MAKING THE MOST OF MENTAL MODELS

Kelsey LaMere, Samu Määtyniemi, Jarno Vanhatalo, & Päivi Haapasaari
ROAD MAP

1. Context
2. What Participatory Modelling & Mental Models Are
3. Why We Use Them
4. Need for a New Methodology
5. The Rich Elicitation Approach
6. Benefits & Challenges
Atlantic salmon - *Salmo salar*
CLIMATE CHANGE & THE BALTIC

Kelsey LaMere – University of Helsinki
SALMON NEED COLD WATER
PROBLEM FRAMING

WHAT IS GOING ON HERE?

WHAT DO WE WANT?

HOW DO WE GET WHERE WE WANT TO BE?
Any person who is invested in the resource based on profession, leisure, or interest.
PARTICIPATORY MODELLING

WHEN THE WIDER COMMUNITY CONTRIBUTES

**SUBSTANTIVE** - Knowledge synthesis & problem solving

**NORMATIVE** - Legitimacy

**INSTRUMENTAL** - Relationship building & implementation

**EDUCATIONAL** - Learning & growth
WHAT ARE MENTAL MODELS?

- Structural & Exploratory Tool for participatory modelling
- Conceptualization of a system’s causal dynamics
- Built on personal experience, knowledge, and values
- Cognitive aid in reasoning
WHY MENTAL MODELS?

IMPORTANCE

• Knowledgebase

• Alternative hypotheses

  • Brain storming

  • Holism

• Values

Kelsey LaMere – University of Helsinki
Mental Models as Influence Diagrams
DIRECT ELICITATION

INDIRECT ELICITATION
**DIRECT ELICITATION**

Can Lead to:

*Over Simplification*

---

**INDIRECT ELICITATION**

Kelsey LaMere – University of Helsinki

---

Can Lead to:

*Inaccurate Representations of Stakeholder Beliefs*
PROBLEM #1: RICHNESS

NAOMI TAMAR

Kelsey LaMere - University of Helsinki
PROBLEM #2: WE NEED BETTER PM DOCUMENTATION

Although participation is becoming ubiquitous in environmental modelling, participatory methods are not well documented and lessons learned are rarely published.
THE RICH ELICITATION APPROACH
THE RICH ELICITATION APPROACH

DIRECT ELICITATION & QUESTIONNAIRES
- Methodology-Related Questions
- Content-Related Questions

INDIRECT ELICITATION
- Direct Elicitation
- Digitizing Influence Diagrams
  - Transcription
  - Note Taking & Coding Transcripts

VERIFICATION & STANDARDIZATION
- Enhancing Influence Diagrams
  - Sending Enhanced Influence Diagrams for Stakeholder Approval
  - First Revision
  - Variable Harmonization
  - Final Revision
THE RICH ELICITATION APPROACH

DIRECT ELICITATION & QUESTIONNAIRES

Questionnaire
- Methodology-Related Questions

Stakeholder Learning → Direct Elicitation → Digitizing Influence Diagrams

Questionnaire
- Content-Related Questions
THE RICH ELICITATION APPROACH

INDIRECT ELICITATION

Transcription → Note Taking

Coding

Transcripts
THE RICH ELICITATION APPROACH

VERIFICATION & STANDARDIZATION

- Enhancing Influence Diagrams
- Sending Enhanced Influence Diagrams for Stakeholder Approval
- First Revision
- Variable Harmonization
- Final Revision

Kelsey LaMere – University of Helsinki
OBSERVATIONS OF STAKEHOLDERS

Generally positive attitude

Quickly understood direct elicitation

Preferred facilitator to draw

Uncertainty about own knowledge

Frustration with messiness

Kelsey LaMere – University of Helsinki
STAKEHOLDER OPINIONS

Substantive (Knowledge)

Normative (Legitimacy)

Instrumental (Relationships)

Educational (Learning)
CHALLENGES & FUTURE IMPROVEMENTS

• Fix follow-up Failure

• Explain expectations & Context
THANK YOU