



**Staying Alive in the 21st Century Telecom Market –
Decision Support Systems and Effective Asset Management
With *ProXit's ProTools* Applications**

By the *ProXit* Architectural team

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The Telecom market is one of the largest global industries and among the fastest growing segments of the global economy. The telecom industry is one of the major economic sectors where there will be explosive growth in consumer and business demand in the 21st Century. This growth is based on the influence of many historic factors including

- Privatisation of state-owned telecom enterprises
- Liberalisation of domestic telecom markets
- Need for new infrastructure due to revolutionary technological improvements in the industry, the world-wide demand for high-quality/high-capacity wireline and wireless communications
- Transition to a new paradigm in communications based on the Internet, electronic mail, cellular phone, and the personal computer.

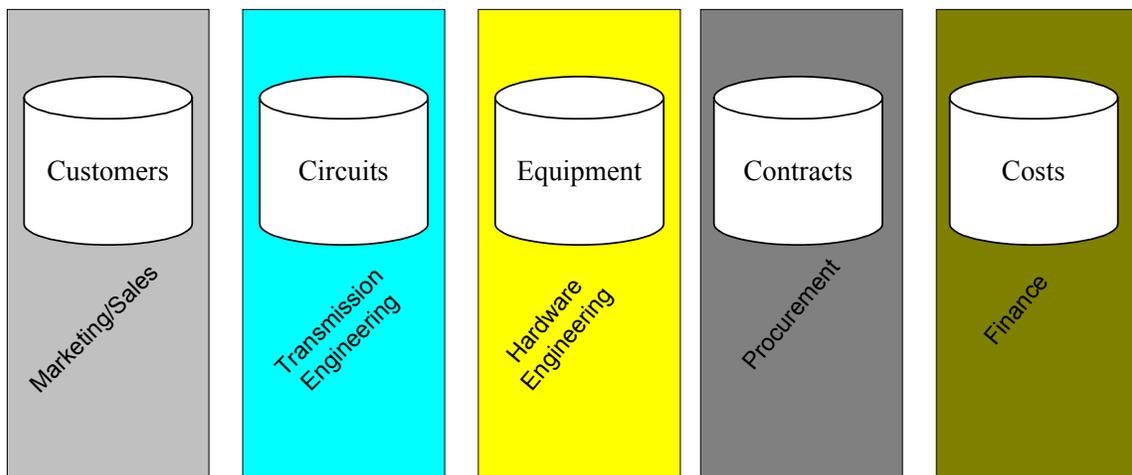
As has been witnessed over the last 15 years, there continues to be a rapid pace to deregulation worldwide affecting domestic, international, fixed, and wireless communications. As is the case with any “new” industry, two fundamental economic phases occur in the early part of the cycle:

1. *Growth Stage*; The first major wave (and supported by accompanying regulatory law) is for alternative telecom providers to enter the business arena, and alternative infrastructure to be installed to support the burgeoning user demand. Countries such as the UK, Sweden, Finland, USA, Australia, and New Zealand were early adopters of this wave via heavy industry deregulation. All countries will eventually pass through this phase as second, third, and fourth operators for each industry segment evolve and operate as strong competitors to the incumbent operator. For basic services, the only differentiation between operators will be the price of offered services (which should be based on underlying cost structure). The most important variable in minimisation of cost will be effective utilisation of personnel. All other variables including equipment, transmission, and originating/termination access will approach commodity status and no differentiation between operators will be possible. For this cycle, tools that allow operators to operate efficiently and realise the most benefit out of fixed assets are important, although often overlooked due to the massive growth encountered by most companies during this stage.
2. *Consolidation Stage*; The second major wave will be consolidation at both the domestic and international level, where the weak will be acquired by the strong and some service providers will simply go bankrupt. This phenomenon has already become prevalent in the developed telecom markets in most industry segments, led by the merger and acquisition frenzy in Internet Service Providers (ISP), Mobile operators, Cable TV operators, and most recently Fixed operators. Those companies with a lower relative cost structure, as compared to their competitors, will always be advantaged in this scenario. For this part of the economic cycle, tools that allow

operators to operate efficiently and quickly integrate new technologies or companies to be acquired, becomes paramount to survival. With the beginning of the 21st century, we have now entered this phase of the current economic cycle for Telecom operators. The single most important activity in minimisation of cost for network operators will be productivity of personnel. All other cost variables including equipment, transmission, originating/termination access, and peering/transit will pale in comparison, and minimal differentiation between operators will be possible by simply focusing on equipment or circuit issues.

In sharp contrast to manufacturing companies, telecom operators suffer from a lack of process control methodology and related decision support tools. Within most organizations, there is limited understanding of the relationship between supply and demand. The network (and related staff/capabilities) is not typically thought of as a supply chain requiring careful characterization, regular measurement, and specific optimization to match the demand or customer needs.

The “silo” model is very prevalent in the telecom services industry and is characterized by a separation of information collection (and resulting workflow processes), maintenance, and sharing throughout the enterprise. The following illustrates the “silo” information model:



As this diagram illustrates, different organizations within the enterprise maintain different information sets, optimized for their individual functional purposes. While this may be useful for the workgroup, it is clearly not optimal for the overall enterprise. This information and organizational approach presents several shortcomings including:

- There is continual “local optimization” but never a “global optimization.”

- Correlation of the data is nearly impossible, i.e., relating hardware to circuits, customers to contracts, is generally not feasible
- Information sharing is complex at best due to different naming, numbering and data structure conventions between the organizations.
- “Multi-Entry/Single Usage”; Multiple entry of the same data in several databases.

The limitations of this model take shape in many forms, which are simply symptoms of poor information, organization, and workflow processes. We all read about them everyday;

- Rampant network costs
- Lack of ability to provision customers
- Unknowledgeable customer service representatives
- Poor capacity Management

Telecom operators and service providers who do not recognize the limitations of this approach will continue to flounder and eventually go out of business.

A new Paradigm for cost-effective operation of Telecom Networks

The companies that will survive and thrive must focus on an approach that allows for rapid and enterprise-wide optimization of all network assets. With this approach, there must be awareness that the single most important set of “network” assets is actually the people and their collective productivity. The major differentiator going forward will be enterprise-wide speed in the form of Mean-Time-To-Execute (MTTE). This can be for provisioning of service, delivery of new products, or repair and restoral. This approach must combine:

- An efficient, learning organization
- Lean and non-overlapping business processes
- Targeted decision support system (DSS)/application suite

Only by dealing with this “3-legged stool” can the enterprise meet demand with the correct and lowest-cost supply.

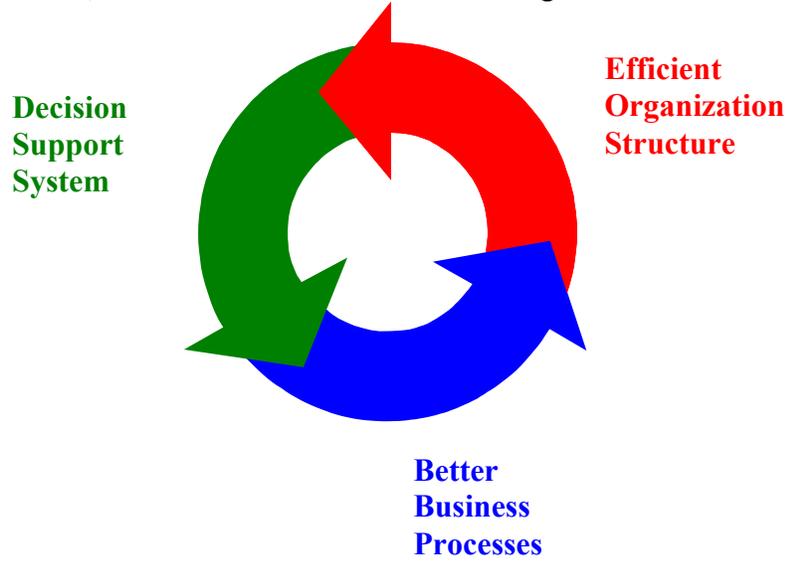
At its core, the DSS must maintain accurate network asset information and the inter-relationships between the assets. The data structure must allow for the integration of major asset information in one repository. The information must be viewable across the enterprise and allow for better integration of functions. Equally important, the data structure must anticipate change in the environment by way of mergers, acquisitions, and new technology deployment.

In developing a DSS, the application suite must be designed to address all 3 legs of the stool as described before. Therefore, the DSS must be:

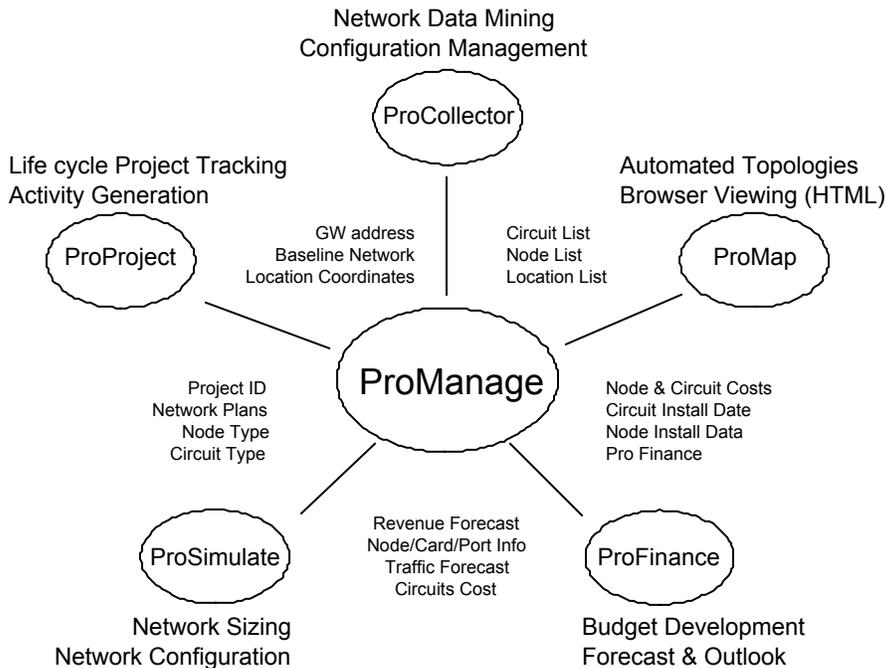
- Telecom Relevant
- Standards-Oriented
- Modular and Interoperable
- Customizable to the environment

The key to increasing operational efficiency and reducing network costs to the absolute minimum is the elimination of The “silo” model of information collection (and resulting workflow processes), maintenance and sharing. The successful operators will abolish the current business model dominated by information and organizational segregation. They

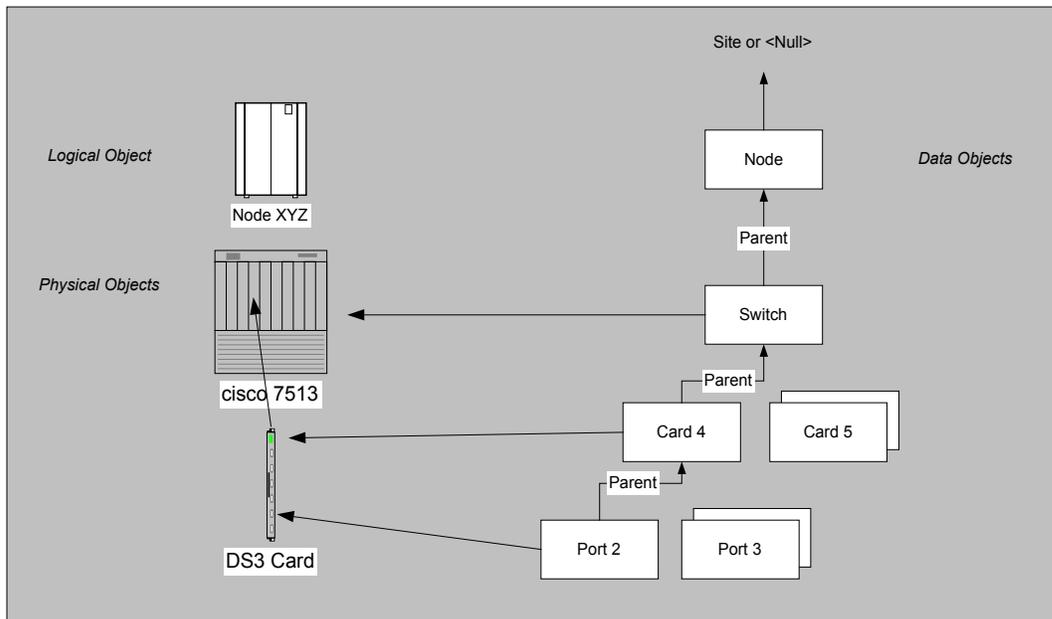
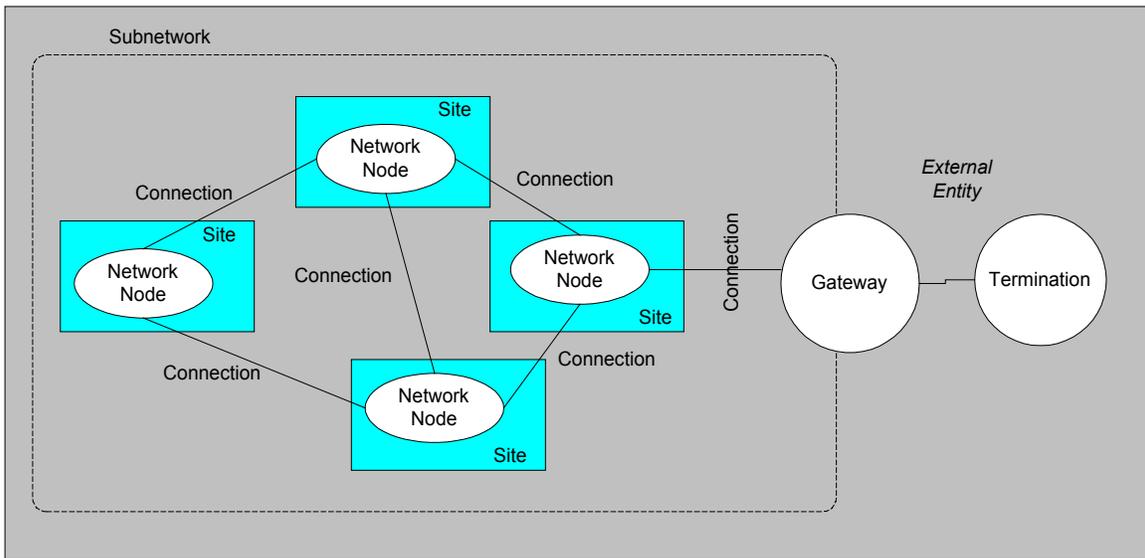
will do this by creating a virtuous cycle of information management, allowing for better business processes, which allows for more efficient organizations.



At *ProXit*, we have created an overall DSS framework to allow this efficiency to be realized. Built on an open and standards-oriented platform, *ProTools* is a set of inter-related applications designed specifically for allowing Telecom Operators and Service Providers to build highly efficient and cost-effective service delivery enterprises.



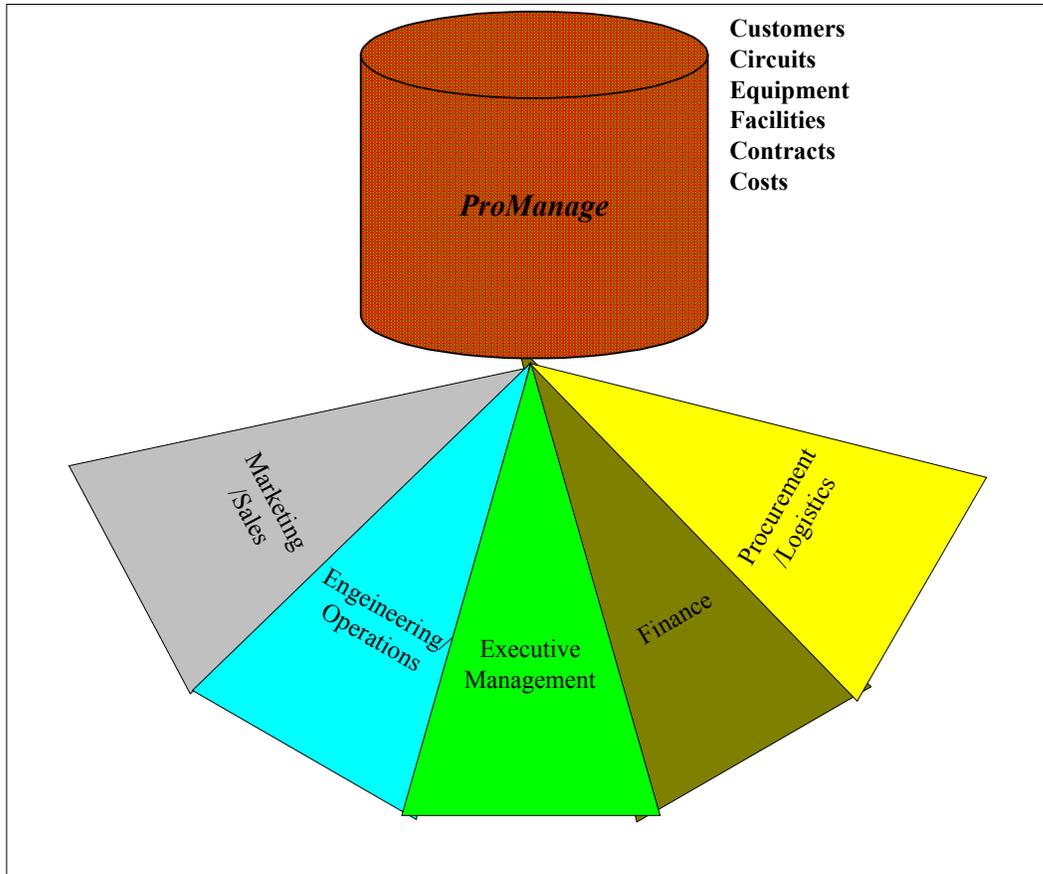
The *ProXit* approach allows these enterprises to operate with a new paradigm of organization and information integration, which leads to efficient and learning organizations. When enterprises adopt this approach, a virtuous cycle is created with a Decision Support System that allows an optimization of all network assets, starting with the most important; the human assets. The *ProXit* approach begins with a generalized data structure specifically conceived for the telecom business. All “elements” are by definition correlated throughout the physical and logical network chain. The following diagrams illustrate these relationships:



Each element in the hierarchy can contain a set of attributes including:

- Cost (Installation, Recurring, in local currency)
- Events (Installation, Removal, etc.)
- Last Audit (Date, Person)
- Miscellaneous Informational Items

Applying this approach and infusing it into the enterprise workflow, a single data structure is created allowing for single entry, multiple view (“Single-Entry/Multiple Usage”) of the organization’s critical information. The following diagram illustrates this concept:



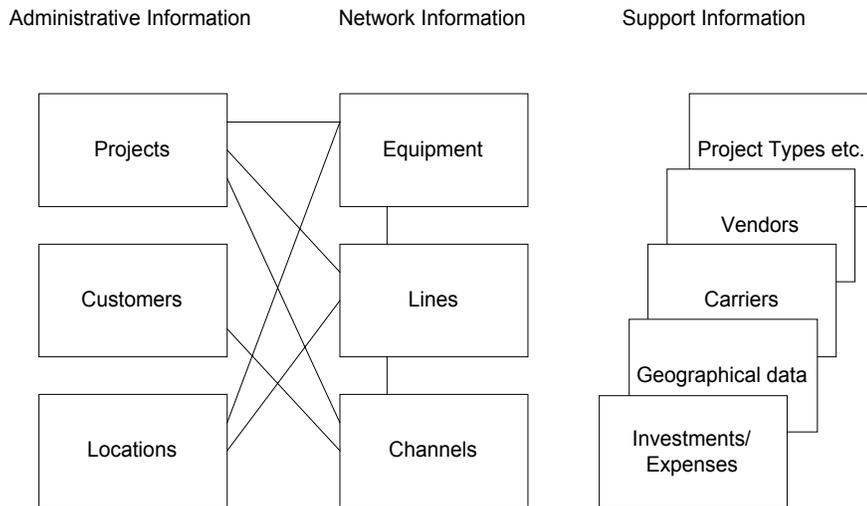
All **ProXit** applications are web-enabled and built on an “Internet Computing” model, making it unnecessary for customers to install specialized computers, software, or networks to access these high-powered tools. Customers will typically access their applications via a standard web browser (e.g. Netscape Communicator or Internet Explorer) via the Internet or the company’s internal Intranet. This approach allows for widespread and simplified implementation across the enterprise. This internet-based approach also allows customers to share information transparently across the enterprise, independent of location and functional organization. The democratization of information results in immediate productivity gains as all employees have access to the same information, at the same time. Organizations that do not have free information flow, particularly geographically disperse companies, have a difficult time with synchronization of facts for decision-making and always struggle with managing costs.

The heart of the **ProXit** application suite, **ProManage** is the data repository for all network, configuration, and cost information. Utilizing this application, relevant network information is entered, stored, and maintained in a predefined manner allowing for ready telecom network design and operation as well as business decision support. Other **ProTools** applications can be added in a modular fashion, as a need is identified. Third-

party applications supporting billing, customer relationship management, trouble-ticketing, and network management can be interfaced to the *ProTools* application suite via custom APIs.

ProManage comes pre-built with a telecom-specific library of information including a geographic information system (GIS), major equipment suppliers, equipment configuration library, transmission circuits and types, and others. Easy to use input forms provide a simple and repeatable mechanism for collecting network information or alternatively network information can be collected automatically from the online, active network via *ProCollector*. Queries are SQL-based database operations aimed at providing a specific resultant set of data to a user-defined question. A standard set of telecom queries comes pre-built with *ProManage* providing for a convenient and powerful reporting mechanism to track network cost, implementation status, and other important measures. Based on customer request, other custom queries can be developed on an as-needed basis. Key Performance Indicators (KPI) of the network can be readily measured via predefined reports.

A high-level view of the basic *ProManage* data structure is as shown below:



Implementation of the *ProXit* system

ProXit can provide both the applications and the people required for successful implementation of this revolutionary approach to the Telecom and Service Provider business. The following 5-step plan is representative of how telecom operators and service providers would take the “fat” out of their network costs utilizing the *ProXit* approach.

Step 1 – *Scope Definition*

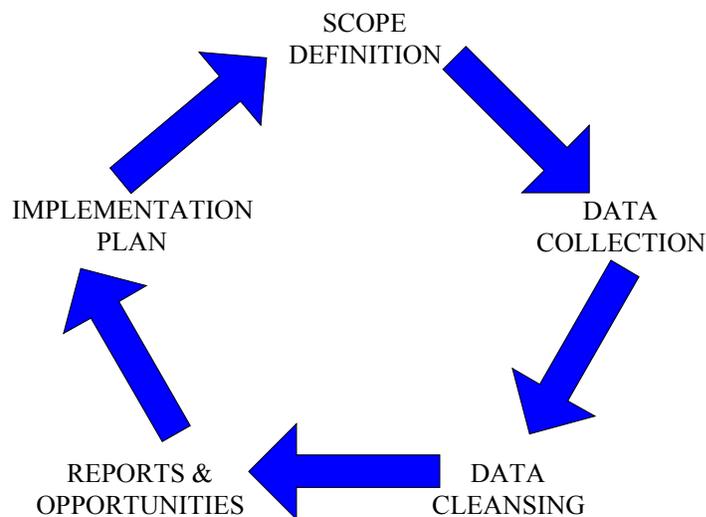
Step 2 – *Automatic Data Discovery, Manual Data Collection, and Entry*

Step 3 – *Data Cleansing and Preliminary Review*

Step 4 – *Query & Reports Preparation, and Opportunity Analysis*

Step 5 – *Network Cost Improvement Implementation Plan*

These 5 steps must occur in sequence and form a continuous feedback loop as shown:



Let’s review each of these steps in a bit more detail.

Scope Definition: In this step, a clear delineation of the subnetworks, regions, and phasing of activities is arrived at between the customer and *ProXit* professional staff. Schedule of deliverables is defined at this point.



Data Collection: In this step, a combination of automatic network element discovery (utilizing the **ProXit ProCollector** application for example) and manual data entry for non-pollable elements, the database is populated. Correlation of non-electronic data items (e.g. equipment items are assigned to locations).

Data Cleansing: Here, the collected data within the data structure is assessed for integrity. Naming and numbering errors become clear and are corrected, and an accurate mapping of all network elements (and exceptional items) becomes clear at this stage in the process.

Reports and Opportunities: A series of standard queries and reports are generated to determine network “fundamentals” including investment and operating costs, facilities in operation, equipment types and manufacturers, transmission circuits and suppliers, and other key operating metrics.

Implementation Plan: Based on a review of the various key performance indicators and related reports, an action plan is prepared to reduce operating costs, improve specific performance metrics, or some combination of the two, based on customer desire.

Utilizing this approach, telecom operators and service providers are certain to reduce operating expenses to the absolute minimum, and as a byproduct improve the workings of the organization and produce very efficient workflow processes. Information will flow freely throughout the enterprise and allow staff members to add value incrementally and at the correct point in the process.

The **ProXit** approach has been implemented successfully for both large international Telecom Operators as well as regional Internet Service Providers. In each case, tangible and immediate results were achieved. Most importantly, the organizations improve and the workflow processes become more efficient.



HQ: H.C.Ørstedsvej 63, 1879, Frederiksberg C, Denmark.
Phone +45 35355055. Fax : +45 3536 5055

R&D: B3-3-2, Megan Corporate Park, Jalan 1/125E, 57100, Kuala Lumpur, Malaysia.
Phone +603 90511151. Fax +603 90511157

Regional: Vie Di Villa Zingone 7, 00151, Roma, Italy.
Phone +39 (06) 58201920. Fax : +45 3536 5055