

Understanding SDI

complexity and institutionalization



Erik de Man



Joep and friends

a jam session on SDI



SDI as a social phenomena

Background



- Splintering Urbanism

- *networked infrastructures, technological mobilities and the urban condition*

Stephen Graham & Simon Marvin (2001)

- “And if SDIs were fragmented and splintering”

Erik de Man (GISDECO 2004)

I will argue ...

- SDIs are complex
- Understanding of SDIs must focus on
 - Challenges
 - Dilemmas
 - Complexities



I will also argue ...

- SDIs face a major dilemma:
 - how to achieve the ‘modernist network ideal’ of stability and sustainabilityand – at the same time –
 - not to ignore the apparently unstable, conflicting and ‘splintering’ environmental conditions.



In other words ...

- How can SDI initiative be oriented towards
 - effectiveness and
 - sustainability
- in view of
 - complexity



Finally, I will argue ...

- Evaluation of SDIs needs multi-faceted frameworks
- Hierarchical structure of SDI initiatives is a bureaucratic ‘ideal’ at most
- Developing SDIs can best be understood as
 - institutionalization of
 - complex, socio-technical actor networks



Institutionalization of SDIs (1)



- The social process
- within a community of
- increasingly becoming
 - valued and trusted and
 - taken-for-granted
- develops around a commonly felt / social problem in spatial-data handling (exchange, sharing and use)

Institutionalization of SDIs (2)



The SDI initiative

- gains an institutional / structural property within a specific spatial-data community

and therefore

- contributes in shaping stakeholders' behavior in spatial-data handling

Institutionalization of SDIs (3)



- Because structural & institutional properties are subject to wider cultural conditions
- institutionalization of SDI is also subject to prevailing cultural conditions
- Institutionalization of SDI will strengthen the structural & institutional properties of society

SDIs are complex (1)

- Complexity
 - things relate but don't add-up
 - more than one but less than many

Annemarie Mol and John Law (2002)

SDIs are complex (2)

- Complexity
 - does not necessarily develop into stability
 - as reciprocal mutuality of individual actors

Chunglin Kwa (2002)

SDIs are complex (3)

- Instead of capturing and controlling complexity
one should
- acknowledge multiple realities shaped by heterogeneous and reflective actors

Thea Hilhorst (2004)

SDIs are complex (4)

- Complexity
 - mask for simplicity because of redundancy

Herbert Simon (1981)

but

- Redundancy – necessary condition for
 - diminishing uncertainty
 - maximizing reliability

Martin Landau (1969)



SDIs are complex (5)



I suggest ...

- Complexity
 - quality in its own right
 - not ‘complexified’ simplicity

- dilemmas – conflicting values; non-trivial problems

SDIs are complex (6)



I suggest ...

- Complexity of SDIs is because of
 - social context – culture & institutions
 - multi-faceted
 - dynamic – ongoing negotiations and alignments
- SDIs → dilemmas in their development and implementation

SDIs are multi-faceted

- Facilitator of communication
- Networked infrastructure
- Socio-technical actor network
- Institutional properties – ‘duality of technology’ (Wanda Orlikowski)
- SDI as ‘common-pool’ resource
- Learning and adaptation (‘community of practice’)



SDIs face a number of challenges




- Exclusion – access denial
- Fragmentation and collapse – ‘splintering’
- Technocracy – techno-centricity
- Isolation from use – inward looking
- Discontinuity – short-livedness

SDIs around dilemmas & questions

- Who is allowed access and who is denied it?
- Are existing communication mechanism maintained or frustrated – and for whom?
- Who are proponents, alliances, and opponents – are these groups changing?
- Are users participating in development?
- How are changes in the environment detected and how to adapt?
- Optimal mix of centralized control and self-organization?



Where does this leads us to? (1)

- Uniqueness of each SDI initiative
- SDIs are socially constructed/interacted
- SDIs are subject to social/cultural conditions (Hofstede, Douglas, Etzioni) 
- Understanding SDIs needs multi-faceted frameworks
- Hierarchical structure of SDI initiatives is a bureaucratic 'ideal' at most



Where does this leads us to? (2)



- It follows that design, implementation and use of SDI revolve around a major dilemma:
 - how to achieve the ‘modernist network ideal’ of stability and sustainability
 - and not to ignore the ‘splintering’ environment



SDI needs multi-faceted evaluation



- Understanding and evaluation of SDI has to go beyond objective oriented performance indicators only
- Impossible to evaluate/assess SDI initiatives in single statements on success/failure
- Evaluation/assessment of SDI initiatives is a dilemma in its own right

Are SDIs hierarchical structured?



- Part-whole property 
 - Pyramid or Greek temple structure?
 - Multiple jurisdictions?
- Janus-effect
 - Are spatial info needs similar at different levels? 
- Near-decomposability property
 - Is redundancy and overlap only 'noise'?

Where does this leads us to? (3)



- Development of SDI initiative revolve around a major dilemma:
 - SDIs are socially constructed
 - Society is also socially constructed (Anthony Giddes ‘structuration theory’)
- → development of SDI initiatives as
 - institutionalization of
 - complex, socio-technical actor networks

SDI as negotiated actor-network



- Development of SDI
 - design, implementation & use
 - proponents
 - opponents
 - (potential) allies
 - negotiations

- on-going process; unstable
- actors define one another in interaction

Actor-Network Theory (ANT)



(ANT) or “sociology of translation”

- Creating alignment amongst potential allies (four stages):
 - problem (re-) definition
 - locking allies into collaboration
 - defining new roles
 - sustenance

Michel Callon (1986); John Law (1992);
Stephen Fox (1999)

Stable SDI as actor-network

- simple design/architecture
- multiple and redundant interactions
- political support but no single predominant actor
- institutionalized operation – being trusted and valued; participation

After: Eugene Martin (2000) Actor-networks and implementation: examples from conservation GIS in Ecuador;

Erik de Man (2000) Institutionalization of GIT - unifying concept?



Institutionalization of SDI

- strong/normative impact on the exchange, sharing and use of spatial data
- shared by many
- develops around a commonly felt need / social problem in spatial data handling
- follows almost automatically from the emerging SDI
 - collective actions in spatial data handling



Implementation and use of SDI (1)



- case-specific & social practice
- continuous, never-ending process
 - a verb – not a noun
- step-by-step in stages
 - processes-within-processes
 - each step:
 - conditions & resources are (partly) created by earlier steps

Implementation and use of SDI (2)



- ‘ANT’ and ‘Institutionalization’ *together*
- provide a multi-faceted scope for
- understanding
 - development
 - adoption and
 - application
- of effective SDIs

Where does this leads us to? (4)

- Effective and sustainable SDI initiatives are
 - integrated within society ('spatial-data community' or beyond?)
 - as structural / institutional properties
- and
 - subject to prevailing cultural conditions



Recall ...



Joep and friends

a jam session on SDI

My way ahead

- Entertaining the Citizen
 - *when politics and popular culture converge*
Liesbet Van Zoonen (2005)
- Toward a Political Economy of Culture
 - *Capitalism and Communication in the Twenty-First Century*
Edited by Calabrese & Sparks (2004)
- Understanding Institutional Diversity
Elinor Ostrom (2005)

