



TEXTRON Systems

Unique Challenges and Lessons Learned for Providing Handheld Applications for Department of Defense

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Concept

- Provide Situation Awareness (SA) to mobile, dismounted Soldiers
- Enable information flow to and from Soldiers in the field
- Use a platform that is already understood by users – the smartphone
- Use app concepts that are already understood
 - List, map, augmented reality, reporting

Concept

- Facilitate integration with other systems
 - Unmanned Aerial Systems (UAS)
 - Distributed Common Ground System (DCGS)
 - Force XXI Battle Command Brigade and Below, Joint Capabilities Release (FBCB2 JCR)

Current Trends

- Troops increasingly using a variety of smartphones (e.g. iPhones and Androids) in theater. Troops increasingly developing custom apps for mobile devices. General Officer's pay close attention to what the troops think!
- Traditional Acquisition System Programs have not kept pace with technology in terms of scalability and usability.
- Thick clients and relational databases do not work in all operational environments.
- From Generals to Sergeants, smartphones with apps, enabling composability is the future... there is no competing vision except in the rice-bowled traditional acquisition community and they're slowly testing the smartphone waters

Voice of the Customer

- “In a counterinsurgency, the flow [of intelligence] is (or should be) reversed. The soldier or development worker on the ground is usually the person best informed about the environment and the enemy. Moving up through levels of hierarchy is normally a journey into greater degrees of cluelessness. ... they [ground units] are at once the most important consumers and suppliers of information” - (Flynn, January 2010)
- The American Soldier needs to be more than a “shooter” or a “sensor” -he is a platform that can capture, deliver, analyze, and use critical information.” - (Filipelli, 2009)
- *“You can’t contain the app concept, it will sweep the Army like a tidal wave”... in reference to tying it to a single POR or owner. “Separate Ops and Intel screens in the TOC is not good”... about how powerful a combined COP will be on a handheld – (MG Custer, 2010)*

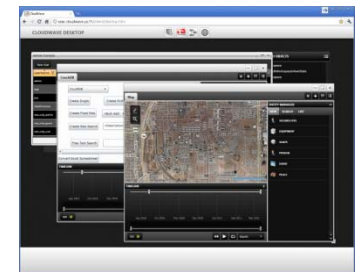
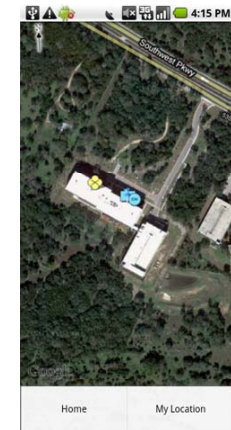
The SoldierEyes™ Initiative

- Mission: SoldierEyes™ provides pertinent and time-sensitive information to the dismounted Soldier's hand while facilitating that Soldier's ability to find, fix, finish, exploit, analyze and disseminate actionable intelligence information.
- SoldierEyes™ Demonstration Prototype Objective: Provide a proof of concept and "Fisher Price" easy prototype cloud environment for mobile digital device applications for preliminary user evaluation and testing.

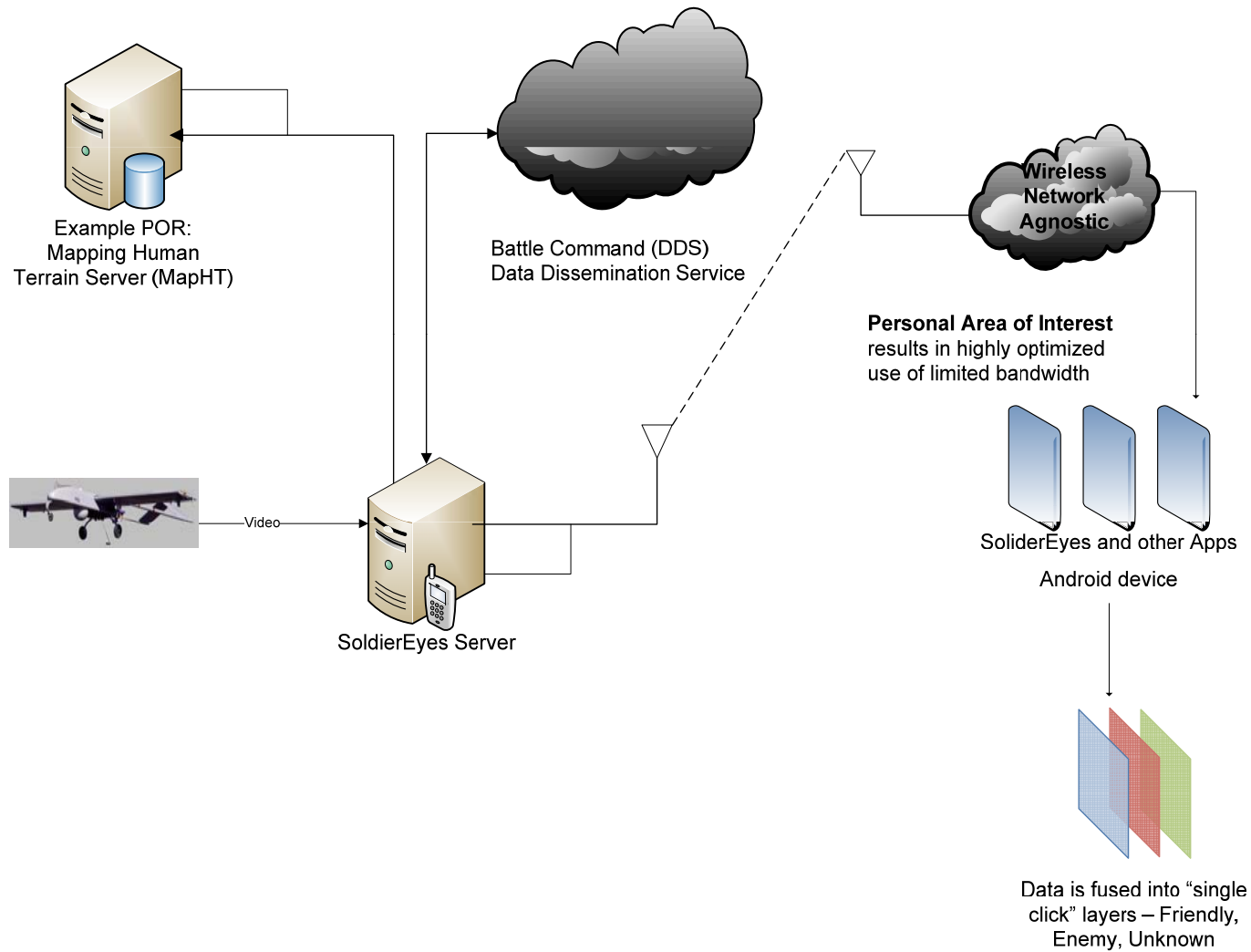


SoldierEyes™ Description

- SoldierEyes™ provides a common understanding of the battlefield through three distinct and dependent operators
 - Soldier Eyes App Cloud (SEAC): Provides the vital conduit of data from PORs, processes and stores app required data, and provides the data to mobile device applications (either Overwatch or third party provided, e.g. Aptus' Threat Act Program).
 - Soldier Eyes COP: Provides a Common Operating Picture for the dismounted Soldier and a means of inputting SPOT reports to the system.
 - Soldier Eyes Console: Provides warfighter analyst access to Apps, SEAC provided data, and system level configurations at the Command Post.

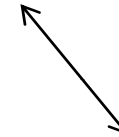
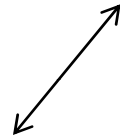


SoldierEyes™ System View – SV1



Operational View – OV1

Near Real-Time operational updates

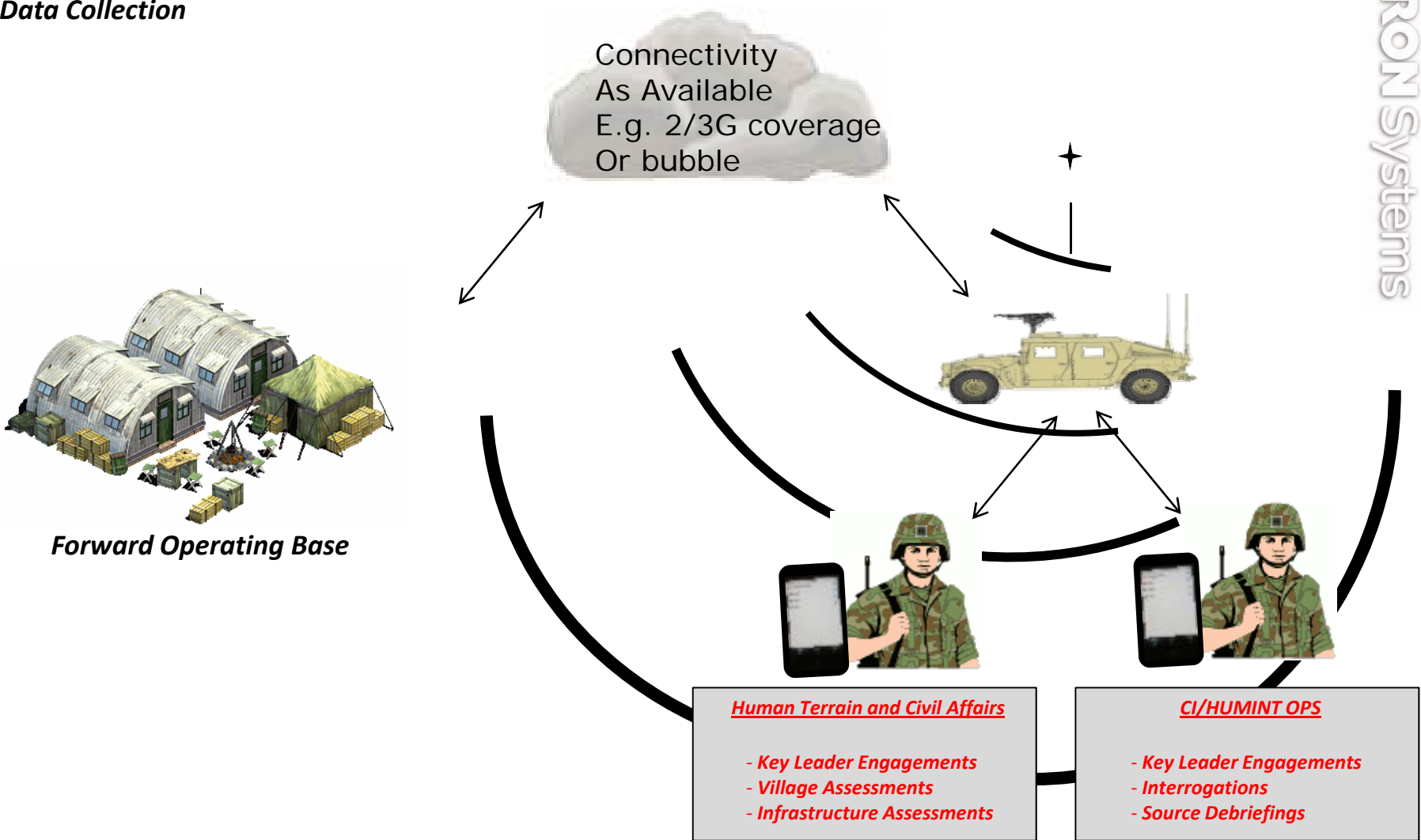


Common Operational Updates



Operational View – OV2

Data Collection



Capabilities

- “Fisher Price easy...”
 - Highly intuitive app
- Multiple layers
 - Intel, Ops, Human Terrain views to select or combine
- Augmented reality mode
 - Leverages handheld sensor platform to create a data rich view of the environment
- Map mode
 - Oriented view based on digital compass
- Auto synchronization when network is available
 - Does not require constant connectivity
- Supports today’s Disconnected Intermittent and Low (DIL) environments
 - Maps and other “infrastructure” capabilities



Common Questions

- What if there is no cell coverage?
 - Expeditionary cell bubble
 - Cellular networks
 - Work on any network providing IP service
 - Disconnected operations
 - Support for “no bars” operation

Common Questions

- How do you handle security of the phone and the information transmitted and received?
 - Security of the device
 - E.g. remote control of device
 - Security of the information
 - E.g. encryption
 - On the device, on transmission, etc.

Common Questions

- How do the icons get from the TOC to the phone and vice versa?
 - From commercial mobile device to military radios
 - What does the network look like?
 - Aspects are related to how to handle multiple security domains
 - Guards etc

Normal Development Lessons

- Product vision
 - Focused application
 - Versus good idea fairy
 - “If it could only do ...”
 - Evolve continuously
 - What are we trying to build and why

Normal Development Lessons

- Development agility
 - App development versus 2167A/498/...
 - Commercial driven technology versus defense
- Development priorities
 - Resource allocation issues with respect to “standard” development projects
 - Especially for new type of product area
 - Development versus demonstration resources
- Prototype versus production code

Other Development Lessons

- An app is not always a weapon system
 - But it might be
 - Safety critical, security, etc.
 - 99¢ apps
- Suite of apps versus one app to rule them all
 - Harken back to the filters of Unix
- Demonstrate mobile devices with defense apps for “aha” moment
- Environment to support testing
 - Automated, stress
 - Multiple target platforms (fragmentation)

Acronyms

- CI – Counter-Intelligence
- COP – Common Operating Picture
- DCGS - Distributed Common Ground System
- DDS – Data Dissemination Service
- DIL – Disconnected Intermittent Low
- FFBCB2 JCF – Force XXI Battle Command Brigade and Below, Joint Capabilities Release
- HUMINT – Human Intelligence
- MapHT – Mapping Human Terrain
- OPS - Operations
- OV – Operational View
- PASS – Publish And Subscribe System
- POR – Program of Record
- SA – Situation Awareness
- SEAC – SoldierEyes App Cloud
- SV – System View
- TOC – Tactical Operations Center
- UAS – Unmanned Aerial System