

## Of Configurators and Configuration: Lessons From Leaders

*by Jane Barrett, Regina Denman, and Michael Burkett*

No one would pull a heavy payload with a vehicle designed for speed. Yet configurable product value chains are doing much the same thing when they focus on efficiency rather than translating market needs into plant requirements. In these businesses, configuration is as important to the quote-to-cash process as a transmission is to an engine. To better understand how these companies can become demand driven, we interviewed over 80 companies and 16 technology providers to provide insights and guidance.

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*The Bottom Line: Although configurable product value chains with mature configuration processes have a 2% margin improvement and a 500% increase in order accuracy, these processes are nascent, with most companies leaving money on the table.*

The translation of market demand into a profitable order is complex. Getting it wrong elongates the time to value and erodes the bottom line. Configuration technologies are like a transmission or a gearbox in a powertrain, translating the need of the driver into the road performance needed from the engine's power. No one would purchase a vehicle designed for speed to haul a heavy payload. In custom product businesses, however, this happens all the time, with companies often buying technologies that do not fit their needs.

This Report highlights findings from our study of more than 80 manufacturers—interviews with more than 40 organizations combined with a quantitative survey of another 40+ companies in manufacturing, technology, and telecommunications industries, all who have invested in configuration technologies. In the course of our discussions, many companies did not consider the configuration process important. In 40% of the cases, senior leadership viewed this process merely as a necessary transactional function focused on efficiency in order to cash, not realizing the impact it can have on revenue and margin. Not surprisingly, these companies still struggle with managing new product introductions, maintaining rules and data in the sales configu-

rator, and facing a lack of internal alignment among sales, product management, engineering, manufacturing, and services.

Some companies know better. Those that truly understand configuration technologies often see staggering results. Consider these insights from our interviews:

- “The configurator is our differentiator. We can go from an idea to a precise solution in minutes.”
- “Our margin improved 2% in that business. Better configuration process and tools ensures we don't miss parts and that dealers accurately quote a manufacturable product.”
- “80% of orders used to have errors. Now maybe 1% do, and we threw away our huge printed catalog.”
- “Sales went up 500% in three years with the same staff. They can now handle thousands of quotes versus hundreds each month.”
- “We convert 15% more quotes now into orders.”

## **Vendors featured in this Report**

*Access Commerce, BigMachines, Cincom, Configit, Configura, Configure One, Consona, Exalt, FPX, Oracle, SAP, Selectica, Sterling Commerce, Tacton Systems, TDCI, Technicon Interactive*

It's important to understand that technology only makes up a small part of this recipe for success. The real key is to design the process with the end goal in mind. Companies that do this best focus on sensing the opportunity and translating requirements into a profitable lifecycle. Achieving this result requires internal alignment, process discipline, and data management.

In this Report, we detail lessons from leaders and provide a summary of the software vendors serving this space, all of which sell complex configure-to-order or engineer-to-order products that create market differentiation through flexibility to provide custom offerings.

## To get the gears to mesh, start with the goal

Because most companies operate in silos, performance improvements must begin with a process redesign. To drive improvement, functions must align with designing and selling platforms that can be profitably manufactured and installed.

The goal must focus on the five moments of truth for the customer experience: desire, purchase, usage, service, and disposal (see Figure 1). Modular platforms can bridge the gap between customer delivery expectations and manufacturing cycle times. A lifecycle approach can increase revenue over the life of the application. Accurate warranty and installed product details help drive optimal usage and service. The goal should be a focus on the design of the lifecycle with service support for maximum value.

Supply chain excellence in the configurable product business begins with process. To get it right, IT must play the role of best supporting actor. This customer-facing process requires complex technologies, heavy integration, ongoing master data management (MDM), and maintenance of rules and product models. In-house developed applications are still used by 33% of companies for some or all of the configuration process, and these applications remain heavily reliant on IT support.

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## Definitions

- **Configurable products**—The process of creating or changing a product to fit the requirements of a specific customer order. Customization options include variations in dimensions, material, component parts, color, and functions. Manufacturing methods could be CTO or ETO.
- **Configure-to-order (CTO)** is a method of manufacturing that allows you, through interaction with your customer, to select a base product and configure all the variable parameters.
- **Engineer-to-order (ETO)** is a manufacturing philosophy whereby finished goods are built to unique customer specifications, requiring interaction with product development activities and tools during the configuration and/or design process.

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However, of the 18 configuration applications that are suitable for a broader set of industries, few can cater for the breadth and depth needed to support channel complexity, highly engineered products, and multi-provider solutions. As the vendor landscape changes and grows, a group of niche applications will remain.

In selecting technology, more than one configurator solution may be required to fulfill the needs of businesses or even product lines. These applications are very specific. We find in our research that 90% of large organizations deploy multiple front-end applications or extensions to meet the quotation and configuration needs of different product lines or businesses. In some cases, the applications are specific to just one product line, such as pumps or heating, ventilating, and air-conditioning (HVAC). In the words of one IT director, "Building an infrastructure to plug in and integrate multiple configurators for different needs is key."

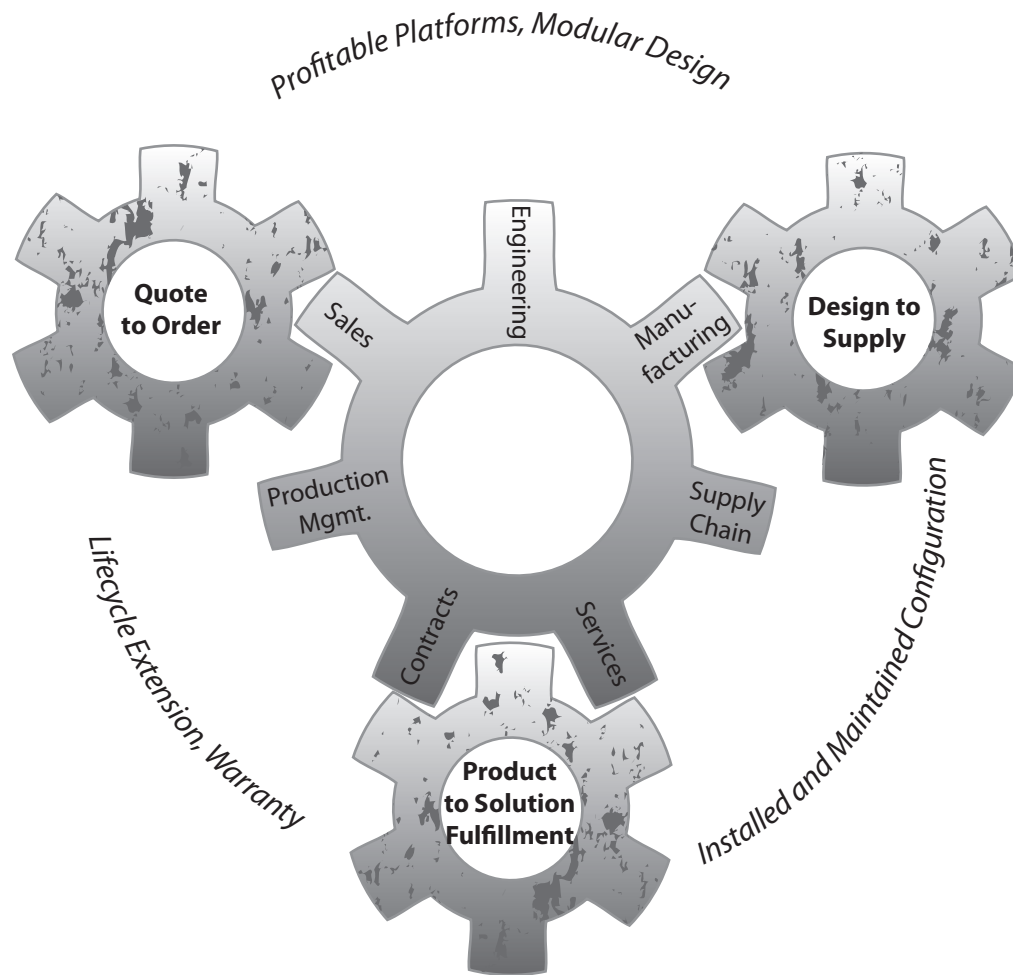
Configuration technologies are also specialized on the back end of the supply chain, in the form of services. As aftersales services are becoming a more predictable source of revenue and profit and ultimately customer loyalty, configuration engines are growing in importance in warranty and service claims.

Yet, in our interviews, only 10% of manufacturers include services or consider the lifecycle implications

in technology selection—our discussions were all about product configuration, with services quoted and sold separately.

The time has come for the product and services supply chain to integrate, and for the vendors to step up with products designed to integrate not only with CAD and manufacturing systems, but also service, warranty, and contract management.

**Figure 1:** Building end-to-end alignment and processes



Source: AMR Research, 2009

## Follow the money

While the technologies available to support configuration may be sophisticated and continually improving, money is still left on the table as companies struggle to fully deploy and maintain these enhanced tools and processes. And the demand for make-to-order configurable products continues to grow. Why the struggle? Survey results highlight the top three barriers to further deployment of tools and technology:

- **Lack of technology**—Technology does not meet the company's unique requirements, said 26% of survey respondents. A single end-to-end solution does not exist today.
- **Lack of resources**—It takes time to build and maintain the models and rules. The technologies available are sophisticated, but translation of engineering models and rules into sales language remains a challenge.
- **Cost and complexity of integration**—Managing master data across multiple systems and building seamless integration is a major task. IT is heavily involved in pulling together CRM, configurators, ERP, CAD, and PLM systems.

Look for products with proven out-of-the-box capabilities and industry-standard templates and best practices. This helps you verify their capabilities during the selection phase and accelerate the implementation. A third of our references also told us that while they liked their niche solutions features, these small vendors do not provide good user documentation or training manuals.

## Driving configuration excellence

In this post-recession economy where every dollar counts, quote-to-cash process maturity is evolving. In early stages of maturity, companies focus on getting a

sales order for a configurable product into their ERP system. The struggle here forces us to downgrade our car theme to a bicycle theme: Like a cheap bike with no gears, these companies just pedal, go and struggle with the hills.

On the other hand, leading companies are able to shift gears to drive more power and flexibility in their configuration processes. This means the ability to translate an opportunity into a profitable lifecycle where products and services can be sensed, fulfilled, monitored, and extended. Table 1 identifies trends in maturity as companies progress through four stages of being demand driven.

Bearing in mind that all the companies studied have invested in technology to support the process, our interviews showed 50% are still in stage 2, 45% in Stage 3, and only one is moving into Stage 4. Reaching Stage 4 on this journey requires a change in mindset as much as process.

But does every company need a Stage 4 vision or investment? For some, Stage 2 may be sufficient. For example, in windows and doors or networking equipment, the dealers require strong quotation, design, and visualization capabilities, often provided by the OEM, but then they place bulk orders on the OEM. The OEMs then lack visibility into what the dealers actually sold. Would visibility into ordering patterns of exactly what combinations are selling be worth the investment in tools and resources necessary? Probably. But first the Stage 4 vision needs to be defined as a strategic priority at the executive level.

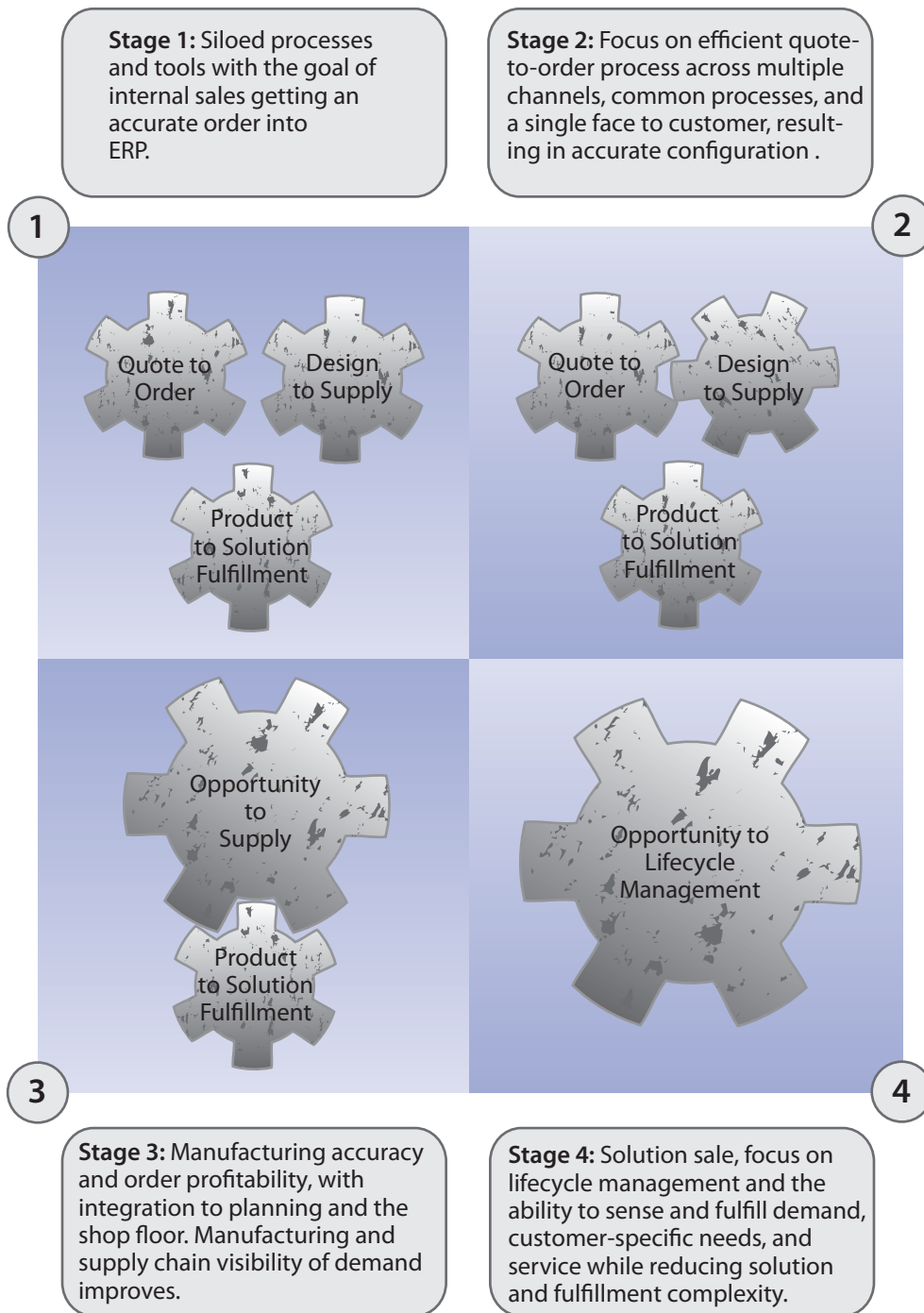
Companies are continually building out more complex solutions to add value and prevent commoditization. As they do this, they must integrate processes and align teams to pull together the needs of sales, engineering, manufacturing, and services into a total solution. The typical journey is shown in Figure 2.

**Table 1:** Demand-driven maturity model for solution configuration

	<b>Stage 1: Reacting</b>	<b>Stage 2: Anticipating</b>	<b>Stage 3: Collaborating</b>	<b>Stage 4: Orchestrating</b>
<b>Goal</b>	Generate quote and order by internal sales and customer service.	Quote-to-order integration.  Single face to customer and self-serve across channels.	Opportunity-to-build integration.  Translation of engineering rules to sales language.  Ensure manufacturability and profitability of configured product sold and integration of supply chain planning.	Opportunity-to-lifecycle management.  Maximize solution profitability, demand sensing, and complexity reduction through the lifecycle.  Compliance transformed from cost to competitive advantage.
<b>Process</b>	Quotation and order entry.  Functional silos across channels with little consistency of processes.	Quote-to-order process across channels.  Visualization and guided selling but limited internal integration of sales, marketing, and engineering.	Quote-to-manufacturing order.  Automation and integration of design, manufacturing, sales, marketing, and IT enabled through workflow.	Quote-to-solution fulfillment, including services and warranty.  Integration expanded to contracts, services, projects, procurement, and partners.
<b>Tools</b>	Disparate systems, spreadsheets, mostly ERP for order entry.	Sales configuration for quote-to-order cycle.  Multiple deployment options and integration of sales configurator, with CRM/ERP for master data.	End-to-end solution based on integrated sales and manufacturing configurator, ERP, CAD, and PLM.  Dedicated niche applications for specific needs.	Integrated solution would include predictive analytics, remote monitoring, embedded software management, contract management, and service/project management.
<b>Metrics/ Benefits</b>	Functional: Order detail accuracy and reduction in credits and chargebacks.	Customer focused: Quote lead time reduction, product configuration accuracy, customer satisfaction, shorter DSOs, process efficiency.	Accurate and profitable orders: Higher revenue and margin, manufacturing visibility of demand, and flexibility to handle variability leads to decrease in order fulfillment and new product introduction cycle time.	Solution lifecycle profitability: Revenue and margin increase.  Inventory, forecast, and installed base visibility. Contract adherence and expansion.

Source: AMR Research, 2009

**Figure 2:** Demand-driven stages in configuration



Source: AMR Research, 2009

## Getting into gear: lessons from leaders

This is not the journey for the faint of heart. The ongoing challenge of keeping accurate rules and models and managing data synchronization is not always appreciated by everyone in the organization. Nonetheless, the value of having the right sales and product configuration process and tools, internally and for your dealers, is immense.

Keep in mind as well that the needs even within one business can differ vastly based on the product and services sold, so one configuration solution often does not cut it. Most importantly, companies need to have the right vision to improve the process so it's easier to quote, sell, manufacture, install, and maintain custom solutions.

The case studies below highlight best-in-class approaches to configuration.

### Case study No. 1: Niche is not a bad word for diversified Ingersoll-Rand

Ingersoll-Rand takes the right approach for its business. It's a \$13B global, diversified manufacturer of golf and utility vehicles, refrigeration and industrial equipment, security systems, and climate control and air conditioning systems and services. Early on it identified the need for a range of configurator solutions based on the diverse nature of the product characteristics and the needs of customers and their channel partners. The company classified its configuration requirements into four areas:

- **Guided selling to not only help a customer select the right solution, but also move product on the shelf**—The company uses BigMachines with a custom web front end.
- **Standard model options for assemble- and build-to-order products**—Oracle EBS caters for this product configuration, helping ensure a configured unit is compliant with the rules and can be built. Additionally, this configurator is exposed in several other online applications, including Siebel Sales and Siebel Partner products.
- **Engineered, configurable products where flexible dimensions and variables are required**—Homegrown or specific solutions are provided to generate drawings and select material requirements. Additionally, the company is reviewing PTC's Options and Variants capabilities to attempt to standardize on one engineering engine behind these configurators.
- **Dedicated applications for niche requirements, such as the architectural market where HVAC is designed in buildings**—Again, homegrown or niche solutions are used.

In all cases, the order feeds into the Oracle EBS back-end system. What else can we learn from Ingersoll-Rand?

- **Skills**—The person maintaining models and rules needs skills in between sales and engineering. The work can be tedious, so this person must enjoy the job, know the rules engine, and be a good facilitator and translator.
- **Geographies**—Different geographies will need further translation, often requiring different rules or even a different configuration solution.
- **Master data**—ERP is the system of record for all master data. In the words of its CIO, “MDM as a concept works, but the products are a fad for those who don't know how to properly architect their systems and drive the right behaviors in their data administrators.”
- **Calculating the ROI**—The return may not always be the strongest, but investment in the right tools and processes for the quote-to-cash cycle is just the cost of doing business and customer satisfaction. However, the company has seen quote lead times drop from two weeks to three or four days in cases, and it has the ability to grow without increasing head count. There is also a sales uplift, but this is hard to quantify and attribute directly to the tools.

## Case study No. 2: Profitable platform and a total solution approach helps an electronic equipment manufacturer edge into Stage 4 maturity

A leading electronic equipment manufacturer serves the energy management requirements of industry, data centers, infrastructure buildings, and residences. This business unit provides uninterruptible power supplies, electronics peripherals, and data center products. The company illustrates process maturity entering Stage 4.

The company has taken a Lego-like approach, simplifying solutions into modules to mass-produce and streamline back-office functions as much as possible. This cost-saving approach allows investment to be focused on marketing and innovation. The configurator delivers 30% of the build instructions, with the rest based on standard building blocks. Additional customization is then done at the customer site, not in the factory. This hastens delivery, improves quality, and reduces costs.

A global model is used across channels, touching every point in the engagement. Discipline is enforced with sales not being compensated if they do not follow the process. The model is based on several key points:

- Sales and channels use the tools to educate customers on solution capabilities and scope the opportunity.
- Initial drawing requests are integrated into Siebel CRM, helping sales sense demand and reach out to support their channel partners.
- A detailed design is produced to the SKU level in the BOM. 85% of solutions are configure to order. For the 15% that are engineer to order, the last phase is handled on a case-by-case basis in engineering. Engineering may turn down an unprofitable opportunity.
- A single line-item purchase order is then moved to the Oracle EBS ERP system. This simplifies back-office functions.
- Complete documentation is provided to manufacturing as well as on-site contractors or system integrators.

Cincom tools provide about 30% of the configuration solution, with the rest custom built in a Java framework. Open source is used wherever possible, such as the Vport generator that creates Word and PDF documents to show airflow in rooms. Effort has been put into integrating the total solution—no simple task.

The company's vice president of enterprise software stated, "At our level of maturity, an off-the-shelf solution is not available. We continue to watch new technologies and open source options. We must keep ahead of the curve as configuration is deeply embedded in our product and business strategy, and a core differentiator."

## Case study No. 3: Sales configuration helps GE Healthcare launch a new product

GE Healthcare planned the launch of a new custom product to replace a standard—that is, non-configurable—product. To support the launch of this highly complex piece of equipment with up to a million combinations of options, the company needed a configurator for manufacturing as well as sales.

It selected Tacton. Nearly five months were spent simultaneously specifying the configuration options and rules while developing the product. The product was successfully launched, with the configurator minimizing the effort and time required for sales to get up to speed on the complexities of this high-priced asset. It also provided the flexibility to configure and quote offline using a laptop.

Ambassadors in each region were responsible for the sales configuration and educating the sales force, reducing the need for corporate support. The sales team now had time to focus on selling other standard products. In the first year, sales of the new configurable product increased by 200% compared to the standard product it replaced without implicating sales of other engineered offerings in this product segment.

This product launch was so successful that future plans include configurator deployment for other products, some being standard products, just to make information and visualization more easily accessible to the sales force.

## Case studies in sales configuration and visualization

The solutions have become smarter and sexier. Visual product selling, spatial layout, and drag-and-drop interaction speed the quotation process and drive sales. Often this needs to be done out in the field, or in a person's home using a disconnected laptop. It can also be embedded into a web storefront. In one case, updates to the product's pricing, models, and rules get sent out to dealers every few months on a CD. The mom-and-pop shops love this.

Here are other examples from various industries:

- **A manufacturer of custom carts, workstations, shelving, and cabinets**—The company provides sales, dealers, and architectural partners the ability to visualize room layout while building the desired solution. No CAD skills are required, thus removing a prior bottleneck. Sales configuration tools help shape demand by prompting the user to upgrade options selected for greater energy efficiency or other advantages.
- **Heavy truck manufacturer**—Its in-house solution enables sales and dealers to visually select fuel tanks, batteries, tool boxes, and other options that are compatible with the frame layout. It also calculates performance such as speed in the gears, revs per minute at cruising speed, and fuel economy, ensuring the configuration will meet user requirements. The goal is to help the buyer get the right truck for the job.
- **Office furniture manufacturers**—Parametric graphical configuration (PGC) helps office furniture manufacturers **Steelcase**, **Haworth**, and **Kinnarps** plan and visualize office environments. PGC, best described as CAD on steroids, reduces the techni-

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*“Giving customers the visual experience of what the product will look like before they buy it has improved our quote conversion rate. We call it our customers’ design experience.”—  
Specialty vehicle manufacturer*

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cal design element (typically 80% of the effort) to almost zero, allowing focus on creative design. The technical design, which comprises drawing, calculation, quotation, order preparation, assembly drawings, and costing, is where most errors are made. The value is in helping the customer with surface planning, choices, and color. PGC functionality is also suited to other spatial design environments, such as storage, material handling, and building products.

- **Herman Miller**—Herman Miller has been using a parametric visual configurator tool since 1992. In addition, it provides dealers access to its PLM tools to visually specify mass-customized solutions. This provides dealers with visualization and costing at the product and option level, and ensures valid selections are sent through to the configured order stage, all managed through multi-stage workflow. These capabilities have increased order volumes as mass-custom and standard products can now be ordered together.
- **A pump manufacturer**—One global company implemented a best-of-breed sales configurator, integrated to its ERP system, with guided selling, pictures, and graphics. These visual and automated capabilities made a huge difference to onboarding distributors, particularly in emerging regions where language was an issue.

## The biggest gap is analytics

Supply chain likes to work with fixed SKUs and part numbers. So does forecasting software. No wonder companies have trouble planning in CTO and particularly ETO environments, where there is typically a new part number generated for every new configuration. Forecasting and planning needs to go below the SKU level and into the product and service configuration. SKU and material dependencies need additional intelligence to understand what combinations of attributes, characteristics, and values are selling. This is like finding the pot of gold for forecasting and marketing.

These insights allow ongoing redefinition of the solution by customer, channel, or region. Imagine being able to guide customers at the moment of sale to the configurations that best meet their needs and that are most profitable for you, based on just a few of the customer's must-have features. How about feeding this intelligence back into R&D to optimize design of models, platforms, and options?

Also, develop a common language. Configured products intensify the differences in how the product is viewed. Sales focuses on the size of the deal. Marketing thinks about the features the product is offering to the market. Manufacturing worries about the bill of materials and routing. The more custom and engineered the product, the bigger the chasm—a nightmare for the sales and operations planning (S&OP) process, where the goal is to come up with a consensus plan. Analytics to synthesize the data into a common language can help with planning, SKU

rationalization, and product design.

We asked the 40+ companies we interviewed about which vendors have these analytical capabilities today. A handful of companies do this analysis from time to time, but it is a cumbersome and often manual process. While everyone would like these analytical capabilities and recognize the value, none of the 16 software providers we studied are there yet.

We did find one vendor that claims to fill this gap. **Emcien** looks at product mix using automatic buying pattern detection technology. These buying patterns can be leveraged by product teams for mix optimization, a recommendation engine, and attribute forecasting. AMR Research has not yet verified these capabilities.

## Navigating the vendor landscape

The vendor landscape continues to morph as players drop out and new ones emerge. Current technology, such as 2D and 3D visualization, on-demand offerings, and nomadic capabilities, is quickly adopted by the smaller niche vendors that have the ability to move fast in product development. However, one needs to weigh up the options: flirt with attractive, flexible, front-end solutions that sales people and the channels love, or implement solid integrated solutions that better support manufacturing of complex products?

To help you think through this dilemma, view the marketplace and vendors in three categories.

## 1. Channel complexity with high-volume sales

*Doors, windows, furniture, electronics, equipment, and components where products are configure to order.*

This is the space where many of the niche vendors have focused, employing new technologies such as software as a service (SaaS) and visualization. The ERP players have struggled to provide solutions to meet the sales configuration and quotation requirements for multi-channel environments. Integration to CRM and sales force automation (SFA) is common in this space.

While all the solutions have some level of quote and order capability, vendors to consider if strong quotation and sales configuration is your primary need are Access Commerce, Big Machines, Cincom, Configit, Configura, Configure One, Consona's Configuration Solutions, FPX, Oracle Siebel, Sterling Commerce, Tacton, and TDCI.

## 2. Engineering complexity with high product mix

*HVAC, custom-designed machinery and equipment, pumps and motors, and other complex engineered solutions.*

These high-mix products typically require engineering to be involved in the quotation and design phase,

where CAD integration is needed. Installation, ongoing services, and warranty may also need to be included in the deal. Yet we seldom see this happening on a single order, both because the tools don't handle it but also because organizations are still organized in silos and have not merged these processes.

Providers to consider if this is your business are Access Commerce, Cincom, Configura, Configure One, Consona's Configuration Solutions, Oracle EBS, SAP, Tacton, and Technicon.

## 3. Multi-provider solution and services complexity

*Telco and high-tech.*

In telco and many high-tech deals, configuration means pulling together a complex solution comprising products and services from different suppliers.

Exalt, founded in 2002, plays primarily in this space, offering an on-demand application that links product information from multiple suppliers in one portal. It also offers managed services for the data and rules maintenance from these suppliers. We also see Access Commerce and BigMachines showing some capabilities for these environments. Oracle Siebel currently leads market share in this sector.

**Table 2:** Configuration vendor summary

Vendor	SaaS /hosted deployments	Online, web, and mobile deployment options for B2B and B2C	2D and 3D visualization capabilities	Proven capabilities for engineered products
Access Commerce (Cameleon)				
BigMachines				
Cincom (Acquire)				
Configit (Product Modeler and Quote)				
Configura				
Configure One (Concept Enterprise Product Configurator)				
Consona (Configuration Solutions)				
Exalt				
FPX (Firepond OnDemand Solution)				
Oracle (Oracle E-Business Suite)				
Oracle (JD Edwards EnterpriseOne)				
Oracle (Siebel)				
SAP (Product Configuration)				
Selectica (Configurator)				
Sterling Commerce (Sterling Configurator)				
Tacton Systems (TCstudio, TCserver, TCsite, TCnomad)				
TDCI (BuyDesign)				
Technicon Interactive (CustomCommerce)				

	Proven or full capabilities in the application
	Partial, or available but not deployed
	No capabilities

Source: AMR Research, 2009

**Table 3:** Configuration vendor summary—details

Vendor	Customers	Core verticals	# Services staff
Access Commerce (Cameleon)	125	Industrial, high tech, building, telco	20
BigMachines	170	High tech, industrial, medical, telco	60 plus partners
Cincom (Acquire)	60	Industrial, specialty vehicles, HVAC and electrical	35
Configit (Product Modeler and Quote)	50	Industrial, high tech	11 plus 25 certified with partners
Configura	40	Office furniture, material handling, kitchen and bathroom, industrial equipment	50 plus partners
Configure One (Concept Enterprise Product Configurator)	110	Industrial, medical, high tech	16
Consona (Configuration Solutions)	200	Industrial, electronic, consumer products	15
Exalt		High tech (multivendor solutions, channels, and VARs)	
FPX (Firepond OnDemand Solution)	77	Industrial, medical, high tech, software	17
Oracle (Oracle E-Business Suite)	*	High tech, industrial manufacturing, medical	**
Oracle (JD Edwards EnterpriseOne)	*	Industrial products and components, construction, medical	**
Oracle (Siebel)	*	High tech, telco, industrial, medical	**
SAP (Product Configuration)	1,000+	Industrial, high tech, furniture, consumer, telco, A&D, automotive	**
Selectica (Configurator)	25	High tech, telco, insurance	17
Sterling Commerce (Sterling Configurator)	42	High tech, industrial, communications and media, retail	45 plus partners
Tacton Systems (TCstudio, TCserver, TCsite, TCnomad)	97	Industrial and medical equipment, building products	30
TDCI (BuyDesign)	100	Building products, industrial, specialty vehicles	17
Technicon Interactive (CustomCommerce)	20	Industrial, electronics, building products, furniture	8

\* Does not publicly report this level of detail.

\*\* Direct and through partners.

Source: AMR Research, 2009

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## The tip of the configurator iceberg

The 18 products included in this study make up the tip of the iceberg. Solutions for sales and product configuration come in many shapes and sizes, and for different needs. Consider the following:

- **ERP capabilities**—Many ERP packages that are suited to a configured or engineered product environment will have a built-in configurator, or integrate to a best-of-breed application. For example, Consona acquired Configuration Solutions to broaden its midmarket ERP offerings. **Infor's** Syteline embeds TDCI as its configurator. Other ERP players, such as **Epicor**, **IFS**, **Infor**, and **QAD**, have integrated configurator modules worth considering before investing in a point application.
- **Specific industry subsectors have niche providers**—For example, manufacturers of fluid handling products and pumps have a choice beyond the 18 mentioned in this Report. Vendors like **Intelliquip**, **Pump-flo**, and **VSX-Vogel** only serve this market. **SoftTech**, **Edgenet**, **Friedman**, and **Abstrax** cater specifically for the window and door industry. Other solutions cater purely for HVAC design.
- **Configurator solution providers emerge in different geographies, with some building out their coverage**—Some solutions are very country/language specific but don't necessarily suit global needs. For example, niche players that remain German-language-specific include **Camos**, **EAS Automation Systems**, and **Perspectix**.
- **The traditional PLM solutions play an important role in this process, particularly in an ETO scenario**—Most vendors support a master configuration of the product from which variants can be generated within predefined design rules. For example, Herman Miller's dealers use PTC to configure digital product models of their office solutions. Siemens PLM recently acquired the intellectual assets of **RuleStream**, used by **Babcock** and **Wilcox** among others, to automate design calculations of complex products. **Dassault's** ENOVIA MatrixOne has been used by customers such as **Linde forklift** for product configuration.
- **The SAP ecosystem**—Complementary application providers are numerous and feed heavily off the SAP user base. **eSpline** tools help fill SAP Variant Configurator (VC) gaps by providing tools to govern and compare model changes and import quotes and orders from third-party solutions. It partners with **Fysbee SAS**, which offers automated SAP VC/IPC model testing. **Sybit** is moving into model testing capabilities, and also market mobile and quotation tools integrated to SAP with visualization. **VCXI** tools streamline the configuration process in SAP, manage errors and prices, and have options specifically for the printing and packaging industry.
- **Oracle Partners**—**Keste** provides custom solutions for disconnected configuration, custom partner portals, and quoting applications around the Oracle Configurator. **Latis Technologies** has a methodology specifically for CTO solutions, and **Intelligroup** provides productivity enhancements. Siebel OEMs the **IBM** iLog Constraint Engine in its Configurator. **aMind** provides a Java framework that allows customers to render the Siebel configurator with a different user interface.

## Conclusion

Do you have the right transmission for your business engine? Or is your quotation and configuration process like an old diesel truck rumbling along the Autobahn, needing regular stops to fix problems before reaching its destination? Processes to quote, sell, make, deliver, and service configurable solutions are diverse and complex, requiring investment in technologies, time, and resources. But beware: The investment required to manage data and integration across multiple systems cannot be underestimated. But without the vision of the end point you are trying to achieve, you are likely to end up with a gearbox that only gets you part of the way on your journey.

The road to improvement is full with options, and the technology landscape is fragmented but feature rich. Industrial, medical, and high-tech manufacturers have struggled through this downturn, but many recognize the need to simplify their businesses, improve internal alignment, and build customer-driven processes and capabilities suited to the specific value chains. Perhaps this paves the way for CTO and ETO process excellence?

**Research and Advice That Matter**

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