

Crowd Surfing the Augmented Reality Wave

By Tanya Charles

As a collective GIS community filled with self-labelled geo-geeks, two key industry drivers constantly limit us: data and technology.

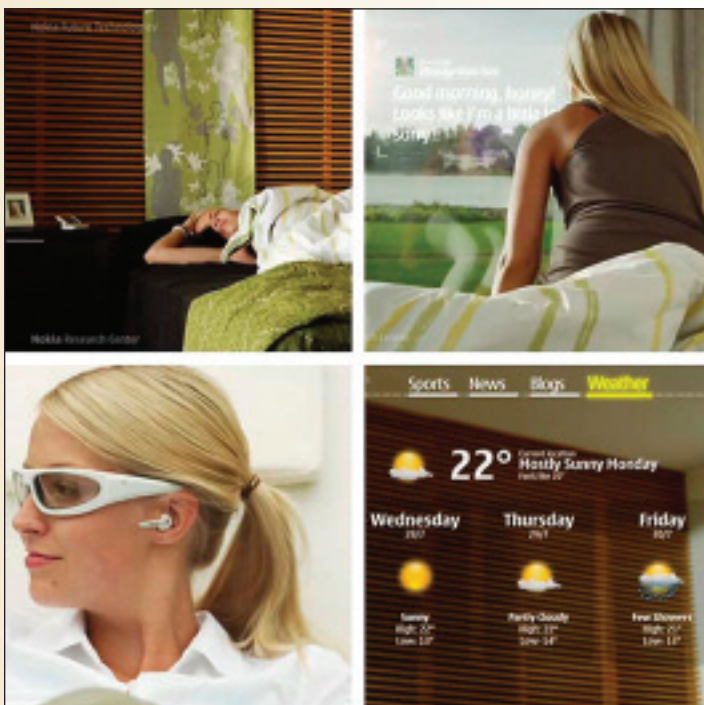
Fear not, as change is imminent and new technologies emerge daily. Lately we have seen the proliferation of smart phones, tablets, app stores, and social media. Geo-located information via Twitter, Facebook, and Foursquare is being gathered for free and used for both social and industrial applications. Flickr alone hosts over 100,000,000 geo-tagged photos. The big question is how to integrate new advances in hardware with relevant and meaningful information.

The hardware is coming. We all see the rapid rate at which hardware is developed and goes out of date. A pair of glasses, an earpiece, and a haptic wrist device will soon replace bulky computers. The goal of hardware producers is to make your access point completely seamless with your environment. Once we are able to wear our hardware as accessories, people will be truly 'plugged in'. Look at Bluetooth headsets, a seamless technology that when first released brought about jeers and laughter but has evolved to a functional accessory worn by the masses.

tion beyond traditional methods. The key to this is in facilitating crowd accelerated innovation. People will interact and learn from their environment in a new way. They will be immersed in the augmented reality of the digital world that they have helped build.

CloverPoint is doing this today. We have developed a 3D simulated campus with the University of British Columbia. It is a common operating platform for multiple agencies within UBC to create, share, and disseminate critical business data to support their decision making process. Architects, planners, and facility managers alike can visualize the impact of new buildings. Academics and sustainability teams will use this virtual world as a living lab to test various scientific hypotheses. The entire system is built to function online and is based on accurate 3D models built from engineering drawings and placed in real world space with real data pulled from GIS services into a 3D environment. A security module allows different users to have different levels of access (CRUD - Create, Read, Use, Delete) based on user group permissions. The system provides administrators with the capacity to do 2D and 3D space management in a controlled environment while other users may only have access to view the system and get building information. More information on Insight UBC can be found at the following link:

http://www.cloverpoint.com/pdf/2011_09033_UBC_PDS.pdf.



Virtual cities and campuses are the perfect venue for gathering instantaneous geo-located data from the public. This method of gathering data has been coined Crowdsourcing. Crowdsourcing is defined as the trend of leveraging mass collaboration enabled by Web 2.0 technologies to achieve business goals. Campuses are home to lots of young technologically savvy students with mobile devices and laptops distributed across the spatial extent of the study area.

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The next step in virtual space management involves integration with crowd-sourced information. Digital blueprints and images are linked to 3D buildings that connect to centrally managed web services. Class location and schedule changes can be augmented into student virtual environments so they can visualise the location change in their augmented environment in real time. No more getting lost on campus.

So, we agree, technology is cool but it can only take us so far without good data and data is costly and time consuming to collect. LiDAR, GPS, air photography, and field mapping are all expensive and lengthy processes. Technological advances in hardware are producing innovative data collection methods going far above conventional methods for gathering data and the results are amazing.

No longer are field crews delivering a series of lines to denote pipe location. They are using ground penetrating radar to determine pipe length, diameter, and location in 3D space and integrating this content into information management systems. The applications for this use alone are astounding. Think about how many times a year primary intersections are shut down due to pipe breaks and gas leaks. Utility crews could take a wireless device into the field to view pipe locations and what agency they belonged to before an excavation allowing for timely temporary turn-offs thereby avoiding costly delays and damage.




Stantec, a CloverPoint business partner, is using internal LiDAR technology to create 3D models of building interiors. The accuracy and format of this data makes it readily analysed and incorporated so issues can be identified before they happen. This means fewer electrical fires, pipe bursts,

and flooded basements. We are talking about a pipe network with intelligence based on solid foundation data. They aren't just pipes; they are pipes with a 3 dimensional location, compliance dates, manufacturer details, and material descriptions.

It is a lofty goal to have data like this accessible to everyone, but prepare to share as we are in the midst of a data paradigm shift. We see people sharing data from all levels of government, the public, institutions, First Nations, and private companies. Users are crying out for accurate, credible, and reliable foundation data available when people need it. The time for archaic expensive systems with disparate data that lack users is the past.

Embrace the crowd-sourced future. Enter the Web 2.0 world where information sharing, interoperability, and user-centered design provide a foundation for websites allowing users to interact and collaborate in a social media dialogue as creators (prosumers) of user-generated content in a virtual community. This contrasts the first generation of websites where users (consumers) were limited to the passive viewing of content created for them. The future of GIS data is in shared and augmented features manifested through crowd sourced accelerated innovation.



So where do you want to be when this paradigm shift becomes apparent to the general public: Clutching your ortho-digitized geodatabase with white knuckles, or at the leading edge blazing a path through the nuances of the spatial digital realm with people looking to YOU for guidance to a better GIS data future? 

Tanya Charles started with CloverPoint after finishing her degree at University of Victoria in 2007. Due to her passion for data and technology, and her determination to be an innovator and a leader, she is now the head of Clover Point's GIS department. She is an expert at Geospatial techniques and technology and is now CloverPoint's GIS Project Manager and Practice lead. She has been an integral component to the company through its evolution from a GIS analysis and Cartography Shop to a cutting edge software development company that integrates the importance of spatial relevance with slick programming and solid databases. You can reach her by email at tcharles@cloverpoint.com. For more information on CloverPoint visit <http://www.cloverpoint.com>.