Common and Individual Situation Awareness from a Technical Point of View

Klas Wallenius

SAAB

Parallel and Scientific Computing Institute

Outline

- Situation Awareness
- WASP
  - Incl. demonstration
- Future development of Situation Picture

Situation Awareness

What you need to know when making decisions

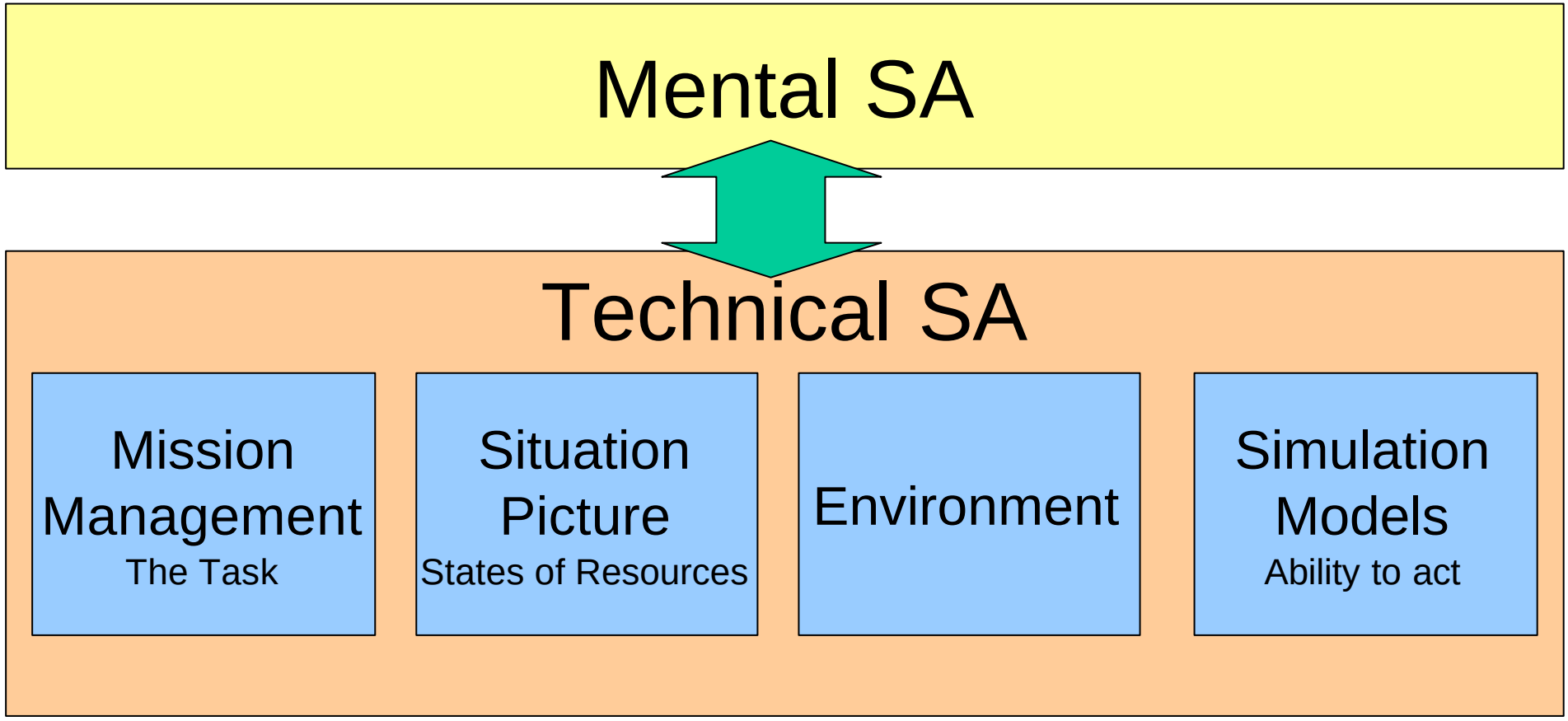
- The Task
- States of Resources
  - Entities that can be affected by your and other actors decisions
- Environment
  - Entities that cannot be affected by decisions
- Actor's possibilities to act
  - The relations between entities
- How much you know and could know
  - Knowledge is a set of hypotheses
  - "Information Awareness" - Precision, quality, and utility

Mental Situation Awareness

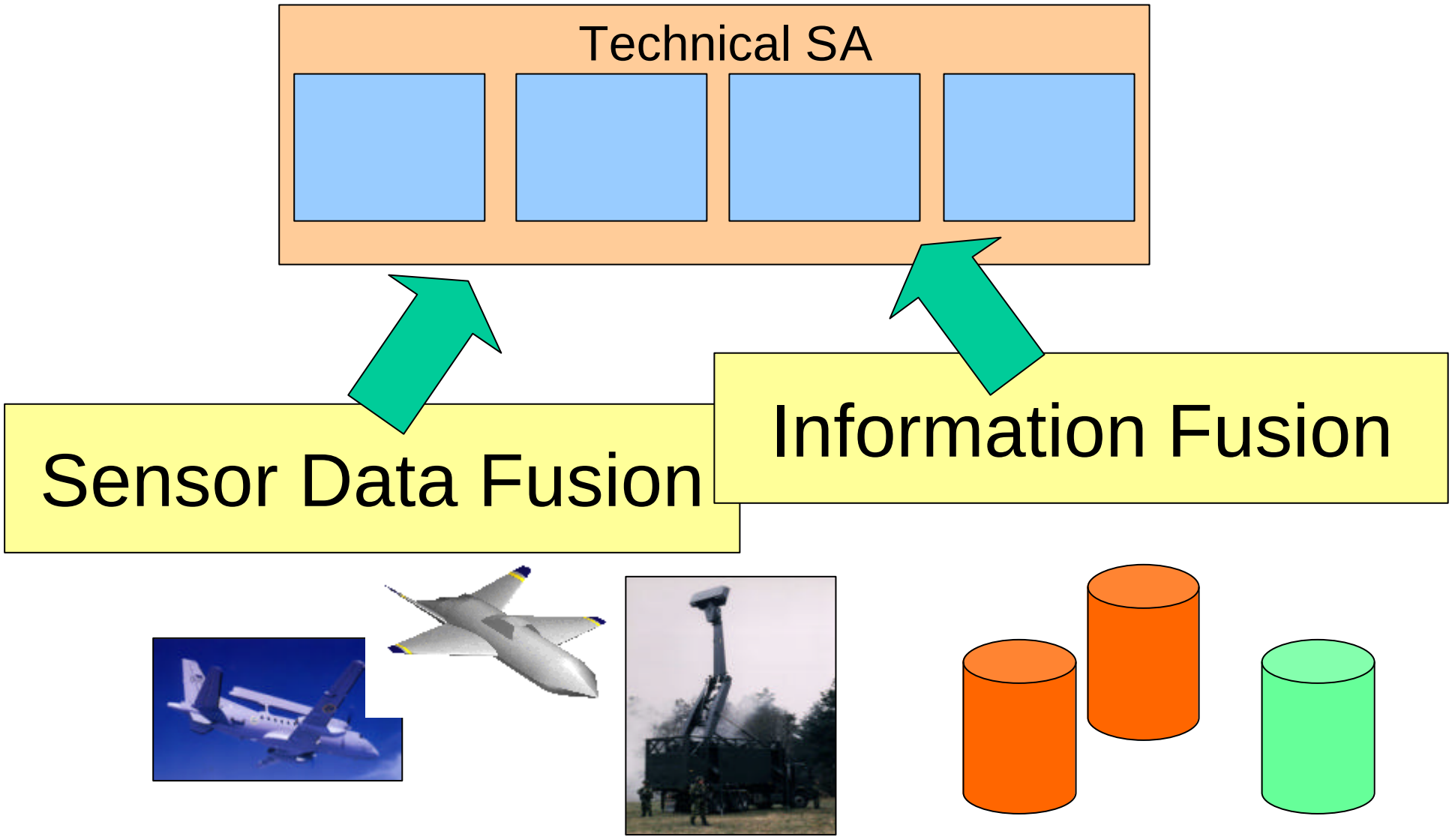
Mental SA

- **SA is mental and could be achieved without artifacts**

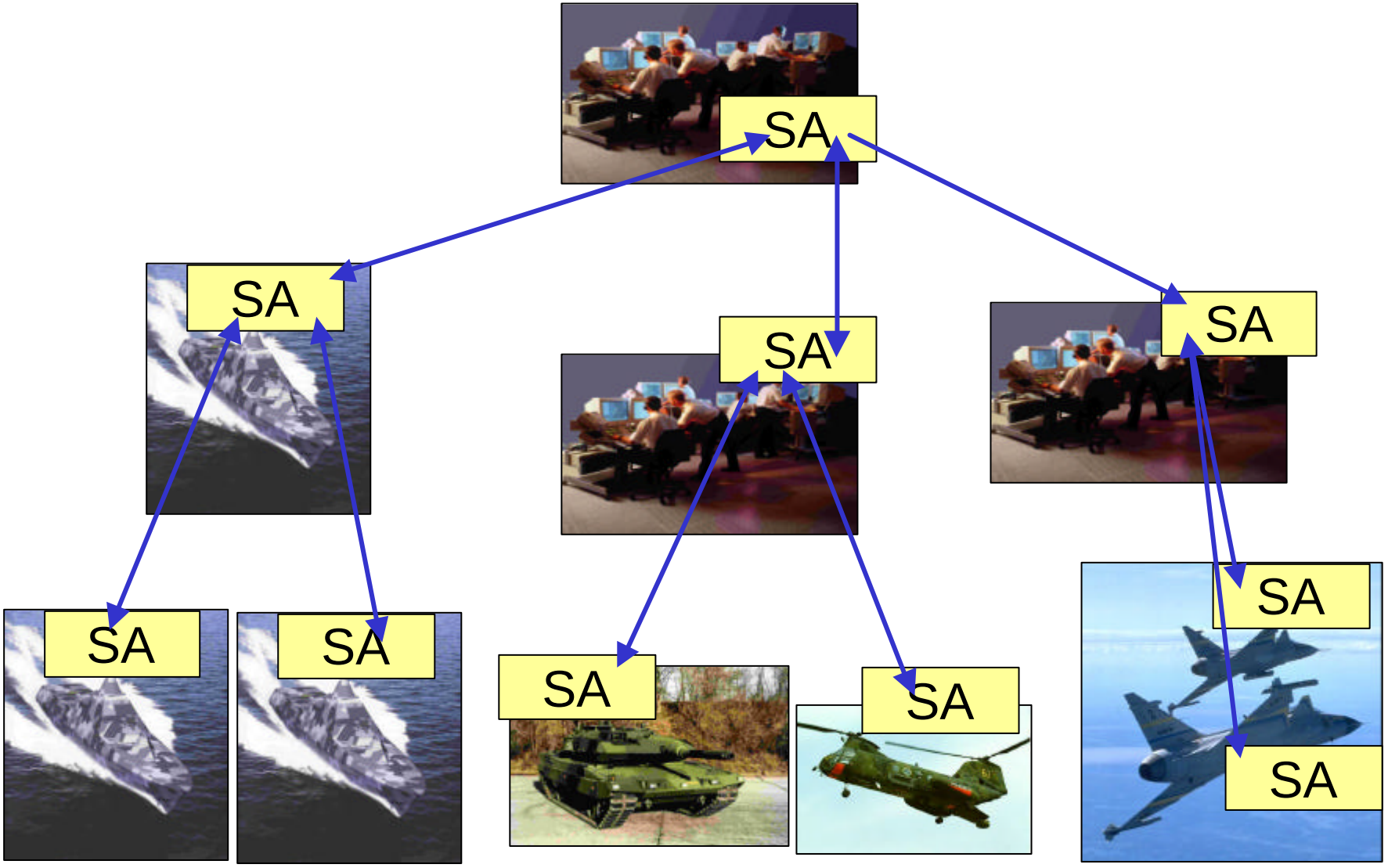
Technical Support for C2



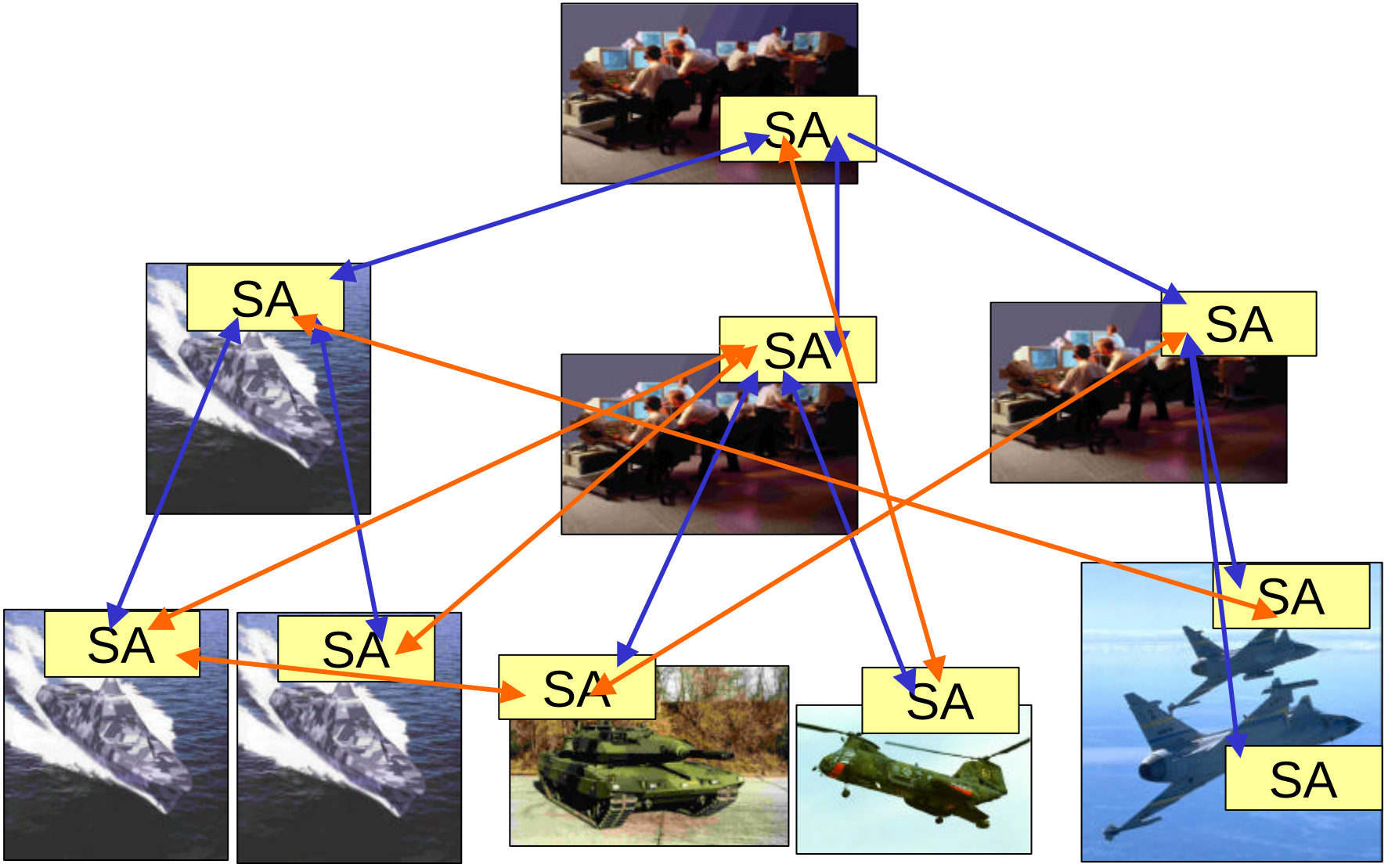
Achieving Technical SA



Common SA

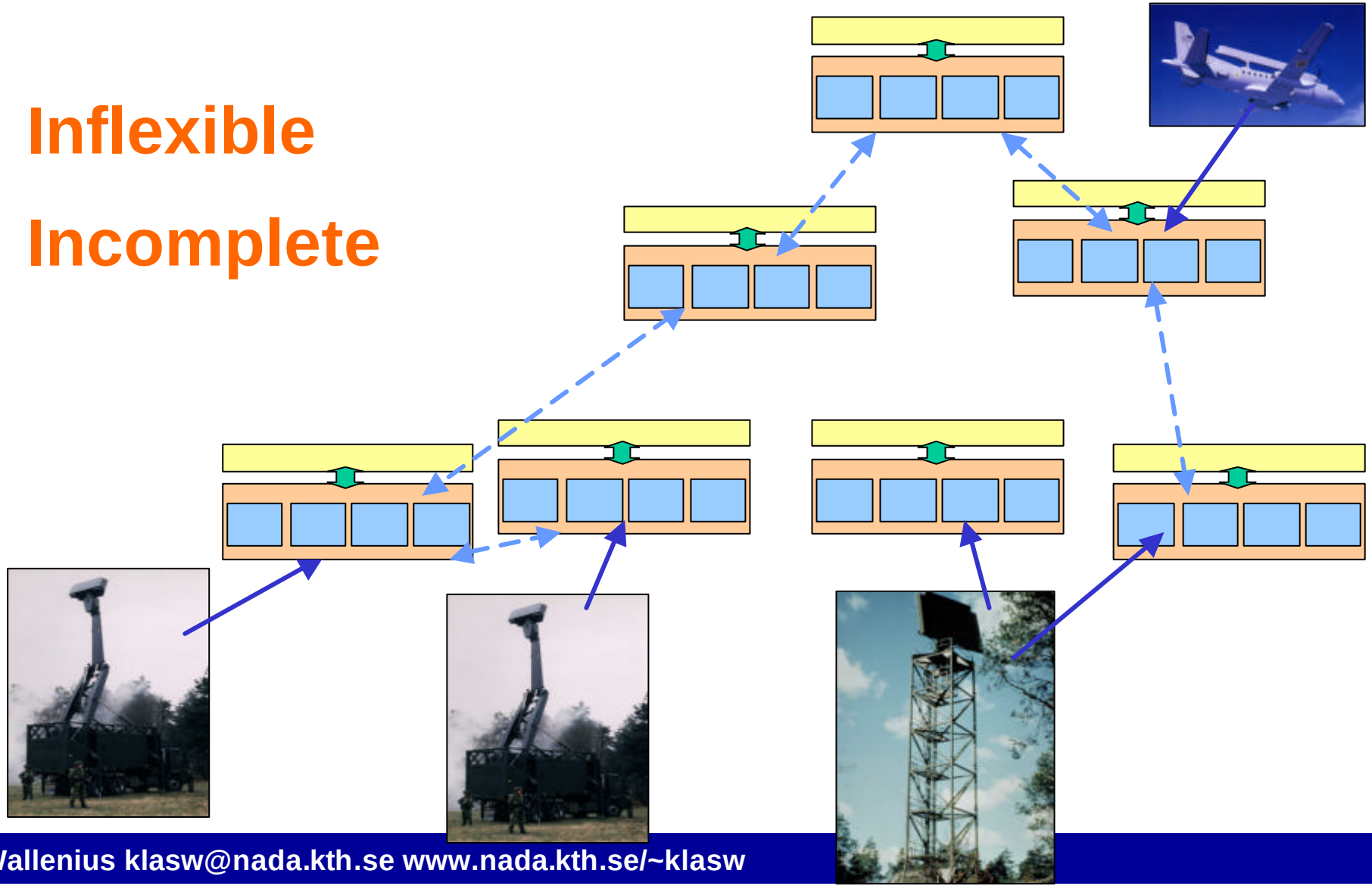


Common SA for NCW

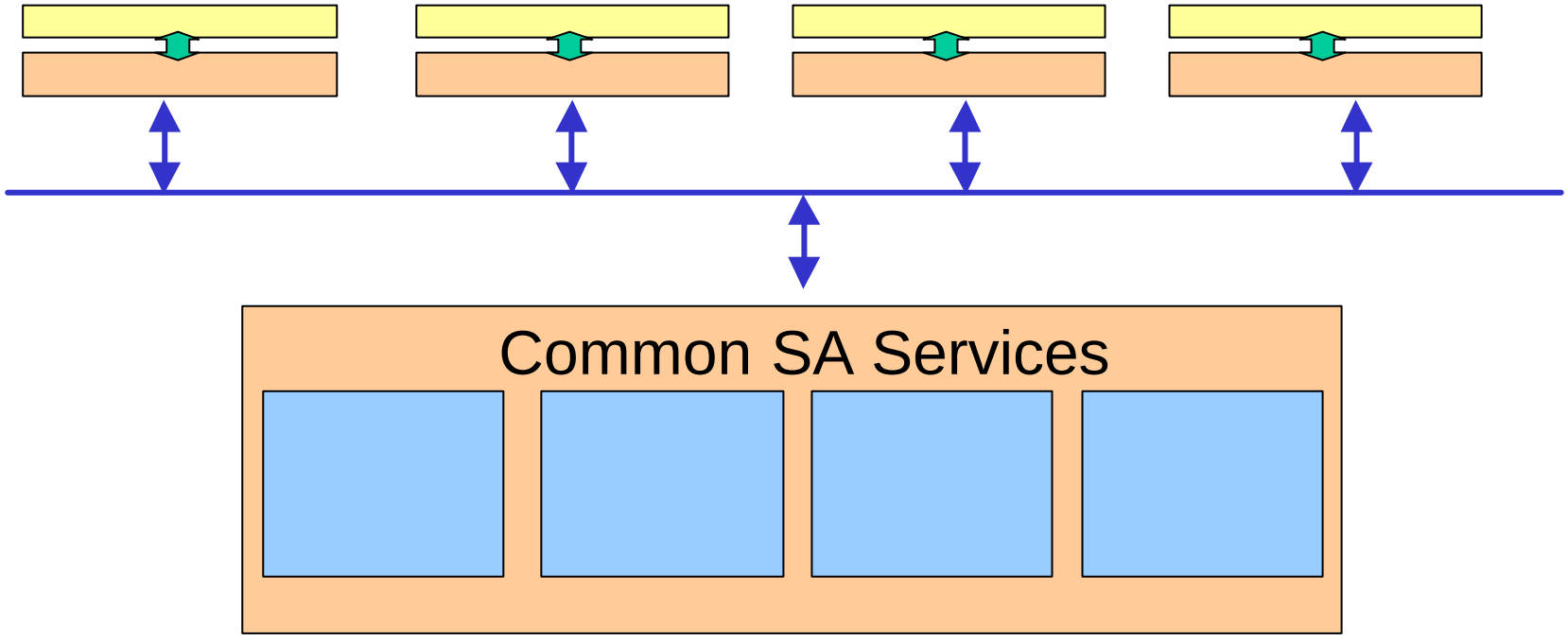


Platform Centric Support for Common SA

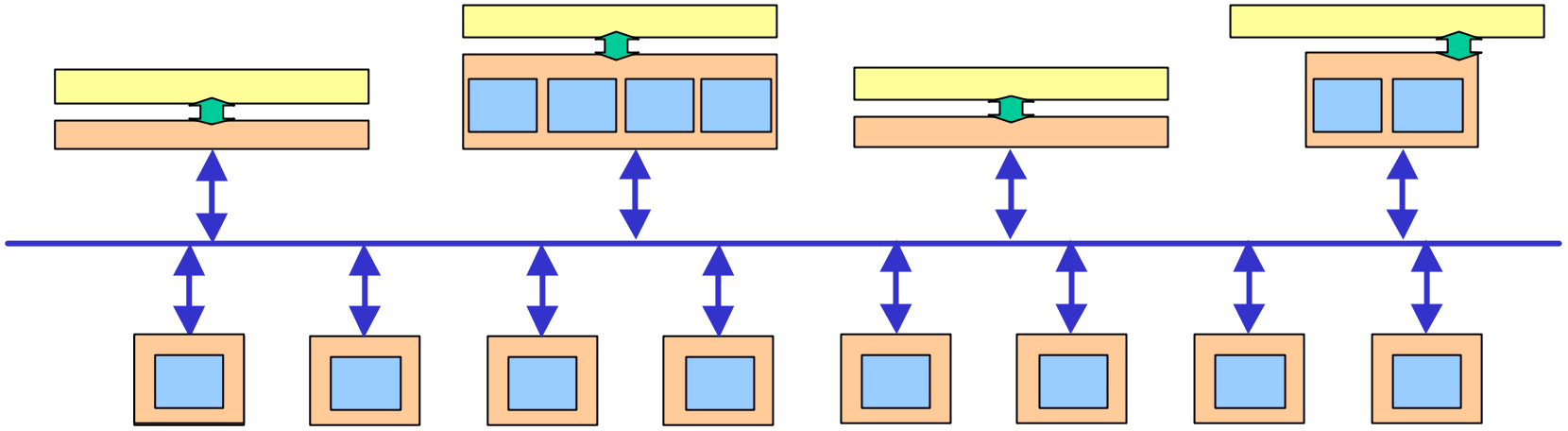
- Inflexible
- Incomplete



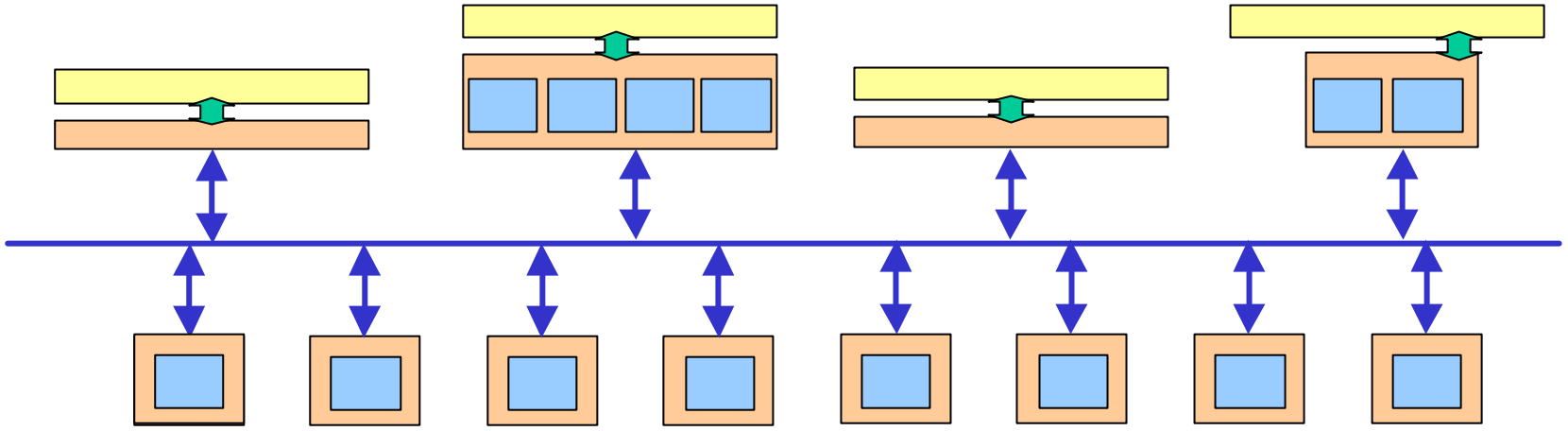
Common SA Services Logically Centralized



Common SA Services Physically Distributed



Common SA Services Physically Distributed

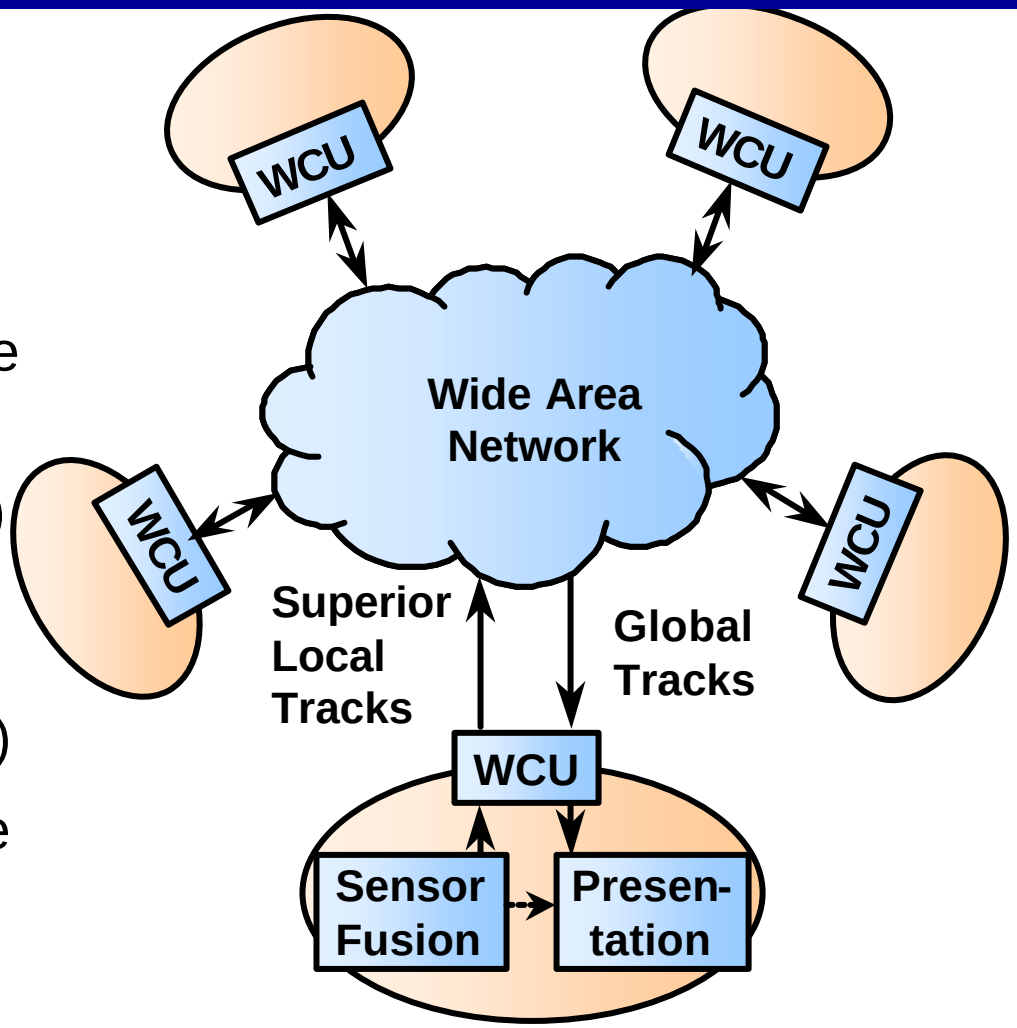


Requires means to

- Keep info consistent
- Keep robust to congestion and bandwidth fluctuations
- Keep track of resulting quality
- Select info relevant to the task at hand

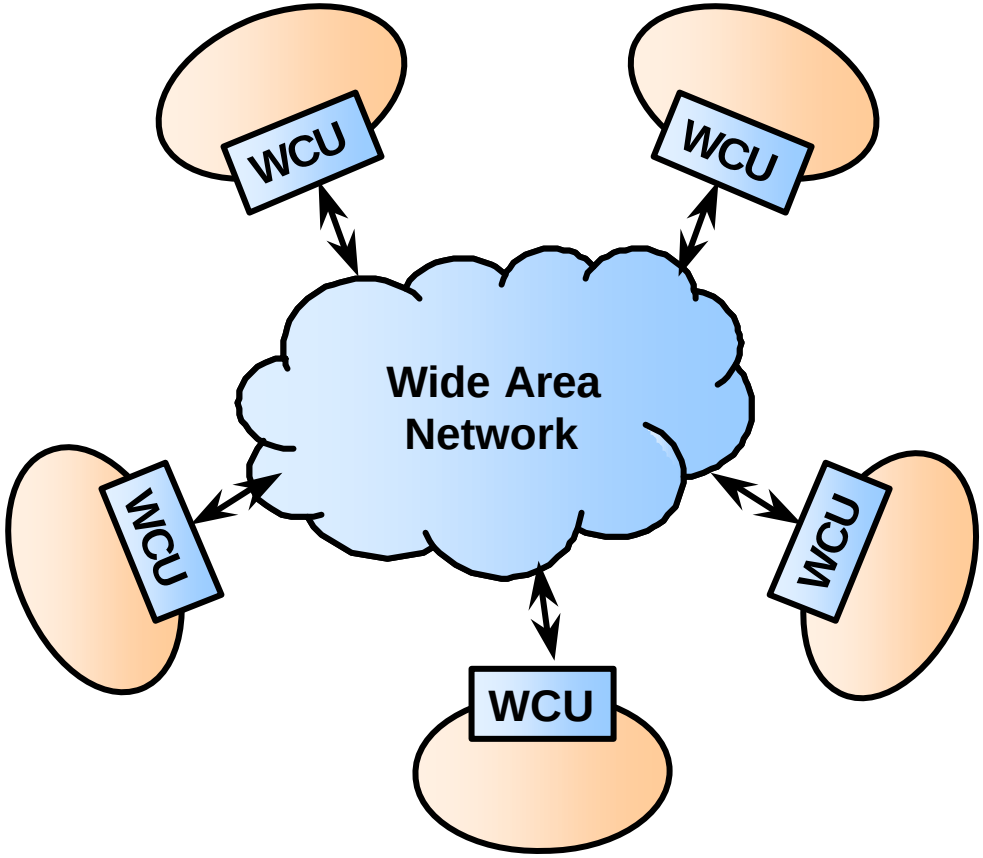
Wasp – The Wide Area Situation Picture

- Provides Situation Picture regarding moving targets
- A distributed and non-hierarchical infrastructure
- Based on commercial network technology (Internet)
- Encapsulated software for effortless integration - The WASP Correlator Unit (WCU)
- Scalable, robust and possible to reconfigure on the fly.



WASP Features

- Unique global target numbering
- No hierarchical verification of the situation picture
- On-line estimation of data quality
- Bandwidth control
- Encapsulated and distributed functionality
- Data selection with respect to geographical areas and data quality



Future Development of Situation Picture

- Include other kinds of objects
- Make relevant also for higher command levels
  - Hierachical Aggregation
  - Projects or activities rather than objects
  - Non map-oriented entities
  - Non map-oriented interaction

Future Development of Situation Picture

- Include also the future and the past
  - Save Situation Picture continously
  - Integrate with planning and simulation
- Information Awareness
  - Introduce general management of uncertainties
    - PDFs of hypothesises
  - Calculate relevant info

The End