

# Growth and Development: Enriching GIS Education, Experience, and Enlightenment

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## Abstract

The future state of geographic information systems (GIS) has long been a topic of discussion and debate for academics and practitioners alike. In literature spanning the eighties and nineties, the future state of GIS was captured, by the majority of authors, in terms of capability development in data management, modeling and simulation, multi-criteria decision support, and cartography.

Surveying the current state of GIS applications shows that most of these capabilities have been achieved, are nearing maturity, or have at least been addressed, albeit superficially. Data management is quite possible at the enterprise level, spatial modeling and simulation are beginning to take their well-deserved place in industry, decision support is somewhat lagging behind but making advances nonetheless, and cartography has long been handled well.

## Introduction

If we consider GIS as a system comprised of many components, for instance software, hardware, personnel, and data, then what do we identify as the next growth and development for geographic information systems? Software is offering more and more functionality “out-of-the-box” while also providing rich environments in which to extend functionality. Hardware, at one point seen as a limitation to GIS evolution, is now [more than] adequately meeting processing and storage requirements. Data acquisition techniques and technologies continue to improve and the resolution at which data may be obtained and retained has vastly escalated with time as well.

Spatial practitioners or GIS professionals, on the other hand, have they been able to stay abreast of all these changes? Are we, as an industry, providing tools without training, programs without purpose, and enhancements without education? Where does the geospatial industry go from here? Or, better yet, does our industry even need to grow and develop its technology further?

## Application versus Application

In yesteryears, if we were to address the issue of application versus application the ensuing debate would be one deeply rooted in the pros and cons of vendor specific technology. Within the lifecycle of most GIS implementations, the choice of software programs and platforms was a pertinent and pressing question leading to many head-to-head vendor digital dog-and-pony demonstrations.

Historically speaking an important choice to make, but now with software applications converging on open standards and common capabilities, the clear choice is becoming much more blurred. Is the issue of programs and platforms disappearing? Not entirely. Are GIS professionals finding the issue of application versus application easier to answer? No, but for the reason that the issue has transmogrified itself into a grander issue. The issue of application versus application still falls under the same name but its meaning has shifted from an issue of software applications to application of technology.

The geospatial industry has prepared itself well to handle the positives and negatives of various vendor wares, but how do we now prepare to handle the necessary infusion of GIS into the world of business? How do we promulgate the business benefits of GIS? How do we uncover suitable business challenges for which GIS was designed but has yet to be applied? How do we transform the traditional view of GIS as a software-centric system into the vision of an applied analytic environment?

## Business: Driving Force for Technology

Far too often geographic information systems are introduced into businesses as a tail looking for a dog to wag. Instead, the geospatial industry would benefit greatly from a technology hiatus and a reprioritization on reaffirming successful business applicability. Successful business applicability in the context of geographic information systems does not need to be tied to technology advancement; success can, and should, be linked directly to the applicability of technology to solving business problems.

If GIS success will be measured in terms of business or societal applicability then how do we prepare GIS professionals for this situation? The answer is not found in radically changing curriculum to transform GIS professionals into MBAs. Rather, a rigorous regimen of business vitamins that transitions GIS professionals from their knowledge of spatial topology to a connection with business needs. GIS professionals, as a virtual badge of merit, must be able to relay directly the business value of spatial eye-candy and translate this into the business bottom line.

In general, geographic information systems can provide immense amounts of value to business through applications in Risk Management and Assessment, Business Process Improvement, and Capabilities Creation. Does this mean we make GIS professionals savvy in all aspects of all businesses? No, for it is far too lofty to make this an end goal. Another approach is to encourage GIS professionals to become deep generalists; an approach that has worked well in other professions requiring constant development of skills, knowledge, competence, and credibility. Deep generalists will have a broad understanding of many topics with an adequate level of skills in each subject area to add value to a business. These folks will know, at a minimum, how to capitalize on the knowledge of subject matter experts to make connections between GIS the technology and GIS the business solution.

## Ubiquitous Enabler

In recent years, what has led to the success of GIS within the business arena has begun to lead to its demise. Geographic information systems have become an embedded piece of technology that has been incorporated ubiquitously into virtually all technological medium, for instance, web browsing, location based services, elevator news, and many more places unbeknownst to the vast majority of the public. We have placed our industry capabilities in hands of millions without providing explanation of why and how. The only time our “dinglehopper”<sup>1</sup> is mentioned is when it is not working as expected.

The argument could be made that it does not matter that our technology is embedded as long as it is being used. Great point, but how do you improve upon the applicability of GIS to additional business issues if unwilling to identify the tiny successes along the way. Perhaps think of it this way, when you last purchased a pen you liked to write with did you praise the brand or the ball in its tip? So is it the container or enabler? In most cases, the enabler is overlooked.

Shame on us for not better explaining our industry, but it should come as no surprise to those within the industry since we suffer from an identity crisis, a lack of a solid, all-encompassing definition for GIS that does not teeter on the edge of nebulous. The future of geographic information systems must include aspects of public relations. Many software vendors have taken this as a mission already but the need extends past vendors and falls directly into the laps of all GIS professionals. GIS professionals must step out from the hesitancy of explaining their vocation so that the benefits of their works may be appreciated and (most importantly) understood by many more individuals within their respective companies and within the general public.

## Summary

Have we reached the end of GIS growth? Are we in fact living in the future but just not aware of it? Yes, we are in the future state of GIS and yes, we are oblivious to this fact. Recent technology improvements (not to be confused with architectural improvements) from GIS vendors have done little more than provide us with the technology version of the proverbial better mouse trap.

Although the GIS capabilities goals of yesteryear were met, only a handful of people truly understand these capabilities and, without comprehension, the application of GIS to solve real-world business problems becomes limited; after all, GIS technology is a means to an end and not the end itself.

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<sup>1</sup> Refers to a scene from Disney’s “The Little Mermaid” where one character being exposed to a dinner fork (i.e. the unexplained technology) for the first time refers to it as a “dinglehopper”.

## Biography: Jason Humber

Jason Humber founded Integrated Informatics Inc. in October of 2002 to provide data management and system design consulting services to the pipeline industry for new construction, operations, and pipeline integrity. As a Principal Consultant, Jason is responsible for corporate level development and delivery of Integrated Informatics unique suite of services.

In 1999, Jason began his career with the Natural Gas Business Unit of BP Canada Energy Company in Calgary, Alberta. His primary focus within BP was development of a business unit wide data management system that supported the analytic and integration needs of pipeline integrity. While working with BP, Jason also took on a pivotal role on the project management team within the Alaska Gas Producers Pipeline Team and helped to establish the processes required for Project Data Management. More recently, Jason has completed a similar advisory role with the Mackenzie Gas Project, and has broadened and implemented these data management approaches to encompass the needs of developing oil sands projects and upstream oil and gas exploration.

Denby, A., Humber, J., "Validation of Modeling Outcome: Rationalization and Recognition of Realistic Results", February 2005, GeoTec Event  
Denby, A., Humber, J., "Modeling in Geographic Information Systems: Data Amalgamation and Integration", February 2005, GeoTec Event  
Humber J., Denby, A. "Growth and Development: Enriching GIS Education, Experience, and Enlightenment", February 2005, GeoTec Event  
Odegard, L., Humber, J. "Comprehensive Modeling for Inventorying Directly and Indirectly Affected High Consequence Areas", February 2005, GeoTec Event  
Odegard, L., Humber, J., "Integrity Management: Automated Analysis for Class Location", October 2004, International Pipeline Conference  
Dupuis, B., Humber, J. "Pipeline Integrity: Establishing Data Management Value", October 2004, International Pipeline Conference  
Denby, A., Humber, J., "Overland Flow: Comparison of Modeling Methods", September 2004, 13th Annual GIS for Oil & Gas Conference & Exhibition  
Humber, J. "Enhancing the Pipeline Route Selection Process", September 2004, 13th Annual GIS for Oil & Gas Conference & Exhibition  
Humber, J. "Enhancing the Pipeline Route Selection Process", September 2004, Alberta Geomatics Group Educational Luncheon  
Dupuis, B., Humber, J., "The Evolution of Data Management to Empower Integrity Management Decisions: A Case Study of an Enterprise Implementation", September 2002, International Pipeline Conference  
Humber, J. "Case Study in Breaking Down the Barriers with GIS", December 2001, Marcus Evans conference  
Dupuis, B., Humber, J., "Application of GIS Technologies to Integrity Management" (Tutorial Session), April 2001, Banff Pipeline Conference  
Lemke, M., Humber, J. "Web-based Imaging and Data Services for Pipeline Maintenance and Management", September 2000, International Pipeline Conference

## Biography: Allison Denby

Allison Denby joined Integrated Informatics in May 2004 as the lead Geographic Information Systems Consultant. Her activities within the company encompass many aspects of spatial data management including database development, analysis techniques, research and development for raster based modeling, and GIS implementation.

Allison has successfully completed her Bachelors of Applied Geographic Information Systems degree. Her work background is varied and has involved projects ranging from promotion of geomatics and GIS education awareness across Canada to process improvement for pipeline integrity data integration.