

NPI VELOCITY IN DISCRETE MANUFACTURING: THE HIDDEN COST OF LATE PRODUCTS

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Report Highlights

P2

New products are the lifeblood for most companies, in particular, discrete manufacturing, where almost half of their total revenue comes from new products (44%).

P4

Products that are released on-time resulted in lowered overall costs, higher revenue and 72% higher profit margins.

P7

The PPM approach that the Leaders bring to product development emphasizes automation, risk mitigation, and visibility (internal AND external).

P11

Discrete Leaders have seen almost double the increase in ROI and 18% more of their projects reach the expected ROI since they have implemented their PPM solution.

This report will explore the New Product Introduction (NPI) process among discrete manufacturers. Specifically, the importance of hitting time to market goals on new products, and how companies can achieve this by getting control over their Project Portfolio Management (PPM) process.

2

Discrete Manufacturers indicated that 44% of their total revenue comes from new products.

Bringing new products to market today is a complex endeavor. Customers are demanding that their products be feature-rich, sold at a low cost, and reliable. Global competition and volatile markets are creating a challenging business climate for discrete manufacturers which leaves them with little room for error when managing these projects. Compounding the issue is the need for companies to be first to market, especially in discrete industries like automotive or high tech where the voice of the customer is becoming the number one priority. Projects that do not hit product launch dates run the risk of failing to realize their full value. Companies need to take a holistic approach to the New Product Introduction (NPI) process to reduce risk in the business and be successful.

Based on the experiences of over 175 respondents, this report will explore the NPI phase among discrete manufacturers. Specifically, the importance of hitting time to market goals on new products and how companies can achieve this by getting control over their Project Portfolio Management (PPM) process.

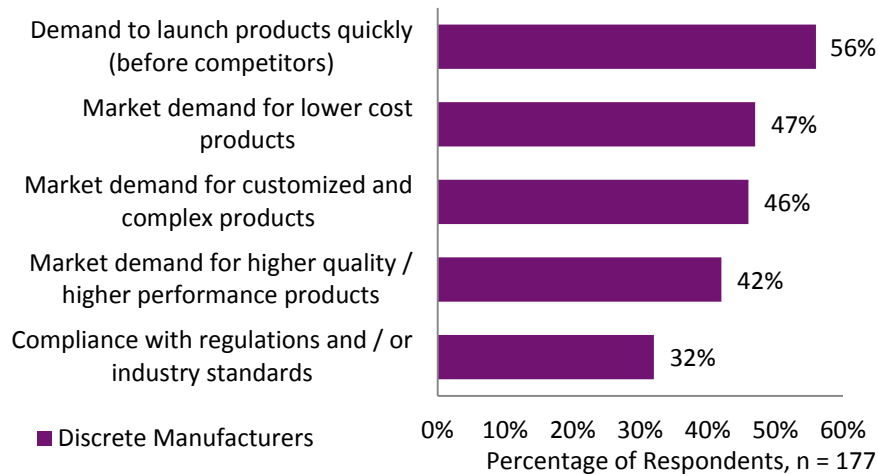
The Importance of New Products for Discrete Manufacturers

New products are the lifeblood for most companies, in particular, discrete manufacturing, where almost half of their total revenue comes from new products (44%). However, with the complexities in today's business environment, organizations in discrete industries face many challenges that have a direct impact on the ability to create innovative and unique offerings to the marketplace. Increased product complexity, changing consumer demands, market globalization, extended supply chains and design networks, and regulatory compliance are all concerns that affect product development. Even with all of these challenges, the number one driver to improve the NPI process among discrete manufacturers is still clearly time to market (Figure 1).

Sector Definition

For the purposes of this report, respondents who indicated that they operated within the **discrete manufacturing** space (which includes aerospace and defense, automotive, industrial equipment manufacturers, medical device, high tech, etc.) were isolated and aggregated for comparison against their peers in Aberdeen Group's performance framework.

3

Figure 1: Top Pressures to Improve NPI - Time is Crucial

While both cost and quality come in high, launching products before competitors has always been a top focus for manufacturers. In fact, *every year for the past five years*, time has been the number one pressure identified by companies surveyed looking to develop more successful products. To improve time to market performance, a company must first realize where issues are most likely to occur, for discrete manufacturers, it all starts with requirements (see sidebar).

Defining the right requirements is critical to a successful project. Missing on requirements will render a project unsuitable to the market unless there is costly rework conducted which delays product launches and ultimately impacts profitability. As we will see, successful companies do a much better job of defining requirements upfront –setting their projects up for success. Changes are bound to occur over the lifecycle of bringing a product to market, it is almost inevitable. These changes, if not properly managed, can wreak havoc on project timelines. It is not a surprise to see 36% of respondents identify change management as a top challenge.

Top Reasons a Project Performs Poorly

Discrete respondents were asked to select the top two reasons that a project performed poorly. Poor performance is defined as late, over budget, or doesn't meet requirements:

- Poorly defined requirements - 48%
- Changes introduced after start of project - 36%
- Poor supplier performance - 23%
- Projects not adequately staffed - 23%
- Time spent waiting for decisions - 22%
- Lack of defined ownership - 16%

4

Key Definitions

New Product Introduction (NPI):

In engineering, NPI refers to the complete process (from design to delivery) of bringing a new product to market.

Project Portfolio Management

(PPM): A business process to manage the mix and execution of products and ideas the company is considering bringing to market or has already brought to market. The objective is to determine the optimal mix and sequencing of proposed projects to best achieve organizational goals - while honoring constraints imposed by management or external real-world factors.

Another consideration, especially among discrete manufacturers, is the management of suppliers. All of these pressures can be difficult to manage if not attacked properly, and as a result, throw projects off track.

There can be very severe consequences to late delivery of a product. For example, with an automotive manufacturer, there is aftermarket business (like dealer sales and services) that will be lost, resulting in the product failing to realize its full value. When examining the product performance for those that are delivered on time, versus those that are not, the importance of capturing market share stands out (Table 1).

Table 1: What does a Late Product Really Cost?

Product Performance	On-time Products	Late Products
Expected revenue targets hit	79%	62%
<i>Decrease</i> in product cost	5.7%	1%
<i>Increase</i> in product revenue	11.2%	8.3%
Profit margins	9.1%	5.3%

Source: Aberdeen Group, June 2014

Products that are released on-time resulted in lowered overall costs, higher revenue and *72% higher profit margins*. While the exact numbers can vary depending on the type of product or project, one thing is clear; there is a lost opportunity when delivery dates are not met. So the question needs to be asked, how can a discrete manufacturer ensure their products are on-time?

Defining Leaders Among Discrete Manufacturers

Aberdeen used four key performance criteria to distinguish the discrete Leaders from Follower organizations (Table 1).

Aberdeen used metrics that measure an organization's ability to

5

respond to pressures driving improved efficiency, customer sensitivity, and product profitability. Table 2 summarizes the criteria used to define the Best-in-Class and the respective performance of each maturity class. The metrics used to define Best-in-Class companies reflect success with addressing the top business pressures of time, cost, and profitability

Table 2: Top Performers Earn Leader Status

Definition of Maturity Class	Mean Class Performance
Discrete Leaders: Top 30% of Discrete aggregate performance scorers	89% of projects delivered on-time or early 91% of projects are delivered within budget 28% increase in project profitability over the past year 10% increase in project length when a project is late
Discrete Followers: Bottom 70% of Discrete aggregate performance scorers	59% of projects delivered on-time or early 73% of projects are delivered within budget 9% increase in project profitability over the past year 23% increase in project length when a project is late
All Discrete Manufacturing: aggregate performance scorers for all discrete companies	66% of projects delivered on-time or early 78% of projects are delivered within budget 15% increase in project profitability over the past year 21% increase in project length when a project is late

Source: Aberdeen Group, June 2014

Clearly, the discrete Leaders are doing something right – over 90% of their projects are delivered within budget with 89% on schedule or early. The discrete Followers cannot say the same, and what is alarming to see, for those projects that are late, there is a 23% increase in project length. The effects of this performance is reflected in the profitability these groups see, as the Leaders have seen over three times the increase in profitability when compared to their peers.

What Separates the Leaders?

Many organizations—Leaders as well as their competitors—seek to define ownership for PPM processes and align their portfolio

6

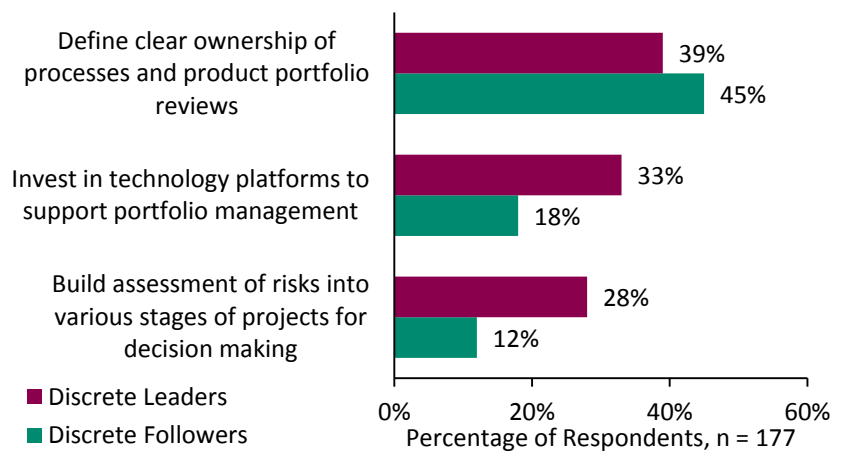
“We recently implemented a Decision Gate process. This has resulted in the ability for us to map our products to defined user requirements. By doing this kind of mapping upfront, it has ensured greater customer satisfaction. The main challenge has been implementation of a process for researchers to give up ownership and transition products to advanced developers.

~Project Engineer Medical Device Company

Discrete Followers are over two times more likely than Leaders to manage their PPM and NPI processes through spreadsheets.

to customer demands. While these strategies are important to effective PPM processes, they are not what set the Leaders apart from their peers. Instead, the critical difference is how the Best-in-Class support these strategies by focusing on risk and supporting it with the proper technology (Figure 2).

Figure 2: Top Actions of Discrete Leaders



There are a number of advantages to combining risk assessments and a gated approach for product development. The primary benefit is the ability to identify problems and assess performance as a project progresses through its phases (discovery, scoping, development, testing, launch). This ensures that projects stay on track and meet projected targets. A gated approach can also incorporate financial information around costs, budgets, or burn rates to provide the needed information to determine the feasibility of potential product ideas.

The implementation of support technology can improve the efficiency of PPM as it would any other business process. These tools automate PPM tasks and make critical information available to improve stakeholder decision making. Trying to manage all of the moving parts of new product introduction through a manual processes like spreadsheets is just unfeasible, which shows itself among Followers (see sidebar). While the

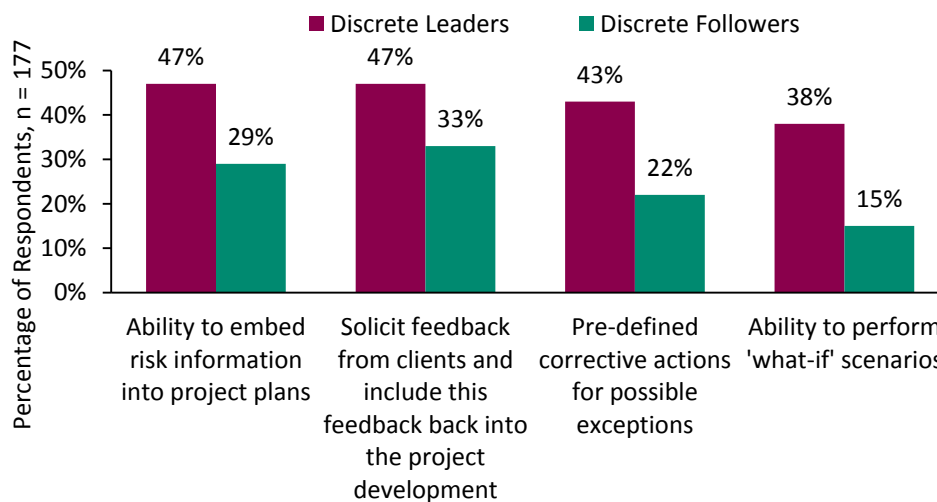
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adoption rate of these two actions is low among all discrete manufacturers, it is telling that Leaders are looking to expand their capabilities in these areas.

Getting Control over NPI and PPM Processes

As was seen earlier, half of all poorly performing projects can be traced back to matching customer expectations. You need to set your projects up for success (Figure 3). Discrete Leaders realize the importance of this first step, and as a result, solicit customer feedback early in the process and deliver it back to development. Obtaining customer feedback in the PPM process permits the Leaders to identify the product ideas in demand or use their feedback to improve on products so that they will drive demand. Regular feedback from customers throughout the development process ensures that the product continues to develop in step with demand, making it easier to ensure the final product will meet customer needs.

Figure 3: Preparing for the Unforeseen



We know that dealing with change mid-project is the next most likely roadblock to be encountered, because of this, you see the Leaders

Fast Fact

When compared to older products, new products from my company (All Respondents):

- Have higher profit margins - 43%
- Have the same profit margins - 15%
- Have lower profit margins - 6%
- Don't know - 35%

8

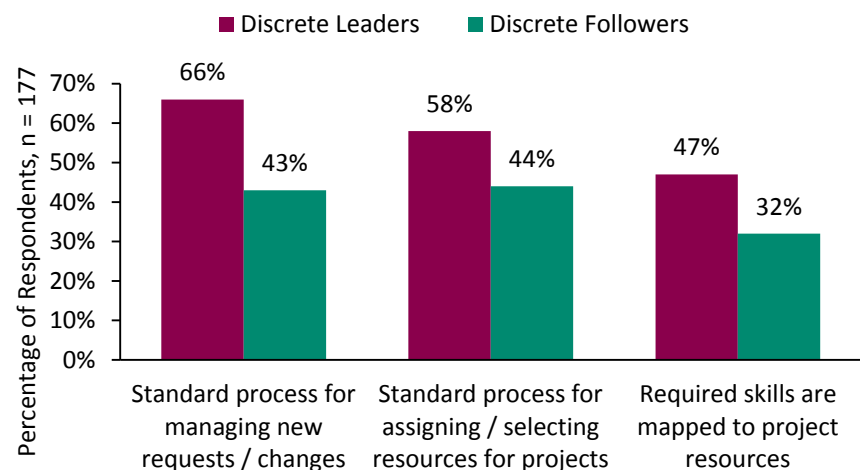
“We have improved the discipline of execution. Plans and intentions are great, but the real difference is made in execution. The challenge there of course is to get everybody - that is: including (senior) managers - to behave in a disciplined manner, even when operational pressures mount.”

~ Product Development /
Engineering Manager,
Small A&D Company

focused on aiding decision makers in the event of a change. "What-if" scenarios allow decision makers to see how any changes will impact (positively or negatively) budget and schedule progress. Only 15% of Followers have the ability to conduct these "what if" scenarios, leaving them fixed in following out their plans as scheduled, even if it is not the most optimal. In addition, Leaders are 62% more likely than their competitors to embed risk information into their project plans. This allows a company to be more capable of reacting to unforeseen problems, like a change in requirements, supplier issues, material revisions, etc. Tools like "what-if" scenarios with embedded risk information are what Leaders turn to in order to prepare for the unforeseen. They are powerful capabilities for discrete manufacturers, especially those focused on new product introduction, and lay the foundation for success.

Now that the groundwork for a successful project has been laid, the next step is developing a plan, optimizing it, and then executing. With the lack of resources being experienced throughout companies today, utilizing what is available becomes even more important to the execution of projects (Figure 4).

Figure 4: Aligning and Optimizing Resources



Source: Aberdeen Group, June 2014

9

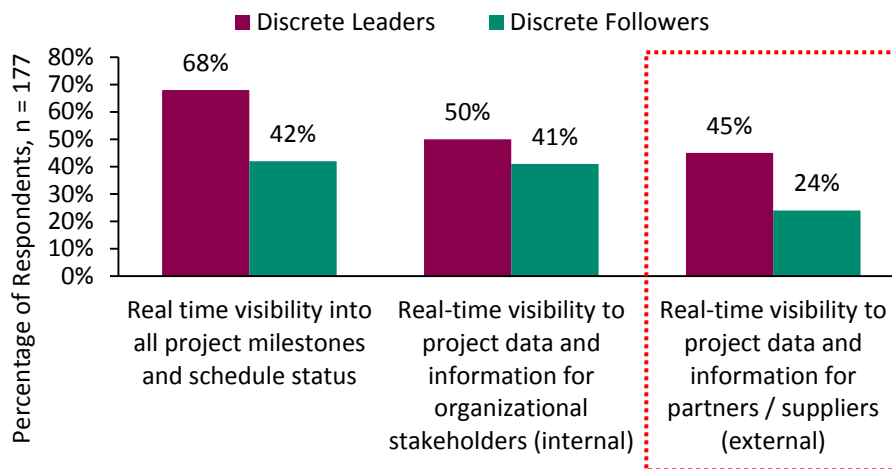
Discrete Leaders overcome their resource challenges by providing managers with visibility into not only the resource workload across all projects, but also the proper skill sets of the people needed. Half the battle of resourcing a project is getting the *right* skillsets to work on the project and ensuring that these resources have the time to work on the project. With the huge impact that time to market can have on a product's success, it is no surprise to see Leaders focus so much more on this area. It is because of these resource allocation capabilities that Leaders are able to deliver 89% of their projects on time or early.

Bringing a product to market is a long and fluid process. Delays and unforeseen incidents are bound to occur—no matter how much planning an organization conducts. Discrete manufacturers need to be able to adapt on the fly and "re-optimize" based on any deviations. This is why Leaders stress the importance of having real time visibility (Figure 5).

"The most beneficial thing our organization has done when it comes to PPM has been migrating from a shared file server for documents to a collaborative platform environment tailored for project management. In doing so, we have been able to ensure that everyone is working on the latest version of the data and it enables greater collaboration across the organization."

~ Project Manager, Medium High Tech Manufacturer

Figure 5: Real Time Visibility to Aid Decision Makers



Source: Aberdeen Group, June 2014

Limiting access to project data to only select project members and project managers limits the ability of the business to respond cohesively to any challenges that may arise. Providing

10

The Challenge of Managing Suppliers

Discrete respondents were asked to select the top two challenges they face when working with suppliers:

Lack of visibility to supplier's manufacturing capabilities:

- **31%** of respondents

Meeting project schedules:

- **28%** of respondents

Lack of visibility to supplier's capacity:

- **25%** of respondents

Risk management / mitigation:

- **17%** of respondents

access to project data to all stakeholders at every level in the organization will enable better project decision making, which is needed to contain costs and hit milestones.

Most discrete manufacturers today depend on a global network of suppliers to bring new products to market. However, this outsourcing brings its own challenges that must be managed effectively (see sidebar). The customer / supplier relationship can be one that varies greatly between companies. For Followers, they are seen as necessary speed bumps– third parties that can potentially derail the launch of a new product with one nonconforming or late shipment. For Leaders, they are viewed as strategic partners, key contributors to NPI and capturing maximum market share. Discrete Leaders accomplish this partnership by stressing external visibility (46% of Leaders vs. 24% of Followers) so that all of their partners, contractors, and suppliers have access to the information that they need and are kept in the loop.

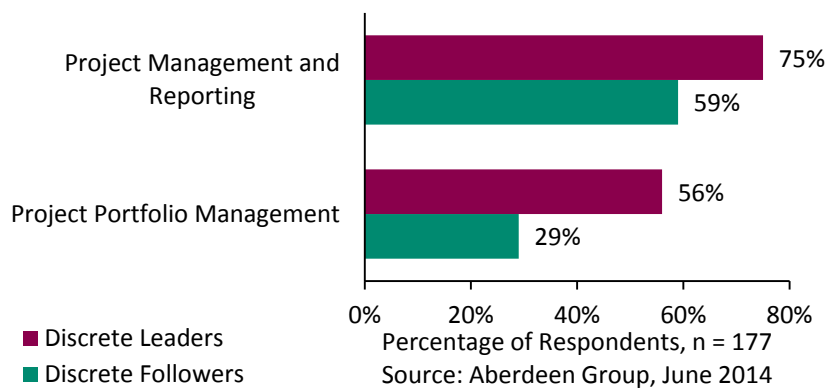
This is a win-win for all parties. Leaders are able to better allocate their own internal resources while the partners find the Leaders easier to work with, encouraging lower bids and future business. Followers, on the other hand, get bogged down by trying to enforce penalties or fines on their suppliers, tarnishing what could have turned into a mutually beneficial relationship. This real-time visibility that Leaders possess allows them to look forward and respond to problems before they become issues throughout the project's lifecycle. The Followers rely solely on reacting to problems as they arise, which has a severe impact on the cost and time targets for their projects. It is this visibility that separates the Leaders from the Followers and allows them to hit their product delivery goals.

11

The Importance of Having the Right Tools

All of the capabilities listed in the previous section are critical to getting control over the process, but what enables the Leaders to have these capabilities? The answer reveals itself when examining the enterprise-level solutions that companies are investing in (Figure 6).

Figure 6: Automating the PPM Process



Effectively addressing these needs requires a streamlined and automated PPM process that may be easily adaptable to changing requirements. Organizations relying on manual, labor-intensive processes are less likely to have the right visibility and flexibility to make the right decisions about which products should be in the portfolio. These solutions normally include automated reporting tools, such as dashboards, to make pertinent information available to relevant stakeholders. As a result, these tools facilitate the comprehensive analysis incorporating tradeoffs, resource constraints, and past and potential performance that epitomizes Leading portfolio decisions. The breadth of information considered by Leaders when selecting projects permits them to reliably review the value and liabilities of each development project and make the appropriate decisions. The numbers speak for themselves (see sidebar), Leaders have seen almost double the increase in ROI

"One of the most beneficial things we did when it came to PPM was that we implemented a consolidated operation reporting system which provided a dashboard for real time status of on-going and incoming projects as well as stock inventory status. In addition, we implemented a regular program for soliciting customer feedback regarding the project and service satisfaction levels. We then used this information to further improve both our services and products."

~President, Large Automotive OEM

Discrete Leaders are 51% more likely than Followers to have their Product Lifecycle Management (PLM) solution integrated with the Project Portfolio Management (PPM) solution.

12

How has your PPM solution improved the business?

Change in ROI on projects since implementing PPM solution:

- **Leaders - 14% increase**
- **Followers - 8% increase**

Percentage of projects that bring in expected ROI since implementing PPM solution:

- **Leaders - 74% of projects**
- **Followers - 56% of projects**

and 18% more of their projects bring in the expected ROI since they have implemented their PPM solution.

Key Takeaways and Recommendations

The timely launch of a new product offers an organization's greatest opportunity for increased profitability. Improving the ability to pick a mix of products that minimize risks and best address customer demands has a tremendous impact on the financial success of the company. The PPM approach that the Leaders bring to product development emphasizes automation, risk mitigation, and visibility (internal AND external). Those discrete manufacturers looking to effectively manage their NPI and PPM processes and launch new products as intended should:

- ➔ **Avoid delays for product launches.** Products that are late to market are less profitable, plain and simple. Discrete companies must recognize this and focus on getting control over their NPI and PPM processes.
- ➔ **Identify and mitigate risks early in the NPI lifecycle.** New products see higher profit margins than older products. The more innovative the product, the greater the margin advantage. However, while more profitable, greater innovation also represents more risk. Putting in the extra work upfront pays off in the long run. Leading companies embed risk information and conduct "what-if" scenarios in the early phases of a product's development to put their project on a path for success.
- ➔ **Equip managers with the tools to plan and distribute their resources and execute the plan.** Everyone is being forced to operate while understaffed, however, discrete Leaders provide their decision makers with the tools they

13

need to better map out a projects needs to available resources.

→ **Stress the importance of real time visibility (both internally and externally) to reduce time to decision.**

Visibility is crucial for effective decision making, which is why Leaders strive for it. It also makes the company more adaptable and easier to do business with. This ability enables discrete manufacturers to keep new products on track and hit product launch dates.

→ **Invest in enterprise-level solutions to gain central insight, control, and accountability into PPM processes.**

Discrete Leaders are 93% more likely than their competitors to implement an enterprise-wide PPM solution. The added visibility and control afforded by an enterprise-level PPM tool can directly impact the profitability of projects and the businesses that rely on them for growth and profit.

For more information on this or other research topics, please visit www.aberdeen.com.

Related Research

[*The Executive's Perspective of Successful Product Development*](#); June 2014

[*What Drives Success For Best-in-Class Product Developers?*](#); May 2014

[*ERP in Discrete Manufacturing: It's Not What You Have, It's How You Use It*](#); March 2014

[*Project Management: Putting the Pieces Together*](#); March 2012

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14

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