



Cyon Research 2009 Survey of Engineering Software Users

A Cyon Research Report

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Contents

Executive Summary	3
Observations	4
Purchasing policies and practices	4
Hardware refresh rate	4
Timely adoption of new software	6
Participation in the selection process.....	7
Acquisition sourcing.....	8
Length of acquisition process	9
Financial outlook	10
Investing during hard times.....	13
Looking forward	16
How companies sell themselves	16
Software selection criteria.....	19
Comparing CAD systems deployed	19
Comparing industry sectors	20
Comparing firm size.....	20
Comparing procurement sources	21
Comparing from within AEC sectors	21
Comparing firms that have cut spending with those that have increased spending	21
Corporate differentiators	21
Procurement priorities	22
Control of the BoM.....	23
Number of MCAE Applications	23
New software	24
V6	24
Synchronous Technology	24
Inventor Fusion.....	25
In closing.....	26
Demographics.....	26
Methodology.....	29
About Cyon Research	32

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Executive Summary

The economic outlook has never been more uncertain. When will customer spending on engineering software and related hardware recover?

Is the worst over, or can we expect further declines? What is the risk to recurring software maintenance or subscription revenues?

How many of your firm's competitors have already begun investing in their engineering software tools to prepare to gain market share in the eventual recovery? What factors are driving customer spending priorities in the post-recession period? How do you identify the companies that are likely to be the first to increase investments in engineering software?

Cyon Research's recently completed survey of technical software users helps answer these questions and others like them. This survey is based on validated responses from nearly 600 users of CAD, CAM, CAE, and PLM software and focuses on customer purchasing policies, practices, and spending expectations.

For instance, approximately 29% of the respondents reduced technical software expenditures in the first half of 2009. For the first half of 2010 only 19% expect further spending cuts and even fewer expect to cut expenses in 2011. These figures suggest the worst cost-cutting is behind us, but there are potentially larger reductions overhanging the market if the world economy continues to falter.

Roughly 42% of customers are considering or are about to cut spending on new software and hardware acquisitions. Similarly, 40% of those surveyed may reduce spending on software maintenance if their business continues to decline. Since much of the CAD software industry relies on recurring revenue to cover ongoing expenses, this news is of exceptional concern.

When software buying accelerates again, which criteria will be most important in selecting new software and hardware? The highest ranked criterion is the impact new systems would have on improving product quality. This belief is consistent with how the respondents view their companies. Those companies that differentiate themselves through superior products are most likely to identify **improving product quality** as the most important criterion. **Improving product quality** was followed closely by **total cost of ownership** and the **ability to reduce engineering and product development costs**.

The channels through which customers acquire their software are changing rapidly. The number of customers buying at least some engineering software from websites nearly doubled to 18% compared with a similar survey in 2008. Firms purchasing in excess of 1,000 software licenses buy more often from system integrators than from software manufacturers.

Beyond the financial outlook and discussion of software selection criteria, this report explores the relationship between how firms differentiate themselves from competitors and what they find important about their engineering software tools. Other issues covered include an examination of the relationship of MCAE tools to spending; control of the master BoM; and customer sentiment on new software from Dassault Systemes (V6), Siemens PLM Software (Synchronous Technology), and Autodesk (Inventor Fusion).

The above data are merely samples of the wealth of decision-support material in the 2009 survey. Cyon Research's Survey of Engineering Software Users is an ongoing project, intended to capture market trends early. Cyon Research customers on annual subscription receive this and other updates as part of their subscription.

Cyon Research 2009 Survey of Engineering Software Users

A Cyon Research White Paper

Cyon Research recently completed a survey of technical software users as a follow-up to our 2008 survey, published in January, 2009. The current survey included an expanded set of questions. This report is based on the responses from 587 validated users, who can be segregated by: the software they use, their position within their company, the industry in which their company operates, the size of the firm, the number of seats of various types of software used, and other factors.

The survey looked at four key types of information: demographics¹; how each respondent's firm differentiates itself from its competitors; select criteria considered in the purchase of technical software; and the impact of the recent downturn in technical software spending. In the latter area we looked at software maintenance, current acquisitions, planned technology acquisitions, and projections for overall spending for product design and development. We looked not only at actions taken, but also at spending policies about to be put in place, as

well as those under consideration. We also examined the procurement process itself: who is involved at each stage of the acquisition process, how long each stage typically takes, and the channels through which the respondents procure software.

The result was a vast amount of raw data, which Cyon Research analyzed in depth. This report will focus on observations of relevance to a broad audience.

In preparing this report, we paid particular attention to information of value to companies that sell technical software to the manufacturing and AEC markets, and also to those that invest in such companies. Space limitations permit only a small portion of the potential evaluations to be covered. Cyon Research is prepared to provide additional analyses for clients who have specific interests they want explored².

Observations

The primary purpose of this survey was to get a deeper understanding of issues, policies, and practices surrounding the acquisition and deployment of software for design and engineering. This research allows us to determine differences among various groups, to evaluate their spending plans under changing economic circumstances, and to their purchase of technology

tools, especially software. In this report, Cyon Research presents findings obtained by deep analysis of the survey data.

Purchasing policies and practices

The following questions about procurement were asked of survey respondents as shown in Figures 1 through 13:

- *How often does your firm typically refresh the hardware used by architects, designers, and engineers?*
- *Regarding the adoption of NEW software tools, at what level of maturity does your firm wait for software to reach before making an acquisition?*
- *For software your firm has ALREADY DEPLOYED, at what level of maturity does your firm generally wait for software to reach before it will release a software update for deployment?*
- *What is your firm's policy for software transitions within the scope of a project?*
- *Who is directly and actively involved in the selection of the software tools for design and engineering (CAD/CAE/PDM/BIM/EDA)?*
- *How long does each part of the procurement process take?*
- *Where do you acquire your design and engineering software tools?*

Hardware refresh rate

The first of these procurement questions explores the hardware refresh cycle, looking not only at the refresh rate in the aggregate, but separating out desktops, laptops, shared resources (compute

¹ Details on demographics of the survey respondents are contained at the end of the report, as is our methodology for collecting and evaluating the data.

² Readers interested in a deeper analysis of the data can contact Brad Holtz at Cyon Research. Brad can be reached at 301-365-9085 or brad.holtz@cyonresearch.com.

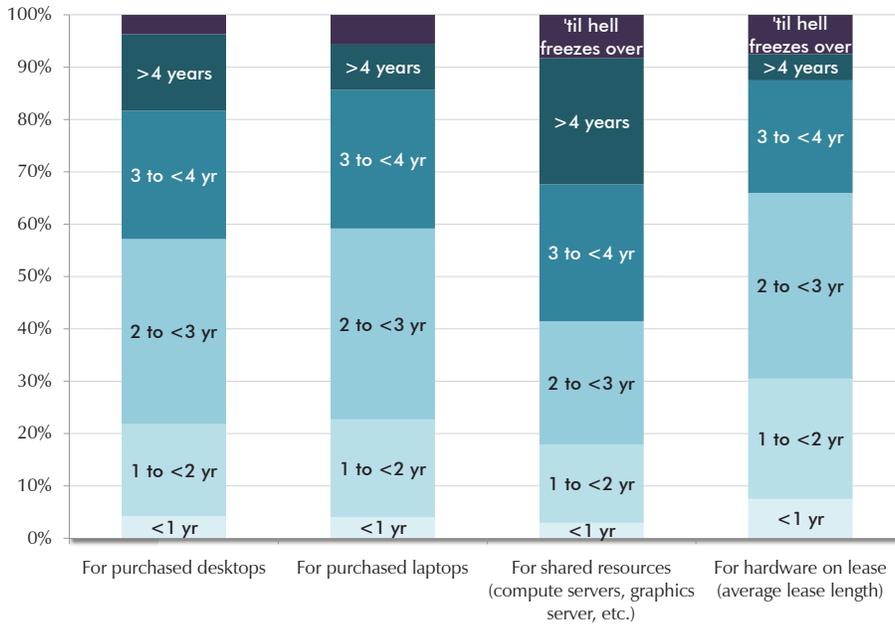


Figure 1. Hardware refresh rates for purchased desktops, purchased laptops, shared resources, and hardware on lease.

servers, graphics servers, etc.), and hardware on lease (Figure 1).

As might be expected, shared resources are refreshed more slowly than other hardware. Across the board, two-thirds of the respondents who lease hardware do so with a lease length of

less than two years. The refresh rates for desktops and laptops look similar in the aggregate, but when slicing the data to look at individual sectors, some differences appear. For example, users from AEC sectors hold on to their hardware longer than their counterparts from manufacturing sectors (Figure 2).

In comparing the data with our prior survey, refresh rates are running somewhat longer today than they were a year ago, as would be expected in the current economic situation. Our interpretation of current refresh cycles is that even through the cost of hardware has recently come down significantly; many feel that their firms consider their current hardware “good enough.” In fact, some respondents were doubtful that their companies would ever upgrade the hardware they were using—hence the significant number of “‘til hell freezes over”³ responses.

One item to note is the visibility of corporate refresh rates. We were surprised at the differential in the percentage of respondents unaware of refresh rates (*Don’t Know*) between purchased hard-

³ Many respondents selected the option “‘til hell freezes over,” rather than “>4 years,” to emphasize the resistance to change. Several chose to expound on their exasperation with this issue in their narrative response to this question.

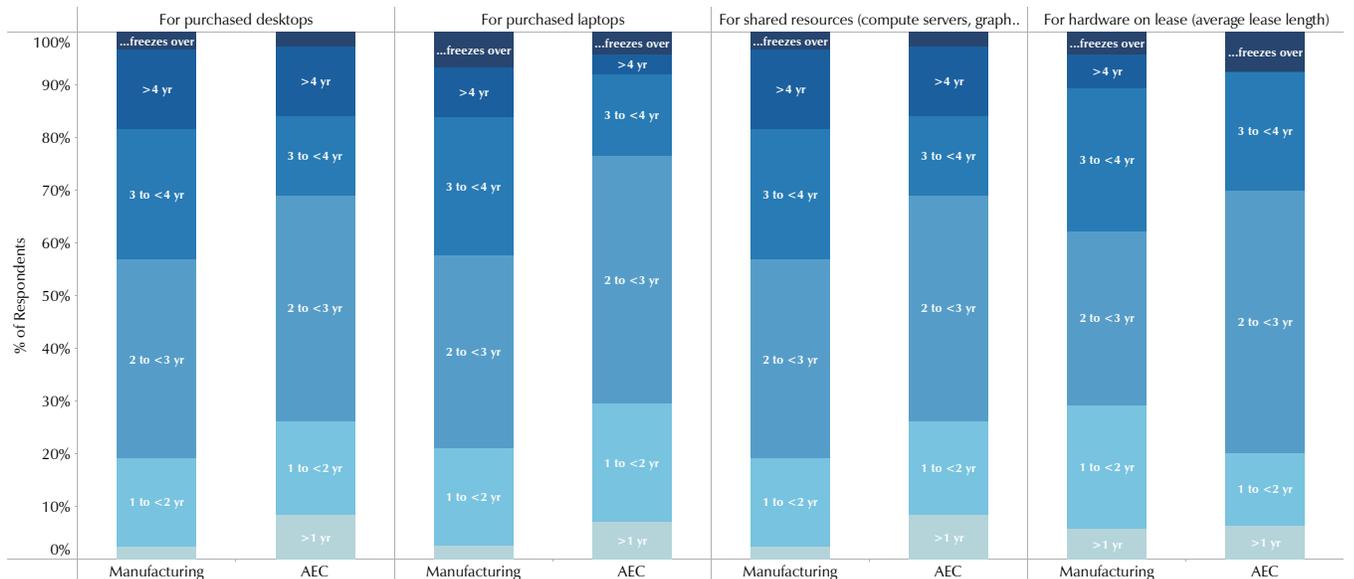


Figure 2. Similar to Figure 1, but comparing Manufacturing and AEC sectors. Image extracted from the interactive data available from Cyon Research supplied as a Tableau Software “packaged worksheet”.

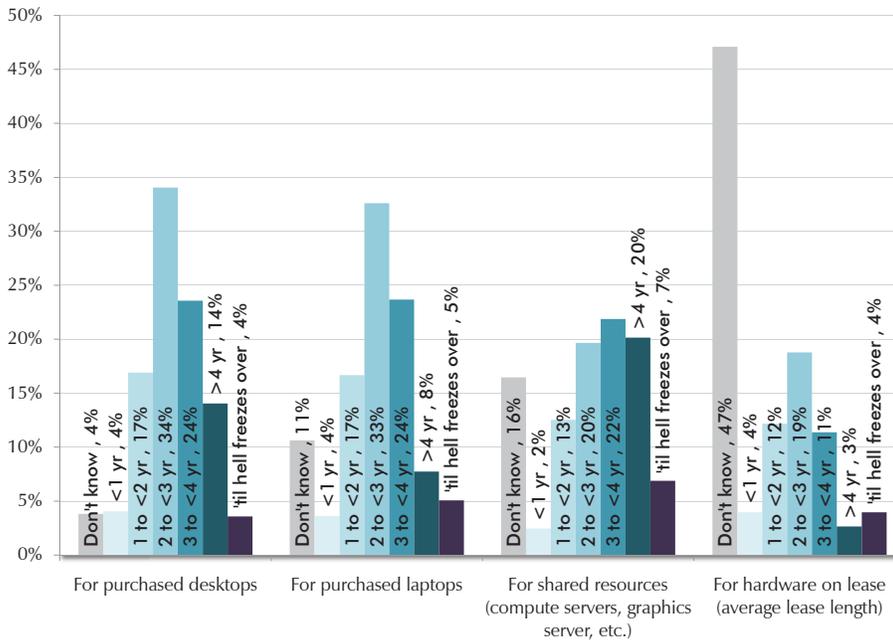


Figure 3. Similar to Figure 1, but including those that don't know. Note the large proportion of users who don't know what their firms refresh rate is for leased hardware.

ware and hardware on lease. Four times as many respondents for leased hardware were unaware of their firm's refresh rate for leased hardware as they did for purchased hardware. (Figure 3).

Timely adoption of new software

The next two procurement questions are similar to one another, with the first addressing the

timing of software **PURCHASES**, as related to software maturity (Figure 4), and the second examining the timing of **DEPLOYMENT** of updates, as related to software maturity (Figure 5).

The former question is critical for sales cycle planning to a software vendor. The latter is critical to the understanding of "stickiness" of maintenance contracts and upgrade cycles. It

is also critical in understanding the depth of technical support expected. Vendors whose customer-base is shifted to deploy earlier in the maturity cycle may experience the benefit of having to support a narrower band of legacy releases. Half the respondents indicated a delay between product release and their **purchase**. It appears that typical lag time between release and **deployment** is at least a year.

As shown in Figure 4, 60% report that they have no set policy regarding new software installation; while 20% wait for the second revision or later. Regarding updates to existing software, only 24% have no set policy.⁴ The rest, as shown in Figure 5, are evenly distributed along a range from "installing new releases immediately" to "waiting for two or

⁴ We investigated whether size of firm had a significant impact on this large "no set policy" percentage. It did, but only slightly. There was a straight-line decrease in the "no set policy" percentage as we moved from smaller to larger firms; but even looking just at the largest firms, the rate was still more than 50%.

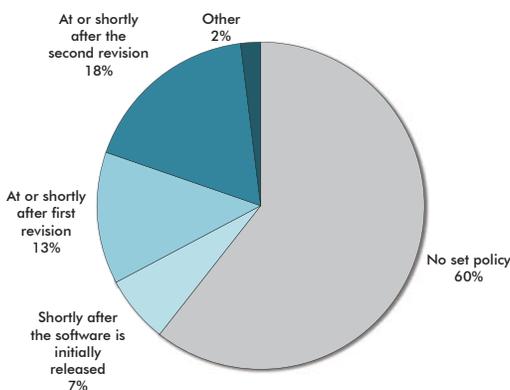


Figure 4. "Regarding the adoption of NEW software tools, at what level of maturity does your firm wait for software to reach before making an acquisition?"

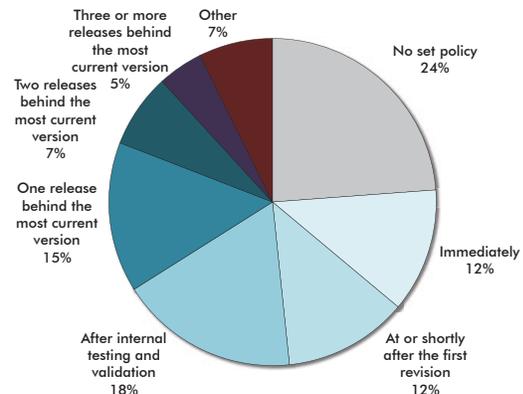


Figure 5. "For software your firm has ALREADY DEPLOYED, at what level of maturity does your firm generally wait for software to reach before it will release a software update for deployment?"

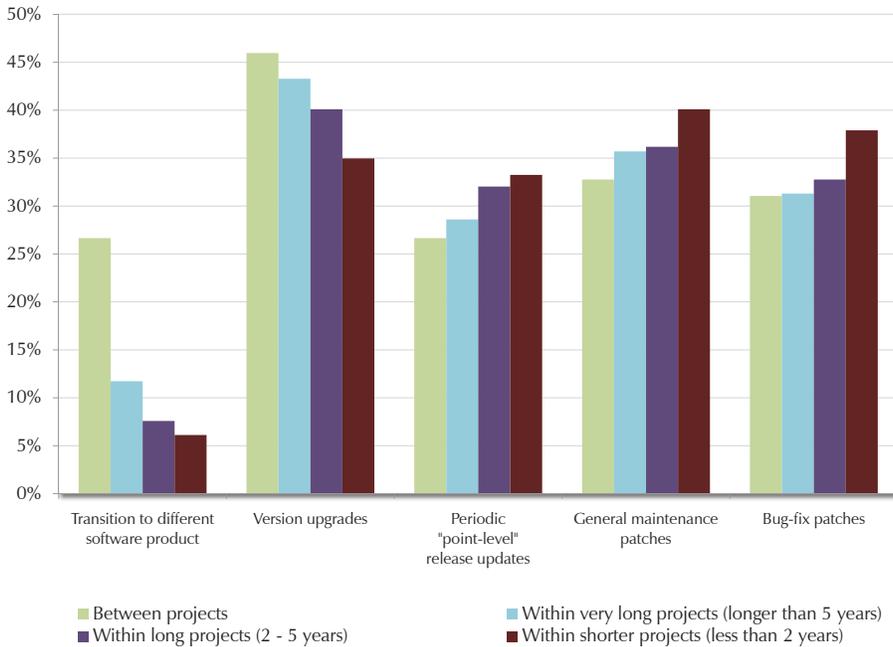


Figure 6. Company policies for software transitions within the scope of a project, by type of update.

more releases beyond the current version."

After similar results from the prior survey, we wondered if this delay might be related to the length of project cycles, perhaps indicating reluctance to deploy updates in the middle of a project, which is why we asked the next procurement question. Responses to this question of deployment during a project, rather than between projects, are summarized in Figure 6 and 7.

This behavior may be influenced by the need to be in synch with business partners. One respondent summed up the issue very well:

"It all depends on the conversion process stability. As a rule we move to new software as soon as possible because we feel it increases our quality, as new tools tend to find mistakes in our product. The last phase

of the project, which is 3-6 months before release, we stop messing with the software, and the final engineering branch works with the tools that were in place at the time of the branch."

Another respondent concurred:

"Not primarily driven on project length. Driven more by a plan that affects all projects across the board in an incremental fashion. Typically, for version dependent data, system configuration is such that previous version, current version, and next version are typically on every machine, with support for previous version disappearing when the next "next version" is released. Continuous incremental migration."

Participation in the selection process

The next procurement question, "Who is directly and actively involved in the selection of the software tools?" addresses the roles of those involved in each stage of the procurement process. The overall results are presented in Figures 8 and 9.

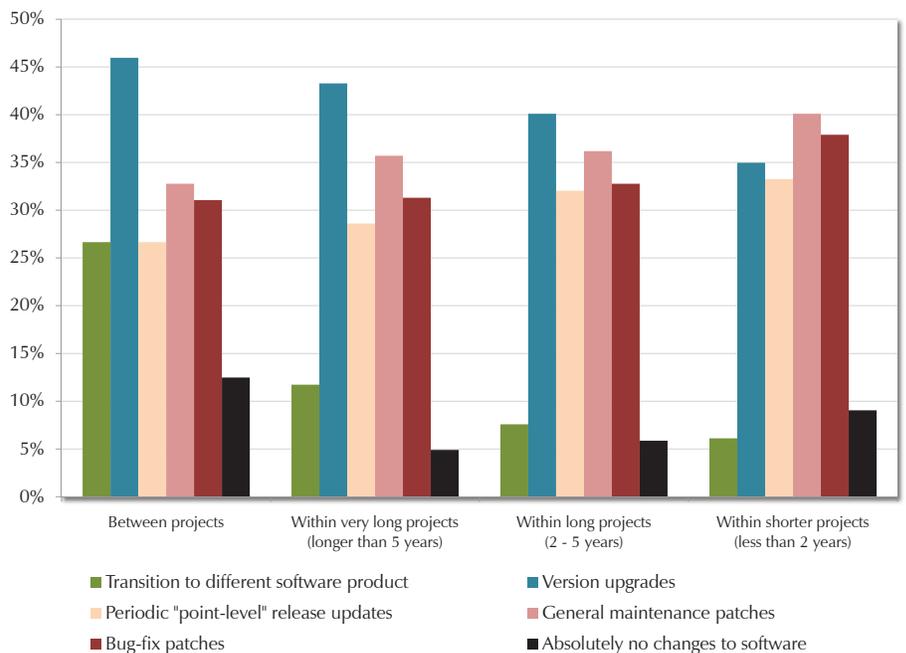


Figure 7. Firm policy for software transitions within the scope of a project, by length of project cycle.

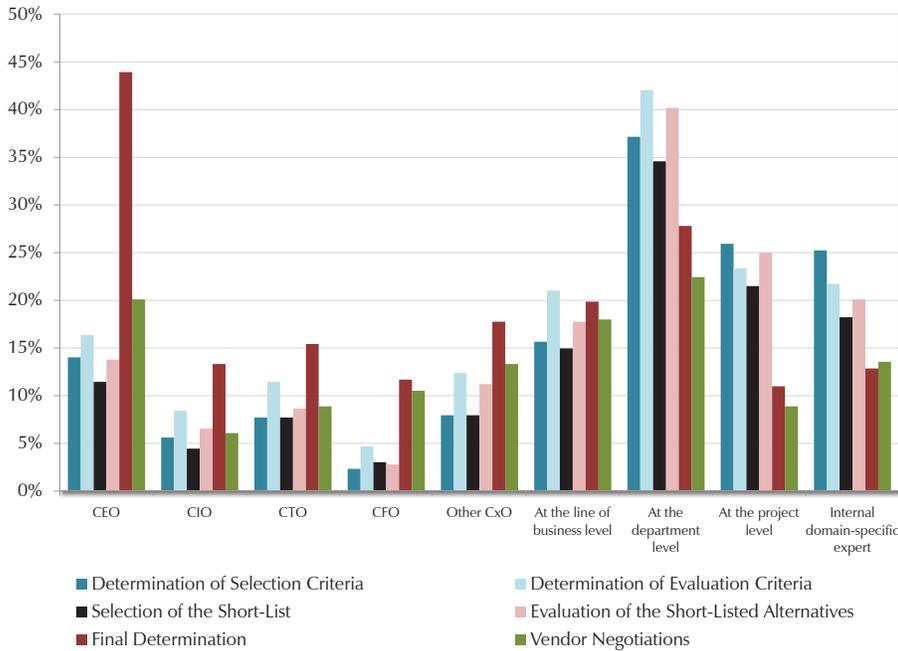


Figure 8. "Who is directly and actively involved in the selection process, by role?"

Two results are notable here. Considered in aggregate, department-level personnel are heavily involved in all steps up to final vendor determination and vendor negotiations particularly in firms of less than \$200 million annual revenue. On the other

hand, CEOs are, by far, more involved in the actual vendor selection than any other stage of the process. However, these observations for the sample set vary significantly as we examine different subsets of the data. Even so, there is remarkable

consistency in the primary role that department level executives play in the acquisition process.

This is one of the more interesting questions that arose as we examined the data. For example, Figure 10 shows a view of the data limited to firms from the Industrial Machinery sector whose annual revenue is between \$30M and \$200M. If this is a vendor's customer base, and their challenge is getting on the short-list of vendors, then they need to be communicating at the department level. C-level executives do not seem to play a significant role in that sector. On the other hand, for that group, CEOs are actively involved in more than a third of the final determination decisions.

Acquisition sourcing

The final acquisition process question we asked explored which channels firms use to procure software (Figure 11). As might be expected, the numbers add up to more than 100%, as many firms buy from multiple sources. Compared to last year's survey, the percentage of respondents buying from the vendors' websites and other websites nearly doubled.

Where respondents obtain MCAD software varies significantly based upon the size of the firm in terms of the number of MCAD seats installed. Small companies tend to buy online or from local dealers while larger firms tend to purchase software either directly from the vendor or from national VARs and system integrators (Figure 12).

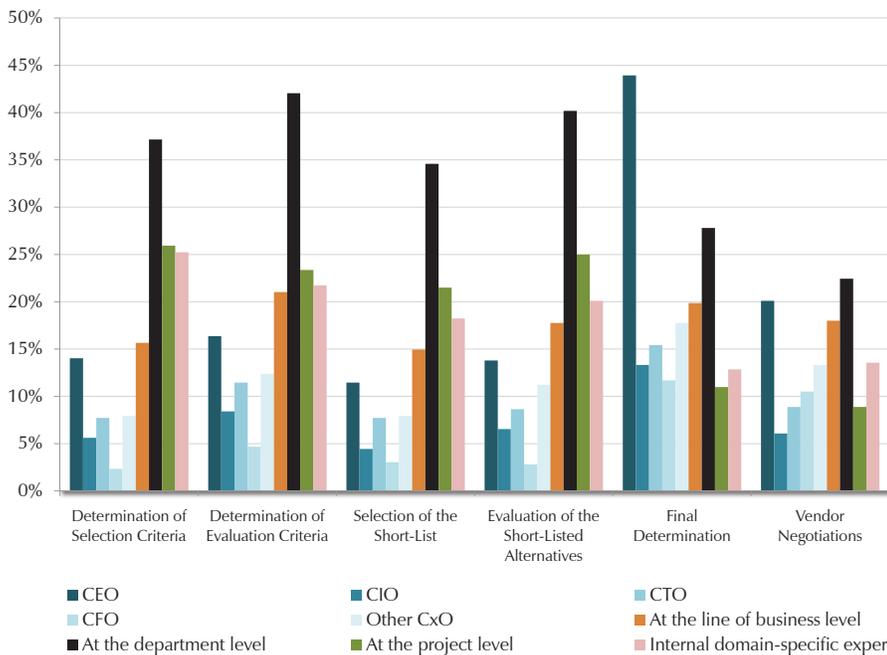


Figure 9. "Who is directly and actively involved in the selection process, by process stage?"

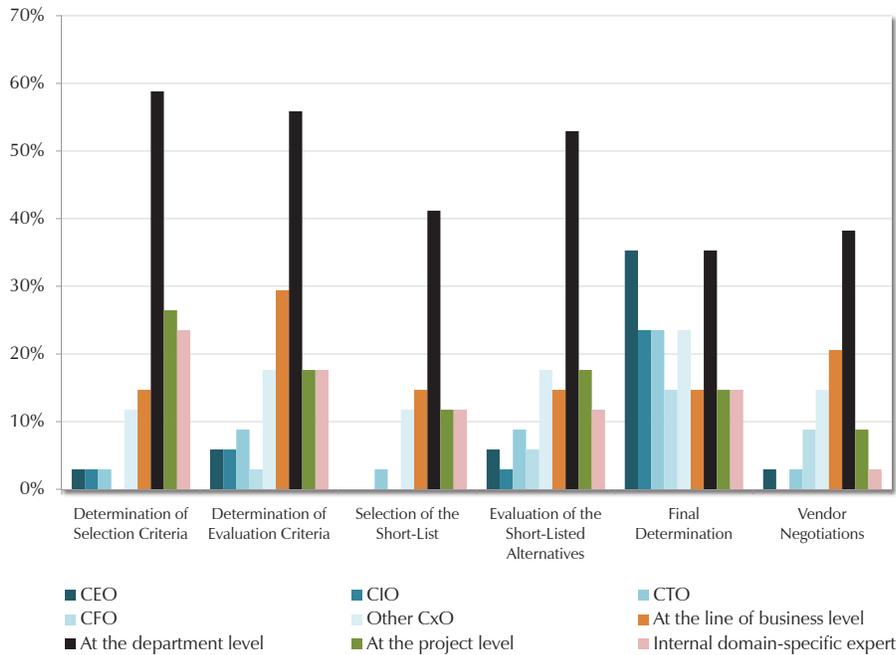


Figure 10. Similar to Figure 9, but looking at only firms from the Industrial Machinery sector with annual revenues between \$30M and \$200M.

AEC respondents are more consistent than MCAD respondents with respect to how they procure technical software. While nearly 40% of those with 1 to 9 seats use their vendor’s website, more than 25% of those with 100 or more seats also use vendor websites as their primary source for procuring software. Surprisingly, fewer than 10% of these larger users purchase directly from vendors (Figure 13).

Length of acquisition process

Another critical set of procurement results—how long each step of the process takes—is shown in Figure 14. These durations, as well as the level of personnel involved, vary greatly, depending upon the size of the responding organization.

As might be expected, many of the process stages can overlap,

so the total acquisition process duration (rightmost column: “Overall, the entire process”) is significantly less than the sum of the durations of the stages.

The stages are presented, left to right, in the order that the

selection process is likely to take. Taken together, most stages are completed by most firms in less than two months. The picture differs by sector and company size, as would be expected, but sales representatives should expect that if their prospect is taking an extended period of time for any one of these stages (longer than two months for firms under \$200 million; longer than three months for larger firms) there is a strong possibility that the procurement is in trouble.

Figure 15 shows the data limited to larger firms (those with greater than \$1.5B in annual revenue). Not surprisingly, each stage of the acquisition process takes longer in large firms than in smaller firms. What is interesting, however, is that the period for the evaluation of the short-listed alternatives is much more affected by firm size than the other stages, and that stage rarely (14%) takes less than four weeks.

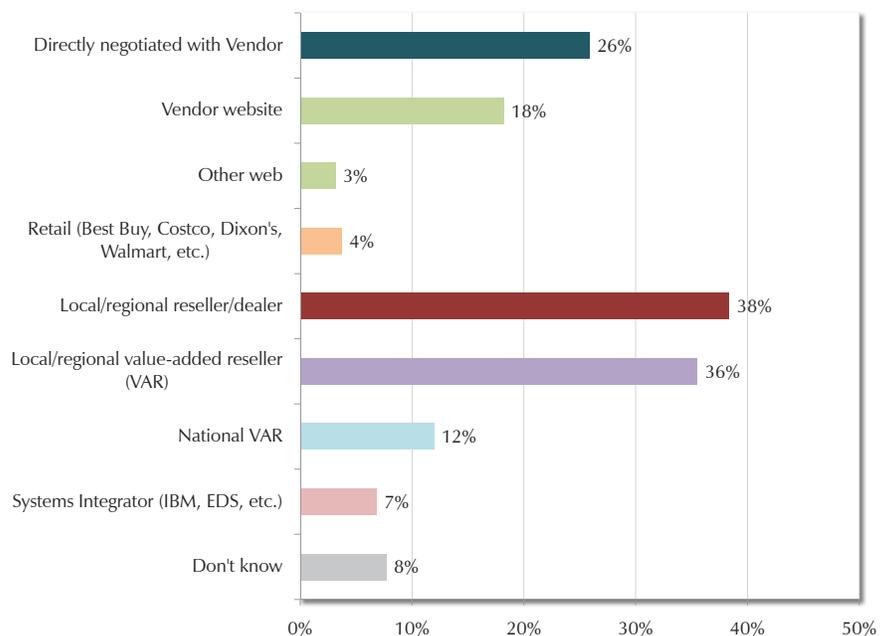


Figure 11: “Where do you acquire design and engineering software tools?”

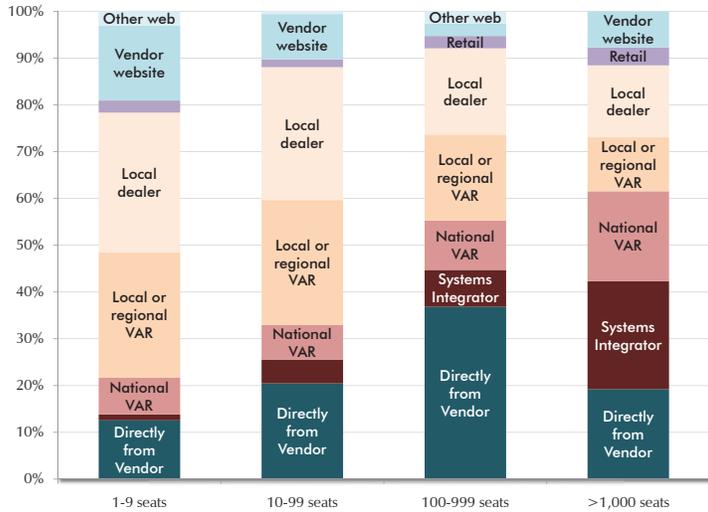


Figure 12. Acquisition channel for users from manufacturing sectors by number of CAD seats deployed.

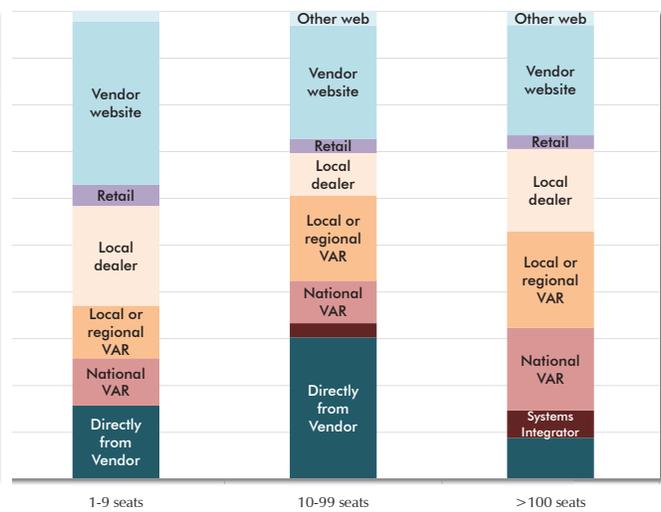


Figure 13. Acquisition channel for users from AEC sectors by number of CAD seats deployed.

One of the more interesting results from the prior survey was that for both Autodesk and SolidWorks customers, the average procurement cycle was shorter than that for the other vendors. (This was not altogether surprising, given the price-points of these two mainstream systems and their relative ease of deployment, when compared with larger or more complex PLM deploy-

ments). Such procurement timing could have implications for how quickly the various vendors see their business come back once the economy begins to recover. Another variable to consider is how quickly the “large” deals in the pipelines begin to close once conditions begin to improve – for vendors such as PTC, Dassault Systemes, and Siemens, this will be important for their fiscal years

2010 and 2011 revenue prospects.

Financial outlook

A critical objective of this survey was determining the extent to which the current economic climate was affecting the spending outlook for engineering and design programs, and the tools used to support that activity.

We asked survey participants “By how much do you expect to change your SPENDING FOR SOFTWARE TOOLS (including maintenance) for design and engineering, compared to the same period in 2008?” This data of **estimated spending plans** for the first half of 2009, the second half of this year, 2010 (by half year) and 2011 (full year) as shown in Figures 16 and 17.

For basis of comparison, in our earlier survey (conducted in the summer of 2008), the weighted average for the expected growth of spending over the next year was 5%. Not surprisingly, expect-

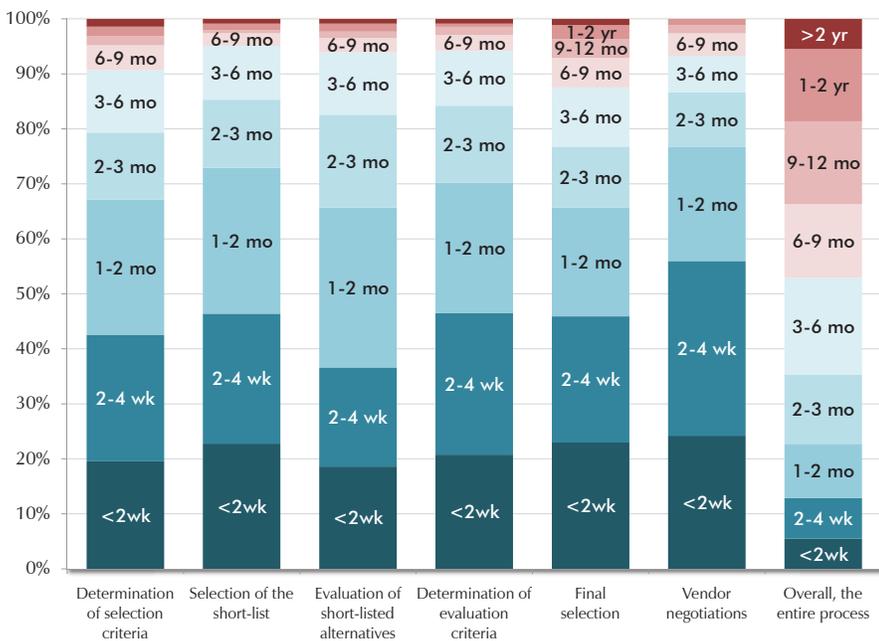


Figure 14. “How long does each stage of the procurement process take?”

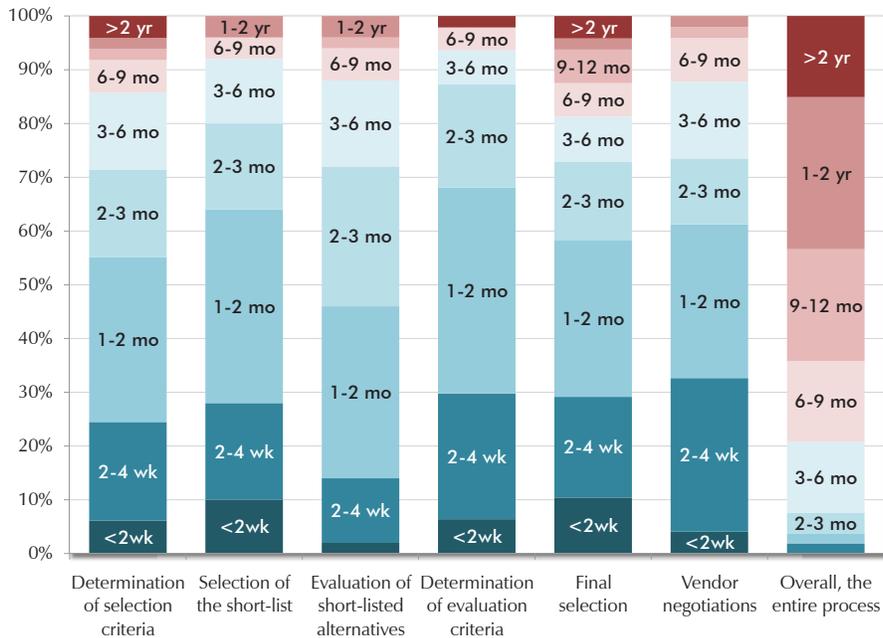


Figure 15. Similar to Figure 14, but for firms with greater than \$1.5B in annual revenue.

tations have been considerably pared back for the intermediate term. This change corresponds to what we have already seen in declining new license revenues for the main software vendors whose businesses are covered in this survey, and some deterioration in maintenance revenues as well. It's conceivable we may not begin to see positive year-over-year sales comparisons until early 2010.

We should note that the data shows much optimism for 2010 and 2011. However, only 32% expect to increase their spending in 2010 above their 2008 spending for engineering software.

We were not surprised at the proportion of respondents who expected material declines in their expenditures for design and engineering tools during the first half of 2009. (The survey was largely conducted during the spring of 2009, before the end

of first half of 2009, the results for which will begin to be disclosed in late July.) For instance, 16% of the respondents said that such expenditures would decrease by more than 50% in the first half of 2009.

However, the extent of such steep planned reductions in spending lessens in the subsequent periods, to 11% for the second half of the year, and then to 4% and 3% for 2010 and 2011.

About 29% of the respondents expected that their firms would reduce expenditures for technical software in the first half of 2009. By 2010, this number drops to 19%; and it drops still further in 2011. By comparison, in the prior survey, only 11% of the respondents said they expected to reduce spending.

While Figures 16 and 17 show spending expectations for software tools for design and engineering, Figure 18 shows spending expectations for all of **product design and development**. Expected revenue growth is shown in Figure 19, with a

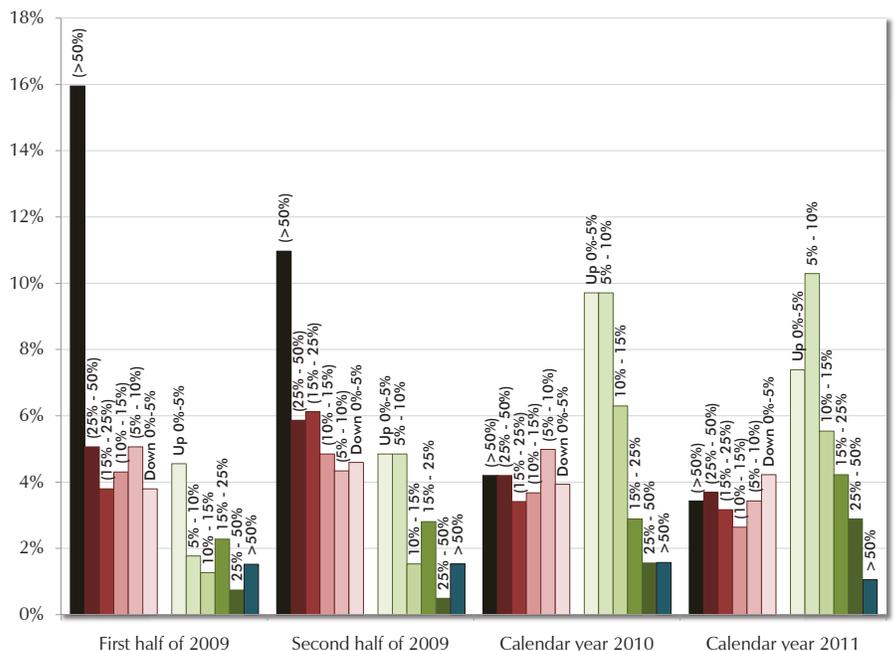


Figure 16. By how much do you expect to change your SPENDING FOR SOFTWARE TOOLS (including maintenance) for design and engineering, compared to the same period in 2008?

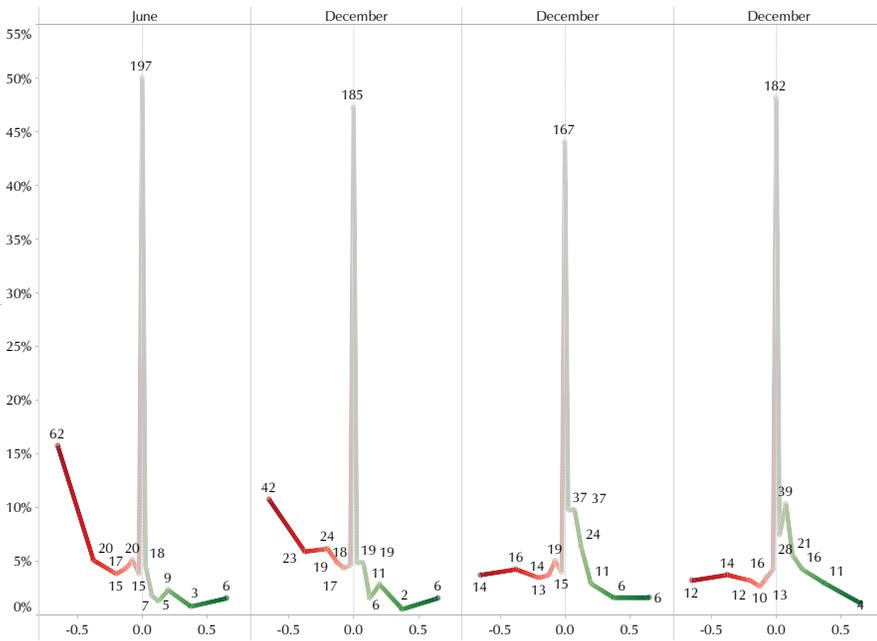


Figure 17. Similar to Figure 16, showing number of respondents at each data point, including the bulk of respondents who responded with an expectation of “no change.” Image extracted from the interactive data, available from Cyon Research and supplied as a Tableau Software “packaged worksheet”.

slightly different granularity in terms of time.

Based on this, and other evidence, Jay Vleeschhouwer⁵ expects that Autodesk will show a greater than 25% decline in its Design Solutions Group revenues this year, Dassault Systemes will report about a mid-single-digits decline in license revenues (assuming they have a substantial sequential increase in their fourth quarter revenues), and that PTC could see a nearly 40% decline in its license revenues in its fiscal year 2009. The overall

⁵ Vleeschhouwer is a former Managing Director in Merrill Lynch equity research. His area of coverage includes the software sectors addressed by this report. He was instrumental in the launch of the prior survey while still at ML, and has acted as a financial markets advisor for this second survey. Merrill Lynch, which cooperated with Cyon Research in the data collection stage of the prior survey, had no involvement in the current survey.

survey results corroborate that there will indeed be double-digit declines for many of the principal software products this year.

To give some flavor as to how the customers were thinking about their businesses, beyond the formal parameters of the survey questions, we quote a variety of comments. Responses ranged from relatively unconcerned:

“All long-range plans are in place and being implemented. The present general economic business conditions were internally forecast during the planning.”

to the fairly pessimistic:

“Heck if I know. I just hope we’re still in business in 2010 and beyond with the current economic crises.”

to matter-of-fact and rational:

“Our intent is to spec out new systems to replace the oldest equipment. We will insure that these new systems will be able to accommodate software and

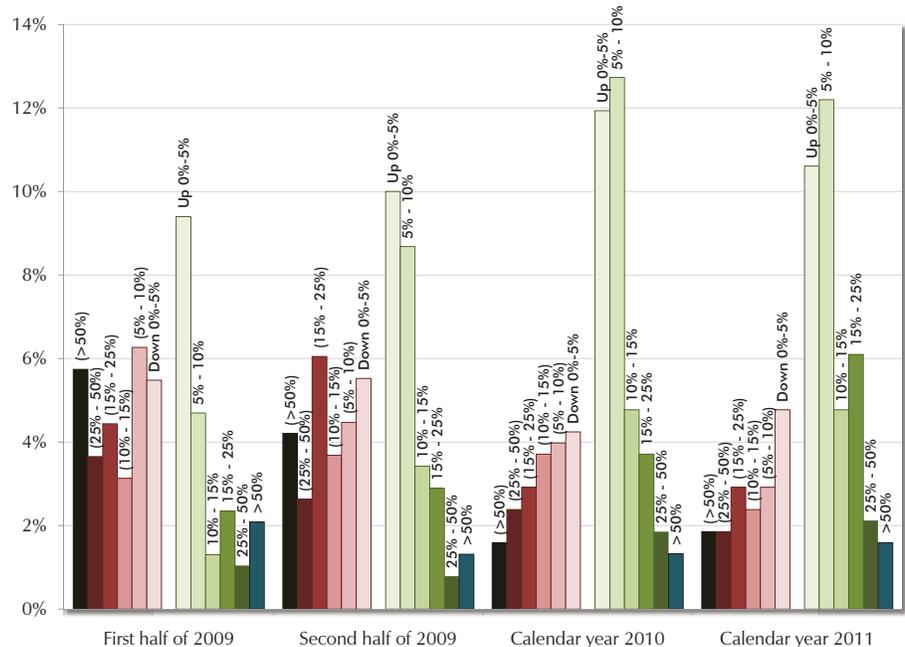


Figure 18. “By how much do you expect to change your spending ON PRODUCT DESIGN AND DEVELOPMENT (not just software), compared to the same period in 2008?” Again, the “no change” column is hidden for clarity.

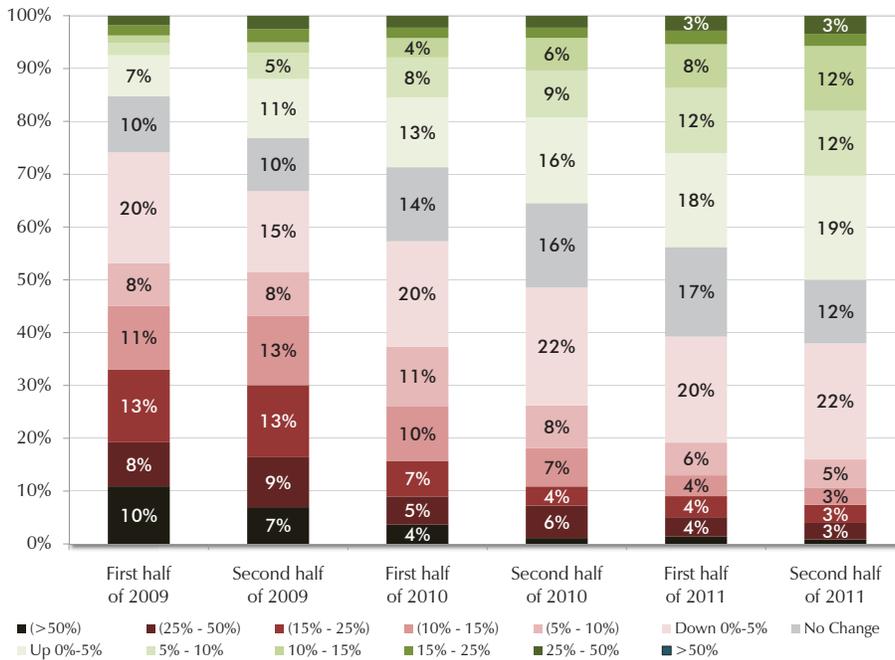


Figure 19. "By how much do you expect your company's REVENUE to change, compared to the same period in 2008?"

hardware upgrades for at least five years if possible. More use of maintenance and consumable budget versus procurement budget."

As in the 2008 survey, we asked the respondents if they thought their companies would grow faster or slower than their peers within their business sector. The responses, shown in Figure 20, exhibit a strong "Lake

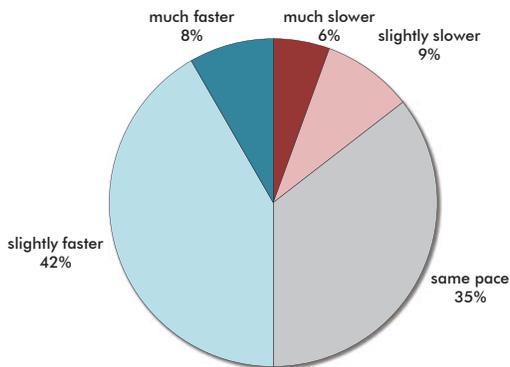


Figure 20. The "Lake Woebegone" effect: most respondents believe their firm will perform above average, when compared to peers from their sector.

Woebegone"⁶ factor: fully 85% of the respondents believe that their companies will grow as fast as or faster than their competitors; only 15% believe that they will grow slower.

Investing during hard times

In our previous survey, which was designed and conducted prior to the current economic debacle, we asked the question: "How do general economic conditions affect your software purchasing?" In that survey, 36% said they would maintain or increase spending in the face of a business slowdown.

In this survey, we have taken the opportunity to look at actions rather than projections. We

⁶ "Lake Woebegone" is a mythical place created and popularized by humorist Garrison Keeler on his radio show, Prairie Home Companion, where "...all the children are above average".

asked, "How have the general economic business conditions affected your company's acquisition position for software tools for design and engineering?" Respondents indicated whether they had taken action (**Done**), were about to take action (**About to do**), considering taking action (**Under consideration**), or had decided to not to pursue (**Not going to happen**) each of the following software acquisition strategies:

- Discontinue Software Maintenance Across the Board
- Discontinue Software Maintenance For Unused Seats
- Discontinue Software Maintenance Selectively
- Cancel Acquisitions in Progress
- Delay Acquisitions in Progress
- Hold All New Acquisitions
- Do Nothing
- Use the Slow Time to Jump Forward on Engineering IT Projects, But Within the Current Budget
- New Spending for Strategic Advantage Against Competition

As of May this year, 32% reduced their acquisition spending and 28% decreased spending on maintenance. Only 9% had already increased their spending in order to gain competitive advantage (Figure 21).

We can see the distressed economy clearly in this picture. More sobering is what we will refer to as the "overhang."⁷ This is the overall effect of the actions under consideration or about

⁷ By "overhang" we do not mean excess or unused software capacity, but instead a way of conveying potential business decisions by users.

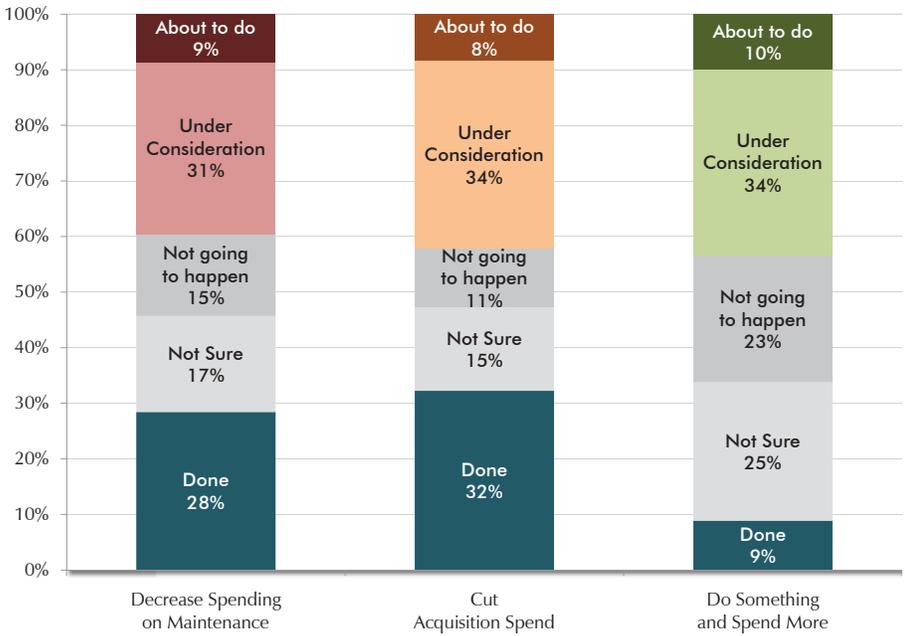


Figure 21. Spending actions

to be taken. The overhang on acquisition spending cuts is 42%. Since many of the CAD software industry leaders' revenue has a very significant reliance on recurring revenue, the overhang on maintenance, at 40% should be particularly distressing news to vendors.

One bright spot is that many companies are looking to increase spending as a way to gain strategic advantage over their competition. The overhang on this potential for increased spending is 44%. While we don't expect that all of the overhang will eventually become real expenditures, the prospect of increased spending for competitive advantage should be viewed as an eye-opener for those unable to use the slow time to prepare for the coming recovery. This foreshadows a competitive shakeout to come.

The length of the procurement cycle does not seem to be cor-

related with maintenance spending cuts already taken (**Done**). On the other hand, the percentage who say it is not going to happen decreases from about 30% for those firms where the procurement cycle is less than two months to about 15% where

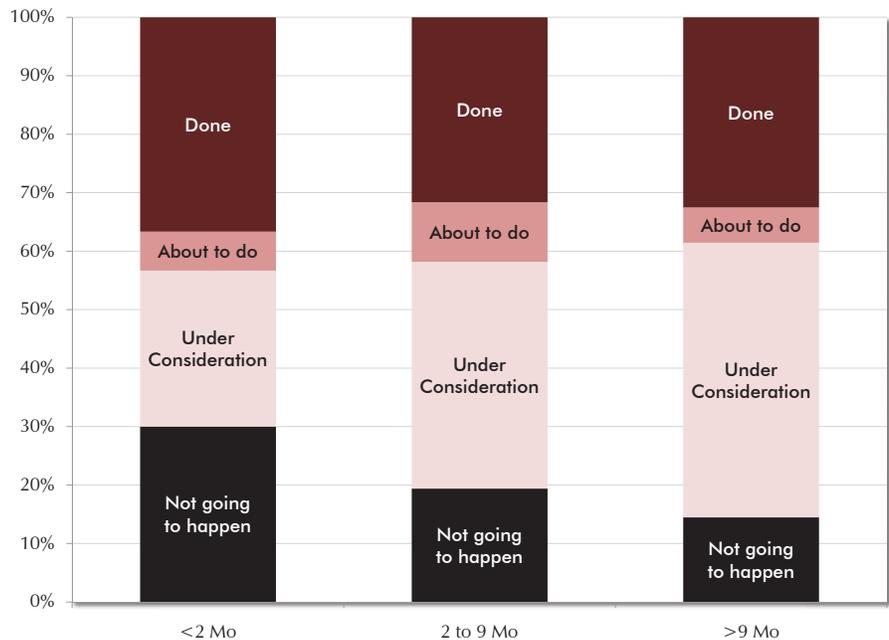


Figure 22. Decision stage on decreasing maintenance spend by length of procurement cycle.

the procurement cycle is greater than nine months (Figure 22).

In a number of cases we looked at the difference in responses between senior management (**C-level**) and individuals directly involved in the design process. In some there was little variance, as in the case of those who responded that they were about to spend more to increase their competitive advantage. On the other hand, nearly twice as many **non C-level** individuals believed that their firms would not increase spending as **C-level** individuals (Figure 23).

In general, **C-level** and **non-C-level** individuals responded about the same regarding plans for reducing maintenance expenditures. The most significant difference was that about 35% of the **non C-level** individuals believe that their firms are considering reducing maintenance

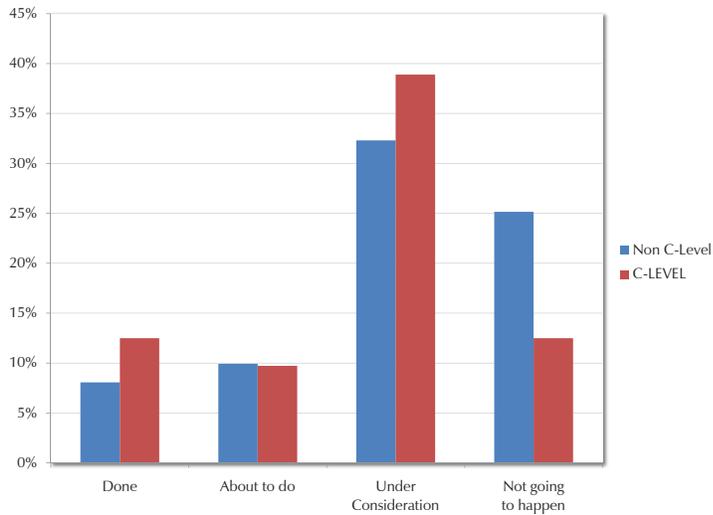


Figure 23. Decision stage on **increasing spend** to gain competitive advantage, **C-level** executives versus others.

while only 25% of the **C-level** individuals feel that way (Figure 24). We're not sure whether this is due to lack of **C-level** exposure to the lower-level effects of budget constraints, or (perhaps more likely?), **non C-level** individuals underestimating the firm's commitment to maintenance spend. Either way, it is critical that vendors interpret their customers' maintenance projections cautiously.

One question we raised was whether the source of software had an impact upon the attitude respondents held regarding their willingness to increase spending in order to create a competitive advantage. For the most part, how companies procure software does not seem to have a significant impact on their investment plans. One exception was for companies that purchase via vendor websites. These respondents were significantly less likely (in comparison with those purchasing via other channels) to dis-

miss the potential for increased spending⁸ (Figure 25).

The number of MCAD seats installed was strongly correlated

⁸ More specifically, only 11% of those that purchase via vendor websites listed "Not going to happen" as an option for the "increasing spending" question. For comparison, respondents purchasing from the other channels ranged from 19% to 32%.

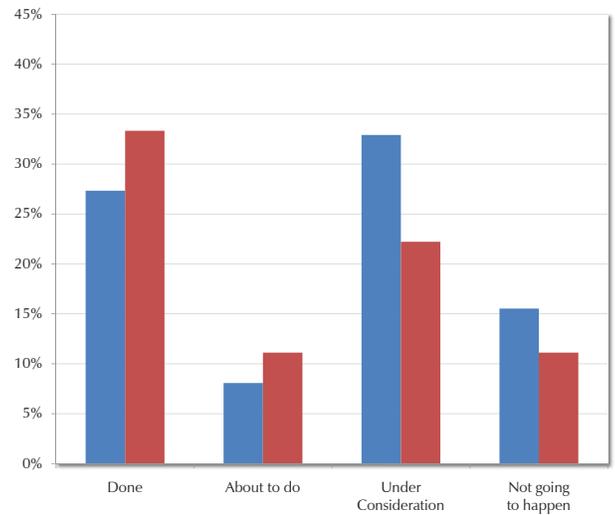


Figure 24. Decision stage on **decreasing maintenance spend**, **C-level** executives versus others.

with the overall length of the procurement cycle for new software purchases.⁹ For companies with 1 to 9 seats installed, nearly 65% of the respondents stated that the typical procurement took less

⁹ Intuitively, this makes sense. We note that, while many of their customers have hundreds of seats, the average number of Pro/E seats at PTC customers is estimated at fewer than 10 seats and fewer than 5 seats for SolidWorks customers.

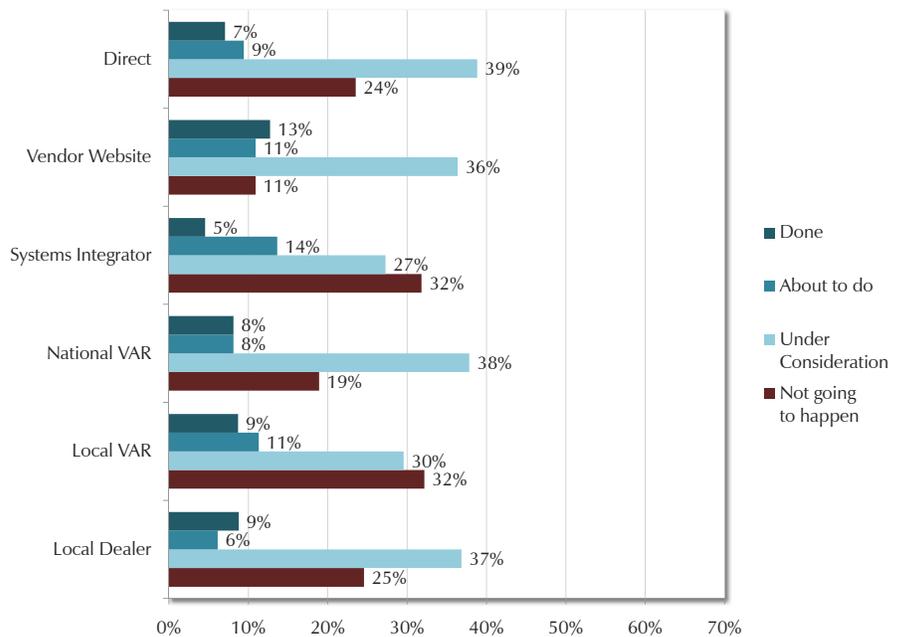


Figure 25. Decision stage on **increasing spending** to gain competitive advantage, by procurement channel

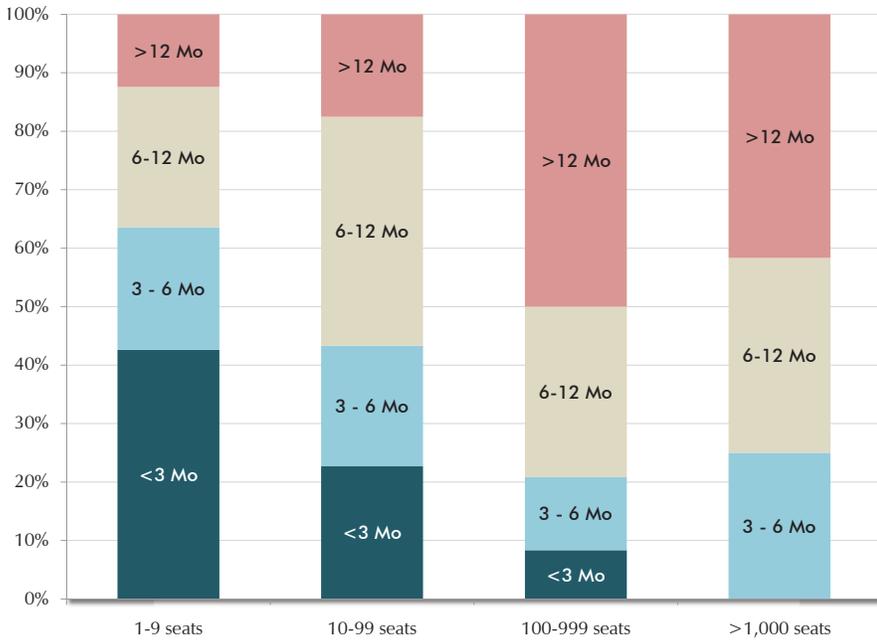


Figure 26. Overall length of procurement cycle, by number of CAD seats deployed

than six months. For companies with 100 or more seats installed, this dropped to 25% or less. Half of those with 100 to 999 seats installed said that it takes more than 12 months to complete procurements, and about 42% of those with more than 1,000 seats agreed (Figure 26).

Looking forward

The financial data quantifies the effects that the current downturn is having on the technical software industry. User attitudes are consistent with first half 2009 financial reports posted by the publicly traded companies in the industry.¹⁰ The bright spot here is the longer-term outlook, 2010 and 2011, for increased spending in the purchases of design, analysis, and data management software. As in most business areas, the firms they represent are trying to control costs while, at the same time, prepare for the

¹⁰ Of those reported as of July 29.

pickup in business that everyone hopes will occur next year.

The financial projections here are a snapshot of user opinions from the March-May 2009 time-period. As should be expected, such data on buying plans

in economic hard times can change very rapidly, even from industry sector to industry sector. The remainder of our findings are based on data that has a long shelf life—that is, it is likely to change very slowly over time.

How companies sell themselves

One of the most important questions asked was how the respondents perceived that their companies differentiated themselves from competitors.

The focus of this survey was on gaining a better understanding of the decision-making process around the acquisition of design and engineering software. In order to better understand that process, it is important not only to examine direct questions (i.e., “which criteria are important?” as in Figure 27), but also in-

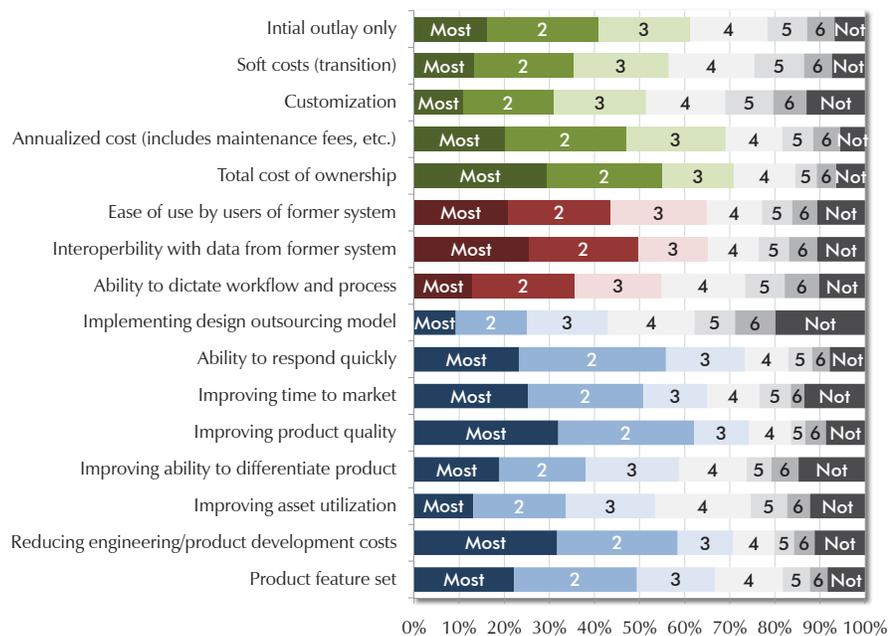


Figure 27. “Which criteria are most important to your firm when choosing software for design and engineering?” Values range from 1 (most important) to 7 (not important).

direct questions. The question examined in Figure 28, “How does your firm differentiate itself from its competitors?” is a key to understanding how to sell software. The customer may be focused on the software evaluation criteria, but ultimately the purchase decision boils down to how that software will help the firm deliver better on its differentiators against its competitors.

For this survey, we greatly increased the number of criteria by which firms differentiate themselves from their competitors, in the interest of a deeper understanding.

As before, **quality** and **price** were the most and least important criteria, respectively. More than 80% of the respondents placed a 1 value (most important) or a 2 value on the **quality** criterion.

Even though the **price** criterion was last in the ranking of crite-

ria, it was still quite important to many – fully 1/3 placed a value of 1 (most important) or 2 on **price**.

Joining the **quality** criterion at the top of the importance list are **specialized knowledge**, **product reliability**, and **custom design**. Interestingly, the criterion **certification** had the most varied response, with an equal number of respondents valuing it **Not Important** as **Most Important**.

It is important to note that, as we look more closely at individual market segments or company sizes, these relative ranks change considerably. For example, for respondents from the Industrial Machinery sector, **custom design** was valued **most important** by more respondents than any other criteria.

We were surprised by the relatively low placement of the

criterion **first to market**. This data bears careful examination. For example, a company that emphasizes low price and is losing market share may find this is happening because its competitors are emphasizing product quality or the ability to rapidly configure products to meet specific customer needs.

The following are our findings in the exploration of how users’ firms differentiate themselves from their competition:

- **Sustainability** is a much more important factor¹¹ to CATIA users as a competitive differentiator than it is to users of other MCAD software. Also, it’s notable that, among AutoCAD users, those in manufacturing sectors rank **sustainability** in the bottom 40% of the issues we listed, while respondents from AEC and other sectors rank **sustainability** in the top 40%.

In particular, manufacturing firms with revenues greater than \$1.5 billion place a high value on **sustainability** as a factor in how they differentiate themselves from their competitors, and rank it among the top five factors. In contrast, smaller firms in the manufacturing sectors place a significantly lower value and rank on **sustainability** as a competitive differentiator.

- **Intellectual property**, as a factor by which firms differentiate themselves from their competitors, is of significantly higher value to specialized MCAD users than it is to mainstream MCAD users. Manufacturing firms with revenues greater than \$600 million place a high value on **intel-**

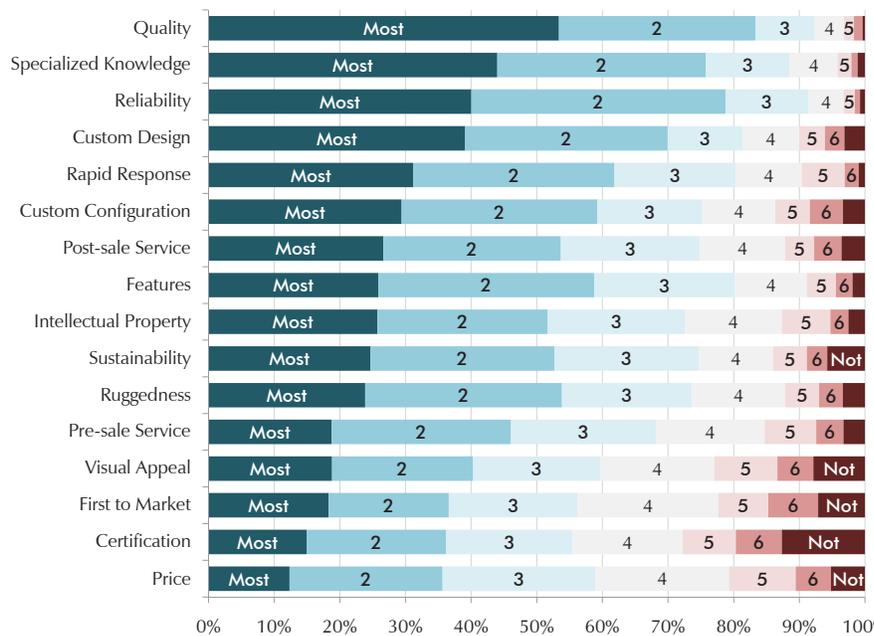


Figure 28. “How does your firm differentiate itself from its competitors?” (scale: 1 = most important, 7 = not important)

¹¹ In terms of both **Rank of Average Ranks**, as well as **Average of Values**.

Criteria	Sectors where criterion is more important	Sectors where criterion is less important
Price	Consumer Packaged Goods Consumer Goods	Other Manufacturing Medical Devices Shipbuilding
Quality	Consumer Packaged Goods Consumer Goods	Industrial Machinery Electronics & High Tech
Ruggedness	Industrial Machinery Automotive	Medical Devices Shipbuilding
Rapid Response	Consumer Packaged Goods Shipbuilding	Medical Devices
Custom configuration	Industrial Machinery	Medical Devices Shipbuilding
Visual appeal	Consumer Packaged Goods Consumer Goods Automotive Medical Devices	Shipbuilding Aerospace Other Manufacturing Industrial Machinery
Sustainability	Consumer Packaged Goods Electronics & High Tech	Shipbuilding Medical Devices Industrial Machinery
Specialized knowledge	Shipbuilding	Industrial Machinery

Figure 29: Manufacturing sector outliers by criteria.

lectual property as a factor in how they differentiate themselves from their competitors and rank it among the top four factors.

Smaller firms place a significantly lower value and rank **intellectual property** in the bottom five. Interestingly, among specialized MCAD users, respondents from firms that also deploy mainstream MCAD software value **intellectual property** higher than those that only deploy specialized MCAD.

- **Certification** ranks as the least important factor in competitive differentiation for mainstream MCAD users, unlike users of specialized MCAD¹², who rank it above **visual appeal, first to market, ruggedness, price, pre-sale service, and sustainability**. Even so, one-sixth of the mainstream MCAD users valued **certification** as **most important**.

Medical Devices (39%) and Ship-

¹² Here, specialized MCAD refers to those that use specialized MCAD and do not also have mainstream MCAD deployed at their firm.

building (31%) were the sectors where the highest proportion of respondents gave **certification** the highest value. It is notable that the Aerospace sector, at 21%, was significantly lower than we had expected, even adjusting for firm size.

- When evaluating factors by which firms differentiate themselves from their competitors, responses from Pro/ENGINEER users are consistent with their mainstream MCAD peers, with one notable exception: **intellectual property**. Mainstream MCAD users (other than those with Pro/E) rank **intellectual property** in the bottom third, while Pro/E users rank it in the top third.

In some cases we can gain insight into a product by looking at the responses of its users in comparison with those of its close competitors. In the case of Nemetschek North America’s VectorWorks, some interesting differentials between it and its competitors Revit and MicroStation were seen, even

when the samples were limited to the single Architecture sector. In particular, the factors of **quality, custom design, rapid response, and visual appeal** were valued as being significantly¹³ more important as factors by which VectorWorks users differentiate themselves from their competitors than users with MicroStation or Revit. Conversely, **pre-sale service** was significantly less important to VectorWorks users than to MicroStation or Revit users.

A close look at the criteria by which respondents’ firms differentiate themselves from their competitors reveals that some sectors stand out as having a notably higher or lower value than the rest, for any given criterion. Figure 29 highlights those values for manufacturing industry sectors.

In some instances, the number of users/seats was the filter by which we saw differences. For example,

- Respondents from companies with fewer than 10 MCAD users/seats place a significantly lower value (than did respondents from firms with more than 10 MCAD seats) on both **intellectual property** and **time to market** as factors by which they differentiate themselves from their competitors. Many of the **mainstream MCAD** products, including Inventor, SolidWorks, and Pro/E have a large proportion of their customer-base in firms with fewer than 10 MCAD users/seats.

¹³ Here and elsewhere, when we refer to “significant” differences in value, we mean that the probability of the null hypothesis is less than 5% (p<.05). A reference to “very significant” means p<.01.

- Respondents with 100 to 999 MCAD users/seats place a much lower value on **sustainability** (among factors by which they differentiate themselves from their competitors) than do users with more or fewer MCAD seats.
- Among respondents from AEC firms with 10 to 99 CAD users/seats, there was remarkable consistency in the value placed on **specialized knowledge, quality, and rapid response** as factors by which they differentiate themselves from their competitors.

Software selection criteria

We also looked at sixteen criteria by which firms evaluate software. Figure 27 shows the results of that evaluation, across all users and sectors. As with the other question on criteria, respondents were asked to rate 16 different procurement criteria from 1 (very significant) to 7 (not important).

For this question we have color-coded the criteria in Figures 27 and 30 into three groups: **green** for financial criteria; **red** for criteria related to ability to use the software; and **blue** for criteria related to product capabilities.

Across the broad spectrum of users, **total cost of ownership, interoperability, and improving product quality** are the most important within each group, respectively. This picture does vary significantly as we examine subsets of users, whether by sector, size, product, or other factors. Subsequent portions of this report will show how these criteria varied among users of different software packages.

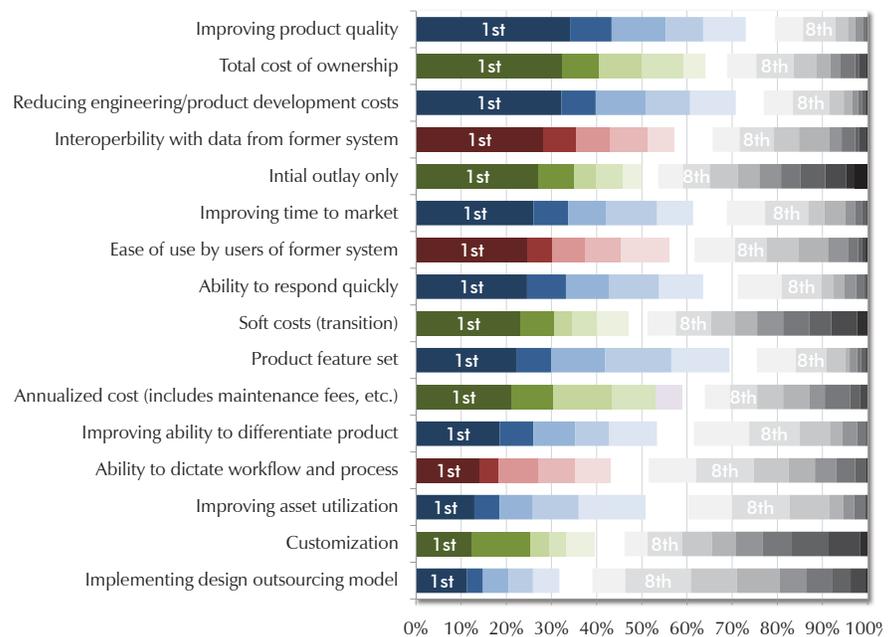


Figure 30. Ranking of criteria for choosing software. Shows proportion of respondents at each rank for each criteria. Sorted by percentage of respondents ranking the criteria as first. Compare with Figure 1, which shows the proportion of respondents at each value.

Another key question we investigated was the importance respondents placed on each of sixteen factors related to product selection. Figures 27 and 30 show the full spectrum of results in aggregate, with Figure 1 showing (unsorted) the value of responses (from 1 to 7) and Figure 30 showing (sorted by first rank) the percentage of users at each rank for each criterion.

The highest ranked criterion for procuring technical software was the impact it would have on enabling the buyer to improve product quality. This was very consistent with how the respondents said their companies differentiated themselves from their competitors. It is interesting to note that each criterion had some respondents value that criterion as being **not important** and others who rated the same criterion as **most important** (Figure 30).

With the large volume of responses we received, and given the depth of questions asked, the data can be sliced and diced many different ways. We looked at each of these procurement criteria across hundreds of different category pairs (e.g., specialized vs. mainstream, PLM vs. PDM, firm size, product type, industry sector, etc.). Among our findings, the following observations should be of interest to the broadest range of readers.

Comparing CAD systems deployed

- **Annualized Costs** and the **ability to dictate workflow and processes** are ranked¹⁴ higher by respondents whose firms have deployed **specialized MCAD**

¹⁴ "Ranked higher" indicates that the rank of average ranks for that criterion is notably higher. If not indicated otherwise, the two comparables would differ by at least 5 rank positions (out of 16).

software (but not also mainstream MCAD), than by those who have deployed mainstream MCAD.

- Respondents from the AEC sectors whose firms use AutoCAD LT (Autodesk's second largest product, by revenue) rank **Cost** issues as less important than do respondents from other sectors whose firms use AutoCAD LT. Similarly, AutoCAD users (rather than AutoCAD LT) from sectors other than AEC and manufacturing are significantly more concerned about **annualized costs** and **total cost of ownership** than those from manufacturing or AEC sectors.¹⁵
- Solid Edge users rank **total cost of ownership** significantly higher than do Inventor users. They also place more importance on **soft costs, annualized costs**, and the **ability to dictate workflow and processes**. On the other hand, Inventor users rank **ease of use by users of former system** and **ability to respond quickly** higher as decision criteria.
- Solid Edge users rank **ability to respond quickly** higher as a decision criterion than do other mainstream users; and also higher than do Siemens NX users.
- In general, SolidWorks and Inventor users rated most procurement issues in a similar manner. However, Inventor users ranked three criteria higher than did SolidWorks users: **customization; ability to dictate workflow and processes; and improving product quality**.

- CATIA V4 users¹⁶ rank **interoperability with former systems** higher as a decision criterion than do users of any other group of mainstream or specialized MCAD.
- Siemens NX users rank **annualized costs** higher than do users of CATIA or Pro/E.
- Siemens Pre-NX¹⁷ users rank **total cost of ownership** higher than do users of NX or CATIA. Perhaps this may be a factor in their delay in moving to NX.
- Siemens NX users rank the **ability to respond quickly** higher than do users of CATIA.
- CATIA V4¹⁸ users rank **reducing product development** costs lower than do users of other specialized MCAD software.
- Siemens NX and CATIA V4 rank **product feature set** higher than do CATIA V5 and Siemens Pre-NX users.

Comparing industry sectors

- Respondents from the Consumer Packaged Goods sector rank **total cost of ownership** lower as a decision criteria than do all other industry groups except for Life Sciences.
- Respondents from the Shipbuilding and Other Manufacturing sectors rank **interoperability**

¹⁶ All respondents whose firms who have currently deployed CATIA V4 have also deployed CATIA V5. In those few instances where we discuss comparisons between CATIA V4 and CATIA V5 users, reference to CATIA V5 will indicate those who do NOT also have CATIA V4.

¹⁷ Unless otherwise noted, references to Siemens NX will include users who may have NX predecessors (Siemens Pre-NX)

¹⁸ At this point in its evolution, the majority of the CATIA installed base is using V5. Some have begun deploying the latest version, V6, which began shipping last year.

with former systems higher than do respondents from other industry sectors. Shipbuilding and Other Manufacturing sectors also ranked **improving time to market** lower than did respondents from other industry sectors.

- Respondents from the Heavy Engineering sectors (Energy; Process, Power & Offshore) rank **total cost of ownership** higher than those from other sectors, particularly including Industrial Machinery and Medical Devices.
- Respondents from the Process, Power & Offshore sector rank **ease of use** higher than do respondents from any other sector except for Architecture.
- Respondents from the Energy sector rank **interoperability** lower than do respondents from the Process, Power & Offshore sector.
- Respondents from the Business Services sector rank **ability to dictate workflow and process** and **reducing engineering costs** higher than do users in other sectors, except for Architecture.
- Respondents from the Process, Power & Offshore sector rank **soft costs, annualized costs**, and **total cost of ownership** higher than do users from most other sectors.

Comparing firm size

- Respondents from the manufacturing sectors with more than 1,000 CAD users/seats rank **soft costs** and **ability to differentiate product** higher than do similar respondents with fewer seats installed.
- Respondents from the manufacturing sectors with 100 to 999 CAD users/seats rank **total cost of ownership** and **product feature set** higher than do users with fewer or more seats.

¹⁵ AutoCAD and AutoCAD LT together typically account for 35%-40% of Autodesk's total annual revenues (although it's likely to be less than that this year).

- Respondents from the AEC sectors with more than 100 CAD users/seats rank **ease of use** significantly higher than do AEC users with fewer seats.
- Respondents from the AEC sectors with 10 to 99 CAD seats rank the **ability to differentiate product** higher than do similar users with fewer or more seats.
- Respondents from firms with \$200 to \$600 million in revenue rank **interoperability** higher than do those from smaller and larger firms.
- Respondents from firms larger than \$600 million in revenue rank **asset utilization** higher than do those from smaller firms.
- Respondents from firms with \$30 to \$600 million in revenue rank **ease of use** higher than do users from smaller or larger firms.

Comparing procurement sources

- Respondents who procure software directly from the vendor rank **total cost of ownership** higher than do those who use other procurement sources.
- Respondents who procure software from the vendor’s website or from a local VAR rank **ease of use** higher than do respondents who use other procurement sources. Vendors with a substantial share of their revenue generated via channel partners (Autodesk, DS SolidWorks) or planning to grow their channel-based business (Dassault Systemes, PTC, Siemens), should pay close attention to these findings.
- Respondents who procure software from local or national VARs rank **interoperability with data from former system** higher than do those who procure software from a local dealer.

- Respondents who procure software from the vendor’s website or from a local dealer rank **reducing engineering/product development costs** higher than do respondents who procure software from national VARs or direct from the vendor.

Comparing from within AEC sectors

- MicroStation users rank **annualized costs** higher than do Revit users. MicroStation users also rank **total cost of ownership** higher than do Revit users.
- MicroStation users rank **product feature set** somewhat higher than do other AEC users.
- MicroStation users rank **interoperability** lower than do Revit users.
- AutoCAD and AutoCAD LT users from AEC sectors rank **reducing engineering costs** higher than do Revit and MicroStation users.

Comparing firms that have cut spending with those that have increased spending

Here we look at various factors to help us recognize groups likely to either cut or increase spending.

Corporate differentiators

The information on spending plans can be looked at many different ways. For example, respondents who were **about to increase spending** ranked the criteria by which their companies differentiated themselves from their competitors such that **quality** and **specialized knowledge** were most important and **price** and **visual appeal** were the least important (Figure 31). When compared to those who were **about to cut acquisitions**, we see that the latter group values nearly every criterion lower

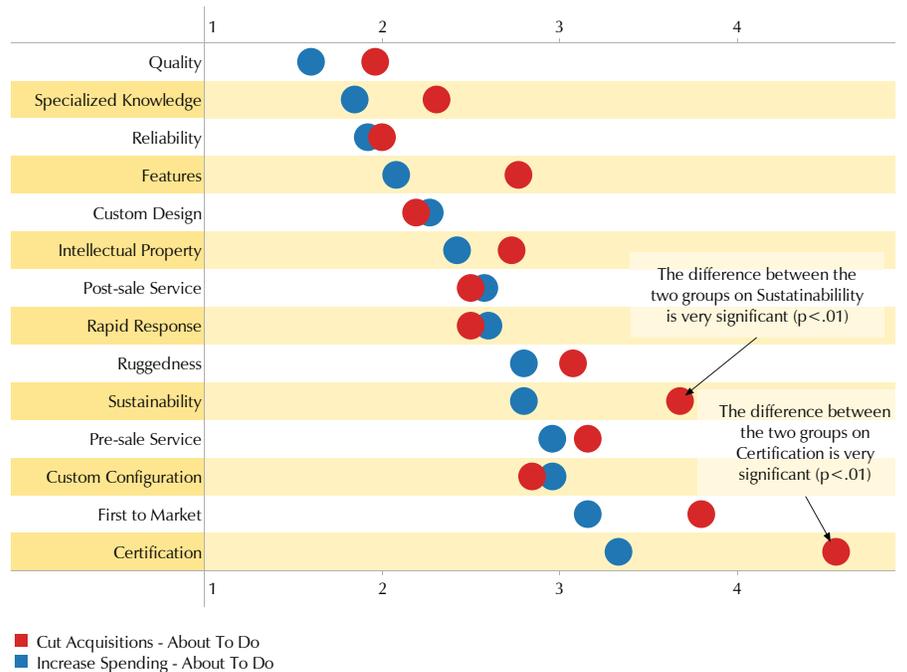


Figure 31. Comparison of firms **about to cut acquisitions** with those **about to spend**. Horizontal axis is the average value for the criterion, where most important = 1 and not important = 7

than the first group does except in four cases where they value them about the same. Overall, the individuals who plan to cut acquisitions appear to be more negative than those who plan to increase spending – no real surprise.

- Comparing respondents whose companies are about to increase spending with those that are **about to cut acquisitions**, Figure 31, **sustainability** and **certification** stand out as criteria by which the two groups differ in how they value the factors by which they differentiate themselves from their competitors. Those about to cut acquisitions care significantly less about **sustainability** than do those about increase spending.
- Respondents from firms that have **already increased spending** valued **features, custom configuration, first to market** and

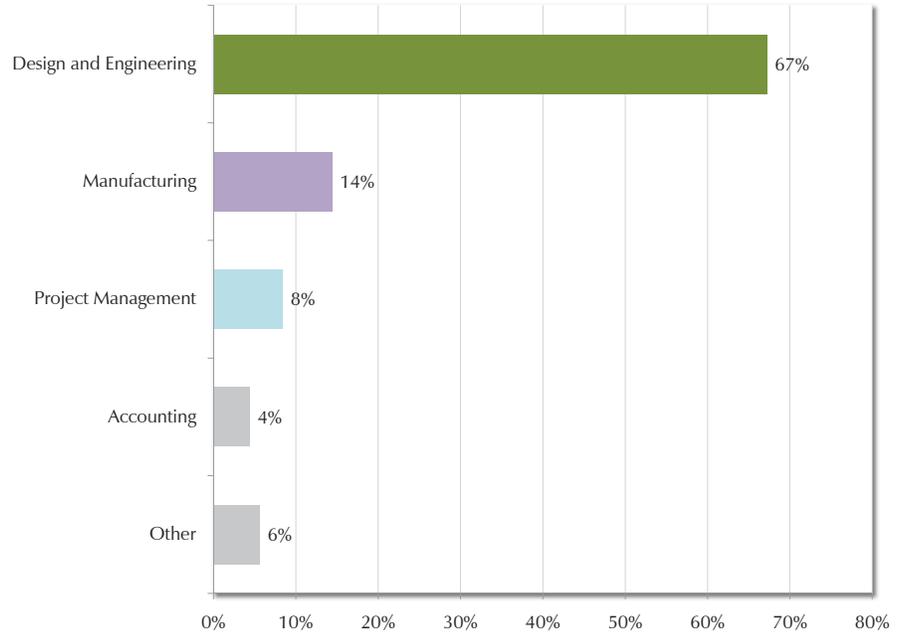
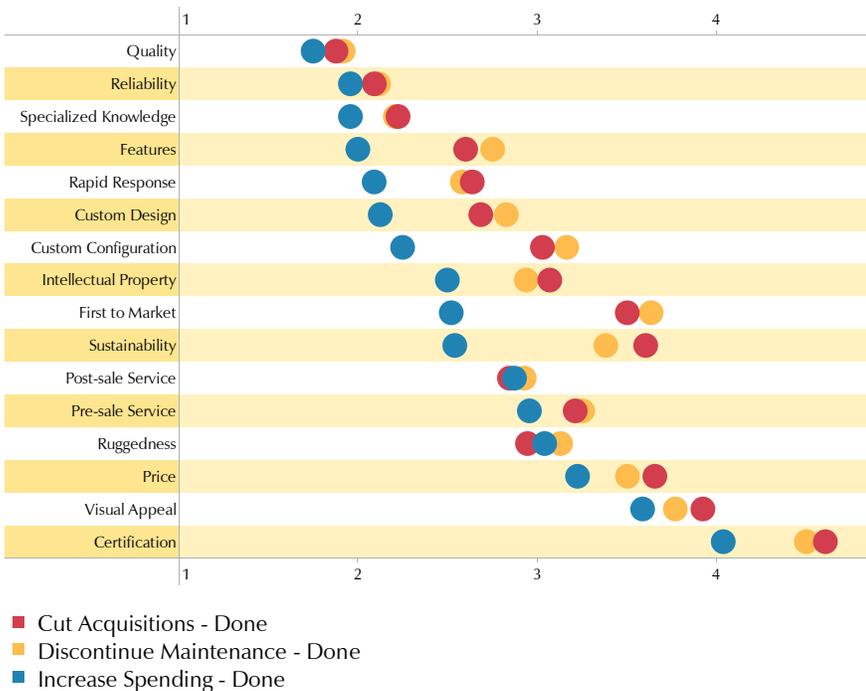


Figure 33. “When there is only one Bill of Materials (BoM) of record, which group has control over the BoM of record?”

sustainability as significantly **more important** as a factor in how they differentiate themselves from their competitors, than respondents from firms that had either **already discontinued**

maintenance or had **already cut acquisitions** (Figure 32). In fact, we were intrigued to see that respondents who had already increased spending rated nearly all criteria higher than did those who have already cut acquisitions and/or discontinued maintenance.



Procurement priorities

- Respondents who **do not plan to discontinue maintenance** rank the **ability to respond quickly, improving asset utilization** and **product feature set** higher as decision criteria than those who have **already discontinued maintenance** or are planning to do so.
- Respondents who have no plans to reduce technology acquisition spending rank **interoperability** higher as a decision criterion than those who have already done so or are planning to reduce spending.
- Respondents who have **already cut acquisitions** rank **product**

Figure 32. Comparison of firms that have **already increased spending** with those that have **already cut spending**. Similar to Figure 31, but based on actions taken rather than pending actions.

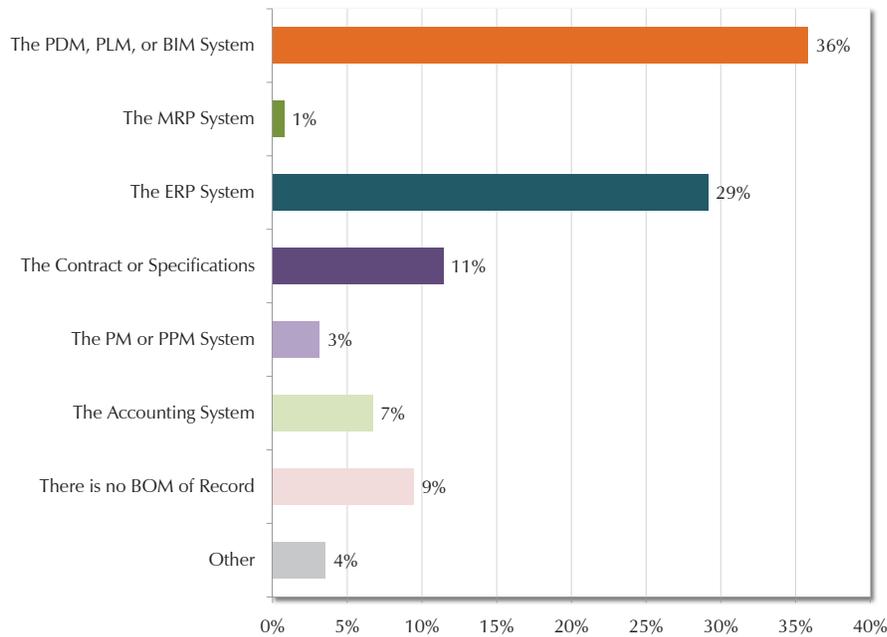


Figure 34. “In most firms there may be many repositories of Bills of Materials (BoMs), but there is only one BoM of record. For your firm, who has control over the BOM of record and which system does it reside in?”

feature set higher as a decision criterion than do others.

- Respondents who have **already increased spending** or plan to increase spending rank **annualized costs** lower as a decision criterion than those who have no plans to do so.
- Respondents who are **not going to increase spending** rank **asset utilization** lower as a decision criterion than those who have already increased spending or are planning to do so.

Control of the BoM

In recent years, the management of a product’s bill of material (BoM) has become an increasingly complex subject since there are often several automated systems involved in the process. There are two aspects to this issue--which group has control over the BoM of record (Figure 33); and what software is used to maintain the BoM of record

(Figure 34). Among our respondents, two-thirds have their BoMs of record maintained by the engineering department.

PDM, PLM, or BIM software is used to manage BoM data for more than one-third of the respondent firms; 29% are maintained with ERP (enterprise resource management) software.

Number of MCAE Applications

Our prior report showed a clear correlation between the number of different MCAE tools deployed at a firm and the classification of MCAD software used. The results of this current survey, with almost three times as many respondents, show the same correlation (Figure 35). Nearly two-thirds of firms surveyed who have **both mainstream and specialized MCAD** installed use

multiple MCAE tools.¹⁹ On the other hand, among those who only have mainstream MCAD software installed, one-third have no MCAE and fewer than one-fifth have more than one CAE product. This implies a fairly untapped market for the use of MCAE tools in the mainstream MCAD base.²⁰ Firms that have only specialized software installed tend to fall between these two groups with about 50% having a single CAE product installed.

Similarly, as with our earlier report, we also looked at the impact that the type of PDM/PLM software the respondent was using had on the number of CAE products in use. Nearly half of those who had neither PDM nor PLM software installed also had no CAE software. Those with just PDM installed used slightly more MCAE. The big change came with those who had just PLM or a combination of PDM and PLM installed. As shown in Figure 36, almost three-quarters of the respondents who had both PDM and PLM deployed at their firm also had more than one MCAE tool in use.

¹⁹ It would not surprise us if this figure underestimates the true number, as the visibility of MCAE tools may be lower than that of MCAD tools – many may not be aware of the extent of the MCAE software at their firm.

²⁰ An estimate of untapped potential should consider that the maintenance-paying base of mainstream MCAD (not even counting PTC’s Pro/E) is probably in the neighborhood of 400,000 seats (according to calculations by Jay Vleeschhouver).

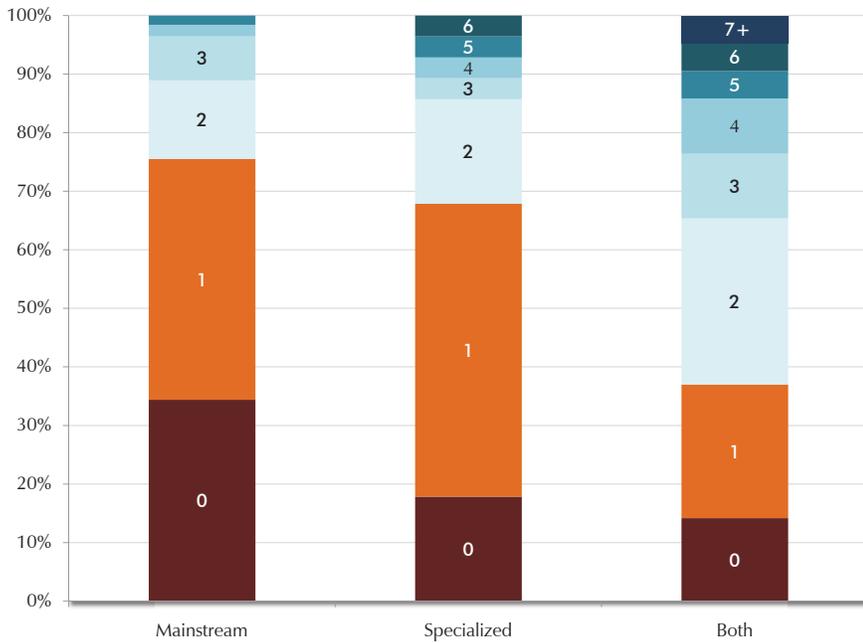


Figure 35. Number of CAE applications used by type of MCAD used

New software

During the past 18 months there have been significant developments in MCAD from the two primary specialized MCAD providers. Dassault Systemes released CATIA V6 and Siemens PLM Software introduced Synchronous

Technology. We asked the users of these two vendors' products their plans for deploying the new technology. In our analysis, we qualified the respondent base for these questions, as shown in Figures 37 through 41, considering only those responses from who were already users of the ven-

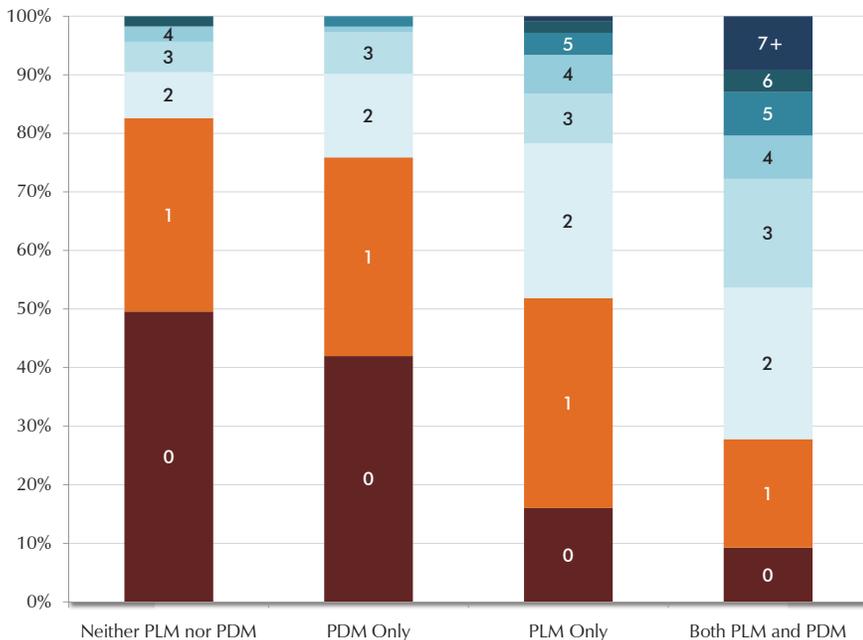


Figure 36. Number of CAE applications used by type of data management used

dor's products. We can assume, therefore that this data reflects the opinion of a knowledgeable and informed audience.

V6

Last year, 60% of the CATIA users said it was too early to tell if they would deploy V6, and 30% said they would deploy the software to some extent. In the current study, the percentage of those who think it is still too early dropped by a quarter, to 43%, while the number planning to deploy the software to some extent increased by half to 43% (Figure 37).

All else being equal, this apparent increase in interest should be welcome news for Dassault, given its evident commitment to V6 (though the percentage showing interest is no better than the percentage showing little or no interest). Still, the ultimate incremental revenues to Dassault Systemes from V6 remains to be seen.

Because of the relationship between SolidWorks and Dassault Systemes, we thought it would be interesting to see how those numbers changed when users of SolidWorks were included in the data. That result is shown in Figure 38.

Synchronous Technology

Among users of Siemens PLM Software NX (and its predecessors) and Solid Edge, the number who plan to implement the company's Synchronous Technology is similar to what our prior study revealed: 55%, while the

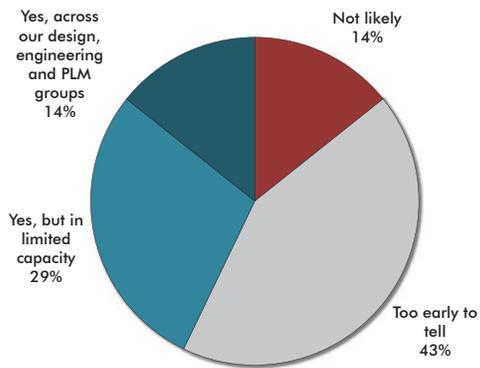


Figure 37. Dassault Systemes customers' thoughts on deploying V6. Only responses from those whose firms are already using CATIA were included in this chart.

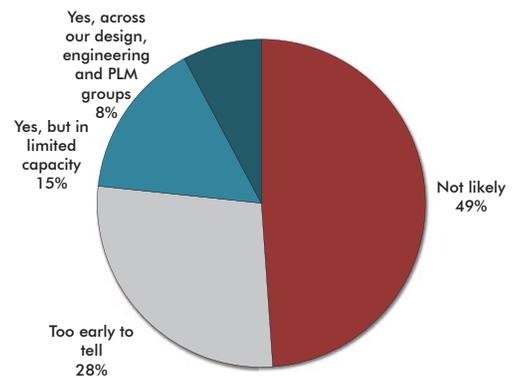


Figure 38. Similar to Figure 37, but including responses from other Dassault Systemes customers, most notably users of SolidWorks, but also including non-CATIA users of Dassault Systemes ENOVIA product line.

number who have indicated “**not likely**” almost doubled, to 34% (Figure 39). Among Solid Edge users, a larger number believe it is too early to tell (Figure 40).

tor respondents considered it still too early to tell if they might eventually deploy the software, about one-quarter (28%) already had plans to do so (Figure 41).

Inventor Fusion

Autodesk has also brought a new technology to the attention of its users: Inventor Fusion. At the time we closed the survey, Inventor Fusion was still in the “labs” stage of development; and while most Autodesk Inven-

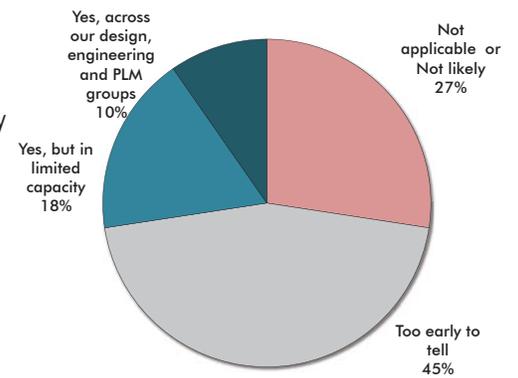


Figure 41. Autodesk Inventor customers' thoughts on deploying Inventor Fusion

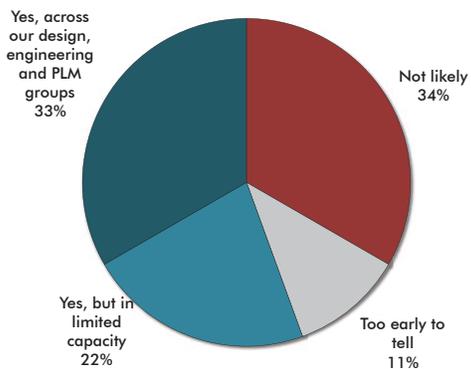


Figure 39. Siemens PLM Software customers' thoughts on deploying Synchronous Technology. Only responses from those whose firms are already using NX (or its predecessors) were included in this chart.

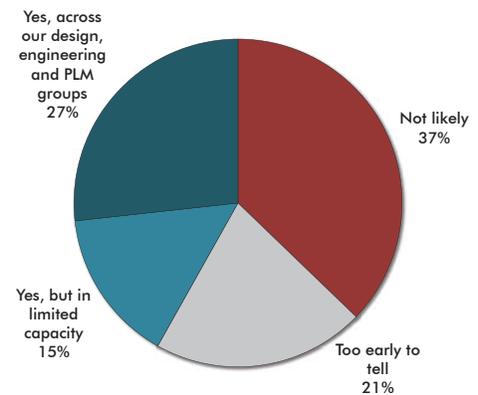


Figure 40. Similar to Figure 39, but including responses from users of Solid Edge.

In closing

The Cyon Research 2009 Survey of Engineering Software Users report provides only a sample of the richness of information we have collected and explored.

Of particular note in the report was the extent to which many firms have reduced expenditures. At the same time we observed that other firms see the current economic climate as an opportunity to gain competitive advantage, and are budgeting accordingly. While most respondents were pessimistic about the near future, they were optimistic about the longer term.

This data is of particular value to organizations that sell engineering software. We have limited our presentation here to only the information of interest to a broad audience. Much of the richness and value, however, only manifest when exploring the specifics.

For readers interested in accessing this rich data, we have developed worksheets for data exploration using an innovative and intuitive tool from Tableau Software. These business intelligence (BI) worksheets are available from Cyon Research for an additional fee (the required Tableau Software Reader is a free download). We can also provide you with custom research.

We plan to revisit this subject on an annual basis. We would appreciate any input you might have or support for the next survey, and how you would like to see the resulting information to be presented.

Demographics

Cyon Research sent survey invitations to its database of contacts. Desktop Engineering and ConnectPress were also given an opportunity to invite their readers to participate. A link to the survey was also given for broad distribution to representatives from Autodesk, Bentley Systems, Dassault Systemes, Kubotek, Nemetschek North America, PTC, Siemens, and SpaceClaim. A small number of surveys were submitted from a link given out via Twitter by others.²¹

Of the 717 individual surveys we received, we validated 587 as coming from the user community. The 587 respondents represent more than 550 companies from 37 countries. Figure 42 shows the geographic distribution of the respondents.

²¹ Our thanks to Deelip Menezes, Ralph Grabowski, and Randall Newton, among others.

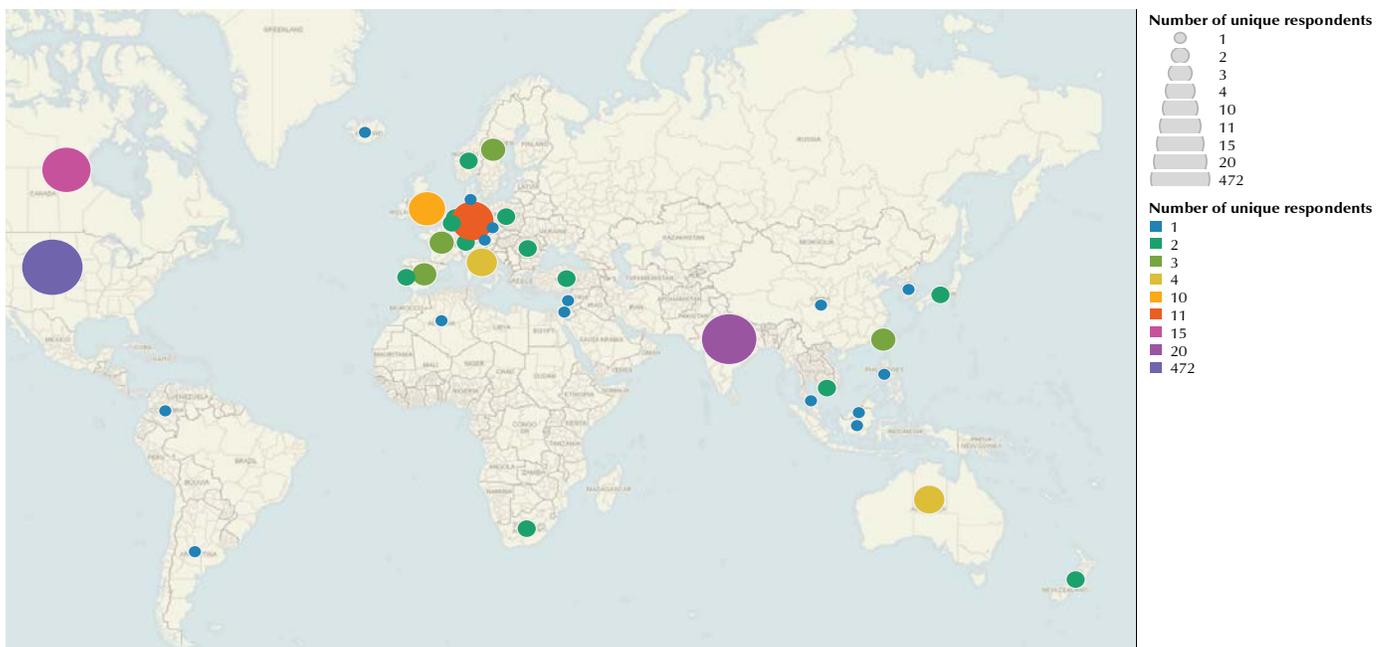


Figure 42. Geographic distribution of respondents. Image extracted from the interactive data available from Cyon Research supplied as a Tableau Software “packaged worksheet”.

The industry sectors our respondents participate in are shown in Figures 43 and 44. Broadly, respondents were from firms in manufacturing sectors (66%) and AEC (Architecture, Engineering and Construction) sectors (21%), with a smattering (6%) not participating in either sector. These others came from industries such as energy, life sciences/health-care, business services, and financial services.

The distribution of firm sizes among respondents, shown in Figure 45, is less evenly distributed than in our prior survey—half of the respondents in this survey fall into the category of less than \$30M annual revenue. Because of this we took special care in looking at our observations to determine the role that firm size plays in each observation.

On an absolute basis, firms with greater than \$200M in annual revenue numbered 50% more than in our prior survey. This was overshadowed by the increase in the number of respondents from smaller firms: 250% more respondents from firms with less than \$30M in annual revenue and 275% more from firms with \$30M to \$200M in annual rev-

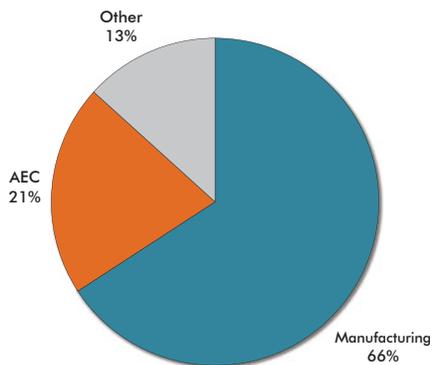


Figure 43. Respondents by major sector

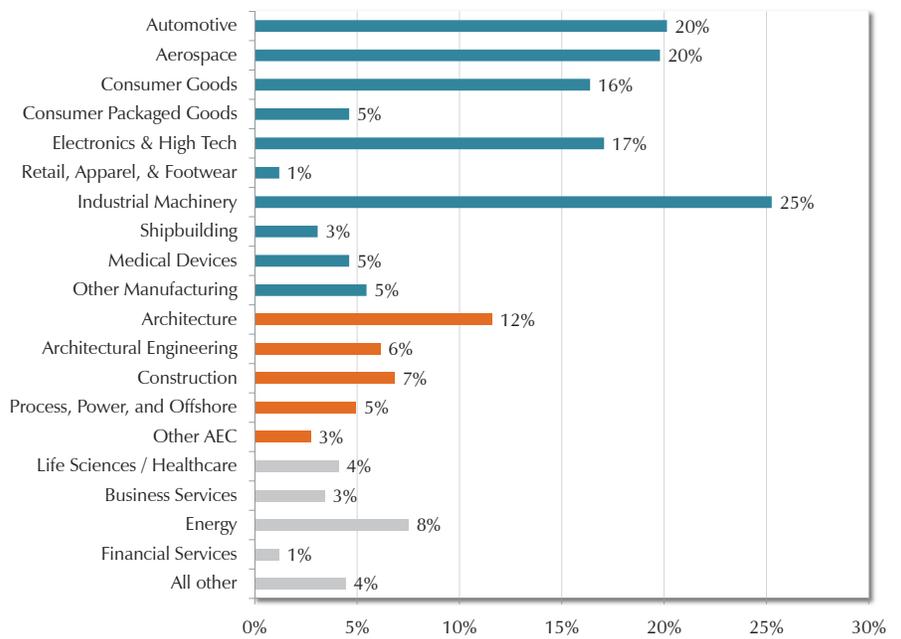


Figure 44. Respondents by industry sector. Many respondents’ firms participate in more than one sector.

enue. A diverse set of corporate responsibilities was represented by these respondents, with nearly half (49%) being either engineers or architects²². Another 25% were management-level individuals, ranging from department heads to CEOs (Figure 46).

More than half of the respondents have deployed **mainstream MCAD** software (AutoCAD, CoCreate, Inventor, Pro/E, Solid Edge, SolidWorks, or SpaceClaim). A fourth of the respondents to this survey have deployed **specialized MCAD** (CATIA, NX, or their predecessors). Interestingly, most (80%) of the respondents whose firms

²² The category “Engineer or Architect” includes those who identified themselves not only as an engineer or architect, but also project manager, program manager, engineering manager, team leader, supervisor, assistant manager, business development, CAD manager, CAD administrator, and PLM manager. The role of analyst is included under the “other” category in Figure 5.

have deployed specialized MCAD have also deployed mainstream MCAD (Figure 47)²³.

According to other research²⁴, mainstream MCAD seats (SolidWorks and Inventor together, in particular) now accounts for half or more of average new unit volume for the industry, a considerable change from the previous decade. This proportion of MCAD users with **both specialized and mainstream MCAD** is significantly different than in our prior survey, even after adjusting for firm size.

Figures 48 through 52 show the distribution of the number

²³ “Specialized MCAD” refers to CATIA and NX CAD systems; it is a term that has replaced “high-end MCAD” as the preferred industry term. See the Cyon Research white paper, “A Fresh Look at the Value-Proposition of High-End MCAD,” available at <http://cyonresearch.com/whitepapers>.

²⁴ Cyon Research’s unpublished data, corroborated by Jay Vleeschouwer .

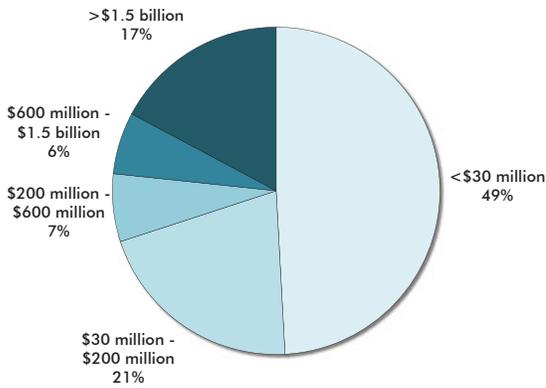


Figure 45. Respondents by company size (annual revenue)

of users/seats of CAD, data management, CAE, and EDA, deployed at the respondents' firms. Once again, we had a very strong response from firms with fewer users/seats than those of our prior survey, but the number of responses we received in each category was larger than in the prior survey.

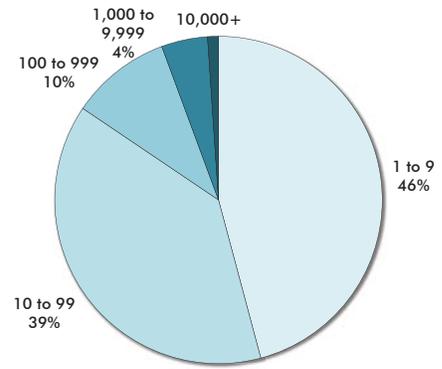


Figure 48. Respondents by number of CAD users/seats

We also focused on the delineation between users of **PDM** (Product Data Management) and **PLM** (Product Lifecycle Management) software.²⁵ We categorized Aras, Autodesk Buzzsaw, Autodesk Productstream, Autodesk Streamline, Autodesk Vault, Bentley ProjectWise, Dassault Systems SolidWorks (Professional, Premium, and Enterprise PDM), and Microsoft SharePoint as PDM. Arena, Dassault Systems ENOVIA (MatrixOne, SmarTeam, and VPM), Oracle Agile, PTC Pro/Interlink, PTC Windchill, SAP, and Siemens Teamcenter were classified as PLM for this survey.

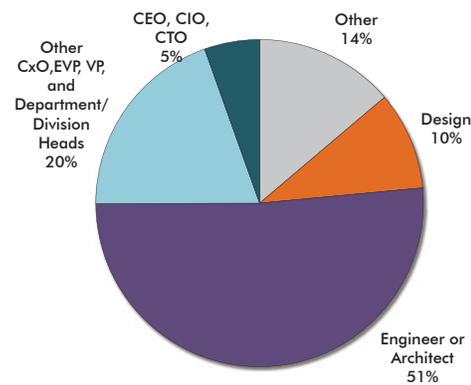


Figure 46. Respondents by role

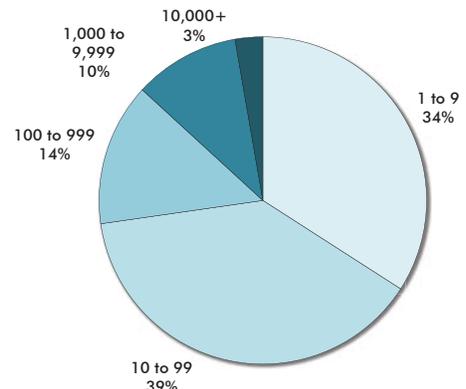


Figure 49. Respondents by number of data management users/seats

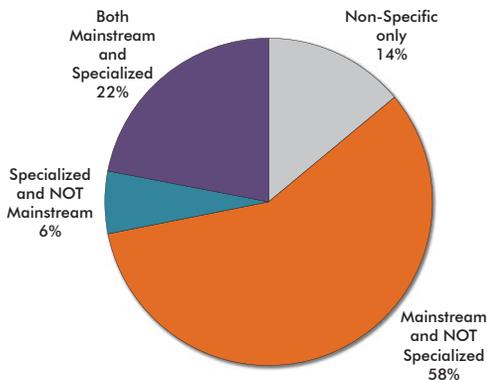


Figure 47. Respondents by type of MCAD —specialized versus mainstream

²⁵ While some may disagree with Cyon Research's segmentation of these software products, we feel that the allocation of a particular product to either the PDM or PLM category is fairly clear-cut. Moving one or more of the less commonly used packages from PLM to PDM or vice versa (e.g., Arena) would have negligible impact on the outcome.

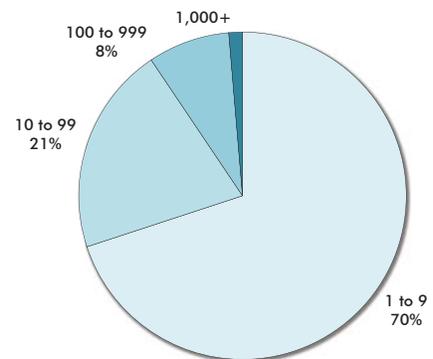


Figure 50. Respondents by number of CAE users/seats (of those with CAE)

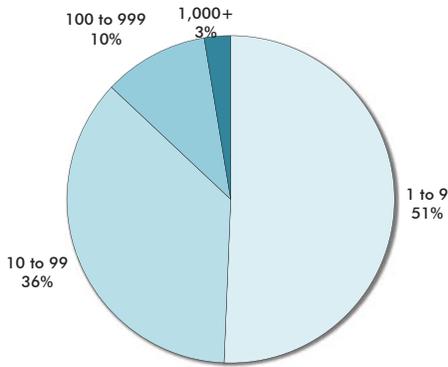


Figure 51. Respondents by number of EDA users/seats (of those with EDA)

As shown in Figure 52, the percentage of respondents whose firms have deployed PDM and PLM software is similar, and about the same number have deployed neither. One-seventh of the respondents are from firms that have deployed both PDM and PLM software.

Figures 53 through 56 show the representation of major software tools in use at respondents' firms for each of CAD (Figure 53), MCAE (Figure 54), data management (Figure 56), and EDA (Figure 56).

We need to emphasize that Figures 42 through 56 describe who has responded to the survey, not the makeup of our industry; nor does it in any way reflect the market share of any of the software vendors in the survey. Our methodology focuses on acquiring deep insights into the mind of the customer base, and is **not** designed to reflect market share²⁶.

²⁶ Those interested in detailed market financial data may want to contact our colleagues at Cambashi www.cambashi.com or CIMdata www.cimdata.com

Methodology

In order to appreciate the observations presented in this report, it is helpful to understand both the demographics and methodology of the report.

In this survey, we expanded our questions with the goal of providing data of interest to the sales channel. We estimate that respondents spent, on average, about 30 to 40 minutes to complete the survey. The result is a tremendous volume of detailed data that required considerable effort in order to enable us to present the findings described above.

In our 2008 survey, in which the data was collected prior to the general market collapse last fall, we posed 24 questions on subjects including user classification by industry sector and position, products deployed, purchasing criteria, and spending intentions.

In this survey, we revisited questions from the prior survey in more detail, in particular looking at how users have reacted with

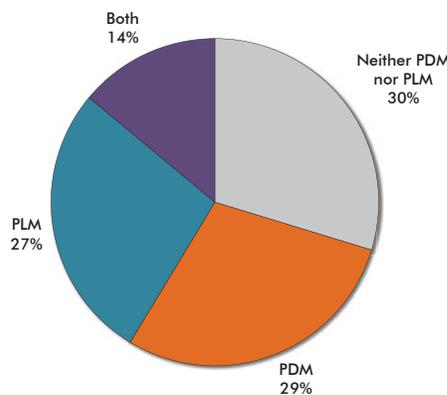


Figure 52. Respondents by type of data management—PLM versus PDM

regard to spending, so that we might consider actions and new plans versus prior intentions. For example, the question, "How have the general economic business conditions affected your company's acquisition position for software tools for design and engineering?" revealed what actions firms had taken, were about to take, were considering, or had decided not to pursue, with regard to discontinuing various levels of maintenance, limiting acquisitions, or increasing spending.

Other questions that were added or expanded with this survey include:

- Who is directly and actively involved in each stage of the selection process?
- How long does each part of procurement process take?
- Expected spending on software over the next three years?
- Expected change to spending on design and development?
- Expected change in company revenue over the next three years?

Some questions asked for a relatively simple answer, such as the size of one's company and the role the respondent played in that company. Other questions requested a specific response such as whether or not the respondent's company had slowed software maintenance or procurement due to the economic downturn.

Still other questions requested a value judgment on the part of the respondent. They were asked to evaluate the importance of certain factors. For example,

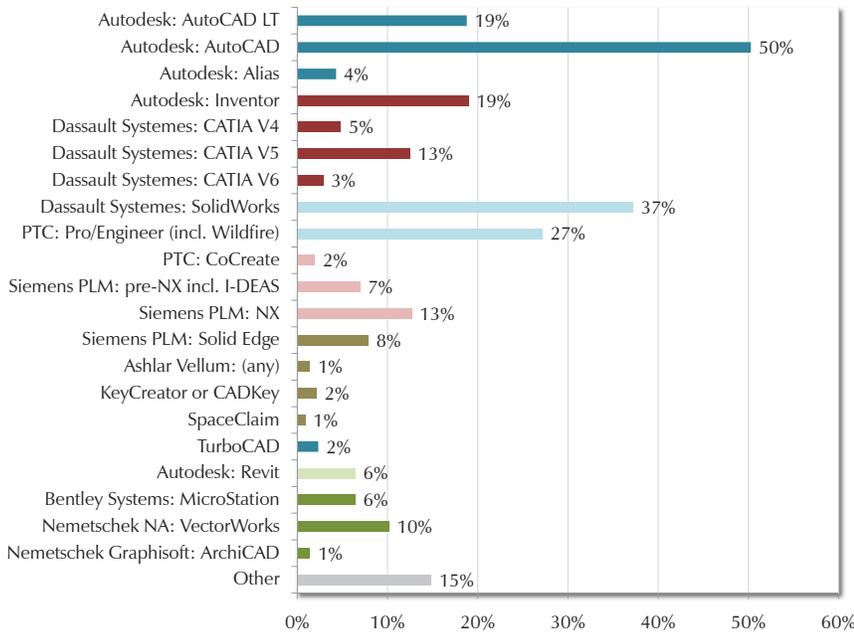


Figure 53. Respondents by CAD system deployed

“Which criteria are most important to your firm when choosing software for design and engineering?” Figure 27 shows the complete set of responses to that question. As might be expected, the complete picture is much more complex and interesting than a simple number that

compresses the results into an average.

In most cases the results of this survey were consistent with those of the prior survey. (When we investigated the few notable discrepancies, they disappeared when we made adjustments to

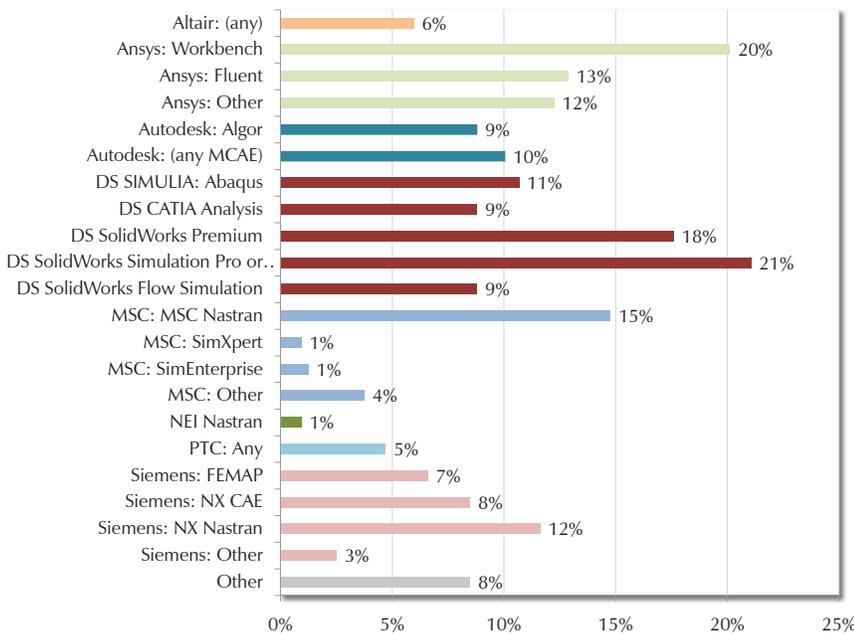


Figure 54. Respondents by MCAE system deployed

account for the different makeup of the set of respondents.) The key point is that the results have important implications for the vendors, as we discuss in further detail later in this report.

The questions asked required several types of responses.

When we analyzed the data, we explored how each of many factors (company size, industry sector, product type, number of users/seats, etc.) affected the results for each of the areas under investigation.

Two of the questions we asked, “How does your firm differentiate itself from its competitors?” and “Which criteria are most important to your firm when choosing software for design and engineering?” required the respondent to place a value on each of 16 factors. In evaluating the responses to these two questions, we looked at three different evaluators, each of which provided a different qualitative comparison.

The simplest of the three evaluators is a direct **average of the responses**, in which we compare (between groups) the average value the respective groups gave for the factor in question. We also calculated the probability that the result is statistically significant for each comparison.

We can also look at each group and calculate the **standard deviation** for that group, so that we may identify any factors that stand out as significantly more

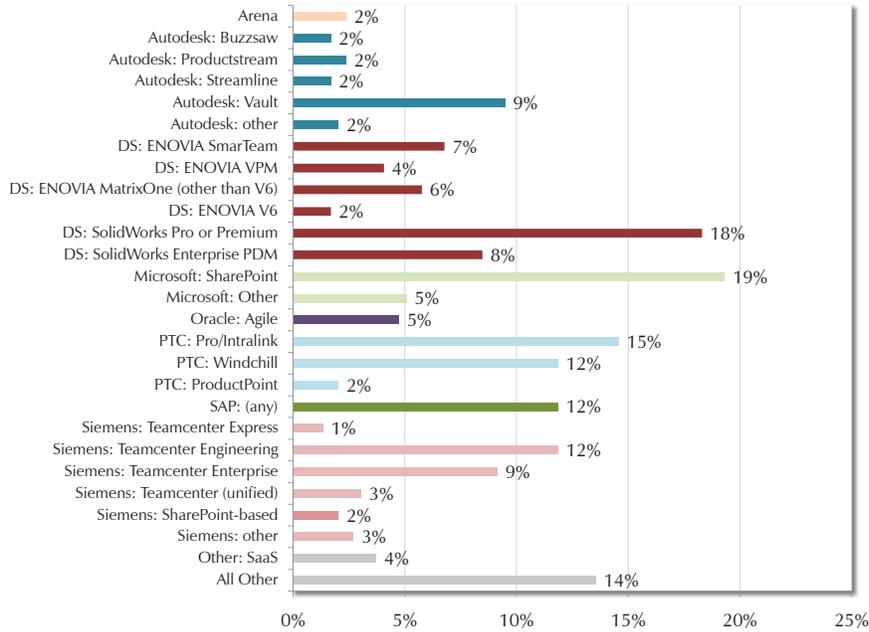


Figure 55. Respondents by Data Management system deployed

or less important than the other factors²⁷ for a given group.

The third way we looked at the data was to evaluate the **rela-**

²⁷ In our analysis, we highlighted factors that were >1, >2, or >3 standard deviations more or less important than the other factors for a group.

tive importance of each factor to each respondent. We ranked each criterion across each respondent, and then averaged the rank across all respondents for a given group. This results in a **Rank of Average Ranks**.

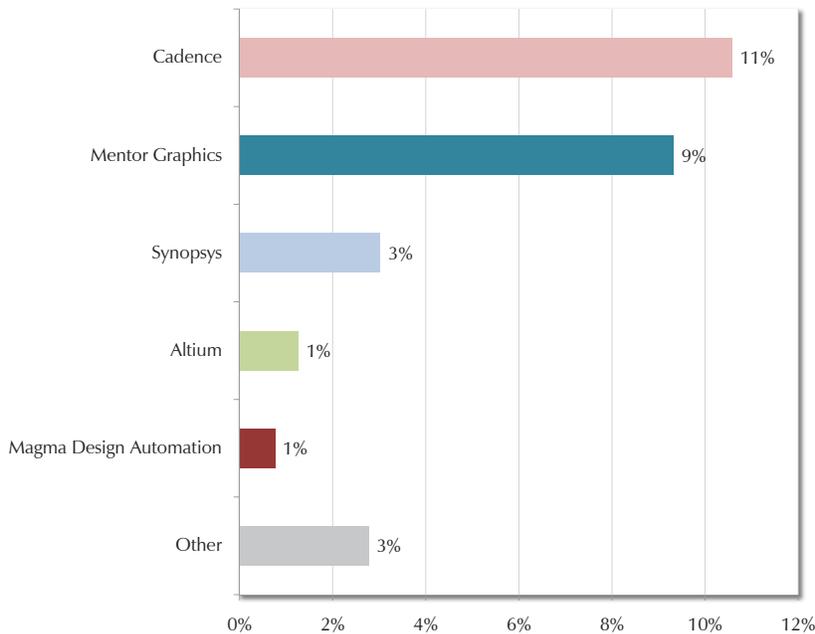


Figure 56. Respondents by EDA system deployed

While small differentials were expected, large differences in the comparison of this **Rank of Average Ranks** is quite telling in terms of the relative importance

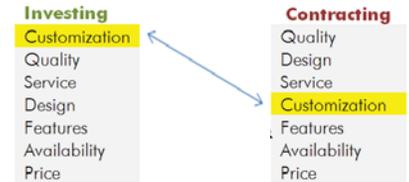


Figure 57. Ranks of Average Ranks

any two groups place on any given factor (Figure 57).

Our analysis of the survey data indicates that there are significant differences among a variety of groups of respondents in terms of:

- The size of the business (either by annual revenue or by number of CAD seats)
- Which CAD or CAE software tools they use
- Their tool used for data management (PDM versus PLM)
- The number of MCAE software tools deployed at their firm
- The procurement channel from which they purchase technology products
- How fast they refresh the hardware
- Specialized MCAD software versus those with mainstream MCAD software
- Industry sector
- Those who have cut spending versus those that have increased spending

These findings are relevant to software vendors and industry investors.



About Cyon Research

Cyon Research is a consulting firm that provides design, engineering, construction, and manufacturing firms with a strategic outlook on the software tools and processes they rely on to create the world around us. Cyon Research also supports the vendor community with its unbiased insight, vision, methodologies, and expertise to help them understand the complex nature of their markets, and grow by serving the needs of their customer base.

Cyon Research brings to its clients a unique combination of experience, perspective, and insight, supported by an extensive network of well-established industry relationships. Our close contacts throughout the user, analyst, vendor, and developer communities provide surprising benefits for our clients and add significant value to our services.

These relationships are enhanced by COFES: The Congress on the Future of Engineering Software, our annual invitation-only event. COFES is where attendees can make the types of connections that just aren't possible through any means other than face-to-face.

The focus of our research within the realm of design, engineering, construction, and manufacturing is the technologies and markets that are likely to become real within the next two to six years.

The domain of our research is the tools, processes, and procedures used in the design, engineering, management, and production of the built environment and manufactured goods.

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