9 STOP MULTIBILLION DOLLAR DEVELOPMENT DELAYS

People are pushing aircraft and train manufacturers to rethink product development

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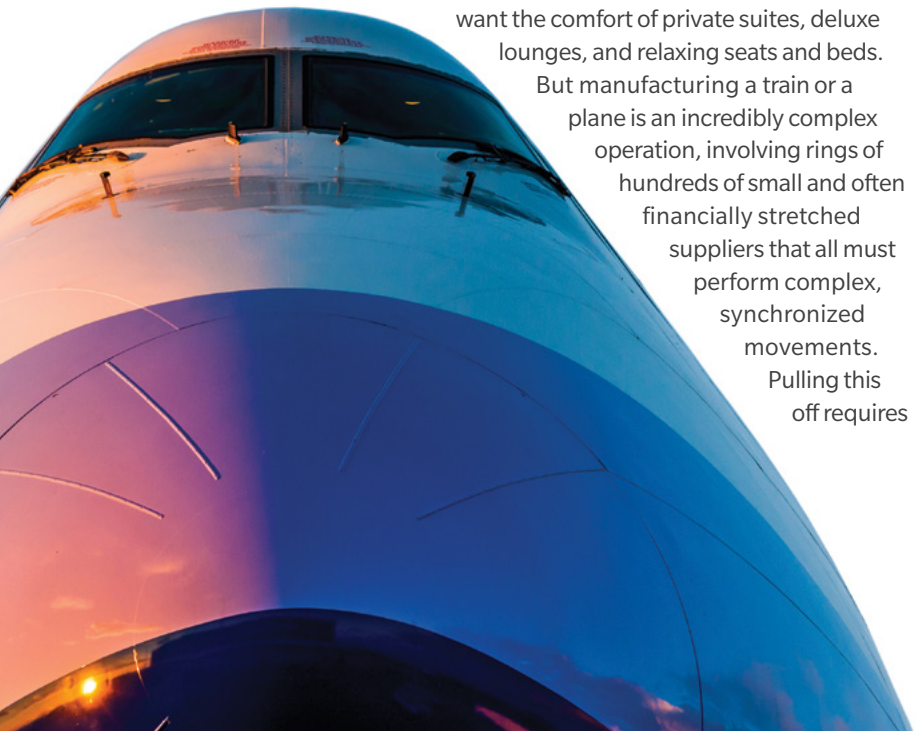
There's a simple way to forecast the future: Look at what the super-affluent own now. According to Google's chief economist, Hal Varian, what only the wealthy can afford today is what people who are merely comfortable will want tomorrow. Flat-screen televisions, mobile phones, anti-lock brakes, and airbags were all once considered luxuries for the elite before they became commoditized and commonplace.

For companies in the business of making products, a corollary to Varian's rule might be this: If mismanaged, creating the products of the future for ordinary consumers could make them poor – the result of cost overruns and compounding delays.

Consider what's happening with aircraft and trains. Consumers crave faster, quieter, fuel-efficient, safe, and hassle-free travel, with easy access to the latest technology. They want the comfort of private suites, deluxe lounges, and relaxing seats and beds. But manufacturing a train or a plane is an incredibly complex operation, involving rings of hundreds of small and often financially stretched suppliers that all must perform complex, synchronized movements. Pulling this off requires manufacturers to redefine product development to prevent costs and delays from escalating, especially as they pack in new technologies, each of which can require hundreds of thousands of engineering hours to be stabilized.



There is not a moment to lose: Rising demand for transport worldwide and an aging installed equipment base are driving a large number of new projects. In the next 20 years, global aircraft demand is projected to rise by 20 percent versus orders received in the past decade. Orders for rail equipment look set to jump by 20 percent, too, to $213 billion for 2015-2017, up from $180 billion for 2007-2009, according to the Association of the European Rail Industry (UNIFE).

All the while, the costs of developing game-changing planes and trains keep rising. Aviation and rolling stock development programs are seeing delays of as much as four years, resulting in hundreds of millions of dollars in cost overruns. Add in contractual penalties and the total bill for ongoing delivery problems in the aircraft industry alone has risen to about $20 billion over the past several years. These days, the cost of developing an aircraft from its preliminary design to its final delivery can often jump by 48 percent.

The fundamental problem is that most manufacturers try to prevent product delays by improving their own product development and manufacturing processes in isolation.

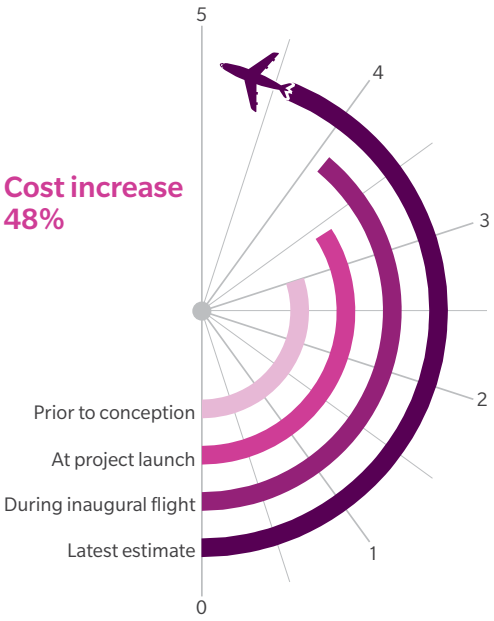
Instead, manufacturers must take a broader view to produce planes and trains that are becoming much more complicated, and thus more difficult to deliver on time and within budget. Manufacturers must re-evaluate how they manage everything with their contractors, suppliers, and other outside parties – from product development and the supply chain to the ramping up of production.

To better anticipate and manage their customers' needs, airplane and train manufacturers should implement systems engineering methods that challenge current functional requirements – right from the moment that an airplane or train is only a concept. They can, for example, expand their pool of choices for cutting-edge concepts and accelerate the shift into the development process by inviting suppliers, customers, and others to submit new ideas through "open innovation" forums. They can then develop the best concepts in parallel with cross-functional teams made up of suppliers and in-house experts in engineering, quality, and manufacturing.

Other best practices need to be put in place at every step: Manufacturers should standardize engineering processes and modularize components and assemblies. They need to rely more on upfront digital simulations to reduce the number of physical tests. A "design authority" comprising senior experts can be created to track and monitor engineering teams' progress. Establishing and implementing key milestones, or "maturity gates," that are linked to concrete deliverables, is also crucial for tightening up management oversight and validating each step in product design.

Finally, manufacturers must take the lead in strengthening their fragile and fragmented supplier networks. They will need to learn to identify tomorrow's leaders, assist them in spotting potential acquisition targets, and draw up a plan with them for progressive improvement. At the same time, manufacturers should be prepared to coach these "best of breed" suppliers on their journey toward product development and manufacturing excellence.

COSTS AND DELAYS TAKE OFF ($ BILLION)
RECENT AIRCRAFT PROGRAM DEVELOPMENT COSTS, FROM PRELIMINARY DESIGN TO 2014



Source: Oliver Wyman analysis.

Manufacturers already have many of the tools and resources required to create the next generation of travel experiences, turning the elite into the everyday. If they can transform their product development process and coax their suppliers to join them on the journey – those planes and trains we all want will get here a little sooner.

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