Engineering services in Aerospace and Defense

Meeting the sourcing challenge

The Accenture A&D engineering services sourcing study

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Why we conducted this research

Engineering is a complex and expensive activity that has always been at the heart of the aerospace and defense (A&D) industry. But in recent years, it has become harder to bring the right engineering capabilities to bear in the right place at the right time, as the industry has faced up to mounting challenges ranging from talent shortages to offset requirements, and from cost pressures to an aging workforce.

Such trends have seen A&D companies across the world buy a growing range and volume of engineering services from external providers, as a way to gain cost-effective access to the skills and capacity they need. But to date, many questions about the industry's sourcing of engineering services have remained unanswered.

For example, what are the main drivers that make companies decide to buy engineering services from external suppliers? In which functional areas are these services being used most heavily? What are A&D companies' goals, challenges and priorities in using them? What contracting payment and cost structures are being applied? And what does experience suggest are the key success factors when buying and using such services?

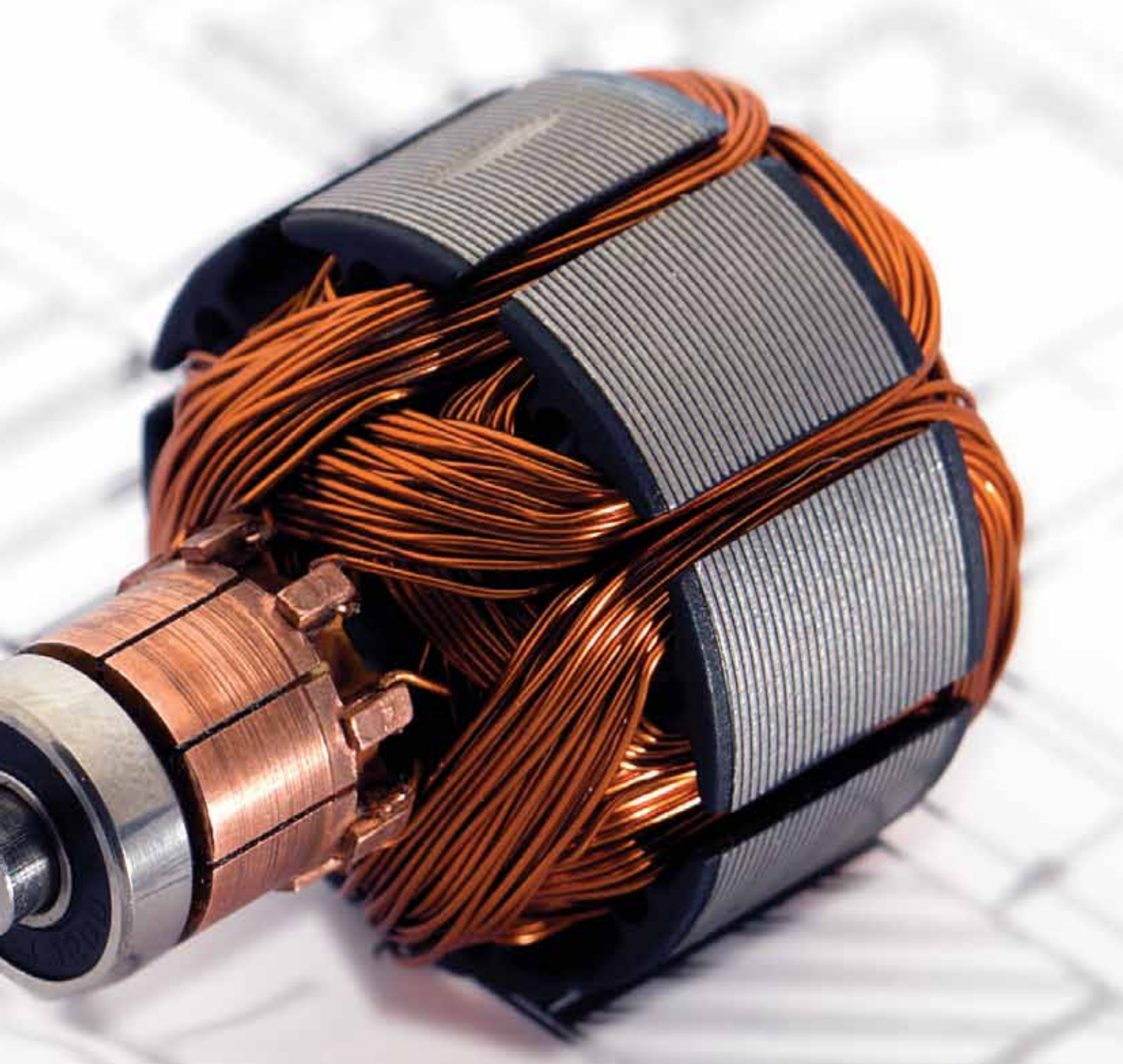
To answer these questions and more, Accenture commissioned an in-depth qualitative study among senior executives involved in engineering sourcing decisions in 31 leading A&D companies worldwide. We interviewed each of these key decision-makers about their aims, expectations, challenges and practices in this mission-critical area. This paper presents the key findings of this study, supported by Accenture's analysis of the resulting implications and opportunities.

The Accenture A&D engineering services sourcing study: survey sample and methodology

Our study is based on interviews with 31 executives in leading aerospace and defense companies worldwide, based in Europe, the Americas and Asia. The countries within the scope of the research included the US, Canada, Brazil, Germany, France, Italy, Spain, Sweden, UK and Singapore.

Over 30% of the companies interviewed in the study have annual revenues above US$10 billion, and 58% between US$500 million and US$10 billion. The executives interviewed were at the levels of Head of Engineering, Head of Procurement Engineering or Chief Finance Officer, and were closely involved in their companies' engineering sourcing decisions.

The interviews were conducted by telephone in January and February 2010 by an external market research agency, in order to verify the quality of the responses and the objectivity of the results.



Key findings

The study reveals four key findings. These are:

1. The market for A&D engineering services is mature and stable, with a wide range of activities being sourced from external providers.
2. Contracting structures are becoming more sophisticated, with a growing move towards a "work-package" approach under which suppliers provide commitments on price, on-time delivery and quality.
3. For services provided outside their own facilities, companies are making growing use of offshore sourcing to achieve greater cost benefits, fulfill offset obligations, and mitigate currency risks.
4. A shortage of relevant skills is causing A&D companies to look externally for expert engineering resources.

We will now examine each of these findings in more detail.

Key finding 1

The market for A&D engineering services is mature and stable, with a wide range of activities being sourced from external providers.

Today, major Aerospace & Defense companies around the world are active and significant users of external engineering services, resulting in the creation of a large, mature and stable market for these services. Over a third of the firms we interviewed say they intend to spend more than US$100m on engineering services over the next three years (see Figure 1), and 10% will spend upwards of $1bn.

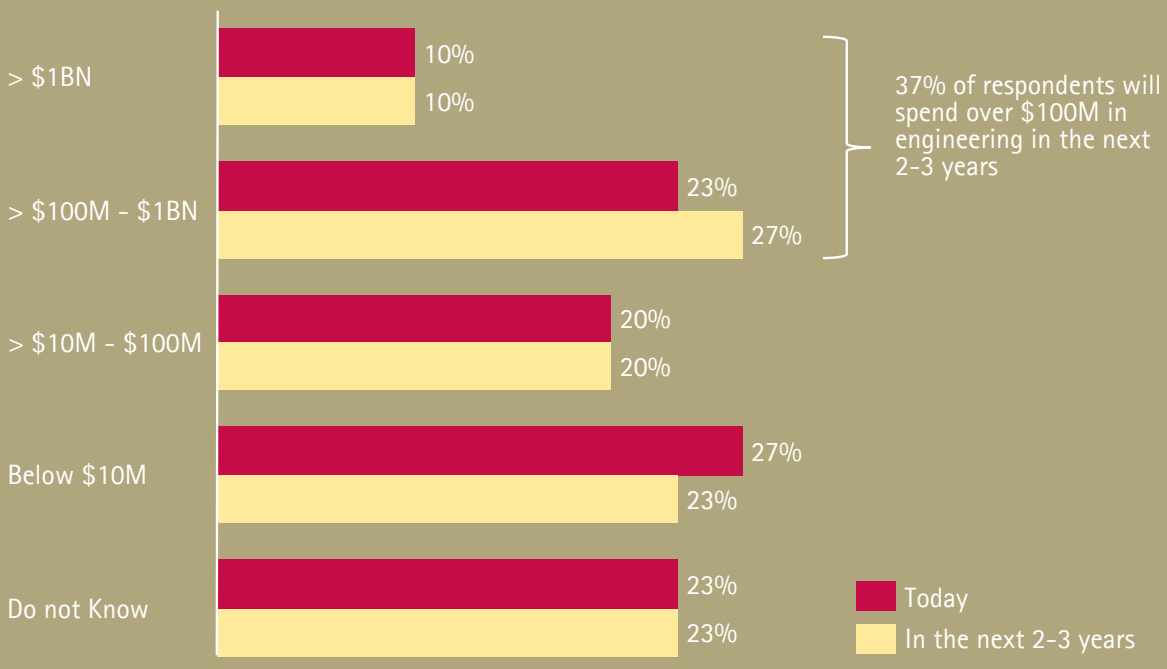
As well as being relatively mature and stable, the market is highly fragmented and dominated by niche local providers. The companies in our survey use a wide array of local and global suppliers, with over two-thirds of respondents using more than 10 providers of engineering services. However, 40% of companies say that 80% of their budget is concentrated among their five largest providers, indicating that the remainder of the budget is spread among a "long tail" of very small suppliers. Also, local players predominate over global ones, accounting for over 50% of companies' current provider base for engineering services (see Figure 2).

The market's highly-developed nature is further underlined by the wide range of activities being sourced from external providers (see Figure 3). These findings highlight a significant difference between A&D and other sectors, in that external sourcing of services in A&D tends to focus as much on higher-value, skills-intensive areas as on commoditized and routine activities, such as tech pubs and warranty.

This reflects A&D companies' use of external engineering services as a way to tap into scarce high-end engineering skills and top talent that are increasingly difficult to attract, acquire, retain and develop internally. In contrast, rising usage of external services in most other industries was driven at least initially by a focus on reducing the costs of low-value, high-volume back-office processes.

Figure 1: Spend on engineering services today and over the next 2 to 3 years

What is the estimated total spent in engineering today and what is your objective for the next 2-3 years?

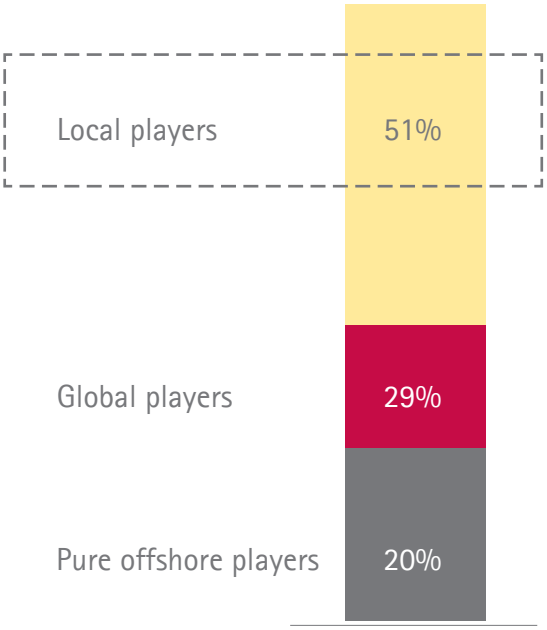


Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010

Base = All respondents

Figure 2: Types of engineering services providers used

What type of engineering services providers do you currently work with?

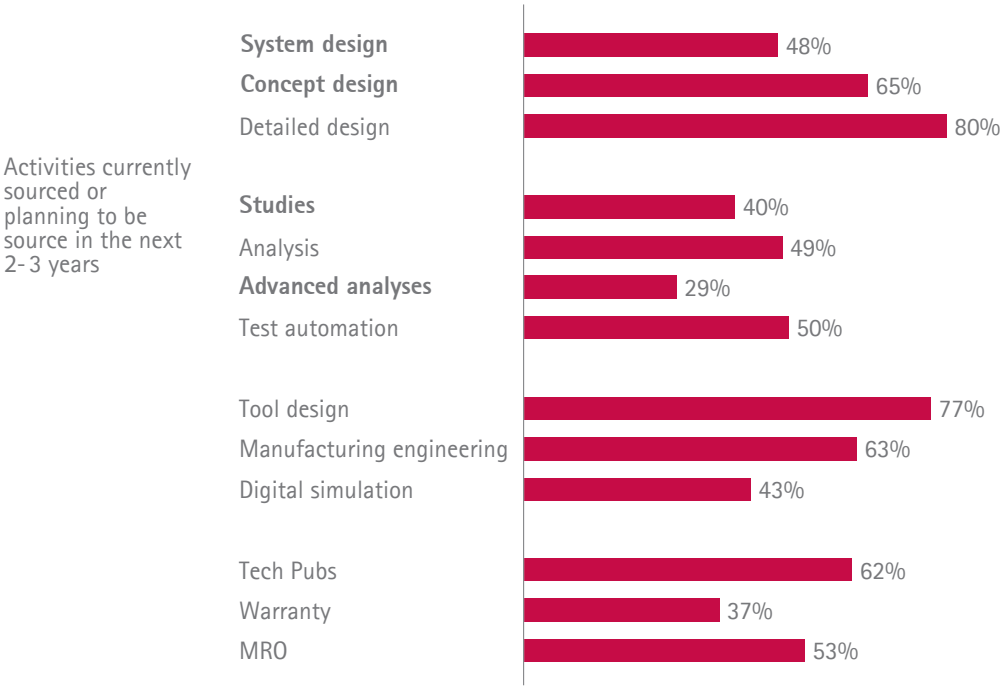


Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010

Base = All respondents

Figure 3: Types of engineering activities being sourced externally

Which engineering activities does your company currently source from external providers or plan to source in the next 2 - 3 years?



Engineering High-end vs. Low-end profile

System, Concept, Detailed design

Engineering studies & analysis

Manufacturing Engineering

Design for Maintainability

Engineering High-end profile in bold

Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010

Base =All respondents (excludes don't know)

Key finding 2

Contracting structures are becoming more sophisticated, with a growing move towards a "work-package" approach under which suppliers provide commitments on price, on-time delivery and quality.

The marketplace for engineering services in A&D is characterized by rising sophistication in the contracting structures being used. Across most industries where external services are widely utilized, there has been a clear trend in recent years away from setting pricing and supplier incentives on the basis of "inputs" such as man hours and suppliers' costs, and towards focusing on "outputs" such as service quality metrics, success in meeting milestones, and real business results generated.

As Figure 4 shows, a similar trend is evident in A&D companies' sourcing of engineering services. "Time and materials" are declining as a basis for buying and paying for external services, and are being steadily replaced by utility-style "pay-per-service" and more significantly —"workpackages". Under the workpackage approach, suppliers make up-front commitments on pricing, on-time delivery and service quality, and payment depends on their meeting these goals.

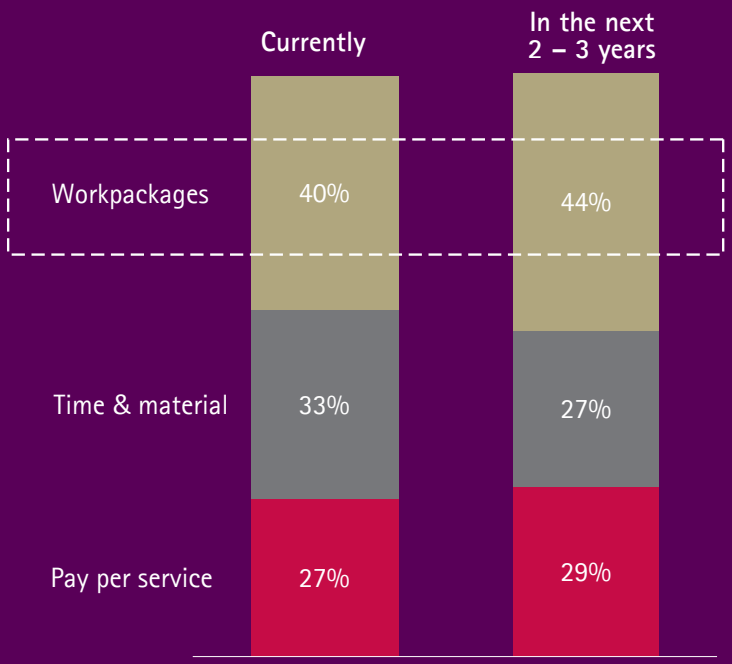
This shift towards focusing on business outputs shows that A&D companies buying engineering services are increasingly expecting to see the performance of complete, end-to-end activities and the provision of pre-defined deliverables for an agreed price. If the activity is a design study, then they want to receive a completed high-quality structural design, together with the tools required to execute it. The central role that these types of engineering activities play in A&D companies' business means it has taken some time for them to come to terms with letting go of entire end-to-end processes and entrusting them to third-parties. But our research shows this is now happening with growing frequency across the industry.

At the same time, the trend towards linking the price paid to the outcomes received demonstrates that A&D companies are managing their risks more effectively by creating closer alignment between their various objectives when using external engineering services. As Figure 5 shows, our respondents' top two reasons for buying engineering services are, firstly, to improve efficiency and productivity; and secondly, to manage production costs more effectively. A work package approach to contracting with providers enables them to combine and link both of these aims in a single agreement.

> "[We want our engineering services suppliers to] broaden the range of services rendered by the same company, [so] that they can provide us not only with engineering services, but with all of the disciplines that comprise a particular part of the vessel."
>
> Survey respondent

Figure 4: Basis on which engineering services are sourced today and for the next 2-3 years

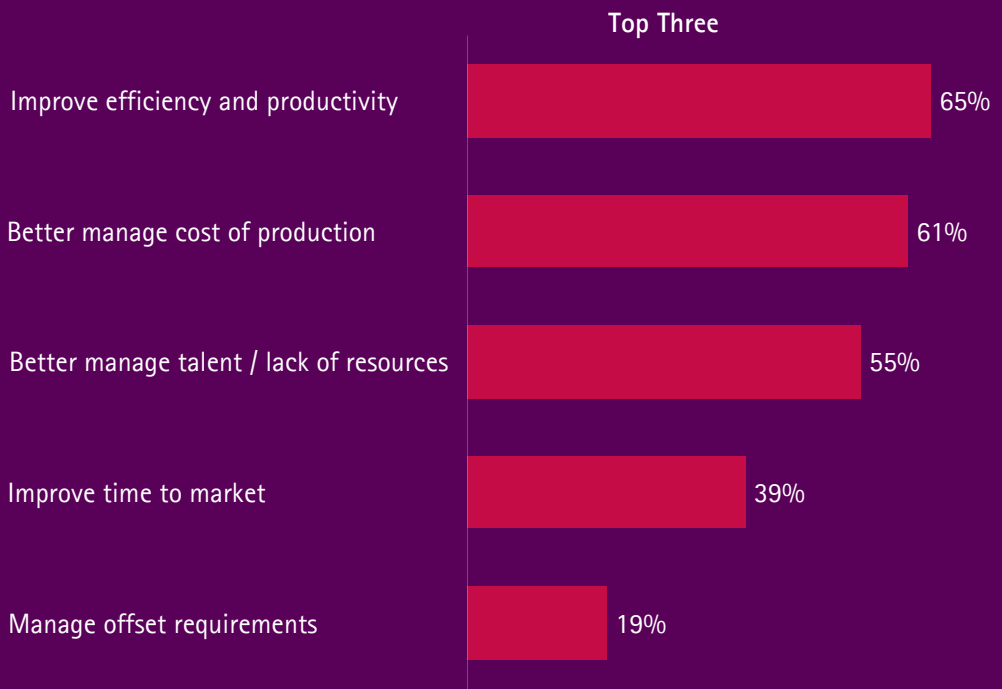
Regarding the engineering activities you currently source, how are the services performed and what do you expect for the next 2-3 years?



Base = All respondents (excludes don't know)

Figure 5: Main reasons to buy engineering services

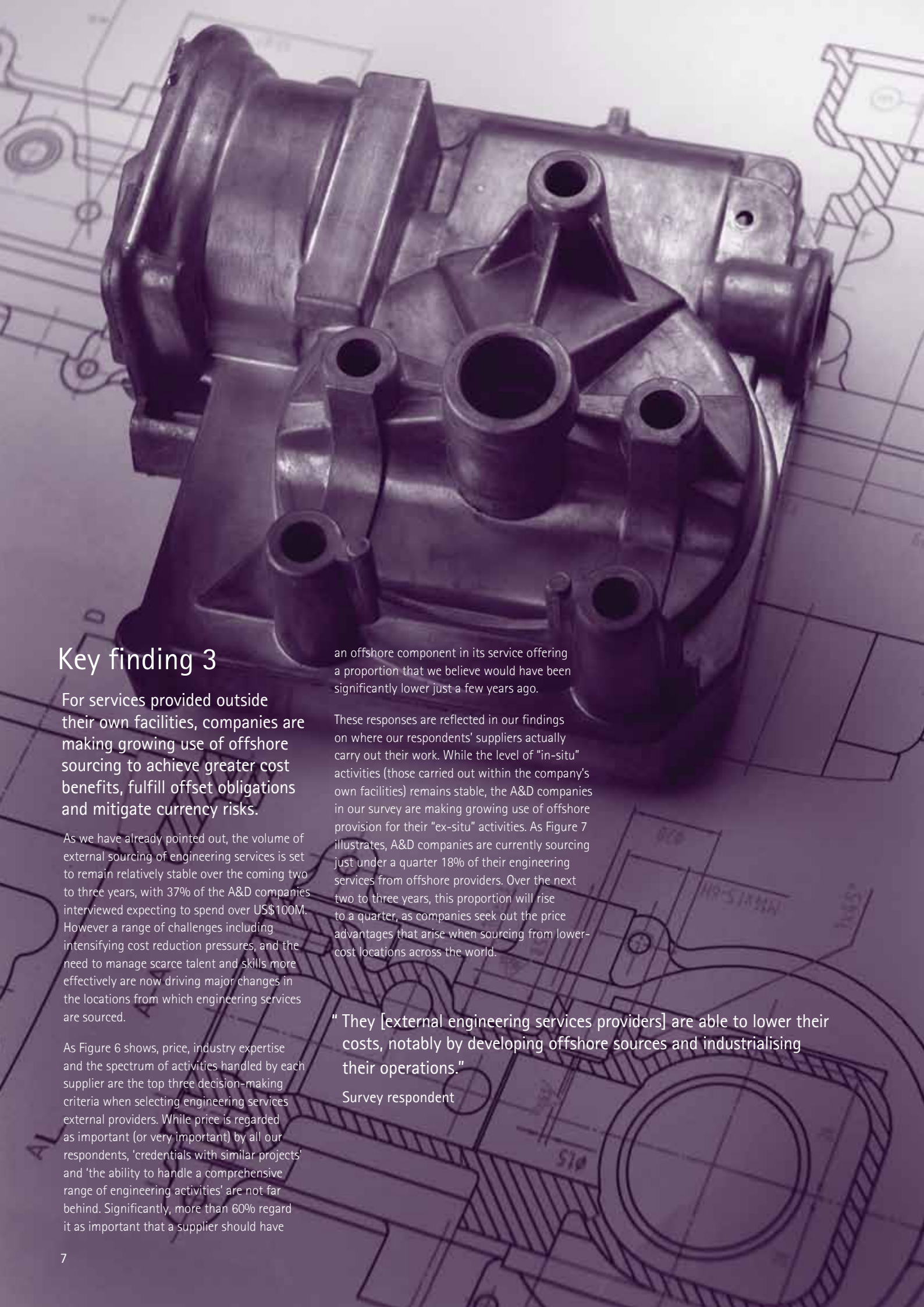
In your company, what are the top 3 most important reasons to buy engineering services?



One respondent in two considers that the need for better talent management is a key driver in engineering sourcing decisions

Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010

Base =All respondents (excludes don't know)



Key finding 3

For services provided outside their own facilities, companies are making growing use of offshore sourcing to achieve greater cost benefits, fulfill offset obligations and mitigate currency risks.

As we have already pointed out, the volume of external sourcing of engineering services is set to remain relatively stable over the coming two to three years, with 37% of the A&D companies interviewed expecting to spend over US$100M. However a range of challenges including intensifying cost reduction pressures, and the need to manage scarce talent and skills more effectively are now driving major changes in the locations from which engineering services are sourced.

As Figure 6 shows, price, industry expertise and the spectrum of activities handled by each supplier are the top three decision-making criteria when selecting engineering services external providers. While price is regarded as important (or very important) by all our respondents, 'credentials with similar projects' and 'the ability to handle a comprehensive range of engineering activities' are not far behind. Significantly, more than 60% regard it as important that a supplier should have an offshore component in its service offering a proportion that we believe would have been significantly lower just a few years ago.

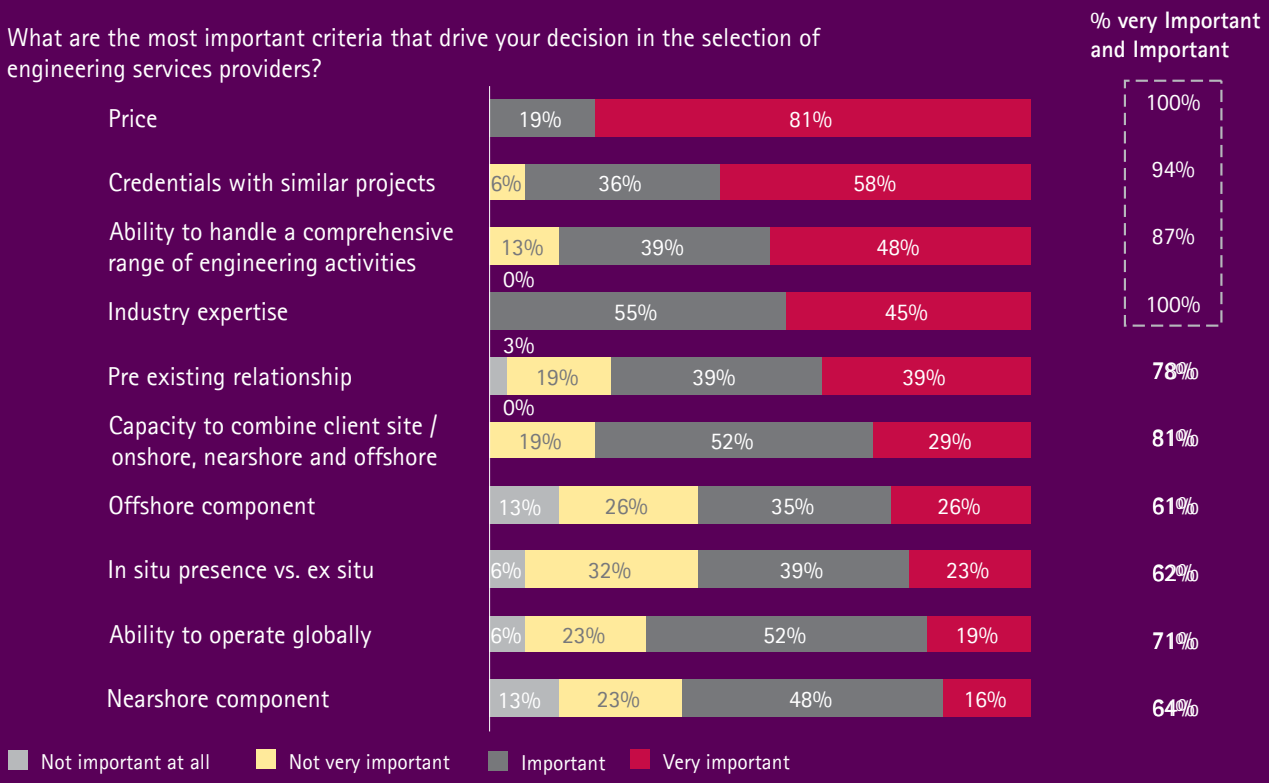
These responses are reflected in our findings on where our respondents' suppliers actually carry out their work. While the level of "in-situ" activities (those carried out within the company's own facilities) remains stable, the A&D companies in our survey are making growing use of offshore provision for their "ex-situ" activities. As Figure 7 illustrates, A&D companies are currently sourcing just under a quarter 18% of their engineering services from offshore providers. Over the next two to three years, this proportion will rise to a quarter, as companies seek out the price advantages that arise when sourcing from lower-cost locations across the world.

" They [external engineering services providers] are able to lower their costs, notably by developing offshore sources and industrialising their operations."

Survey respondent

Figure 6: Most important criteria when selecting external providers of engineering services

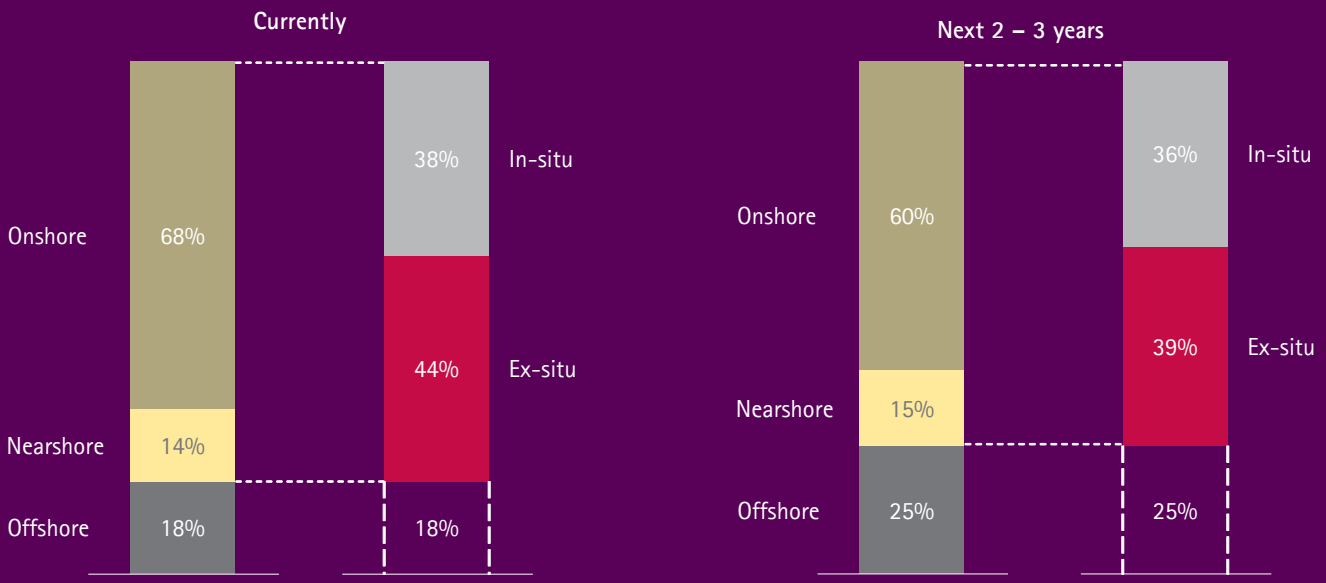
What are the most important criteria that drive your decision in the selection of engineering services providers?



Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010
Base = All respondents

Figure 7: In situ and ex-situ sourcing on-shore, nearshore and offshore

In your company, what is the proportion of engineering sourced to external providers in-situ, ex-situ or offshore? What is your objective in the next 2-3 years?



Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010
Base = All respondents (excludes don't know)

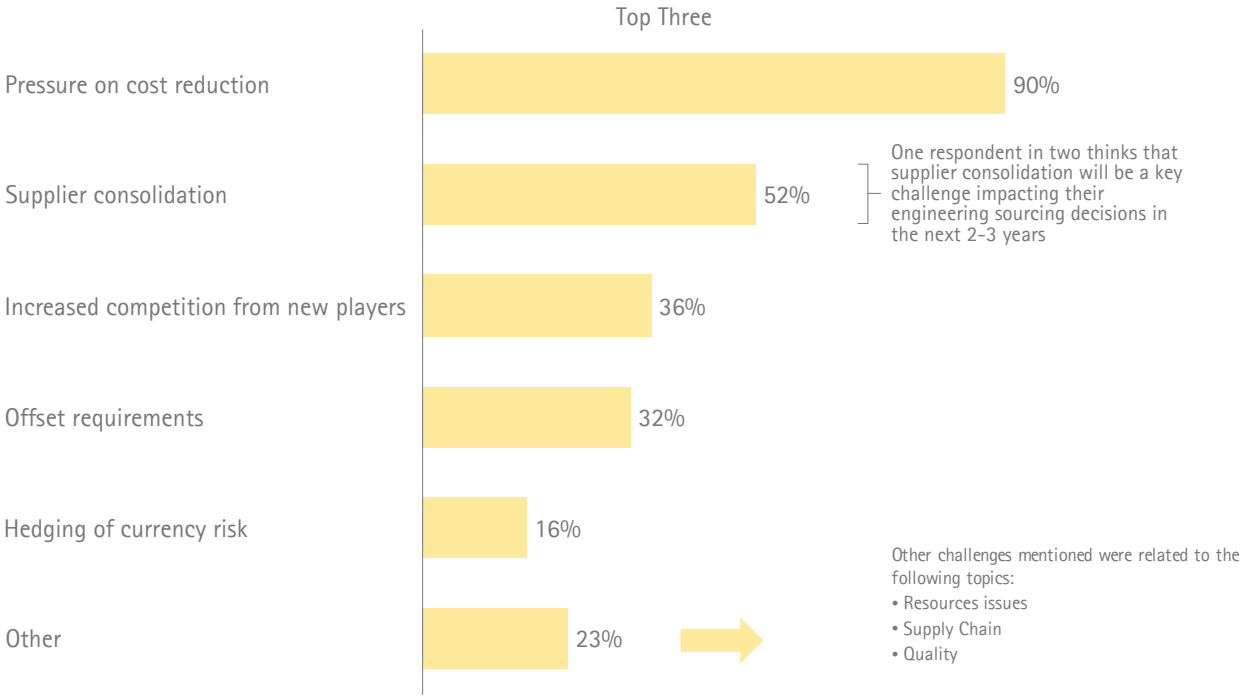
Other findings suggest that the momentum behind the move towards lower-cost offshore sourcing will be maintained. Asked to cite the top challenges impacting their decision-making related to A&D engineering services over the next two to three years, 90% of executives point to cost reduction pressures (see Figure 8).

While this focus on costs will help to maintain the migration towards offshore sourcing, two further factors are also helping to drive it. One is the opportunity to use offshore sourcing as a way to meet offset requirements under contracts in particular countries, by providing a quick and flexible way to locate work within the chosen jurisdiction. In Figure 7, some 32% of respondents highlight offset requirements as an important factor in sourcing decisions going forward.

Furthermore, one in six of our respondents point to a second additional benefit from offshoring: the ability to hedge currency risk. With A&D sales universally negotiated and paid for in US dollars, A&D companies with a different base currency — such as euro — face an inherent currency risk, due to their costs being in one currency and revenues in another. Offshore sourcing priced in US dollars can help to align costs and revenues, thereby mitigating this risk.

Figure 8: Top three challenges impacting sourcing decisions

What are the top 3 challenges that will most impact your engineering sourcing decisions in the next 2-3 years?



Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010
Base =All respondents

Key finding 4

A shortage of relevant skills is causing A&D companies to look externally for expert engineering resources.

We asked our panel of industry leaders to specify the extent to which engineering services providers could help them manage their companies' priorities around engineering, the top two benefits were better control of cost and managing a lack of resources and skills (see Figure 9).

While cost advantages are widely regarded as a "given" in external sourcing, it is significant that our respondents regard third-party engineering services providers as playing an almost equally important role in enabling them to fill gaps in their talent base. This indicates that the industry's widening skills gap is causing A&D companies to look externally for expert engineering resources.

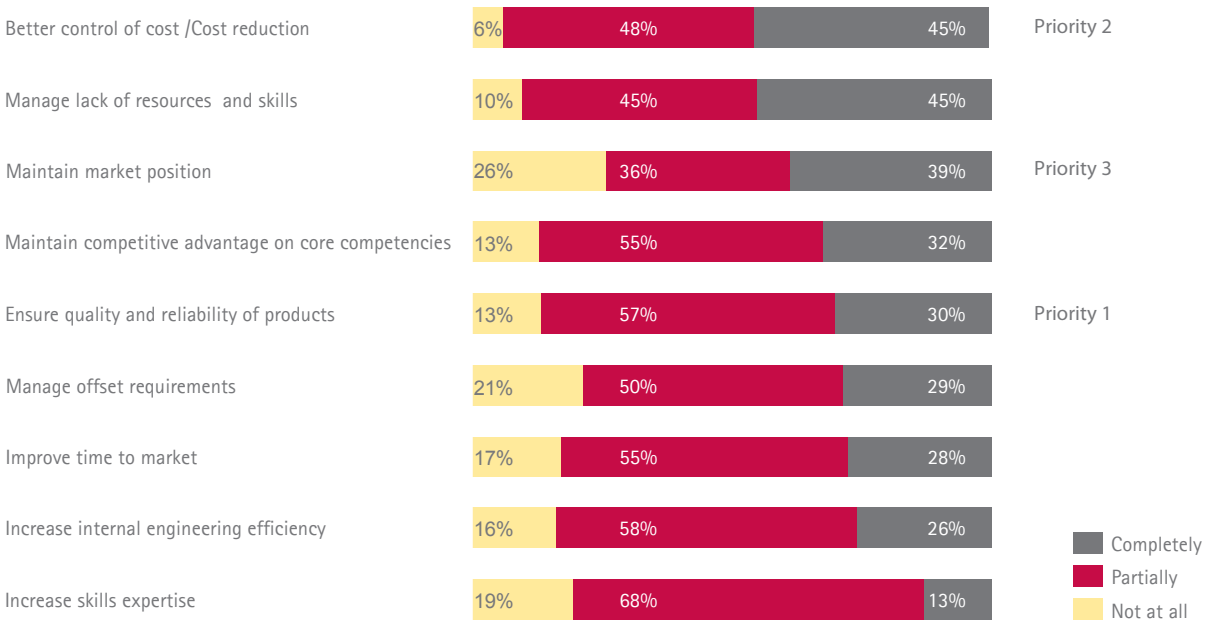
The use of engineering services as a way to tap into scarce top-end talent is further underlined by the types of work being sourced externally. As we noted earlier, use of external engineering services tends to be concentrated around higher-value, skills-intensive areas, in contrast to the more commoditized and routine activities that are usually bought from third-parties in most other industries. As Figure 10 shows, this top-end focus is set to remain virtually unchanged over the next two to three years, as companies continue to buy in services that bring access to hard-to-acquire expertise.

"They [external engineering services providers] are able to accompany us on offset markets, that is to say able to build partnerships which would allow us to valorise skills transfer when discussing compensations/off-setting."

Survey respondent

Figure 9: Extent to which external providers can help to meet engineering priorities

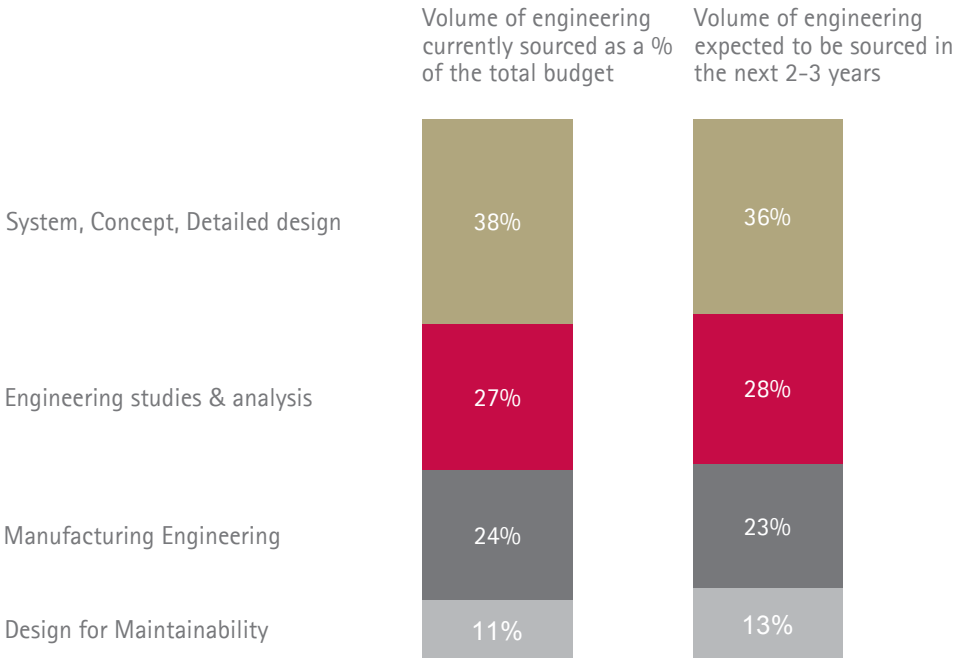
To what extent can sourcing from external providers help you manage the priorities related to engineering in your company?



Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010
Base =All respondents (excludes don't know)

Figure 10: Breakdown of engineering services currently sourced externally

In your company, what is the current volume of engineering services sourced (percentage of total budget)? What is your objective for the next 2-3 years?



Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010
Base = All respondents (excludes don't know)

However, A&D companies still perceive some major barriers when considering using external engineering services, and are keen to keep their very highest-level and most core business-critical engineering skills in-house. As Figure 11 shows, our respondents remain particularly sensitive to concerns over confidentiality and quality and engineering services providers have to overcome these two barriers with appropriate responses, such as security certifications and high-value skills.

> " [We are looking for] the flexibility to react to the needs of our company. To react to the market fluctuations, and so to always look for dynamism in the suppliers who are able to cope with work peaks and to resist to contraction of the same market."
>
> Survey respondent

Figure 11: Main barriers to using external engineeering srvices

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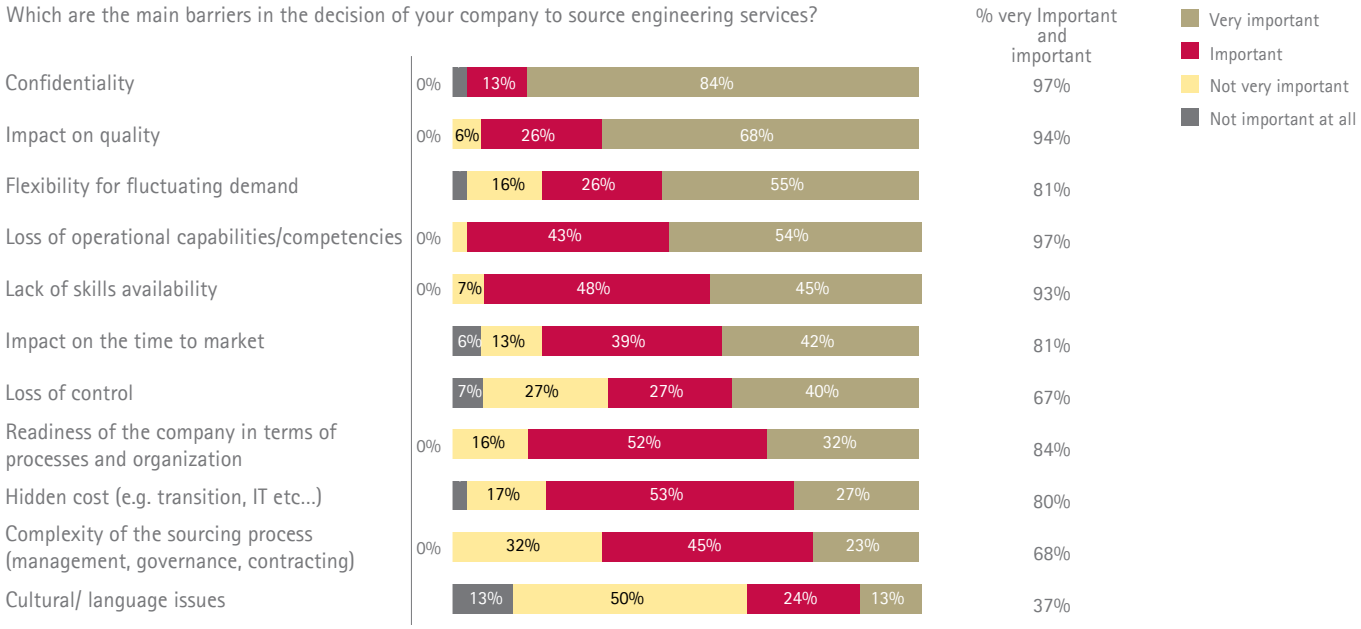


Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010

Implications and next steps

The findings of this study raise profound implications for A&D companies worldwide. Clearly, external engineering services will continue to play an increasingly important role in the industry. Yet companies are quite wisely committed to keeping much of their core engineering expertise in-house.

Our research and client conversations confirm that companies have four overarching expectations and priorities in their sourcing of engineering skills, capabilities and services:

- Quality and reliability of sourcing;
- Competitive pricing;
- Keeping core competencies in-house; and
- Accessing deep industry expertise.

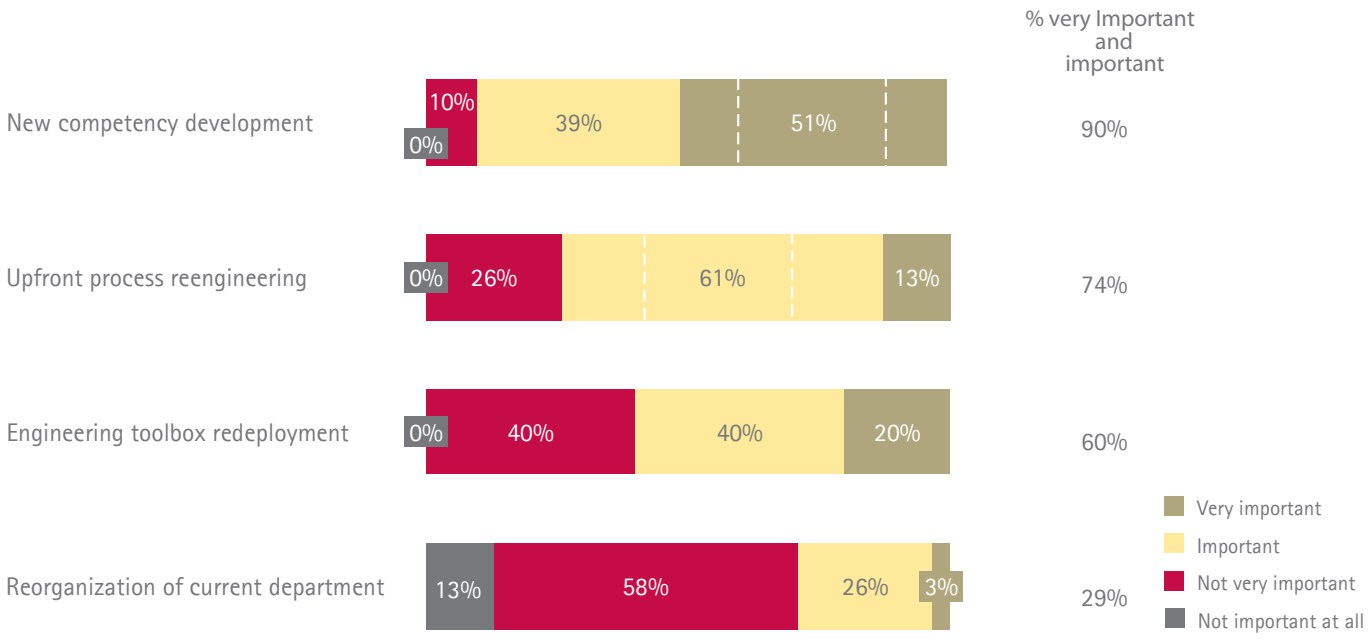
Yet, in using external engineering services to pursue these priorities, they need to address four potential areas of concern:

- Confidentiality;
- Impact on quality;
- Flexibility and availability of skills; and
- Loss of in-house competency.

To overcome these barriers, and align their use of engineering services with their priorities, our survey respondents recognize that they need to take a number of transformational steps (see Figure 12). The most important of these changes is the development of new competency to manage engineering services more effectively — a priority highlighted by 90% of executives. Also required are reengineering of upfront processes and redeployment of a standardized 'engineering toolbox'.

Figure 12: Transformation needed to best implement engineering services

What transformation do you think is necessary to best implement



Source: Accenture Engineering Services in Aerospace and Defence Survey, 2010

Base = All respondents

The Accenture value proposition

Our A&D client experience and engagements over many years have consistently shown that the fastest and most effective way to achieve these transformational steps is by collaborating with an experienced and trusted provider: one whose knowledge and understanding encompasses the A&D industry, the vital role of engineering capabilities for A&D companies, and the market for sourcing those capabilities at high levels of quality and confidentiality and low cost.

To meet A&D companies' complex and changing needs, Accenture has developed a value proposition that leverages our leading on-shore engineering capabilities, supported by - and integrated with - our Global Delivery Network of over 50 centers worldwide. As a result, we are able to provide engineering solutions that are tailored to each client's needs in terms of cost, quality, skills and confidentiality, while simultaneously helping the client sustain, preserve and develop core engineering competencies in-house.

Contact Us

To find out more about how Accenture can help your business source external engineering services in a way that create the right long-term value, please contact:

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About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with more than 246,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$25.5 billion for the fiscal year ended Aug. 31, 2011. Its home page is www.accenture.com.

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