## Case

# NEGBI – introducing new systems in the telecom market

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### Abstract

NEGBI is a large company that has telecommunication, coordinated by NEGBI PN, as one of its core competences. NEGBI PN had a strong market position based on supplying its high-quality switch, the complex device that connects senders and receivers in telecommunication networks. Changes over the past 20 years meant that many state-owned companies were privatized, forcing telecom suppliers to develop more competitive products. Technological innovations strongly increased the complexity in the market. These factors created a challenge for billing technology to master highly complex tasks. NEGBI PN decided to enter this market, due to its particularly high growth rates. Selling the systems was directed to local branch offices in 96 countries. Large turnover was expected because of the opportunity to reach potential customers world-wide. The challenge for NEGBI PN was to introduce their billing solutions with a solid marketing strategy.

An executive summary for managers and executives can be found at the end of this article.

## The company

With a turnover of £30 billion, National Electronics Great Britain Inc. (NEGBI) was the third largest company in Great Britain in 1996. It was divided into 16 different divisions which covered various areas of the industrial sector. Ever since the company's founding in 1895, telecommunication has been part of its main business. With a turnover of £3 billion, the "Public Networks" (PN) division was number two, in a market dominated by six large suppliers – following the market leader with only a very small difference regarding their turnover. For many years the main turnover generator for NEGBI PN were its so called "switches". In a way, these represented the center of telecommunication networks by analyzing and documenting a sender's (i.e. caller's) data streams before switching them on to a recipient. Normally, these systems were of a high complexity and a network operator's most significant investment. Not without pride, NEGBI liked pointing out that they had the "best selling switch in the world" with their own variety of connection knots. The main reason for this, was the superior technical quality of the NEGBI switches.

## The market development

The 1980s brought to pass a phase of extensive changes for the world's telecommunication sector. These changes originated in the fact that the operation of telecommunication networks was considered to be the responsibility of government. Consequently, most of the phone companies were government owned, so called PTTs (Post, Telegraph & Telecommunication). Throughout the years, the national meaning of telecommunication networks was increasingly questioned. Furthermore, the argument arose that the telecommunication service market could only keep up with the times if the market forces could freely unfold without being hindered by the state companies' monopolistic position. The turning point was in 1984, when in the USA, the

The case is based on a true story. Developments and numbers are authentic. Names and locations were altered by the author for reasons of privacy.

Teaching notes form the author are available on request from wriedt@esmt.org

"American Telephone & Telegraph" (AT&T), the world's largest phone company, was split up. This event led to a remarkable wave of deregulation in the telephone sector in most of the world's industrial nations. In Great Britain, to name only one example, British Telecom, which had held a monopoly position until 1996, was privatized and was faced with much competition.

The deregulation wave did not remain without consequences for the telecommunication technology market. The new operator companies sought the most advanced systems, in order to offer crucial competitive advantages to potential customers. To reduce customer loss, even the former monopoly operators had to improve their systems economically as well as technically. The race between the operators, the explosive development of technical innovations and the net traffic growth world wide created the conditions for an enormous expansion in the telecommunication market. The compound annual growth rate was expected to rise from $588 billion in 1995 up to $1,06 trillion in 2000.

These developments called for a change of structure for all large traditional manufacturers of telecommunication equipment. The former monopolists previously preferred to tie themselves to certain suppliers, mostly national ones, regarding technology and the procuring processes. These ties started to break, as the operating companies passed the pressure on to their suppliers. With the wave of deregulation, these suppliers had to face a dual challenge: meeting their customer's drastically changing demands and giving their businesses a much stronger international focus.

## NEGBI business unit "the public networks" (PN)

In order to prepare for the new situation, extensive strategic planning began in the early 1990s at NEGBI PN. This included creating nine different business units (BUs) and giving them full business accountability for their respective variety of products and services. The sales organization continued to operate in two separate units; the so-called local companies and regional sales. The local companies, of which NEGBI held 96 all over the world, were independent legal units and managed as profit centers. The local companies cultivated a direct contact to their regional customers. They were supported in this by employees appointed by the regional sales departments, who worked in the London headquarters as an interface to the BU's product-specific contacts.

Regional sales had the important job in coordinating all parties involved to prevent overlapping of services. The employees of regional sales were assigned to eight organizational sales units (RS1 through RS8). These units had been created on a geographical basis. Just like the local companies, these eight sales units had their own turnover responsibility. Consequently, a BU did not offer their products or services directly to the customer, but submitted an offer to the regional sales, who passed it on – possibly slightly modified, regarding price and/or service – to the local company. Finally, the local company presented it to the customer – again, with possible changes or adjustments regarding price and/or service (Figure 1).

The BU's decided independently about the structure of their product and service portfolios. In this context, every new BU had to consider placing those products and service areas which were assumed to have the best economic prospects. Within the BU TI (T = Telecommunication Management Networks; I = Intelligent Networks) the billing unit was considered significant in this respect.

Generally, billing stands for technology which supports the operator in his billing activities towards the customer. In the widest sense, it includes the recording and accounting of charges, and billing administration.

## The "billing-project"

The billing subject is not to be treated lightly, neither technically nor organizationally. This can be shown by the following examples:

- *"Value added services"*. The possibilities of net usage are becoming more and more complex. More services such as phone conferencing, voice-mail and automatic call directing services are offered in the telephone sector. These services complicate the accounting by their segment-specific billing system. The service Universal Number allows the customer to activate his personal phone number in different phones at different times. The customer can, for example, still phone with his private number when he is in his office, but also activates this number when he is at home. However, the two locations may be in two different charging zones and thus have to be billed differently.
- *"Flexible charges"*. The tougher the competition, the faster operators have to be able to adjust their fee structure to new market situations. The time required to change the billing system to new fee models is of greatest

**Figure 1** PN's organizational structure
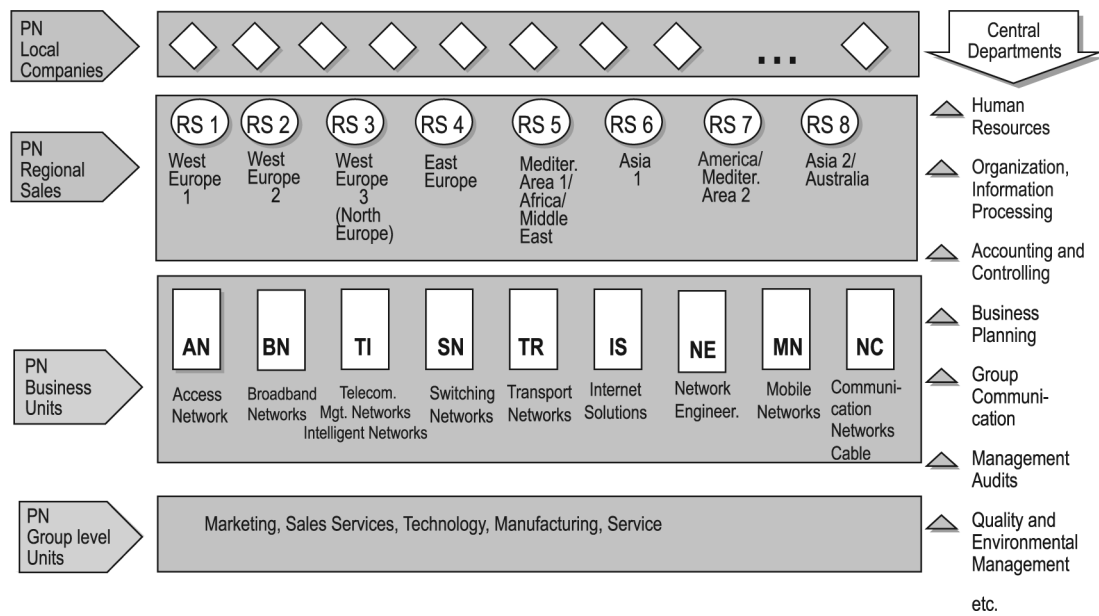


importance here. This is exactly where many of the large operators' mainframe-based billing systems have proved their disadvantage: due to difficult software modifications, their adjustment of price policy often takes months or even years. In the course of such an adjustment in the 1980s, AT&T lost many of their customers in the US because they were incapable of reacting promptly to the MCI-price concept "Friends and Family". (The "Friends and Family" concept allows the customer to define certain people – especially friends and family – and pay lower fees for calling them.)

- *"Service time"*. The time needed to supply a customer with a service offered ("Time to market") is a crucial factor of competition in many markets. For example, buyers of mobile phones increasingly expect to be able to phone immediately after their purchase. Not only does this mean, that the existing telecommunication network has to adjust instantly to the new participant (i.e. the switching centers), but also that the billing system has to be configured within the shortest amount of time.

- *"Convergence billing"*. More and more operators offer their customers several network technologies, such as wireline and wireless phoning, Internet, and cable television. In spite of the great variety of networks involved, billing should preferably be done through only one system so that the customer obtains an overview of all charges on one bill only. In this context, aspects of

cross-technology price-linkages have to be considered, for example for using wireless a customer receives a discount on their wireline services.

- *"Payment management"*. Billing systems have to supervise the administration of received and outstanding payments, while keeping up a constant communication with other systems. For example to handle customers' payment by bank transfer, the bank has to coordinate with a phone company's accounting. Often, banks use their own software programs with special software standards and features. All these systems have to be compatible with the phone companies.

- *"Journaling"*. Operating companies have to be in a position to outline their current financial and economic situation to any internal or external party at any time. This implies that operating companies have to be capable of summarizing the results of their billing activities to submit relevant information in a over-all company context.

The list clearly shows the need for high standard technology in billing activities. The market volume in the area of billing technology world wide was estimated to be as high as US$15-25 billion from 1996 until end of 2000, showing annual growth rates of 13-17 percent.

However, for the year 1996, it was generally agreed that nearly 60 percent of the market would be covered by the large operators' own development. Due to the considerable significance of reliable billing systems, the operators insisted on

keeping the billing systems in their own hands. However, due to the increasing technical complexity of billing systems, more operators shifted towards buying billing systems instead of developing them themselves. The estimate for the operators' share of bought solutions, within the billing area, was predicted to double by the turn of the century.

NEGBI PN did not have any experience with billing, as in the past, their main focus had been on switching and voice/data transmission. Nevertheless, in the summer of 1995, the BU TI decided not to ignore this attractive part of the telecommunication market. Furthermore, the idea was to become an universal-supplier and a systems integrator in the Telecommunication Management Network (TMN) area, where billing presented one of the central elements. Two large IT consultancy companies had so far established themselves in the market as TMN integrators, without producing their own hardware and software.

Normally, NEGBI tended to develop all important software products on its own. Yet, since the development of an own billing basic software would have taken too much time, it was decided to use a complete software product as a basic system, that would allow changes in customer specific solutions. Such a customization and integration of the basic software added up to 50 percent of the billing solution production costs. The other half of the costs consisted of software licenses and hardware investments in approximately equal parts.

In order to find the best billing system, all of the 40 companies offering corresponding software products were considered. None of these companies had reached a leading market position at that time. After several months of evaluation, Marple/BP of Kent System Inc. (KSC) was identified as the best product. The responsible personnel at NEGBI favored it, mainly because of the following aspects:
- the open interfaces guaranteed high compatibility with other software systems;
- the multi-server architecture promised high scalability;
- the architecture of the database guaranteed easy configuration of the system and thus very high flexibility; and
- the basis of Microsoft Windows as the operating system for the user interfaces predicted a high usability and acceptance by customers.

The first point seemed of high importance from BU TI's point of view, as the plan was to implement other elements of network management along with the billing system. For example, the so-called provisioning systems were considered. This way, a new user's phone number could automatically – that is "remotely" – be connected to the switching center by the customer service assistant. Concerning the same subject, the plans for developing an interface between the switching centers and the elements of the network management had to be considered as well (Figure 2).

## The partner

For the first time in its existence, KSC was ready to cooperate with a different company as value adding reseller (VAR) of Marple/BP. This meant that NEGBI was given permission to independently sell Marple/BP. Kent Allor, the owner of KSC, stated that a sale of the company or an exclusive marketing right was not an option for him.

Kent Allor established the company in 1982. In the 1940s he immigrated from India to the USA as a penniless adolescent and invested everything into his education. Soon he got a scholarship from Massachusetts Institute of Technology (MIT) and became a professor after excellent exams and an exceptional dissertation. Next door to the university, he then set up his company. In 1995, KSC had approximately 100 employees in Chicago, Los Angeles and Boston, where the headquarters were located. The company had been through a period of fierce growth since its founding. The last two years had added particularly to this development.

At conferences and trade fairs Kent Allor often surprised his audience by emphasizing that he did not consider himself in the service enterprises field but rather as a product seller. In March 1996, KSC and NEGBI negotiated a partnership contract. It regulated the conditions under which NEGBI was to act as VAR of Marple/BP. Immediately after signing the contract, the partnership was announced to the market by means of a press release.

## The task

The billing project group's leading position at BU TI was given to Mr Friend, who had worked successfully at NEGBI PN for several years in product planning and marketing. Although the development engineers of the newly formed project organization were still hierarchically assigned to the head of development of the BU, Mr Friend was responsible for the new group's coordination.

**Figure 2** Elements of a network-management-system discussed at NEGBI PN
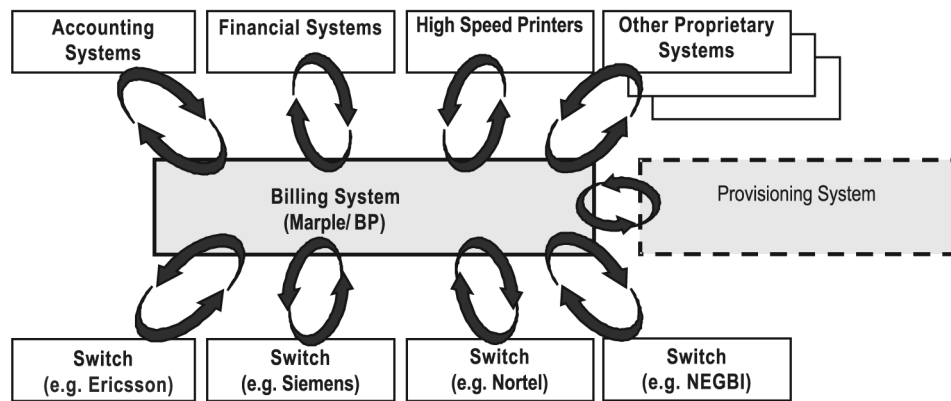


Only a few months after signing the contract with KSC, the first marketing steps of the new billing project group were achieved. First, one of Great Britain's new operators had contacted Mr Friend to show his interest. This company had already ordered several components of a new network that was to be installed by NEGBI PN. It was very pleased to learn that the billing solution was also to be obtained from NEGBI. This operator had a relatively small network with regard to customers, but the high complexity of the performance needed (different value added services and rate structures) combined with a narrow time window made the implementation and customization of the billing system a fastidious task. Moreover, the customer had ordered a complex provisioning system from NEGBI PN to which the billing system's interfaces had to be customized.

The second customer to be won was a big carrier in a central African country. This customer had ordered a billing system. No other network elements or systems had been ordered at that time. A personal friend and former colleague of Mr Friend, who now worked for PN-Regional Sales and knew the president of that monopolistic PTT, had made this contact.

In December 1996 the head of BU, with regard to these two assignments, decided to push up billing activities and make a concerted move towards international success. Besides planning to increase the numbers of employees (from ten to 40 in the billing group), some ambitious goals were set together with Mr Friend. These included increased assignments, turnover and earnings for the next two years. They also decided to open an office in Boston which was to optimize the KSC interfaces, to develop the billing project development in the USA, to support the training of billing development engineers and to create the billing group's marketing.

"The billing group is the pearl in our business unit's crown", Mr Friend was assured by BU's head, "we see a great business future worldwide and a great personal future for you, too". With regard to the estimated growing importance of the billing group Mr Friend was asked to draw up a "strategy paper" concerning his business sector and explain the status as well as the expectations in it. The central declarations of this "strategy paper" were to be presented during the next BU top management meeting.

## Appendix

(Press release from March 18, 1996, concerning the NEGBI-KSC-partnership.)

**NEGBI Signs Worldwide Agreement with KSC**
NEGBI to become value added reseller and integrate KSC's Billing and Customer Care platform into its TMN product portfolio

BOSTON, MASS. – March 18, 1996 – KSC today announced a worldwide partnership with NEGBI in the area of billing and customer care. NEGBI will integrate KSC's Marple®/BP telecommunications billing and customer care platform into its TMN System applications suite. NEGBI's TMN System provides network operators and service providers with a complete portfolio of customizable management solutions. KSC is presenting Marple/BP on the NEGBI stand, No. F12, in Hall 16 at the CeBIT exhibition, Hannover.

The current world marketplace holds significant market opportunities for an advanced billing and customer care platform. Worldwide

telecommunications providers and cable operators are broadening their service offers to include video-on-demand, on-line and telephony services, all requiring increasingly sophisticated billing systems. This strategic partnership with NEGBI will ensure greater worldwide availability of Marple /BP, complementing KSC's direct sales activities.

"This is a highly competitive market, and we have recognized an urgent need among network operators and service providers for fully integrated and highly automated management solutions", commented Claudia Julien, president, TMN&IN (Telecommunication Management Networks & Intelligent Networks) Business Unit, at NEGBI. "We chose to partner with KSC because of the company's proven, client/server-based Marple/BP architecture, its technical expertise and significant experience in billing and customer care".

"We view this as a strategic partnership", commented Kent Allor, PhD, KSC president. "We will work together on product enhancement and marketing globally. In addition, NEGBI will provide its customers with support for Marple/BP, backed up by KSC's technical experts. Working with an industry leader such as NEGBI and integrating our specialized billings product into NEGBI's TMN System Products will add significant value to the Marple/BP solution".

### Sales and support
Both KSC and NEGBI will be dedicating staff to the partnership. This includes the establishment of sales consultancy, and development teams at NEGBI who will receive training from KSC. NEGBI will offer its customers the full range of professional services, product customization, system integration, and maintenance support.

### Marple/BP
Marple/BP is the industry-leading, UNIX-based invoicing and customer care solution. It has been licensed by a number of *Fortune* 100 telecommunications and information services companies including AT&T, US WEST and MCI/ News Corp. Internet. KSC provides a full complement of integration, training and maintenance services in support of Marple/BP deployments. The same services will be provided by NEGBI.

The product provides comprehensive billing functions, including: message processing, rating, discounting, bill production, remittance processing, accounts receivable, collections and journaling. At the same time Marple/BP provides critical customer care functions including provisioning, account inquiry and adjustments. The product's flexible architecture ensures that it can also be tailored to meet the unique billing and customer service requirements of diverse providers.

The system operates over distributed, highly scaleable and flexible UNIX-based environments. The Marple/BP architecture exploits multi-processing hardware platforms to provide high-volume transaction throughput. Utilizing a high performance SQL engine and a comprehensive graphical-user interface (GUI), the billing solution offers support for a distributed client/server architecture.

### NEGBI
NEGBI is a major global vendor in all areas of electronics and information technology. With successful operations in 200 countries around the world, revenue turnover in Fiscal 1995 was approximately equivalent to US$53 billion. Telecommunications is a key business area for NEGBI, and the company focuses on providing complete, future-oriented solutions for all technologies including transmission networks, cellular radio networks, intelligent networks, broadband networks, switching networks and access networks.

### KSC
KSC is a leading provider of strategic software products and services to the Fortune 500. With headquarter in Boston, Massachusetts, offices throughout the US, the company delivers powerful software solutions targeted at the operational and decision support needs of large organizations in telecommunications and other industries. Marple/BP has been deployed in several large organizations including AT&T, US WEST and MCI/ News Corp. Internet.

### Questions to NEGBI
(1) Please analyze and evaluate the situation of NEGBI's Billing-Group. In doing so, pay also attention to:
  • the market development;
  • the competition; and
  • the partner.
(2) Please provide an overview of possible (dis)advantages of NEGBI PN's current sales structure for the development of the billing group.
(3) Please use the results from your analysis so far to suggest a planning approach to Mr Friend for the further developments of his billing group.

## Executive summary and implications for managers and executives

*This summary has been provided to allow managers and executives a rapid appreciation of the content of the article. Those with a particular interest in the topic covered may then read the article* in toto *to take advantage of the more comprehensive description of the research undertaken and its results to get the full benefit of the material present.*

### The company

National Electronics Great Britain Inc. (NEGBI) is among the largest companies in Great Britain. A total of 16 divisions generate an annual revenue of £30 billion in various industrial sectors. NEGBI PN (Public Networks) is specialized in telecommunication technology, one of NEGBI largest operating fields with an annual turnover of £3 billion. NEGBI's strong position in the telecom sector was based on producing and selling its switch, a complex device that connect callers and recipients. To strengthen the market position the management of PN was highly interested in developing and launching new products and services. Introducing billing solutions was one of these areas, where growth was expected.

### Changes in the market

In the 1980s, the world faced a privatization wave in the telecom sector. Large state-owned telecom firms were split up und privatized. Formerly stable markets, dominated by only one player, now changed into dynamic markets with several smaller firms. The market pressure, evolved from fierce competition, was shifted from the operators to their suppliers. New products and technologies were demanded to create crucial competitive advantages. New demands, fuelled by increased consumer mobility and new technologies, contributed strongly to this effect.

### The product

All new technologies had to be implemented into the operators' billing systems, which consequently had become very large and complex. Yet, these systems had to remain flexible in order to react instantly to new market developments. Furthermore, customers expected to be charged on only one bill for all the services provided. Operating companies formerly kept their billing systems, the core of their administration and revenue generation, completely in their own hands. However, increased technical complexity pushed operators towards buying solutions from external specialists.

### The partner

The intention of NEGBI PN was to provide complete billing solutions. The customization and integration of the system should have been done by NEGBI employees, hardware and software was to be bought externally. After careful selection of all software products in the market, they contracted Kent System Inc. (KSC) for their product Marple/BP. NEGBI was given permission to independently sell Marple/BP. Kent Allor, the owner of KSC, stated that a sale of the company or an exclusive marketing right was not an option for him.

### Activities so far

The market volume in the area of billing technology worldwide was estimated at 15-25 billion, showing annual growth rates of 13-17 percent. NEGBI, attracted by large potential revenues and attractive growth rates, moved into the new market. A billing group was established, headed by Mr. Friend, who had worked successfully at NEGBI PN for several years in product planning and marketing. The billing group was soon contacted by a British telephone operator who showed interest as well as by a big carrier in a central African country. The billing group initially consisted of ten people, however, it was to be expanded to 40 in the near future.