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Zara: IT for Fast Fashion

On a beautiful August night in 2003, Xan Salgado Badás and Bruno Sánchez Ocampo settled into seats at their favorite tapas bar in the Spanish city of La Coruña, ordered *pulpo gallego* (octopus Galician style), and resumed their argument.

Salgado was the head of IT for Inditex, a multinational clothing retailer and manufacturer headquartered in La Coruña (see Exhibit 1 for a map). He was Sánchez's boss, although the two men had worked together for so long that their formal reporting relationship mattered little. It certainly did not keep Sánchez from disagreeing with every point Salgado made this evening as they discussed the point-of-sale (POS) terminals used by Zara, Inditex's largest chain of stores. Sánchez was the technical lead for the POS system, so the matter was close to his heart.

"It's time to upgrade them," said Salgado.

"No, it's not."

"Yes, it is. It's risky to let them get so far behind current technology."

"No, it's riskier to upgrade them just to 'stay current.' The software works fine now; we shouldn't touch it."

"But it runs on DOS, which you know Microsoft doesn't even support anymore."¹

"And *you* know DOS hasn't been supported for *years* now, and that hasn't stopped us or hurt us," Sánchez replied. "We have the right to keep using the operating system—where's the problem?"

"One problem is that the hardware vendor for our POS terminals could upgrade their machines, or some peripheral for them, so that they're not DOS-compatible anymore. Then where would we be? We'd be explaining why Zara can't open any new stores because we don't have POS software that works with our POS hardware. Do *you* want that job?"

¹ All computers have an operating system (OS), which is a specialized program that "sits between" the hardware (i.e., the screen, keyboard, disk drive, processor, etc.) and the software (also called "applications" or "programs") that users want to run on the computer. Microsoft's MS-DOS (Microsoft Disk Operating System), or DOS, was a widely installed operating system in early personal computers. In 1985, Microsoft launched the Windows OS to replace DOS.

Professor Andrew McAfee, Executive Director of the HBS Europe Research Center Vincent Dessain, and Research Associate Anders Sjöman prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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"Of course not. So let's buy a bunch of the current terminals so if that happens we'll have plenty of breathing room while we port the POS application to a new OS.² But I don't even think we need to do that. The terminal vendor has assured us they're not going to make any drastic changes, and we're a big customer.

"And let me remind you why we shouldn't tamper with POS unless we absolutely have to," Sanchez continued. "*Everything about it works!* Sales get recorded in stores around the world and transmitted to us here every day like clockwork. I wrote most of the POS application, and I'm the one a store manager calls when there's a problem they can't fix. Do you know how many of those calls I got last week?"

"I know that the application is stable, but that doesn't..."

Sánchez didn't let him finish: "*None!* That's how many! Let me ask you another question—do you know how many stores we opened last week?"

"No, but what's that got to..."

"*Exactly!* That's because opening a store requires *no IT involvement!* You don't have to send someone to Dubai, or Argentina, or Russia, or wherever. The store manager just unpacks the POS terminals, inserts a couple disks in each, plugs a modem into a phone line, and starts selling clothes. Why on Earth would you want to mess with that?"

"Because I'm worried about DOS," Salgado said. "And because I think it might be time to upgrade the POS application itself. We could add functionality, we could add networking capability, we could..."

"We could mess it up in the process. We could turn it from an application that we never have to worry about into a real headache, for us *and* the stores."

"But the store managers are asking for POS to include more..."

"Store managers are *always* asking for something more from us. But which do you think they'd rather have: a basic POS application that *always* works, or a fancy buggy one?"

"Of course they'd rather have a stable application," Salgado replied, "but we've been hearing more and more lately that they want to be able to look up inventory balances in their stores, other stores..."

"Great. So instead of *selling* clothes they'll be *counting* them all the time, trying to make sure their online inventory figures are 100% accurate. Bad idea.

"POS is not broken," Sánchez finished definitively. "Why are we trying to fix it?"

Instead of replying, Salgado sat back and thought. He was quite familiar with Sánchez's arguments, because Salgado himself had made them many times. The two of them, in fact, often switched sides in this debate; it was how they made sure that they raised all the relevant issues and examined the whole argument, instead of getting entrenched in one point of view. This thorough approach, however, had only deepened Salgado's confusion over what to do about POS. He wondered what approach would be most in keeping with how Zara developed and exploited its overall computing infrastructure.

² "Porting" is the work of rewriting an existing piece of software so that it is compatible with another operating system.

Zara Business Model

The original business idea was very simple. Link customer demand to manufacturing, and link manufacturing to distribution. That is the idea we still live by.

—José María Castellano Ríos, Inditex CEO

Zara was founded by Amancio Ortega, who in 2003 was still its largest shareholder and the richest man in Spain.³ Ortega had started in 1963 with clothing factories. Over time, he came to believe that retailing and manufacturing needed to be closely linked in the apparel industry, where consumer demand was notoriously hard to forecast. So he integrated forward, opening the first Zara store in La Coruña in 1975.

Two important events occurred in 1985. First, Inditex (Industria de Diseño Textil) was formed as a holding company atop Zara, other retail chains (see Exhibit 2 for a list of them as of 2003), and a network of internally owned suppliers. Second, José María Castellano Ríos joined the company. Castellano had worked as an IT manager and shared Ortega's belief that computers were critically important in enabling the kind of business that they wanted to build. Castellano became Inditex's CEO in 1997.

Speed and Decision Making

In addition to their affinity for information technology, Ortega and Castellano shared two other beliefs about the company. First, Zara needed to be able to respond very quickly to the demands of target customers, who were young, fashion-conscious city dwellers. Their tastes in clothing changed rapidly, were very hard to predict, and were also hard to influence. Other companies in the apparel industry had shown that marketing and advertising campaigns could be effective at convincing a consumer to buy their clothes. History had also demonstrated, however, that "fashion misses" were common even with extensive advertising and that new styles could appear suddenly (based, for example, on what a rock star wore during a televised awards show), surge in popularity, then quickly fade. Zara wanted to be able to produce and deliver such styles while they were still hot, rather than relying on the persuasiveness of its marketing to push clothes it had made some time ago.

Second, Ortega, Castellano, and the other senior managers wanted to take advantage of the intelligence and trust the judgment of employees throughout the company, instead of relying on a small set of decision makers. Store managers at Zara, for example, were given much more responsibility than those at other large clothing chains. In addition to dealing with customers, employees, contractors, and landlords, Zara store managers decided what garments would be on sale at their stores. They placed orders for the items they thought would sell, rather than simply accepting and displaying what headquarters decided to send them.

Similarly, a group of people at La Coruña called "commercials" had great discretion in deciding what clothes would be designed and produced. In sharp contrast with those of other chains, Zara's collections were not conceptualized and designed by a small, elite team. Instead, collections were created, then extended and modified over time, by teams of commercials, each dedicated to a section of the store (Men, Women, or Children) and, within that, to a specific collection ("Basic" and "Sports," for example, were both collections within Women). Teams usually consisted of two designers and two product managers, who purchased material, placed production orders with the factories, and set prices.

³ This section draws on Pankaj Ghemawat and José Luis Nuevo, "Zara: Fast Fashion," HBS Case No. 703-497 (Boston: Harvard Business School Publishing, 2003).

Another group of commercials, called store product managers, sat in close proximity to the product teams and served as La Coruña's main interface with Zara stores around the world. They traveled extensively, observing what residents were wearing and talking at length with store managers to find out what kinds of clothes were selling. Even more importantly, they also tried to learn what kinds of clothes *would* sell if Zara made them. Store product managers communicated what they had seen and heard to the design teams, helping them keep abreast of fast-changing trends and demands (for a layout of the office in La Coruña where design teams and store product managers sat, see Exhibit 3). Store product managers could initiate store-to-store transfers when they saw that garments selling slowly in one area were popular in another.

Other employees within the commercial function also exercised a great deal of autonomy. They decided, for example, which clothes each store would be able to order. When total orders from stores exceeded availability for an item in any period, commercials decided which stores would get clothes and which would not. Commercials' decisions were not typically reviewed by higher-level managers. Zara believed that such second-guessing would compromise both the company's speed and its emphasis on decentralized decision making.

Marketing, Merchandising, and Advertising

Unlike its main competitors, which were other multinational clothing retailers such as H&M, Gap, and Benetton, Zara did virtually no advertising. The company placed ads only to promote its twice-yearly sales⁴ and to announce the opening of a new store. As a result, Zara's marketing expenditures averaged 0.3% of revenue, instead of the 3%–4% typical for competitors. (For a financial comparison of Inditex and its three main competitors, see Exhibit 4.)

While it spent little on ads, Zara spent relatively heavily on its stores. They were always located in a city's prime retail district, often on the best-known street. And while Zara's store managers had a great deal of freedom in deciding what clothes to stock, they had no discretion about the look and feel of their stores. Store layouts were completely changed every four to five years, with artwork, window displays, and sales racks changed more frequently. A 1,500-square-meter pilot store was kept in La Coruña, where all new store layouts were designed and tested before being rolled out around the world. After a redesign, a La Coruña-based team traveled to each Zara store to set up the new configuration.

Individual stores also did not have the freedom to set garment prices; these were determined by product managers. Prices were established for the Spanish market, denominated in euros (€), and noted on the tag affixed to the garment in La Coruña. Prices for other countries were set at a fixed percentage of this baseline, taking into account distribution costs and market conditions.

Zara did not try to produce "classics"—clothes that would always be in style. In fact, the company intended its clothes to have fairly short life spans, both within stores and in customers' closets. Three implications followed from this approach. First, experienced Zara shoppers knew that if they saw a garment they liked they should buy it on the spot, because it might not be there on their next visit (about 75% of the merchandise in the average store was changed over three to four weeks). Second, shoppers also knew that they should visit the store often, since new styles showed up all the time. Finally, Zara garments were not designed and manufactured to be highly durable; they were described as "clothes to be worn 10 times."

⁴ All large clothing retailers held these sales to get rid of merchandise in advance of a new collection's debut. Because of its proficiency at matching supply to demand, Zara typically sold 15%–20% of its clothes during these sales at an average discount of 15%. European competitors sold 30%–40% of their clothes this way, at an average discount of 30%.

Zara had decided not to sell clothes over the Internet, for two main reasons. First, the company's distribution centers (DCs) were not configured for picking small orders and shipping them to consumers. Second, it would be complicated to handle returns of merchandise bought online. Zara managers understood that the retail mail-order industry saw return rates as high as 50%–60%, which they compared unfavorably with their normal 5% store returns. A Web site—www.zara.com—existed but served only as a digital display window, showing a few typical garments at any time.

Financials and Growth

At the beginning of 2003, Inditex operated 1,558 stores in 45 countries, of which nearly 550 were part of the Zara chain. The group opened on average one store per day across the world. Forty-six percent of the group's sales were inside Spain, with France the largest international market. Zara generated 73.3% of the group's sales. Of the three departments inside Zara, Women accounted for 60% of sales, with the rest evenly split between Men and the fast-growing Children segment. For its fiscal-year 2002, Inditex had posted a net income of €438 million (about \$502 million U.S. dollars) on revenues of €3,974 million (about \$4,554 million), continuing a trend of rapid and profitable growth; the company's earnings, for example, had more than tripled between 1996 and 2000 (Exhibit 5 provides the group's financial information, Exhibit 5 shows its geographic expansion, and Exhibit 6 shows growth over time).

Inditex executives felt that ample room for growth existed within its current markets. Italy, for example, had very few Zara stores, despite the fact that shoppers there were some of the most fashion conscious in Europe. Zara's Italian stores were extremely popular, giving Castellano confidence that the country could one day have a store density similar to that of Spain. And Inditex's western European expansion could, he felt, be largely supported with its current infrastructure. This implied that it would not be necessary to build entirely new production and distribution networks in order to support future growth.

Operations

To reach its goal of quickly and accurately responding to shifting consumer demands, Zara established three cyclical processes—ordering, fulfillment, and design and manufacturing. Of these, ordering (of garments by the stores) was the most regular, precisely defined, and standardized around the world.

Ordering

Every major section of a Zara store—Men, Women, and Children—placed an order to La Coruña twice a week. The order encompassed both replenishment of existing items and initial requests for newly available garments. Stores faced “hard” deadlines for submitting these orders; if they missed the deadline, La Coruña calculated a replenishment-only order for them, based on what they had sold since the previous order.

Store managers determined replenishment quantities by walking around the store and determining what had been selling by counting garments and talking to salespeople. Store personnel could *not* look up their inventory balances on any in-store computer, so canvassing the store was the only way to learn about stock levels.

Managers learned about newly available garments by consulting a handheld computer that was linked each night, via dial-up modem, to information systems at La Coruña. (See Exhibit 7 for a

picture of a handheld.) Less than 24 hours before each order deadline a digital order form, called "the offer," was transmitted to all stores' handhelds. The offer included descriptions and pictures of the newly available items, as well as all replenishment items that were still available to that store. Each store's offer was different; offers were developed by a team of commercials and were based on garment availability, regional sales patterns, predictions about what would sell well in each location, and other factors. (See Exhibit 8 for a portion of an offer.)

To facilitate ordering, the store manager usually divided the offer into segments and "beamed" each segment to a different handheld using infrared technology. Several people then used these handhelds to fill in their segment of the offer as they walked through the store, then beamed their segments back to the store manager. After reviewing them, the manager would send the completed form, now called "the order," back to La Coruña.

Fulfillment

Fulfillment, or shipping clothes to stores to satisfy their orders, involved another group of commercials at La Coruña. Their job was to match up the supply of finished clothes coming from factories into the DC with the stores' demands for these items. They worked with two pools of information: the aggregated orders from all stores, which was finalized soon after the order deadline had passed, and the total supply of inventory in the DC at the same point in time. Both of these were at the level of the stock-keeping unit (SKU), which was defined as the combination of garment plus fabric plus color plus size.

When supply and demand lined up closely for a particular SKU, no decisions were required; the commercial simply allowed the inventory to be divided up, by computer, among all the stores that wanted it. If, however, demand for an SKU was greater than supply in any ordering period, the commercial had to determine which stores would get the available inventory and which would not. He or she did this by looking at which stores had been most successful at selling the item and which ones, if any, had been shortchanged on these decisions in the recent past.

These commercials also worked with product managers to determine future production for each SKU. If there were more demand than supply, of course, production would be increased as quickly as possible. When supply started to exceed demand, the commercial would decrease replenishment requests and eventually stop placing new factory orders altogether.

Finally, commercials could also ship items that stores did *not* order. These were typically new garments for which Zara wanted to assess demand. They would be sent to stores in targeted geographies; store managers knew to expect such deliveries periodically, and to offer the clothes for sale rather than asking where they came from. Store managers also knew to expect that some items that they had ordered might not arrive because total demand had exceeded supply and commercials had decided to allocate available SKUs elsewhere.

Deliveries typically showed up at stores one or two days after each order was placed. Stores in western Europe were replenished by truck from the two Spanish DCs. Latin American stores were replenished from smaller local DCs.⁵ More remote stores, such as those in northern Europe and the Middle East, were replenished by air from the Spanish DCs. Garments did not stay long in a DC; the goal was to produce, then deliver, only what the stores needed, and only when they needed it. In fact, there was little inventory *anywhere* in Zara's supply chain. Clothes flowed quickly, and without stopping, from factories to DCs to stores, where they were immediately put on the sales floor; Zara stores had no "back room" where excess inventory could be kept.

⁵ Latin American DCs were supplied via bulk shipments from Spanish DCs.

Each section of all Zara stores ordered twice a week, but different sections received shipments on different days. As a result, the DC in La Coruña was active throughout the week but most active on the days when Women's orders were shipped to stores, since the Women's Department accounted for the greatest share of sales, orders, and SKUs.

Design and Manufacturing

Like other large clothing retailers, Zara introduced substantially new design collections at the start of the fall/winter and spring/summer buying periods. In sharp contrast to the competition, however, Zara also brought out new items continuously throughout the year, including both changes to existing garments (for example, a shirt with a new collar or color) and entirely new creations. In a typical year, Zara introduced approximately 11,000 new items; competitors averaged 2,000–4,000.

Zara's vertically integrated manufacturing operations enabled this constant introduction of new items and also ensured short lead times. Production requirements were distributed across a network of specialized facilities that quickly produced and delivered the required goods. Zara owned a group of factories in and around La Coruña to do the capital-intensive initial production steps of dyeing and cutting cloth.⁶ Cut fabric was sewn into garments at a network of small local workshops in Galicia and northern Portugal that guaranteed quick turnaround times.⁷ All finished garments were sent to a Zara facility, where they were ironed, inspected, given a machine-readable tag, and sent to a DC.

Using this network, Zara could consistently move a new design from conception through production and into the DC in as little as three weeks.⁸ Two days after that, the garment could be on sales racks in stores around the world. This speed enabled Zara to respond to the fast-changing and unpredictable tastes of its target customers. As far as Inditex managers were aware, no other large apparel retailer could match this capability.

A consequence of Zara's approach to design, fulfillment, and manufacturing was that the company did not have to rely on accurate long-range sales forecasts. Instead, commercials within design teams simply made an initial guess about how well a garment would sell, then communicated this guess to factories in the form of a first-production requirement. It was not critical that this guess be accurate. Stores' orders told commercials how well the garment was selling and thus whether future production should be increased or decreased. And flexible factories with short lead times could adjust to such changes easily and rapidly. Zara did not have to predict what would be selling six months, or even one month, in the future; it could continuously sense what customers wanted to buy and respond "on the fly."

Information Technology

Approaches and Organization

Zara's approach to information technology was consistent with its preferences for speed and decentralized decision making. The company had no chief information officer and no formal

⁶ Zara bought a large amount of undyed fabric on the external market and also owned some textile fabrication facilities.

⁷ These workshops were not owned by Inditex.

⁸ Zara outsourced production of some items with comparatively stable and predictable demand patterns like men's dress shirts. Lead time for items produced in China was approximately four months; for items produced in Turkey, lead time was two months.

processes for setting an IT budget⁹ or deciding on specific technology investments or projects. Instead, Salgado and Castellano sat on a technology steering committee and so got involved early in discussions of initiatives that might include computerization (for a formal organization chart of Inditex, see Exhibit 9). As these discussions progressed, Salgado and his colleagues would determine what new systems, if any, were required and which IS department personnel should work on them. There was little or no formal justification for IT efforts, nor were cost/benefit analyses typically conducted for a proposed effort.

Salgado and his colleagues shared a preference for writing the applications they needed themselves rather than buying commercially available software. They felt that the company's operations were unique enough that commercial packages would not be suitable. The fact that Zara did business in so many countries and currencies, for example, meant that standard accounting packages would have to be heavily modified and extended. Rather than attempting this, the IS department wrote its own accounting software. Similarly, the applications that supported ordering, fulfillment, and manufacturing were largely developed internally.¹⁰

Application development and other IT activities were the responsibility of an IS department of approximately 50 people, almost all hailing from Galicia and recruited from local universities.¹¹ They were divided into three groups: Store Solutions, Logistics Support, and Administrative Systems. With very few exceptions, all IT support of Inditex stores around the world was done directly from La Coruña. Staff retention was not seen as a problem; in the last 10 years, only one person had left the department.

La Coruña

At La Coruña, several information systems were used to support Zara's operations. Internally developed applications were used to prepare the offer and distribute it over the Internet to stores around the world and also to receive orders from all of the stores and aggregate them. Another application compared the aggregated order to available inventory for each SKU, highlighted situations where supply and demand were imbalanced, and executed commercials' decisions about how to allocate products when demand exceeded supply.

Yet another application kept track of the "theoretical inventory" of each SKU at each store. Shipments to stores increased this inventory, and sales decreased it. At the end of each business day, each store transmitted that day's sales for all SKUs back to La Coruña, using a modem connected to one of the store's POS terminals (see Exhibit 10 for a photo of a Zara POS terminal). Of course, if shipments and sales were not recorded perfectly, stores' theoretical inventory would become inaccurate; theft, damage, and other losses would also make theoretical inventory a poor reflection of reality.

The company had not historically been greatly concerned that theoretical inventory be 100% accurate for each store and SKU at all times. Theoretical inventory was used to help make allocation

⁹ Castellano estimated Inditex's 2002 IT spending to be €25 million, or approximately 0.5% of revenue. A 2001 survey of large North American retailers found their IT spending to average approximately 2% of annual revenue (Gartner, Inc., 2001 IT Spending and Staffing Survey Results).

¹⁰ Zara did use standard commercial applications for office productivity (word processing, e-mail, etc.) and computer-aided clothing design.

¹¹ IT employees accounted for less than 0.5% of Inditex's total workforce. Large North American retailers, in contrast, devoted approximately 2.5% of employees to IT on average (Gartner, Inc., 2001 IT Spending and Staffing Survey Results).

decisions and for little else.¹² Salgado maintained that “Having 100% control is most of the time just too expensive. Being 95% right is pretty good, and often you don’t need more accuracy.”

Factories

Inside Zara’s factories, relatively simple applications were used to plan production. These applications did not use sophisticated mathematics to generate “optimal” plans and schedules. Instead, they presented factory managers with quantities and due dates for all production requests. Managers used this information to load their factories and put jobs in sequence.

The most sophisticated technologies inside Zara factories were usually the large computer-controlled equipment that cut cloth into patterns.¹³ These machines calculated how to position patterns so as to minimize scrap and could cut over 100 layers of fabric at a time. Cut fabric was then sent from Zara factories to external workshops for sewing.

Distribution Centers (DCs)

Zara’s DCs relied on a great deal of automation and computerization. At the La Coruña DC, for example, miles of automated conveyor belts facilitated the ongoing task of receiving bulk quantities of each garment from factories then recombining these garments into shipments for each store. (See **Exhibit 11** for a picture of these conveyor belts.) Information systems tracked where each SKU was stored as it entered the DC, then controlled the conveyor belts to pick them up and drop them off at the appropriate places. Humans helped with this work, particularly by taking garments off the belts at the end of their journey through the DC, then putting them on hanger racks or in cardboard boxes that would be sent to each store. Zara’s IT department wrote the applications that controlled the DC’s automation, often in collaboration with the vendors of conveyor equipment.

Stores

All Zara stores had identical handhelds—also known as personal digital assistants (PDAs)—and POS systems. PDAs had been introduced in 1995. At that time, many within the company felt that it was taking too long and costing too much to fax order forms back and forth to all stores around the world twice a week. Because of the number of SKUs involved these forms could be well over 15 meters long, so it was time consuming to send and receive them. Unreliable fax machines, paper shortages, and other similar problems also introduced delays and frustration into the critical ordering process. Salgado and his colleagues decided to address the situation with IT and began experimenting with handheld computers that would communicate with La Coruña via modem. They first used Apple’s Newton device and became one of the largest users of this then-new technology. After the Newton was discontinued in 1998, Zara switched to another PDA manufacturer.

In 2003, PDAs were used primarily for ordering and also for tasks such as handling garment returns to DCs and transmitting information from headquarters to all stores. Each store had several PDAs, allowing redundancy and division of labor during the ordering process. Zara constantly upgraded stores’ PDAs as devices were discontinued or as technological advances such as color screens became available.

¹² All Zara stores periodically conducted physical audits of their inventory. During an audit SKUs were divided into categories based on price, then the number of garments in each category were counted. If the total value of the inventory in the store was close enough to the total value of theoretical inventory, the store passed the audit.

¹³ These were commercially available machines, and Zara did not greatly modify them.

The POS terminals in use within every store, in contrast, had remained essentially unchanged for well over a decade. They still used the DOS operating system, which in 2003 was no longer supported by Microsoft. Zara continued to use DOS, and the internally developed POS application that ran on top of it, because this combination had proved to be remarkably stable, effective, and easy to roll out and maintain over time. Store employees, for example, could turn POS terminals on and off at any time without worrying about following start-up or shutdown procedures. They could also set up and maintain the complete POS infrastructure themselves. When opening a new store, the manager simply inserted two floppy drives into each "blank" POS terminal; the floppies contained DOS and all required applications. In the event of a serious problem with a POS terminal, a complete software reinstallation was similarly straightforward. As a result, no IT support was required to open a new store, nor was it necessary to run a large IT support organization to assist the stores.

Neither the POS terminals nor the PDAs were always connected to Zara's headquarters or to other stores. One POS terminal at each store had a modem, which was used at the end of each business day to transmit comprehensive sales information and other data to La Coruña. POS terminals were not connected to one another via any in-store network, so employees copied daily sales totals from each terminal onto a floppy disk, then carried these disks to the one modem-equipped terminal to accomplish the transition. PDAs also used this terminal's modem to receive the offer and transmit the order. Stores did not have any computers beyond the POS terminals and PDAs. Within a store, POS terminals and PDAs could not share information.

The POS terminals and PDAs did not contain information that could be used when one store wanted to know if a nearby one had a particular SKU in stock. Store personnel telephoned one another to answer this question.

Conclusion

Salgado and Sánchez both worried about "getting fancy" with store IT. Would upgrading to a modern operating system, enhancing the POS application itself, and/or building networks within and between stores put at risk the robust and scalable infrastructure they had built? They also worried, however, that Zara was building a bigger and bigger company on top of a more and more obsolete operating system. What if the hardware vendor for POS terminals changed the machines in such a way that they could no longer use DOS? This vendor had already made it clear that Zara was its only customer using the ancient operating system. The vendor also said that it had no plans to change its machines so that they could no longer run DOS, but Salgado had gotten nowhere when he had tried to include such assurances in Zara's contract with the terminal maker.

Did all of this mean that it was now time to port the POS application to another OS such as Windows, UNIX, or Linux? And as insurance against unpleasant surprises, did it make sense to purchase enough of the current POS terminals now, so that Zara's needs would be covered in the event of a sudden loss of support from the vendor?

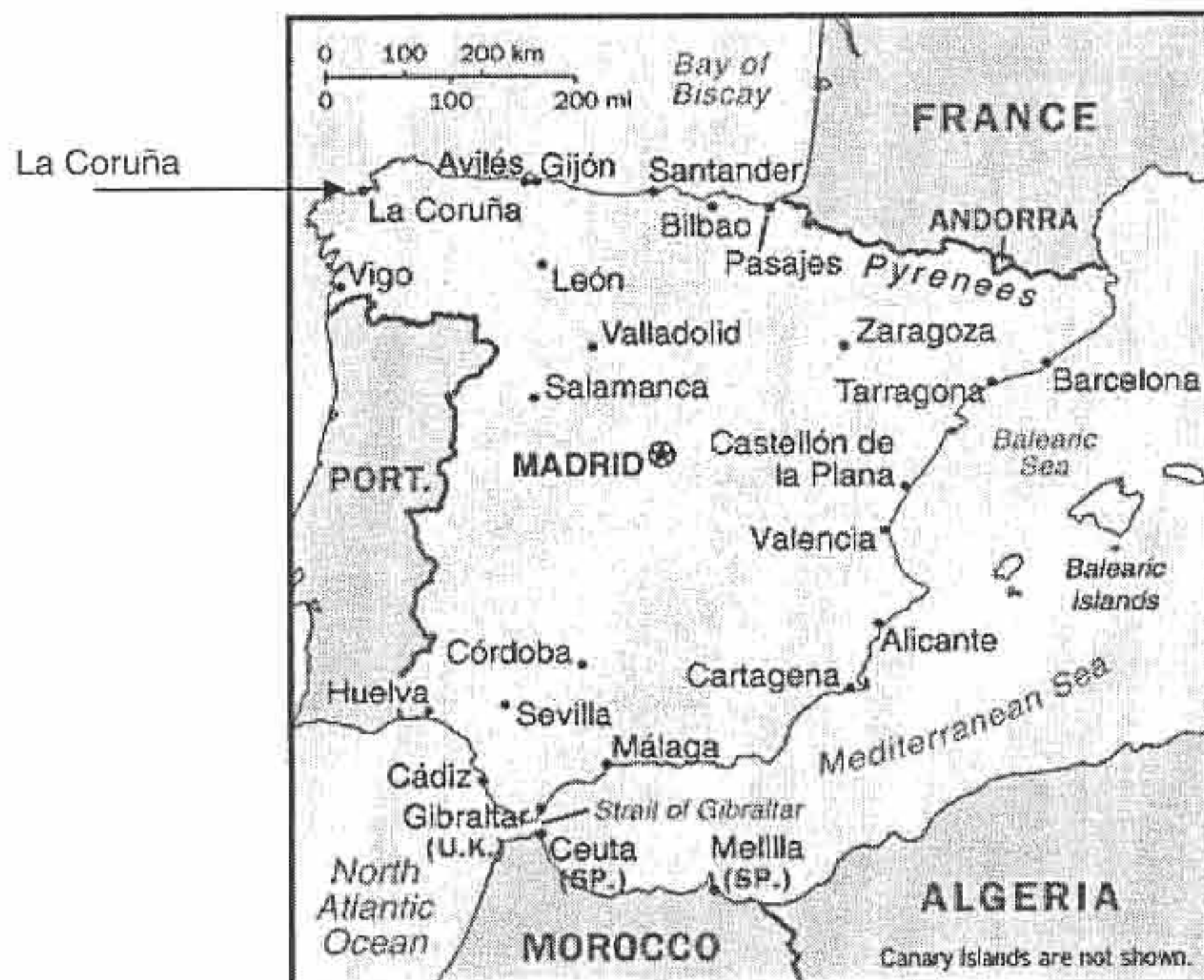
If they were going to port the POS application to a new operating system, should they also use it as an occasion to build new capabilities into the software? One of the few complaints store managers had about the PDAs was that it was time consuming to use their small screens and styluses to accomplish returns. An updated POS application could easily incorporate this functionality, allowing store personnel to use a large screen, keyboard, and mouse to quickly execute returns transactions.

And why stop there? Modern POS terminals, since they were really modern PCs, could accommodate even more sophisticated capabilities, especially networks within stores and across the

company. Wireless networks were particularly intriguing since they were much cheaper to install within a store. With a wireless network in place, it would no longer be necessary to carry floppy disks around the store at the end of each business day to tally up total sales. And if all stores and La Coruña were permanently connected to the Internet, every location could know the theoretical inventory of all of its SKUs, as well as the theoretical inventory in all other stores. In this scenario, stores could request inventory transfers from one another online, eliminating the need for phone calls to see if an item were in stock. (See Exhibit 12 for some industry-based assumptions on development costs.)







Salgado and Sánchez saw that a move to change the operating system of Zara's POS terminals entailed a number of follow-on decisions. Was now the right time to make them, or should the company simply continue to use the IT infrastructure that had worked so well for so long? Even the arrival of the delicious *pulpo* did not take their minds entirely off the issue, but it did temporarily stop them from arguing about it.

Exhibit 1 Map of Spain, with La Coruña Indicated



Source: University of Texas, http://www.lib.utexas.edu/maps/europe/spain_sm97.gif, accessed January 20, 2004.

Exhibit 2 Inditex Retail Chains (end of 2003)

Zara	Massimo Dutti	Bershka
		
<ul style="list-style-type: none"> • Founded in 1975 • Continuous design based on customer desires, for women, men, and children. 	<ul style="list-style-type: none"> • Acquired in 1995 • Higher fashion for men and women 	<ul style="list-style-type: none"> • Founded in 1998 • Trendy clothing for a younger market
Pull and Bear	Stradivarius	Oysho
		
<ul style="list-style-type: none"> • Founded in 1991 • Offering casual clothing at affordable prices 	<ul style="list-style-type: none"> • Acquired in 1999 • Youthful urban fashion 	<ul style="list-style-type: none"> • Founded in 2001 • Lingerie

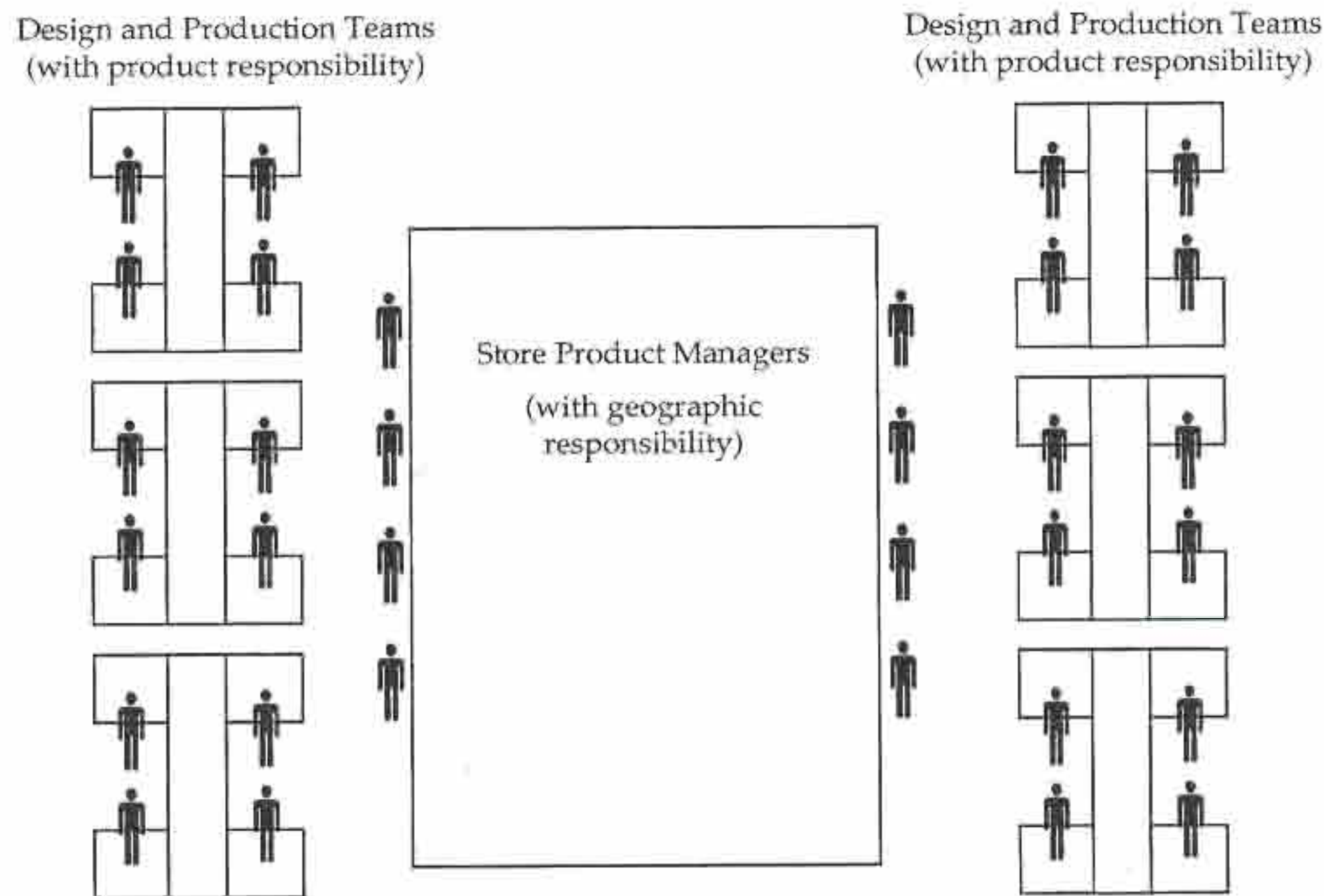
Source: Inditex (formatted by casewriters).

Note: The retailing chains were organized as separate business units.

Exhibit 3 Physical Organization of a Zara Design Department

The department for Zara Women sat in one open landscape. Design and production teams consisted normally of two designers and two product managers responsible for a specific collection, such as knitwear for Zara Women. They interacted with the store product managers, who were in almost daily contact with stores in their geographical region, for instance France.

The other Zara departments—Men and Children—were organized in a similar way.



Source: Casewriters research.

Exhibit 4 Inditex and Key Competitors (financials in €)^a

	2002				2001			
	Inditex	Gap ^b	H&M	Benetton ^c	Inditex	Gap ^b	H&M	Benetton ^c
Operating Results (€mn)								
Net Operating Revenues	3,974	13,819	4,972	1,992	3,250	15,559	4,269	2,098
- Cost of Goods Sold	1,955	9,122	2,230	1,124	1,563	10,904	2,064	1,189
Gross Margin	2,019	4,697	2,742	867	1,687	4,655	2,205	909
- Operating Expenses	1,180	3,729	1,840	625	982	4,276	1,615	624
Operating Profits	839	968	902	243	705	379	590	285
- Nonoperating Expenses	224	202	-40	194	209	108	-28	43
Pretax Income	615	766	943	49	496	271	618	242
- Income Tax	173	309	321	57	150	280	206	92
- Minority Interests	4	0	0	2	5	0	0	2
Net Income	438	456	621	-10	341	-9	412	148
Net Margin	11.02%	3.30%	12.49%	-0.49%	10.49%	-0.06%	9.65%	7.05%
Financial Position (€mn)								
Current Assets	1,146	5,487	2,038	1,637	854	3,436	1,468	1,558
Property, Plant, and Equipment	1,413	3,611	668	706	1,228	4,695	661	720
Other Noncurrent Assets	455	368	477	301	523	435	54	543
Total Assets	3,014	9,467	3,184	2,643	2,605	8,566	2,183	2,821
Current Liabilities	1,013	2,607	578	546	834	2,320	432	956
Noncurrent Liabilities	240	3,363	90	957	285	2,850	101	624
Total Liabilities	1,253	5,969	667	1,503	1,119	5,170	533	1,580
Shareholders' Equity (book value)	1,761	3,497	2,085	1,141	1,486	3,396	1,650	1,241
Liabilities and Shareholders' Equity	3,014	9,467	2,752	2,643	2,605	8,566	2,183	2,821
Market Capitalization								
Equity—Market Value ^d	13,981	12,320	16,496	1,144	13,433	12,687	15,564	2,605
1-Year Change in Market Value (%)	0	0	0	-1	0	-1	0	0
Other Statistics								
Employees	32,535	169,000	25,674	7,824	26,724	165,000	22,944	7,666
Number of Countries of Operation	45	6	14	120	39	6	14	120
Sales in Home Country (%)	46%	NA	11%	31%	46%	87%	12%	44%
Sales in Home Continent (%)	75%	NA	96%	69%	77%	NA	96%	78%
Number of Store Locations ^e	1,558	3,117	884	5,371	1,284	3,097	771	5,456
Stores in Home Country (%)	59%	88%	14%	NA	60%	88%	15%	40%
Stores in Home Continent (%)	85%	91%	95%	NA	86%	92%	96%	80%
Average Stores Size (square meter)	NA	NA	NA	NA	514	632	1,201	279

Source: Compiled and calculated by casewriters.

- 2002 numbers: Operating results and financial position from companies' annual reports. Market cap/equity data from analyst reports. Other statistics from company Web sites, annual reports, or analyst reports.
- 2001 numbers: As for 2002 numbers and based on Pankaj Ghemawat and José Luis Nueno, "Zara: Fast Fashion," HBS Case No. 703-497 (Boston: Harvard Business School Publishing, 2003).

^aConverted to euros for Gap (original financials in USD) and H&M (from Swedish kronor, SEK).^bGap includes retail chains Gap, Banana Republic, and Old Navy.^cBenetton includes main brands United Colours of Benetton, Sisley, Nordica, and Prince.^dEquity market value for 2002 as of February 18, 2003, and for 2001 as of May 22, 2002.^eIncludes franchise stores.

Exhibit 5 Inditex Historical Financials (millions of Euro)

Year	2002	2001	2000	1999	1998	1997	1996
Net Operating Revenues	3,974.0	3,249.8	2,614.7	2,035.1	1,614.7	1,217.4	1,008.5
Cost of Goods Sold	1,954.9	1,563.1	1,277.0	988.4	799.9	618.3	521.0
Gross Margin	2,019.1	1,686.7	1,337.7	1,046.7	814.8	599.1	487.5
Operating Expenses	1,179.8	982.3	816.2	636.2	489.2	345.5	285.4
Operating Profits	839.3	704.4	521.5	410.5	325.6	253.6	202.1
Non-Operating Expenses	224.3	209.3	152.7	118.1	96.7		
Pre-Tax Income	615.0	495.1	368.8	292.4	228.9		
Income Tax	172.5	149.9	106.9	86.2	76.1		
Minority Interest	4.4	4.8	2.7	1.5	-0.2		
Net Income	438.1	340.4	259.2	204.7	153.0	117.4	72.7
Net Margin	11.02%	10.47%	9.91%	10.06%	9.48%	9.64%	7.21%
Inventories	382.4	353.8	245.1	188.5	157.7		
Accounts Receivable	237.7	184.2	145.2	121.6	75		
Cash and Cash Equivalents	525.9	315.7	210	171.8	158.8		
Total Current Assets	1,146.0	853.7	600.3	481.9	391.5	274.0	190.3
Property, Plant, Equipment	1,412.6	1,336.8	1,339.5	1,127.4	880.4	635.7	
Other Non Current Assets	455.2	414.5	167.8	163.6	54.4	67.5	
Total Assets	3,013.8	2,605.0	2,107.6	1,772.9	1,326.3	977.2	820.3
Asset Turnover	1.32	1.25	1.24	1.15	1.22	1.25	1.23
ROA	14.54%	13.07%	12.30%	11.55%	11.54%	12.01%	8.86%
Accounts Payable	506.2	426.3	323.0	276.1	215.6	131.4	
Other Current Liabilities	506.5	407.9	347.3	275.6	229.1	141.5	
Total Current Liabilities	1012.7	834.2	670.3	551.7	444.7	272.9	234.1
Non Current Liabilities	239.8	284.5	266.4	328.0	208.2	174.4	171.3
Total Liabilities	1,252.5	1,118.7	936.7	879.7	652.9	447.3	405.4
Equity	1,761.3	1,486.2	1,170.9	893.2	673.4	529.9	414.9
Total Liabilities and Equity	3,013.8	2,605.0	2,107.6	1,772.9	1,326.3	977.2	820.3
Leverage (Equity / Total Assets)	1.71	1.75	1.80	1.98	1.97	1.84	1.98
ROE	24.9%	22.9%	22.1%	22.9%	22.7%	25.0%	20.0%

Note: Inditex fiscal year ended January 31. Fiscal year 2002, for instance, ran from February 1, 2002 to January 31, 2003.

Source: Inditex (Formatted by case writers)

Exhibit 5 Inditex Store Locations by Country and Group (January 31, 2003)

	Zara	Kiddy's Class	Pull & Bear	Massimo Dutti	Bershka	Stradivarius	Oysho	Total
Europe								
Andorra	1			1				2
Austria	4							4
Belgium	15		1	13	4			33
Czech Republic	1							1
Cyprus	3		2	1	2	2		10
Denmark	2							2
Finland	1							1
France	71			1		1		73
Germany	21			3				24
Greece	23		7	3	5		1	39
Iceland	1							1
Ireland			5					5
Italy	3						2	5
Luxembourg	2			1				3
Malta	1		3					4
Norway				1				1
Poland	4							4
Portugal	35	7	38	32	20	14	9	155
Spain	200	52	200	155	135	128	48	918
Sweden				2				2
Switzerland	2			2	2			6
The Netherlands	4			1				5
Turkey	8							8
United Kingdom	17			2				19
	419	59	256	218	168	145	60	1,325
Middle East								0
Bahrain	1		1	1		1		4
Israel	11		14					25
Jordan			1	1				2
Kuwait	3		2	1		1	1	8
Lebanon	2		1	2				5
Qatar	1		1	1		1		4
Saudi Arabia	8			4		3		15
United Arab Emirates	4		4	4	4	2		18
	30	0	24	14	4	8	1	81
Asia-Pacific								0
Japan	6							6
Singapore	1							1
	7	0	0	0	0	0	0	7
Americas								0
Argentina	5							5
Brazil	10							10
Canada	9							9
Chile	3							3
Dominican Republic	1							1
El Salvador	1							1
Mexico	29		10	16	19		9	83
United States	8							8
Uruguay	2							2
Venezuela	7		6	2	6		2	23
	75	0	16	18	25	0	11	145
TOTAL	531	59	296	250	197	153	72	1,558

Source: Inditex.

Exhibit 6 Inditex Store Development

Year	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	Zara only	
																	01	02
Europe																		
Spain	57	70	85	99	201	266	323	350	391	399	433	489	603	692	769	918	225	200
Portugal		1	2	4	11	17	28	38	49	60	74	87	97	104	140	155	38	35
France				1	3	5	13	20	30	36	47	55	59	64	68	73	67	71
Greece							1	6	8	10	14	17	17	19	29	39	20	23
Belgium								4	8	11	13	17	20	21	28	33	14	15
Sweden								1	3	3	4	6	6	5	3	2	0	0
Malta									1	1	1	1	2	2	2	4	0	1
Cyprus										1	2	4	5	8	9	10	2	3
Norway											1	1	1	1	1	1	0	0
Great Britain												1	3	7	11	19	11	17
Germany													2	7	17	24	15	21
Switzerland																6	0	2
Netherlands													2	2	6	5	3	4
Poland													2	2	2	4	2	4
Andorra														1	2	2	1	1
Austria														3	3	4	3	4
Denmark														1	2	2	2	2
Czech Rep.															1	1	1	1
Iceland															1	1	1	1
Ireland															2	5	0	0
Italy															3	5	0	3
Finland																1		1
Luxembourg															2	3	1	2
	57	71	87	104	215	288	365	419	490	521	589	678	819	939	1,101	1,317	406	411
Americas																		
United States			1	1	3	3	3	4	6	6	7	7	6	6	8	8	8	8
Mexico						1	1	7	12	14	20	25	29	41	55	83	27	29
Argentina												4	8	8	8	5	8	5
Venezuela												1	3	4	20	23	7	7
Canada													1	3	4	9	4	9
Chile													2	2	3	3	3	3
Brazil													3	5	7	10	7	10
Dominican Republic																1		1
El Salvador																1		1
Uruguay													2	2	2	2	2	2
	0	0	1	1	3	4	4	11	18	20	27	37	54	71	107	145	66	75
Middle East/Asia																		
Israel											6	16	22	23	24	25	9	11
Lebanon												1	3	4	4	5	2	2
Turkey												3	3	4	5	8	5	8
Kuwait												1	2	4	4	8	2	3
United Arab Emirates												1	3	5	15	18	4	4
China												1	1	0	0	0	0	0
Japan												10	11	17	5	6	5	6
Saudi Arabia													3	11	14	15	6	8
Bahrain													1	1	2	4	1	1
Qatar														1	2	4	1	1
Singapore																1		1
Jordan															1	2	0	0
	0	0	0	0	0	0	0	0	0	0	6	33	49	70	76	96	35	45
TOTAL	57	71	88	105	218	292	369	430	508	541	622	748	922	1,080	1,284	1,558	507	531

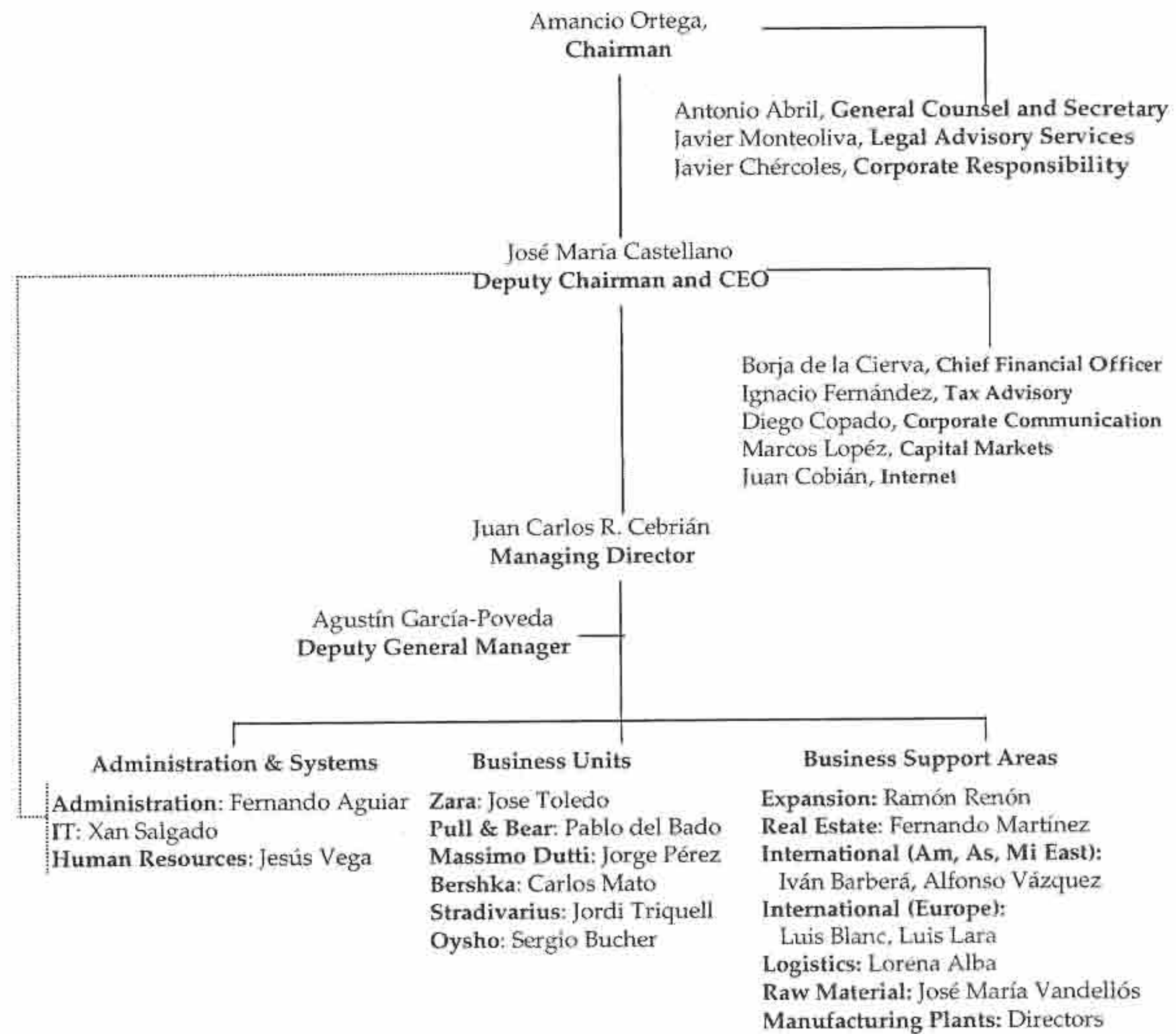
Source: Inditex.

Exhibit 7 Dell Handhelds (as of fall 2003)



Source: Casewriters.

Exhibit 9 Organization



Source: Inditex.

Exhibit 12 Assumptions for Zara's Upgrade Decision

Category	Value
Operating System for POS terminals (costs per computer/CPU)	
Windows: One-time license cost	€140
Annual maintenance fee	€30
Unix: One-time license cost	€160
Annual maintenance fee	€25
Linux: One-time license cost	€0
Service contract ^a	€10–€150
Hardware (per store, avg. 5 terminals needed per store)	
POS Terminals	€5,000
Wireless Router (1 per store)	€180
Wireless Ethernet Card (1 per POS terminal)	€50
Connectivity (annual cost per store)	
High-speed Internet connection	€240
Overall programming time required to:	
Port existing POS application to new OS ^b	15,000 hours
Expand POS application to include ^b	
1. Lookups of same-store theoretical inventory	3,000 hours
2. Lookups of other-store theoretical inventory	1,000 hours
3. Inventory transfers	1,000 hours
Cost per day of programming time	€450
Time required per store to:	
Install new POS terminals with new POS application	16 hours
Establish wireless network	8 hours
Train staff on new POS application ^c	8 hours
Cost per day of installation/training time	€2,000

Source: Casewriters' estimate, based on available industry data.

^aDepends highly on IT staff's knowledge in Linux programming and maintenance.

^bAssuming three features are developed in sequence, i.e., step 3 builds on step 2, which builds on step 1.

^cAssuming new application contains inventory lookup functionality.