

**EXECUTIVE ROUNDTABLE ON
INTERNATIONAL COLLABORATION**

INTERNATIONAL COLLABORATION: CHALLENGES ARE TECHNICAL, HUMAN AND POLITICAL

Put 30 aerospace and defense industry and government leaders together for 3 hr. to discuss how to address international collaboration and cooperation on major

Those attending agreed upfront that the future of space exploration and the development of aircraft, aerospace, defense and security systems rest on joint operation by nations

Hosting the UGS-sponsored Executive Roundtable were Charles T. (Tom) Burbage, vice president and general manager of Lockheed Martin's Joint Strike Fighter/F-35 program, and Anthony L. Velocci, Jr., editor-in-chief of *Aviation Week & Space Technology*. They were assisted in shaping the group discussion by Maj. Gen. John L. (Jack) Hudson, assistant deputy undersecretary of the Air Force for international affairs. Hudson previously was the Air Force executive officer who led JSF.

Attending the event were executive leaders from the Aerospace Industries Assn., Honeywell, Rockwell Collins, Lockheed Martin, Northrop Grumman, GE Aircraft Engines, NATO, the Royal Netherlands Air Force, Stork Aerospace, the U.S. Air Force, U.S. Army and NASA.

"The important thing we saw coming from this event was an opportunity to get after the truly big issues that inhibit global commerce from taking place," said Tim Nichols, vice president of the Joint Strike Fighter Global Coalition for UGS, which has deep expertise in the aerospace and defense industry. "It



Tim Nichols of UGS introduced the first *Aviation Week* Executive Roundtable. Panelists who presented the concept of global collaboration were (from left) Anthony L. Velocci, Jr., editor-in-chief of *Aviation Week & Space Technology*; Charles T. (Tom) Burbage, vice president and general manager of Lockheed Martin Aeronautics' Co. Joint Strike Fighter program; and U.S. Air Force Maj. Gen. John L. (Jack) Hudson.

aerospace projects—beyond rhetoric and down to how-to—and a plan takes shape.

Hosted by product lifecycle management (PLM) software provider UGS, an *Aviation Week* Executive Roundtable held Nov. 15 in Phoenix focused on the realities of making international ventures click.

around the globe. Huge barriers exist, ranging from technology-transfer policies to trade agreements and disagreements that have put nations and companies at odds in recent months.

However, there are other crucial issues industry leaders believe can and should be resolved quickly.



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Tom Burbage (left), AIA's CEO John Douglass (center) and Honeywell Aerospace Electronics President Dean Flatt discuss changes required for the U.S. aerospace and defense industry to lead and participate in global collaboration contracts.

does not matter what industry you analyze; sharing risk and expertise around the globe on a virtual basis to develop, produce and sustain systems of the future is essential.”

JSF AS THE TEMPLATE

In setting the stage for the discussion, Burbage, Hudson and Velocci identified the issues involved in international collaboration, using the JSF program as a template. In the course of the five-year design-development and requirements-definition phase of the program, the JSF team quickly moved toward international collaboration to help facilitate development of the modern combat aircraft.

Today, the program involves many countries, including Australia, Italy, the Netherlands, Turkey and the U.K. Engineering and design experts from five continents are participating in the program, allowing for virtual teaming and round-the-clock work. The team is developing

new technologies to offer a single aircraft that has common logistical support and training, yet comes in three variants—conventional takeoff and landing, short takeoff and vertical landing, and a carrier version.

In addition, the JSF is seen as a system node on an over-arching defense and security network. Perhaps most important, the program is a symbol for all the challenges involved with global aerospace commerce—information sharing, technology transfer and firewalls, virtual teaming, 24/7 design capability and government regulation. These are the same types of issues being addressed in the Airbus A380, Boeing 7E7 and International Space Station programs, as well as in the Presidential Moon to Mars initiative.

INTEGRATED AND INTERACTIVE INTERNATIONAL COALITIONS

Key issues identified by the roundtable leaders included the economic and technical advantages to

nations that participate in international ventures and the difficulties imposed on those global enterprises by the decades-old systems instituted to protect intellectual property and economic value. Those regulations and systems, which were designed for 20th century businesses, still exist within every government, culture and company.

Burbage underscored the need for technical solutions that enable teams to speed ideas and data into a program, thus allowing the enterprise to avoid major delays and permitting efficient management of a system that involves literally thousands of suppliers and technical experts worldwide. However, as Burbage and Hudson noted, the need for strong personal relationships that emanate from a solid teaming approach are the foundation on which all other activity must rest.

Indeed, the keys to success for global programs are integrated and interactive international coalitions. Such successful efforts operate in a digital environment that allows knowledge and information to be shaped, recorded and mined, from the initial stages of ideation through support in the field. The result is economic value to the companies forming the coalition, as well as a reduced cycle for producing success.

John Douglass, CEO of the Aerospace Industries Assn. (AIA), said the current situation facing teams such as JSF is difficult. Historically, many industrial partners have been able to work across borders effectively, even when their governments have not seen eye-to-eye. However, many aerospace industry partnerships are struggling today because of the highly charged political environment.

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WORKING GROUP FINDINGS

The Executive Roundtable, as a whole, examined the knowledge sharing, technology interoperability, teaming and political aspects of international cooperative ventures. However, four working groups focused on developing specific solutions to the challenges posed by cross-border collaboration.

Led by Mike Gass, vice president of space transport at Lockheed Martin Space Systems, and *Aviation Week* Executive Vice President/Publisher Kenneth E. Gazzola, Group 1 identified the need for a technology lexicon, similar to the ISO 9000 standard, that will enable aerospace companies and governments worldwide to develop criteria that will push forward the ideals behind international coalitions.

"This would be a baseline technology-protection language that would allow companies and governments to engage in a clear conversation concerning sharing," Gass explained. He noted that establishing standards for high-definition television took more than seven years. "We need to get this [aerospace technology lexicon] done now," he declared.

Group 1 also called for an interoperability roadmap that would help guide future efforts.

"Protectionism and interoperability are incongruent," said Gazzola. "There must be a balance between economic venture and the goals of interoperability, whether applied to defense, commercial air transport or space exploration."

Group 2, led by Sandra Carney-Talley, assistant vice president at AIA, and UGS' Nichols, noted the linkage between interoperability and sustainment of aerospace platforms.

UGS MEANS PLM

UGS, a leading global provider of product lifecycle management (PLM) software and services, sponsored the first *Aviation Week* Executive Roundtable. The UGS global team's vision is to work collaboratively with clients to create enterprise solutions that enable them to transform their process of innovation and, in doing so, begin to capture the value of PLM.

PLM is an increasingly important and visible enterprise business strategy through which organizations digitally manage a product's complete lifecycle, all the way from its concept to its retirement, and gain value from that product as a result.

Through the rich heritage of companies that came together to form UGS, its pioneering solutions have been helping companies accelerate time to market, improve quality and increase revenue for nearly four decades. With more than 3.3 million licensed seats of technology in use and 42,000 clients worldwide, UGS is a proven leader in both market experience and PLM solution development. In fact, UGS manages or creates more than 40% of the world's 3-D data. For additional information on virtual collaboration, seamless knowledge management, lifecycle productivity and/or global interoperability, visit www.ugs.com or e-mail timothy.nichols@ugs.com.

The decades-long life of various programs, ranging from space stations to commercial aircraft to defense platforms, necessitates a preexisting agreement on technology transfer and sharing.

"When it comes to consistency of purpose and making decisions on interoperability, you cannot backtrack," stated Nichols. "We must acknowledge that the lead buying agency is buying the right to transfer



Lt. Gen. Horst Martin, deputy commander of Allied Forces North for NATO (left); Lt. Col. Ben de Jong, deputy program leader of the F-16 Replacement Office for the Royal Netherlands Air Force (center); and Erick Vink, vice president for JSF for Stork Aerospace, were among the leaders who attended the UGS-sponsored *Aviation Week* Executive Roundtable.

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technology to those who are sustaining the technology in the field.”

Group 2 cited the Snecma alliance as an example of a successful international venture. A group of companies was tasked and funded to develop a new nacelle technology. The involved companies then each bid on the final product, based on shared technology.

Thus, Snecma was able to define and clear the technology-sharing hurdles between companies in Europe and the U.S.

“We need to evolve to that footing,” Nichols said.

Group 3, led by Burbage and Dean Flatt, president of Honeywell Aerospace Electronics Systems, focused heavily on the political realities of interoperability.

“We must be clear as to what we need to protect as a nation, versus what we need to protect economically,” Flatt said. “We can’t make these decisions program by program.

We need an agreement, clear rules and a single arbiter of those rules. Otherwise, we renegotiate the same transfer repeatedly, and in a costly way.”

Group 3 also indicated that the trade issues between the U.S. and Europe are a major challenge. “We need to get these resolved and off the table so the industry can move forward,” Flatt declared.

Aviation Week's Velocci, along with Aaron Shenhar—a professor at

Stevens Institute of Technology in Hoboken, N.J.—led Group 4, which concluded that international collaborative aerospace efforts need to work using a knowledge management vehicle that can help establish methods for success.

“We need to learn together, codifying past program successes and

Just as important in this new industry business model is the need to secure and protect information that is proprietary.

Earlier, Burbage outlined a system in which engineers from one company download only the specific information that they need for their work. Once their work is completed, it is uploaded

to a secure data source. This protects proprietary technology and coding while enabling team members to fully participate in a project.

Group 4 also addressed the issue of sustainment, or logistics. In Europe, this issue has been partially resolved by establishing common warehouses for maintenance, repair and overhaul.

“This is the outcome of [establishing] standards,” Shenhar said. “With common equipment you can share resources,” he said.

“We need to examine

how that would work in a military environment.”

Honeywell’s Flatt noted that while all four groups identified different instances of where these issues arose, they arrived at the same outcomes—the need for common language, technology and information sharing, and a change in how transfer and trade agreements are determined and arbitrated. ♦

— Written by Carole Hedden
— Photos by Ed Hazelwood

TAKING THE NEXT STEPS

Often, the fatal flaw of events such as the Executive Roundtable is that the concepts developed are not put into action. However, this group established an action plan with specific timelines and assigned leading executives to ensure that the process moves forward.

Three initiatives were established, and reports on each are to be submitted by Feb. 10. A second roundtable is to meet in Europe during the first quarter to continue advancing the agenda.

The three initiatives are:

- Articulate the role of a congressional/presidential advisory panel to establish the authority, responsibility and accountability for technology transfer in the 21st century. Lockheed’s Tom Burbage and Mike Gass are responsible for performing this task.
- Define the technology interoperability lexicon standard. Tim Nichols of UGS is leading this initiative.
- Establish a global commerce/collaboration model, based on the Joint Strike Fighter template, that can be used as an educational and database tool for the entire aerospace industry. Aaron Shenhar of Stevens Institute of Technology is heading this effort.

failures to share among partner companies and nations,” said Shenhar.

Using JSF as a template, Group 4 recommended that international programs take the time to teach companies how to compete for economic value on a program.

Group 4 also reinforced the need for industry-wide standards, including an emphasis on “plug-and-play” concepts and use of open-architecture operating systems in major programs.