What is the meaning of this year’s User Conference Theme: GIS – Enabling a Smarter World?

Geography and GIS are increasingly playing a major role in addressing the challenges of the 21st century, providing a framework for understanding and creating a more sustainable world. The evidence of this is demonstrated in the tens of thousands of important GIS applications and systems that are deployed around the world.

In the last decade, the technology industry has been putting forth a vision of creating a smarter world with technologies and systems that help people and organizations become more efficient and effective. Applications include smart electrical networks, smart transportation systems and even whole smart cities. The basis of these “smart” ideas and innovations is rooted in the human need to make better decisions and implemented using system theory, computational analytics and the growing ability to connect things and leverage real-time and big data analytics to support efficiency and decision making.

Because of the essential nature of location, and the spatial dimension, GIS is emerging as a fundamental part of many of these smart initiatives. While still early, we are seeing significant application of GIS as a platform for creating smarter institutions everywhere. Web GIS in particular is leading the way in providing a framework that can easily integrate many types of real-time data with advanced analytics, visualization and mapping.

One of the major advances enabled by the web GIS architecture is the integration of real-time observational data from many type of sensors, sometimes called the Internet of Things (IoT). Real-time web GIS promises to be a platform for implementing the vision of smart cities, smart utilities, smart government, and smart organizations. This integration will mean huge opportunity for GIS professionals and the geospatial field in general, but also brings forth new challenges in the use, display, and analytics of this real-time data in conjunction with more traditional data sources.

A smarter world will mean a world where decisions and actions are enabled with real time data, analytics and automation applications that improve efficiency and decision making. As GIS integrates smart technologies, such as IoT and big data analytics, GIS professionals will increasingly be asked to use their
capabilities to build systems that support real-time problem applications such as energy usage, emergency management, environmental management and applications that drive efficiency in fields of logistics, task force capabilities and faster response.

Through our existing understanding of spatial science along with the growing understanding of dynamic interaction and real-time analytics and response, we can envision how GIS will enable a smarter world.

What does this vision mean?

Organizations and societies will increasingly become digital, and GIS will provide a framework for efficiencies and better decision making. GIS professionals will be heavily involved in supporting real-time applications that integrate real-time information into almost every human activity, from urban design and land use planning to environmental conservation and natural resource management. Here are other important aspects of this vision:

- Society will better understand their world through the power of mapping and geographic analysis.
- Humans will increasingly be able to predict the future and make better decisions about managing resources wisely and communicating with others.
- Real-time GIS (fed by the Internet of Things) will become essential.
- Maps will increasingly become recognized as a fundamental language for understanding and communication.
- GIS will be used to systematically model the processes of our world.
- GIS will increasingly support smarter decision making and make operations more efficient.
- GIS will drive efficiency and optimization of almost every human endeavor.

What are the big ideas I should think about before and at the User Conference?

Here are the big ideas to ponder before and during this year’s User Conference.

**Web GIS – A New GIS Pattern**

The Web GIS pattern represents a new way of delivering GIS through web maps and related services that can be accessed with easy-to-use apps that run on any device. Web GIS is built on the concepts of sharing, collaboration, and being connected—both within an organization and with the outside world.
ArcGIS users are increasingly leveraging this pattern and building apps based on web services deployed in their own portals and in ArcGIS Online. This pattern is providing valuable capabilities to GIS users and also expanding the reach of mapping, analytics and visualization across organizations.

The Role of Real-Time Data

The integration of real-time data with Web GIS will support “smart” initiatives in governments, businesses, and the academic and non-profit world. This integration will mean more effective and efficient organizations and ultimately a more sustainable world.

Web GIS is playing a major role in bringing real-time data together in a framework that is easily manipulated, visualized, analyzed, and available for better understanding and improved decision making.

New “Smart” Technology

The key new technologies that will make ArcGIS smarter are:

1. The GeoEvent Server supporting integration of real-time data
2. The GeoAnalytics Server with support for big data spatial/temporal analysis
3. Insights - the new interactive spatial analytic and visualization tool

GIS as a Pervasive Platform and GIS Professionals

We are increasingly seeing maps and geographic information embedded into everything. The result is that our organizations and society are becoming increasingly spatially aware, thinking about geographic patterns and how what we do impacts everything. The result will be a society that better understands our world through the power of mapping and geographic analysis.

Beyond understanding, GIS professionals are impacting how the future is created providing valuable geospatial knowledge that helps create a better world.

Over time GIS will not only continue to support a wide variety of applications; it will fundamentally advance how we think about nearly everything that we do. GIS professionals will be at the heart of this.
GIS as a Community Platform - Extending GIS to All Citizens

This new concept is being implemented in the city of Los Angeles and involves extending web GIS to support the entire “citizen community” outside of government.

The idea is that a government can set up a separate web GIS to serve citizens and institutions of a community using the same maps and content managed by the agencies. This is not just a website of maps or open data. This is a full web GIS with content and apps that facilitate community GIS independent of the government.

Content is initially provided and maintained by the GIS organization of the government. Citizens, civic hackers, NGOs, schools, educators and even startups can use the platform for public applications that support civic engagement and community initiative.

This is a powerful way agencies can extend and leverage their GIS investments. Combined with ArcGIS, open data provides an entire platform for better communication and collaboration in a community.

GIS as a Platform for “Digital Transformation”

While GIS has been systematically advancing for the last five decades, today GIS is undergoing a massive transformation integrating many technologies and concepts into a powerful platform for smarter human behavior. We see that the GIS platform will not only bring more technology and data types together but also become a powerful force for supporting analytics, communication and collaboration in all types of organizations.

GIS Technology Enabling a Smarter Future

GIS is helping us be smarter on many frontiers. The primary ingredient evolving this is the power of GIS to connect and integrate information from many sources. Its allows us to do spatial analysis, modeling and make spatial/temporal predictions about everything from climate change to land use and related environmental impacts. It is doing this within a framework of high powered visualization and analytic tools that are increasingly being made available through accessible maps and apps.

What are some of the specific technologies that enable the “smart” vision?

To enable the "smart" vision, your organization will need the following.
1. A Web GIS architecture that:
   a. Abstracts and integrates all types of geospatial data (layers and web maps).
   b. Supports dynamic “services based” spatial analytics and visualization
   c. Includes ready to use apps that support a wide range of capabilities.
   d. Open architecture and APIs for embedding/extending.

2. Ability to integrate and use real-time data

3. Ability to store, manage and analyze very big collections of spatiotemporal data

4. Interactive apps that support spatial data exploration and analysis

How does the Internet of Things (IoT) work and how does it connect and integrate with GIS?

The basic concept of IoT involves “things” that provide their data to networks and the Internet. The big idea is that over time all things become connected with the Internet and are brought together for greater measurement and understanding. This is a huge, new and rich data source that can be used to support systems that monitor, analyze and even give automated instructions to a variety of systems and applications.

In recent years both the science community (NSF and their cyber infrastructure research) as well as government and private sector communities have embraced the concepts of IoT to support the creation of systems and products ranging from consumer focused appliance monitoring in a home to entire electrical utility grids that manage power distribution and usage.

At Esri we see these worlds, GIS and IoT, as highly synergistic.

IoT concepts can have many practical uses in the GIS world, providing dynamic geospatial measurement of both the natural world (e.g. soil moisture, stream flow, plant growth) as well as in the built environment (building, energy use, noise, traffic flow).

IoT has been central to the concept of smart cities and when integrated with a GIS, can support many applications, monitoring, and reports on the status of many urban systems.

GIS provides a practical way to organize real-time sensor data into “layers” of information that can directly leverage the visualization and analytic power of a GIS. For users, this means a whole new dynamic and rich set of information that can enrich their existing applications as well as support a new class of applications that can make organizations “smarter.” One can immediately envision simple applications
such as Dashboard for ArcGIS or Story Maps apps fed with real-time data. Over time, Esri’s users will learn how to leverage this environment and support a smarter world.

What major initiatives will Esri talk about at this year’s User Conference?

For the past year, Esri has been working on the following new initiatives that support our users:

- Making GIS easier and more accessible
- Extending GIS to serve the civic community. This is actually being done in the City of Los Angeles with their GeoHub project. This pattern promises to extend the world of GIS to support the entire community (civic, schools, NGOs, businesses, etc.), not just the city.
- Exploratory spatial data analysis – Insights for ArcGIS. This is a new and exciting application for interactive exploration of GIS and other tabular information.
- Space/time analytics of big data
- Real-time GIS and the Internet of Things
- The Living Atlas: a rapidly expanding world of digital online geospatial content
- 3D GIS in every aspect of GIS
- Green Infrastructure landscape planning project
- Spatial apps enabled by the new JavaScript APIs, Web AppBuilder for ArcGIS, and AppStudio for ArcGIS
- Integration of drone content into ArcGIS
- Advancing ArcGIS Pro
- Advancing the science of spatial analysis
- Completing Web GIS for on-premises deployment
- Lifelong learning for GIS professionals (training, MOOCs, books, and communities)

There is so much to see and do at the Esri User Conference; what tips do you have for me to make the most of it?

Here are a few tips that would help you make the most out of your UC experience:

1. Attend the Plenary Session on Monday (morning and afternoon) - this is critical for understanding Esri’s direction and the conference as a whole.
2. Prior to UC, download the Esri Events app (for iOS or for Android) and use the Search tool to select from the many offerings such as Technical Workshops, Demo Theater Presentations, Moderated Paper Sessions, Industry-Focused Sessions, Special Interest Groups, and more to create your schedule. The detailed agenda is also available on the UC website.

   Please note that there will be no pocket agenda at the UC this year, as part of our continued efforts to go green.

3. Check out the Technical Keynotes:
   - Approaches to Spatial Analysis by Esri Director of Software Products and senior members of his team
   - From Wow to How: 5 Steps to Launch Your Web GIS by Esri Director of Professional Services.

   These keynotes will discuss strategy, best practices, case studies, and proven workflows for your GIS.

4. Consider attending the Road Ahead sessions (for Desktop, Server, Online, Runtime SDKs, Content, ArcGIS API for JavaScript, and Real-Time GIS). These sessions are excluded from the recordings provided by Source of Knowledge, the third-party company that makes most of the Technical Workshops and Paper Sessions available for purchase.

5. Review the Industries section in the Q&A to learn about the events and activities taking place at the UC that are relevant to your industry.

The Esri User Conference is also about networking, making new friends, and having fun. To help you make the most of your visit, we put together a web page that highlights activities you may be interested in.

Does Esri have a Code of Conduct for the UC?

Yes. At Esri, we believe geography can make the world a better place. To make it possible for true collaboration, creativity, innovation, and idea exchange to thrive we are committed to facilitating a welcoming and respectful community for all. We empower all participants in our community to actively engage in creating a friendly and safe environment for all. Please visit our website for the details on Code of Conduct at Esri Conferences and Community Spaces.
What is the Esri Map Book and how should I use it?

Published annually since 1984, the Esri Map Book features important and innovative accomplishments of GIS users around the world, and showcases work presented in the Esri International User Conference Map Gallery exhibit. In addition to the printed edition, this 31st edition of the Map Book will also be available as a website (available before UC; link coming soon). Now you can experience the full functionality of the web maps—including ArcGIS Online and Story Maps—that appear in this year’s volume. It’s easy to access the online map book and share these intriguing examples with friends, family, coworkers, and your social media circles.

Esri

How is Esri advancing geographic science?

At Esri we focus on basic and applied science. We recognize that scientific research will be driven by major themes that are of compelling interest to society. Science helps us understand not only how the Earth works, but also how the Earth should look (by way of geodesign), and how we should look at the Earth (by way of Earth observation in varying forms and the accompanying data science issues of analysis, modeling, developing, and documenting useful datasets for science, interoperating between these datasets and between various approaches).

With this view in mind, we support scientists within universities, research institutes, government agencies, and NGOs with our software and services. We also seek to perform good science at Esri (particularly in hydrology, forestry, ecology, conservation biology, ocean science, agricultural science, and basic geographic information science). This underpins much of what we do as an organization and is helping us evolve ArcGIS into a comprehensive geospatial platform for science. We see ArcGIS as a platform that supports research project management and collaboration, spatial analysis, visualization, open data, and the communication of science. As such, we have produced a variety of products specifically for advancing geographic science, including:

- **Multidimension Tools and Multidimension Supplement Tools** in ArcGIS Pro and ArcMap. These tools allow the user to work with netCDF, HDF, and GRIB scientific data formats. A new geoprocessing tool accesses scientific data stored on a remote server via the OPeNDAP protocol and makes a raster layer from data stored on a remote OPeNDAP server.
• The **Scientific Data Workflows package** provides free examples to help jumpstart the effective work with multidimensional datasets in ArcGIS. A Scientific Data Workflows.docx file goes through a number of general scientific examples. The workflows may be customized and with the inclusion of one’s own data. Download from [esriurl.com/workflows](http://esriurl.com/workflows).

• **Dimension Explorer**, a free tool that makes it easier to visualize and work with time-aware and multidimensional data in ArcMap by providing slider controls for navigation - [esriurl.com/dimension](http://esriurl.com/dimension).

• **Spatial Analysis Tools** in ArcGIS Pro and ArcMap include scores of new functions for space-time pattern analysis and mining (including space-time cube visualization and analysis of changes in temporal trends at a location), raster segmentation and processing, working with 3D and LAS (lidar) datasets, pairwise feature processing, suitability modeling, cost distance analysis, data review, and workflow management.

• **Integration of ArcGIS with the SciPy Stack**. We seek to evolve ArcGIS into a comprehensive geospatial platform for science; a platform that supports research project management and collaboration, spatial analysis, visualization, open data, and communication of science, all at multiple scales. The inclusion of the SciPy stack supports this goal by expanding the number and type of analytical methods available to the science community. For context, see [esriurl.com/scipy](http://esriurl.com/scipy) and see also the video on [videos.esri.com](http://videos.esri.com) entitled *Python: Working with Scientific Data*.

• **Inclusion of the netCDF4 Python library** to allow users to build custom geoprocessing tools that analyze netCDF data, perform advanced slicing (sub setting) of a netCDF file (e.g., for creating climatologies), reading netCDF files which contain groups.

• **Inclusion of Pandas**, a software library written for Python programming language and offering data structures and operations for manipulating numerical tables and time series.

• **Integration with R**. R (aka the R Project for Statistical Computing) is an extremely popular environment for statistical computing, containing over 6300 packages for solving a wide variety of statistical problems, widely used by environmental scientists of all stripes, as well as statisticians. Although it contains a number of cutting-edge methods not implemented in any other environment, perhaps 95% or more of these packages are not explicitly spatial. Hence many in the Esri user community have been asking for a mix of its functionality with ArcGIS, as well as better code-sharing interaction with the R community. Hence a new open
source bridge library on GitHub will allows users of recent versions of ArcGIS Desktop and ArcGIS Pro to directly build R into their workflows and to pass data between ArcGIS and R. An additional aim is to build a community of people who will develop R-based geoprocessing tools that are shared freely and openly, along with sample data. The community of tools will be user developed and user driven. Esri will not be developing sample toolboxes around R packages. Instead, our role will be to facilitate the community and help people build what they find useful, and want to own and maintain. For context, see the comprehensive video on videos.esri.com entitled *Integrating Open Source Statistical Packages with ArcGIS*.

- **New Python Raster Functions**, a curated set of lightweight but powerful tools for on-the-fly image processing and raster analysis in ArcGIS. Available from Esri’s open-source community on GitHub.

- The open source **Esri Geoportal Server** continues to be a popular and valuable contribution. The latest version, 1.2.6, includes increased support for the Project Open Data catalog format, various search and publication enhancements, and further integration options with ArcGIS Online/Portal for ArcGIS. You can access the release at github.com/Esri/geoportal-server/wiki.

- **GeoPlanner for ArcGIS** brings the power of ArcGIS Online and a geodesign workflow to land-based planning activities with a JavaScript-based web application that allows users to create, analyze, and report on alternative planning scenarios in support of better, more informed decision making. Universities and other organizations with campus site licenses already have access to this app via an ArcGIS Online Organizational Account. See esriurl.com/geoplanner.

- **Insights for ArcGIS**, a new experience added to ArcGIS to enable iterative and exploratory analysis with your data in a geographic context. Through one fluid and simple drag-and-drop interface, you can quickly answer questions with data from enterprise data warehouses, Excel spreadsheets, Big Data, and ArcGIS services. Watch a video.

- **GIS Tools for Hadoop** is an open-source toolkit intended for big spatial data analytics. The toolkit allows users to leverage the Hadoop Framework to do spatial analysis on spatial data. Esri is pushing forward in the use of Spark as well.

- **GeoAnalytics** is a new extension to ArcGIS for Server that enables a new way of processing
spatiotemporal data that is designed for big data by leveraging distributed analytics and storage. The extension works with your existing GIS data and tabular data, using familiar workflows to complete complex spatial analyses as distributed processes across a cluster of machines. Tools are accessible from ArcGIS Pro, from the ArcGIS Online web experience, or from your own apps via a REST API. Watch a video.

- **The Living Atlas of the World** features beautiful and authoritative maps, satellite imagery feeds and demographic data on hundreds of topics relating to people, Earth, and life. This includes a rich collection of Earth and ocean observation layers describing current conditions such as severe weather and hurricanes. To enhance and expand this collection, Esri has recently published a new set of live feeds layers featuring frequently updated data from several sources, including NOAA, NASA, and US Geological Survey. The Living Atlas also includes layers from a new map of global terrestrial ecosystems for a host ecosystem research and management applications, including assessments of climate change impacts to ecosystems, economic and non-economic valuation of ecosystem services, and conservation planning. This map of **Ecological Land Units (ELUs)**, represents the most current, accurate, comprehensive, and finest-resolution data available at a global scale for each of the four inputs: bioclimate, landform, lithology, and land cover. To access this content, see this Esri white paper.

- For many years Esri has been compiling a human geography database of demographics and statistics about all countries in the world, and mapping these data using an innovative methodology. The **Esri World Population Estimate**, a new probability surface that estimates the location and count of people throughout the world, is now available to researchers and others online.

- **Science books from Esri Press**: For example, *Mapping and Modeling Weather and Climate with GIS* (2015) features leading climatologists, meteorologists, and other experts sharing approaches to advance atmospheric and ocean science through GIS. *Ocean Solutions, Earth Solutions* (2015) is an externally peer-reviewed research monograph based on papers presented at the inaugural Esri Ocean GIS Forum. It is about use-inspired science and realistic solutions for mapping, monitoring and protecting the ocean, hence the entire Earth. It is also the first Esri Press book to employ Digital Object Identifiers (DOIs) for citation of both chapter text and supplementary datasets (further reading on citations). *GIS Research Methods: Incorporating Spatial Perspectives* shows researchers how to incorporate spatial thinking and GIS technology into research design and analysis, and thus should be incredibly useful in the classroom. For more information go to Esri Press.
We seek to provide a catalyst toward geo-enabling the scientific process by way of the products mentioned above. Esri is also a member of the scientific community with objective representation on various boards and councils, such as the Science Advisory Boards of NOAA, the EPA, the US Census Bureau, the Federation of Earth Science Information Partners (ESIP), the Board of Directors of the Open Geospatial Consortium (OGC), the Consortium for Ocean Leadership, the National Academy of Sciences, and more. For additional information and to keep abreast of our science initiatives, see the Esri and the Science Community blog.

What is Esri’s approach for keeping up with changing technology and trends?

Clearly, geospatial technology continues to advance rapidly, opening up many new opportunities for our users. This spans from new measurement tools and data sources to advances in computing and software.

Esri’s philosophy is to support an evolutionary approach to its product innovation. This means incrementally evolving our software, taking advantage of changing technology trends and user requirements.

Over the years, Esri technology has gone through a series of amazing changes based on fundamental changes in related technology. Recently, Esri has also gone through a major transformation in its technology, investing heavily in Web GIS. This has simplified the deployment and use of GIS by our users, while at the same time maintaining their existing systems and capabilities. This has also involved integrating our traditional client/server technology into the Web GIS platform in such a way as to introduce major innovation and, at the same time, provide ongoing continuity for our users.

The result has been the creation of a platform that is helping our users deploy GIS across their entire organizations.

While Esri is simplifying the technology, GIS infrastructure implementation and management still requires the skills and knowledge of the GIS professional. It also requires someone who understands users’ needs and can configure apps that work for key mission areas. Helping users learn how to realize the potential of Web GIS and at the same time continue to support traditional workflows and applications is one of the main objectives of this year’s User Conference.

How does Esri work with nonprofit organizations?

A cornerstone of Esri’s mission is to support the application of GIS towards a more sustainable future.
Nonprofits and volunteers supporting them use ArcGIS to further their reach, better understand their impact, and tell geographically enriched stories. We provide affordable access to ArcGIS to many organizations through a series of special programs for students and educators, conservation groups, nonprofits, and disaster responders. Each year we are humbled and honored to see nonprofits around the world making a difference by applying geography with GIS. This important and often critical work involves every aspect of our organization, and we are all inspired by the impact of these organizations.

Is ArcGIS too complicated for a small nonprofit to understand and use?

Not at all. ArcGIS now offers a SaaS model through ArcGIS Online that provides a complete solution for the needs of most nonprofits. With a special low-cost subscription to ArcGIS through the Nonprofit Organization Program, nonprofits can map their spreadsheets, conduct field surveys, benefit from smart mapping, analyze and enrich their program information, and share their impact through story maps. Not long ago, these capabilities would have required considerable software installation, configuration, hardware, and training to implement. Now a nonprofit can log in and benefit immediately from the increasingly advanced capabilities offered with ArcGIS.

How is Esri supporting open government initiatives?

Esri puts significant energy into supporting open government. Our technology is used around the world to further transparency, citizen participation, and collaboration. Governments are finding that the ArcGIS platform is a strong platform for creating a data-driven inclusionary strategy that improves relations with citizens and commerce.

Maps and spatially-oriented data are the most commonly accessed authoritative data provided by governments worldwide. Esri provides an open data solution as part of ArcGIS Online enabling organizations to easily and openly share this spatial and tabular data. Thousands of governments are now using this open data solution to support open data and transparency initiatives as well as provide economic development and citizen engagement. This solution is also improving collaboration within and between governments by encouraging them to work openly and connect with local civic brigades and business entrepreneurs.

In addition, Esri offers integrated Smart Community solutions providing public access to my government services, my health services, parks and recreation finders, elections results and polling place locators, civic reporting, executive dashboards, and many more. More than 150 included maps and apps are available.
through the ArcGIS for Local Government and ArcGIS for State Government solution templates. These are available as open source software.

While incorporating open government into our product offerings has been critical to our customers’ success, we also recognize that technology alone will not provide an open government. Therefore, we support many activities to help broader innovation in the community by providing educational forums, supporting emerging businesses, and helping bridge the software development and government leadership communities.

Finally, we are actively participating in the broader community of innovative government initiatives across the globe. We have continued our partnerships with start-up incubators and accelerators to include Code for America, TUMML, and 1776. Our work with the International City/County Management Association to bridge the gap between government executives, citizens, and communities now includes regular working groups that resulted in the establishment of the Local Government Technology Alliance.

In 2015 and 2016, we worked closely with the City of Los Angeles to create a new concept for citizen and community engagement known as the GIS Hub. The Los Angeles implementation is called GeoHub and can be found at http://geohub.lacity.org/. This concept has been enhanced by a number of other local governments and promises to be a whole new way for not only sharing data and maps but actually providing access to data, apps, and maps used in the actual running of the City.

There will be multiple presentations at the User Conference sharing this concept.

What is a GIS Hub?

The GIS Hub is a new concept and technology pattern for providing GIS for an entire community. This pattern results in a GIS that is usable for all citizens and organizations of a city. The Hub can be considered to be a civic engagement platform for any type of government and non-government organization. It’s also a way to open and maximize data sharing and collaboration both within organizations and for the community they serve.

Driven by community-focused initiatives, the Hub configures and extends Web GIS by connecting all the parts of a GIS ecosystem to best serve the community and stimulate measurable progress on key community initiatives. These community initiatives are designed with various maps and apps and can be measured to ensure action so that community officials achieve their goals. Applications can range from crowdsourcing community feedback on various projects and having citizens participate in data collection and accuracy, to working together with civic developers or local schools and universities on community
improvement projects. The Hub provides sustainable and repeatable ways to collaborate on key initiatives as they evolve over time.

Is the GIS Hub a new product?

A GIS Hub is built on a configuration of ArcGIS Online. It configures and extends this platform with special maps and apps that respond to a community's initiatives. Through our work with customers, Esri has discovered the need for specialized tools and licensing that we are currently packaging as a product and services offering. The GIS Hub is available for users now. We are continuing to make advancements in simplifying and productizing this Hub product and anticipate community-wide licensing models available later this year.

How would the Hub foster civic engagement in my community?

Governments of all sizes are fundamentally challenged with the tasks of understanding the concerns and demands of their residents, and of engaging multiple stakeholders from the business community, NGOs, and schools. Citizen engagement requires connecting around issues and initiatives.

The Hub connects people with the use of maps that tell stories and communicate about fundamental issues that people care about. The Hub also fundamentally helps communities gain better understanding and engagement by way of open data, maps, and apps that let citizens communicate with their city. With the GIS Hub, communities can actually create and interact with their own maps and data in an online community that fosters communication and collaboration.

Where can I learn more about the Hub at the User Conference?

There are many opportunities to learn more about the Hub at the User Conference

- Listen to the City of Los Angeles' experience during the UC Plenary on Monday.
- Visit with representatives from the City of Los Angeles at the Map Gallery social Monday afternoon.
- Attend one of the three Envisioning sessions scheduled Tuesday through Thursday at the Expo:

The Hub—A Civic Engagement Platform
What does Esri mean by a "spatial university?" Is this happening around the world?

The spatial university is our vision of what a higher education institution would look like if it fully realized the potential of spatial thinking and geospatial technology to enrich teaching, learning, research, and campus administration. The spatial university has four defining characteristics:

1. Spatial thinking across the curriculum. There’s now compelling evidence suggesting that spatial abilities prepare students for success in STEM coursework and early employment. However, no college or university to our knowledge includes such preparation among its overarching objectives for general education. Nor do many institutions have campus-wide programs to prepare students to use GIS in community based service learning projects or internships.

2. Geospatial workforce development. For nearly a decade the U.S. Department of Labor has highlighted
career opportunities associated with geospatial technologies. In 2014 it published an updated Geospatial Technology Competency Model that clearly defines workforce needs. Still, relatively few higher education institutions offer advanced, practice-oriented undergraduate and graduate programs that prepare students for geospatial career opportunities. And many that do offer such programs struggle to attract sufficient enrollments.

3. Geo-enabled research. Research discoveries too often remain segregated and hidden in disciplinary silos. GIS, and the spatial perspective it embodies, is inherently integrative. The spatial university hosts and disseminates multidisciplinary and interdisciplinary research enabled by the spatial perspective and geospatial technologies. We believe that it’s an urgent priority for research universities to prepare a new generation of researchers who understand how geoenablement powers innovation.

4. GIS for campus administration. The spatial university has an enterprise GIS infrastructure in place to support campus planning, operations, maintenance, and sustainability. Given the proven potential of such infrastructures to save money and increase safety and security, it’s remarkable that more institutions have not yet fulfilled this potential.

We promote our vision of the spatial university in frequent visits to universities and colleges around the world. Though Esri has no plans to name a set of spatial universities, we do support institutions that share our vision by providing low-cost education licensing, educational resources and experience that complement higher education offerings, and opportunities for student internships and careers.

What are you doing to support primary and secondary schools?

We believe GIS is a major education platform that can support inquiry-based education in science, technology, engineering, and math (STEM). We are committed to making our technology accessible to every student and teacher. In 2014, we donated ArcGIS Online accounts to every public, private, and home school in the United States. Since then we have provided free curriculum solutions to thousands of schools and teachers with great results. Over 3,000 schools have already embraced this platform with more adoption every day. Our goal is to inspire mainstream adoption of geo-enabled teaching in thousands of U.S. schools.

To realize the potential of GIS in schools, we are working hard to build and sustain a community of teachers and volunteers who are making GIS come to life in thousands of schools around the world. Every year we conduct an intensive weeklong workshop in Redlands called “Teachers Teaching Teachers GIS” (T3G) that grooms GIS champions across the country. We’re working with the GIS Certification Institute, which offers points toward GIS Professional (GISP) certification for volunteers who help schools
set up, administer, and use their donated ArcGIS Online accounts. And, we’ve teamed with the American Association of Geographers to recruit more than 1,000 volunteer geomentors to assist teachers who wish to adopt GIS in their classrooms.

Meanwhile, Esri partner, Maps.com, provides many resources for teachers, including an exciting new product called Field Trip Library, which uses Esri Story Maps to bring history and geography to life. Beyond the United States, content providers such as Collins are including Story Maps in educational products like the Geographical Enquiries series. We are also encouraging Esri’s international distributors to do all they can to support primary and secondary education. Some, including Esri Canada and Esri UK, have ambitious programs to bring GIS and spatial thinking to schools.

How does Esri support the business functions of primary, secondary, and higher education campuses?

ArcGIS is a powerful platform for education facilities management. There are hundreds of campuses using it successfully. Beyond our basic platform, Esri also provides a series of open source apps that can help our users get going rapidly. Also we support a number of partners like PenBay Solutions, R&K Solutions, and others. Fundamentally, GIS supports the three primary business areas that comprise campus facilities management. These include

1. **Portfolio management of real properties**: from a single building to entire campuses, including properties dispersed across a state, region, and country. Analyses including current need vs. occupancy, facility condition, cost of operation, and sustainability.

2. **Operations**: Meeting the day-to-day requirements of managing and operating a single building or campus.

3. **Safety and Security**: Ensuring the physical and environmental safety of the facilities and their occupants.

A collection of case studies is available in our e-book GIS in Education: Across Campuses, Inside Facilities.

What new GIS Learning resources are available from Esri that can help people get started? Who are the target audiences?

We continue to publish many books (100+) and lessons that support your professional growth and
success with ArcGIS. Of special note this year are the following:

**The ArcGIS Book: 10 Big Ideas about Applying Geography to Your World**

Last year, Esri Press published this book along with a companion website (http://www.thearcgisbook.com) that guides you through the holistic aspects for using and applying web GIS. Each chapter contains dozens of live examples and Learn lessons that guide users with all levels of experience through the application of GIS.

This year at the conference, Esri will release a companion guide, the *Instructional Guide for the ArcGIS Book*. The *Instructional Guide* gives teachers and students alike everything they need to get started using ArcGIS quickly and simply. The book contains 40 lessons in which students apply GIS to real-world scenarios. Half of these skill-based lessons don’t require any download or sign-in at all: just navigate to a map on the web and start learning. Following the same chapter structure of *The ArcGIS Book*, this guide provides a smorgasbord of GIS-related activities, videos, and lessons that allow teachers to develop customized, dynamic, and compelling approaches to using GIS in the classroom.

These two books aim to inspire a deeper understanding of the potential and power of web GIS and is an excellent resource for professional development. This book will be available for purchase at the User Conference and from retailers beginning July 15, 2016.


This book is the story about how imagery and remote sensing power modern GIS. *The ArcGIS Imagery Book* is a roll-up-your-sleeves approach to rapidly and effortlessly begin putting imagery to smarter, more skillful use in your GIS. Even “armchair” geographers will appreciate this book and its website companion (available late June at www.TheArcGISImageryBook.com) for the wealth of gorgeous, inspiring, and occasionally troubling images and links to powerful web apps and maps that weave interesting, and stories about our planet and the issues we face. This book is relevant to both those who are very familiar with geographic information systems and those who have never heard the term. Starting in late June, you can interact with this book online at www.thearcgisimagerybook.com with close to 200 live links and exercises to begin to understand applying imagery in your GIS.

*Learn ArcGIS*

Learn ArcGIS is a free online learning resource with guided lessons based on real-world problems. New lessons are added every month and use a variety of the latest ArcGIS products. New users will find a
wealth of practical tools to get them get started. The “Get Started” series of lessons is a great quick start for beginners. The idea behind these exercises is to show GIS in action using practical, real-world examples for how to apply ArcGIS to address a wide series of problems and scenarios. Visit: [http://learn.arcgis.com](http://learn.arcgis.com).

**Who are the target audiences for these GIS learning resources?**

We created these learning resources for GIS users at all levels worldwide – from seasoned GIS pros to people who are new to GIS, students from K12 to college, decision makers, executives, and citizens. Even your families and friends can start using GIS through these new books and lessons.

We aim to make GIS accessible and useable by everyone, including use in:

- K12 Education especially students and teachers engaged in ConnectED.
- Any college program in which GIS is part of the curriculum
- Introductory courses for GIS
- GIS programs in community colleges
- Lifelong learners interested in professional development and advancement

**What are the most important new books coming from Esri Press this year?**


This book is the story about how imagery and remote sensing power modern GIS. *The ArcGIS Imagery Book* is a roll-up-your-sleeves approach to rapidly and effortlessly begin putting imagery to smarter, more skillful use in your GIS. Even people new to imagery and GIS will appreciate this book and its website companion (available late June at [www.TheArcGISImageryBook.com](http://www.TheArcGISImageryBook.com)) for the wealth of gorgeous, inspiring, and occasionally troubling images and links to powerful web apps and maps that weave interesting stories about our planet and the issues we face.

*Instructional Guide for the ArcGIS Book* by Kathryn Keranen and Lyn Malone

The *Instructional Guide* gives teachers and students alike, everything they need to get started using ArcGIS quickly and simply. The book contains 40 lessons in which students apply GIS to real-world scenarios. Half of these skill-based lessons don't require any download or sign-in at all: just navigate to a
map on the web and start learning.

*Getting to Know ArcGIS Pro* by Michael Law and Amy Collins

Teaches GIS users how to get started solving problems by visualizing, querying, creating, editing, analyzing, and presenting geospatial data in both 2D and 3D environments using the latest ArcGIS mapping app, ArcGIS Pro. This book teaches the basic functions and capabilities of ArcGIS Pro through practical project workflows and shows how it is an essential component of the ArcGIS platform. Data for completing the exercises and trial software are available for download.

*Getting to Know Web GIS, second edition* by Pinde Fu

Features detailed, step-by-step exercises that teach readers how to share resources online and build web GIS applications easily and quickly; includes the latest upgrades and advances, such as smart mapping, AppStudio, ArcGIS Pro and scene services; and expands the use of ArcGIS Online, Portal for ArcGIS, ArcGIS for Server, Web AppBuilder for ArcGIS, and ArcGIS API for JavaScript.

Each chapter includes a complete application project using multiple products from the browser/client side to the server side. Data for completing the exercises is available for download.


A comprehensive guide to creating maps that communicate effectively. In *Designing Better Maps*, renowned cartographer Cynthia A. Brewer guides readers through the basics of good cartography, including layout design, scales, projections, color selection, font choices, and symbol placement. Designing Better Maps also describes the author’s ColorBrewer application, an online color selection tool. The second edition includes a new chapter on map publishing.

*GIS Research Methods: Incorporating Spatial Perspectives* by Sheila Steinberg and Steven Steinberg

This book shows researchers how to incorporate spatial thinking and geographic information system (GIS) technology into research design and analysis. Topics include research design, digital data sources, volunteered geographic information, analysis using GIS, and how to link research results to policy and action. The concepts presented in *GIS Research Methods* can be applied to projects in a range of social and physical sciences by researchers using GIS for the first time and experienced practitioners looking for new and innovative research techniques.

This book has been a top cartography university-level textbook for decades. The eighth edition will be fully updated with a new chapter highlighting web map design. This edition also includes the latest information about the use of imagery and remote sensing. As in the past, Map Use provides students with the knowledge and skills to read and understand maps and offers professional cartographers a thorough reference resource. With the addition of material highlighting recent developments in GPS and geographic information system (GIS) technology, this new edition extends its instructional capacity even further. This book is appropriate for students of cartography and map design, as well as for students without a formal education in geography.

What does Esri mean by "Lifelong Learning?"

"Change is the only constant in life." That saying is truer than ever in today's rapidly changing world. Technological change demands that we rethink the role of education in our lives. Rather than a prelude to adulthood and careers, learning has become a way of life. Esri User Conference participants of all ages and all stages of professional development are actively involved in learning, teaching, and mentoring. In fact, lifelong learning is one thing that the diverse community of GIS users has in common.

It's hard to think of a technology and set of professional practices more changeful than GIS. Recognizing this, the U.S. Department of Labor identifies lifelong learning as a cornerstone of its Geospatial Technology Competency Model. We do our part by providing educational resources and experiences that lifelong learners need, and by supporting educational institutions at all levels. These include:

- Web-based and instructor-led training and free "massive open online courses" (MOOCs).
- Curriculum solutions for educators, including Esri Press books and SpatiaLABS exercises for higher education, and Geolnquiries for schools.
- Deeply discounted access to the ArcGIS platform and training resources for educational institutions, and free access for students.
- A multi-level Technical Certification program that attests to practitioners’ skills.
- A Young Professionals Network that builds community among recent graduates and other newcomers to the GIS field.
- The User Conference and many other Esri-sponsored learning events.
Alongside our education partners, Esri is committed to providing a full spectrum of offerings for learners who wish to broaden their horizons, both professionally and personally. The Lifelong Learning exhibit at the 2016 User Conference Pavilion will showcase these offerings and provide access to the people who stand behind them.

Representatives of Esri Training Services, Education Outreach, and Technical Certification teams will be on hand at the Lifelong Learning exhibit. They’ll be ready to advise visitors about how we can help learners learn, help teachers teach, help GIS pros advance their careers, and help the GIS community change our world for the better. They’ll also be eager to hear advice about what more we can do to help. Visitors will discover education offerings that are most useful to them, and will learn about Esri’s plans to expand its support for lifelong learners.

What is Esri doing in the area of Massive Open Online Courses (MOOCs)?

So far, Esri has offered three MOOCs: Going Places with Spatial Analysis, The Location Advantage, and Do-It-Yourself Geo Apps. These classes are high quality and very effective learning instruments. Since Fall 2014, these have attracted over 50,000 adult learners from more than 150 countries. On average, 27% of students completed the courses, which is four times the typical completion rate of other MOOCs.

In September 2016, we will launch Earth Imagery at Work, a new MOOC that explores how industries like agriculture, environmental management, disaster managements, utilities, and the commercial sector use earth imagery to make better decisions. Students will gain no-cost access to ArcGIS Online, ArcGIS Pro, and the new Esri app Drone2Map for ArcGIS during the course.

In 2017, we will offer eight MOOCs. These will be scheduled two at a time, in February, April, September, and November. For further information, and to sign up for a MOOC, visit [http://www.esri.com/mooc](http://www.esri.com/mooc).

What types of training does Esri offer?

We offer instructor-led courses and workshops and self-paced learning options on many GIS and ArcGIS topics.

Instructor-led courses teach best practices and recommended workflows for the ArcGIS platform. Class time is devoted to discussion, group activities, and hands-on exercises. Instructor-led workshops are half-day or full-day sessions in which concepts and demonstrations on a focused topic are presented. Ample time is devoted to question-and-answer sessions.
Courses and workshops are taught by professional Esri instructors who have achieved one or more Esri technical certifications and CompTIA CTT+ certification (which covers core instructing skills). Our courses incorporate proven adult learning principles to teach knowledge and skills that can be applied immediately on the job.

Instructor-led courses are taught at Esri learning centers around the United States, at Esri distributor locations worldwide, and through the Instructor-Led Online Classroom, a popular option that combines the benefits of training in a traditional classroom with the convenience of learning from your own workspace. Online courses and workshops are scheduled in multiple U.S. time zones. You can browse available instructor-led courses in our course catalog.

Instructor-led training options can be tailored to meet your organization’s immediate, short-term, and long-term training goals. You can learn more on the Esri Training website.

Self-paced learning options provide focused training on GIS and ArcGIS concepts. Here are some useful resources:

- E-learning courses have an interactive design that includes video demonstrations and hands-on software exercises with data included. To view available courses, visit the course catalog.

- Live training seminars provide one hour of free online training presented by Esri technical experts. Each live seminar includes question and answer sessions with the presenter and is recorded. To view the schedule of upcoming live training seminars, visit esri.com/lts.

- Esri Press publishes educational books and workbooks on a variety of GIS topics. You can browse books by category and download a copy of the latest Esri Press catalog at esri.com/esripress.

What's new from Esri Training this year?

Esri’s Training experience is being reinvented from the ground up. We’re putting a host of authoritative learning resources for the ArcGIS platform at your fingertips—all in one central collection you can access anytime from anywhere. The new Esri Training site will be the go-to place for individuals to continuously grow their geospatial skills and for organizations to build and sustain ArcGIS capabilities across their entire workforce. At the end of this summer, all customers who have an Esri qualifying product with a current maintenance subscription will receive unlimited access to all of Esri’s self-paced e-Learning resources on the new site.
These resources include over 500 hours of web courses, training seminars, videos, teacher resources, and documents professionally written and curated by Esri experts. Additionally, you will have access to an interactive learning experience with Learning Plans and a personal dashboard enabling you to track your learning. Visit the Lifelong Learning exhibit in the Esri Pavilion to learn more or send your questions to Training@esri.com.

Does Esri offer any GIS training for CIOs?

Yes, in the spring of each year Esri organizes at its Redlands Conference Center a CIO Summit which focuses largely on issues and solutions for public sector agencies.

Do you offer industry-focused training?

Yes, we offer instructor-led courses for the public safety, water utility, and defense and national security industries. These courses use familiar terminology, scenarios, and data to teach best practices for ArcGIS-supported workflows commonly used in those industries.

You can find details on our industry-focused courses in our course catalog.

Does Esri offer e-books or digital magazines?

Esri Press publishes e-books and continues to increase their availability and the functionality they provide. Most Esri Press e-books are available for libraries through the MyiLibrary and ebrary system, and for purchase through many major online retailers.

In addition to print and web versions, ArcNews and ArcUser magazines are now available as interactive mobile apps for Apple iPad and Android devices. These apps have moved from the Esri Books App and are now accessible from the Apple Newsstand and Google Play Store.

In addition, Esri has created a library of free e-books covering a wide range of trends, technologies, and industries. For example, there are six volumes of Essays in Geography and GIS authored by leading academicians and scientists in the industry. Also, check out The ArcGIS Book: 10 Big Ideas About Applying Geography to Your World, available as an interactive website at www.TheArcGISBook.com and as a free downloadable PDF (70MB).
How is Esri doing?

Esri is healthy and growing. We continue to enjoy a leadership position in our market but don’t take this for granted. Esri is continually investing in innovation. For the last five years, we have invested over 27% of our revenue in research and development.

Esri is a global organization with healthy and growing subsidiaries and partners in more than a hundred countries. We are also committed to our employees and to providing a great place to work. This year we were again ranked by Forbes as being among the top six best places to work among U.S. technology employers. Our staff is growing and creating many new innovations that are advancing GIS technology and helping us support our users.

We continue to appreciate the support from our users and partners everywhere. We aspire to help them in their work in all aspects of what we do.

What is the Esri Young Professionals Network (YPN)?

The Esri Young Professionals Network (YPN) provides resources to those who are new to their GIS career (within five years) and those who have just recently implemented GIS in their established careers. This program is not only for young people, it is a community for those just starting out in GIS as well as experienced professionals who are beginning to use GIS. YPN also works closely with universities to bring together recent graduates of GIS programs with internship opportunities and more. By bringing together passionate GIS individuals in this community, YPN strives to provide mentorship, promote leadership, and make training resources accessible.

The YPN motto is: Learn, Connect, Lead. Learn by discovering strategies for career growth and professional success. Connect by growing your network of innovative and tech-savvy contacts. Lead by developing and using leadership skills that raise your profile.

You can connect with YPN on the following social media outlets.

Website:  www.esri.com/YPN
Twitter:  @EsriYPN
Facebook:  www.facebook.com/EsriYPN
LinkedIn:  Esri Young Professionals Network
Instagram: esriypn
Go to www.esri.com/YPN and click on “Join YPN Community” button. Then access the Upcoming Events page that highlights all UC activities and make sure to register!

Do I have to be young in order to be part of the Young Professional’s Network?

No. The concept of YPN is to create a community of people who are new to the GIS profession and want to learn more about what it means to be a GIS professional and build a community of relationships that can help grow knowledge. This social networking dimension of GIS is very important as it facilitates many types of sharing and collaboration.

What is the Esri Startup Program?

The Esri Startup Program is designed to give emerging businesses the tools to build mapping and location analytics capabilities into their products with Esri software. Qualifying startups receive online services, software, training and support, content, and other opportunities to help them succeed. Here is more about the program:

The three-year program provides solution services, software, support, and training to help jumpstart product development.

- Software & Online Services: We provide you the tools to add powerful maps, routing capabilities, location analytics and more for your product and organization.
- Support & Training: We enable you with an entire suite of training and support options, giving you access to our detailed knowledge base, documentations, blogs, forums and more.
- Opportunities for co-marketing and networking with industry experts

Members join as an Emerging Partner in the Esri Partner Network (EPN), a network of more than 2,000+ partners worldwide.

You can learn more via the website, esri.com/startups, or for in-depth details, read our Orientation Blog Series.

The GIS Industry
What big changes does Esri see in the GIS market?

This is clearly one of the most exciting times to be in the GIS profession. We are seeing huge changes and opportunities happen in our market driven in part by what is happening with Web GIS. We have worked hard to extend and transform our technology to an enterprise platform that can connect our traditional users with the rest of their organization.

This sharing extends the reach of geography and GIS applications to many more people: knowledge workers, field workers, executives, and beyond. This is also improving collaboration and sharing within government, the private sector, and education.

This transformation is creating many new opportunities for GIS professionals, not only for their careers, but also in supporting new audiences of users with important and impactful applications.

In business, our partners are likewise finding new opportunities to improve the way they build and configure systems and applications.

In fact, the movement to Web GIS is simplifying and speeding things up, allowing our users and partners to do more in the same amount of time, ultimately achieving their goals faster.

What is the big idea with Web GIS?

Web GIS and its shared services pattern has transformed GIS into an enterprise platform. This pattern is making GIS easily available and useful to a whole spectrum of applications and users.

While still in its early phases, Web GIS is on a trajectory that will make maps and location analytics pervasive across organizations. The pervasive nature of this platform will enable smarter and more aware organizations that are able to support new ways to collaborate and make better decisions.

Thinking further ahead, one can see how the Web GIS patterns and architecture will ultimately support a global nervous system that connects all of our geospatial measurements with individuals and institutions that can use them. Like the Internet itself, this nervous system will undoubtedly emerge and have far-reaching implications for society and the evolution of the planet. We already see an example of this in the ecosystem of ArcGIS Online. Users are sharing and collaborating in the development of geo-referenced information, and as a result, collaborating in new ways among organizations of all types.
To realize this future we need to continue to evolve data policies that support open access, security and privacy, and allow for the development of creative applications that leverage both public and private sector investments of all types.

This vision also means a technology platform and associated business model must also have a business model that is sustainable and supports the infrastructure and resources that are necessary for its evolution.

GIS professionals will play an important role in both realizing and supporting this platform. Most important will be their role in envisioning how it can be successfully configured to support critical organizational missions and workflows. This means creation of information products, system data management and sharing, as well as teaching both the concepts and methods for how geography can make a difference.

How does Esri see the future?

We are fundamentally optimistic about the future. Nevertheless, at this point in history it will take all of our best science, technology, and critical thinking to create a sustainable future.

Geographic science and locational information will be essential ingredients for understanding, planning, and managing the future at all scales. The evidence of this is clearly illustrated in the hundreds of thousands of organizations who are already using it for management and decision making.

What does the future hold for GIS?

GIS will increasingly be providing shared services and supporting rich apps that support individuals and organizations across government, business, society, and academic institutions. The architecture to support this is already emerging with the web GIS pattern. Over time this shared infrastructure will increasingly make geographic knowledge available anywhere, any time, and on any device.

Looking ahead 20 years, our sense is that GIS will become pervasive in most organizations as a new kind of social infrastructure that will be available globally.

The Role of the GIS Professional
What are some of the key organizational concepts that GIS professionals should keep in mind while implementing GIS?

A successful GIS implementation requires more than technology – it requires:

- Vision & leadership
- Understanding how GIS contributes to your organization's success
- Strategic planning and effective governance
- Evolutionary approaches (change management)
- Apps that are engaging
- Good people

I need GIS skills that I don't have in house. Can Esri help me with my short-term project as needed?

Yes. Here are a couple options to help you: specific User Conference activities, and Esri Rent-a-Tech services.

At the UC, skills-development is offered in multiple formats, from technical workshops, to lightning talks, to one-on-one interactions in the UC Expo.

At the Platform Enablement area in the Esri Pavilion at Expo, consultants, technical advisors, and other experts are available to offer guidance on your project regardless of how far along you may be. The area includes: Strategy & Planning; Architecture & Security; Geodata Engineering; Configuration & Integration; Training & Certification; and Premium Support.

You can also attend one of the Platform Enablement Lightning Talks that align closest to your needs. You can find them listed in the UC online agenda, and there is a full schedule posted at the island and on the Platform Enablement site on GeoNet. Two that might be particularly helpful for less-experienced GIS professionals are:

- Maximize Value using ArcGIS Web App Templates at 1:30 June 29 at the Platform Enablement area
- Web GIS: Unlock the Power of Maps Across Your Organization at 11:30 a.m. June 28 at the Platform Enablement area
Beyond the conference, seek out Rent-a-Tech representatives. Rent-a-Tech is a program that provides best practices-based consulting support specifically designed to enable our customers with their GIS work as needed. These consulting services focus on activities like installation and configuration, system design, data management, application development, and integration with business systems. The goal of Rent-a-Tech services is to help you develop self-sufficiency while extending your organization’s capabilities.

How can I improve my GIS skills on my own?

Esri has a variety of lifelong learning materials including

- Esri’s self-paced e-learning (will be free to all users on maintenance in late summer 2016)
- “Learn” lessons built into the ArcGIS documentation
- Various books available from Esri Press

How can I grow my career as a GIS professional?

This is an exciting question because in GIS there are so many things to learn and so many professional paths to take. We recommend a solid education embracing science, the arts, or professional degrees along with technology training. There are many colleges and universities that now offer professional and advanced degrees in GIS.

At Esri, we have a large collection of course offerings and publications for learning including instructor led, virtual training, MOOCs, and over 100 publications.

Another way to grow your career is to become certified in our software. We highly recommend this. Certification is beneficial for both users and employers in demonstrating the technical knowledge important for being a strong practitioner. Read the Q&A on “How does Esri support professional standing through certification?” to learn more.

Finally, get connected to other users via user groups. These meetings include the Esri User Conference, our developer summits, and regional and industry events. All of these offer lots of opportunities for better formal and informal learning. The GeoNet communities facilitate a way to digitally connect with many users.
Why do you think people in the GIS field are so motivated?

While it’s hard to make generalizations, here are some of our observations:

1. GIS offers an almost endless portfolio of options for doing interesting and meaningful work.
2. GIS requires continuous learning and innovation.
3. The GIS field (like geography) involves the science of bringing many types of people together, many disciplines, many organizations. This is always interesting.
4. The outputs of GIS are often insightful and communicate with people effectively.
5. GIS is about connecting and serving and creating productivity.

The result is that GIS professionals tend to be engaged, empowered, and inspired by the challenges and opportunities that GIS provides. Maps and geographic thinking are being realized as a powerful framework for understanding everything, and GIS professionals are finding new and valuable applications that make significant contributions.

What are the volunteer opportunities available for GIS professionals who want to offer their skills?

This is a great question. There are a variety of organizations and activities for GIS volunteers. They include:


2. GISCorps is a program of the Urban and Regional Information Systems Association (URISA). GISCorps coordinates short term, volunteer GIS services to underprivileged communities worldwide. Our services support humanitarian relief, community development, local capacity building, health and education. Learn more at: http://www.giscorps.org/.

3. The Society for Conservation GIS (SCGIS) is a non-profit organization that assists conservationists worldwide in using GIS through communication, networking, scholarships, and training. Learn more at SCGIS.org.

4. Map Action is a UK-based humanitarian mapping charity that works through skilled volunteers to provide support after disasters around the world. Learn more at: http://www.mapaction.org/.
Esri provides software and technical support to these and other organizations to support volunteerism as well as to the volunteers supporting them. Learn more at: http://www.esri.com/esri-special-programs.

As a GIS professional what scripting language should I invest in (Python, JavaScript?)

ArcGIS’s core scripting language is Python. This is how people build models, script workflows, and automate various aspects of their job. At the engineering level, Esri is increasingly exposing our technology to this scripting environment and will at 10.5 make major aspects of the overall platform available for open scripting through a supported Python API.

Esri also supports JavaScript as a web programming language accessing services that define not only features and functions but also the content of the ArcGIS platform. Many users use JavaScript as the foundation for building apps that work with ArcGIS.

What are the implications of web GIS for me as a GIS professional?

The fundamental shift that is occurring with GIS is the transformation into the services-based architecture that is available by way of the Internet and other networks. At the technical level, this means that geographic knowledge (maps, data, models, and apps) are becoming available ubiquitously. This means more emphasis on addressable geospatial services (delivered by way of GIS servers) as well as on apps for the integration and consumption of these services.

GIS professionals are currently very active in the standing up of Web GIS systems: designing and building the Web GIS infrastructure and platform. This involves creating and integrating geospatial services in a Web GIS portal, creating web maps, layers, and 3D web scenes, inventing new types of web-based spatial analysis workflows, and promoting GIS to a much broader audience—everybody in the enterprise from field workers to knowledge workers to executives and the general public.

As a GIS professional will I need to learn a lot of new skills for deploying Web GIS?

No. The traditional GIS concepts and skills known by GIS professionals provide all the foundation that’s necessary. Web GIS is easy to learn and provides a complete system that can be rapidly implemented inside an organization. This includes very easy to stand up services, a catalog for organizing these services (portal), and a whole family of apps that are immediately usable.
## Do I need to be a Web programmer to implement or use a Web GIS?

No. Web GIS is directly usable and configurable. A GIS user can easily configure and deploy ready-to-use apps or easily develop their own apps using Web AppBuilder for ArcGIS or AppStudio for ArcGIS. Both of these app builders are for non-programmers.

However, those users who are developers can easily extend the system by specialized means.

## As a GIS professional, how can I use ArcGIS to extend the reach of my GIS?

ArcGIS provides an open computing platform for maps and geographic information, making it easy to create and share your work as useful, interactive GIS maps, data layers, and analytics. The big breakthrough with the Web GIS pattern is all of the advanced geographic intelligence that you create as data, maps, and analytical models can be mashed up and delivered as online maps and apps and shared with others who can put them to work—both within your organization and beyond. The people who need your information can work with easily configured apps on their computers, tablets, and smartphones to leverage your geographic information in their work.

## How does this work?

The GIS professional working on the desktop creates and shares information to the Web GIS (which can be in the cloud, on your secure enterprise network, or both). Knowledge workers, executives, citizens, developers, and other GIS users can build upon and leverage your work. In turn, you can leverage other users’ layers for your own work as well.

## Does Esri provide any resources that can help me better understand how to extend the reach of GIS in my organization?

*The ArcGIS Book* and its [companion website](http://www.arcgis.com) provide an excellent resource for you to learn more about how to apply ArcGIS to extend your reach. This interactive website is a companion to the book that you do as well as read. The adventure starts when you engage yourself in the process by exploring live link examples that are referenced in each chapter and doing the lessons in this book. Each step of the way you will gain new skills that take you further. GIS professionals are in high demand for a reason. Businesses, governments, and organizations of all stripes can see the utility and value of GIS. This book is a call to action and a blueprint for how to get there. It’s about applying geography to your specific situation, problem, or conundrum, and finding a solution with ArcGIS.
I need help organizing my GIS. Where can I go?

Esri as well as its thousands of business partners provide a wide variety of application and technical enablement services. They provide a variety of consulting services including help in planning, implementation, and improving various aspects of existing GIS installations. These can range from short term engagements to longer term strategic engagements. In addition, we have programs that allow organizations to directly engage with Esri. These include:

1. The Esri Enterprise Advantage Program (EEAP) - provides ongoing advice, consulting support, training and premium support to help organizations.

2. Rent-a-Tech - provides short-term, GIS technical help, including Jumpstarts and configuration services, to help users deploying products, technology, or applications.

How does Esri support professional standing through certification?

To help Esri software users benchmark and validate their technical skills, we offer a technical certification program based on the use and best practices of Esri software. Achieving a certification aids in qualifying your technical skillset to current or potential employers and customers. Certification helps hiring managers and customers quickly identify technically qualified candidates or consultants.

The Esri Technical Certification Program consists of three domains with multiple tracks and levels, and recognizes expertise in desktop, developer, and enterprise use of ArcGIS, which was released late last year. You can find out more about Esri technical certification at esri.com/certification.

At the User Conference, you can attend a session that will help you identify the best approach to selecting and preparing for an Esri Certification. You can also read the Q&A: “How can I grow my career as a GIS professional” to learn more.

The Journey to Preparing for Certification

Wednesday, June 29

9:30 AM - 10:15 AM

Implementation Center
San Diego Convention Center

You can also stop by the new Lifelong Learning exhibit to talk more about the certification program.

What sessions and events do you recommend for GIS managers at the 2016 Esri UC?

Many events and sessions are tailored specifically to the needs of GIS managers at the UC, among them are the following:

GIS Manager Open Summit – The summit offers opportunities to engage in conversations with peers on topics that relate to business efficiencies, return on investment (ROI), managing data, and more.

ArcGIS as a Platform – Putting it All Together

Architecting the ArcGIS Platform: Best Practices

Best Practices for Technology Change Management

Defining and Driving a Location Strategy

Engaging Stakeholders with Powerful Web Apps

Esri Pavilion: Platform Enablement - Solution Architecture

Esri Pavilion: Platform Enablement - Esri Enterprise Advantage Program (EEAP)

Esri Enterprise Advantage Program - Special Interest Group

Establish an Initial Operating Capability for Your Organization

Getting the Most Out of ArcGIS Configurable Web Apps

Identify the Value of Location in Your Business

Insights for ArcGIS

Sharing Data and Apps to Inform Decision-Makers
What are some of the major software initiatives that Esri is working on?

The following is a list of some of the major ongoing efforts that will be updated and released this year:

1. Usability and user experience
2. Smart mapping and visualization
3. 3D throughout the platform
4. Advanced modeling and spatial data analytics
5. Spatial statistics
6. Data visualization
7. Real-time analytics
8. Big Data raster analytics
9. Big Data vector analytics
10. Advanced image processing
11. Open data
12. Community engagement (GIS Hub)
13. Advancing the Web GIS platform
14. Configurable apps
   a. For the field
What are some of the important innovations for ArcGIS 10.5?

The ArcGIS platform continues to evolve in a number of areas. Here are some highlights:

**First**, we are introducing a new class of server technology for distributed computing and storage frameworks to analyze and visualize very large datasets. This technology will enable batch analytics on high-volume spatiotemporal (Vector) data as well as image analytics on very large collections of imagery.

We will make these new capabilities available as two server products: one for vector (GeoAnalytics Server) and one for imagery (Image Analytics Server). Both of these products will be released as part of ArcGIS 10.5.

The combination of image processing and raster analysis functionality will support dissemination, on-the-fly analysis, and batch analysis on large collections of imagery gathered by drone, aerial, and satellite sensors.

The combination of GeoEvent and GeoAnalytics functionality will support high velocity real-time ingestion, high-volume storage and both real time and batch analytics on that same data.
Second, we are introducing Insights, a new spatial data exploration and analysis app that performs interactive spatial analysis of many data types and formats including web layers, spreadsheets, and DBMSs. This intuitive app will open up and make available mapping, charting, and exploratory spatial analysis to the entire enterprise.

Third, we are completing the integration of 3D capabilities across the ArcGIS platform to enable complete workflows for editing, managing, analyzing, and sharing in 3D GIS. ArcGIS Pro and Esri CityEngine allow users to publish web scenes to ArcGIS Online or to ArcGIS Server. We are adding the ability to publish web services from CityEngine. KML is being added and enhanced across the platform. The ArcGIS Web and Runtime SDKs are becoming fully 3D enabled, allowing device apps built on Runtime and Web to take full advantage of 3D workflows and information products.

Earlier this year, we released a new desktop client app, ArcGIS Earth, which supports Google Earth-like 3D navigation on Esri databases and services. This client integrates KML-oriented workflows. At 10.5, Esri will be introducing a new open 3D mesh data format for use in visualization across the ArcGIS platform.

For more information, see the 3D and Mapping and Visualization sections of the Q&A.

Fourth, we are working to expand our suite of apps that work together and support workflows for different types of users in an organization. We are enhancing the suite of apps for field workers, providing faster and efficient data collection, field work management and coordination, visualization of transactions/tasks, and analytics. We are doing the same for office workers and communities. These new apps are being showcased at the User Conference, and you can also find additional information in the Apps and App Builders section of the Q&A.

Fifth, Esri is introducing a new web API leveraging Python for working with all aspects of the ArcGIS platform. This means that web users will be able to script and execute ArcGIS capabilities from Python. It will also enable the easy embedding and interoperability between ArcGIS and the whole world of Python libraries.

What is the Geoinformation Model, and why is it important?

The Geoinformation Model refers to how ArcGIS abstracts many types of diverse geospatial data types into layers, web maps, and web scenes. Abstracting data in this way is fundamental to making Web GIS work, allowing for the use of almost any type of spatial data in ArcGIS.
Does Esri have a plan for multiple portals working together?

Yes. This is a frequent request from our enterprise customers who have stood up multiple web GIS portals and wish to share their “items” among their portals. This is sometimes also referred to as “portal federation.”

With the 10.5 release, ArcGIS will support this type of workflow. This means that “items” (web maps, datasets, apps, etc.) in a portal can be automatically replicated in another portal.

This capability will support the following scenarios:

1. **Portal of portals** - In this configuration, users can choose to automatically replicate items from many portals to a centralized enterprise.
2. **Portal to Portal Sharing** - Catalog items in one organization can be replicated in another organization's portal.
3. **Portal to ArcGIS Online** - This will allow content in a portal (behind the firewall) to be shared with ArcGIS Online for access by the public or external organizations.

Initially this functionality will be for on-premises implementations only (using ArcGIS 10.5) but shortly after we will support integration with ArcGIS Online as well.

We are excited by this capability because we believe it will lead to lots of collaboration between our users (i.e., cities, counties, regional government and even state agencies).

Can you explain what a Web GIS is?

Simply put, Web GIS is a modern pattern for implementing the concepts and functionality of GIS. Web GIS is built with web services that support the creation of web maps and scenes used in apps. These web services also support the creation of a variety of common GIS analysis and workflows. Web GIS can be implemented in the cloud, on-premises, or as a hybrid combining both.

ArcGIS Online is an example of a rapidly growing Web GIS. This pattern makes GIS easier, more accessible, and more affordable. It also enables sharing and simplifying access to authoritative content as well as empowering self-service mapping.

Web GIS is enabling GIS professionals to reach a much wider audience.
See The ArcGIS Book for more examples and information about Web GIS.

What UC sessions do you recommend for me to learn about Web GIS?

For an in-depth discussion on Web GIS, please attend the following sessions on Wednesday and Thursday during the User Conference:

**Web GIS: Architectural Patterns and Practices**

Wednesday, June 29

8:30 AM - 9:45 AM

Room 15 B

San Diego Convention Center

Thursday, June 30

8:30 AM - 9:45 AM

Room 15 A

San Diego Convention Center

**Web GIS Architecture Deployment Options**

Thursday, June 30

1:30 PM - 2:45 PM

Ballroom 06 E

San Diego Convention Center

**Architecting the ArcGIS Platform: Best Practices**
What is the Living Atlas and how can I get my maps or layers included?

The Living Atlas of the World features beautiful and authoritative maps, satellite imagery feeds and demographic data on hundreds of topics relating to people, Earth, and life. This includes a rich collection of Earth and ocean observation layers describing current conditions such as severe weather and hurricanes. To enhance and expand this collection, Esri has recently published a new set of “live feeds” layers featuring frequently updated data from several sources, including NOAA, NASA, and US Geological Survey. The Living Atlas also includes layers from a new map of global terrestrial ecosystems for a host ecosystem research and management applications, including assessments of climate change impacts to ecosystems, economic and non-economic valuation of ecosystem services, and conservation planning. This map of Ecological Land Units (ELUs), represents the most current, accurate, comprehensive, and finest-resolution data available at a global scale for each of the four inputs: bioclimate, landform, lithology, and land cover. To access this content, see this Esri white paper.

What is Esri’s strategy for building content in the Living Atlas?

For the past several years, we have been building a large portfolio of ready-to-use online content to support our users. This includes the popular suite of Esri basemaps (i.e., Streets, Imagery, Topographic, and more) as well as many other types of maps and layers. This includes demographic maps and boundary layers for the United States and over 130 other countries around the world, global elevation data down at 30m resolution for most regions and 10m or better resolution in many countries, live traffic maps for most cities and countries, live feeds on active hurricanes and recent earthquakes, and much more.

This content is totally integrated into our software products, making it easy to discover and use.

The Living Atlas provides over 5000 maps and datasets that describe the people, places, and things of the Earth. This is an amazing content platform and is by far the largest digital atlas of current geospatial
content in the world. This atlas has been carefully designed for the ArcGIS platform with all of its layers being immediately ready for use. The content comes from a variety of sources including government agencies and the private sector. Esri's main contribution is to integrate this information to a consistent set of layers and maps that can be immediately used in various applications.

Esri’s strategy going forward will be to continue maintaining and updating these basemaps and layers so that they can be relevant for the GIS community’s applications.

In addition to Esri’s curated layers, users can also nominate their own data for inclusion in the Living Atlas library. Esri has set up a series of tools and processes that assist users in evaluating their content with respect to quality for insertion and inclusion in the Living Atlas. We encourage users to share their information in the Living Atlas as maps and services for other users to use.

How can I get Esri’s content behind my firewall?

Esri currently supports the dissemination of the ArcGIS Online content in the form of appliances which can be deployed on premises behind firewalls. These include basemap appliances, geocoding appliances, and StreetMap Premium for high performance routing. In the future we are planning to make the full Living Atlas content available as an appliance as well. Find out more about ArcGIS Data Appliance.

Is there a way for me to take Esri’s online geocoding capabilities behind my firewall?

Absolutely! For users that are concerned about privacy and need a secure solution for geocoding their location records, Esri offers 2 solutions to meet these needs.

1. StreetMap Premium - offers users access to country-specific geocoding that they can directly use with ArcGIS Desktop or publish as a geocoding service using ArcGIS for Server to do geocoding behind their organization’s firewall.

2. World Geocoder for ArcGIS - offers users a robust, world-wide geocoding capability that can be hosted behind the organization’s firewall.

What are Esri’s plans for updating the World Imagery basemap? If I acquire imagery for my area, can it be included in the basemap?
The World Imagery basemap is one of our most popular maps and is being actively updated with imagery from Esri’s user and partner community. For example, we have recently updated the World Imagery map with NAIP 2015 1m imagery for 26 states in the United States contributed by the USDA Farm Service Agency. Each month, several new geographies, such as the State of Texas or Country of Spain, are updated with more recent or detailed imagery that is acquired by Esri.

If you have acquired recent imagery for your community that you would like to see published online, we encourage you to contribute to the Esri Community Maps for Imagery. We will process and publish the imagery for free, and share the results back to you and the community.

For more information about checking the performance of your GIS infrastructure, please email us at profservices@esri.com.

What are ‘vector basemaps’ and how are they delivered to users?

Vector basemaps use a new data format for web mapping with several advantages:

- High-display quality, leveraging high-resolution displays (like Retina)
- Small and efficient format, making them faster to load and cache much larger areas
- Dynamic labeling, resulting in on-the-fly symbology, and clearer text labels
- Client-side rendering, allowing map styling and customization

Late last year, we introduced a new set of vector basemaps in the beta release on ArcGIS Online. The vector basemaps are built with the same Esri Community Maps data that we use to generate our existing raster tile basemaps so data from our contributors will appear in these new maps too. We recently released a beta 2 version of the vector basemaps that include Community Map data from many contributors.

During the beta period, we will be updating and expanding data content, map styles, and style resources such as fonts, and addressing other known limitations. We anticipate the vector basemaps will stay in beta release until late this year (2016).

Will vector basemaps be delivered in the Data Appliance for ArcGIS?

For users that would like to deploy vector basemaps on-premises to use in their portal or custom applications, we intend to include vector basemaps as part of future updates to the Data Appliances.
What is Esri doing to improve the time required to publish data updates from the Community Basemap program?

Esri is working hard to reduce the time required to update our basemaps with new community data. We continue to make our raster tile map updates faster, and with the introduction of vector basemaps we will significantly reduce the update time.

Does Esri support premium content in ArcGIS?

Yes. ArcGIS Online increasingly contains content from a variety of third party organizations. This content is paid for through subscription and is available through Esri’s ArcGIS Marketplace.

When maps contain subscriber content, is it ok to share them publicly?

Yes, ArcGIS Online subscribers can use ‘subscriber content’ as well as ‘premium content’ for both their organization’s use and for publicly sharing maps and apps. For example, an organization can embed a live traffic map shared on their public website, without requiring the website visitor to have an ArcGIS Online account. The following link provides blogs about these workflows.

Is there an Esri repository for geospatial data?

Yes, ArcGIS Online is Esri’s public repository for geospatial data. It is designed for sharing data, web maps, apps, and other related materials between and among users. All ArcGIS users have full access to leverage this repository. Contents now include nearly 6 million “items.”

Can you explain how Esri is supporting open initiatives?

ArcGIS is an open, interoperable, and standards-based platform. Our “Open Vision” is founded on three simple, powerful principles: Interoperability, Innovation, and Collaboration. Please see our website, Esri’s Open Vision for more details.

In short ArcGIS supports Open Standards, Data Interoperability, Open Data, and Open APIs, and open source application software and solution templates. We also actively engage and support Open Source and other Communities.
Our ultimate goal is to provide our users with an open platform that is reliable, takes advantage of modern technologies and scales with our users’ requirements.

What are Esri’s plans for additional support for OGC standards in upcoming releases of the ArcGIS platform?

ArcGIS already provides extensive support for OGC standards at various levels across the platform. We are continuing to expand the support for all standards, including OGC.

With the June 2016 release of ArcGIS Online, users can

- Register OGC services and consume secured OGC services,
- Use identify operations with WMS services and leverage custom parameters
- Use WFS services in the map viewer.

In upcoming ArcGIS Online updates, users will be able to create dynamic hosted OGC services such as WMS, WMTS, and WFS.

ArcGIS Desktop apps already have extensive support for OGC standards. Also, for users interested in 3D on the Desktop, ArcGIS Pro has been enhanced with better KML support. ArcGIS Earth supports OGC WMS and WMTS in addition to KML support. We are working on native support for OGC WFS in ArcGIS runtime and ArcGIS Pro.

Standards support is an ongoing activity, and we continue to invest in them to support our ArcGIS users as part of our Open Vision.

What’s new in version 2.0.0 of Geoportal Server?

Geoportal Server 2.0.0 is the next generation of open source standards-compliant metadata catalog. As part of the evolution of Geoportal Server, the catalog and harvesting capabilities have been separated into their own modules. There are users who want a catalog without the need for harvesting or even metadata editing. Vice versa there are users who are just interested in harvesting metadata between catalogs without a specific search experience. Finally, some of our users have run into the technical limits of the technology we used in 1.2.x, working with many millions of metadata records representing collections and granules (the items in these collections).
The Geoportal Server 2.0.0 catalog repository is at https://github.com/Esri/geoportal-server-catalog, while its sibling for harvesting is at https://github.com/Esri/geoportal-server-harvester.

Geoportal Server Catalog 2.0.0 initial release features:

- Use of Elasticsearch for cataloging and indexing content
- Support for user authentication through LDAP, OAuth2, or a simple list
- Support for CSW 3.0.0 with OpenSearch
- Support for ISO19115, ISO 19115-2, FGDC, Dublin Core, ArcGIS metadata formats
- A REST API for managing the content of the catalog
- A user interface for searching the catalog, viewing map services, uploading and deleting metadata records, and changing record ownership

We will continue to release updates on Geoportal Server 1.2.x, realizing many catalogs depend on this version. You can find this on GitHub at: http://github.com/Esri/Geoportal-Server.

Can I use Geoportal Server with Portal for ArcGIS or ArcGIS Online?

Yes! For several years, users have found benefits in the combination of the metadata catalog capabilities of Geoportal Server with the location platform capabilities of ArcGIS Online/Portal for ArcGIS. Geoportal Server is intended to provide a metadata catalog used in the context of Spatial Data Infrastructures (SDI) where multiple vendor technologies are used. These SDI are typically national and international, with multiple independent organizations (or nations) collaborating based on international standards for data, metadata, and web service interoperability.

When combining the two products, users have looked specifically to the following capabilities from Geoportal Server:

- Provide web-based editor for standards-based metadata
- Provide federated search to other portals and catalogs
- Provide automated harvesting of external content into ArcGIS Online/Portal for ArcGIS
- Provide standards-based catalog interface to ArcGIS Online/Portal for ArcGIS

In the Summer 2015 release of ArcGIS Online, the standards-based metadata capability developed in Geoportal Server became available as part of ArcGIS Online, enabling you to manage standards-based
Can you share some of the important standards initiatives that Esri participates in?

Esri participates in many national and international initiatives aimed at making geospatial and earth observation data better discoverable, accessible, and increase their use for decision-making. These initiatives include but are not limited to the Open Geospatial Consortium (OGC), the Group on Earth Observation (GEO), Eye on Earth, the Global Spatial Data Infrastructure (GSDI) organization, and many others. Our role varies from collaborating with other stakeholders on ensuring the definition of appropriate and useful standards. We are not creating standards for the sake of creating standards.

More and more, these initiatives overlap through interoperability pilots that involve stakeholders from various organizations.
This year, Esri participates in the OGC Testbed 12 and as part of that will provide a generic web client that is able to consume various OGC web services (WMS, WFS, WCS, WMTS, KML), ArcGIS Rest services, and more. This client will also include a federated search capability that is able to search both OpenSearch and OGC CSW catalogs. Users will be able to save/open a web map with the collected layers to an OGC context document for further use in other applications. The generic web client is based on the ArcGIS Web AppBuilder and the widgets we include will be made available as open source.

Where at the User Conference can I learn about Esri’s support for interoperability?

There will be many sessions at UC that cover this topic. In addition, you can visit the Esri team at the Interoperability and Standards booth on the floor of the exhibition area at the User Conference. Check out the User Conference agenda for sessions on OGC support, ArcGIS Data Interoperability extension, and metadata.

What is ArcGIS Open Data?

ArcGIS Open Data is a capability for ArcGIS users to share their spatial and tabular data with the public through open formats. It enables the public to discover, explore, visualize, and download data. Data can be downloaded in multiple standard formats supporting the open data movement.

Does ArcGIS Open Data support tabular data?

Yes, extensively. Publishers can upload CSV data to ArcGIS Online and share the CSV directly as open data, or create table services if the data is larger than 5MB. In addition to ArcGIS Online, publishers can also leverage the native capabilities of ArcGIS for Server to create web services for the tables by connecting directly to the source database. Esri supports the various formats supported by ArcGIS for Server, including data stored in any DBMS ArcGIS for Server can access.

Am I charged any credits if I enable Open Data for my organization?

No. ArcGIS Open Data provides a full featured open data solution that is included with your ArcGIS Online subscription. It works directly with your ArcGIS for Server to build data downloads for your users.

It is important to note that if you publish your services in ArcGIS Online, a standard credit rate applies for hosting. While hosting data in ArcGIS Online can help your services scale for public use, it is not required.
What are Esri’s Open Source Solution Templates and how can they help me?

To help you make use of ArcGIS across your organization, Esri provides hundreds of ready-to-use maps, apps, and platform configurations that you can directly use. These include pre-configured maps that you can pour your data into and take advantage of the symbology and settings, as well as pre-configured applications that use those maps providing both internal and external apps for your users and others who need access to your information. All of these solution templates are fully supported, maintained, and available as open source. The solution templates focus on six main areas: Utilities (gas, water, electric), Telecommunications, State Government, Local Government, Parks and Gardens, Military Operations, and Emergency Management. Go to solutions.arcgis.com for more information.

Can Esri create a new way for users to share their application scripts, code, and templates similar to what ArcScripts accomplished previously?

Yes. Esri is developing a brand new web experience focused on discovering, collaborating, and freely sharing user-generated content and Esri-developed scripts and code. This new capability will be available on the ArcGIS Code Sharing website (coming soon). Our vision is an open source repository for easily sharing work with users as well as facilitate sharing among the entire Esri GIS community.

What is Esri doing to support software accessibility in the area of Section 508?

Section 508 of the U.S. Rehabilitation Act of 1973 (29 U.S.C. 794d) requires the U.S. federal government to procure technology products are accessible to people with disabilities. Under Section 508, federal entities must procure the most accessible technology product that does not impose an undue burden on the government. Many state and local governments, as well as private companies, are also adopting Section 508 standards when purchasing technology.

Esri is committed to building accessible software, and with each release of ArcGIS we are improving in this area. We recognize the need across the entire ArcGIS platform – mobile, desktop, server, and online applications.

We publish information regarding product accessibility on disclosure forms called Voluntary Product Accessibility Templates, or VPATs. The VPATs are designed to assist customers in selecting the product that best meets their accessibility needs.

You can find more information about our commitment to Section 508 at www.esri.com/legal/section508.
Customers are also encouraged to engage with us on the topic of accessibility. Comments, inquiries, or suggestions can be directed to Section508@esri.com.

What is the best way to give feedback to Esri about software issues?

The most effective way is by submitting a support case. This can be accomplished via phone, live chat, or on Esri’s website (MyEsri & Support Page). Once received, the Esri Support team troubleshoots and analyzes the issue while working closely with Software Development and your account manager to ensure it is prioritized appropriately. Additionally, you can provide feedback through ArcGIS Ideas on GeoNet. GeoNet is the online location of Esri’s community where you can ask questions, explore topics, and collaborate on all things ArcGIS.

At the UC, you can discuss issues directly and submit feedback at the Tech Support and Product Islands.

What technical support options are available for me as a user of ArcGIS?

Esri provides assisted and self-assisted support resources for all of your needs, including technical assistance as well as managing cases and information specific to you and your organization.

Assisted Support:

For users located within the United States, Esri has ArcGIS Specialists that are ready and available to help you for technical assistance across the ArcGIS Platform. Our Technical Support team is available by Phone, Email and Chat from 5:00 am PT to 5:00 pm PT. For Esri users outside of the United States, please contact your local distributor for Support.

Self-Assisted Support:

Esri recently launched a new and improved Support Site that has been designed with a focus on providing an improved online support experience for all users. In addition to new product-centered navigation, there are a number of new features to help you find answers to your questions and solutions to your technical issues on the ArcGIS platform. Additional self-help resources available to you include GeoNet, ArcGIS Help, ArcGIS Documentation and the Esri GitHub repository.

MyEsri provides resources for you to manage your existing cases, organization account information, authorizations, and software downloads. In addition, you can also obtain up to date information
regarding software defects or enhancement requests that you have encountered and submitted to Esri when you are logged into MyEsri.

What is the Premium Support program?

Premium Support provides the highest level of technical support available from Esri. Premium Support is a subscription-based service that is been designed to meet the needs of Esri customers who are developing, implementing, or supporting complex, mission-critical GIS. It provides all the benefits of standard support plus a designated Technical Account Manager, prioritized support case management, 24/7/365 support, and a quarterly technical support review. Premium support is available to purchase as a stand-alone service as well as being an element of the Esri Enterprise Advantage Program.

For customers outside the United States, Esri with its distributors provides Premium Support. Direct International Standard Support is available to multinational companies who require a direct connection to Esri in the United States. Direct International Standard Support allows such customers to be able to receive standard voice and email support during their working hours.

What is Esri doing to standardize its technical support globally?

Esri provides technical support by way of its international distributor in each country. We are working with each distributor to improve and standardize the quality of technical support. This year, Esri launched a Global Support Program with a goal of improving consistent services worldwide. A number of Esri’s distributors have already engaged in this program, and the result has been reduced time to solve cases, increased visibility, and sharing of best practices. Customers will benefit from these investments with more standardized service, a self-service portal with their local distributor, and opportunities to provide more input and product feedback.

What is Esri doing to improve the quality and stability of ArcGIS Desktop?

Esri remains committed to developing high-quality software products. We use the latest software development methodologies and perform an exhaustive set of automated and holistic tests continually through the development cycle. In addition to our own internal quality team, we do a large number of customer holistic testing sessions each year, bringing in users with their own data and workflows to test new functionality. We also continually work hard to fix issues our users report.

Several years ago we introduced the Esri User Experience Improvement Program (EUEI) that you can opt
into at the time you install your software. This program gives you the opportunity to send feedback
directly to Esri if you experience a crash or software failure. The details from the automated reports allow
us to identify where failures are occurring. This is very useful to us for addressing problems. If you get a
message asking if you’d like to send information from a crash to Esri, please do so. If you are
experiencing any other problems, please contact Esri Technical Support and we will do everything we
can to resolve your issues.

Why should I share my crash reports with Esri?

Unfortunately, sometimes our software crashes. There are many variables that can impact software
stability, and it is frustrating when instability occurs. As part of the Esri User Experience Improvement
program (EUEI), when a serious application error occurs, users are provided the option to report it. We
strongly encourage you to do this. This will help us identify, track, and repair critical issues. If you do
choose to submit these error reports, please include a valid email address. At times, the issue you are
reporting may have been fixed in a later version of Esri software or available software patches. In those
cases, one of Esri’s Customer Advocates can directly contact you to make you aware of updates which
may help improve your experience with the software.

The Error Report we receive from you includes important and detailed information that often enables us
to diagnose and repair problems that we have no other means of reproducing. These types of errors
typically occur in situations where complex configurations involving third party software components are
used in concert with ArcGIS, with very specialized data formats.

The content of the Error Report that you send to ArcGISErrorReport@esri.com provides the Esri
Development team with direct failure points and technical information that can be used to fix software
instability issues in the next release of ArcGIS Desktop improving the quality of the software.

What is a web map and why is that important?

At Esri, a web map is more than a map in a browser. It’s a technical specification that the entire platform
development team honors. This is why ArcGIS Pro or ArcMap can read and publish web maps, and why
web maps can be used across the entire ecosystem in ArcGIS Maps for Office, app templates and
builders, and even by developers using the JavaScript API.

These characteristics make web maps a foundational building block of the ArcGIS Web GIS ecosystem.
Web maps also leverage the entire platform, enabling you to integrate shapefiles, spreadsheets, ArcGIS
What is smart mapping?

Smart mapping is designed to enable anyone to make great looking web maps quickly and easily. It takes a data-driven approach to present the right tools at the right time to guide you along the way.

It “bakes in” cartographic expertise into the authoring process, and uses smart defaults to create great-looking maps without a lot of mapping knowledge and skill. While this is great for beginners, experts have full control, and can expand on what smart mapping suggests to create awesome web maps.

But more than just a way to make nicer maps, it’s also a way to visually explore your data, so you can discover things along the way, and capture those discoveries and save them in your maps, enabling others to gain insight through how you represent the data.

Some of the new capabilities added recently include the ability to illuminate multiple attributes in your data, and the new Predominant Category map styles to compare multiple, related attributes, and show which attribute is predominant.

You can learn more by viewing these Story Maps:

What’s New in Smart Mapping?

What is a Predominance Map?

Does Esri provide managed services?

Increasingly user organizations are looking to have their data, applications, and even entire GIS operations managed in cloud computing environments. Esri and its business partners provide offerings and a range of cloud-based capabilities and services. For more information, check out the Esri Managed Cloud Services website.

What is Esri Managed Cloud Services?

Esri Managed Cloud Services provide cloud environments designed, provisioned, and managed by
cloud and GIS experts according to Esri best practices. This enables organizations to take advantage of the capabilities, flexibility, and security of the cloud. The result is users can have their ArcGIS software, applications, and/or data content managed by Esri at a variety of service levels.

At the UC, you can get more information at the following sessions:

- The Technical Workshop, “Deploying Apps in the Cloud” will be held from 3:15 p.m. to 4:30 p.m. Thursday June 30 in Room 01 A/B.
- The Lightning Talk, “Get More From the Cloud” will be presented at 2:30 p.m. June 29 at the Platform Enablement area in the Esri Pavilion of the UC Expo.

What is the difference between Managed Cloud Services and ArcGIS Online?

Esri Managed Cloud Services and ArcGIS Online are part of the ArcGIS platform deployment pattern. ArcGIS Online enables users to make and share maps using a scalable software-as-a-service provided by Esri. It is secure at a FISMA Low level.

In comparison, Esri Managed Cloud Services is a set of capabilities and services designed to help customers take advantage of ArcGIS, applications and data in the cloud. Esri Managed Cloud Services has environments certified as secure at the FedRAMP Moderate level.

I want to move my GIS to the cloud but continue to manage it; can Esri Managed Cloud Services help?

The short answer is, yes, Esri Managed Cloud Services can help. The offerings fall into two general categories: managed services and consulting services. Our experience gathered through standing up and managing complete ArcGIS cloud environments enables our experts to apply industry best practices across a range of customer needs. Our experts can deliver consulting services to help customers determine what their organization needs to do to deploy in the cloud and can also work with you to develop proofs of concept. Consulting services often precede utilization of managed services.

What are the official product names? Is it ArcGIS for Desktop and ArcGIS for Server or is it ArcGIS Desktop and ArcGIS Server?

Several years ago, as part of the naming standards issue, we changed the names to be consistent with ArcGIS for Server and ArcGIS for Desktop, etc. What we found is that we made a mistake, and that our users are more comfortable referring to these products as ArcGIS Server and ArcGIS Desktop, so starting
now Esri is changing these names back to ArcGIS Desktop and ArcGIS Server.

These changes will be implemented on our website and in the software over the next release cycles.

Is there an affordable way for me to get ArcGIS for my school work, volunteer work, or personal use?

Yes. Esri offers ArcGIS for Personal Use to give you access to the latest version of ArcGIS for a very low cost. In the United States, you pay just $100 for a 12-month license. You can take advantage of this license for volunteer work or to improve your personal GIS skills or even to study for your ArcGIS certification.

With the ArcGIS for Personal Use license, you get:

- ArcGIS for Desktop Advanced (ArcMap and ArcGIS Pro)
- Most of the ArcGIS Desktop extensions
- ArcGIS Desktop software updates
- ArcGIS Online Named User Account with 100 service credits
- A suite of ready-to-use apps for use anywhere, on any device
- The Living Atlas of the World with maps and data, including access to foundation content from Esri, on thousands of topics
- Installation support

You can learn more at the [ArcGIS for Personal Use][1] website.

[Components of ArcGIS - ArcGIS Desktop](#)

Why does Esri have two desktop solutions?

ArcGIS Desktop supports two fundamental applications, ArcMap and ArcGIS Pro. Over the last several years we have been working aggressively to build capabilities of ArcMap into the ArcGIS Pro application. With the release of 1.3 (Summer 2016) many of the capabilities commonly used by ArcMap users will have been implemented into ArcGIS Pro. Over the next year, we expect ArcGIS Pro to provide all of the most commonly used capabilities found in ArcMap.
ArcGIS Pro is designed to run side by side with ArcMap so that users can take advantage of both of these applications and gradually migrate their solutions and workflows to the new 64-bit environment provided by ArcGIS Pro.

ArcGIS Pro has many advantages over the ArcMap application including a whole new and modern user interface, performance (64-bit processing), 2D and 3D views, multi-threaded geoprocessing, support for multiple layouts, and many of the features and functions that have been requested by users for many years.

In addition to these capabilities, ArcGIS Pro is fully integrated into the Web GIS pattern of working on and with web layers, web maps, and web scenes. This means that in common workflows where a user generates a high-quality map or 3D visualization, they can author a map or 3D representation and send it to a server or ArcGIS Online to make it immediately available as web maps for other users in their organization.

Is ArcMap or ArcGIS Pro better for Web GIS? Can I use both?

ArcGIS Desktop is an inherent part of the ArcGIS platform. ArcMap and ArcGIS Pro are complementary, and both support Web GIS. But clearly ArcGIS Pro is more deeply integrated into Web GIS and designed from the ground up for Web GIS and offers capabilities beyond ArcMap – like the ability to publish 3D scenes, vector tile packages, and lots more.

Both can be used together, and many users switch back and forth between the two as they begin to transition. Some functions may be more familiar using ArcMap, but there is an increasing number of capabilities that are easier using ArcGIS Pro, as well as some things that you can only do using ArcGIS Pro. Esri’s development focus is on ArcGIS Pro, but ArcMap will continue for many years to come.

We would recommend that you use ArcGIS Pro as much as possible, and begin to transition whenever you can. ArcGIS Pro is growing and maturing very rapidly, and is the premier desktop for Web GIS professionals.

Will ArcMap be deprecated anytime soon?

No. Esri has been advancing not only ArcGIS Pro but also adding new functionality to ArcMap. At release 10.4, many new geoprocessing functions have been added to ArcMap. We also will continue ongoing support of operating systems, databases, and related technologies into the foreseeable future.
ArcMap will continue to be maintained, supported, and updated for the foreseeable future.

Where can I find information about issues addressed in each release of ArcGIS for Desktop?

Links to all of the issues addressed in each release back through ArcGIS 10.2 can be found below. Note that hundreds of improvements have been addressed for each release.


Can I migrate/use documents from ArcMap into ArcGIS Pro?

Yes. Map documents (.mxd), scenes (.sxd), and globes (.3DD) can be imported into ArcGIS Pro. Once in ArcGIS Pro these can be saved as part of an ArcGIS Pro project (.aprx). Keep in mind that you cannot export projects in ArcGIS Pro to .mxd, .sxd, or .3dd documents. This is because ArcGIS Pro contains functionality that would be lost when converting to these formats.

What are the new capabilities coming with the summer release, ArcGIS Pro 1.3?

ArcGIS Pro will be released this summer and will include the following:

- New analysis and geoprocessing tools
- Support for KML as a native layer
- Support for geodatabase topology
• Publishing of elevation surfaces
• Viewing vector tiles
• Additional advanced image classification tools
• The ability to create tile packages locally and upload them to ArcGIS Online
• Additional tasks functionality
• Improved cartography

When will ArcGIS Pro support parcel editing?

ArcGIS Pro supports simple feature editing now and is adding topology support at 1.3. We expect full parcel support to be available next year.

What are the licensing options for ArcGIS Pro?

Starting in 2016, we made it very flexible to license ArcGIS Pro. Users have the following three options:

1. Named user license
2. Single use license
3. Concurrent use license

The Named User option lets users log in and use ArcGIS Pro from any machine, anywhere, at any time. Through an easy-to-use interface, users can connect their named user license to either single use or concurrent use licenses. In the case of the named user model, users can activate their license using either ArcGIS Online or Portal for ArcGIS.

How can I customize and extend ArcGIS Pro?

There are many ways to configure, automate, and extend ArcGIS Pro depending on your needs.

1. Configure the tools and buttons that appear on the ribbon tabs and quick access toolbar in the application. See this help topic for details on how to customize the user interface.
2. Create and share Tasks. Tasks allow you to create a custom workflow complete with steps and instructions that you can share with others who perform the same type of work. Tasks ensure everyone using them will perform a consistent workflow and get work done faster.
3. Use ArcPy, a Python site package, to automate analysis and mapping. You can use Python, for example, to create a script tool that does complex analysis, or use the ArcPy.mp package to create an automated map layout that updates based on map content. Automation through Python can greatly reduce the hours spent on redundant processing and activities required to author maps.

4. Extend ArcGIS Pro using the ArcGIS Pro SDK for .NET. The Pro SDK was released with ArcGIS Pro 1.1 release last summer. The Pro SDK provides a powerful and well managed API for extending the functionality of ArcGIS Pro. With the Pro SDK you can build your own menus, buttons, and toolbars, and develop your own custom functionality. The Pro SDK makes it possible to create add-ins that are easy to share and deploy. In upcoming releases, there will be new Pro SDK capabilities to customize the application start-up experience.

At the User Conference, you can attend the following sessions to learn more:

**ArcGIS Pro SDK for .NET: Add-in Fundamentals and Development Patterns**

**Tuesday, June 28**

1:30 PM - 2:45 PM

Room 31 A

San Diego Convention Center

**Thursday, June 30**

10:15 AM - 11:30 AM

Room 31 A

San Diego Convention Center

**ArcGIS Pro SDK for .NET: UI Design and MVVM**

**Wednesday, June 29**

10:15 AM - 11:30 AM
What is Esri doing to improve the quality and stability of ArcGIS Desktop?

Esri remains committed to developing high-quality software products. We use the latest software development methodologies and perform an exhaustive set of automated and holistic tests continually.
through the development cycle. In addition to our own internal quality team, we do a large number of customer holistic testing sessions each year, bringing in users with their own data and workflows to test new functionality. We also continually work hard to fix issues our users report.

Several years ago we introduced the **Esri User Experience Improvement Program** (EUEI) that you can opt into at the time you install your software. This program gives you the opportunity to send feedback directly to Esri if you experience a crash or software failure. The details from the automated reports allow us to identify where failures are occurring. This is very useful to us for addressing problems. If you get a message asking if you’d like to send information from a crash to Esri, please do so. If you are experiencing any other problems, please contact Esri Technical Support and we will do everything we can to resolve your issues.

**Does ArcGIS Desktop include ArcGIS Online?**

Yes. Each license of ArcGIS Desktop on maintenance includes an ArcGIS Online entitlement. This means that for every current seat of ArcGIS Desktop that you have, you also have one named user and service credits available to you. ArcGIS Online is a valuable, cloud-based resource that can be accessed through both ArcMap and ArcGIS Pro to connect to rich, world-wide content such as the Living Atlas. ArcGIS Online can also be used to store and share the work that you do, and the content that you create, with ArcGIS Desktop. Furthermore, ArcGIS Online can be used to manage your ArcGIS Pro licenses giving you flexibility and control of software accessibility in your workforce.

**Can ArcGIS Pro be virtualized?**

Yes, ArcGIS Pro is designed to work natively on your desktop or in a virtualized environment. We work closely with the major players in the delivery of virtualization, including Nvidia and Citrix. ArcGIS Pro is tested and supported on all the major virtualization environments including Citrix XenDesktop, Microsoft Hyper-V VDI, and VMWare Horizon View.

You can learn more about how to virtualize ArcGIS Pro by reading this [white paper](http://www.nvidia.com/object/grid-esri-offer.html). Additionally, we have created multiple blogs and articles that describe this:


https://blogs.nvidia.com/blog/2015/12/07/nvidia-grid-esri-arcgis/
Also, Esri partners with Nvidia, VMWare, and Dell to provide the ArcGIS Desktop Virtualization Appliance. This is a server that has been thoroughly tested to determine the user workflows, number of virtual machines, and user experience that is available with this server. In fact, the ArcGIS Desktop Island at the User Conference this year is completely virtualized and powered by an ArcGIS Desktop Virtualization Appliance.

### Which virtualized environments is ArcGIS Pro supported in?

ArcGIS Pro is supported in the Citrix XenDesktop, VMware (Horizon View), and Microsoft (Hyper-V VDI) virtual environments. The [ArcGIS Pro System Requirements](https://www.esri.com/arcgis-system-requirements) page provides a list of all supported virtualization environments. We are constantly reviewing and updating this page to provide our users with the most current information.

### Can I virtualize ArcGIS Pro in the same environment as I use for ArcMap?

Probably not. ArcMap is a single-threaded application and has a rendering engine that uses Microsoft’s GDI+ graphics library. Because of this, ArcMap is fairly easy to virtualize with good results.

ArcGIS Pro combines 2D and 3D spatial analysis and visualization in one application. ArcGIS Pro can do this because it is built on a multi-threaded architecture and uses a rendering engine that takes full advantage of DirectX and OpenGL graphics libraries. In a virtualized environment, this requires servers that are capable of using Nvidia GRID K2 and M60 cards. And this also requires the use of virtualization environments that take full advantage of shareable GPUs that are designed to deliver great graphics and user experience in virtualized environments.
Components of ArcGIS - ArcGIS for Server

How would you describe ArcGIS for Server today?

ArcGIS for Server has evolved significantly over the past few years. The focus traditionally has been on data management and powerful server-based analytics. Esri expanded Server dramatically with the 10.3 release by including Portal for ArcGIS.

This “Portal” technology introduced the Web GIS pattern on premises, including the Geoinformation Model with web layers, web maps, and web scenes, a content management catalog, search, many web-focused spatial analysis tools and several dozen apps that include Web AppBuilder. Esri has bundled all the capabilities with the advanced ArcGIS for Server and introduced a whole new identity management and security model.

Today we see the ArcGIS for Server product encompassing five distinct roles that can be deployed separately, but more often together, to make up a full modern, enterprise GIS:

A Web GIS deployment - This setup is when Portal for ArcGIS is deployed along with a hosting server, a special role of the ArcGIS for Server software, and the ArcGIS Data Store component. This setup provides Web GIS capabilities such as web maps, configurable applications including story maps, sharing and collaboration features, and much more. This is the foundational part of the Web GIS pattern and is functionally comparable to an ArcGIS Online organizational subscription. This is the pattern that supports Esri’s many ready-to-use applications such as Operations Dashboard, Collector for ArcGIS, Survey123 for ArcGIS, Workforce for ArcGIS, and much more.

The GIS server - This setup uses ArcGIS for Server in its classic form by publishing map services, feature services, geocoding services, and much more from your enterprise data sources such as enterprise geodatabases built on SQL Server, Oracle, and other RDBMSs. This is the fully featured GIS server that makes your own authoritative data available to your Web GIS and the world through REST-based web services including web services based on OGC standards such as WMS, WMTS, WFS, KML, and others.

Real-Time GIS - This setup uses ArcGIS for Server along with the GeoEvent Extension to provide real-time ingestion of high velocities of events. New in ArcGIS 10.4 is the ability for GeoEvent Extension to participate directly in a Web GIS deployment and take advantage of the spatio-temporal big data store features of ArcGIS Data Store. This now allows for archiving of higher velocities of data as well as longer term storage of huge volumes of events.
Image and raster GIS - Using ArcGIS for Server and the Image Extension allows you to publish out and perform analysis on large mosaic datasets. This pattern does the same for your raster data that the standalone GIS server does for your vector data by making raster data available through REST-based web service including the OGC WCS service type. Along with publishing the raster data, you can apply an extensive set of on-the-fly raster functions and even entire chains of raster functions.

Big Data Analytics - Starting with ArcGIS 10.5, planned to be released at the end of 2016, you will be able to setup and deploy an advanced distributed computing platform that can apply time and space-based aggregation and processing functions through the well-known geoprocessing framework. This type of deployment will attach to your Web GIS setup in order to take advantage of the framework features from ArcGIS Data Store and provide capabilities to Web GIS clients such as ArcGIS Pro and the portal's own embedded map viewer.

How can ArcGIS for Server be deployed?

ArcGIS for Server has a very flexible deployment pattern. The software is available for both Windows and Linux, and it can be deployed in almost any type of infrastructure: Anywhere from completely on-premises in a physical or virtual environment to cloud environments whether private, hybrid, or public cloud environments like AWS and Microsoft Azure.

In the AWS and Azure cloud environments we have native tooling available to make deployments easier than ever before. For AWS this includes a number of pre-built CloudFormation templates, and for Azure there is a flexible Cloud Builder application that allows you to define and configure all types of setups with a few clicks of a button. Both of these options take just a few inputs in order to deploy your selected software using cloud infrastructure that is automatically provisioned according to your specifications.

If you do not wish to manage and host the software yourself, there are many managed services offerings available including Esri’s own Esri Cloud Managed Services (EMCS) who will install and maintain the software for you using dedicated infrastructure.

What's New in ArcGIS for Server 10.4?

ArcGIS 10.4 for Server was released in January of this year with many new capabilities. Recently a maintenance update, ArcGIS 10.4.1 for Server, was released building upon and improving 10.4.

New in ArcGIS 10.4 (using ArcGIS for Server with Portal for ArcGIS, along with ArcGIS Pro 1.2) was
support for vector tiles and vector tile packages. This is a really exciting new feature that allows for fast, high fidelity basemaps that can be restyled on-the-fly to provide a completely custom look and feel depending on your needs. For server administrators they're also incredibly attractive as the time to create vector tile packages is a fraction of the time to create traditional raster tile caches.

In Portal for ArcGIS there were many new features such as out of the box analysis tools, enhancements to smart mapping, and lots of other enhancements for the server administrators such as simpler installation and setup, new functionality in the area of high-availability, disaster recovery, and more security. See the other questions for more highlights in this area.

See the ArcGIS 10.4 release blog post for more background on these new features and several more.

What's new in Portal for ArcGIS at 10.4?

Portal for ArcGIS provides similar capabilities to ArcGIS Online. It is delivered as part of ArcGIS for Server and can be installed and hosted within a user’s own infrastructure. With the release of ArcGIS 10.4, Portal for ArcGIS has received even more capabilities that brings it on par with ArcGIS Online, such as out-of-the box analytical tools. Some of the highlights include:

*Spatial analytics* - Portal for ArcGIS now provides a set of web-based spatial analysis tools. These analysis tools are available in the Perform Analysis pane of the map viewer and allow users to quantify patterns and relationships in the data and display the results as maps, tables, and charts.

*Standards-based metadata* - To provide more information about an item than what is available on the details page, Portal for ArcGIS administrators can enable metadata for items and configure the metadata editing and viewing experience with a supported standard. This feature also applies a style to the metadata—such as the Federal Geographic Data Committee’s Content Standard for Digital Geospatial Metadata (CSDGM) or the internationally recognized North American Profile of ISO 19115:2003—to support metadata standards.

*Update shared items in groups* - Portal members can now create groups that allow those with access to the group to update affiliated items. For example, shift workers in an operations center can update the maps underlying their apps and dashboards and be sure that employees on another shift (who are also members of the group) see and use the new information.

*Make custom print layouts* - When printing from the map viewer, Portal for ArcGIS users can now make custom layouts from your ArcGIS for Server infrastructure. Layouts are based on what the organization's
print service provides, but administrators can configure custom print options that allow users to choose dynamic text options for map elements such as title, date, and time.

Configure trusted servers - At 10.4, the Portal for ArcGIS map viewer, Web AppBuilder for ArcGIS, and configurable apps fully support editing feature services secured with web tier authentication. To take advantage of this, administrators can configure trusted servers that allow Portal for ArcGIS to automatically pass through credentials.

Have there been any improvements in making ArcGIS for Server enterprise ready?

Yes! In 2015 and 2016, we have had a major focus on what we refer to as “Enterprise Readiness.” As a result, ArcGIS for Server 10.4 is the easiest and most secure product we have ever supported. It is easier to install, configure, and administer. This is an ongoing focus for ArcGIS Server.

An important aspect of this is the better tooling for IT departments. The following are some examples of what has been done in this area.

Deploying in an enterprise data center:

A new Chef automation cookbook comes with recipes for installing all core components of ArcGIS for Server. With this approach, advanced IT departments can completely automate the rollout of the software including much of the configuration of the individual components such as federation of ArcGIS servers and portal, configuring ArcGIS Data Store with ArcGIS for Server, and much more.

Deploying in public clouds:

Setting up your ArcGIS system in fully supported public cloud environments like Amazon AWS and Microsoft Azure is getting easier.

For Amazon AWS cloud, Chef automation can be combined with a host of new CloudFormation templates that allow for highly complex setups with a few button clicks and pieces of information. On the Microsoft Azure cloud there is a wizard-like experience as part of the ArcGIS Server Cloud Builder for Microsoft Azure. This makes it possible to define the desired infrastructure and software setup, and then deploy the selected infrastructure and software in a single operation.
To improve the operational administration of the ArcGIS platform, ArcGIS for Server 10.4 has a new read-only mode to help enforce change management policies while also improving server resiliency and maintain high SLAs and uptime. We also enhanced password management for connections to databases and enterprise geodatabases in order to minimize the need for republishing services, when an outside event such as a password reset takes place. And, security setup is easier using better defaults like HTTPS enabled by default.

For more information on this topic, please read the following article: [ArcGIS for Server enterprise readiness](#).

### What is a portal, why is it important, and what are the ways I can get one?

A portal is an important logical component of a modern Web GIS. A portal provides the needed geospatial framework and organizational infrastructure to discover, manage, share, and use content. A portal also delivers a framework to manage member identity, their roles, and how they collaborate.

A portal supports the Geoinformation Model - web map, layers, and scenes - that abstracts the details of the actual data sources and makes them easier for everyone to work with.

A portal also supports Identity - a member’s role and their privileges to access data, collaborate, and use the portal’s capabilities.

Perhaps most importantly, a portal represents an organization’s geographic information ecosystem and is the central hub, or switchboard, for GIS engagement.

A portal can be implemented as part of the two main Web GIS deployment patterns: using ArcGIS Online which is hosted as a software-as-a-service offering in the cloud, or it can be implemented using ArcGIS for Server software which includes a component called Portal for ArcGIS. Hosting ArcGIS for Server software can be done on-premises or in the cloud with many different options to meet your particular deployment needs.

### Components of ArcGIS - ArcGIS Online

**What is ArcGIS Online?**
What is ArcGIS Online?

ArcGIS Online is a key component of the ArcGIS Web GIS platform. It is a comprehensive, cloud-based mapping platform that enables you to make and share maps and apps easily.

ArcGIS Online provides cloud-hosted storage, management, 2D and 3D mapping, publishing, and analytic capabilities that you can use to extend your GIS, and empower others. ArcGIS Online also includes the Living Atlas, a vast collection of curated and authoritative content, including basemaps, demographic layers, live feeds, and much more, that you can use immediately and apply to your mapping needs.

Why should I be interested in ArcGIS Online if I already have ArcGIS for Server?

ArcGIS Online can complement and extend what you already do using ArcGIS for Server. In the past ArcGIS for Server-based services were typically used to build custom applications. Those services were only available through those custom applications. By registering your services in ArcGIS Online, they can be leveraged and used in many more ways. Especially via web maps, which can be deployed across a variety of applications and devices. ArcGIS Online enables you to easily, and without cost, leverage your existing investment in ArcGIS for Server in new ways.

Do I need to host all my data in the cloud?

No, the ArcGIS Platform offers a range of possibilities for implementing your GIS, depending on your needs and other factors and requirements. ArcGIS Online offers cloud hosting capabilities for data and services, and ArcGIS Server offers on-premises capabilities for the same.

You can keep your data and your services hosted from your on-premises infrastructure, or can host and publish data using the cloud (ArcGIS Online). Many organizations leverage both - maintaining their data and services on-premises, but also tapping into the cloud to leverage the Living Atlas content and maps and apps published by other organizations. This hybrid approach is ideal for many organizations, however the full range of possibilities, from cloud to on-premises, should be considered.

What is a web map and why is that important?

At Esri, a web map is more than a map in a browser. It’s a technical specification that the entire platform development team honors. This is why ArcGIS Pro or ArcMap can read and publish web maps, and why web maps can be used across the entire ecosystem in ArcGIS Maps for Office, app templates and...
Web maps can be used across the entire ecosystem in ArcGIS Maps for Office, app templates and builders, and even by developers using the JavaScript API.

These characteristics make web maps a foundational building block of the ArcGIS Web GIS ecosystem. Web maps also leverage the entire platform, enabling you to integrate shapefiles, spreadsheets, ArcGIS services, services from ArcGIS Online, the Living Atlas, as well as serve as the integration point for information from enterprise systems, Big Data, and the Internet of Things (IoT).

### What new capabilities have been added to ArcGIS Online?

ArcGIS Online is updated at regular intervals throughout the year. Each update includes important new features, capabilities, and content based on forward-looking product development goals and user feedback and requirements.

Some of the key new features introduced over the last several releases include:

- **New Item Details page layout** that makes it easy to document and explore your items. New capabilities include in-place editing, interactive smart mapping and saving to the layer, usage statistics, and more.

- **Improved and enhanced smart mapping capabilities**, including new map styles to support multi-attribute mapping, predominance mapping, and time mapping. For more information, see [What’s New in Smart Mapping](https://arcgisblog.com/arcgis/what-s-new-in-smart-mapping) and [What is a Predominance Map?](https://arcgis.com/information/smart-mapping/predominance/).

- **New geoprocessing tools**, including Choose Best Facilities, which lets you find the set of facilities that best serve demand from surrounding areas. You can learn about this tool by watching this [brief video](https://www.youtube.com/watch?v=dQw4w9WgXcQ).

- **Updated and new content**, including Vector tile layers which support editing styles to make your own unique layers and basemaps.

- **Improvements to mapping capabilities**, including improved search capabilities, UI and UX improvements, and new app templates for 2D and 3D maps.

- **Improvements and additions to site and user management**, including integrated enterprise authentication, enhanced reporting, custom roles, and collaboration tools.

To learn more about important new features for each release, see the [What’s New help topic](https://doc.arcgis.com/en/arcgis-online-and-arcgis-enterprise/whats-new/whats_new.html) and the [What’s New blog posts](https://arcgisblog.com/arcgis/what-s-new/what-s-new-help-topic).
What analysis capabilities does ArcGIS Online provide? Do these cost credits?

ArcGIS includes a large set of modeling functions that produce analytical results. These typically generate new data layers and associated tabular information, enabling you to use ArcGIS to model a variety of spatial problems and share your results. Analytics includes built-in spatial analysis tools in the map viewer as well as locator and geoprocessing packages you can add to your portal.

Analysis tools can be accessed via the Perform Analysis pane in the map viewer, which presents the tools in an organized and easy to understand way. Tools are organized into categories such as Summarize Data, Find Locations, Data Enrichment, Analyze Patterns, Use Proximity, and Manage Data.

Each tool has a tool pane that guides you through the process of completing the necessary steps and information to use the tool, also presenting options for you to choose.

Analysis tools consume credits; the amount will depend on the type of analysis and the number of features. Click Show credits on each tool to calculate the consumption for the analysis you want to perform. Most analysis consumes very small amounts of credits.

For more information see Perform analysis.

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<thead>
<tr>
<th>Is there a service level agreement (SLA) for ArcGIS Online?</th>
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<td>The Service Level Agreement for ArcGIS Online can be found here.</td>
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<th>Where can I learn more about ArcGIS Online security?</th>
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<td>We understand that trust is paramount to using any cloud service, including ArcGIS Online. In 2014, we launched Trust ArcGIS - a website that provides comprehensive information about ArcGIS platform security, compliance, privacy, and availability, including information about Server, Desktop, apps, and Online.</td>
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<td>The site includes:</td>
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<td>• High-level overviews</td>
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<td>• Answers to FAQs</td>
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Esri is committed to our security team expansion, additional third party validation, and expanded internal training and education. We intend to provide you with the trust you need to use the ArcGIS platform—in the cloud or on-premises. Read a summary of secure best practices.

Information about ArcGIS Online security certifications can be found here.

**Will Esri support FedRAMP for ArcGIS Online?**

Yes. We are hopeful that we can have this certification in place by the Federal User Conference next February. FedRAMP is a stringent certification embodying many IT and cloud policies required for US government. (We currently have FedRAMP certification for ArcGIS when deployed on a managed infrastructure.)

FedRAMP certification requires a significant commitment of resources by both Esri and the government. We are working collaboratively with several sponsoring agencies who are interested in sponsoring Esri through this program.

**How can I learn more about what’s coming in ArcGIS Online updates?**

Announcements with information about what’s coming in each release are made one month prior to each update via email to Administrators. Blogs and other articles from Esri also announce and detail upcoming new features. For example, these recent blog posts introduce new capabilities in the latest release:

- Introducing a new experience for working with items in ArcGIS Online
- Operations Dashboard – A New Experience Is Coming!
Follow the [ArcGIS Online Community](https://arcgiscommunity.com) on the ArcGIS Blog to learn about what’s coming, as well as to keep informed about important announcements, tips, and how-tos.

How can I learn more about ArcGIS Online system status and scheduled maintenance?

Scheduled maintenance announcements, as well as live system status, can be viewed at [status.arcgis.com](https://status.arcgis.com). You can subscribe via RSS feeds to receive notifications immediately.

Can I be notified when I am getting close to service credit limits, or when my subscription is getting close to expiring?

Service credit notifications are built directly into the system. When your organization's credit use is greater than 75% of the total available, Administrators will receive an automatic email notification.

Administrators also have a usage-metering dashboard in ArcGIS Online, where they can monitor consumption rates.

As you approach the renewal date of your subscription, Esri will send email notifications to the Administrators at intervals of 90 days, 60 days, and 30 days in advance of the subscription renewal date, as well as on the day the renewal is due.

Your account manager or International Distributor will also receive a notification, so that your needs can be reviewed.

What changes have been made to improve the user experience and usability of the organization portal?

Each update includes improvements and enhancements to the user experience and user interface, for both those creating content and information products, and for those who use them.

Here are just some of the areas where Esri has made usability improvements to ArcGIS Online over the past year:

- Improved the layer dropdown menu within the table of contents
- Added service credit usage icons for premium content
- Added the New Map/Recent Map dropdown in the map viewer
- Added the New Map/Recent Map dropdown in the map viewer
- Moved the Analysis tool to the top toolbar
- Added the ability to add map notes directly from search
- Self-adjusting options for making smart maps even better at many zoom levels
- Redesigned the analytic hot spots so it is more intuitive
- Bulk group and role assignment of users
- Improvements to the login pages for organizations using enterprise authentication
- User interface additions to manage ArcGIS Pro, Navigator, and App Studio licensing
- Adding search results as a map notes layer
- Performance improvements to embedded maps and folders with many items
- Simplification and standardization for the configuration of apps
- And more.

For specific details see the What’s New help topic and the What’s New blog posts.

We have a growing number of named users and content within our organization. What features can make it easier for me to manage members and their content?

Administrators have access to their organization’s status page where they can monitor member activity and view usage data.

Over the past year Esri has added a detailed presentation of information to enable Administrators to gain access to important usage and management details. These details include credit usage (by time and type), content (by type, member, sharing settings, geographic extent, what’s popular, and what’s trending), app usage, groups, and member details (by role, utilization, content, and credits).

Much of this information can also be exported to a CSV file for use in spreadsheets and used for analysis outside of ArcGIS Online.

Additional administrative features include:

- Credits can be allocated to some or all members of your organization, providing a flexible way to manage and control expenses.
- Additional workflow support and security settings have been added to help Administrators...
- Additional workflow support and security settings have been added to help Administrators manage users, groups, and custom roles within their organization.

- Group level collaboration has been improved to support 24x7 workflows. This is especially important in workflows found in emergency operations centers where those coming on to later shifts can update and manage items from previous shifts.

- Metadata support, covering a variety of standards, has been added to provide a structured approach to documenting your authoritative data, and enforcing standard documentation requirements.

- Best practice guides are available to assist in the process of effective administration.

What types of content can I add to a web map?

The data used in layers can be provided by a growing set of sources, many that are standards-based, including:

- ArcGIS for Server web services (including secured services) such as feature services, image services (cached and dynamic), vector tile layers, and map services.
- CSV, TXT, and GPX files
- GeoRSS: Live web feeds that include geographic features and locations
- Shapefiles, KML
- Map Notes (simple markup features)
- OGC Web Map Service (WMS), OGC Web Tile Map Service (WMTS)

With the June 2016 update we will also support WFS layers in web maps and in items, pop-ups from WMS layers, and the ability to register third-party WMTS services as items and manage them within ArcGIS Portal.

For more information and to learn more about specific formats see the Layers help topic.

What types of items can I add to ArcGIS Online?

ArcGIS Online items can be of many types, including ArcGIS document types, data, other types of documents (such as Word, Visio, PowerPoint) and more. For a comprehensive list see What can you add to ArcGIS Online?
Can I share a map from ArcGIS to Twitter?

Yes, you can easily share maps and apps from the ArcGIS Online map viewer or an item page. Doing this provides a link to the map/app, its metadata, and a nice thumbnail. In fact, this is a really cool way to see what people are doing with arcgis.com! Just go to Twitter, search for “arcgis.com,” and view the live results. This shows you tweets that originate from the share action (either to a specific map or to an application). It is a fascinating way to see what people are doing with the platform. Here is the link to search results on Twitter.

What materials and learning resources are available to help learn ArcGIS Online?

Esri offers a wide variety of learning and educational resources, including:

- ArcGIS Online blog
- ArcGIS Online GeoNet Space
- ArcGIS Online Training and Courses
- ArcGIS Online Getting Started Lessons
- ArcGIS Books

In addition, materials, assistance, and help are available from your Esri regional office or International Distributor.

What is happening with ArcGIS Marketplace? How can Marketplace help me?

The ArcGIS Marketplace is a destination that allows ArcGIS users to search, discover, and access useful apps and data from qualified providers (Esri partners, startups, distributors, and Esri).

Since its release in late 2013, ArcGIS Marketplace providers have offered a variety of apps and content for ArcGIS users. We continue to invest to increase the value of the ArcGIS Marketplace for users as well as app developers and content providers. We are planning to add e-commerce capabilities later this year, providing more options for consumers and providers, while making the listing process more efficient. Please take a look for yourself and discover a world of apps and content.
Components of ArcGIS - Apps & App Builders

What is Esri’s Mobile strategy?

We are evolving ArcGIS to leverage the many mobile technologies available today and to respond to the increasing expectations for having GIS available to everyone, anytime, everywhere.

The four pillars of our mobile strategy are:

1. Apps for anyone: ArcGIS delivers mobile GIS apps for executives, field crews, knowledge workers, and the public in general. Esri delivers focused mobile apps that are lightweight and easy to use while on the go. These apps are used for

   Capturing data in the field: Collector for ArcGIS, Survey123 for ArcGIS, ArcPad, and ArcGIS for Windows Mobile

   Checking out performance indicators: Explorer for ArcGIS and Operations Dashboard for ArcGIS

   Getting to a place or learning more about something: Navigator for ArcGIS and the multiple app templates included with AppStudio for ArcGIS.

2. Apps to take GIS anywhere: ArcGIS, and your data, is available to you no matter where you are: in the office, at home, or in a remote area. Many of our apps are in fact optimized to work even disconnected from the network.

3. Apps for any device: ArcGIS apps run on pretty much any device. Smartphones, tablets, and handhelds as well as touch-enabled laptops. Esri delivers mobile apps that work in the most common operating systems including iOS, Android, and Windows.

4. A suite of Apps: While every one of the ArcGIS mobile apps is useful on its own, we have optimized them to work together with the ArcGIS platform. When ArcGIS apps are used together, their value to support complex workflows is multiplied. While at the conference, take time to truly understand how all the ArcGIS apps work together.

What are the ArcGIS apps?
The ArcGIS platform comes with a library of generic apps designed to improve the way people work. Users can either configure these out-of-the-box ArcGIS apps, or alternatively, use our app builders to build your own apps with no coding required. ArcGIS apps and app builders enable you to solve problems in three main areas:

- **Optimize Field Operations**: Many organizations rely heavily on data captured in the field to operate. Esri provides a complete array of apps to optimize field operations. ArcGIS apps help your field workers communicate the status of their work, get to places more easily, and efficiently capture data while in the field. Learn more.

- **Improve Decision Making**: ArcGIS apps provide unique capabilities to explore, analyze, and understand your business data. From small spreadsheets to big data, ArcGIS apps let you find hidden patterns and gain insights that will lead to better decision making. Learn more.

- **Engage and Communicate with Your Audience**: ArcGIS enables you to share information, tell stories, connect data with people and ideas, and innovate together to create better outcomes. Learn more.

Is there an overview of all the Apps for ArcGIS?

Yes, the best way to find out about the different apps is to go to the Apps website. We think of our apps as supporting four main areas:

- Apps for the Field (Collector, Workforce, etc.)
- Apps for the Office (Maps for Office, Earth, etc.)
- Apps for the Community (Story Maps, Open Data, etc.)
- App Builders (Web AppBuilder and AppStudio)

What are the major highlights for apps and app builders in 2016?

In 2016, we are releasing a number of new apps that will enable you to optimize your field work with the power of location including:

- **Drone2Map for ArcGIS** turns raw still imagery from drones into stunning 2D and 3D imagery products in ArcGIS for monitoring, analysis, and inspection.

- **Workforce for ArcGIS** is a mobile solution that uses the power of location to achieve better
coordination and teamwork in your field workforce.

- Survey123 for ArcGIS is a simple and intuitive form-centric data gathering solution that makes creating, sharing, and analyzing surveys possible in just three easy steps.

- ArcGIS Earth is an interactive globe viewer that helps you explore any part of the world and work with a variety of 3D and 2D map data formats including KML.

- ArcGIS Maps for Adobe Creative Cloud enables design and communication professionals to access millions of data-driven maps inside Adobe's design apps and add them to their work.

Additionally, we are releasing major updates to several popular apps.

- ArcGIS Maps for Office (formerly known as Esri Maps for Office) enables Microsoft Excel and PowerPoint users worldwide to ask location-related questions of data, get powerful insights, and make the best decisions.

- Esri Story Maps is releasing two new templates: Story Map Cascade (see an example), and Story Map Crowdsource (see an example).

What is coming with Operations Dashboard for ArcGIS?

Monitoring activities and events, tracking your field workforce, and assessing the status and performance of daily operations are great examples of how customers are using Operations Dashboard for ArcGIS today. Operations Dashboard was released in January of 2013 on the Windows platform providing a common operating picture for operations and emergency managers followed by a responsive web application designed for use in a browser and on a tablet device to provide an executive dashboard view.

We are in development of the next generation of the Operations Dashboard app that builds upon the views you have already created within your organization. A new application framework provides the freedom to organize and group widgets into a single view that is designed for use in an Operations Center or on a tablet. Charts will have a fresh new look with more ways to configure their look and feel: we have streamlined the configuration experience and will support more capabilities within the web map (labeling, heat maps, proportional renderers, stream layers). Using the ArcGIS API for JavaScript you can extend the new app just as you can today with the existing apps. In fact, both the new app and the existing apps will work together so that you can migrate to the new app when you are ready. Sign up on our product page to stay informed of what is coming and join our beta program this summer.
How does ArcGIS support crowdsourcing?

Esri developed a series of ArcGIS Online application templates to support crowdsourcing needs in local governments, state governments, utilities, and other organizations. The following crowdsourcing applications can be configured to meet specific needs of your organization:

**Crowdsourcing Reporter** - A responsive group application template that allows users to submit problems/observations. The app presents one or more maps that users can use to report a problem or observation. Users can submit new reports, review existing reports, and comment/vote on reports/observations submitted by other users.

**Crowdsourcing Manager** - A responsive group application template (desktop and tablet devices) that allows users within an organization to review problems/observations submitted through the Reporter app. The app presents one or more maps that users can use to review a problem or observation. Users can look for patterns and clusters, review problem details, update status, and assign responsibility.

**Crowdsourcing Polling** - A responsive web application template that allows users to submit feedback through comments and votes. The app presents a map that can be used to gauge sentiment on issues or proposals. Users can explore the map, gain additional information through popups, and submit comments and votes.

**AppStudio for ArcGIS Quick Report Template** - Designed to provide a simple experience for citizens to quickly report observations, this configurable template is ideal if you want to publish your own branded native crowdsourcing app into the Apple iTunes and Google Play app stores. Watch this video tutorial for more details. The Quick Report Template is built so users cannot see observations reported by other users unless properly curated by your own organization.

**Photo Survey** - Photo Survey is an ArcGIS configurable application template that can be used by local governments to publish street-level photo collections and conduct focused property surveys that may identify blight, damaged structures, or construction activity. Photo collections can be combined with relevant survey questions in an ArcGIS Online map, and shared with the Photo Survey app. Once complete, the Photo Survey app can be used by the general public and/or local government staff to review street-level photos and complete property surveys to help eliminate blight and revitalize neighborhoods.

**Story Map Crowdsourcing** - Releasing in June 2016, the new Story Map Crowdsourcing application template can be easily configured to enable simple crowdsourcing and public friendly sharing of photos and
content. Story Map Crowdsourced apps can be used for a variety of purposes from citizen science to promotional stories created to enable people to share places and photos for particular events and locations.

What should I not miss about the apps and app builders at Esri UC 2016?

There’s so much apps knowledge to gain at this year’s Esri UC. We urge all users to join sessions, meet Esri staff, and learn how to use and build apps. You can:

- Choose from more than 50 sessions on the agenda for ArcGIS apps and app builders.
- Attend the Mobile Special Interest Group (SIG) meeting on Wednesday, June 29, 12:00 p.m.-1:00 p.m., located in Room 3 at the San Diego Convention Center where you will hear from Esri software users and partners who have successfully implemented mobile GIS technology in their organizations.
- Visit the Apps Product Island in the GIS EXPO, Halls A-C, at the San Diego Convention Center.
- See what apps other users have built using Esri technology at the User Software Applications Fair, located at the Sails Pavilion at the San Diego Convention Center.

Register for the Story Map Workshop preconference seminar on Sunday, June 26, 8:30 a.m.-5:00 p.m.

What is the future strategy for ArcPad?

ArcPad 10.2.3 was released Jan 17th 2016. This update addresses some important stability and feature enhancements that improves the utility and reliability of ArcPad. The 10.2.3 update of ArcPad includes a new camera module, improvements to data synchronization, and overall security enhancements.

With the 10.2 release of ArcPad we introduced support for working with ArcGIS portals (ArcGIS Online and Portal for ArcGIS). With this came the ability to directly access and edit feature services (hosted or on-premises) from ArcPad. Also, you can upload and store ArcPad Packages (projects and templates) in your ArcGIS portal. These ArcPad Packages can then be shared with others in your organization and downloaded directly from the ArcPad application. To learn more see What's New in ArcPad.

ArcPad will continue to be sold and supported by Esri and our distributors for years to come. ArcPad fills
a necessary position in Esri’s product offering by enabling GIS users to work with many of the high accuracy and rugged field devices sold today, and Esri has many users who have invested in GPS hardware (Windows Mobile/Windows CE devices) and require ArcPad to get a return on their investment. But, it is important to note that ArcPad is a mature product and closely tied to Windows Mobile, and Microsoft has stopped development for the Windows Mobile/Windows CE platform (the last update was Windows Mobile 6.5.5 in 2011). As such, future updates to ArcPad will be focused on new critical bug fixes and compatibility with the ArcGIS platform. New mobile development will be focused on more modern platforms (iOS, Android, and Windows 10) and products such as Collector for ArcGIS, Survey123 for ArcGIS, and AppStudio for ArcGIS.

Components of ArcGIS - ArcGIS for Developers

What developer activities will take place at the UC this year?

There are dozens of technical workshops and demo theaters for developers scheduled this year. Check the agenda search tool for topics and technologies of interest to you, such as Web AppBuilder and AppStudio for ArcGIS. Developers can use these two new tools to create apps for the web and for native devices without code, or for giving coding projects a huge boost. There are also sessions on the newly released version 4.0 of the ArcGIS API for JavaScript, which is a re-engineered and simplified API that also includes new and improved features such as support for 2D and 3D maps, client-side geometry engine, and smart mapping for intelligent thematic rendering. Also new are beta versions of the new ArcGIS Runtime SDKs (Quartz release). Most exciting of those is the new Runtime SDK for Xamarin, which gives developers the ability to write an app once using .NET and compile native iOS and Android apps.

Due to its popularity the last couple of years, we will again be hosting a Developer Island in the Esri Pavilion area of the convention center in Hall C from Tuesday through Thursday. There, you can chat with Esri engineers and developers about the latest APIs, developer tools, and resources.

Something new this year is a new UX/UI Island on the Showcase floor. For the last few years we've held a UX/UI Summit for an afternoon; this year it's down in the Showcase and will go from Tuesday through Thursday. Building applications that meet the increased expectations of usability by your end users is a rapidly growing topic of interest. Stop by and hear from the design pros, watch demo theater sessions, and learn a few things that will make your apps more productive. And now that it'll be there for three days, we're providing a lot more flexibility for your schedule.
On Wednesday night, as part of our global GeoDev Meetup series, we’re hosting our 5th Annual GeoDev Meetup at the UC in the Coronado Room of the Marriott from 5:30pm-7:30pm. We’ll have free drinks and snacks. Tickets for this meetup are free but are very limited and seats fill up fast. You’ll need to sign up ahead of time to attend. If you wait until the week of the conference, you might be too late.

How is Esri supporting the developer community?

There is a very active developer community on GeoNet, which is Esri’s user community online. Keep up on the latest info by subscribing and reading blogs, watching the newest tech videos, and asking and answering questions in the discussion forums for helping you solve problems, and become more productive by using the newest tips and techniques shared by the global ArcGIS developer community.

Throughout the United States and in some other countries around the world, the popular GeoDev Meetup series continues and is growing. Search for “Esri” on meetup.com to find a local group near you. You can meet and network with developers like yourself, watch or give tech talk presentations, and benefit from professional connections in your area by sharing your work and learning from others.

The DevSummit events are growing. Over the past 12 months, Esri has hosted large and growing DevSummit conferences in Palm Springs, Washington DC, and Berlin, Germany. These conferences are “For Developers, By Developers,” and you can meet and chat with the developers and engineers who build with ArcGIS every day. A little later this year, we will also be launching a new project called “DevSummit Online” where we will host weekly interactive webcasts to present DevSummit-style tech workshops, panel discussions, interviews, and “Ask Me Anything” events. All online and all interactive with a text chat backchannel. 2016 is the year we will make DevSummit go year-round.

Esri sponsors many hackathons and hosts many app challenges throughout the year. Bring your talent and drive to solve problems in your community and throughout the world by participating in a hackathon.

As a developer, how can I work with the ArcGIS platform?

Developers can work with the ArcGIS platform in many ways. However, at the highest level, developers will either build apps or extend the platform. Building apps is done by using the web and native APIs, app builders, and configurable apps offered through the platform. Extending the platform includes customizing the user experience in ArcGIS Desktop, implementing custom workflows with ArcObjects, automating with Python, and extending ArcGIS Server. More information can be found on the Esri
What options do I have for creating apps?

ArcGIS is a rich platform for creating and managing apps. It allows developers and users to quickly and easily create focused apps that improve productivity. Apps can be created in different ways:

- **Configurable apps** – users can pour their data into pre-built apps and publish in a matter of minutes.
- **Builders** – Web AppBuilder and AppStudio let you create your app in a WYSIWYG (what-you-see-is-what-you-get) environment and give you more control over the design of your app.
- **APIs and SDKs** – If you need to extend the templates and builders or access more fine-grained capabilities, we have Web and native Runtime APIs available for any platform you are building for.

There are many technical workshops, demo theater presentations, lightning talks, and more at UC 2016 about creating Apps. Search for Apps in the UC agenda.

What are my options if I want to extend the ArcGIS platform?

As a developer, you have many options to extend the ArcGIS platform:

- **Build add-ons and extensions** to ArcGIS Desktop (ArcMap and ArcGIS Pro). Additionally, you can automate your processes using Python.
- **Extend ArcGIS for Server** by building Server Object Extensions (SOEs) and Server Object Interceptors (SOIs).
- **Develop apps** with our web and native APIs and SDKs that improve the efficiency of your operations and give your users a focused workflow.

There are many sessions at the UC that cover this topic. The best way to find the right session for you is to search the detailed agenda for key words such as: ArcGIS Pro SDK, Web AppBuilder, Runtime, or Python.

What are Esri’s supported development environments for GIS users?

Esri provides many application programming interfaces (APIs) and software development kits (SDKs) for
building apps for Web, desktop, mobile, and embedded devices. We encourage developers to use the right API for the right platform and user experience. Python is the choice for automating ArcGIS for Desktop, while JavaScript is the recommended API for Web application development. For building focused apps for phones, tablets, desktops, and embedded devices, the ArcGIS Runtime SDKs for iOS, Android, Java, Mac OS X, Qt, and Windows .NET offer the developer all the right choices. Our newest Xamarin SDK is ideal for building cross-platform apps that can be compiled to different platforms. We recommend that GIS professionals invest in learning and becoming skillful at the languages that best fit their business goals.

What is Esri doing to support the open source community?

The open source community is an important part of our “ArcGIS Open” vision. We actively participate in, and contribute to, many open source initiatives. For years, we have encouraged development of open source libraries that are included in ArcGIS as well as contributed code and support to these projects.

All of our open source development is centralized on GitHub as a platform for building apps, templates, and utilities in ArcGIS with community contribution and involvement. In a few years, this site has grown to about 300 open source projects, from mobile applications, web libraries, analysis toolboxes, big data processing engines, and operational tools. Many apps and projects from Esri in the future will start and continue as open source projects on GitHub.

The ArcGIS platform is built on an architecture supporting standards and interoperability. Esri adopts open standards such as the addition of GeoJSON, or develops and publishes new standards that drive state-of-the-art technology such as our I3S 3D Specification. These standards are community contributed and often submitted through standards bodies such as OGC, W3C, or ISO. By integrating standards, Esri promotes the value of interoperability and the opportunity for open source libraries to work seamlessly with the ArcGIS platform.

Esri also sponsors a number of open source conferences throughout the year and actively participates in talks, workshops, and hackathons. We share a common passion for geography and technology and support these events to foster broad innovation across the community. Many Esri staff participate in virtual communities, discussion boards, and chat groups regularly.

How can I get Esri’s Open Source Solutions?

ArcGIS Solutions source code, along with other Esri open source code, is available on GitHub.
What is GitHub, how is Esri using it, and how can I get involved?

GitHub is a web-based hosting service for software development projects. Built around the Git source code control system, it is more than just an online repository, it provides an infrastructure that supports social coding. Esri chose to use GitHub to host a wide variety of open source projects: not just applications, but also utilities, templates, datasets, and other kinds of collaborative projects.

Currently, there are over 300 projects, and over 2,000 developers across the globe who are combining their talents and efforts to extend them and make them better. Even if you don’t want to contribute code, you can still help by contributing ideas, issues, and discussion points. Beyond that, you get access to the code and gain visibility into the development process. Our objective is to make the development process for these projects transparent and encourage community contribution and involvement. Going forward, many apps and other projects from Esri will start and continue as open source projects on GitHub.

I want to develop a native app once and deploy it to many platforms. What are my options?

Developing native apps for multiple platforms can prove challenging. As a developer you want to avoid having to write your app multiple times to support multiple platforms. This endeavor is costly and time consuming. Several options are available to help you write your app once and deploy it to many platforms:

- The ArcGIS API for JavaScript can be used to develop browser-based apps that are always connected to the Internet. Apps can be implemented with a responsive design so they can run on many devices and support many different form factors.
- The ArcGIS Runtime SDK for Java allows for apps to be developed once and run on Windows and Linux platforms. In a future release of the Runtime (Quartz release), the Mac platform will also be supported.
- With the ArcGIS Runtime SDK for Qt a developer can write apps that target multiple platforms. Web developers will find an easy transition to QML since it is a scripting language similar to JavaScript.
- AppStudio for ArcGIS is built on top of our Qt/QML API and includes several productivity tools developers can leverage like streamlined setup, the AppStudio Player that makes enterprise deployments easy, ready-to-use templates, and productivity libraries.
- We have recently released support for Xamarin which allows .NET developers to build apps that target iOS, Android, and Windows platforms.
What's new in the ArcGIS API for JavaScript 4.0?

Version 4.0 of the ArcGIS API for JavaScript represents the first release in a whole new generation of the JavaScript API that integrates 2D and 3D into a single easy-to-use and powerful API. Version 4.0 allows you to build full-featured 3D applications powered by web scenes that can include rich information layers such as terrain, basemaps, imagery, features, and 3D objects.

Here are a few of the capabilities that we are excited about:

- Make a 3D app as easily as a 2D app – render a map with a 2D view or 3D view (or both) using just a few lines of code.
- Easily integrate with your web GIS – author and style your map in ArcGIS Online or Portal for ArcGIS, then simply load your web map or web scene into your app using just a few lines of code.
- Create meaningful visualizations of your data in 2D and 3D – turn raw data into information with simple layer styling and rich pop-up windows.
- Build a great user experience – developer-friendly widgets, flexible UI placement, and control over the map view are some of the capabilities that will help you build a beautiful app with a responsive design.
- Enable interactivity using the local geometry engine – perform operations such as buffer, measurement, and spatial intersect all client-side to show immediate feedback to the user.
- Identity management – allow your end users to log in to the platform to access secured content.

What version of the ArcGIS API for JavaScript should I use, 3.16 or 4.0?

The 4.0 API introduces new capabilities such as 3D support, map rotation, and deeper portal integration. However, not all existing 3.16 capabilities are included in the initial 4.0 release. Each release will add more functionality until it not only matches the 3.x generation API, but far exceeds it. Developers should consider their app requirements and evaluate whether the current 4.0 or 3.16 release has the desired supported capabilities. For example:

- Does the app need 3D visualization? If so, use 4.0 now!
- Do you need a particular functionality from 3.x that's not yet available in 4.0 such as editing? If so, use the existing 3.16 version.
The guide in the link provides a detailed table that helps you choose the correct version. See Choose a version for more information.

Is it a lot of work to visualize my data in a 3D web app?

It is straightforward to create 3D apps using the 3D configurable web applications and builders, without writing a single line of code.

And if you are a developer, you can further customize and extend any of these applications using the ArcGIS API for JavaScript. You can also use the JavaScript API to build custom 3D apps. The API has a unified approach for working with 2D and 3D. The code is working with the same services, so you are working with the same geometries and same tasks such as geoprocessing. This makes it possible to code something once, and use it in 2D or 3D. Some things like navigation are naturally different when you’re working in 3D space so we’ve created a simple way to it work for both.

Learn more about building 3D web apps here.

Does the ArcGIS API for JavaScript support smart mapping capabilities?

Yes. ArcGIS API for JavaScript 3.16 supports complete smart mapping in 2D and is what powers the ArcGIS Online map viewer. Version 4.0 supports the majority of the 2D smart mapping functions present in 3.16 excluding heat mapping which will be added in an upcoming release.

In addition to being able to visualize layers that you have pre-configured in Online or Portal, the API also has simple tools to help you programmatically apply the same techniques used in the Map Viewer for selecting “smart” defaults. This is particularly useful when building custom data exploration web applications. Learn more about using Smart Mapping in custom web apps here.

How do web maps and web scenes help simplify the code for my custom JavaScript or runtime app?

Web maps and web scenes enable you to style your layers, configure your map, and author rich pop-ups using platform tools rather than write all of the code that generates the map. To build an app that consumes the web map, all you have to do is load it by ID and then the API brings the map to life in your app.
This approach allows you to have a consistent representation of your data, whether you are building a
native app or a web application. Another benefit is that you can update the map styling and/or add layers
even after the app is released. Web scenes have all of the same advantages, only they allow you to
visualize your data in 3D.

Can I use jQuery or React to build my application user interface (UI) with the ArcGIS API for JavaScript?

Yes, you can use any library you’d like to build the UI for your JavaScript application, such as jQuery or
React. This is true for both the 3.x version of the API as well as the 4.0 version. Here is an example that
demonstrates how you can use jQuery with the 3.x API.

API for JavaScript 4.0 makes it even easier to use 3rd party libraries to build your UI. API widgets have
been re-architected so that there is a clean separation between their core business logic and their UI. This
enables you to use the out of box UI, or replace it with your own UI built with whatever library you choose.
See this question to learn more about working with 3rd party libraries - “What is Esri doing to make it
easier for me to use 3rd party libraries with the ArcGIS API for JavaScript?”

What is Esri doing to make it easier for me to use 3rd party libraries with the ArcGIS API for JavaScript?
(e.g., Dijit, Ember, Angular)

All widgets version 4 of the ArcGIS API for JavaScript API have been reengineered to enhance their
extensibility and customization. Each widget’s presentation is now separate from its properties, methods,
and data. You can use widgets as-is, style them with CSS, or completely customize the UI. The code for
the out of box UI is also shared on GitHub so you can use our implementation as a starting point, or use it
for ideas when creating your own. For example, you can read about the Locate widget in the online SDK,
and then from there link to the UI implementation on GitHub. While the API is built on Dojo, its widgets
are not entirely dependent on Dojo’s Dijit framework. The separation of core logic and presentation lets
you more easily create new widgets and repurpose existing widgets with any third-party framework such
as Bootstrap, React, or jQuery. Learn more about widgets.

Some developers want to integrate the JavaScript API into a third-party framework such as Ember. This
can make code more maintainable and facilitate development when you are collaborating with other
developers. Because 4.0 is a more consistent API and has an architecture that separates business logic
from the UI, it is much easier for you to integrate it with other development frameworks. To learn more
about working with the JavaScript API and 3rd party frameworks, see this video. You can also explore
these GitHub projects for examples of working with *Ember* or *Angular*.

### What is Esri Leaflet and when should I use it?

The Leaflet plugin called “*Esri Leaflet*” is a lightweight set of tools for working with ArcGIS services with Leaflet. The Leaflet project is an open source contribution from Esri of this intentionally light API for the Leaflet developer community. This allows Leaflet developers to enhance it with additional or new capabilities if and as needed for their purposes.

Esri Leaflet might be the right choice for developers who already have apps built on Leaflet and now simply want to bring in ArcGIS services into their apps. Developers should carefully consider their application requirements and ensure that using Leaflet and the Esri Leaflet plugin will meet their needs now, and also down the road as requirements evolve. In many cases, the ArcGIS API for JavaScript is selected as it enables developers to fully leverage the ArcGIS platform, and is Esri’s primary focus for building innovative web technology.

### What new capabilities will come with the next release of Runtime?

The next major Runtime release, planned for later this year, has some significant new functionality including:

- Improved performance
- Support for editing and authoring maps
- Direct access to the new OGC GeoPackage data format, vector data including mobile Geodatabases and shapefiles, KML and rasters including JPEG, JPEG2000, NITF, GeoTIFF, MrSID, CADRG, ECRG, DTED, SRTM, HRE, and lidar.
- Analysis performed locally on the device
- Support for smart mapping, vector tiles Mobile Map Packages, and the ability to read and write maps
- Viewing and analysis of 3D data
- Support for Xamarin to allow .NET developers to build apps that run across multiple platforms

### Will ArcGIS Runtime SDK for Java ever be able to work on a Mac?


Yes, the next release of ArcGIS Runtime SDK for Java can be installed and used on Mac OS X. The LocalServer subsystem of the ArcGIS Runtime, however, will not be installed or runnable on Mac OS, and will be separated out into its own installer.

What is the roadmap for ArcGIS Engine developers?

ArcGIS Engine has been a stable and mature developer platform for many years now. Esri has not been adding new functionality into ArcGIS Engine since ArcGIS Runtime became the pathway forward for the modern ArcGIS platform. ArcGIS Engine remains a supported product, especially for our Windows developers, both Java and .NET. However, all development efforts continue to be made into ArcGIS Runtime product.

Esri is no longer encouraging new development projects with ArcGIS Engine. In addition, this year we are announcing that the ArcGIS 10.4.1 release of Engine for Linux (not Windows) will be its last, and Linux C++ and Java developers are encouraged to look towards ArcGIS Runtime for their development plans.

Has the ArcGIS Runtime SDK for Xamarin been released yet?

Yes. A public Tech Preview of the ArcGIS Runtime SDK for Xamarin is available to download today. The first commercial release is scheduled for Q4, 2016.

When will ArcGIS Runtime SDKs support Windows 10 UWP apps?

The first Quartz beta of the ArcGIS Runtime SDK for .NET will include a UWP API for Windows 10 UWP apps. The first Quartz beta of the ArcGIS Runtime SDK for Xamarin will include a Xamarin Forms API that supports use in Windows 10 UWP apps.

When will ArcGIS Runtime SDKs support Windows 10?

Full support for Windows 10 and ArcGIS Runtime will come with the Quartz release. However, Windows 10 is supported by the ArcGIS Runtime SDK 10.2.7 for .NET where the Desktop API is supported for use in WPF apps on Windows 10. Check out the system requirements page for more information.
What's new in Mapping and Visualization?

**Smart mapping** continues to be popular within ArcGIS Online and ArcGIS Server, and we have begun to include aspects of smart mapping in ArcGIS Pro. In particular you can now create heat maps using Pro, and we have added support in Pro for the histograms and unclassified choropleth renderer that gets used as an aspect of smart mapping.

**Vector Tiles** can now be authored and published using ArcGIS Pro. Later this year, we will be releasing versions of our Esri Online Basemaps as Vector Tiles that have high quality graphics for high resolution displays, can be re-styled to change the symbology on the fly, and draw and refresh incredibly fast. We have made it much easier to **author multiscale maps** allowing you to specify scale ranges within a single layer to set symbology and set scale-based sizing of symbols. These new workflows for authoring multiscale maps contribute directly to Vector Tiles but can also be used to author multiscale maps for Raster Tiles or and other multiscale layers that can be shared across the platform.

We continue to enhance 3D visualization support across the platform. You can now publish 3D point scenes and local 3D scenes directly from Pro to ArcGIS Online or Portal.

Another very popular addition to mapping visualization is the ability in ArcGIS Pro to create and share an **animation**. You can animate fly-throughs of your 2D maps and 3D scenes. You can control the keyframes and path, turn layers on and off, step through a time or range based data. You can export the animation to video formats such as .avi or .mp4 and we make it easy to share in many common formats with preset aspect ratios and frame rates set up to support YouTube, Vimeo, or even Vine.

Charts are another visualization technique that complement the maps you make. We have begun to incorporate interactive charts along with maps in different aspects of the platform. With ArcGIS Pro it is now possible to include charts, histograms, and scatter plots in your project to further enhance your data visualization experience. You can add charts as a separate view to a map and use it to interrogate the data. They are interactive and very visual. When you select elements in the chart, for example, the data highlights on your map and vice versa. We have taken this approach much further using the new Insights application. Insights is a truly immersive experience, allowing you to interactively explore your data through a series of maps, charts and on-the-fly analysis. Insights is a new Web application that will be coming out this year.

How can I use smart mapping?
**Smart mapping** is a concept that we began rolling out last year through ArcGIS Online, Portal for ArcGIS and ArcGIS Pro. It is based on the idea that by interrogating your data as you add it to a map, we can provide better defaults, better symbology, and easy to use tools for making adjustments while you author your thematic maps. This means that the non-cartographer can make better maps that are visually appealing and tell important stories more accurately. Smart mapping uses continuous color ramps, proportional symbols, improved categorical mapping, heat maps, and transparency to show additional details about your data. We’ve applied the cartographic first principles to how we automatically interrogate and set intelligent defaults as you add your data to the map. We then provide you with smart choices, allowing you to modify or customize the defaults, while still adhering to cartographic principles.

You can be using smart mapping in several different ways. If you are using ArcGIS Online or Portal you can add your data to the map viewer. If you are adding data from a .csv, .txt, .gpx, or shape file, the map viewer will analyze your data and give you several styling options. If your data is already in your map simply use *Change Style* in the layer context menu. If you are using ArcGIS Pro, once you add your data, select either Heat Map or Unclassed Colors options under the Symbology options. It is that easy, and will get you on your way working with and communicating with your thematic maps.

What is Esri’s plan in providing better charting and graphing capabilities in ArcGIS?

Visualizing data through charts helps to uncover patterns, trends, relationships, and structure in data that may otherwise be difficult to see as raw numbers in a table. In ArcGIS Pro 1.2, you can create charts from any map layer with an attribute table to visualize and explore data and communicate a message. This release lets you make great *bar charts, histograms*, and *scatter plots*, and with 1.4, users will have more chart types such as line charts and other visualization types.

What is geodesign?

**Geodesign** is a collaborative systems approach to planning and design that uses stakeholder input, geospatial modeling, impact simulations, and near real-time feedback to facilitate the creation of holistic designs and wise decision making. It allows planners and designers to quickly generate, evaluate, and compare any number of alternative design scenarios, helping them to pick a preferred design that best suits the goals of the stakeholders.

An important takeaway is that geodesign does not represent an entirely new approach to planning and design, but rather a framework based in established practice coupled with new tools that can be adapted to different types and scales of projects. The key is to tap the increasing power of GIS technology and the
accessibility of digital information—from cloud computing to open data, 3D visualization, and free imagery—to help inform decision making while developing and implementing plans.

Geodesign is truly a trans-disciplinary approach to problem solving, so it appeals to geospatial technologists, scientists, sociologists, planners, urban designers, and landscape architects, to name a few.

There are three books on geodesign by Esri Press, *A Framework for Geodesign*, *Geodesign Case Studies in Regional and Urban Planning*, and a new entry, *Advanced Land-Use Analysis for Regional Geodesign: Using LUCISplus*. There is another by Springer that is a compilation of selected papers from one of the geodesign summits called *Geodesign by Integrating Design and Geospatial Sciences*.

There are many technical workshops, demo theater presentations, lightning talks, and more about geodesign at UC 2016. Search for ‘geodesign’ sessions in the UC agenda.

What’s new with geodesign in 2016?

Geodesign is continuing to grow in popularity with numerous colleges starting classes and degree programs. This year, Paul Zwick and his colleagues took it upon themselves to develop a Geodesign Specialty at the University of Florida, available this fall to anyone pursuing the popular Sustainability and the Built Environment major in the College of Design, Construction, and Planning. Learn more about the Geodesign Specialty here.

Esri continues to invest in supporting this emerging community and the development of geodesign capabilities in its software. *GeoPlanner for ArcGIS*, the first web-based application to take full advantage of the geodesign workflow, went through a makeover. A new version became available this past March. It is easier to use and has more functionality. Check out what’s new here.

We are also continuing to work on several desktop implementations that support both 2D and 3D geodesign workflows. The new *ArcGIS Pro*, along with the entire ArcGIS platform, is well suited for site and neighborhood specific geodesign. It supports many types of 3D formats and reads *Esri CityEngine* rule packages, thus streamlining important aspects of the geodesign workflow. A series of anticipated geodesign tools are in the works for ArcGIS Pro.

To find out more about geodesign, consider attending the *Geodesign Summit Europe* in Delft, the Netherlands, this November 1-2, 2016 or the *Geodesign Summit* in Redlands, January 25-26, 2017. Videos from past summits are available at Esri’s E380 Video Channel.
How is Esri allowing planners to better utilize GIS?

Esri supports both 2D and 3D workflow solution products in planning and geodesign. The first of these products is GeoPlanner. GeoPlanner is a web app that allows users to sketch 2D maps on top of web maps. GeoPlanner can quickly evaluate alternative designs providing various charts and graphs describing impacts of proposed alternatives.

A second product that fosters 3D planning is called Esri CityEngine. This product automatically generates 3D urban visualizations using “procedural” rules. We are currently working on adding 3D interactive sketching and procedural tools that allow urban designers and planners to quickly create realistic scenarios and evaluate these alternatives with different kinds of modeling applications.

There are many technical workshops, demo theater presentations, lightning talks, and more about GeoPlanner and Esri CityEngine at UC 2016. Search for GeoPlanner and CityEngine sessions in the UC agenda.

Capabilities of ArcGIS - 3D

How can I get started with 3D if I only have 2D data in my GIS?

There are multiple tools to help you add existing 2D data to 3D visualizations and analyses. You can use 3D Analyst and procedural rules built with Esri CityEngine to extrude 3D shapes and create 3D objects from 2D data in ArcGIS Pro or in CityEngine. Advanced users can create multiple scenarios of proposed buildings and other urban assets with CityEngine. GIS Developers can even use JavaScript to extrude shapes in 3D from 2D feature services in custom web applications.

To help you get started in 3D, we provide curated world terrain and basemap services that allow you to create 3D scenes. Our hosted 3D content is usable in ArcGIS Pro, web experiences, and Runtime applications.

How can I use 3D with in my browser?

ArcGIS web Scenes allow you to combine elevation layers, draped 3D layers, and feature sources that contain 3D information as 3D views. We developed optimized 3D layers for streaming huge amounts of
3D data to include, for example, all of the 3D buildings in an entire city within your scene. These optimized 3D layers include the means to share 3D features. Soon they will also include Point Cloud information and Integrated Mesh data, which can depict the large areas on the globe with details such as buildings and vegetation as single continuous surface.

Within your Web GIS you can discover, combine, and share these 2D and 3D layers within a 3D Web Scene. ArcGIS includes a free 3D Web Scene Viewer, and web scenes can be used in Web AppBuilder and Story Maps, and can be customized with the JavaScript API.

We also released an open specification for serving 3D content in a scalable format that is designed into Portal for ArcGIS.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>Is Web GIS really ready for 3D visualization?</td>
<td>Absolutely! The ArcGIS platform with its 3D services, 3D authoring clients (ArcGIS Pro, CityEngine, and 3D JavaScript API), and 3D viewers (web scenes, ArcGIS Earth, and device apps) represents a complete system for 3D GIS. Because of the power of Server, Desktop, Runtime, and scene viewer, users—both at the development and end-user levels—can now treat ArcGIS Online and ArcGIS for Server as a complete 3D system.</td>
</tr>
<tr>
<td>Will the capability to publish 3D data to ArcGIS Online be equivalent to the capability for ArcGIS Server?</td>
<td>Yes. We have made 3D publishing and sharing capability equivalent across ArcGIS Online and ArcGIS Server. Because we have a complete system, we have designed the desktop, online, and on-premises aspects of the platform all to work well with 3D.</td>
</tr>
<tr>
<td>Can I host 3D content in ArcGIS Online or must I host all of my 3D content in my ArcGIS Server?</td>
<td>Yes. ArcGIS Online can host web scenes, including scenes containing 3D buildings, elevation, and integrated mesh data. With ArcGIS Pro 1.3, you will be able to publish 3D layers and scenes as packages that can be uploaded to ArcGIS Online and Portal for ArcGIS.</td>
</tr>
<tr>
<td>Where is Esri headed with 3D editing? Will I be able to edit complex 3D objects with Esri tools?</td>
<td>You can edit complex 3D objects in Esri CityEngine using the built-in shape editing tools. These tools allow you to combine or separate parts of a 3D object by splitting or grouping faces. The position,</td>
</tr>
</tbody>
</table>
rotation, and scale of faces, edges, and points can be modified as separate features, or as features shared by multiple faces. Faces can be split, merged, extruded, or pushed in using interactive creation tools.

What is Esri CityEngine?

Esri CityEngine is advanced 3D content creation software used to quickly build city environments for your work with 3D GIS. It is focused on interactive creation of content with real-time feedback, and the ability to consume 3D data in a large variety of formats. It is also the platform for authoring and publishing procedural rules to be consumed in ArcGIS Pro as 3D Symbology, or used by the Feature From CityEngine Rule geoprocessing tool to create 3D content in a geodatabase. The 3D environments that you build in CityEngine can be brought into ArcGIS for deeper analysis and visualization, and published directly to ArcGIS Portal or ArcGIS Online as services.

What is new in Esri CityEngine?

The 2016.0 release integrates CityEngine with the ArcGIS platform. The new ‘Get Map Data’ interface allows a user with an ArcGIS Online subscription to clip out and import terrain and imagery information for use in starting a new project. The user can even connect to feature services to use as the basis of new layers that will be combined with rules to generate new 3D layers for buildings, parks, streets, or other features.

Once a 3D model of an existing city, a master plan, or a redevelopment project has been created in CityEngine 2016, then its 3D object layers can be exported as scene layer packages (SPK files). The SPK can be shared from CityEngine to ArcGIS Online or Portal for ArcGIS and then viewed or combined with other web layers in the Scene Viewer, Story Maps, Web AppBuilder projects, or custom JavaScript 4.0 apps.

Further highlights of CityEngine 2016 are (1) its new Portal Navigator to conveniently find rule packages and web layers by searching online content libraries in ArcGIS Online or Portal for ArcGIS, (2) the new out-of-the-box support for Alembic geometry caches that allows for the creation of massive 3D city models, and (3) numerous procedural runtime enhancements (CGA) such as simpler placing methods for buildings or better roof generation commands.

Can CityEngine export 3D GIS data to Unity or other VR/AR visualization engines?

Yes. CityEngine is very well suited to export your 3D GIS data or city models to Unity, the tool of choice
for developing Virtual Reality applications (e.g., Gear VR, Hive, Oculus) or Augmented Reality solutions (e.g., HoloLens). Therefore, CityEngine writes the popular FBX file format which can be read by Unity. In the typical use case, FBX’s so-called ‘instancing’ feature allows for small file sizes and high frame rates in Unity.

Is Esri CityEngine really used in the production of Hollywood blockbusters?

Yes. CityEngine is used by several major animation studios and visual effects houses for the creation of digital sets of urban environments. As one of the new features, CityEngine 2016 can generate Alembic geometry caches of unlimited size on disk. Alembic allows for the hassle-free management and rendering of massive 3D models in DCC tools such as Houdini or Maya and is typically used in the production of feature films.

Does 3D work on mobile devices?

Yes. Esri has been building 3D capability into the ArcGIS Runtime SDKs to allow you to create custom 3D experiences on mobile devices. With the 10.2 Runtime Windows .NET SDK, you were able to create mobile 3D experiences for Windows devices. 3D for other mobile platforms, including iOS and Android, is planned to be released with the next update of ArcGIS Runtime in 2016.

What is ArcGIS Earth and can I use it to replace Google Earth in my enterprise?

ArcGIS Earth is an interactive globe viewer that helps you explore any part of the world and work with 3D and 2D map data including KML, shapefiles, and Esri REST services. ArcGIS Earth is free for download from [www.esri.com/earth](http://www.esri.com/earth) and allows users to browse and view publicly shared content from Esri or from other users. With ArcGIS Online subscriptions, Earth users can also share content privately with other users and view premium content and services.

While ArcGIS Earth will likely meet many of the needs of former Google Earth Enterprise Client users, there are many cases where other Esri technology may be a better fit. Here are some examples:

- **Web apps:** If your users have access to web browsers to view your organization’s 2D and 3D data, then the map and scene viewers included in both Portal for ArcGIS and ArcGIS Online may be a fit. These viewers run directly in your browser without the need for a plug-in and provide excellent support for 2D and 3D viewing, mashups, querying, and analysis. Custom apps can be built with our JavaScript 4.0 API and configurable apps can be created with
Web AppBuilder. Users can even use 3D and 2D together in Story maps.

- **Advanced capabilities:** If your users need to create, edit, and analyze sophisticated 3D data and imagery, ArcGIS for Desktop, especially ArcGIS Pro, may be the best fit for you. ArcGIS Pro has been built from the ground up to work well in both 2D and 3D environments and can handle anything from simple 3D shapes to sophisticated multipatch models. With support in ArcGIS Pro for KML, users can create high quality map layouts and animations that combine KML, geodatabase data, and REST services.

- **More options:** We will be releasing new versions of the ArcGIS Runtime SDKs that can work with 3D data on mobile devices including iOS and Android, but through native SDKs and through Xamarin.

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**How is the migration from Google Earth to ArcGIS Earth going?**

Since late 2013 Esri has developed and released technology to fully replace the Google Earth enterprise platform. To date, we have released the new ArcGIS Earth client and now support 3D services in ArcGIS Server. This replicates nearly everything that the Google Earth client supported (3D visualization, KML support, and a variety of functions for visualization and query).

A number of US federal agencies have chosen to adopt ArcGIS (including ArcGIS Earth) as a Google replacement and are well on their way to implementing ArcGIS as the enterprise 3D platform. Many international customers in Australia, Japan and Europe have similarly engaged and successfully migrated their operations completely over to the ArcGIS platform.

ArcGIS Earth has similar performance to Google’s visualization technology and in addition supports many analytic and mapping capabilities not available in Google.

We will continue to add functionality including support for all KML data types, sketching, and the fusion of multiple web services in this 3D environment.

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**How is KML being supported in Esri apps?**

ArcGIS Earth, ArcGIS Explorer for Desktop, and ArcGIS Pro all share the same KML engine and natively support KML with substantial OGC KML 2.2 compliance and even some of the recently added KML 2.3 support, including timesliders. KML support currently includes network links, ground overlays, and many of the popular tools that the Google Earth community came to love. We will be continuing to update and improve our KML support into the future, including adding Map Tours later in 2016.
How is Esri working to help users integrate BIM with ArcGIS?

ArcGIS currently works with BIM data through interop tools that allow you to transform the building objects into Esri-supported 3D model formats and to read the attributes into a database. You can add BIM models from IFC and various graphic formats such as KML, SketchUp, and DAE. The Data Interoperability Extension can convert BIM data such as REVIT files or IFC sources to GIS content as attributed 3D feature content.

Future effort will be devoted to enabling users to work more natively with BIM information.

Capabilities of ArcGIS - Spatial Analytics

What is Esri doing in the area of Big Data?

At 10.5, Esri will release three new products that support Big Data. These include GeoAnalytics Server, Image Analytics Server, and enhancements to the GeoEvent Server (Real-Time GIS).

- **The GeoAnalytics Server** focuses on vector-based analytics using a library of spatial and temporal analytics. The GeoAnalytics Server leverages Elasticsearch open source technology that enables storage and analytics of very large datasets across a distributed environment. This new capability supports dramatic reductions in processing time. Problems that used to take days and weeks are reduced to minutes and hours.

- **The Image Analytics Server** provides a new capability for scalable distributed processing of massive image and raster collections. This ability to process raster function chains over scalable compute and distributed storage significantly reduces processing times and enables analysis that was not previously possible. The analytics works with your existing GIS and imagery data, but can be further optimized to leverage distributed storage. The persisted output from the analytics are new image and feature layers in your Web GIS.

- **The real-time GeoEvent Server** is being enhanced to significantly increase the ingestion of real-time data while at the same time being able to archive these very large datasets in an Elasticsearch data environment.
**What is the GeoAnalytics Server?**

ArcGIS GeoAnalytics Server is a server product that provides a rich set of feature analytic tools that allow users to gain valuable information from large-scale spatiotemporal data using “distributed computing.” Users can analyze and visualize the results using ArcGIS Pro, Portal for ArcGIS map viewer, or REST API. ArcGIS GeoAnalytics Server will be available as part of ArcGIS 10.5 expected later in 2016.

**How do I run the ArcGIS GeoAnalytics Server tools?**

There are multiple ways that the Big Data tools can be run:

- Tools can be run through very familiar geoprocessing workflows, from the map viewer or ArcGIS Pro.
- Like other Server tools, they can also be run through the REST API.
- Both ArcGIS Python API and Insights for ArcGIS will be introduced at 10.5, and will support Big Data analytics.

**What is Insights for ArcGIS?**

Insights for ArcGIS is a new web app for the ArcGIS platform. It provides a unique experience that enables iterative and exploratory analysis with your data, no matter the source, in a geographic context. It introduces a new paradigm for data exploration that is visually oriented. Using Insights, you work with workspaces upon which you place cards – maps, table, charts – that can be linked together. Interacting with one card is reflected in other cards. For example, if a data point is clicked in a chart, it can trigger updated views in associated maps and tables. Models can be saved from the workspace, so the same exploration can be performed on other data.

**Why is Insights for ArcGIS significant?**

Because it is an integrated part of the ArcGIS platform, the Insights app provides many of the same powerful analysis tools that users are already familiar with (e.g., summarization, proximity, statistical and pattern analysis, and more). For visualization, users have access to thematic maps and smart mapping capabilities. Most importantly, Insights is designed to work with enterprise data sources so they become part of an integrated analytic process.
What types of data does Insights support?

Insights for ArcGIS can integrate a variety of data sources for your analysis, even if that data does not naturally have geographic context. By including a wider variety of information in analysis, users can now find answers to unique questions not possible to answer previously.

Insights integrates a variety of data sources, and version 1.0 of Insights is to include support for:

- Enterprise Databases
  - SQL Server
  - PostgreSQL
  - SAP HANA
  - Teradata
- Spreadsheets
  - Excel Workbooks
- Big Data
  - Big Data Files
  - Hive/Hadoop
  - Spatiotemporal data store
- GIS Data
  - Geodatabases
  - Feature Tables
- Real-time streams

Insights also leverages Esri’s ecosystem of data, including the Living Atlas. Additional data types will be supported in subsequent releases and updates.

When will Insights be available?

Insights is part of the 10.5 release, scheduled for late 2016. Users can participate in the Early Adopter and Beta programs that will start after the User Conference. To sign up, and for more information, visit the Insights for ArcGIS web page.
How will Insights be deployed?

Insights will initially be available for use on-premises at ArcGIS 10.5. Future releases will be enabled in ArcGIS Online.

Where can I see Insights and learn more at the User Conference?

Visit the Esri Showcase area to meet with the Insights development team, and see it in action. You can also attend the Insights Special Interest Group and this technical workshop:

**Insights for ArcGIS**

Tuesday, June 28: 3:15 PM – 4:30 PM

Thursday, June 30: 1:30 PM – 2:45 PM

Friday, July 1: 9:00AM – 10:15 AM

How do I use geocoding with the ArcGIS platform?

Geocoding is available across the ArcGIS platform: on the desktop, in the server, and in ArcGIS Online. If you are deploying ArcGIS in the cloud or looking for a ready-to-use geocoding service, you can access Esri's **ArcGIS Online World Geocoding service**. The service is pre-configured and ready-to-use in ArcGIS and the API is configurable in developer applications.

If you are deploying ArcGIS behind your organization's firewall, we offer two options:

1. **World Geocoder for ArcGIS**: If organizations require a global geocoding capability hosted on their own premises, we recently released the World Geocoder for ArcGIS product so that users can geocode large global datasets securely behind their firewall at a fixed fee.

2. **StreetMap Premium for ArcGIS**: If organizations require geocoding limited to a specific country, we offer a product called StreetMap Premium for ArcGIS, which delivers ready-to-use map display, geocoding, and routing for the geography of interest. These capabilities can be used behind the firewall with ArcGIS Desktop or hosted using ArcGIS Server.

If you are maintaining your own address data or asset data that you need to search against, we offer the
capability to **build your own geocoding capability with ArcGIS** to search against your data. For example, utilities may be interested in searching against their own assets, and local governments may want to search against their own authoritative addresses. ArcGIS includes the tools necessary to build your own geocoding solution that you can use with ArcGIS or deploy as a geocoding service for use across the organization.

I will be attending the Esri User Conference this year. Are there any geocoding sessions I should attend?

Yes! Please come join us at the following sessions:

- Configuring Geocoding for Portal for ArcGIS and ArcGIS Online
- Geocode Like a Pro: Getting Started with Geocoding in ArcGIS Pro
- Geocoding with ArcGIS Online and ArcGIS Online World Geocoding service
- Geocoding: High Performance Batch Geocoding with ArcGIS
- Geocoding: What’s New in Geocoding
- Using StreetMap Premium

There are many geocoding options available from Esri. How do I choose which option is right for me?

If you are deploying ArcGIS in the cloud or looking for a ready-to-use geocoding service, you can access Esri’s **ArcGIS Online World Geocoding service**. The service is pre-configured and ready-to-use in ArcGIS and the API is configurable in developer applications.

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At the UC, you can attend the following sessions to learn more about geocoding:

- Configuring Geocoding for Portal for ArcGIS and ArcGIS Online
- Geocode Like a Pro: Getting Started with Geocoding in ArcGIS Pro
- Geocoding with ArcGIS Online and ArcGIS Online World Geocoding service
- Geocoding: High Performance Batch Geocoding with ArcGIS
- Geocoding: What’s New in Geocoding
- Using StreetMap Premium

How does Network Analyst and ArcGIS Online integrate with Navigator for ArcGIS? Specifically for workflows of sending routes from the office into the field?

Support for these type of workflows starts with quality street data. Beginning with ArcGIS Pro 1.2, a GIS analyst can package a custom network dataset for use within Navigator for ArcGIS. This ensures that the same routing data that is used in the office is used in the field.

Esri has plans throughout 2016 to support saving, sharing, and consuming routes throughout the platform. This includes creating a route with ArcGIS Pro, ArcGIS for Server and Portal for ArcGIS, and ArcGIS Online; and then consuming that route within Navigator for ArcGIS. These plans include the ability to follow a pre-defined route without it being recalculated on the device.

What core routing improvements are being made to Network Analyst in Desktop and Server?

All Network Analyst solvers (except VRP) are now provided as ArcGIS Pro tools. These ArcGIS Pro Network Analyst tools work with local data, and they also work directly with the ArcGIS Online routing services.

The ArcGIS Online Directions and Routing Services are a great options for organizations that don’t want to manage and maintain network data. The Origin Destination Cost Matrix solver is now available as an Online Service, making all six of the Network Analyst solvers available through ArcGIS Online.
<table>
<thead>
<tr>
<th>Question</th>
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<tbody>
<tr>
<td>Esri recently released the World Geocoder for ArcGIS; are there plans</td>
<td>It is possible today to replicate the ArcGIS Online routing services yourself. To do this, you need StreetMap Premium, Network Analyst, and ArcGIS for Server. The ArcGIS for Server documentation describes how to publish network and geoprocessing services. A streamlined set of instructions for replicating ArcGIS Online services with StreetMap Premium data is now on GitHub. This configuration may be productized in the future.</td>
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<tr>
<td>for a World Router for ArcGIS? Can I deploy the same ArcGIS Online</td>
<td></td>
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<tr>
<td>Directions and Routing services on my own hardware and infrastructure?</td>
<td></td>
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<tr>
<td>What are the new capabilities in spatial statistics in ArcGIS?</td>
<td>In the area of Space Time Pattern Mining, the new Local Outlier Analysis tool has been added to the Space Time Pattern Mining toolbox in ArcGIS Pro 1.2. This tool is a space-time implementation of the Local Moran's I statistic. It identifies statistically significant clusters of high values or low values, as well as outliers, in a space-time cube. In the future ArcGIS pro release, tools in the Measuring Geographic Distribution toolset in the Spatial Statistics toolbox will become 3D enabled. In addition, both Create Space Time Cube and Optimized Hot Sport Analysis tools will support hexagons so when aggregating your data you can choose a traditional fishnet grid or a hexagon grid. Please check the Spatial Statistics website for any updates we make in spatial statistics. There are many technical workshops, demo theater presentations, lightning talks, and more about spatial statistics in ArcGIS. Search for spatial statistics in the UC agenda.</td>
</tr>
<tr>
<td>What are some key improvements of Spatial Analysis and geoprocessing in</td>
<td>In addition to improvements discussed in other questions throughout the Q&amp;A, you will find the following:</td>
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</table>
| ArcGIS Pro 1.2?                                                        | • Conflation tools help you reconcile data from multiple sources and obtain the best possible data quality for analysis and mapping. In ArcGIS Pro 1.2 (as well as in ArcMap), a new tool for transforming features was added to the conflation toolset. A new option is available to detect line direction differences, and the support for rubber sheeting links is improved.  
• ModelBuilder in ArcGIS Pro has several enhancements  
  • You can create a group of any model elements as a visual tool for simplifying your complex models. |
- Any dataset variable can be marked **Add To Display**.
- You can drag a layer or dataset onto any tool element in your model and automatically see a list of all valid tool parameters and environments that layer or dataset can be connected to.
- Any successfully run geoprocessing tool can be shared as a geoprocessing package (.gpkx). Geoprocessing packages can be shared as a local file or through your ArcGIS portal.
- A new Lidar Ground Classification tool is available, which allows users to use unclassified aerial lidar in LAS files to perform a ground classification that will make a distinction between ground and nonground points. You can use this tool to create DEMs for display and analysis.
- The Sampling toolset contains tools for generating randomly and regularly spaced features. New tools in this toolset include **Generate Tessellation** and **Generate Points Along Lines**.

### What improvements have been made in the ArcGIS Spatial Analyst extension?

ArcGIS Spatial Analyst provides a broad range of powerful spatial modeling and analysis capabilities. Key improvements had been made in site selection suitability modeling and cost distance analysis. In the area of suitability modeling, there are two new tools: the **Rescale by Function** tool for assigning weights to model criteria and the **Locate Regions** tool for identifying most suitable regions from a suitability map. In the area of cost distance analysis, the new **Cost Connectivity** tool makes it possible to quickly identify the optimal path between multiple locations in a non-networked cost distance problem. The new tools had been added to both ArcMap and ArcGIS Pro.

### What improvements have been made in the ArcGIS Geostatistical Analyst extension at ArcGIS Pro 1.2?

ArcGIS Geostatistical Analyst extension includes statistical models and tools for spatial interpolation, which is a common GIS workflow. There are two new tools in Geostatistical Analyst at 1.2: **EBK Regression Prediction** and **GA Layer to Rasters**. EBK Regression Prediction is a geostatistical interpolation method that uses **Empirical Bayesian Kriging** with explanatory variable rasters that are known to affect the value of the data that you are interpolating. This approach combines kriging with regression analysis to make predictions that are more accurate than either regression or kriging can achieve on their own. GA Layer to Rasters exports a geostatistical layer to one or multiple rasters. The primary purpose of this tool is to export geostatistical layers to multiple output types.

### What is Esri’s plan to integrate Conda functionalities in ArcGIS?

Python has a rich ecosystem of pre-existing code packages that users can leverage in their own script tools from within ArcGIS. But, managing which packages are installed on a system can be a complex and time-consuming task, especially when developing for multiple projects at once or trying to share code with others. The Python community has created methods that allow users to easily create projects in multiple versions of Python and trivialize the process of installing nearly all publicly available Python packages. The software ‘Conda’ is the most popular and widely used Python package manager. It is created by Continuum Analytics, a company dedicated to advancing Python’s role within the scientific computing community.

Beginning from ArcGIS Pro 1.3 release, Esri will integrate the functionality of Conda into ArcGIS Pro. Conda provides a strong value-added component to many organizations, particularly our scientific and governmental customers who have to coordinate code across multiple machines or deploy software through centralized IT systems. This will allow users of ArcGIS Pro to easily integrate open-source libraries in projects and to package their Python environment along with their projects to streamline the entire workflow of creating and sharing Python tools.

What are Esri’s plans for an interactive Coordinate Conversion tool?

Esri has developed and released new tools for converting coordinate notation from one format to another. These include the Convert Coordinate Notation GP Tool, as well as the Go To X/Y tool. While these tools addressed converting single sets of coordinates to other notations, many users have a need for an interactive tool for converting between multiple coordinate formats simultaneously. Esri has released a new interactive coordinate tool delivered as a widget for ArcGIS Web AppBuilder and an add-in for ArcGIS Pro. Please visit the ArcGIS Solutions website to download these tools.

Capabilities of ArcGIS - Real-Time GIS

What is new with Real-Time GIS?

Real-Time GIS is enabled in ArcGIS through the ArcGIS GeoEvent Extension for Server and multiple ArcGIS applications. The 10.4 release provides several new capabilities and key enhancements including:

- The new spatiotemporal big data store included with ArcGIS Data Store. The spatiotemporal big data store can accumulate and store all of your high volume observation data, sustain
high velocity write throughput, and can run across multiple machines (nodes). This observation data can include moving objects, changing attributes of stationary sensors, or both.

- An enhanced map and feature service that enables the visualization of data in the spatiotemporal big data store. The map service performs Geohash aggregation on-the-fly which is useful when visualizing the millions or billions of observations from the spatiotemporal big data store. The aggregation is an on-the-fly representation which breaks the paradigm of scale dependent rendering, providing content dependent rendering at smaller map scales.

- The visualization of high volume data is now scalable. You now have the option to store your latest observations in your stream services and persist that data to the spatiotemporal big data store.

- Optimizations to event handling which resulted in an increase in the amount of data you can ingest into GeoEvent Extension.

What are some common use cases for Real-Time GIS?

Real-Time GIS is used for configuring a common operating picture of what is currently happening in the field, including displaying in a map the live location and status of assets such as vehicles, personnel, environmental sensors, etc. For example:

- A police department may want a real-time map of where all the police patrols are and their current status: in-service, out-of-service, busy, or available.

- A utility company may want to visually represent the status of the network with real-time information captured by sensors in the field and map the location of field crews with their current status.

- A government entity can publish a map that accurately shows the last known pollution levels or weather across a region or country.

Real-Time GIS can help you make more informed decisions and respond faster by not only visualizing the real-time data, but also performing real-time analytics on the streaming data. Additionally, it allows you to notify and alert key stakeholders when an event of interest occurs. For example:

- A transportation company can monitor the temperature of goods in its delivery trucks and warn the driver and the supplier via SMS or email when a particular temperature threshold is
End customers can also be notified when the delivery truck is 15 minutes from a delivery location.

Crews at a construction company can be alerted when expensive equipment leaves a project area.

Emergency responders can use the current location of field crews to determine which one is closer to a particular incident to provide improved response.

A logistics company can lock down access to a computer or vehicle when its owner is more than 60 feet away from the vehicle.

A public works organization can keep track of the route followed by its vehicles during a storm. The tracked route can be logged for further analysis, indicating if a particular vehicle stopped for a long period of time or deviated from its initial assignment.

What should I not miss at Esri UC 2016 regarding Real-Time GIS?

Join sessions, meet Esri staff, and learn how to get started with Real-Time GIS. You can:

- Choose from a variety of sessions on the agenda for Real-Time GIS.
- Look for our road ahead session where the Real-Time GIS team will introduce the next generation of Real-Time GIS.
- Visit the Real-Time GIS Island in the GIS Expo to talk to the Real-Time GIS team who will be able to answer all of your questions and demonstrate the capabilities.

What connectors and processors are available with ArcGIS GeoEvent for Server?

The GeoEvent Extension provides out-of-the-box a number of input connectors, output connectors, and processors that allow you to receive event data from virtually any source as well as send that event data to almost any destination. For a complete listing of the out-of-the-box connectors and processors see the GeoEvent Extension documentation. Additional connectors and processors are available on the ArcGIS GeoEvent Extension Gallery and the Esri Partner Gallery. The connectors and processors available on the galleries enable ArcGIS to handle additional types of sensors or feeds and perform additional real-time analytics. Many of those connectors and processors on the galleries have associated source code available on Esri's GitHub, providing you the opportunity to extend their capabilities.
If I cannot find a connector or processor that meets my specific requirements, can I develop my own?

Yes, new connectors and processors can be created using the ArcGIS GeoEvent Extension for Server SDK. In addition to developing your own connectors using the SDK, new connectors can also be configured in GeoEvent Manager using the out-of-the-box adapters and transports, the underlying components of a connector. To learn more about extending the GeoEvent Extension, refer to [Extending the ArcGIS GeoEvent Extension to Server](#).

What is the new spatiotemporal Big Data Store and how will it benefit me?

At 10.4, ArcGIS Data Store, available with ArcGIS for Server, has been enhanced to work with observational data by way of introducing the spatiotemporal big data store. Observation data can be moving objects, changing attributes of stationary sensors, or both. The spatiotemporal big data store enables archival of high volume observation data, sustains high velocity write throughput, and can run across multiple machines (nodes).

The spatiotemporal big data store is scalable. Adding additional machines adds capacity, enabling you to store more data, implement longer retention policies of your data, and support higher data write throughput. To get started using the spatiotemporal big data store, download the [tutorial](#).

Why are spatiotemporal analytics so important, and what is Esri doing to integrate this type of analysis?

The challenges we face increasingly require us to make decisions based on real-time data. The data that we are confronted with is frequently ‘big data’ that happen both at a particular time and in a particular spatial context. Visualizing and analyzing this kind of data introduces new challenges and requires us to think about our problems not just in terms of location, or time, or attribute space, but in a truly 4D manner that brings all of these dimensions of information together.

The ability to simultaneously explore this 4D data, to profile, summarize, cluster, and connect information based on spatial, temporal, and attribute characteristics allows us to solve the problems that bridge the domains of spatial science and dynamic and real-time analytics. Having the flexibility to model time as both linear and cyclical is critical, as is the ability to visualize all of the spatial, temporal, and attribute dimensions of our data at varying scales.

Spatiotemporal analytics are becoming an integral part of the ArcGIS platform, from the way we store real-time and time-aware big data, to the methods we use to aggregate and visualize this data, to the analytics that uncover underlying patterns, trends, and anomalies. These innovations allow us to truly
build understanding from the massive amounts of spatiotemporal data at our fingertips.

How is temporal data supported in ArcGIS?

Time is supported throughout the ArcGIS platform, including support for

- Historical data in the geodatabase data model (time stamps and historical data logging).
- Ingestion and storage of real-time data that contains time information (sensor time, received time, etc.)
- Temporal visualization of historic (playback, time window) and real-time data (live)
- Temporal analysis of historic (e.g., duration, course, speed, distance covered, time slicing, temporal relationships, drive-times) and real-time data (e.g., geofencing)
- Statistical analysis and visualization of spatiotemporal trends and patterns (e.g., time-series, hot spots, outliers)

- Temporal imagery and raster dataset that extend also to multi-dimensional scientific datasets

Here are resources to get more information:

- For ArcGIS Online, start with View time maps and Configure time settings.
- For ArcGIS Pro, start with Temporal data.
- For ArcMap, start with What is temporal data?
- For Statistical Analysis, start with An Overview of the Space Time Pattern Mining toolbox.
- For ArcGIS Server, start with Serving time-aware layers and Stream Services.
- For developers, start with Histogram Time Slider and Time slider with dynamic map service layer.

- For temporal rasters and scientific data start with Improving-your-Scientific-Analysis.

What is the meaning of real-time GIS?

Fundamentally, there are two definitions. First, it means the integration and application of real-time data
in a GIS (including sensor data, GPS tracking, social media, etc.). This can mean bringing in feeds of information from sensors or moving objects at a rate of 1000s or 10000s per second, or it may mean hourly updates.

The second refers to the real-time coordination of work across an organization. Using web GIS, people in the field can be collecting data while at the same time others are visualizing, analyzing and even disseminating the very same data as web maps or reports. An example of this is in public health where immunization activity and health surveys can be carried out using an application like Collector for ArcGIS or Survey123 for ArcGIS and simultaneously the results can be visualized in the Dashboard for ArcGIS or analyzed using Insights for ArcGIS.

This means connecting the field to the whole world of real-time analysis and decision making, all at the same time. Web GIS will increasingly be configured to support these kinds of collaborations and workflows.

### Capabilities of ArcGIS - Imagery and Remote Sensing

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<tr>
<th>What imagery can I use in ArcGIS?</th>
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<tr>
<td>ArcGIS supports a very wide range of formats and sensors. The vast majority of imagery and rasters ranging from the simplest orthophoto tiles to imagery directly from satellite, aerial and drone sensors can be used in ArcGIS for visualization and analysis to extract useful information. All these formats can be directly read and used in ArcGIS or converted to more optimum formats if required. See <a href="#">Supported Raster and Image Formats</a>.</td>
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<tr>
<th>What is Esri’s strategy for supporting image processing functionality?</th>
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<td>ArcGIS image processing capabilities have grown tremendously over the past decade. Today, ArcGIS users can manage, process, exploit, and disseminate all aspects of imagery and raster data. Esri’s strategy for image processing is to provide easy-to-use, out-of-the-box image processing for GIS users who are not experts in remote sensing to make it even easier for them to extract meaningful information from imagery.</td>
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Our key strategy is to fully embed all the common image processing tools as part of the ArcGIS platform.
The Esri platform also enables users and partners to extend our image management and analytics capabilities.

What image analysis and processing tools are included in ArcGIS?

ArcGIS has more than 100 advanced imagery and raster data geoprocessing tools, as well as 50 functions that can be combined to create powerful on-the-fly image processing chains. We continue to incorporate more advanced image analysis and processing tools in ArcGIS with every release. More recently, ArcGIS added new image segmentation and classification capabilities. These enhancements enable users to quickly transform an image into segments of similar pixels and then perform classification based on attributes such as shape, size, and texture. Such segmentation tools are specifically useful for working with large-scale imagery. These capabilities will enable the introduction of workflows for dynamic calculation of selected information products, such as automatic calculation of impervious services.

Many of the newer tools and functions are designed for working with scientific data. One function that will be of particular interest to many analysts is the Python Adapter. This enables developers to write new raster functions in Python and have them executed as part of an on-the-fly image processing chain. All image processing is available in ArcGIS for Desktop and ArcGIS for Server. Esri is currently evaluating how image processing can be leveraged in the mobile environment.

What further improvements in image management are coming in 10.5?

Mosaic datasets remain the optimum data model for the management of large collections of imagery and rasters. We have seen these scaled to tens of millions of rasters in a single mosaic dataset.

At 10.5 we will continue to add support for more sensors, and will also be adding a ‘Python Raster Type,’ which will make it easier to create customized support for the wide range of new sensors and define the processing and metadata to be ingested. The tools for seamline generation to create seamless mosaics are being improved. The scaling of mosaic datasets will also be enhanced by enabling the use of database services such as Amazon RDS.

I have imagery from Sentinel, Pleiades, and WorldView. Can I use these in ArcGIS?

Yes. ArcGIS provides support for imagery at different levels of processing. This can be the low level products that require orthorectification for use such as WorldView Basic to orthorectified products such as Sentinel2 1C level. The metadata from these products is read in and used by ArcGIS to ease data
processing. This imagery can be loaded individually into ArcGIS Desktop using raster products. Alternatively, large collections can be managed using mosaic datasets and served as image services. See Supported Raster and Image Formats.

Can I use multidimensional NetCDF and HDF files in ArcGIS?

ArcGIS has extensive support for multi-dimensional datasets stored as NetCDF, HDF and GRIB. Individual slices can be added as layers. Collections of such files can also be added to a mosaic dataset and then accessed as multidimensional data cubes. These can be processed using the built in raster functions or using the Python Raster function that enables development of on-the-fly processes using Numpy and Scipy. The resulting data can be output as various formats or rendered with a range of vector renderers that support display of arrows, barbs, etc. This works across the platform from desktop to web apps.

For more details see Multidimensional Raster Types or attend the following Using ArcGIS as a Scientific Data Platform and Analyzing Multidimensional Scientific Data in ArcGIS.

What image processing does ArcGIS provide?

ArcGIS has built in more than 50 different raster processing functions that cover the gamut from band algebra and stretching imagery, to performing orthoectification and pansharpening, to segmentation and classification. These functions can be chained together into function chains that efficiently process the imagery without requiring intermediate products and enable the on-the-fly processing for dynamic access to all forms of imagery. When imagery is served as image services through ArcGIS server, the client applications can define the processing to be performed on the servers enabling the clients to access rich imagery products without pre-processing or additional storage. If required, the same function chains can also be applied to datasets to output static products. In some cases it is advantageous, for example, to process the data into a static tile cache that can be published though ArcGIS Online. At ArcGIS 10.3, we added Python Raster functions that enable you to further extend the processing chains to utilize the many different processing algorithms being developed in Python and utilize libraries such as NumPy and SciPy.

What is Esri’s strategy for integrating lidar information into ArcGIS?

Esri recognizes the importance of lidar and continues to make improvements in areas of display, analysis, and data management. ArcGIS Pro includes support for displaying billions of points in a single dataset that can be interactively explored in 2D and 3D views. With the ArcGIS Pro 1.3 release, users have access
to lidar attributes, including colorized RGB values, that couple with stretch renderers and advanced point symbols to make beautiful photo-realistic looking 3D images. In 1.3 we've also added tools to perform interactive class code editing for data cleanup. Additionally, there's a new building rooftop classifier to facilitate feature extraction and a tiling tool for data management. These capabilities complement the existing support for DEM/DSM creation, spatial searches, ground and height classification, point filtering, statistical summaries, and advanced surface analysis. The ArcGIS platform now makes accessing, managing, and extracting useful information from these large data collections easier than ever.

Later this year, we will be releasing the capability for users to share lidar data to ArcGIS Online and Portal for ArcGIS in a manner that will allow point clouds to be combined with other GIS data and visualized in high performing web experiences.

What's new for elevation and lidar data?

ArcGIS support for elevation and lidar data is already extensive. As is apparent in services such as World Elevation, ArcGIS can work with massive volumes of elevation data and make this accessible in a range of on-the-fly renderings. It can also allow access as data values or in tools that generate viewsheds and downstream trace. Lidar data is similarly handled and in ArcGIS Pro 1.3 we have extended the Lidar support. You can download workflows to quickly set up these and other mosaic datasets and image services.

What is the Image Analytics Server? Can you give some more details?

While ArcGIS already scales to work efficiently with massive volumes of imagery and raster data. We are seeing an increase in the requirement to enable processing of massive datasets to create rich derived information products. The Image Analytics Server (available at 10.5) will allow the processing of such massive datasets. It will spread massive big data raster processing over many machines simultaneously to reduce processes that might have previously taken days into hours.

Examples include classification of all the newly collected Landsat images daily, suitability modeling on massive datasets, and production of orthorectified images from massive collections.

What is Drone2Map for ArcGIS?

Drone2Map for ArcGIS is a new app being released in June. It is dedicated to the rapid processing of imagery from drones for 2D, 3D, and Inspection workflows. The products from Drone2Map can be
directly accessible from ArcGIS Online or used in desktop applications.

Using Drone2Map, you can take a directory of drone-captured imagery and quickly transform it into orthophotos, digital surface models, points clouds, and 3D meshes. The data can be easily used in ArcGIS for Desktop or shared through ArcGIS Online as 2D image and scenes. Drone2Map also includes workflows for processing and using imagery for inspection workflows.

For more details check out Drone2Map Landing page or attend Drone2Map for ArcGIS UC Session

Can I do object-oriented image classification in ArcGIS?

Yes. At ArcGIS 10.3 we added capabilities to segment images and then apply a range of classifiers including Maximum Likelihood and Support Vector Machine (SVM) classifiers. At 10.4, based on your requests, we further improved the segmentation and extended the classifier to include Random Trees Forest and accuracy assessment tools. At ArcGIS Pro 1.3, we are providing a new classification wizard that will streamline the workflow for applying the appropriate pixel or object-based classification to imagery along with very unique tools for editing and checking the accuracy of the classification results.

What is a book that can help me get started with imagery in ArcGIS?

Esri Press just released a new book and companion website called The ArcGIS Imagery Book that is designed to get people engaged with Earth Observation Imagery, a foundational data source for GIS that is expanding with highly sophisticated remote sensing devices such as satellites, micro-sats, drones, and more. In addition to nearly 200 inspiring live imagery-fueled web maps, app, and story maps, the book includes Learn ArcGIS lessons focused on using imagery both online and in ArcGIS Pro.

Capabilities of ArcGIS - Data Collection and Management

Are there any significant advancements being developed in ArcGIS data management?

Yes. While the geodatabase is a stable data management environment, Esri is extending its capability to support a whole new network data model for utilities. This model will be introduced at 10.5 and be accompanied with a variety of industry-specific implementation models (electric, water, gas, and eventually, telecom).
Esri is also continuing to expand the support for new database management systems. While ArcGIS for Server is already integrated with SAP for simple features queries, we will be updating full geodatabase support, leveraging the 10.5 network model.

What am I able to do today with ArcGIS and the SAP HANA database?

We have provided direct access to SAP HANA spatial and business data through query layers and feature services beginning with ArcGIS 10.3.1. This allows Esri users to load spatial data into SAP HANA, create SQL queries on spatial and business data in SAP HANA that run in HANA memory for fast performance, and bring the results back to ArcGIS for use across the platform as feature services.

I have heard that Esri has plans to extend the enterprise geodatabase to SAP HANA. When is this expected to be available?

In December 2015, SAP and Esri announced that through a global technology partnership, Esri will commercially support ArcGIS using SAP HANA as an enterprise geodatabase. This will expand the existing integration with SAP HANA and allow customers to run all their SAP Business Suite and ArcGIS applications within an architecture based on SAP HANA. This new development will be done in sync with the redesign of Esri's core network management infrastructure. Expected initial release is next year (2017). Learn more about Esri and SAP HANA.

Where can I go to learn more about SAP HANA at Esri UC?

SAP has a morning technical presentation and an evening SIG for SAP HANA on Tuesday, June 28th at Esri UC. Please check the UC app and online agenda for location information.

7:00 a.m. to 8:00 a.m. Use Cases and Customer Experiences with SAP HANA and ArcGIS

5:00 p.m. to 7:00 p.m. SAP HANA and ArcGIS: Capabilities, Future Directions, User Cases, and Deployment Patterns

I have heard that ArcGIS 10.4 supports the Dameng database. Where can I learn more about Dameng?

At ArcGIS 10.4, query layer support was extended to the Dameng database (v7.1.5), which is a popular database in China and the Asia-Pacific region. Learn more about the Dameng database. Learn more about using query layers with Dameng and other supported databases.
At the User Conference consider attending the following session:

**Accessing Spatial Databases in ArcGIS Using Query Layers**

Wednesday, June 29, 5:00 p.m. to 5:30 p.m. in Tech Theater 17, Exhibit Hall A.

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**Industries - Agriculture**

How can I stay in touch with Esri and GIS developments relevant to the Agriculture industry throughout the year?

Esri’s Agriculture team includes business strategists, developers, data scientists, and imagery scientists who are prepared to help you with how the ArcGIS platform can support your agribusiness, your agtech solution, or your startup.

Throughout the year, you may want to consider the following resources:

- Visit [Esri’s Agriculture](https://www.esri.com) page, with industry specific updates and case studies.
- Join the Esri Agriculture group on [LinkedIn](https://www.linkedin.com)
- Follow Esri Agriculture on [Twitter](https://twitter.com) to discover timely information of interest to the global forestry GIS community
- View agriculture related videos on E380, Esri’s [Video Channel](https://www.youtube.com)
- For software suggestions or enhancements, go to [ideas.arcgis.com](https://ideas.arcgis.com) and submit your ideas
- Esri hosts and participates in numerous local, national, and international conferences and user groups. Search for [events](https://www.esri.com/events) on Esri’s Events page.

What trends and challenges does Esri see in the Agriculture industry that may positively or negatively impact my work in the near future, and how can GIS help me?

The Agriculture industry is becoming increasingly reliant on technology to cope with emerging business demands. GIS supports decision-making about farm management across the operation. While ArcGIS as a
desktop mapping tool continues to play a strong role in revealing spatial patterns, you can elevate the value of GIS by extending it into the field.

Increasingly, growers are mapping, monitoring, scouting, and collecting field observations which synch and integrate with the enterprise GIS system. Conversely, farm managers and operators are taking maps into the field to validate and ground truth imagery-derived observations. In this way, ArcGIS is a platform for integration. It connects existing business systems: enterprise resource management (ERM), computer-aided dispatch (CAD), records management systems (RMS), customer relationship management (CRM), and enterprise asset management (EAM), with the value-added benefits of exposing these variables on a map.

Integration allows Agriculture organizations to create more effective management plans and predict and minimize labor costs and errors resulting from manual reconciliation of inventory and accounting databases. To be effective, integration should be in real time, flexible, easily verified, and scalable.

What specific solutions does Esri or its partners have that apply directly to the Agriculture industry?

ArcGIS can be configured to provide a complete system for agriculture management, or it can be customized to power highly targeted agtech solutions. It's highly scalable and fits into existing IT architectures, or it can be used as a stand-alone solution. It transforms data into actionable intelligence and has a range of ways to deliver information, not just data, to the right person at the right time.

Here are key elements of the platform especially relevant for agribusiness and agtech:

- The Living Atlas for ArcGIS now features a collection on Agriculture Data – See this Story Map for a tour of the live data services you can use in your projects and apps.
- Drone2Map for ArcGIS – A new app to transform drone data into ready to use GIS imagery
- Overview of ArcGIS Apps – For the field, office, community, and app builders, a good place to browse for ways to jumpstart your solution.
- Insights for ArcGIS – a powerful tool to explore and interact with complex agricultural data across maps and tables.
- Esri Startup Program – Start here if you are a startup, emerging business, or SAS provider. Qualifying startups receive cloud services, software, training, support, and content.

How can I make the most out of my visit to the UC?

We are planning a number of exciting activities of special interest to the Agriculture industry.
- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.

- Visit the Natural Resources industry neighborhood located on the Expo floor. There at the Agriculture kiosk, you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.

- Attend the Esri Agriculture Forum – A place for the GIS community to come share and learn about the latest innovations in the ArcGIS platform for Agriculture. Sunday, June 26th 2:00 PM in San Diego Convention Center room 27B.

- Attend the Agriculture Special Interest Group (SIG) meeting Tuesday, June 28 12:00 PM – 1:00 PM in San Diego Convention Center Room 24 A.

- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.

- Attend the Agriculture Track of moderated paper sessions the mornings of Tuesday, June 28th, and Wednesday, June 29th.

- Consult the Agriculture Guide to UC for all the details.

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**Industries - Architecture, Engineering, and Construction**

How can I stay in touch with Esri and GIS developments relevant to Architecture, Engineering, and Construction throughout the year?

There are several ways to keep in touch with the Esri AEC industry and learn of our new developments and user success stories. A great place to start is visiting our AEC Industry website to find out what’s new and what your peers are working on. This is where we share our AEC community videos, announcements, articles, and upcoming events throughout the year, including special webinars presented by Esri technical staff, partners, and users.

We also maintain Industry Websites that correspond to the industries or markets you work in where you can learn where and how GIS is being applied by your customers. This includes sites for facilities, utilities, transportation, energy, and more.
Moving beyond the industry focus and into a more in-depth discussion – visit our blogs where we share deep dives into product features and content: [https://blogs.esri.com/esri/arcgis/](https://blogs.esri.com/esri/arcgis/)

And for general suggestions on enhancements, you are welcome to visit ideas.arcgis.com to submit your ideas to Esri staff.

What trends and challenges does Esri see in Architecture, Engineering, and Construction that may positively or negatively impact my work in the near future, and how can GIS help me?

One of the biggest AEC challenges to date still remains collecting and sharing data accurately and efficiently. *Time is money… Knowledge is power.*

The ArcGIS platform brings the world’s [geospatial] data into your hands so you can make better decisions throughout the infrastructure lifecycle: Plan, Design, Build, Operate. Your information is costly – therefore managing it is imperative. Managing a variety of data sources to develop your engineering and construction plans in GIS is made easy and saves you tons of time in data recovery. It’s strengthened when you back your results with analytical data to predict best-case scenarios. With ArcGIS, you can engage with your stakeholders through web maps and a variety of apps offering true collaboration throughout the project lifecycle.

Esri turns data into knowledge by using real-time data processing, dashboards, and mobile tools to facilitate safe operations. Use ArcGIS to improve the daily maintenance activities of assets with a location-aware platform. With your hands on all this information, you can control the improvement on your entire infrastructure lifecycle budgets.

Furthermore, here is a shortlist of trends happening in the AEC:

- Real-time GeoEvent Extension for Server: The Internet of Things (IoT)
- Big Data and GeoAnalytics
- Drones & Drone2Map for ArcGIS - using the ArcGIS platform to help manage, analyze, and disseminate imagery and lidar datasets
- 4D – time and space (3D)
- Reuse of data, keep and maintain, leverage for all uses/users by ETL and integration of location into common office and business systems like ArcGIS Maps for Office, Esri Maps for SharePoint, ArcGIS Data Interoperability
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What specific solutions does Esri or its partners have that apply directly to Architecture, Engineering, and Construction?

We provide solutions built on the ArcGIS platform for a variety of industries that our AEC customers and partners use out of the box to expand offerings to the clients and improve quality and value as well as efficiencies in many of the services they already offer. Esri also offers a number of more specialized tools and solutions for 3D data development, planning and geodesign, logistics, CAD & BIM conversion, UAV image processing and much more.

The AEC industry team works with many partners that provide products and services that apply throughout the infrastructure life cycle: Plan, Design, Build, Operate & Maintain as well as help you manage projects and run your company.

We have a large ecosystem of partners that offer IT and field data collection hardware, domain specific analytic applications, productivity tools, and work flows integrated with design tools. In addition, these partners keep pace with Esri development so that users will be able to use the very latest in Esri technology. Partners provide world-class services and solutions to tackle the largest AEC GIS implementations that can include all aspects of the ArcGIS platform, and some partners provide focused capabilities in their niche expertise with the ArcGIS family of products.

To access Esri Partners, Partner Solutions, and Partner Services, visit our [Partners website](#).

For a list of Esri Partners attending the Esri User Conference, visit our [Esri UC Exhibitor website](#).

How can I make the most out of my visit to the UC?

There are a lot of activities for those users that work in AEC and/or its related fields like CAD, BIM, facilities, and high accuracy mapping. You can join in on the following:

- Attend the Plenary session to learn about where the GIS industry is headed and how our users are driving our technology.
- Explore the industry islands located on the Expo floor and speak with industry experts, request demos, and enrich your product knowledge.
- Visit with the solutions team to discover the latest advances built on the ArcGIS platform.
Attend the AEC Track of AEC User Presentations– these are presentations that overcome real-world applications of GIS on AEC projects.

Attend Industry tracks for the Industries your firm targets where you will hear from users of GIS where and how they are applying the technology to solve problems and where they could use additional help.

Visit technology and product islands located on the Expo floor to learn the latest directly from Esri development and product specialist.

Mingle and network with Esri staff and your peers at one of the many socials hosted during UC week.

Visit the exhibition hall to meet with Esri Partners like Microsoft, IBM, Amazon, Trimble, CITRIX, and many others to learn what they can do to help you become more successful.

Industries - Banking

How can I stay in touch with Esri and GIS developments relevant to the Banking industry throughout the year?

The Esri banking special interest group on LinkedIn is an active community of FSI professionals and one of the best ways to stay connected and network with other like-minded people. This forum is regularly updated with news and information from Esri about industry trends, news, product developments and thought leadership. We have already done much of the hard work in making your organization more productive and profitable and the LinkedIn Group is the best way for real estate professionals to find information on specific workflows, analytics, case studies, maps, apps, and templates to make you more productive in a matter of hours not months.

The banking web page also contains frequently updated information on videos, demos, articles, case studies and user references to keep you informed and up to date.

Esri News for Business and the monthly Bizness Bit newsletters deliver insight straight to your mailbox, and we encourage you to subscribe. The real estate team is also active on Twitter, Instagram, and LinkedIn - search for “Esri BizTeam” on any of these platforms to find and follow us.

Finally, come see us in person at the various industry events and tradeshows which can be found on our
What trends and challenges does Esri see in Banking industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Banks are increasingly needing richer, analytics-driven insights to enable a more personalized approach to targeting and engaging with consumers. Geography and spatial analysis enhance customer analytics to drive engagement and customer experiences.

Predictive and cognitive analytics are creating demand for more data that's richer and available faster so you can improve your understanding of the marketplace. The industry increasingly focuses on digital and social selling. ArcGIS pairs internal data with Esri’s data analysis automation and data delivery tools to ensure the right insights can be delivered to those that need them. ArcGIS enables financial institutions to evaluate their business strategy for physical distribution as a strategic asset in the digital omnichannel world.

Globally, the banking industry is thinking “Mobile First.” The industry continues to focus on improving and expanding the core app functionality beyond balance checking, ATM locator, and mobile deposits. Spatial data and analytics provide a platform of engagement and insight to maximize the value of past investments in technology and bring about business transformation. ArcGIS can help by improving the way you make decisions, prioritize investment, and engage with clients.

What specific solutions does Esri or its partners have that apply directly to Banking industry?

Esri has created specific solutions for financial organizations from retail banks and investment managers to credit cards and credit units. Find solutions and partners to get you going and be more successful at www.esri.com/banking.

Does Esri have solution for branch facilities management and corporate services?

We have considerable experience, directly and through partners, in supporting corporate real estate services and facility managers. We can help you:

- Maximize revenue from new and existing facilities or properties
- Eliminate unnecessary facility or property expenditures
- Drive growth through fully informed site selection decisions
- Optimize space planning and allocation for facilities or properties
- Maintain your facility or property portfolio at optimal condition and capacity
- Reduce risk, plan for business continuity, and effectively manage change

How can I make the most out of my visit to the UC?

Please look for the following events that will help you make the most of your UC experience.

- The Business Summit, taking place at the Hilton Bayfront 6/26-6/27 is packed with speakers and sessions relevant to the banking sector.
- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Relax, network, discover solutions, and meet partners at the Business Summit Expo (Hilton Bayfront, Saturday 6/25), Business Summit Social (Hilton Bayfront, 6/26), and Commercial Social (Hilton Bayfront, 6/28).
- Visit the industry neighborhood located on the Expo floor to speak to the real estate industry team, get your questions answered, share your ideas, see demos and get the latest product insights
- Join your colleagues at the Real Estate Special Interest Group meeting Tuesday afternoon at the Hilton Bayfront and stay for the social.
- Visit us at one of the UC Expo Envisioning Sessions taking place through the week which will show you best practice workflows and illustrate new ways to get more value out of ArcGIS.
- Check out the real estate paper tracks happening Tuesday and Wednesday in the Convention Center to hear real world implementation strategies, meet others who are putting ArcGIS to work and expand your knowledge.

Industries - Defense and Intelligence

How can I stay in touch with Esri and GIS developments relevant to Defense and Intelligence throughout the year?

There are several ways to keep in touch with Esri and other users across the Defense and Intelligence
What trends and challenges does Esri see in Defense and Intelligence that may positively or negatively impact my work in the near future, and how can GIS help me?

Geospatial Intelligence (GEOINT) is the integration, analysis, and visualization of data from multiple disciplines and sources to present a more comprehensive intelligence product to the intelligence and defense communities. GEOINT enables complete situational awareness of the environment by visualizing the relationships between people, places, events, timelines, and physical location. Defense and Intelligence organizations are more often asked to do more with less and seek innovation to increase efficiency, produce and deliverer information quickly. Current trends which will have an influence in the adoption, implementation and on-going use of geospatial technologies include:

- **Rise of Activity Based Intelligence (ABI) and Big Data**

  GIS is helping analysts identify patterns, trends, networks, and relationships hidden within large data collections from multiple sources. These datasets are massive and in many dissimilar formats requiring integration and technology to derive better insights in correlating data, deriving patterns, and predictive analysis. The ability to interface to all static and dynamic sources and produce location-based awareness is the next generation of fused intelligence.

- **Cloud solutions and mobility: Apps and Web GIS**

  Defense and Intelligence is embracing connected cloud infrastructure for its unique capabilities to support agility and scalability for rapid deployment and access to large computing resources. The ability to deliver data and applications to forward deployed units in connected and disconnected environments from cloud based infrastructure is the technology challenge. Esri’s platform must support all possible configurations whether connected or disconnected and still allow users to conduct their mission with or without access to cloud infrastructure.

- **Real-time and automated remote sensing data processing**

  GIS is continuing to grow more support of sensors directly in core products, but needs to continue to
provide flexibility for integrating unique sensors from defense and intelligence platforms. Esri’s technology can manage extremely high rates of data in content management, as well as support dynamic analysis against this volume of data.

- **3D modeling & simulation, and 3D analysis**

Traditionally the use and exploitation of 3D has been dominated by custom unique solutions to the military for mission planning and mission rehearsal. The growth of commercial sensors and solutions is far outpacing the development in defense/intelligence, and current demand is high for these industries to seek integrated 3D technology to collect, analyze, and deliver content from very large strategic systems to thousands of small tactical smart devices. Server, Desktop, and Runtime must be able to deliver 3D content from Esri derived content as well as support translation or read and consume native formats.

What specific solutions does Esri or its partners have that apply directly to Defense and Intelligence?

Esri offers many solutions and templates designed specifically for the Defense and Intelligence industries. We also work with a wide range of partners that provide services across six main capability categories:

- Visualization & 3D
- Analytics & Reporting
- Imagery & FMV
- Collaboration & Sharing
- Content Management
- GeoApp Development

Find our Defense and Intelligence partners exhibiting throughout the Solutions Expo.

What is Military Tools for ArcGIS?

Military Tools for ArcGIS is a collection of supported open source tools that reduces the complexity, cost, and time to create common defense and intelligence geospatial products—all part of the ArcGIS platform and available at no additional cost. Military Tools for ArcGIS is a single, completely offline, delivery mechanism that is easily configured and deployed across your enterprise. The interactive tools support
many defense workflows, such as coordinate conversion, distance and direction calculations, visibility analysis, and the creation of military symbols in the web and on the desktop.

Is Military Tools for ArcGIS a replacement for Military Analyst?

No. Military Tools for ArcGIS is a new, soon to be released offering that has increased functionality across the ArcGIS platform. While some of the capabilities that were offered via Military Analyst (coordinate conversion, visibility, etc.) are also included in Military Tools for ArcGIS, Military Analyst was an extension to ArcGIS Desktop only and is no longer supported by Esri.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the Defense and Intelligence industries.

- Esri National Security and Public Safety Summit, June 25-26
- National Security and Public Safety Social, June 26
- The Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole
- Industry Focused Sessions and Technical Workshops to include updates in ArcGIS for Defense
- Defense & Intelligence Demo Theater
- Defense & Intelligence Envisioning Center Demo Theater
- Moderated Paper Presentations

For all the details, see the Defense, Intelligence, and National Security Guide to UC.

Industries - Economic Development

What trends and challenges does Esri see in economic development that may positively or negatively impact my work in the near future, and how can GIS help me?

The economic development industry has and will continue to undergo significant transformation.
Ongoing changes in the world economy, in the makeup of the American populace, and in technology will present at once a threat to longstanding tenants and an opportunity for reinventing how we foster growth and prosperity. Recovery from the current economic malaise will not be as simple as resuming the policies and practices of yesterday. New models and methods to identify problems, analyze data, and innovate solutions will be essential. GIS can play a central role in unifying the many groups necessary to achieve any development project.

GIS can have direct and immediate impact in these areas:

Prosperity

- Business Attraction
- Business Retention and Expansion

Finding Opportunity in the Data

- Analyzing workforce
- Industry clusters
- Ideal sites

Innovation

- Open data driving economic growth
- Supporting entrepreneurs and small business with tools

Livability

- Economic and community transformation
- Cities an environment to support growth and innovation
- Livable cities as a competitive advantage

What specific solutions does Esri or its partners have that apply directly to the economic development industry?

Esri has a number of ready-to-use or easily configurable templates on the ArcGIS for Local
Government web site. There you will find great examples of how the ArcGIS Platform has been put to use to support common workflows. Many use these as good starting points for developing their own apps.

The economic development industry works with a wide range of partners that provide services in three main categories:

- Solution applications which add value to the ArcGIS platform
- Data providers
- GIS implementation and services

You can find Esri partners exhibiting throughout the Solutions Expo and by visiting our Esri Partner web page and doing a keyword search on economic development.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the economic development industry:

- On Monday, attend the Plenary Session (morning and afternoon), to gain an understanding of Esri’s direction and the conference as a whole.
- Visit the Government Industry neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.
- On Tuesday, attend the morning kickoff sessions. These 75-minute sessions apply concepts from the UC Plenary to economic development.
- On Wednesday, attend the Economic Development Special Interest Group (SIG) meeting.
- Check out the Birds of a Feather sessions to see what others in your community are doing in a fun interactive session.
- If you are a state or local government employee, join Esri industry staff at the State and Local Government Social, Wednesday from 5:30 PM - 7:00 PM at the Hilton Bayfront- Promenade

To help you filter the material that is directly relevant to the economic development industry, we created a Guide to UC. In it you will find:
Moderated user presentations in the community development, planning, or economic development tracks

Technology workshops and demo theaters of interest

Partners with relevant solutions that are on the Exhibit floor

Networking events and opportunities such as the Map Gallery and Industry socials

And the UC guidance notes such as how to contact friends and colleagues and info about the Thursday night party, and more

Industries - Elections and Redistricting

How can I stay in touch with Esri and GIS developments relevant to Elections and Redistricting throughout the year?

By its nature, the Elections and Redistricting Industry represent a smaller user community than many of the other industries but that doesn't mean they are any less energetic. Even though this is a US Presidential election year with practitioners busy planning for and conducting primary events with GIS, many have contributed stories and case studies that can be found on our Election Industry pages. In fact, even though the Redistricting Season is still several years away, several event for and meetings of the Redistricting Community are being posted there as well.

There are many ways to keep in touch with each other and with Esri, to learn about new developments and user success stories. The industry web pages are a great place to find out what's new and what your fellow users are up to. Watch for upcoming events throughout the year, including special webinars presented by Esri technical staff, partners, and users. In this election year, any place where you see our Government Sales or Marketing team, you’ll see and hear about our elections stories.

What trends and challenges does Esri see in Elections and Redistricting that may positively or negatively impact my work in the near future, and how can GIS help me?

You only have to see the news to know the elections industry is changing. More and more requirements are being placed on local election offices to meet the expectations of socially engaged citizens, the Press and federal oversight. Many election offices have maxed out the ability of older, legacy voter registration systems to support the growing needs of operating on election day. GIS, and specifically, the ArcGIS
Platform, its services, and Apps, makes it easier to manage registration and election data, understand voter needs, and deliver services. Polling place siting, managing staff and volunteers, and delivering equipment are just the beginning. Esri clients are ending Election night on a high note with online maps that clearly show results.

What voters expect from their election officials is only growing. With voter registration data systems, and election day operational needs and logistics becoming more complex, the ArcGIS platform is there to help. It provides the analysis and collaboration tools smarter communities will require. The use of web maps and data services will expand the possibility of sharing existing data improving post-election day analysis reporting.

What specific solutions does Esri or its partners have that apply directly to Elections and Redistricting?

ArcGIS includes a set of ready-to-use apps for elections. These apps help voters find voting locations, see how long the wait is to cast a ballot, explore election results and know who their elected representatives are. Also, we’re proud to team with several leading organizations to bring our users the right solution to geo-enable the election process. These partners are found on the Industry web pages.

How can I make the most out of my visit to the UC?

- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the Government industry neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve election business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.
- On both Tuesday and Wednesday mornings, attend presentations in Demo Theater 14 on Solutions for Smart Elections.
- Check the Detailed Agenda for sessions on Configuring Election apps, Esri Business Analysis Overview and Desktop Mapping.
- The US Census Bureau is holding several talk on Census data and the Census Partnership Program to hear about the data needed to conduct redistricting in 2020.
Industries - Environmental Protection

How can I stay in touch with Esri and GIS developments relevant to Environmental Protection throughout the year?

There are several ways to engage and become active in the environmental and natural resources community. And we are committed to growing the opportunities for you to stay informed with the latest advances in technology and to learn from the best practices from your peers. We would suggest you bookmark the Environmental Protection web pages on the Esri website where you will find the latest case studies and watch interactive demos. This year, we launched a very popular webinar series. A way to receive up-to-the-minute information is to follow us on social media such as Twitter at @esrienvironment or through the Esri GeoNet community.

And for general suggestions on enhancements, you are welcome to visit ideas.arcgis.com to submit your ideas to Esri staff.

What trends and challenges does Esri see in Environmental Protection that may positively or negatively impact my work in the near future, and how can GIS help me?

In today's climate, environmental professionals are looking to keep pace with the best practices in the use of technology for better workflows and processes to improve government service. Geographic information systems (GIS) technology continues to come to the forefront as the preferred tool to help meet these objectives. Charged with field inspections, validation and follow through on permit conditions, and meeting conditions of approval for permits departments of Environmental Protection, Natural Resources, Fish and Wildlife, Environmental Compliance, and Conservation can all benefit from Esri's ArcGIS platform.

Understanding the impact of manmade and natural events on the environment is a crucial part of an environmental agency's job. Analytical tools can provide insight into future effects on nature as well as provide a platform to hear the community's response on proposed projects and communicate back to them on findings made by your organization. Geographic information systems (GIS) software and applications continue to give more meaning to locations of specific species, protected or managed lands to provide reports utilized to get a comprehensive look at potential project effects.

What specific solutions does Esri or its partners have that apply directly to Environmental Protection?
The Environmental Management and Natural Resources industries can really benefit from the current offerings by Esri. First, we have many solutions that will open new doors and expand the way you work. ArcGIS Open data is presenting new ways to collaborate within organizations and with those organizations you coordinate activities with. Collector is changing the face of field mobility and data collection. It is by far one of the most popular offerings within the industry. Story Maps are changing the face of how to present information to executives and to the public at large. Whether you are seeking to communicate environmental management issues or looking to presenting changes in our natural resources there is a Story Map template that can support your work. And Drone2Map promises a new way of capturing images from any drone and ports the imagery directly into ArcGIS.

The ArcGIS for State and Local Government Solutions provides simple configurable apps. Please be sure to explore some of these apps to see what's in store for you. Attend sessions and special interest groups, or sit with our development teams to have your questions answered. Some of the solutions you may be interested in include:

- Environmental Impact
- Permit Inspection
- Permit Status
- Water Quality Inspections
- Water Quality Status
- Citizen Science Reporter
- Park and Recreation Locator

In addition to the Esri solutions, you will find dozens of consultants, software providers, and startup companies with solutions they are ready to demonstrate and discuss. Tools ranging from real time sensor monitoring to environmental impact assessment. Find Esri partners exhibiting throughout the Solutions Expo.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the environmental management and natural resource industries.

- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
• Visit the Esri Pavilion: Government Neighborhood-Land & Environment Management community located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.

• At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.

• On Tuesday, attend the morning kickoff sessions. These 75-minute sessions apply concepts from the UC Plenary to your industry.

• Network with Esri staff and your peers at one of the Special Interest Group Meetings throughout the week.
  • Forestry and Land Management SIG
  • GIS at the National Park Service
  • UAS for Environmental Monitoring and Conservation
  • State and Local Government Social
  • Water Resources SIG
  • And more! See the online agenda

• Check out the Birds of a Feather sessions to see what others in your community are doing in a fun interactive session.

To help you filter the material that is directly relevant to the Environmental Protection industry, we created a Guide to the UC. In it you will find:

• Moderated user presentations in the Utilities and Telecom Track
• Technology workshops and demo theaters of interest
• Partners with relevant solutions that are on the Exhibit floor
• Networking events and opportunities such as the Map Gallery and Industry socials

UC guidance notes such as how to contact friends and colleagues, info about the Thursday night party, and more

Industries - Facilities
How can I stay in touch with Esri and GIS developments relevant to the Facilities industry throughout the year?

The facilities management or “facilities and indoors” industry has a broad-based, active user community spanning higher education, health, government, and commercial organizations. There are several ways to keep in touch with each other and with Esri, to learn about new developments and user success stories. The industry web pages are a great place to find out what’s new and what your fellow users are up to. You can also run interactive demos and watch videos. To join in the conversation with Esri and your colleagues, scroll to the “Communities & Events” (GeoNet). At GeoNet, you will find the “Facilities GIS User Group”. Watch for upcoming events throughout the year, including special webinars presented by Esri technical staff, partners, and users. Scroll further down the Main page to see highlighted Esri partner solutions.

You are also welcome to check out the Facilities and Indoor GIS mapping solutions ArcGIS online hub to explore ideas for implementing ArcGIS for your property, facility, or workplace management practice.

For suggestions on enhancements, go to ideas.arcgis.com and submit your ideas.

What trends and challenges does Esri see in the Facilities industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Property, facility, and workplace managers face challenges that tend to fall into four major categories: strategic planning, operations, employee productivity, and resource allocation. Together these challenges can impact the speed of business which is directly connected to organization revenue generation and cost avoidance.

The ArcGIS Platform, and specifically Web GIS, liberates critical location data that was formerly trapped inside information silos and delivers it to all employees on any device, anywhere, anytime. This saves money by putting information directly into the hands of field workers and office workers at the same time. You can now access data from previously closed systems, such as portfolio performance accounting, real-time operational status, space and asset inventory (i.e., supply/demand), and facility condition. This means you can respond more quickly to employee and customer issues whether you’re comparing new building or space design alternatives, completing a workplace location efficiency study, optimizing work order response times, or completing a space inventory assessment.

Competition for the next generation workforce continues to increase. The ArcGIS platform provides the
perfect platform for analysis of suitable sites, community demographics lifestyle pattern, as well as resource and amenity allocation and placement.

Esri turns data into knowledge by using real-time data processing, dashboards, and mobile tools to facilitate safe operations. Use ArcGIS to improve the daily maintenance activities of space and assets with a location-aware platform. With your hands on all this information, you can control the improvement on your entire facility lifecycle budgets.

Additionally, here’s a short list of industry trends:

- Advancing campus/building indoor location and route mapping options such as those provided with the Campus Place Locator
- Internet of Things (IoT) support of real-time sensor and tracking with GeoEvent Extension for Server and Esri Partner solutions
- CAD & BIM integration with ArcGIS using ArcGIS Pro and the ArcGIS Data Interoperability extension
- Viewing campus and building portfolio in dynamic 3D visualizations with ArcGIS Pro, Web GIS scenes, and new 3D Web app support
- Attracting and keeping top-talent with workplace location studies using Esri Business Analyst
- Quickly assessing aging buildings and infrastructure with ArcGIS Maps for Office, Story Maps, and Operations Dashboard for ArcGIS.
- Streamlining asset audit and inspections with Collector for ArcGIS, Navigator for ArcGIS, and Survey123 for ArcGIS

What specific solutions does Esri or its partners have that apply directly to the Facilities industry?

The facilities management and indoors GIS industries work with a range of partners that provide services in three main categories.

1. Property, facility, and workplace management: Esri is fortunate to have a variety of partners that enhance the already world-class professional GIS functionality of the ArcGIS platform. These partners offer tools for domain specific analytic applications and work flows, and integration with real-time control systems and design tools. In addition, these partners keep pace with Esri development so that users will be able to leverage the very latest in Esri technology.
2. Implementation services: Esri’s implementation partners provide long- and short-term implementation services. Services range from full enterprise GIS solutions that include all aspects of the ArcGIS platform from integration to Integrated Workplace Management Systems (IWMS), Computer-Aided Facility Management (CAFM), and real-time control systems such as Building Automation Systems (BAS) technologies. Other partners provide jumpstart capabilities of Portal for ArcGIS and ArcGIS Online and everything in between.

3. Data management: Esri data management partners provide data integration and interoperability services.

Find Esri partners exhibiting throughout the Solutions Expo.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the facilities management and indoor GIS professionals.

- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the 3D industry solution neighborhood located on the Expo floor. There you can talk to Facilities industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- At the Expo, go to one of the Facilities Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.
- Come to the “Facilities and Indoor GIS” lunch session to find out about this active community.

To help you filter the material that is directly relevant to the facilities management and indoor GIS industry, we created a Facilities Guide to UC. In it you will find:

- Moderated user presentations
- Technology workshops and demo theaters of interest
- Partners with relevant solutions that are on the Exhibit floor
- Networking events and opportunities such as the Map Gallery and Industry socials
Industries - Forestry

How can I make the most out of my visit to the UC?

Esri is planning a number of exciting activities of special interest to forestry.

- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the Natural Resources industry neighborhood located on the Expo floor. There at the forestry kiosk, you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- Attend the forestry Special Interest Group (SIG) meeting Wed., June 29 12:00 PM - 1:00 PM in Room 23A.
- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.
- On Tuesday, attend the morning kickoff sessions. These 75-minute sessions apply concepts from the UC Plenary to your industry.
- Check out the Birds of a Feather sessions to see what others in your community are doing in a fun interactive session.
- Participate in meetings hosted by the USDA Forest Service or the Bureau of Land Management, where foresters and land managers are always present.
- For those forestry GIS specialist focused on managing wildfire, participate in Special Interest Group meetings and technical sessions hosted by Esri’s Public Safety industry team.
- Consult the Forestry Guide to UC for all the details.

How can I stay in touch with Esri and GIS developments relevant to Forestry throughout the year?

Esri’s forestry team includes foresters, ecologists, and natural resource management specialists who are prepared to have discussions with you about how the ArcGIS platform can support your forest management goals. Throughout the year, you may want to consider visiting the following resources:

- Visit Esri’s forestry web page to explore the numerous benefits of ArcGIS in forestry. Read forestry-related case studies, watch forestry videos, and find solutions to your forestry
challenges.

- Visit the Esri Forestry Group on GeoNet to interact with the diverse community of forestry and land management GIS specialists.
- Visit the Esri Forestry Group Resource Center to view a curated collection of forestry story maps, powerful apps, maps, and training resources.
- Join the Esri Forestry Group, an active community of more than 4,000 professionals dedicated to sharing information, ideas, and experiences about Esri GIS technology in the forest industry.
- Subscribe to Esri News for Forestry and discover real world operations and business applications for forests, woodlands, parks, urban trees, and land management and GIS solutions for planning, harvesting, health, logistics, and land management.
- Join the Esri Forestry Group on LinkedIn, where 5,000 members interact, share information and connect.
- Follow the Esri Forestry Group on Twitter and discover timely information of interest to the global forestry GIS community.
- Follow Esri’s Forestry Manager on Twitter for links to content such as forestry story maps, videos, and articles.
- Follow the Esri Forestry Group on Facebook to connect, share and interact.
- View the 2012 Esri Forestry GIS Conference Proceedings and Videos in an interactive place-based story map format that combines images, text, and maps.
- View the 2013 Esri Forestry GIS Conference Proceedings and Videos in an interactive place-based story map format that combines images, text, and maps.
- View forestry GIS related videos on E380, Esri’s Video Channel.
- Download the Forestry Data Model and schema to leverage a geodatabase design for representing multidimensional forestry spatial data.
- Download the Forest Service data model and schema to leverage a standardized geodatabase and appropriate GIS tools and workflows for managing USDA Forest Service spatial data.
- For software suggestions or enhancements, go to ideas.arcgis.com and submit your ideas.
- Esri hosts and participates in numerous local, national, and international conferences and user groups. Search for events on Esri’s Events page.
What trends and challenges does Esri see in the Forestry industry that may positively or negatively impact my work in the near future, and how can GIS help me?

To cope with new and emerging business demands, foresters and land managers are increasingly required to go beyond their traditional role as data collectors, information suppliers, and planners. In addition, they are now needed to provide analytical insight into their business while improving the management reporting cycle, often with real-time visibility across the organization.

While ArcGIS Desktop continues to provide a foundation for GIS mapping, recent technological advancements have dramatically transformed ArcGIS from a desktop mapping tool into a complete system of engagement. The platform provides flexible building blocks for the in-house creation of modern, responsive apps without requiring any software programming. ArcGIS app builders include preconfigured templates along with widgets you can drag, drop, and configure.

The role of business-critical information in forestry has never been more vital to future success. To sustain growth and achieve even higher levels of business value, foresters and land managers must apply industry standards and best practices for managing this information. Leveraging best practices that truly align with meeting operational challenges will drive significant results, lower costs, and support better decision making.

Many forest companies leverage ArcGIS as an integration platform to connect existing business systems: enterprise resource management (ERM), computer-aided dispatch (CAD), records management systems (RMS), customer relationship management (CRM), and enterprise asset management (EAM). Integration allows forestry organizations to create more effective management plans and predict and minimize labor costs and errors resulting from manual reconciliation of inventory and accounting databases. To be effective, integration should be in real time, flexible, easily verified, and scalable.

What specific solutions does Esri or its partners have that apply directly to Forestry?

ArcGIS is a complete system for forest and land management. It’s highly scalable and fits into existing IT architectures, or it can be used as a stand-alone solution. It transforms data into actionable intelligence for every forestry department and organization. ArcGIS enhances all forest management workflows, including land administration, forest and natural resources inventory, forest planning, and forest and asset management. This enables any forest resource manager employing these proven methodologies to meet organizational requirements through better decisions at every level.

ArcGIS provides a new framework for information integration and performs a core business function in
many forest companies through a single platform for multiple forestry business requirements. The big breakthrough is in how easy it is to engage with the system. This ease of use is about not just improvements in the software user experience and interface but also how the system is directly connected to authoritative data repositories of immense proportions.

An increasing number of Esri partners with forest industry expertise are starting to leverage the ArcGIS platform to meet your toughest challenges. Collaboration with Esri and its trusted partners can bring specialized talent and innovative solutions to your team, together helping to take your business to the next level. Our goal at Esri is to help foster a vibrant and active partner community that builds applications on top of the Esri ArcGIS platform. These applications provide greater value to the customer from commercial off the shelf (COTS) technology with specific workflow oriented solutions that answer a wide variety for forestry business challenges.

Industries - Health

How can I stay in touch with Esri and GIS developments relevant to the Health industry throughout the year?

The Esri Health industry has a very active user community. There are several ways to keep in touch with us and with each other to learn about new developments and user success stories. The industry web pages are a great place to learn what’s new and what your fellow users are up to. You can run interactive demos, watch videos, explore white papers, reference materials, and the latest offerings.

To join in the conversation with Esri health and like-minded colleagues, get involved in our social media platforms:

- GeoNET: go to ‘health and human services’
- LinkedIn Groups: See ‘Esri Health’ and ‘Esri for Human Services’
- Twitter: handles include ‘@Esri_health’ and ‘@Esri_HumanServi’
- Facebook: look for ‘Esri Health and Human Services’
- Instagram: we’re at ‘esri_hhs’

On these platforms you can ask questions, post comments, and seek advice. We’re posting information
frequently, so keep watch for upcoming events throughout the year, including special webinars presented by Esri domain experts and technical staff, partners, and users.

What trends and challenges does Esri see in the Health industry that may positively or negatively impact my work in the near future, and how can GIS help me?

The Health and Human Services industry is facing a number of challenges for which GIS can help. Healthcare reform under the Affordable Care Act (ACA) requires organizations to focus on the triple aim: improving the patient experience, improving overall population health, and reducing costs. Associated policies and regulations of the ACA extend other recent regulatory changes like Health Information Technology for Economic and Clinical Health (HITECH), Meaningful Use, Health Information Exchanges, and the Healthcare Marketplace. This, in addition to enhanced privacy regulations under HIPAA, has led to significant regulatory complexity, shifting budgets and increasing responsibilities that force governmental agencies to do more with less, become more transparent in their operations, and engage a diverse set of stakeholders. As the Affordable Care Act evolves, integration and interoperability of both public health and human services becomes essential as these two systems must work together for improved delivery of vital services. GIS is a natural for data integration since datasets can be aligned by common locations. Using location intelligence, organizations can achieve the triple aim by strategically targeting resources, pinpointing areas of highest need, and determining access to care.

Healthcare reform aims to move us from fee-for-service to value-based care healthcare delivery models. There is new focus on population health. With their extensive experience in population health, Public Health and Human Service governmental agencies are leading candidates to participate in collaborative efforts to integrate services and provide guidance in formation of Accountable Care Organizations. GIS is a natural fit for population health planning and intervention for all kinds of health organizations.

A top priority of health and human services is MMIS Modernization (Medicaid Management Information Systems) as Medicaid expansion projects an additional 8.5 million in 2016. The new regulatory environment in health requires modernization of legacy systems and implementation of new systems and processes to consume data that is accessible from Health Information Exchanges, Meaningful Use and related initiatives. Current Federal regulations have extended waivers (OMB A-87) to enable states to complete work on eligibility and enrollment systems integration through December 2018. As organizations are slowly adopting platform solutions that allow data integration in order to increase analytical capabilities to drive data-driven decision making, staff are demanding more intuitive systems across platforms and devices. The ArcGIS platform serves this need. Additionally, organizations are trying to limit their IT infrastructure and move to the cloud while still maintaining data integrity and security. Web GIS is a powerful tool, employing Software as a Service, so IT infrastructure needs are minimized.
What specific solutions does Esri or its partners have that apply directly to the Health industry?

The Health and Human Services industry has solution offerings in the following areas:

1. Vector-borne disease surveillance and control. This solution includes applications that help organizations respond to vector-borne disease outbreaks in 4 major areas: performing surveillance, responding to public requests, delivering interventions in the form of treatments and controls, and communicating through public outreach and education.

2. Mobile data collection. Use location intelligence on any device, anywhere and at any time with mobile data capture. This solution can be used to address homeless point in time counts, facility or restaurant inspections, or field survey needs.

3. Healthy communities. Health and human services departments provide a broad range of programs and services. This solution has information products to support the work in many of those programs from chronic disease surveillance, to community health status dashboards, to public risk communication and outreach.

Visit the Health industry page to learn more about these solutions or contact us for more information.

We also work with several partners that provide a range of products and services including: health facility management, vector control, health system forecasting tools, and more. Find Esri partners exhibiting throughout the Solutions Expo.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the health and human services industry.

- On Monday, be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.

- Visit the Health and Human Services industry kiosk located within the State and Local Government Neighborhood on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and learn about specific product technologies. Visit with our solutions team to discover the latest offerings for Esri health solutions built specifically on the ArcGIS platform.

- At the Expo, go to one of the 3 Envisioning Sessions, “5 Key Tools You Need to Support Community Health” designed to illustrate the real-world value of ArcGIS.
At the State and Local Government Showcase Demo Theater, there will be two presentations, one on Tuesday at 5:30 PM “Transforming Field Data into Actionable Intelligence,” and one on Wednesday at 1:30 PM called “GIS to Combat the Threat of Vector-borne Disease.”

There will be a health and human services focused technical workshop on Thursday at 3:15 PM called “Configuring the ArcGIS Platform for Health and Human Services Organizations” in Room 17B at the Convention Center.

Attend one of the many moderated paper sessions offered throughout the week, where customers like you share their great work in health and human services.

Make sure to attend the Special Interest Group meeting on Wednesday, 8:30 AM, at the San Diego Marriott, Marina Salon E, to enjoy the provided breakfast with industry professionals and listen to the latest news on upcoming GIS developments related to the health and human services industry.

To help you filter the material that is directly relevant to the health and human services industry, we created a Health and Human Services Guide to UC. In it you will find:

- Moderated user presentations in the Public Health, Hospitals, and Health Systems tracks
- Technology workshops and demo theaters of interest
- Networking events and opportunities

Industries - Insurance

How can I stay in touch with Esri and GIS developments relevant to the Insurance industry throughout the year?

The Esri insurance special interest group on LinkedIn is an active community of insurance professionals and one of the best ways to stay connected and network with other like-minded people. This forum is regularly updated with news and information from Esri about industry trends, news, product developments and thought leadership. We have already done much of the hard work in making your organization more productive and profitable and the LinkedIn Group is the best way for real estate professional to find information on specific workflows, analytics, case studies, maps, apps, and templates to make you more productive in a matter of hours not months.
The insurance web page also contains frequently updated information on videos, demos, articles, case studies, and user references to keep you informed and up to date.

Esri News for Business and the month Bizness Bit newsletters deliver insight straight to your mailbox, and we encourage you to subscribe. The real estate team is also active on Twitter, Instagram, and LinkedIn – search for “Esri BizTeam” on any of these platforms to find and follow us.

Finally, come see us in person at the various industry events and tradeshows which can be found on our webpages and continually updated through LinkedIn and Social Media.

What trends and challenges does Esri see in the Insurance industry that may positively or negatively impact my work in the near future, and how can GIS help me?

The insurance industry is increasingly rolling out business intelligence and analytics across the enterprise. Commercial and personal lines carriers have adopted leverage predictive models and Big Data to improve underwriting and claims. We have long worked with Big Data to help intelligently consume and analyze data coming from vehicles, wearables, and other devices. ArcGIS does not just read and write data from enterprise and existing systems, it is the system of record, analysis, and insight for all things spatial at all points of business execution.

IoT’s large data streams offer real time insights and Esri is working with partners such as Microsoft Corporation and others to integrate location services and spatial analytics so that you can turn raw data into wisdom. Learn more about Esri and Microsoft Azure IoT Suite.

Aggregate analysis and modeling are increasing focus on data integration and management. ArcGIS has been specifically designed to perform fast, high volume mapping and modelling of large portfolios so the insurance industry can perform aggregate analysis by geography by product by risk.

Improving customer and claims service delivery are key to reducing costs and delivering better service customers before, during and after an event. ArcGIS comes ready-made with all the analysis tools you need to better model, forecast, monitor, and execute any natural or manmade event. An ArcGIS-based location strategy and high-precision, authoritative data services like earthquakes, tornadoes, hail, wildfire, and others allow the insurance industry and its stakeholders to continuously monitor and better price risks.

Highly accurate, worldwide content is increasingly required as the insurance industry becomes truly global. ArcGIS content is a marketplace of authoritative, real-time content delivered by Esri and its
partners. Because this data is delivered as web services, not just static or background maps, they can be easily built into different workflows and analytical processes. We provide a curated, discoverable data library that contains the highest accuracy and best quality services to plug directly into the business process in both a secure cloud-ready or on premise format.

Drones are increasingly being used to map remote and large facilities and provide immediate damage assessment after an event. Drone2Map for ArcGIS turn drones into an enterprise GIS productivity tool. Drone data can be used to create new highly detailed map layers, 3D models and other analytical imagery products in minutes, not days. All of these can be shared with any ArcGIS environment for further analysis and visualization.

What specific solutions does Esri or its partners have that apply directly to the Insurance industry?

Esri has created specific solution offers for all types of insurance companies from primary carriers to reinsurers, cat modelers to service companies. Find solutions and partners to get you going and be more successful at www.esri.com/insurance.

How can I make the most out of my visit to the UC?

Here are some opportunities you should not miss at Esri UC:

- The Business Summit, taking place at the Hilton Bayfront 6/26-6/27 includes speakers from Munich Re, Swiss Re, CALEOS and other insurance industry relevant speakers from public safety and supply chain to real estate.
- Come relax, network, discover solutions and meet partners at the Business Summit Expo (Hilton Bayfront, Saturday 6/25) Business Summit Social (Hilton Bayfront, 6/26) and Commercial Social (Hilton Bayfront, 6/28).
- On Monday, be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the industry neighborhood located on the Expo floor, to speak to the real estate industry team, get your questions answered, share your ideas, see demos and get the latest product insights.
- Come join your colleagues at the Insurance Special Interest Group meeting Tuesday afternoon at the Hilton Bayfront and stay for the social.
- Join us at one of the UC Expo Envisioning Sessions taking place through the week which will
show you best practice workflows and illustrate new ways to get more value out of ArcGIS.

- Check out the insurance paper tracks happening Tuesday and Wednesday in the Convention Center to hear real world implementation strategies, meet others who are putting ArcGIS to work and expand your knowledge.

For all the details, consult the Insurance Guide to UC.

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**Industries - Land Records and Administration**

How can I stay in touch with Esri and GIS developments relevant to Land Records and Administration throughout the year?

To get started, you can check out the land administration industry web pages. There’s a lot of good content to get started. The next steps are to visit the Land Records Solutions site. Here you will find all of maps and apps that are included in the solution, and more are being added often.

Subscribe to Esri News for Assessors, Land Records, and Cadastre and get the latest user story, updates on apps and maps, and find what conferences we will be attending. Be sure to submit your story as well! Know that we’re always at the IAAO Annual Conference, and GIS CAMA Technology Conference.

Sign up for one of the webinars in the Land Records Educational Webinar Series. Whether you want to connect and learn about using Excel for value analysis, get more on managing parcels efficiently, deploying Open Data, or picking up a few tips on field force management, there’s a webinar for you.

The Land Records Meetup boasting over 1300 members is an informal web meeting that discusses all things parcels, such as implementing the parcel fabric, PLSS, least squares adjustment, Deed Drafter and a lot more. All of the past webinars are recorded, so search and find if there is a topic in the past that may be useful to you. Be sure to join us for lunch at the Land Records Meetup at noon on Thursday (Room 31B/C).

Get answers from your peers and find out what others are working on at GeoNet in the Land Records Community. This is a great place to share your experience and learn from others.
What trends and challenges does Esri see in the Land Records and Administration industry that may positively or negatively impact my work in the near future, and how can GIS help me?

With the public becoming more tech savvy, there is an expectation that their interface with government will be modern, and this includes the assessor’s office. Not long ago, annual tax rolls were commonly posted just once per year. Now with online (non-authoritative) sites such as Zillow, it is driving assessors to post current and accurate assessment and property characteristic data in order to reduce appeals. Appeals in many large jurisdictions consume a significant portion of the assessor’s budget, and defending them properly is important to the consistency of the property tax system – GIS provides tools to help with this.

Access to real time, authoritative data in end-user ready technologies will continue to provide value to the taxpayer, reduce calls to your office, and deliver a modern experience to taxpayers. Open Data provides this for assessors.

As more data becomes available – for example, current satellite imagery, good positional accuracy of assessor data will be required for proper overlay. Public access to accurate data is required to maintain the trust and confidence of the public.

Maintaining multiple technology systems in the assessor’s office will continue to be a challenge. ArcGIS for Land Records enables users to connect to other systems (primarily CAMA) and grow use of technology with COTS and eliminate the need to keep GIS and CAMA technology synchronized. This is done with simple ETL or a services integration.

What specific solutions does Esri or its partners have that apply directly to Land Records and Administration?

Partners in the land records industry provide two main capabilities – Solution Implementation, and Apps.

Solution Implementation - There are several components to solution implementation carried out by partners, primarily parcel data migration, system integration, and app deployment. Partners Sidwell,
Bruce Harris Associates and ProWest have successfully deployed the land records solution and we are actively engaged in co-marketing, primarily to Tier 4-5 communities.

Apps - Bruce Harris Associates has a Paperless Reappraisal System that is available in the ArcGIS Marketplace. DevNet offers EdgeMaps, a GIS-based CAMA solution with Local Government Information Model published services.

Find Esri partners exhibiting throughout the Solutions Expo.

How can I make the most out of my visit to the UC?

There is a lot happening in land records and land administration at the UC. If you’re involved in national government, the National GIS Executive Forum pre-conference will be beneficial.

There is a full list of sessions in the Guide to the UC that contains a complete list of sessions, meetings and workshops.

- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole
- Visit the industry neighborhood located on the Expo floor. Do this early in the conference so you can get some personalized direction on what sessions/meetings can help you out. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- Come to the Land Records Meetup to meet peers, Esri insiders, and find out about this active community.
- Visit Partners on the exhibit floor.

For all the details, consult the Land Records and Administration Guide to UC.

Industries - Manufacturing

How can I stay in touch with Esri and GIS developments relevant to the Manufacturing industry
throughout the year?

There are several ways to keep in touch with each other and with Esri, to learn about new developments and user success stories. The industry web pages are a great place to find out what’s new and what your fellow users are up to. You can also run interactive demos and watch videos.

You can also subscribe Esri News for Business and the monthly Bizness Bit newsletters deliver insight straight to your mailbox.

The manufacturing team is active on LinkedIn. Search for “Esri BizTeam” to find and follow us.

The quickest way to connect with the growing community is via Twitter @EsriMFG.

For suggestions on enhancements, go to ideas.arcgis.com and submit your ideas.

What trends and challenges does Esri see in the Manufacturing industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Manufacturing is going through a transformation process that increasingly adopts digital automation, Big Data processing, and IoT. Manufacturing is a global industry that relies on a complex chain of suppliers and sub suppliers. Key concerns include visibility, risk management, as well as traceability and sustainability.

C-Level executives and investors have increasing ROI expectations from people, processes, and technology. ArcGIS makes complex data visible and understandable. Location analysis helps with smarter decisions. It makes you more productive and profitable immediately. Innovation continues to be paramount and companies need to reinvest in technology to remain competitive. ArcGIS supports the latest industry standards and technologies.

With increased competition and globalization, the need to share information has become a major focus. No matter how you work—smartphone, tablet, or desktop—you can always enhance your professional capabilities with information access, on-site analytics, and data collection. ArcGIS makes it easy to collaborate across the organization, discover knowledge, and share information both internally and with clients.

What specific solutions does Esri or its partners have that apply directly to the Manufacturing industry?
Esri has created specific solution offers for small, medium, and large manufacturing organizations that include everything you need to get going and continue to be successful. Find solutions and partners at www.esri.com/manufacturing.

How can I make the most out of my visit to the UC?

Here are some opportunities for you at Esri UC:

- The Business Summit, taking place at the Hilton Bayfront 6/26-6/27 is the forum for commercial businesses such as Manufacturing, Retail, etc.
- Come relax, network, discover solutions and meet partners at the Business Summit Expo (Hilton Bayfront, Saturday 6/25) Business Summit Social (Hilton Bayfront, 6/26) and Commercial Social (Hilton Bayfront, 6/28).
- On Monday, be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the industry neighborhood located on the Expo floor, to speak to the manufacturing industry team, get your questions answered, share your ideas, see demos and get the latest product insights.
- Come join your colleagues at the Manufacturing Special Interest Group meeting Tuesday afternoon at the Hilton Bayfront and stay for the social.
- Join us at one of the UC Expo Envisioning Sessions taking place through the week which will show you best practice workflows and illustrate new ways to get more value out of ArcGIS.

For all the details, consult the Manufacturing Guide to UC.

Industries - Mining

How can I stay in touch with developments relevant to the Mining industry throughout the year?

We are committed to supporting the specific and dynamically changing needs of the Mining GIS community. To do so effectively is a challenge, when the community is so diverse in terms of technology adoption, workflow focus, IS/IT policies, geographic and commodity differences, etc. Over the past 10
years working very closely with members of the community, we have developed an active and engaged Mining User Group (MUG). Here’s how you can stay in touch with relevant developments and activities:

**Follow Online Information Channels:** Including Esri Industry web pages where you will find case studies, partner solutions, specific offers, an online marketplace containing mining specific apps, support for community initiatives, upcoming webinars, opportunity to register for an e-mail newsletter, links to tech issues hosted on Ideas or GeoNet, etc. Also the LinkedIn blog site, where you’ll find members of the community sharing trends, ideas, and developments in open online forum.

**Attend Mining User Group Events,** for example held in conjunction with major mining calendar events like PDAC, or regional MUG events in your area, like Alaska or S Africa. You can find about those from the MUG LinkedIn page where you will also find information about how to become a MUG Member and links to relevant social media feeds, etc.

What Trends and Challenges does Esri see in the Mining industry that may positively or negatively impact my work in the near future?

**Commodity Prices** - The overriding challenge for the mining industry at the current time is of course the low commodity prices, which have resulted in lower revenues, a dramatic drop in exploration activity, and has severely constrained budgets. Creating operational efficiencies and demonstrating clear ROI has become key for large and small miners alike. We are working with many clients that are using GIS to realize significant improvements in everyday workflows from land management, to field logistics/mobility, and HSE.

**Technology** - In the longer term it seems clear that mining companies are looking to technology to provide them an edge. Many have active (if delayed) e-mine projects that look to integrate the benefits of IoT, cloud, Big Data, real-time feeds, mobility, and dashboards. We are active with several companies in this regard and anticipate a significant increase as companies realize the benefits of a truly web-based GIS, greater workflow alignment, applications integration and the power of mobility – with GIS capabilities provided anywhere, anytime and on any-device. We believe that those companies that strive for prudent investment even during the downturn will be poised to take considerable advantage as budgets and operational schedules gradually return.

**Staffing** - The downturn in budgets, coupled with the increasing pace of technology change is forcing some hard decisions regarding staffing. Of course, mining has always been recognized as a cyclic industry and will be back, as will a hiring frenzy. Those individuals who have used the downturn wisely to
improve their skills will hopefully be rewarded. We are working aggressively with the MUG community to increase various support mechanisms for Mining GIS professionals in these difficult times, creating regional seminars, online webinars and e-learning options, creating a MUG Fellows and Young Professionals Network (YPN), connecting with appropriate Universities, and supporting personal use licensing for just $100 annually.

What specific solutions does Esri or Partners have that apply directly to the Mining industry?

GIS is now being applied to a very wide array of applications areas, across the whole mining enterprise, from exploration to shipping. While many of the new COTS capabilities being introduced are directly relevant to increasing value, allowing us to ‘do more with less’ (e.g., Web AppBuilder, Collector for ArcGIS, and Drone2Map for ArcGIS), there is still a considerable requirement for specific workflow-based solutions implementation. That’s where mining focused solutions partners play a vital role.

Dedicated partners with knowledge of specific domain areas (such as exploration, permitting, sample management or HSE), technologies (such as imagery, big-data, or drones), or workflows (such as land records, logistics, or surveillance/COP) augment the COTS technology using the ArcGIS platform with workflow-oriented solutions that answer specific business challenges.

How can I make the most out of my visit to the UC?

There are many things going on at the UC. To help you filter the material that is directly relevant to your industry, we put together a Mining Guide to the UC. This will point you to such things as:

- The Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole
- Moderated user presentations in the Mining Track
- Technology workshops and demo theaters of interest
- Partners with relevant solutions that are on the Exhibit floor
- Mining/Geoscience Map Gallery exhibits, and a few general interest ones for fun
- Networking events and opportunities such as the Map Gallery and Industry socials
- UC guidance notes, like how to contact friends/colleagues, Thursday night party, etc.

We encourage all Mining oriented UC attendees to review the Mining Guide to the UC and lock a few
important things into your calendar for the week, such as the Monday plenary, of course. Then look for other workshops/demos, user sessions, related industries, of specific interest to you that can spur innovative new ideas and solutions that you can adopt. Try to plan your time to get the most out of the week, and then experiment in a purposeful way to gain additional value.

### Industries - National Mapping

How can I stay in touch with Esri and GIS developments relevant to National Mapping throughout the year?

The Mapping | Statistics | Imagery web pages are a great resource for what’s new and to see what your fellow users are doing. You can read user success stories, learn about new developments and watch videos. It is structured by topographic mapping, maritime, aviation, statistics, imagery and 3D, so you are sure to find stories and solutions for your specific areas of interest.

You can join in the conversation with Esri and your colleagues by networking, collaborating and sharing information in the GeoNET – Mapping and Charting community. Ask questions, get answers, and interact with your fellow users.

Subscribe to the Esri News for Mapping | Statistics | Imagery e-newsletter for new user success stories, technology updates and current events. Read how other Esri users are innovating, automating and transforming their organizations and contributing to their National GIS. You are invited to tell your story of how your organization is modernizing by submitting an article.

What trends and challenges does Esri see in National Mapping that may positively or negatively impact my work in the near future, and how can GIS help me?

Increasing expectations demand that you

- **Do more with less**

You are faced with staff and budget cuts, which is requiring you to automate your outmoded processes. You can no longer afford to use inefficient and redundant field collection and production processes. The ArcGIS platform enables you to collect information once, use it many times and share it in many ways.
• Produce authoritative content to solve your customers’ problems

Evolving customer expectations require you to change from serving static maps to dynamic, current, and interoperable Web GIS information products of higher quality in shorter times. Web GIS enables secure and quick delivery of your authoritative information to key stakeholders, allowing evidence based decision making across government and industry.

• Adapt to changes in information and technology

Organizations like yours are being overwhelmed with technology, information, and implementation. You’re dealing with increasing workloads from the volume, variety, velocity, and veracity of data sources and sensors. The ArcGIS platform enables you to harness technology and the four Vs of Big Data to effectively collect, manage, produce, and share your information.

• Manage and deliver data from a multitude of sensors

The explosive use of drones and proliferation of low cost, high-resolution imagery, and other sensor information requires effective enterprise imagery management and the need to serve large amounts of information products. ArcGIS provides the ability to quickly collect and manage imagery from drones and other imagery platforms by geoprocessing it on-the-fly and delivering a large variety of derived imagery products to decision makers.

What specific solutions does Esri or its partners have that apply directly to National Mapping?

Web GIS enables secure and quick delivery of your authoritative information to key stakeholders, anywhere, anytime and on any device, empowering evidence-based decision making across government and industry. ArcGIS is an effective platform for national governments to manage their modern, secure, and efficient production environments for national mapping, statistics, and imagery content, and the foundation of a National GIS. They can easily share their content as information products and apps to anyone they choose in Esri’s Web GIS, part of the ArcGIS platform.

ArcGIS provides self-service online map production from your dynamic data to anyone in your organization for

• Production Mapping – Empower your customers with high-end cartography on the web with Esri Production Mapping for Server.

Maritime Charting - Enable your customers to visualize all your Electronic Navigational Charts (ENC) at once in a dynamic, seamless, online service using ArcGIS for Maritime: Server.

The ArcGIS platform enables you to harness technology and information to effectively collect, manage, produce, and share your foundation data. Automating and streamlining production processes with ArcGIS empowers your organization to deliver information quickly and at lower cost. Creating multiple data products from one platform with ArcGIS enables you to collect information once, and share it many times and in many ways. Esri provides solutions for

- **Production Mapping** - Optimize your map production and improve the quality and value of your geospatial output through standardization, repeatability, and configuration of your production processes. Esri Production Mapping helps you create and maintain large amounts of specification-driven GIS data and maps on strict schedules.

- **Defense Mapping** - Streamline your end-to-end data extraction and cartographic production activities with Esri Defense Mapping enterprise production management tools and workflows. Respond rapidly with data changes, updating critical web services, and publishing updated map products.

- **Maritime Charting** - Efficiently consolidate nautical chart production for digital and paper charts from the same data, to accelerate editing and maintenance times with ArcGIS for Maritime: Charting. Through automation, fully compliant Electronic Navigational Charts (ENCs) can be created with the click of a button, and paper charts are ready for cartographic finishing in minutes, saving time and money.

- **Maritime Bathymetry** - Easily manage massive amounts of raster and point bathymetric data with ArcGIS for Maritime: Bathymetry for better decision making and to reduce the costs of redundant data. The solution provides spatial analysis tools that allow you to realize the true value of your bathymetric data by analyzing it in a geographic context.

- **Aviation Charting** - Increase your aeronautical chart production efficiency by generating and managing many different types of charts from one central, database-driven system with ArcGIS for Aviation: Charting.

Implementation services are available through Esri Professional Services to assist you in reducing your production costs and achieving higher throughput to meet your customer’s deadlines. They can enable you to produce a flexible range of products to meet new customer needs through automation, while
achieving the quality you require. Initial operating capabilities can be realized in as little as one week. Implementation services can then be done in a phased approach to build on the initial success and spread it across your organization. This groups keeps pace with Esri’s state-of-the-art development enabling users to leverage the latest Esri technology allowing you to be more effective and efficient in delivering information to your customers.

Esri has a full spectrum of partners working in the Mapping | Statistics | Imagery industry that complement and extend the ArcGIS platform. Many of them will be exhibiting in the Esri User Conference Expo.

What is Esri doing to support the use of S-57 and other maritime data types in ArcGIS?

Esri offers many solutions for your S-57 Electronic Navigational Chart (ENC), Additional Military Layers (AML), and Inland ENC (IENC) dataset needs including production, analysis, visualization, and dissemination throughout the ArcGIS platform.

ArcGIS for Maritime: Charting provides simple and efficient tools and workflows for the production of S-57 datasets as well as largely automated paper chart production from a single source of vector features. This one-feature-to-multiple-products concept allows producers to increase productivity while reducing the number of edits to the geodatabase. This production environment can also be used to analyze your data using a variety of geoprocessing tools, visualize your data using the international standard S-52 or customize your symbology, and disseminate your data by publishing web services in ArcGIS for Server.

ArcGIS Runtime SDK for WPF contains the Hydrographic Layer, which allows you to build custom applications for the visualization and analysis of S-57 datasets. S-52 is used to visualize your data.

ArcGIS Data Interoperability gives you the ability to load S-57 datasets into ArcMap as well as into a geodatabase for analysis.

Esri S-57 Viewer is a free add-on to ArcMap that provides users the ability to visualize data using S-52 and analyze it using a variety of geoprocessing tools.

At 10.3.1, Esri released ArcGIS for Maritime: Server and this new product brings Nautical Charts to the public and into the hands of everyone in the organization. It enables securely sharing S-57 datasets, including AML, Inland ENC, and encrypted S-63 ENCs as standard web services that can be consumed in the ArcGIS platform, and by any OGC WMS compliant client, extending the use of this rich content data...
beyond its traditional use for safety of navigation in the bridge of a ship into the GIS world for analysis, planning and decision making while combining with other data sources.

At 10.4.1, this ArcGIS for Server extension adds support for the AML 1.1.3 Portrayal Specification to support NATO customers and additional coordinate systems including Polar Stereographic to support the Arctic region.

How can I make the most out of my visit to the UC?

Esri has a number of activities designed to benefit the mapping, statistics and imagery industry. These are listed in detail in our Mapping | Statistics | Imagery UC activities

• The Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole
• The National GIS Executive Forum and the Imaging and Mapping Forum begin prior to the UC on June 25 and 26 and flow through the entire week of UC.
  • The National GIS Executive Forum (NGEF) is by invitation only to chief executive officers and their senior managers from national agencies, who are responsible for mapping, imagery, statistics, surveying, cadastre and land administration. Executives from these national organizations are encouraged to request an invitation here.
  • At the Imaging and Mapping Forum (IMF) you will learn about capture and mapping technologies using imaging, Lidar, 3D, and multidimensional analysis and modeling to solve organizational challenges. Discover new innovations that enhance use of Big Data and take advantage of the opportunity to share, learn, and network with industry thought leaders.
• Visit the Mapping | Statistics | Imagery community in the Government neighborhood in the Esri Expo in Hall B-2, on Tuesday-Thursday. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific solutions.
• At the Expo, go to one of the National Mapping Envisioning Center Sessions and renew your vision for how ArcGIS can transform your organization.
• Tuesday-Thursday, attend moderated paper sessions to hear success stories from your colleagues solving challenges that are similar to yours. Each of the following tracks have multiple paper sessions that are sure to stimulate your interest in: National Mapping, Imagery, 3D and Spatial Data Infrastructure.
To help you quickly choose the activities directly relevant to you and our industry, we created three separate UC events and activities documents, one each for mapping, statistics and imagery. In them you will find the days, times, and locations of the following sessions related to our industry:

- Special Interest Groups
- Technical sessions
- Demo theater presentations

You can find these and many more of the Mapping | Statistics | Imagery industry focus events and activities at:

- National Mapping
- Statistics
- Imagery and 3D

Industries - Petroleum

How can I stay in touch with developments relevant to the Petroleum industry throughout the year?

We are committed to supporting the specific and dynamically changing needs of the Petroleum GIS community. To do so effectively is a challenge, when the community is so diverse in terms of technology adoption, workflow focus, IS/IT policies, geographic differences, etc. Over the past 20 years working very closely with members of the community, we have developed an extremely active and engaged Petroleum User Group (PUG), with a great structure and communications methodology, which reinforce a constant state of collaborative exchange. Here’s how you can stay in touch with relevant developments and activities:

Follow Online Information Channels: Including Esri Industry web pages where you will find case studies, partner solutions, specific offers, an online marketplace containing petroleum specific apps, support for community initiatives, upcoming webinars, opportunity to register for an e-mail newsletter, links to tech issues hosted on Ideas or GeoNet, etc. Also, the PUG web-page and LinkedIn blog site, where you’ll find members of the community sharing trends, ideas, and developments in open online forum.

Attend Petroleum User Group Events, for example the recent Esri Petroleum GIS Conference or regional
PUG events held in your area. You can find out about those from the PUG website, where you will also find information about how to become a PUG Member, information about recent workflow and technical subjects reflecting active Petroleum trends, links to relevant social media feeds, etc.

What Trends and Challenges does Esri see in the Petroleum industry that may positively or negatively impact my work in the near future?

**Oil Price** - The overriding challenge for the industry at the current time is of course the low oil price, which has resulted in lower revenues, a dramatic drop in drilling activity, and has severely constrained budgets. Creating operational efficiencies and demonstrating clear ROI has become key for large and small operators alike, but particularly with respect the smaller US shale companies. We are working with many clients that are using GIS to realize significant improvements in everyday workflows from land management, to field logistics/mobility, and HSE.

**Technology** - In the longer term it seems clear that companies are looking to technology to provide them an edge. Many have active (if delayed) digital oilfield projects that look to integrate the benefits of IoT, cloud, Big Data, real-time feeds, mobility, and dashboards. We are active with several companies in this regard and anticipate a significant increase in the use of GIS by US operators - as companies realize the benefits of truly web-based GIS, greater workflow alignment, applications integration and the power of mobility - with GIS capabilities provided anywhere, anytime, and on any device. We believe that those companies that strive for prudent investment even in the downturn will be poised to take considerable advantage as budgets and drilling schedules gradually return.

**Staffing** - The downturn in budgets, coupled with the increasing pace of technology change is helping to fuel (pun intended) the ‘great-crew change’, where long-serving experienced staff are replaced by younger, perhaps more ‘agile’ younger staff with different skill sets. Debate abounds regarding this Phenom, based on your perspective of course; but on the positive side for the Petroleum GIS community, there appear to be plenty of opportunities in related fields to weather the current hiatus. Of course, O&G will be back, as will a hiring frenzy, and those that have used the time wisely to improve their skills will hopefully be rewarded. We are working aggressively with the PUG community to increase various support mechanisms for Oil and Gas GIS professionals in these difficult times, such as regional petroleum seminars, online webinars and e-learning options, creating a PUG Fellows and Young Professionals Network (YPN), connecting with appropriate Universities, and supporting personal use licensing for just $100 annually. (Free for first year if you have been laid off from your employer.) See the ArcGIS for Personal Use section on [www.esri.com/petroleumpersonaluse](http://www.esri.com/petroleumpersonaluse).
What specific solutions does Esri or Partners have that apply directly to the Petroleum industry?

GIS is now being applied to a very wide array of applications areas, across the whole oil and gas enterprise, from frontier exploration to retail site planning. While many of the new COTS capabilities being introduced are directly relevant to increasing value, allowing us to ‘do more with less’ (e.g., Web AppBuilder, Collector for ArcGIS, and Drone2Map for ArcGIS), there is still a considerable requirement for specific workflow-based solutions implementation. That’s where oil and gas focused solutions partners play a vital role.

We are lucky in oil and gas to have a tremendous cadre of dedicated partners with specialist knowledge of specific domain areas (such as exploration, pipeline, or HSE), technologies (such as imagery, big-data, or drones), or workflows (such as land records, logistics, or surveillance/COP). The PUG is working aggressively to define some of the more common workflows and share them within the community. We hope partners will step up and provide solutions that might be placed on the ArcGIS Marketplace or similar. A few have already been made available including Exprodat and Oceaneering.

Our goal at Esri is to help foster a vibrant and active partner community that builds applications on top of the Esri ArcGIS platform. This will augment the value of the COTS platform technology with workflow-oriented solutions that answer specific business challenges.

How can I make the most out of my visit to the UC?

There are many things going on at the UC. To help you filter the material that is directly relevant to your industry, we put together a Petroleum Guide to UC. This will point you to such things as:

- The Plenary Session (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Moderated user presentations in the Petroleum Track
- Technology workshops and demo theaters of interest
- Partners with relevant solutions that are on the Exhibit floor
- Petroleum/Geoscience Map Gallery exhibits, and a few general interest ones for fun
- Networking events and opportunities such as the Map Gallery and Industry socials
- UC guidance notes, like how to contact friends/colleagues, Thursday night party, etc.

We encourage all Petroleum oriented UC attendees to review the Petroleum Guide to UC and lock a few important things into your calendar for the week, such as the Monday plenary of course. Then look for
other workshops/demos, user sessions, related industries, of specific interest to you that can spur innovative new ideas and solutions that you can adopt. Try to plan your time to get the most out of the week, and then experiment in a purposeful way to gain additional value.

Industries - Public Safety

How can I stay in touch with Esri and GIS developments relevant to the Public Safety industry throughout the year?

The Public Safety industry team facilitates an active user community. There are several ways to keep in touch with each other and with Esri, to learn about new developments and user success stories. The industry web pages are a great place to find out what’s new and what your fellow users are up to. You can also run interactive demos and watch videos that highlight the latest public safety use cases. Additionally, every month the Public Safety team puts on a series of webinars ranging in topics from Emergency Management, Fire, Law Enforcement, or Emergency Call Taking that discuss the latest lessons learned, best practices, or highlight new technologies. Watch for upcoming events throughout the year, including special seminars presented by Esri technical staff, partners, and users. Finally, Public Safety has a robust presence on social media, and here is how you can stay connected:

- Follow GIS Public Safety on Twitter
- Join Esri—GIS for Public Safety on Facebook
- Follow EsriDRP on Twitter
- Join Esri—Disaster Response Program on Facebook
- Join Esri Public Safety on LinkedIn Groups
- Join the conversation on the Public Safety GeoNet Community

What trends and challenges does Esri see in the Public Safety industry that may positively or negatively impact my work in the near future, and how can GIS help me?

The 21st century is more complex, interconnected, and reliant upon technology than ever before. For leaders, this means executing adaptive and diverse mission requirements that differ from traditional workflows, where government agencies, departments, and staff of all ranks must adjust to fluid priorities and ever increasing mandates.
Modern security challenges range from local communities to nations and regions. Organizations must prepare for natural and technological disasters, criminal activity, public health emergencies, displaced populations, and social unrest—both foreign and domestic. They must account for political, economic, and social crises that can occur quickly and without warning.

The ArcGIS platform, and specifically Web GIS, offers a solution by liberating critical location data that was formerly trapped inside information silos and delivers it to all stakeholders on any device, anywhere, anytime. It provides collaboration with other entities for a smarter, safer, community. This saves time and resources by putting information directly into the hands of field responders and operations center personnel at the same time. You can now access data from previously closed systems, such as real-time sensor networks, weather services, records/crisis management systems, and critical infrastructure databases. This means you can respond more quickly, efficiently, and effectively whether you’re responding to a 911 call, fighting a fire, running a special event, or managing a complex incident.

What specific solutions does Esri or its partners have that apply directly to the Public Safety industry?

Esri offers many Public Safety Solutions and templates that can get you started in solving your challenges. Also, Esri’s extensive partner network offers additional solutions for specific workflows and processes, all utilizing the ArcGIS platform.

I have been using the Flex COP viewer - what should I move to?

Users of the Flex COP Viewer should migrate to the Situational Awareness collection of focused maps and apps included in ArcGIS for Emergency Management.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the Public Safety industries.

- On Monday, be sure to attend the Plenary Session (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the Public Safety neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- At the Expo, go to one of the Operations Theater sessions designed to illustrate the real-
world value of ArcGIS in a simulated Public Safety (Fire, Law Enforcement, or Emergency Management) situation.

- Attend one of the 5 Public Safety Interest Groups to hear the latest from your peers.
- Attend the National Security and Public Safety Summit (NSPSS) (formerly Esri Homeland Security Summit) on Saturday and Sunday. The NSPSS is the world’s largest geographic information system (GIS) event dedicated to homeland security, national security, and defense. It is attended each year by professionals from around the world, including executives, analysts, intelligence personnel, and frontline staff, to discover how Esri software, services, and partner agencies improve mission workflows.

To help you filter the material that is directly relevant to Public Safety industries, we created a Public Safety Guide to the UC. In it you will find:

- Moderated user presentations.
- Technology workshops and demo theaters of interest
- Partners with relevant solutions that are on the Exhibit floor
- Networking events and opportunities such as the Map Gallery and Industry socials
- UC guidance notes such as how to contact friends and colleagues, info about the Thursday night party, and more

Industries - Public Works

How can I stay in touch with Esri and GIS developments relevant to the Public Works industry throughout the year?

The public works industry has an active user community. There are several ways to keep in touch with each other and with Esri, to learn about new developments and user success stories. The industry web pages are a great place to find out what’s new and what your fellow users are up to. You can also run interactive demos and watch videos. To join in the conversation with Esri and your colleagues, scroll to the Public Works GeoNet group. There you can ask questions, post comments, and seek advice. Watch for upcoming events throughout the year, including special webinars presented by Esri technical staff, partners, and users.
Each year the Public Works user group gathers in the summer for the Public Works SIG Luncheon during User Conference to meet and network with Esri Staff, colleagues, and partners. The meeting will highlight new trends, topics, and technology in the public works industry, highlighting updates to ArcGIS for Public Works and workflow based solutions. This year, the luncheon will be held on Wednesday, June 29 at the San Diego Convention Center in Room 24 B.

What trends and challenges does Esri see in Public Works industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Public Works are facing many challenges associated with aging infrastructure, unfunded mandates, and changing workforce needs.

The ArcGIS Platform, and specifically Web GIS, liberates critical location data that was formerly trapped inside information silos and delivers it to all employees on any device, anywhere, anytime. This saves money by putting information directly into the hands of field workers and office workers at the same time. You can now access data from previously closed systems, such as real time data control systems, AVL, weather services, environmental services, and demographics. This means you can respond more quickly to customer issues whether you’re paving a street, collecting waste, or spraying for mosquitoes.

The weather extremes of drought and flood across the planet are significantly impacting all aspects of the business. The ArcGIS platform provides the perfect platform for analysis of sustainable supplies, situational awareness for the protection of life and property, and analysis of environmental sensor predictions.

As public works departments create more complex networks, ArcGIS is there to help. It gives you the tools to manage your networks. It provides collaboration with other entities for a smarter, safer, and more environmentally responsible community.

What specific solutions does Esri or its partners have that apply directly to Public Works industry?

You can find ArcGIS for Public Works solutions here: http://solutions.arcgis.com/local-government/public-works/. ArcGIS for Public Works offers several off the shelf configurable information products to meet the current needs Public Works Departments are facing. Maintain right of way assets; meet transportation and environmental quality needs; coordinate and plan capital projects; and operate parks, and government facilities in a safe and effective way. These templates help you support asset collection on mobile devices, engage constituents, and provide internal dashboards to monitor activities.
These templates include:

- Apps to Maintain Public Road Network
- Apps for Inventory Right of Way Assets
- Apps to Connect with Citizens
- App to Promote Public Parking
- Apps to Prepare for Incidents and Events
- App to Manage Snow Operations
- App to Maximize Capital Investments
- Apps to Maintain Facilities and Grounds

Find Esri partners exhibiting throughout the Solutions Expo. You can find a list of exhibitors here.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the public works industry.

- On Monday, be sure to attend the Plenary Session (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the Infrastructure neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.
- On Wednesday, June 29, attend the morning Public Works SIG luncheon at noon at the San Diego Convention Center in Room 24 B.

To help you filter the material that is directly relevant to public works, check out the Public Works Guide to UC.

Industries - Real Estate
How can I stay in touch with Esri and GIS developments relevant to the Real Estate industry throughout the year?

The Esri real estate special interest group on LinkedIn is one of the best ways to stay connected and network with other people in the community. This forum is regularly updated with news and information from Esri about industry trends, news, product developments and thought leadership. Esri has already done much of the hard work in making your organization more productive and profitable and the LinkedIn Group is the best way for real estate professional to find information on specific workflows, analytics, case studies, maps, apps, and templates to make you more productive in a matter of hours not months.

The real estate web page, www.esri.com/realestate also contains frequently updated information on videos, demos, articles, case studies and user references to keep you informed and up-to-date.

Esri News for Business and the month Bizness Bit newsletters deliver insight straight to your mailbox. You can subscribe at http://www.esri.com/industries/business/business-newsletter. The real estate team is also active on Twitter, Instagram, and LinkedIn – search for “Esri BizTeam” on any of these platforms to find and follow us.

Finally, come see us in person at the various industry events and tradeshows which can be found on our webpages and continually updated through LinkedIn and Social Media.

What trends and challenges does Esri see in the Real Estate industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Workplace transformation is impacting the way companies do business and think about real estate investments. ArcGIS improves the way you make decisions, prioritize investment and engage with clients.

C-Level executives and investors have Increasing ROI expectations from people, processes, and technology. Esri makes real estate information smarter and harder working with reusable maps than can go from the boardroom to table to printed flyer. It makes you more productive and profitable immediately. Innovation continues apace in commercial real estate and companies need to reinvest in technology to remain competitive. ArcGIS supports all the latest industry standards and technologies.

With increased competition and the globalization of CRE the need to share information has become a major focus. No matter how you work—smartphone, tablet, or desktop—you always have to enhance your
professional capabilities, and improve information access, on-site analytics, and data collection. ArcGIS makes it easy to collaborate across the organization, discover knowledge, and share information both internally and with clients.

**What specific solutions does Esri or its partners have that apply directly to the Real Estate industry?**

Esri has created specific solution offers for small, medium, and large real estate organizations that include everything you need to get going and continue to be successful. Find solutions and partners at [www.esri.com/realestate](http://www.esri.com/realestate).

**How does Esri provide market specific information?**

ArcGIS Online and apps such as Business Analyst and Community Analyst are loaded with thousands of data variables and hundreds of thousands of maps that you can combine to showcase your portfolio. These include demographic, expenditure, business, income, education, segmentation and much more. ArcGIS gives real estate professional a competitive edge with the best market insights and analytics.

With ArcGIS you overlay your data on ready-to-use maps, including local government data, risk, environmental, and real-time information from thousands of providers and authoritative sources. This gives you a better understanding of potential downsides and quantifies real opportunities.

ArcGIS analytics is more than simple reports. Analysis like “find similar facility,” closest office to employees, and geoenriched drive times help you discover relationships and patterns that connect the dots between your location and potential tenants or users.

**What is Esri doing with Big Data, IoT, Drones, and Web Solutions/SaaS?**

Esri continually updates and upgrades its software ahead of and in response to new trends and technology advances.

The Internet of Things (IoT) provides new ways of creating, communicating and analyzing data. It has changed how we work, think, and share information. Esri has long worked with Big Data to help intelligently consume and analyze data. IoT’s large data streams offer real-time insights and Esri is working partners such as Microsoft Corporation and others to integrate location services and spatial analytics so that you can turn raw data into wisdom. Learn more about [Esri and Microsoft Azure IoT Suite](#).
Drone2Map for ArcGIS turns drones into an enterprise GIS productivity tool. Users not only get video output to enhance marketing materials but the same data can be used to create new highly detailed map layers, 3D models and other professional imagery products in minutes, not days. All of these can be shared with any ArcGIS environment for further analysis and visualization.

Esri provides Software as a Service (SaaS) solutions to the commercial real estate industry. Business Analyst and ArcGIS Online provide everything you need to collect, discover, use, analyze, and create real estate data. Template apps and interactive web maps make it easy to share your analytics and insight with others in your organization, clients, and beyond. Built-in security keeps your data safe while ready-to-use content, apps, and templates make you more productive right away. Learn more about Business Analyst for Web and Mobile and all the features of ArcGIS Online.

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<tr>
<th>Does Esri have solutions for facilities management and corporate services?</th>
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<tr>
<td>Directly and through partners, we support corporate real estate services and facility managers. Our solutions help you:</td>
</tr>
<tr>
<td>• Maximize revenue from new and existing facilities OR properties</td>
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<tr>
<td>• Eliminate unnecessary facility OR property expenditures</td>
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<td>• Drive growth through fully informed site selection decisions</td>
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<td>• Optimize space planning and allocation for facilities OR properties</td>
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<tr>
<td>• Maintain your facility OR property portfolio at optimal condition and capacity</td>
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<td>• Reduce risk, plan for business continuity, and effectively manage change</td>
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<th>Does Esri have ready-to-use apps for Microsoft Office and Smartphones?</th>
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<tr>
<td>ArcGIS apps make you productive immediately and they work the way you do. You can:</td>
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<tr>
<td>• Capture photos, financial, structural and competitive insight on your mobile devices</td>
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<tr>
<td>• Turn pictures and property listings into dynamic marketing apps that showcase your portfolio</td>
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<td>• Identify market opportunities using global demographics, spending, market potential, and more with the Business Analyst Web and Mobile apps.</td>
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<td>• ArcGIS for Microsoft Office puts maps, infographics and demographic data into Excel and interactive maps into PowerPoint</td>
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Collect and share site and portfolio information on your iOS or Android devices with Collector for ArcGIS

Take apps you customized in the office out on the road and tell your story in a better way with Story Maps and more

How can I make the most out of my visit to the UC?

Here are some opportunities you should not miss at Esri UC:

- The Business Summit, taking place at the Hilton Bayfront 6/26-6/27 is packed with speakers from CBRE, JLL, CCIM Institute, Alvarez and Marsal, MacKenzie Real Estate and other real estate relevant sessions.
- Come relax, network, discover solutions, and meet partners at the Business Summit Expo (Hilton Bayfront, Saturday 6/25), Business Summit Social (Hilton Bayfront, 6/26), and Commercial Social (Hilton Bayfront, 6/28).
- On Monday, be sure to attend the Plenary Session (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the industry neighborhood located on the Expo floor, to speak to the real estate industry team, get your questions answered, share your ideas, see demos and get the latest product insights
- Come join your colleagues at the Real Estate Special Interest Group meeting Tuesday afternoon at the Hilton Bayfront and stay for the social.
- Join us at one of the UC Expo Envisioning Sessions taking place through the week which will show you best practice workflows and illustrate new ways to get more value out of ArcGIS.
- Check out the real estate paper tracks happening Tuesday and Wednesday in the Convention Center to hear real world implementation strategies, meet others who are putting ArcGIS to work and expand your knowledge.

For all the details, consult the Real Estate Guide to UC.

Industries - Retail
How can I stay in touch with Esri and GIS developments relevant to the Retail industry throughout the year?

Retailers, from analysts to key management, can stay in touch with Esri and ArcGIS developments through several venues:

- **Retail Special Interest Group Meeting (SIG)** - The Retail SIG is an industry led group that meets annually at the Esri User Conference. The SIG provides an opportunity for retailers to network and discuss how they use ArcGIS. The SIG is also a forum to bring forward key enhancements and requests for ArcGIS development teams. In addition to meeting at UC, the SIG holds quarterly conference calls throughout the year. While group logistics are facilitated by Esri staff, the meetings and content are 100% customer led.

- Esri’s retail customers can participate on LinkedIn in the [Esri Commercial Business Group](#).

Esri News for Business and the monthly *Bizness Bits* newsletters deliver insight straight to your mailbox.

What trends and challenges does Esri see in the Retail industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Here are the trends and challenges we see, and ways ArcGIS can help.

- **Big Data**: CIOs in retail are struggling with big data. The issue isn’t as much around gathering the data, but rather what to do with the vast stores of information they continue to accumulate: transaction-level data, supply chain data, and customer data. Research indicates CIOs are looking for solutions that enable them to consume, analyze, and derive insights from the data they have. ArcGIS can enable retailers to analyze and visualize their big datasets, deriving insights, and feeding analysis and results into operational systems in replenishment, planning, and store operations.

- **Information Security**: This is a top concern for every CIO in retail today. After a number of high profile data breaches retailers are reprioritizing development resources to build more secure enterprises. ArcGIS aligns with this strategy by providing the highest certifications for data security. In addition several configuration models are available to insure that none of a retailer’s proprietary geographic data leaves their organization.

- **Slowing Store Growth**: In Tier 1 and above, new store development has nearly stopped. Where once the big chains were opening 40 to 100 stores a year, today that growth is the best companies become limited to relocations and consolidations. Closing stores and
consolidating or exiting markets requires nearly identical workflows and GIS capabilities as new stores do. In order to best maintain market position and retain as much market share as they can retailers must leverage transfer models, sales forecast, and market share analysis to profitably consolidate or exit a market.

- The Rise of the Small Format Store: A true bright spot in the retail real estate and market planning space is the growth of the small store format. The re-urbanization of cities by millennials and baby boomers to urban neighborhoods is providing opportunities for small format, highly localized stores that in neighborhoods that are walkable or accessible by public transportation. ArcGIS supports site selection and market research by allowing retailers to bring geographic data, trade area analysis and their own market data into one platform to provide analysis and fast access to insights to make smart data driven decisions about a proposed new site, quickly and confidently.

- Big Data From a Business Perspective (as opposed to technology): Big Data provides retailers with an opportunity to extend their understanding of their markets, customers, stores, supply chain, vendors, literally their entire enterprise. Big Data gives insights when engaging with customers, or optimizing their supply chains is critical, and they understand this. For Esri, we help you connect Big Data with ArcGIS capabilities.

What specific solutions does Esri or its partners have that apply directly to the Retail industry?

Esri is fortunate to have number of partners that provide solutions to solve specific business problems and enable solutions that can be configured and installed quickly and efficiently, providing a fast past real business value. Among the solutions that our partners can provide:

- Routing and optimization of customer facing in home services and deliveries.
- Operational awareness and mobile workforce management
- Instore mapping and analysis of customer movement for dwell time and store space management analysis.

Find Esri partners exhibiting throughout the Solutions Expo.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the retail industry:
The Business Summit, taking place at the Hilton Bayfront 6/26-6/27 is packed with speakers from Chick-fil-A, Nike, World Duty Free, Dick's Sporting Goods and other retail relevant sessions.

Come relax, network, discover solutions, and meet partners at the Business Summit Expo (Hilton Bayfront, Saturday 6/25), Business Summit Social (Hilton Bayfront, 6/26), and Commercial Social (Hilton Bayfront, 6/28).

On Monday, be sure to attend the Plenary Session (morning and afternoon), which is critical for understanding Esri's direction and the conference as a whole.

Visit the industry neighborhood located on the Expo floor, to speak to the retail industry team, get your questions answered, share your ideas, see demos and get the latest product insights.

Come join your colleagues at the Retail Special Interest Group meeting Tuesday afternoon at the Hilton Bayfront and stay for the social.

Join us at one of the UC Expo Envisioning Sessions taking place through the week which will show you best practice workflows and illustrate new ways to get more value out of ArcGIS.

Check out the retail paper tracks happening Tuesday and Wednesday in the Convention Center to hear real world implementation strategies, meet others who are putting ArcGIS to work and expand your knowledge.

Experience technology workshops and demo theaters all week during the User Conference.

For all the details, consult the Retail Guide to UC.

Industries - Telecommunication

How can I stay in touch with Esri and GIS developments relevant to the Telecommunication industry throughout the year?

The telecom industry has a very active user community. There are several ways to keep in touch with other users and Esri, to learn about new developments and user success stories. The industry web pages are a great place to find out what's new and what your fellow users are up to. You can also run interactive demos and watch videos. To join in the conversation with Esri and your colleagues, scroll to the Telecommunication User Group (TELUG) LinkedIn Groups. There you can ask questions, post comments, and seek advice. Watch for upcoming events throughout the year, including special webinars presented...
by Esri technical staff, partners, and users.

Each year the Telecom User Group (TELUG) community gathers for its own user conference. This year, the EGUG and TELUG communities will join together at a single event called GeoConX. While the communities will share a venue, each will have their own unique program and events. What they will share are common services, such as data health checks, a common expo, socials and some Esri technical presentations. The event will be held October 17-20, 2016 at the Pointe Hilton Tapatio Cliffs Resort in Phoenix, Arizona.

For suggestions on enhancements, go to ideas.arcgis.com and submit your ideas.

What trends and challenges does Esri see in the Telecommunication industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Telecom companies face challenges that tend to fall into four major categories: revenue growth, competition, network transformation, and customer experience.

The ArcGIS platform, and specifically Web GIS, liberates critical location data that was formerly trapped inside information silos and delivers it to all employees on any device, anywhere, anytime. This puts information directly into the hands of all workers and levels of management. The entire organization can now access real-time data systems, weather services, environmental services, and demographics. This means you can respond more quickly to customer issues whether you’re engineering a fiber line, dealing with wireless installations or expanding cable service coverage.

As telecom build more complex networks, ArcGIS is there to help. It gives you the tools to manage your networks and provides a platform to collaborate other workgroups for a smarter, safer, and more environmentally responsible community.

What specific solutions does Esri or its partners have that apply directly to the Telecommunication industry?

Esri has provided ready-to-use maps and apps for Telecommunications that you can deploy with simple configurations. In addition, we work with a wide range of partners that provide services in three main categories.

1. Asset, work, and operations management: Esri is fortunate to have a variety of global
partners that enhance the already world-class professional GIS functionality of the ArcGIS platform. These partners offer tools for domain specific analytic applications and workflows, and integration with real-time support systems and design tools. In addition, these partners keep pace with Esri development so that users will be able to leverage the very latest in Esri technology.

2. Implementation services: Esri’s implementation partners provide long- and short-term implementation services. Services range from full enterprise GIS solutions that include all aspects of the ArcGIS platform from integration to provisioning, asset, work management, and real-time operational support systems for organizations such as a Network Operations Center (NOC) as well as others. Partners provide jumpstart capabilities of Portal for ArcGIS and ArcGIS Online as well as everything in between.

3. Data and data management services: Esri partners provide special telecom datasets while others provide data migration and conflation services.

Find Esri partners exhibiting throughout the Solutions Expo.

Can you tell me a little more about the road ahead for telecoms?

We are building the next generation of the utility network for electric, gas, and water networks. The first release will be available early in 2017. We expect to release technology for the telecom industry later, although partners could release something sooner through their own applications. The Utility Network project will

- Provide utility customers with the ability to model, edit, and analyze complex networks of facility infrastructure using all Esri platform clients
- Enable key modeling concepts to better support a true representation of what is on the ground, while fostering an easy exchange of network information with other mission critical systems
- Support highly responsive editing and analysis capabilities
- Support offline mobility capabilities including transactions in the field

When will you release the new utility network management technology?

The first release is planned for the first half of 2017. The initial release will target the electric, gas, and water domains, with data models available through the ArcGIS Solutions site. Telecom and other
industries will be targeted with later releases.

Partners will have the ability to provide data models for other domains with the initial release, but Esri will only target those listed above.

What is the best software release for managing the network data of utility and telecom customers today?

All telecom customers should move to the ArcGIS Desktop 10.2.1 release. They should remain there for the next few years. Customers should move to the latest release of all other Esri software. For specifics on the ArcGIS 10.2.1 for Desktop release, please see the What’s New topic here.

Since the initial release of 10.2.1, we and our partners continue to provide patches specifically targeting network management workflows with the 10.2.1 release. Esri has five Utility and Telco Update Patches (UTUPs) available with the sixth one available soon. Please check each patch on the support site for more information on the specifics of what went into each patch. Information on the fifth patch (the patches are cumulative) can be found here.

For more information on moving to ArcGIS 10.2.1 for Desktop (if you are not already there), please contact your Esri account representative.

Is Esri building mobile applications specifically for telecom customers?

Esri continues to advance how network data is collected, updated, and viewed in the field. Today, Esri has a series of configurable apps (Collector for ArcGIS, Explorer, AppStudio for ArcGIS) and ready-to-use templates to help telecom companies jumpstart their field deployments. Many users have had success with these templates and apps.

However, Esri’s out-of-the-box apps have limitations when it comes to working with the network data most telecom organizations want to see in the field. Partner solutions offer extended capabilities geared specifically for telecom workflows.

Going forward, Esri will continue to refine the core software based on the known requirements, provide out-of-the-box applications for generic workflows, and work with partners to provide applications specific to telecom workflows. Since mobile applications use Web GIS, they will not be significantly impacted by the migration to the new Utility Network.
How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest for the telecommunications industry.

- On Monday, be sure to attend the Plenary Session (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the industry neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.
- At the Expo, go to one of the Telecom Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.
- On Tuesday, attend the morning kickoff session. This 75-minute sessions applies concepts from the UC Plenary to the telecom industry.
- Tuesday afternoon check out the Birds of a Feather sessions to see what others in your community are doing in a fun interactive session.
- Join Esri industry staff and colleagues at the telecom social on Tuesday right after the Birds of a Feather sessions.
- Attend technical workshops that cover the ready to use maps and apps for telecommunications industry
- Attend the demonstration theaters in the Expo floor to learn more on how to configure the platform and solutions for your organization.
- Attend the technical workshops and demo theaters.

To help you filter the material that applies to the telecommunications industry, we created a Telecommunication Guide to the UC. In it you will find:

- Moderated user presentations in the Telecom track
- Technology workshops and demo theaters of interest
- Partners with relevant solutions that are on the Exhibit floor
- Networking events and opportunities such as the Map Gallery and Industry socials
- UC guidance notes such as how to contact friends and colleagues, info about the Thursday night party, and more
Industries - Transportation

How can I stay in touch with Esri and GIS developments relevant to the Transportation industry throughout the year?

Each of the five separate sectors within the transportation industry have active user communities and special interest groups dedicated to their specific mode of transportation. There are several ways you can stay abreast of the latest developments, share experiences with others in your market, and have an effective dialogue with Esri. The Transportation Industry web pages are a great place to find out what's new and what others are up to. There you can find great case studies, watch the latest user videos, and run interactive demos, each with a focus on your particular market. We also invite you to join the conversation on GeoNet, where individual groups are forming to exchange ideas, questions, and best practices. Specifically check out the group formed for DOTs and Roadway agencies. In addition, there are separate Special Interest Group meetings at the UC every summer that help connect you to other users in your community. This year we have combined our separate transportation summits in Europe into a single European Transportation Summit, and we hold a Rail Summit every year to support our North American rail users. If you are not receiving notices and invitations to those events, please let us know.

What trends and challenges does Esri see in the Transportation industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Large transportation agencies have long struggled with integrating information from across their organizations, and putting data into the hands of those who need it on a day to day basis. Often characterized as “silos of excellence,” information has often been stored in individual applications and business units, without effective ways of integrating that information for agency-wide use. In the past, agencies tackled those problems by creating data warehouses and data marts, which were difficult to create, and even more difficult to maintain.

But recent IT trends such as services oriented architectures and Web GIS have made the task of integrating and organizing information much simpler, and ArcGIS Online and Portal have made it easier to deliver that information to all employees in an easy to use format, on any device, anywhere and anytime. Esri has developed a suite of downloadable applications to help empower your field workers with easy to use data collection, inspection and work organization tools to help your agency become more efficient and productive. Easy to configure, you can have your field crews up and running in no time.
What specific solutions does Esri or its partners have that apply directly to the Transportation industry?

Esri is fortunate to work with a large number of industry leading companies who not only help configure our software to their customer’s requirements, but also have integrated solutions addressing many of the key business functions within transportation. We often talk of the infrastructure lifecycle in transportation, and we have partners with solutions to handle each of those stages of the lifecycle. We have partners, such as Citilabs, that specialize in the planning process, whether planning the most effective transit routes, future transportation demand or using Esri CityEngine to help design more sustainable and livable cities of the future.

To support those transportation users who manage linear assets, we have created Roads and Highways, which helps roadway agencies manage their complex linear measurement requirements, and which can manage any location, no matter how it is captured and stored. This includes address ranges, for those agencies that would like to have a single system to manage their location challenges. Together these trends are helping large transportation agencies move into an era of leveraging the information in their organizations to make better, data driven decisions about the transportation assets and resources under their control.

Almost all transportation agencies are moving to commercial off the shelf asset management solutions, and Esri integrates with almost all of the industry leading solutions, from SAP and IBM Maximo to Vueworks and Agile Assets to help you more effectively manage your assets. Esri has a full suite of easily configurable mobile applications, Apps for the Field, to help your agency connect your field workers to your inspection and asset management needs.

Esri also has a growing list of downloadable solutions for transportation agencies that are easily configurable to help you share roadway conditions, analyze crash information, and conduct asset inventories, among others. Together these Esri and partner solutions make it easy for you to rapidly bring the power of location intelligence to your organization.

How can I make the most out of my visit to the UC?

Start your experience at the UC by attending the Transportation Exchange, Sunday Evening at 7PM, Sapphire Terrace of the Hilton Bayfront Hotel. Meet other transportation colleagues, and Esri transportation industry staff in an informal setting to kick off your week. In addition, you can find these other events and sessions geared to the transportation community:

- On Monday, be sure to attend the Plenary Session (morning and afternoon), which is critical
for understanding Esri’s direction and the conference as a whole.

- Visit the Infrastructure Neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.

- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.

- On Tuesday, attend the morning kickoff sessions. These 75-minute sessions apply concepts from the UC Plenary to your industry.

- Come to the transportation sector Special Interest Group (SIG) lunch sessions to join others in your specific sector to hear presentations, and dialogue with others in your community.

- Check out the Birds of a Feather sessions to see what others in your community are doing in a fun interactive session.

To help you filter the material that is directly relevant to transportation, we created a Transportation Guide to UC. In it you will find:

- Moderated user presentations in the Transportation Tracks
- Technology workshops and demo theaters of interest
- Partners with relevant solutions that are on the Exhibit floor

Industries - Urban and Regional Planning

How can I stay in touch with Esri and GIS developments relevant to the Urban and Regional Planning industry throughout the year?

The Urban and Regional Planning industry has a number of ways to connect, meet like-minded folks, and stay current on trends. First there is the industry page where you can find the latest in articles and videos from users like yourself. There is also the Esri Insider blog. Just search for urban planning or geodesign and you’ll find thought provoking pieces you can comment on. There is also the GeoNet community, a place you can ask questions, start a discussion, or seek advice.

Another great way to stay on top of what’s happening in the Urban and Regional Planning space is to
meet up with us at an event. There is always the Government Community Development neighborhood in the exhibit hall at the Esri UC in San Diego, June 27-July 1. If regional planning is your thing, we will be at the National Association of Development Organizations Annual Training Conference in San Antonio, October 15 - 18, 2016. If design is your emphasis, you can catch us at the American Society of Landscape Architects Annual Meeting and Expo in New Orleans, October 21-24, 2016. For the latest in geodesign, there is the Geodesign Summit Europe, in beautiful Delft, Netherlands, November 1-2, and in early 2017, there is the Geodesign Summit at the Esri Headquarters, January 25-26.

We also have a series of webinars throughout the year covering how Esri technology is helping users to enhance the planning process. Topics like data driven decision making, smart community planning, 3D visualization, and more, are discussed by Esri experts and best-in-class users. To find out more about the webinars and what’s going on in planning, follow us at @esri_com_dev and @geodesignsummit.

What trends and challenges does Esri see in the Urban and Regional Planning industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Urban and regional planning is facing a number of major challenges. Some are driven from the outside, things like: 1) rapid urbanization or its inverse, shrinking communities, 2) resource scarcity, especially water, 3) extreme weather events and their impacts, 4) traffic congestion, 5) globalization and its impact on local economies, and 6) shifting demographics.

These drivers of change have spawned an enormous number of planning initiatives from green infrastructure and complete streets, to smart growth and smart cities, to innovation districts and new urbanism. The issues are complex and inherently geographic. Their solution requires inter-departmental collaboration and involves many stakeholders including other organizations and the public.

The ArcGIS platform, and particularly Web GIS, liberates critical data that was formerly trapped inside departmental silos. By setting this data free, it is possible to mash it up with other data to turn it into valuable information—the kind of information that decision makers need to make informed decisions. The result is context sensitive planning and decision making based on desired outcomes rather than emotions or gut feelings. This improves transparency and accountability making it easier to justify planning and policy decisions. It can drastically improve, not only the numbers of citizens who engage in the planning process, but the diversity of voices heard. Web maps and apps, available anywhere, anytime, and on any device is the future. It is now what people expect, and planning departments are going to have to modernize to meet this demand. The good news is that it is highly scalable. A town of 1,500 to a city of many millions can do it.
Planning in 3D is also becoming a need to have, as opposed to a nice to have. Most jurisdictions are buying both imagery and high resolution LiDAR data that is now being used to create 3D cities. This data is being easily consumed by CityEngine and ArcGIS Pro to visualize existing conditions, create new content, and evaluate the impact of proposed plans. A number of cities are using this approach to update their comprehensive plans and review land use change requests and specific plans.

What specific solutions does Esri or its partners have that apply directly to the Urban and Regional Planning industry?

The Urban and Regional Planning industry works with a wide range of partners that provide services in three main categories.

1. Urban and regional planning, including long range planning, land use change planning, district and master planning including public engagement.
2. Permitting, plan review, code enforcement.
3. GIS system integration, GIS strategic planning, GIS implementation

You can find Esri partners exhibiting throughout the Solutions Expo and by visiting our Esri Partner web page and doing a keyword search on planning.

Esri also has a number of ready to use or easily configurable planning and development templates on the ArcGIS for Local Government web site. There you will find great examples of how the ArcGIS Platform has been put to use to support common planning workflows. Many use these as good starting points for developing their own apps.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the urban and regional planning and economic development industries.

- On Sunday, attend a pre-conference workshop on geodesign.
- On Monday, be sure to attend the Plenary Session (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.
- Visit the Government Industry neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to
specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.

- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.
- On Tuesday, attend the morning kickoff sessions. These 75-minute sessions apply concepts from the UC Plenary to your industry.
- Check out the Birds of a Feather sessions to see what others in your community are doing in a fun interactive session.
- If you are a state or local government employee, join Esri industry staff at the State and Local Government Social, Wednesday from 5:30 PM - 7:00 PM at the Hilton Bayfront- Promenade

To help you filter the material that is directly relevant to your industry, we created the **Urban and Regional Planning Guide to UC**. In it you will find:

- Moderated user presentations in the community development, planning, or economic development tracks
- Technology workshops and demo theaters of interest
- Partners with relevant solutions that are on the Exhibit floor
- Networking events and opportunities such as the Map Gallery and Industry socials
- And the UC guidance notes such as how to contact friends and colleagues and info about the Thursday night party, and more

**Industries - Utilities**

**How can I stay in touch with developments relevant to the Utilities industry throughout the year?**

The electric and gas industries have a very active user community. There are several ways to keep in touch with each other and with Esri, to learn about new developments and user success stories. The [industry web pages](#) are a great place to find out what’s new and what your fellow users are up to. You can also run interactive demos and watch videos. To join in the conversation with Esri and your colleagues, scroll to the Electric and Gas Communities (GeoNet) and Electric and Gas User Group (EGUG). There you can ask questions, post comments, and seek advice. Watch for upcoming events throughout the year, including
special webinars presented by Esri technical staff, partners, and users. You can also find a number of LinkedIn groups for Esri Electric and Gas communities.

Each year the Electric and Gas User Group (EGUG) communities gather in the fall for a user conference. This year, the EGUG and telecom communities will gather together at a single event called GeoConX. While the communities will share a venue, each will have their own unique events. What they will share are common services, such as data health checks, a common expo, common socials and some common Esri technical presentations. The event will be held October 17-20, 2016 at the Pointe Hilton Tapatio Cliffs Resort in Phoenix, Arizona.

For suggestions on enhancements to Esri software, go to ideas.arcgis.com and submit your ideas.

What trends and challenges does Esri see in the Utilities industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Electric and gas utilities face challenges that tend to fall into four major categories: financial, customer service, employee issues, and compliance.

The ArcGIS platform, and specifically Web GIS, liberates critical location data that was formerly trapped inside information silos and delivers it to all employees on any device, anywhere, anytime. This saves money by putting information directly into the hands of field workers and office workers at the same time. You can now access data from previously closed systems, such as real-time data control systems, weather services, environmental services, and demographics. This means you can respond more quickly to customer issues, whether you’re hooking up an electric line, fixing a gas leak, or discovering cable service coverage.

Renewable energy is significantly impacting all aspects of the business. ArcGIS is the perfect platform for analysis of suitable sites, situational awareness of asset performance, and analysis of sensors predictions.

As electric and gas organizations create more complex networks, ArcGIS is there to help. It gives you the tools to manage your networks. It provides collaboration with other entities for a smarter, safer, and more environmentally responsible communities.

The electric and gas industries work with a wide range of partners that provide services in three main categories.

1. Asset, work, and operations management: Esri is fortunate to have a variety of global partners that
enhance the already world-class professional GIS functionality of the ArcGIS platform. These partners offer tools for domain specific analytic applications and work flows, and integration with real-time control systems and design tools. In addition, these partners keep pace with Esri development so that users will be able to leverage the very latest in Esri technology.

2. Implementation services: Esri’s implementation partners provide long- and short-term implementation services. Services range from full enterprise GIS solutions that include all aspects of the ArcGIS platform from integration to asset, work management, and real time control systems such as SCADA and Distribution Management Systems (DMS). Other partners provide jumpstart capabilities of Portal for ArcGIS and ArcGIS Online and everything in between.

3. Data management: Esri data management partners provide data migration and conflation services.

Find Esri partners exhibiting throughout the Solutions Expo.

What specific solutions does Esri or its partners have that apply directly to the Utilities industry?

Esri has provided ready-to-use maps and apps for Utilities that you can deploy with simple configurations. In addition, we work with a wide range of partners that provide services in three main categories.

1. Asset, work, and operations management: Esri is fortunate to have a variety of global partners that enhance the already world-class professional GIS functionality of the ArcGIS platform. These partners offer tools for domain specific analytic applications and work flows, and integration with real-time control systems and design tools. In addition, these partners keep pace with Esri development so that users will be able to leverage the very latest in Esri technology.

2. Implementation services: Esri’s implementation partners provide long- and short-term implementation services. Services range from full enterprise GIS solutions that include all aspects of the ArcGIS platform from integration to asset, work management, and real time control systems such as SCADA, Distribution Management Systems (DMS) and Network Operations Center (NOC) technology. Other partners provide jumpstart capabilities of the ArcGIS Portal and ArcGIS Online and everything in between.

3. Data management: Esri data management partners provide data migration and conflation services.
Find Esri partners exhibiting throughout the Solutions Expo.

Can you tell me a little more about the road ahead for utilities and telecoms?

We are building the next generation of the utility network. The initial release is planned for the first half of 2017 and will target electric, gas, and water networks. We expect to release technology for the telecom industry later (though partners could release something sooner through their own applications). The Utility Network project will

- Provide utility customers with the ability to model, edit, and analyze complex networks of facility infrastructure using all Esri platform clients
- Enable key modeling concepts to better support a true representation of what is on the ground, while fostering an easy exchange of network information with other mission critical systems
- Support highly responsive editing and analysis capabilities
- Support offline mobility capabilities including transactions in the field

What is the road ahead for the Schneider Electric ArcFM Solution?

Schneider Electric will continue to support and grow utility and telecom capabilities for network management, design, mobile, and operational awareness on top of the ArcGIS platform.

Network and Asset Management

Schneider Electric will continue to support and enhance Esri’s 10.2.1 environment, also known as the utility and telecom release, with new productivity tools, web-based tools, and improved network management. Schneider Electric is also working on a future release of the ArcFM Solution, known as ArcFM 11, which is being engineered to support a number of new technologies, including Portal and Esri’s upcoming utility network model. ArcFM 11 will continue to provide quality, utility-centric, ArcFM tools that improve productivity, add utility context to the network model and support best-of-breed system integrations.

Planning, Design, and Analysis
Schneider Electric also continues to grow the Designer product line as part of the ArcFM 11 series. This next-generation solution embraces a new paradigm of lightweight design applications that can move work between users, in the office and field, both within and outside of the company. These applications are being built on the latest ArcGIS platform technology and will leverage Portal for ArcGIS for user authentication and access to geospatial content. As the solution matures, engineering and optimization tools will allow designers to make better decisions and produce optimal designs based on configurable parameters.

The work on Designer HFC (Hybrid Fiber Coax) for the telecom and cable industry is an example of how Schneider Electric is making use of ArcGIS Runtime to build a highly performant, industry-focused application. Designer HFC allows Coax Engineers to easily design and draft nodes in a Hybrid Fiber Coax network, allowing them to build out greenfield designs and update existing nodes. The result is an engineer-assisted design tool that incorporates engineering calculations to provide an optimal layout on the fly.

**Field Mobility**

Full support for field work and mobility is a key tenet of the ArcFM Solution as Schneider Electric moves forward. ArcFM Mobile is an enterprise-ready geo-centric mobile solution built with purpose for utility field work, including redlining and various tasks such as inspections. Its most recent release leverages core Esri frameworks to support disconnected workflows that scale to large, tier 1 sized utilities. Its future release will soon support offline tracing.

**Operational Awareness**

Sharing information about the current state of the network across the organization is becoming more critical to utilities and telecoms. Along with updates to Responder, Schneider Electric will be providing greater operational insight by extending the Esri Solution Templates for Utilities to build out template-based solutions for electric, gas, water, and telecom workflows. Responder will also be leveraging the Web GIS model to provide quicker access to outage data during large-scale outages and apps that engage utility customers.

Schneider Electric is dedicated to delivering a quality, geo-centric solutions for utilities and telecoms and support the growing need for better technologies and patterns such as Web GIS, identity, the utility network, cross-platform mobility, and integrated workflows.
Is ArcGIS for Electric Utilities compatible with ArcFM?

Yes. The ready-to-use maps and apps included in ArcGIS for Electric Utilities can be used with ArcFM.

What should I do now in preparation for the new Utility Network?

1. Migrate to ArcGIS 10.2.1 for Desktop (if not already there), with the latest Utility and Telecom Update Patch.
2. Configure and deploy Portal for ArcGIS (on premises or ArcGIS Online).
3. Deploy the ready-to-use maps and apps for utilities.

When will you release the Utility Network?

The first release is planned for the first half of 2017. The initial release will target the electric, gas, and water domains, with data models available through the solution site (solutions.arcgis.com). Telecom and other industries will be targeted with later releases. Partners will have the ability to provide data models for other domains with the initial release, but Esri will only target those listed above.

I have heard different information on how difficult it will be to move from my current environment to the Utility Network. Should I be concerned?

No. We will provide data migration tools as part of the initial release. These tools will move data from your existing data structure to the new electric and gas data models. These tools will be available for free and will be supported.

Data migration always uncovers data issues. We recommend that prior to migration you test several pilot areas to see if there are any systemic data issues. We also recognize that some utility and telecom customers have built custom and unique data models. The Esri data migration tools will be available to be tailored by customers and partners to accommodate different data models.

The new network management technology has some additional capability, such as the ability to model devices with terminals. This capability simplifies the integration of GIS with systems such as Advanced Distribution Management Systems (ADMS). We are also working on making it possible to move data directly into the Utility Network and take advantage of the majority of new capabilities, while reserving other things (terminal support, for instance) to a later date as the needs of the organization progress.
We want all organizations to be able to take advantage of the rich set of capabilities coming with the network management technology, but understand there are some tradeoffs involved when it comes to the cost of migration. We are working diligently to balance these two and look forward to talking more about it at the Esri User Conference.

You talked about data migration to the Utility Network, what about applications?

Most of the applications that extend our current network management software are supplied by Esri partners. Partners are in the process of migrating their applications to the new network management technology. Once the data is migrated, applications from partners that have adopted the new network technology will work. Partners will be leveraging the additional functionality in the years to come, offering even greater capability.

As noted above, many custom mapping applications can be migrated now to Portal for ArcGIS with simple configuration, eliminating the costly maintenance of custom programs. One of the main objectives of this new project is to eliminate customization. The goal is to reduce the total cost of ownership.

The ArcGIS platform is based on Web GIS which heavily uses web services. Web services provide a simpler way of creating apps and maps. In addition, Esri has provided a rich set of developer tools such as Web AppBuilder for ArcGIS and AppStudio for ArcGIS to rapidly deploy apps, sometimes in a matter of hours or less.

What is the best software release for managing the network data of utility and telecom customers today?

All electric customers should move to the ArcGIS 10.2.1 for Desktop release. They should remain there for the next few years. Customers should move to the latest release of all other Esri software. For specifics on the ArcGIS 10.2.1 for Desktop release, please see the What’s New topic [here](#).

Since the initial release of 10.2.1, we and our partners continue to provide patches specifically targeting network management workflows. Esri has five Utility and Telco Update Patches (UTUPs) available for the ArcGIS for Desktop 10.2.1 release with the sixth one available soon. Please check each patch on the support site for more information on the specifics of what went into each patch. Information on the fifth patch (the patches are cumulative) can be found [here](#).

For more information on moving to ArcGIS 10.2.1 for Desktop (if you are not already there), please
contact your account representative.

Is Esri building mobile applications specifically for utility and telecom customers?

Esri continues to advance how network data is collected, updated, and viewed in the field. Today, Esri has a series of configurable apps (Collector for ArcGIS, Explorer for ArcGIS, and AppStudio for ArcGIS) and ready-to-use templates to help utilities jumpstart their field deployments. Many users have had success with these templates and apps.

However, Esri’s out-of-the-box apps have limitations when it comes to working with the network data most utility organizations want to see in the field. Partner solutions offer extended capabilities geared specifically for utility and telecom workflows.

Going forward, Esri will continue to refine the core software based on the known requirements, provide out-of-the-box applications for generic workflows, and work with partners to provide applications specific to utility workflows. Since mobile applications use Web GIS, they will not be significantly impacted by the migration to the new Utility Network.

How can I make the most out of my visit to the UC?

Esri is planning a number of activities of special interest to the electric and gas industries.

- Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.

- Visit the industry neighborhood located on the Expo floor. There you can talk to industry experts, see demos that solve industry business problems, and get directed to specific product technologies. Visit with the solutions team to discover the latest advances in the Esri solutions built specifically on the ArcGIS platform.

- At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.

- On Tuesday, attend the morning kickoff sessions. These 75-minute sessions apply concepts from the UC Plenary to your industry.
· Come to the EGUG (Electric and Gas User Group) lunch session to find out about this active community.

· Check out the Birds of a Feather sessions to see what others in your community are doing in a fun interactive session.

· Join Esri industry staff and colleagues at the Electric and Gas social on Tuesday right after the Birds of a Feather sessions.

· Attend technical workshops that cover the ready-to-use maps and apps for electric, water, gas, telecommunication, and small utilities.

· Attend the demonstration theaters in the Expo floor to learn more on how to configure the platform and solutions for your organization.

· Attend the technical workshops and demo theaters.

To help you filter the material that is directly relevant to, we created an Electric and Gas Guide to UC. In it you will find:

· Moderated user presentations in the Electric and Gas track

· Technology workshops and demo theaters of interest

· Partners with relevant solutions that are on the Exhibit floor

· Networking events and opportunities such as the Map Gallery and Industry socials

· UC guidance notes such as how to contact friends and colleagues, info about the Thursday night party, and more

Industries - Water Resources

How can I stay in touch with Esri and GIS developments relevant to the Water Resources industry
The water resources industry has a very active user community. There are several ways to keep in touch with each other and with Esri. To join in the conversation with Esri and your colleagues, visit the Hydro and Arc Hydro Communities on GeoNET. The Esri Water Practice also manages the Esri Water Resources LinkedIn Group as well as the Esri Water Meetup. GeoNET is the best place to ask questions, post comments, and seek advice. Meetup is great for upcoming events throughout the year, including special webinars presented by Esri technical staff, partners, and users.

The water resources web page is a great place to find out how GIS brings business value to the water resources industry. The industry pages provide case studies, videos and literature.

Each winter Esri hosts the Water Conference. The conference provides a forum to discuss how we can better manage water today and into the future. This year water professionals met in Austin, TX. We are planning to be in Florida for 2017 with an expanded flood symposium, see you there!

What trends and challenges does Esri see in the Water Resources industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Water Resource organizations are facing many challenges associated with the weather extremes of drought and flood, watershed management, water quality, and more.

The ArcGIS Platform, and specifically Web GIS, liberates critical location data that was formerly trapped inside information silos and delivers it to all employees on any device, anywhere, anytime. This saves money by putting information directly into the hands of field workers and office workers at the same time. You can now access data from previously closed systems, such as real time data control systems, AVL, weather services, environmental services, and demographics. This means you can respond more quickly to customer issues whether you’re pumping groundwater, monitoring a dam, or cleaning out detention basins.

The weather extremes of drought and flood across the planet are significantly impacting all aspects of the business. The ArcGIS platform provides the perfect platform for analysis of sustainable supplies, situational awareness for the protection of life and property, and analysis of environmental sensor predictions.

As water resource organizations create more complex networks, ArcGIS is there to help. It gives you the tools to manage your natural and built infrastructure networks. It provides collaboration with other
entities for a smarter, safer, and more environmentally responsible community.

What specific solutions does Esri or its partners have that apply directly to the Water Resources industry?

If you need help getting started with Esri technology, visit the Arc Hydro and Spatial Analyst resource pages. Both Arc Hydro and core ArcGIS functionality with the Spatial Analyst extension provide the tools necessary for advanced terrain processing, hydrographic analysis, and visualization in configured maps and apps.

There are also many partners that offer advanced solutions and services for the water resources industry.

1. Esri is fortunate to have a variety of global partners that enhance the already world-class professional GIS functionality of the ArcGIS platform. These partners offer tools for domain specific analytic applications and work flows, and integration with real-time control systems and design tools. In addition, these partners keep pace with Esri development so that users will be able to leverage the very latest in Esri technology.

2. Implementation services: Esri’s implementation partners provide long- and short-term implementation services. Services range from full enterprise GIS solutions that include all aspects of the ArcGIS platform from integration to asset, work management, and real time control systems such as SCADA, stream gauges, water quality and other environmental sensors. Other partners provide jumpstart capabilities of the ArcGIS Portal and ArcGIS Online and everything in between.

3. Data management: Esri data management partners provide data migration and conflation services.

4. Natural resource management and engineering services: Many of the ENR 500 companies provide hydrologic and hydraulic engineering services built on top of the Esri platform. Deliverables can be integrated directly into your enterprise GIS.

Find out what partners will be exhibiting at the Esri UC.

How can I make the most out of my visit to the UC?

There are many events and activities with a water focus at the Esri UC:

- Attend the Sunday Esri Water UC Meeting.
• Join Esri industry staff and colleagues at the Water social on Sunday night after the Esri Water UC Meeting.

• Be sure to attend the Plenary Session on Monday (morning and afternoon), which is critical for understanding Esri’s direction and the conference as a whole.

• Visit the industry neighborhood located on the Expo floor. Water team members will be in the Utilities neighborhood answering both water utilities AND water resources questions. There you can talk to industry experts, see demos that solve business problems, and ask about solutions that can support your needs.

• At the Expo, go to one of the Envisioning Sessions designed to illustrate the real-world value of ArcGIS in a simulated industry situation.

• Attend the Water Resources and/or National Hydrography Dataset Special Interest Group meetings.

• Identify and attend paper sessions that can provide peer feedback on topics pertinent to your goals.

To help you find your way to these events we have created a Water Guide to UC that lists:

  • Moderated user presentations
  • Technology workshops and demo theaters
  • Networking events and opportunities such as the Water social and Water UC Meeting

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**Industries - Water Utilities**

How can I stay in touch with Esri and GIS developments relevant to my industry throughout the year?

The water industry has a very active user community. There are several ways to keep in touch with each other and with Esri. To join in the conversation with Esri and your colleagues, visit the [ArcGIS for Water Utilities](https://community.esri.com/community/arcgis-for-water-utilities) and [Utilities and Communications](https://community.esri.com/community/arcgis-for-water-utilities) Communities on GeoNET. The Esri Water Practice also manages the [Esri Water Utilities LinkedIn Group](https://www.linkedin.com/groups/16351290-esri-water-utilities) as well as the [Esri Water Meetup](https://www.meetup.com/Esri-Water-Meetup/). GeoNET is the best place to ask questions, post comments, and seek advice. Meetup is great for upcoming events throughout the year, including special webinars presented by Esri technical staff, partners, and users.

The [water industry web page](https://www.esri.com/software/gis/water) is a great place to find out how GIS brings business value to the water industry.
industry. The industry pages provide case studies, videos and literature.

Each winter Esri hosts the Water Conference. The conference provides a forum to discuss how we can better manage water today and into the future. This year water professionals met in Austin, TX. We are planning to be in Florida for 2017.

What trends and challenges does Esri see in the Water Utilities industry that may positively or negatively impact my work in the near future, and how can GIS help me?

Water Utilities are facing many challenges associated with aging infrastructure, water supply (drought/flood), and funding.

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The weather extremes of drought and flood across the planet are significantly impacting all aspects of the business. The ArcGIS platform provides the perfect platform for analysis of sustainable supplies, situational awareness for the protection of life and property, and analysis of environmental sensor predictions.

As water, wastewater, and stormwater organizations create more complex networks, ArcGIS is there to help. It gives you the tools to manage your networks. It provides collaboration with other entities for a smarter, safer, and more environmentally responsible community.

What specific solutions does Esri or its partners have that apply directly to the Water Utilities industry?

If you need help getting started with Esri technology, visit the ArcGIS for Water solutions page. ArcGIS for Water provides maps and apps to maintain comprehensive water, sewer, and stormwater records; coordinate and plan capital projects; and improve the operations of utility networks that provide clean drinking water and protect public health. Get a jump start on providing value to your organization with our pre-configured maps and apps for water delivery, sewer collection and stormwater conveyance.
There are also many partners that offer advanced solutions and services for the water industry.

1. Asset, work, and operations management: Esri is fortunate to have a variety of global partners that enhance the already world-class professional GIS functionality of the ArcGIS platform. These partners offer tools for domain specific analytic applications and work flows, and integration with real-time control systems and design tools. In addition, these partners keep pace with Esri development so that users will be able to leverage the very latest in Esri technology.

2. Implementation services: Esri’s implementation partners provide long- and short-term implementation services. Services range from full enterprise GIS solutions that include all aspects of the ArcGIS platform from integration to asset, work management, and real time control systems such as SCADA, Distribution Management Systems (DMS) and Network Operations Center (NOC) technology. Other partners provide jumpstart capabilities of the ArcGIS Portal and ArcGIS Online and everything in between.

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