

A man with short dark hair and glasses, wearing a light pink button-down shirt, is leaning over a desk in a modern office. He is looking down at a large sheet of paper, possibly a blueprint or technical drawing. His right hand is holding a green highlighter, and his left hand is resting on the paper. On the desk, there are several orange sticky notes, a black pen, and a laptop is partially visible on the left. The background is a blurred office space with bright, modern lighting fixtures.

Three keys to technical quality when using

external engineering support services

INTRODUCTION

Whether you choose to augment your engineering team with contingent workers or outsource work to an engineering services provider to support your projects, it is important to keep value top of mind.

Think of value as a provider's ability to deliver services that meet the technical quality your project needs at a cost that fits within your budget: essentially, performance per dollar spent.

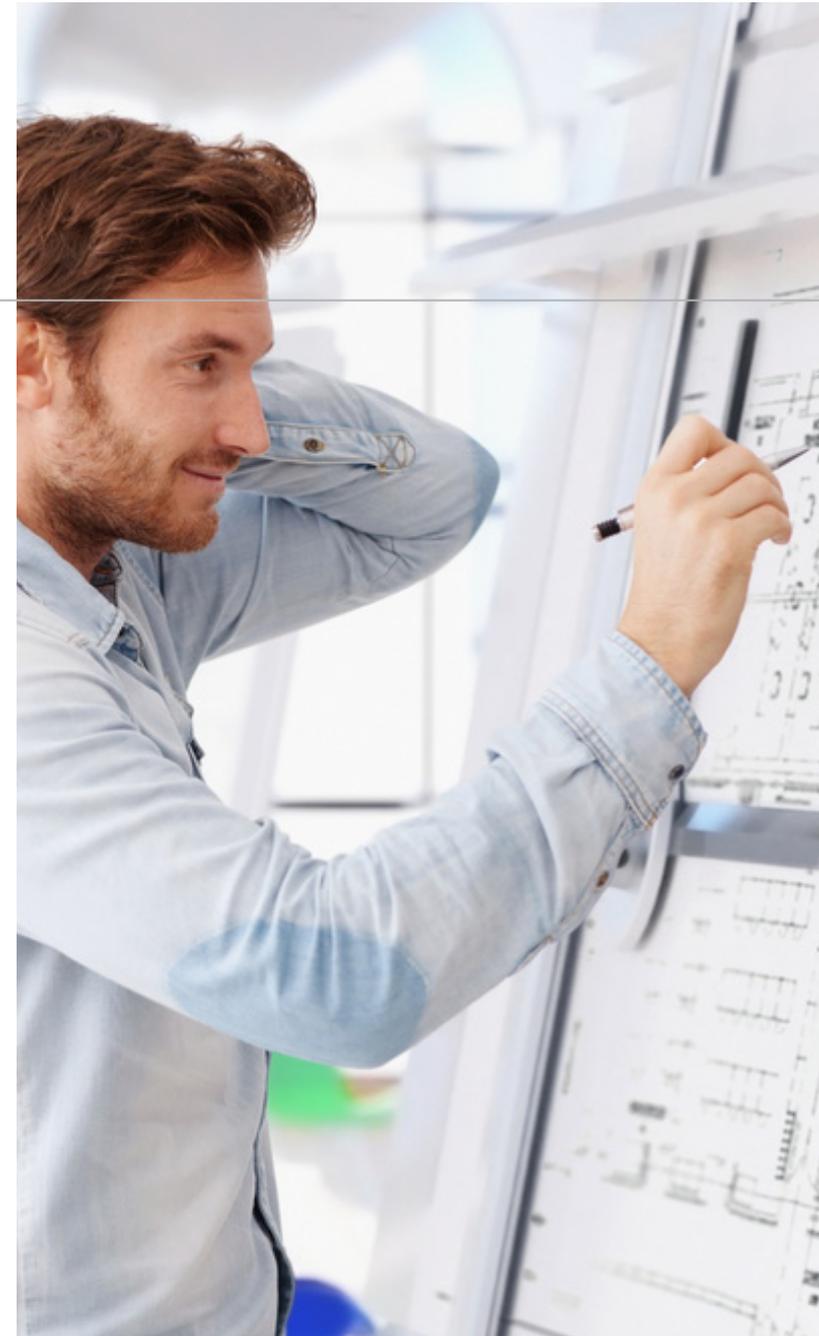
It is impossible to obtain value—at any price—if high-quality technical work is not being delivered. Here you'll find three ways your engineering support provider can bring value: people, process, and technology.

TECHNICAL QUALITY: THREE KEYS TO SUCCESS

Technical performance and quality are essential to the outcome of any engineering work product—whether engaged in NPD, facilities design, field service, or any other project or program.

Technical quality of procured engineering support services depends on a combination of three major factors: **people, process, and technology** (PPT).

These three factors can vary in their relative level of criticality depending on the nature of the work being delivered, but the “people” factor is always important.



1. PEOPLE

Quality engineering work requires quality engineering workers. Most engineering managers look for well-trained and qualified engineers and technicians when hiring for their own staff. They should not settle for less when bringing in contractors to help execute their projects.

Specifying worker qualifications, credentials, and experience levels is an important first step in ensuring that workers with appropriate backgrounds are assigned to the work. While an engineering manager may be interested in interviewing and reviewing the profiles of contract workers to be assigned to a small project, it can be burdensome and excessively time-consuming to interview large numbers of workers for more expansive project teams. This is where developing a level of trust and confidence in the supplier and establishing good, open communication can become very valuable.

One of the risks in procurement of services via fixed price bid is that certain suppliers might be tempted to assign their “B-team” (less experienced, and sometimes less capable, junior workers) to the project in order to minimize their costs of production. However, the exact opposite can be true with time and materials pricing, as a supplier might assign workers who are overly qualified for the job at hand—especially if they are salaried and have been idle “on the bench,” and not producing chargeable hours. These workers are sometimes charged out by suppliers at premium bill rates because of their qualifications, even if the particular project or task they are assigned to does not require such a high level of skill.

There is an additional consideration for the buyer who might be tempted to specify workers with less experience and lower qualifications in order to perhaps save money on an hourly bill rate. Such workers may need a larger number of billing hours to complete the assigned work—while more experienced engineers or technicians may bill at higher hourly rates, but might work more efficiently and complete the task in less time.



2. PROCESS

A well-designed and well-executed work process can make all the difference in delivering successful projects. This speaks to both the project management process and the technical work process: how will data be produced, collected, and analyzed? How will design changes be reviewed? Many clients ask suppliers to utilize a standard project management protocol, such as the Project Management Institute (PMI®) methodology, though suppliers vary in their ability to follow such standards.

Work process design for a particular project often benefits from good technical communication between the engineering services supplier and the client. Many managers want to be able to collaborate closely with suppliers who will be performing design, analysis, testing, and many other functions. Very often, clients design an engineering work process and select a supplier to execute the process and deliver the resulting data, designs, or other work product.

Engineering managers who have outsourced projects to overseas suppliers in low-cost countries often complain about a myriad of technical and operational difficulties, including time zone differences; technical misunderstandings; language, communications, and cultural issues; and quality performance problems on the part of suppliers.

In an effort to smooth over inherent operational and technical problems with their overseas centers, some suppliers have resorted to establishing project liaison offices in the U.S. These ostensibly act to take the burden off clients by serving as a go-between to ease communications and provide a U.S. point of contact for issue resolution and follow-up. In some cases though, these U.S. liaison offices merely mask communications faults and work errors. Rather than add value, this adds yet another layer to the communications process (think “the telephone game”) and further isolates the client from the actual work process.

Clients benefit and quality improves when the work and the workers performing it are brought closer, and communication becomes more timely and direct.



3. TECHNOLOGY

The use of particular technology by an engineering services supplier can be integral to the success of a project. For example, in a mechanical design project to support an NPD program, a client who desires to receive design models and drawings in a certain file format will want to work with a supplier who can meet those specifications. They may also desire the ability to quickly scale their virtual design team to meet the demands of the project using cloud-based design software and a distributed work platform.

Similarly, when a client requires finite element analysis (FEA) or topology optimization (TO) to be performed by a supplier as part of a project, the client will likely want to know (and may want to specify) which software packages will be used to produce the work.

In other cases, suppliers use customized or proprietary software to add an impressive edge to their customer-facing dashboards or reports. Clients may or may not find value in these interfaces, but they are no substitute for the quality and accuracy of the work product itself.

Most engineering clients want to know about the source data behind these reports and dashboards, the sampling protocols, how results are tabulated, etc.

Of course, technological tools are invaluable in the delivery of a variety of engineering projects, but it is essential to separate tools that truly contribute value from those that amount to window dressing.

One of the emerging areas of technology with impact on delivery of external engineering services is in robotic process automation (RPA). RPA is most commonly seen in performing transactional clerical tasks—such as entering, distributing, and searching engineering change orders (ECO). However, with the incorporation of artificial intelligence (AI) technologies, automation of creative engineering work is also increasingly common. Like all automation, success and effectiveness is highly dependent on the quality and validity of algorithms employed by the technology, so clients considering the engagement of suppliers using RPA should investigate prior to contracting.



CONCLUSION

EVALUATING PEOPLE, PROCESS, AND TECHNOLOGY

When purchasing engineering support services, it is important to evaluate them in terms of people, process, and technology (PPT). Focusing exclusively on any one of the three can result in an adverse impact to the technical quality—and ultimately the value—of the resulting work product. By clearly specifying the PPT factors for your project, you will help to ensure that the supplier you partner with will deliver the assigned work with the technical quality your project requires.



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