

## Glamox: A digital transformation

In January 2001, back in his office after the Christmas holiday, Christian H. Thommessen, CEO of Glamox AS, considered the company's future. He needed to find a way to finance the company's growth strategy for the coming years, but did not particularly like any of his alternatives, such as floating the company on the Oslo Stock Exchange or raising money by issuing new shares. With the depressed level of the capital markets, these solutions would net less cash than he felt comfortable with. It would also force Thommessen to be uncharacteristically humble in front of both the major stockholders and the business press.

During the three years since he began his work in Glamox, he and his hard-working management team had succeeded in changing the structure and processes of the company from a historically based collection of unrelated and partially overlapping businesses to a streamlined, IT-enabled operational performance leader. However, the restructuring had coincided with a downturn in some of the company's major markets, and while the operational measures were impressive, the financials had so far left quite a lot to be desired. Thommessen wondered for how long the company could keep up the team spirit that had carried them through the change. How could Glamox further capitalize on their e-value chain?

### **The Glamox group**

Glamox AS, a Norwegian limited company founded in 1947, had grown from a small local manufacturer of industrial light fixtures to a significant player in the international lighting business. The company developed, manufactured and distributed professional lighting solutions worldwide. In December 2000 the company had about 1,250 employees and 19 subsidiaries, located in most European countries, Asia, USA, and Canada. (**Exhibit 10**). With revenues of 1300 MNOK (USD 145m) Glamox was the largest lighting manufacturer in Scandinavia and one of the six largest in Europe. (See also **Exhibit 1 and 2**).

The organization was divided into two separate sales divisions, the European Professional Lighting division (EPL) and the Global Marine & Offshore division (GMO), reflecting the two distinctively different market in which the company operated.

### **European Professional Lighting (EPL)**

The EPL division supplied lighting products to European land based professional markets, like office buildings, industrial sites, tunnel lighting, emergency lighting, rehabilitation projects etc. Glamox was the dominant player in the Norwegian and Estonian markets and had strong positions in Denmark and Finland. In other countries market shares were smaller, but some markets such as Germany revenues were important due to market size.

*Associate Professor Espen Andersen, BI Norwegian Business School prepared this case, based on a draft by Master of Management students May Isaksen, Marius Ivan and Kåre Håkonsen, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.*

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The land-based European professional lighting business consisted mainly of relatively small, local companies, often family-owned, as well as a few pan-European players. The customers normally had local (national/regional) presence only and market position was considered vital. The industry was mature with modest overall market growth and some excess production capacity. Towards the end of the 1990s the industry was consolidating through a number of acquisitions and alliances. For instance, the largest and third largest player merged in 2000, forming a comparative giant with a 10% share of the European lighting market.

The parts supplier side of the industry had few and large actors, typically with large volume contracts with the manufacturers. Glamox had suppliers with contracts of around 40 MNOK p.a.

Glamox had chosen to focus on the professional market, where the customers were more concerned with product and service quality and less price sensitive. However, even in the professional market there was a move towards commoditization and increasing price competition.

Customer needs spanned from minor day-to-day replacement orders, to large projects such as providing lighting to Gardermoen (Oslo's new international airport), major office buildings around Europe, or Øresundsbroen, the new bridge connecting Denmark and Sweden. The major share of the revenue came from sales into project organizations. In a project, the project contractor did not necessarily have influence over the purchase of equipment; instead the purchase was done through an electric or building contractor. Another important influence on the selection of lighting suppliers, was the architect or consultant who performed the project design and specified the products to be included in the final solution (**Exhibit 14**). However, even if a Glamox product was specified by the architect during the design phase, the contractor was free to use other products with similar characteristics, though being specified meant a strong position in the subsequent purchasing process. Traditionally the EPL sales force has focused more on the wholesalers and the electric contractors than on the decision-makers in the specification phase.

Products were sold both directly from Glamox and indirectly through wholesalers. Typically, larger projects were served directly from Glamox, while day-to-day needs and smaller projects were handled by wholesalers. All invoicing was done by the wholesaler, even where the product was sold and delivered directly from Glamox. When the wholesalers did the invoicing, the mark-up was typically 5-25%, with the largest mark-up in projects handled by the wholesaler.

### Global Marine & Offshore division (GMO)

The GMO division was a world leader in lighting for passenger and cruise ships, and among the largest in offshore installations, pleasure craft lighting and service station sectors. This position came from building a global agent network and a sales organization following the international success of Norwegian cruise ship designers, and by being active in the booming oil industry in the North Sea. The marine and offshore segments were demanding markets involving rough environments (moisture, salt, vibrations, chemicals) and stringent operational reliability and security requirements.

The GMO markets were not as price sensitive as the more traditional land-based building & construction segments and were divided into highly specialized market niches, often delineated by strict product standards and regulations. Most GMO sales were project based and to a large extent handled directly by Glamox. The wholesalers played a less significant role than in the EPL division. The GMO sales force had focused on the ship owners/shipyards as well as the architects/consultants and had built a leading international market position.

### Glamox – 50 years of Norwegian industry history

The history of Glamox dated back to 1947 when the entrepreneur and engineer Birger Hatlebakk started production of dairy equipment in aluminum. He discovered an electrochemical process which made it possible to cover metal surfaces with a thin layer of aluminum oxide. Metal surfaces coated this way turned out to be well suited for light reflectors, as they reflect light semi-diffused, without glare, and at the same time maintained high luminance.

During the fifties Glamox started producing luminaries, being the first company in Europe to use aluminum louvers. By 1957 the company had built a factory in Molde, a small coastal town with a population of about 20,000 in the western part of Norway. Molde was often referred to as the “city of roses” - a description originating from its pleasant climate and an abundance of flowers. It was a regional center of Romsdal, an area whose inhabitants traditionally were seen as clever merchants, if somewhat stingy. Whether these character traits helped the company is unknown, but Glamox grew successful over the following years and became a dominant contributor to the local economy.

The company soon began expanding outside Norway and during the 1960s and 1970s established subsidiaries in several European countries. Over the years the entrepreneur Birger Hatlebakk used profits to diversify into other business areas. In the early eighties, setbacks in the new business areas caused a severe financial crisis that forced the founder to leave the company.

With a second generation Hatlebakk as CEO, Glamox managed to raise new equity and to continue in the lighting business. The company was no longer family controlled but instead had a majority of professional investors, delivered satisfying results through most of the eighties and used the profit to expand through organic growth and acquisitions. In 1989 Glamox acquired its largest competitor in Norway, Ifa Electric A/S. Up to this point Glamox had sold its products directly to projects. Ifa Electric followed a different strategy and was a combined manufacturer and wholesaler. Glamox partly adopted this strategy and started to use wholesalers as an additional sales channel.

At the beginning of the 1990s Glamox was in an excellent position to take advantage of a strong growth in the home market, but instead, troubled by the integration of Ifa Electric, which turned out to be more complex than first anticipated, the company lost market share. Profitability fell and management was replaced.

Further expansion came in 1993, with the acquisition Adax, a Norwegian producer of electric panel ovens and other heating products, and later the German company Aqua Signal, a manufacturer of maritime lighting products based in Bremen. With the

purchase of Aqua Signal, Glamox became the world's largest player within marine luminaries. Even if these acquisitions were successful, Glamox continued to show poor profitability.

In 1997, a new Chairman of the Board, Svein Jacobsen, was appointed. A professional board member, Jacobsen had earlier been the CEO of Tomra, a global producer of bottle return automates. The owners gave the new Chairman free reign to make organizational changes. Jacobsen, after visiting several of the companies' subsidiaries, soon concluded that a change of management was needed, partly because the members of the management team all came from the same small town, something Jacobsen felt had created a low performing management group and a change resistant environment.

After some initial conflicts, which resulted in four of the management group leaving their positions, Jacobsen hired Christian Thommessen as the new CEO of Glamox.

### Revitalizing Glamox – reclaiming the industry leadership

Thommessen was a highly profiled and respected, if somewhat controversial businessman in Norway, who could look back at a career which included positions with the consulting firm McKinsey, as managing director of one of Norsk Hydro's business units, as well as the head of the Norwegian office of IBM. In IBM he had further been promoted to the European headquarter in Paris where he took charge of IBM Global Network and the Internet consulting business in Europe, a position he left to join Glamox.

The eloquent Thommessen had built his reputation as a turn-around specialist: In both Norsk Hydro and IBM Norway, he had brought the companies through massive organizational changes to regain successful operation and profitability.

Although not scheduled to take up the position as CEO until January 1, 1998, Thommessen wanted to get to know the company as soon as possible. In the fall of 1997 he met with various members of the Glamox organization to form his opinion of the company. He quickly understood that decisive action was needed in the company's logistics and information systems.

Per Olav Fredly, originally from Molde, was one of the managers who welcomed Thommessen. Having moved from Oslo to join Glamox in 1989 after a career of various IT and logistics positions, in 1997 Fredly's title was IT and logistics manager. He felt he had tried for years to instigate changes in the Glamox organization without success. Since he joined the company in 1990, he had experienced firsthand the escalating problems of aggressive acquisitions without a matching aggressive integration strategy. A proliferation of subsidiaries, product lines and production facilities had created an extremely complex organization, where management was not so much decentralized as split into many small fiefdoms. (**Exhibit 3**).

The main victim of this less than optimal organization was the sales force. As one salesman told his manager at the time:

Today one of my customers really told me off, and with good reasons. He works with a major construction project in Oslo, and he had an order that

was due last week, and it still isn't delivered! And this is an order that I made 30 - 40 phone calls to put together! I believe I called everybody in Germany and Finland and Molde and all over. And now I may have to do it all over again to sort out the problem.

In 1997, Glamox had 19 subsidiaries, each with a warehouse, its own logistics and responsibility for supplying all sales units. The fact that the company had deployed as many as 25 different administrative information systems added substantially to the complexity.

Fredly had also noticed that the general feeling among employees in the organization was one of growing frustration and lack of motivation. The result was extremely poor order delivery precision (estimated to be in the 80–85% range while competitors were above 90%.) and an overall low cost-efficiency. Fredly and others concluded that Glamox desperately needed major restructuring.

By the beginning of 1997, Glamox' corporate management was gradually becoming aware of some of the problems facing the company and had approved a project studying the flow of materials, information and money in the organization. The VIP project, as it was called, was led by Egil Tautra from a local management consulting company, with Per-Olav Fredly responsible for the logistics analysis. The conclusions from this project were developed into a broad vision of Glamox as a customer centric company, focused on delivering products through a new and efficient value-chain. Central to this vision would be the deployment of a state-of-the-art ERP (enterprise resource planning) system for all of the company's sales, production and logistics activities.

The necessity of organizational restructuring and the fact that 19 of the 25 old administrative systems had to be changed because of the Y2K problem, made Fredly believe he would get approval from the board of directors and top management to continue with the implementation of this project. But Fredly's presentation to the board of directors in a meeting in November 97 was met with a less than enthusiastic response – except for Christian Thommessen, who was sitting in as an observer. Thommessen surprised everyone present by saying that when he came on as CEO, he would make this project his first priority – and make sure that it would be the first priority of the organization as well. News of this quickly spread and the meeting was later seen as an emotional watershed in the organization – ushering in a new era and emotionally committing a group of change-ready managers to a period of dramatic organizational change.

### ***The start of a new era***

“Congratulations on your new position – and Glamox will, thank God, never be the same again.” read one of the Christmas cards that lay waiting for Thommessen when he officially took up his position as CEO at the new headquarters, recently moved from Molde to the busy atmosphere of Nydalen, one of Oslo's technology centers.

Thommessen was well aware of the challenge he was facing. Not only was Glamox tethering on the brink of financial disaster, but it was also a company whose culture and way of doing business was markedly different from the highly effective, internationally

oriented and technology savvy Thommessen. With no official announcement, he quietly prepared to replace most of the present management. “We need to get rid of the old communists” Thommessen told one of the new managers in 1998. Out of the original 38 people in the senior management group, 25 were replaced during the turnaround operation, a highly unusual development in the placid world of Norwegian management.

New managers were recruited from within the company as well as from the outside, and responsibilities were placed with disregard to former organizational demarcations. Per-Olav Fredly became Vice President of Logistics and IT in the Spring of 1998, and then became Senior Vice President for the ‘e-value chain’ in October 2000. Egil Tautra came in as head of IT from mid-1999. The year before, O.T. Finnøy was brought in as Chief Operations Officer. Finnøy, a former employee of Glamox, had left the company in 1993 deeply frustrated by the many internal conflicts and chaos that prevailed. In 2000 he was promoted to Senior Vice President for the EPL division.

Drawing on his broad experience both as a consultant and manager, Thommessen quickly initiated a number of strategic initiatives. Corporate finance, logistics and information technology was centralized to Molde. An initial financial analysis was undertaken, showing that average operating margin had sunk below two percent, debts had increased to 500 MNOK during the 1990’s, and market share in the traditional business had decreased.

Applying the same methods as he had used in other turnaround efforts, Thommessen formed a group of 45 senior managers and union representatives, in addition to the management team, to perform a detailed analysis of Glamox’ markets using a portfolio matrix model. The existing markets were divided into 28 different segments, which were analyzed according to market attractiveness (growth, size, profitability) and competitive position. This pre-project was financed by selling an office building.

To gain a better understanding of the company’s competitive position, senior personnel interviewed 244 actual and potential customers. This process revealed that Glamox scored very low on prioritized key buying factors such as delivery precision, delivery time and price, but scored high in less important areas, such as product range and quality. Said Thommessen:

In addition to gaining a relevant fact base, this approach revealed many new business opportunities. Normally, a customer would meet a Glamox salesman with his order book under the arm. This time, he met salespeople and executives with only one purpose; to understand how Glamox could improve as a supplier. Why some other companies leave this job completely in the hands of consultants is hard to understand, considering the great opportunity it is to strengthen the relationship.

Finalizing the market strategy, Glamox selected 9 market segments to focus investments in (**Exhibit 4**). These segments represented 40% of the total market, were expected to grow, and Glamox had 60% of its revenue in them. Glamox planned to grow sales and marketing expenses in the focus segments with 30% over the next three years, while the activity in the other 19 segments was maintained at the current level. The strategy was expected to produce a 380 MNOK increase in revenue by 2001 (10% annual increases.)

Most of the customers emphasized product price as their first or second buying factor. Most customers also ranked Glamox as worse than the competition on price. Glamox decided to radically change the pricing strategy and reduce prices by 2% p.a. instead of the nominal 3% p.a. increases that had been the norm the past years. The price reductions were done selectively, to minimize competitive response, and were aimed at tying up customers in longer term contracts, primarily within the 9 investment segments. The effective price reduction was planned to be 5% p.a. or a total of 17% over the 3 years plan period. Cost reductions in the company were expected to maintain the gross margin level.

The organization was radically redesigned, centralizing sales and operations into two units. The sales unit was turned into a matrix organization with 28 customer segments and 13 geographic sales units. The operational unit contained 8 production sites. The functionally divided organization reflected the view that Glamox did not have separate or complete value chains in any of the market areas. Two new positions were established at corporate level: An R&D manager and a Business Development manager.

Thommessen, himself a 7% shareholder of the company, also launched a management incentive program where a large group of management was offered stock options.

But Thommessen understood this was not enough. At a meeting with the Board of Directors in May 98, Thommessen stated “We need to reengineer the whole Glamox value chain” during the final presentation of the new business strategy, entitled “Revitalizing Glamox – Reclaiming the industry leadership”. This plan, with a timeframe of four years, consisted of three major elements; a growth strategy within selected market segments, a redesign of the value chain, and a restructuring of the manufacturing function. The financial objectives included boosting the operating profit margin from 1% to 8% to establish a position among the industry leaders and to achieve a profit before tax in 2001 above 150 MNOK (**Exhibit 5**).

### Betting the company

When the 100 MNOK reengineering project was initiated in July 1998, it represented a large investment considering the company’s weak financial performance. Having produced a negative cash flow of 200 MNOK the previous 6 years, including a 1997 deficit of 18 MNOK, the company was up against the wall. Without a strong bid for improvement, the future would be uncertain.

In Norwegian business circles the project gained high visibility – it was a large turnaround by Norwegian standards. The charismatic and quotable Thommessen gained attention in an interview in the national newspaper Aftenposten in May 1999:

We are going to demonstrate that it is possible to bring a company from the stone age to cyberspace in one quantum leap. We will invest a total of 100 MNOK, equivalent to 7% of the company’s annual revenue, in reengineering the value chain. (...) [Traditional enterprises] are investing only 1% [of revenues] p.a. on similar processes. With 7% I dare say that we are performing one of the most comprehensive modernizing processes in Norwegian industry.

Drawing on the key buying factor analysis, ambitious goals were set for the project (**Exhibit 8**):

- define a new industry standard for delivery precision (at 98%)
- reduce delivery time dramatically
- reduce annual costs by 65 MNOK
- make Glamox e-business “ready” - i.e. ready to extend the concept of e-business towards external parties (suppliers, customers and other stakeholders).

The project was named VCR, an acronym for Value Chain Reengineering, and was scheduled to be completed within 2 years (**Exhibit 5**). Per-Olav Fredly was to be the internal project manager and O.T. Finnøy the chairman of the project steering committee. Commented Fredly:

Our vision on how we could satisfy our customers was to build a new simple, efficient and uniform value chain. We wanted an electronic value chain where all transactions were digitized and where information could be accessed from one common source. We also needed to create an organization that could take full responsibility for both the flow of information and the flow of goods across the company. (.....) First we focused on our internal value chain to obtain an optimal operation. Remember that the expectations of an electronic interface are much higher than to a traditional manual interface. Our system has to be 100% functional before we can integrate customers and suppliers.

Even though a major part of the investment was in IT hardware and software, the project scope was not limited to an IT installation. It involved a complete turnaround of the company, with a redesign of the internal work processes and a radical simplification of the value chain (**exhibit 6**.)

The most important changes in the reengineering process were the concepts of *the mobile salesman*, the *SPOC* (Single Point of Contact) logistic centers, a *virtual central warehouse* and *EDI-based communication with wholesalers*.

#### *The mobile salesman*

The mobile salesman concept was the most visible and the strongest motivator of the four changes. Said Fredly:

It used to be that the day of a salesman was uphill battle all the way. First, because of lack of delivery precision he had to spend time trying to convince customers – who often already had a negative experience with Glamox – to purchase from us once more. This negatively impacted the success ratio of sales calls. Secondly, having completed a sale he had to spend a quite a bit of time – with inadequate ordering systems, databases etc. – in his office working with a number of counterparts throughout Glamox to help secure a prompt and correct delivery of the next order. A lot of time that instead could be used to sell other products got lost in this process.



The objective was to give the sales force the right and proper information available at the point of sale. The Glamox salesman was to be able to produce an offer on his laptop computer at the point of inquiry, and if the customer accepted the offer, automatically turn it into a sales order directly confirmed by the system.

The sales force was equipped with a complete mobile office solution – and, consequently, office premises in the local sales organizations were reduced. The sellers' laptop mobile office included the GSS - Glamox Sales Support software (**Exhibit 13**), the product database Glabase and the calculation model OptiWin (**Exhibit 9**). Together with the corporate network and standard office support software this gave the salesman a simple way of organizing his day effectively and place him more in front of the customer (**Exhibit 7**).

*Single Point of Contact Logistic Centers:*

Two Single Point of Contact (SPOC) logistic centers were established, one in Molde, Norway, covering Northern Europe, and one in Bremen, Germany, covering Central Europe (**Exhibit 11**.) The personnel in the centers were responsible for coordination and administration from when the order was electronically registered until the goods were delivered at the customer-specified site.

The SPOC in Molde was organized with an open floor-plan, inspired by financial trading desks (**Exhibit 12**). Each of the operators had responsibility for a certain group of products or a geographical area. The physical arrangement of the center was meant to facilitate communication, assistance and backup whenever necessary. Opening hours were extended to cover the whole week, with regular personnel manning the SPOC during open hours and a skeleton watch at night, staffed by students from a local college. The students proved to be an excellent workforce – easily trained, highly motivated and competent, and a good source for recruiting.

The SPOC centers made possible significant staff reductions. In 1997, around 100 employees had been required in the logistics operation (order handlers, purchasers, invoicing, warehouse, transport). In December 2000, that number was down to 60.

*Virtual Warehousing.*

Warehousing throughout the company was totally rearranged. Before the VCR project, Glamox had had warehouses both at the production sites and at the regional sales units, all with a broad range of products. This required much internal transportation, with customers often experiencing split deliveries of single orders. In 2000, the number of warehouses was down to five, all located near the factory sites. The warehouses contained only the products manufactured locally. In addition, a warehouse for third-party trading goods was established in each SPOC region.

The concept of cross docking was introduced to consolidate shipments from disparate sources. Single items necessary to fulfill a customer order would be shipped from separate production locations and still be coordinated into a single delivery at separate cross docking nodes operated by Glamox or external parties. In the cross docking, goods arriving already have a customer assigned, so incoming shipments were transferred directly to outgoing trailer trucks without intermediate storing. A cross docking node

eliminated the inventory-holding function of a warehouse while still allowing it to serve its consolidating and shipping functions.

As a consequence of rearranging the logistics, the incidence of obsolete stock was lowered and total inventory was reduced by more than 30%. The new solution also made it possible to move from production-to-inventory towards production-to-order.

#### *EDI with wholesalers*

Most of the items produced directly for stock were delivered to wholesalers. The VCR project took steps to integrate wholesalers into Glamox' value chain through EDI<sup>1</sup> interfaces, incorporating such elements as framework agreements, orders and invoices. Said Fredly in late 2000:

Increased value comes from improving the supply chain, not from transferring work from one part to the other. While EDI is less flexible and more demanding to establish than Internet and web solutions, it reduces the number of steps in the process. We also gain better quality in our data since the customers now are responsible for the data quality. [.....] What our customers need is an integrated solution where they have a direct EDI interface to our ordering system. So far around 10% of all orders are done through EDI within the EPL division.”

#### Enterprise Wide Information Architecture

A major step in redesigning the value chain was the implementation of one enterprise wide information architecture. The previous 25 different IT systems in the 19 separate subsidiaries were replaced by one Enterprise Resource Planning (ERP) system from the Dutch company Baan. The servers were centralized in a data center in Molde, where critical equipment was duplicated. This improved IT operational stability compared to the old systems, when critical hardware was scattered all around the company, often without any backup at all. In parallel there was a complete renewal of almost all IT-equipment (servers, network, personal computers) and for the first time the separate entities in the company were tied together in a wide area network.

To ensure a strong ownership towards the new solution and to reduce the risk of people opposing the results a large number of personnel from various functions were included in the modeling phase of the new ERP system. Commented O.T. Finnøy, SVP of the EPL division:

To perform the necessary modeling of the new ERP system we established a temporary office, in rented locations in Oslo where everybody could be on “neutral” ground. Over a period of more than 6 months we flew in key personnel from the whole company (logistics, IT, production, finance and external consultants) every week. In this “laboratory” we designed the new Glamox. This was one of the important decisions that helped create a wide accept for the chosen model and helped the project succeed. The teambuilding effect was enormous, the

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<sup>1</sup> Electronic Data Interchange, use of direct computer connections between companies for commercial communication, generally based on industry standards.

participants became personal friends and old rivaling was neutralized. When they went home to assist with the implementation they were excellent ambassadors for the new ideas. A small miracle happened during that period – we planted a seed for a new company culture!

To realize the expected benefits from the implementation there was a strong focus on standardization. For the ERP system, a standard solution without any modifications was chosen, and the management was very clear about having the same tools and the same business model cover the needs of all the subsidiaries. Commented Fredly:

If you choose to standardize, you have to stand behind this decision all the way. I remember our German colleagues were very reluctant to use English versions of the software. Instead of giving in to local requests we let the personnel attend an English language-training program. Looking back at the process I am very satisfied with the choices we made. We designed a simple solution which made it possible to reduce the number of personnel in the IT function from 17 to 11.

Glamox carefully selected a sequential implementation plan, where the Norwegian units were migrated first. After successfully completing this step, the solution was copied to other parts of the company. The complete implementation was done in no more than 7 months, but not without periods with deteriorating customer service and temporarily dips in delivery precision. Commented Finnøy:

In our second implementation step we underestimated the internal work involved in converting data from 4 old systems, merging two finished goods warehouses and moving the order handling from the sales units in Oslo, Bergen and Trondheim to the logistics center in Molde. [.....] Almost 60 employees worked through the whole Easter holiday and made it possible to be ready before the first working day. Up until July nobody in the business took any time off.

Fredly underscored the importance of Thommessen's detailed attention:

We succeeded because our management fully supported the reengineering process. Thommessen supported the process with professional competence while he empowered the project steering committee, and let this group take the operative decisions. During the implementation process he followed the development closely on "order line" level. During the most critical phase he visited vital customers to keep their confidence in Glamox despite temporarily poor results. Thommessen has been like a snowplough and we have gone behind him and done the job!

The new network was operated with a significant higher service level for customers and employees, but still reduced the annual corporate IT operating costs by 4 MNOK. The inevitable increase in communication cost was more than compensated by reductions in IT personnel, consulting services, service fees as well as improved bargaining power on the purchasing side.

### Restructuring the manufacturing process

In an effort preceding and paralleling the VCR project, Glamox also optimized the structure and efficiency of the widespread manufacturing facilities. An untapped potential was realized by specializing the product range in each plant, eliminating duplicate work done by sister companies. This led to the closure of a plant in Germany, while labor intensive products were moved to Estonia where manpower costs were lower.

The two plants in the Molde region were changed to order-based production. This was made possible by the development of modularized products and production processes, a project led by Alf Reistad, manager of one of the factories, and Petter Heramb-Aamot, an external consultant. In April 1998, Glamox introduced a new series of luminaries, called modularized/matrix. With this new production concept, customer specific luminaries could be ready for delivery only one hour after the order had electronically entered the Molde plant, provided the production capacity was available. Allowing for 48 hours of transport, a European customer could take delivery of the customized product after 2-3 days rather than 3 weeks.

The development of modularized products also dramatically reduced the number of parts necessary. While the old product family required as many as 2000 parts to supply all customer specific variations, the number was down to approximately 150 with the new concept. The parts were controlled by the Japanese production philosophy, “Kanban”, which reduced the dependence on computer automation. A “two box system” has been introduced where assembly personnel picked the components from one of the boxes while the suppliers refilled the empty box at regular service intervals, normally every day. All components were stored at the assembly station.

Flexibility increased by transferring control from computers to the individual operator. At the same time the amount of manual work was increased. The result was slightly higher unit costs, but with much less setup cost and reduced production time.

Modularized and made-to-order production fitted well with the vision of the mobile salesperson and the use of construction software (GSS) to create semi-customized solutions for an increasing number of customers. Three of the product families were initially designed to utilize the modularized concept. In 2000, these products represented 15% of the company’s total turnover and as much as 35% of the EPL division’s revenue, a share that was rapidly increasing. All future product development was focused towards modularized products and the Kanban production philosophy.

### Turning Glamox into an ‘e-lighting company’:

The first step in the e-business strategy was to improve the internal value chain in order to realize benefits both for the customers and the company. Through this work Glamox created a platform that made it possible to take the next step towards electronic collaboration with external parties. In January 2001 Glamox introduced an electronic product catalogue with broad functionality. Over the next two years the company planned to introduce e-services towards selected suppliers and customers in four steps:

- Automation of most of the transactions (EDI-based)
- Customer self-service functions (e.g. order status)

- Communication and collaborative solutions
- e-commerce solutions

The company deliberately postponed the installation of a web-based e-commerce platform. An electronic product catalogue was seen as far more important to support sales, especially towards the architects and consultants performing the project specification. Commented Thommessen:

As opposed other companies implementing e-business, Glamox has started the efforts with extensive internal digital solutions that produce specific customer and cost benefits before we focus on web pages and e-commerce transactions. To accomplish the task the opposite way often results in a 'click-and-nothing' experience to customers. Without efficient digital production and logistics processes the effort becomes only a new marketing and communication channel.

### Continuing the strategy process

At the same time as the company was focused on the demanding task of the VCR-project, it continued to execute the other elements of the strategy.

In 1999 Glamox acquired the industry group Høvik Lighting, a company producing high quality lamps for offices and private homes. The acquisition gave Glamox access to a well-established brand with emphasis on design recognized by architects worldwide. Preparations were also made for a bid for the small, specialized searchlight producer Norselight. Norselight's products were especially designed for demanding applications in hostile environments at sea. Glamox also divested the whole heating division, yielding a cash infusion of 80 MNOK.

The company decided to separate its EPL sales efforts towards the project and wholesaler market. To obtain this, a new brand, 'Glamox Professional,' was introduced, which would only be sold through the wholesalers. The remaining brands were reserved for project sales and focus would shift towards project owners and specifiers such as architects and consultants. With this move, it was hoped that channel conflicts would be reduced and that Glamox would get more of the transaction fees and control with customer relationships.

### Summing up the results

In December 2000, almost three years into Glamox' four-year modernization and change process, results from several of the strategic actions taken were excellent. Said Thommessen:

Through the VCR project we brought Glamox from the stone-age to cyber space in less than 2 years! The project has been very successful; it is a bull's eye! We completed the investment on time and within 110 % of the budget. During 2001 we will reach the targeted annual cost reduction and even go beyond this goal.

Delivery time on customized products had shown a dramatic improvement. In 2000, products could be manufactured and packed 50 minutes after receiving the order and be delivered 24-48 hours later on the European market.

Delivery precision, one of the key indicators of a successful process, was monitored closely, on a weekly basis. Following periods with temporarily weak performance during the implementation phase, delivery precision was stabilized at 95% towards the end of 1999. Meanwhile, Glamox had reevaluated its original goal of a delivery precision at 98%, because the customers had indicated that a delivery precision of 95% was sufficient.

More important than their own measures, however, was the feedback from customers' measures. Glamox largest customer, the wholesaler Elektroskandia, measured delivery precision on a per order item basis over 5 business days, as well as how much work was required (as a percentage of work on orders) to fix problems. Their requirement for their suppliers was a minimum of 95% delivery precision, and less than 5% problem solving. In 1999, Glamox scored 81.5% and 5.2%. For the last 6 months of 2000, however, the numbers were 93.6% and 2.6%, and early indications for 2001 were 97.4% and 1.7%.

Commented Fredly:

The vision has become 75% reality. Now we are working to integrate our customers, suppliers and other important stakeholders in our e-business system. In addition we will try to reap the rewards internally from the large investment we have done in the project. Our aim is to reach the same degree of integration and efficiency with our external partners/stakeholders as we have done in the internal value chain.

From 1998 to 2000, Glamox had reduced operating costs by 85 MNOK and gained marked share with a net profit of 55 MNOK (**Exhibit 8**), with productivity improvements contributing 51 MNOK and the VCR project 34 MNOK. Another 38 MNOK in savings were expected from the VCR project in 2001.

This led to excellent financial results in 1998 and 1999, but in 2000 the forecasted profit was negative, primarily because of adverse market conditions. A temporary decline and uncertainty in oil prices reduced the activity in the offshore market. The important Norwegian and Baltic home markets suffered from 12% and 35% respectively, the latter largely because of the collapse of the Russian economy. Considerable over-capacity in the industry led to falling prices – far beyond what was expected as a result from Glamox' aggressive pricing strategy. It was estimated that this alone would cause the profit on a full year basis to fall with 60-80 MNOK.

A considerable gain in the market share had been achieved. In 1997, the 9 market segments selected for growth constituted 60% of the total revenue. Glamox managed to grow its market shares in these segments and in 2000 this figure the market share was expected to increase to 74%.

At the same time the market portfolio had been moved towards the more profitable GMO business. In 1997 only 36% of the revenue was generated here, while in 2001, as a result of both organic growth and acquisitions, the share was expected to be above 50%. Despite a decreasing market, Glamox had managed to grow its EPL market shares, especially in the important home market (which represented 1/3 of the division's

business) where the market share was expected to increase to 35% in 2000 as compared to 27% in 1997.

Glamox needed to initiate further actions to bring the profitability in line with the original goal and ensure the profitability of the EPL division. Among other actions, an EPL plant in Finland and a GMO plant in Norway were to be closed, the production moved to Molde and Bremen, and the products modularized. This would reduce the number of manufacturing units in the EPL division from five in the 2000 to two in 2001. The GMO plant in Bremen, Germany would be focused 100% on marine products. Glamox also planned to implement separate value chains for the two divisions with effect from the first half of 2001. Some of the simpler commodity products (such as some downlights) were to be bought from the outside. In total, these actions were expected to reduce costs by 50-60 MNOK. However, to finance the transition cost of these action, the company had to sell an office building sell its headquarters building in Molde and lease it back.

Customer reactions to the restructuring of Glamox were in general enthusiastic, though problems remained, especially in the market access. One customer made this comment, very atypical, in March 2001, not knowing that the GMO division produced down-lights – and that the EPL division, in this case, sold it through a wholesaler who effectuated the delivery:

Glamox is like two different suppliers. It is a pleasure to do business with the GMO division like it has always been. The goods are delivered on time without any trouble. The GMO division is one of the best performers in the business, but the EPL division is another story. [...] The other day I received a kitchen solution I had ordered with 300 down lights of the same type. What I got were 300 lights of two different types, none of them equal to the one I ordered. On top of this there were technical problems with the lights.

### **After the turnaround**

For all the dramatic change in the organization, Glamox' financial performance still was not satisfactory, with gross margins still below the goal of 8%. Svein Jacobsen, Chairman of the Board, reflected on the situation:

We haven't reached the expected results. Perhaps we over-invested in the VCR process? Still, we probably didn't have any choice.

In his office, Thommessen weighed his options. He had been instrumental in the decisions that had brought the company into the current situation. Thommessen himself was sure that most of them had been necessary and correct, but the other members of the management team were starting to voice some concern over the lack of results. Had it been a smart decision to invest the 110 MNOK all at once? Surely, the cash flow would have been better if the VCR project had been performed over a longer time period? While the VCR process was producing results, there were signs that the not all of the sales force were willing or able to take advantage of the new technology or capable of going into an advisory rather than order-taking role. And for all the excellent statistics,

some customers were still experiencing more problems than necessary with Glamox deliveries.

Thommessen strongly felt his personal commitment to his management team, who had been working flat out for three years, as well as the company's importance for Molde, where it was the largest employer. As one of the executives had said, after pulling another all-nighter: "Most of us cannot find similar jobs in this region. That's a motivator, but more importantly, we are committed because we were given the opportunity to do what we thought was the right thing – though the task certainly had been easier if we had been allowed to start sooner. Anyway, under those circumstance, you don't give up until you are dead..." Thommessen felt that selling or further reducing the activity in Molde was out of the question, at least for him.

What could he do to keep up the progress the company had made during the last three years? How could he keep the investors happy? How could Glamox further capitalize on its e-Value Chain capabilities?

"The humble pie beckons", Thommessen thought.



**Exhibit 1:** Financial results and key ratios for the Glamox Group 1995 – 2000

		1995	1996	1997	1998	1999	2000
<i>Sales and Profits</i>							
Sales and other operating revenue	MNOK <sup>1</sup>	995.1	1 086.7	1 101.7	1 190.0	1 297.1	1 287.5
Total revenue	MNOK	995.1	1 086.7	1 101.7	1 209.8	1 342.1	1 357.9
Operating profit	MNOK	34.3	18.2	9.4	58.1	63.5	(7.4)
Profit before tax	MNOK	0.8	(58.6)	(18.1)	36.9	38.0	(54.4)
Profit after tax	MNOK	(2.5)	(67.4)	(22.7)	21.7	29.8	(54.4)
<i>Profitability</i>							
Operating margin	%	3.4	1.7	0.9	4.8	4.9	(0.6)
Gross profit margin	%	0.1	(5.4)	(1.6)	3.1	2.9	(4.2)
Net profit margin	%	(0.3)	(6.2)	(2.1)	1.8	2.3	(4.2)
Return on total assets	%	5.7	2.8	1.8	8.2	7.7	0.5
Return on equity	%	0.4	(18.5)	(13.5)	11.5	13.1	(26)
<i>Capital / Liquidity</i>							
Current ratio		1.6	1.7	1.5	1.5	1.4	1.1
Cash flow	MNOK	37.1	6.8	17.8	65.7	67.4	(10.4)
Cash flow from operations	MNOK	(103.0)	(33.0)	(8.0)	85.0	12.0	(10.0)
Equity	MNOK	194.5	180.3	154.6	223.8	230.3	188.3
Equity ratio	%	24.7	23.5	20.5	23.0	23.1	(17.5)
Investments	MNOK	94.7	33.7	54.7	17.2	47.5	53.6
<i>Share related key figures</i>							
Earnings per share	NOK	(14)	(80)	(36)	33	45	(81)
Cash flow per share	NOK	65	10	27	98	100	(15)
Equity per share	NOK	381	262	226	333	342	279

Notes:

**1:** 100 NOK equaled US \$9.0495 or €8.1283 as of April 2001.

**Exhibit 2:** Results per division accumulated Q4 / 2000

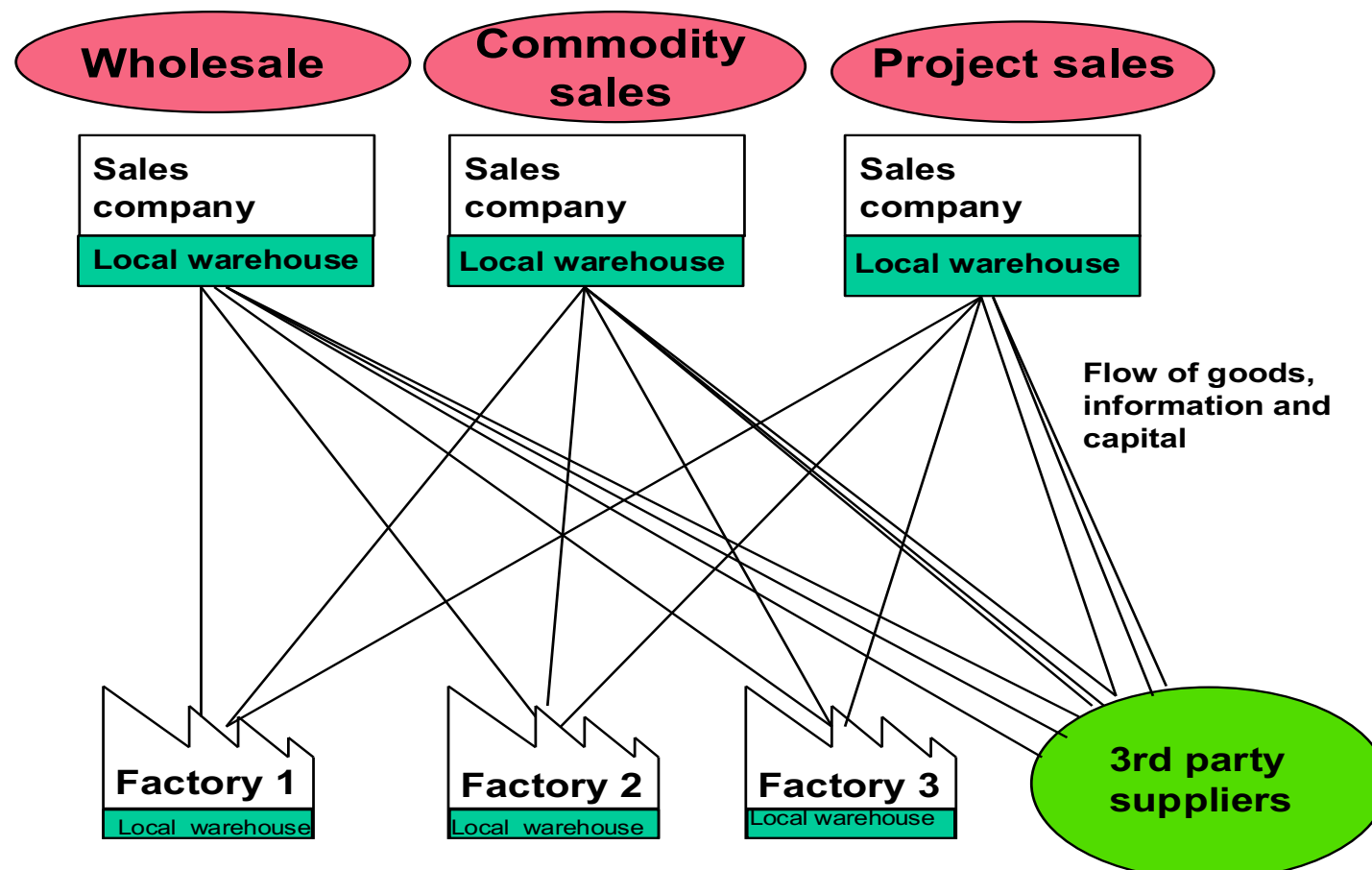
	<b>Orders received</b>		<b>Revenues</b>		<b>EBIT</b>	
	<b>Act.</b>	<b>99</b>	<b>Act.</b>	<b>99</b>	<b>Act.</b>	<b>99</b>
EPL – European Professional Lightning	678.2	722.4	674.0	706.0	-19.5	18.0
M/O – Global Marine Offshore	645.7	455.2	601.9	513.0	44.0	41.0
Heating <sup>1</sup>		75.2		78.0		6.0
Glamox ASA/Elim			11.6	0.0	-31.9	-1.5
<b>Glamox Group</b>	<b>1 323.9</b>	<b>1 252.8</b>	<b>1 287.5</b>	<b>1 297.0</b>	<b>-7.4</b>	<b>63.5</b>

Source: 4Q-2000 – Analyst presentations.

Notes:

1: Heating division sold in 1999.

### Exhibit 3: Organization 1997 (simplified)



**Exhibit 4:** Selected investment segments

Segment name	Size MNOK	Expected annual growth	Profitability level	Glamox' annual revenue MNOK	Glamox' market share
<b>EPL (European professional lightning)</b>					
Nordic lighting through wholesaler channel	935	5.0 %	46.0 %	106	11.3 %
Nordic lighting commodities in projects	935	5.0 %	46.0 %	136	15.0 %
Nordic office building lighting design	625	6.0 %	50.0 %	80	12.8 %
Baltic; heating <sup>(1)</sup> and lighting	400	17.0 %	41.0 %	60	15.0 %
<b>GMO (Marine offshore)</b>					
World wide offshore upstream	600	5.0 %	52.0 %	42	7.0 %
World wide petrol stations	425	8.0 %	55.0 %	40	7.3 %
Europe and US lighting for recreational boats	260	5.0 %	62.0 %	52	20.0 %
World wide commercial ships	525	5.0 %	35.0 %	183	34.9 %
Nordic heating <sup>(1)</sup> through retail channel <sup>(2)</sup>	284	6.0 %	43.0 %	59	21.1 %
<b>Total 9 segments</b>	<b>4 989</b>	<b>7.2 %</b>	<b>45.3 %</b>	<b>758</b>	<b>15.2 %</b>
<b>Total other 19 segments</b>	<b>7 608</b>	<b>2.9 %</b>	<b>47.2 %</b>	<b>412</b>	<b>5.4 %</b>
<b>Total</b>	<b>12 597</b>	<b>4.6 %</b>	<b>46.0 %</b>	<b>1170</b>	<b>9.3 %</b>

Source: Presentation of Glamox by Per Olav Fredly, October 2000.

1) Heating sold in 1999

2) Segment replaced with cruise and ferries in 1999

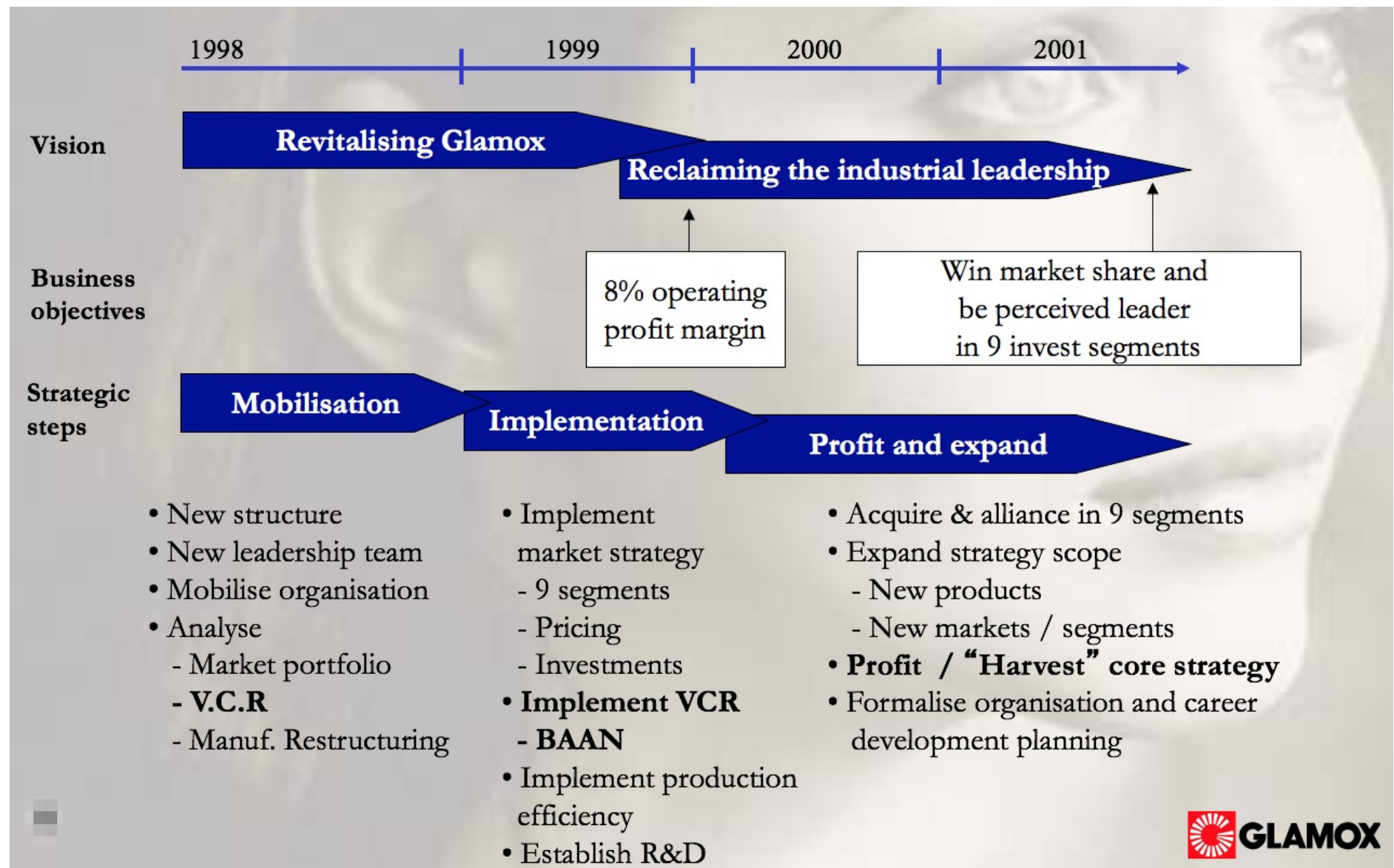
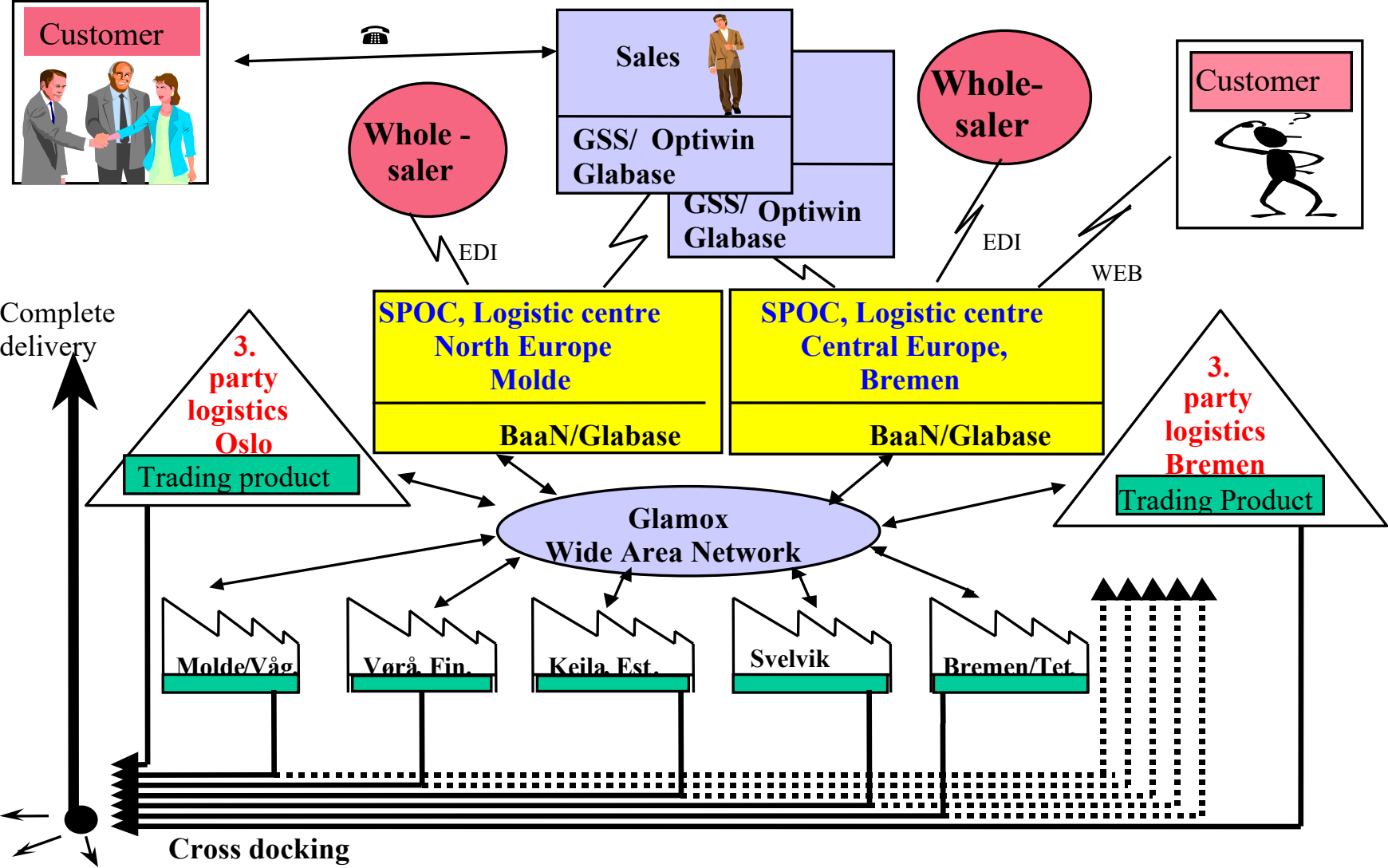
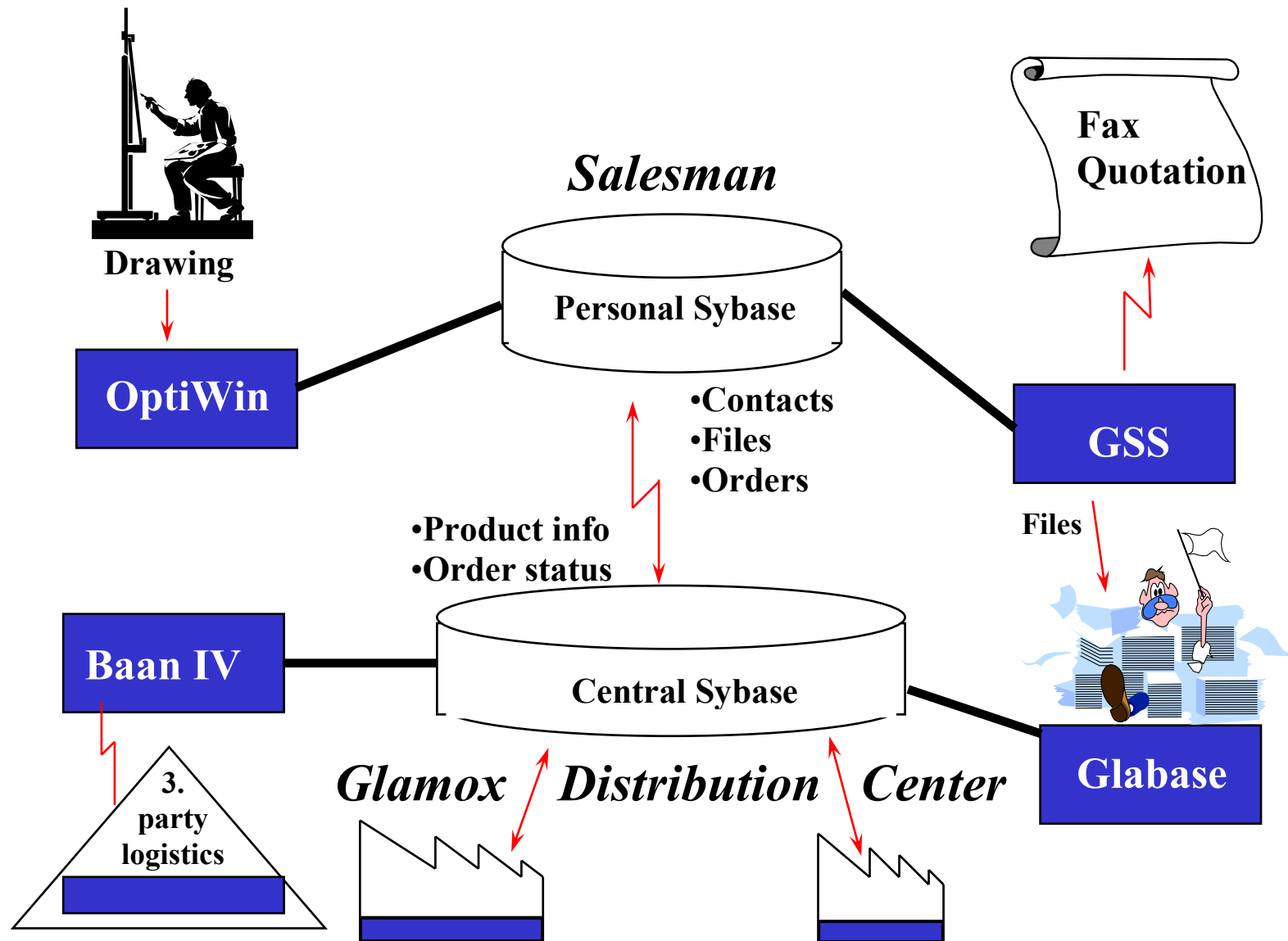
**Exhibit 5:** Glamox “gameplan” 1998 – 2001

Exhibit 6: E-value Chain



**Exhibit 7:** The day of a digital mobile salesman

**Exhibit 8:** Breakdown of results from turn-around-process (all figures MNOK)

	Rationale	1998	1999	2000	2001	1998 - 2001
Market growth <sup>1</sup>	98: + 4%	18	-11	-10	8 <sup>2</sup>	5
Price development <sup>3</sup>	98: Stable prices	0	-24	-42	23 <sup>2</sup>	-43
Inflation <sup>4</sup>		-8	-10	-20	-40 <sup>2</sup>	-78
Results external factors		10	-45	-72	-9	-116
Market shares <sup>5</sup>	98: + 4%, 41%DG	18	38	6	20	82
Productivity	Revitalizing process 1998	31	21		10	62
E-business process	Revitalizing process 1999			27	33	60
Cost reduction conjuncture <sup>6</sup>	Revitalizing process 2000			6		6
Structure production <sup>7</sup>	Revitalizing process 2001			-	10	10
Depreciation eBusiness investment	E-business cost savings			-23	-1	-24
Higher investment in the market	Market shares	-10	-13	-14	-16	-53
Acquisition / sales of units			5			5
Increased rent from sale/leaseback of buildings					-11	-11
Results internal factors		39	51	2	45	137
Results (EBIT) accumulated	1997 + 9M	58	64	-7	30	21

## Notes:

1: For 1998: 4% total market growth x 1100m (market share) x 0.41 (gross margin) = 18m

2: Estimated by case author.

3: Price fall 7% (average, based on developments in gross margin) x 700 (volume) ≈ 50m

4: Salaries and other non-controllable increases, negotiation strength of suppliers (i.e., aluminum prices)

5: Gain over market growth.

6: "Plain cost cutting" to adapt to market conditions

7: Shifting some production abroad



**Exhibit 9: Optiwin – Design tools****Project manager**

No. 1236 Ser.no. 3 Date estd. 13.10.96

Description: School Date altered: 26.10.98

Customer no. 52 New Customer

Name: Glamox Project Department

Address:

Postal info:

Telephones:

Telefax:

>> Room Exit

**Room calculation**

Project: 3

Room name: Office User: Date altered: 26.12.98

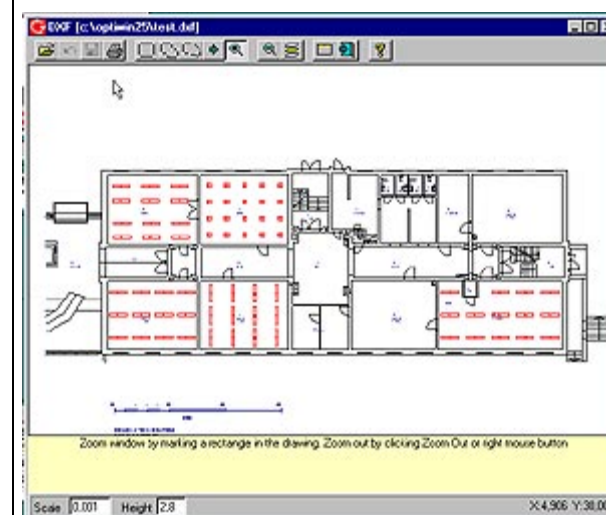
Information: SedNo: 170

Room shape: Length 11.5 Width 6.3 Height 3.0 Avg mount height 2.1 Area 75.0 Enlarge

Reflection: Ceiling 0.5 Floor 0.5 Wall 0.5 Example: Standard values reflection Ceiling Wall Floor Required lum. level Maintenance factor Height calculation plane

No.	Lum.type(Name)	Lumen	Nc	Lux level	Watt/ft
1	IND P 250W SD (F)	10400	7		14.56
2	GMA 224 (F)	3600			
3	ROLLER 85.70W LGT HVLT (F)	3200			
5	GON 18 126 S (F)	1800	8		3.63
Total		87200	15		18.19

Buttons: New, Delete, Search, Calc, Import from DWG, >> Lum. positioning, Exit

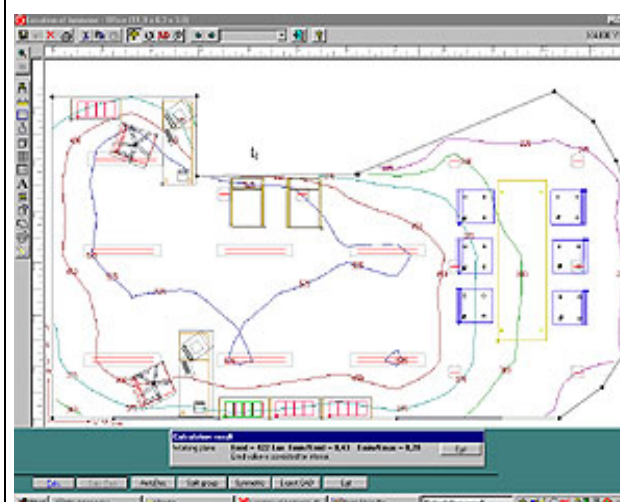
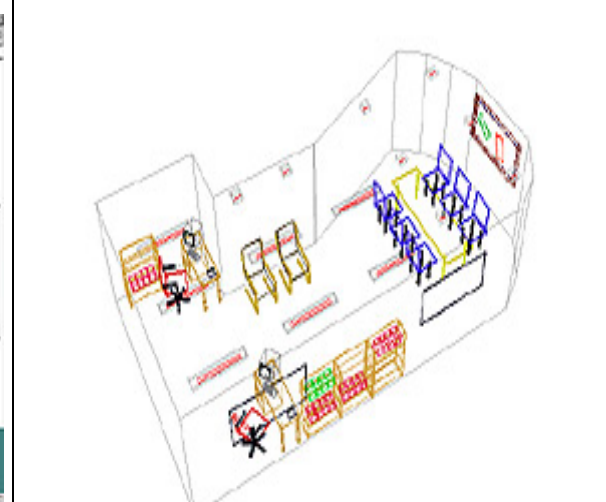
**Connection to CAD****Directory**

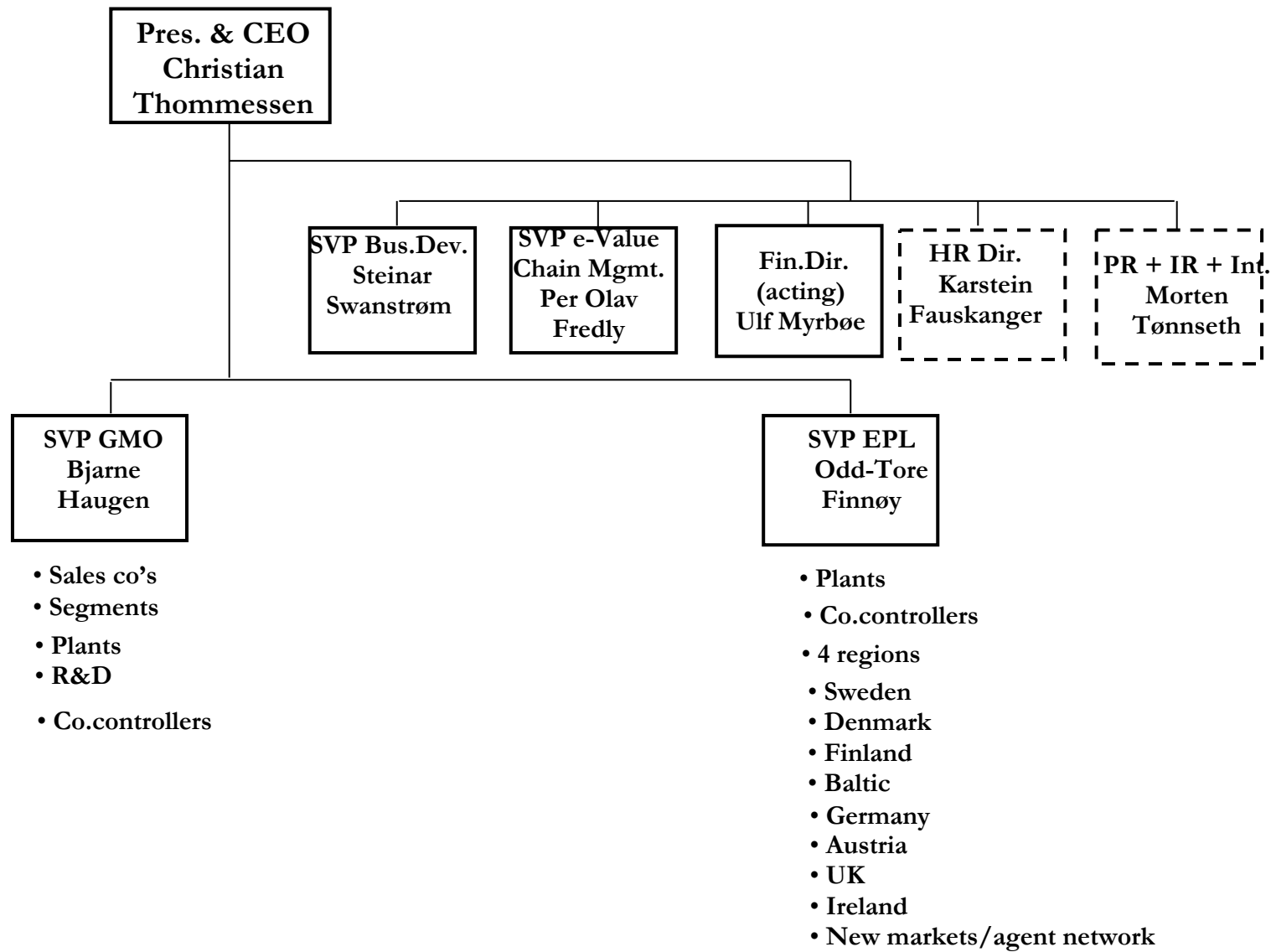
Luminaire Click to select

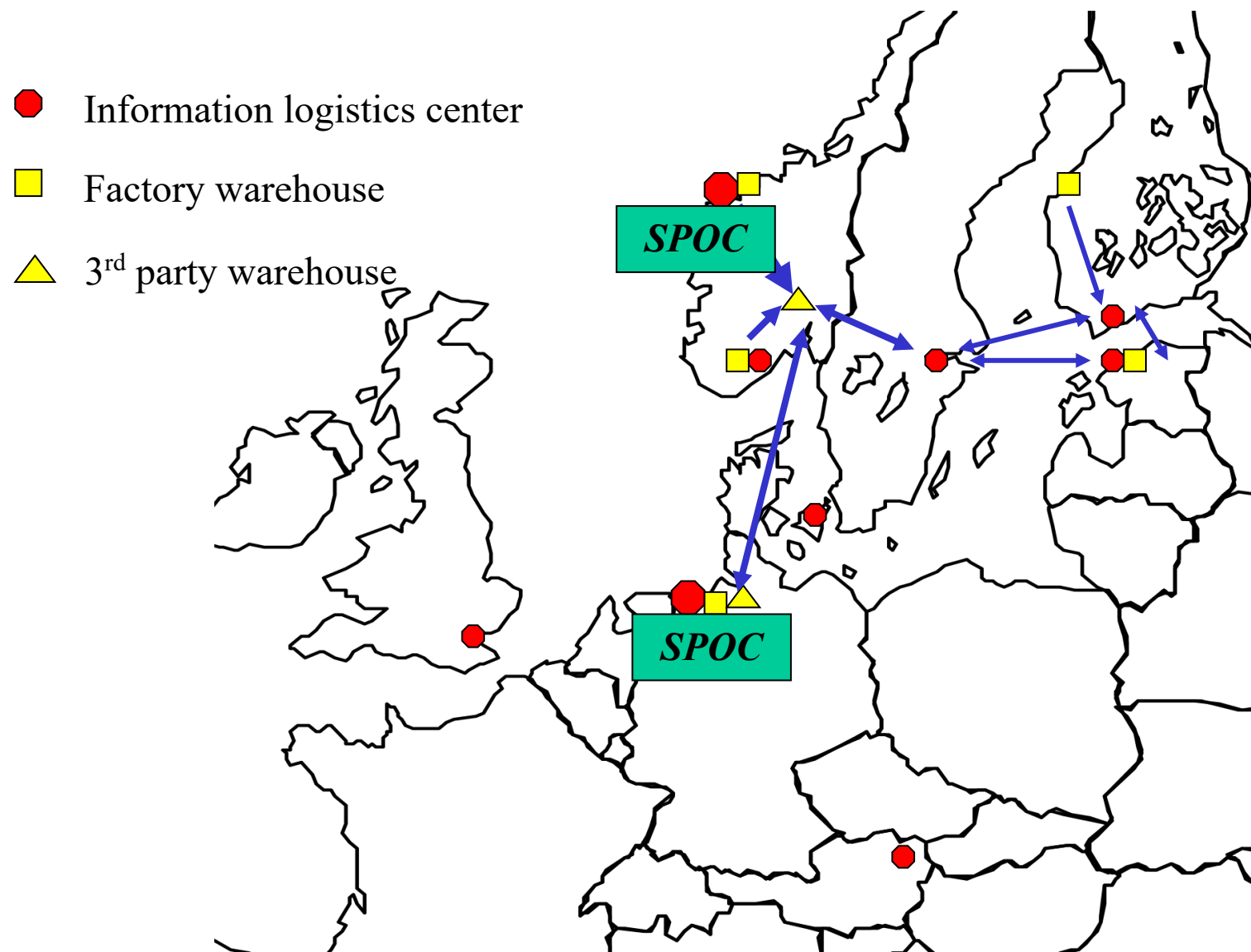
- FLR 200 114 SL
- FLR 200 114 DL
- FLR 200 128 SL
- FLR 200 128 DL
- FLR 200 135 SL
- FLR 200 135 DL
- FLR 225 128 SL
- FLR 225 128 DL
- FLR 300 214 SL
- FLR 300 214 DL
- FLR 300 228 SL
- FLR 300 228 DL
- FLR 300 235 SL
- FLR 300 235 DL
- FLR 325 228 SL
- FLR 325 228 DL
- FLR 600 314 SL
- FLR 600 314 DL
- FLR 600 414 SL

No.	Gear	Type	Colour	Lumen	Watt
1	ELD	15 28W HE	Super	2900	31

Buttons: >> Use, Exit

**Luminaires positioning****Inventory**

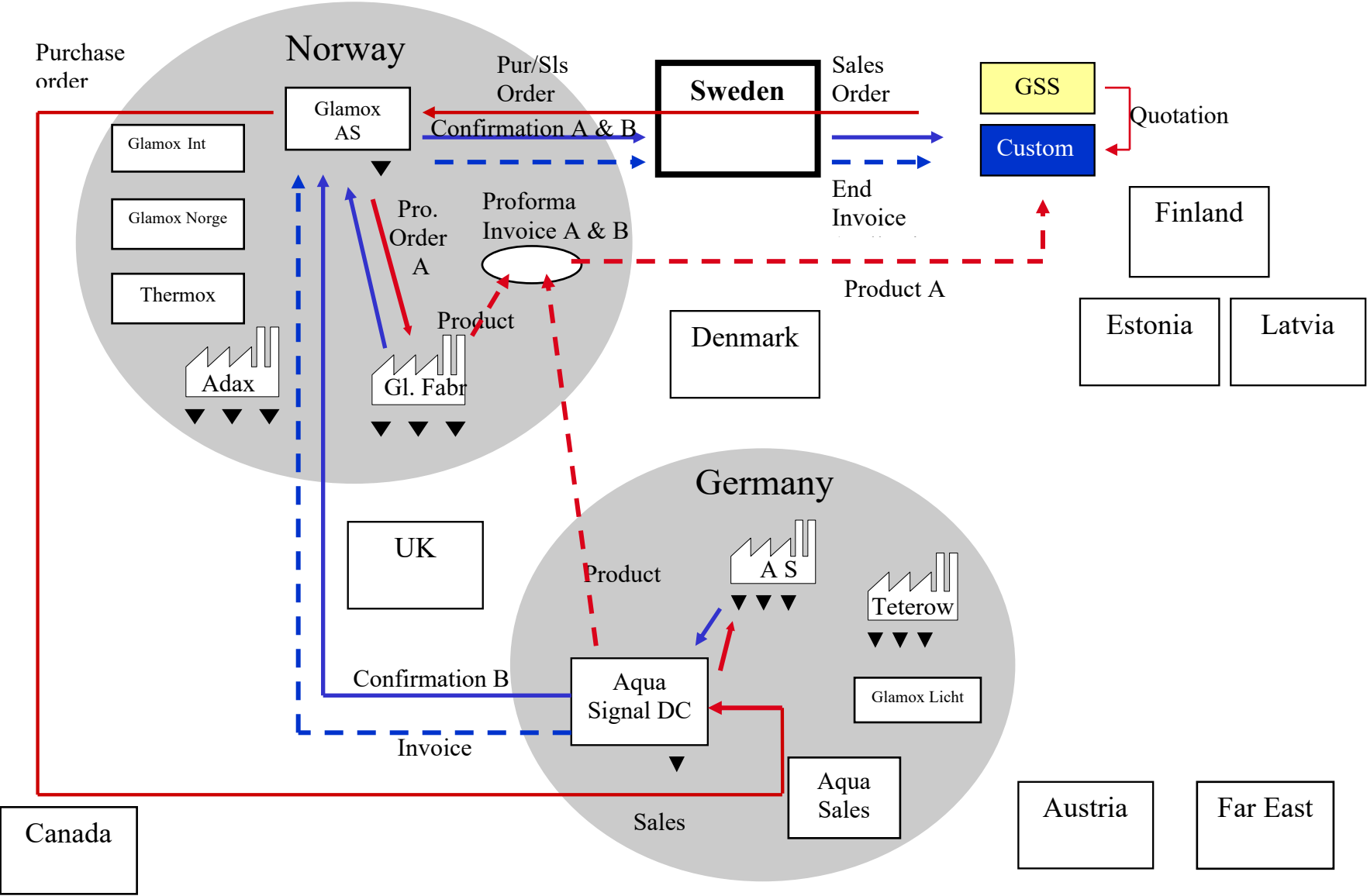
**Exhibit 10:** Simplified organization chart, October 2000

**Exhibit 11:** Logistics structure, 2000

**Exhibit 12:** SPOC room, Molde



Exhibit 13: GSS – Glamox Sale Support System



**Exhibit 14:** Market structure