

Coping with the relentless pace of New Product Introduction (NPI)

Industry Forum Insight
July 2015



Introduction

The most common reason for a new product to fail is that it doesn't find a market on the anticipated scale even though the total global annual spend on new product development is estimated at \$1 trillion currently. This amounts to over \$150 for every person on the planet.

New Product Introduction (NPI) is built round four phases – concept formation, refinement, prototyping and production but digital tools are transforming each of these. Connectivity is now as critical to manufacturing success as the four classic factors – materials, skills, energy and capital investment. Digitisation has brought shorter development timescales, low cost rapid prototyping, new manufacturing technologies offering greater accuracy and mass customisation, new actual and potential business models, for example via the internet of things, and the chance to develop and sustain richer collaborative networks. Customers of all kinds are finding out about products and services in new ways as products and services and are better informed than ever before.



These developments are increasing the competitive potential of smaller businesses across the globe. In response, larger firms are increasing the rate of new product and service introductions and upgrades. A moving target is much harder for a potentially disruptive new competitor with cost or resource advantages to overtake. Manufacturing provenance can still be a key asset as evidenced by the continuing strength of the UK's premium automotive brands.

Industry Forum's Manufacturing Advisory Group (MAG) recently met to consider the implications of these developments where the factory life-time for each product is contracting. MAG agreed that facilities-sharing by firms who otherwise may be competitors is beginning to enter into equation. Also increasingly important is the transfer of manufacturing during a single product lifetime between sites within a group with different production capabilities.

Production and Supply Issues

This current business environment is summarised in the acronym, VACU: Volatile, Ambiguous, Chaotic and Uncertain . Many UK based OEMs are keen to reduce their risk profile by reshoring their supply chain which provides a major opportunity for smaller UK firms who can master the relevant new product introduction processes and procedures.

MAG agrees that it is still too common for the production phase of new product introduction to be hampered by an excess of problems. These problems occur too far downstream and impact on the ramp up to volume production. The timescale the achieving break even and profitability suffers. With a properly structured and managed new product introduction process problems are identified and resolved in the early stages of the process. Ramp up runs much more smoothly, the total cost of new product introduction is reduced and the programme achieves profitability faster showing a better overall return.



MAG confirm that the reliability of suppliers is often a major concern especially where a supplier is working on several projects for different customers. If few suppliers are capable of producing a specialist component then those suppliers with the required capability tend to have scheduling problems with 'the loudest shouting customer' getting the attention. This may not benefit either the supplier or the customer base beyond the very short term.

The choice of a supplier-partner for long term collaboration has become more complex. Manufacturers have to weigh up speed to market vs supplier performance. New products mean new designs which often require new methods of

manufacture. New designs can also require new materials, new components or new manufacturing processes and this can seriously restrict the choice of supplier. Composites are replacing metals and additive manufacturing is entering the assembly process.

NPI process improvement and strategic commitment

MAG see an important role for Industry Forum in providing an impartial assessment of NPI capability in terms of widely accepted standards. They are convinced that with shortened product development timescales the whole supply chain has to be totally committed to 'right first time'. MAG have found that successful NPI increasingly requires the early finance of the skills development, particularly to deepen engineering skills. NPI is often required on simultaneous product lines, which means resources get spread thinly. Resources have to be reallocated to tackle the risks in NPI and reduce them with continuous improvement.

IF has examined UK manufacturers' approach to new product introduction finding that at tier 2 and below there are still too many SMEs who do not manage new product introduction as a cross-functional process with stage gates. They have yet to use standards or procedures such as Advanced Product Quality Planning (APQP) or the German supplier assessment process, VDA 6.3, and they have not started on time compression by using concurrent activities. These firms seem to have limited incentive to invest in the higher level skills that underpin these approaches.

Firms working at tiers 1 and 2, who are often mid-caps, have some documented standards and packets of good practice but they still do not manage new product introduction as a single end to end process. APQP is not integrated into a gated process and concurrency and cross functional working have very limited application. The skill base is also insufficient. These findings support the recommendations of Parliament's All Party Manufacturing Group who warn that there are still too many firms in UK manufacturing supply chains, especially at the smaller end, who lack ambition and a long term perspective and strategy. Global firms like ABB Robotics who have invested heavily in making smaller UK firms aware of the benefits of modern manufacturing techniques endorse these conclusions.



A structured approach

Industry Forum has developed a structured approach to assess and improve customers' new product introduction (NPI) processes encompassing programme management and review, product and process definition, product development, process development, supplier management and product and process validation. This approach can improve customer satisfaction and profitability, eliminate waste, manage risk better and improve team relationships reducing individuals' stress levels.

Industry Forum's NPI Effectiveness Assessment encompasses 36 separate categories. The typical stages of the resulting NPI improvement project include:

- Creating a realistic understanding of the customer's NPI process maturity via a proven independent assessment
- Specification of the gap between the current maturity and the level required to support the customer's future business strategy
- Defining the future state process to close the gaps
- Developing implementation work –stream charters
- Developing the standard work to support the future process
- Training to close the key capability gaps
- Implementing the improved process in bite sized chunks supported by a PDCA approach to continuous improvement

Industry Forum can improve customers' NPI capability by introducing a variety of proven techniques and approaches including problem solving, Product Part Approval Process, Design Failure Mode Effect Analysis, Process Failure Mode Effect Analysis, Measurement Systems Analysis and Statistical Process Control.