

Redesigning Business Processes through IT

Staying at the Top with Otis Elevator: Sustaining a Competitive Advantage through IT

This case won the 1992 Case Writing Award (category: Technology Management) given by the European Foundation for Management Development (EFMD). It was prepared by Claudia Loebbecke, Research Assistant and Tawfik Jelassi, Associate Professor at INSEAD. It is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

Introduction

Otis has been the leader in the elevator industry in France for more than a century. In fall 1991, about six months before the scheduled implementation of SAFRAN-O, the last of five information technology (IT) applications resulting from the new Master Plan launched in 1986, Bruno Grob, CEO of Otis France, wondered how and to what extent IT had contributed to sustain this unique market position, as well as if and how it could do so in the future. 'The competitive advantage doesn't come from the tool [the computer system]. The tool is a tool, and the tool will remain a tool . . . The tool should be served by a strategy, by a human resource, training, motivation, and anything else.'

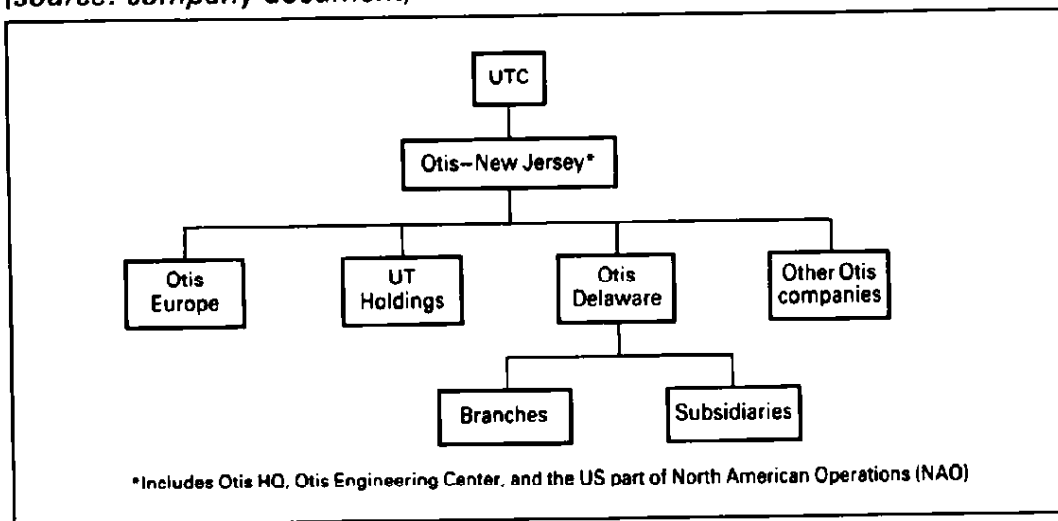
Otis Worldwide (Overview)

Otis Elevator was founded by Elisha Otis in 1853. Over the last 140 years, it has been a world leader in the manufacture, sales, and service of elevators and related products. Its products and services are renowned for their quality and are sold for a premium price. Otis especially dominates the market for the sales and maintenance of customized elevators as well as elevators for large projects. During the last five years it has increasingly turned into a service company, whose main business is, as Pierre Istace (Quality, Marketing and Communication Manager at Otis France) put it, 'to transport people, not to manufacture lifts.'¹

In 1975, Otis Elevator became a subsidiary of United Technologies Corporation (UTC), one of the fifty largest industrial companies in the world. UTC owned 100% of the stock of Otis New Jersey (ONJ), which is the parent company of Otis. (For the legal structure of Otis see Exhibit 1.) This affiliation opened the door to massive R&D resources for Otis. Through collaboration with the UTC Research Center, Otis developed electronic elevators and increased its efficiency in installing elevators.

Otis Elevator with its four geographical divisions, North American Operations, Latin American Operations, Pacific Asian Operations, and European Transcontinental Operations (ETO), was the only elevator company with a strong presence in every continent.² There are about 46,000

Exhibit 1 *The legal structure of Otis Elevator, worldwide*
(source: company document)



Otis employees based in approximately 570 headquarters, district and branch offices in 45 countries. Otis world headquarters are located in Farmington, Connecticut, US. For an overview of the management organization see Exhibit 2. The structure of Otis Europe, a holding company domiciled in France, is shown in Exhibit 3.

Otis worldwide revenues are almost twice that of its nearest competitor. Competitors range from elevator divisions of multi-billion dollar conglomerates to small local firms with a handful of employees and no manufacturing capabilities of their own. Otis' six main rivals are: Schindler (Switzerland), Mitsubishi Electric Corp. and Hitachi (Japan), Kone (Finland), Dover Elevator International (US), and Thyssen (Germany).

Exhibit 2 *Otis management organization (source: company document)*

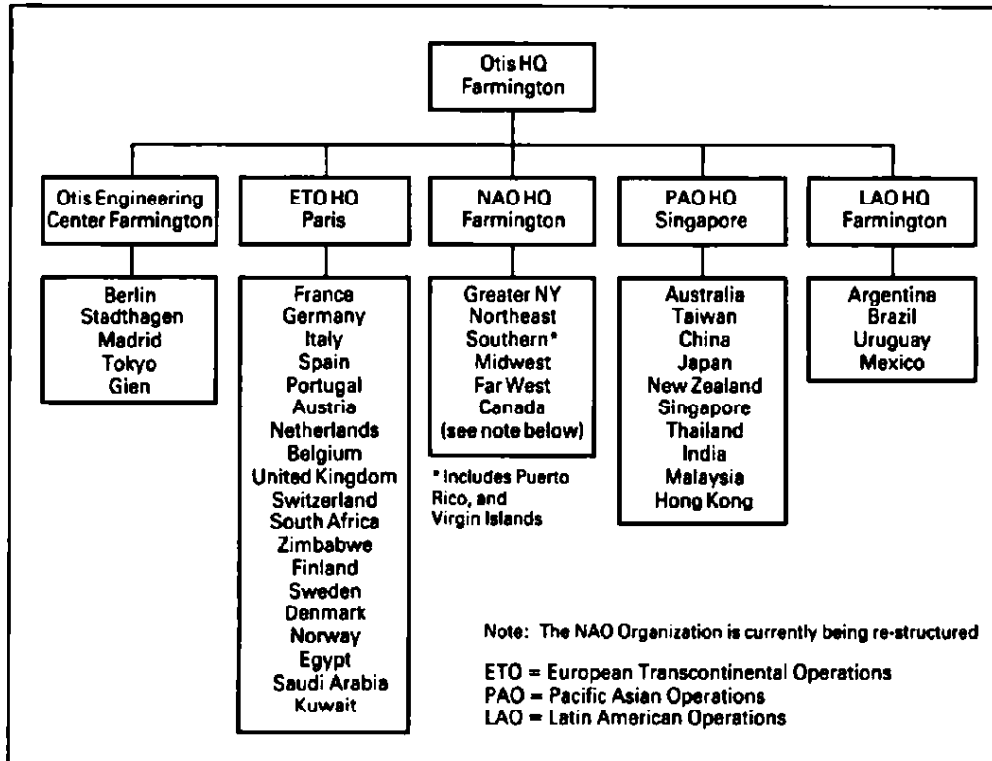
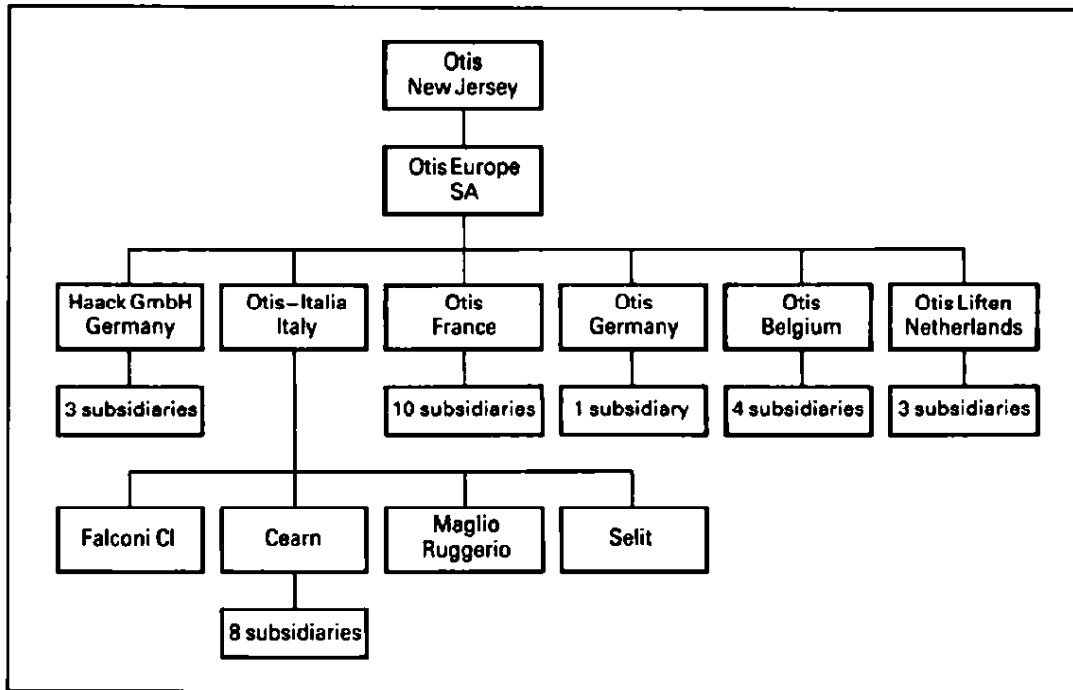


Exhibit 3 *Legal structure of Otis Europe (source: company document)*

The Elevator Industry

The two main business sectors of the elevator industry are 'New Equipment' and 'Service'. Due to the direct correlation with the building cycle, elevator sales represent a cyclical business sector, while the elevator service market is characterized by strong stability. Of the two business sectors, service accounts for a significantly higher portion of profits. Elevator manufacturers therefore often accept a low margin on the sale of new equipment in order to obtain the service contract.

The service market has attracted many small companies that did not produce elevators themselves. As long as elevators operated on the basis of electro-mechanical devices, these companies could compete successfully, since the interior design of almost all lifts on the market was very similar. With the introduction of microprocessors in the manufacture of elevators, some small companies had to reduce their service offers; they had neither the equipment nor the appropriately trained personnel to cope with these new developments in the elevator market.

Thus the use of new technologies increasingly 'regulates' the oligopolistic elevator market, providing additional benefits to the big players who

are also producers of equipment: an elevator manufacturer typically receives service contracts for 60% to 80% of its newly installed equipment. Furthermore, for elevators with microprocessor-based control systems, the manufacturer is likely to keep the service contracts since small, local companies cannot provide appropriate maintenance.

Otis France

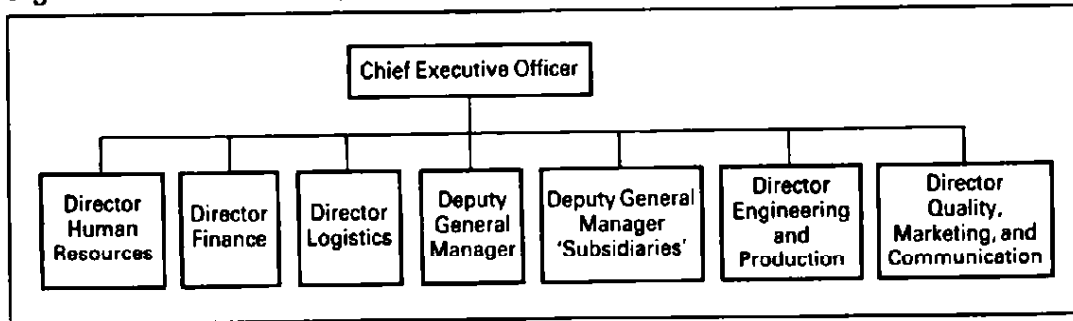
There are three common types of elevators: gearless traction, geared traction, and hydraulic; escalators and travelators can be viewed as complementary products. Activities associated with these products are New Equipment and Service. The New Equipment business is made up of sales, manufacturing, and construction. The Service is made up of some sales (spare parts), a small amount of manufacturing, and a large field labor force engaged in four types of services: contractual maintenance, repair, modernization, and replacement.

Contractual maintenance is about 70% of total service sales. Here the customer is usually different from the new equipment one (the construction contractor is seldom the final building owner). Therefore, the selling price of the maintenance contract is established once the building is completed and separately from the new equipment contract. Repair service consists of putting the elevator back in order, while modernization improves its operational condition. Repair margins are generally less than the margins for contractual maintenance, but higher than the modernization ones. However, modernization is a growth business in which – by definition – the market increases by age.

Otis France with about 6,400 employees serves approximately 40,000 customers. While about 1,400 people are employed in staff, management, sales, R&D, and administrative jobs, another 1,100 individuals work in one of the two company's factories in Gien (800) and Argenteuil (340), and almost 4,000 work in the field.³ Due to the scope of its business, Otis France's organizational structure divides the country into three 'zones' (East France, West France, and Paris with suburbs), 28 branches, and 180 commercial agencies. [The organizational structure of top management (the Executive Committee) is shown in Exhibit 4.] This organization also includes 10 subsidiaries (100% owned) grouped under the name of CFA and covering the whole country.

Otis France is the leader in elevator sales and service in the French market. With a turnover of more than \$0.7 billion it has a market share of 39.6% of the elevator market in France. Its three main competitors in this

Exhibit 4 *Otis France Executive Committee (top management's organizational structure) (source: company document)*



market are Schindler (18.3% of total turnover in the market), Kone (12.4%), and Soretcx⁴ (8.5%). (In 1988, Schindler acquired the elevator and escalator interests of Westinghouse Electric Company in the US.) About 60% of Otis turnover originates in service, while 40% results from new equipment sales or intercompany exports of equipment to Otis sister companies in Europe or agents in Third World countries.

Information Technology at Otis France

In early 1986, Otis France used three main IT applications to support its elevator business: OTISLINE, the Customer Database, and REM (Remote Elevator Monitoring). OTISLINE was adapted from a successful implementation at Otis North America. REM was introduced to the French market after it had been developed and tested as a prototype in the US.

OTISLINE

In late 1981, Otis North America began exploring how IT could be used to enhance customer service and improve responsiveness to their service requests. This resulted in the development of OTISLINE, a centralized dispatching unit that has access to all customers and their associated products/maintenance data. OTISLINE has drastically improved the company responsiveness to customer callbacks. It has enabled not only a complete redesign of the customer information system, but also the creation of a new industry standard for service. Due to its success in North America, the OTISLINE concept was adopted and installed by other divisions within Otis Worldwide, including Otis France.

In France OTISLINE was also set up as a national communication center for the Otis maintenance activity. However, due to some local features (e.g., a different zip code and address structure, and a telephone network that was less accessible for repair mechanics than in the US), the installed OTISLINE is different from its US counterpart. OTISLINE in France, as in North America, operates 24 hours a day, seven days a week, receiving customer phone calls from building management and users and dispatching, as quickly as possible, Otis service teams to the elevator site. Customers are charged for the OTISLINE service; a factor that has increased their service expectations. On average 2,400 phone calls are received per day from customers and 800 from Otis repair technicians. OTISLINE keeps a record on each elevator; every event (e.g. an inspection, a repair, etc.) is stored in the computer database. The Otis Maintenance Center as well as authorized individuals within the company can access this database and use the relevant information for their activities.

Customer Database

With more than 40,000 customers stored, the customer database can be used by sales, marketing, and communication people. For each customer a variety of information is available: address, phone number, name of people involved with elevator activity, annual turnover with Otis, pending negotiation, direct marketing campaigns, and results of customer satisfaction surveys.

Remote Elevator Monitoring (REM)

Otis North America successfully introduced the prototype of a 'Remote Elevator Monitoring' (REM) system which uses microprocessor technology to monitor an elevator performance and automatically notify Otis if it is malfunctioning. If the performance deviates from predetermined standards, the REM Master Unit, which is installed in the machine room, sends a message over a dedicated telephone line to Otis. Functions with abnormal performance readings are corrected during regular maintenance. If a shutdown occurs, the REM system allows Otis to determine, through a bidirectional voice-link between the cab (located inside the elevator) and OTISLINE, whether passengers are trapped in that elevator.

The major market for REM is France, where more than 7,000 units are implemented. In other European countries, only a few hundred REM systems are installed, while in the US, Otis North America has not sold any.

REM has an external and internal impact. Introduced as an additional customer service, it serves as a diagnosis tool which automatically feeds the shared company database. It enables preemptive maintenance (striving for the goal of zero callbacks) and thus reduces maintenance/service costs and improves customer satisfaction. 'With REM' says Logistics Manager Pierre Amar, 'we should have no breakdowns any more, because we should be able to be on the job site before they occur.'

The Birth of the Master Plan

In the summer of 1986, top management at Otis France contemplated the use of IT within the company. They were aware of the competitive advantage resulting from OTISLINE and REM, from both an external (customer) viewpoint and an internal (organizational) perspective. They thought that additional benefits could be gained from the development of new IT applications that improve efficiency and facilitate the flow of information across the company.

To support its internal processes, Otis was still using a system developed in the early 1960s and based on the technology that was available at that time. This system lacked mainly the ability to provide business estimates and process customer information. Every time during the last twenty years when a change was made in the organizational structure or in the business conduct, there was an attempt to adjust the computer system to the introduced changes. Says Pierre Amar, 'we realized that the system, the technology, and the organization were the three dimensions of the problem. So we felt that we'd try to understand where we go from now and we decided to set up the "schéma directeur" [the Master Plan] of our project.'

The idea of an IT application that could contribute to a redesigned retail system was introduced. However, top management were convinced that the development of further IT applications had to be based on an organizational redesign. They agreed that any new system could only serve as a tool for a pre-developed business strategy. Says Bruno Grob, 'the tool itself won't create the strategy, the motivation, the teamwork. The tool itself will create nothing. If it comes within a strategy, then it's outstanding; but it has to be prepared far in advance.'

The 'Master Plan' Project

The Concept

Otis France's goal was to simplify the managerial and operational procedures

related to the processing of a customer order. Central to the project was the inter-relationship between these procedures and the organizational structure with decentralization of responsibility driving the design. The entire process, from the initial contact with the customer through the installation of the elevator, was reviewed and redesigned. Says Bruno Grob, 'simplify processes and make them clearer, that was the main point. Once that was done, even imperfectly, we could design systems to respond to them. Obviously we had the computer in mind, but it was not the purpose of our exercise.'

The People Involved

Top management's decision to launch the Master Plan led to involving several employees from different levels in the project. Pierre Amar noted that 'the first step was not to leave that to the IT people.' Three committees (the Steering Committee, the Project Team, and the Users' Council) were officially formed to participate in a variety of tasks.

The Steering Committee consisted of the CEO and all the first-line directors. It was 'in charge of talking to each other and trying to understand where they would like Otis to go in terms of systems to support the company strategies' (Pierre Amar). The committee monitored the progress of the entire project, validated the results, and gave general guidelines. Bruno Grob, who at the start of the committee work was Deputy General Manager, was later promoted to the position of CEO. From that point on, he became the key driving force of the project, even more than before.

The Project itself was assigned to a newly formed dedicated team, called 'Direction de l'Organisation'. Its make up was intended to cover a broad range of experience and knowledge about the company. It had five members from the Organization Department including the Corporate Organization Manager.

The Users' Council, consisting of thirty individuals coming from the various areas of the company, examined and ratified the work and recommendations of the Project Team. It ensured the coherence and completeness of the project and carried out the management decisions. Furthermore, the Users' Council submitted its own proposals to the Project Team and prioritized the Steering Committee's actions.

The Beginning of the Project

Otis started with investigating the characteristics of its business. 'Our

approach,' says Pierre Amar, 'was not to look at the problem from the system point of view, but to audit the existing situation, the organization itself.' The goals of that process were twofold: first, to analyze the current business situation and to improve the understanding of what the company was actually doing in order to generate profits; second, to increase awareness of the 'Master Plan' project. The Users' Council became enthusiastic about it because its members were able to talk about what they knew. Thus the Project Team had successfully created broad commitment for the subsequent steps.

Says Pierre Amar:

We started explaining what we were doing: designing, manufacturing, selling, maintaining elevators, managing people, etc. We tried to match the major business areas with the organizational units as they were at that time. This resulted in a matrix reflecting who did what. Afterwards we attached ratios to the matrix fields showing each person's resource allocation. We had two industrial locations: Did we need both of them or would one suffice? We were organized in branches which were providing two main services: modernization and maintenance of elevators. Was that the right way to handle our business? People started looking differently at the way the company behaved.

During that process we discovered that one aspect was missing in our approach: the customer. We had never had the customer as a driving factor in what we were doing. In the branches we were driven by geography rather than by market segments, or even by the customer himself. We found that our whole business was contract-oriented: We were handling contracts rather than dealing with customers. That was the very big start.

Then we started thinking of what should be the processes and the systems to support them. We described each process and analyzed who our customers were. Afterwards we investigated the communication aspects: Who dealt with whom and what kind of information was exchanged? We ended up with the target architecture of our processes rather than of our systems (which did not exist). We described the processes and determined the amount of information we wanted to handle in the future.

The Development Methodology Applied

In defining their information systems requirements, Otis – with the help of an external consulting company – developed and applied a methodology which used the company's strategic goals to drive the system design process. This methodology divided the whole process into four main phases, which were implemented in a step-wise manner. The four phases were:

1. assessment of the current organizational structure including a functional breakdown of the business as depicted in the strategic plan,
2. assessment of the existing information systems,
3. planning of the new organizational structure,
4. planning of the new information systems (including the systems' architecture and implementation).

These four phases, depicted in Exhibit 5, provided the functional and technical design of the new retail system and constituted the 'Master Plan'. Their associated time frame is shown in Exhibit 6.

Exhibit 5 *Development sequence of the Master Plan's phase (source: company document)*

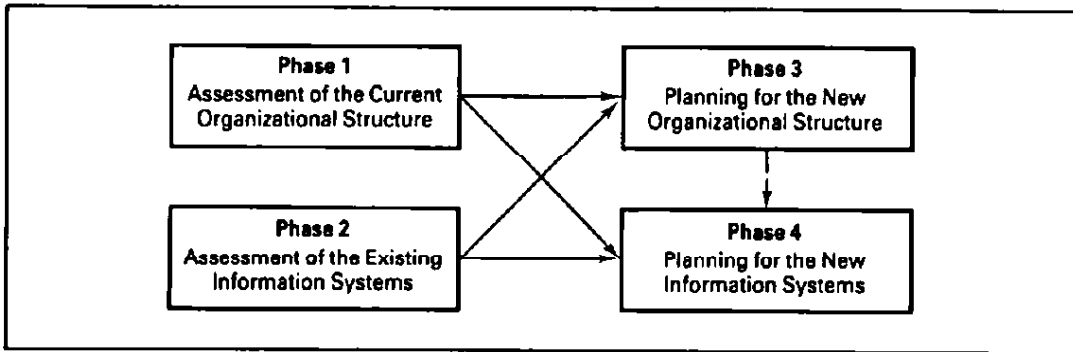


Exhibit 6 *Time frame for the development phases (source: company document)*

	Feb. '86	March '86	April '86	May '86	June '86	July '86
Phase 1	21 X	24 Y				
Phase 2			7 X	24 Y		
Phase 3				5 X	14 Y	
Phase 4					6 X	18 Y
						3 Y

X = Meeting of the Steering Committee
 Y = Meeting of the Users' Council
 The meetings always mark the end of a phase.

The development phases determined three levels of investigation (conceptual, organizational, and physical) and two main tasks in the process (evaluation of the present situation and generation of solutions). The conceptual level, 'What has to be done', provided the link with the strategic dimension and resulted in the redefinition of the business domains. The organizational level, 'How to do it', investigated alternative choices for the company; its findings suggested a new organizational structure and a set of information systems. The physical level, 'With what to do it', determined the resources needed to implement the project.

Results of the Master Plan

The results of the Master Plan can be categorized into two interdependent areas: organizational changes and new IT applications. For the latter category, the Master Plan provided a conceptual description of five new IT applications (SAGA, SALVE, STAR, SAFRAN-N,S,K and SAFRAN-O) to be implemented between 1986 and 1992. These applications support negotiation, sales/contract management, invoicing/accounts receivable, purchasing management, and accounting. Their design is based on the concept that each type of sales (e.g., sales to a new customer or to an existing one, maintenance, repair, or modernization) follows the same basic procedure.

The New IT Applications

The five new IT applications include SALVE, a support system used by sales representatives in their negotiations with the customer from the initial contact to the booking stage. Once the order has been booked (order received by the factory), it is passed to SAGA, a contract management system which creates and maintains the sales order. SAGA can be viewed as a special contract control system. Information gained from SALVE and SAGA serves as input for STAR, the purchasing and supplier management system. SAFRAN-N,S,K handles invoicing and other accounting functions related to modernization as well as sales of new equipment. SAFRAN-O, to be implemented in May 1992, handles the billing of maintenance services. It is expected to improve Otis productivity in this area since bills are currently prepared on a quarterly basis for the 60,000 contracts to maintain 130,000 elevators. Exhibits 7-11 provide a brief description of each new IT application.

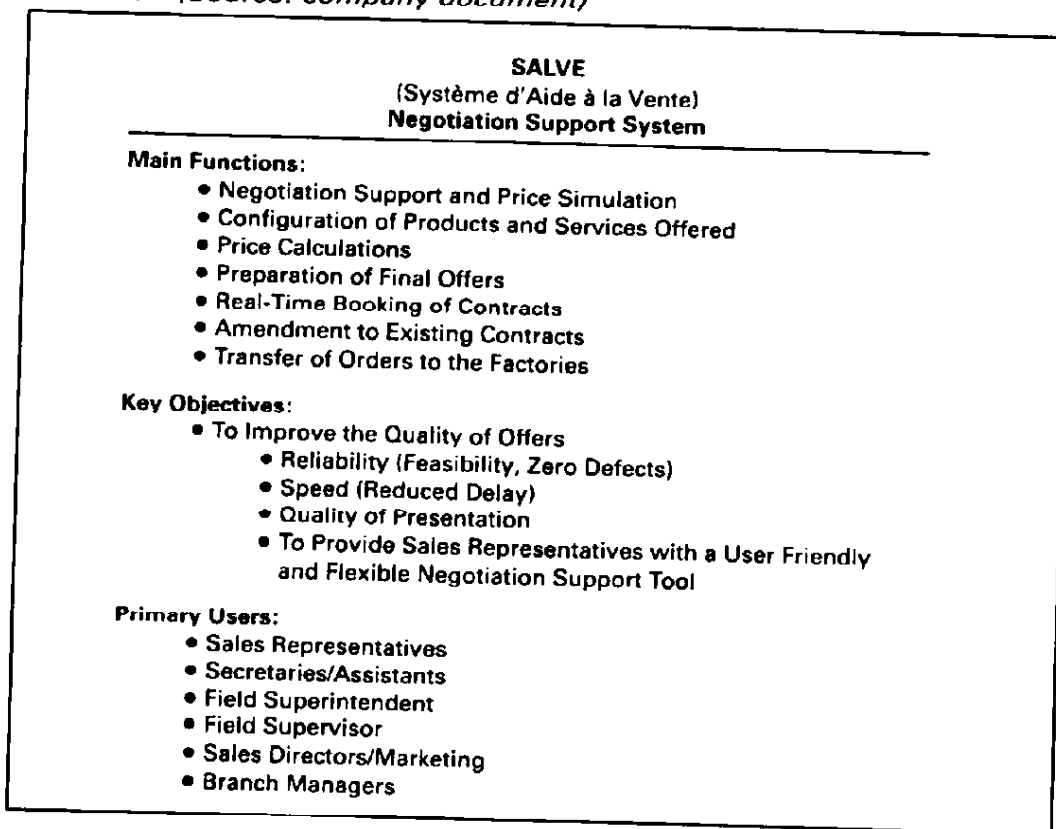
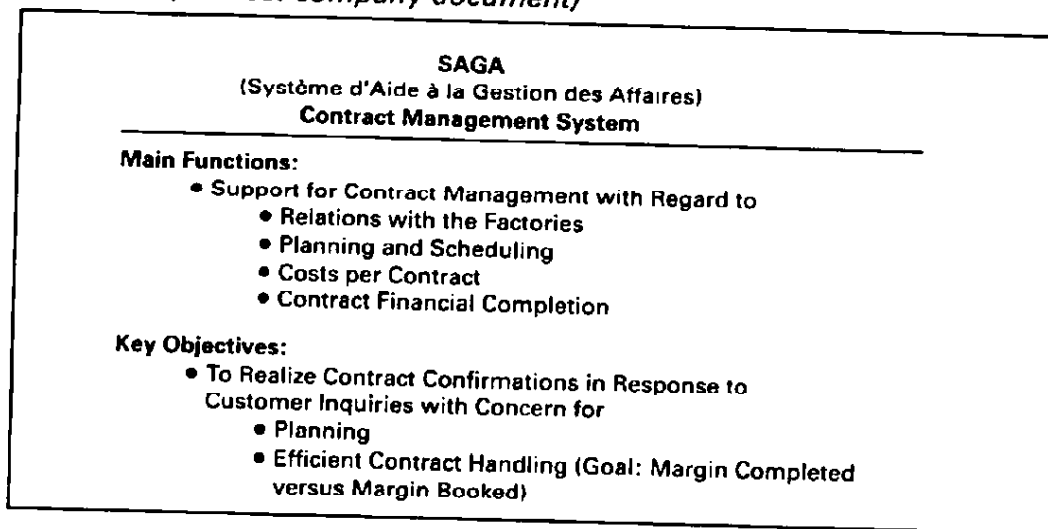
Exhibit 7 (Source: company document)**Exhibit 8** (Source: company document)

Exhibit 8 *Continued*

<ul style="list-style-type: none"> • Efficiency and Productivity (Number of Hours Used to Complete the Contract) <p>Primary Users:</p> <ul style="list-style-type: none"> • Field Superintendent • Field Supervisor • Control Department • Audits

Exhibit 9 *(Source: company document)*

<p style="text-align: center;">STAR (Système de Traitement des Achats en Région) Purchasing and Supplier Management System</p> <hr/> <p>Main Functions:</p> <ul style="list-style-type: none"> • Management of Suppliers • Purchase Orders Processing • Invoice Validation and Processing • Cash Management of the Local Branches <p>Key Objectives:</p> <ul style="list-style-type: none"> • Initiate (Regularly) Payments • Manage all Contracts in Coordination with SAGA • Ascertain Flexibility, Decentralization, and Control of Administrative Tasks <p>Primary Users:</p> <ul style="list-style-type: none"> • Purchasers in Local Districts • Secretaries / Assistants

Exhibit 10 *(Source: company document)*

<p style="text-align: center;">SAFRAN N,S,K* (Système d'Aide à la Facturation en Région) Invoice and Billing System for New Equipment in New and Existing Buildings as well as Modernization</p> <hr/> <p>Main Functions:</p> <ul style="list-style-type: none"> • Invoicing Data • Calculation and Printing of Invoices • Credit Notes • Bonds Management <p>Key Objectives:</p> <p>To Optimize Cost in Process Coverage</p>

Exhibit 10 *Continued*

<ul style="list-style-type: none"> • To Propose a Flexible Organization of Invoicing Procedures (Standardize Billing Rules) • To Customize Invoices to Customer Needs <p>Primary Users:</p> <ul style="list-style-type: none"> • Accountants • Employees in Charge of Invoicing • Assistants/Secretaries • Financial Director (Validation) <hr/> <p>* N = New Equipment in New Buildings K = New Equipment in Existing Buildings S = Modernization</p>

Exhibit 11 *(Source: company document)*

<p style="text-align: center;">SAFRAN O* (Système d'Aide à la Facturation en Région) Invoice and Billing System for Maintenance</p> <hr/> <p>Main Functions:</p> <ul style="list-style-type: none"> • Invoicing Data • Automatic Quarterly Preparation of Maintenance Invoices • Support Correction of Wrong Invoices • Price Increases <p>Key Objectives:</p> <ul style="list-style-type: none"> • Increase Productivity • Correct Invoice for the Maintenance <p>Primary Users:</p> <ul style="list-style-type: none"> • Accountants • Employees in Charge of Invoicing • Financial Director (Validation) • Branch Manager Assistants <hr/> <p>* O – Maintenance</p>

The new IT architecture (see Exhibit 12) was designed for developing systems for business functions (e.g., negotiation), as opposed to the previous systems which targeted specific activities such as repairs or sales. 'SALVE, for instance' explains Jean-Claude Casari,⁵ 'is a system that supports negotiation up to the booking stage. It is the same system for new equipment or service sales. That was a big change compared to the old system where we managed operations by activity. For new sales, we had one type of

management and for repairs we had another type. So we never had a global view of what we did per unit [elevator].’ Adds Pierre Amar, ‘this choice was driven by our objective to get systems independent from the organization. The previous architecture required a specialized sales organization for New Equipment/Modernization or Maintenance. The new one allows a high level of flexibility; a salesman can receive a mixed portfolio of activities. Access to the related system functions is achieved through workstation customization.’

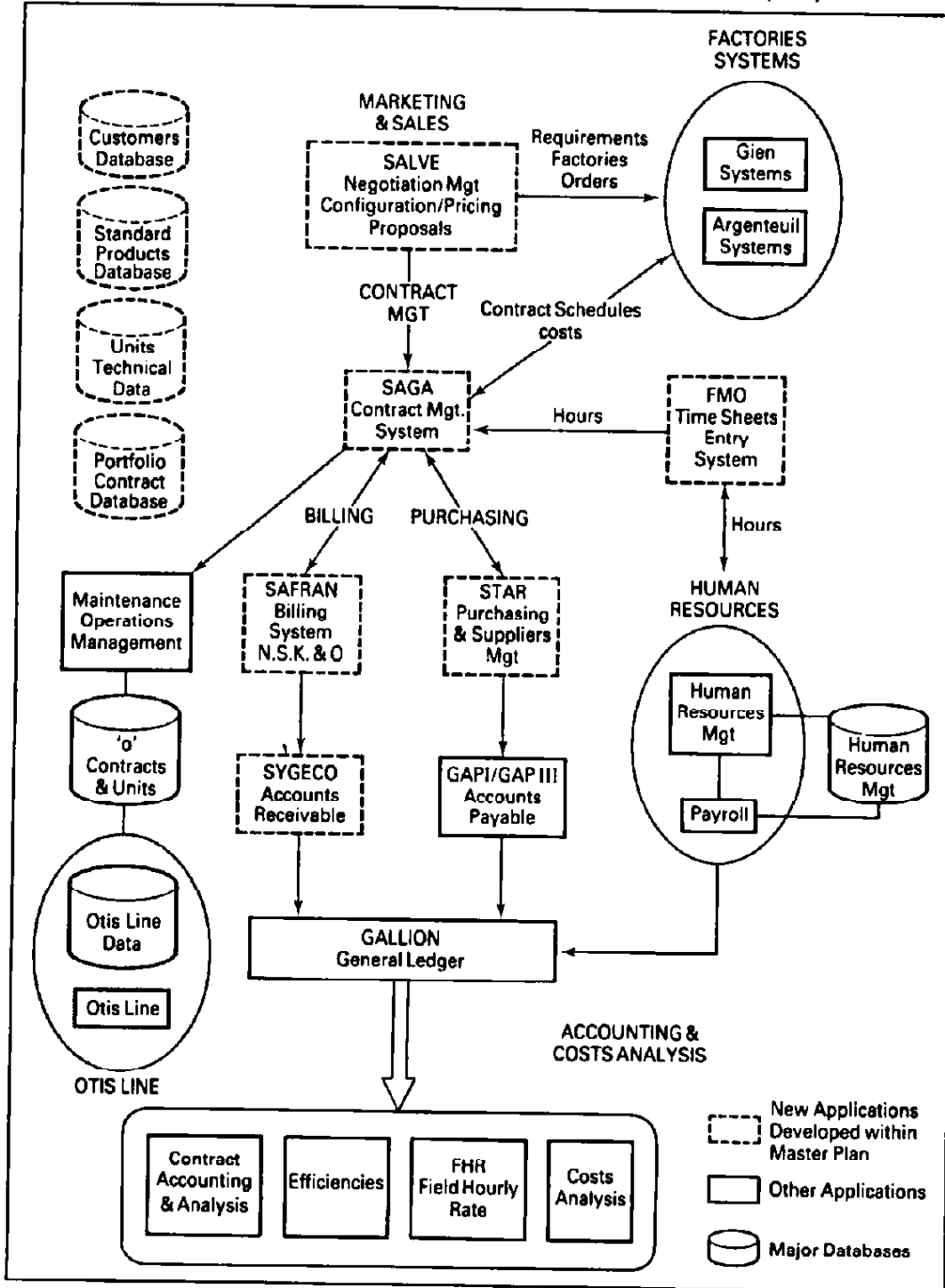
For 1992, three additional accounting systems are planned to allow full integration of the IT applications developed under the Master Plan. They include SYGECO which handles accounts receivable, another system for accounts payable and an accounting/cost analysis system. Finally, a service management system, the counterpart of SAGA for maintenance activity, will be developed.

SALVE is the first system that was implemented; it served as a basis for developing the other applications. Giving the salesperson the authority and responsibility to set a price required implementing two control mechanisms: first, building in the system a ‘plus/minus × percent’ margin within which a price can be set; second, basing the salesperson’s premium on his/her sales performance (incentive). From the salesforce perspective, the major benefit of SALVE is the drastic reduction of lead time. The processing time from having a signed customer order to forwarding the material form to the factory has been reduced from one month to 48 hours. Moreover, the salesperson is in a stronger bargaining position with the customer since he/she has, through SALVE, a complete record of previous negotiations/contracts with each customer. From the management perspective, SALVE offers two main advantages: first, orders get to the factory faster; second, unlike in the past when too many customized units were sold, there are now more sales of standard products because the salesperson can ‘bring’ the customer to the product line.

At the beginning, the implementation of SALVE caused significant problems. There was major resistance to change by salespeople who had never been exposed to computers before. This necessitated a strong educational commitment and the need ‘not to change the tool and the process at the same time’. In spite of the misfit caused by this situation, the company did not want to implement both changes simultaneously, ‘otherwise’, as Pierre Amar put it, ‘people [would have been] completely lost. We [Otis] found that adapting to a computer terminal is always a burden for people.’

Before the introduction of SALVE, salespeople played the role of a ‘mail box’, letting staff members in the corporate headquarters execute most tasks (e.g., determining prices for units, contract processing, etc.) for them. With SALVE they are responsible for processing such tasks themselves in

Exhibit 12 Otis France information systems 1991 (source: company document)



the field. In the beginning, that appeared to them to mean a significant increase in their workload. Management had expected SALVE to free up some of the salesforce time which could be spent in the field meeting with customers. But experience showed that salespeople spent a lot of time in front of the screen, thus creating a major concern for customers who refused to pay somebody for operating a computer. (After one year SALVE became more 'user-friendly' hence reducing the time salespeople spent on the keyboard.)

In spite of the Master Plan's goal of developing a common database for the new IT applications, it was never intended to integrate OTISLINE with the internally-oriented applications. Explains Christian Madrus de Mingrelie, Organization Manager, 'The two databases have to be meaningfully connected, but there will always be two databases.'

Organizational Changes

The step-wise implementation of the Master Plan's applications also resulted in some organizational changes in the headquarters and in the field. For Dominique André, Manager of the 'West France' Zone, 'the organizational changes were expected in advance, but not formally planned.' The Master Plan led to 'decentralization through centralization'. Decentralization concerned data entry, invoicing, pricing, and booking.

The new applications led to changing the allocation of human resources. Although nobody has been laid off, the headquarters' staff has been reduced by about 20% since the launch of the project in 1986. Says Tibor Gyoengyoesi, Marketing Studies Manager:

For me as an outsider within the company,⁶ the main idea of the Master Plan was decentralization. Once we had decided to give more responsibility to the people working in the region, we had to give them the tools to cope with that. And then, after they had more responsibility, we [in the headquarters] wanted to know what the salespeople did every day. Therefore, we needed to introduce control mechanisms.

Control, as a consequence of the increased autonomy and responsibility, is also crucial for the Finance Department. Says its manager, Charles Vo, 'We gave more autonomy to the salesmen and thus dramatically improved our response time. On the other hand, we have a dramatic control problem. Salesmen can cheat or purposefully violate the control rules. We realized that we had to be tougher regarding the control issue and created a new Audit Department.'

The Master Plan in Retrospective

The Master Plan's applications enabled Otis to benefit from:

1. A reduction of administrative overheads due to the decentralization of responsibility. Previously, all orders had to be checked at corporate headquarters in Paris (to ensure that the requested elevator configuration was viable and the price was within the defined limits) prior to making an offer to the customer. Since the new IT applications perform all the necessary checks, going through the headquarters is no longer necessary. Furthermore, the company benefits from the improved accuracy.
2. A drastic reduction in the order processing time (i.e. from the time a customer places an order until it is forwarded to the factory) from one month to 48 hours. This has significantly improved responsiveness and customer service.
3. Better management reports providing information on elevators sold or maintained, contracts finalized, and troublesome units. 'For example', says Dominique André, 'we now receive the bookings per branch every day; it used to be once a month with two weeks delay.'
4. Increased flexibility enabling salespeople to prepare all types of offers with an unlimited number of options and alternatives.

For Dominique André, decentralization, quality, and productivity are the major benefits of the Master Plan. Says he: 'Our situation is easy to understand: We are number one in France both in New Equipment and Service, with more than 35% market share. All our competitors try to reduce our part of the elevator cake. It is a daily challenge to keep our maintenance contracts. For a strong market leader with a service that can be easily imitated, the first strategic objective is to keep the number one position and the market share. The Master Plan helped us to reach this objective. As a next step we will try to improve it.'

'Although, in the beginning', says Dominique, 'we had huge problems with the new applications, especially with SALVE, we would definitely do it again like that. Immediately after the introduction of SALVE, there was some resistance, but now [in 1991] even the sales representatives would not want to work without the system. They ask for more.' 'In any case', adds Bruno Grob, 'we feel comfortable with what we have done, since we know that our competitors now are trying to do the same thing as we did.' Regarding the other Otis subsidiaries in Europe, Bruno Grob says, 'Yes,

they all want to come to France and even though our Master Plan is not perfect, everyone wants to use it.'

Nevertheless, the Master Plan is by no means viewed as perfect. Drawbacks and future threats are also recognized at different management levels. They include the lack of training, the time-consuming data input, and the reduced time that sales representatives spend in the field. Explains Dominique André, 'the biggest problem is the time that productive people have to spend in front of the computer. We want our sales representatives to be face-to-face with our customers, and SALVE is one obstacle to that.'

In November 1991, four months after joining Otis, Christian Madrus de Mingrelie, thinks that 'user-friendliness, simplicity, and flexibility' are the three main areas needing further improvement. Reflecting on the future of the company, Bruno Grob says, 'the major threat for the future comes from the Japanese companies. They have the ultimate in management and they all have the same goal; that will finally outweigh the strengths of any IT application.'

Some Perspectives for the Future

Zero Callbacks as a New Slogan for Otis

For Pierre Istace, 'zero callbacks are not yet expected by the customer. Would such a slogan raise expectations to a level that could not be guaranteed? Or would it be the best preemptive measure against the Japanese threat? Japanese companies entering the French market, most likely, would base their marketing on such a slogan.'

More Flexible Systems

More flexible systems would fulfill the needs of different units within the company. Such a development could also serve as a basis for a Pan-European system, which requires a high degree of flexibility. 'We have to become more flexible', says Christian Madrus de Mingrelie. 'We need subsystems for the different requirements of the regions where we have similar functional, but different physical processes. Just look at the Paris area and the small local branches in the field . . . And then we need to work on the interfaces between the different subsystems.'

Shortened Cycle Time

A major goal for the internal procedures is to shorten the 'flow' path of a contract through the different business processes. 'Two main steps are to be accomplished in order to pursue that goal', says Charles Vo. 'First, strict benchmarks should be introduced with the intention to save time in each process separately. Second, the integration of the different processes and systems within the headquarters and between the headquarters and the regions should be optimized.'

European Integration

The goal is to have a common, standardized maintenance contract. However, one of the stumbling blocks is the variety of technical environments which are in place in different countries and the resulting lack of portability. 'So far, a first agreement has been achieved on the programming language (NATURAL) and the database system (ADATABASE) to use', says Christian Madrus de Mingrelie. Other problems regarding standardizing the European maintenance contract stem from the diversity of legal frameworks (e.g., accounting procedures) and the different ways of doing business in various European countries.

The End . . .

In the fall of 1991, about six months before the launch of the last system that resulted from the Master Plan, Bruno Grob, sitting in his office at the top floor of the new headquarters, was assessing the current corporate situation. He was not only pleased that the company was still market leader, but also that the investment in IT seemed to have paid off. He recognized that the use of IT had certainly played an important role in gaining and keeping Otis' position in the market. But had the investment in IT resulted in a sustainable competitive advantage?

When pondering on this critical question, he remembered a comment made previously by Jean-Claude Casari, one of his subordinates:

I think we have to look again, now that we have finished implementing the IT applications, how to simplify the organization. Of course, we have changed, but in my mind we have not changed enough. When you implement systems in a step-wise manner – for instance in some applications we are still using the old system because we have not replaced it with a new application – we are

obliged to design an organization that is not completely ideal. So the next step is to look again at the processes in the branches, to see again how to simplify them, then to take advantage of our good on-line system. I have just [in 1990] hired some people to work on that. It's a never-ending process.

Notes

1. Every nine days, Otis moves the equivalent of the world population.
2. ETO includes Africa and the Middle East.
3. The remaining people are employed in commercial positions in the branches.
4. Soretex is a subsidiary of Thyssen (Germany).
5. At Otis France until June 1991; now Strategic Planning Manager at Otis ETO headquarters.
6. Tibor Gyoengyoesi has been working for Otis France since, but was not directly involved in the project.