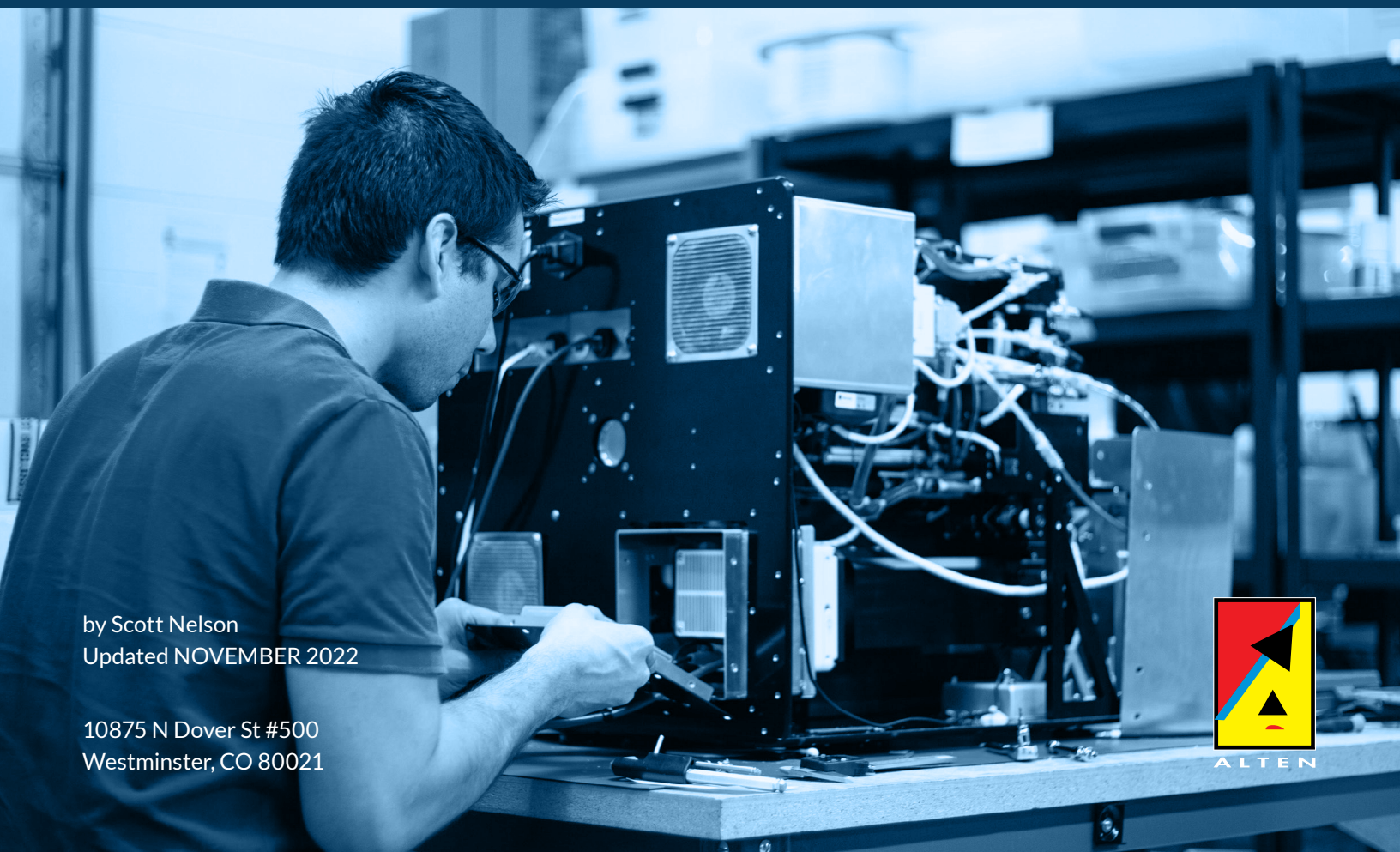
ALTEN TECHNOLOGY

HIDDEN COSTS OF PRODUCT DEVELOPMENT: ACHIEVING PRODUCT EXCELLENCE WITHIN BUDGET



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INTRODUCTION

The Three Primary, Hidden Costs That Plague Product Development

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> Often hidden costs are pitted against each other, forcing you to trade one for another.

Innovation, by nature, requires an investment. It is a gamble—one in which being right once or twice out of ten endeavors could pay off to a multiple orders of magnitude return. To survive long-term and stay ahead of the competition, companies must continue to innovate, especially once patents expire on original ideas and become commoditized. Though not every idea succeeds—and most do not—effective leaders must determine which risks to take and which opportunities to pursue to optimize ROI and control costs in product development. Balancing aggressive timelines and delivering optimal product quality is challenging. Even so, the reward for a product that correctly predicts what the customer wants when they are ready to purchase is worth a calculated roll of the dice.

In addition to those listed above, decision-makers face several pressures. For example, different functional groups can have varied priorities or a limited pool of resources straining the ability to deliver a great product, which forces decision-makers to find creative solutions to unburden the core team.

The real ROI of product development is a challenging metric to predict because of unexpected or unplanned costs eroding margins. Three macro-categories comprise the types of hidden costs in product development:

- Incomplete project proposals
- Misaligned expectations
- Scope creep

During product development, these hidden costs are often pitted against each other, forcing decision-makers to trade one for another. Typically, a development team can mitigate at most two of those factors at the expense of the other(s). Talented engineers want to minimize the potential for quality issues, but this can push the schedule out and cost the team time or additional billable hours.

Your primary challenge is to know when the product meets the target specifications, preventing scope creep, over-engineering, and untracked changes from hiding additional costs in the project.

The solutions are to clearly define and document the scope so the team knows what a complete project should look like and to formally track changes. Clarifying the deliverable scope and maintaining a change-tracking discipline allow both the development team and the customer to be accountable for not inflating the project scope. Frequent communication with regular touchpoint meetings will be imperative to ensure the project meets its goals whether the team is internal or outsourced.

INCOMPLETE PROJECT PROPOSALS

The process of completing a request for information, quote, or estimate can be challenging, especially with development projects spanning months to years.

To minimize risk, the team can use previous estimates as a baseline or quote the project in phases, providing a budgetary rough order of magnitude (ROM) number for subsequent project phases. This approach gets complicated, and lessons learned throughout the project could require a phase quote that exceeds the ROM.

Generally, an estimate is the beginning of the relationship between the customer and supplier. It is important for both parties to provide as much detail and transparency about the product and project as possible. Open dialogue between the parties reduces the supplier's need to make assumptions that could add unplanned costs. Working with an external partner can make the estimating process more straightforward as the partner typically specializes in a given area and understands its costs very well.

The best way a supplier can communicate an estimate or quote is to submit a formal, full proposal that contains a clear list of assumptions with the stated cost. This document allows both sides to see all the rules the supplier must follow. It provides each entity the opportunity to review and approve—or take exception to—each deliverable and the validation steps. Following the execution of the contract, both sides can refer back to the agreed-upon proposal document in the event of a discrepancy. As a result, both parties must review and understand the verbiage in the proposal.

Here are four guidelines to account for when receiving a quote on a project to avoid an underbudgeted proposal:

- If there is still research to be done, account for the time and money required by the supplier to complete the effort.
- If the development partner or product is new, plan on the learning curve causing surprises that will extend the schedule.
- If the team is large, account for communication inefficiency.
- Review the overall proposed staffing plan and understand how and when senior-level experts or lower-level project engineers will be used.

Successful suppliers offer timely delivery, clear communication, high quality, and the rapid rectification of issues. Conversely, using a supplier that does not meet expectations adds cost in two ways: wasted deliverable output and delayed project timing. The supplier should take the necessary steps and implement processes to mitigate risk.

MISALIGNED EXPECTATIONS

Nothing derails product development faster than when the project team starts down the wrong path from the outset.

It is paramount for the developers to understand the customer's expectations before beginning their task. This can be challenging because many of the signs that the execution is not meeting expectations cannot be measured. For example, the team may have anecdotal confidence after a successful initial meeting that they "get it" and skirt the typical processes in the interest of expediting the delivery schedule.

Another sign the team might be missing its mark is a failure to show measurable progress. Developing a technical, detailed product requires breaking the project into stages where teams have definitive points to check in and measure progress. ALTEN Technology employs a process that is predicated on frequent check-ins with your team to avoid false starts. These touchpoints create opportunities to ensure the approach is moving toward your desired goal and show measurable progress along the way. Without these check-ins, the product quality can suffer significantly, leading to increased validation testing or product redesigns down the road.

You hire a specialized firm for its expertise in product development, usually in a specific niche or industry. However, less experienced firms can agree to something outside their core competency, putting the entire effort at risk. The customer expects the product development team to be knowledgeable in the desired area. A group that has overextended its expertise may not understand what you are asking of them. Similarly, a firm that submits a bid substantially below competitive offers may either not have the expertise to execute the project or cut corners to save margin for undercutting the quote. This approach creates risks for product quality.

During the design review, misaligned expectations can be corrected by simple restatements of project phase objectives before presenting results. Tables or flowcharts of criteria can be used to clearly communicate the team's objective. This allows the team to course-correct or improve objective specificity at that time. Increasing the frequency of design reviews also helps the project direction. The Agile approach is ideal for preventing dramatic halts in progress or changes in direction.

ACTION STEP

Use an experienced firm and correct any misaligned expectations early on in design reviews; provide any tables, images, or flowcharts that may be helpful to your team.

SCOPE CREEP

In new product development, scope creep usually presents the most significant risk to the schedule, which can negatively impact the budget.

The hidden cost items already discussed (i.e., incomplete project proposals and misaligned expectations) can also cause a project's scope to increase.

Other common causes of scope creep include the following:

- Changes in customer requirements
- Changes in stakeholders/roles
- Preliminary success, which could motivate you to attempt making the end product even better

These factors add hidden costs in multiple ways. Frequently, your team may have brought in a design firm to handle one component of a larger system. Because each subcomponent influences another, the variable timelines for each part mean that the performance and/or packaging constraints may require a change elsewhere in the system. An example of this event could be a change to a durability requirement due to a prior change to system architecture. Your new durability requirement could require a design change to a supplier's component, such as adding vibration isolators or increasing material thickness, to meet the new specification, thereby increasing the cost. Changing stakeholders or their roles on your team may lead to a shift in priority based on the new authority's experience. Additionally, a team that experiences early success might become excited to optimize the requirements based on the result. These changes, although potentially improving the end product, may add requirements and drive up costs.

> "Keeping the initial project scope in front of the team reminds everyone of the goal that the project plan was crafted to deliver.

Mitigating scope creep is relatively easy but requires process discipline. Keeping the initial project scope in front of the team reminds everyone of the goal the project plan was crafted to deliver. Clearly communicating a formal scope change through change management ensures your team has done the due diligence required to justify the change and accepts any associated increases to project timing and cost. It is important to partner with an external design team that uses this type of quality system and can identify the tangible consequences should you proceed with a change.

CONCLUSION

Contracting an experienced product development firm poised to proactively tackle challenges is the best way to prevent these unplanned expenses. Bringing the external team on at the beginning of a project helps you to better understand a project's feasibility. Learning how scope and deliverable assumptions affect the development effort before the project begins increases confidence that the project will be successful. Choosing a partner that provides transparency into the team's progress through frequent touchpoint meetings protects the team's objective for the deliverable.

As an experienced team of multi-disciplined engineering experts, ALTEN Technology can act as a dedicated product development partner. We offer the systems engineering needed to integrate electrical, mechanical, and software components to ensure a robust technical product. This process controls hidden costs that arise from incomplete project proposals, misaligned expectations, and scope creep challenges, giving you the peace of mind that the development is proceeding according to both the plan and budget while your internal team focuses on core competencies and next-generation innovation.

ENGINEERING LEADERSHIP

Hidden costs can lower a development project's profitability. Product development already requires investment, so it is worth evaluating internal processes to determine sources of inefficiency or redundancy. Drilling down into the process is a difficult task, especially with an internal team. Your company might have put constraints or other priorities on team members that challenge or isolate the development work on a single product. Further, the internal team might lack the expertise required for a given task. These shortfalls could lead you to make erroneous conclusions about the sources of hidden costs.