Measuring the future of cloud-based GIS analysis

by Rudolf de Munnik, Esri South Africa

Abstract

The cloud is growing in importance for GIS professionals, with cost efficiency, scalability, and flexibility as major drivers. We can see the beginnings of cloud options for many organisations with the ability to utilise the ArcGIS technology as Software as a Service (SaaS) by running ArcGIS Server in the cloud and also via Esri’s managed services in the cloud.

ArcGIS Online is a key part of the Esri vision for ArcGIS in the cloud for making and sharing maps, apps, and other resources, and organising online communities. Organisations and users can subscribe to online services such as geocoding, spatial analytics and infographics and publish results through dashboards and various smartphone platforms to reach the public, planners and decision makers.

GIS is changing the way geographic information is managed by information managers and GIS professionals accessed by their organisations. This complete GIS further integrates desktops, servers, mobile, and web applications and provides additional tools and infrastructure for extending the reach of existing GIS implementations. With new GIS functionality, organisations can transition to next-generation GIS platforms without jeopardising current GIS investments.

Introduction

The cloud is growing in importance for GIS professionals, with cost efficiency, scalability, and flexibility as major drivers. We can see the beginnings of cloud options for many organisations with the ability to run ArcGIS Server in the cloud and also via Esri’s managed services in the cloud. On a similar, but yet somewhat different and exciting frontier, ArcGIS Online is a key part of the Esri vision for ArcGIS in the cloud. However, up until recently the focus for ArcGIS Online has been on the data part of GIS – making and sharing maps, apps, and other resources, and organising online communities.

At the 2012 Esri International User Conference we introduced new ArcGIS Online capabilities – hosted services from Esri that enable anyone, not just GIS professionals, to be able to publish Web services using CSV files, shapefiles, and other sources. These capabilities also enable GIS users to publish maps via hosted services directly in the cloud from their ArcGIS Desktop, leveraging data in their enterprise and making ArcGIS Desktop the premier dashboard for Web Publishing.

Emerging ArcGIS Online capabilities will enable anyone to publish geographic information in an efficient, scalable, and cost-effective manner. And perhaps most importantly, they will make publishing GIS services that can be accessed by anyone easier than ever before. During the Esri User Conference plenary Jack Dangermond spoke about the evolution of ArcGIS Online, and demonstrated new capabilities that included publishing web services directly via ArcGIS Online and ArcGIS Desktop.

Fig. 1: ArcGIS as a cloud platform.
This new architecture enhances GIS data management and information interchange and supports emerging Web services, GIS portals, and spatial data infrastructures (SDIs). The result of these engineering efforts, ArcGIS, is based on key interoperability and Web computing concepts.

**ArcGIS as a complete integrated system**

The measuring of the future of cloud based GIS analysis is built on the following pillars: data management, planning and analysis, field mobility, visualisation and collaboration. The implementation of the ArcGIS platform as a cloud solution depends on how successful the pillars of the system have been established. For the purpose of this paper the focus will be on the data management, field mobility and visualisation.

**Data management**

Integrating multiple data sources is often crucial to building a system or completing a project. ArcGIS supports this need for interoperability with various data formats through ArcGIS Data Interoperability. The interoperability functionality eliminates barriers to data sharing by providing state-of-the-art direct data access; data translation tools; and the ability to build complex spatial extraction, transformation, and loading (ETL) processes.

ArcGIS Data Interoperability allows you to use any standard GIS data, regardless of format, within the ArcGIS for Desktop environment for mapping, visualisation, and analysis.

The workbench application, included with the extension, enables you to build complex spatial ETL tools for data validation, migration, and distribution.

With ArcGIS Data Interoperability, you can directly read more than 100 spatial data formats, including GML, XML, WFS, Autodesk, DWG/DXF, MicroStation Design, MapInfo, MID/MIF and TAB, Oracle and Oracle Spatial, and Intergraph GeoMedia Warehouse, and export to more than 70 spatial data formats.

**Field mobility**

ArcGIS Mobile helps organisations deliver GIS capabilities and data from centralised servers to a range of mobile devices. You can use ArcGIS Mobile to deploy intuitive and productive mobile GIS applications to increase the accuracy and improve the currency of GIS data across your organisation.
Easy-to-use ArcGIS Mobile applications enable field staff that do not necessarily have any GIS experience to do mapping, spatial query, sketching, GPS integration and GIS editing.

![GIS field mobility](image1)

**Fig. 4:** GIS field mobility.

**Visualisation**

The operations dashboard for ArcGIS provides a common operational picture for monitoring, tracking, and reporting an event or system of events across a group of people within your organisation. Focus on aspects of the event or activity that matter most to you. Monitor services, deliveries, people, and more, anywhere in world.

![Common operation picture](image2)

**Fig. 5:** Common operation picture.

The operations dashboard application leverages responsive maps and dynamic data which update automatically as underlying information changes. Create and share operational views that include interactive maps, list charts, gauges, and other performance indicators based on live geographic data defined in a web map or web service.

ArcGIS Online subscribers can install the operations dashboard via a click-once deployment without the need for administrator rights.

**References**


Contact Rudolf de Munnik, Esri South Africa, Tel 011 238-6300, rdemunnik@esri-southafrica.com