

Genesis Automation, Inc.

August 2001: Houston, Texas

Brent Hoffman, CEO of Genesis Automation, Inc. retired to his corner office, directing his calls to voice mail. It was time to select the portfolio of projects his company would pursue in the upcoming year. In the past, portfolio selection had been easy, but a recent decline in company performance (Exhibit 2) and a weakening market (Exhibit 3) had muddied the waters and conditions in the 21st century seemed more complex.

Twenty years earlier, Brent was a central figure in the decision to move away from mainframes towards UNIX-based systems. At best, critics described the move as premature. At worst, they called it customer abandonment and groundless faith in immature technologies. Upon reflection, Brent considered the event a career-defining moment. His unwavering stance won out, and the new product had given Genesis not only a competitive edge, but had propelled the company to market dominance. There was no denying that Brent's input then, and at many subsequent forks in the road, had helped Genesis become the leader in pipeline automation.

Background

Over its thirty-year history, Genesis Automation grew from a tiny start-up whose three founders operated out of a rented warehouse bay to an international player with more than 3500 employees worldwide. Today, customers generally perceive Genesis' product as top in the market, and it is used by more than 80% of North America's oil and gas transmission companies.

The company specializes in automating oil and gas pipeline systems, allowing transportation and distribution companies to monitor and control their pipeline network from a centralized location. In the mid '80s, deregulation of the oil and gas transportation industry led to an explosion in demand for **Supervisory Control and Data Acquisition (SCADA)** systems. In addition to real-time control and automation, Genesis developed back-end solutions to provide customers with billing, nomination, leak detection, batch tracking and a host of other applications. To date, Genesis has been a minor player in the water, wastewater and electrical transmission markets. However, it expects most of its future growth to come from these areas as they undergo deregulation.

The worldwide market for energy transmission control systems hovers at approximately \$700 million per year. As a relatively small market, it has not interested many larger players, which affords Genesis some protection. In 1995 Genesis attempted to diversify out of the SCADA market into the multibillion custom business services/solutions market, but the venture produced three successive years of losses and was spun off to "live or die on its own" in 1998.

Since 1990, Genesis successfully increased market share through aggressive pricing and acquisitions. Sales in 1998 and 1999 were particularly good, as customers clamored to

upgrade their systems to avoid the much-publicized Y2K meltdown. Management anticipated a slowdown in sales during the first quarter of 2000, and expected sales to recover by mid 2000. However, throughout 2000 and well into 2001 new contract awards were slow and backlogged work quickly disappeared. For the first time, new recruits were not aggressively pursued, and rumors of layoffs began to circulate among employees. Productivity and morale sank to an all-time low and turnover became an issue.

Despite repeated assurances of an imminent upturn from Sales and Marketing, Genesis' situation continued to deteriorate. Teledata, its nearest competitor, did not seem to be suffering, and made matters worse by posting several quarters of market share improvements at Genesis' expense. By July 2001 Hoffman could no longer convince himself that there was nothing to worry about. He scheduled upper management to attend a strategy session to determine what was happening, and what to do about it. The three-day meeting was held at a dude ranch 45 minutes outside the city. The ranch specializes in executive getaways, and Hoffman hoped that the isolation would remove barriers and improve communications among the various departments, factors so critical for reaching consensus.

Representatives from Sales and Marketing admitted that the current product line was not as attractive to customers as it used to be, and further indicated that smarter end devices using open standards had created the risk of disintermediation. Market studies revealed that field device manufacturers were abandoning their proprietary protocols and switching to standard access methods (such as ODBC), which would allow data to be retrieved and manipulated by any number of Windows applications.

Sales and marketing's report was mirrored by R&D, who further indicated that the next version of the product was Genesis' response to the open-standards game. The new product would allow the user to effortlessly move data between their SCADA system and their Windows applications.

Engineering reported that the market share problems were related to product quality and customer service, as both metrics were falling in recent surveys. Engineering suggested that this decline was caused by premature software releases and the subsequent lack of attention that R&D gave to the current product while pursuing the next.

Service pointed out that their employees' average experience level was lower than in other departments, and that they were so busy fielding customer concerns and traveling to site that they didn't have time to train.

After two days of discussion little progress had been made, and Hoffman had no expectation that the third day would be any different. Instead of kicking off a final day of round-table discussions, he challenged senior management to work together to come up with concrete ideas addressing the problem within 30 days. To emphasize to his managers the gravity of the situation, Hoffman ended the retreat early with the prophecy

that, if they failed him on this, he was not the only one who wouldn't be working at Genesis in two years time.

Back at the office Hoffman was unsure that his executives could effectively tackle the problem, so he contacted business strategy consultant Catherine West. On previous occasions he had used Catherine to find creative solutions to difficult problems, and he hoped she could do so again.

Initial Brainstorming

Allen Sorenson – As a sixteen-year veteran of the company, Allen knew the control industry inside and out. His experience and position as head of Engineering gave his opinion great weight at Genesis, but this time he was as uncertain as anyone about what could remedy the slide in sales. Allen's mentor at Genesis had been a firm believer in TQM, and many of these principles had rubbed off on Allen. His mentor would often quote Deming:

“It is not enough to do your best; you must know what to do, and then do your best.”

Allen could relate with that now and believed that the market share slide was due to erosion of Genesis' competitive advantage. While no product could compare for flexibility and functionality, the specialized code and complexity made quality control and customer service problematic. Allen believed that the quality and service ratings were declining further, but voicing this to upper management was risky, while objectively discussing them with his counterparts in other departments was impossible. Each department had its spin on things, and to challenge the status quo without being cast as a non-team player was difficult. As Allen pondered each potential solution, his thoughts invariably gravitated back to product quality and customer service.

At the next Engineering leadership meeting, Allen summarized the events of the senior executive retreat to his key employees and reiterated the CEO's "do or die" challenge. To alleviate the tension, Allen tried to put a positive spin on things, which left more than a few people confused. As one area service rep summed it up, "Except for the year-end party, Allen is rarely as animated as we saw him today. For him to get so worked up is unlike him. We must really be in trouble."

Catherine West – As a six-year veteran of McKinsey's Business Technology Office (BTO) group, Catherine was well versed in the latest technology offerings. She was also skilled in helping companies leverage those technologies to improve their performance and align their departments around a coherent strategy.

Catherine had seen many companies in similar situations. A strong product combined with quality employees would sustain the company for a number of years, but then the company would suddenly find itself struggling to maintain its position. At a loss to explain the reversal, the company then would come to her for solutions. As Brent outlined his concerns, she realized that addressing them would require a strong

commitment from Genesis. As an outsider, Brent was her strongest ally, an ally her project couldn't afford to lose. However, Brent Hoffman was 63, and even if he were willing to sponsor a major initiative, it might lose steam under his eventual replacement.

To develop a better understanding of the issue, Catherine interviewed key employees from each of Genesis' departments. Her data collection revealed varying opinions, and even some denial that a problem even existed. Finance felt that Genesis executives needed better data in order to detect and respond to market trends. HR believed that efficient employee training was critical if they were to go to successfully migrate from UNIX to Windows based systems. Engineering felt that R&D's Windows-only focus was prematurely killing the product that still accounted for the vast majority of their sales. Sales and Marketing argued that the whole setback was temporary, and that once the next product was released they would recover their lost market share and more. Upper management was concerned with increasing costs and the declining productivity-per-employee numbers, especially since Teledata's product was significantly cheaper and catching up in functionality.

Following this internal data gathering session, Catherine decided to conduct a quick customer survey to see how they viewed the product. She polled each of Genesis' departments for the questions they felt were most relevant, and compiled the results into a short questionnaire. The survey was then forwarded to 80 customers, 60 of whom had recently purchased a Genesis system, with 20 having gone with the competitor. Of these, 32 Genesis customers responded, along with 9 of the competitor's customers.

Armed with this information (Exhibit 4), Catherine prepared her solution.

Shigeo Aoyama – As Chief Technology Officer, Shigeo was charged with keeping the company competitive through the effective selection and deployment of new technologies. Shigeo described himself as a “technology evangelist,” and was hired in 1999 by the CEO himself, based on his depth of knowledge and obvious enthusiasm for the work. Shigeo believed that a company needed to take risks if it was serious about succeeding in the Internet age. His newly created position at Genesis required him to work closely with Sales & Marketing to determine the company's future product roadmap. Upon arriving at Genesis, Shigeo's first order of business was to assess market trends to help determine the future sales potential of UNIX-based systems. The decision to discontinue UNIX development in favor of the Windows/Intel platform was controversial, but Hoffman realized that many of the same arguments from Engineering were the same knee-jerk responses he had heard from his own critics two decades ago. Shigeo won approval for the new technology strategy and immediately put R&D to work.

Shigeo saw Genesis' current problem as rooted in the lack of coordination among the various departments and recommended implementing a system-wide ERP package. He knew that ERP would help Genesis manage costs, improve communications among departments, increase customer service and, perhaps most importantly, increase management's ability to view information and make appropriate decisions.

Shigeo's primary goal was to develop the infrastructure necessary to take Genesis from a medium-sized business to a large company. Presently, Genesis had an assorted collection of systems in each department, some dating back to the 80s. These systems were badly fractured and desperately needed consolidation. As long as Genesis enjoyed market dominance, there was no business case to support the expenditure needed to develop common global systems. Shigeo viewed the recent market share slide as inevitable, a direct result of competitors' streamlining their operations, reducing costs and becoming more responsive to market trends. The primary questions on Shigeo's mind were "Which ERP package best fits our business model, and which of our processes can we afford to change?"

John Turner –Sales, Marketing and R&D were convinced that the market share problem would solve itself once the next version was released, but they also realized that it was imperative to respond to the CEO's challenge. Otherwise they risked losing ground and potentially some percentage of the funding they currently received for product development. Their preference was for Genesis to spend as little as possible on the issue, but they weren't opposed to supporting plans that strengthened the company without affecting their own goals.

John Turner, area sales rep for North-East US, headed a small team charged with improving the accuracy of Sales projections, monitoring proposal developments, allying with those that gave Genesis the greatest advantage with least expense and, if necessary, developing counter proposals to defend against mega projects. Genesis had always beaten the competition through its superior product and employees, and the last thing Genesis needed when profit margins were being squeezed was to invest heavily in extraneous IT systems.

The Proposals

Allen Sorenson's Plan:

After three weeks of hard work, Allen Sorenson was happy with his team's plan, which aimed to restore customer confidence in the company and product. They concluded that sales were lagging primarily because Genesis had lost its focus and dedicated much needed resources to non-core business experiments. Allen's team identified three major areas where a concentrated effort could increase employee efficiency and customer satisfaction.

First, the team noted that customer service drastically needed an overhaul. Due to the product's complexity, it was extremely difficult for the service department to address customer concerns. Part of Genesis' appeal was its ability to customize baseline applications and create new functions to meet each customer's specific needs. While this was a selling feature, it also limited service's ability to deal with issues in the modified areas. Service often had to hand the problem back to the original engineering team, which slowed the resolution process. In addition, without a standard method for service to record the problem particulars, engineering typically had to contact the customer again to discuss the issue. Once Engineering resolved the problem, the details of the solution often

did not get passed back to service. The team proposed a KM style defect tracking system that allows for information sharing between engineering and service, and for the quick lookup of symptoms in a defect tracking/resolution database. The initiative's goal was to increase the percentage of calls that service could handle directly from the current 50% to a target goal of 80%, and to decrease the time it took Genesis to resolve customer issues from the current average of three days down to eight hours.

Second, the team noted that many product quality issues could be detected during development, and suggested that a specially trained quality assurance team be formed to review the product throughout its development lifecycle. Based on this team's findings, training would be set up in R&D, service and engineering to correct the most commonly made errors in programming and design. It was expected that this team would more than pay for itself with decreased onsite commissioning costs and follow up warranty work. The current average number of bugs found after Factory Acceptance Testing (FAT) was 80. The goal of this initiative was to reduce this bug count number by 75% to 20 post-FAT bugs.

Finally, Allen was tired of the poor cooperation among the various departments, and his team proposed mandatory tours of duty among them. He was pleasantly surprised that John Turner had thrown his support behind his plan, and hoped this was an indication of improved cooperation between Engineering and Sales. It was expected that Service and Engineering would share employees, as would Engineering and R&D, and R&D and marketing. Aside from developing contacts outside of their native departments, each employee would get a better feel for the challenges that each department faced, and this knowledge would improve inter-departmental cooperation.

Catherine West's Plan:

After considering the needs of each functional and regional unit, Catherine concluded that the company would be best served by carefully selecting the best products on the market. Her general plan was to use PeopleSoft for Human Resources, SAP for Financial Accounting, Sales and Purchasing, and Seibel for Customer Relationship Management. To integrate these systems with Genesis' existing legacy systems, she proposed they contract with IBM to integrate the various systems using their MQSeries and EAI products. In addition, she recommended Vignette as the best product to meet the company's document and knowledge management needs. Catherine's position was that only through the use of the best products on the market could Genesis reverse the slide and restore its competitive advantage.

Catherine knew her plan was ambitious, and therefore proposed a multi-phase rollout of the packages. In Phase One, the company would work on implementing the SAP Sales and Seibel CRM modules. Currently, management was badly out of touch with the customer, which translated into lost sales and diminishing market share. These modules would also greatly decrease the "over the wall" issues facing them currently. For instance, customers had been known to approach different departments within Genesis, obtain multiple quotes for the same work, and then select the lowest bid. Improved customer management was critical if Genesis were to operate as a single entity.

Specifically, Seibel's CRM package was proposed to provide Genesis with end-to-end customer management support, from initial sales contact, through engineering and into service. Service and engineering would benefit most from CRM, as it would provide them with sophisticated call-center capabilities, decreasing problem resolution delays.

Phase Two focused on improving internal communications and accounting through the implementation of Vignette's Knowledge Management product and SAP's Finance module. Vignette would allow each of Genesis' departments to publish and manage information and documents related to its business strategies, customers and operations. In addition, improvements in the financial accounting system would give managers the ability to drill down into areas of concern in any of their worldwide locations. Catherine noted that, with these systems in place, strategic errors would decrease significantly as management made decisions based on better data. For example, in the future there would be no need to debate whether a problem even existed. Instead the data would quickly tell them what and where the issues were.

Phase Three would focus on developing interfaces to the remaining legacy system not already replaced, and would also recommend the implementation of PeopleSoft in HR. Genesis currently relied on an archaic personnel resource management system which could not handle the intricacies of multiple location operations. It was impossible to track the movement of employees from one region to another, which made progression and succession problematic. As a company that values diversity, Genesis desires the ability to evaluate its employees on a worldwide basis to ensure that senior positions are filled with the most qualified individuals. Employees based outside North America often felt that leaving the company was the only option, and Genesis wanted to correct this problem.

Minimally, Catherine expected that implementation of these three phases would take three years, but her experience told her that a five-year rollout plan to address them was more realistic. Out of concern that the CEO's retirement could derail the project, the early work was geared toward providing Genesis with immediate benefits. Catherine would consider the project a success even if Phase Three were never attempted.

Shigeo Aoyama's Plan:

Before being hired as Genesis' chief technology officer, Shigeo was involved in several Fortune 500 ERP projects. He had firsthand experience of the value that a well planned and implemented ERP system could bring to a company. He had heard many ERP horror stories, but knew that the ERP industry was maturing and that delays would only give Teledata more time to erode Genesis' market position.

In particular, Shigeo had his team research the usage of SAP R4.6, with its improved modules and end-to-end functionality. Recent reviews and research group publications convinced him that SAP had not only improved its traditional financial product but had closed the gap in their HR and CRM capabilities as well. In addition, SAP had significantly reduced the effort required to customize and implement the product. SAP could provide them with a seamless system, giving Genesis the internal transparency that its departments so badly needed.

Shigeo identified 38 processes that differed from SAP's baseline offering and that he considered critical to Genesis' competitive advantage. Twelve of these differences required modifications to the core SAP package. Although he was concerned about these changes, he felt that his experience with SAP implementations would help them overcome these issues.

Shigeo knew that Catherine West was planning a best-of-breed strategy, but his experience told him that a mid-size company would be more able to install, learn and maintain a single application that it would to integrate many. Not only would it be cheaper to license and run SAP wall-to-wall, it would save them money in future upgrades.

The Decision

Brent listened intently to each presentation, asking obligatory questions on costs, scheduling and anticipated benefits. Every presentation was well done: it was apparent that each group had done its homework. As the meeting wound down and the presenters filed out, Brent was left alone with his thoughts. Which plan should he present to the Board? How would it affect the company's future? What would happen if they chose the wrong one?

Exhibit 1 – Biographies

Allen Sorenson – Director of Engineering, Genesis Automation Inc.

MS Electrical Engineering – University of Washington 1980

Allen worked for five years as an offshore drilling engineer with ABB, primarily on jobs in the Gulf of Mexico. During this time he received a number of awards for his innovative use of technology, which helped ABB achieve several deep-water records. Allen met Brent Hoffman during an Oil and Gas Exposition in Houston, Texas, and Brent persuaded him to join Genesis Automation in 1985 as a technical specialist in control systems. His oil and gas experience, control system knowledge and innovative nature resulted in his quick rise in the company. Allen was promoted to his current position of Director of Engineering in 1994.

Catherine West – Principle, McKinsey BTO

MBA – MIT Sloan School of Management 1995

Catherine West was recruited by McKinsey in 1995 and transferred to its newly formed Business Technology Office in 1997. She was recently promoted to the position of Principle (full Partner). When asked to comment about life as a consultant, Catherine responded:

“I love it. There is no other job that requires you to be in top form at all times. From the moment I arrive at my client’s business the intense focus on the job at hand gives me such a rush. You always work with quality people, and everyone pulls their weight. My six years of experience at McKinsey are more like fifteen years anywhere else, and they pay really well...”

Shigeo Aoyama – CTO, Genesis Automation Inc.

MS Computer Engineering – Carnegie Mellon 1988

MBA – Harvard School of Business 1994

Shigeo began his career at IBM in 1988, and took advantage of their education program to earn his MBA through Harvard’s executive program. As part of IBM’s Global Services team, Shigeo developed his PeopleSoft and SAP skills, and was hand picked to manage IBM’s blue team on its most complex jobs. In 1999 Shigeo was lured away from IBM into his current position as Genesis’ Chief Technology Officer.

Brent Hoffman – CEO, Genesis Automation Inc.

BS Chemical Engineering - University of Texas at Austin 1963

MS Petroleum Engineering – Stanford University 1969

Brent worked the oilfields of Texas for four years prior to returning to school to earn his Bachelors degree in Chemical Engineering. He then completed a stint with Texaco prior to returning to get his Masters degree in Petroleum Engineering. With oil in his veins, he started Tejas Resources, an exploration company specializing in computer geological mapping and deep well drilling. Brent sold his interest in Tejas Resources in 1979 and joined up with Genesis as the new head of Sales, drawing on his extensive understanding of the industry and his innumerable contacts. Brent was promoted to CEO of Genesis Automation in December, 1994.

Exhibit 2 – Genesis Automation, Inc. – Annual Income Statement (\$ millions)

Income Statement			
	<u>2000</u>	<u>1999</u>	<u>1998</u>
Sales	\$ 381.9	\$ 420.4	\$ 394.2
COGS	237.2	256.9	234.2
Gross Profit	<u>\$ 144.7</u>	<u>\$ 163.5</u>	<u>\$ 160.0</u>
Operating Expenses			
Selling Expenses	\$ 46.2	\$ 38.7	\$ 33.9
General Expenses	19.1	17.2	13.8
Total Operating Expenses	<u>\$ 65.3</u>	<u>\$ 55.9</u>	<u>\$ 47.7</u>
Income from Operations	79.4	107.6	112.6
Non Operating Income	4.5	11.4	6.2
EBIT	\$ 83.9	\$ 119.0	\$ 118.8
Interest Expense	30.5	36.2	32.3
EBT	\$ 53.4	\$ 82.8	\$ 86.5
Income taxes	20.8	32.3	33.7
Net Income	<u>32.6</u>	<u>50.0</u>	<u>52.8</u>

Exhibit 3 – SCADA Industry

Sales	1997	1998	1999	2000	2001E	2002E
Genesis	349.3	394.2	420.4	381.9	361.7	361.1
Oil and Gas Market Share	1997	1998	1999	2000	2001E	2002E
Genesis	55.0%	57.1%	58.8%	56.2%	52.8%	50.5%
Teledata	12.1%	15.3%	17.2%	20.0%	21.1%	21.1%
Other	24.7%	19.8%	16.8%	14.7%	13.9%	13.8%
In-house	8.2%	7.9%	7.2%	9.1%	12.2%	14.6%
Market Sizes	1997	1998	1999	2000	2001E	2002E
Oil & Gas	340	360	365	325	300	300
Electrical	155	165	180	193	220	240
Water & Wastewater	140	166	170	162	165	175
Total	635	691	715	680	685	715

Exhibit 4 – Recent Purchaser Survey Results

Genesis Automation (1-poor 3-fair 5-average 7-good 10-excellent)

1. Quality	6.1
2. Functionality	8.8
3. Flexibility	7.5
4. Service	5.5
5. Price	5.0
6. Maintenance costs	7.2
7. Upgrade path	6.4
8. Likelihood of repeat purchase	7.0

Which product did you purchase?

• SCADA 6.0 (All Unix)	53%
• SCADA 6.2 (Unix/Windows)	28%
• SCADA 7.0 (All Windows)	19%

Which architecture would you most prefer for your next purchase?

• All Unix	34%
• Unix/Windows	38%
• All Windows	28%

Competitor (1-poor 3-fair 5-average 7-good 10-excellent)

1. Quality	7.2
2. Functionality	7.8
3. Flexibility	6.2
4. Service	8.2
5. Price	7.0
6. Maintenance costs	7.2
7. Upgrade path	6.4
8. Likelihood of repeat purchase	7.2

Which architecture is your system based on?

• All UNIX	0%
• Unix/Windows	0%
• All Windows	100%

Which architecture would you most prefer for your next purchase?

• All UNIX	0%
• Unix/Windows	22%
• All Windows	78%

Exhibit 5 - Technology

Most transmission and distributions companies prefer UNIX-based solutions for scalability and reliability reasons, but requests for Window-based systems are increasing. Genesis has developed products to operate on multiple platforms, including all UNIX (IBM, Sun, Compaq) all Windows (NT, 2000), or a hybrid UNIX backend Windows front-end solution. The next Genesis product offering is strictly windows based, although 90% of its clients still prefer UNIX-based servers for the back-end processing and Windows clients for the GUI.

Hardware margin for UNIX-based systems is typically greater than 50%. Hardware margin for Intel-based server systems is usually between 25 and 30%.

A typical system consists of redundant server and communications hardware at a primary site, and a third set of hardware at an emergency backup site as shown in the following diagram.

