

**Implications of Information Flow  
Priorities for Command and Control of  
Interorganizational Network-enabled  
Defence**

12th ICCRTS

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# Network-enabled Defence (NED)

NED describes how future networks with improved and integrated information and weapon systems can enable Command and Control of Joint and Territorial operations and enable Interagency Collaboration in securing vital functions of the Finnish society in Total Defence (Kaskeala 2005)

## *Joint and Territorial Operations*

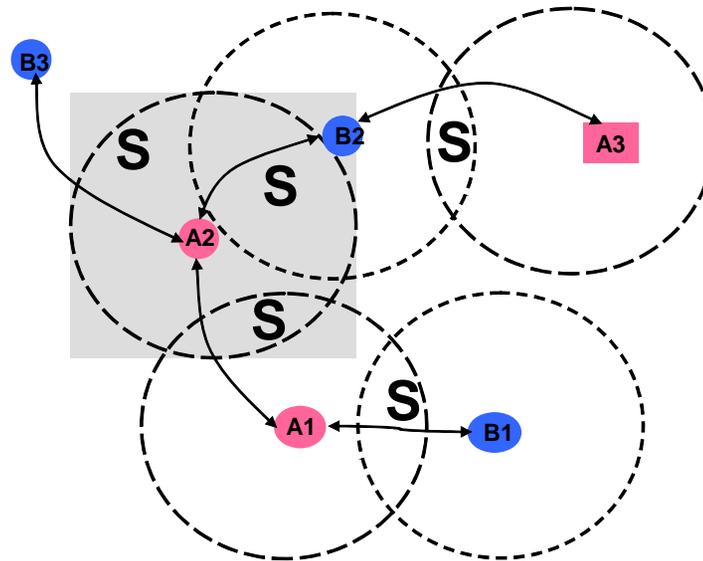


## *Interagency Collaboration in Total Defence*

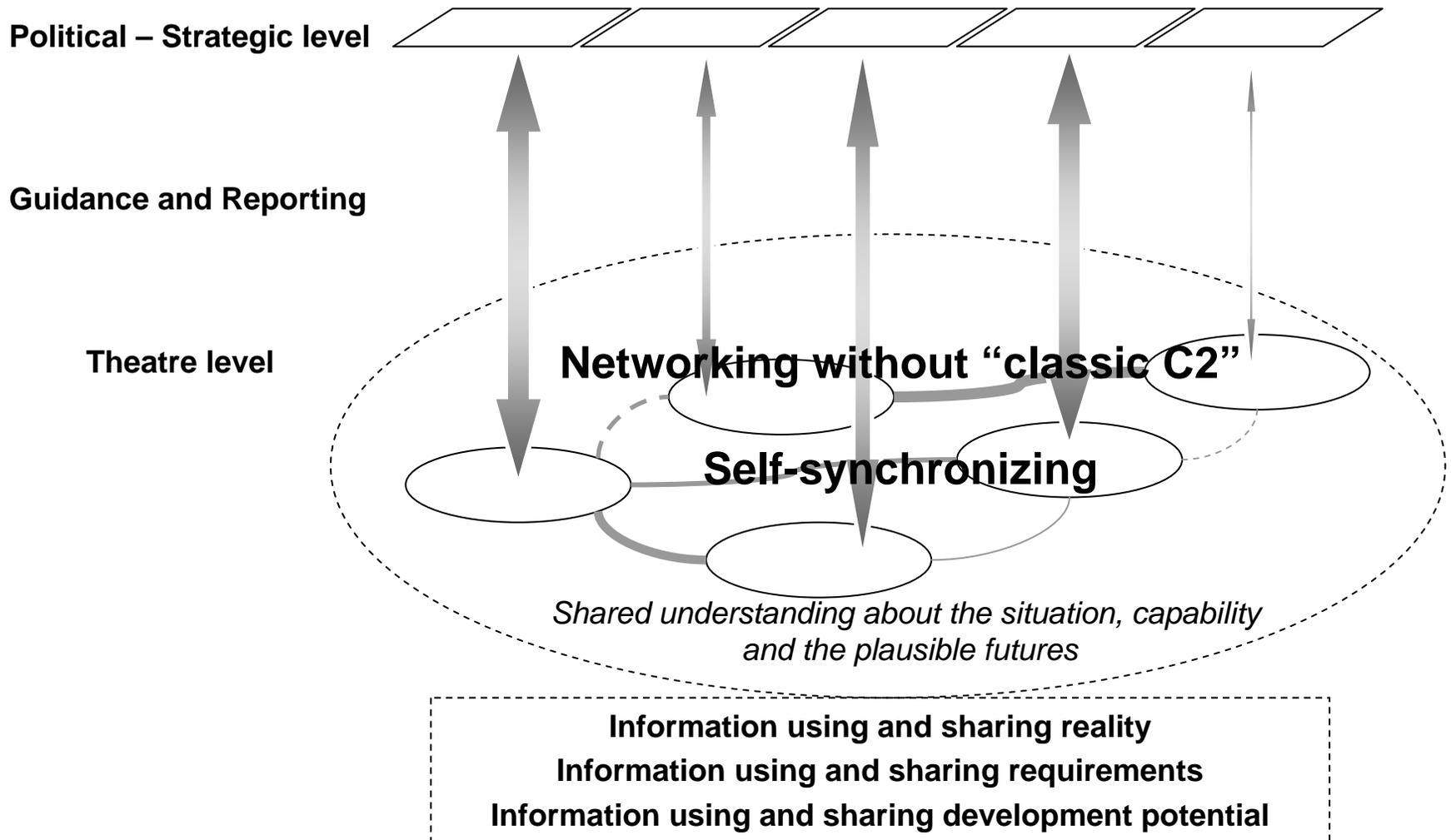


# Goal

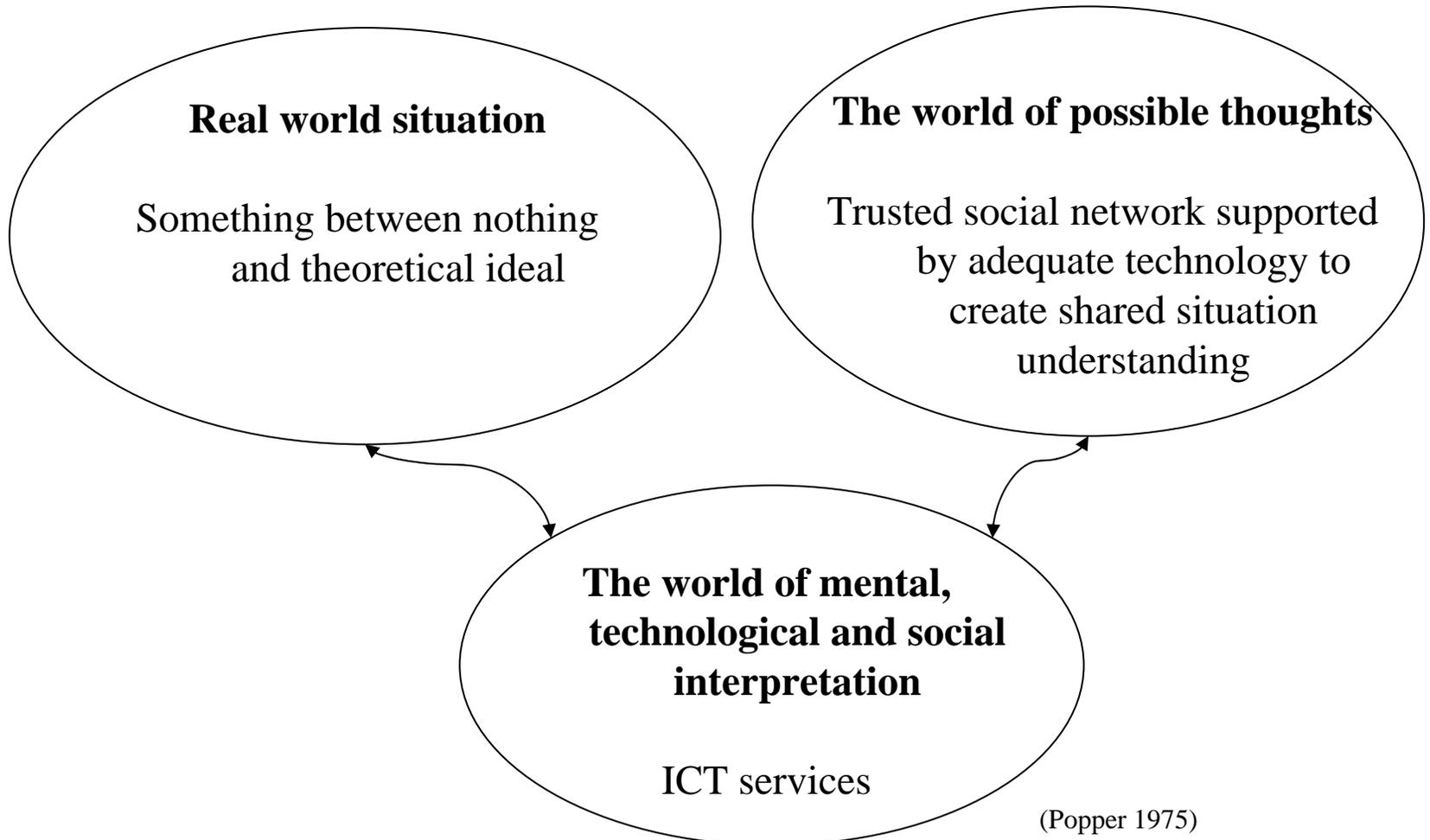
Increase understanding about the interorganizational command and control approach and structure of NED  
– *information* point of view



# Organizations on the Theater – the Management Challenge

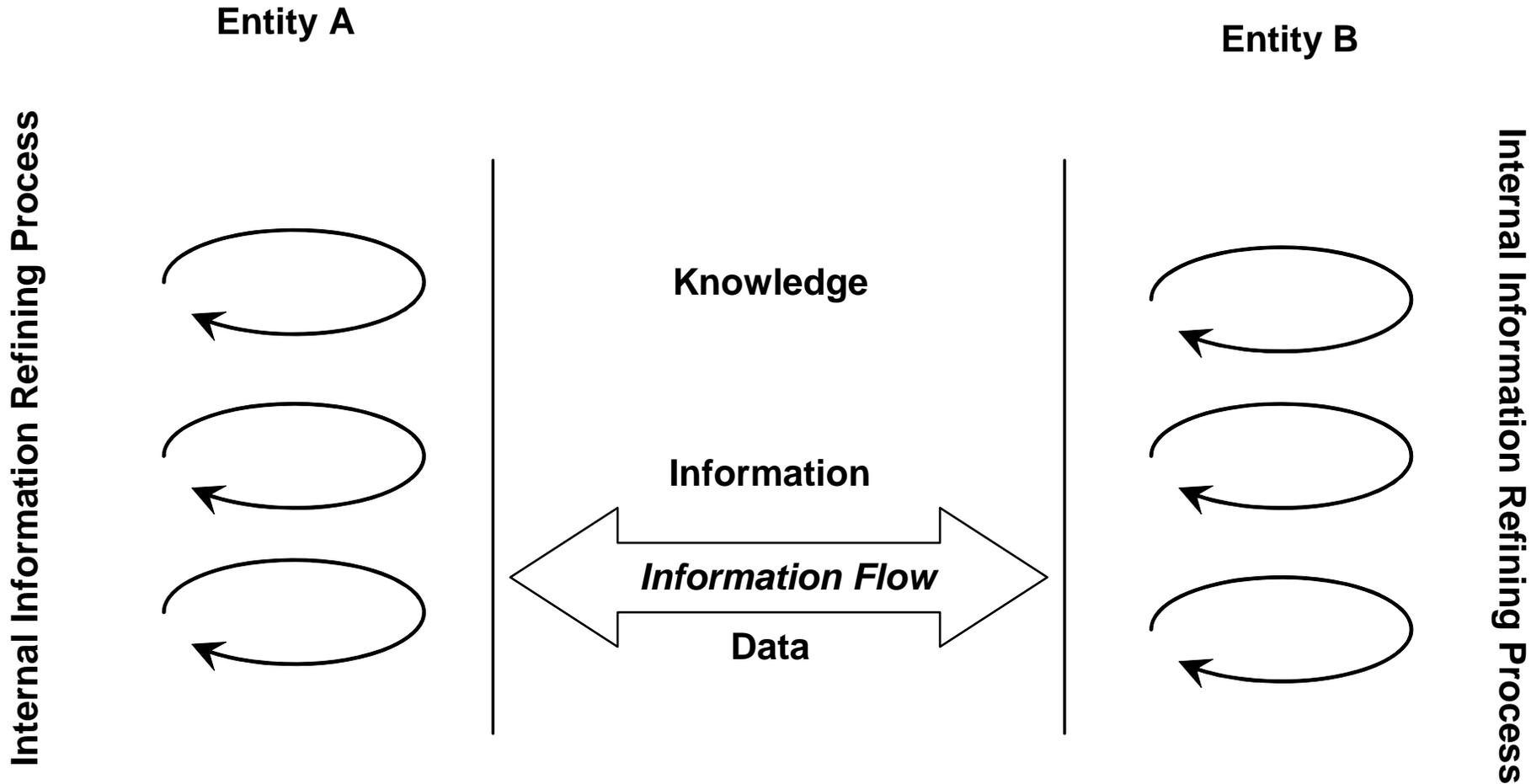


# The Frame



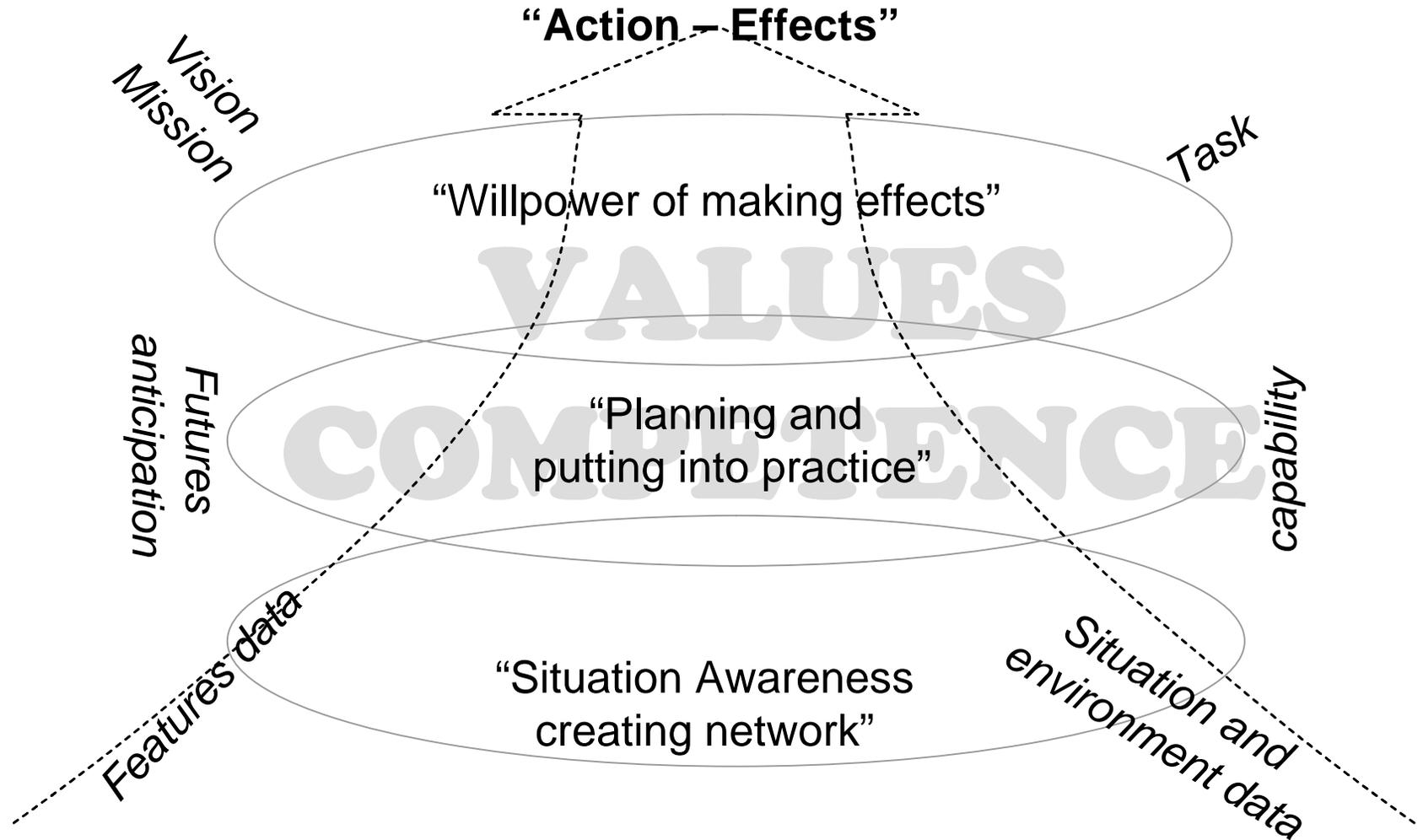
(Popper 1975)

# Information Flowing Concept



(Kuusisto 2004, based on Maier 2000)

# Situational Awareness Information Model



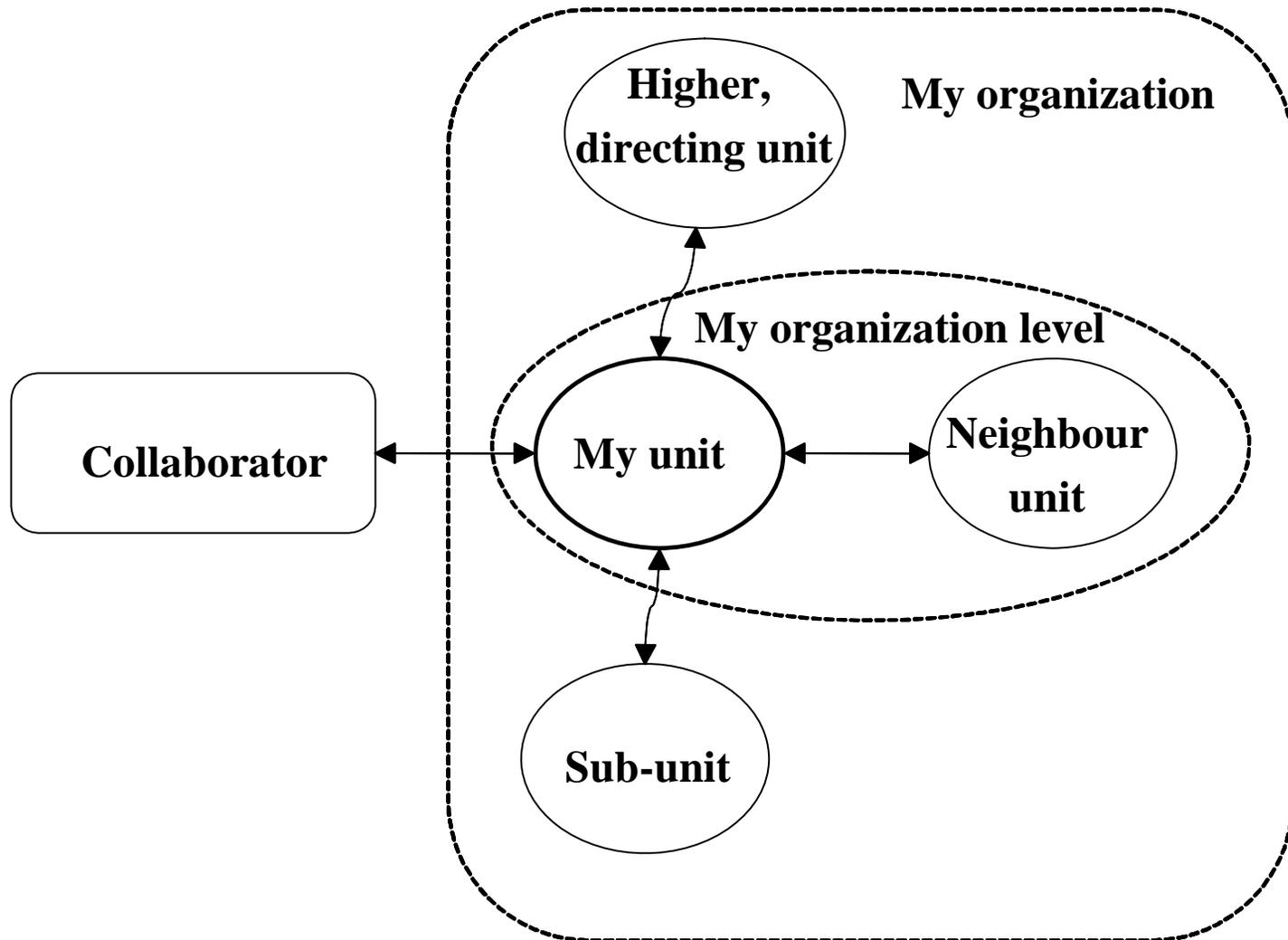
# Structuring by General Information Categories

<i><b>Expectations, Experiences</b></i>	<i><b>Conclusions</b></i>	<i><b>Input facts</b></i>
<b>Mission, vision</b>	<b>Decision</b>	<b>Task</b>
<b>Foreseen end states</b>	<b>Alternatives</b>	<b>Means</b>
<b>Anticipated futures</b>	<b>Possibilities</b>	<b>Resources</b>
<b>Action patterns</b>	<b>Restrictions</b>	<b>Environment</b>
<b>Features</b>	<b>Event model</b>	<b>Events</b>

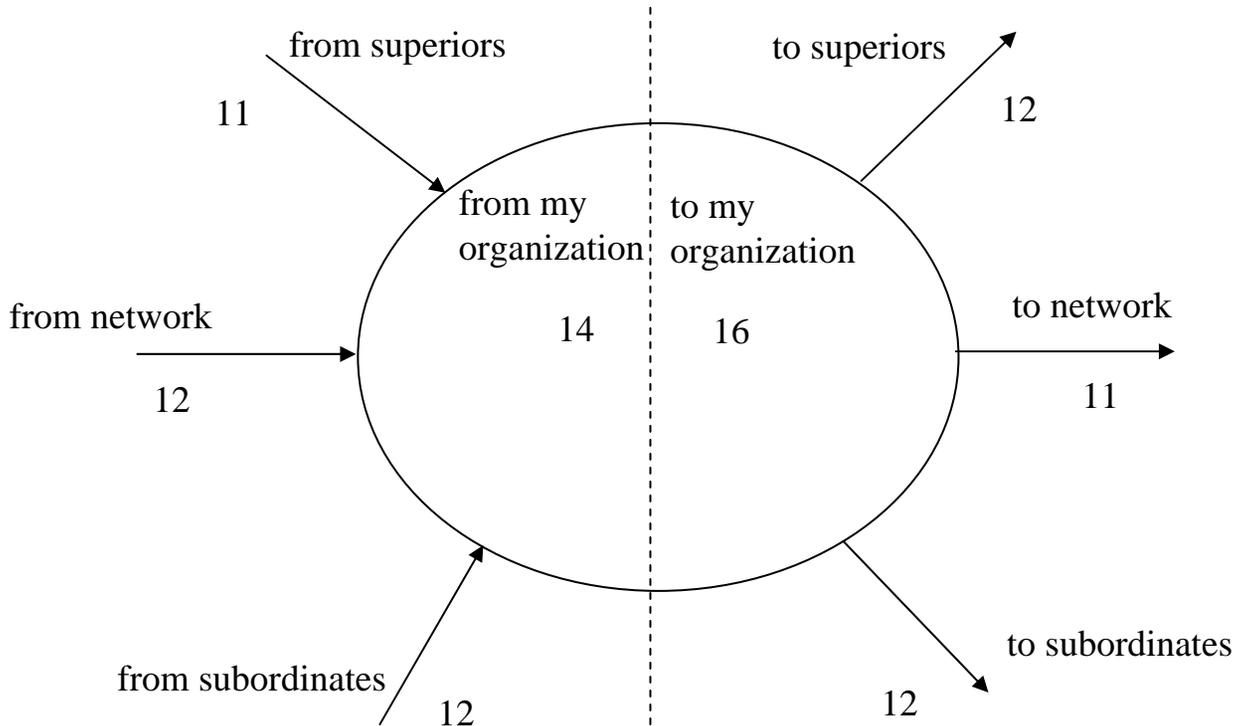
# Empirical Study

- *Topic*: Situation awareness in NED
- *Target group*: Governmental organizations in Finland in 2005
- *Aim*: To collect information for improving interorganizational collaboration services and processes of NED
- *Focus*: The changes in situation awareness when moving from normal situations to those involving disruptive events and exceptional conditions (e.g., as associated often with crisis situations).
- *Method*: Semi-structured interviews, 11 people representing governmental authorities in the area of domestic and international security or tightly related to these actors were interviewed

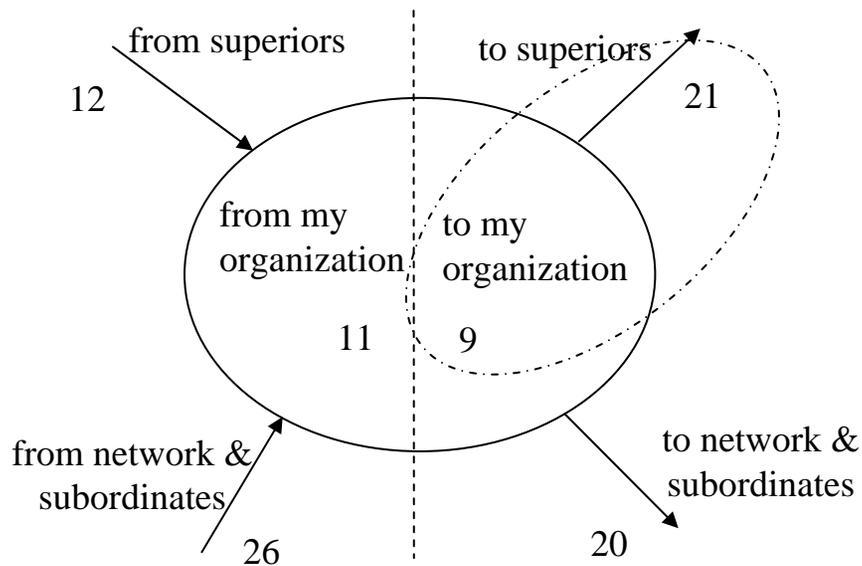
# Empirical Study - Environment



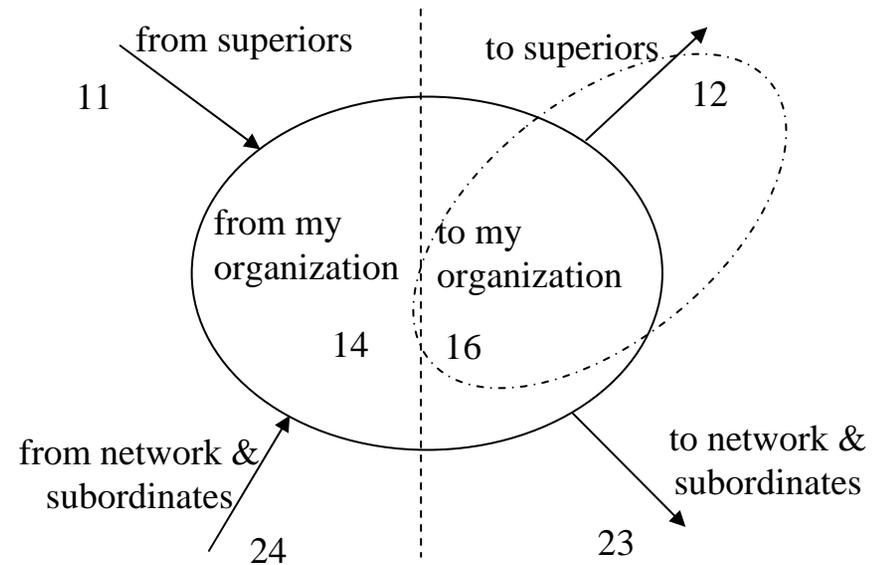
# National Administration: Directions of Information Flows



# Comparison to Brigade level



Brigade



National administration

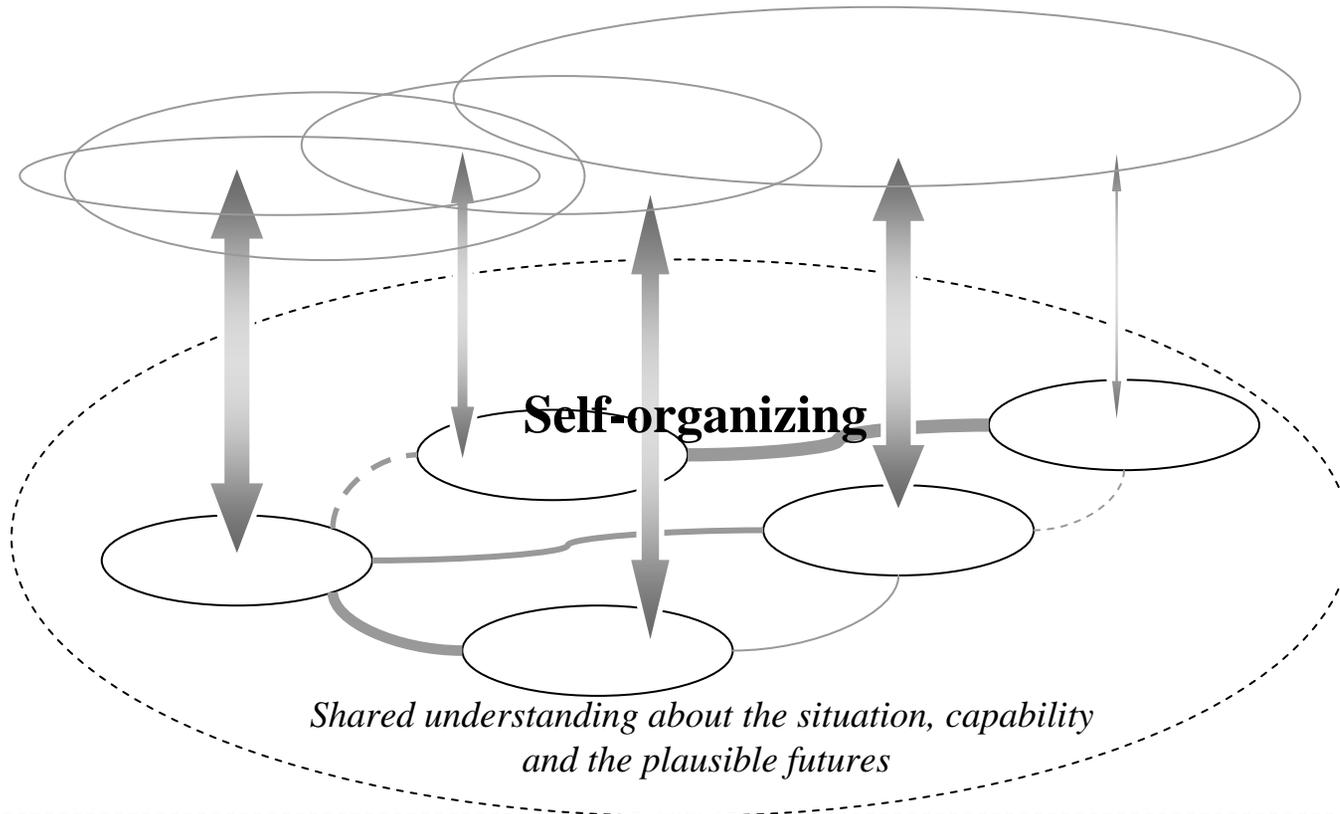
# Results

- Collaborating partners are often considered only as a source of information
  - In a well functioning collaborating the information flows are equally multilateral amongst all collaborating parties in NED
- Three functional subsystems are identified
  - Events: An actor collects event and environment data, combines them with existing norms, refines them and delivers the results to superiors as well as uses the results as basis for further activities
  - The forming of basis for decision-making: an actor analyses and implements tasks, joins information about resources and means to information about anticipated futures and foreseen end-states as well as forms possibilities to act
  - Decision-making itself and activities needed for implementing decisions: analysis of tasks and decision-making as well as dissemination of orders and instructions and reporting of implemented activities

# Information Flows to be Shared in NED

- Shared information flows should include mission and vision, anticipated futures and foreseen end-states, resources and means, as well as information about tasks (Kuusisto et al. 2007).
- Sharing of these information flows supports the collaborating organizations to form virtual strategic level.
- Synthesized information of the virtual strategic level is needed when each collaborating organization is forming its alternatives to act internally.
- When alternatives to act are formed, an organization is having sufficient information capability to proceed with making and implementing decisions.

# Virtual Strategic Level of NED

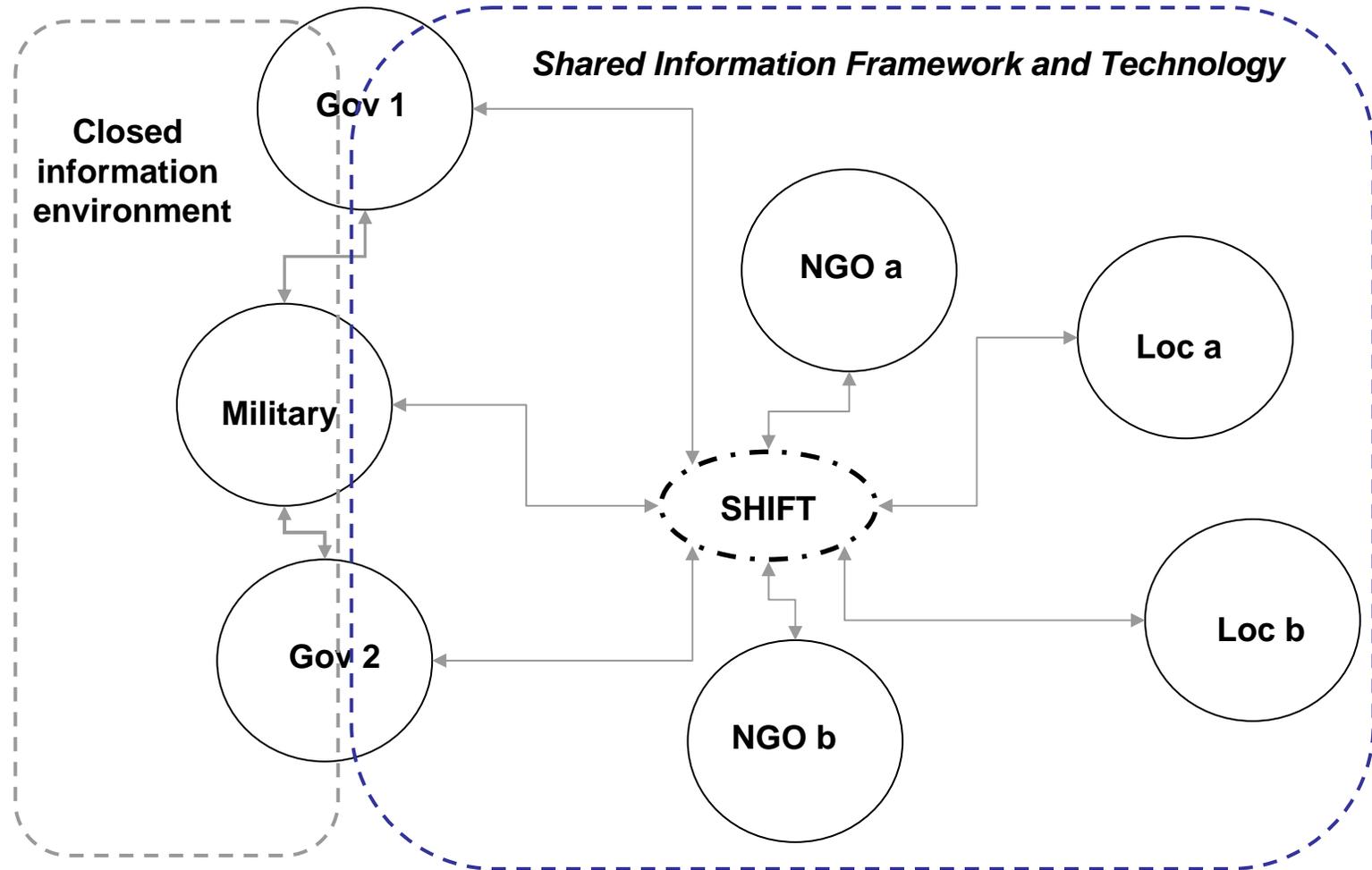


**Every actor has to gain general situational understanding**  
**Information about resources and means need to be shared – capability**  
**Plausible futures – alternatives to act – acting**

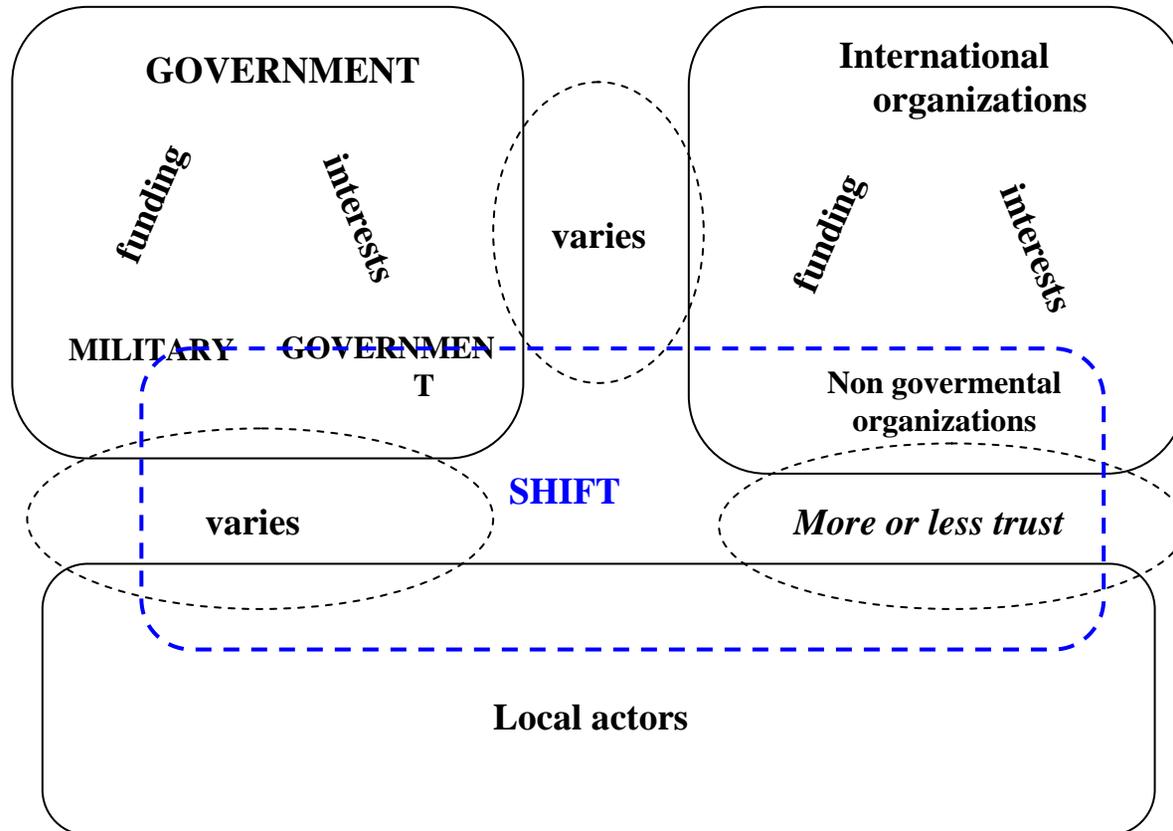
# Shared Information Frame and Technology (SHIFT)

- The theoretical framework referred and the empirical results reported have been applied to develop SHIFT concept and technology in Finland
- Relates to Multinational Experience 5 (MNE5) challenge: “Information sharing among nations, organizations, and agencies is currently insufficient to support a comprehensive approach. MNE5 products and solutions related to this challenge will be primarily policy, process, organization, and technology-oriented.”

# SHIFT



# Organogram and Trust



# Reference

- Kaskeala, J, (2005) *The Finnish RoadMap to Network Enabled Defence*, presentation at Royal United Services Institute (RUSI) conference, September 21, 2005.
- Kuusisto, R. (2004) *Aspects on Availability, A Teleological adventure of information in the lifeworld*, Edita Prima Oy, Helsinki. 124p.
- Kuusisto, R. (2005) *Tilannekuvasta täsmäjohtamiseen, johtamisen tietovirrat kriisinhallinnan verkostossa* (From situational picture to precision management, information flows of management in crisis management network), Liikenne- ja viestintäministeriön julkaisuja 81/2005. 29 p. In Finnish.
- Kuusisto, T., Kuusisto, R., Nissen, M., (2007) “Implications of Information Flow Priorities for Interorganizational Crisis Management”, In Armistead, L. (edited) *Proc. of ICIW2007, 2nd International Conference on Information Warfare and Security*. Monterey, USA, pp. 133-140
- Maier, R. (2001) *Knowledge Management Systems, Information and Communication Technologies for Knowledge Management*, Springer-Verlag. Berlin, Heidelberg, New York.
- Popper, K. (1975) *Objective Knowledge, An Evolutionary Approach*, Oxford University Press.
- SHIFT workshop on 14.-16.11.2007, Helsinki. (Results are based on a breakout session, where attendees were discussing about organizing and trust of various actors on crisis management situation.)