

Future-oriented technology analysis: steering medical neuroimaging



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in this presentation



- future-oriented TA approach: an interactive approach
- research project: neuroimaging in health care
- future challenges

socially responsible innovations



drawbacks

- uncertainty about possible applications and impacts
- uncertainty about possible positive/negative societal consequences
- low motivation to engage in joint reflection

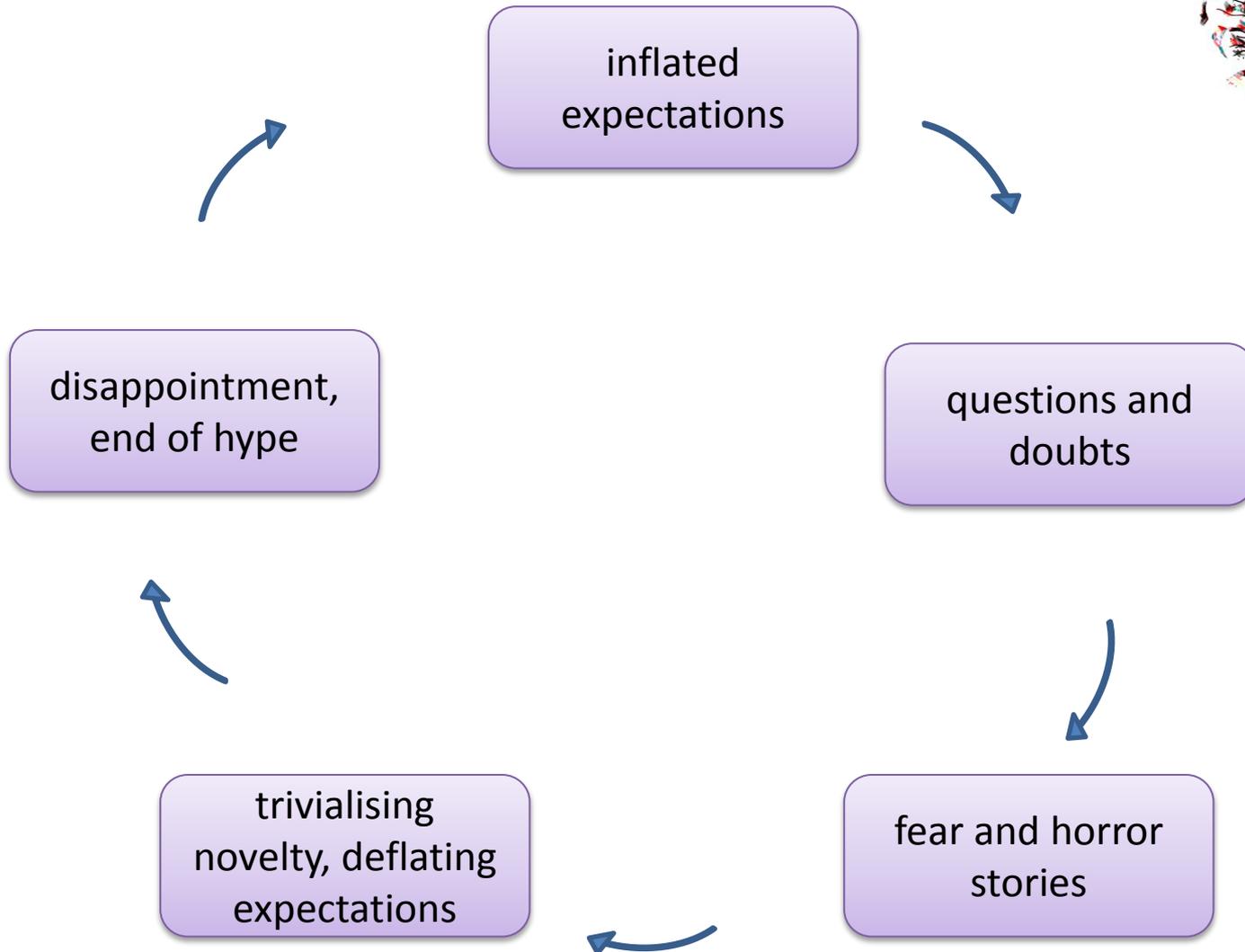
early phase

opportunities

- new field
- options open for exploration
- room for steering

societal embedding

Collingridge dilemma of control
(Collingridge 1981)



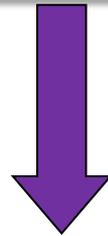
hype-horror cycles (Swierstra and Rip 2007)
promise-disappointment cycles (Brown et al. 2003)



socially responsible innovations: an interactive approach



an interactive approach to science and
technology development processes;
the Interactive Learning and Action
Approach (Broerse and Bunders 2000)



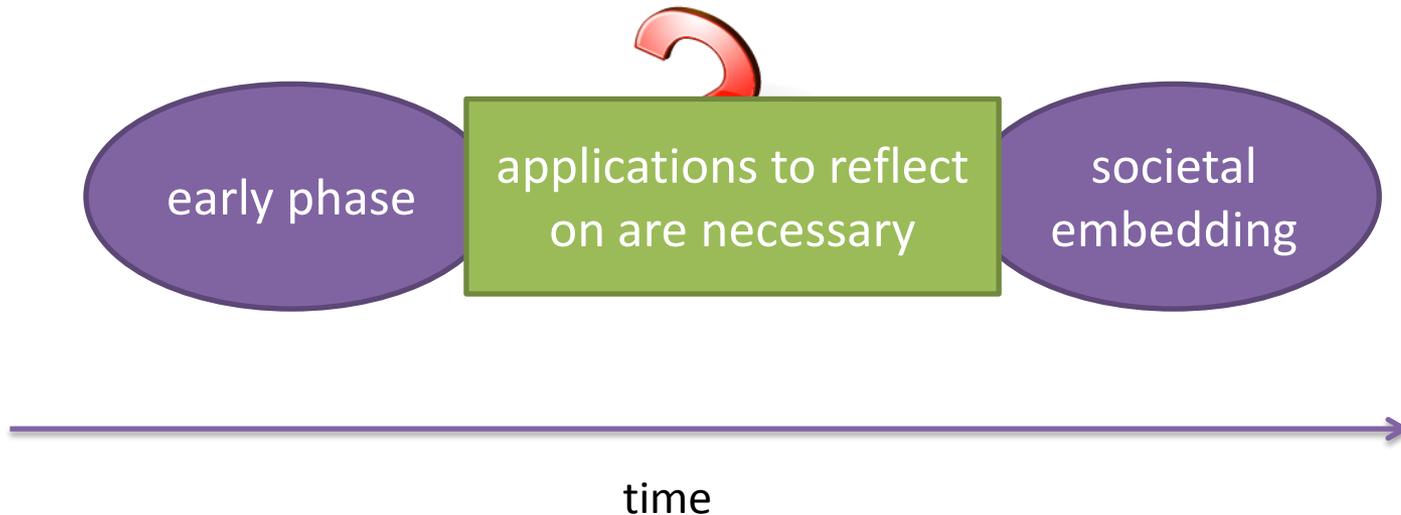
- actively involving all relevant stakeholder in an open exchange, planning, action and reflection process
- integrating different perspectives through joint learning
- shared desirable innovations

socially responsible innovations: an interactive approach



probable futures
possible futures
desirable futures

forecasting approaches
scenario approaches
vision assessment

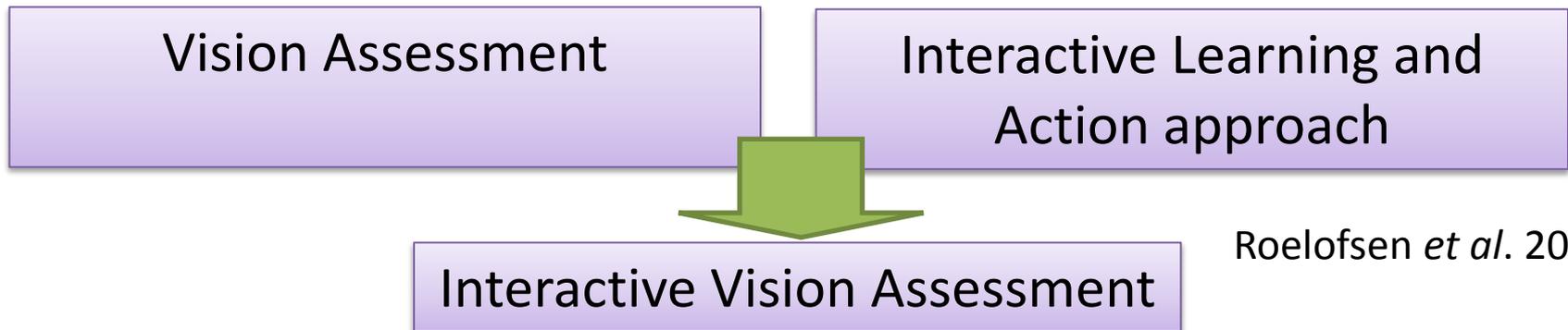


Interactive Vision Assessment



Vision Assessment (Grin *et al.* 2000):

- long-term considerations
- mental image of shared attainable futures
- ‘common language’ that guide actions



Roelofsen *et al.* 2008

Interactive Vision Assessment



phase 1: exploration

phase 2: in-depth study visions and identifying research options

2a. guiding visions

2b. desirable futures from relevant stakeholders

phase 3: integration of different visions

identification shared visions, matches and initialize action

phase 4: prioritization and action planning

phase 5: implementation

neuroimaging



- image and study function, connectivity & biochemistry intact brain
 - (f)MRI
 - EEG
 - MEG
 - PET
 - Etc.

Promises
&
concerns

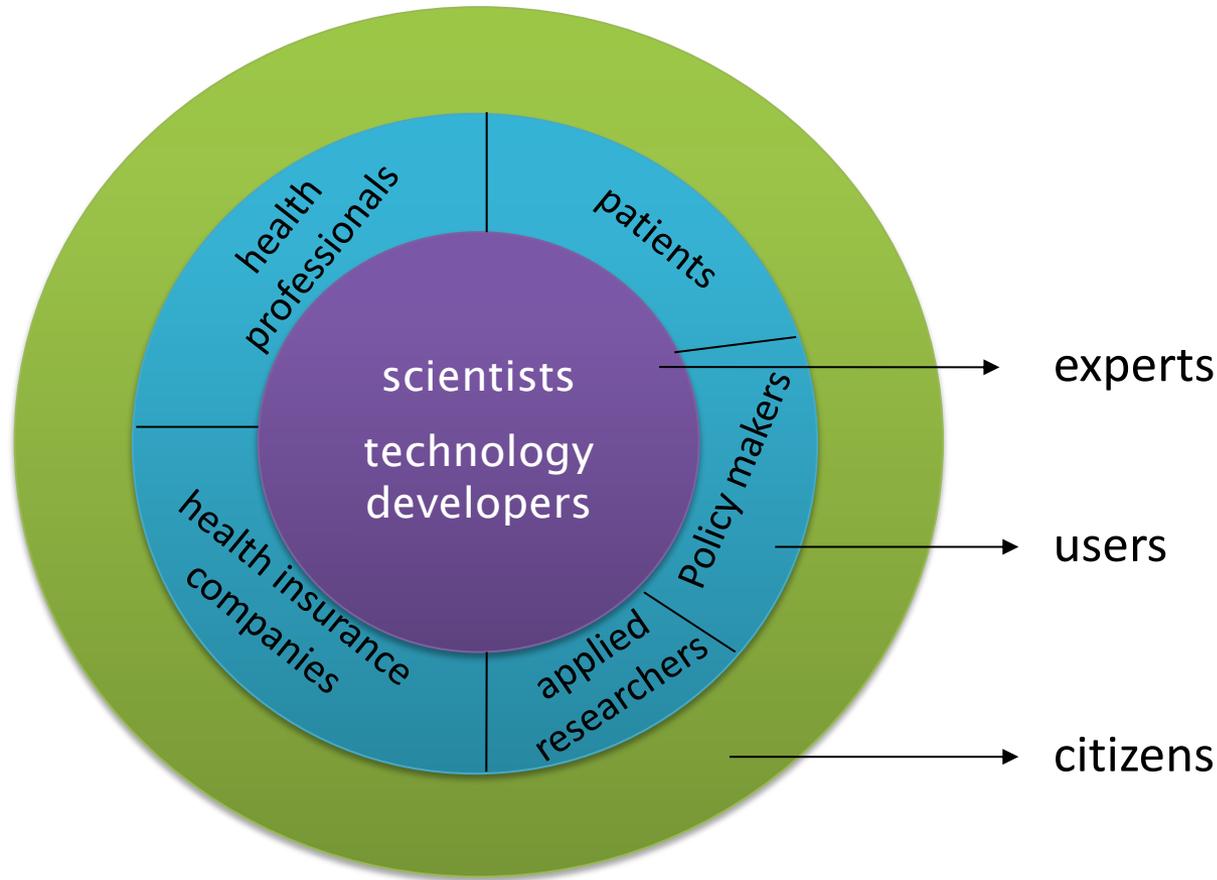
Interactive Vision Assessment



Phase 1: scientific state-of-the-art & potential relevant societal issues

Phase 2: guiding visions of medical neuroimaging & in-depth study visions other relevant stakeholders

guiding visions of medical neuroimaging



guiding visions



- prevention
 - shift focus from treatment towards **prevention**
- diagnosis
 - from comparison with control groups towards **individual level**
 - from external symptoms towards **changes in brain functions**
- treatment
 - from effectiveness on group level towards effectiveness on an **individual level**

guiding visions: examples



“You will have a screening and based on this you receive a profile in which it is clearly stated what to do to conserve your health”.

visions societal stakeholders



- public
 - focus groups with citizens
- reflection guiding visions & formulate own visions
- degree of acceptability future applications differs per citizens per context

public visions: general conditions



- key conditions that determine acceptance
- yes: freedom of **choice**, right to not **know**, guaranteed **privacy**, true informed **consent**
- no: if negative social or economical **implications**

public visions of neuroimaging



Participant 1: no, listen! What if you just do that test and there is nothing wrong with you, you feel good and just do that test. And then they say you have 75% chance that you get that. You are not allowed to smoke anymore. You are not allowed to do this, and that, you must do this.

(...)

Participant 6: well, you can, or try to do all things you want to do in your life, if you know in advance.

Participant 1: optimist! (...) I think I would be awfully scared. That's why I would never do such a test, not me.

experts & citizens



- personalized diagnostic and treatment options desirable under conditions
- experts: prevention – **macro** public health problem
- citizens: prevention – **individual** problem

next steps: from analysis to action



- dialogue:
 - integration different visions
 - (quick) wins
- create commitment amongst all relevant stakeholders
 - turn enthusiasm and commitment into action



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