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# **Total Creative Revolution: Innovation and Governance at KAO Infosystems Canada**

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# Table of Contents

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<b>Introduction</b>	<b>1</b>
<b>KAO's Total Creative Revolution</b>	<b>2</b>
KAO Infosystems Canada	3
Innovation & Learning at KAO	4
Governance & Coordination at KAO	8
Options & Solutions	10
<b>Conclusion</b>	<b>11</b>
<b>Epilogue</b>	<b>12</b>
<b>Acknowledgements</b>	<b>13</b>
<b>References</b>	<b>13</b>
<b>Appendices</b>	<b>14</b>

## Introduction

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For modern companies, global competition forces an unforgiving regime of continuous change and innovation. The 'new economy' confirms the assertion by the economist Joseph Schumpeter that innovation, rather than price, drives competition. Among computer, information and telecommunications companies, this understanding is common currency, but it is less recognized in basic manufacturing operations. In addition, it is often assumed that innovation is exclusively concerned with new products, ignoring the crucial roles played by the development of new manufacturing processes, of new organizational styles and of new markets. For today's managers, therefore, fostering all forms of innovation must be an all-encompassing task to maintain competitiveness.

Typically, it is also assumed that innovation is the result of an individual genius in a lab or some young whiz kids in their garage. That perspective is complemented by the image of serendipitous discovery – the sudden flash of insight that changes everything. Increasingly, however, innovation is being understood as a social process, the product of many perspectives being brought to bear on an existing problem. The project team or business alliance is *the* industry standard by which firms engage in collective learning. We can see in the Cisco vs. Nortel fight or the Wintel vs. Sun-Netscape-AOL battles, that the coordination of these collective processes is an issue of major strategic importance. Understandably, the challenge of innovation becomes inevitably linked to the challenges of distributed governance, or how individuals and groups work together, including, their establishment of shared vision, effective communication, common understanding, reliable commitment and trust.

Simply put, innovation is dependent on the ability of employees and business partners to construct effective systems of collective learning. Senge (1990) and others have developed a rich understanding of organizational learning in this regard and Moore (1996), Storper (1997) and others have tried to map the nature and competencies for sustaining networked production systems. The purpose of this paper is to juxtapose these issues of organizational learning and governance side by side, through the experience of an extremely successful manufacturing plant, KAO Infosystems of Arnprior, Canada.

During the period covered by our case writing, KAO's diskette and CD products were not subject to particularly radical change, although historically they had been. However, innovative manufacturing processes and organizational structures were required to meet the demands outlined in the case. As such, KAO's experience may have more relevance to managers in traditional industries than the experiences of computer and telecommunications related firms where product innovations tend to dominate.

## **KAO's Total Creative Revolution**

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In late April 1998 KAO's General Manager, Craig Cunningham, confirmed to his staff that the company had signed a major CD contract with one of the world's leading software manufacturers. At the same time he announced that the production equipment required to fulfill that order would be moved from KAO's Plymouth, Massachusetts plant to Arnprior. The combined news meant that the limits of both plant and personnel were going to be severely stretched. The new CD contract was to manage subscription service updates for a wide assortment of some 30–40,000 programmers and developers across North America. The task involved regular, customized, short-run production outputs and significant amounts of manual packaging.

As Engineering Production Manager, Steve Nicholson was responsible for squeezing as much efficiency and quality as possible out of KAO's production process. "Our main problem at the time," he said, "was that we had two things overlapping -- a large CD order and the equipment to fill that order needed to be moved from Plymouth." He was confident that his people were up to the new task, only he wasn't initially sure how they were going to do it. "After all," he mused, "how do you generate additional capacity in a production system that was already operating at 125% of design?"

Similarly, John Rajsic, KAO's Production Manager, had to coordinate the transfer of the equipment and get the new lines up and running. In addition, Rajsic had to ensure that existing orders, accounting for 70% of KAO's current capacity, were not neglected and that a long planned capacity improvement initiative continued to move forward.

"The main problem from my position," said Rajsic, "was the need to settle what equipment would come up. We didn't know how many lines or what condition they would be in. Eventually we discovered that the "new" equipment wasn't maintained all that well by our sister plant in Plymouth. So we had a lot of equipment repair and maintenance to do as well. However, once it was all installed, we ended up producing 55% more CD's than we did the previous month."

Because the new contract would involve significant amounts of manual packaging, Rajsic expected he would need a lot of casual labourers, many of whom would be entirely new to KAO. It was clear to him that some amount of training would be required. But when would that happen? So once the equipment was in place, the big question would be how to get the 'right' people, those who would maintain KAO's high standard of quality?

Another interesting twist was that the contract was being shared with KAO's Fremont, California plant. Since the West Coast operation had obtained the contract, they would be the interface with the client. The challenge, therefore, for KAO Canada would be to present to the client a seamless output in terms of product and service. That meant there had to be a high degree of synchronization with Fremont.

## **KAO Infosystems Canada**

KAO Infosystems Canada (KIC) is the Canadian manufacturer for the Infosystems division of KAO Corporation of Japan. In 1997, the KAO Corporation generated almost \$8 billion (US) in revenues, of which the Infosystems Division contributed sales of over \$900 million. KAO's original core competency in surficants had made it a world leader in consumer products with such household brands as Jergen's soap, Biore personal care products and Goldwell cosmetics. But that same expertise also gave KAO a natural advantage in the production of data storage media where surficant technology is a critical success factor. In 1998, KAO Infosystems manufactured magnetic and optical media such as computer diskettes (floppy disks), CD-ROM's, CD recordables, and DVD's.

In addition, KAO Infosystems provided customized production and world-wide distribution services for content developers that included CD replication, diskette duplication, end-to-end turnkey services, as well as marketing, channel development and customer services. KAO Infosystems operated eight production facilities worldwide, including the Arnprior, Ontario plant, and all were ISO-9002 certified. In 1996 KAO Infosystems was ranked as the world's number one CD-ROM producer, and in 1997 produced 175 million CD's.

KAO Infosystems Canada began in 1983 as Didak Manufacturing and was located in Arnprior just outside of Canada's national capital Ottawa. At the time Didak produced 100,000 5¼-inch computer diskettes per month under the 'Axiom' brand name. A merger between Didak and the Japanese firm KAO in 1986 resulted in KAO-Didak and the quadrupling of its manufacturing space. The merger added state-of-the-art production equipment that automated the production process from start to finish. From this point, KAO-Didak operated 24 hours per day, seven days a week and was producing 2.5 million 3½-inch diskettes per month. The company was again reorganized in 1993 as KAO Infosystems Canada (KIC), and the Arnprior plant went from an 80,000 to 140,000-sq. ft. production facility resulting in a tripling of diskette output per month. In 1994 KIC became ISO certified – a challenge in itself for any business, but more so in light of their move into an entirely different media business -- CD manufacturing.

With the addition of another production line in 1996, KAO increased diskette production output to its 1998 level of 10 million pieces per month, but it also doubled CD production and added the capacity for CD glass-mastering. While floppy disks could be mass-produced and inventoried, the CD business was extremely customized, with some runs as low as several thousand. Thus CD's added another altogether different level of complexity to KIC's operation.

In keeping with its tradition of providing end-to-end services, KAO also added MPEG and video production studio services in Toronto. In April of 1998, in an effort to streamline their operations, KAO Infosystems closed their Plymouth, Massachusetts plant and relocated diskette-marketing functions for the eastern US market to Arnprior. In addition, two additional CD production lines were to be moved north -- a move that was to be completed by mid-May. The resulting increase in CD capacity from 1.8 to 2.7 million pieces per month was a major factor in the new contract, but Nicholson's challenge was the small window in which to move the equipment and train the staff.

In the twelve years since Didak had merged with KAO, the data storage industry had undergone dramatic changes -- changes in product, changes in production, changes in markets, and changes in response time -- all on a background of increasingly cut-throat competition and declining margins. Instead of producing the simple but technologically sophisticated product of the mid-eighties, by 1998 KAO was manufacturing a variety of products, both magnetic and optical. It offered a variety of services from product registration and customer information services, to the bundling of OEM software products, to global marketing solutions that included direct marketing, Internet commerce, distribution and upgrade management.

KAO had also moved from a supply-based system of production to a production-on-demand style that had reduced their response time from months to weeks or often to hours. Customer profiles had changed from the original independent software vendors to become OEM hardware vendors, publishers of a wide variety of previously printed materials, and suppliers of both entertainment and edutainment multimedia products. Both diskettes and CD-ROM's had become commodity items, their distinguishing features becoming principally price and quality, although the best quality was now largely assumed. Consequently, the industry had witnessed a veritable free fall in price. Diskette prices, for example, had dropped an average of 23% per year between 1986 and 1996. Where diskettes once sold for \$2 – \$2.50 each, they now wholesaled for less than 20¢. Consequently, cost control and process innovation to reduce the cost of production became central to the organization's survival.

KAO Infosystems Canada responded to these challenges in three ways:

- First, they instituted programs of continuous improvement and innovation;
- Second, they developed a skilled, stable workforce either by recruitment or training; and
- Third, they created a learning culture that ensured the requisite adaptability for the company in the face of dynamic industry change.

KIC's approach resulted in a gradual production increase to a level that was 125% of their equipment's design capacity and a doubling of per capita output between 1993 and 1998. KIC's employee turnover rate was 3-5 times lower than that of other high-tech firms in the Ottawa area, even though their wage rates were lower than industry leaders. Their measure of innovation was Total Cost Reduction or TCR, which KAO re-defined as Total Creative Revolution. KIC achieved TCR rates of 50% in one year. In 1997 KIC was ranked as the leading plant within the industry's leading company (in terms of efficiency and quality). Just as impressive was the company's client list that included such leaders as Microsoft, IBM, HP, Apple and Lotus.

## **Innovation & Learning at KAO**

In order to respond to the relentless competitive demands for lower prices, KAO's management was quick to adopt a philosophy of embracing continuous learning and improvement. As KAO's understanding of market conditions evolved, that philosophy began to shape the coordination mechanisms necessary to meet the triple challenges of innovation, retaining a skilled workforce, and corporate flexibility (see Appendix B).

According to KIC's General Manager Craig Cunningham, "We learned that philosophy and empowerment were not enough. We also learned that developing skills and experience were not enough. As we saw it, the key to continuous improvement was knowledge. The more knowledgeable our employees became, the more perspectives they could bring to bear on our production process. So we set about developing a learning culture at KAO and building our own knowledge bank."

To create a learning culture at KAO, senior managers promoted three major principles throughout the organization. They were:

1. *everyone must learn*
2. *everyone must teach*
3. *advancement was linked to knowledge*

The first principle, *everyone must learn*, applied to everyone from line workers to senior executives. Learning was viewed as an integral part of everyone's job description. Not only were employees expected to perform specific tasks but also a certain amount of job time was to be dedicated to learning. The second principle, *everyone must teach*, enshrined the idea that knowledge was to be shared, not hoarded, among others in the organization. Since teaching was based on knowing and not on formal positions this second principle did much to remove barriers between people and move responsibility downward in the organization. The third principle, *advancement was linked to knowledge*, tried to create the proper incentives throughout the organization. For example, job expectations were tied to knowledge acquisition. If employees wanted to develop a career path within KAO, that path would be linked to their willingness to learn and broaden their knowledge base. If they wanted a merit increase, that increase was tied to their ability to apply new knowledge or demonstrate their innovativeness. If they wanted secure employment, that security was connected to their increased capability to contribute to KAO.

To facilitate learning, KIC initially undertook to create a series of formalized courses, offering everything from machine operation, to statistical process control, to computer applications, to the understanding of financial statements. Drawing faculty mainly from KIC employees, KIC established *KAO Infosystems Canada University* (KICU). Because employee learning became generally recognized as a critical success factor, KAO employees were given time off with pay to go to school.

At its height KICU offered over 80 different courses. "We went way overboard in the number of courses we offered," said Cunningham, "but we needed to test the limits of where this idea would lead us." By 1998 KICU had been scaled back a bit but still about two dozen courses were offered, including advanced topics in management -- sales & marketing, project management, and inventory management -- as well as technical courses in computer programming, electronics, pneumatics, and computer networking.

The precedents set by KICU also had an impact on external training programs. Courses not available internally through KICU were made accessible to employees. The philosophy was that employees should be learning even if that learning wasn't obviously linked to their job description. Employees were encouraged to seek diploma courses to advance their knowledge

and that training would be subsidized with tuition grants and time off. However, there was a price employees had to pay for learning externally -- they were expected to share their newfound knowledge on their return, often by setting up another internal KICU course on the topic.

While employee learning was generally self-directed, some courses, such as those on company structure and philosophy, statistical process control (SPC), and ISO 9002, were required for all company employees. This presented some unique challenges, particularly with SPC. SPC was required because the company wanted to show that every corporate process could be broken down, measured, analyzed and improved upon (see Appendix C). However, SPC demanded a minimum level of mathematical understanding and for many KIC employees who had only rudimentary high school math this requirement appeared daunting. KIC management though, responded with patience. In one case, it took an employee four attempts to pass the SPC exam. Such patience, however, paid off by demonstrating the firm's commitment both to the need for SPC and to its employee's growth.

This tolerance of failure became a key element of KIC's culture. "If you want to innovate then you have to expect that sometimes people won't get things right the first time. This is the downside of a learning culture that is often ignored," said Cunningham. "A lot of times I, or one of my managers, have been awoken in the middle of the night because a machine operator tried to apply what he'd learned in the classroom and broke the machine. Sure it's inconvenient as hell to come in at four in the morning to fix a machine, but in the long run, that willingness to apply something new has been essential to our competitiveness. Without it we would have been surpassed long ago."

KAO's principal means of fostering innovation has been in its creation of an environment in which both learning and creativity could flourish. KAO managers encouraged employees at every level to take the initiative and improve upon both products and processes. This was done in part by selecting people who were very "hands on" types, who saw problems as challenges and were willing to tackle them. "I'm sure it is surprising to some that KAO Infosystems, this very high-tech, very automated manufacturer is located way out in rural Arnprior," said Steve Nicholson. "I mean we have cornfields just across the road. But it turns out that farmers tend to be our best employees. They aren't afraid of getting their hands dirty. They have this inbred attitude that if there is a problem you fix it. You don't wait -- you just do it."

"I hired someone not too long ago," continued Nicholson, "who showed up late to his interview dressed in jeans and looking a little rough. I know that elsewhere he would not have been given a second thought. But he'd had a lot of experience fixing things on his own. I had this gut feeling that he would work out and he did. I often find him trying to improve upon things on his own."

Once on the job, employees discovered that it's OK to modify things or work outside their specific area of responsibility. In fact, they soon came to recognize interesting ideas can readily give them access to all sorts of "experts" from across the company who were willing to help them. At KIC, 'skunkwork projects', the kind of informal R&D projects that go on outside the general direction of managers, were common. "You know I'm an engineer by profession," said Cunningham, "and there's nothing I like more than running across a group of people trying to



figure out a new way of doing things. I can't tell you how many times I've gotten sucked into one of these groups. It's fun for me and a good way for me to keep in touch with what's going on."

"If you go to a firm like Nortel, you find a lot of people who work as specialists" said Nicholson. "Here people are encouraged to acquire a very broad knowledge about everything we do. We do a lot of cross training. People bounce around a lot from one job to another. It's never dull and people seem to derive a certain satisfaction from never knowing what it is they'll be doing that day. It makes work fun." Recalling that KAO operated in two different businesses, floppy disks and CD's, Nicholson said, "the creation of a liquid workforce that could operate between the two is an essential management goal."

One thing KAO Infosystems didn't skimp on was praise. Besides a regular pat on the back, KAO created what employees refer to as the 'Board of Fame' to publicly recognize innovative employees. "People respond well to positive feedback, more so even than to money," said Cunningham. "We put up the 'Board of Fame' right next to where we usually meet with new clients in order to give them a sense of our ongoing creativity. As it turned out, this became a major selling tool for us." KAO also maintained a box at the Corel Centre for sports and special entertainment events but instead of using it as an executive perk, it was used almost exclusively to reward employees who had made innovative contributions to the firm.

Unlike other organizations which tended to give lip service to creating both learning and innovation cultures, KAO was pretty free with learning's essential currency – information. Employees could generally access whatever information they wanted on the company's computer network. The company maintained an open library and encouraged employees to seek out and maintain outside contacts both within and outside of KAO's far-flung global organization.

Since the organization understood that learning could take place anywhere, managers, mid-level engineers and designers made sure that they took the time to explain to line operators and technicians why they did what they did. Being accessible was another trait of KAO managers. "It is a trait we hire for," said Cunningham. "If someone has all kinds of degrees and management experience but is not willing to get down in the trenches to teach and learn then that person isn't for us." Problems at KAO were not viewed as occasions to lay blame but as opportunities to correct and learn.

As an example of KAO's ability to conduct joint problem solving, it periodically ran a "Capacity Improvement initiative" that involved small teams who had an interest in improving upon certain production performance issues. The teams developed and implemented their own changes, then monitored and fine-tuned them. The teams were drawn from across the company -- operators, technicians, engineers and support staff. Team leaders could be anyone.

In fact, Cunningham cited the experience of one employee who had been regarded as "on his way out" but who took responsibility for an improvement team because he felt particularly bugged by the problem. When this person learned that as team leader he could get access to whatever information and expertise he needed to solve the problem, his innate curiosity seemed

to turn on and he started talking to technicians, engineers and even finance people. When that didn't satisfy him, he started taking KICU courses and when that wasn't enough he took outside courses. "In the end," said Cunningham, "his team came up with a very effective solution, but more important than that we gained someone who is now one of our top employees."

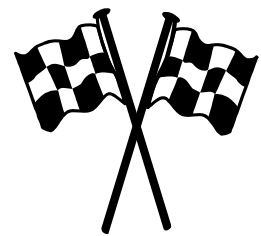
From the Capacity Improvement initiative, engineers learned from line personnel and vice versa. Morale improved because of the real sense of empowerment and communications across the organization. "The CI initiative really got people working together and it gave them ownership of what we do here," said Nicholson. "Keeping people interested is a key challenge for me. CI focussed people on specific tasks and then all we had to do was keep out of their way. The result was that they are now more conscious and vigilant in their work."

## **Governance & Coordination at KAO**

As John Rajsic would point out, although the Production Manager's job did involve keeping equipment running, his main task was to create an adaptive capacity among KAO's employees to meet any challenge that came along. "To get the best out of people, you really need to get to know them. It's not just what they say, but it's in their body language and tone of voice as well." Rajsic's appreciation of this fact came from a twenty year career in manufacturing which he began as an industrial mechanic and which later found him in management after honing his people skills in listening, communicating and mentoring.

In 1993, when Rajsic was hired as Production Supervisor at KAO, he was attracted by the opportunities for learning and professional growth -- a fact reflected in the thirty-odd courses he has taken since then. In October 1996, Rajsic became Production Manager with particular responsibility for KAO's CD operations.

According to Rajsic, coordination at KAO was very future oriented and was based on three elements -- healthy relationships, frequent communications, and the building of an adaptive capacity to respond. "Reducing our changeover times is crucial to our business. We operate with a 'pit-stop mentality' here. We have to know what to do and to be able to do it quickly or the time we lose could cost us the race." Consequently, Rajsic often found himself trying to prepare for challenges that had not yet arisen rather than dealing with the ones that had been faced before.



The first component of KAO's strategy 'healthy relationships' reflected the company's clear recognition that although people could be a huge resource, they were turned into assets only by continually nourishing the company's relationship with them over time. "I'm continually talking to people," says Rajsic. "I need to know what my staff can do and what their limits are. But they need to know that too, so we talk about what works on the job and what doesn't. When we find out what's missing, then I work with them to develop their skills. With most people this isn't an open-ended thing. The Peter Principle still applies. But once we can agree what the limits are, I let them do their job. Successful management," Rajsic emphasized, "doesn't mean constant monitoring. Only a bad manager has to be there all the time."

Once again the key element in building those relationships within KAO lay in the organization's encouragement of learning and the sharing of knowledge. The cross cutting of the teaching and learning experience among employees at all levels contributed immensely to the reduction of knowledge hierarchies and the "stove pipe" style that many organizations seemed to operate with.

As it turned out healthy relationships were important not only within KAO but also between the Arnprior plant and its external stakeholders. KIC maintained very close connections with its sister plants within KAO. It was frequently the case that the Arnprior plant would be asked to produce all or part of an order generated from any one of KAO's principal locations in the US, Ireland, Japan, or Spain, or for that matter from any of its 55 offices worldwide. The establishment of working relationships with their counterparts in these other organizations became an essential element of KIC's problem solving capacity. As Rajsic put it, "when there is a problem, people are much more forgiving if a relationship is already established." To create those relationships, Rajsic relied on regular face-to-face sessions to build the needed trust and understanding.

The second component of KAO's coordination strategy was frequent communications. While information tended to be available to whoever needed it, the more complex projects tended to receive more frequent communication to head off potential problems. Each morning KAO executives would meet to prioritize jobs for the day. As production problems or new considerations arose during the day, orders could be delayed or moved forward in priority, based on a three-dimensional rating system that included loyalty, revenue and strategic importance. The scheduling process was a dynamic one that could be changed as soon as it took to make a decision and do the changeover -- usually within an hour.

A scaled pricing system with dimensions of time urgency and size was also put in place. For example, those customers who wanted to drop off their CD content at closing time on one day and pick it up next morning and had fewer than 1,000 copies paid the highest price. The least costly jobs allowed 10 days or more turnaround on tens of thousands of copies. The pricing system thus helped KAO to prioritize its schedule as well as to earn a profit.

The third component of KAO's coordination strategy was aimed at building a capacity to respond to the high levels of uncertainty they were often faced with. When scheduling decisions were made, production capacity was always buffered and downtime budgeted. "We always try to ensure at least 15% excess production capacity to handle the inevitable breakdown of equipment or the urgent last minute order," said Rajsic. "We have a hard time turning away the small, loyal customers who have supported us all these years. Their business has often meant the difference between being profitable or not."

KAO also took advantage of the fact that they operated in two different manufacturing businesses – diskettes and CD's. The diskette business was a high-volume, automated process and so it was natural to build up inventories to achieve the necessary scale economies. The CD business, on the other hand, was more of a short-run, customized operation that was consequently more labour intensive. When diskette inventories were high, employees from the diskette side were cross-trained in CD production during slack periods. Almost 50% of KIC's

staff were cross-trained in this manner. The result was a very fluid workforce that could move as demand dictated. “It’s like having 8-10 extra people just floating and able to fill in the gaps,” said Rajsic. KIC would also use slack periods to cross train its people with its sister plants in the USA and Europe. Because of its reputation for innovation and quality, KIC also became a preferred site for KAO employees from other sites to come and train.

Building adaptive capacity also involved creating a virtual labour force, a casual labour pool that KAO had been developing over time that had experience with KAO’s operations. The size of this group ranged from 65 - 165 people and had a full-time coordinator within the Human Resources Department. While many customers shut their eyes to it, it was a common practice in the industry to outsource jobs to competitors that for one reason or another could not be entirely handled by the main producer. In KAO’s case, several such competitors had become occasional partners learning to deliver the same quality that had made KAO an industry leader. These relationships were forged over many years of trial and error in the accumulation of trust capital.

## **Options & Solutions**

As both Nicholson and Rajsic began dealing with the governance challenge of innovation, under the dual constraints of intense time pressure and complex interrelated tasks, they recognized a number of options. They could hire additional people to run the new CD lines, but many of the tasks that would be required of them would be very specialized. Since no company in the Ottawa Valley came up to KAO’s level of automation, this option entailed having to spend a lot of time training. Time however, was something that they did not have. Alternatively, they could allow more overtime, but that would have had a big impact on costs and impair the effectiveness of their people. They could also contract the new CD job out to another firm but it would be hard to find anyone who could do a job of this size on such short notice. In addition, the client was clearly expecting KAO’s highest level of quality. Further, with the larger corporate responsibilities being established with the Arnprior plant, it would be unseemly to put this job off onto someone else at this time.

KAO’s “solution” was to take advantage of the flexibility they had built up in their people. First, a ‘crack’ team from the existing CD line was sent to Fremont, California to better understand the needs of their client. Second, another team was sent to Plymouth to oversee the operation and dismantling of the equipment down there. Since KIC had extensively cross-trained about half of their diskette staff in the CD operation, diskette inventory was quickly ramped up and then the “excess” personnel were shifted over to CD production.

KAO’s major concern centred on the large staffing needs at the packaging end of the process. The casual labour pool of experienced workers proved to be invaluable. While additional staffing requirements were outsourced to Olsten, a temporary help agency, KAO’s more experienced casual workforce supplemented their lack of training.

To ensure high customer satisfaction, the synchronization between Fremont and Arnprior in terms of quality and timing of outputs began early. In preparation for the new contract rollout, Rajsic travelled many times to California to make sure he and his colleagues in Fremont were all on the same page. In the time before the production lines were set up, the Arnprior management

team began meeting weekly to discuss the progress of the various teams and the Fremont group was also included via teleconference. This minimized the chance of any surprises to the whole network of players. As production started, these meetings increased in frequency and became daily progress updates.

In the end, even though the “new” equipment was in need of greater repair than anticipated and the client was itself almost two weeks late with its software masters, KAO was able to absorb these additional “shocks” and still deliver to the client’s customers on time. It was this type of adaptability that had made KAO’s Arnprior plant number one in the industry.

## Conclusion

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The dilemmas faced by both principals in the case, Steve Nicholson and John Rajsic illustrate a common challenge faced by many modern organizations responding to global competitiveness -- how do you constantly innovate, under the dual constraints of intense time pressure and complex interrelated tasks? In KAO’s case, the company had to deal with the challenge of equipment upgrades overlapping a large new contract for which production had to begin within a narrow one-month window. The company’s response was embedded in their culture of continuous learning and flexible governance that enabled it to shift and add resources, as the need required. “The bottom line,” according to Rajsic “was that we had only one month to do it all -- to get the equipment, repair it, install it, find the right people, hire and train them to process and package the order, and in the end provide our client with a level of quality and service which was beyond their expectations.”

A very clear message from the experience of KAO Infosystems Canada, was the importance of collective learning. That learning took many forms but its ubiquitous presence provided KAO with a capacity for change that was and continues to be uncommon in most organizations. Clear too, was the centrality of the human relationships among managers, employees and partners and the mutual respect each accorded the other. It was evident that these relationships had been institutionalized in a variety of ways, so as to optimize the degree of innovation and adaptability within the organization and provide a self-governing framework similar to one described by Hayek (1989) that motivated “*individuals to do the desirable thing without anyone having to tell them what to do*”. This is the essence of economy – doing less and accomplishing more. For organizations that want to succeed in the new global marketplace, these are critically important lessons.

## Epilogue

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In spite of KAO's success in production innovation, the overall decline in diskette prices continued to minimize the contribution from diskette manufacturing to KAO Infosystems' profitability. In September 1998, KAO Corporation of Japan decided to concentrate on its core competencies in household products and eliminate its Infosystems division. Subsequently, KAO Infosystems Canada sold off their diskette production facilities to make it more attractive to potential buyers. The move shed some 120 local jobs. It is significant that within weeks other area technology firms had hired all of those laid off. KAO offered to provide part-time employment to ease any transition pain its employees might experience but their offer was never taken advantage of.

On December 2, 1998 KAO announced the sale of its Infosystems division to Zomax Industries of Minneapolis for \$60 million. The acquired Kao Infosystems assets and facilities included a call centre in San Ramon, CA, a twenty-two line CD and DVD manufacturing, packaging and distribution facility in Fremont, CA and the six line CD manufacturing, packaging and distribution facility in Arnprior, Canada. The purchase also included KAO's Irish assets -- a call centre in Dublin, an eleven line CD manufacturing, packaging and distribution facility in Dublin and a diskette duplicating, packaging and distribution facility in Langen, Germany.

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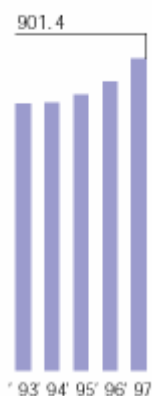
## Appendix A: KAO Financial Data

### FINANCIAL HIGHLIGHTS

Kao Corporation and Consolidated Subsidiaries		Years ended March 31, 1997			
		Billions of Yen			Millions of U.S. dollars
		1997	1996	1995	1997
<b>For the year:</b>					
Net sales		901.4	835.5	796.7	\$7,263.5
Net income		27.5	24.5	23.6	222.3
<b>At year-end:</b>					
Total assets		807.1	756.8	709.2	6,503.8
Total shareholders equity		379.5	359.8	342.0	3,058.4
		Yen			U.S. dollars
<b>Per share:</b>					
Net income		45.92	40.85	39.49	\$0.37
Cash dividends		14.00	12.50	11.50	0.11

- Notes:
1. The U.S. dollar amounts are translated, for convenience only, at the rate of 124.10 Yen=US\$1, the approximate exchange rate at March 31, 1997.
  2. Net income per share is computed based on the weighted average number of shares outstanding during the respective years.
  3. Cash dividends per share are the amounts applicable to the respective years, including dividends to be paid after the end of the year.

**Net Sales**  
(Billions of yen)



**Net Income**  
(Billions of yen)



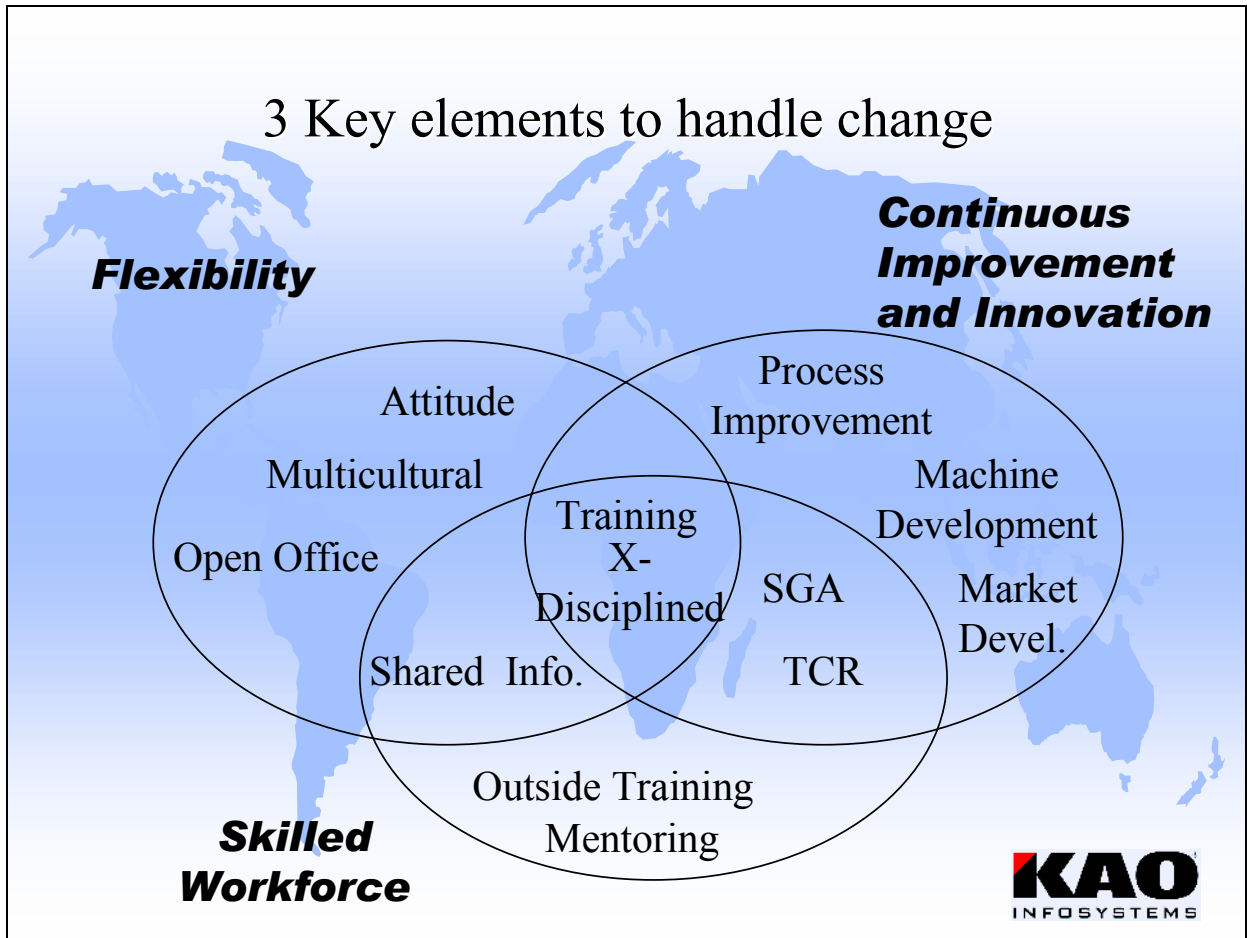
**Net Income per Share**  
(Yen)



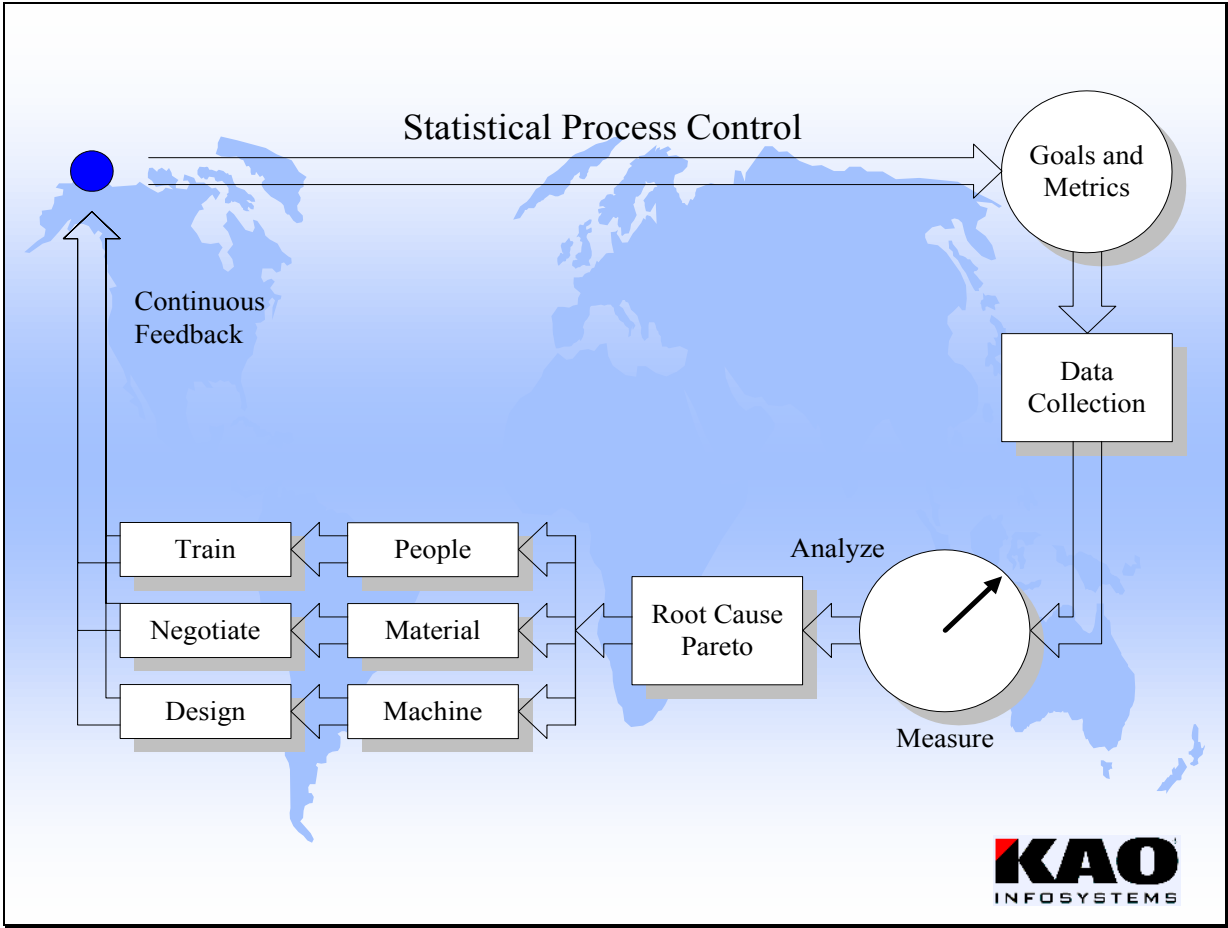


## Appendix B: Handling Change at KAO

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# Appendix C: Universal Quality Control



## Appendix D: Skills Distribution Shift

