

## **GITA Conference 2005**

***Speaking Submission from GE Energy  
with Cox Communications and Adelphia Communications***

**“The Real Benefits of Geospatial Applications for Cable MSOs”**

## BIOGRAPHICAL INFORMATION

Scott Casey  
Manager, Communications Industry Marketing  
GE Energy, Smallworld Solutions

### **Specific Responsibilities**

I joined Smallworld Systems in 1996 as Customer Services Manager. I took on the Product Line Manager job in 1997 and then Director of Business Development in 1999. GE acquired Smallworld Systems in 2000. I have held my current role in industry marketing since 2002. My responsibilities include creating marketing collateral such as sales presentations, value propositions, ROI evaluations and case studies, monitoring industry trends, maintaining competitive intelligence and participating in geospatial and communications industry forums, conferences and committees. I also work very closely with the software product R&D group, providing input for new features and product roadmap strategy. Finally, this role allows me to work closely with the sales organization as well and spend a great deal of time with our customers and prospects.

### **Past Experience**

I have worked in the telecommunications OSS software industry for 16 years. I have extensive experience in geospatial network inventory management and operations software solutions and have worked on projects with numerous local and international service providers including Bell Canada, SBC, Rogers, Cablevision, AT&T, Cable and Wireless, Telecom New Zealand, Telstra, Cablevision and Cox Communications. I have held management positions in professional services, customer support, technical sales and product marketing.

### **Educational Information**

Civil Engineering, Seneca College of Arts and Technology, Toronto, Ontario

### **Professional Memberships**

GITA  
SCTE (Society of Cable Television Engineers)  
TMF (Telemangement Forum)

## **The Real Benefits of Geospatial Applications for Cable MSOs**

Scott Casey  
Communications Industry Marketing  
GE Energy  
2000 S. Colorado Blvd.  
Suite 2-1100  
Denver, CO 80222  
303-268-6132

Speaker:  
**Scott Casey**

Co-speakers:  
**David Johnson, Cox Communications**  
**James Pierce, Adelphia Communications**

Learning Objectives:

1. How cable companies are exploiting next-generation geospatial technologies
2. The importance of geospatial data in customer care and network engineering
3. Where are the ROI opportunities for geospatial applications?

Abstract:

This discussion will focus on Cable MSO company case studies where geospatial applications have become a critical path to improving the business. The topics will include the business case, deployment strategy, process improvement and the on-going benefits of these applications. Advanced next-generation geospatial applications are being widely deployed in the customer care and network operations departments, in addition to the long tradition of use by the engineering group. Data sharing, centralized data management and distributed architectures all play a role in the modern system. In addition, specific areas where there are real ROI opportunities will be examined.

Suggested Topic:  
ROI/Business Case

Industry Segment:  
Telecommunications

**THE REAL BENEFITS OF GEOSPATIAL APPLICATIONS FOR CABLE MSOs**

**OVERVIEW OF A CABLE MSO COMPANY AND NETWORK**

Cable companies operate a network to provide cable television service to consumers within a franchise area. A franchise area can be a metropolitan center, an urban cluster or an entire part of a State. The organizational structure of the company that operates the network within this franchise is called a “cable system”. The outstanding characteristic of a cable system is that the network is contiguous and can provide service to the majority homes that are within the given area. The franchise areas that the cable systems operate within are set out and regulated by the Federal Communications Commission, or FCC ([www.fcc.gov](http://www.fcc.gov)). Major cable service providers are called MSO’s (multiple system operators) because they operate many cable systems within these franchise areas. In the United States there are approximately 30,000 franchises where a local cable service provider offers consumer products such as basic cable television, digital cable, bundled programming packages, pay-per-view, HDTV (high-definition TV), high-speed Internet and digital voice (or voice over Internet Protocol). To provide some perspective on how successful the cable MSO’s have been with services like high-speed Internet (HSI), the following figure shows historical and projected market share data in the United States:

<b>HIGH-SPEED INTERNET MARKET SHARE: CABLE, DSL, WIRELESS &amp; SATELLITE</b>						
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>CABLE</b>	64%	63%	62%	59%	57%	53%
<b>DSL</b>	34%	34%	34%	36%	35%	37%
<b>WIRELESS</b>	1%	2%	2%	2%	3%	4%
<b>SATELLITE</b>	1%	1%	2%	3%	5%	6%

2004 to 2008 figures are projections  
Source: Cable World

Figure 1: High-speed Internet service US market share

The ILEC’s offer HSI with a DSL (digital subscriber line) service over the copper twisted pair network that provides phone service. The cable MSO’s offer HSI with a Cable Modem service over the coaxial network that provides video broadcast service. Wireless companies use mobile technologies such as WiFi and wireless LAN to offer the service, and satellite companies include the HSI service bundled within the video feed picked up by the dish and receiver. We can see from the data that in 2002 cable HSI maintained a well-established dominant market position and that cable is not losing much market share to DSL from the phone companies. Combined, Wireless and

Satellite are taking more market share from cable than the ILEC's. This is just one example of the strong market presence of the cable MSO's. Another way to measure the cable companies is by subscribers:

Switched service voice access lines (includes ILECs and CLECs)

- In 2002 there were 158.4 million lines
- **4.1%** of these (6.47 million) were DSL

Cable television subscribers (includes MSO's and Cable TV companies)

- In 2002 there were 90.7 million subscribers
- **12.5%** of these (11.37 million) were Cable Modem

The above data indicates that the cable companies have out-performed the phone companies with respect to getting the greater share of their customers to sign up for a premium monthly service.

Cable service has traditionally been provided over a powered coaxial network that takes a broadcast signal from the Head End (source) office location and distributes the signal to the consumer. This network is hierarchical with Splitters that create the branches that enable the one-to-many topology. Each consumer is connected to a Tap, which is a device that serves a small cluster of customer "drops" – the cables that go into the house, apartment or business. In between are Amplifiers, Extenders and Power Supplies, among other in-line equipment, that ensure the correct signal level and strength for each customer drop. In the early 90's the MSO's started deploying Hybrid Fiber-Coax (HFC) networks that combine both optical-fiber and coaxial cable lines. Optical fiber runs from the cable Head End to Nodes that serve neighborhoods of 500 to 2,000 subscribers. Coaxial cable runs from the optical-fiber feeders to each subscriber. Hybrid networks provide many of fiber's reliability and bandwidth benefits at a lower cost than a pure "all fiber" network.

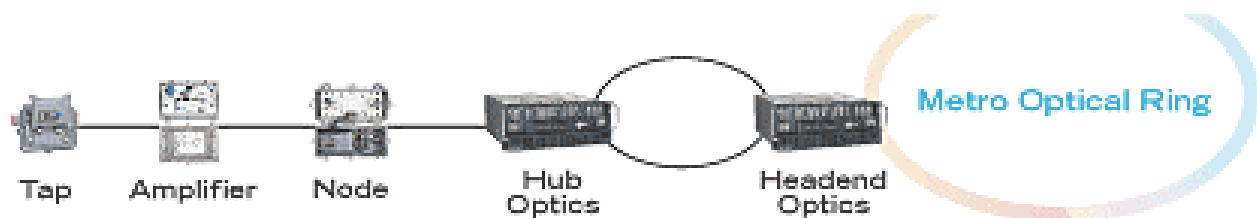


Figure 2: The HFC network architecture simplified (from Motorola's HFC Network Solutions)

Many of the cable MSO's also provide corporate services to small, medium and large businesses. These services are provided over the coaxial and fiber cable networks. When HFC networks were built, the fiber portion of the network was over-built in order to allow extra fiber for additional consumer and business services. The fiber networks grew rapidly and became extensive and far-reaching in scope, in many cases providing extensive coverage of large metropolitan areas within the franchise. These network architectures are commonly called "Metro Optical Rings", and they opened the door to

offering corporate business network services and ultimately competing with the ILEC (incumbent local exchange carrier) telephone companies.

## THE BUSINESS CASE FOR GEOSPATIAL APPLICATIONS

In the past the cable MSO's have used paper, CAD and stand-alone design files to manage network construction and builds, but this information did not effectively track the network infrastructure and support day-to-day operations in service delivery, network reliability and customer care. No centrally maintained view of the complete network was available and this led to numerous problems including:

- Incomplete data for
- Inconsistent standards
- Laborious record keeping
- No clear picture of the end-to-end network
- Inability to target customers for marketing campaigns
- Poor network outage responsiveness

### Cox Communications

In response to these issues, Cox Communications, Inc. built a business case and strategy. Cox Communications is a cable MSO that has 6.5 million customers in 23 states, with over 120,000 coaxial network plant miles and over 23,000 fiber plant miles and over 20,000 employees nationwide. Their geospatial system project charter called for improved application scalability and reliability, improved user satisfaction and efficiency, the ability to provide accurate network data to operations and to reduce costs associated with legacy CAD data migration.

David Johnson, Director of Corporate Network Design at Cox, states that their next-generation geospatial solution "will provide us with a complete design and maintenance solution for our fiber and coaxial networks. We are confident in realizing those benefits and gaining a rapid return on our investment." The project has been successful in pulling disparate data into a centralized enterprise geospatial solution. The data consolidation process included migrating their legacy GIS platform, transforming and converting their stand-alone CAD files and field walkout plant verification with subsequent data capture. This was all performed on a common national base map with accurate street and address data. Now the land information, fiber and coaxial plant data, common equipment specifications and customer addresses are all in one centralized master database application that is accessible to corporate and regional network engineering and operations staff.

The business benefits associated with this project are:

- **Centralized and scalable network inventory source of record for the enterprise**  
*This means that good data is available to all that need it*
- **Streamlined and automated engineering process**  
*Saves time and money, and resulting data is far more accurate and consistent*
- **Serving plant to customer address data integrity**  
*Invaluable for “serviceability” analysis supporting targeted growth and entitlement campaigns*
- **Network operations is now integrated with the complete plant data view**  
*The NMS/CMTS (network management systems and cable model termination systems) are linked to the same data as planning and engineering*

### Adelphia Communications

Adelphia Communications, Inc. serves 5.3 million customers in 31 states and has over 14,000 employees nationwide. Their geospatial project charter has the following goals:

- Reconcile Billing System address data with Geo-spatial database
- Transfer ownership of address data to engineering
- Create Head End- and node-to-address topologies
- Start migration of legacy stand-alone network plant data to corporate enterprise GIS platform

The address reconciliation aspect of this project is targeted at achieving precise knowledge of “homes passed”. In the cable industry, a home passed represents the address that is served by their network whether that address is a current (actual) or marketable (potential) customer. The cable MSO’s have traditionally relied on their billing systems for tracking actual vs. customers and addresses. The problem is that the billing system does not have knowledge of the network adjacency to the address or the true serviceability of the potential address.

This is why an enterprise geospatial system with accurate and reliable data on the exact address’ location, it’s position within Head End and Node service boundaries, and the proximity to the serving cable plant is critical. It also explains the need to transfer the “ownership” of the address to the engineering department so that the Head End and Node boundaries are overlaid seamlessly with the true customer address locations for

the entire corporate footprint. This first step alone tells the company, through spatial analysis, what services are available to each actual or potential service address within their franchise by linking the address to the serving Head End and Node. The next step is to determine whether a specific address is on the network or not. This can be accomplished by having the cable network's topology, layout and location in the same system with the boundaries and true address locations. More complex spatial data analysis allows for buffering and proximity queries, for example find all address within 100 feet of the cable network. The results of these queries can be used to update the address's serviceability records. This can be further fine-tuned to determine whether the address currently has an active billed service, is connected to the network but not being billed, or not connected but near enough to be turned active with a visit from a field technician.

According to James Pierce, Director of HFC Network Engineering at Adelphia, the enterprise geospatial system "satisfies the need for a permanent and stable master source of record of addresses for both active and potential service points and offers data that can be shared by the billing, customer care and engineering departments". He also states that it is the best place to capture plant and asset data as it supports topologies such as the Head End- and Node-to-address relationships for accurate customer serviceability. It further allows for HFC network equipment hierarchy and connectivity to be modeled for fast analysis and allows for data standardization and integration with other systems. James goes on to say that "service qualification and quality of service are dependent on an accurate and complete inventory topology. Traditional disparate and regional engineering tools are not acceptable to the business any longer. We must have a corporate view of where our customers touch our network and what node equipment serves their touch point in order to know what services are immediately available to that customer." This is all made possible through the use of next-generation enterprise geospatial software platforms. The projects drivers are clear with the following tangible business benefits being targeted:

- **Outage Responsiveness**

*"Geospatial systems and GIS help you know ahead of time which customers are going to be affected by a problem. We need to provide a proactive response to outages. Only then do we exceed both SLA's and customer expectations." – James Pierce*

- **Greater Market Share**

*Allows for effective targeted up-sell of premium and bundled services to prime customer demographics*

- **Improved Customer Service**

*An immediate YES/NO response to customer inquiries and service orders*