Design and Calculate
A new way of working with water for urban and landscape planners

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23 November 2016
Background

Deltares: knowledge institute applied research:

• **Model**: how does the context (landscape) operate? (“process modeling”; explanatory)

• **Calculate**: what differences might changes in the context cause? (“impact modeling”; predictive)

Designers

• **Vision**: how might the landscape be altered (“change modeling”)

• **Design**: what should be done? (“decision model”)
Practical problems

Current design **interfaces are primarily model-oriented** & not supportive of the way designers sketch and draw.

Designs made by hand or with dedicated designer software are **not suitable as model-input**.

During design sessions, proper **assessment of alternatives is lacking** because impact calculations take **too much time**.

Impact models use **predefined measures**, leaving the designer little to **no freedom** to actually ‘design’.

Most impact models are both, **not detailed enough** (terrain features) and **too detailed** (required input).
The project

Partners: public & private

- Deltares
- Nelen & Schuurmans
- Strootman Landscape Architects
- Robbert de Koning Landscape architect
- Buro MA.AN, urbanism, landscape, art, architecture
- Water Board Delfland
- Water Board Vallei & Veluwe

Money: 225 kEuro

50% cash- & in kind investments
50% Min Economic Affairs
Project aims

Promote knowledge integration
in/through design processes

Enhance cooperation:
between designers & water- (and soil-) management experts

Better plans!
Project method

**Workflow analysis** of designers
- open interviews (video recorded)
- pinpoint critical moments for model calculations
- investigate use of analogue- and digital design modes

**Interface development**
- convert designs into input for 3Di water management model
- interface prototype development in cooperation with end users

**Test** interface in real world projects

**Disseminate** results

23 november 2016
Conclusions workflow analysis

Design & Calculate:

- enables technical innovation & incorporation of aesthetics
- enables to reconcile design with sectoral measures

There is a need:

- for real time, detailed simulations
- to connect digital graphic environment with GIS environment in a more dynamic way
Interface prototype development

3Di: 2 levels

Calculating grid

Sub-grid level information layers

quadtree-method;
White: calculation cells
Green/yellow: sub grid pixels

http://www.3di.nu/