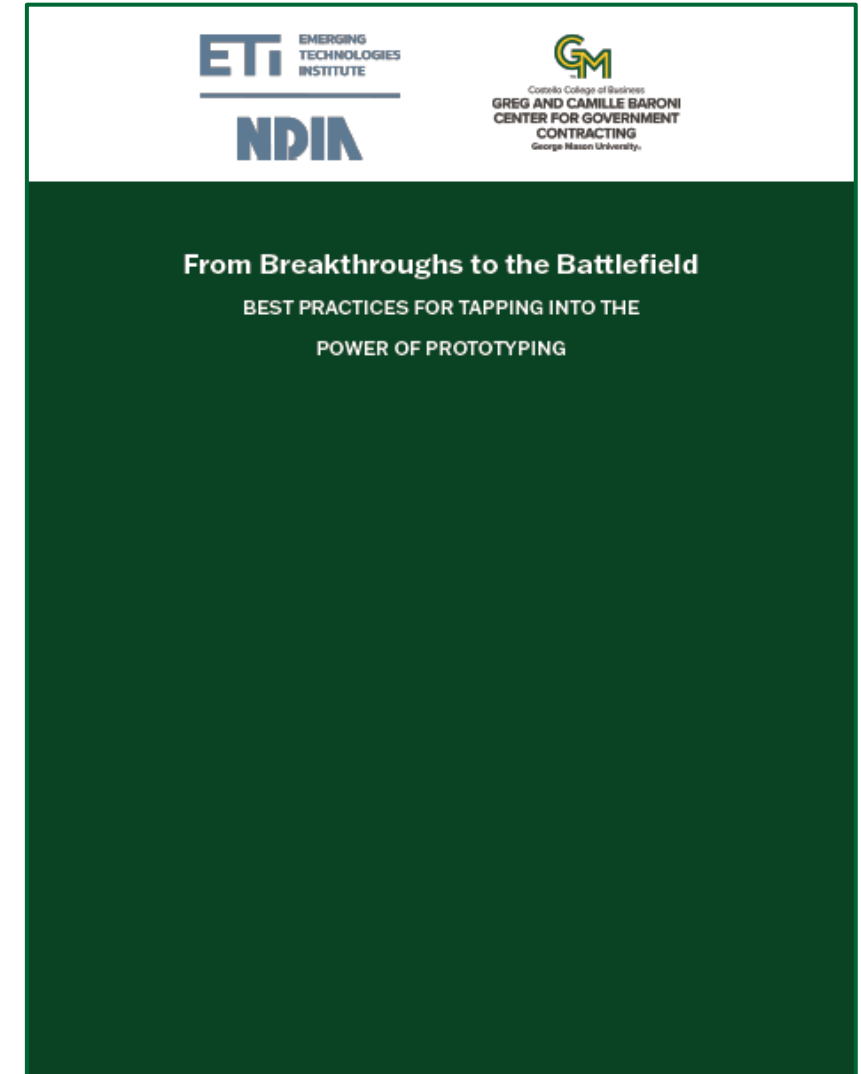# From Breakthroughs to the Battlefield
# Best Practices for
# Tapping into The Power of Prototyping

## By: Dr. Arun Seraphin, Stephanie Halcrow, Anna Kim, and Jacob Winn

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EMERGING TECHNOLOGIES INSTITUTE

Costello College of Business
**GREG AND CAMILLE BARONI**
**CENTER FOR GOVERNMENT**
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# The Report

- **Why prototype?**
- **What are the benefits?**
- **What are the best practices?**
- **What is a successful prototype?**
- **Can we measure success?**
- **Can we amplify the power of prototyping?**



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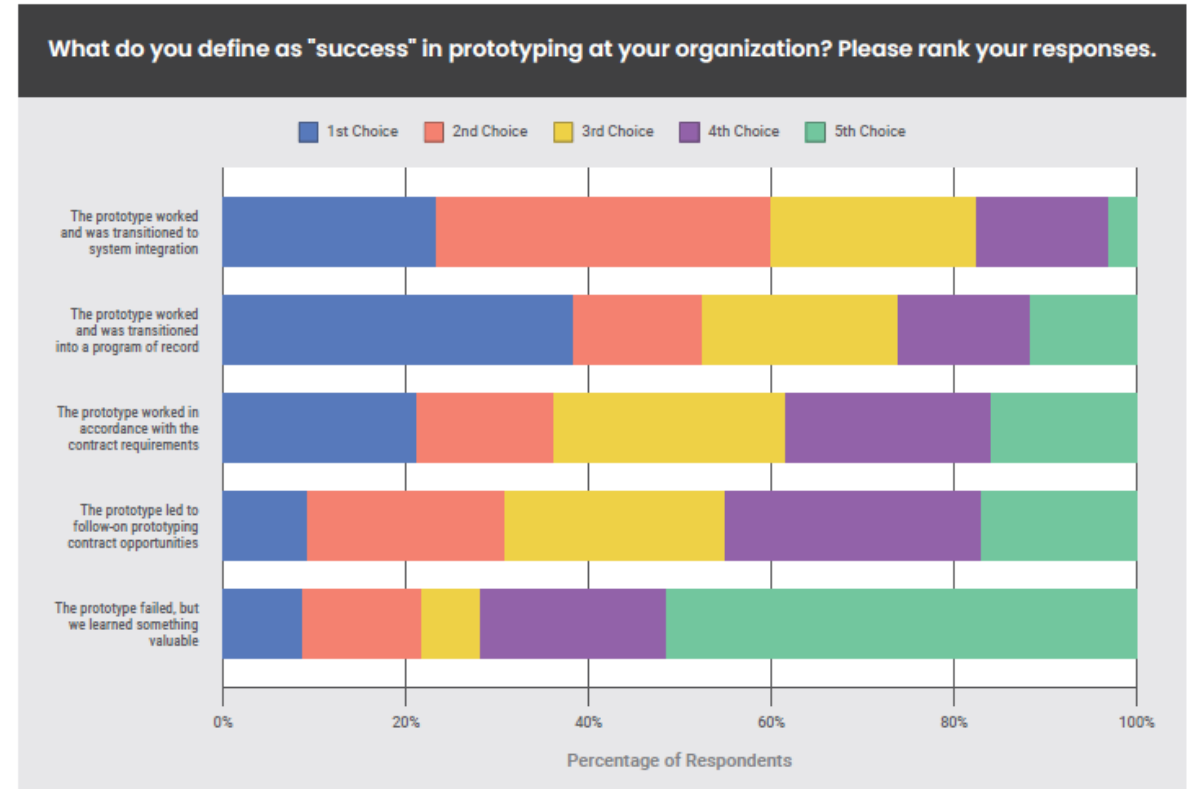
# Methodology

- **Survey**
  - Leveraged NDIA, Baroni Center, and National Armaments Consortium (NAC) email distribution lists
  - Over 200 individuals responded; all sectors of the DIB represented
  - Small businesses and primes, traditional and nontraditional, academia and FFRDCs
- **Webinars, Workshops, and One-on-One Interviews**
  - Two Baroni Center Webinars
  - Two NDIA led workshops
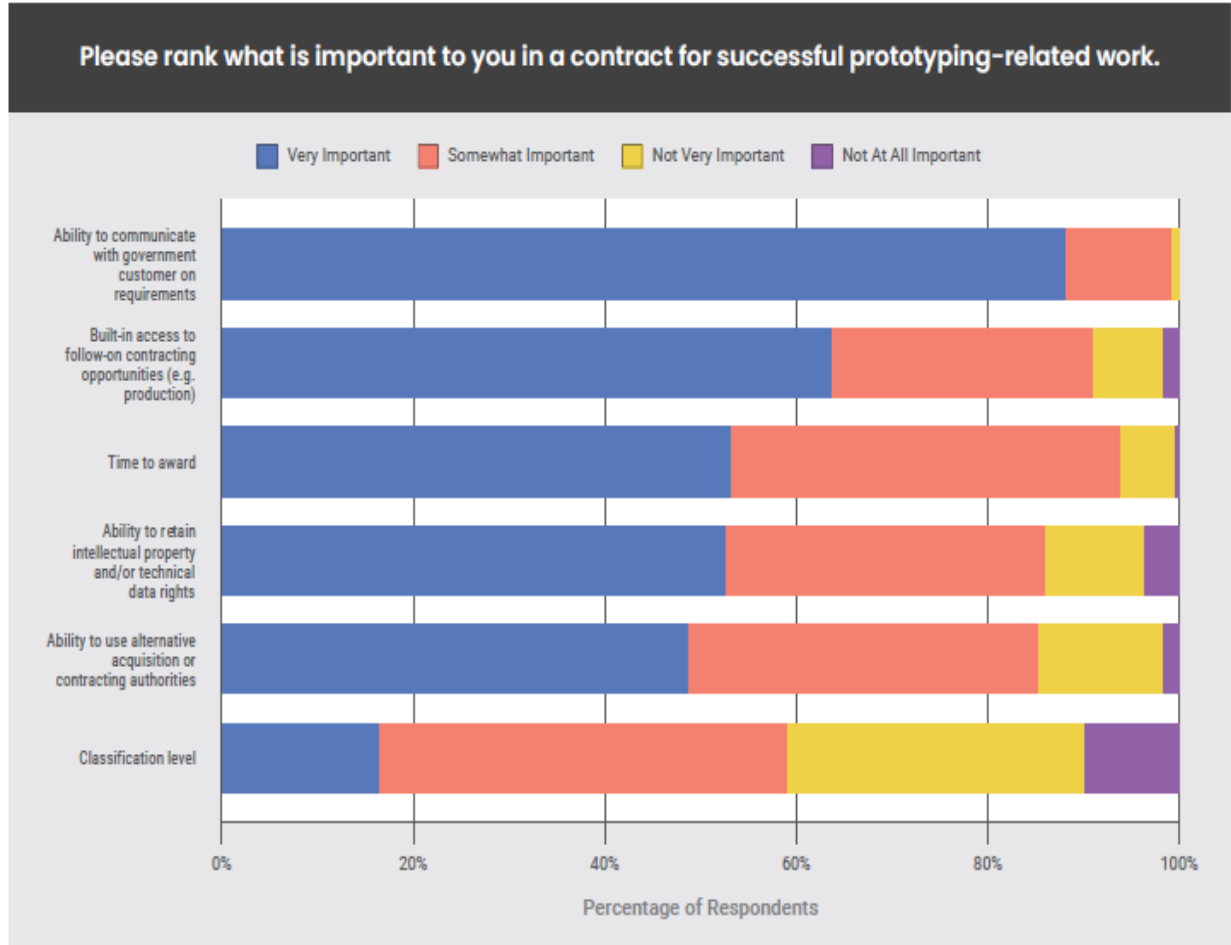  - Follow-on interviews

# The Power of Prototyping

- **Industry defines success as…**
  - Improving Existing Weapon Systems
  - Transitioning to a Program of Record
- **Industry does NOT define success as…**
  - Furthering Knowledge
- **Other Powers of Prototyping**
  - Developing the Next Generation's Workforce
  - Enhancing the Defense Industrial Base's Manufacturing Capacity and Efficiency
  - Learning at the Speed of Relevance



What do you define as "success" in prototyping at your organization? Please rank your responses.

Legend: 1st Choice, 2nd Choice, 3rd Choice, 4th Choice, 5th Choice

- The prototype worked and was transitioned to system integration
- The prototype worked and was transitioned into a program of record
- The prototype worked in accordance with the contract requirements
- The prototype led to follow-on prototyping contract opportunities
- The prototype failed, but we learned something valuable
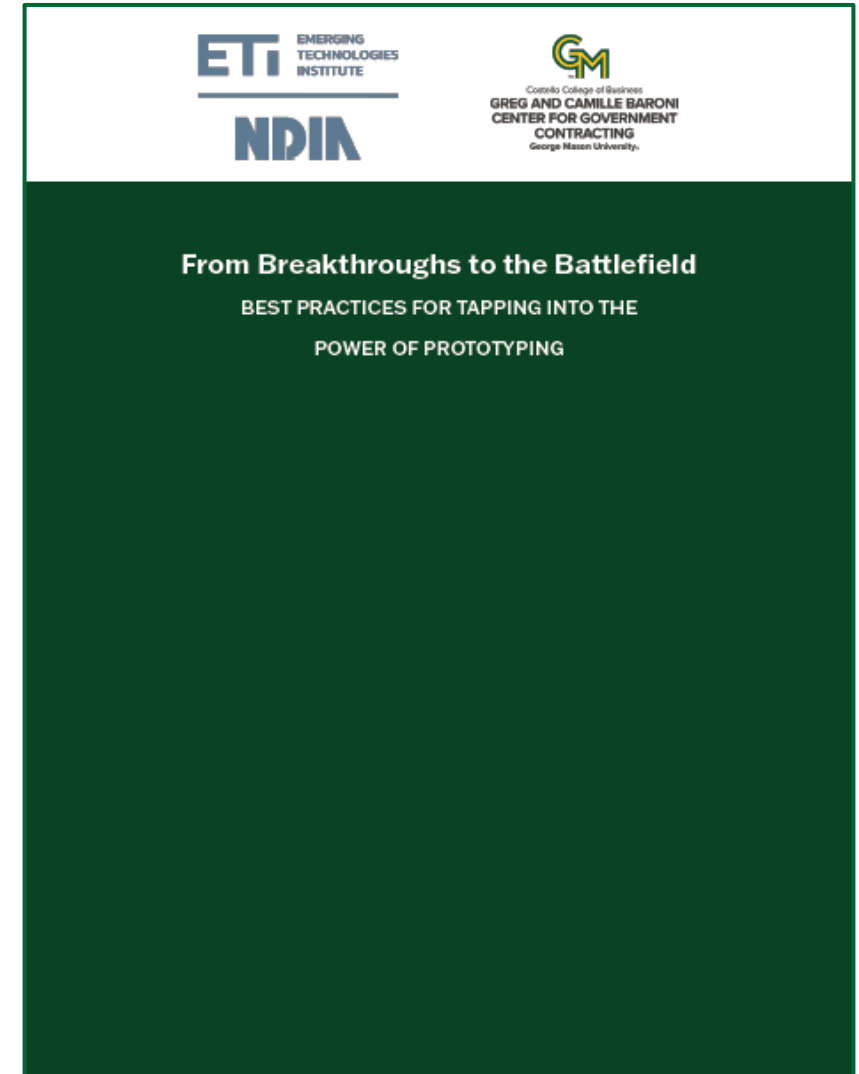
Percentage of Respondents

# Best Practices for Prototyping

- **Commitment and Collaboration of Resources**
- **Develop Thoughtful Requirements**
- **Understand the Real Problem**
- **Embrace Digital Acquisition**
- **Pursue Simple and Open Design**
- **Use International Standards**
- **Prototyping Iteratively**



Please rank what is important to you in a contract for successful prototyping-related work.

Legend: Very Important, Somewhat Important, Not Very Important, Not At All Important

Categories: Ability to communicate with government customer on requirements; Built-in access to follow-on contracting opportunities (e.g. production); Time to award; Ability to retain intellectual property and/or technical data rights; Ability to use alternative acquisition or contracting authorities; Classification level

Percentage of Respondents

# Next Steps for DoD, Congress, and Industry

- **Resolve Conflicting Definitions**
  - DoD to update Prototyping Guidebook with focus on customer
- **Measure Success, Evaluate Outcomes, Model Successful Organizations**
  - DoD to establish what constitutes success and measure; DoD and Congress realign funds to successful organizations
- **Leverage All Readiness Levels**
  - DoD to update policy and enforce use of software, manufacturing, systems integration, sustainment readiness levels; Congress to evaluate; Industry to support
- **Align Efforts with Stakeholders**
  - DoD to align prototyping efforts to customer's problem; Congress to support with funding
- **Capture and Share Knowledge**
  - DoD to develop a process/system to accelerate learning
- **Adopt Prototyping Best Practices**
  - DoD to update Prototyping Guidebook



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# *Discussion*