ASSOCIATION OF CANADIAN MAP LIBRARIES AND ARCHIVES
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GIS Trends

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Esri UC2021: Reporting from the world's biggest GIS event

Abstract

In this issue of GIS Trends we review the Esri User Conference (July 12-15, 2021), offered for a second year as a virtual event.

This year's Esri International User Conference (#EsriUC) was an excellent opportunity to get up to speed with technologies, take stock of where our institutions stand with GIS, set some goals, and enjoy many fascinating sessions.

The conference theme "GIS - Creating a Sustainable Future" no doubt hit home to most of us given recent extreme climate events across the globe.

The conference had 71,723 registered attendees from over 200 countries, with almost half (47%) from outside the United States. Over 2,500 Esri staff were in attendance, and the conference hosted 153 technical workshops, 251 user videos, 181 exhibitors, and 57 Special Interest Groups (SIGs).[i] The plenaries were open and technical workshops were free to students and Esri account holders. For those who registered for the conference, session recordings will be accessible at the UC web site for 90 days.

These were the top 10 favourite technical workshops, as reported by the conference organizers:

- ArcGIS API for Python: An Introduction
- ArcGIS Arcade: An Introduction
- ArcGIS Field Maps: An Introduction & What's New
- ArcGIS Field Maps: Migrating to Field Maps
- ArcGIS Online: Choosing the Right App
- ArcGIS Online: The New Map Viewer
- ArcGIS Pro Editing: An Overview
- ArcGIS Pro: Mapping and Visualization
- ArcGIS & Microsoft 365: Better Together
- Spatial Data Science in ArcGIS

These were the top 10 User Presentations:

- 30 Years of Census Block Geography and Data, by U.S. Census Bureau

- A First-of-Its-Kind Intelligent Water Network in Australia, by North East Water
- AI Training and Inferencing Processes for LiDAR Classification, by Exelon Utilities and ComED
- Asking the Right Questions: Framing a GIS Business Model for the Organization, by Clark Nexsen
- Best Practices for Biodiversity Mapping and Analytics, by NatureServe
- Bringing Sea Level Rise to Life using GIS and Python, by NOAA, NOS and CO-OPS
- Converting to the Utility Network at Chelan County PUD, by Chelan Public Utility District and Power Engineers
- Death to PowerPoint, In with Esri!, by US Army Corps of Engineers
- Detecting the Invisible: AI-Based Wetland Mapping, by Chesapeake Conservancy and Defenders of Wildlife
- Expanding ArcGIS Hub with Experience Builder, HTML and Illustrative Techniques, by Cobb County Government
- Flood Inundation Mapping Using GIS & Remote Sensing Techniques, by National Water Supply and Drainage Board

I was able to take in only a fraction of the conference sessions and workshops. Those interested in a comprehensive overview should check out the conference plenaries[ii] with Jack Dangermond, Esri staff and guests, and the "ArcGIS 2021: Technology Advances and Roadmap"[iii] session with Sud Menon.

Here are a few observations from the sessions I viewed. These are by no means representative of the entire conference.

ArcGIS Online New Map Viewer:

The new Map Viewer (formerly known as Map Viewer Beta) is out of beta as of its April release; Map Viewer Classic (formerly known as Map Viewer) is still available; AOL administrators can choose either as the default setting for their organization's primary viewer (worth keeping this in mind when planning for the fall term). The App launcher offers both so users can switch if they wish. Maps can be read in either viewer, but options that don't exist in Map Viewer Classic won't show up on the map.

There are lots of impressive enhancements in the new Map viewer, such as dot density styling, multi-element pop-ups, layer blending, group layers, vector symbols, charts (beta), map rotation, enhanced bookmarks, Sketch layers, label filters and classes, labels for clusters, clustering for more than 50,000 feature points, floor-aware map visualization, and more. Some functionality remains to be added to the new Map Viewer. For example, we were advised that Classic Map Viewer is still better for work with OGC WMS and WMTS layers and performing analysis.[iv] For more information on which map viewer to use check: https://doc.arcgis.com/en/arcgis-online/reference/faq.htm#anchor36.

ArcGIS Pro: There were many sessions on ArcGIS Pro, ranging from introductions to reviews of layouts and visualizations, 3D analysis, data analysis, geoprocessing, migrating from ArcMap,

using BIM data, using CAD data, cartographic production, defense mapping, editing, tips and tricks, the road ahead, and more.

The "Road Ahead" session and conference plenaries reviewed some of the ArcGIS Pro 2.8 enhancements (ArcGIS Pro 2.8 first released in May 2021). We were advised that this release focuses largely on performance and productivity as well as introducing some new capabilities. Some of the performance improvements listed include the 3D Terrain system, vector tiles in layout view, saving and opening large projects, geoprocessing improvements, multiple portal connections and sharing pane, working with Revit files, Feature Service initialization and append as well as numerous enhancements across the UI, drawing and analysis.

New feature functions for ArcGIS Pro 2.8 include the introduction of command search, support for image change detection using deep learning tools, new support to big data connections, data engineering, SAS-ArcGIS Bridge (allows integration of SAS statistical package) and tools to support PDF Accessibility.[v]

ArcGIS Pro 2.9 is due at the end of year and the release after that will be 3.0. The ArcGIS Pro Roadmap provides more information about near-term, mid-term and long-term enhancements.

I enjoyed the "ArcGIS Pro: Layouts and Maps Series"[vi] session: it reviewed new cartographic enhancements for layouts including options for blending, formatting legends, formatting map frames (including the ability to edit the vertices of map frames), and the ability to use the eyedropper selection tool for colour selection and to covert grids to features. The session also reviewed accessibility options for PDF layouts including the ability to add Alt Text information to map frames, chart frames, and pictures, export tagged pdfs, and add metadata. Other major functionality reviewed included building multiple pages from one layout (including demonstrations of spatial and bookmark options), and options for layout automation using Python and the ArcPy site-package.

ArcGIS Story Maps: "*ArcGIS Story Maps: What's New and What's Coming"*[vii] reviewed what's new in Stories, Collections and Themes. Within stories, we looked at the Story Map Builder including the Express Maps option which supports the creation of basic maps, and includes some nice drawing tools such as an annotation tool which offers the ability to curve arrows when labelling maps. The Story Maps Builder now includes many of the features once available only separately as individual classic templates as well as new options. Notably, sidecar, slide show, map tour, swipe and timeline (beta) are now available within one builder. The ability to include different style options within one story is huge! Also available for inclusion are an audio block and imagery gallery. Finally, new accessibility options for story maps were reviewed including the ability to set language of a story for screen reader detection.

Collections bring together stories, apps and files and are ideal for portfolios or when a story is too big and would be more effective if separated into parts. The theme builder was introduced in 2020, and supports customization of themes for stories – for example, in order to align with organization branding. Theme customization options include the ability to choose colour, an expanded list of fonts (this has gone from originally offering 14 fonts to now including the Google fonts library),

and other design elements such as buttons, quotes and links, and theme separators. It is also now possible to add organization logos to themes.

ArcGIS Field Maps: There were several excellent sessions on ArcGIS Field maps, and conference statistics showed that these were well received. By way of introduction, we learned that ArcGIS Field maps combines map viewing, data collection and editing, and location tracking into a single app replacing the functionality of ArcGIS Collector, ArcGIS Explorer, and ArcGIS Tracker (all to be retired in December 2021). ArcGIS Workforce and ArcGIS Navigator are to be incorporated over time. An overall product goal is to avoid organizations having to deploy multiple applications to complete a workflow. ArcGIS Survey123 and ArcGIS QuickCapture will remain as distinct apps.[viii]

ArcGIS Indoors: First released in 2019, this product caught my attention at last year's conference. It has many potential uses within universities, including wayfinding, location sharing, workspace sharing, facility asset management, back-to-work management and more. It would be wonderful to introduce the potential of Indoor GIS to university administration by showing them what we can do with this product in our library buildings. Note, however, that at this time if the product is to be used for administrative purposes (such as building operations), it needs to be purchased and licensed separately, outside of EIL agreements.[ix, x]

ArcGIS Arcade: Described as a "portable, lightweight, and secure expression language" Arcade is designed to use across ArcGIS applications including ArcGIS Pro, ArcGIS Online, ArcGIS Runtime API's and the ArcGIS API for JavaScript. It is especially used for visualization, labeling, pop-ups and calculations. It is not intended for building applications, running analyses, or automating tasks.[xi] I've referenced two blogs I found helpful which describe Arcade further and provide use cases.[xii]

ArcGIS Maps SDK for game engines: Check this out if you wish to use ArcGIS within game engines. ArcGIS Maps SDK integrates with Unity and Unreal Engine, the two major gaming software engines. This opens new doors for VR and ArcGIS including lots of possibilities for on campus. For example, it can support faculty interested in including immersive experiences in their curriculum.[xiii]

Esri Accessibility Special Interest Group (SIG): This was an excellent presentation[xiv] which summarized a great deal of information in one hour, including the status of Accessibility Conformance Reports (ACR) for a variety of Esri products and as well as examples of accessibility options added to ArcGIS Pro, Field Operations and Field Apps, ArcGIS Online. More information can be found here: https://www.esri.com/en-us/accessibility/overview.

Cartography: For those who have not experienced the conference's cartography sessions, they are an absolute must! They left me inspired and with lots of ideas. I looked forward to end-of-day "Mappy Hour" discussions with cartographers Edie Punt, Kenneth Field, Nathan Sheperd and their special guests. I also watched the "ArcGIS: Map Wizardry" technical workshop[xv] given by John Nelson and Kenneth Field. Just as in last year's 2020 session, the abstract began with a line worth quoting: "Sit back, and enjoy this inspiring cartographic ride!"

[i] Conference statistics, Top 10 Technical Workshops, Top 10 User Presentations taken from slides presented at Closing Session, Esri UC 2021 15 July 2021 and also provided at: https://community.esri.com/t5/user-conference-blog/esri-uc-closing-session-conference-stats-esri/ba-p/1079554.
[ii] Plenaries are linked to the Esri UC 2021 conference web site and also on the Esri Events YouTube channel.
[iii] *ArcGIS 2021: Technology Advances and RoadMap*, Sud Menon, Esri UC2021, 14 July 2021.
[iv] Information derived from: *ArcGIS Online: The New Map Viewer*, Chris Whitmore, Lauren Ballantyne, Zara Matheson, Esri UC 2021, Tuesday, 13 July 2021.
[v] Information on performance improvements and new feature functions derived from: *ArcGIS Pro: The Road Ahead* Craig Williams, Jim McKinney, Prashant Mangtani, Ty Fitzpatrick, Orhun Aydin, David Watkins, Nathan Shephard, Stefan Balbo, Aubri Kinghorn, Esri UC 2021, 12 July 2021.
[vi] *ArcGIS Pro: Layouts and Map Series*, Aubri Kinghorn and Jeff Barrette, Esri UC 2021, 14 July 2021.
[vii] Information derived from from: *ArcGIS Story Maps: What's New and What's Coming*. Aravind Sivasailam, Ashley Du, Jennifer Bell, Esri UC 2021, Wednesday, 14 July 2021.
[viii] *ArcGIS Field Maps: An Introduction & What's New*, Brent Pierce, Jeff Shaner, D'Maia Curry, Esri UC 2021, 12 July 2021.
[ix] License information was obtained outside the conference, and applies to Canadian higher education Esri Education Institution License (EIL) agreements. License terms are subject to change (check with your Esri representative).
[x] There were several sessions on ArcGIS Indoors. For an introductions see "ArcGIS Indoors: An Introduction" Andy Steward, William Isley, Beau Ryck, Esri UC 2021, 12 July 2021.
[xi] Information derived from *ArcGIS Arcade: An Introduction*, Allison Rost and Rudy Prosser, Esri UC 2021 12 July 2021.
[xii] https://www.esri.com/arcgis-blog/products/arcgis-online/data-management/your-arcade-questions-answered/#what-is-arcade and https://www.esri.com/arcgis-blog/?s=#arcade.
[xiii] For further information see: *ArcGIS Maps SDK for Game Engines: An Introduction, Adrien Meriaux and Rex Hansen, Esri UC 2021, 13 July 2021*
[xiv] *Esri Accessibility Special Interest Group (SIG)*. Panel: Arjav Badjatiya, Aubri Kinghorn, Charmel Menzel, Karl Frantz, Klara Schmitt, Roanan Harris, Jessica McCall, Esri UC 2021, Thursday, 15 July 2021.
[xv] ArcGIS: *Map Wizardry* John Nelson and Kenneth Field, Esri UC 2021, 14 July 2021.

GIS Trends: Note from the Editor

Submissions and Feedback

GIS Trends is a place to share ideas, observations and discoveries in the area of GIS and other spatial technologies. If you have something you would like to share please write to me. We also welcome feedback on GIS Trends articles. Proposals for articles and feedback should be sent to: bznamirowski@trentu.ca

Thanks for reading and contributing!
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