Improving Civil-Military Information Sharing in Peace Support Operatons using a Service-Oriented Approach

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Presentation Structure

- Peace Support Operations (PSO)
- Communications obstacles in PSO
- Research Approach
- The Service-Oriented Computing paradigm
- Parallels
- Operational Process Modelling

Peace Support Operations

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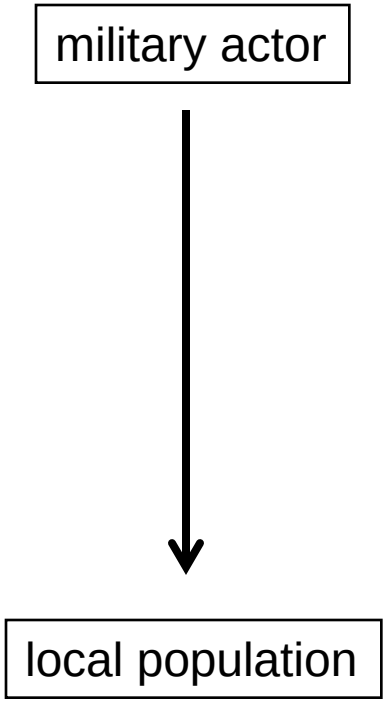
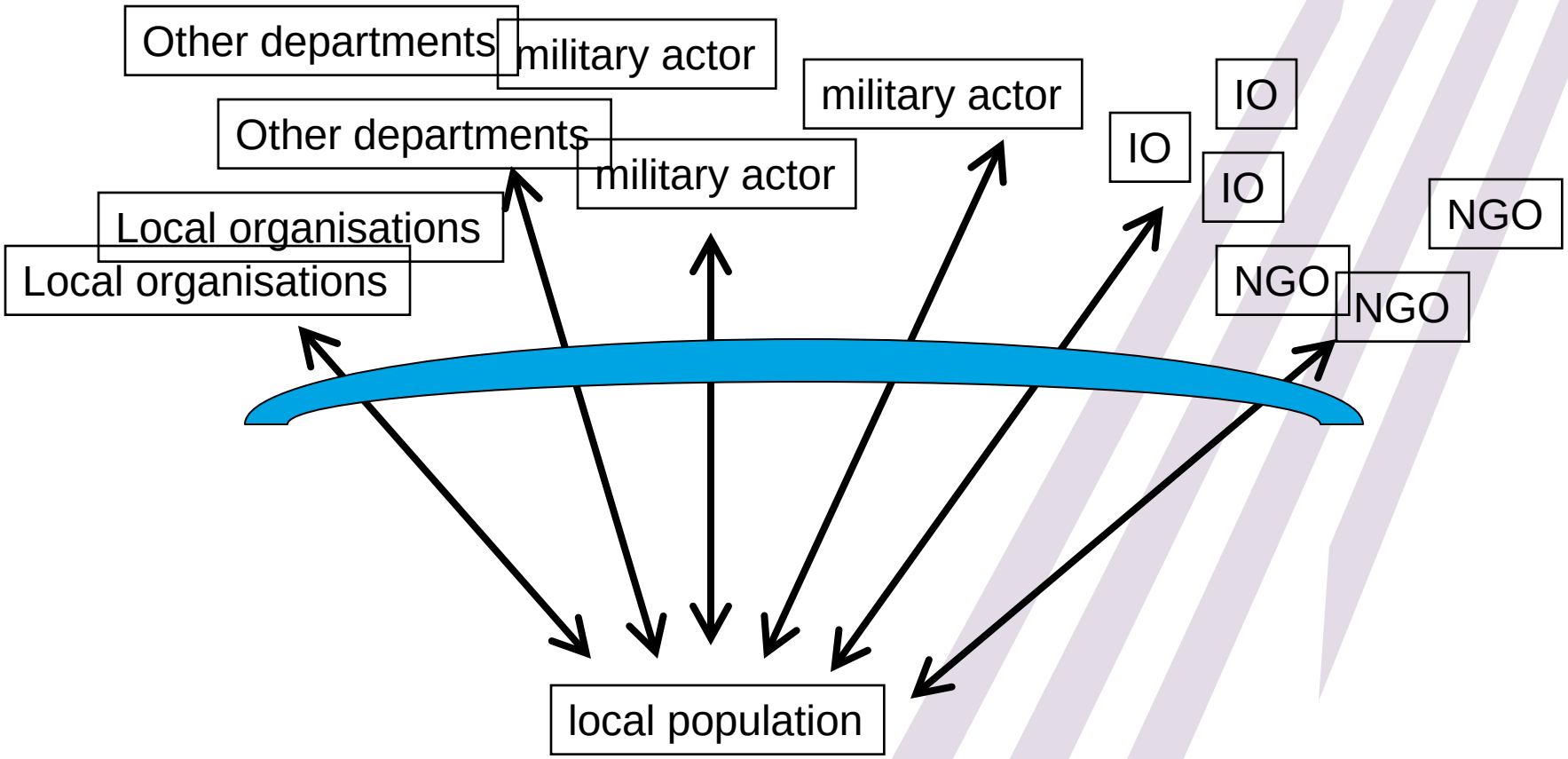


Peace Support Operations



Peace Support Operations

Information exchange required to:

- increase trust & understanding
- prevent interference
- improve safety
- prevent duplication of effort (scarce resources)
- learn from each other (don’t reinvent the wheel)
- allow coordination of activities

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Communications Obstacles (1)

Research (Rietjens et al, 2008 and others) describes following communications obstacles in PSO:

• "**principles gap**":
humanitarian organisations not wanting to be associated with military actors

• **information overload**:
many different civil organisations (IO's, NGO's) involved (in Kabul, Afghanistan more than 650 organisations!)

• **unstructured information**:
large amounts of unstructured information prevent analysis and processing

Communications Obstacles (2)

- **no institutional memory**:

civil partners become frustrated with lack of institutional memory of military partners, due to rotations and lack of information structure

- **heterogeneity in methods and approaches:**

different working methods of civil organisations, diversity of approaches and interpretations between nationalities, military rotations, units, staff members

- **no reliable communications:**

face-to-face contact necessary, but lack of time to share information in the field

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Research approach

• Information systems discipline: confluence of people, organisations & artifacts (*Hevner et al, 2004*)

• Two paradigms: behavioral science & design science

• Most research on PSO information sharing is behavioral science

• Should be complemented with design science research (technical approach to problem solving)

• Technology and behavior are inseparable: results of behavioral research to be taken into account

Research Aproach

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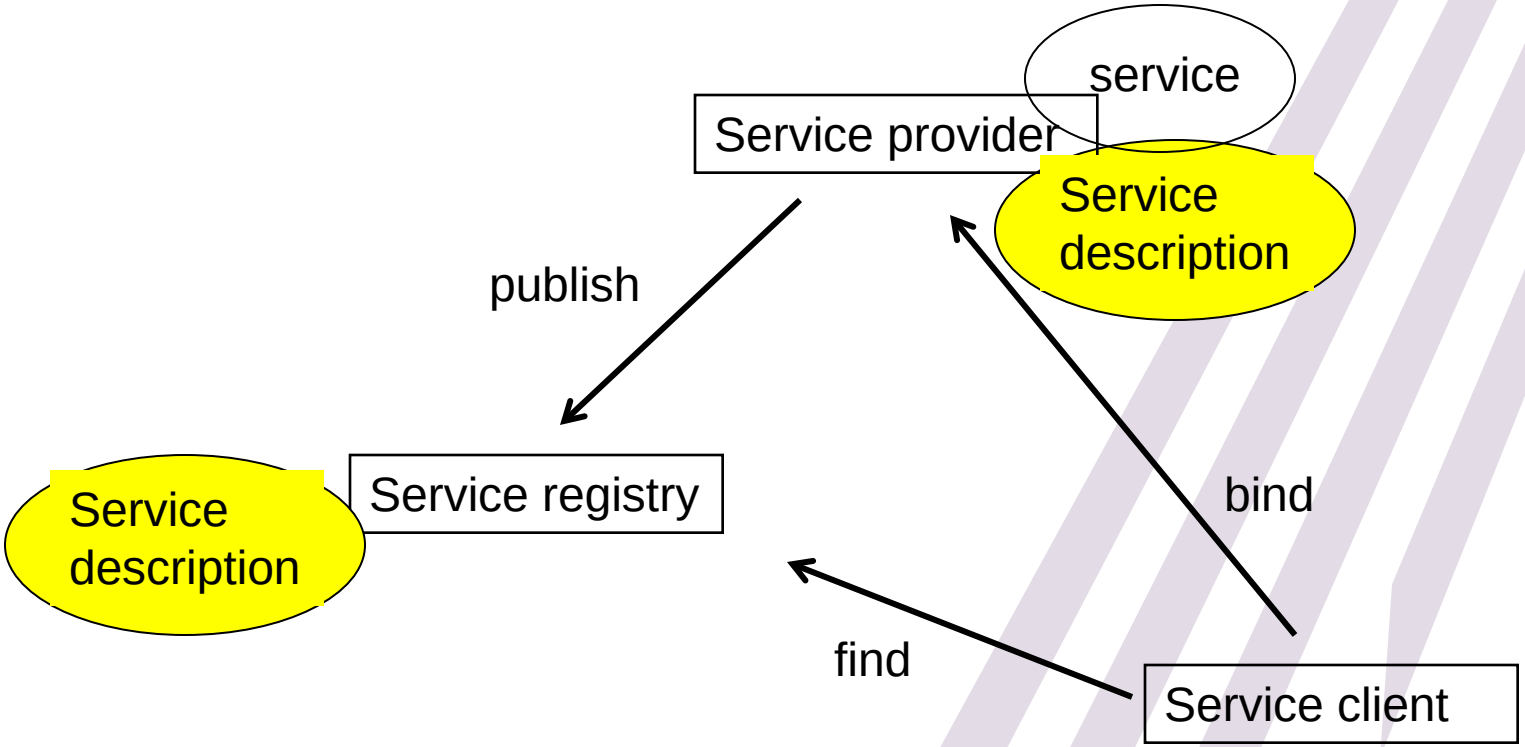
The Service-Oriented Computing paradigm (1)

Webservice: *a self-describing, self-contained software module available via a network, such as the Internet, which completes tasks, solves problems, or conducts transactions on behalf of a user or application* (*Papazoglou, 2008*)

Webservices:

- are loosely coupled software modules
- semantically encapsulate discrete functionality
- can be accessed programmatically
- can be dynamically found and included in applications
- are described in a standard description language
- are distributed over the Internet

The Service-Oriented Computing paradigm (2)



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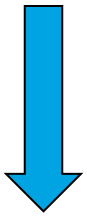
Parallels (1)

Observation:

The wide range of different organisations, loosely cooperating in PSO, each making its specific contribution, resembles the cooperation of different software services, loosely coupled, to support a business process.



Initial research question:

Could information exchange between civil and military partners in PSO be improved by applying the principles and technologies of Servce-Oriented Computing?

Parallels (2)

SOC might solve observed communication obstacles:

• *bridging the "principles gap"*:
loose coupling of services, representing organisations, could provide necessary separation

• *preventing information overload:*
keeping track of capabilities, availability, activities and selection of partners could be supported / automated using service orchestration technology

• *providing structured information*:
publication of services description in standardised language could ease & automate information handling

Parallels (3)

• *providing institutional memory*:
Public registry of services descriptions allows for easy reference

• *reducing heterogeneity:*
agreement on the use of web services as standardised way to promulgate information on organisation, capabilities, availability etc could reduce heterogeneity

• *alleviate limited communication capabilities:*
use of services technology allows more efficient use of scarce communication facilities than unstructured telephone use and e-mailing

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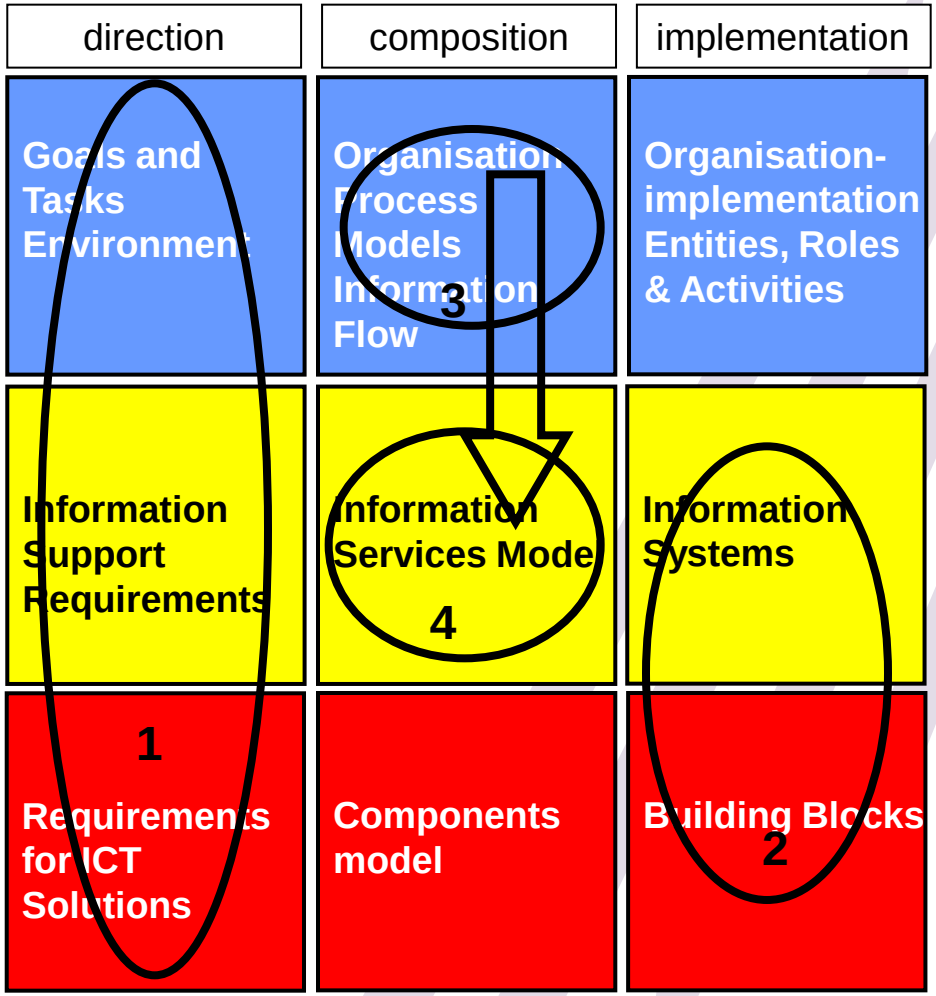
Operational Process Modelling (1)

Architecture products:

1. **C4I principles**
2. **C4I standards & technologies**
3. **Operational Process Model**
4. **Operational Services Model**



Defensie

Operational Process Modelling (2)

Previous work on C4I architecture for NL Armed Forces:

• used Boyd's (1996) OODA loop as modified by Grant (2005): Rationally Reconstructed OODA model (OODA-RR) for Internal Process View

• included Naturalistic Decision Making Process (Klein, 1998): repository of prototype situations as "knowledge representations"

• initially modelled Joint Air Defence process

Research question: OODA-approach only applicable to C2 processes or to all operational processes incl PSO?

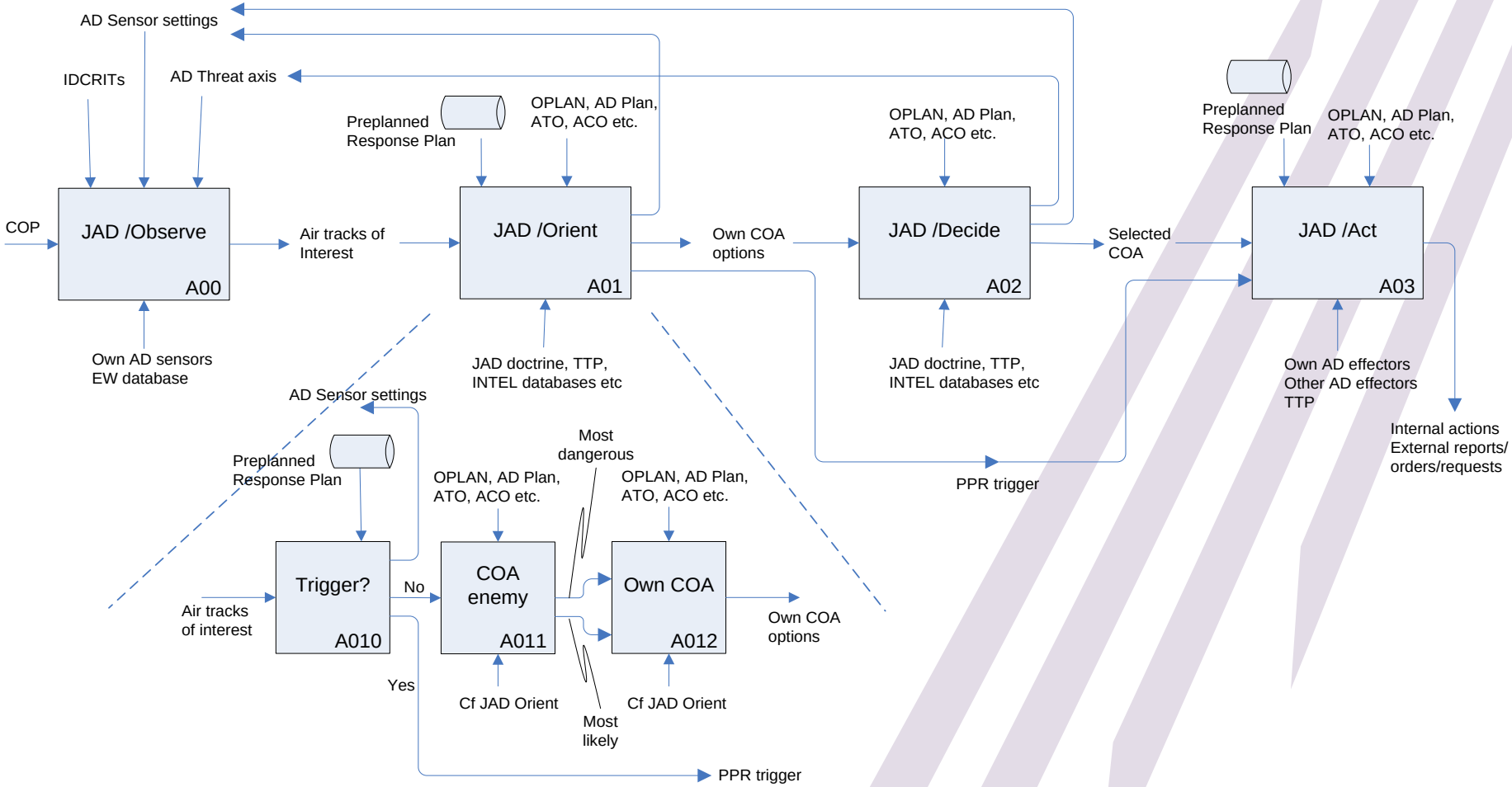
Operational Process Modelling (3)

Defensie

Operational Process Modelling (4)

Defensie

Operational Process Modelling (5): JAD process OODA-RR flow diagram



Operational Process Modelling (6)

Defensie

Any questions?