Agile Development of Shared Situational Awareness: Two Case Studies in the U.S. Air Force and Army

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• In a world of a fast changing threat, software development has to handle requirements for unknown threats that cannot be identified ahead of time.

• Agile software development methodology enable fluid delivery of capability in a timely manner

• Two cases: U.S. Army and U.S. Air Force
U.S. Army Intelligence Center of Excellence
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- U.S. Army Intelligence Center of Excellence
  - USAICoE is building a next generation software application to solve a knowledge management and collaboration problem with respect to the Capability Development & Integration process
  
  - The vision is to maximize the return on this investment by broadly applying this application across USAICoE, the Army, the DoD, and the Federal Government

  - The capability is being demonstrated to a wide variety of organizations and is helping to solve the government knowledge management and collaboration challenges
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Knowledge Management Challenges

**Challenge**

- High turnover leads to knowledge retention issues
- Long Ramp Up Time due to difficulty in accessing knowledge
  - Tacit knowledge
  - Disparate (hard drive silos)
  - Document centric
- Hard to Collaborate
  - Identify who has expertise in particular topics
  - Know what others are working on that may be related

**Opportunity**

- Better Connect:
  - People to Content
  - People to People
- Knowledge Creation:
  - Rapid and Easy
  - Process Centric
  - Collaborative
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Solution: Wiki On Steroids
✓ Centralized Knowledge – tacit and disparate knowledge is gathered and organized in a centralized repository
✓ Topic-Centric – content is organized around topics, not “captured” inside documents
✓ Cooperative Content Creation – knowledge workers all contribute to the content

Hard to get knowledge in:
✗ Manually Populated – content must be manually gathered & populated
✗ Manually Organized – hyperlinks and page categories must be manually created
✗ “Extra Duty” – contributing knowledge is a separate task outside of my normal job / process

Hard to get knowledge out:
• Unstructured Content– limited to keyword search
• Limited Collaboration Capabilities
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What is the solution?

Wiki
- Topic-centric Knowledge Management
- Collaborative Content Creation

Social
- Rich User Profiles
- Personal Spaces
- Activity Feeds
- Status Updates

Think “Facebook @ Work”

Semantic
- Faceted Search
- Inferred Relationships
- Visual Navigation
- Advanced Reporting & Analytics

Text Mining
- Document Ingestion
- Automatic Link identification
- Automatic Page categorization
- Crowd-sourced for maintenance efficiency and data quality
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Two sides of the Collaboration

Reference Library

- Knowledge “Hubs”
- Used to get up to speed on new topics quickly;
- Place to “contribute back” to the institutional memory of the organization

Where you go to share knowledge

Analytical Processes

- “Process-Centric” Knowledge Management
- Place to go to execute your organization’s analytical processes and create standard deliverables
- Think “templated” version of Google Docs

Where you go to do your work

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Visual Navigation
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Milestone & Activities Timeline

Iteration: Iteration #2
07/01/2009 to 03/31/2010

The second iteration of the Serpentine System was tested in Kabul with the 10th Mountain Div and highlighted the value add of the system.
U.S. Air Force Number Air Force & Operations Center
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Commanders Situational Awareness (Top Issues)

Cyber Incidents Response
- CAT I @ Bellview 11-4383: Server back on line [COMPLETE]

Dynamic Defensive Cyber Actions
- 3 New Domains added to BHL
- 4 IP addresses dynamically blocked
- 1 site added to download whitelist

Defensive Posture
- IOP FAK @ Corinne City: Bypass Mode; ETC: 071600ZJUL11

Other Items of Interest
- Mission 33-435 Underway
- Mission 33-436 HAZCON (50% degradation in IDS)
- Mission 33-437 Upcoming
Commanders Situational Awareness (Color Details)
NetCDS Workspace 624TH OC

Commander's Situational Awareness

Current (Auto)

Issues Details MEL Events

OCO

Last 24 hours:
Missions fired:
- EUCOM: 3 PACOM: 1 NORTHCOM: 3
- RCMA - Vector Check Bravo
- Rolling Thunder ETIC 2300Z 30SEP2011
- Operations Polar North OpsSum

Next 24 hours:
- Operation Reya Lokilani
- ARCS Assessment 1st Battalion, 6th Marine Regiment Outbrief
- Coldstream Guards Battle Group (UK)
- Canadian Helo Force - A (CAN)

Current 24 hours:
- Task Force Reya (US Army)
- Elements of Dækon/ISAF (Denmark)

High Priority/Special Interest:
- Availability +1
- C2 Status -2
- Defensive Cyber Operations +1
- Offensive Cyber Operations +1

Updated: 14 1502Z FEB12 by mark.adkins

Side 2 of 4
CSA - Real Time Update to Filtered Events Brief
Multiple Views of data and information
Flexible Status Reporting

Gateway Status

Mission Execution
What is Agile?

• Agile is an umbrella term for different processes that promote a disciplined project management and delivery approach based on frequent inspection and adaptation.

• It is encapsulated in a simple Agile Manifesto written in 2001, which emphasizes the use of frequent involvement and team work.
  – Individuals and interactions over process and tools
  – Working software over comprehensive documentation
  – Customer collaboration over contract negotiation
  – Responding to change over following a plan
What is Agile? (continued)

- **Scrum** is an iterative, incremental framework for project management and perhaps one of the most widely adopted Agile methodologies.

- Focused on an **incremental and flexible** approach to software development, Agile addresses all the end-to-end development lifecycle in each iteration.
Agile at Accenture

- Agile at Accenture is an adaptable model which we value differently to each Client and project size.
- It requires **going beyond Scrum** for the majority of clients to enable scalability and sustainability of practices.
- It is more than just a methodology or process that needs to be followed, it requires the **right attitude**.
- Agile is a cultural behavioral change in addition to processes and tools.
- Agile at Accenture can be deployed to both co-located and distributed projects.
Agile Delivery Methodology

Rapid Delivery

- 30 day “Sprints”
- Rapid prototyping
- Risk management
- Releasable Software
- Quality Assurance

Ability to respond to change…
Team Composition & Agile Structures

- Program Manager
- Solution Owner
- Scrum Master
- Enterprise Architect
- User Interface
- Quality control
- Senior Developers
- Junior Developers

- Roadmap
- Data Management
- User Stories (Backlog)
- Sprint Review
- Retro meeting
- Team Story Selection
- Daily 15 minute Scrum
- Scrum of Scrum
- Defect Review
- Senior Working Group
- Technology Working Group
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• Conclusion
  – Quality
  – Risk Management
  – Delivery
  – Command and Control Capability Evolves Each Sprint
  – SMEs Collaborating
  – Acquisition Challenges
  – Stresses of Complex Symmetry Required to Deliver
  – Challenge to change – Use a framework to guide development