GIS: ‘Intelligent Nervous System For The Planet’

Using location services, GIS is ‘location intelligence’ that provides a master framework to give context and meaning to data. It layers various data around geospatial features, including things that move. Recent technological advances are creating an enormous impact across the broad geospatial community, enabling users to not only share their data, but to synthesize it into interesting collections of advanced information for the planet. Increasingly, maps and geographic information are being organized into all types of layers that help us understand almost everything about our world. This fast-growing trend has been adopted by hundreds of thousands of organizations worldwide, enabling more people to use GIS to explore the numerous geographic patterns about our world.

This recent evolutionary stride is transforming GIS into a system of distributed web services (shared by many organizations globally) that can be accessed and leveraged on the web by interested communities. GIS adoption and use are rapidly spreading beyond GIS professionals to become relevant to virtually everyone. Because all GIS items are shared web services, you can open and interact with any item by simply
referencing its URL. We like to imagine this global GIS as the “intelligent nervous system for the planet”. The more people are able to collaborate and share information, the stronger this GIS foundation becomes.

**Marrying technologies**

Spatial analysis and modeling have historically been a desktop GIS task. Traditionally, GIS commands and tools were used throughout the GIS community and compiled into geoprocessing scripts for scientific modeling and computation. With cloud computing, Python scripts and Jupyter, notebooks are rapidly being adopted for spatial analysis and data science for processing and analyzing this data across vast networks of cloud computing. These scripts are being taken to where data resides (in data cubes in the Cloud). Python scripts are also incorporating and applying Machine Learning, statistical modeling and Deep Learning logic, marrying these with all kinds of other scientific computing methods.

Meanwhile, IoT networks are providing rich observations in these Cloud networks and data is being integrated into rich spatial analytics. Geoprocessing and maps provide the integrating language of GIS. Esri’s ArcGIS platform includes over 1500 tools that can be used to program sophisticated analytical, data science and automation workflows. These can be integrated with other scientific tools to develop advanced analytic results.

**Investing in innovation**

At Esri, our goal has always been to focus on the changing needs and aspirations of our users. We are a strong business with a stable financial foundation for supporting the work we do. However, we do invest heavily in building and enabling GIS software. Each year, we invest about one-third of our revenue in advancing our fundamental technologies. We also work hard to develop training and support, books, blogs and newsletters for helping our professional community stay current.

User adoption of the ArcGIS Online Web GIS throughout the world is increasing at an annual rate of close to 30%. Currently, this community
is generating 2-3 billion online maps daily. It has created and shared over 27 million items in its collective Online GIS, and the rate for adding new items in 2019 exceeded 40%. This information sharing ethic has added tremendous value to the ArcGIS platform.

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