MIRROR TOOL

Designing a tool to stimulate reflexivity of fundamental scientists using a novel co-design approach

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BACKGROUND – REFLEXIVITY

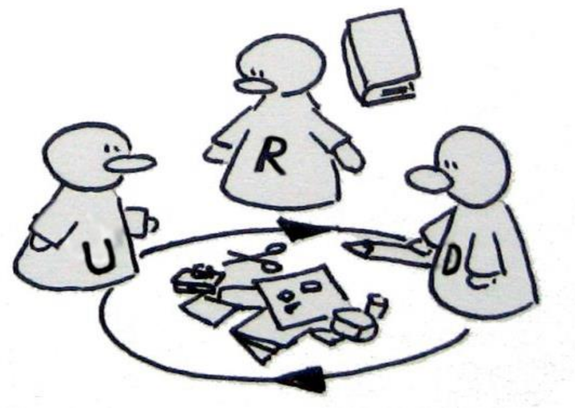
Reflexivity, one of the dimensions of Responsible Research and Innovation, is 'reflecting on your own activities, commitments and assumptions, trying to rethink prevailing conceptions'[1]. Two orders of reflexivity are defined[2]. First-order reflexivity concerns adaptations or changes in the process or technology. Second-order reflexivity concerns reflecting on its own norms and values within the system.

AIM – STIMULATE REFLEXIVITY

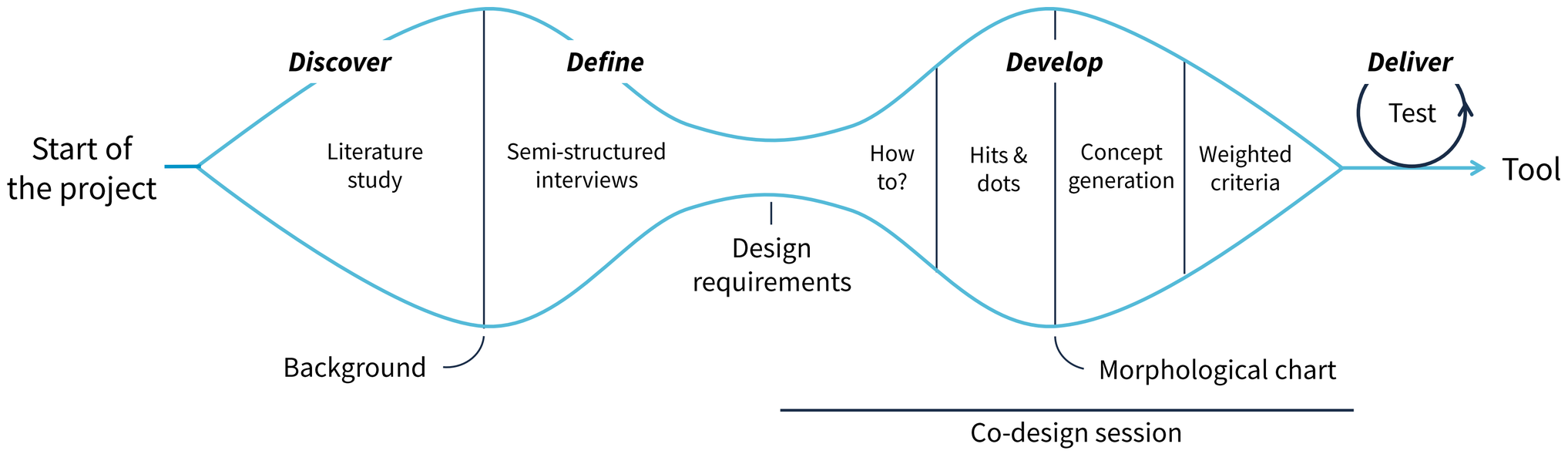
The aim of this research was to design and test a simple and sustainable tool or method, via a self developed co-design approach, to stimulate reflexivity with regard to social ethical context of fundamental researchers within the TU Delft. This started from the perspective of operationalizing Responsible Research and Innovation theories and was part of the focus of the Horizon 2020 project NUCLEUS[3].

RESULTS – A NOVEL CO-DESIGN APPROACH

The process of this research was separated in four phases – discover, define, develop, deliver – according to the design-based research method[4]. However, the shape of the double diamond used in design-based research was adapted, due to the exploratory nature of this study. The tool was created in a co-design way, involving the end-users, the scientists, and a designer in the process, creating shared value and mutual understanding[5]. Also the quality can become higher of the innovation by applying co-design[6].



The co-design method[6]



RESULTS – THE MIRROR TOOL

The mirror tool is the first tool designed with and for scientists to stimulate reflexivity in the context of Responsible Research and Innovation.

- On micro-ethics level (first order) reflexivity seemed to be stimulated by using the tool.
- However, macro-ethics (second order reflexivity) were not considered using the tool, omitting the socio-ethical and socio-economic aspects. Therefore, changes to the design are proposed assuring also macro-ethics will be taken into account.
- Using the tool, not only reflexivity was stimulated, but also responsiveness was encouraged, due to the last question on the mirror form: 'So what?'.

OUTLOOK – A DIGITAL FUTURE

- The tool could be more functional when digitalizing the mirror form, not being limited by the amount of writing space. Besides, supplementary elements could be implemented.
- A quantitative test should be performed before implementation to statistically prove the effect of the tool, increasing its reliability.
- Implementation of the tool at the BN department of the TU Delft could be done via two ways: via the graduate school or via the principle investigators.
- Both the Mirror Tool and the developed co-design approach can be of large value for the NUCLEUS consortium, implementing it all around the world.

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