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A Customizable Maturity Model for assessing Collaboration in Disaster Management

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Background and objectives of the research

- In Finland preparedness for disaster management and collaboration capabilities are trained constantly in search and rescue (SAR) and information and communications technology (ICT) exercises
- Shared situational awareness (SSA) is a prerequisite for successful collaboration
- Geographic information and spatial methods can play an essential role in building a SSA
- Human agents' core competencies are at high level - **challenges exist in collaboration and in building a SSA** (lack of communication, sharing of information, lack of trust)
- The evaluation of the results of an exercise is often a qualitative report that describes the successes and aspects that should be improved in the collaboration
- More **quantitative and measurable methods** are needed

Background and objectives of the research

- Maturity models (MM) describe capabilities that are required in collaboration
 - Include key areas and sub-areas
 - Five maturity levels describe the different stages of collaboration
- Existing MMs are too generic
 - NATO Network Enabled Command and Control Maturity Model¹
 - Emergency Management Capability Maturity Model²
- Objectives of the research:
 - How to develop a customizable MM?
 - How to assess the maturity in an exercise?
 - How to present the results?

The method was developed and tested in two case studies

- The SAR exercise: A passenger airplane crashed into an airport
 - A temporary SAR organization has a pre-defined structure and common processes (rescue authorities, police, medical care services, airline, airport, Red Cross, cities)
 - Contents of the developed MM was based on literature, on objectives of the exercise and on feedback from previous exercises
 - Key areas: roles and structures, processes, common ground and tools, communication and interaction, competence and general goal
 - A quick maturity assessment was performed at the end of the one-day exercise

The method was developed and tested in two case studies

- The national ICT exercise: Serious disturbances in information systems and networks
 - Organizations from the local, regional and national administrative levels of several ministries and from private sector
 - Contents of the developed MM was based on literature, on the Security Strategy for Society and on interviews of participating organizations
 - Key areas: management of disturbances, creations of situation awareness, support provided by legislation, communications
 - Three quick maturity assessments were performed
 - Pre-assessment by the steering and evaluation group
 - In the first day and in the second day by all participants

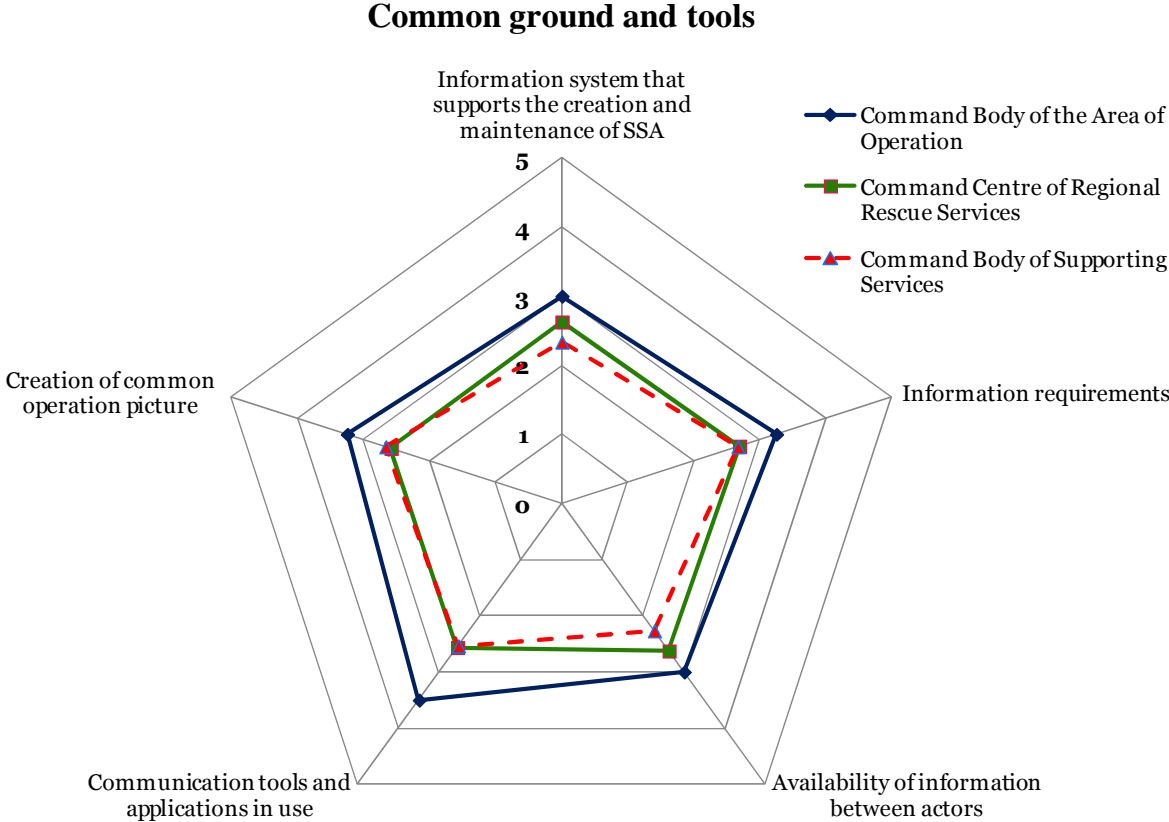
The SAR exercise: The five maturity levels of collaboration

Maturity levels	Description
1 Separate	Everyone acts on the basis of his own needs. Solo actions.
2 Learnable	A little collaboration on the basis of common SAR processes. Requirements for collaboration have been taken into account to some extent in the preparedness plans of organizations.
3 Established	Operations of organizations have been developed on the basis of common exercises. Actors value both the training and the practicing of collaboration. The active planning, development, and measurement of collaboration and common SAR processes are progressing.
4 Proactive	The actors perceive both the whole and the different phases of a SAR operation. The cooperation is systematic. The actors execute the most important goals of collaboration through common SAR processes.
5 Optimized	Collaboration produces the desired results without distractions. The functioning collaboration is an ideal for other corresponding organizations. Complete collaboration.

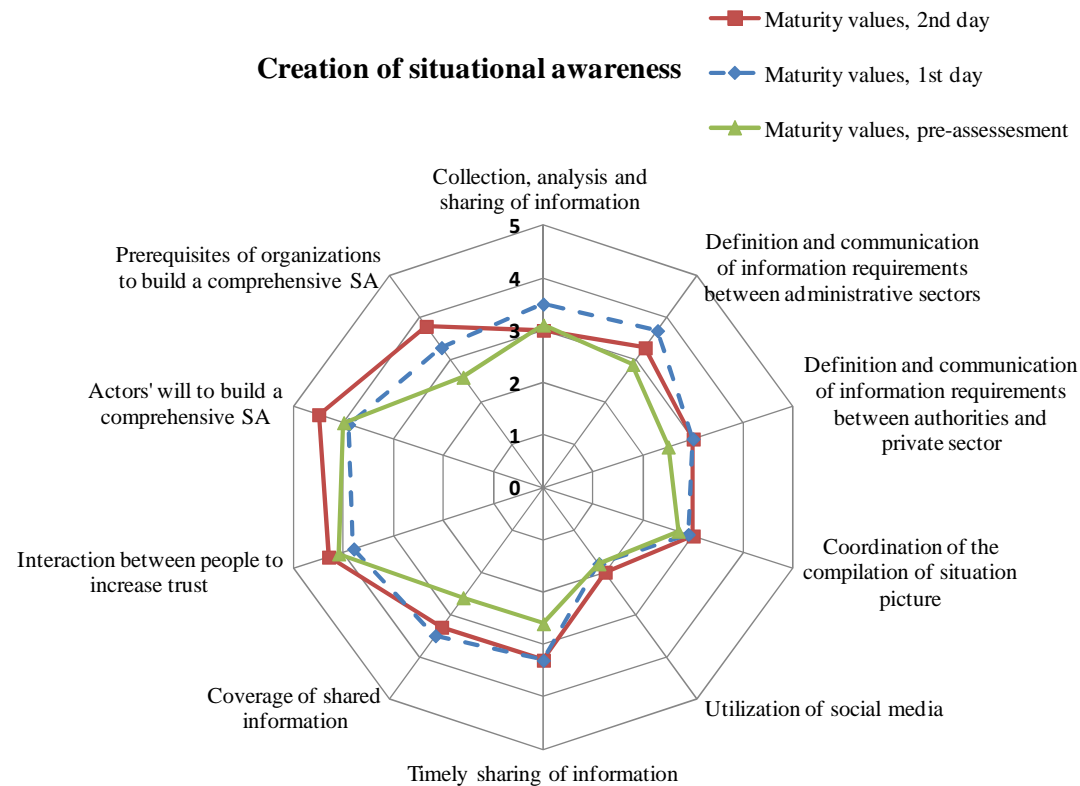
The national ICT exercise: Collaboration can mature from separate actions to appropriate cooperation

Maturity levels	Description
1 Separate actions	The sharing of information and interaction between organizations is very limited. The need for common processes of cooperation has been identified.
2 Starting cooperation	Internal cooperation in administrative sectors. The ensemble does not work yet. Formal interaction and sharing of information. Low intersectoral shared situational awareness.
3 Coordinating	Adequate instruction enables networked cooperation to take place. Both formal and informal interaction and exchange of information. Shared situational awareness available only at the top management level.
4 Adaptable, capable of changes	Organizations are capable of reacting together in a fast and agile manner to new situations. Dynamic information exchange ensures good shared situational awareness and understanding. Intersectoral cooperation between authorities and private companies at all operational levels.
5 Appropriate cooperation	Cooperation produces the desired results without distractions. Availability of critical information that is needed for actions is excellent. Optimal sharing of resources and responsibilities.

The SAR exercise: The maturities of Command Bodies vary



The national ICT exercise: Organizations performed better than was expected



Development process of a customized MM and maturity assessment

1. *Selection*

- A pre-study and a decision of the best existing MM

2. *Customization*

- The identification of key areas and sub-areas and description of the maturity levels

3. *Assessment*

- The maturity assessment in the exercise

4. *Visualization*

- The visualization of the results

5. *Analysis*

- The analysis and utilization of the results
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Conclusions

- Descriptive names of maturity levels should highlight the actual starting level of collaboration and the highest maturity level that is realistic to achieve
- A two-phased maturity assessment gives valuable information about the agility of the collaboration
- Clear visual presentations of the strengths and progress in the collaboration can motivate human agents for further improvement
- The questionnaire and data collection methods need further development