EXTENDING THE AEROSPACE AND DEFENSE ENTERPRISE
With a host of challenges facing today’s aerospace and defense companies, ranging from pressure on costs to scarcity of talent, and from new competitors in emerging economies to a changing industrial footprint, these businesses are becoming ever more aware of the need to work in a different way – as efficient and mature “Extended Enterprises”. But making it happen means resolving tensions between the familiar and the new. It means considering security versus openness, intellectual property protection versus shared innovation, and the pooling of skills versus fiercely competing for talent.

Balancing those tensions is undeniably a challenge, but none of them are irreconcilable, especially as greater integration and collaboration between suppliers, partners and customers takes hold in the aerospace and defense industry.

For instance, 67% of aerospace and defense executives now agree their competitive advantage will not be determined by their organization alone, but by the strength of the partners they choose. Almost a third are already taking aggressive steps to participate in digital ecosystems as a result. And around 78% believe that in five years, ecosystems will have shared responsibility for a brand.

The Extended Enterprise is an important way of driving this more collaborative vision because it implies a comprehensive network of firms involved in multilayered collective design, development, production, delivery and support of a product.

BUT HOW TO TURN THE IDEA INTO REALITY?
There are five key streams of activity, or building blocks, to consider. Crucially, creating a successful Extended Enterprise rests on the integration of all five of these building blocks – and an understanding of the interdependencies between them:
1. **Collaboration and governance**
   Working together to achieve a common goal, with mutual understanding of needs and objectives by developing partnerships or contractual relationships.

2. **Agile operations**
   Flexing to changing needs by enabling agility in new and existing relationships and adapting to changes across the ecosystem which impact processes or product delivery.

3. **Talent and competencies**
   Developing and sharing the skills and competencies needed across the Extended Enterprise. Nine in every ten aerospace and defense organizations say they are under extreme competitive pressure to extend innovation into their workforce and corporate structure.4

4. **Innovation**
   Capturing and integrating innovations across suppliers and technology partners. More than 60% of aerospace and defense companies see increased speed and agility in developing solutions as the principal benefit from participating in a digital ecosystem.5 But only 19% say their organization has a predominantly agile or fluid structure.6

5. **Data sensitivity and regulatory compliance**
   Remaining compliant with the regulatory environment and with legal and contractual requirements. More than 60% of aerospace and defense executives believe government regulations in the industry have not been able to keep pace with technology.7

**WE’LL NOW CONSIDER EACH OF THESE BUILDING BLOCKS IN DETAIL.**
Collaboration and governance: a framework for success

Successful Extended Enterprises define and organize questions of governance to achieve their shared goals. This governance rests on a foundation of trust. And trust, in turn, requires transparency. In a highly competitive industry this trust and transparency is not always easy to achieve. But it’s vital. Any omissions in the information shared between partners will ripple throughout the entire ecosystem, and will likely render the whole collaboration model ineffective. That’s why 87% of aerospace and defense executives believe that trust is the cornerstone of every business in the digital economy today. And it’s why a common vision of the objectives, of the role of each party, and of decision-making processes, as well as a common framework, IT governance, and set of security rules are so critical.

A true Extended Enterprise is an interdependent network of organizations in which no single entity has ultimate operational control. Governance must therefore encompass all the parties involved, including everyone from suppliers to clients. This is an area in which the implementation of innovative solutions can provide effective support. For instance, 52% of aerospace and defense executives see expanded opportunities for trusted partnerships coming from defining a new digital industry.

Governance must address the appropriate level of collaboration and the definition of roles required. Defining the right performance indicators and developing common standards and compliance with regulation and certification are also important, as are the challenges of working with contacts that balance risk and reward between parties.

Confidentiality and data security is another key area, creating a tension between the demands of openness and transparency on the one hand and the need to protect proprietary IP and data on the other. Indeed, cybersecurity is a major concern about digital ecosystems, with 65% of aerospace and defense executives admitting their organization reviews or updates its security and policies at least quarterly. Moreover, nearly 75% see transparency in their initiatives as an imperative to gain favorable public opinion and trust.

Transparency along with other tools, common metrics, methodologies and communications are thus key to driving trust. In practice, it means achieving a balance between the constraints of controlling information that must be protected and being open to a wide range of partners in an ecosystem that revolves around a nucleus of trust.
Agile operations: a lever for efficient collaboration

An Extended Enterprise must be able to react to disruptive developments with agility (such as changing product specifications or switching suppliers) and capitalize on new relationships or new collaborations at pace. As many as 61% of aerospace and defense executives believe that participating in digital ecosystems will increase their speed and agility in developing solutions. But it also offers new ways to make the overall organization more effective and the final product more efficient (for instance, by analyzing processes for choosing between prime contractors or subcontractors).

For aerospace and defense executives, a lack of control is one of the most frequently cited concerns about participating in a digital ecosystem. And it’s true that continuous adaptation to change is a constant challenge for any business. To operate efficiently and effectively the Extended Enterprise therefore needs a stable set of processes that are agreed and understood by all parties up front. This is especially important given the future trajectory that aerospace and defense companies see for their organizations: 75% think that in just five years their organizations will act as unified ecosystems rather than separate entities. IT has a critical buffer role to play here, providing a collaborative platform using standard interfaces and new technologies to maximize interoperability within the network.

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Skills and talent management

An Extended Enterprise needs the right people, the right skills, and the right talent. However, there is widespread recognition in the aerospace and defense industry that talent is in very short supply. And as many as 90% of aerospace and defense executives believe that organizations are under competitive pressure to extend innovation into their workforces and corporate structures. This is further complicated by the fact that operating in a highly regulated industry imposes restrictions on the extent to which talent can be simply imported from elsewhere.

How should an Extended Enterprise respond? A liquid workforce is one way of resolving the problem, with 35% of aerospace and defense executives strongly agreeing that building a strong liquid workforce will win the war on talent. Building talent across the Extended Enterprise is another critical move. That requires, for example, sponsoring and investing in relevant university faculties, sharing resources across the enterprise, and exchanges between suppliers and customers to drive collaboration and trust. Above all, it means adopting a holistic view that takes into account the requirements of the entire network, not simply the immediate interests of the largest players.

Larger suppliers and integrators are already exchanging talent and skills more willingly, particularly to address complex work. Elsewhere, however, there is a significant tension between the need to maintain competitive advantage and the need to access new skills to drive innovation, lower costs, increase profitability, and adapt to changing customer requirements. There’s no doubt it’s a tough balance to get right.

This talent scarcity thus drives ever more intense competition, especially among the small and medium-sized enterprises that are so essential to the effective operation of the Extended Enterprise. Moreover, other more visibly digital industries, such as software and social media, are also competing for the same science and technology talent. Demand for these skills is expected to grow at double the rate of other occupations.

However, the development of an Extended Enterprise rests on the ability to share skills, expertise and knowledge throughout the ecosystem. And this sharing must be for the benefit of the entire network, rather than just a few of its isolated, individual parts. So that means engaging in activities like tactical planning, product-centric resource planning, local investment, and the development of networks of research/university alliances, subject to appropriate non-disclosure and no-poaching agreements.
Aerospace and defense companies see increased innovation as one of the key outcomes of working in a truly collaborative Extended Enterprise. For example, 67% of aerospace and defense executives agree their competitive advantage will not be determined by their organization alone, but by the strength of the partners they choose. But innovation today is as challenging as it ever has been. 84% of aerospace and defense executives agree, for instance, that their organizations need to understand not just where their customers are today, but where they want to be tomorrow – and shape the technology to act as their guide.

Working in a truly collaborative way as an Extended Enterprise usually means avoiding reliance on a single supplier and instead involves extending a collaborative platform to multiple businesses. The more that customers rely on the Extended Enterprise to contribute to their value chain – not simply as suppliers but as true partners – the more those partners will take ownership and accountability for specific pieces of work. This is a decisive shift from, say, simply requesting a component to delivering a complete function that achieves a specific objective and drives competitive advantage.

While recognizing these undoubted benefits of collaborative innovation, aerospace and defense companies are also hesitant about the potential for losing their IP protection and the misalignment of business goals between partners. That often leads them to limit their collaboration to the early phases of product development.

But technology is starting to offer solutions that could help to overcome the challenges. For instance, 75% of aerospace and defense executives believe that blockchain and smart contracts will become critical over the next three years. And, as the winning industry moves shift from having the best engineering to harvesting the best innovation in the network, ensuring the entire network can remain innovative becomes the new imperative. Indeed, 90% of aerospace and defense companies believe we have entered an era of technology advancement that is no longer marked by linear progression, but by an exponential rate of change.

Securing continuous innovation within the Extended Enterprise means making sure the whole network is optimized for the long-term. For instance, driving down suppliers’ prices will yield short-term benefits to the purchaser. But if those supplier businesses fail as a result, those benefits could be cancelled out by much greater and longer lasting damage to the network: a restricted supply of specialist capabilities and slower innovation. And that has important implications for growth. Indeed, only 56% of aerospace and defense companies say they are currently successfully driving new sources of growth.

To ensure the whole network is optimized, two things are key: a recognition by each party of their mutual dependency and the adoption of a joint approach to innovation. That means sharing risk and reward across partnerships, with portfolios designed to achieve common goals and shared innovation roadmaps, supported by clear NDAs, IP management, and technological protection.
The sharing of data and information is essential to collaboration as an Extended Enterprise. But in the context of aerospace and defense, this is far from straightforward. The heavily regulated nature of the industry demands strict adherence to the highest levels of data security and other forms of regulatory compliance, whether that’s in product safety (the fundamental building block of reputation in the industry), secure product technology (critical for competitive advantage), or control of the supply chain. Moreover, data security is a core issue for aerospace and defense companies: 49% of aerospace and defense executives say cybersecurity is a primary concern regarding their participation in digital ecosystems.22

However, it is possible to operate effectively as a highly collaborative Extended Enterprise within a robust data security and regulatory compliance environment. But it calls for a new approach, including a commitment to joint certification to ensure regulatory compliance.

A joint certification plan, including all levels of the supply chain, should therefore be set up prior to starting work on a product. Prime contractors should neither assume full responsibility for a product’s certification nor push the certification issues down below their Tier 1 responsibilities – it has to be defined and agreed jointly.

Above all, the Extended Enterprise calls for holistic thinking. That means no longer cascading compliance and data security issues down to smaller suppliers, but viewing these questions in the round, across the whole network, using effective approaches to product lifecycle management.

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CONCLUSION
Time to build the Extended Enterprise for the long haul

There is a clear realization within the aerospace and defense industry of the direction of travel. The Extended Enterprise is a key means of securing a profitable future. But it means rethinking existing models and taking a new approach to building trust. And that’s a long-term process, which depends on a whole range of intangible factors. And getting the implementation of the Extended Enterprise wrong can have serious adverse effects on company performance (both operational and financial) and resilience.

The important point is therefore for each business to define the optimal degree to which they want to “extend” their enterprise to maximize success.

Understanding the five building blocks set out here – and their interdependencies – is a key means of doing so, and making the Extended Enterprise a reality for any Aerospace and defense business.
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