juto-salur

technische universität dortmund | ipp bremen Institut für Public Health und Pflegeforschung | **Public Health** Institute **Fulda** | UNIVERSITY OF TWENTE. | ITC

SUSS Revisited: An Interactive Spatial Understanding Support System (ISUSS) for Collaborative Spatial Problem Structuring

Rehana Shrestha, Johannes Flacke, Javier Martinez, Martin van Maarseveen
University Twente,
Faculty of Geo-information Science and Earth Observation (ITC)
PGM Department
Enschede, The Netherlands

AESOP conference
From control to co-evolution
Utrecht, the Netherlands, 9-12 July 2014

Funded By

STIFTUNG
BERG · MENSCH · GESUNDHEIT · NATUR | dfz Deutsches Stiftungs Zentrum

---
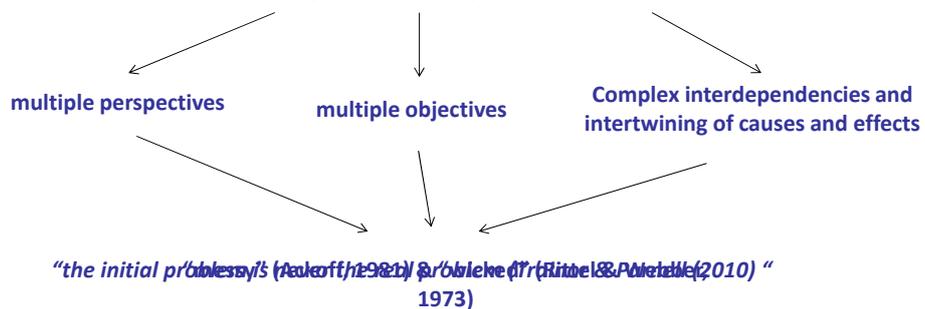
Introduction

Collaborative planning theories emphasize involvement of stakeholders from earlier phases of planning such as scoping and problem formulation

multiple perspectives   **multiple objectives**   **Complex interdependencies and intertwining of causes and effects**

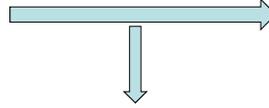*"the initial problem is (Ackoff 1981) & 'wicked' (Rittel & Webber (2010) "*
1973)

problem situation is spatial in nature, is instigated by environmental justice controversies (NIMBY, LULU), its negative externalities lead to spatial inequalities in health

No Simple Formulations of the problem !!

ipp bremen **Public Health** Institute **Fulda** | technische universität dortmund UNIVERSITY OF TWENTE. | *juto-salur*

Introduction

Problem finding → **Problem formulation**

Importance of getting a good appreciation of the situation and understanding "what is really going on and why" is paramount

Research Objective:

- To conceptualize and develop an **Interactive Spatial Understanding Support System (ISUSS)** to support the stakeholders in spatial problem structuring
- To show the effectiveness of such system in an interdisciplinary setting with a heterogeneous group of stakeholders; from spatial planning and public health domains

Public Health Institute **Fulda**   technische universität dortmund   UNIVERSITY OF TWENTE.   ITC   *jufo-salus*

3

Theoretical strengthening of ISUSS

Spatial Understanding Support System (SUSS)
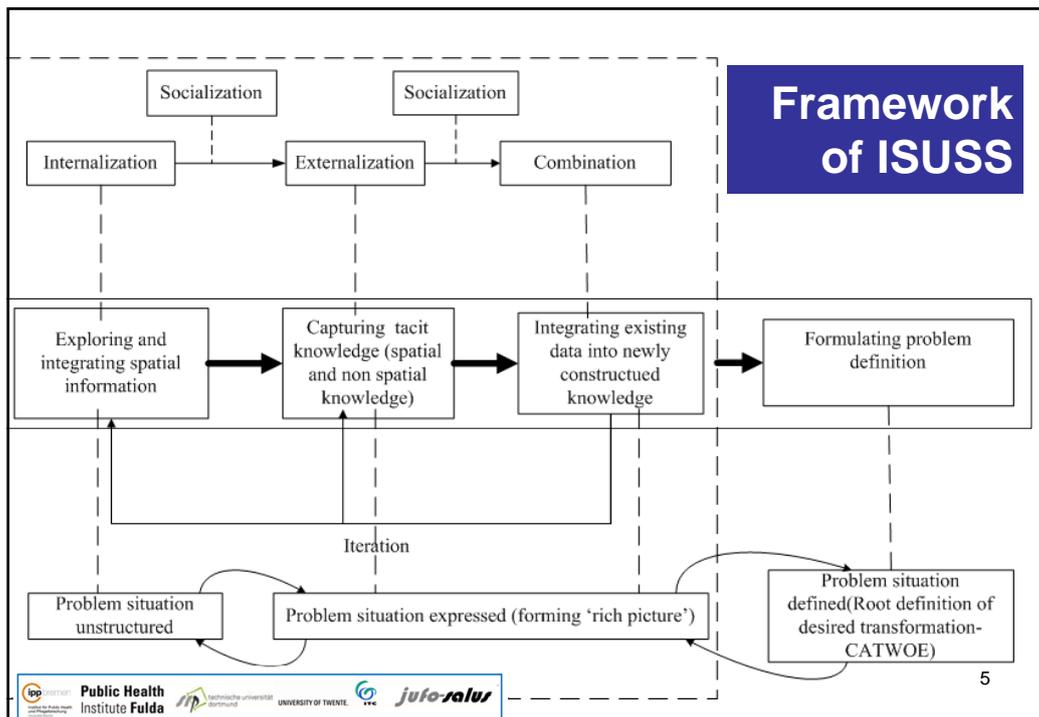- **Coined by Couclelis (1991)**

ISUSS

Problem structuring methodology
- **Three stages of Soft System methodology (SSM) (Checkland, 1981)**

Knowledge conversion model
- **SECI (Socialization- Externalization- Combination- Internalization) model (Nonaka & Takeuchi, 1995)**

Public Health Institute **Fulda**   technische universität dortmund   UNIVERSITY OF TWENTE.   ITC   *jufo-salus*

4

Framework of ISUSS

Socialization	Socialization

Internalization → Externalization → Combination

Exploring and integrating spatial information	Capturing tacit knowledge (spatial and non spatial knowledge)	Integrating existing data into newly constructued knowledge	Formulating problem definition

Iteration

Problem situation unstructured	Problem situation expressed (forming 'rich picture')	Problem situation defined(Root definition of desired transformation- CATWOE)

Public Health Institute Fulda — technische universität dortmund — UNIVERSITY OF TWENTE. ITC — juto-salus

5

Implementation of framework in workshop

Case Study – District of Nordstadt, Dortmund
➢ **Existing land use plan reflects historically grown situation having close proximity of residential areas with other mixed land use such as industries**

➢ **Is instigated with negative connotation of mixed land use structure termed as "Gemengelagen"**

➢ **Statistical data shows higher percentage of migrants in the district and relatively higher mortality rate in the district**

Photo source: Uwe Grützner, TU Dortmund

Stakeholder identification
➢ **Professionals with focus on spatial planning and public health on different issues in Nordstadt.**
➢ **Identified based on personal knowledge and contact network**

Public Health Institute Fulda — technische universität dortmund — UNIVERSITY OF TWENTE. ITC — juto-salus

6

Implementation of framework in workshop

Set up and components of ISUSS

➢ Hardware: 'Maptable' – a horizontal table surface with touch sensitive screen that works as a common map interface as medium of communication

➢ Software: multi-touch software Phoenix 1.1 from Geodan, Amsterdam

7

Implementation of framework in workshop

Operational task description

➢ Task I : Exploring and integrating spatial information
- insight into physical/built environment, existing social environment, environment related health pressures in Nordstadt
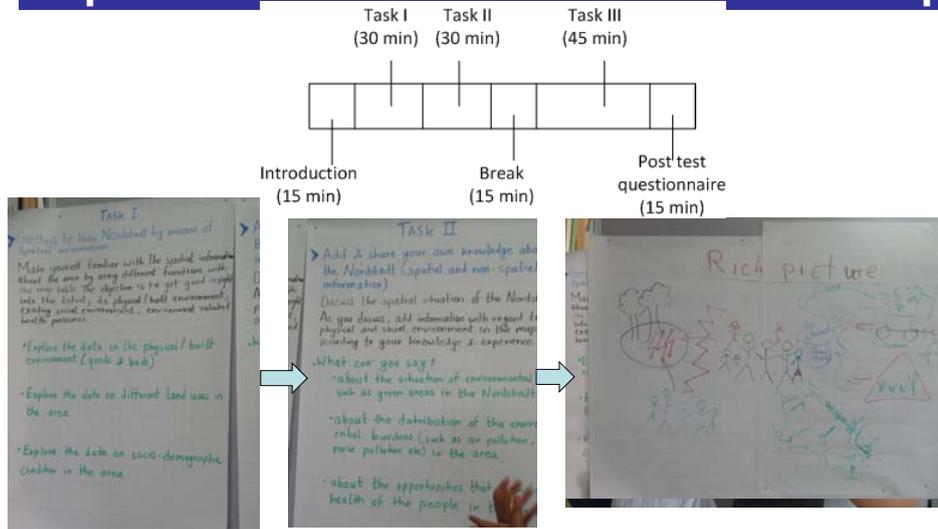- Familiarize with different functions within the map table
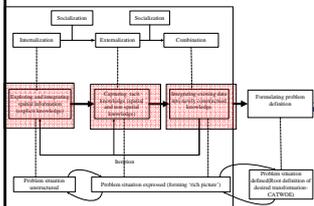
Task II: Capturing tacit knowledge
- Add and share information according to knowledge and experience

➢ Task III: Integrating existing data with the newly formed knowledge and information
- Build 'rich picture' showing problems and their causes, affected group, relevant actors

8

Implementation of framework in workshop

Task I
(30 min)

Task II
(30 min)

Task III
(45 min)

Introduction
(15 min)

Break
(15 min)

Post test
questionnaire
(15 min)

9

Preliminary findings from the workshop

- ...rmation, retrieval of information at different ...on the situation of the area

- ...formation on the problems and opportunities in ...d experience (tacit knowledge)

- "Show what you mean" could be observed... ...of view and to communicate one's point of v...

- Stepwise introduction of tools/functions i...

10

Preliminary findings from the workshop

Some challenges and limitations:
- Use of technology and its adaptation also depends on the age of the people

- At times, loss in focus and more effort on dealing with technology is observed

- Inflexibility of software and hardware to provide support on some tasks

- Integration of support provided by maptable during task I and task II to the production of rich picture

Public Health Institute **Fulda**   technische universität dortmund   UNIVERSITY OF TWENTE.   jufo-salus

11

---

jufo-salus

technische universität dortmund   ipp bremen   **Public Health** Institute **Fulda**   UNIVERSITY OF TWENTE. ITC

THANK YOU
QUESTIONS?

Funded By

STIFTUNG
- MENSCH
- GESUNDHEIT
- NATUR

dz Deutsches Stiftungs Zentrum

12