

BIOGRAPHICAL INFORMATION

Chris Steel
Partner
PA Consulting Group

Specific Responsibilities

Chris joined PA in 1999 in London and now leads their IT consulting business in New England

Past Experience

Immediately prior to joining PA Chris spent 5 years as a Managing Consultant with ESRI in the UK. Chris's consulting focus is now on advising clients on how to gain maximum value from information technology investment, and on helping them realize that value through strong and effective implementation management.

Chris has led many significant client engagements including:

- The development of a Physical Network Inventory Strategy for a leading telco
- The implementation of an asset management system for a water utility
- The design of a trading information system to help an energy company maximize its revenues from the New England Power Exchange
- A review of a network management systems integration project and an audit of the delivery capability of the main software supplier for a leading international telco

Educational Information

BSc – Geography, St Andrews University

MSc – Engineering and Land Survey, University College London

MBA – Henley Management College

Professional Membership

Royal Institution of Chartered Surveyors

British Computer Society

Royal Geographic Society

BIOGRAPHICAL INFORMATION

Ross Smith
Principal Consultant
PA Consulting Group

Specific Responsibilities

Ross joined PA in 2003 in Boston as a Principal Consultant and he is now engaged in the delivery of complex IS projects primarily in the Utilities and Telecommunications.

Past Experience

Ross is an international IS/GIS Project Management and Systems Integration professional with a M.Sc. in GIS and over 14 years of commercial application development and project management experience.

Prior to joining PA, Ross lead the GIS Professional Services Group for a large Engineering firm, overseeing projects across Europe. Ross now works as a Principal Consultant lending his expertise and experience to helping clients manage the delivery of complex IS projects and achieving maximum business value from their IT/IS investments.

Ross has led many significant client engagements including:

- The development of a Physical Network Inventory data model and data migration plan for a leading Network Operator in the UK
- The development of a asset management strategy and business plan for a water utility in the US with emphasis on capital expenditure planning for mains replacement and renewal
- The consolidation of multiple corporate GIS systems in New Zealand following de-regulations of the Electricity market
- The development of environmental and utility based GIS web-based applications for the US Air Forces in Europe

Educational Information

BA – Geography, Wilfrid Laurier University, Canada

MSc – Geographical Information Systems, Edinburgh, Scotland

Physical Network Inventory (PNI) for Utilities: Business Case and Roadmap
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The cornerstone of utility companies is their network infrastructure. These essential assets need to be managed and maintained to ensure consistent and quality service delivery. Physical Network Inventory (PNI) applications based on Geographical Information Systems (GIS) allow utility companies, whether it be water, gas, electricity or Telecomm, to record what their assets are, where they are, and how they are connected. Poor network records data, systems and processes result in increased OPEX costs, inefficient asset utilization, and poor customer service. This paper will outline an approach to building business case justification for investing in a Physical Network Inventory (PNI) system, and provide implementation roadmap advice for utility companies with existing or legacy GIS applications that have failed to provide the expected return on investment.

Overview

Network Operators share many common characteristics with other regardless of whether they provide gas, electric, telecommunications or water services to their customers. Each of them relies on their network assets to delivery their service to their customers. The efficiency and effectiveness of how they manage these assets correlates to their capability to deliver a quality service to their customers.

The *sustainable* service delivery capability of a fixed-asset Network Operator is therefore fundamentally based on the quality and geographical extent of their deployed *physical network infrastructure*. Their ability to install, manage, repair, upgrade and optimize their network assets has a direct impact on their operating costs, customer service levels, service offerings, competitiveness and capital expenditure allocations.

Fundamental questions need to be answered by Network Operator staff on a daily basis to support the business, comply with regulatory requirements, identify new customers and retain existing customers through quality of service. These questions include: What network plant is currently installed? Where is it? How are these network elements connected to each other? Which customers are connected to which network elements? How is the network performing at delivering service to customers? Where are improvements required?

These questions are fundamental and not confined to the Network Operations and Engineering departments of an organization. As Figure 1 shows, there are diverse users of network related data within a Network Operator's organization.

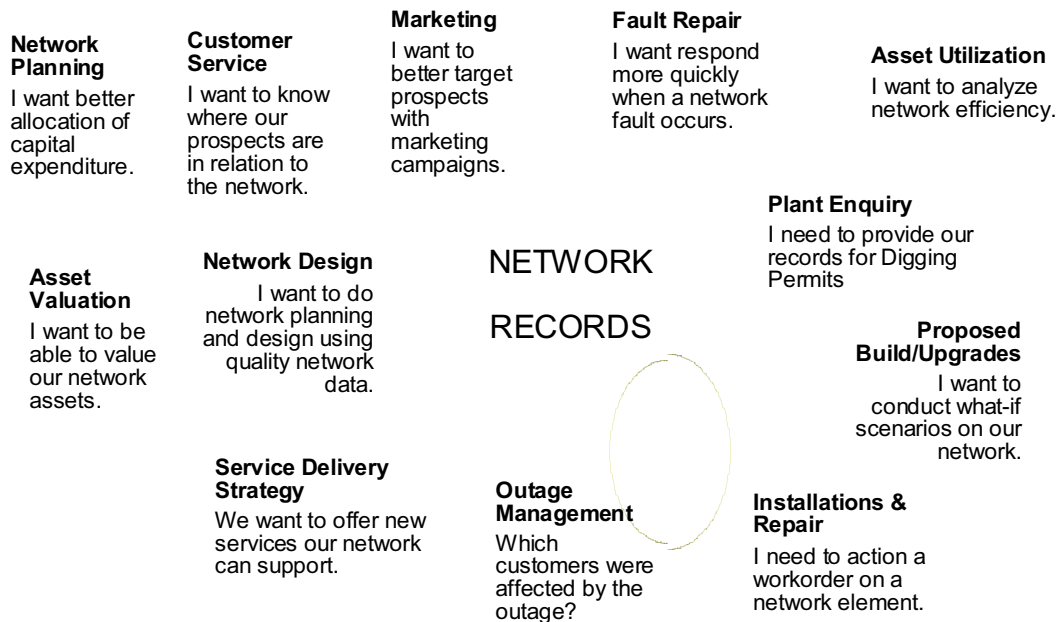


Figure 1: Users of Physical Network Records have diverse needs across the Business

If network records are not accurate, up-to-date or accessible, then the following may be the result:

- Network design is impaired, leading to inefficient use of existing network assets
- Data ownership is poorly defined, leading to “islands” of information
- Data duplication leading to confusion and poor decision making
- Fault Response times are impaired due to a lack of accurate records
- New connections are costly and time-consuming due to inefficient data flows between departments
- Asset valuations become impossible
- Customer service suffers due to inefficiencies
- Difficulties in relating customers to associated network elements
- Need for higher headcount to perform manual operations

Complications Abound

In response to this, many Network Operators acquired GIS technology to help address this critical need, but our experience shows that many fail to regularly revisit their original business drivers or assess true cost and value on a systematic and on-going basis. This can result in lost opportunity to leverage the technical solution and data for wider

gain throughout the business - such as decreasing operational costs, better meeting regulatory reporting requirements, streamlining operations and maintenance activities, supporting customer service needs, forecasting and planning etc.

The challenge faced in understanding the business value in return on investment (ROI) terms.

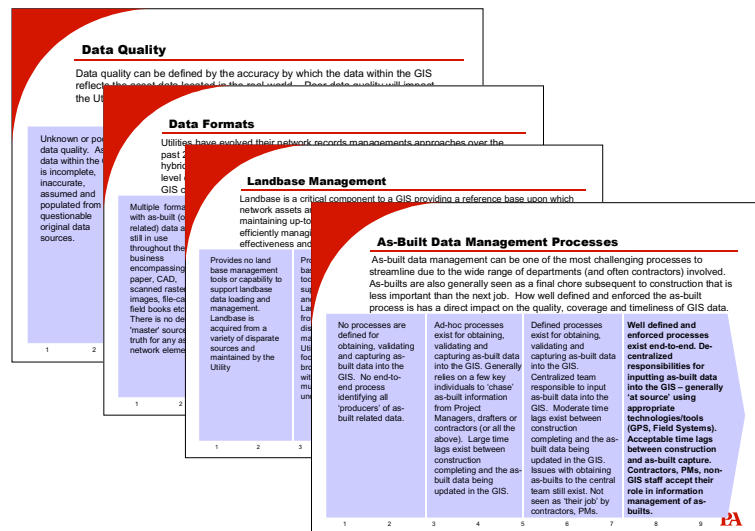
One approach to overcoming these obstacles is to use a Best Practice Capability Maturity Model (CMM) that helps a Network Operator identify both strengths and weaknesses with their current approach to collecting, managing and using data that describes their physical network. By also employing a Geospatial Physical Network Inventory Strategy framework that is supported by the CMM a Network Operator can establish a clear plan of activity that addresses missed opportunities.

The Capability Maturity Model Approach

The CMM is designed to be an easy-to-understand methodology for ranking an organizations geospatial related activities in relation to their business goals and drivers. Born out of IT performance improvement, the 4 levels of the CMM provide a "measuring stick" for organizations looking to improve their geospatial related processes, data and systems.

The purpose of the CMM, used in a cross-functional and business-wide context with participation at several levels of the organization, is to:

- Facilitate and generate discussion surrounding a variety of technical and business GIS related topics to ensure all participants have an equal level of understanding
- To review a number of maturity measures and rank your collective view of an organization’s capability to support their business using geospatial technology (data, process, technology, people)
- To gain an understanding of how current activities align to business goals and driver, in other words - the value of GIS to your business
- To understand variations in approach, philosophies and viewpoints between groups, territories and departments



The CMM uses a variety scaled measures to permit organizations to assess where the stand. This structured ‘assessment’ approach allows an organization to formally assess

their current capability and the contribution of geospatial technology to achieving their business goals and objects.

Effectively, it answers the question “How well is our investment in geospatial technology enabling business process for business benefit?”.

What remains however is to compile the information learned from using the CMM into an easily understandable form that permits all levels of the organization to clearly see where and how geospatial technology is enabling business processes – and more importantly where it is failing to do so.

Building a ‘one page’ strategy that clearly articulates these strengths and weaknesses of the use of geospatial data and technology provides support for budgeting, project planning and resourcing. There are some key principles that must be applied however to ensure successful implementation and adherence to the strategy.

Guiding Principles of a Physical Network Inventory Strategy

There are several guiding principles that should be considered when building the PNI Strategy. These include:

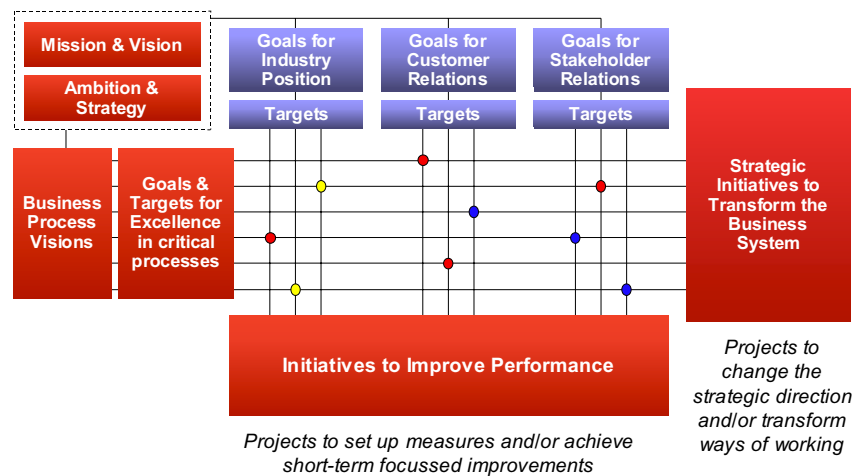
- a) **Adopting a business wide approach that is consistent across business units**
Often, functional areas of the business operate as silos with no coordinated approach to managing network inventory data that are created and used across the enterprise. It is vital to take a holistic approach that identifies the business requirements of each business unit producing or consuming network data, while fostering buy-in and support from those business units for a consolidated network inventory strategy.
- b) **Clearly define a framework against which business needs can be evaluated**
On-going operational expenditure investment decisions are often not clearly driven by strategic business need, nor are they prioritized in light of wider business objectives. It is therefore vital to understand business needs in relation to achieving business goals and objectives. These needs represent the benchmark upon which decisions are based when implementing, developing, customizing or deploying capability. These requirements do not necessarily pertain to functionality, but broader business need that must be satisfied in order to support business objectives.
- c) **Limit the use of “quick fix” tactical solutions.** In order to remain competitive, Network Operators must react quickly to changing consumer demands, market and regulatory environments. This means there is normally limited or no analysis performed to determine the full cost and long term implications of if a tactical activity will cost-effectively yield the desired results. To overcome this, organizations should incorporate investment check-points into tactical activities. Although financial, resource and time constraints are unavoidable, seek to ensure that they do not result in deviations from the overall strategy. Tactical solutions can often be false economy.

- d) **Link the GIS initiatives to business benefit and shareholder value.** It is not uncommon to see that value measures have not been identified, leaving little or no means to demonstrate the impact or added value GIS expenditure has on shareholder value. Value measures must be identified and designed into the overall strategy so that they can be measured over time. This supports sustainability in the on-going investment decision process.
- e) **Recognize that investment in GIS is a long-term commitment.** Executives often view GIS investment as having a finite investment period, rather than a going-concern. Building an accurate and complete network inventory sufficient to support network infrastructure management activities and value-added functions such as full flow-through provisioning often takes years. It cannot be time-boxed.

Physical Network Inventory One-Page Strategy

For some years, “strategic planning” has been out of favor, dismissed as a churning out of five year plans which rarely saw the light of day. But now it is coming back into fashion as global competition, corporate restructuring and the impact of technology on the quality and delivery of products and services are forcing organizations to review constantly the ways they operate and undergo transformational change.

Having spent years improving efficiency in billing and customer service areas, many Network Operators have become pre-occupied with seeking ways to grow their customer base, maximize their asset utilization, optimize their network, better target infrastructure capital expenditure, and reduce their operational and maintenance costs.



It is essential that the analysis and development phases of strategy work are robust. The strategy developed must be issue led, fact based, consistent, long-term and what eventually happens.

Using a *One Page Strategy* process organizations can satisfy all of these requirements. This approach maintains that critical balance between robust analysis and creativity, and to provide an effective, exciting process for building ownership and commitment across the business.

The key features of a One Page Strategy approach are:

- It is a highly participative approach, involving not only the senior team but a large number of managers and staff as well, thus ensuring full ownership of the plan produced and commitment to its success
- It positively draws out creativity from within the business, which results in plans which are more ambitious and deliver more value than traditional strategy approaches
- It develops plans which are both achievable and sufficiently flexible for future adaptation in the light of changing circumstances
- It the strategy is summarized on one page which has a logical structure and is easy to communicate

The whole process encourages knowledge-sharing, thus providing both team and individual development and leaving them well equipped re-run and sustain the process for continually adjusting the strategy as business needs and objectives change.

Conclusion

Using the CMM and One Page Strategy approach Network Operators can position geospatial technology and data related to their physical network inventory in the context of the wider business mission, goals and strategy. Similarly, business stakeholders can immediately see the part GIS technology plays in the bigger picture of business operations – the foundation for any business case.

Sustainable service delivery demands current, useful and accessible network records. Far from a back-office function, GIS supports this demand as it can be used by all areas of the business.

Tools such as the CMM are invaluable in understanding where an organization's capabilities at supporting the business through the use of GIS technology are today and, through inclusive stakeholder engagement, sets a common foundation of understanding of what changes are needed to derive additional value. Building on this, a simple, well-structured representation such as a One Page Strategy builds a compelling case for investment in geospatial physical network inventory systems.