

Rapid Prototyping

The Agile Creation of Solutions for Modern Defense & Intelligence

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Introduction

For federal military and intelligence agencies, traditional rapid prototyping has filled a minor role in the engineering and production of solutions for users and operators.

The old purpose was “embedded functionality now, form and fit later” – basically, to create hardware or software with scaled functionality. The traditional prototype had no physical constraints of size and interoperability required for the fielded system, so it allowed users to test functionality at reduced cost. Traditional prototypes also helped in testing an emerging technology or served as a step for risk reduction in a major development program. In this brief, we propose a redefinition for federal agencies: Rapid Prototyping is an agile system, putting solutions for warfighting and intelligence quickly into the hands of users and operators, providing a good portion of needed capabilities upfront in the short term, and

gradually upgrading functionality that is based upon continuous input from the field. The integration of standard off-the-shelf commercial technology often makes form fit a minor step in the process of creating vital solutions.

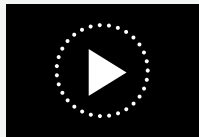


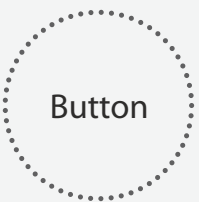

“Rapid Prototyping is an agile system, putting solutions for warfighting and intelligence quickly into the hands of users and operators.”

Booz Allen Hamilton’s definition of Rapid Prototyping is a sharp change from traditional major development programs, which are historically inflexible, have long timelines, and are expensive. Unlike the traditional model, Rapid Prototyping will allow federal users and operators to quickly and cost-effectively obtain vital solutions to fulfill urgent missions. The new role for Rapid Prototyping meets a crucial requirement as the federal government must now rapidly respond to unpredictable emerging threats such as irregular warfare and international crime within the constraints of reduced fiscal resources.

How to Use This Document?

This Booz Allen Interactive Marketing Brief is comprised of interactive elements for a more engaging and dynamic user-experience. For your reference, the key below explains the interactive elements.

INTERACTIVE ELEMENTS:

-  Play Video
-  Play Video Fullscreen
-  Interactive Button
-  Interactive Button
-  Indicates a Scrollable Text Area

New Environment for Defense & Intelligence



Booz Allen's additive manufacturing capabilities answer the call when our clients need us to respond to Quick Reaction Capabilities.

Traditional solutions and their procurement process cannot meet the rapidly evolving threats of the 21st century.

To meet these challenges with agility, federal agencies need a development, manufacturing, procurement, and support process that enables flexibility and more responsiveness. We believe Rapid Prototyping is the strategic solution for this challenge.



History of Rapid Prototyping:

Digital Hardware Prototyping

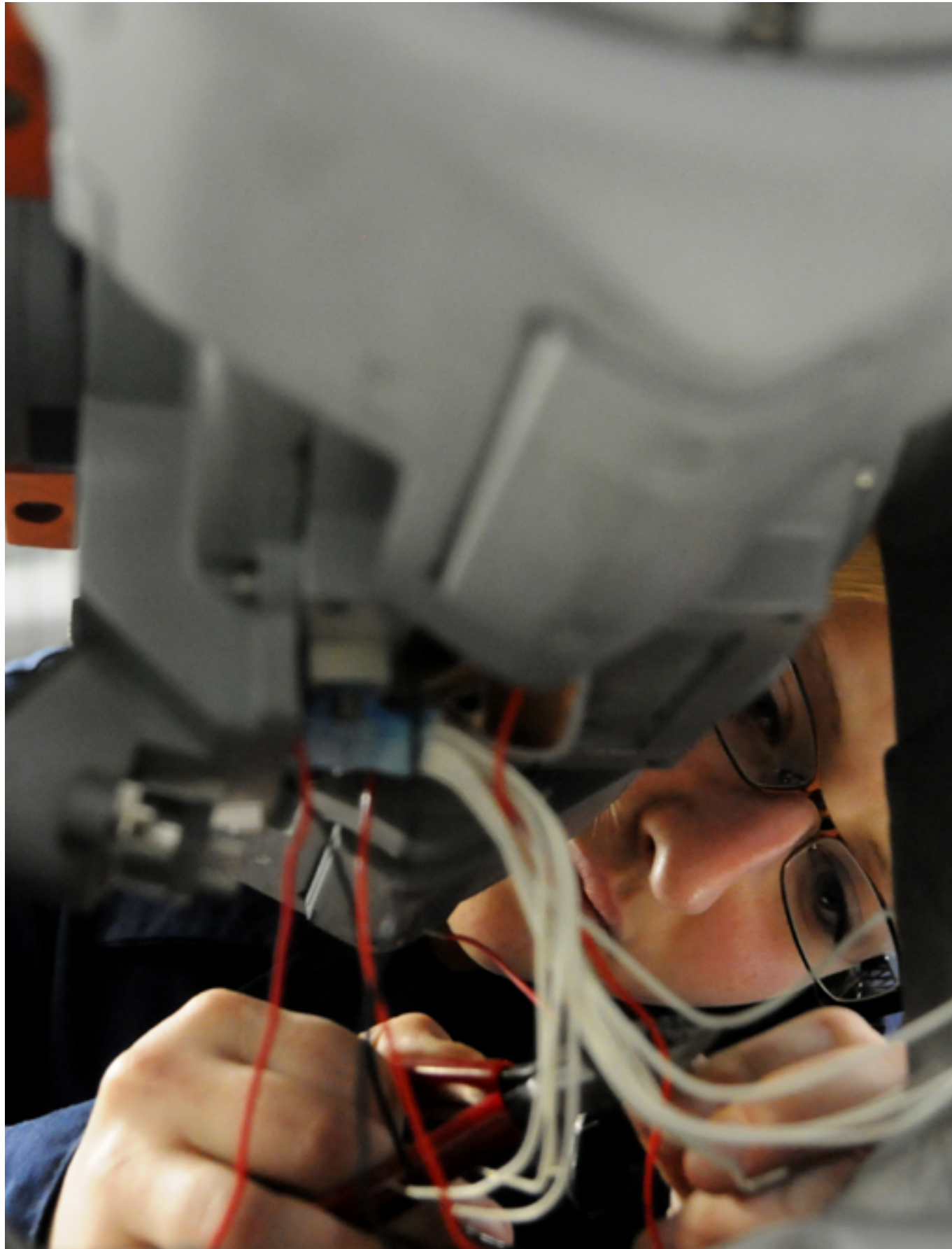
Software Prototyping

Manufacturing Rapid Prototyping

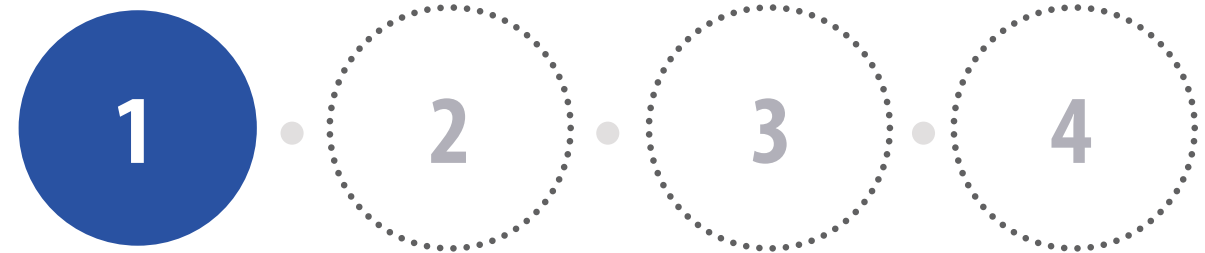
Rapid Prototyping for the Warfighter

Digital Hardware Prototyping

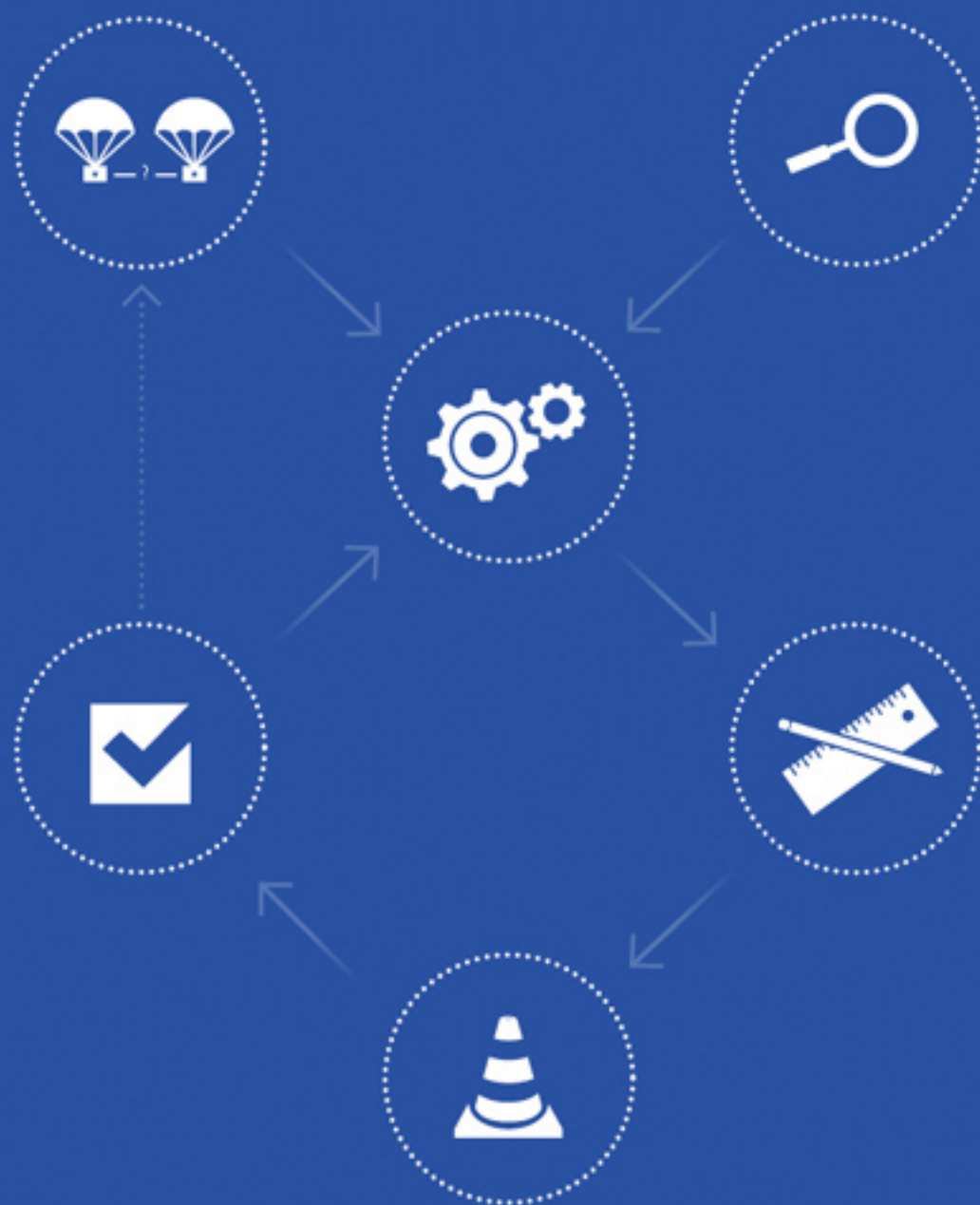
Starting in the late 1970s, field programmable gate arrays were used to quickly prototype a digital chip without full design and implementation. By solving “just enough” of the design goals, gate arrays often became the functional solution.



A Better, More Agile Way to Make Solutions for C4ISR

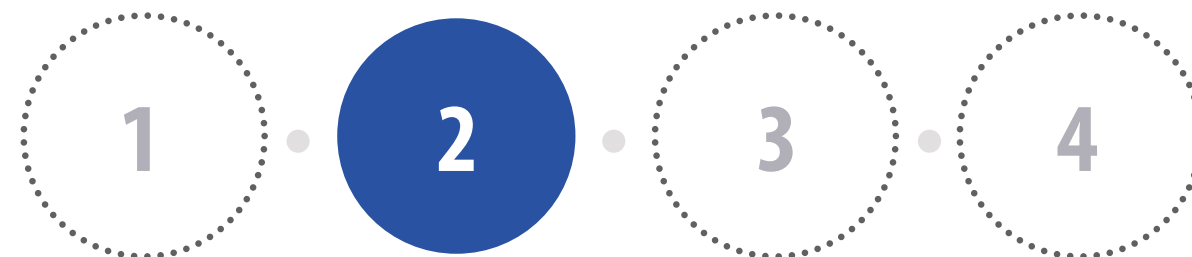


OUR RAPID PROTOTYPING PROCESS



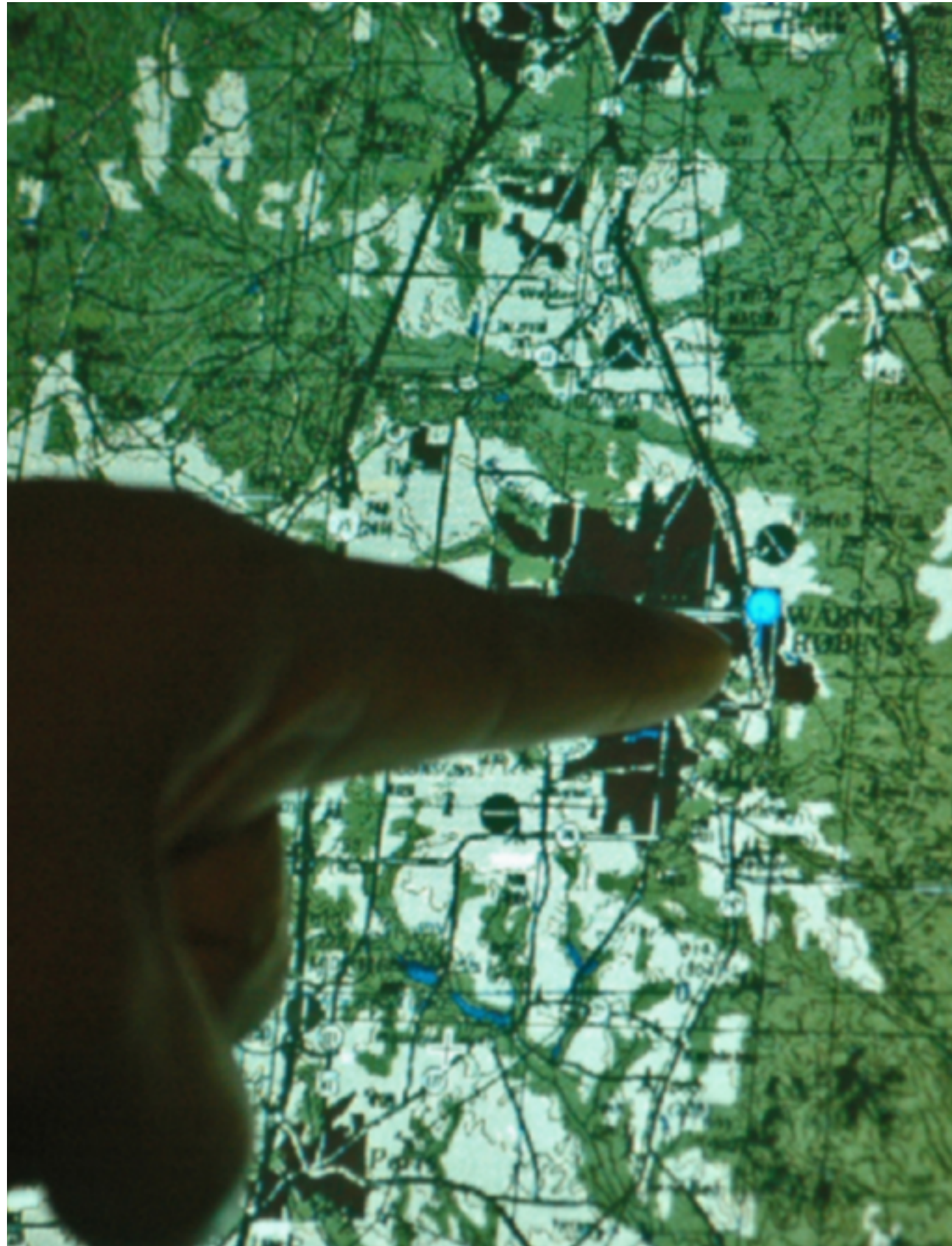
Tap Icons to Learn More

A Better, More Agile Way to Make Solutions for C4ISR

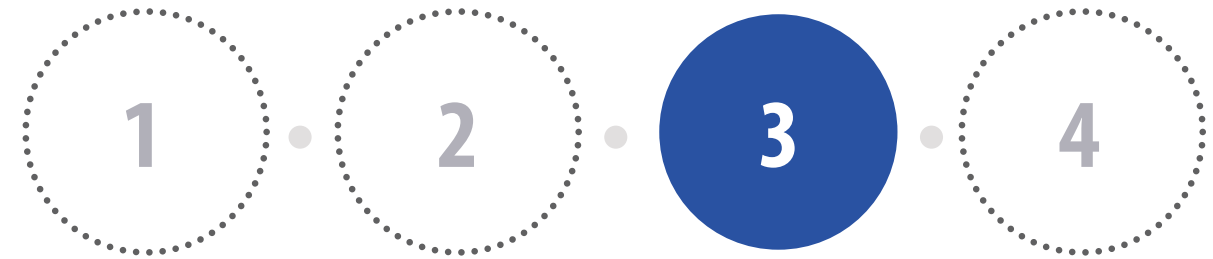


Deploying Functional Solutions Quickly

This is the essence of Rapid Prototyping. Our concept of Rapid Prototyping produces functional solutions that can be quickly fielded by considering form factor up front. For example, Booz Allen developed, tested, perfected, and deployed a new airborne measurement and signature intelligence capability in direct operations within 18 months for a federal client. In another case, a military command asked us to develop a new targeting capability. After a few weeks of laboratory work, we demonstrated sufficient performance with simulated data to be invited to an operational exercise. We expect the system to deploy within four months of successful demonstration. During the Rapid Prototyping process, people in the field can provide real-world feedback, which we can use to quickly modify and upgrade the solution in response to actual new threats. This is an efficient, adaptable, and interactive lifecycle that accomplishes major goals of the mission.



A Better, More Agile Way to Make Solutions for C4ISR

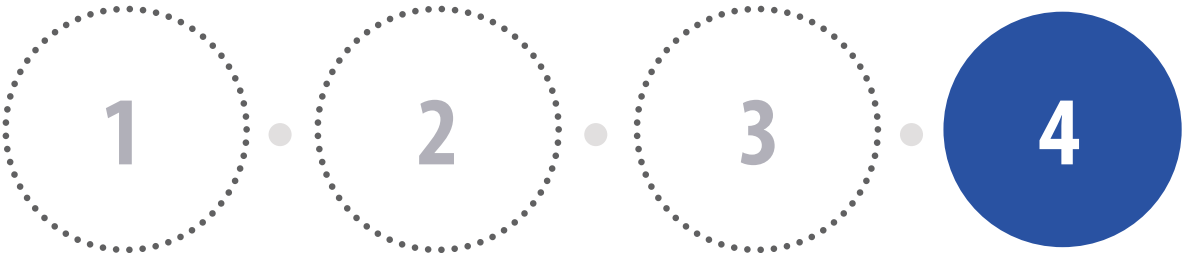


KEY ASPECTS OF RAPID PROTOTYPING

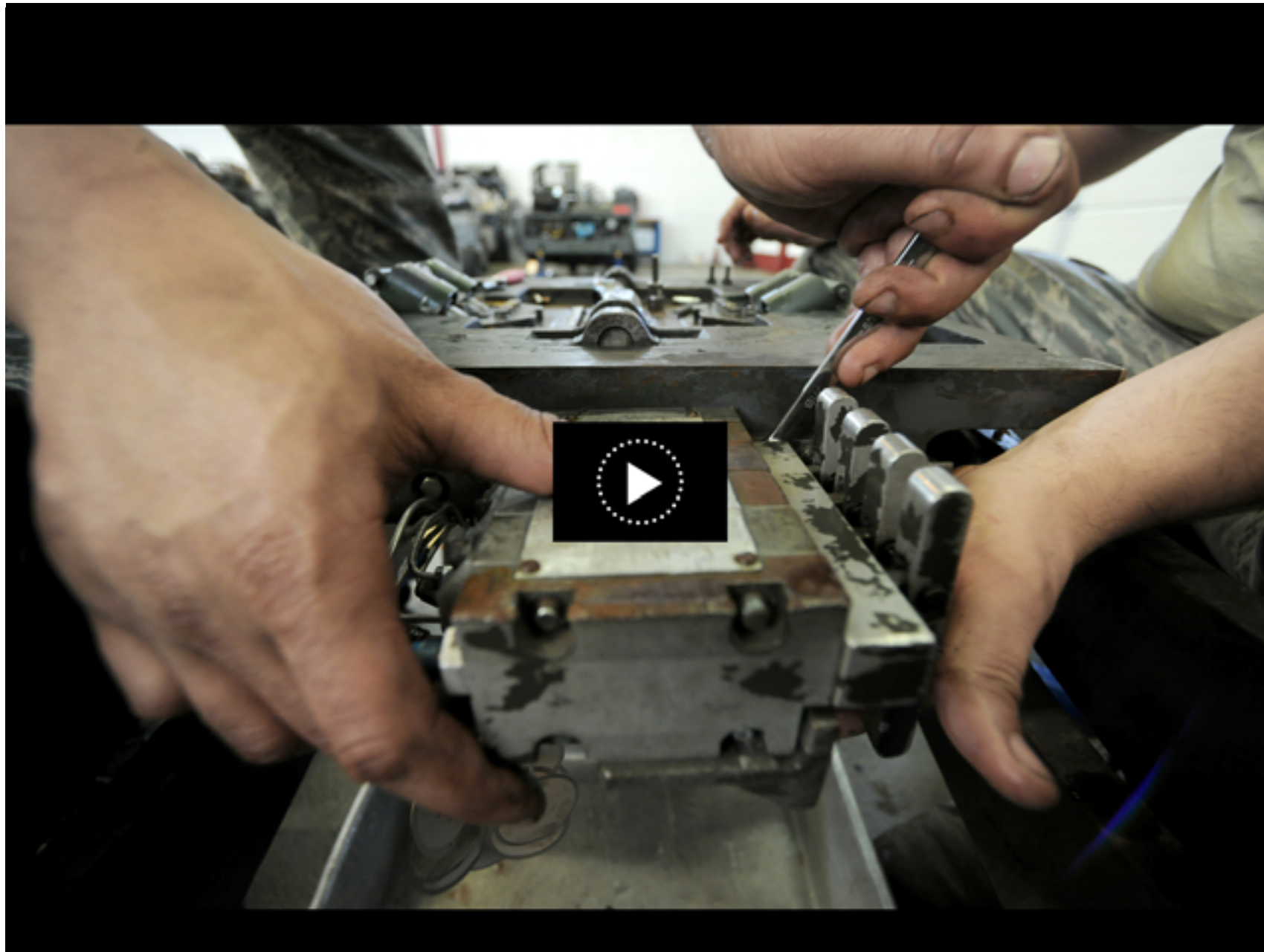


Tap Icons to Learn More

A Better, More Agile Way to Make Solutions for C4ISR



Challenges for Adopting a Rapid Prototyping Strategy



Booz Allen's additive manufacturing capabilities such as a 3D printer and scanner enable us to generate prototypes quickly and economically while reducing design iteration and fabrication.

Leveraging Booz Allen Hamilton for Rapid Prototyping



CASE STUDY: HINDSIGHT SENSOR

Challenge

Provide convoys in war zones with the ability to detect improvised explosive devices (IEDs) during vehicle transit.

Solution

Result

Conclusion

In summary, Rapid Prototyping is the new strategic way for federal defense and intelligence agencies to stay agile in their response to emerging threats, by quickly getting effective solutions into the hands of warfighters and operators. By making Rapid Prototyping a core strategy for national security, federal agencies will be able to better protect citizens from emerging threats wherever they appear, and to accomplish this critical mission while meeting new fiscal requirements.

About Booz Allen Engineering Services

Booz Allen Hamilton’s Engineering Services team delivers rapid, tailored, sound engineering and scientific solutions to our defense and civilian government clients. We couple a profound understanding of engineering and scientific principles to our rich consulting heritage to solve product, facility, and systems challenges within our key engineering thrusts: Rapid Prototyping, System Engineering & Integration, and Applied Sciences.

Rapid Prototyping

System Engineering & Integration

Applied Sciences

Rapid Prototyping

Creates functional defense and intelligence solutions faster by rapidly engineering and producing field prototypes to meet any request in weeks or months, not years. Addresses constantly changing, unanticipated mission requirements with unique engineering design solutions using standard off-the-shelf components and technology.

About The Authors

LEE WILBUR



Lee Wilbur is a senior vice president at Booz Allen Hamilton where he brings more than 25 years of executive management, program management, and systems engineering experience with missile defense, space, aircraft, and ground combat systems. His background includes extensive experience in complex system development and supporting system engineering technologies.

DR. ALLAN STEINHARDT



Dr. Allan Steinhardt is a vice president at Booz Allen Hamilton where he provides engineering services to the Office of the Secretary of Defense. Steinhardt is a Fellow of the IEEE, has published over 100 articles in academic and defense strategy journals and a radar textbook. His background includes program manager and chief scientist for DARPA, National Labs scientist, and professor at Cornell University.

About Booz Allen

Booz Allen Hamilton has been at the forefront of strategy and technology consulting for nearly a century.

Today, Booz Allen is a leading provider of management and technology consulting services to the US government in defense, intelligence, and civil markets, and to major corporations, institutions, and not-for-profit organizations. In the commercial sector, the firm focuses on leveraging its existing expertise for clients in the financial services, healthcare, and energy markets, and to international clients in the Middle East. Booz Allen offers clients deep functional knowledge spanning strategy and organization, engineering and operations, technology, and analytics—which it combines with specialized expertise in clients' mission and domain areas to help solve their toughest problems.

The firm's management consulting heritage is the basis for its unique collaborative culture and operating model, enabling Booz Allen to anticipate needs and opportunities, rapidly deploy talent and resources, and deliver enduring results. By combining a consultant's problem-solving orientation with deep technical knowledge and strong execution, Booz Allen helps clients achieve success in their most critical missions—as evidenced by the firm's many client relationships that span decades. Booz Allen helps shape thinking and prepare for future developments in areas of national importance, including cybersecurity, homeland security, healthcare, and information technology.

Booz Allen is headquartered in McLean, Virginia, employs approximately 25,000 people, and had revenue of \$5.86 billion for the 12 months ended March 31, 2012. Fortune has named Booz Allen one of its "100 Best Companies to Work For" for eight consecutive years. Working Mother has ranked the firm among its "100 Best Companies for Working Mothers" annually since 1999. More information is available at www.boozallen.com. (NYSE: BAH)