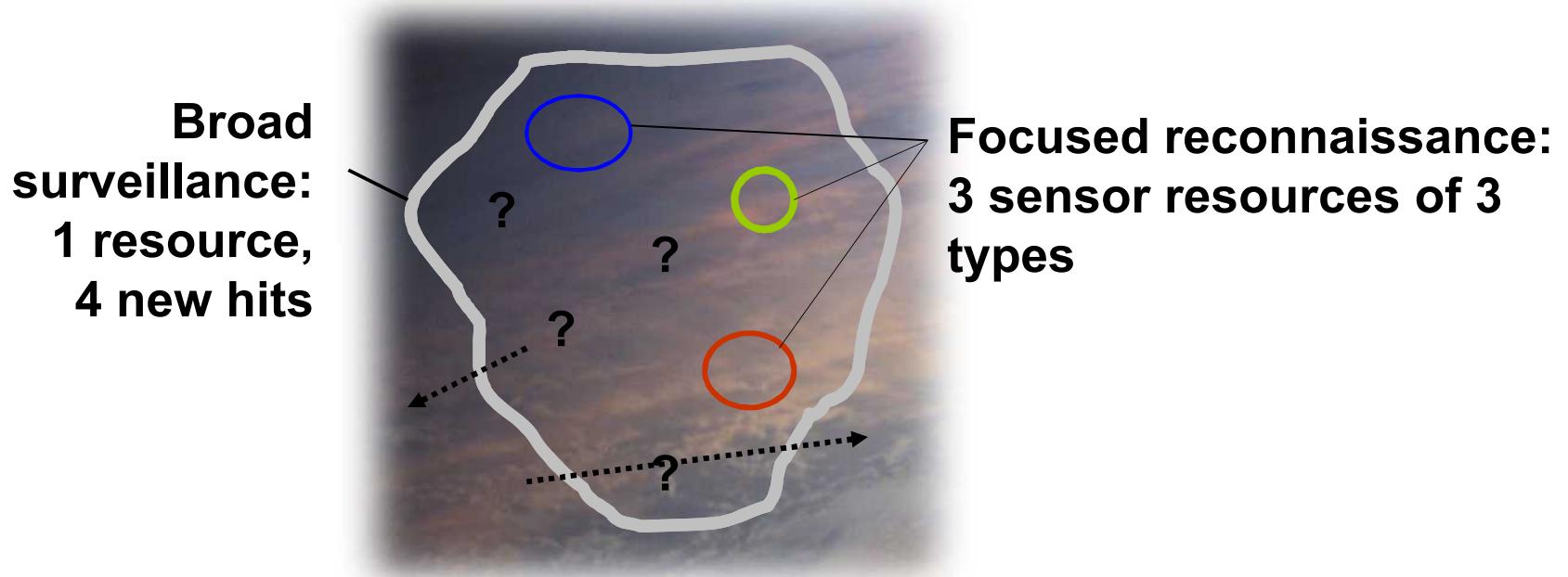


Sensors, Plans and Situations

Project: Collaborative Situational Awareness in Network-Centric Warfare

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Problem: Advanced sensors detect more ambiguous, fleeting energy sources than can be fully sampled



How do you choose when:

- Your team controls only one resource
- Each team speaks a different technical language
- You have an unknown time to act, probably minutes

Most sensor systems are designed to execute independent, *a priori* plans, not adapt to ambiguous situations at the **speed of need**

Approach: Empirically study live, cross-cultural sensor operations to understand collaborative situational awareness and reasoning

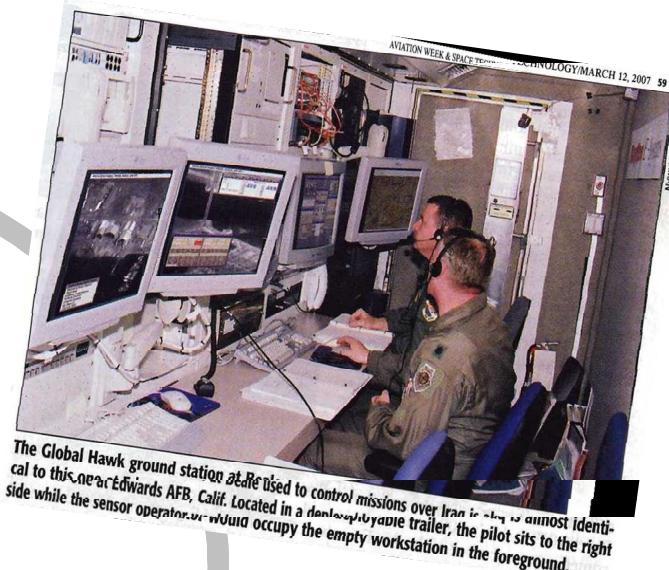


A pilot at Nellis Air Force Base, in Las Vegas, maneuvers a Predator in a mission on the other side of the globe.



**Face-to-Face
Voice loops
Text chat
Conferencing**

**Different spectra
Different systems
Different concepts
Different jargons
Different priorities**



The Global Hawk ground station at Edwards AFB, Calif. Located in a demountable trailer, the pilot sits to the right side while the sensor operator would occupy the empty workstation in the foreground.



Hypothesis: Ops dialogue is a psycholinguistic computation and control mechanism for sensor systems

What it does for sensor systems

Dynamically adapts sensitivity and selectivity to context

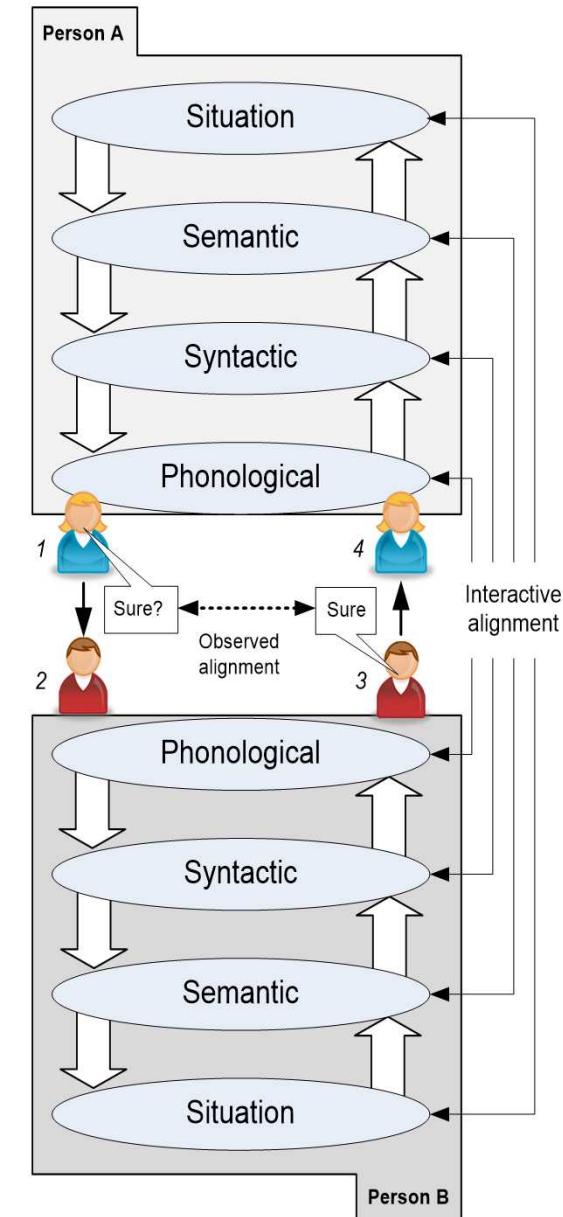
Avoids algorithmically correct but situationally inappropriate system states

How the mechanism works

Crews create linguistic common ground between cultures that is sociable and non-hierarchical

Exploits “meaningful imprecision” of natural languages, particularly prepositional phrases: near, during, with, etc.

Thinking aloud, opinions, hedging to reason about ambiguous situations and adapt



Results:

Psycholinguistic mechanisms have been observed, analyzed, and documented, laying a foundation for improved sensor decision support systems

Case studies are scientific yet accessible to crews, managers, engineers, and policy makers

Significance:

Analyses have been widely read and discussed inside the work domain

Known applications:

- Crew training and CONOP development
- Operations floor redesign project
- Operationally Responsive Space (ORS) program: training in cross-cultural operations
- Office of the Director of National Intelligence (ODNI): collaboration training and policy development

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