Application Outsourcing for Manufacturing Companies

Realizing Cost Savings and Business Improvements Through a Structured Three-Phase Approach

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Introduction

Many manufacturing companies today are spending more time and money on operational issues, and not spending enough on strategic developments. Application outsourcing allows companies to free up valuable resources. In addition, by moving to a more industrialized model in a centralized low-cost country for the service, funds generally can be quickly released to help pay for investments in larger transformation programs. Alternatively, companies can ask one supplier to manage both elements (both the maintenance and the transformation), as another possible way to move ahead of the competition in strategic areas of high added value.
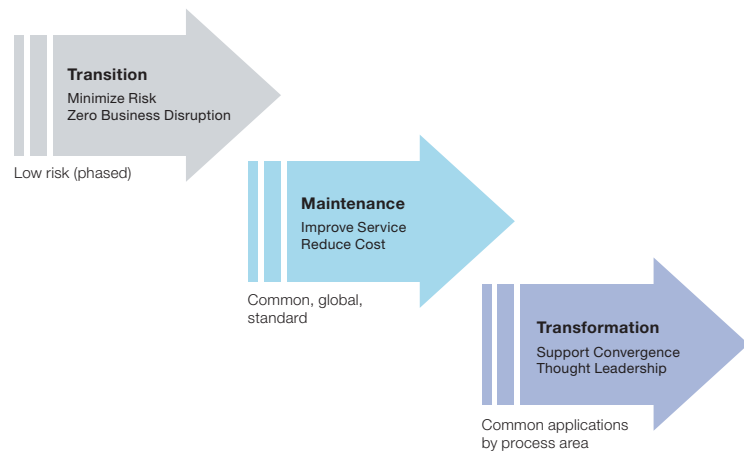
In other cases, original equipment manufacturers (OEMs) are looking at outsourcing to more than one supplier, in order to ensure that competition and innovation continue beyond the bidding phase and throughout the contract's lifetime, plus ensuring a best-of-breed approach where suppliers are selected based on the value they can add in a particular business area, and not just because they have good generic capabilities. This multivendor sourcing and the potential strategies behind it are discussed in a separate Capgemini whitepaper titled "The Keys to Successful Multisourcing."

Capgemini has been working successfully with manufacturing clients around the world for over 30 years, with significant growth in recent years in the outsourcing area. As a result of this experience, we have developed a specific approach to IT outsourcing in manufacturing companies. This approach covers the full lifecycle of transition, maintenance and transformation for applications and processes specific to the manufacturing industry. This whitepaper outlines our approach to working with manufacturing companies in the area of application outsourcing, explains the key lessons learned from this experience and examines how other manufacturing companies can benefit from this knowledge.

Three Key Steps to Success

There are different opinions about the best order in which to approach application outsourcing: Is it best to transform the systems landscape first and then transition, or transition "as is" and then transform at a later date? Clearly there are different models depending on different company situations, but in general it is more efficient to take a structured three-phase approach starting with the transition of applications "as is." The three phases consist of transition, maintenance and transformation. There can be some level of applications and infrastructure rationalization prior to transition, but this should not be complicated or lengthy.

A Three-Phase Approach to Manufacturing Application Maintenance

Transition
Minimize Risk
Zero Business Disruption

Low risk (phased)

Maintenance
Improve Service
Reduce Cost

Common, global,
standard

Transformation
Support Convergence
Thought Leadership

Common applications
by process area

Source: Capgemini

Each phase has its own objectives and requirements, and while the maintenance team will be involved throughout, the transition and transformation teams should be seen as projects with defined start and end dates, and different reporting mechanisms. Too often, companies are disappointed that a transition is not fully effective or timely, or that the transformation is too slow and not adopted by the whole company. This is primarily because many IT vendors do not appreciate the different skills required for each phase of the journey, and many clients do not fully appreciate that the objectives for each step are different: transition should ensure business continuity and minimum disruption; maintenance is about continual improvement in both quality and price; and transformation aligns IT more closely with today's (and tomorrow's) business requirements.

Transition should be viewed as a project with a start, a finish, strict reporting guidelines and clear methodology to be followed. Based on our experience, this is best managed with a global transition team of dedicated experts who have completed many transitions before, and who are project management experts rather than applications maintenance (AM) experts. Similarly, transformation needs to be viewed as a change management project, with experts in business process and the manufacturing industry working alongside the applications maintenance team to ensure the right level of connection and adoption.

In the next sections we will look in more detail at the specifics of each phase.

Transition: Toward a Smooth Cutover

Our Standard Global Transition Methodology makes knowledge transfer industrialized and less risky. The transition manager along with the delivery manager help ensure that the transition is seamless and complete. Proper knowledge assessment is conducted, and gaps, if any, are plugged. During the entire transition phase the delivery teams adapt to the new systems and understand them completely in order to cut over smoothly to service delivery.

Transition and Knowledge Acquisition Methodology

Start Up	Execution	Close Down
Due diligence	Tech org review / Service design / Service build	Readiness assessment / Cut over to delivery

Service Management and Delivery Initiation

People and Organization

Knowledge Transfer

Process and Procedure

Technology and Infrastructure

Financial and Contractual

Acceptance and Sign-off

A globally managed, regionally planned and implemented transition, using ASEs* for speed, accuracy and commitment

Knowledge Acquisition Methodology and Automated Tools are used to identify, organize, absorb and implement applications portfolio information with the lowest risk of business impact

Planning	Inventory & Design	Customization & Acquisition	Execution	Readiness Assessment

Technology Portfolio Analysis / **Knowledge-to-Role Mapping**

Document Knowledge
Document Collection, Review & Enhancement

Less Documented or Implicit Process Knowledge
Interviews
Technology Familiarization/Intelligence
Problem Log Analysis
Work Shadowing — Rev Work Shadowing
Remote Cross-Training

Training
Skill Gap Analysis
Training

Readiness Test + Cutover

Continuous Improvement / Ongoing Knowledge Transfer

Enabling Tools
Knowledge Transfer Process Management
Live Meeting   Classroom   Video   Deck-based Mentoring   Shadowing   Re-presentation

* Capgemini's Accelerated Solutions Environment (ASE) combines world-class facilitation teams, patented, decision-making processes, global knowledge bases and innovative workspaces to enable organizations to make better and faster business decisions.

Source: Capgemini

The entire transition phase comprises three stages:

Pre-Transition. There are certain pre-transition activities that are critical before actually going through the transition of any system. The basic objective of these pre-transition activities is to study the complete application portfolio and transition readiness. These activities are as follows:

• Determining a transition index for each application based on key parameters like application age, business criticality, volatility, past incidents, size, stability and number of planned releases in a year.
• Transition planning where applications should be grouped into waves on the basis of duration of transition, business criticality, business/functional areas, technology and region.
• Identifying knowledge objects and resource planning for each application.
• Forming transition teams to cover four core areas: applications, domain, systems and processes.
• Creating a questionnaire of standard items that can be surveyed for an application.
• Conveying sign-off criteria and service-level agreements (SLAs) to the entire transition team.

Knowledge Transfer. A detailed knowledge acquisition plan, knowledge acquisition and knowledge retention should be performed during the knowledge transfer phase. This includes the following activities:

- Creating and maintaining a master transition plan at the engagement level with a list of all applications, planned start date, planned end date and status.
- Creating a detailed transition plan for each application.
- A transition plan review against a transition checklist to determine the completeness of transition planning.
- Setting an expected level of knowledge to be acquired for each knowledge item in agreement with the company.
- Ensuring the availability of a subject matter specialist at the company during transition.
- Transition activities that will be carried out.

Post-Transition. After the knowledge transfer phase is complete, an assessment of acquired knowledge and transition sign-off is performed, including the following activities:

- Presenting an application overview document for each application to the company.
- Company assessment of the acquired knowledge level based on the presentation.
- Measuring acquired knowledge against the expected knowledge level that was set.
- Addressing gaps, if any, by having additional sessions, workshops or assignments.
- Transition sign-off happens once the expected knowledge levels are met.

Maintenance: Supporting the Applications

Our maintenance methodology is a result of learnings from various engagements, our conscious effort to innovate and incorporate leading practices into our processes, and our drive for continual improvement. The maintenance phase consists of the following stages:

Corrective and Adaptive Maintenance. After cutover the corrective and adaptive maintenance of the systems begins:
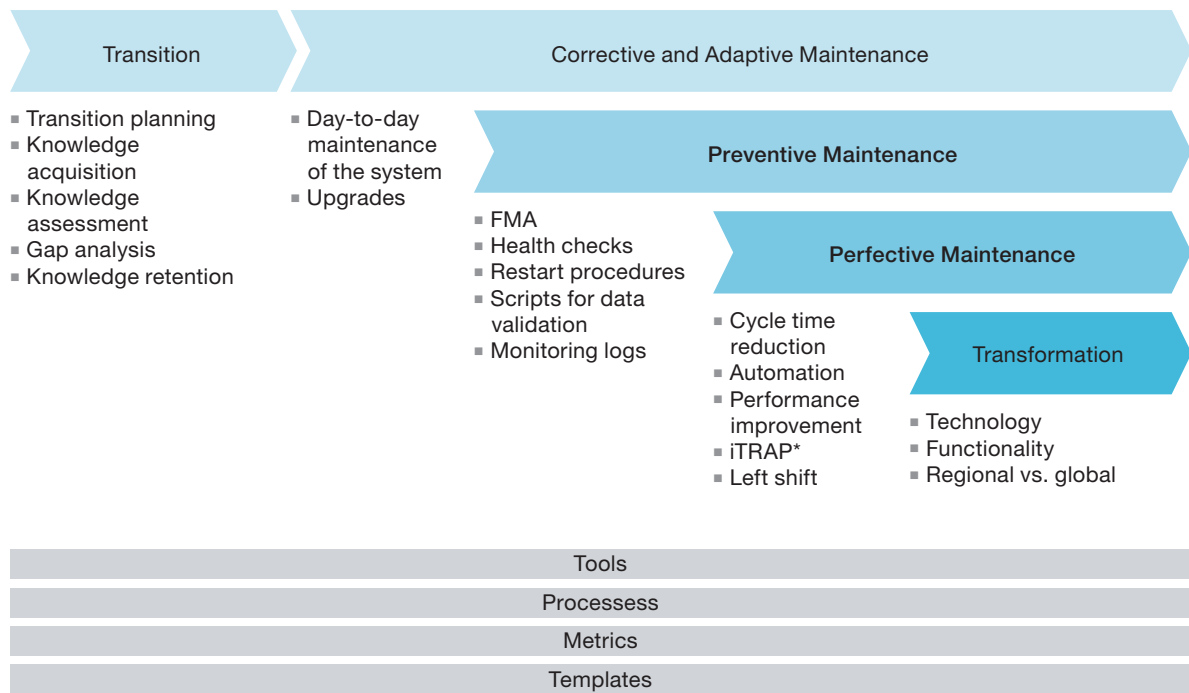
- Day-to-day maintenance improves the reliability, readiness and application availability for the user.
- Installation of patches and regular upgrades helps ensure continual support by other vendors and security compliance.

Preventive Maintenance. High availability of the applications is essential. To achieve this objective, we have proven practices in place that have been used in existing engagements and fine-tuned. These practices include:

- Failure Mode and Effect Analysis (FMA) is done to examine potential failures across applications. This assists in risk analysis and in determining corrective and preventive measures.
- An Automated Health Check Tool helps ensure that the application functions as expected during critical business hours.
- An External Data Verification and Correction Tool is used to verify data coming from external systems. This tool facilitates identification of incorrect data based on configurable rules.
- Automated Batch Job Monitoring helps ensure that the interfaces are executed effectively as per schedule and any errors are analyzed and resolved without impacting the users.

• User guides and FAQ documents are posted on the applications to help online application users.

• Automatic identification of sequence numbers nearing overflows and allowing users to set configurable thresholds increases the downtime for applications due to such errors.

Maintenance Methodology

Transition	Corrective and Adaptive Maintenance
▪ Transition planning ▪ Knowledge acquisition ▪ Knowledge assessment ▪ Gap analysis ▪ Knowledge retention	▪ Day-to-day maintenance of the system ▪ Upgrades

Preventive Maintenance

▪ FMA
▪ Health checks
▪ Restart procedures
▪ Scripts for data validation
▪ Monitoring logs

Perfective Maintenance

▪ Cycle time reduction
▪ Automation
▪ Performance improvement
▪ iTRAP*
▪ Left shift

Transformation

▪ Technology
▪ Functionality
▪ Regional vs. global

Tools
Processess
Metrics
Templates

* *Documentation process for Information Transfer Recovery and Application Portability*

Source: Capgemini

Perfective Maintenance. After stabilization of the application maintenance, the application should be analyzed to identify opportunities for improvement. The improvement strategies should be discussed and implemented. Some of the key perfective maintenance activities are as follows:

• Batch cycle time reduction. Business-critical batch jobs can be identified and analyzed to reduce run time and increase reliability. A number of strategies can be used, including reorganizing jobs, automation, query optimization, multithreading, building new indexes/re-indexing, redesigning/rewriting critical components and optimizing application/database server configuration.

• Automation of data change requests enables users to resolve recurring data change requests, which reduces service request resolution time.

• Redesigning/rewriting critical components optimizes performance and reduces the wait time for users.

• Identifying and fixing memory leaks improves the reliability, readiness and application availability to the user.

• Providing application-level services like periodic application health checks, periodic batch job monitoring, level 1 and 2 support, fixing recurring tickets, B2C site-scope monitoring.

• Providing engagement-level services like monitoring knowledge database, documenting leading practices, monitoring service-level agreement compliance.

Transformation: Rationalizing Applications to Increase Savings

There are many possible ways of approaching transformation. Based on our experience with transformation projects in the manufacturing industry, where most companies struggle with too many applications, often bespoke, Capgemini has found that the most successful model is to work on an application rationalization framework in the first instance.

Clearly a company can start either with the future vision and work back, or with the current state and work forward. Inevitably companies may end up doing a mixture of both approaches, but we have found that the biggest benefits can come from more pragmatic early steps. This is particularly true in the manufacturing industry because of the complexity of the industry and the applications landscapes, the bespoke nature of most of the applications, and the large number of stakeholders who need to be aligned. Once some initial early wins have been scored on the "low-hanging fruit," it is easier to get stakeholder buy-in for further transformation work, which involves more business process alignment, and a move to more homogeneous (global) models.

Transformation Approach Focuses on Application Rationalization

Transformation Goal — Rationalize the number of applications to increase cost savings, improve application effectiveness, and enhance company's ability to act as one company in Sales and Marketing.

	Geographic Scope				Approach
	North America	**Europe**	**Asia Pacific**	**South America**	
Level 1 Technology	●	●	●	●	Confirm candidate applications → Develop criteria & assess Impact → Classify & prioritize → Secure approval & budget → Implement changes
Level 2 Regionalization	●	●	●	●	Identify candidate processes → Identify applications & overlap → Determine criteria & impact → Classify & prioritize → Secure approval & budget → Commence changes
Level 3 Clustering	●	●	●	●	Identify candidate processes → Identify applications & overlap → Determine criteria & impact → Classify & prioritize across region → Secure approval & budget → Commence changes
		●	●		
Level 4 Globalization	●	●	●	●	Identify candidate processes → Identify applications & overlap → Determine criteria & impact → Classify & prioritize globally → Secure approval & budget → Commence changes

Sample example from a manufacturing AM transformation

Source: Capgemini

This transformation can be divided into four levels:

Technology: Transformation based on technology will reduce the number of operating systems and application versions. This will reduce technical support through:

- Reduction in FTEs required to support multiple technology versions
- Simplified and reduced licensing
- Simplified upgrade and maintenance
- Reduced server requirements

Regionalization: Transformation based on regionalization will reduce the number of applications by combining applications with similar functionality on a per region basis. This will reduce maintenance cost through:

- Reduction in FTEs required for reduced application portfolio
- Reduction in the number of required application changes

Clustering: Transformation based on clustering will reduce the number of applications by combining applications focused on shared business processes across two or more regions. This will reduce operating costs and operational complexity through:

- Shared business processes
- Regional leveraging of leading practices
- Common application services

Globalization: Transformation based on globalization will reduce the number of applications by combining applications focused on global common business processes. This will reduce operating costs and operational complexity through:

- Common global business processes
- Global leveraging of leading practices

Transformation will rationalize the number of applications to increase cost savings and improve application effectiveness. Sometimes it is even worth retiring applications where the current cost of maintenance appears negligible, as no matter how low this maintenance cost, there is nevertheless an ongoing burden of complexity, which itself carries a hidden cost.

Throughout this transformation program, companies must never lose sight of the fact that this is a major change program, and ensure that important side tasks such as stakeholder alignment, communication of success and booster programs are managed.

Of course there are other approaches to transformation, and Capgemini has a suite of tools such as Application Modernization, Application Portfolio Strategy and Application Management Maturity Modeling.

Lessons Learned From Application Outsourcing in Manufacturing Industries

Transition: Manage Incumbents, Plan Knowledge Transfer

Based on our experience, key lessons learned regarding the transition phase range from managing incumbents to planning knowledge transfer to creation of development/test environments. Let's look more closely at these learnings.

Plan transition around the manufacturing calendar. Avoid month-ends, quarter-ends and major new product introductions. Include annual events in the transition plan where possible (for example, year-end cycle) and plan national events.

Managing incumbents. Anticipate that there will be subject matter specialists who will be less than cooperative especially if they are from third-party suppliers that are exiting the account. To minimize the impact of this kind of situation, the knowledge transfer should be made as quickly as possible and early access gained to the subject matter specialists. Finally, it's important to manage the "tail." We often find that clients have a far longer tail of suppliers that are subcontracted to manage smaller applications in more remote geographies, and knowledge transfer from these smaller companies can be very challenging, especially close to contract termination. Being aware of this long tail and managing it effectively early in the transition process is key.

Understand the limited management layers in national sales companies (NSCs). Often the NSC will have an IT manager and a flat organization below this. It is important to avoid too many meetings with travel; use videoconferencing and other options whenever possible.

Work on business process mapping as well as standard applications transition. Understanding downstream consequences of upstream service issues is a key to success. Look especially at areas such as EDI and barcoding where a lot of IT service problems surface due to inconsistent business processes between plants.

Managing reporting/SLAs. Limit the number of SLAs. At one OEM, each organizational area had its own ideas about how to rank application criticality, how to measure success and what SLAs were needed. Be prepared for pushback from different areas within the IT and user community as reports are tested. The discussions will be time consuming at best and will result in change requests that must be managed appropriately and centrally. Be careful about promising reports or measures without a central review/approval of the request.

Planning knowledge transfer. Detailed knowledge transfer plans are a plus. Having ticket history allows the teams to focus on critical information and can help manage resistance from subject matter specialists. Without good ticket examples, the team is mostly reliant on these specialists to both prioritize what is important and then to deliver the knowledge. Use collaborative tools and methodologies such as Capgemini's Accelerated Solutions Environment (ASE) for key transition planning, but limit the number of participants to a minimum to ensure the best results.

In-flight projects. We recommend against transferring any in-flight project. Sometimes, we have assumed responsibility after requirements, design or a clear specified quality gate. But this was achieved after a detailed understanding of the as-is situation and the expected/agreed-upon deliverable by both Capgemini and the incumbent. The general rule that we advise is: "Be wary of incumbent developers who want to transition in-flight projects."

Mainframe. A clear and detailed RACI (Responsible, Accountable, Consulted and Informed) system is very important and should include areas such as logical versus physical DBA (doing business as) roles, moves to production, security administration, etc.

Asset management. Very few companies or incumbent suppliers are able to articulate what they own, what licenses are outstanding, what the service contracts are, or, in some cases, what version they are running. Companies should assume that data capture will be difficult.

Refresh responsibility. Often infrastructure management (IM) hosting vendors do frequent refreshes and upgrades. The burden of testing and maintenance after these refreshes and upgrades falls on AM teams, causing a greater workload than was anticipated.

Recruiting. A recruiting plan at the individual position and name level is critical and must be managed centrally, particularly for sites such as India and Poland, with weekly calls regarding progress and changes.

Subcontractors. Capgemini often subcontracts incumbents to provide support from subject matter specialists on critical applications until knowledge transfer is complete and the service is sufficiently stable to continue. Such incumbents are monitored closely for knowledge capture and verification.

Creation of development/test environments. The effort and the impact of handling old, out-of-date, no-longer-supported software is, by and large, much greater than anticipated. Building development/test environments from scratch is much more challenging. Even when doing image transfers, companies should anticipate and plan for extensive application testing to ensure everything is working correctly.

Maintenance: Where Opportunity Areas Exist
The opportunities and lessons learned in the maintenance phase vary depending on the area of the business.

In *Portals,* there is a significant opportunity to reduce the number of applications, as 70% of the functionality is the same across the globe, and there are normally different portals for each country, product line, campaign, business process, etc.

In *Order Management,* a large number of high-severity tickets come from issues with product configuration. It is easy to underestimate the workload involved in managing changes in this area.

In *Sales Management,* a large percentage of front-end systems such as product registration applications are common and can be standardized into a single core application.

In *Parts Order Management* the retail inventory systems should be upgraded to the latest technology with the latest hardware configuration to cater to the increasing market demand.

In *Sales and Marketing Management,* the business user volume for sales reporting and marketing applications is increasing rapidly. Revisit the process every six months to identify the reports that are most demanded and viewed, and eliminate those that are obsolete.

Transformation: Finding Significant Business Improvements

The most important thing to remember about the transformation phase is that it's difficult! Initiatives often do not progress as fast as everyone would like: The IT department doesn't want to risk upsetting the business; the business often sees (gets) very little benefit (especially in the initial stages of applications rationalization, cost reduction and staff centralization offshore); and the supplier is financially incented to keep the applications list as long as possible. When initiatives do get under way, they are often watered down and reduced in scope, leaving minimal benefits all around.

However, the rewards are significant. The application rationalization approach helps identify and map best-in-class business processes, and this business process knowledge helps improve the AM service. When people can get focused on a common application with a common business process, they can change the process and make significant business improvements.

We have found that the best small transformation ideas tend to come from the delivery group. It may take a few months after transition, but once the new team has broken the back of day-to-day maintenance, they can often see new opportunities to change the applications landscape. This is especially true when the delivery team is centralized in one location, and they can feed off each other and build a sense of internal competition.

On the other hand, we find that the best large transformation ideas typically come from other clients. If we are looking to significantly change the way a process works, or the way applications work together, we need a different mindset: people who understand the manufacturing industry and have worked in the same process area with other clients, and can compare and contrast different ways of working. It's also good to share ideas among different delivery teams, both inside the industry and with other non-manufacturing AM clients.

Tools like Capgemini's Accelerated Solutions Environment (ASE) are an important element in the transformation phase. The ASE is an ideal setting for complex problem-solving among people who are not necessarily working on exactly the same agenda. This is particularly relevant for the manufacturing industry due to the fact that there are often different stakeholder models in place in different markets. Not only does the ASE help solve complex problems, it does it in an extremely fast timeframe, thereby typically reducing the overall change program time by several weeks or months.

Our experience also tells us that sometimes transformation has to be forced. Change is tough, not many people want to do it, and there are always good reasons for not changing.

Contractual tools can help, but at the same time they can be complicated. We have experienced contracts where transformation is rewarded, and a lack of it is penalized, but these are very difficult to manage, and often end up being counter-productive.

Conclusion: Extending the Benefits of Manufacturing Application Outsourcing

Successful application outsourcing benefits extend beyond the opportunities and savings that come directly from the phased approach presented in this whitepaper. Additional broader business improvements can be realized by manufacturing companies in the areas of more effective process, vendor collaboration and improvement initiatives.

Effective Process
Good incident and escalation management can produce significant benefits in terms of reduced application downtime, improved IT image and therefore higher satisfaction. In addition, significant training and investment upfront in the area of business process mapping pays dividends later in the process of applications management.

Improvements in the transition management process results in far fewer people needing to travel on-site for knowledge transition. Ten percent traveling is now a good rule of thumb.

Vendor Collaboration
Lots of processes and techniques in major incident management can be documented and used as a standard procedure across different vendors, with significant benefits in terms of faster resolution, less confusion and greater confidence. Capgemini's Playbook[1] is effective in a multivendor collaborative environment in reducing the incident turnaround time resulting in early and effective resolution of the incident.

From our delivery experience on various multisourcing engagements, we have found that ticket resolution across vendors actually takes less time, whereas people often think the opposite is true. As long as roles and responsibilities are clear, having different company expertise attacking a problem is extremely helpful.

Improvement Initiatives
Investment in tools and automation at the beginning of an assignment pays substantial returns. For example, tools that we have built for various processes such as ticket management and tracking minor enhancements have significantly increased the effectiveness of our application outsourcing work with clients.

In addition, there is significant opportunity to automate change and release management. We have found that 80% of these processes tend to be manual, which results in increased failure and wasted effort.

Finally, companies can realize significant benefits from moving towards lean IT by means of Failure Mode Analysis, Perfective Maintenance and cross-skilling staff in multiple technologies/applications for effective utilization of resource capacity.

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[1] Playbook is a comprehensive guide for quick and effective coordination in the event of high-severity incidents. It contains up-to-date information for every vendor responsible for the application along with the list of basic activities/steps that should be performed based on their type and level of support before opening an MML (Man-Machine Language) link. It captures event details during the incident in consistent format across vendors and aids effective root-cause analysis.

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More information is available at **www.capgemini.com**

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