

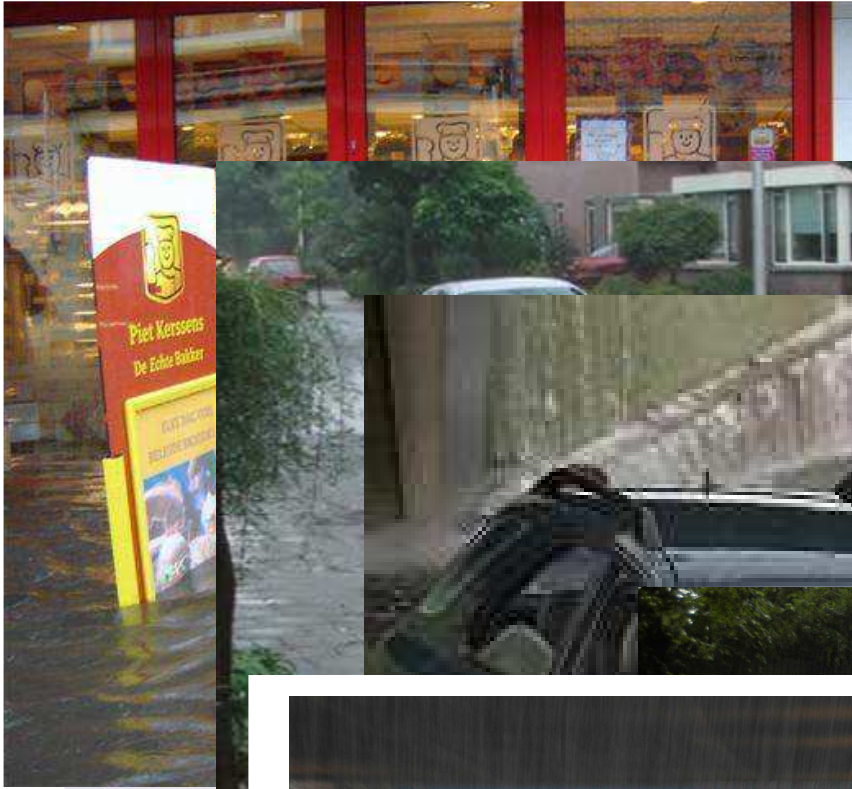
Mainstreaming climate adaptation: Dealing with uncertainties in storm water management

ECCA, Hamburg 2013,
19 March 2013

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- expert water at Tauw consultancy.





Increase in flooding

- Increase of impervious areas
- Climate change
- Optimized sewer systems
- Urban areas pram-friendly.



Climate adapted



Extreme showers

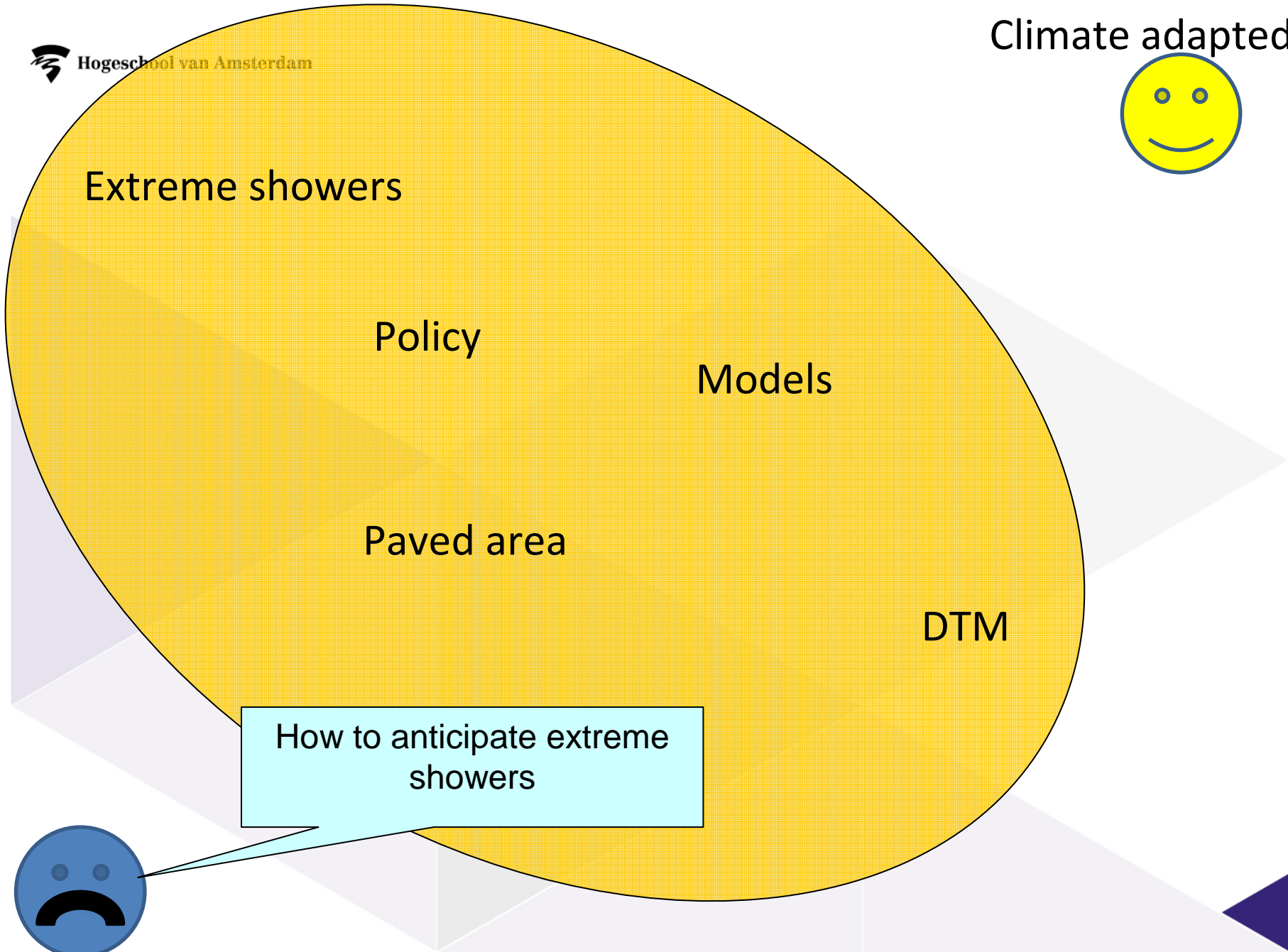
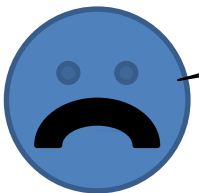
Policy

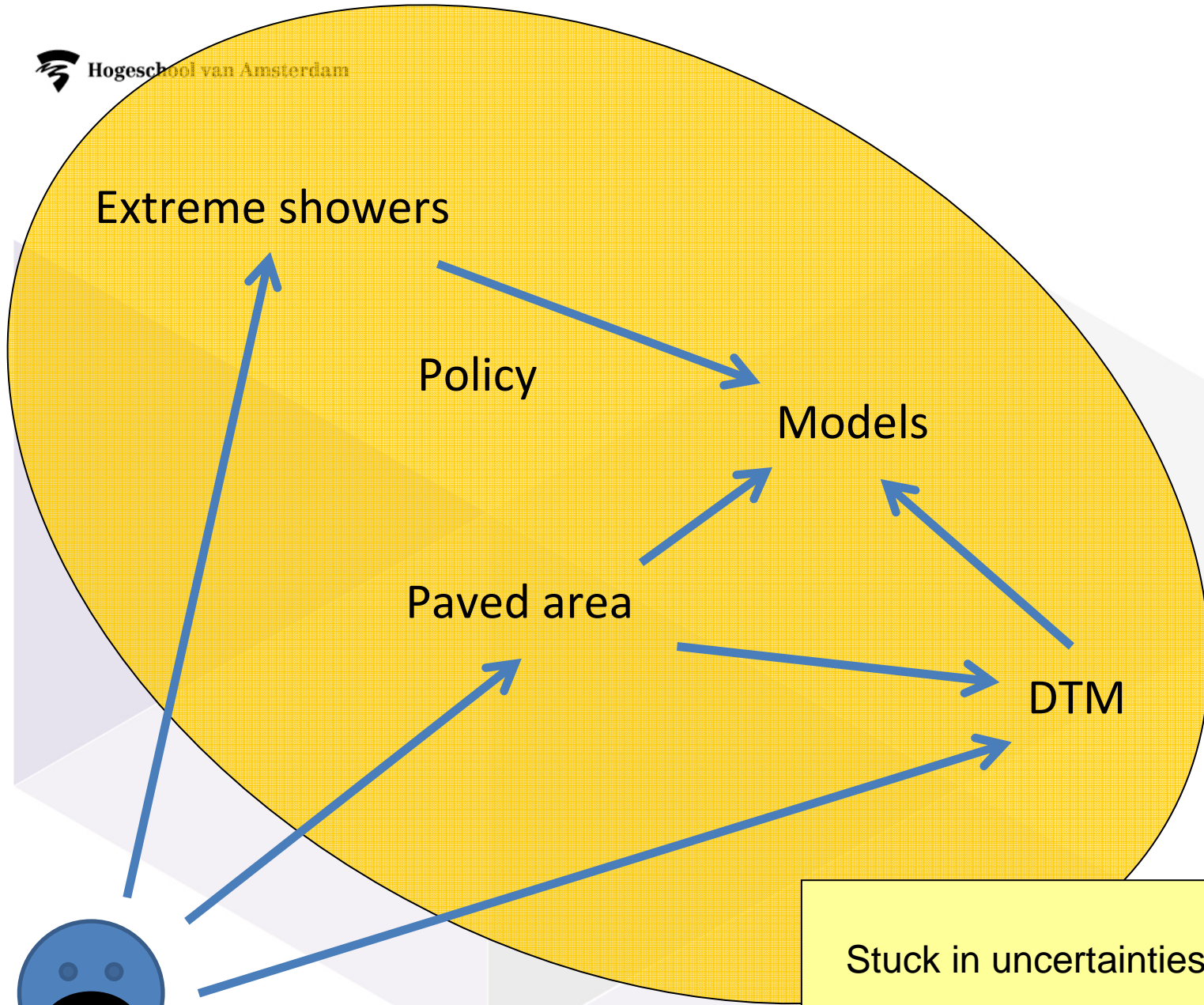
Models

Paved area

DTM

How to anticipate extreme showers





Stuck in uncertainties




Uncertainties

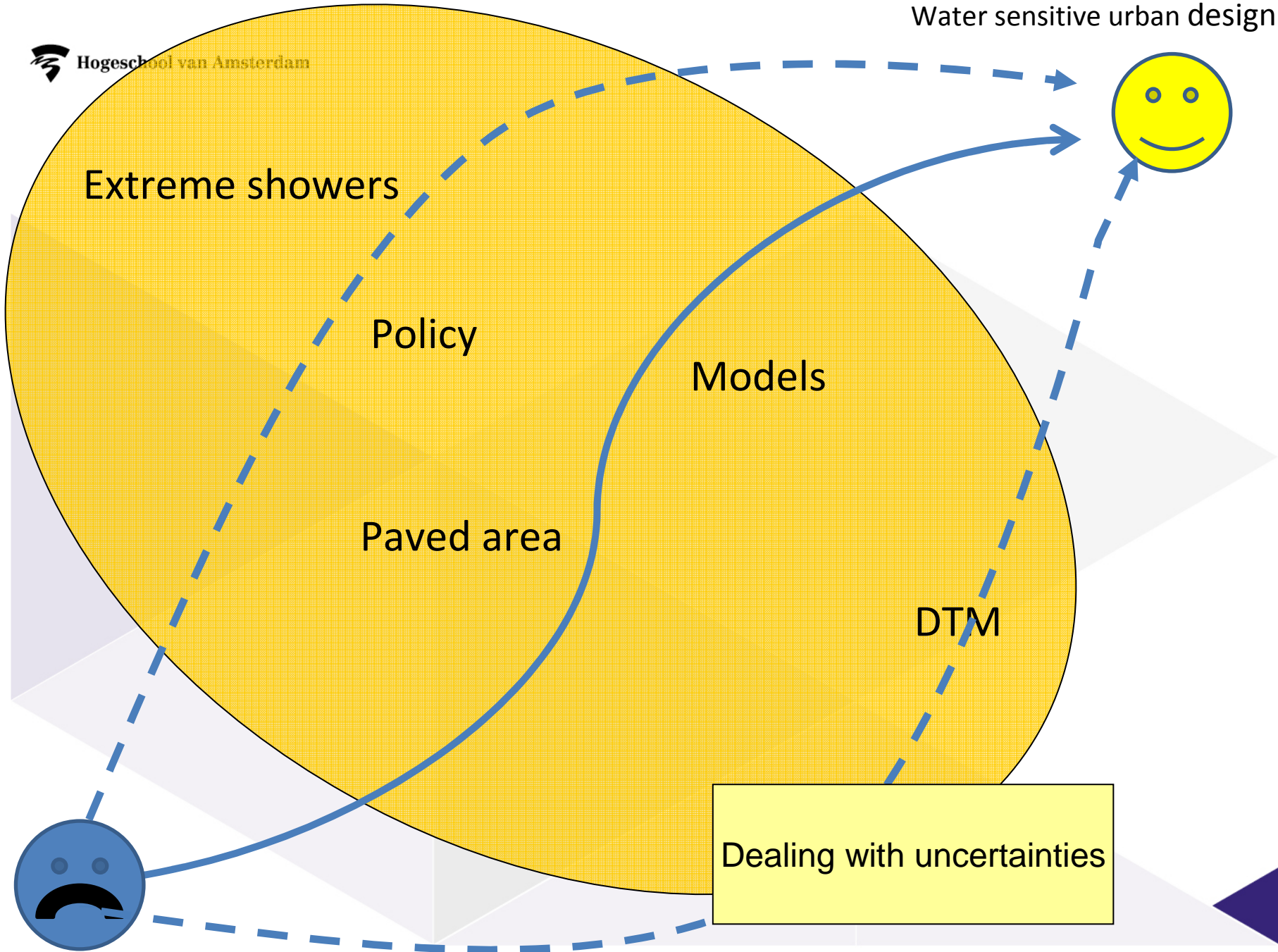
- Rainfall
- Model
- DTM/paved area
- Policy
- Acceptance

But in most cases solutions = clear

- Make more space for water
- Improve urban area
- Together with other stakeholders

Try to accept uncertainties and just move into the right direction.





Research Anticipating extreme showers

2011-2013: results

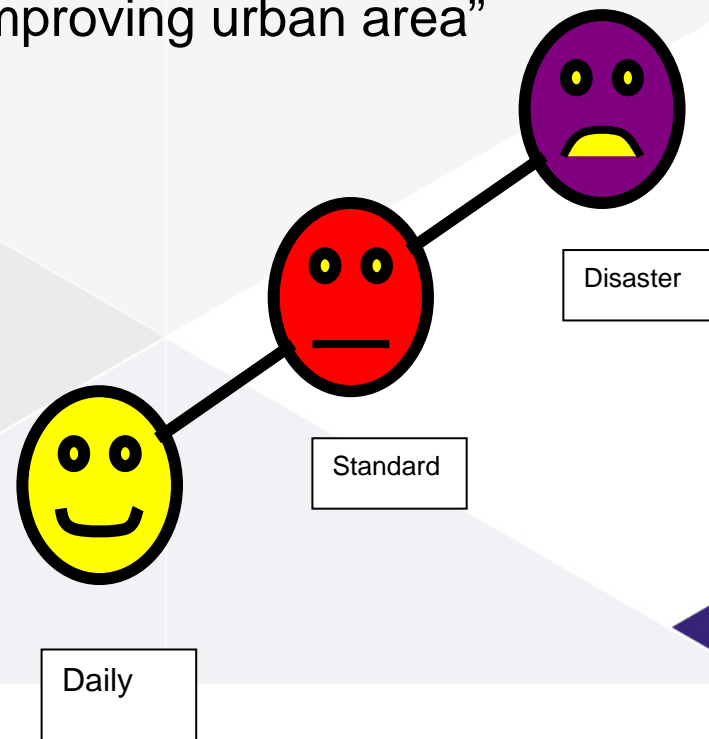
- Modeling → Above ground!
- Rainfall → Large variation
- Damage → Financially not so big
- Approach → Dutch: no rules?
- How to implement → ...

What to do?

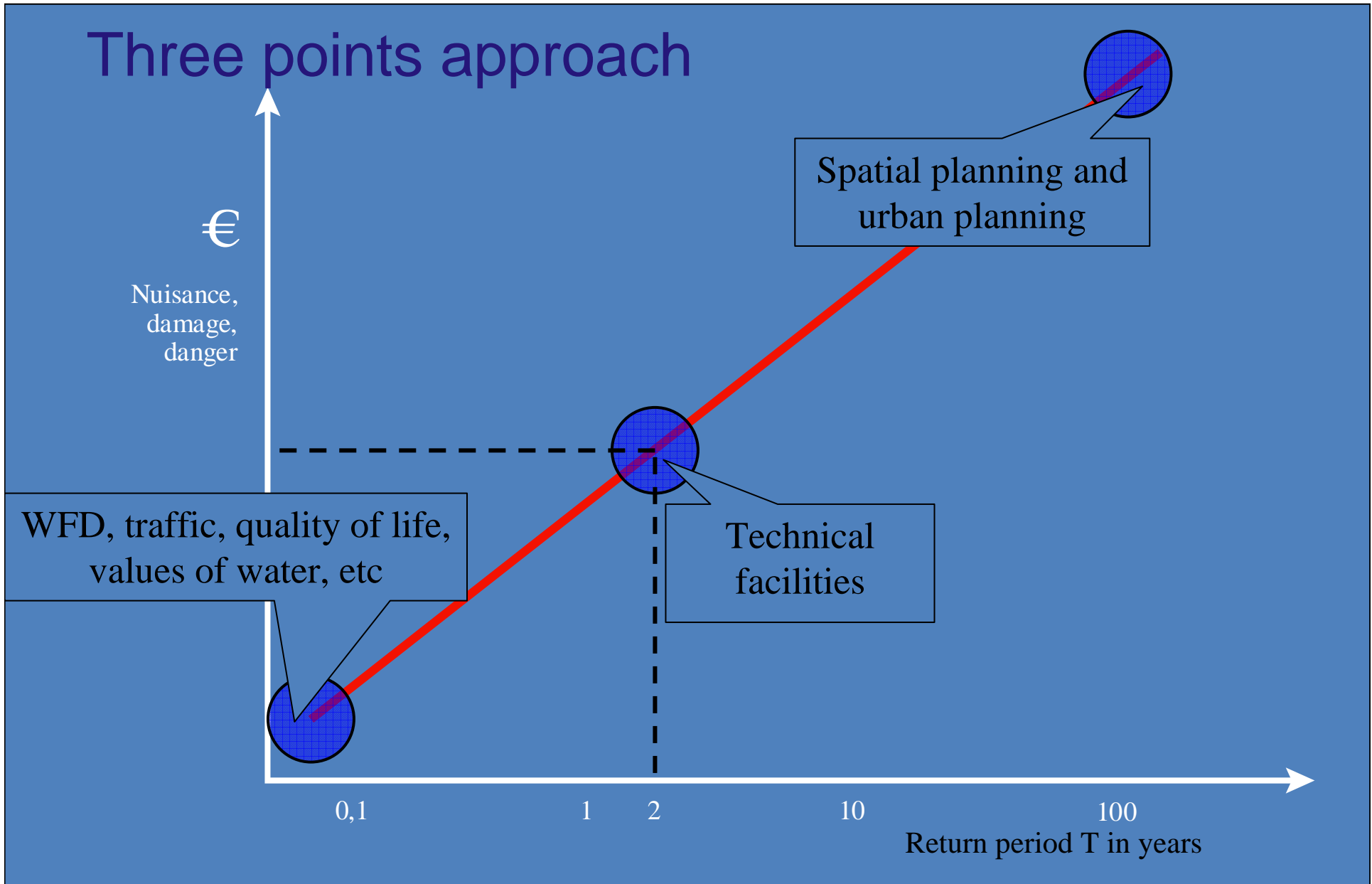
Nothing? (low frequency, mostly no extreme damage)

NO! Be prepared!

- “Climate change is opportunity for improving urban area”
 - Above ground solutions
 - 3 points approach



Three points approach



How to convince?

- Start with extreme
 - 60 mm in 1 hour / above ground modeling
- Visualize
- Workshop
- Work together



Evaluation at T=100

DEM in GIS for analysis of

- Depressions
- Flow paths

Maps meant for

- Communication / Interaction

Specific locations

- 1D sewer & 2D overland flow

Example, Flood mapping





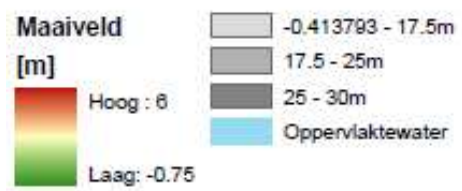
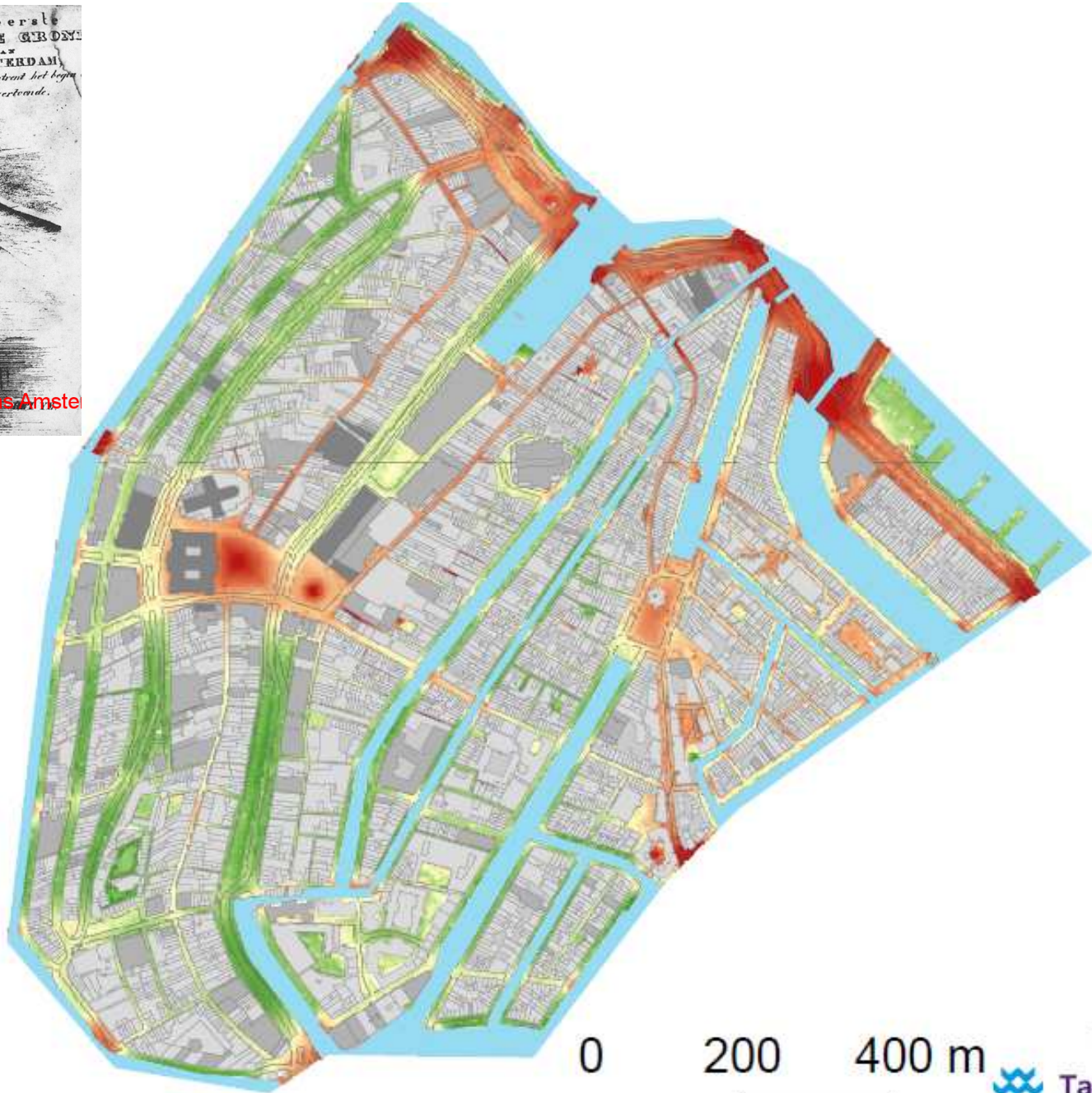
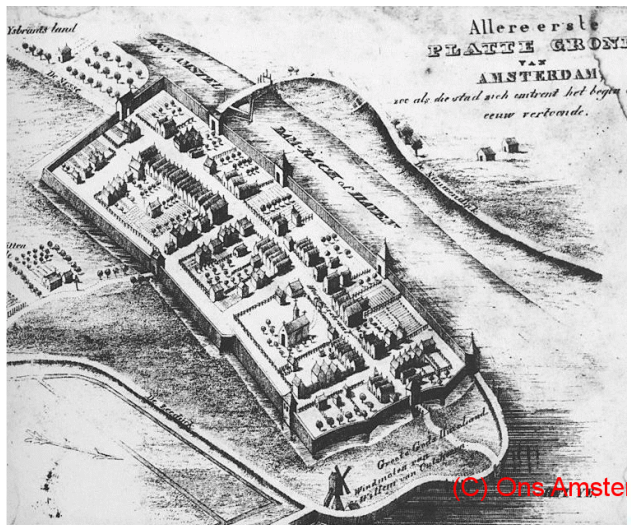
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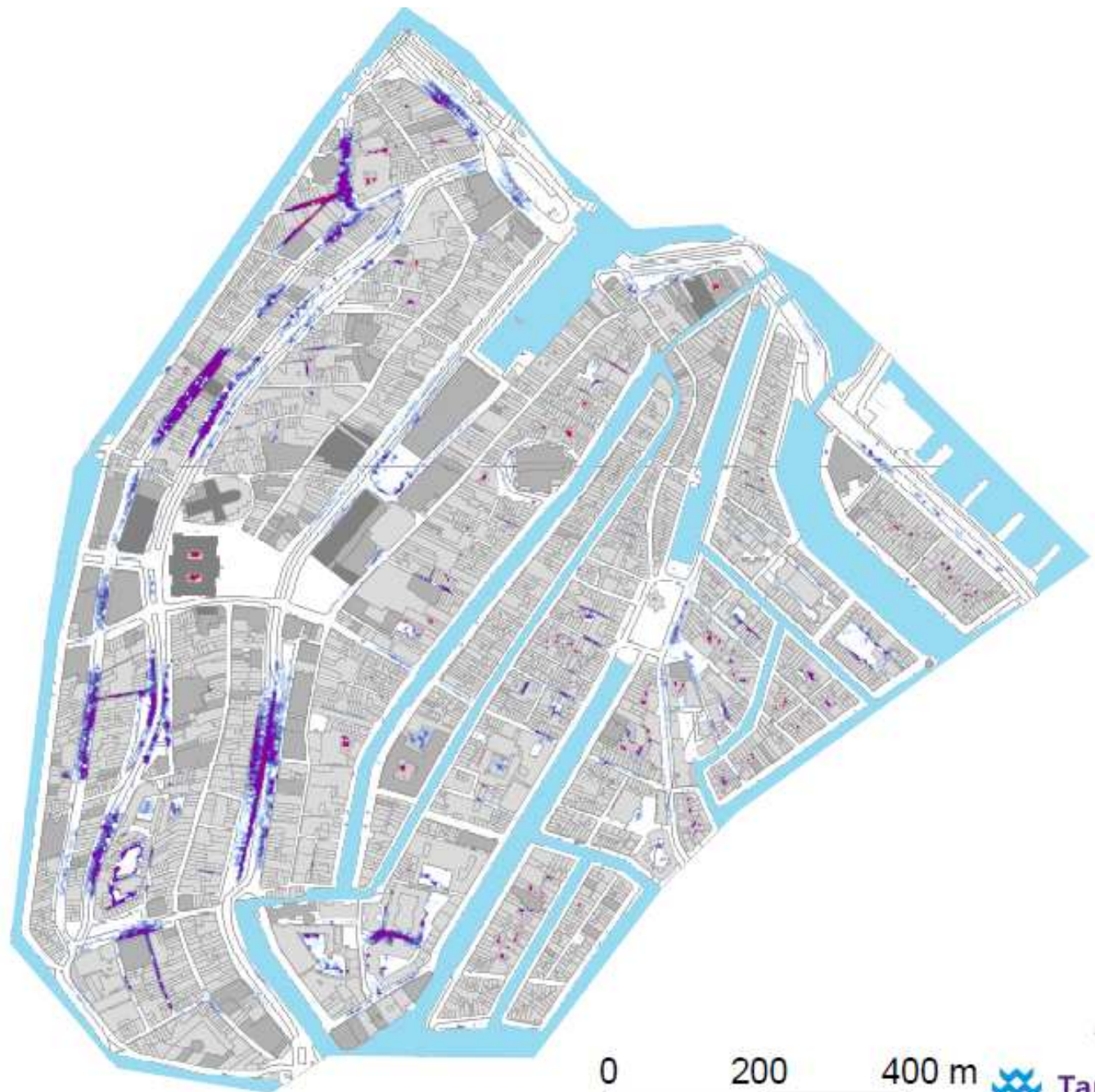
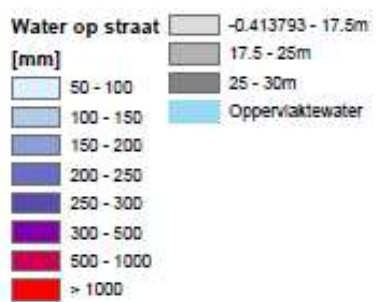


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0 200 400 m



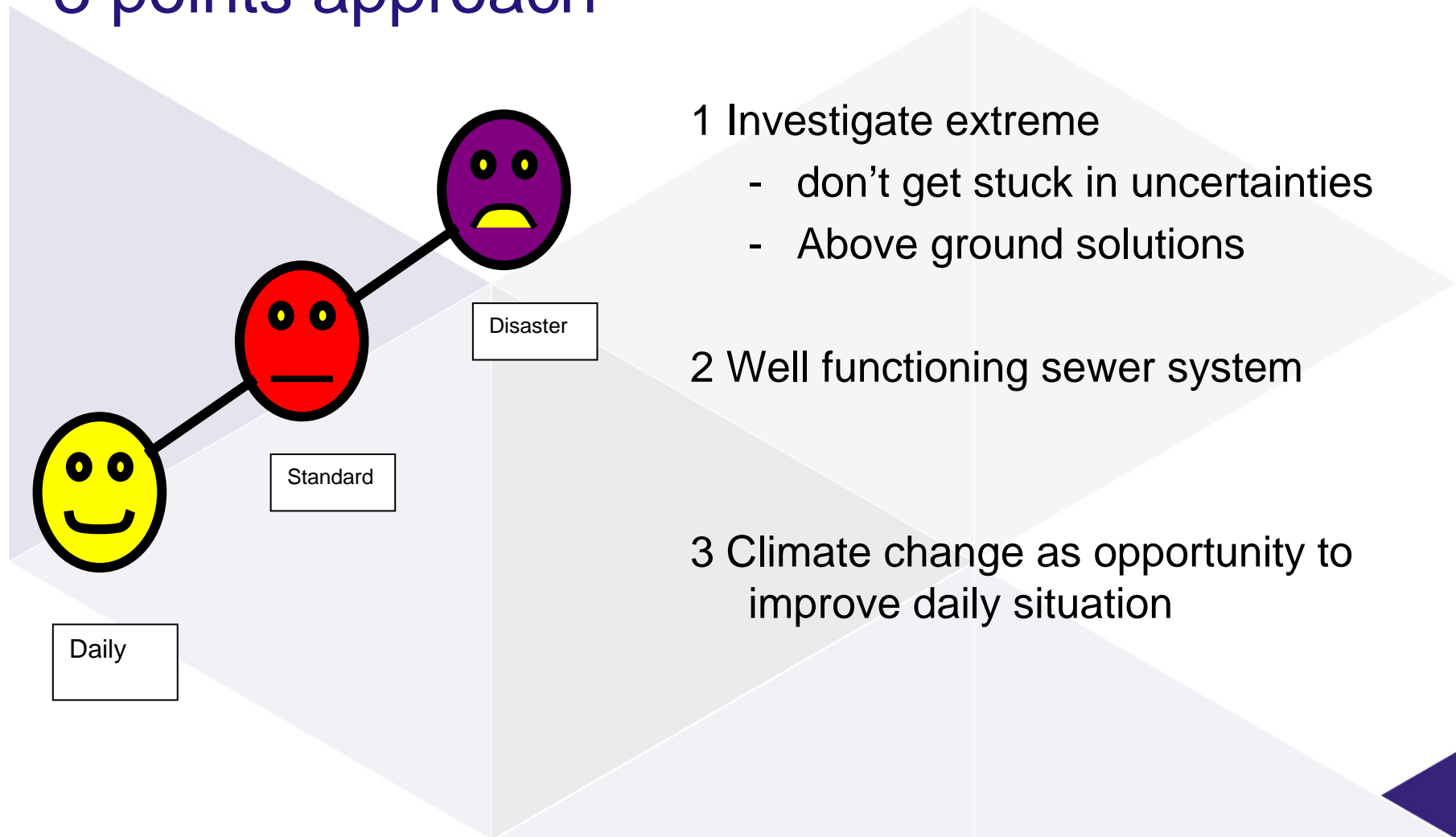


What to do?

Spot on horizon is clear!

- More space for water
 - Street kerbs / street profile
 - Dedicated depression (parks, squares)
- Prevent flow towards vulnerable areas

3 points approach



Questions?

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- Annelies Straatman
- Eric van Dijk