

A&M INSIGHTS Unlocking engineering exercises to achieve more with less Unlocking engineering excellence

Every industrial goods company understands the importance of engineers. But many manufacturers are currently experiencing margin erosion driven by a combination of different factors that relate to engineering. These include the complexity and high costs of running engineering functions; inefficient utilisation of engineers leading to lower productivity; and skills shortages in key markets, to name just a few challenges.

The engineering function, which commonly takes up around a third of the workforce in industrials businesses, can sometimes be considered 'untouchable'. But organisations need to understand where resource is being allocated inefficiently, and invest in measuring performance as accurately as possible. At A&M, our view is that productivity can be improved in engineering functions.

Using engineers effectively means ensuring the right skills to deliver projects are available to the business when they are needed. In this report we identify three major levers to help engineering-focused organisations better use available resources:

- Focusing on the customer by building a true understanding of must-have functionality for customers (over and above 'nice-to-have');
- Increasing the productivity of engineers by finding the most efficient way to allocate the right tasks to the right people, while avoiding short-term interruptions to reduce wasted time: and
- Effective use of outsourcing options to address skills shortages and intensify the focus on core internal competencies and differentiators.

Industrials organisations that harness these priorities can benefit from more effective engineers, doing work that more closely aligns with the organisation's value creation plans.





The challenge

Customer centricity has been drummed into engineering functions for years and enhancing focus on the customer is rightly seen as a central element of engineering transformations. But in many organisations, critical decisions on how products work for the customer are left to individual engineers.

This interpretation of customer centricity often leads to excessive functionality and inflated numbers of designs, a lack of 'platform thinking', and longer lead-times for delivery. This framework has also resulted in highly fragmented workdays where engineers are forced to multitask and split their focus between several projects and hierarchies, which often results in frustration and poor productivity. Engineering skills shortages – particularly prevalent in European markets – is another factor that affects customer satisfaction.

In product development, time to market is commonly measured, but engineers suffer from suboptimal communication through the value chain, meaning products take longer to develop than intended and functionality may not match the customer expectation. It is vital to recognise that engineering decisions taken early in the process have a real influence on customer satisfaction.

Increasing productivity in manufacturing has been a focus of improvement for many companies over the past years. Engineering is often overlooked, as it was perceived as a sensitive area, for which improvements are harder to achieve.

Engineering functions are facing several complex challenges at the same time: increasing the speed of delivery while maintaining robust communication; dealing with widespread shortages of skilled resources; and increasing engineers' productivity to do more with existing resources. These factors together demand a change of mindset across engineering and manufacturing organisations.

Customer centricity: key benefits for engineering functions

Defragmentation of activities: focus on major activities/projects

- Defragmentation of activities and clearer prioritisation
- Clarity on targets and KPIs
- More time for congruent activities and improvement of existing portfolio of products
- Lower stress in the function
- Improved cross-functional collaboration





Delivering sustainable transformations

Sustainable improvements can only be delivered if the organisation builds a common understanding of the strengths and weaknesses of its current way of working. The first step is always to evaluate current processes, performance management and planning systems, as well as where there is already spare capacity. Once identified, different improvement levers can be prioritised and the roadmap to results can be defined. Establishing KPIs to measure results is the final step to quantifying and tracking improvements.

The A&M difference: typical results from engineering-focused projects

- Reducing cycle time of customer projects by 25 – 30%
- Increasing engineers' utilisation on customer projects to >80%
- Quality control improvements of 20 25%
- Leveraging scarce skills by increasing outsourcing to 23 – 28% of all activity
- Reducing time to market by 20%

Work packages addressing opportunities in engineering functions might include:

1 Resource management: creating stronger links between project planning and resourcing to ensure the best use of the available resources. Transparency as to where engineers are investing their efforts delivers improved time allocation and faster delivery. Accurate and rapid time allocation decisions are at the heart of robust fact-based decision-making. Analysing decisions quickly improves the speed at which individuals receive feedback. Better decisions, made faster, give leaders more confidence in operational planning.

The first step is to build a good understanding of where engineers spend their time (Figure 1). Expressed as proportions of an engineer's time, green sections denote customer projects, and dark blue signifies support activities. Red is simply time that is wasted. Better segmentation of activities allow executives to understand where high-priority improvements can be made. The company highlighted in Figure 1 experienced a 17% increase in time spent on customer projects (tracked with the grey line) while minimising other less critical work over a period of 10 weeks.



Overview: Engineering utilisation

Figure 1: improvements in engineers' capacity and utilisation in a manufacturing business *Example shown here: immediate impact at beginning of project, showing upward trend. Please note, the population contains non-deployed engineers, such as team leaders, which book their time as "Support". **Outsourcing:** segmenting engineering activities streamlines the process of outsourcing by defining which key activities should remain within the business. Outsourcing options might include offshore for basic tasks that need little interaction, and nearshoring for activities that might need closer communication or regular travel to the supplier site. Figure 2 demonstrates key steps to scope and deliver an effective outsourcing strategy with improved capacity utilisation.



Figure 2: steps to transform outsourcing (including resource allocation, capacity management etc.)

3 **Skills mapping:** better resource management and outsourcing in turn help organisations free up core resources and allocate them to relevant topics/projects. Systematically assessing available skills in the larger organisation helps identify gaps to be closed with welldefined learning paths. Multi-skilling increases flexibility in resource allocation and builds career paths, thus helping to retain talent. **Value stream improvements:** Cross-departmental initiatives to drive quality and decrease cycle times energise the organisation and release benefits that may not have been addressed with localised improvements. Cross-functional initiatives increase the quality of communication and the understanding that there is a pursuit of a common goal. These initiatives are interlinked and show best results when implemented synchronously. Some initiatives are enablers, required for the achievement of the overall impact. Figure 3 shows some examples of achieved results:



Figure 3: specific initiatives implemented at particular stages in the value stream can drive significant productivity improvements



Digitisation: COVID-19 has shown that organisations must continue to invest in digital productivity as well as in the physical workplace. Some digital tools (such as video conferencing) are now very well established, but leaders should be wary of trying to solve new business issues with more software. Changing behaviours in organisations takes more than simply introducing new tools. In-person collaboration and the chance encounters that create new ideas will remain invaluable to engineering success.

Indeed, companies do not benefit from an excess of tooling introduced without detailed demonstrations of solutions' value to key stakeholder groups. Digital products and services only add value if their utility for the business is clearly defined, and if tools are introduced to engineers sensibly rather than as a 'big bang' roll-out. Leaders need to set clear standards and expectations to support teams effectively.

It is imperative to demonstrate the results of improvements quickly. Defining how work packages should be measured is an essential component of upfront work. In our experience, measuring progress in weekly sprints is an effective way of demonstrating impact.

External advisors can be catalysts for change, but longterm improvements must come from within the business. Changes should be transparent and made clear to the wider organisation: once improvements are put into place, the benefits should be communicated clearly to the 'shop floor' and the boardroom.

Productivity, skills and efficiency are combining to pose real operational challenges for engineering and manufacturing specialists. By reassessing best practices on outsourcing, capacity utilisation and resource management through the value stream, companies can enhance their customer focus and potentially their long-term growth prospects.

Pitfalls to watch for during engineering transformations

- Working in isolation: delivering engineering improvements without considering links to or dependencies on other parts of the organisation.
- Going too fast: change requires communication.
- Capacity for change consider the ability of the organisation to digest and drive change.
 A focus on communication is required to bring stakeholders with you.
- Ignoring past achievements of the organisation and specific challenges relating to the workforce. This may involve works council negotiations.





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Our professionals have both operational and advisory experience together with a proven track record in leading businesses through tough, complex situations. To speak to us about our experience delivering transformations and performance improvement initiatives for leading engineering and manufacturing businesses, please visit our website or speak to one of our contacts below.

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