
NTNU
Norwegian University of
Science and Technology
GEOLOGICAL
SURVEY OF
NORWAY
- NGU -
INCREASING THE USABILITY OF
3D GEOLOGICAL MODELS THROUGH APPLYING
USER-CENTERED DESIGN PRINCIPLES
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MSc Geography

14 years at the Geological Survey of Norway, also coordination of 3D activities

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> "The use of maps for communicating information about sub-urban geology to non-geologists"

This presentation is based on

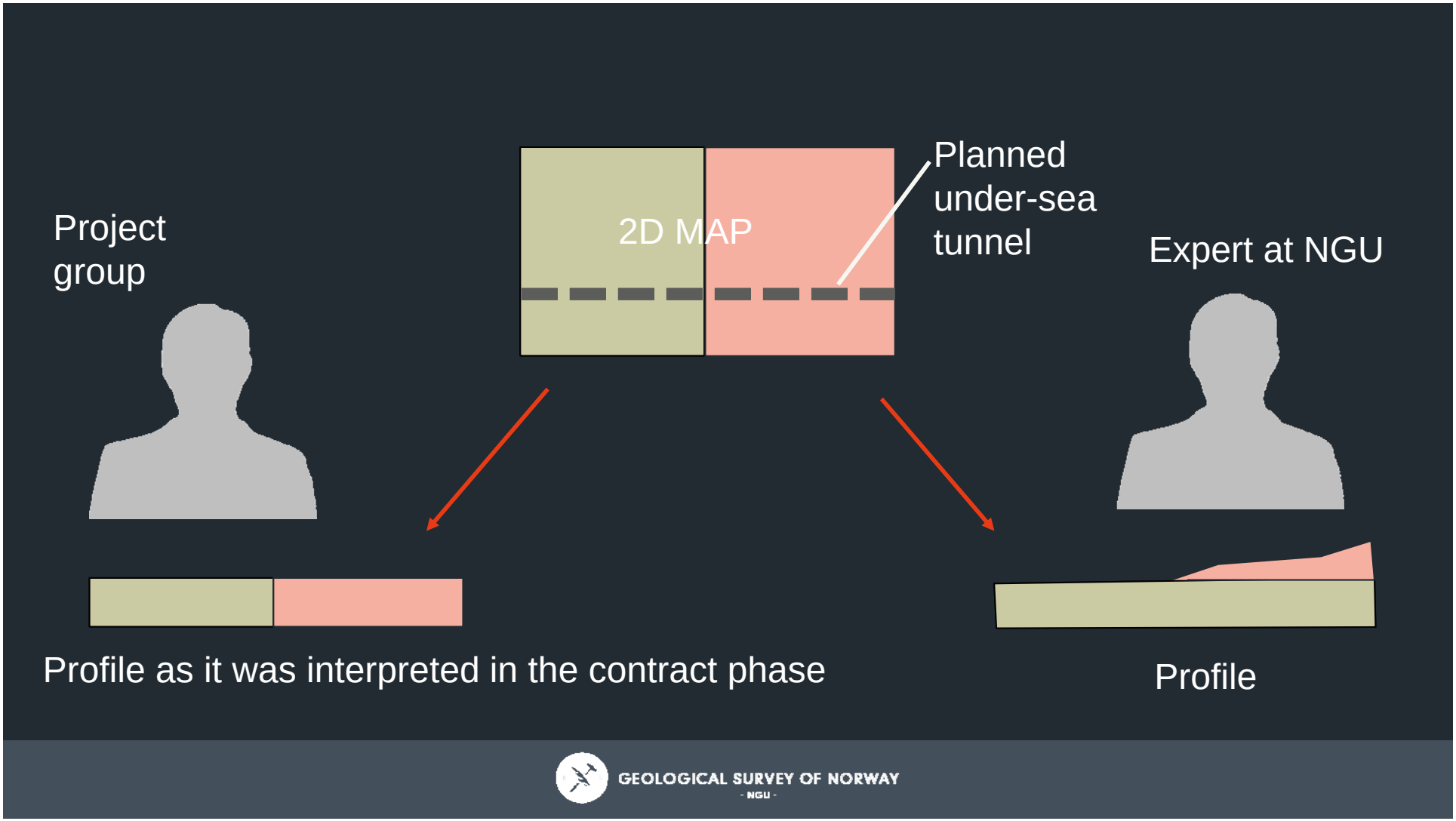
- ***A literature review use, user and usability literature in GI science (not published)***
- ***Interviews with geologists***

Geological knowledge solving societal challenges

Ex:
Better tunnel planning and construction

“Geology is important and the user has to learn to understand our maps!”

(A geologist, somewhere, right now)


Project group
2D MAP
Planned under-sea tunnel
Expert at NGU
Profile as it was interpreted in the contract phase
Profile

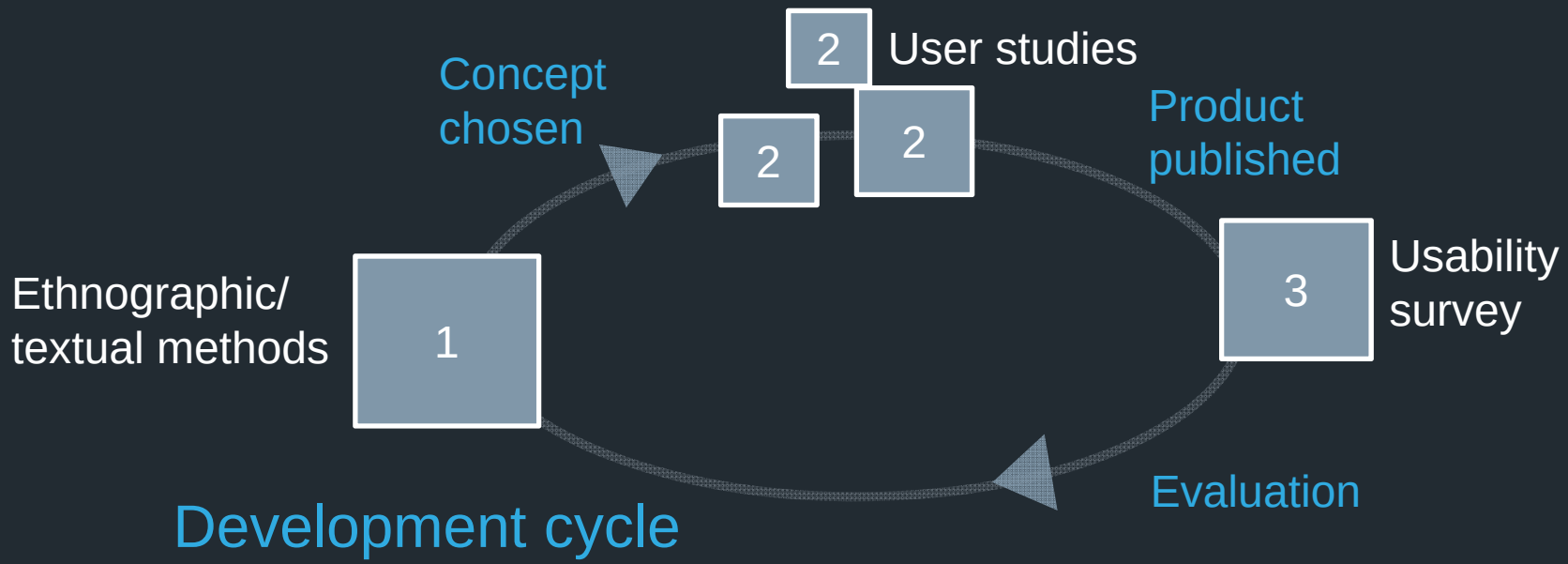
User-centered design (UCD):

"*A development philosophy that puts usefulness and usability at the center of the process and evaluates them empirically*". (Haklay, 2010)

Usability:

"*The extent to which a product can be used by specific users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use*" (ISO 9241-11, 1998)

Both practical and scientific approach for listening to the map user!


2
User studies
Concept
chosen
2
2
Product
published
Ethnographic/
textual methods
1
3
Usability
survey
Evaluation
Development cycle

1. Ethnographic mixed with textual methods

Processes

Use

Institutions

Social groups

Practices

Observation of one or few users in their environment,
in-depth, document review. Qualitative methods from social science.

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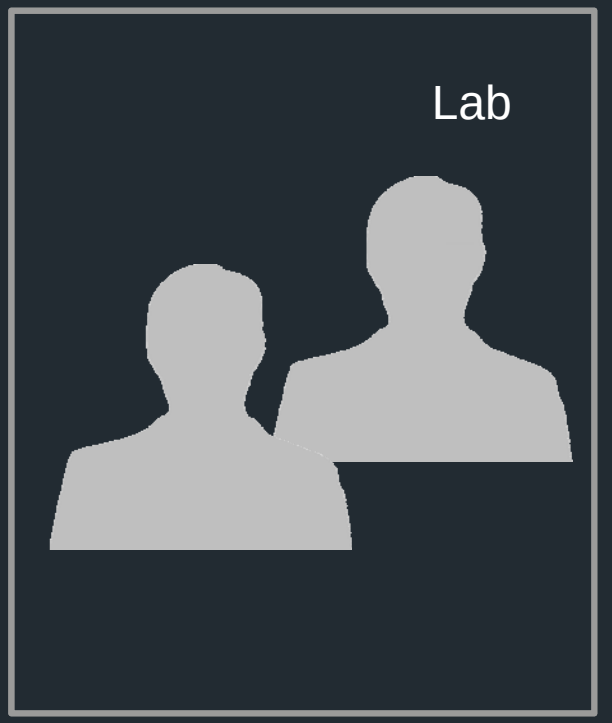
2. User studies



Testing products and systems, performing tasks,
observation, interview, think aloud, eye-tracking, sketch maps,
methods from human-computer design.

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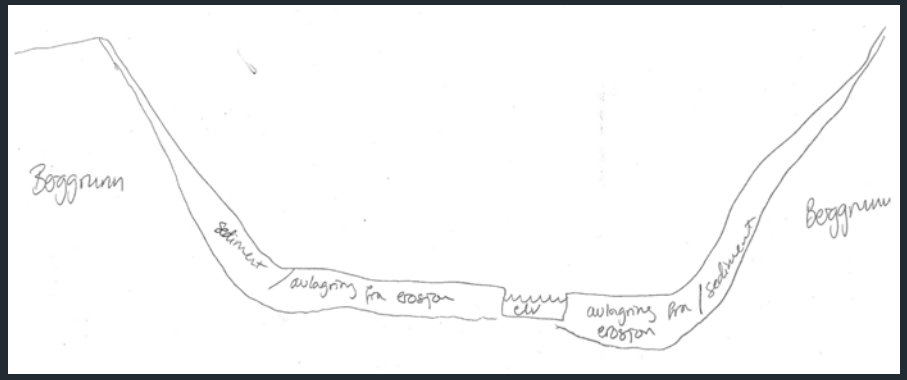
Ideas

- How to visualize uncertainty? Make two alternatives and test.

Sketch map exercise – a user study



3. Usability survey

Effectiveness (accuracy and completeness)

Efficiency (resources)

Satisfaction

Web survey, cost-effective, large group of users, repetition.

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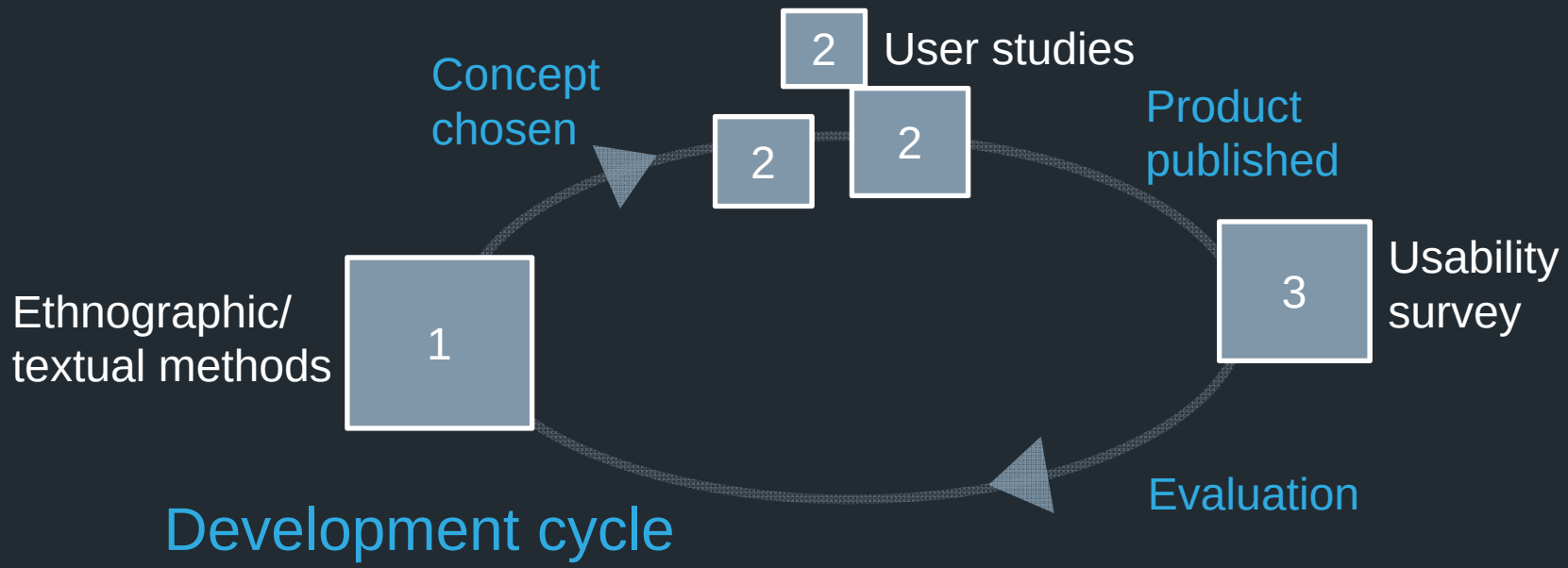
Ideas

- Usability of a 3D model
- Ease of use 3D web viewer
- Usability of geographical information (data reuse)

Stages


2
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2
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1
3
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Evaluation
Development cycle

Challenges

- Focus
- Prioritizing
- Funding
- Time

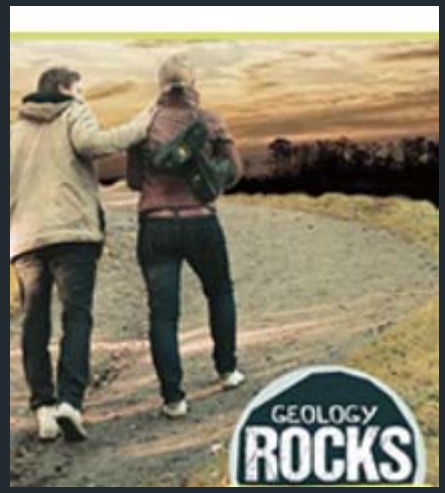
Possibilities

- Approaches and methods available

- Cooperation and innovation

- Increased usability of geological deliverables

- Increased use of geological knowledge in the society



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