Digital Business Begins to Make Its Mark on
PLM

A picture is emerging that supports the marriage of a PLM strategy and the technology backbone to design and develop apparel and soft goods products that are increasingly likely to embed internet-enabled technologies. This will allow firms to create more digital business moments, which will become critically important in the future.

BY JANET SULESKI AND ANNA TONCHEVA, GARTNER

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ABOUT THE SURVEY

Apparel magazine and Gartner's 12th annual survey of the apparel industry's adoption and use of PLM shows the industry moving past standardization-centric activities and into preparations for a digital business future. The opportunity is to invest in PLM and related technologies that match the agility of the numerous consumer-facing digital technologies adopted in recent years. Only when investments in digital PLM grow to match investments in other digital systems in the supply chain and in customer- or consumer-facing environments will apparel companies be able to create digital business moments that engage their customers fully and allow them to grow revenue at a healthy pace in this continued uncertain economic and global environment.

In 2017, 33 percent of survey respondents were manufacturers; 35 percent were vertically-integrated companies that design and sell apparel and other products directly to consumers through their own retail channels; 26 percent were retailers that sell branded apparel merchandise or a mixture of branded and own-brand merchandise; and 6 percent were other soft goods companies, such as providers of home furnishings. Of the survey respondents that indicated an annual revenue range, 10 percent had annual sales of more than $5 billion, 26 percent had annual sales of $1 billion to $5 billion, 42 percent had sales revenue of $100 million to $1 billion, and 22 percent had sales revenues of $100 million or less.

Our annual report is meant to be a useful research tool to help apparel companies that are evaluating the future direction of their PLM strategies and technology backbones. The data presented here provides a view of your industry peers' PLM investments, and helps you assess your PLM discipline maturity, and guide your plans for future PLM initiatives. The results of this study are representative of the respondent base and not necessarily the market as a whole. We welcome your suggestions and feedback for the kinds of data you would like to see collected and presented in next year's survey.

2016 SNAPSHOT AND EVOLUTION

In 2016 we wrote about three principles that were influencing apparel companies' current and upcoming PLM investment decisions: unlocking additional value from PLM capabilities already in place; developing a bimodal PLM strategy to support innovation in a cost-optimized manner; and linking the value of PLM directly to consumers' in-store and cross-channel (or what Gartner refers to as the unified commerce channel) experiences.

These principles, plus the many other trends and practices we've written about over the history of this annual survey, have brought us to where we are today: PLM strategies and technologies as key enablers to digital business for apparel companies.

Digital business can be approximately defined as the creation of new business opportunities by blurring the lines between the digital and physical worlds. It's a point where people, business and things come together to create what Gartner calls digital business moments: a moment in time where people, businesses, and internet-enabled "things" come together and work together to solve a problem, meet a need or create value.

One example of an apparel company conducting digital business could be an athletic clothing company

building sensors into workout gear to better understand customer usage patterns and gleaning product requirement insights, all while providing value to customers in the form of health monitoring services.

As another example, *The New York Times* recently wrote about Amazon's evaluating ways it might be able to offer "on-demand clothing," noting it has received a patent for on-demand apparel manufacturing methodologies, though what these approaches might be is a closely held secret.

So where does PLM fit into the future of a digital apparel enterprise? Gartner defines PLM as a discipline for guiding products and product portfolios from ideas through to retirement to create the most value for businesses, their partners and their customers. Place this expansive vision of the PLM discipline alongside data from Gartner's annual global CEO and business executive survey, in which survey respondents identified growth as their top business priority in 2017 — followed immediately by product improvements and IT-related investments.

At this point, it's easy to see where a PLM strategy and the technology backbone to design and develop apparel and soft goods products that are increasingly likely to embed internet-enabled technologies — in order to create more digital business moments — will become critically important in the future. Meanwhile, this research report will dig into the PLM priorities, initiatives, and investment plans that the survey participants identified as key in 2017 and 2018 as they work to ready their PLM strategies to actively support digital business strategies.
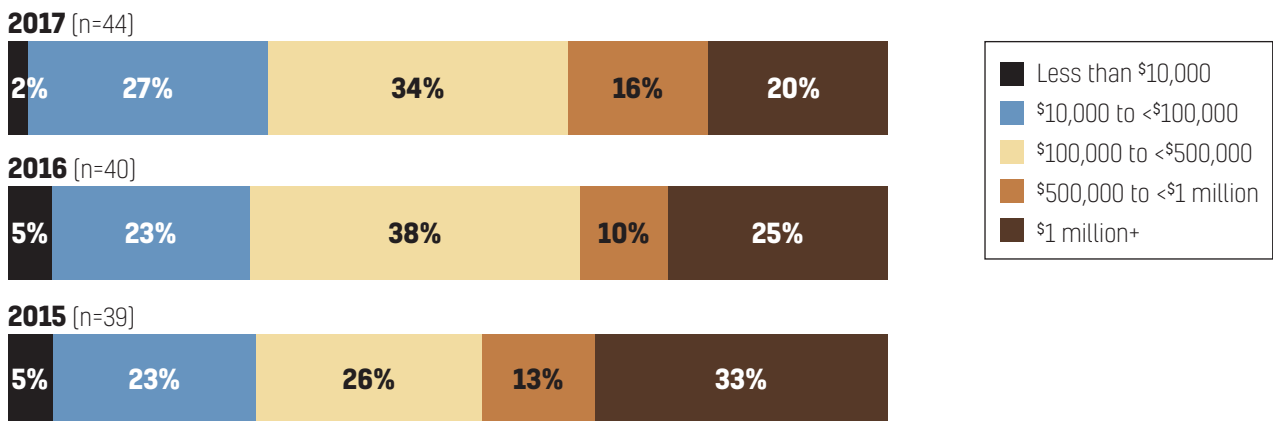
WHERE ARE WE TODAY?

Some readers may be surprised to discover that PLM can refer to both the discipline and software application:

- The **PLM DISCIPLINE** contains multiple cross-functional business processes and supporting applications to govern life cycle processes across the enterprise at every stage of a product's life cycle, from idea through to retirement.
- **PLM APPLICATIONS** contain a robust set of planning tools, compliance analysis, advanced version control of their product specifications (including the final Bill of Materials [BOM]) project management, and a long list of other possible product inspiration, design, development, testing, sourcing and selling functions).

It can be difficult to peg the exact amount companies spend on PLM initiatives to improve the practice of the PLM discipline. It can be even harder to correlate to results, as many apparel companies still do not undertake writing a formal business case to justify the PLM investment, and also do not set aside time to do formal post-initiative reviews to identify which benefits were achieved from the initiative. The focus for PLM initiatives still centers around the software investment needed and the business results obtained, in at least a general sense.

While the survey participant base fluctuates year-over-year and leads to natural fluctuations in the survey results, a few useful comparisons can be made over prior years' survey results. The body of companies that have spent between $500,000 and $1,000,000 on PLM technology appears to be growing. There seems to be a cap on the number of companies willing to spend more than $1,000,000 on PLM applications, with the likely feeling that they are waiting for results from the initial substantial investment and have not yet found the PLM application to be a bottleneck to achieving business goals. An alternative explanation might be that survey respondents are aware of current PLM spending levels, but lack the tenure to know what spending occurred on in-house or heavily-

FIGURE 1: Spending on PLM Technology To Date

2017 (n=44)

| 2% | 27% | 34% | 16% | 20% |

2016 (n=40)

| 5% | 23% | 38% | 10% | 25% |

2015 (n=39)

| 5% | 23% | 26% | 13% | 33% |

Legend:
- ■ Less than $10,000
- ■ $10,000 to <$100,000
- ■ $100,000 to <$500,000
- ■ $500,000 to <$1 million
- ■ $1 million+

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customized systems prior to the current generation, and therefore are not reporting total historical spending on PLM technology. This would also account in part for the seemingly sharp drop in the number of survey respondents reporting total PLM spending of less than $1,000,000. In the current competitive environment among PLM software providers, a great deal of functionality can be obtained and installed for less than $1,000,0000, indicative of a maturing market.
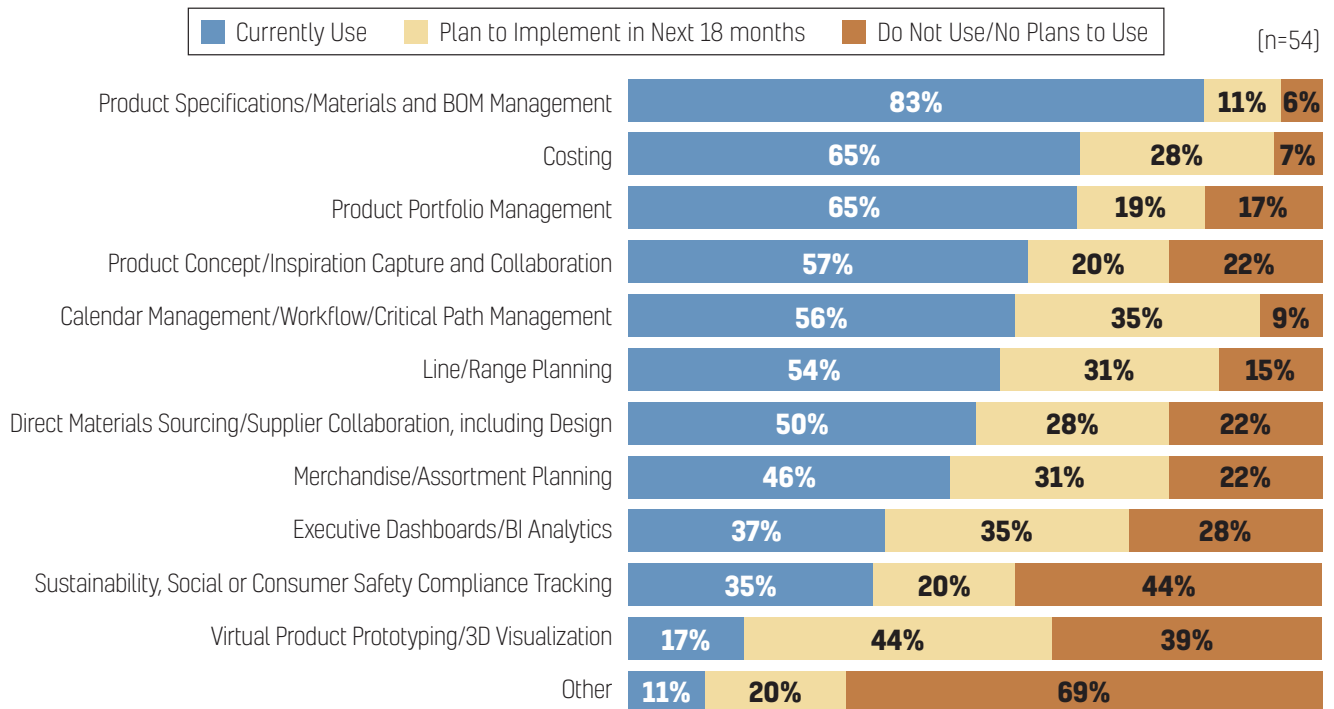
Gartner research shows that the adoption and use of data analytics is a key capability for supply chains to springboard into receiving value from digital technologies such as advanced market testing for products, use of advanced automation techniques in manufacturing, and — a little further down the road for most companies — the exploitation of the Internet of Things (IoT) to create unique business moments with consumers. Year-over-year survey results suggest that the apparel industry is getting on board with the greater adoption and use of dashboards, analytics and more advanced business intelligence capabilities such as predictive and prescriptive analytics. In 2016, 28 percent of survey respondents indicated that they were planning to implement business intelligence functionality to be part of their PLM process. In 2017, that figure has increased to 35 percent (see Figure 2).

Furthermore, the argument can be made that other PLM efforts are geared in the direction of getting pre-

pared for digital business. Survey respondents reported that over the next 18 months, their companies are most likely to implement executive dashboards for reporting and status visibility (57 percent), sustainability, social, or consumer safety compliance tracking (40 percent), virtual product prototyping and modeling (34 percent), and calendar management (34 percent). Many of these investments continue to drive benefits in cost optimization and management, consistent with the results from the *Apparel*/Gartner "2017 Top Technology Trends in the Apparel Market" research study (published in *Apparel's* February 2017 issue), in which 30 percent of survey respondents stated that their most important business initiative for the coming year is reducing product costs to improve margins. However, the subtext is that these PLM application capabilities provide expanded visibility to project status, supply chain compliance topics, and closer-to-real-time ability to develop, view and present potential fashion products to B2B buyers or end consumers. These are enablers allowing apparel businesses to create more business moments — those elusive opportunities to engage the customer by exploiting connectivity, communications and intelligence to deliver value. In this way, apparel enterprises can continue to drive the closer link between the PLM discipline and consumers' experience of the brand.

One of the larger debates about PLM investments over time has been, "What are we actually getting for our

FIGURE 2: PLM Efforts and Adoption Status

Legend: Currently Use · Plan to Implement in Next 18 months · Do Not Use/No Plans to Use · [n=54]

	Currently Use	Plan to Implement in Next 18 months	Do Not Use/No Plans to Use
Product Specifications/Materials and BOM Management	83%	11%	6%
Costing	65%	28%	7%
Product Portfolio Management	65%	19%	17%
Product Concept/Inspiration Capture and Collaboration	57%	20%	22%
Calendar Management/Workflow/Critical Path Management	56%	35%	9%
Line/Range Planning	54%	31%	15%
Direct Materials Sourcing/Supplier Collaboration, including Design	50%	28%	22%
Merchandise/Assortment Planning	46%	31%	22%
Executive Dashboards/BI Analytics	37%	35%	28%
Sustainability, Social or Consumer Safety Compliance Tracking	35%	20%	44%
Virtual Product Prototyping/3D Visualization	17%	44%	39%
Other	11%	20%	69%
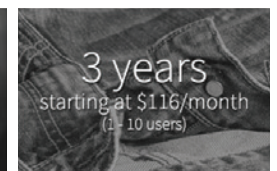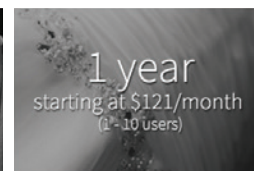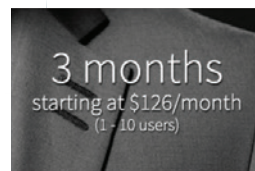
money?" This is where the data on bottom line improvements is useful when looking for where the benefits have manifested in your company's PLM process versus those of your industry peers. The most consistent benefit reported year after year is process standardization.

The risk in leaning too heavily on this as the primary benefit is that companies unintentionally make internal process standardization and execution the proxy for business outcome. The business outcomes that apparel companies really want to see include less time spent in developing a garment, improved quality of the finished goods (through better collaboration and compliance), and shorter total lead time to market. This is the first year of our survey wherein "benefits achieved" results amply demonstrate delivered business outcomes that correlate to the most desired outcomes. Making the biggest jump of all, improved product quality was reported as one of the top benefits achieved by 33 percent of survey respondents, up sharply from 13 percent in 2016. Thirty percent of respondents reported improved product margins as a top-three benefit achieved this year, versus 21 percent last year. Each of these achievements lends itself to supporting the business case for further investment in PLM technologies and improvements in processes and workflow (see Figure 3).

However, benefits from reduced product development time remain elusive for our survey respondents. In 2017, 19 percent of respondents hope to achieve reduced product development time most of all other benefits, but only 11 percent of organizations actually have achieved it as their number one benefit (see Figure 7). That is, slightly more than half the companies that hope that shorter product development time is their No.

1 benefit from their PLM investments reach that goal. PLM process standardization continues to rule the roost.
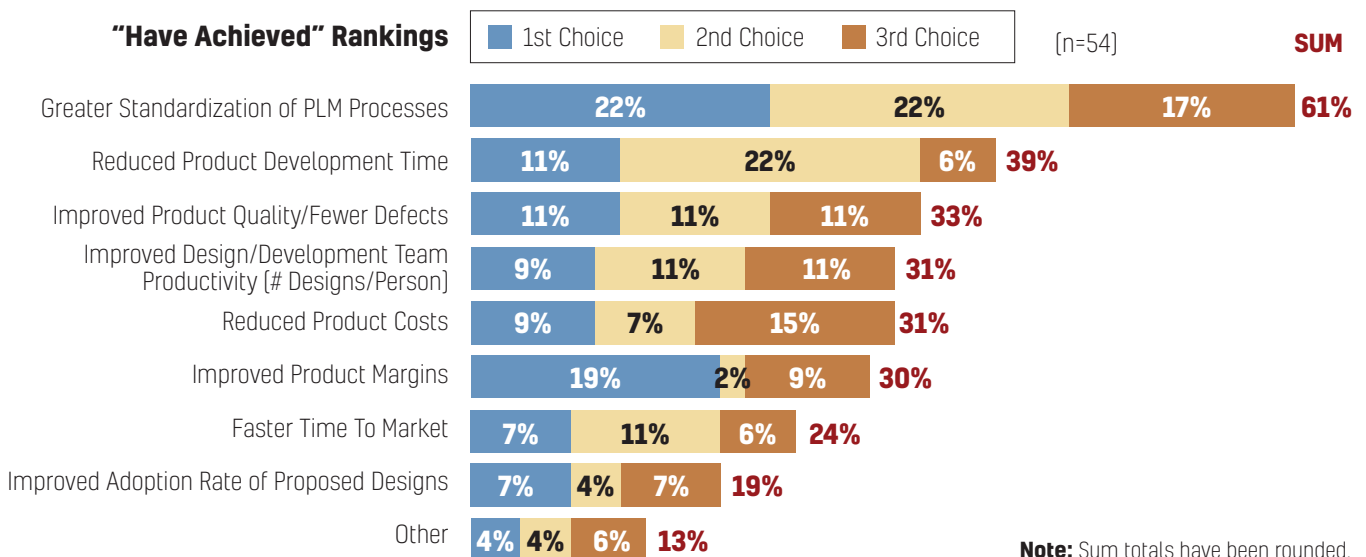
COMPLIANCE AND SENIOR TALENT NEEDS SHAPE COMING PLM INITIATIVES

As digital business in apparel extends beyond the earlier investments in consumer-facing technologies such as e-commerce, smart CRM and creating engaging store environments through experience sensing and shaping technologies, supply chain constraints that pose bottleneck to customer- and consumer-facing initiatives have come onto the radar screen.

This helps drive the proportion of respondents naming finding senior PLM talent to oversee their companies' PLM strategy as one of the factors influencing PLM initiatives over the next three years to 31 percent, up from 23 percent in 2016. Attracting top supply chain talent to the apparel industry is a growing pain point for companies embroiled in fiercely cost-competitive environments (especially when CEOs name top-line revenue growth as their top priority this year, as reinforced by other Gartner surveys). Supply chain organization extending to new product development and commercialization must develop new talent to support supply chain needs in a digital business. Internally, this includes participating on cross-functional agile product development teams or managing digital product innovation centers of excellence (COEs). Throughout the value chain, new talent will be required to source digital services or orchestrate digital ecosystems.

The growing necessity for PLM applications and strategies to act as critical enablers to digital business activities

FIGURE 3: Business Benefits Achieved Through PLM

"Have Achieved" Rankings   ■ 1st Choice   ■ 2nd Choice   ■ 3rd Choice   [n=54]   **SUM**

	1st Choice	2nd Choice	3rd Choice	SUM
Greater Standardization of PLM Processes	22%	22%	17%	61%
Reduced Product Development Time	11%	22%	6%	39%
Improved Product Quality/Fewer Defects	11%	11%	11%	33%
Improved Design/Development Team Productivity (# Designs/Person)	9%	11%	11%	31%
Reduced Product Costs	9%	7%	15%	31%
Improved Product Margins	19%	2%	9%	30%
Faster Time To Market	7%	11%	6%	24%
Improved Adoption Rate of Proposed Designs	7%	4%	7%	19%
Other	4%	4%	6%	13%

Note: Sum totals have been rounded.

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both within apparel companies as well as up and down the apparel value chain has placed compliance topics squarely in the spotlight of fashion's technology runway. Firms must perform on various compliance "stages" — of course they must provide visibility on compliance with government regulations; they must show accountability on quality assurance requirements; and they also must answer to the growing-yet-fuzzy "compliance" requirements that consumers place on brands and products for ethical sourcing of goods, all the way from raw materials to delivery. All of these things have become so much more of an imperative in this age of always-on social media.

Against the compliance-requirements backdrop, digital business' ability to create huge numbers of digital business moments vastly expands the compliance imperative; each of these business moments must comply with as many requirements as possible. In addition, apparel companies will be stretched further than ever before to support fast design, development, commercialization and product launch cycles, at least in certain parts of their product portfolios, while continuing to keep costs down. All these factors are informing apparel companies' PLM investment decisions for the next three years.
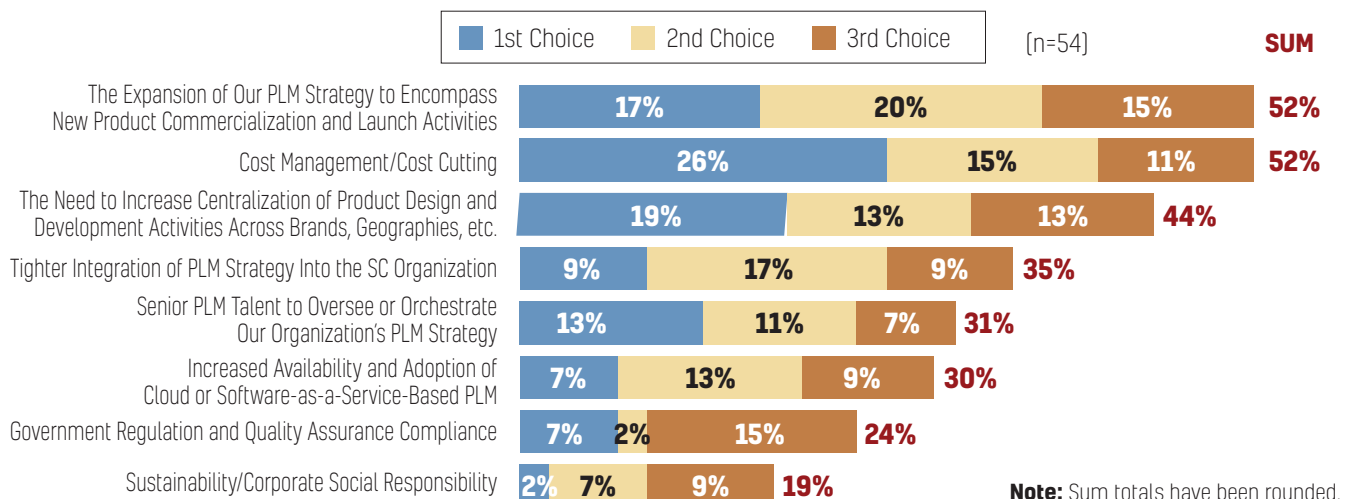
Moreover, cloud and SaaS deployment models are rapidly becoming more expected and accepted, a fact that drove a sharp drop in survey respondents naming that as a top three influencer of PLM strategies for the next three years, from 43 percent last year to 30 percent this year. Additionally, the need to increase centralization of PLM activities also dropped steeply, from 66 percent in 2016 to 44 percent in 2017, as companies achieved their goals of benefits from PLM standardization and increased their focus on challenges with compliance in a digitally-transparent world and the sourcing of senior talent to guide longer-term PLM strategies.

In pursuit of the necessary PLM capabilities to support the emerging digital-business era, survey data reflects a more aggressive investment strategy by the apparel industry. Forty-six percent of survey respondents this year reported plans to spend between $100,000 and $500,000 on PLM technology, up from 28 percent in 2016, and 14 percent plan to invest $500,000 to $1,000,000, up from 6 percent last year. Directionally, this data suggests that companies that last year noted planned spending at lower levels, such as $10,000 to $100,000, moved up to the next category of spending — willingly or unwillingly — to get the needed functionality. Similarly, the timing of these investments has sped up over past year, with 49 percent of survey respondents anticipating the bulk of their technology spend to occur over the next 12 to 18 months, up from 38 percent in 2016 and 31 percent in 2015.

Inquiry trends among Gartner clients suggest that between 2015 and 2017, many apparel companies have focused on improving PLM business processes, both internally and externally, and on constructing the right set of metrics to measure PLM process and outcome performance in both areas as well. Companies have led with process improvements, in many cases stretching existing technology to its limits, and are now selecting PLM technology to extract the most value from these newer processes as well as to set the stage for the digital future.

As touched on herein, standardization remains one of the top benefits sought and achieved from PLM technology investments by apparel companies, and more concrete business outcomes are moving up the list of benefits hitting their hoped-for goals, with one notable exception. Achieving the hoped-for improvements in time-to-market continues to prove elusive for our survey respondents. However, lower product costs, and improved profit margins continue to meet or exceed delivering performance

FIGURE 4: 2017 Top 3 Factors Most Influential for PLM Strategy Over Next 3 Years

	1st Choice	2nd Choice	3rd Choice	[n=54]	SUM
The Expansion of Our PLM Strategy to Encompass New Product Commercialization and Launch Activities	17%	20%	15%		52%
Cost Management/Cost Cutting	26%	15%	11%		52%
The Need to Increase Centralization of Product Design and Development Activities Across Brands, Geographies, etc.	19%	13%	13%		44%
Tighter Integration of PLM Strategy Into the SC Organization	9%	17%	9%		35%
Senior PLM Talent to Oversee or Orchestrate Our Organization's PLM Strategy	13%	11%	7%		31%
Increased Availability and Adoption of Cloud or Software-as-a-Service-Based PLM	7%	13%	9%		30%
Government Regulation and Quality Assurance Compliance	7%	2%	15%		24%
Sustainability/Corporate Social Responsibility	2%	7%	9%		19%

Note: Sum totals have been rounded.

relative to their ranks on the hoped-for benefits lists, providing grounds for continued investment to shorten total lead time to market. Improvements to supply chain visibility, collaboration and supplier relationship management may be the next frontier in PLM discipline investments that apparel companies pursue with greater vigor than before, building on stable and centralized (at least virtually) core PLM activities inside their own companies to reach out to the extended supply chain ecosystem.

THE FUNCTIONAL WISH LIST

Each year, we ask survey participants to rank the top three capabilities they would most like to see PLM soft-

ware vendors and service providers add to their existing functionality in the coming year. In 2016, workflow and critical path management jumped from the tenth-place spot in 2015 to the No. 1 spot on the functional wish list, and improvements to executive dashboard capabilities rose from No. 8 to No. 2. Direct year-over-year comparisons between this year's and last year's results are not entirely valid due to some shifts in the capabilities included in the survey questionnaire. However, general observations can be supported. In 2017, calendar, workflow and critical path management took second place, in keeping with calendar management's No. 1 rank in wished-for improvements in 2016. Taking over first place was virtual product prototyping and 3D visualiza-

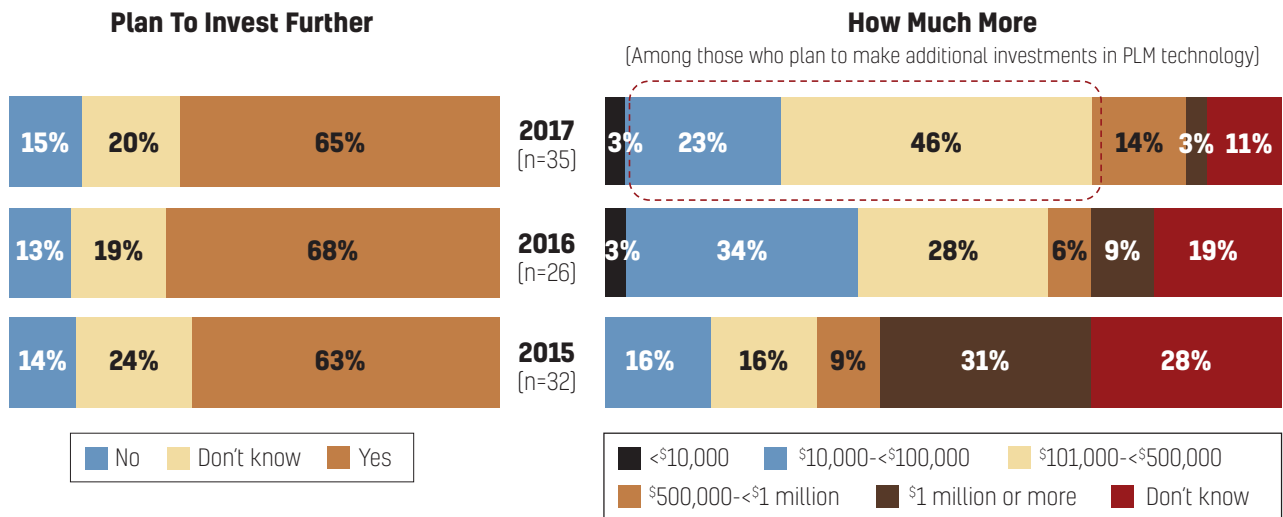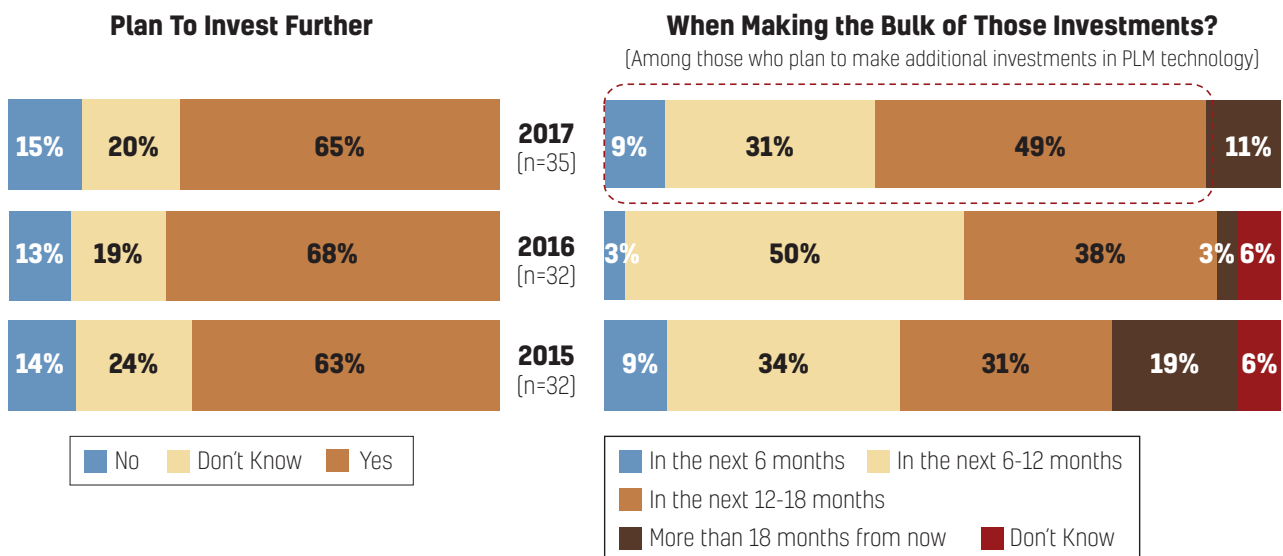**FIGURE 5:** Anticipated Future Investments in PLM Technology

FIGURE 6: Timeline for Future Investments in PLM Technology

tion in the PLM process, and particularly in the product design and development area. Previous survey write-ups have suggested that as these technologies became more speedy, scalable and accessible, that apparel companies would adopt them aggressively as mechanisms for taking cost and even more time out of the design/development phase, and 2016 into 2017 proved to be the tipping point for adoption.

This year's combined category of executive dashboards, business intelligence and analytics ranked

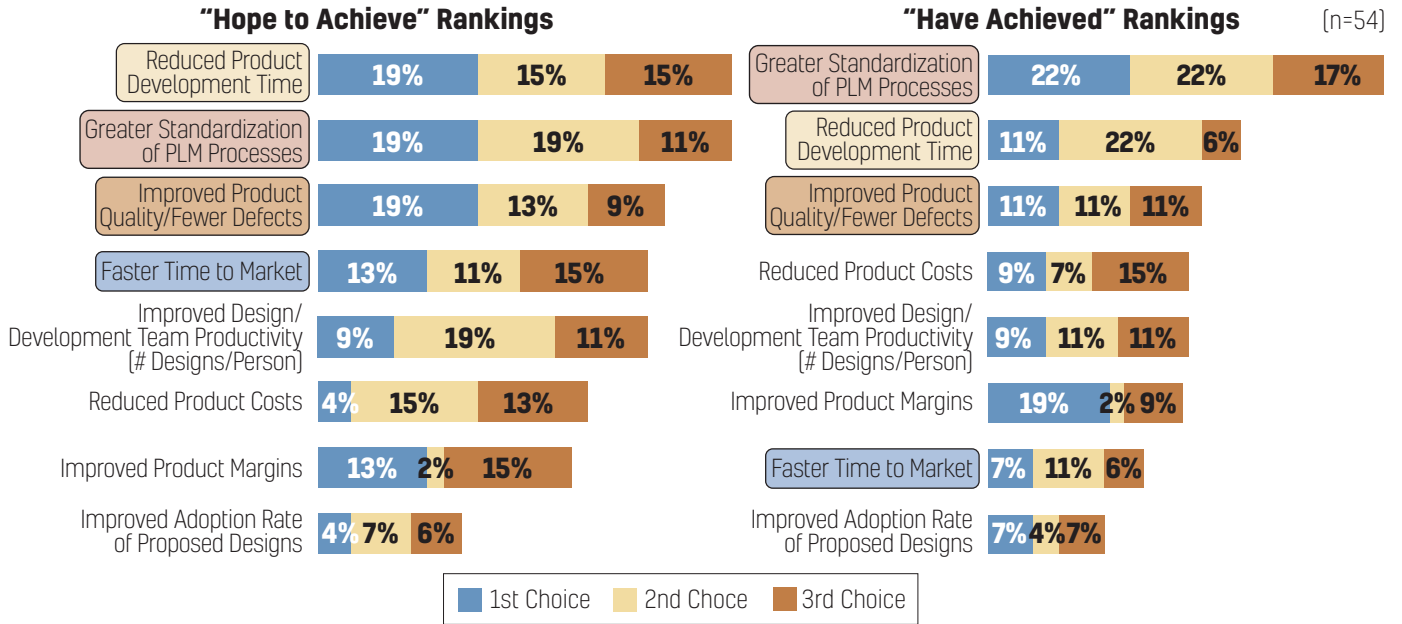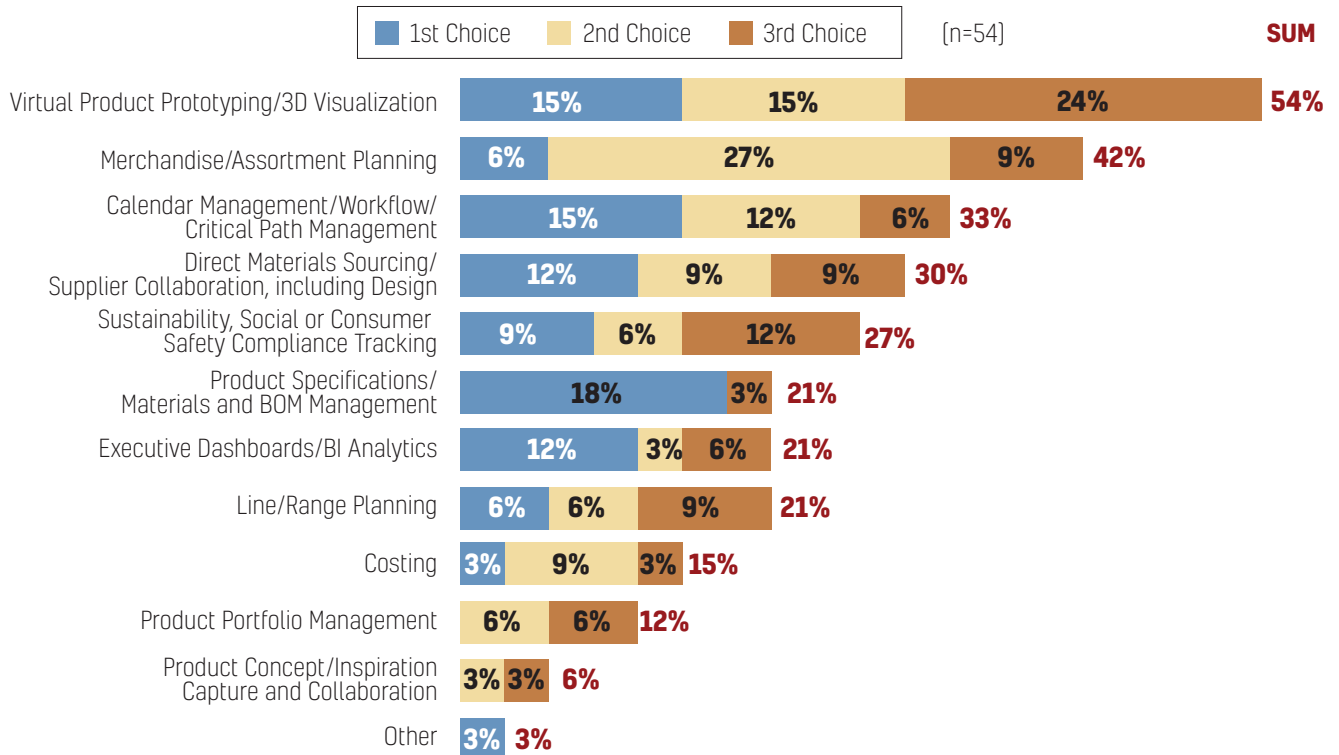**FIGURE 7:** Primary Benefits of PLM Strategy, Hoped For vs. Achieved, 2017

"Hope to Achieve" Rankings

	1st Choice	2nd Choice	3rd Choice
Reduced Product Development Time	19%	15%	15%
Greater Standardization of PLM Processes	19%	19%	11%
Improved Product Quality/Fewer Defects	19%	13%	9%
Faster Time to Market	13%	11%	15%
Improved Design/Development Team Productivity (# Designs/Person)	9%	19%	11%
Reduced Product Costs	4%	15%	13%
Improved Product Margins	13%	2%	15%
Improved Adoption Rate of Proposed Designs	4%	7%	6%

"Have Achieved" Rankings [n=54]

	1st Choice	2nd Choice	3rd Choice
Greater Standardization of PLM Processes	22%	22%	17%
Reduced Product Development Time	11%	22%	6%
Improved Product Quality/Fewer Defects	11%	11%	11%
Reduced Product Costs	9%	7%	15%
Improved Design/Development Team Productivity (# Designs/Person)	9%	11%	11%
Improved Product Margins	19%	2%	9%
Faster Time to Market	7%	11%	6%
Improved Adoption Rate of Proposed Designs	7%	4%	7%

■ 1st Choice ■ 2nd Choce ■ 3rd Choice

FIGURE 8: The 2017 Functional Wish List

■ 1st Choice ■ 2nd Choice ■ 3rd Choice   [n=54]   **SUM**

	1st Choice	2nd Choice	3rd Choice	SUM
Virtual Product Prototyping/3D Visualization	15%	15%	24%	54%
Merchandise/Assortment Planning	6%	27%	9%	42%
Calendar Management/Workflow/Critical Path Management	15%	12%	6%	33%
Direct Materials Sourcing/Supplier Collaboration, including Design	12%	9%	9%	30%
Sustainability, Social or Consumer Safety Compliance Tracking	9%	6%	12%	27%
Product Specifications/Materials and BOM Management	18%	3%		21%
Executive Dashboards/BI Analytics	12%	3%	6%	21%
Line/Range Planning	6%	6%	9%	21%
Costing	3%	9%	3%	15%
Product Portfolio Management	6%	6%		12%
Product Concept/Inspiration Capture and Collaboration		3%	3%	6%
Other	3%			3%

fourth, supporting the forward-looking positioning for digital business, where data analytics are a foundational piece for supply chains to be able to leverage other digital technologies such as IoT and advanced automation. For companies not investing in business intelligence and analytics, the risk is growing that they will fall even further behind the competition due to not having the right capabilities in place to support the next wave of innovations in both products and in customer and consumer engagement based on emerging digital technologies.

Similarly, slight adjustments were made to the categories we asked survey participants about regarding which PLM functions they have in place and plan to implement over the next 18 months. Here, virtual product prototyping and 3D visualization also topped the list. The fact that it is both the most-planned functionality deployment and the most-desired application capability improvement area hints that some companies may be disappointed by the visualization and 3D functionality they find available today from their PLM technology partners. Companies may also find the amount of effort that goes into the preparations to adopt and use these applications across an end-to-end PLM process is unexpectedly daunting. The percent of companies (35 percent) listing calendar, workflow and critical path management investments as a top area to implement in the coming 18 months tied with business intelligence,
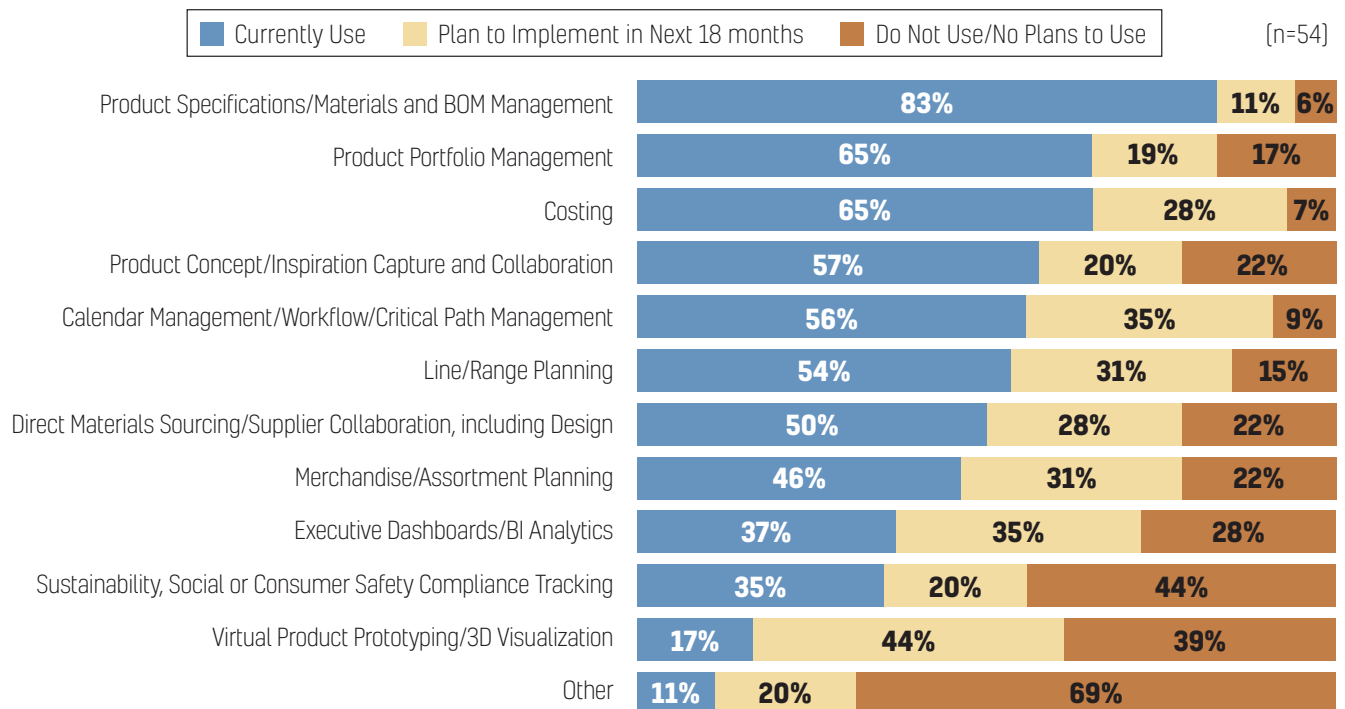
analytics, and dashboards for second place, signaling serious intent to invest in technologies to support emerging digital business strategies.

CLOSING THOUGHTS: NEXT STEPS TOWARD THE DIGITAL PLM PLATFORM
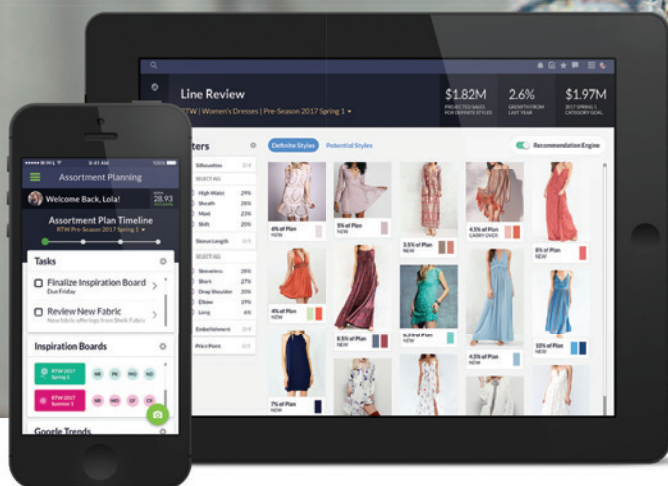
This brings us to the unstoppable-force versus immovable-object moment for PLM in the apparel industry. Many apparel companies up and down the value chain have invested in PLM technologies, but a significantly smaller proportion have created a unified PLM technology architecture that will support digital business needs. In particular, a great deal of product information continues to exist within functional silos, and is essentially invisible even to teams collaborating with one another internally at a company. Apparel companies face increasing pressure to move from these outdated data silos to a digital PLM platform.

The emerging solution to this conundrum is what Gartner calls digital PLM platforms. Digital PLM platforms integrate data and elevate visibility to improve required traceability, regulatory compliance, operational efficiency, cost management, quality control, product portfolio performance and resource allocation needed to support digital business activities (see Figure 10). The graphic here is a digital PLM platform for a manufacturer; retailers can add a substantial digital

FIGURE 9: Activities or Investments Planned for PLM Technology Software and Services

Legend: ■ Currently Use ■ Plan to Implement in Next 18 months ■ Do Not Use/No Plans to Use [n=54]

Activity	Currently Use	Plan to Implement in Next 18 months	Do Not Use/No Plans to Use
Product Specifications/Materials and BOM Management	83%	11%	6%
Product Portfolio Management	65%	19%	17%
Costing	65%	28%	7%
Product Concept/Inspiration Capture and Collaboration	57%	20%	22%
Calendar Management/Workflow/Critical Path Management	56%	35%	9%
Line/Range Planning	54%	31%	15%
Direct Materials Sourcing/Supplier Collaboration, including Design	50%	28%	22%
Merchandise/Assortment Planning	46%	31%	22%
Executive Dashboards/BI Analytics	37%	35%	28%
Sustainability, Social or Consumer Safety Compliance Tracking	35%	20%	44%
Virtual Product Prototyping/3D Visualization	17%	44%	39%
Other	11%	20%	69%

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FIGURE 10: Digital PLM Platform Architecture
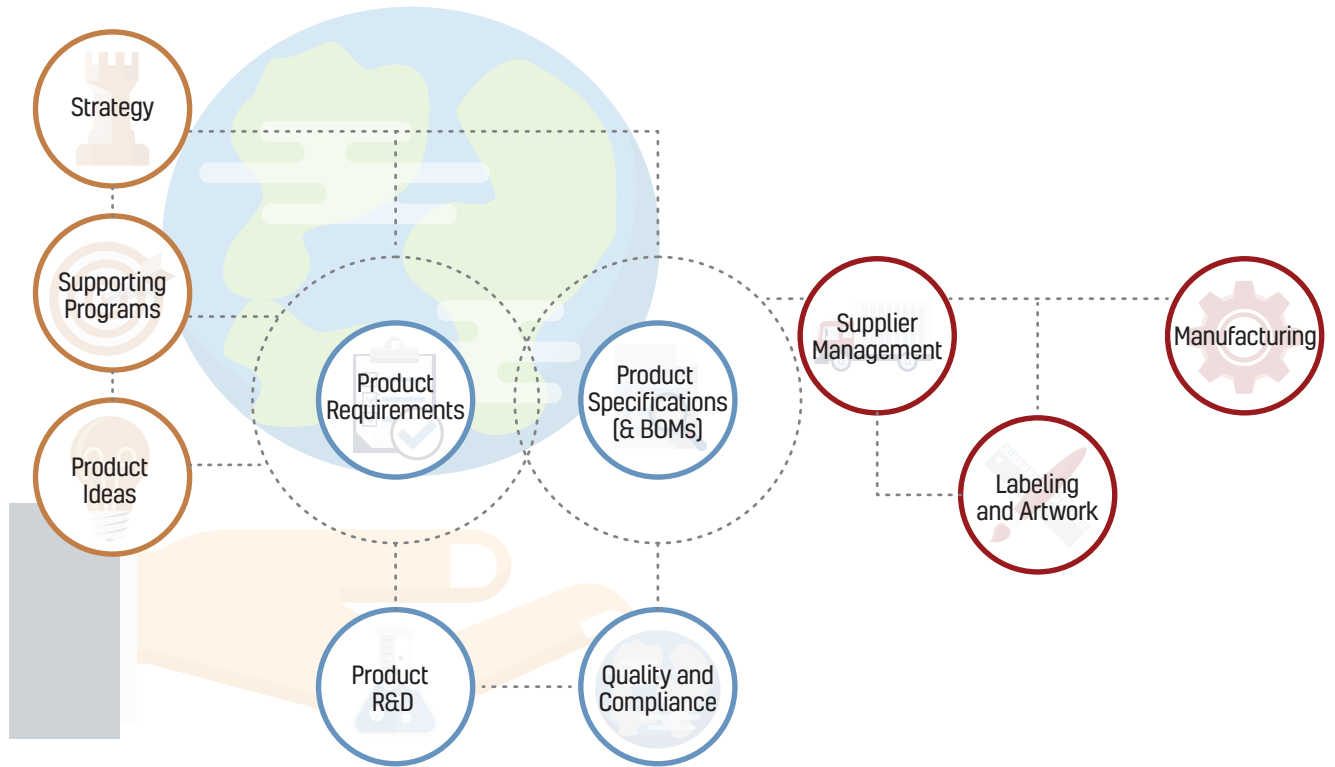
front-end map, likely more mature today than capabilities listed in this figure, to engage consumers to create digital business moments.

In order to fully take advantage of the opportunities that digital business creates, as well as to remain competitive with industry peers, investments in digital PLM platforms will become essential over the next few years. Apparel companies preparing for this eventuality can begin by following Gartner's recommendations to:

Expand the focus of PLM by integrating additional applications to meet the needs of the entire product life cycle.

Evaluate harmonization data points between the applications by identifying how the data point is used across multiple applications and defining which application should be the system of record and system of reference (system of reference can be overwritten if the system of record is different). ■

About the Authors

JANET SULESKI, RESEARCH DIRECTOR, SUPPLY CHAIN & APPAREL, GARTNER
Janet Suleski brings more than 20 years of experience working with retailers, manufacturers and software vendors to her role as research director, supply chain & apparel, at Gartner, and is a founding member of the retail advisory practice. Janet is primarily responsible for researching, analyzing and writing about the technologies, best practices and trends in key retail software segments, including retail ERP, product lifecycle management and business intelligence applications. Prior to her current role at Gartner, Janet's research and analysis focused on fresh item management, point-of-sale, price optimization and customer loyalty software and business processes. She has also covered inventory optimization, strategic sourcing and procurement, collaborative planning, forecasting, and replenishment (CPFR), supplier collaboration and supply chain event management. Janet is a member of *Apparel's* Editorial Advisory Board.

ANNA TONCHEVA, RESEARCHER, RDA TEAM, GARTNER
Anna Toncheva is a researcher in the Research Data and Analytics (RDA) team at Gartner, where she designs, analyzes and delivers the insights from qualitative and quantitative research studies. Prior to Gartner, Anna spent more than a decade at IDC as a research director/economist/analyst. Her focus was to analyze the relationships between IT spending and economic variables, develop multilevel hardware, software and services forecasts and segmentations, and guide clients in evaluating actionable go-to-market strategies and portfolio development.