



# Design and Calculate

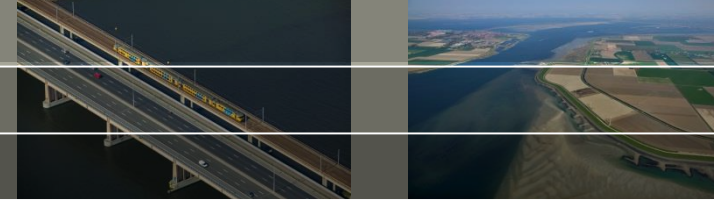
A new way of working with water for urban and  
landscape planners

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# Background



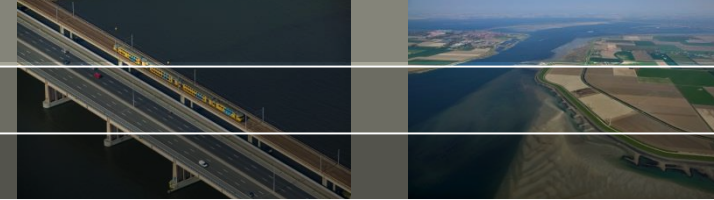
Deltares: knowledge institute applied research:

- **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

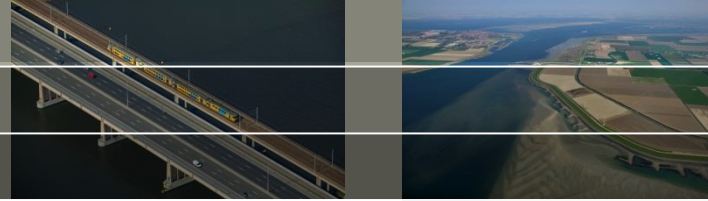
Designs made by hand or with dedicated designer software are **not suitable as model-input**

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

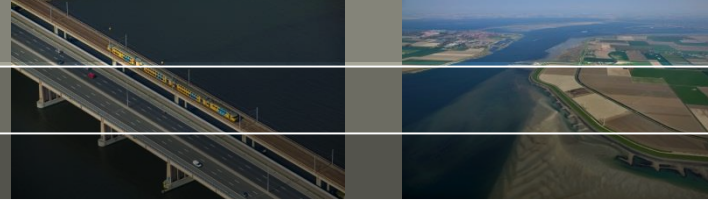
- Deltares
- Nelen & Schuurmans
- Strootman Landscape Architects
- Robbert de Koning Landscape architect
- Buro MA.AN, urbanism, landscape, art, architecture
- Water Board Delfland
- Water Board Vallei & Veluwe

## Money: 225 kEuro

50% cash- & in kind investments

50% Min Economic Affairs

# Project aims



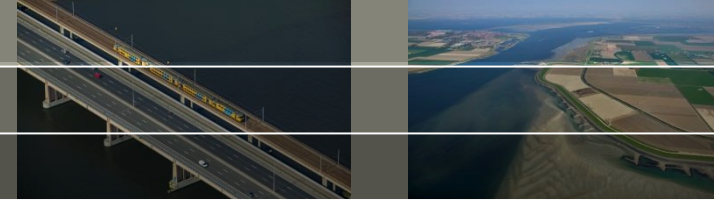
**Promote knowledge integration**  
in/through design processes

**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**

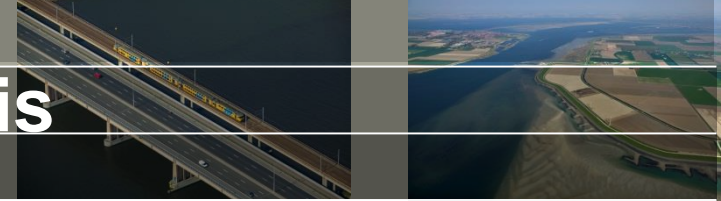
- convert designs into input for 3Di water management model

- interface prototype development in cooperation with end users

## **Test** interface in real world projects

## **Disseminate** results

# Conclusions workflow analysis



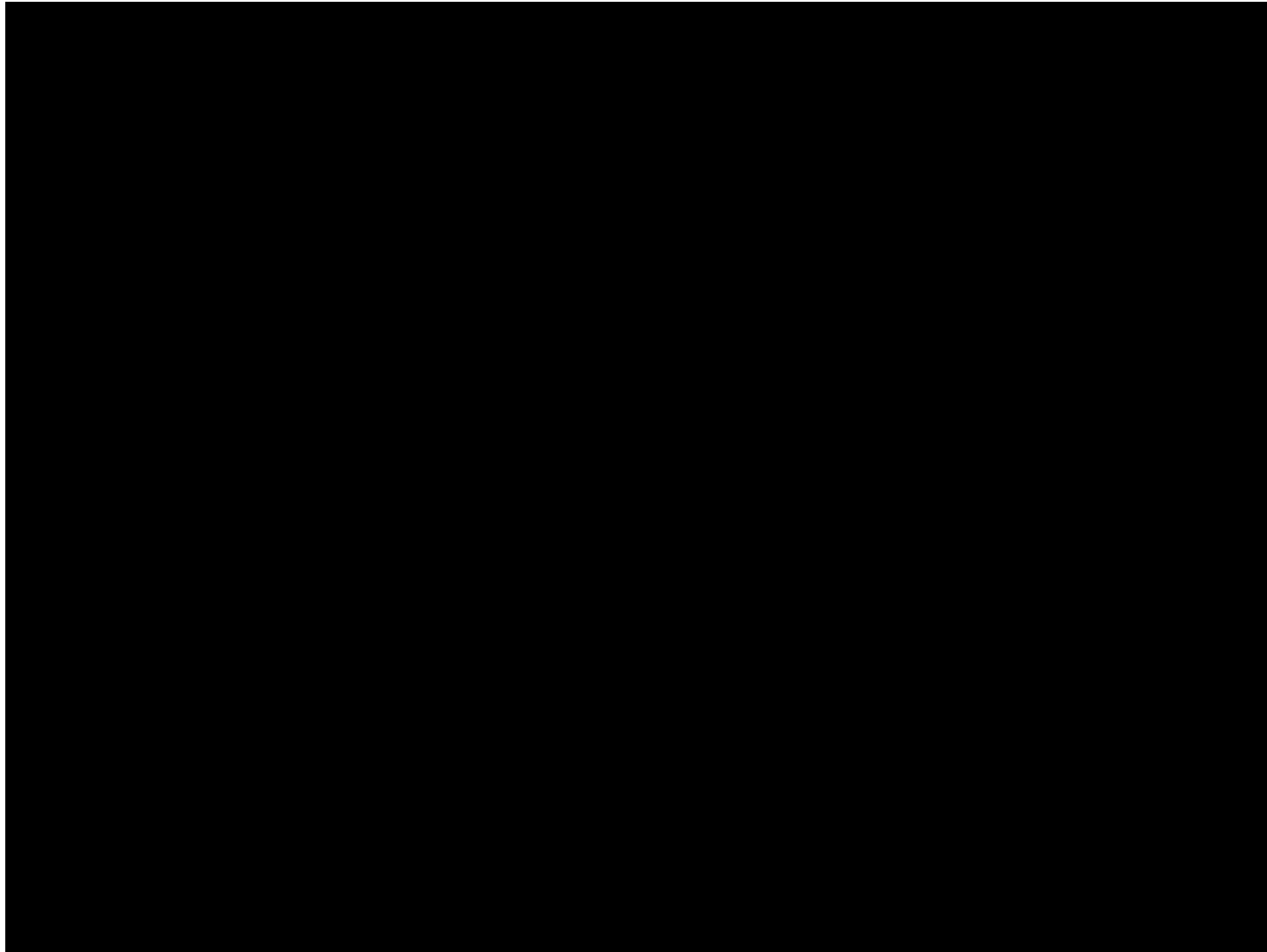
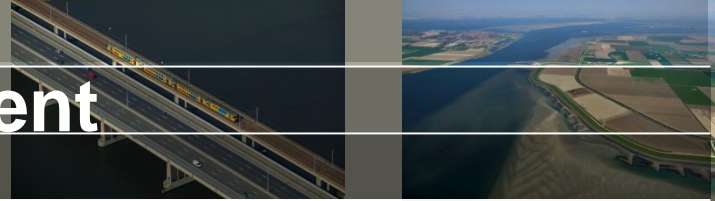
Design & Calculate:

- enables **technical innovation & incorporation of easthetics**
- 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



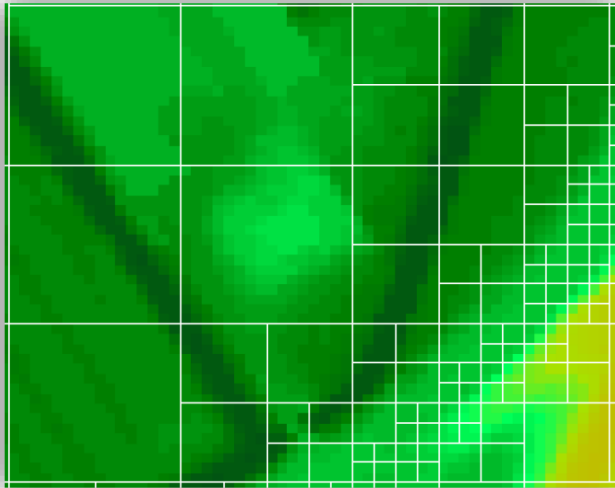


# Interface prototype development



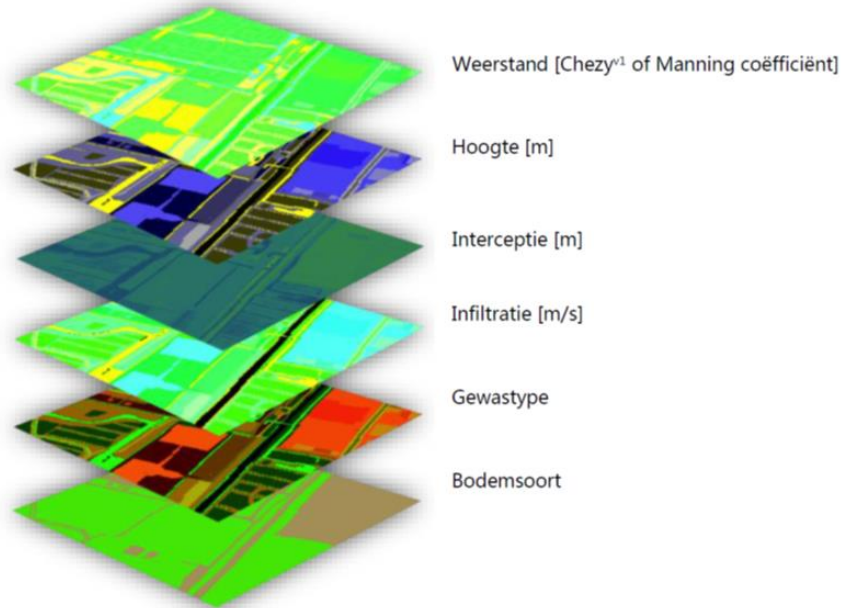
## 3Di: 2 levels

### Calculating grid



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

### Sub-grid level information layers



<http://www.3di.nu/>