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Executive Brief

3 Problems Facing Engineering Teams

In this series, we identified that the most vital factor that determines project success is visibility. We've also highlighted the four pillars of visibility that create a foundation for accurate and actionable project information: capacity, schedule, stakeholder and resource. Lastly, we listed the seven levels that an organization's project management software must support, enable and drive visibility: real-time, accessibility, relevance, rapid, simplicity, collaboration and integration.

And now, we look at three risky, costly, destabilizing and yet surprisingly common "real-world" problems that organizations face when their engineering projects lack the total visibility they need:

Problem 1: Unclear Business Requirements

Whether the goal is to improve software, build a bridge, or achieve any other important objective, all engineering projects are driven by a set of core business requirements. These requirements combine to form the fundamental "why" of the project, and directly influence budgets, schedules, resources, and integration with other projects and programs. However, when organizations lack total visibility, these pivotal business requirements are unclear and therefore unreliable, which invariably leads to cost and schedule overruns and often beginning very early in the execution phase.

Furthermore, even if a project with unclear business requirements manages to stagger across the finish line without being cancelled or reset, then it's very likely—in fact, it's almost certain that it will fail to meet customer expectations to some significant degree; regardless of whether the customer is an external project sponsor, or the organization itself. Fixing this will require at least one more project, though possibly more.

Problem 2: Inability to Adapt

By definition, all projects are iterative, progressively elaborated upon, and unique. As such, even when business requirements are adequate, it's a foregone conclusion that internal factors (e.g. resource availability) and external factors such as regulatory changes that will emerge along the way —some of which will be potentially helpful, while others will be potentially harmful. And the degree to which a project exploits the former and avoids or mitigates the latter is determined by its ability to adapt.

However, without total project visibility, Project Managers cannot make informed decisions as the project advances; many of which, such as those involving workarounds and resource allocation, need to be made in a matter of hours or days not weeks or months. As such, instead of relying accurate real-time data and input, they're forced to lean on best guesses.

Furthermore, without total visibility there is no meaningful way to determine why a "guestimate"

was incorrect. As such, many engineering projects exhibit a pattern of bad calls that cannot be attributed to a specific person or group, but are in essence built-into the very fabric of the project decision-making framework itself. This lack of insight and systemic error repetition can be exasperating for engineers who, like other competence-based professionals, pride themselves on “doing things right the first time”. When it becomes clear that this expectation is not merely unlikely but futile, frustration and apathy set in, which only exacerbates an already intractable problem.

Problem 3: Lack of Effective Communication

Engineering projects require efficient communication flows, for the core reason that they’re comprised by an abundance of intricate inter-dependencies. This includes integrated plans that are often so sophisticated and complex that they would be incomprehensible to most people outside of the engineering space. What happens in one area or aspect of the project is, directly and indirectly, going to impact another. Communication is glue that holds the project together.

However, with total project visibility, project team members simply cannot communicate effectively. The information they share and access is incomplete or outdated, and the process of communicating is burdensome and tedious. As a result, project team members often disassociate soon after the project starts and head straight for their “disconnected islands of activity”, where they cease to effectively connect and share with others.

Contrary to how this may look from above or from the outside, this is generally not because engineers are against knowledge sharing. Their reasons are pragmatic, not political. They simply don’t think that the project communication system works, and as such they don’t feel that it’s safe or smart to use it. And while this may manifest as a teamwork issue, it’s without question rooted in a lack of visibility and as such, that’s the only level on which it can be solved.

The Bottom-Line

Engineering projects are categorically never going to be “easy”, and nothing above suggests that total visibility will somehow help organizations turn a complex, sophisticated and multi-layered endeavor into a passive turn-key operation.

UNITED STATES
1.866.502.9813

UNITED KINGDOM
+44.0.20.3411.2345

ISRAEL
+972.9.794.4300

FRANCE
+33.18.28839.66