

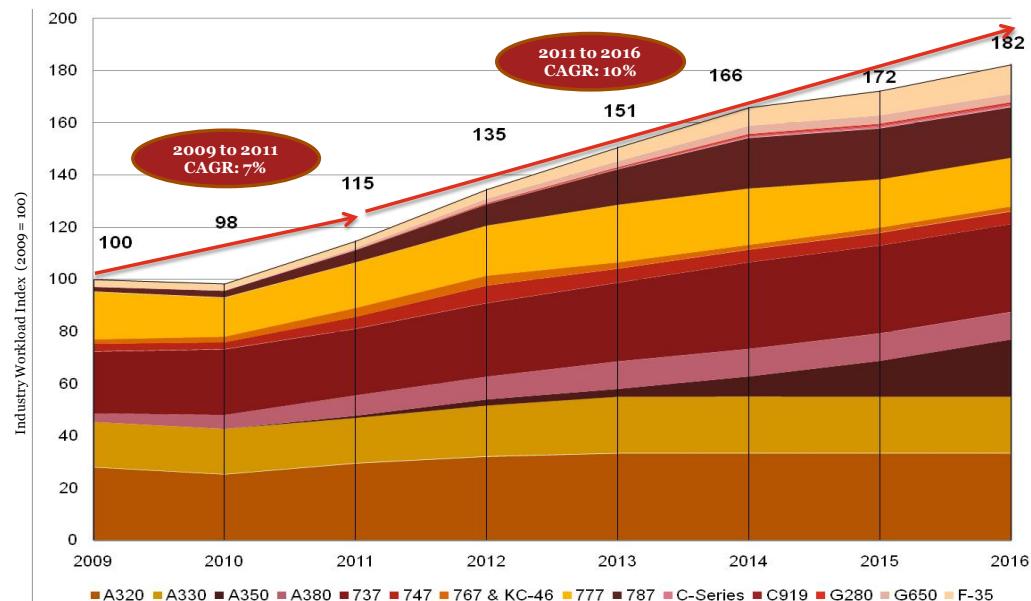
## Supplier management

### Can aircraft manufacturers prevent rate ramp-up problems?

*Financial market conditions are adding to capacity and ramp-up concerns.*

High production rate ramp-up is going to be needed across much of the aerospace and defense sector. Both the leading civil aerospace manufacturers—Boeing and Airbus—have announced a series of record deals for their new generation of commercial aircraft. Military programs such as the Joint Strike Fighter and Tanker are also ramping up in the next five to ten years. But big rate increases also mean pressure on the supply chain, leaving programs vulnerable to supply chain delay or failure. Aerospace companies and their leading tier one suppliers are very conscious of the potential problems, particularly in light of the major delays that have affected recent programs. The question is: What is the appropriate way to prevent future problems?

#### A steep ramp-up



## Supplier management

*A fifth of suppliers are at risk of not being able to deliver the ramp-up that is required.*

The question is even more pertinent at a time when world events and natural disasters have caused upheaval to supply chains in many industries. Although manufacturers can't prevent the occurrence of these outside events, they can insulate themselves from their effects through identification of supply chain risks related to supplier locations, transportation risk, and overdependence on single sources. Also, at a time when banking and market uncertainties remain high, the importance of checks on financial as well as operational and capacity vulnerabilities can't be underestimated. Then there is the need to identify "self-inflicted risks," such as a preferred reliance on a single supplier for certain components because managers perhaps feel comfortable with its product or team. This might come at the cost of overlooking vulnerabilities.

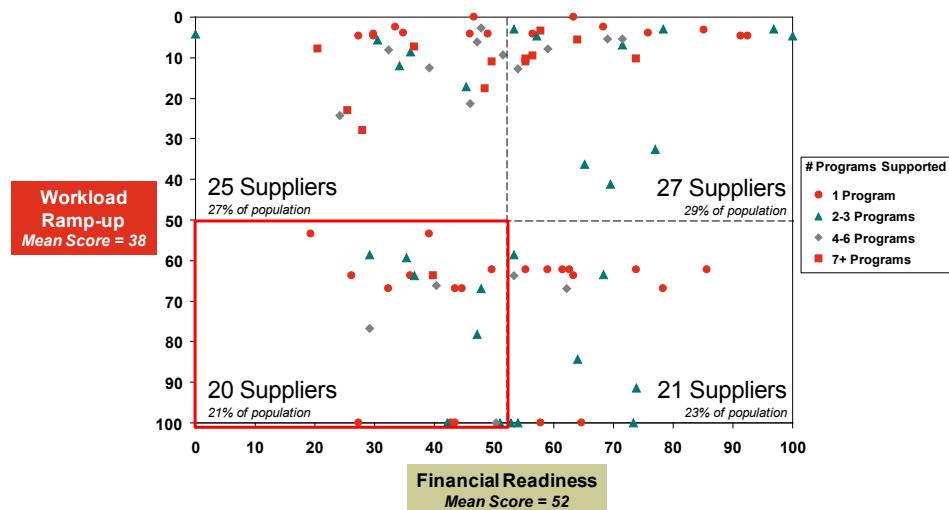
### Pinpointing ramp-up risk

Managing risk in the supply chain is all the more important in commercial aerospace, where the industry operating model has pushed much of the design and manufacturing work to suppliers, often in the form of risk-sharing partnerships. We

analyzed the potential capacity risks in the aerospace supply chain by identifying which suppliers' operations will be most strained by projected rate ramp-ups on key 2011-2016 growth programs. We then mapped that against which suppliers may be worst-positioned financially to invest in additional capacity. Our study covered 12 key growth programs from five commercial and defense OEMs. We calculated required capacity growth and financial readiness scores for 93 suppliers across nine different component and system segments. The results showed that a fifth (21%) of suppliers aren't financially ready to support the high ramp-up that is required.

Companies in the aerospace sector are alert to the need to proactively identify, prevent, and manage supply chain risk. But our experience with many A&D industry players suggests that current approaches to supply chain risk management are either too complex or too simple. We have seen companies trying to assign an absolute probability percentage to each supply chain risk or apply an undifferentiated and resource-intensive approach of performing a detailed due diligence on each of their

### At risk—ramp-up versus financial readiness



*Companies need a more effective more 'live overview' of where the biggest risks lie.*

suppliers. At the other end of the spectrum, companies sometimes rely on internal or supplier surveys to obtain a qualitative view of supply chain risks.

Both the in-depth and the more "light touch" approaches have limitations. Questionnaires can be insufficiently forensic. They also run the danger of bias as they rely on the views of suppliers themselves. Often responses are based on opinions, not facts, and they tend to be informed by experience. More in-depth approaches, though, can be resource-intensive and cover only a certain number of suppliers at any one time. They might, for example, start with the largest suppliers but the biggest risks may be multiple layers down in the supply chain. Both the in-depth and the simpler approaches have the potential of turning "risk management" into "issue management," addressing only current supplier issues rather than identifying future dangers.

## Addressing multi-dimensional risks

PwC has developed a more practical but rigorous approach to assess risk and develop effective mitigation strategies. Our approach starts with a model that can be used to continually monitor and assess risk in the A&D supply chain. It is based on facts, not opinions, and combines readily available or collectible public data and information with data that is internal to the client company. Examples of publicly available data include supplier location, certain financial information, and the likely collective production volume of the supplier across different platforms. This is supplemented with internal data such as the supplier's on-time and quality performance. To determine capacity risk we take into account demands on suppliers from all programs, both commercial and military, including those from competitors.

We combine these elements to form a comprehensive and multi-dimensional set of measurable risk and impact attributes. Each attribute is measurable to enable relative ranking of composite risk and impact. The attributes can be weighted to reflect their shifting importance to the organization or changes in the external or industry environment. Each company in the supply chain is included and the result is a grid-based map of relative risk, enabling the client company to identify where the biggest potential risks lie. It is not overly burdensome or complex and, once established, can be continually updated to provide companies with a more "live overview" of potential supply chain risk as well as the effects of ongoing efforts to reduce supply chain risk.

Each dot on the grid represents a purchased component (or service). Each tells a particular story. For example, it might be a "single sourced part used on 70% of finished products delivered by an unstable supplier." If that is combined with the fact that qualifying another supplier might take six to 12 months, it presents a very practical focus and a compelling case for action to any C-level executive.

## Becoming rate ramp-up ready

Using the model to identify potential risks, we then move on to what we call a "rapid supplier assessment." Here, there are obvious parallels between what a private equity company needs in weighing up acquisition targets and the requirements of aircraft OEMs at the top of complex supply chains. Both should consider pinpointing where risks lie and what it will take to address them. The aim is to have a highly pragmatic approach, seeking to verify risk and the changes that can be put in place to avoid it. These changes might take the form of alterations in the client company's supply chain management to reduce reliance on the particular supplier, reforms to

# Supplier management

be carried out by the supplier, or a combination of both. In exceptional cases, it might even take the form of a decision to acquire the supplier and take direct vertical control of that element of the supply chain. In September 2011, for example, EADS took a majority stake in German company PFW Aerospace, which faced a liquidity crisis. In other cases, consolidation within the supply chain might be needed to address capacity constraints and other ramp-up concerns.

Whether or not there is a need for M&A, PwC is experienced in advising companies and delivering the required supplier transformation program. A “supplier transformation plan” would be developed at company level describing objectives and yearly targets, capability improvements, and performance targets. It would typically include an investment plan integrated into the company business plan with a series of detailed actions. A “workstream plan” would identify each improvement action per workstream plus critical milestones, objectives, and key performance indicators.

One of the challenges facing supplier companies is how they adapt to participate effectively within the overall value chain ramp-up. In our experience, many tier one suppliers still should consider upgrading their core capabilities to improve the reliability of their end-to-end performance in the value chain. This includes the maturity to manage their interface with their customers and the joint interface with

other tier ones particularly the integrated performance of their core capabilities. There remains a tendency to “firefight” or “muscle through” to meet the ramp-up challenge. This can come at the expense of ways to really structure, monitor, and dynamically collaborate as part of an extended supply chain.

## Conclusion

In summary, the need to rapidly expand production in a number of aerospace platforms is putting strains on the supply chain. Our analysis indicates that a significant proportion of suppliers are at risk of not being able to deliver the ramp-up that is required. Companies need a practical yet comprehensive method to identify rate readiness risks in the aerospace and defense supply chain. PwC has developed a way for aerospace and defense companies to quickly understand, pinpoint, and prevent risk across the whole supply chain. In most cases, supplier transformation to address risks can take place without any M&A. But, in some cases, either consolidation within the supply chain or vertical integration of the supplier with the aircraft manufacturer should not be ruled out.

## How PwC can help

To have a deeper discussion about supplier management, please contact:

**Chuck Marx**  
*US Advisory Leader for Aerospace & Defense*  
Principal  
(602) 364 8161  
charles.a.marx@us.pwc.com

**Michael Finley**  
*US Advisory Leader for Mission Services*  
Principal  
(202) 756 1753  
mike.finley@us.pwc.com

**Glenn Brady**  
*US Advisory Leader for A&D Program Management Effectiveness*  
Partner  
(314) 206 8118  
glenn.brady@us.pwc.com

**Dirk de Waart**  
*PwC's PRTM Management Consulting*  
Principal  
(213) 830 8374  
dirk.de.waart@us.pwc.com

**William Lakenan**  
*PwC's PRTM Management Consulting*  
Managing Director  
(415) 498 7660  
bill.lakenan@us.pwc.com

**Cornelius Bronder**  
*PwC's PRTM Management Consulting*  
Managing Director  
(202) 756 1719  
cornelius.bronder@us.pwc.com

**Mark Thut**  
*PwC's PRTM Management Consulting*  
Principal  
(313) 394 6090  
mark.j.thut@us.pwc.com

**gainingaltitude** is an ongoing series. To view our other issues, please visit

**[www.pwc.com/us/gainingaltitude](http://www.pwc.com/us/gainingaltitude)**