

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

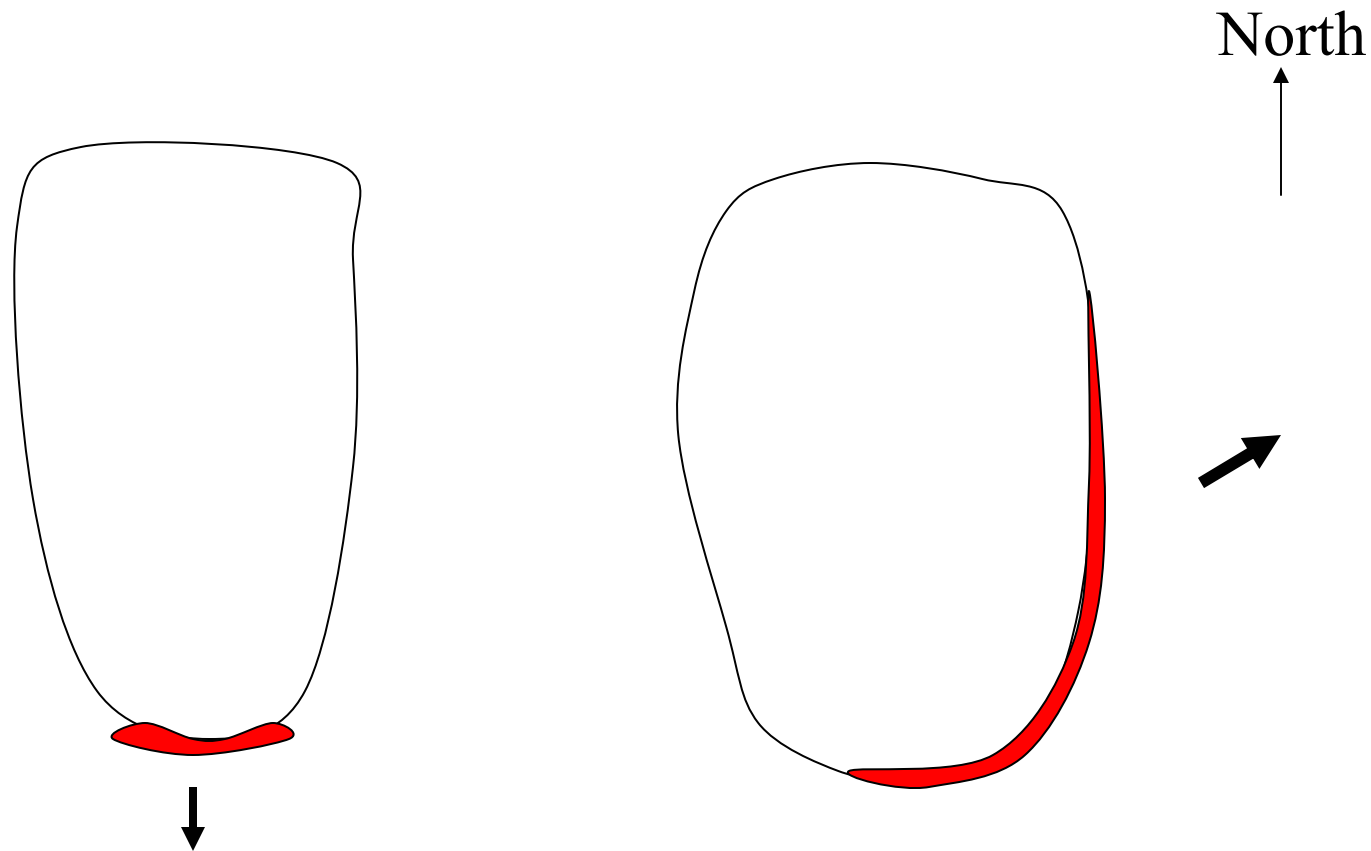


Figure 3 Fire Front with Wind Change

Decision Times by Location

- Front Line, All Decisions 2-3 Minutes
- Head Office, Escalating Decisions 5-10 Minutes
- Head Office, Restructuring 60 Minutes

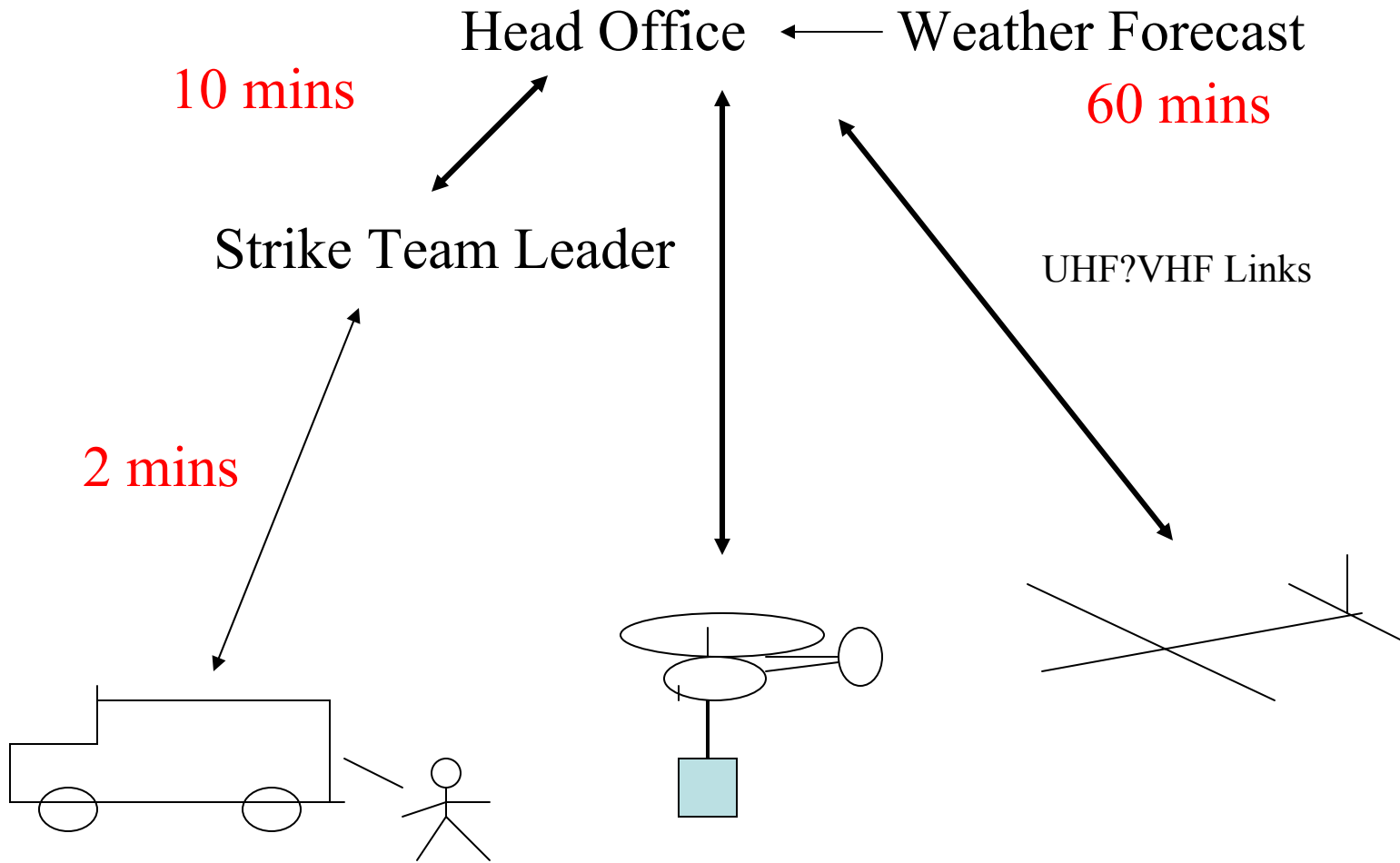
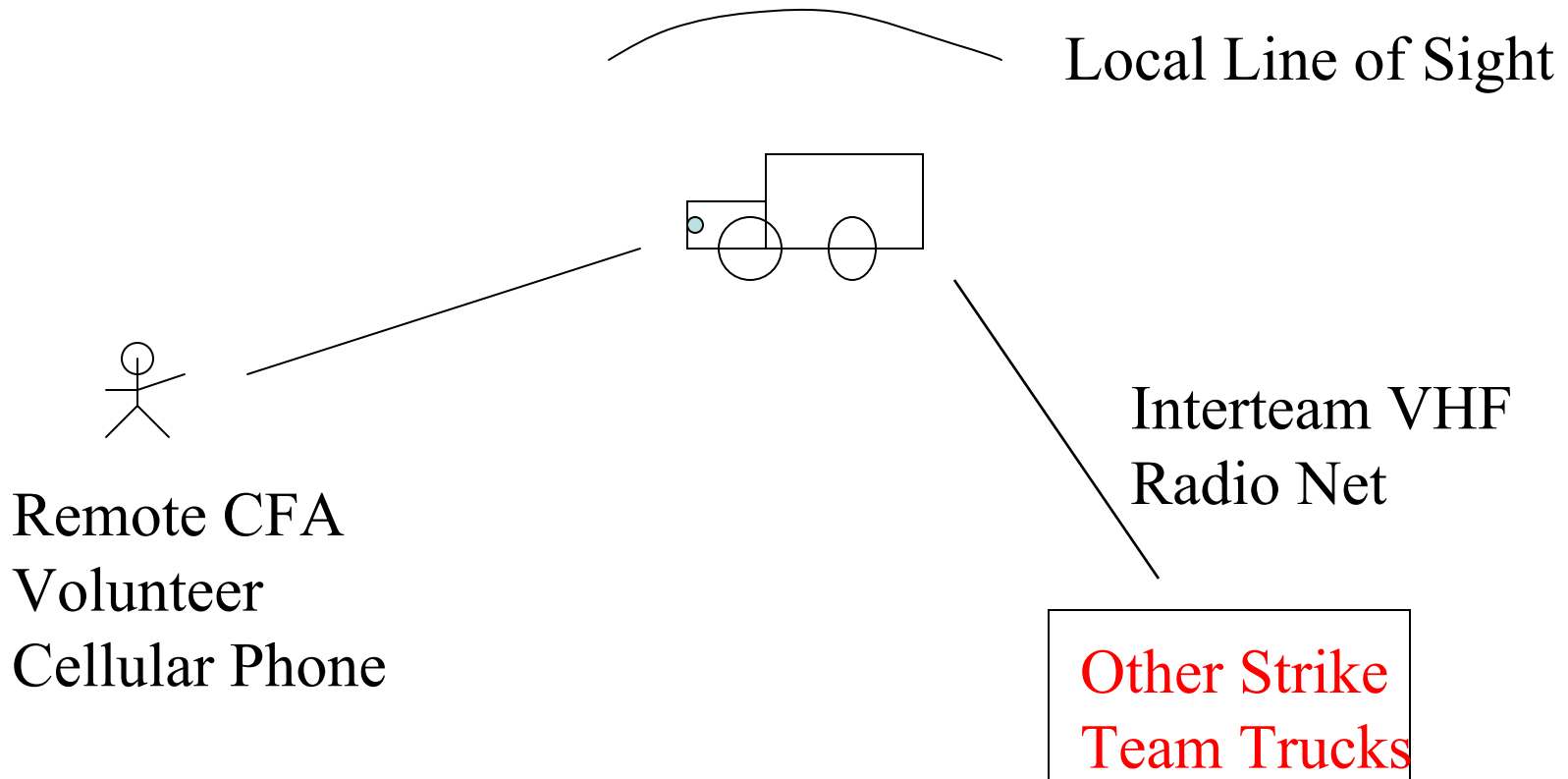


Figure 1 Current Communication Links

CFA Awareness Bubble



The Simulation Model

- UML Design Language
- Production Rules using Drools
- Independent Blackboards
- Java Integration
- Time Step Monitor

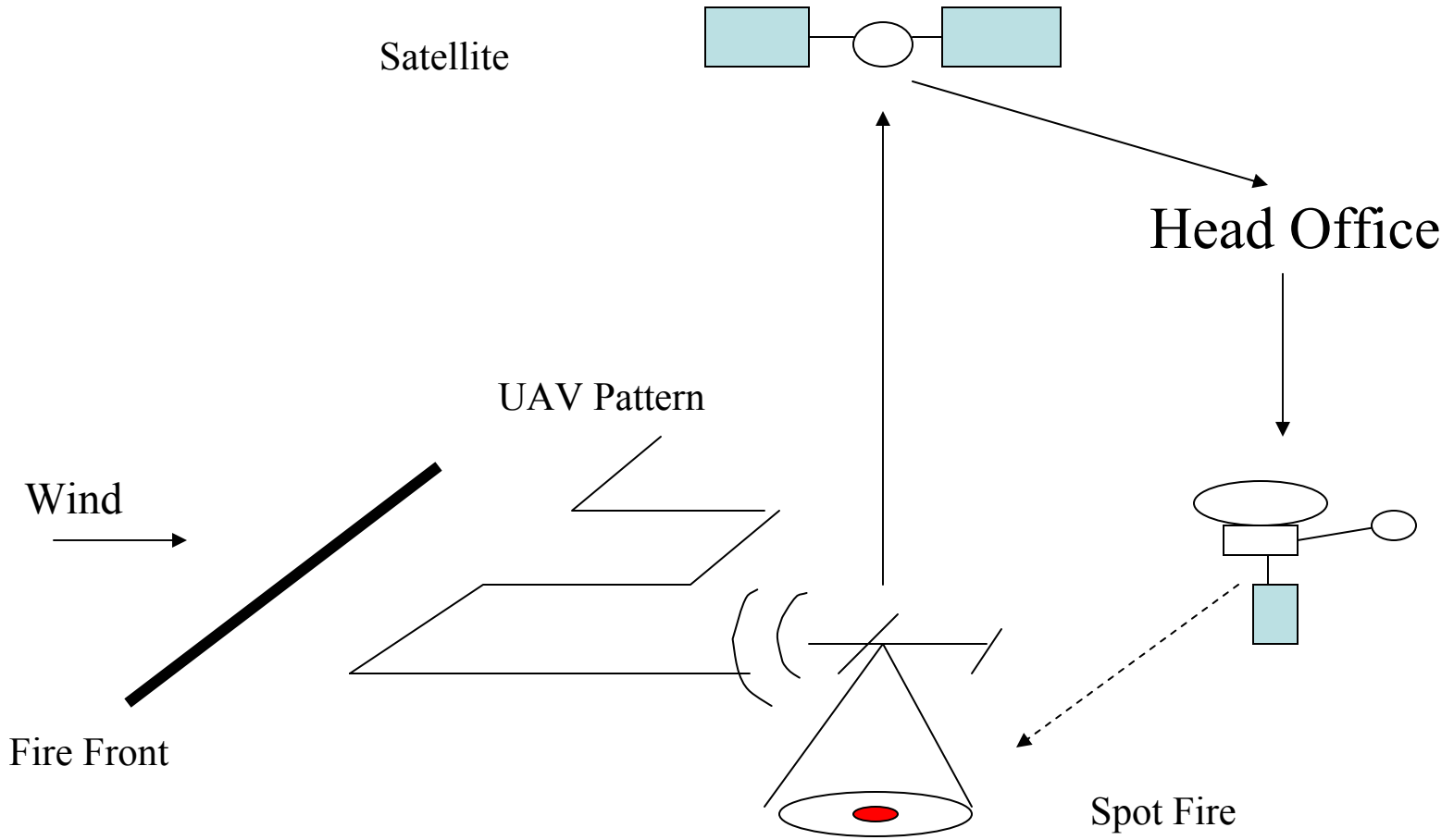
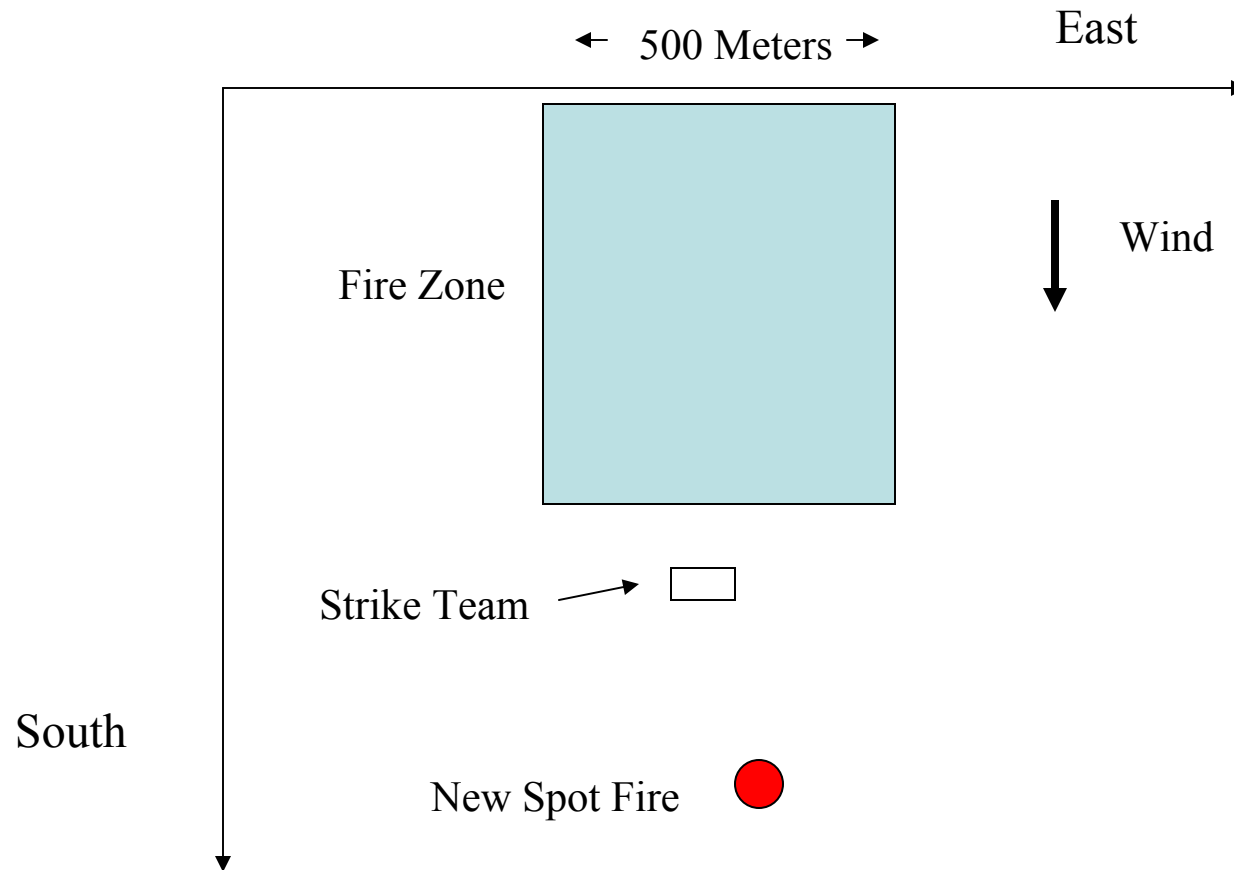


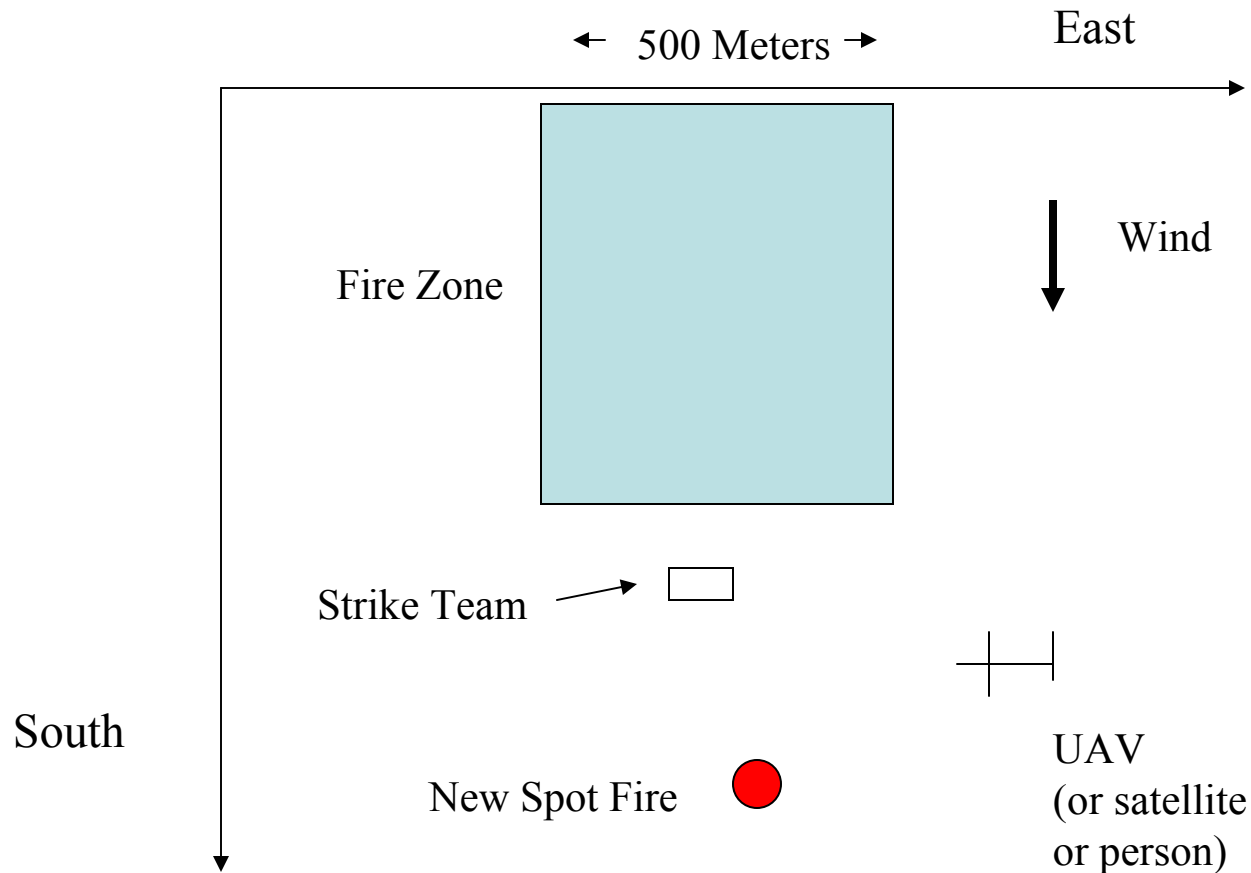
Figure 2 New Technologies

Screen Layout Simulation Model – Formal Comms



Result: Wind change, firefighters die

Screen Layout Simulation Model – Informal Comms



Result: Wind change, firefighters escape to fight another day

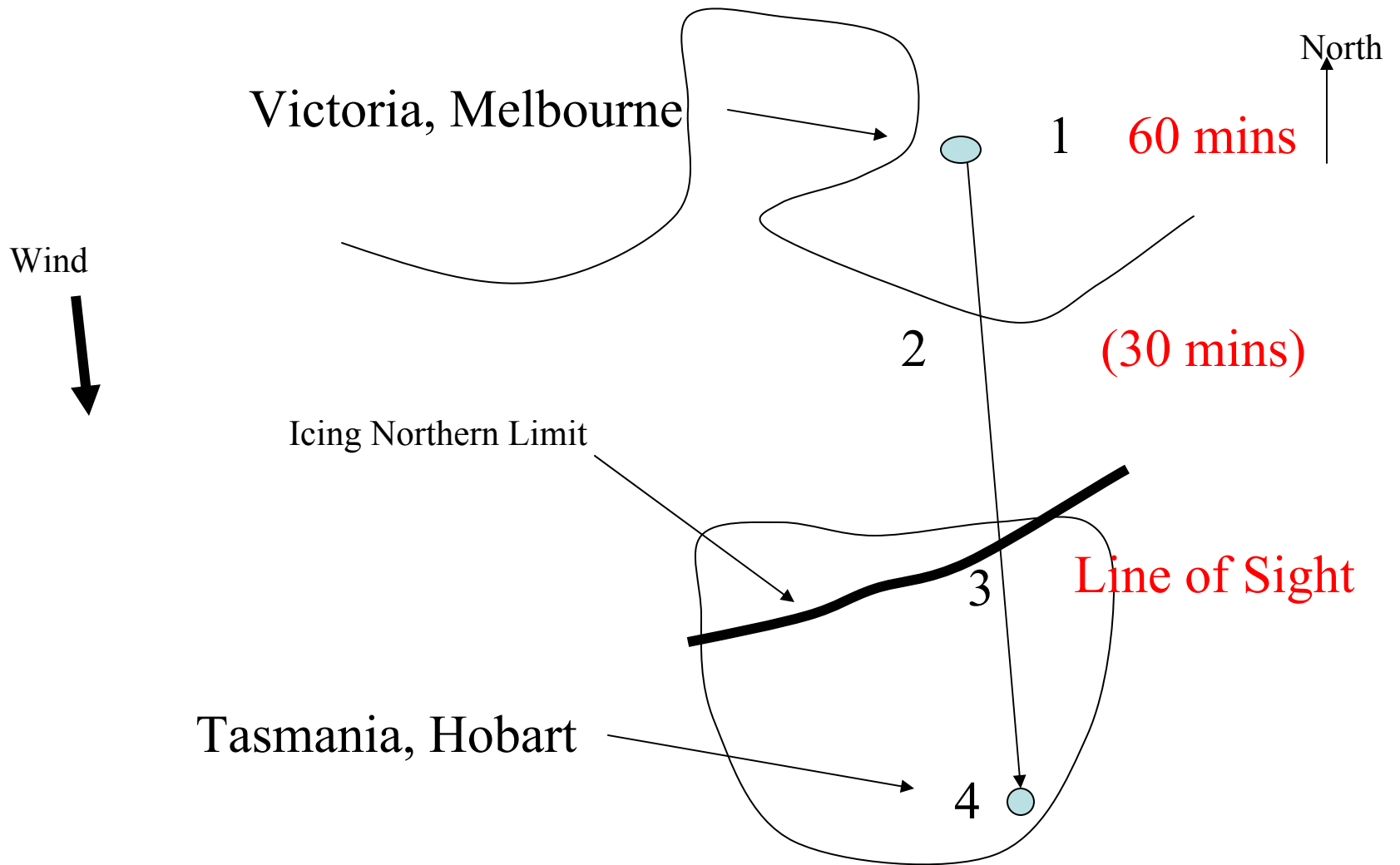


Figure 5 Air Traffic Control Example

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