



# Cyon Research 2011 Survey of Engineering Software Users

A Cyon Research Report

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## Executive Summary

Last year we asked “Is there light at the end of the tunnel?” Based on Cyon Research’s latest survey the answer seems to clearly be yes.

Respondents of the 2011 survey of engineering software users were generally optimistic about business expectations. About 67% expected revenue growth during the second half of 2011 and 70% expected to see measurable revenue growth by the end of 2012. Nearly 46% expect that their firms will be hiring engineering and design personnel. Not only were the numbers more positive than last year but the comments Cyon received were also more upbeat in general.

This trend towards a more optimistic outlook is clear—levels of expectation for growth are up and expectation for decreases in revenue are down. Results have shifted from previous surveys and current respondents see 2012 in a particularly favorable light.

Not surprisingly, there is an emphasis on the need to achieve more, but to do so with fewer people, by leveraging engineering software more intensively. While 60% percent indicate that they were planning or considering buying more software modules and 65% are planning or considering purchasing software upgrades, only 35% feel the same about adding new seats of software. There is a high possibility that more intensive use of technology is one reason that reducing unemployment is proving to be so difficult.

Examining these economic attitudes was just one aspect of the Cyon Research survey, which received more than 600 responses from validated users employed around the world. These individuals utilized a mix of CAD, CAE, and PLM software. Over the past several years, Cyon Research has refined its survey technique to explore in depth why companies change software vendors (software stickiness), whether they prefer best-of-breed or tightly integrated solutions, plans for implementing emerging technologies and how these companies might spend additional funds.

We explored these issues based on industry sectors, manufacturing versus AEC, size of firm, the management level of the respondent, number of seats of CAD and CAE software, the degree to which the respondent uses this software and the person’s involvement in the procurement process.

The data regarding best-of-breed versus best integrated solutions is too extensive to comment on in this summary. Suffice it to say that there are large groups on both sides of the issue as well as a significant portion who are basically ambivalent.

The above data are merely a sample of the vast amount of information Cyon Research has acquired during the 2011 survey. The 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 2011 Survey of Engineering Software Users

## A Cyon Research White Paper

Cyon Research completed a survey of individuals from companies that use engineering design software. The current survey is a continuation of our research into customer thinking, with a focus on software *stickiness*<sup>1</sup>, spending priorities, and attention to selected new technologies.

This current survey is based on the responses from 602 validated customers, two-thirds of whom are from the Americas, one-quarter from EMEA, and 8% from Asia-Pacific. They can be filtered by: the software they use, the industries 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 these key types of information: demographics<sup>2</sup>; software *stickiness*; preference for best-in-class versus best integration; spending priorities; expectations for spending, staffing, and performance gains; and technology initiatives.

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1 Software stickiness is similar to customer loyalty, but refers to customers' resistance to change rather than affinity to the software.

2 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.

**Software stickiness** refers to the reluctance of firms to switch from one software tool to a competing software tool. We looked at what factors were preventing respondents from switching to a different CAD or CAE system, would they like to switch, and when they last went through a transition, whether by reason of choice, or due to some corporate consolidation.

Many software vendors have focused on providing the best possible point solution to a given problem. Others focus on integrating point solutions into comprehensive, interoperable suites of solutions. We looked at the preference for **best-in-class or best integrated** solution and explored how various types of customers differed in their preference or indifference for each type of solution.

We also looked at respondent's **expectations** for their firms staffing changes, revenue growth, and improvements they expected to see in the next 18 months in their customer satisfaction, market share, product development cycle time, product quality, and profitability. We also extended our ongoing research into specific actions related to spending and cutting expenditures for engineering software and maintenance.

In the area of **spending priorities**, we looked at how respondents felt their firms would allocate funding if the firm had an extra 10% added to its software acquisition budget. Separately, we asked how respondents would allocate a similar, extra

10% budget increase among a range of initiatives, including software spending.

Lastly, we explored respondents' involvement and **interest in new technologies**, ranging from augmented reality (AR) to social networks, and current and planned technology initiatives.

The resulting data is available<sup>3</sup> in an accessible, easily explorable format, based on tools from Tableau Software. In preparing this report, we focused on information of value both to companies that sell technical software to the manufacturing and AEC markets, and to those who invest in such companies.

This report includes general observations that are drawn from the collective respondent base. The data support significant, additional analysis of relevance to organizations, a separate service<sup>4</sup> that Cyon Research provides to its clients.

## Observations

The primary purpose of Cyon Research's work is to get a deeper understanding of issues, policies, and practices surrounding the acquisition and deployment of software for design and engineering. These observations may

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3 Cyon Research is making the workbook with the demographics data available to the public at no charge. The other data is available for purchase from Cyon Research.

4 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](mailto:brad.holtz@cyonresearch.com)

either confirm our expectations, or to identify areas that warrant further exploration.

## Software Stickiness

The following questions about software stickiness were asked of survey respondents.

- What are the business drivers that would cause you to consider changing from one CAD platform to another?
- What are the business drivers that would cause you to consider changing from one CAE platform to another?
- When was the last time your firm went through (or considered) a software transition of its primary software platform?

The two questions asking for business drivers related to changing software asked for a textual response. These were then grouped into various categories based upon their similarity. The primary reason given for considering a CAD software change was “improved technology”. This was stated many different ways including ease-of-use, speed, new features, stability, productivity etc. This was followed by cost issues, customer relationships and vendor issues. Interestingly, the latter issue seems to have been less prevalent than in earlier surveys. Perhaps that is because companies have finally found a vendor they are comfortable with. The issues that would restrain making a transition revolved around legacy data, training or the fact that they were satisfied with the software currently in use.

There was little difference in the issues between those that responded concerning CAD software and CAE software.

## Software Transitions

An important aspect of evaluating software transitions is whether it was done strictly for internal reasons or whether it was forced on the respondent’s organization as the result of a business consolidation<sup>5</sup> such as a merger or acquisition. The responses to questions regarding software transitions were separated into these two categories.

<sup>5</sup> For the purposes of this study, the term “consolidation” includes transitions due to mergers, acquisitions, and other software diversity reduction activities.

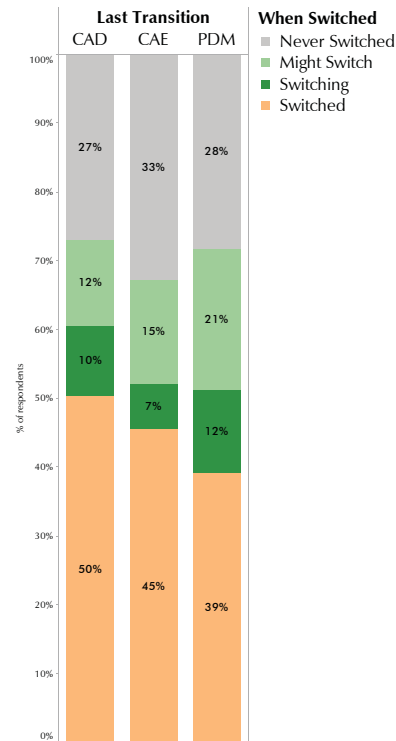


Figure 1. Respondents’ transitions of CAD, CAE, and PDM software.

Cyon has reviewed this in several different ways including an extensive analysis concerning preferences for best-integrated versus best-in-class solutions as compared to making a transition. The highlights of this analysis are described below.

Figures 1 and 2 show when respondents last made a transition whether it was due to a business consolidation or as part of normal business activity. The survey covered CAD, CAE and PDM software. One important caveat. A respondent’s organization may have made a software transition well before that individual joined the company and simply may not be aware of the earlier change. That being said, about 27% of respondents who

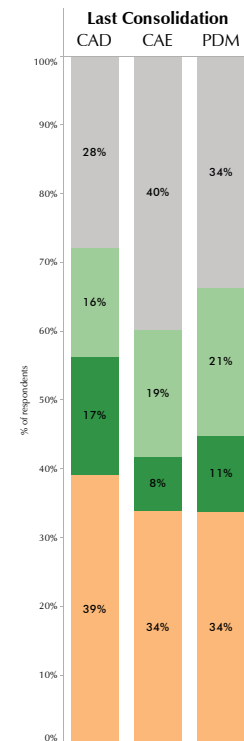


Figure 2. Respondents’ CAD, CAE, and PDM software consolidations. Similar to Figure 1, but for consolidations of software rather than transitions.

were not involved in a consolidation reported that they had never made a transition while 20% of those who were involved in a consolidation reported never having made a transition.

Perhaps more important are those who are considering or are in the midst of making a transition. Among respondents not involved in a consolidation about 22% fall into this category in regards to CAD and CAE software and 33% in regards to PDM software. Among those involved in a consolidation, this jumps to 33% in regards to CAD software and increases slightly to 27% for CAE software but stays nearly the same for PDM software.

When we take the size of the firm into consideration (Figures 3 and 4), small businesses (those with nine or less employees) indicate a very high (41%) trend of never having switched CAD software while on 6% of those with more than 5,000 employees have never switched CAD software. Among these very large firms, no respondent reported that they had never switched CAE or PDM software. Among the very large firms, 42% reported that they either were considering or were in the midst of switching CAD software with 58% in regards to CAE software and PDM software.

Similar trends were reported for firms that had gone through a consolidation. Among very large firms, 58% reported that they were considering or in the process of changing CAD software while only 32% of those with 10 to 4,999 employees fell into the same category. For

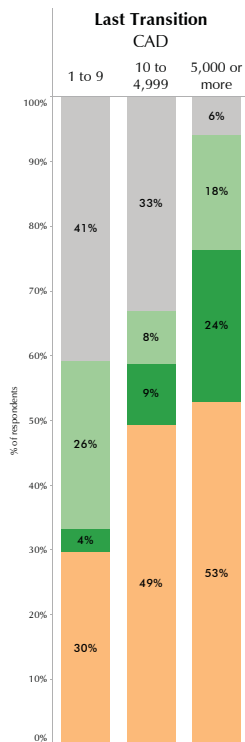


Figure 3. Respondents’ transitions of CAD software, showing differential by number of employees..

CAE software it was 44% versus 22% for the same two groups and 70% versus 30% for PDM software. We also asked respondents to indicate what they had transitioned from and what they transitioned to in broad terms. Among users of older 2D CAD, 36% transitioned to 3D CAD while 65% transitioned to mainstream CAD<sup>6</sup>. Those that already had 3D CAD, 38% transitioned to another 3D CAD package while 63% implemented Mainstream CAD. Among those with mainstream CAD, 63% switched to another mainstream package while 27% switched to a spe-

<sup>6</sup> For a definition of how we delineate between “mainstream CAD” and “specialized CAD” see Cyon Research white paper, “A Fresh Look at the Value-Proposition of High-End MCAD,” published in 2007, available at <http://cyonresearch.com/whitepapers>

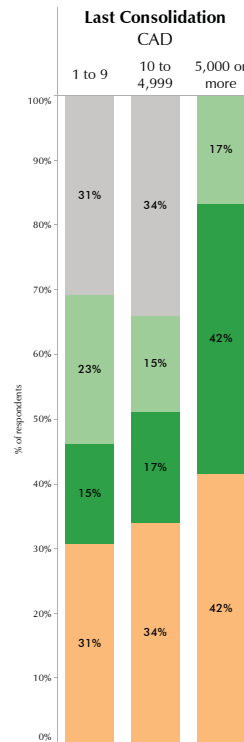


Figure 4. Similar to Figure 3, but for consolidations of software rather than transitions.

cialty product. Further details are shown in Figure 5.

### Respondents’ Remarks of Software Stickiness

We received a very large number of comments regarding switching CAD software. Many related to cost or perhaps cost combined with improved technology, training or ease of use.

*“Total cost of use, implementation, etc. versus the benefits provided”*

and

*“ease of use, overall costs (software, maintenance & add ons), quality of support/training.”*

Customer relationships were also cited by a large number of respondents,

Transition From	Transition To		
	3D CAD	Mainstream CAD	Specialty MCAD
2D CAD	42	76	8
3D CAD	24	40	5
Mainstream CAD	8	39	17
an older Specialty MCAD	2	17	15
Specialty MCAD		4	5

Figure 5. Showing numbers of respondents who transitioned from different classes of CAD software. Color and size are added for emphasis.

*“Our business model depends on what is asked of us by prospective clients - we’re a service provider - hence choice of platform not in our control.”*

and

*“The only thing which could lead to our changing CAD platform would be that our customers all change first resulting in a need for us to change.”*

By a large margin, however, comments involved improved technology in one fashion or another, often with another factor such as cost thrown in.

*“Functional features. Can it make the shapes I need and modify them efficiently.”*

*“Significantly better work process for our designers.”*

and

*“The software would have to be considerably better than my current software at a reasonable cost.”*

Other reasons include industry trends towards new products or technology, interoperability, failure to get the job done and training.

In regards to switching CAE software the comments were similar to those regarding CAD software with the addition of the choice of CAE software being dependent on the CAD software being used,

*“Integration with CAD system and ease of use”*

and

*“We use a system that is integrated with Inventor, any system we would*

*consider would also have to integrate well with Inventor.”*

Cost was also a major reason including,

*“All things being equal, software cost”*

and

*“Cost, training, and efficiency.”*

We found it interesting that in regard to both CAD and CAE software, vendor relationships were mentioned infrequently other than a fear of the vendor going out of business. This is somewhat different from past surveys where there was more concern regarding vendor relationships.

*“Current one goes out of business”*

or

*“Current CAD company either not progressing, going out of business, merged into another business and ‘requested’ customers to change, tool sets no longer fit design needs.”*

## Best-in-Class versus Best-Integrated

One of the key debates among software vendors (and among their customers) is the relative importance of best-in-class solutions and best-integrated solutions. To address this we asked the following question, with the analyzed results shown in Figures 6 through 11:

- When it comes to software for design and engineering (including BIM, PLM, DP, CAE, etc.), my firm typically prefers to select...

Respondents answered the question for each of **CAD**, **CAE**, **ERP**,



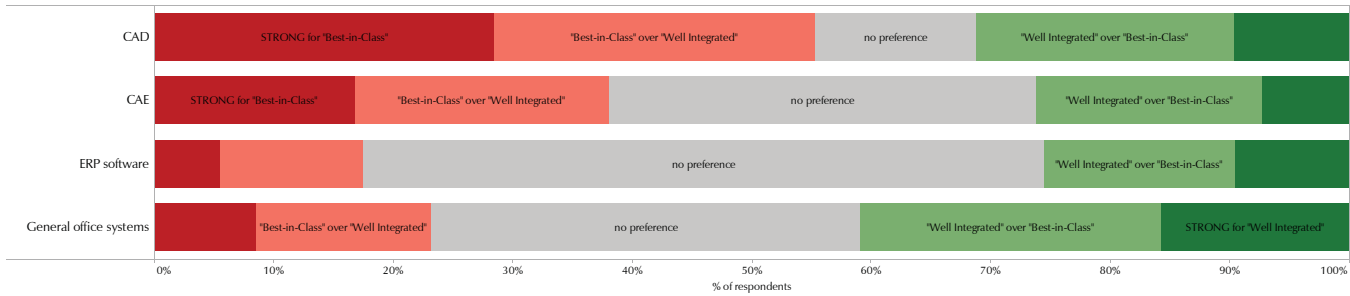


Figure 6. Best-in-class versus Best Integrated.

and general office software. The choices allowed were:

- A “Best-in-Class” preference means that you prefer the best possible point solution for each discipline and are prepared to handle any issues related to how it functions with applications from other disciplines.
- A “well-integrated suite” preference indicates you prefer to work with a suite of tools that are designed to work with each other across multiple disciplines, even if some of the individual point applications might not be the best-in-class for that specific task.

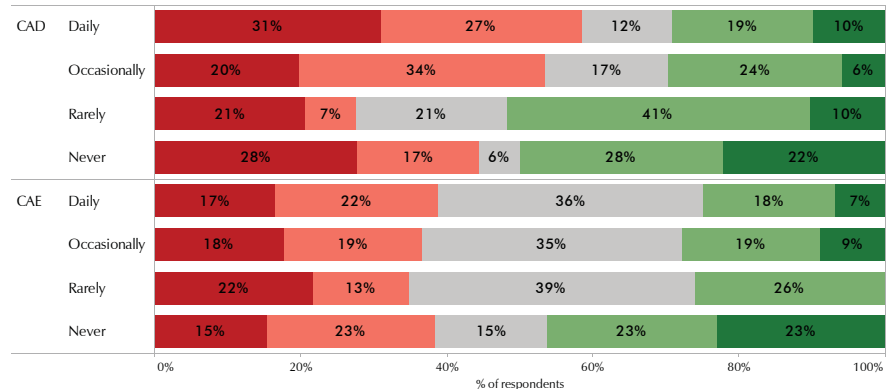
The choices included “strong preference”, “preference” and no preference. Among CAD respondents, 28% indicated a strong preference for best-in-class while another 27% indicated a preference for best-in-class. On the other hand, just 31% indicated a preference or strong preference for well-integrated CAD software. Among the other classes of software, a larger portion of respondents, nearly 57% in the case of ERP software, had no preference between the two types. Among respondents who used CAD software daily, 71% wanted best-in-class software while only 22% preferred well-integrated CAD software. Those who used CAD software infrequently tended to

prefer well-integrated software more often than the frequent users.

Interestingly, there was little difference in opinion between those who recommended software purchases and those who made the final decision. This held for both CAD and CAE software. On the other hand, those who were not involved in the procurement process were ambivalent about which type of software was procured. This involved a third of the CAD respondents and nearly two-thirds of the CAE respondents.

As shown in Figure 8, There were some significant differences between industries and even within

industries based on size. For instance, more than twice as many (44%) of electronic and high tech companies with revenues less than \$30 million strongly preferred best-in-class CAD software while only 21% of larger companies in this industry felt the same way. A somewhat similar ratio exists in the aerospace and defense sector. The reverse exists in the building components for AEC where 26% of the companies with less than \$30 million in revenue prefer or strongly prefer well integrated CAD solutions while 50% of the larger companies in this sector feel the same way. Overall, however, there was little difference in preferences



Preference  
 ■ STRONG for "Well Integrated"  
 ■ "Well Integrated" over "Best-in-Class"  
 ■ no preference  
 ■ "Best-in-Class" over "Well Integrated"  
 ■ STRONG for "Best-in-Class"

Figure 7. Similar to Figure 6, showing for CAD and CAE, by differences of intensity of CAD use.



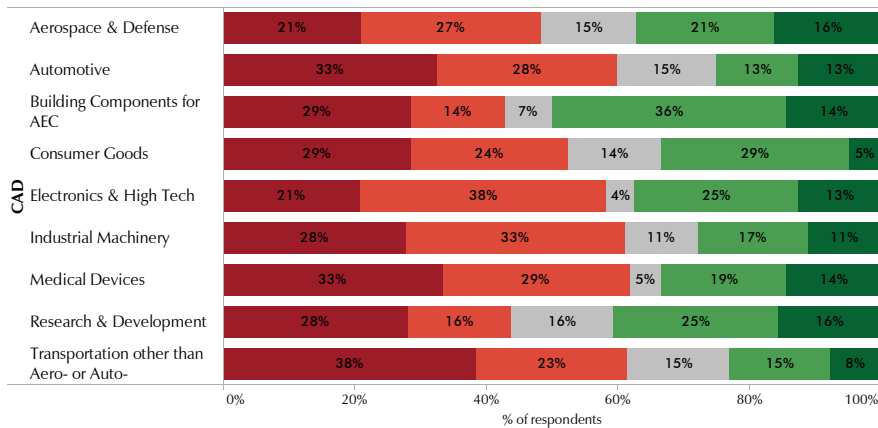


Figure 8. Similar to Figure 6, showing differences by industry sector for the manufacturing industries. Limited to respondents from firms with more than \$30M in annual revenue.

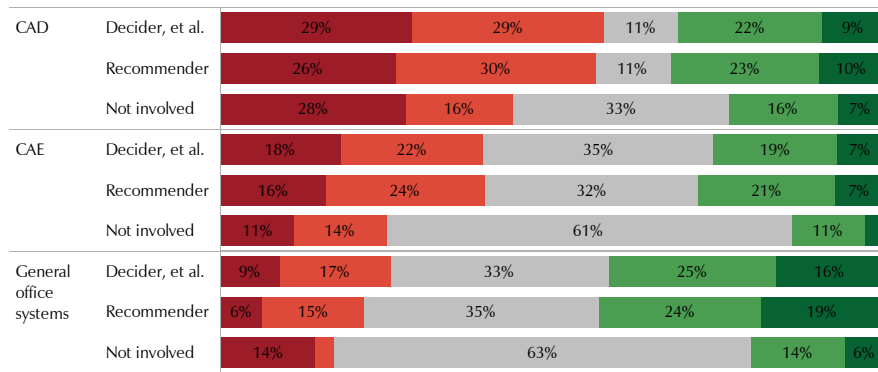


Figure 9. Similar to Figure 6, showing differences by involvement in the acquisition process.

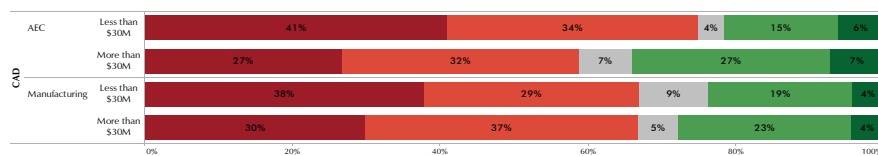


Figure 10. Similar to Figure 6, for CAD software, showing preferences by sector and annual revenue.

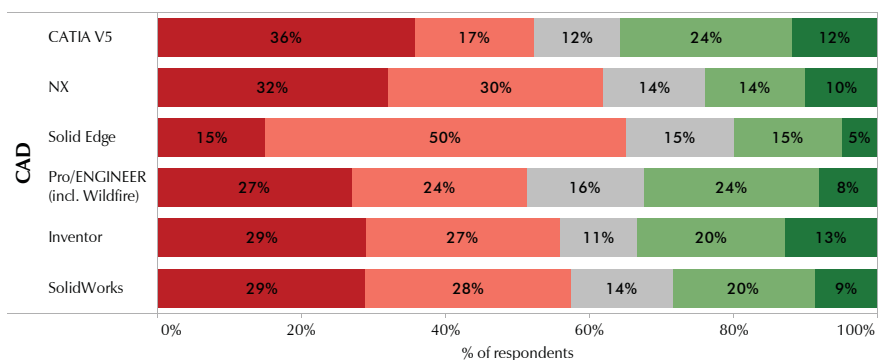


Figure 11. Similar to Figure 6, showing differences by industry sector for the manufacturing industries. Limited to respondents from firms with more than \$30M in annual revenue.

between industry sectors when all respondents were considered.

We were somewhat surprised that users of CATIA V5, NX and Pro/ENGINEER had a similar profile to users of Solid Edge, Inventor and SolidWorks in their lack of preference for a well-integrated solution. Nearly the same percentage of users of each product had no preference while Solid Edge and NX users were the strongest proponents of best-in-class CAD software as shown in Figure 11.

There was very little consistency in the responses to this issue. Some respondents felt that the decision was database dependent,

*“Behind every data management solution is a database. We can get databases to talk to each other. Therefore, we prefer best in class, but only so far that Oracle or SQL back-ends can be linked.”*

## Staffing

Our study closed in May. At the time, the general economic picture was that the global economy was growing, albeit slowly in the United States and Europe. This was before the European Union began to implode. As we write this today, the U.S. economy continues to grow with monthly increases in private sector jobs.

In evaluating hiring plans, the most important area regarding CAD and CAE software procurement is in design and engineering. In the current survey, 46% of the respondents from companies with less than \$1.5

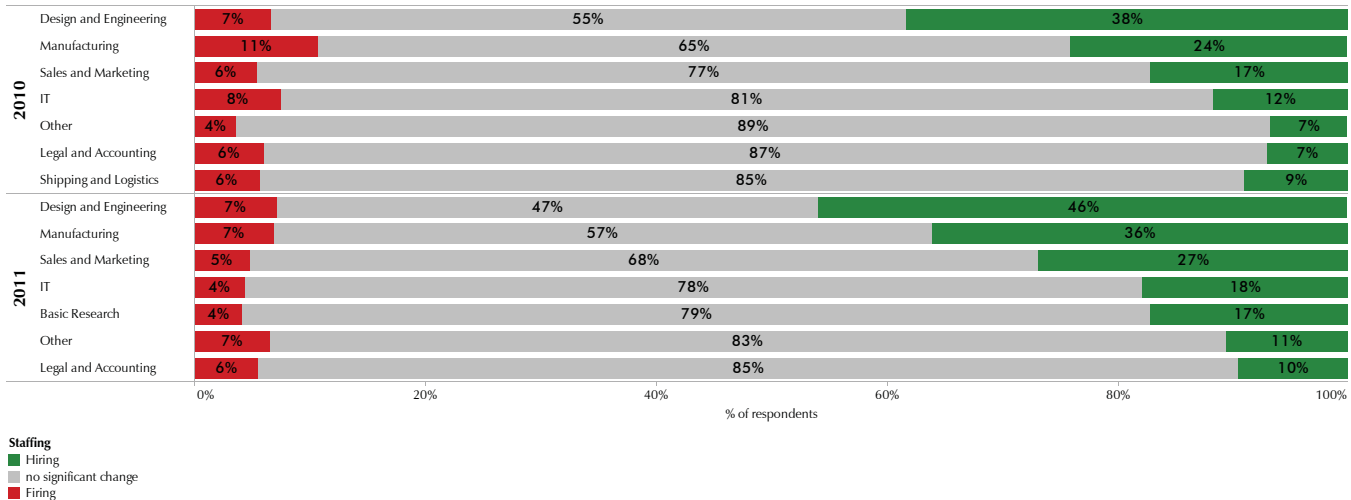


Figure 12. Expected hiring and firing by respondent's firms, for 2011 vs 2010, by business function.

billion in revenues reported that they would be hiring additional people as shown in Figure 12. This compares to 38% who responded similarly in 2010. There was virtually no difference in this regard between the two surveys for larger firms which held firm at about 48% planning to hire. Interestingly, 8% of the respondents from large firms indicated that they would be laying off more than a few people from design and engineering. In the manufacturing area less hiring is expected than last year and more layoffs.

Among the relatively few comments regarding this issue, only one mentioned staff contraction,

*"As with any downturn in Congressional spending, defense contractors have to re-evaluate their headcount. We have plenty of natural attrition due to retirement that we are not filling."*

while most stated that they were hiring, especially senior staff,

*"We will hire the experts needed at the time we need them."*

## Revenue

We have been tracking respondents expectations for revenue growth over several years.

Current survey results are shown in Figure 13 combined with results from the prior two surveys. As you can see, only 11% of the respondents indicated an expectation for a decline (red) in year-over-year revenue for the second half of 2011. This compares to the 20% of the 2010 respondents who felt that there would be a decrease during the same period. Obviously, respondents are more optimistic than a year ago.

When you look at responses from the past three surveys starting in 2009, the increased optimism year by year is very obvious. Back in early 2009, only 24% of the respondents expected to see an increase in revenue during the first half of that year. In the current survey, 70% of the respondents expect to see revenue growth in the second half of 2012 including over 30% who

expect revenue growth of over 10%. Maybe someone should tell Wall Street.

We should also note that there was little difference in the level of optimism between AEC and manufacturing respondents. Within the manufacturing segment, the building components for AEC and transportation other than aerospace and automotive sectors were the most optimistic while the other manufacturing sectors were relatively the same. There was not much variance based on the size of the respondent's company although those with less than \$1.5 billion in revenue were slightly more optimistic than those working for larger companies.

It was not surprising that most respondents commented that revenue change was dependent on the economy. Comments ranged from negative,

*"While the recession may be over from a 'technical' standpoint, we just are not seeing increased business or fact-base optimism."*

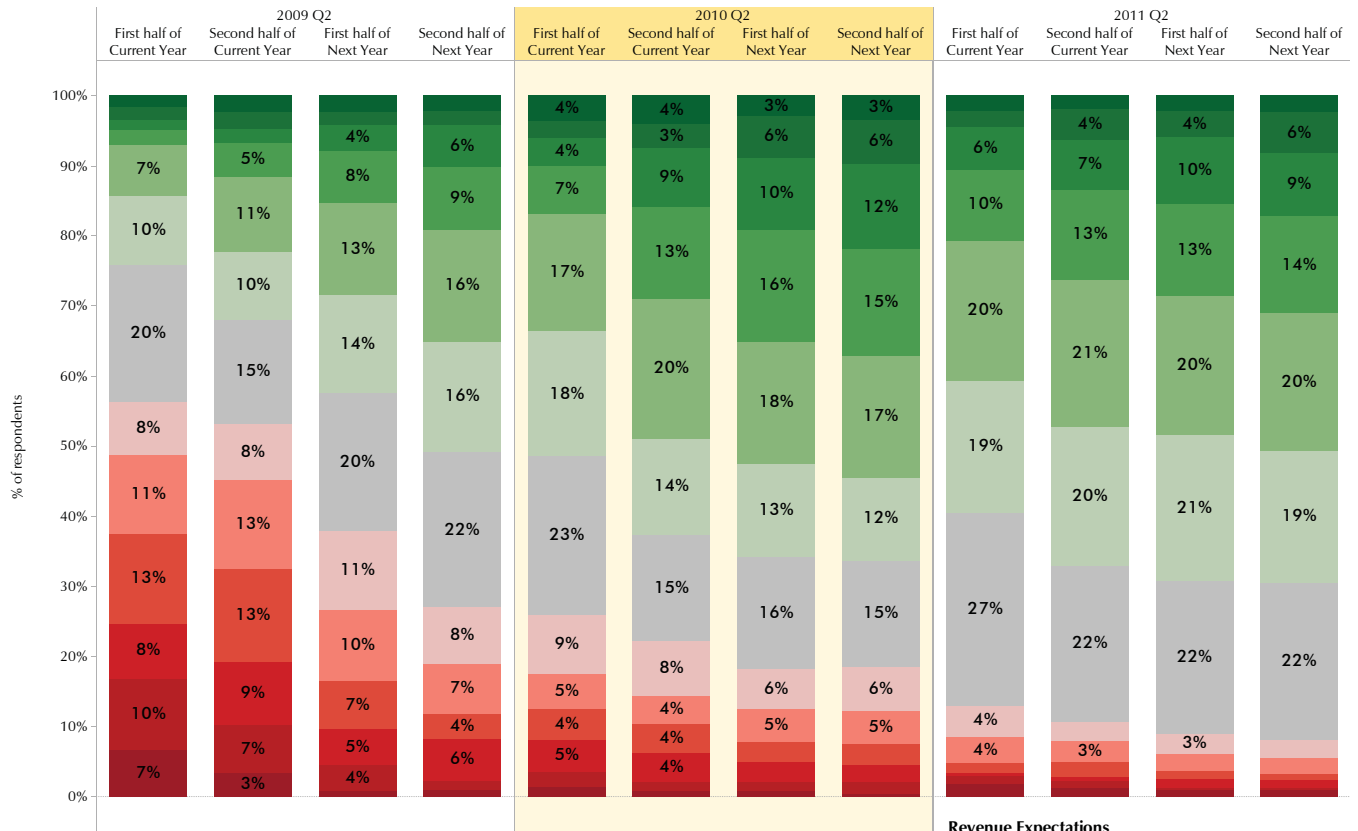


Figure 13. "By how much do you expect your company's REVENUE to change? Shown for each of the past three surveys."

and

"massive layoffs, 30-40% head-count reduction next week."

to somewhat positive,

"Recession seems to be lightening up. More opportunities coming our way."

and

"We expect confidence in the economy to improve leading to more construction related activities."

Other respondents felt that sales growth would be product or sales driven.

"We are a major player in a small and very steadily growing niche market where our major competitors consistently demonstrate less competence than we do. ...Until

our competition figures out how to do what we do better than we do our profits will go up 10-20% annually."

and

"2010 was a terrible year for us. This is already looking better with new return customers and fresh customers for 2011."

## Spending Outlook

This is the fourth year Cyon Research has addressed spending outlook in its studies. In the first survey, we asked how firms might act in a downturn (this was before the current downturn). Two year's ago, the survey showed data on the actions actually taken as a result of a downturn. Last year we asked about spending

### Revenue Expectations

- Increase >50%
- Increase 25% - 50%
- Increase 15% - 25%
- Increase 10% - 15%
- Increase 5% - 10%
- Increase 0% - 5%
- No Change
- Decrease 0% - 5%
- Decrease 5% - 10%
- Decrease 10% - 15%
- Decrease 15% - 25%
- Decrease 25% - 50%
- Decrease >50%

plans for 2010. For this 2011 survey, we asked both about actions they had taken in the past 12 months, as well as their plans for the next 12 months for actions they had **planned**, were **considering**, were **unclear**, or had **rejected**<sup>7</sup> buying new capability (modules or products) or increase the number of seats licensed. We focused on spending plans for software tools in general as compared to their spending in 2010 and we asked

<sup>7</sup> The actual wording of this option was "Not going to happen"

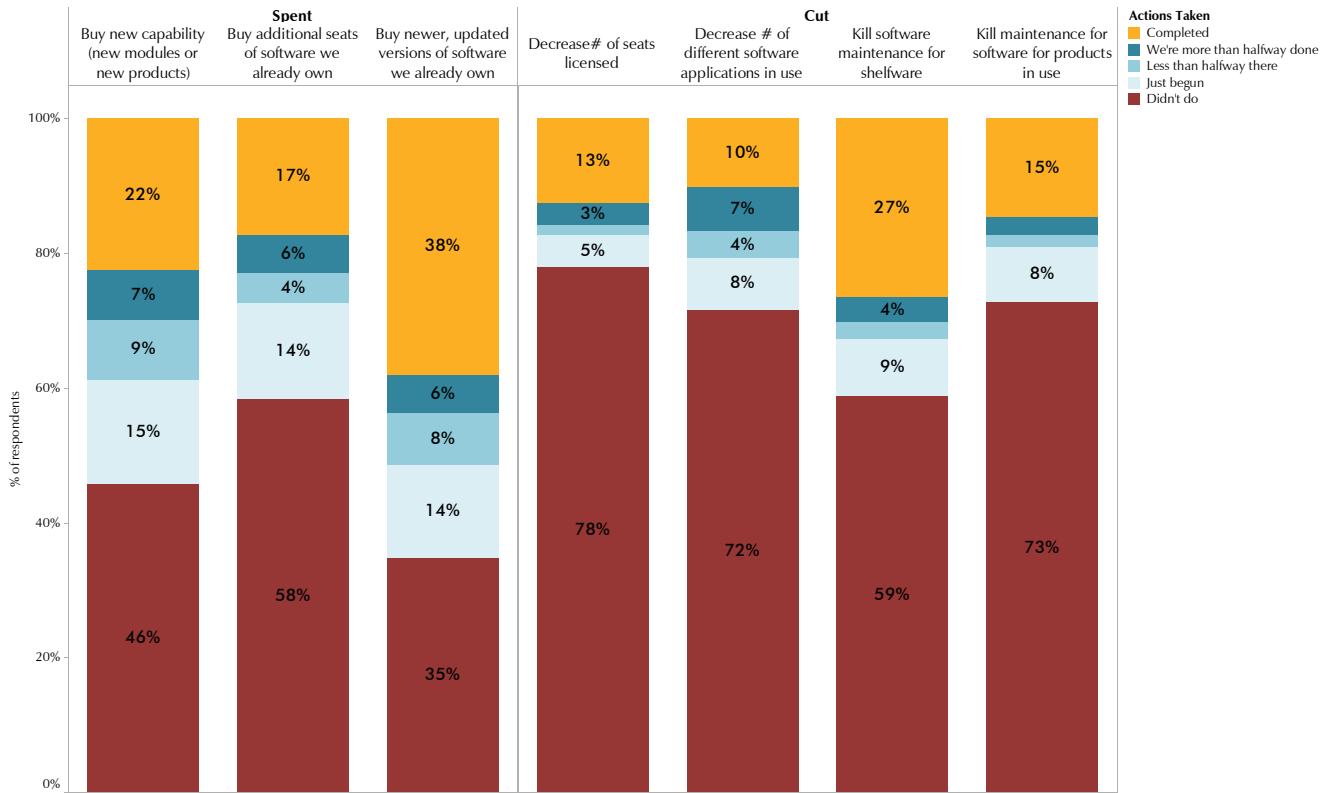


Figure 14. "With respect to software tools for design and engineering, my firm has taken these actions during the previous 12 months."

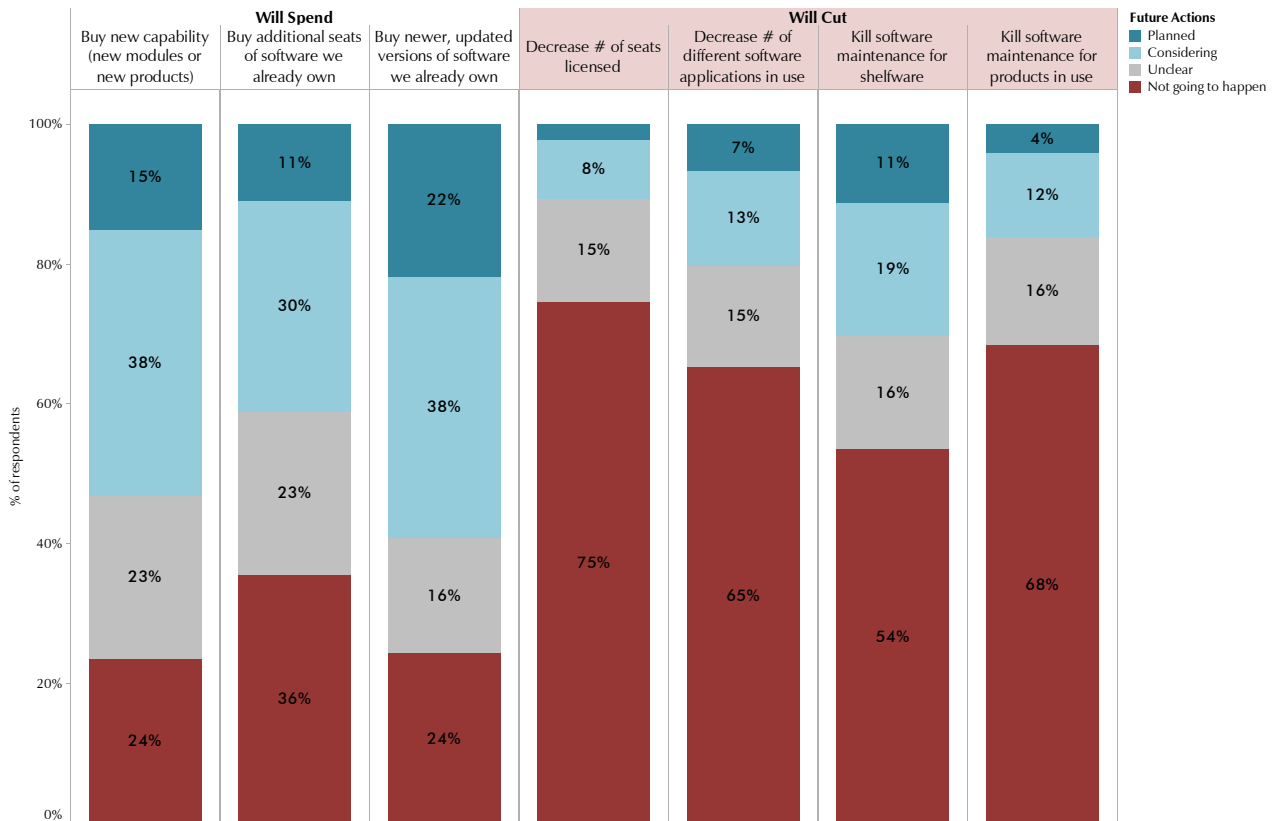


Figure 15. "With respect to software tools for design and engineering, I expect that my firm will do the following during 2011."

respondents to provide forecasts for both 2011 and 2012 and to include maintenance as well as new seats or new applications. (Figure 14 shows the results of actions taken in the past year. Figure 15 shows expected actions.)

Among those who chose to provide explanations of their plans the predominate intent was to add additional design seats, additional applications or both. One of the more extensive responses was

*"As we implement new software tools and business practices, we expect to purchase additional seats of existing software or new software. Those should hit in the second half of 2011. After that, we are controlling spending due to possible spending cuts in Congress and therefore will be improving internal efficiencies using existing tools."*

While another simply stated

*"Suspect we will add people in early 2012."*

Others focused on upgrades:

*"We upgraded everything in January this year. Our systems are upgraded every two years."*

## Actions Taken

When asked what actions their firms had taken in regards to software for design and engineering during the previous 12 months, 13% indicated that they had reduced the number of software seats in use while another 9% indicated that they were in the process of doing so. The biggest reduction was with software maintenance where 27% had

stopped maintenance for software not being actively used and 15% stopped maintenance for software currently in use.

As shown in Figure 14, more respondents took positive actions rather than cutting back. As an example 17% have added new seats and 24% were in the process of doing so. Even more, 38% had added newer, updated versions of software in use and 22% had added new capabilities.

Among companies of different size, there were differences in regard to what actions were taken, but not in a consistent manner although larger companies did tend to cut back more and expand less than smaller companies.

Some of the comments we received included

*"Most software is on long-term maintenance contracts or subscription. New versions are built-in, licensing counts are flexible year to year."*

*"Dropped maintenance on primary analysis package - not a wise decision...."*

## Planned Initiatives

Similar to the previous question, we asked respondents what their plans were during 2012. Only 10% planned or were considering reducing the number of technical software seats while 20% planned or were considering reducing the number of applications in use. In regards to software maintenance, 30% would kill it for software not be-

ing used and 16% for software being used.

The optimists outnumber the pessimists as shown in Figure 15 where 11% planned to add seats and another 30% were considering doing so. Even more, 22%, planned to buy newer or upgraded software and 38% were considering doing so. Similar numbers were reflected in plans for new capability.

As with the prior year, larger companies were more likely to cut back on seat count and software maintenance, but not as drastically as during the prior 12 months. This time, however, the large firms were planning to add software at about the same level as the smaller firms. The actions planned did not seem to vary greatly by geographic region other than respondents in Asia were more apt to spend funds on new functionality. While there was some differences between different manufacturing sectors, the variations were not huge.

There were only a few comments regarding this question but one of the more thoughtful ones was

*"We do not maintain software we do not use. We have upgraded maintenance in place for the products we do use. We closely watch usage of our design software and buy more only when we truly need to."*

## Spending Priorities

During the recent economic downturn, most firms significantly cut spending for software and other investments into their

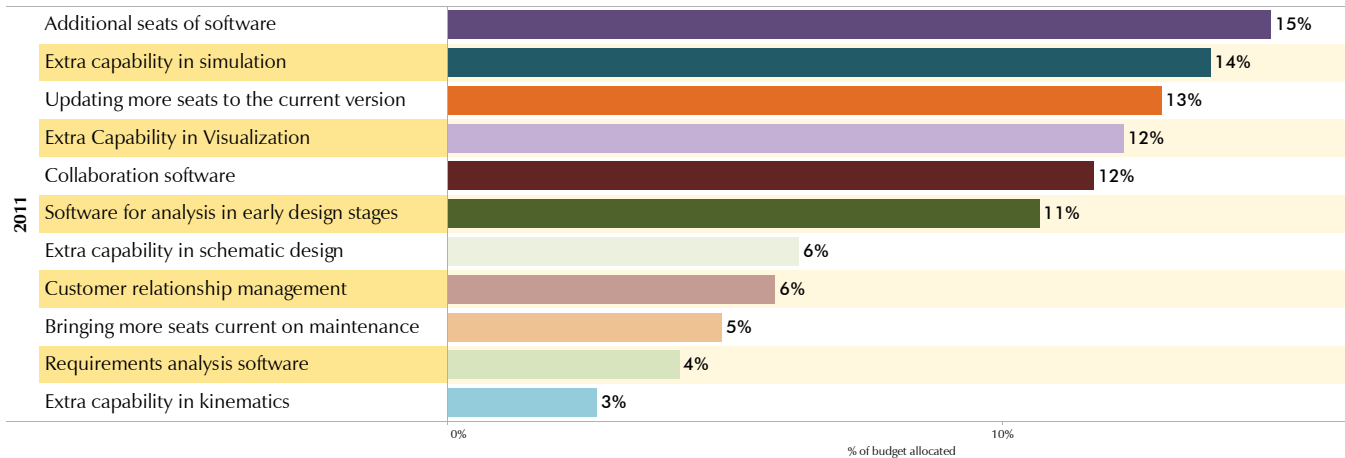


Figure 16. "If your firm was able to add an extra 10% to its budget for software tools listed below, how would it be allocated?"

design and engineering departments. We asked the following questions about how extra budget might now be spent, with results shown in Figures 16 through 19.

- If your firm was able to add an extra 10% to its budget for software tools listed below<sup>8</sup>, how would it be allocated?
- Software is only part of the budget. How would you recommend your firm allocate an extra 10% among these areas<sup>9</sup>?

What is interesting is that the extra 10% amount, is quite small when compared to the amount that many firms are likely to restore to their budgets. What we have asked, therefore, is how firms might rethink real future spending.

### Software Tools

This is a key question in the survey, since it indicates what companies see as their most pressing needs. Respondents were allowed to allocate a portion of their allotted 10% budget

<sup>8</sup> List is shown in Figure 16.

<sup>9</sup> List is shown in Figure 19.

to each of the software categories we listed, as shown in Figure 16. In the 2010 survey software upgrades topped the list, slightly edging out extra capability in simulation and additional seats of software for the top expenditures. In the current survey software upgrades slipped somewhat, lagging very slightly behind extra capability in simulation and additional seats of software. Meanwhile, collaboration and visualization software showed a small increase in interest.

Perhaps more interesting is Figure 17, which combines the related items of **Software upgrades** and **Additional software maintenance** into **Upgrades and Maintenance**; combines the two CAE selections, **Extra capability in simulation** and **Extra capability in kinematics** into **Analysis**; and combines **Extra capability in schematic design** with **Requirements analysis software** and **Software for early design analysis** into **Up-front Design**. The differences in where extra funds would be spent differed little from the previous survey.

When we examine the different manufacturing sectors, we see some variation in where the extra funds would be spent. For example, 18% of respondents in the aerospace and defense sector would spend the funds on upgrades and maintenance while only 10% of those in transportation other than aerospace and defense would spend the funds in this area. On the other hand, both groups would buy additional seats of software, 20% in the case of aerospace and defense and 24% in the case of transportation other than aerospace and defense.

When very large (over \$1.5 billion in revenue) firms are compared to smaller firms (those under \$1.5 billion), there was little difference in where extra funds would be spent. On the other hand, firms with more than 5,000 employees were significantly more interested in upgrades and maintenance than were respondents at small firms (under 10 employees) by a 29 to 17% margin. They were much less likely to spend money on additional visualization software, 4

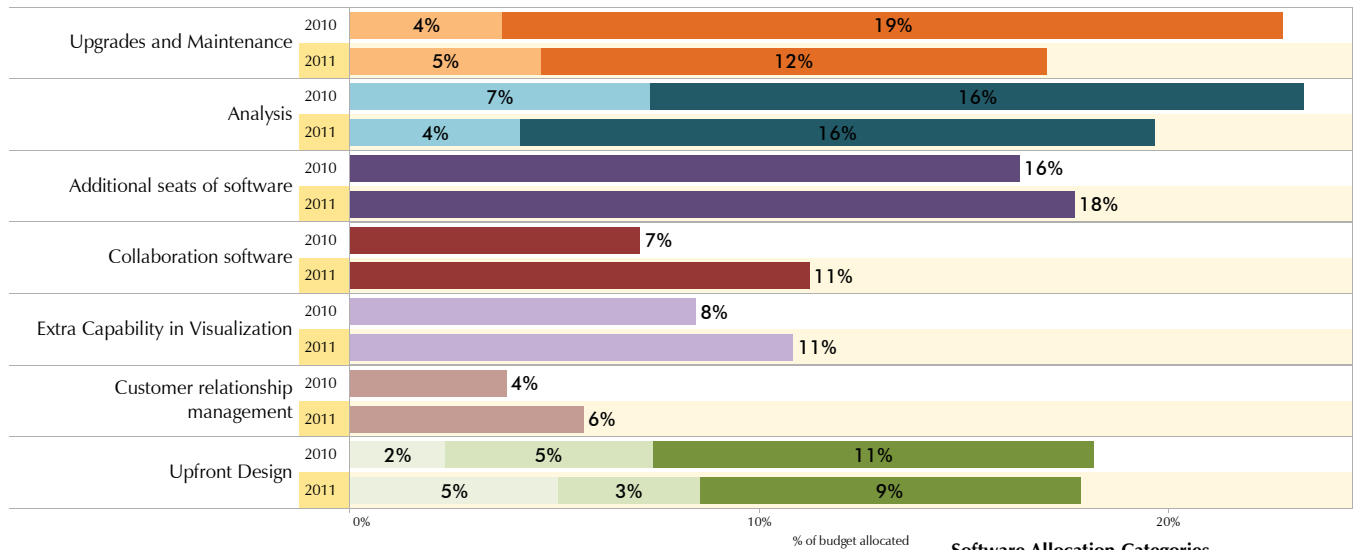


Figure 17. Similar to Figure 16, but grouped by category and showing 2011 vs 2010.

versus 18%. These differences do not hold up when you compare companies based on the number of CAD seats in use.

There were several interesting differences when AEC users were compared to manufacturing users. In the previous survey, twice as many manufacturing users would spend the money on additional software seats as would AEC users. In the current survey, their preferences were almost exactly the same at 18 and 17% respectively. Again this year, about twice as many manufacturing respondents would spend the funds on analysis software as would the AEC respondents. Last year, nearly three times as many AEC users would add collaboration software as would manufacturing users. This year they were very nearly equal in preference for collaboration software, 14% to 11%.

### Investments in Design and Engineering

In the previous question, we asked respondents to allocate spending among different options for spending on software. In this question, software was just one of the alternatives, as we asked respondents to consider how their firms should allocate an additional 10% among a variety of potential initiatives, including software. Figure 18 shows that when software is considered among other alternative spending initiative options, the other alternatives take the biggest piece of the budget.

What was quite interesting is that this year we added **better hardware** as one of those options. Figure 19 shows the same results as Figure 18, but with **better hardware** as one of the options.

That turned out to be a significant move in that 32% of the respondents said that they would spend the extra funds on **better hardware**.

#### Software Allocation Categories

- Updating more seats to the current version
- Bringing more seats current on maintenance
- Extra capability in simulation
- Extra capability in kinematics
- Additional seats of software
- Collaboration software
- Extra Capability in Visualization
- Customer relationship management
- Software for analysis in early design stages
- Requirements analysis software
- Extra capability in schematic design

### Improvements

In our previous survey, respondents gave us key reasons they invest in design software. Chief among them was a desire to achieve **improvements in profitability, product quality, market share, reductions in product development cycle time**, and improvements in their **customers' satisfaction**. Respondents have invested in design and engineering to help achieve these goals. To see how well they view their investment, we asked each respondent how well they expected their firm to do in achieving these goals. Figure 20 shows the results, with improvements in blue, increasing in intensity with increasing expectations.



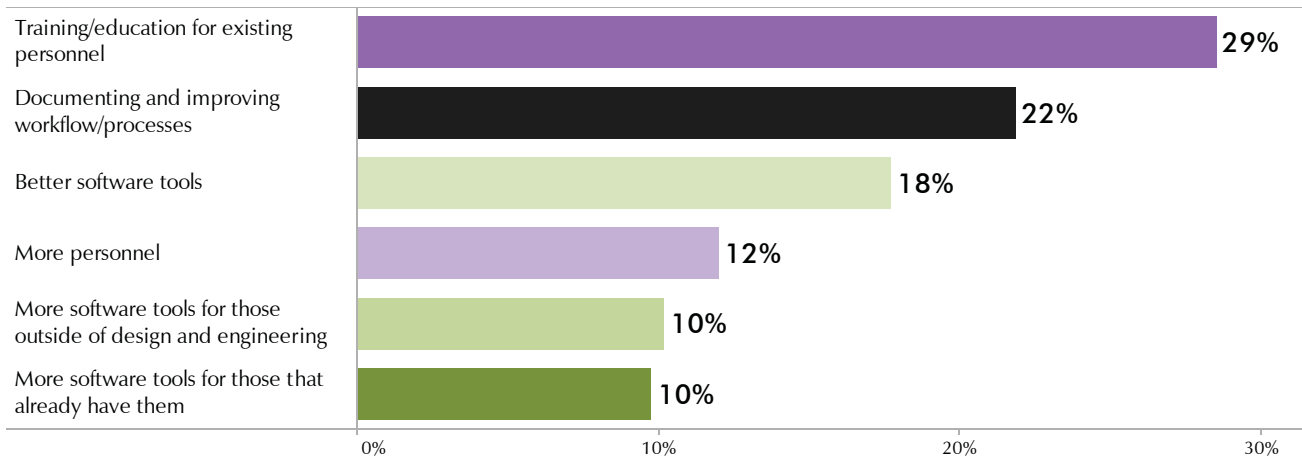


Figure 18. "If your firm had was able to add an extra 10% to its budget for these items, how should that money be spent?"

In one of these areas, **market share**, it's a zero-sum game—wins must come at the expense of others. Which is why the results in Figure 20 must be taken in context of the "Lake Woebegone" factor<sup>10</sup>.

<sup>10</sup> In a prior report we asked our survey audience how they thought they would do in comparison with their peers. Half expected to do better than their peers but only 15% expected to do worse. We referred to this as the "Lake Woebegone" effect, in recognition of Garrison Keeler's radio show where "... all the children are above average."

Expectations in the most recent survey were very similar to the 2010 survey. The one exception is that significantly more expect a substantial improvement in product quality. On average, a little more than a third of respondents expect to see more than 10% gains in these areas over the next 18 months. While we gave no instructions as to how respondents might quantify such gains, it does seem that such expectations, for the most part, are not unreasonable. The question is, are those gains enough to justify increased expenditures

in these areas? Or, are these gains what respondents expect to see given the major cuts they've experienced recently?

In regards to product development cycle time, SolidWorks users expect substantially greater improvements than they did in 2010 while just the opposite is reflected in responses from Solid Edge respondents. Users of other software did not indicate any significant difference in regards to this issue between the two surveys.

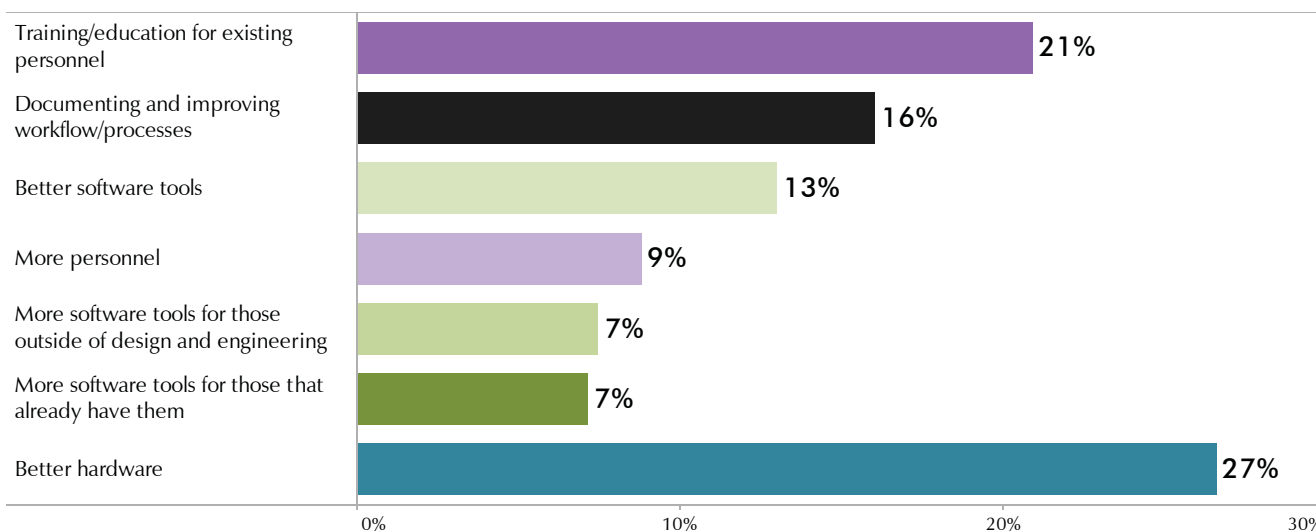


Figure 19. Similar to Figure 18, but including response for "Better Hardware."

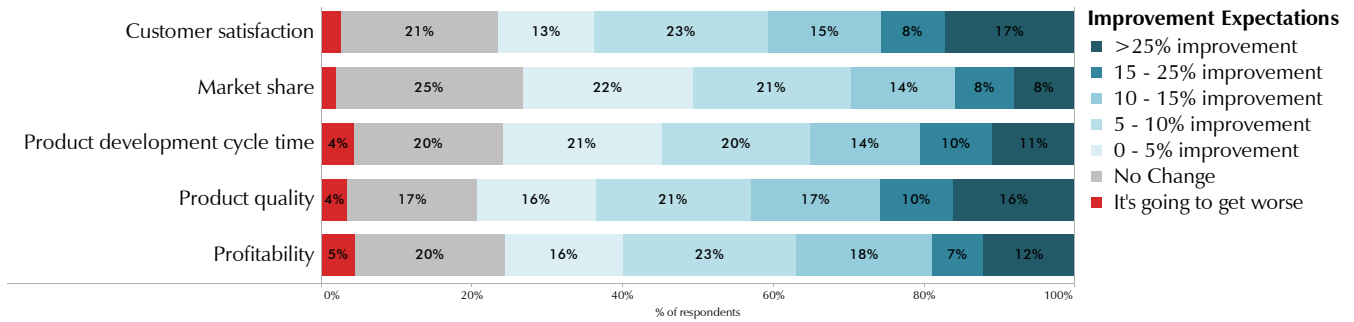


Figure 20. Expectations of improvements over the next 18 months in areas that are primary reasons for justifying investments in design software.

Among CAE respondents, PTC users were the least optimistic about improving customer satisfaction while Altair users were the most optimistic with 80% expecting at least a 10% improvement.

In fact, PTC users were generally more pessimistic regarding all these issues than users of other software. Is there a shrink in the house?

Comments from the respondents about these improvements were evenly split between a focus on business issues, and a focus on technology. The most frequent response was that the improvement would be the result of improved design practices.

*"Using more 3d model based processes throughout the product lifecycle"*

*"Within the engineering department we will use design and simulation tools to speed up product time-to-market, support process improvements, and decrease scrap costs."*

*"Drafting team is driven by senior executives that are focused on continuously improving processes and products."*

Other comments reflected on new products,

*"Better planning and focus on new and existing products."*

and training

*"More schooling to utilize much more of our MCAD program abilities."*

## New Technologies

In order to get a better understanding of acceptance and acceleration paths of selected technologies, we once again asked our respondents,

- At what level has YOUR FIRM engaged with the following technologies<sup>11</sup>?

## Technologies

Cyon listed 19 different technologies ranging from social media such as Twitter, to Cloud Computing (Figure 22). Space does not permit us to explore all the responses in depth so we will just cover some of the highlights. Some of the technologies that have not gained much traction are Google OS, Augmented Reality, Twitter (as a business tool), iPad/iPhone applications and software to reduce sustainability impacts.

The number of respondents adopting Windows 7 nearly doubled year over year, from 30% to 58%. It was somewhat higher among manufacturing respondents than AEC respondents, 59% versus 44%. In general, the differences between AEC and manufacturing respon-

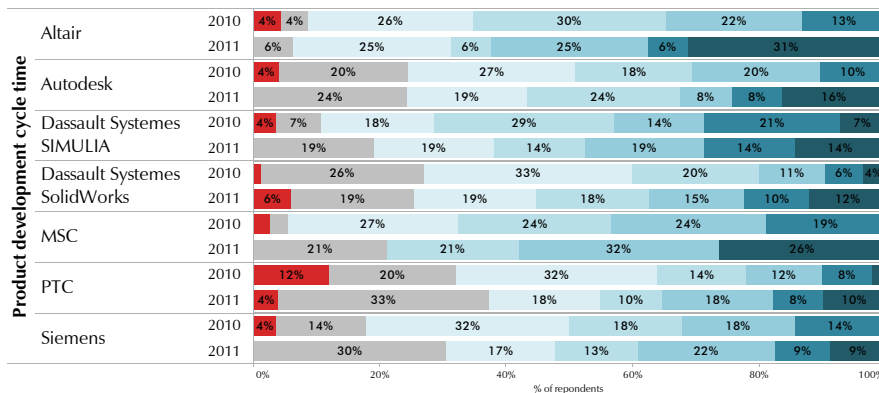
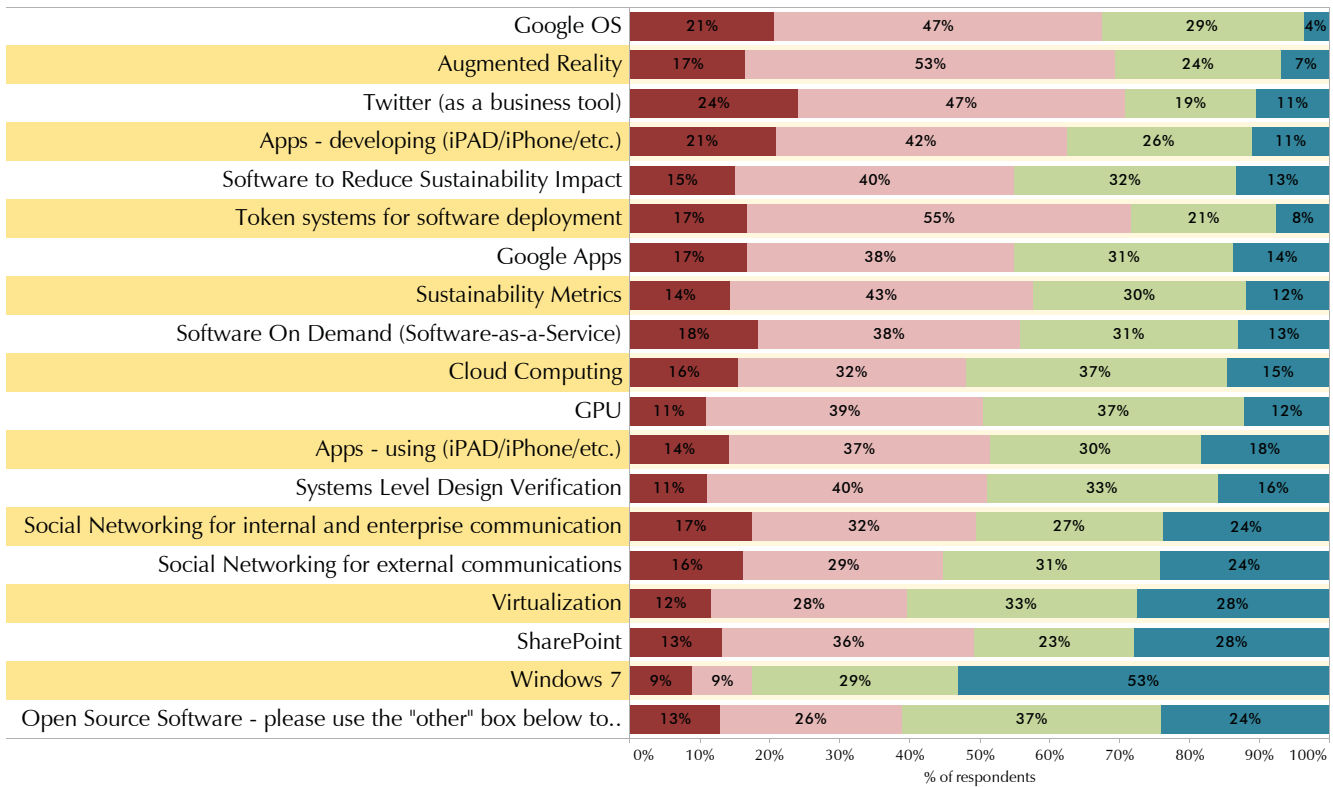


Figure 21. Similar to Figure 20, showing expected improvements in product development cycle time for respondents with CAE software from these CAE vendors.

<sup>11</sup> Listed in Figure 22.



**Level of Attention**  
 ■ Deploying or Deployed  
 ■ Paying attention  
 ■ Not paying attention  
 ■ Rejected

Figure 22. "At what level has YOUR FIRM engaged with the following technologies?"

dents regarding other new technologies was not substantially different. Manufacturing respondents tended to be slightly more positive than AEC respondents in areas such as software to reduce sustainability impact, sustainability metrics, virtualization, and augmented reality.

One surprising result was that the deployment of Microsoft's SharePoint actually decreased slightly from 33% to 28%. On the other hand, acceptance of GPUs (graphical processing units) jumped from 6% to 14%.

Another technology that still is not under active consideration is Twitter—only 25% stated that they were paying attention

or involved in its deployment and 26% had actively rejected corporate use of Twitter. Cyon Research is well aware that many companies are extremely concerned about security issues related to social networking web sites. There was a small uptick overall in general interest in social networks for external communication with the percentage paying attention or actually deploying that technology increasing from 48% to 52% year over year.

There was a more significant increase in those paying attention to or implementing system level design verification with that number increasing from 42% to 54%.

## In closing

This Cyon Research 2011 Survey of Engineering Software Users report provides only a sample of the richness of information we have collected and explored.

Of particular note was the extent to which many firms have continued changing from a pessimistic frame of mind to a more optimistic outlook. This change is consistent with the longer-term outlook we had provided in our prior survey.

Also of note is the large number of firms that are actively engaged in software transitions or consolidations (Figure 3, green).

We have designed our research to be 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, is only manifest when exploring the specifics.

For readers interested in accessing this rich data, we have developed worksheets for data exploration. These business intelligence (BI) worksheets are available for purchase from Cyon Research. We can also provide you with custom research.

We continue to revisit these subjects on an annual basis and would appreciate any suggestions you might have or support for the next survey, and how you would like to see the resulting information presented.

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

## Demographics

Our data was collected via SurveyMonkey, in English, Russian<sup>12</sup>, Chinese<sup>13</sup>, Spanish, and Portuguese.

Cyon Research sent invitations to participate in the survey to users from our database. Desktop Engineering<sup>14</sup>, ConnectPress, and

other publications were given an opportunity to invite their readers to participate. A tracking link to the survey was also given for broad distribution to representatives from vendors in the study. We also used social networks to distribute links, including Twitter and LinkedIn.

Of the 750 surveys we received, we validated 602 as coming from the user community, representing 43 countries<sup>15</sup>. The 602 respondents represent more than 550 companies. Figure 23 shows the geographic distribution of the respondents.

The industry sectors our respondents participate in are shown in Figures 24. Broadly, respondents were from firms in **manufacturing** sectors (69%) and **AEC** (Architecture, Engineering and Construction) sectors (26%),

12 We created the survey in English our friends from Russia, Oleg Shilovitsky and David Levin, assisted us with a version of the study translated to Russian.

13 Our friend George Wong assisted us with the translation into Chinese.

14 We continue to be impressed with the strong response rate receive from readers of Desktop Engineering, who made up more than 30% of our respondents. No other single publication's readers accounted for more than 5% of respondents.

15 We identified country by IP address, cross-checked with respondents responses.

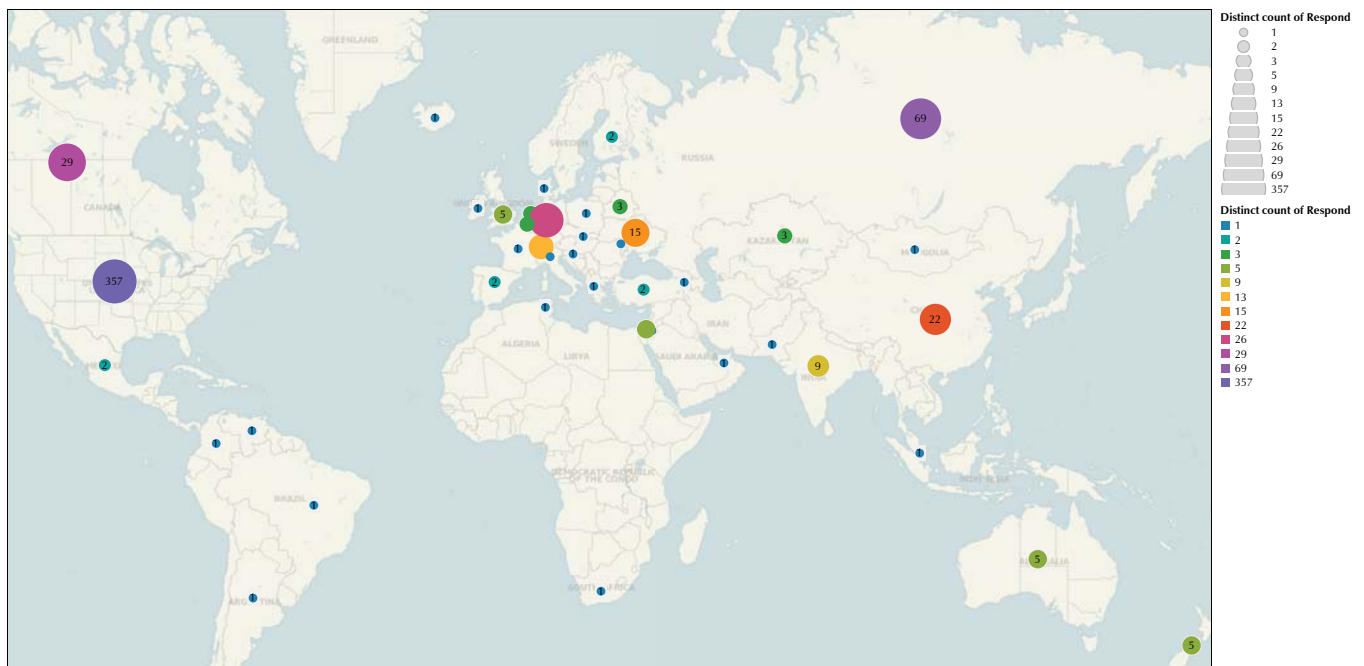


Figure 23. Geographic distribution of respondents.

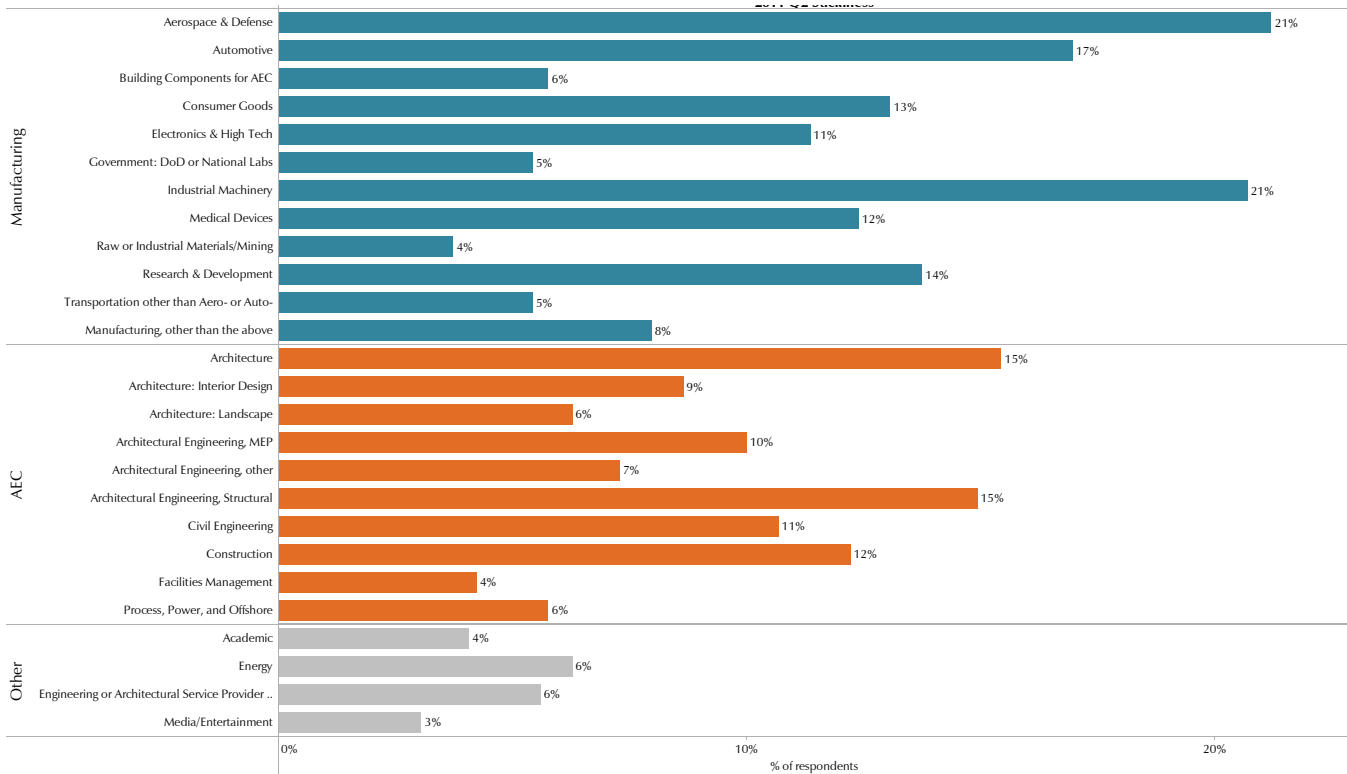


Figure 24. Respondents by industry sector. Many respondents' firms participate in more than one sector.

with (19%) participating in other sectors, including **energy, life sciences/healthcare, business services**, etc.<sup>16</sup>

The distribution of firm sizes among respondents, shown in Figure 25, is similar to our prior survey—about half of the respondents in this survey fall into the category of less than \$30M annual revenue. Because of this we took special care to control for size for all of our observations.

A diverse set of corporate responsibilities was represented by these respondents, with more than (60%) being either engi-

<sup>16</sup> Totals add up to more than 100% as many respondents' firms participate in multiple sectors. Only 6% of respondents were in the "other sectors" category and not also in either manufacturing or AEC sectors.

neers or architects<sup>17</sup>. Another 32% were management-level individuals, ranging from department heads to CEOs (Figure 26).

A large majority (74%) of our respondents personally used CAD software on a **daily** basis. Only 8% used CAD themselves **rarely** or **never** (Figure 27).

Of respondents with **mainstream** or **specialized** MCAD software, 11% have deployed specialized MCAD without also deploying mainstream MCAD. A

<sup>17</sup> The category "Design and Engineering" in Figure 26 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.

third more have deployed **both** mainstream AND specialized software (Figure 28).

Figures 29 and 30 show the distribution of the number of users/seats of CAD and CAE software deployed at the respondents' firms.

The roles our respondents play in the acquisition process are shown in Figure 31.

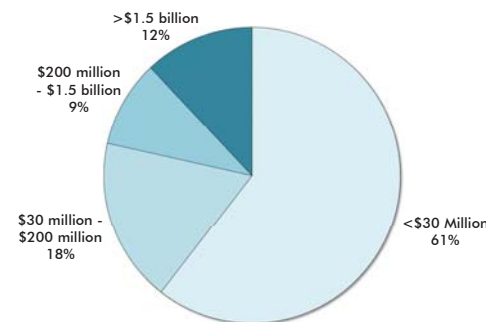


Figure 25. Respondents by company size (annual revenue).

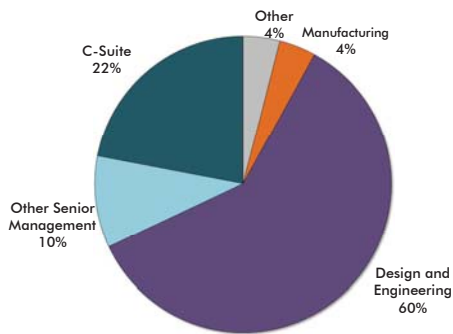


Figure 26. Respondents by role.

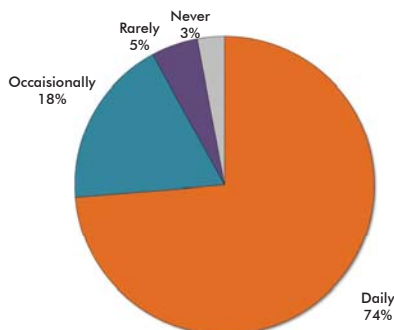


Figure 27. Respondents by CAD usage.

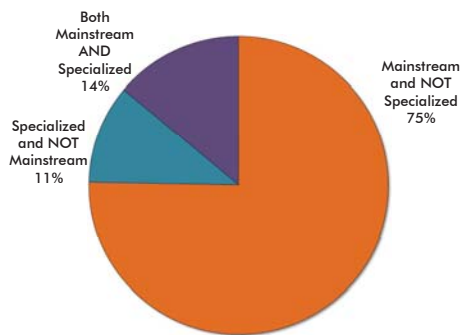


Figure 28. Respondents by type of MCAD — specialized versus mainstream and both

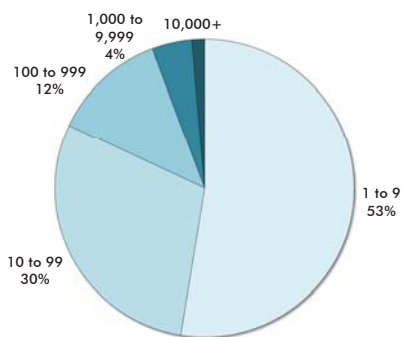


Figure 29. Respondents by number of CAD users/seats.

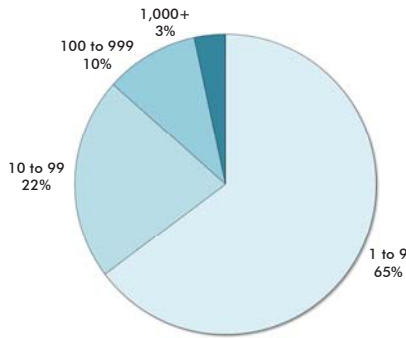


Figure 30. Respondents by number of CAE users/seats.

Figures 32 and 33 show the representation of major software tools in use at respondents' firms for CAD (Figure 32), and CAE (Figure 33).

We need to emphasize that Figures 23 through 33 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 share.

## Methodology

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 that fall, we posed 24 questions on subjects including user classification by industry sector and position, products deployed, purchasing criteria, and spending intentions.

In our 2009 survey, we revisited questions from the prior survey in more detail, in particular looking at how users have reacted with regard to spending, so that we might consider actions and new plans versus prior intentions.

For the 2010 survey we added depth to the spending/cutting decisions and added focus to areas that affect the likelihood of customers changing which software they used.

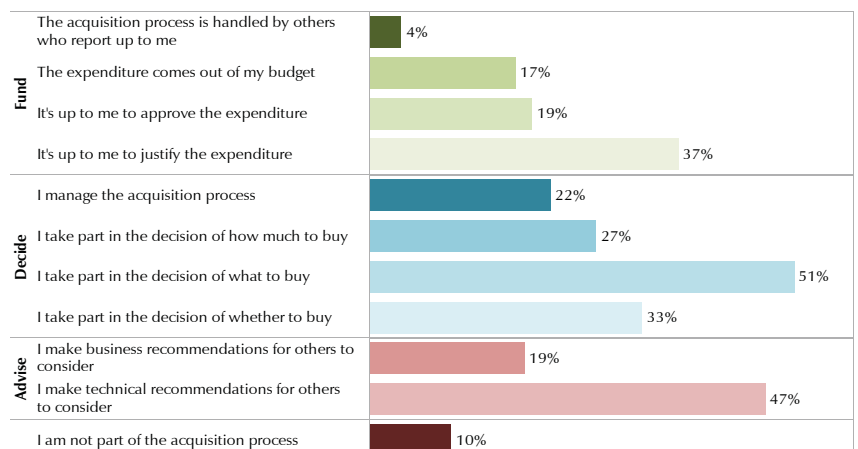


Figure 31. Respondents by acquisition responsibility. Many respondents have more than one role.



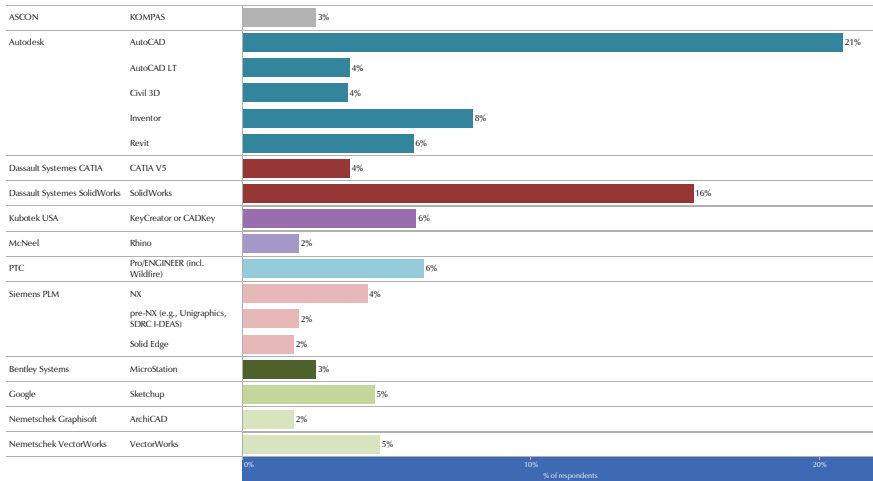


Figure 32. Respondents by CAD software in deployed.

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.

The 2010 survey did not request any value judgment on the part

respondents to consider and place a hard number to represent percentage improvements expected.

The 2011 survey added levels of refinement to increase the usefulness of the data. We also added narrative sections to clarify many of the multiple-choice options. Some of this is shown in this report in the extensive respondent quotes. We also asked questions

designed to better understand what was driving the software transitions we had seen in the earlier surveys.

As with all our earlier surveys, questions asked required several types of responses.

In our exploration of the data, we first look for overall results, then at both expected and unexpected correlations. Before we jump to any conclusion that a real correlation exists, we first go back to see if the correlation is an artifact of this particular set of respondents. 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. Only when we have eliminated the possibility of the correlation being an artifact of the respondent set do we then proceed with the analysis.

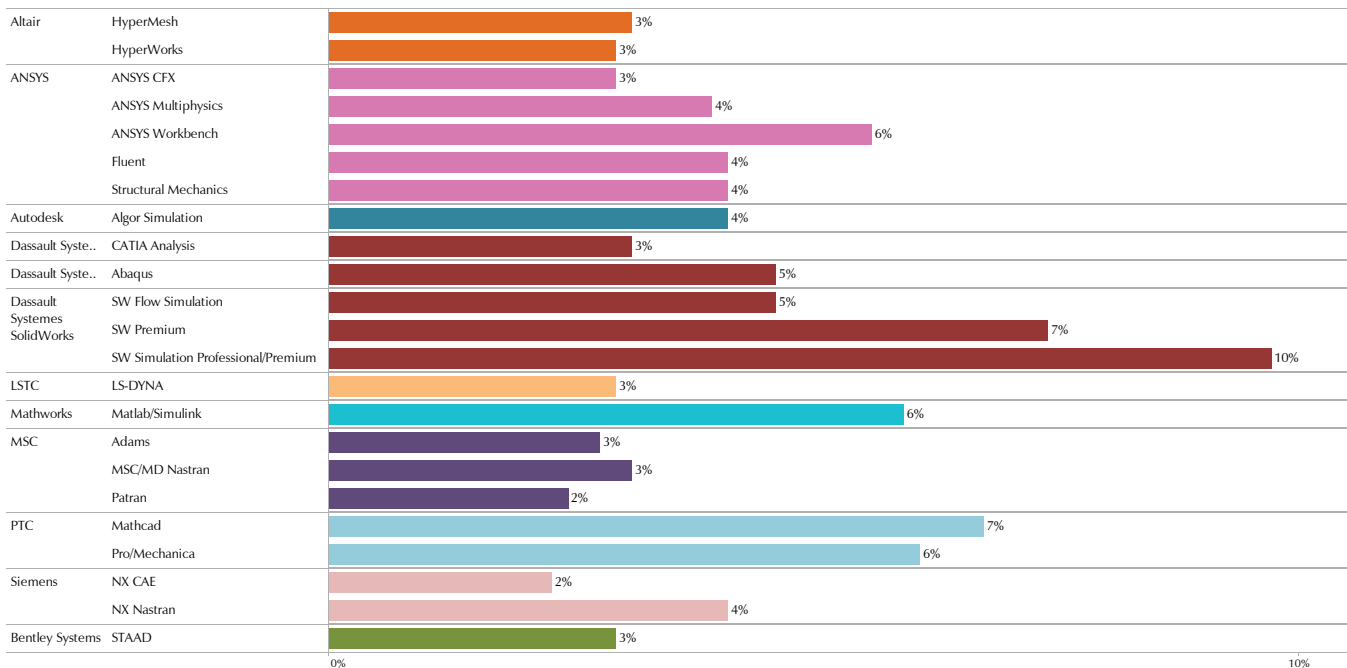


Figure 33. Respondents by CAE software deployed.



In some cases, we choose to focus on getting a broader range of unbiased responses, rather than trying to get numerical data. For instance, this question from the 2010 survey:

- *What are your firm's top two or three initiatives for design/engineering PLANNED FOR 2010/2011?*

was designed to both validate our choices from the 2009 survey and to act source of options for the 2011 survey. For these questions, we only accepted narrative responses. In our analysis of these narrative replies, we group similar responses into categories, and then reviewed the resulting list of categories.

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## About Cyon Research

Cyon Research is a think-tank 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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