Quick Reaction Capability for Urgent Needs

Facilitator: Ed Carroll, Sandia National Laboratories. ercarro@sandia.gov

Ed Carroll is a research analyst at Sandia National Laboratories and a hands-on data-strategy professional who works closely with senior stakeholders to discover opportunities deep in the data. With more than 20 years of experience developing data-intensive solutiolytic models for strategic decision making (often proving engineering best practices), economic performance analyses and merchandising optimization, improved processes for manufacturing and supply-chain management through statistical process control, and defined statistical comparisons of clinical procedure effectiveness.

Ed directed his own consultancy for 14 years, and provided strategic leadership in executive roles in business development for Online Business Systems and Agilis Solutions, as well as technology roles as vice president of engineering for Egghead.com, director of technology at Nike, and director of software engineering at Boeing.

Ed received a Bachelor of Art's degree in Liberal Arts from Arizona State University in 1979, a Master of Science degree in Systems Management from the University of Southern California in 1988, and a Graduate Certificate in BioMedical Informatics from Oregon Health Sciences University in 2011. He lives with his wife Barbara in Albuquerque, NM.

Day-2 Workshop Participants

John Brtis	MITRE	jbrtis@johnsbrtis.com
Ed Carroll	Sandia Nat'l Labs	ercarro@sandia.gov
Bob Malins	Eagle Summit Technology	rjmalins@eaglesummittech.com
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Day-1 Intro and Results Poster

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Quick Reaction Capability for Urgent Needs
Socorro Systems Summit-Collaborative Knowledge Exchange-2017
New Mexico Institute of Mining and Technology, Socorro, NM

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Ed Carroll, Principal Systems Research Analyst
September 19, 2017

Introductions

- Jack Ring:

  Not available, so you get:

- Ed Carroll:

  Principal Research Analyst,

  Sandia National Laboratories:

  - Retired Naval Aviator
  - 25 years in software / systems engineering
  - 15 years in systems analytics and data management

Quick Reaction – my experience

- **Started with a special request and resulted in:**
  - Simplified requirements
    - Common to previous efforts
    - Difficult requirements are deleted
    - Normally thorough analysis cut
  - Minimal modification from established system architecture
    - Proven components, ideas. Nothing really new added
    - Normally thorough technology exploration cut
  - Customer assumed tremendous risk
    - No time to qualify anything new
    - Normally essential processes cut
  - Acceptance of considerable risk by development team
    - Intentional or unwitting. Processes cut, standards ignored

DOD Rapid Acquisition Capability

- ORS (USSTRATCOM, KAFB) – Urgent Space Needs
  - Tailored, disciplined, agile
  - Clear authority – delegated, and direct
  - Appropriate oversight that is risk tolerant
  - Competitive to market-based alternatives

Figure 1: ORS Briefing to Industry, PACA Conference, KAFB, 8/15/2017

DOD Rapid Acquisition Capability(2)

- Army Rapid Capabilities Office
    - Short/narrow chain of command
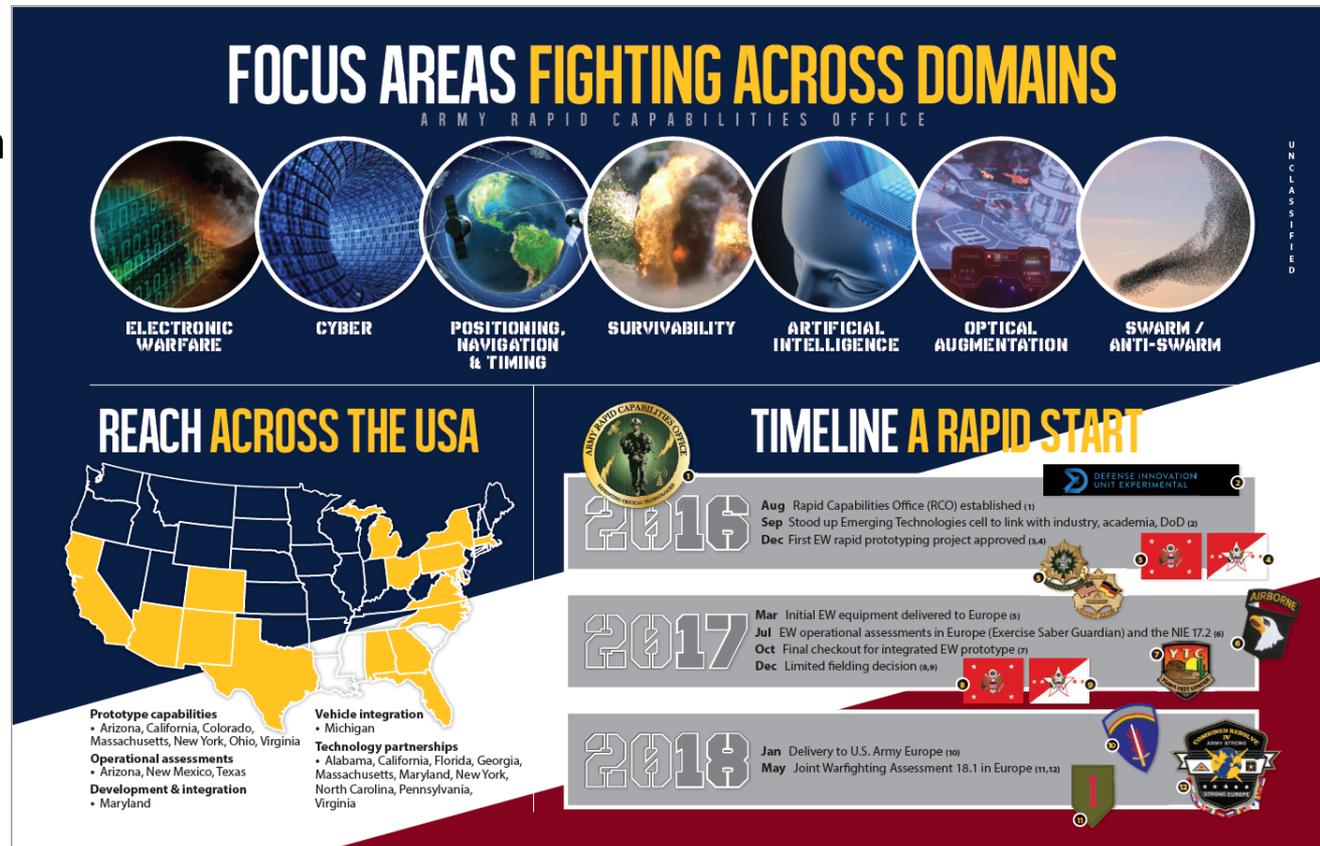   - Early warfighter involvement
    - Collaborative team

Figure 2: US Army image, www.rapidcapabilitiesoffice.army.mil

DOD Rapid Acquisition Capability(3)

- Air Force Rapid Capabilities Office
  - Short/narrow chain of command
  - Early warfighter involvement
  - Small integrated teams

Figure 3: US Air Force image, www.af.mil

DOD Rapid Acquisition Capability(3)

- Maritime Accelerated Capabilities Office
  - Accelerated prototyping, demonstration, and experimentation
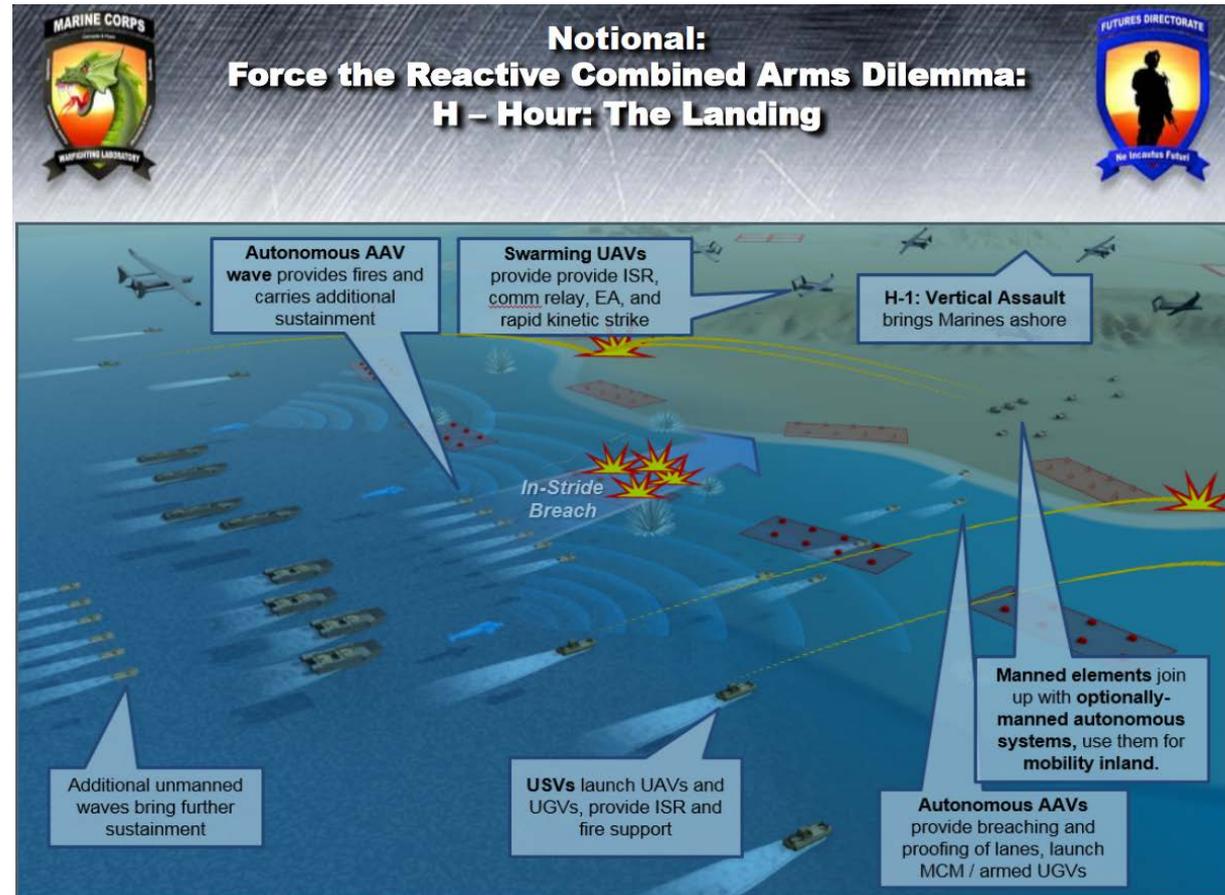 - Limited equipping

Figure 4: USMC Rapid Capabilities Office Briefing to
NC Defense Technology Transition Symposium, 11/15/2016

Quick reaction capability for urgent needs
Day-1 Brief Out Poster

Need:

- **Delivering quickly without sacrificing quality**
- **Rapid changes in urgent needs or persistent needs (Market, war time pressures)**
- **Project life-cycles are getting longer while technology turn over is getting shorter**

Customers:

- **Both sides of acquisition**
- **Investors /Congress**
- **End user**

Impediments to Focus On:

1. **Entrenched culture – acquisition/contract satisfaction, desire to maintain status quo**
2. **Hard to make the change**
   - **Lack of recognition that the process need to change**
   - **Systems engineering inconsistent with quick reaction capability**
3. **Most existing organization structure depend on long term and top/down planning (conflicting turf, work ethics)**
   - **Unwillingness to make investment in new ways of doing business**
   - **Typical culture is about minimizing risk**

Day-2 Workshop

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Discussion

1. Rapid development vs acquisition
2. Should have process in place for an urgent acquisition
3. Back and forth with development and acquisition
4. Find a way to rapidly fund a need with no devel.
5. Have auditor in process to expedite stopgates
6. Constant customer involvement
7. Decision makers should be close to the problem throughout the life of the project.
   1. Must make decisions quickly
   2. Willingness to accept risk to the business
8. Project should have no risk of quality or delivery
9. Customer has willingness to accept risk
10. Clear boundaries on the problem space
    1. Problem needs to be within current capability
    2. Process should accommodate satisficing (good is good enough)
11. Willingness to change
    1. Recognize that change is needed
    2. Quick reaction capability may differ and be inconsistent from status quo.
12. Decision making process should be well defined.
    1. Shorter cycle than the urgent need
    2. Limited checks and balances
13. Capability readiness (funding, infrastructure, people, process)

Requirements

1. Customer shall be closely involved in development cycle.
   1. Customer shall accept higher risk

2. Capability shall be ready (funding, infrastructure, people, process)
   1. Willingness to change
      1. Recognize that change is needed
      2. Quick reaction capability may differ and be inconsistent from status quo.
   2. Capability should have minimal risk (to development) of quality or delivery

3. Clear boundaries shall be set on the problem space
   1. Problem needs to be within current capability
   2. Process should accommodate satisficing (good is good enough)

4. Decision makers shall be close to the problem throughout the life of the project.
   1. Must make decisions quickly
   2. Willingness to accept risk to the business
   3. Decision making process should be well defined.
      1. Shorter cycle than the urgent need
      2. Limited checks and balances