Q&A withâ€¦ Clint Brown, Esri

To gain real insight into today's geospatial business landscape, '*GIM International'* decided to ask some of the sector's most influential companies for their opinions. This series of Q&As captures the current state of the industry from various perspectives, such as which technological and societal developments will have the most impact on the geomatics market, which market segments are the most promising and which areas offer the most substantial growth. The questions also explore the trend towards open data and open-source software. Here, Clint Brown from Esri shares his views.

Which technological developments will affect your product/service portfolio the most in the coming years?

Cloud computing is enabling an instrumented world where computing can be harnessed to analyse and respond to virtually any issue. We envision that GIS will be recognised as a key enabling information technology for most big IT initiatives in the coming years – essentially integrating location intelligence into large to massive enterprise and cloud-based systems and hybrid systems. GIS provides a comprehensive approach for working with virtually all information sources. Further, the data in each individual organisational GIS is being brought together virtually to create a comprehensive GIS of the world in the cloud. Each of us are creating and maintaining our own layers, and because all GIS layers register onto the Earth, we are also contributing to and assembling a larger societal GIS for our planet – our individual GIS systems of record are being integrated, extended and deployed as systems for insight as well as communal systems for engagement.

Which societal developments will influence your share of the geomatics market the most in the coming years? How and why?

GIS has evolved into an essential information technology and will be at the centre of major advances in computing. Geospatial systems and expertise will be essential for our planet's future. In the past decade, GIS has been expanding far beyond the professional GIS community. With the advent of apps, people everywhere began to use online maps – the foundation for shared GIS. Almost overnight, everyone began to recognise the power of GIS as an enabling information platform for improved understanding, decision-making, efficiency, communication and collaboration. GIS provides a geospatial framework to integrate and interpret results. Over the past few decades, the mass adoption of the internet has led to a glut of information that we have come to know as big data. GIS provides a geographic context to make sense of it all – while also providing the capability and the context to analyse that data in real time.

Which market segments are the most promising for your products/services?

The most interesting and exciting growth is in initiative-oriented and community-based systems. Communities are being formed around geographic locations as well as around common initiatives such as education, health care, environmental stewardship, smart cities, etc. Meanwhile, GIS is being applied in virtually every field of human endeavour, from helping businesses identify new customers to enabling our responses to natural disasters. The reach and influence of GIS is also expanding globally. GIS brings all digital content together and enables us to make interpretations to more deeply understand and to comprehend what is happening in a spatial context. For example, GIS maps help us to integrate IoT data feeds that will lead to deeper interpretation and understanding. GIS maps provide a framework for communication and understanding. Story maps have become a major revolution for GIS practitioners engaging with their communities. Over 400,000 story maps were shared publicly in 2017 across virtually every discipline, delivering critical messages and results in a very easy-to-understand way.

In which parts of the world do you envisage substantial growth in users of your products/services?

New social tools in the cloud and on apps have enabled broad global access and adoption of GIS. This is a key global implementation pattern that we see taking place daily and is expanding the comprehensive use of GIS everywhere. We see broad GIS growth everywhere globally with mature systems being implemented now in North America and Europe, and these systems will continue to expand and mature in the next few years. Meanwhile, we see an expected lag in global adoption of web GIS and apps in other parts of the world. Something new in the near future is the capability for web GIS and mobile apps to be adopted and implemented much more rapidly than past information technologies. This is driven by cloud computing and apps on smartphones and other devices.

Open data is becoming increasingly available all over the world. How will this trend affect your business?

Open data will fuel the growth and relevance of GIS everywhere. Recently, computing has become more collaborative and social. With cloud computing and the mobile/app revolution, the GIS community has expanded to include almost anyone on the planet. The data in every individual organisation's GIS is being brought together virtually to create a comprehensive GIS for the world, made accessible on the web. Today, nearly everyone can take GIS with them everywhere they go on their tablets and smartphones. Now everyone can access each other's geographic information as URLs on the web. Their results are being shared using maps and apps on the web and smartphones. The ArcGIS Living Atlas of the World reflects these data-sharing trends, enabling users to build on each other's good work and to share their most creative ideas with others.

Will the tendency of increasing use of open-source software be a threat or an opportunity for your business?

This is definitely an opportunity. The ideas, concepts and motivations behind open-source programming provide the hope that we can work

together and collaborate. Of course, our view is that both commercial systems and open-source systems can be used together to orchestrate the best available solutions for real users with real problems to be addressed. The guiding principles of 'open' and communities have always been fundamental motivators throughout the geospatial community. GIS continues to expand and grow rapidly, limited only by our imagination and commitment to implement meaningful solutions for the world. The demand for apps and opportunities for developers to create new kinds of engagements for our users is unprecedented. Sharing of interactive, amazing, functional online maps has enabled GIS access by virtually everyone. The more opportunity there is for individuals and organisations to access this technology, the better and more comprehensive our global GIS solutions will become.

About Clint Brown, director of product Engineering, Esri

Clint joined Esri in 1983. Since then he has been a key participant in Esri's product development for over 30 years (including ArcInfo, PC ArcInfo, ArcView, ArcIMS, ArcGIS and much more). Clint continues to team with Esri's development leads to grow the product – initially from about a dozen organisations in the early days to over 350,000 organisations today. Clint also works on GIS implementation and concepts, writing extensively about GIS, contributing content to several books, white papers and presentations on GIS. Among the initiatives Clint's teams develop and release are: the ArcGIS Living Atlas of the World, Esri Story Maps and Esri Press publications. He remains passionate about developing and capturing new and evolving approaches and methods for GIS. Clint has published extensively on GIS throughout his career, from *Understanding GIS* to *The ArcGIS Book*, and *The ArcGIS Imagery Book*, as well as numerous articles and publications.