# *Professional Services*—Meeting the changing needs of network operators

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**As technology advances, network operators and service providers are able to offer their customers an astonishing array of new services. Notwithstanding, these new opportunities also imply a new set of challenges. Network operators' business systems must be flexible enough to adapt to the new services. Most operators' business support systems have been supplied by more than one vendor, which makes it difficult to adapt and integrate them. Through a newly formed *Professional Services* business unit, Ericsson is offering a new kind of service, by working in partnership with operators. The service includes consultancy, integration services and management services, the aim of which is to give operators the flexibility they need to bring new services to market in the shortest possible time.**

**The author describes the capabilities of *Professional Services* to advise, manage and integrate telecom management solutions for new and established operators of fixed, mobile, and data networks.**

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## Survival of the fittest

Given the fast pace of telecommunications deregulation in most parts of the world, established fixed and mobile operators are having to change and adapt to stay in business. They are evolving from monopolies to transit organizations, and finally, into aggressive warrior organizations. Ericsson's *Professional Services* can guide them through this transition.

At the same time, new entrants into the market are quickly developing into mature operators who also need a flexible infrastructure. We are witnessing fast growing markets for network operators and service providers and the emergence of service brokers and content aggregators (Figure 1).

Research conducted by *Northern Business Information* predicts that the world market for professional services will double from its current value to USD 28 billion during the period 1997 to 2002 (Figure 2). *Professional Services* is set to become a major player in this market.

## Advise, integrate, and manage

The *Professional Services* business unit, which was created as a result of Ericsson's ongoing focus on solutions, serves three principal areas (Figure 3):

- advice;
- integration; and
- managed services.

Increased competition and advances in technology have led to a change in the requirements of network operators and service providers. They must be able to bring new services to market quickly. To do so, however, they need flexible processes and open systems. Increasingly, operators and service providers are seeking to work in partnership with suppliers who can provide open solutions that help integrate and manage legacy systems. In fact, many new market entrants are choosing to outsource their entire network operations. The *Professional Services* business unit is Ericsson's response to these changing demands.

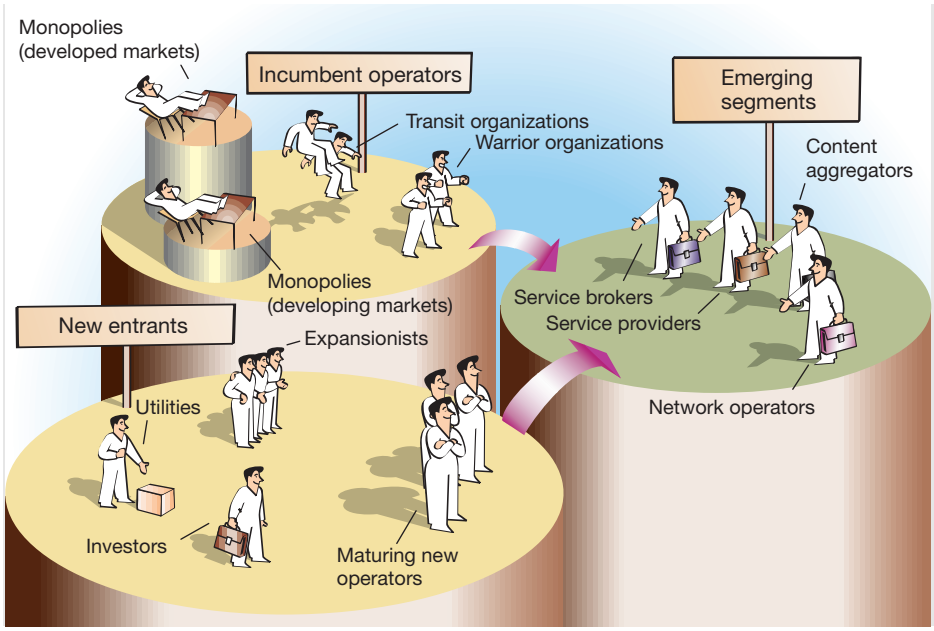



**Figure 1**
**Current and future market segments.**

## Serving as the trusted partner

*Professional Services*' consulting services are provided by the Ericsson-owned consulting firm, *edgecom*, whose consultants have experience of supporting mobile and fixed operators as well as Internet and value-added service providers. The company's services encompass business planning and strategy and the planning and implementation of new technology.

Says Stefan Johansson, *Professional Services* Marketing Director, "Ericsson has traditionally been a technology company. Therefore the offering of consultancy services marks a major shift in the way we work. Our consultants deliver a unique service, not just giving recommendations on what needs to be done, but more importantly, on how to implement those recommendations. They give instructions on implementing change and if required, they will even implement the changes for the operator."

*Edgecom* solutions include the preparation of a business case, implementation consultancy, or a turnkey solution. Customers benefit from knowledge transfer, increased value of the prepaid investment, shorter time to market, increased revenue, and improved customer service.

## Business strategy consulting

*Edgecom* consultants assist new market entrants, such as consortia bidding for a license and established operators who require business development in the areas of strategy and operations. Each of these groups has different needs. A bid team, fully or partially managed by *edgecom*, assesses the opportunities for new entrants. The company's business strategy consulting service establishes close ties between business strategy and operational framework and addresses strategic issues for finding practical solutions.

## Marketing and service consulting

Defining successful ways for operators and service providers to reach the market is a key responsibility of *edgecom* consultants. The creation of services includes pricing, sales and distribution, financial analysis, marketing communications and market plans. The definition of strategies aims at producing results for companies all over the world.

## Customer management consulting

To ensure long-lasting success in communication, operators or service providers need to do more than just attract customers. They must also satisfy and retain their customers.

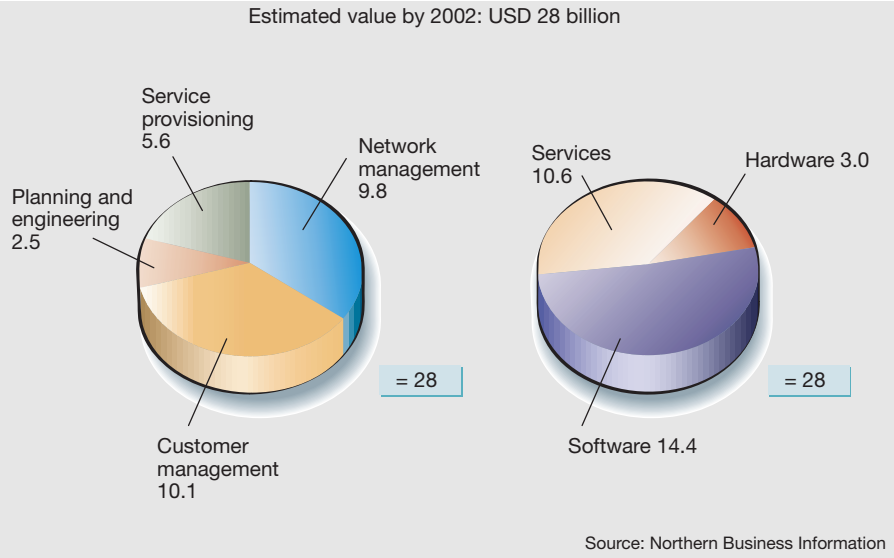



**Figure 2**
**The world market for professional services.**

Consequently, operators and service providers require a clear customer-care strategy, well-defined processes and procedures, highly trained staff, and supporting systems. *Edgecom* consultants assist clients in setting up or improving their customer-care departments, in defining requirements for support systems (for example, billing systems or call-center solutions), for implementing the systems, and for implementing effective processes and procedures that ensure customer satisfaction.

**BOX A, ABBREVIATIONS**

| | |
|---|---|
| CC&B | Customer-care and billing (system) |
| GSM | Global system for mobile communication |
| IAP | Internet access provider |
| IS/IT | Information systems/Information technology |
| ISP | Internet service provider |
| IT | Information technology |
| NO&M | Network operation and maintenance |
| NOC | Network operations center |
| O&M | Operation and maintenance |
| VPN | Virtual private network |

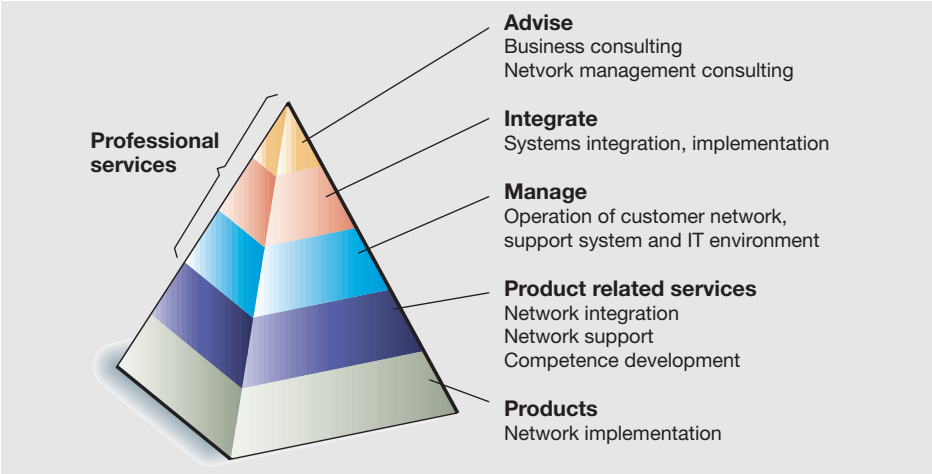



Figure 3
The scope of *Professional Services.*

**BOX B, PREPAID SERVICES**

Eircell, the leading GSM operator in Ireland, asked *edgecom* to provide a consultant to lead the design team of its prepaid service. In response, *edgecom* sent a senior consultant to Ireland,

- to manage a cross-functional project covering all sectors of the mobile organization;
- to manage the project plan—to ensure that all important milestones in the project would be met;
- to support each member of the project;
- to share experience of other prepaid markets in Europe;
- to manage all documentation relating to minutes of project meetings, service design and financial assessment models; and
- to organize trips to study other mobile operators.

The project was a major success for Eircell and *edgecom*. Eircell launched its prepaid service as planned in October 1997, and within two months of the launch Eircell had sold 60,000 prepaid packages. Stephen Brewer, Managing Director of Eircell, claimed that this was the world's most successful launch of a prepaid service. Following this success, Eircell again contacted *edgecom* to carry out additional assignments relating to the development of mobile services.

**BOX C, LICENSE BID**

Telia Overseas AB, the Swedish telecommunication operator's international holding company, asked *edgecom* for assistance in bidding for Slovenia's second GSM license.

*Edgecom* provided Telia Overseas AB with a bid manager whose role was to plan the production of the bid, integrate its various sections, ensure that each section was coherent, and finally, to ensure that every issue addressed by the Slovenian Ministry of Transport & Communications' *invitation to tender* had been properly addressed.

*Edgecom* assumed overall responsibility for writing and formulating the strategy of the technical plan in the bid and planned the radio network and a nominal cell plan. *Edgecom* also drafted the marketing sections and shaped the distribution strategy. Finally, their financial experts completed the calculation for the business plan and wrote the financial section.

Despite a tight timetable, the bid team produced and submitted the license application on time (February 15, 1998), and on June 12, Telia Overseas AB was awarded Slovenia's second GSM license.

The expertise delivered by *edgecom* consultants has been especially notable in the following projects that encompassed

- prepaid services (Box B);
- a license bid (Box C); and
- customer-care and billing systems (Box D).

## Integration solutions—inherent flexibility

Operators and service providers need to bring new services to market in the shortest possible time. To do so, their telecom management systems, which are used for managing the network, services, and customers, must be flexible and fully integrated. An inflexible system cannot be adapted to do things for which it was not originally designed. Therefore, the introduction of new services or system expansion could require months of reprogramming. A lack of integration means that systems are not effectively linked, which leads to delays and inefficiency. Fortunately, Ericsson's integration solutions resolve these problems.

Anders Granström, manager of Integration Services, explains: "Our integration service adds functionality to our customers' infrastructure. The integration service is analogous to that of a doctor-patient relationship. The integrator is the "doctor" who not only treats the problem at hand, but also conducts tests and prescribes activities that prevent problems in the future. These activities are based on the patient's current state of health and take into consideration the patient's lifestyle. The medicine is only a small part of the proactive and reactive treatment the doctor can prescribe."

A key to Ericsson's services is *vendor independence*. When an operator or service provider wants to offer new services, many business systems have to be modified. For example, an operator may be technically able to offer a new service, but still cannot introduce it until the customer-care system is capable of billing subscribers for the service. This means that operators have to deal with several different vendors to update their systems. Worse still, the vendors have to cooperate to ensure that the updated systems are fully integrated into one another. This can be a very time-consuming process that leaves the operator vulnerable to competitors who bring the service to market ahead of them. With Ericsson's integration services, the operator has a single point of contact.

**BOX D, CUSTOMER CARE AND BILLING**

In 1996, a German client asked *edgecom* to help them procure a new customer-care and billing (CC&B) system and a finance system. Because client involvement is vital to the success of each project, a team was formed of *edgecom* consultants and staff from the client organization.

The team's first task was to analyze the client. The company was a service provider of mobile services with definite plans to offer their customers converged services—that is, to offer fixed-wire, data, and wireless telephony services as a package. The existing systems, however, could not support these new services and the client would soon outgrow its CC&B system.

The team next interviewed staff from different departments in the company to hear their demands and requests as relates to the new systems. Meetings were held with management and with staff from marketing, sales, information technology, finance, and customer care.

Having agreed with the client on the requirements, the team drafted the tender, which included all system requirements, including technical and commercial aspects. An *invitation to tender* was sent to various software providers and system integrators. Together with the client, *edgecom* evaluated the responses and issued a recommendation. The Board of Representatives accepted the recommendation, and negotiations with the suppliers were begun. *Edgecom* used its experience to assist the client and to ensure that the best possible terms could be reached.

To make a smooth transition from procurement to implementation, the company also served as a link between the client and its suppliers. This role included providing input on system requirements and finding viable solutions to fulfill them.

## Making things modular

Ericsson's integration solutions can help operators to break up interconnected and interdependent systems that have lost their flexibility. The systems provided by *Professional Services* are open, which facilitates making them work with existing telecom management systems and processes. In addition, expert help is provided for introducing these systems into the legacy environment and for maintaining and upgrading them throughout their lifecycles.

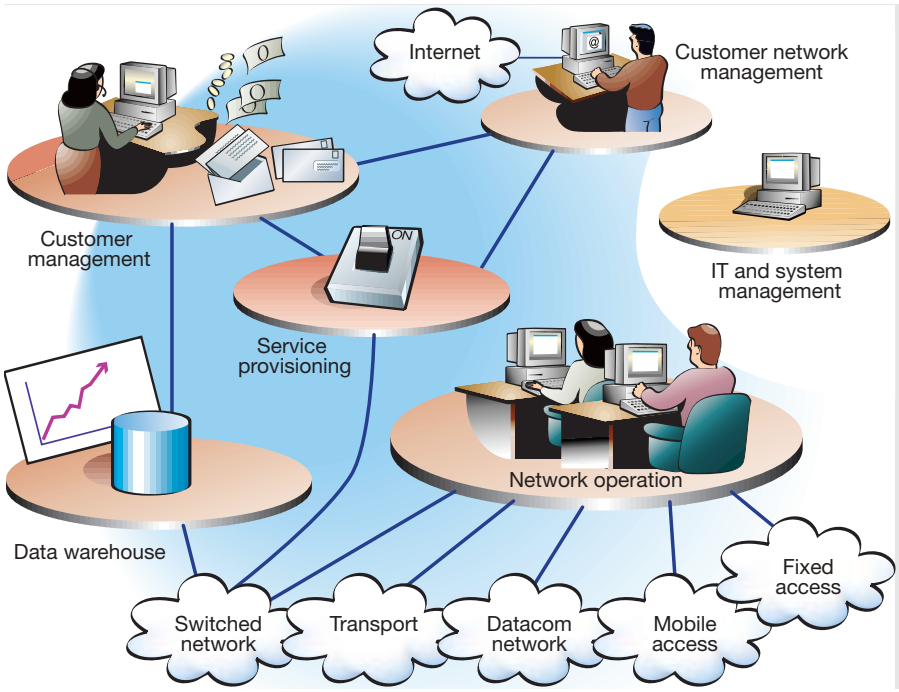
### The telecom management application framework

The systems and integration expertise that *Professional Services* supplies falls into six main areas of telecom management. For each application, one or more *best-of-breed* products have been selected and integrated to provide complete working solutions that cover an entire telecom management area. Links between areas have also been defined, making it easy to create solutions for processes that involve more than one application area (Figure 4).

Network operation comprises the operation and maintenance (O&M) systems that connect directly to the network elements themselves, to provide a local or remote means of controlling individual systems as well as network services. Ericsson's network-operation systems help in the understanding and management of links between network resources and service availability, thereby minimizing the negative impact on revenue-generating services.

Typically, operators build up their sys-

Figure 4
Six main areas of telecom management.



tems over many years, either from scratch or by heavily modifying what could be bought on the open market. These systems bear most of the burden of present-day change.

### Customer management

Ericsson's solutions include call-rating and billing systems, help-desk systems, and workflow or work-order systems. They also include links to network-operation systems for quick and easy realization of subscribers' requests. In today's marketplace, this means handling literally hundreds of different kinds of service.

### Service provisioning

Service-activation systems, which lie between customer-management and network-operation systems, are becoming increasingly important. They enable operators to offer customers highly competitive service packages, which contain multiple services that must be coordinated across a range of network elements from multiple vendors. Ericsson's systems automate service configuration and activation.

### Data warehousing

Data warehousing and data mining are relatively new areas with great potential for improving marketing effectiveness. They involve archiving and exploiting the huge amounts of information created within the network, and correlating that information with individual customers. Ericsson's systems help identify customer trends, which facilitates the marketing of special offers to likely prospects. The systems also enable sophisticated analyses of customer traffic patterns, which serve as input when constructing extremely competitive, tailor-made tariff options.

### Customer network management

Ericsson's customer network management tools—which include Centrex and virtual private networks (VPN)—provide unprecedented levels of control over the services that corporate customers need to use and modify day by day. The network management tools also enable corporate customers to access up-to-the-minute billing information. Similarly, the systems enable service providers and other resellers to control complex applications; for instance, to manage bandwidth and arbitrate broadband networks.

### IT and system management

Information technology (IT) and system management pertain to the computers and networks that run all other management systems. Ericsson's systems play a critical role in managing the evolution from mono-

**BOX E, INTEGRATION**

Through the network-management solution contract with StarHub Pte Ltd., Ericsson is demonstrating its ability to deliver software systems in a multi-vendor environment.

StarHub, a new telecom operator for converged, fixed, and mobile services in Singapore, is building a modern, world-class, integrated broadband info-communications network with leading-edge technologies and flexible platforms. The network, which will be principally fiber-based, will provide high-speed digital capabilities for innovative voice, data, mobility and multimedia services.

The contract covers a complete, integrated network-management solution. Ericsson will work with several vendors to provide fully integrated systems for the network management center. Ericsson is providing a highly integrated and flexible solution for

- managing network resources;
- proactively identifying network faults or degradation, and
- automatically correlating them with affected services and customers.

Installation will begin in August 1999, and the system will be in full operation by January 2000. StarHub chose Ericsson to supply integrated network management systems, which include the functionality

- to monitor different networks;
- to register and correlate alarms;
- to harmonize network performance with load-sharing, rerouting and so on;
- to handle problems in the networks using trouble tickets; and
- to provide a complete inventory of all network resources.

Ericsson will also construct the necessary interfaces to non-Ericsson equipment in the network and to element managers in various parts of the network.

Says Marc Roman, Telecom Management & Systems Integration, "Ericsson will be working with a number of vendors as well as with CAP Gemini to provide fully integrated systems for the network management center at StarHub. This contract shows that Ericsson is becoming increasingly recognized as a supplier of world-class solutions in the area of telecom management."

lithic systems to modular, distributed systems that

- enable rapid changes when necessary;
- give the right people access to the tools they need to do their jobs; and
- manage interfaces between new and legacy systems.

### The value of Ericsson experience

Ericsson's experience of providing long-term support and of upgrades gives it the edge over other retailers of telecom management systems, such as large computer companies, management consultants, systems integrators, and small companies with niche products.

### Best-of-breed policy

Ericsson's *best-of-breed* policy implies that it can choose and make use of any product with technical merit and richness of features. Engineers examine the openness of a product and the extent to which it works in multivendor networks and on multiple IT platforms in a distributed computing environment. They also assess the strength and stability of prospective partners, the quality of their resources, and their ability and willingness to adapt their products to the requirements of Ericsson's customers. Products are tied together in pre-integrated solutions that cover all or part of a telecom management area (Box E).

A key component of the system, Ericsson's network fault management (NFM), is a pre-integrated solution based on *best-of-breed* components that easily detects, manages, and corrects faults across networks, independently of brand or network technology.

### Quality improvement—the TEMS Total concept

The *Professional Services* unit works with operators to help them manage their networks. Christer Edmark, who leads *Quality Improvement Solutions* and the *TEMS Total Solutions* product unit, explains customers' changing requirements: "Operators demand that products and methods work together and yield total solutions that cover every aspect of network management—from network design to the monitoring of network quality and troubleshooting multivendor networks. There is also a growing operator requirement for smooth integration of planning and optimization tools. This is because a successful network is never fully developed, and cell planners and optimization engineers need to work closely together. To stay optimized, networks have to be monitored and fine-tuned continuously. Flexible tools are required for monitoring and diagnosing network behavior—for example, analyses of co-channel and adjacent channel interference, neighboring cell and scan-data analyses, handover definitions, and the tuning of prediction models. The introduction of PC-based cell planning tools—used on ordinary laptops by engineers in the field—drives the integration of planning and optimization tools. This results in low operator investment and support costs."

Ericsson's *TEMS Total* concept offers solutions to problems associated with quality-improvement: wireless and wireline networks, indoor and outdoor networks, voice and data networks, network design, quality assurance and optimization. These solutions are offered on a global basis and support every major network standard. *TEMS Total* provides every tool necessary for successful quality-improvement management.

Christer Edmark continues, describing the positive changes in the relationship that Ericsson is developing with its customers: "We are establishing partnership agreements with a number of customers, to better understand customer behavior and needs and to create a program for mutual development. This will enable us to provide our partners with better service through regular workshops and new releases."

### Professional services for Internet service providers

The activities of the *Professional Services* business unit are not restricted to fixed and mobile operators, but also include services for Internet access providers (IAP) and Internet service providers (ISP). Lars Löfberg, who heads the ISP group, explains: "Today, in addition to established ISPs, network operators are increasingly broadening their service offerings to include Internet service provision. Cable TV operators are also seeking to move into this lucrative market. With our consulting experience and comprehensive technical capability, we are ideally placed to help organizations break into the ISP market. Our integration skills also enable us to serve established ISPs. We supply turnkey solutions that encompass business consulting, solutions management, project management, vendor management, training, support and operation. These integrated solutions are provided locally with the

backup of an international network of systems integration experts. Our services include business development, design, implementation, acceptance testing, feasibility studies, customer competence development and support, and allow us to deliver a complete solution from concept to end product. Mobile data is set to become a major growth area, giving mobile operators the opportunity to provide innovative services, such as mobile network access, wireless telemetry and vehicle location systems. Ericsson is at the forefront of the development of these applications and the production of mobile data terminals, which makes us the ideal partner for fledgling and experienced ISPs." (Figure 5)

## Managed services—the NO&M service

Operators, in particular start-up operators, increasingly want to focus on business and marketing issues rather than on the day-to-day operation of their networks. They also want to minimize investment in operations staff and network infrastructure and bring their services to market in the shortest possible time. *Professional Services*' network operation and maintenance (NO&M) service (Box F) gives operators the choice of

- a totally outsourced network operation—where Ericsson operates and maintains the network from its own network operations center (NOC); or
- a service with Ericsson staff based at the operator's NOC—with the option of transferring operations to the operator's staff at a later date.

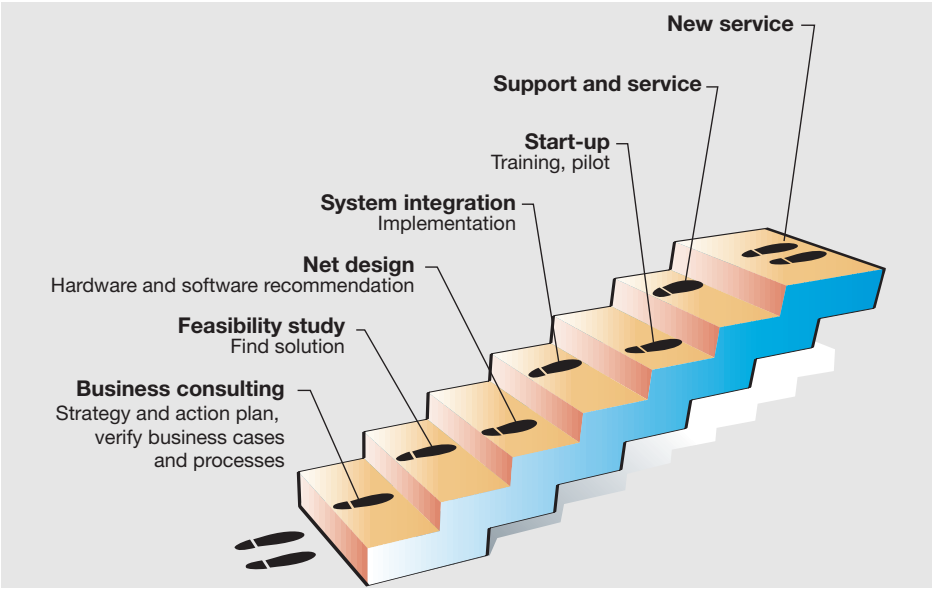
### Outsourcing—customer flexibility

Outsourcing is a growing trend for operators just entering a market as well as for established operators who wish to refocus their attention on sales and marketing instead of on network operations.

Jan Danielsson, Vice President and General Manager of the Managed Services arm of the *Professional Services* unit, explains: "By using an Ericsson NOC to manage several customers' networks, we make savings that can be passed on to the customer. Also, using an existing NOC minimizes the time it takes to establish network operations for the customer."

Outsourcing is a complex area. Therefore, extensive discussions and workshops are held with each customer to determine the scope of the service. From an Ericsson NOC, the service could range from out-of-hours

**Figure 5**
**The typical turnkey project plan, from initial business planning to service delivery.**



**BOX F, NO&M**

Through work with AIS, Thailand's leading cellular network service provider, the *Professional Services'* NO&M service has demonstrated its capabilities to fundamentally overhaul a network operation and improve efficiency of the GSM network.

The NO&M service is typically used to set up operations for a new market entrant, but in the case of AIS, the situation was more complicated since a network operations infrastructure was already in place. Ericsson had to retrain staff, introduce new procedures and reorganize the operations staff. At the same time, AIS had to continue providing its network services to subscribers. AIS was experiencing operational difficulties, which resulted in a decline in network quality. The network had expanded, putting pressure on operational processes and support systems.

The Ericsson NO&M service provided operational process re-engineering and IT infrastructure and training, making it possible to improve network quality and sustain growth in the future. Implementation began with the adaptation of NO&M processes to the AIS network environment. This was especially difficult because a compromise had to be made between documented NO&M processes and established processes in the AIS network.

At the same time, the Ericsson maintenance management information system was installed.

Training and certification are important elements of the NO&M service. The AIS staff were thus divided into two groups: one to operate the network while the other group was being trained.

network surveillance to handling every aspect of network operation and maintenance. Network management encompasses services for wireline and wireless networks.

### Build, operate and transfer—shortening time to market

The operator owns the operation and maintenance infrastructure—that is, the NOC, which includes the edifice, its IS/IT infrastructure and management systems. In this context, *Professional Services* designs, installs and integrates the operational environment and operates and maintains the operator network and the operational environment. After a given period of time, operators may opt to assume operations from Ericsson.

Operators benefit from Ericsson's experience of designing and implementing operational environments, and thus use their capital in the most effective way. They also gain immediate access to experienced operation and maintenance personnel, which shortens time to market by months.

The building stage of the service establishes the conditions for properly managing network operation and maintenance. The services offered are

- network operations planning and implementation; and
- systems integration telecom management.

During the operations phase, Ericsson manages the operator's NOC. The minimum period is typically one year. The services offered are

- centralized network and element management; and
- system support.

Today, projects often include the management of fixed-mobile convergence, an area in which Ericsson has unique expertise.

The transfer phase, which is a complete program for transferring network operations competence, comprises

- competence needs analysis; and
- the planning and implementation of development programs on a per-individual basis, including on-the-job training.

## Conclusion

Ericsson is undergoing a fundamental shift from being a technology supplier to also becoming a leading consultancy, by entering into partnerships with operators to help them to diversify and implement new services.

*Professional Services* has a strong commitment to creating business value for communication providers who look for trusted, value-for-money service, and confirmation that they are getting the best products available on the market. *Professional Services* combines expertise and resources in the areas of consultancy, telecom systems integration and network management, to provide responsive service.