Adaptation as an Element in the Design of Emergency Response Systems

Kurt Petersen
Kerstin Eriksson
LUCRAM

LUNDS TEKNISKA HÖGSKOLA
Lunds universitet
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Kurt Petersen

- Lund University – Professor, Risk Analysis and Management
- President of LUCRAM, Lund University Centre for Risk Analysis and Management
Lund University

- Founded 1666
- 41,000 students
- 2,500 ph.d. students
- 5,500 employees
- 581 professors
- 8 faculties
- 5,160 MSEK turnover
Emergency Management in Sweden

- New legislation on extreme events
- Swedish Emergency Management Agency
- Implementation national, regional and local
- Research
New legislation

- Risk and Vulnerability analysis
- Capability/Ability Assessment
- Training and Exercises
International disasters

- Terrorism, New York, London, Madrid
- Flooding, Central Europe, Asia, Sweden
- Earthquakes, South Europe, Asia
- Forest fires, South Europe
- Wind storms, Europe, Sweden
International disasters

- Accidents at sea, Estonia, Herold of Free Enterprise
- Accidents at land, Bhopal, Seveso
- Diseases, pandemci, bird flu, SARS, MCD
Case 1: Railway Safety

- EU Research Project
- Rule Management
- Case studies in four countries
- Goal: to improve safety management, rule management processes
- Weaknesses, mistakes, etc.
Case 1: Railway Safety

- Semi structured interviews
- Vertical approach
- Findings in order to improve rule management
- Implementation on-going
Case 1: Railway Safety

- Findings
- Violation of rules continuously
- Impractical, wrong, inappropriate, ineffective, missing, necessary
- Low reporting vertically
Case 1: Railway Safety

- Findings II
- Utilise domain specific knowledge
- Utilise prior experience
- Utilise general competence
- Adapt appropriately
Case 2: Storm Gudrun

- Storm in Sweden in 2005
- Severe damage in a certain region
- Long term effects
- Emergency management inappropriate
- Event investigation
Case 2: Storm Gudrun

- Semi structured interviews
- Vertical and horizontal approach
- Findings in order to improve emergency management
- Implementation on-going
Case 2: Storm Gudrun

- Findings
- Lack of communication
- Vertical communication inappropriate
- Emergency planning processes improving
Case 2: Storm Gudrun

- Findings II
- Utilise past experience
- Utilise general competence
- Adapt appropriately
Implications for Emergency Management

- Rare and unusual
- Emergent behaviour
- System response ad hoc
- Adaptive behaviour desirable
- Resilient system approach
Future Research

- Resilience and Emergency Management
- Emergent behaviour
- Risk and Vulnerability Analysis
- Training and Exercising
Future Research

- Requirements to an Emergency Response System
- Definition of successful behaviour
- Refinements of Risk and Vulnerability Assessment Methods
FRIVA – a research programme

- Risk and Vulnerability Analysis
- March 2004 until March 2010
- Financed by the Swedish Emergency Management Agency
- Research Capacity Establishment
- 8 doctoral projects
FRIVA II

- Risk and vulnerability analysis of complex socio-technical systems
- Crisis management from the perspective of the user or the victim
- Critical infrastructures in crises