



AALBORG UNIVERSITY
DENMARK

Aalborg Universitet

The Notion of Socio-Technical Systems

Concepts and application on SDIdevelopment

Stubkjær, Erik

Publication date:
2007

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Stubkjær, E. (2007). The Notion of Socio-Technical Systems: Concepts and application on SDIdevelopment.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

The Notion of Socio-Technical Systems - Concepts and application on SDI development

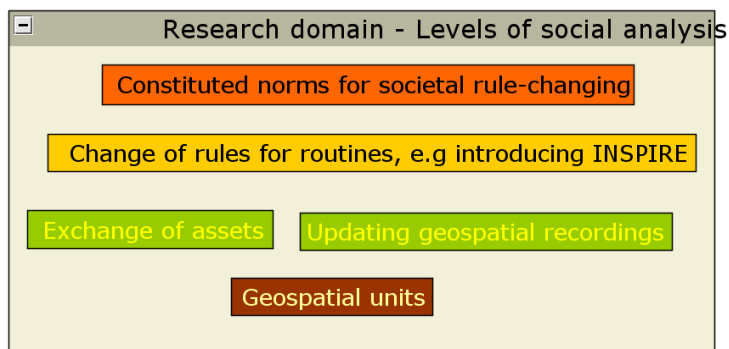
Erik Stubkjær

**PhD course: Paradigms for Development of Spatial Data
Infrastructures,
September 24. - 26. 2007, at Centre for eGovernment,
Aalborg University, Denmark**

Overview

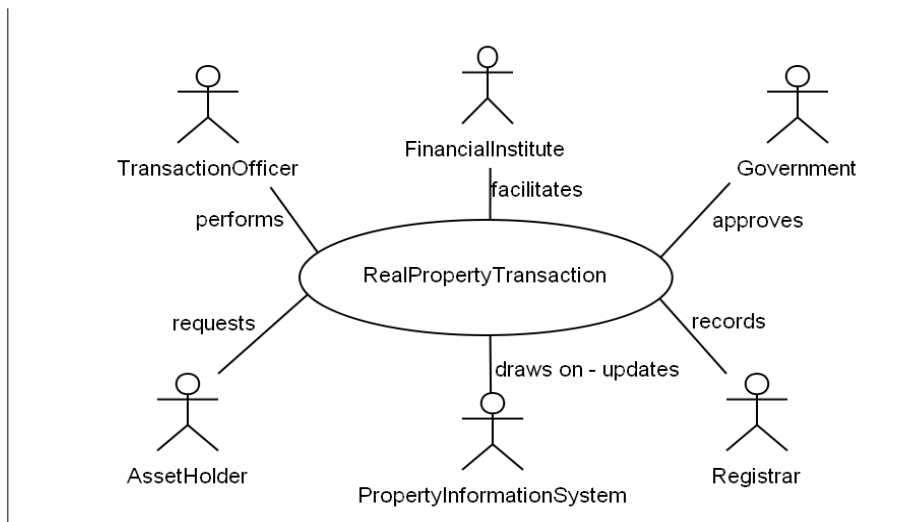
- Yesterday: The research domain and *the reflection* of the domain
- Today: Structuring *the research domain*,
- Basic componets of socio-technical systems
- Applying basic components on SDI development

The research domain, as presented yesterday

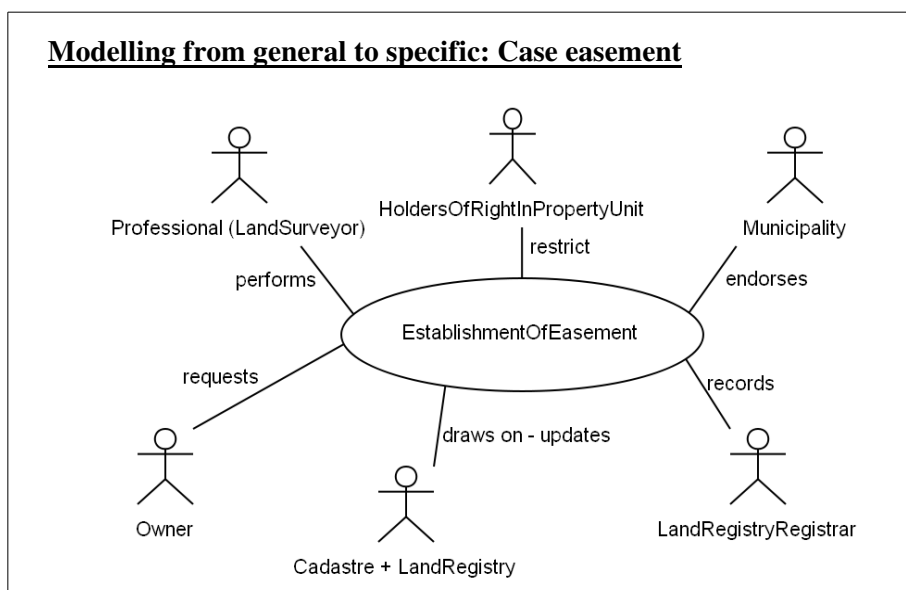


Powered by yFiles

Modelling ongoing activities in UML



Modelling from general to specific: Case easement



Nordic co-operation on modelling routine processes



<http://www.kms.dk/Matrikelogejendomsdannelse/Nordisk+ejendomsregistrering/Nordisk.htm>

Generalisations are needed and possible:

To reduce information asymmetries and transaction costs, user needs may be stated in terms of the following *functional objectives*, which must be met within a jurisdiction:

- Property units are identified and located, and shape and size attributes are recorded.
- Rights in property units are categorized within the jurisdiction, adjudicated, and recorded.
- Skilful transaction officers are available to reorganise the rights in a real property unit and its surroundings at the wish of the parties, without compromising the claims of other holders of rights, and in compliance with spatial, environmental and agricultural legislation, etc.

Functional objectives (cont.)

- Skilful registrars verify of the powers of the disposer, safeguard the interests of other holders of right, and monitor further rule compliances.
- Involved agencies and professions offer compensation in case of occasional errors, and improve where possible the correctness and consistency of the recordings and the efficiency and transparency of business processes within the cluster enterprise.

Stubkjær: ScanGIS 2007

Analysis of social change needs other concepts

- New technology needs to be learnt, mastered, and practised
- Different - opposing or concurrent - interests need be taken into account

Georgiadou; Harvey (2007): “A weakness of spatial data infrastructure (SDI) studies has been the limited uptake of research outside of positivist and scientific- technological perspectives. ..”

Proposal: Perceive the SDI as a socio-technical system.

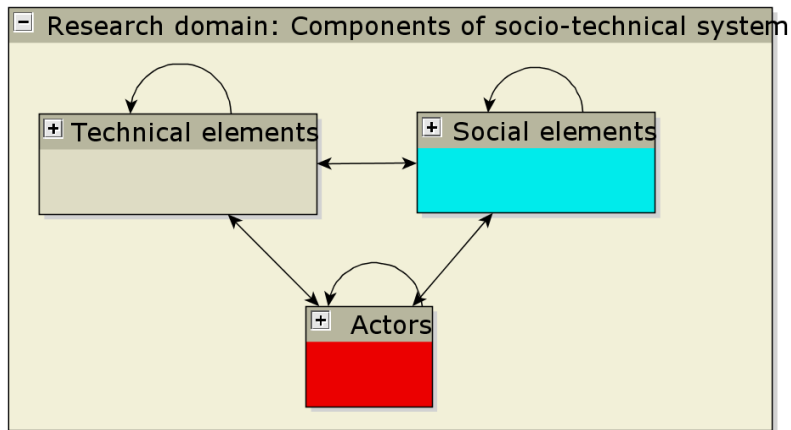
Next Generation Infrastructure Project

“.. all of the relevant aspects - technical, social and managerial - are studied in their mutual coherence. .., by studying and comparing different sectors (such as transportation, the energy industry, telecom and water) we want to initiate, stimulate and improve cross-sectoral learning.”

-
- Multi-Agent Decision Making with Incomplete Information in Traffic Control and Power Exchanges
- Modeling infrastructures as socio-technical systems
-

www.nginfra.nl

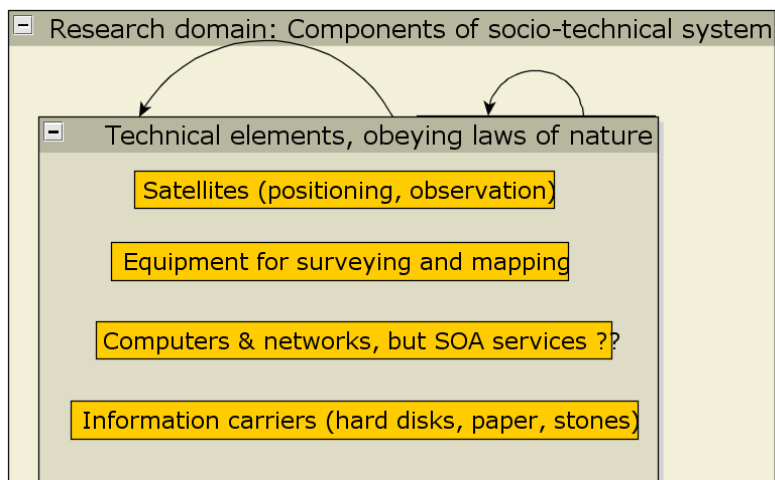
New level (Change, not Exchange) → Other concepts



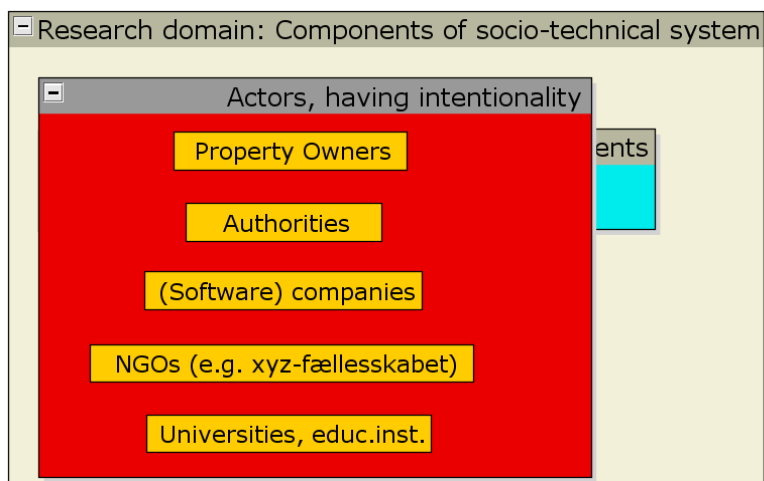
Powered by yFiles

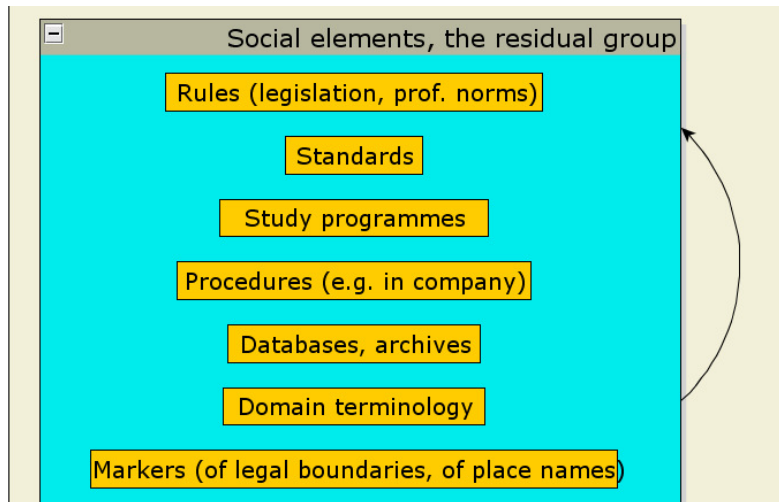
Stubkjaer (2006) GIS development 10/6, pp 26-28.

Technical elements. Criteria: Obeying laws of nature



Actors. Criteria: Having intentionality



The third element category of a socio-technical system:**Summary**

- Yesterday: The scope and basic concepts of the course were introduced.
- An operational set of concepts was proposed:
 - Levels of social analysis, transactions, .. NIE
 - Actor, Policy network, ..
- Today, actors and technical elements were supplemented with 'social' elements, as proposed by ongoing European research.
- A research challenge will be to refine/ complete the lists and to analyse the relationships

est(at)land.aau.dk