The Role of Informal Communications in C2 Decision Making

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Topics

• Introduction
• The Awareness Bubble Concept
• The CFA as an Example of C2 Operations
• The Simulation Model
• Outcomes for Informal Communications
• Social Architectures
• The Awareness Bubble for C2 Operations
• Summary
The Awareness Bubble

• Concept of Local and Trusted Sensors

• CFA: Vision, Peer Communications

• F18: On Board and On Ground Sensors
The Country Fire Authority (CFA)

- Victoria, Australia
- 600 Major Fires per year
- 70% lit
- 1000 employees, 60,000 volunteers
- 1200 Brigades
- Cross border Reinforcements
- Rapid Escalation of Effort
Figure 3 Fire Front with Wind Change
Decision Times by Location

• Front Line, All Decisions 2-3 Minutes

• Head Office, Escalating Decisions 5-10 Minutes

• Head Office, Restructuring 60 Minutes
Figure 1  Current Communication Links
CFA Awareness Bubble

- Local Line of Sight
- Interteam VHF Radio Net
- Other Strike Team Trucks
- Remote CFA Volunteer Cellular Phone
The Simulation Model

- UML Design Language
- Production Rules using Drools
- Independent Blackboards
- Java Integration
- Time Step Monitor
Figure 2 New Technologies
Screen Layout Simulation Model – Formal Comms

500 Meters

East

Wind

Fire Zone

Strike Team

South

New Spot Fire

Result: Wind change, firefighters die
Result: *Wind change, firefighters escape to fight another day*
Figure 5 Air Traffic Control Example
Forms of Social Architecture

- CFA Volunteers, a trusted community of peers
- Charter Pilots, an untrusted peer community, in general
- Corporate Governance, a two layer community
- Fighter Pilots, a trusted community of peers
Implications For C2

CFA Awareness Bubble

Formal networks plus Informal Networks
Informal Networks of Trusted Observers
Provision of Accurate, Timely Operational Information
Tacit Recognition for C2 Purposes

F18 Awareness Bubble

Formal Rules of Engagement
Need for Timely Identification of Targets
Essential Use of Local Views
Pull Out as Fallback
Future Work

Validation of Concept

Application to Organizational Flows

Industrial Companies

Education

Politics

Design of New Systems
Summary

• Investigation into Concept of Awareness Bubbles

• Effectiveness in Emergency Operations

• Extension to Other Domains

• Proactive Use at Design Stage for C2 Applications