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THE VALUE OF IT INFRASTRUCTURE IN PRODUCT LIFECYCLE MANAGEMENT

What keeps you awake at night?

By Monica Schnitger

Ask this of any CEO, CTO, CIO, or vice president of engineering, manufacturing or supply chain, and you're likely to hear concerns about:

- integrating "islands" or "stovepipes" within the organization by providing better access to common data
- business continuity and uptime
- managing large quantities of data and
- ensuring rapid access to data
- the cost of information technology tools and infrastructure both current and future — "have we designed the right infrastructure for today and tomorrow?"

How does a company make IT investments to ensure that it achieves these and other business imperatives? In this white paper, you'll read how four manufacturing companies in industries as diverse as Formula-

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An efficient IT infrastructure helps companies meet customer demands...

...weather uncertain economic times and prepare for an eventual upswing.

Successful companies are building an IT infrastructure that takes advantage of data re-use, availability and consolidation...



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...mitigates risk by ensuring uptime and optimizing data restore and backup...

...controls costs by maximizing use of existing infrastructure, assets and personnel...

...fosters global collaboration within the enterprise and with partners.

TMG knew that technology was critical to the success of its F1 program...

...TMG started by examining the infrastructure that supported the CAD applications at the beginning of the vehicle development process...

F1 racing, aerospace, plastics and power distribution systems manufacturers have optimized their IT infrastructures to support their business needs. All have realized that an efficient IT infrastructure can help their companies meet customer demands, weather uncertain economic times and prepare for an eventual upswing. These companies are building an IT infrastructure that:

- reduces time to market for new products by taking advantage of data re-use, availability and consolidation
- mitigates risk by ensuring uptime and optimizing data restore and backup
- controls costs by maximizing use of existing infrastructure, assets and personnel
- fosters global collaboration within the enterprise and with partners.

These companies have discovered a careful examination of their existing IT needs and solutions (including the current costs) coupled with a clear vision of the environment they need to create can lead to substantial savings and efficiency improvements. What can you learn from their successes?

Toyota Motorsport GmbH

How can a company build an information technology infrastructure to design a Formula-1 racing car from the ground up more quickly than ever had been accomplished before? By creating an infrastructure that:

- is very responsive (since time is of the essence) to the needs of the engineering, manufacturing and business operations communities within the enterprise
- ensures business continuance, since downtime is unacceptable, and
- unifies historical "islands of applications."

Toyota Motorsport GmbH (TMG), the racing arm of automotive giant Toyota Motor Corporation, faced just such a problem. Toyota, with total sales of \$107 billion in the year ended March 2002, has a reputation for building high quality vehicles and leading the automotive industry in design and manufacturing techniques. However, the company felt a need to increase its appeal among car buyers interested in high-end, technologically-focused cars and so, in 1999, the chairman of Toyota,



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Hiroshi Okuda, announced that the company would enter Formula-1 (F1) racing, the world's premier international racing circuit. The company intends to impress the millions of fans who watch F1 races each year with Toyota's technical prowess and cutting-edge vehicle designs — on par with those of F1 competitors BMW, Mercedes and Ferrari.

Toyota has been competing on the international racing circuit since 1957 by modifying its highly successful commercial cars (such as the Celica or Corolla) but F1 racing requires a completely different type of vehicle, built especially for the F1 circuit.

The TMG team decided to approach its F1 design with "a clean sheet of paper," according to Waldemar Klemm, Manager of Information Technology at Toyota Motorsport GmbH (TMG). Klemm points out that Toyota's competitors on the F1 circuit have many years of vehicle design and operations experience. Ferrari, for example, has been designing and competing in F1 racing for 50 years. TMG is also taking a unique approach to its F1 goals. Said Klemm, "TMG is a complex business. We manufacture our engines as well as our chassis, while most F1 teams outsource the engine. You might say that we're a complete car company that only builds prototypes. This means that we need to satisfy all areas of a car company — designers, manufacturing, human resources, marketing communications, finance." Add to this the complexity of the racing car, which has 4500 components (counting the engine as 1 component), and it becomes obvious that the data management issues are enormous.

TMG believes that technology is crucial to the success of its F1 program, and established a relationship with EMC early in its bid for F1 success. Given the tight timeframe set by the corporation, TMG's IT goal was to establish a reliable infrastructure that would make designers and engineers as productive as possible. According to Klemm, TMG decided to start by examining the infrastructure that supported the computer-aided design (CAD) applications at the beginning of the vehicle development process. Said Klemm, "These apps were islands. Our infrastructure design was motivated by the needs of the individual apps. For example, [Dassault Systemes] CATIA required a file server that then had to be connected to the clients. Storage was on a server, and the storage management software was part of its operating system." Other "islands" included the group's email system, design analysis software and other very specific applications, loosely knit together by "bridges" built without a master plan.

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...Said Klemm, "We couldn't go on the way we were going..."

"...Always buying IT infrastructure as consequence of individual apps was the wrong design, the wrong strategy..."

...TMG took a step back and decided to look at the pure basics beneath the network...

...It became clear to TMG that storage and software to manage the storage was the key.



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According to Klemm, EMC had the capabilities required within their software and hardware.

Klemm says that TMG measures the success of its storage and storage management infrastructure implementation...

...by looking at the effectiveness of the IT infrastructure operation and what it provides to TMG.

System downtime is less than 15 minutes in two years — and that was due to a planned expansion.

How can a company build an IT infrastructure to design a Formula-1 racing car from the ground up?...

As TMG approached its infrastructure redesign, Klemm said, "We couldn't go on the way we were going. We had gone in the wrong direction: Always buying IT infrastructure as consequence of individual apps was the wrong design, the wrong strategy. So we took a step back, and looked at it all and wondered, 'How to change it all?' We wanted a reliable, flexible, scalable, secure solution — and sometimes these are not compatible. So we stepped even further back and decided to look at the pure basics beneath the network. What's most important? It became clear that storage was the key."

The TMG IT team soon realized that the storage hardware itself was but one aspect of the solution it sought. TMG determined that software to manage the storage was also a key factor, because the network's security, speed, access, and ability to distribute storage to different locations were also key attributes. Said Klemm, "We wanted flexible, scalable, reliable [storage and storage management] and EMC said 'where's the problem?' With discussions, we built up a wonderful partnership — they really understood our needs, our thinking and what we were looking for. The partnership started with workshops and discussions of how to create the appropriate environment. It was also clear that EMC had the capabilities we required within their software and hardware. But we're still learning and our infrastructure will evolve."

Klemm says that TMG measures the success of its storage and storage management infrastructure implementation by looking at the effectiveness of the IT infrastructure operation and what it provides to TMG. According to Klemm, "Efficiency has gone up since the EMC implementation because we use business continuance software. We mirror the file system we're using for telemetry data analysis that allows engineers to more easily find the appropriate representation of each vehicle. We have the mirror of our production environment to decrease the time to prepare the [digital] test runs. We have both direct attached and network attached storage. This means that it is not time intensive to change servers. Before [our EMC implementation], our technical calculations people wanted the maximum calculation power to improve design and it was really hard to change the server since the storage was part of the operating system. We can now change servers within 1/2 hour. This saves a lot of time and increases productivity — and disturbs the engineers much less. We're very comfortable with our ability to prepare and test a server before the switch. We do this five to six times per year."



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But Klemm also points out that significant savings are due to the increased efficiency of the IT staff: "We also measure our IT staff's productivity. Before [the EMC implementation] a lot of our IT staff was looking for storage capacity — to make sure no high water marks were reached. [The EMC installation] is very secure and stable. We don't need more than two people to manage the installation. It used to take five people. System downtime is less than 15 minutes in two years — and that was due to a planned expansion."

Klemm is justifiably proud of his team's infrastructure implementation, and has suggestions for other managers investigating a change to their IT infrastructure:

- "You need clear goals. Exactly what changes are you looking for?"
- "Think about basics — this project should not be driven by immediate needs. Examine the entire environment and all of your apps. It's never too late to create an appropriate environment."
- "A clear strategy is required. Our islands were built around the individual apps; you need to look at the whole picture."
- "Don't go for the most equipment at the lowest price — that will fail. You need a partner to rely on."
- "Look for a partnership, not just a solution. EMC understands its solutions better than we do and EMC now understands the automotive business and can recommend the best technology solutions to TMG's problems."

This strategy is clearly paying off for TMG. The 2002 season was the first in which a TMG car competed, less than two years after bench-testing its first V10 engine and building a prototype chassis. During that season, the Panasonic Toyota F1 racing team garnered two world championship points and crossed the finish line 0.4 seconds too late to earn a third point. The racing team has set itself the goal of challenging competitively for points on a regular basis in 2003, going so far as to call 2003 the "Year of Challenge."

Raytheon Aircraft Company

The Raytheon Aircraft Company (RAC) faces a completely different business reality. RAC participates in an industry that is under tremendous cost-savings pressure, with no real sign of pending improvement. How can it remain competitive? How can the IT organization con-

...By creating an infrastructure responsive to the needs of the engineering, manufacturing and business operations communities...

...ensures business continuity, since downtime is unacceptable...

...and unifies historical "islands of applications."

RAC believes that its future success is dependent upon its ability to meet scheduled timetables...

...for the development, certification and delivery of new product offerings.



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According to Dr. Penn, the IT infrastructure at RAC had sprung up out of need...

"The legacy view was very business-unit independent — each business unit bought storage as needed..."

"...This leads to a very diverse IT infrastructure and becomes extremely hard to manage."

Critical issues for RAC were business continuity, removal of redundant systems and the addition of data movers.

RAC had 16,000 employees and 832 servers, not a healthy ratio...

tribute by cutting costs while improving efficiency? RAC has found that it needed to:

- optimize the ratio of servers to employees by redeploying existing infrastructure where possible and acquiring new where required
- standardize on a single-source approach to infrastructure and
- implement business continuity and disaster recovery mechanisms to increase uptime.

RAC is the division of defense giant Raytheon Company that provides aircraft products, services and support to government, corporate and individual customers. The RAC group of companies manufactures, markets and supports business jets, turboprops and piston-powered aircraft including the fabled Beech line of single- and twin-engine planes, Hawker business jets and special mission military aircraft such as the Hawker 800. RAC also operates aircraft charter and fleet management services as well as aviation services at airports throughout North America and the United Kingdom. In 2002, RAC's revenue was over \$2.1 billion or approximately 15% of Raytheon Company's total.

RAC has been struggling of late, due to the downturn in flying after the terrorist attacks in 2001, and the general economic cutbacks since 2000. In fact, the company sees soft demand for new and used aircraft for the immediate future and believes that its future success is dependent upon its ability to meet scheduled timetables for the development, certification and delivery of new product offerings.

Raytheon, RAC's parent company, has long recognized value in outsourcing its IT operations. In 1997, the company signed its first agreement with CSC, one of the world's leading consulting and IT services firms. In 2002, this agreement was extended to RAC, when RAC and CSC agreed that CSC would manage RAC's IT infrastructure, including mainframe and midrange computers, desktop, help-desk operations, engineering computing, electronic messaging, network servers and other critical IT operations.

Raytheon's relationship with EMC predates its involvement with CSC. RAC bought its first Symmetrix in 2001 as it sought to bring together the IT infrastructures of its many operations and facilities. According to Dr. Richard Penn, Service Delivery Director of CSC with responsibility for the RAC account, the IT infrastructure at RAC had sprung up out of need: "The legacy view was very business-unit independent — each



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business unit bought storage as needed. This leads to a very diverse IT infrastructure and becomes extremely hard to manage. You need to consolidate storage devices and vendors to make it more manageable and to decrease the amount of expertise needed for different systems.”

When CSC was brought into the EMC/RAC relationship in 2002, Dr. Penn’s first mission was to “create direction. Change is not a natural migration pattern. RAC outsourced to CSC, in part, to critically evaluate every aspect of the infrastructure in place. We saw business continuity, removal of redundant systems and the addition of data movers as critical issues for RAC.”

After Dr. Penn’s CSC team did its evaluation, it reviewed available commercial solutions and evaluated solution providers. “RAC had 16,000 employees and 832 servers. This ratio was wrong — things had gotten out of hand. RAC is seeking continuous improvement and really only needed 60% of these servers. We saw that there could be a significant cost savings by rearranging the storage requirements.”

“We looked at a single-source vendor to cut costs in manpower and overhead. There are a lot of storage vendors but EMC is the ‘800 pound gorilla,’ the industry standard. For years, EMC has brought together the best products and are now taking another step by moving to design. This will make EMC a force to be reckoned with in years to come. We did benchmark other storage vendors, but EMC performed equal to or better than competition. Not the cheapest solution but a solid, firm solution.”

CSC presented its findings to RAC, and together the organizations decided to install an EMC Celerra to serve NFS, enable a Novell migration and farm out CIS. Much of the design work at RAC is done using Dassault Systemes CATIA software, and this new installation enabled RAC to migrate 20% of the CATIA users to NFS. According to Penn, “this works very well. We are currently evaluating when and how to migrate the other CATIA users from CATIA V4 on IBM AIX to CATIA V5 on Intel before moving additional users.”

Said Dr. Penn, “The design for the business continuity and disaster recovery systems has been in place for a long time. We have a mirror site four or five kilometers away, but we couldn’t implement our plan until we had completed the transition to Symmetrix and enabled the SAN and EMC Symmetrix Remote Data Facility (SRDF). The NFS move

...The company discovered it only needed 60% of these servers.

“We saw that there could be a significant cost savings by rearranging the storage requirements,” said Penn.

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RAC has seen efficiency up 60-75% due to storage and server consolidation and centralization.



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Dr. Penn says, "Since we've brought in EMC and made some server changes, I sleep well at night."

Husky has 40 sales and services offices, including 18 technical centers, supporting customers in more than 100 countries.

Husky's IT infrastructure had, over time, become too complex, duplicating effort and system resources.

Husky evaluated its IT infrastructure and decided that the new infrastructure must...

...simplify the IT environment, reduce duplication of effort...

was very simple and straightforward. The CIS Novell client transition caused problems but we worked closely with EMC to resolve them."

Dr. Penn has been through many IT infrastructure transformations and says that "each migration is similar and unique at the same time. You need to talk to the vendor, look at their plan for doing the job and build in time for a redo. Don't put yourself into a critical situation with no recovery time." As an IT outsourcing partner, he adds, it's his job to "have good general knowledge of customer's expectations before even looking at optimizing" the solution.

RAC has 18 service level agreements (SLAs) with CSC, 7 associated with storage. The SLAs measure efficiency, cost and uptime. Dr. Penn indicated that RAC has seen "efficiency up 60-75% due to storage and server consolidation and centralization. We've also seen significant cost savings [due to the infrastructure changes already in place]. We're currently at a 35% reduction [in cost] and are aiming for 40%."

In all, Dr. Penn says that "RAC and CSC have had a very good experience with EMC. Since we've brought in EMC and made some server changes, I sleep well at night."

Husky Injection Molding Systems Ltd.

How do you cope with an IT infrastructure that has, over time, become too complex and now duplicates effort and systems resource? Throw in the need to coordinate IT activities at sites around the world, and you find yourself in the shoes of Husky Injection Molding Systems Ltd., a Canadian company that designs and manufactures injection molding equipment for the plastics industry. Husky's machines and robots are used by its customers to create products as diverse as plastic bottles and caps, medical equipment such as syringes and vials, cell phones and automotive components. For the year ended July 2002, the company reported revenue of US\$581 million.

Husky has over 40 sales and services offices, including 18 Technical Centers, supporting customers in more than 100 countries. Design and manufacturing is carried out on campuses in Ontario, Canada; Vermont, United States; as well as in Luxembourg. Says Jim Wilson, Husky's Vice President of Information Technology, "The IT organization supports roughly 2,500 employees. Our IT staff manages everything from networks to storage to application servers. In fact, each campus manages its own engineering IT."



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In 1997 Husky made the decision to move from 2D to 3D CAD tools in its engineering groups and used this transition to reassess a number of other IT areas. The company decided to upgrade to a more reliable infrastructure with improved access times and to make its ERP implementation more secure by moving to the Unix platform.

Unfortunately, this strategy did not provide Husky with the solid foundation it sought. Says Sam Rego, IT Operations Manager for the Ontario site, "things were breaking on a regular basis." Husky was experiencing unacceptable availability and uptime on its critical bill of materials (BOM) and CAD systems. What began as a project to revitalize the IT infrastructure became a very high-visibility project to stabilize it.

Husky once again evaluated its IT infrastructure and decided that the new infrastructure must:

- simplify the IT environment
- reduce duplication of effort
- be dependable and robust
- foster connectivity among the international operations of Husky.

Rego said that the number one priority in this redesign was to "make sure that we have reliable and solid infrastructure [on which] to build our products."

The team selected EMC as its storage vendor in 1998, moving its Oracle BOM system onto Symmetrix and its EDS PLM Solutions Unigraphics CAD system onto Celerra. In 2001, based upon its experiences in 1998-2000, Husky decided to deploy an additional Celerra SE, consolidating its engineering storage. This enabled Husky to run its Oracle BOM system on local attached EMC disk, saving Husky the expense of buying and managing storage for its Oracle applications. Just last year, the company completed a technology infrastructure refresh, now running SAN to enable backup of its mixed Windows NT/Unix environment.

Says Rego, "EMC gives us a flexible infrastructure with backup and data aggregation abilities. The whole EMC concept is flexibility: take copies, restore copies, do quick refreshes ... for big changes, we make a snap copy." Adds Wilson, " We looked at other providers [during these projects]. The strongest asset EMC brings to the table is its professional services organization and the company's willingness to take

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...saving Husky the expense of buying and managing storage for its Oracle applications.

Said Wilson, "The strongest asset EMC brings to the table is its professional services organization and the company's willingness to take responsibility..."

"...We grew with EMC, adding new EMC products as EMC released them."

Husky is very happy with the uptime of its current infrastructure...

"...Everything has gone extremely well. EMC is a great partner," says Rego.

responsibility. That gives comfort and assurance." Summing up the last few years, Rego said, "Basically, we grew with EMC, adding new EMC products as EMC released them for general distribution."

In describing how the Husky team approached these changes, Wilson commented that the "IT operations managers [on each campus] have to agree with the objective and timing of the technology project. We review 'does this make sense,' and need to see specific benefits before a technology project can go ahead."

Rego said, "EMC is very involved in our implementation plans. We do regular planning sessions. The steps required in an implementation are shown by EMC, augmented by EMC's technical support. We rely a lot on EMC but are very capable of handling technology." In fact, said Wilson, "We're pretty independent on day-to-day operations."

Husky's operations make good use of the latest concepts in business continuity. Rego reports that Husky uses SRDF to maintain a real-time mirror of their data and TimeFinder to perform backups regularly throughout the day snapping copies and refreshing incremental changes on short notice.

The company's next goal is to streamline its data management systems. For example, Rego says that having multiple engineering centers doing design work "has led to problems with duplication. This affects the engineering organization's product data management (PDM) system (EDS PLM Solution's iMAN in this case) and its ERP system. Says Wilson, "Over the long-term, we want to share data between ERP and PDM. This will reduce the total volume of data and make it more consistent." The company also expects this standardization to simplify systems administration and lead to a more agile global product development and manufacturing environment.

But, says Wilson, this requires focus: "We cannot allow ourselves to become derailed. The long-term goal of sharing engineering data with ERP has a lot of upside, but we won't get productivity gains until the very end." When asked how Husky's management can stomach a development program with a long lead-time to completion, Wilson answered that "If a solution looks promising, our management is willing to wait for the ROI. But it's definitely driven by the needs of the business — our engineers need data and finding it quickly is a priority."



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In the meantime, however, Husky is very happy with the uptime of its current infrastructure. Says Rego, "Everything has gone extremely well. EMC is a great partner."

ALSTOM Power

ALSTOM Power is the result of a series of joint ventures and acquisitions — and its IT infrastructure must balance the "explosive" growth of data with the need to minimize IT costs, better manage the roll-out of new design applications and improve data sharing between applications.

ALSTOM Power's steam and gas turbines are used around the world to generate power from coal or other fuels and its transmission equipment gets this power to residential, industrial and other consumers. ALSTOM Power is part of the ALSTOM group, a global holding company which also builds railcars, luxury passenger ships, natural gas tankers, naval vessels, electrical drives and motors.

The ALSTOM group had total revenue of over EU 20 billion in the fiscal year ended March 31, 2002, with over EU 12 billion from the Power group and a further EU 3 billion from the transmission and distribution group. Overall, the company employs over 112,000 people and has operations in about 70 countries in the Americas, Europe, Africa and the Middle East.

The last year has been difficult for ALSTOM, as it suffers the effects of a global economic slowdown and works to integrate its acquisitions. For the nine months ended December 31, 2002, sales were down 10% in the power sector as power suppliers struggle to balance capacity and demand. ALSTOM Power and its competitors are adjusting their strategies as they look for new growth opportunities — or at least ways to maintain profitability even if revenue does not grow. The company recently reaffirmed its commitment to top-notch IT solutions to enable it to meet the dual goals of cost cutting and revenue-creation.

ALSTOM Power designs and manufactures turbines and other equipment in offices and plants around the world. The design offices use mostly EDS PLM Solutions I-DEAS CAD product, although the company reports that it has "some of all computer aided design (CAD) tools" including Dassault Systemes CATIA, PTC's CADD5, and Autodesk's AutoCAD products. The design groups also use a variety of analysis tools and computer aided manufacturing (CAM) tools and manages

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According to Soderlund, "In the past, every country had its own IT organization with little or no coordination between them..."

"...This has been changing over the last 2 years as the company standardizes and consolidates."

ALSTOM Power has set an aggressive goal: to attain a 30% cost-reduction over 3 years...

...by consolidation and cost-cutting while maintaining flexibility of IT services in the face of uncertain demand.

design data using EDS PLM Solutions Metaphase and Teamcenter solutions. ALSTOM Power uses SAP/R3 to manage its manufacturing operations and provide management oversight and control.

ALSTOM Power was formed in 2000 by the acquisition of ABB Asea Brown Boveri's stake in an ABB/ALSTOM Power joint venture. This combination of ABB and ALSTOM assets requires a delicate balancing act between the needs of each individual office and the desire to have a common infrastructure. According to Henrik Soderlund, Manager of Storage and Backup at ALSTOM Power's IT Competence Center in Finspong, Sweden, ABB had completed an evaluation of its IT infrastructure in 1999 (just before the acquisition) because the company had recognized that the:

- volume of data generated by its product design and service teams was growing at an "extreme" rate
- design tools implementation process was not as rapid as desired because the infrastructure was not efficiently designed and
- information sharing between IT tools was not a smooth process in many cases.

ABB recognized that any new IT infrastructure had to be able to handle these conditions while being:

- capable of adapting to changing needs
- easy to implement and
- scalable at the office, region and division level.

After a technical evaluation based upon these decision criteria, the company selected EMC as its infrastructure partner. The evaluation team felt that EMC would provide a broad selection of solutions, including hardware, storage equipment and software, to support the installation. This infrastructure implementation continued at ALSTOM Power after the corporate consolidation.

According to Soderlund, "Many other parts of ALSTOM haven't gone through this consolidation and didn't have a global approach to IT infrastructure. In the past, every country had its own IT organization with little or no coordination between them. This has been changing over the last 2 years as the company standardizes and consolidates, in part based on the successes seen in Sweden."



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ALSTOM Power has set an aggressive goal: to attain a 30% cost-reduction over 3 years by consolidation and cost-cutting while maintaining flexibility of IT services in the face of uncertain demand. The IT organization recognized that server and storage consolidation was a main tool for cost reductions and in 2002 took the next step in the infrastructure consolidation that was started in 1999: The IT team consolidated all of the storage on-hand, totaling 5.5 Terabytes. Again, the team selected EMC as its partner because the EMC installation in 1999 had gone well and was easily extensible by adding on components. Said Soderlund, "Other vendors would have led to a higher total cost of ownership. We didn't even evaluate what to move and what to retire/archive — we just decided to move it all since that was cheaper and quicker."

In 2002, ALSTOM Power decided to implement Networked Attached Storage (NAS) to improve interoperability. ALSTOM Power had been using Novell network for its Windows users, while its business-critical software was generally on the Unix platform. EMC's NAS tools allowed ALSTOM Power to consolidate Microsoft Windows NT, IBM AIX, Sun Solaris and SGI IRIX applications machines and Unix and Netware file-servers. NAS created transparency between Windows and Unix enabling ALSTOM Power engineers to access design files (normally accessed via Unix) from their desktop Windows clients. Similarly, engineers can now use calculations from within Unix applications in Windows-based Microsoft Office applications. Said Soderlund, "We now have complete transparency between Unix and Windows. This used to be quite a bottleneck and required our engineers to have two workstations on their desks."

Sweden's NAS and EMC Celerra implementation led to substantial savings. According to Soderlund, ALSTOM Power measures cost per Gigabyte, and reports that this was reduced "extensively" while dramatically increasing the number of storage units to meet demand. In all, ALSTOM Power was able to eliminate 22 file servers as a result of this consolidation.

Looking ahead, Soderlund anticipates a continuing explosion in the amount of data his Competence Center will have to manage. His preliminary calculations project a 30% growth rate over the next 3 years, but, according to Soderlund, ALSTOM Power is already exceeding this "slightly."

Identifying the keys to a successful IT infrastructure implementation,

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EMC's NAS tools allowed ALSTOM Power to consolidate Microsoft Windows NT, IBM AIX...

...Sun Solaris and SGI IRIX applications machines and Unix and Netware file servers.

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“...This used to be quite a bottleneck and required our engineers to have two workstations on their desks.”

In all, ALSTOM Power was able to eliminate 22 file servers as a result of this consolidation.

The appropriate IT infrastructure can provide better access to common data by integrating functional “islands”...

...reduce risk by ensuring business continuity and improving uptime...

...increase efficiency by improving access to and management of large quantities of data.

Soderlund is clear on his priorities:

- Know what your existing costs are. Said Soderlund, “We had a good process for mapping out the cost components of our prior storage solution. We needed to know these costs — otherwise any comparison to EMC or others would be invalid.” This tight cost analysis enabled the IT team to prove that the proposed EMC-based solution was cost-effective.
- “Try to stick with a well-defined strategy. We know that there will be a lot of change in storage needs over years as applications and tools change, but a flexible, scalable solution should support these changes.”
- Build a flexible infrastructure. “You also need to be able to move storage from one part of the organization to another.” And, finally,
- “Good planning is the best ticket for a good result. We ran all implementations on a strict project plan to minimize problems.”

So, what keeps you awake at night?

As we’ve seen, rethinking the IT infrastructure within an organization can lead to remarkable gains in efficiency, lowered cost and improved productivity.

The appropriate IT infrastructure can:

- provide better access to common data by integrating functional “islands”
- reduce risk by ensuring business continuity and improving uptime
- increase efficiency by improving access to and management of large quantities of data.

Although NAS consolidation may initially appear more expensive than existing infrastructure, significant quantified savings can be achieved through improved availability, control of server proliferation, and lower operating costs.

How can you apply the lessons learned by the world-class companies in this study?



WHITE Paper

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D A R A T E C H

- Audit your current infrastructure to determine if it meets your organization's information requirements for Performance, Availability and Functionality:

Performance

- speed of information access

Availability

- disaster recovery, restore and back-up
- uptime

Functionality

- security
- applications integration

- Discover your current infrastructure costs — you may not be capturing it all right now:

- Is there potential for server and storage consolidation?
- What costs are hidden in other departments' budgets (hard ware or other infrastructure as well as personnel)?

- Determine what an optimum infrastructure might be in two or five years — keeping in mind:

- the rate at which storage requirements grow within your organization
- that some data may be best accessed in an on-line/near-line/off-line manner
- new advances in infrastructure devices and management techniques necessitate selecting an appropriate infrastructure partner.

- Create an implementation plan that anticipates good as well as bad eventualities. The implementation plan requires buy-in from senior executives, as Husky's implementation team noted — and, as Dr. Penn of CSC cautioned, "you need to build in time for a redo."

- Tie infrastructure redesign to meeting business goals. Toyota Motor believes it could not have created its F1 racing entry without redesigning its IT infrastructure and based its decision criteria for infrastructure change on two key principles: speed of access

Discover your current infrastructure costs...

...determine what an optimum infrastructure might be in two or five years...

...create an implementation plan that anticipates good as well as bad eventualities...

...tie infrastructure redesign to meeting business goals.

Careful examination of your current infrastructure and business realities...

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WHITE Paper

D A R A T E C H

...can lead to an IT infrastructure that is efficient, cost-effective and helps to meet market demands...

...by reducing time to market for new products, mitigating risk, controlling costs and enabling global collaboration.

and uptime. You must create an infrastructure that matches your business priorities.

Careful examination of your current infrastructure and business realities can lead you to an IT infrastructure that is efficient, cost-effective and helps to meet market demands by:

- reducing time to market for new products
- mitigating risk
- controlling costs and
- enabling global collaboration.

Then, you too can sleep well at night, secure in the knowledge that your IT infrastructure supports your business needs today and for the foreseeable future.