

Three Points Approach for urban flood risk management: *adapting to climate change through transdisciplinarity and multi-functionality*

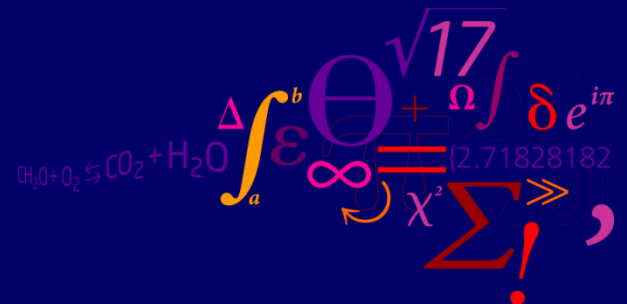
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Outline



- Urban Flood Risk Management
- What is the Three Points Approach?
- Complexity of the urban context
- Transdisciplinarity and Multifunctionality
- Conclusions

“Flooding is the most common natural disaster in Europe and, in terms of economic damages, the most costly one” (WHO, 2002)



Source: World Health Organization (2002). *Floods: Climate Change and Adaptation Strategies for Human Health*. Report on the WHO meeting in London, United Kingdom, 30 June-2 July 2002.

Increasing Urban Flood Risk

- Increasing surface water **quantity**
 - Increasing rainfall and sea level rise (climate change)
 - Increasing impervious areas (increasing wealth)
- Lack of proper **maintenance** of urban infrastructures
 - Increasing complexity of the urban context
 - Gradual loss of tacit knowledge
 - Decreasing social awareness and responsibility

Netherlands (Egmond aan Zee, August 2006)



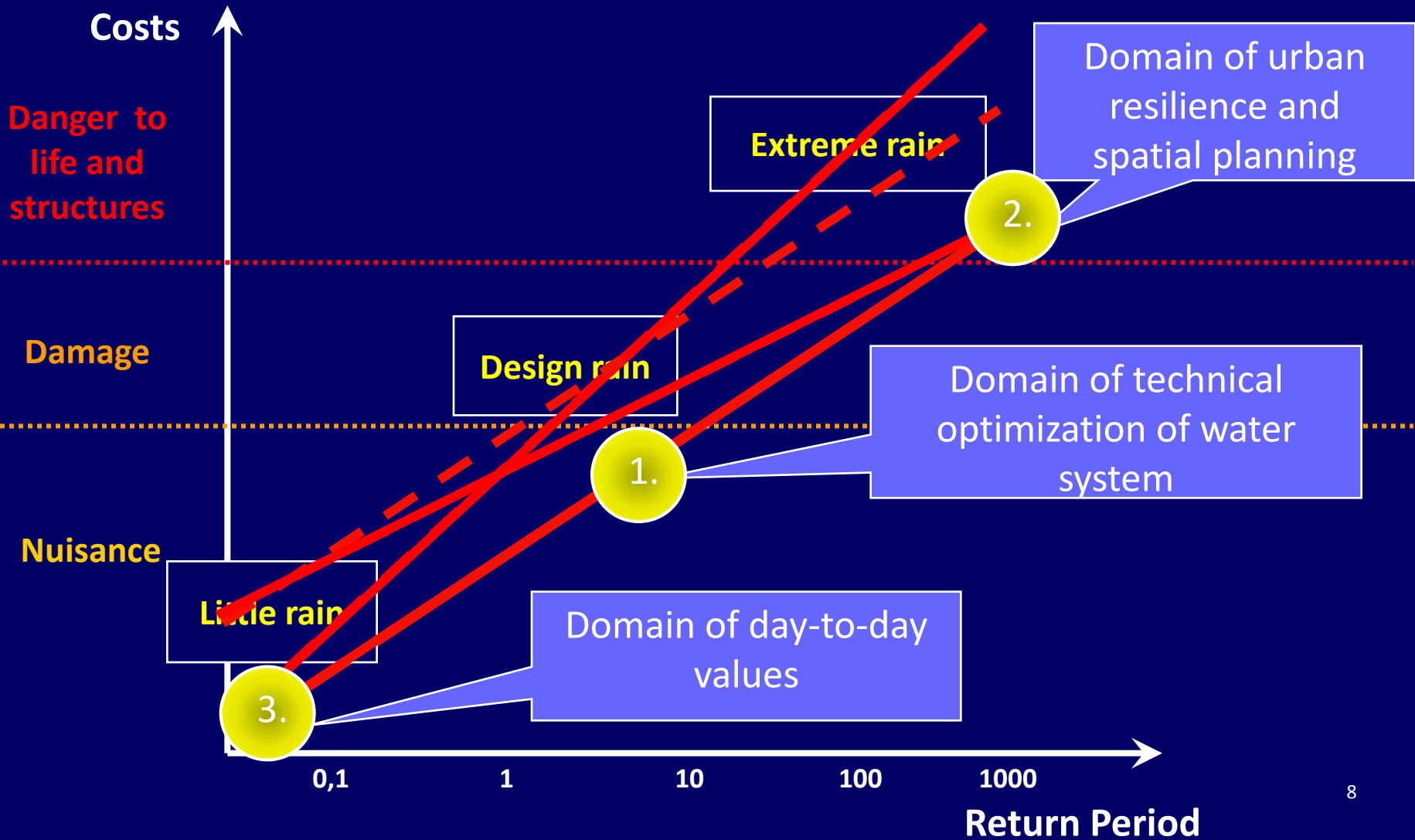
Denmark (Greve, August 2002 & July 2007)



European Flood Directive (2007)

- Flood risk assessment (2011): **medium, high, low** flood return periods
 - Flood hazard maps (physical properties)
 - Flood risk maps (vulnerability)
- Flood risk management plans (2015): **non-structural measures** are preferred aiming to **resilience and preparedness**
- **More holistic approach** (flood is persistent)
- **New opportunities** for the urban water sector

The Three Points Approach



Objectives



- Why is the 3PA needed?
- How to use the 3PA?

Methodology

- Collecting data and knowledge:
 - Practical experience in NL and DK (Egmond aan Zee, Dordrecht, Greve)
 - 35 Interviews (ante-narrative)
 - Literature review
- Developing new ideas:
 - Complexity science: macro-meso-micro knowledge
 - Dialectic
 - Induction
 - Deduction

Netherlands versus Denmark

Netherlands:

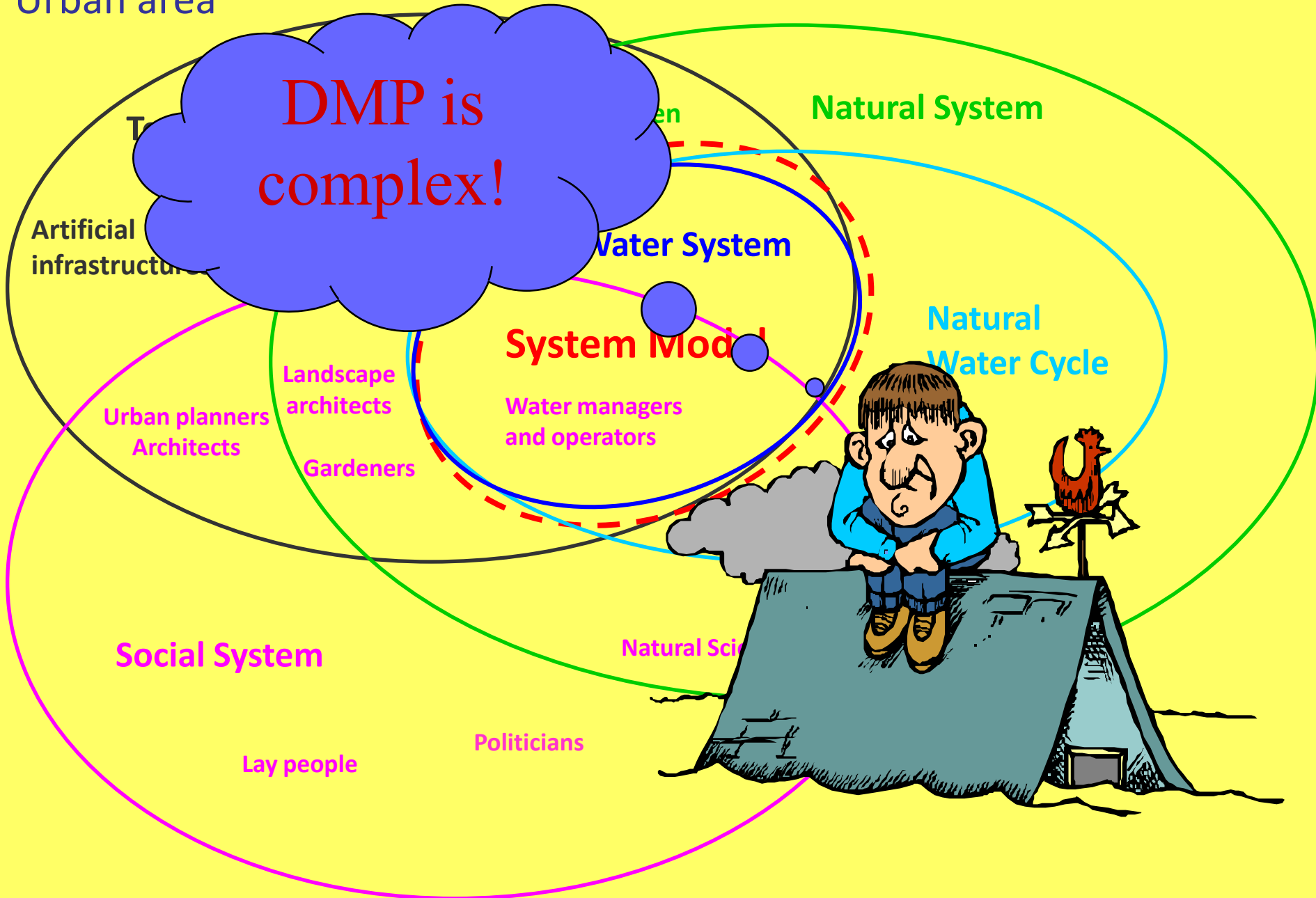
- Used to think about flood risk
- More open to new approaches
- Technicians tend to experiment more

Denmark:

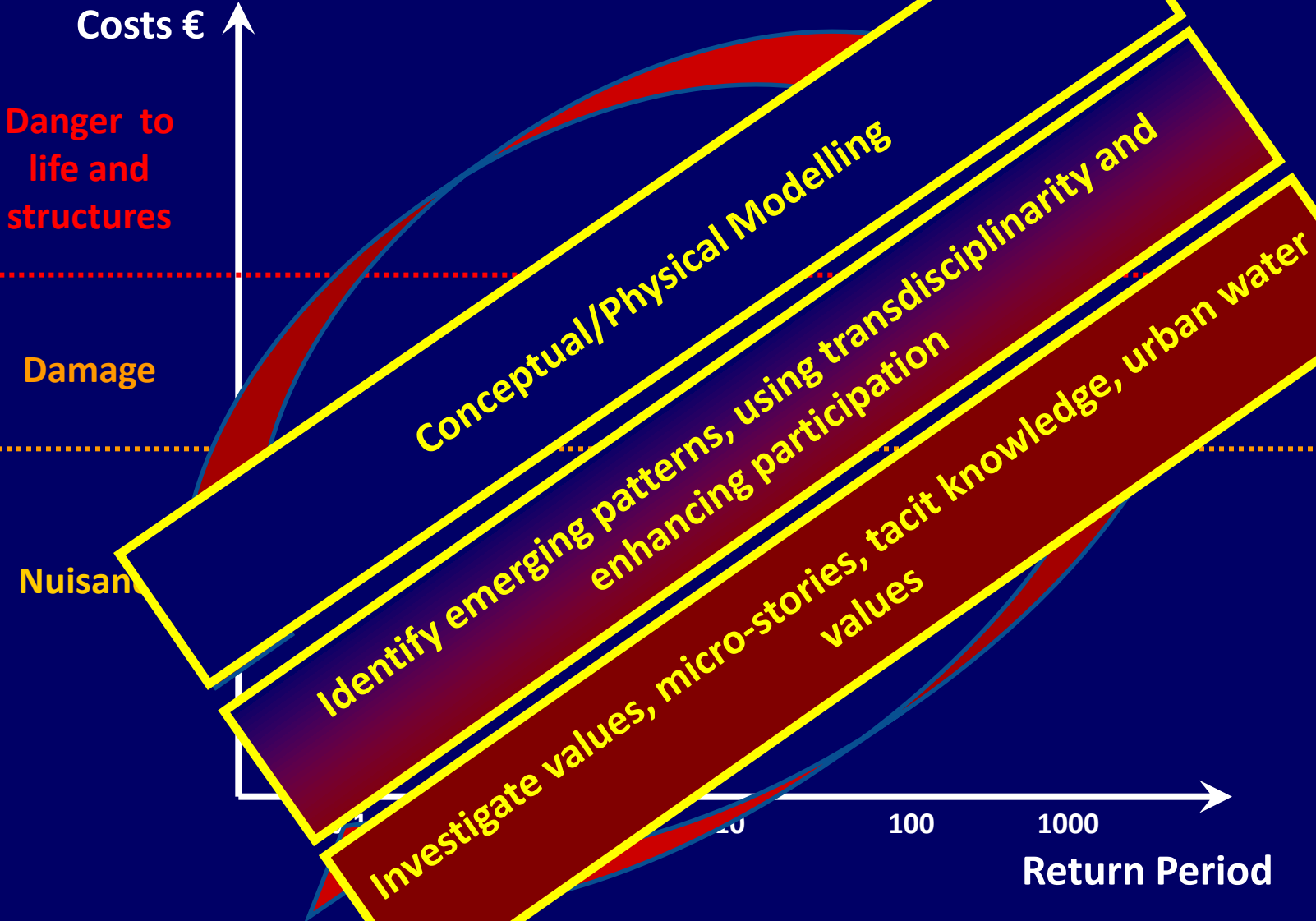
- Flooding is a new challenge
- More resistant to new approaches
- Technicians need stronger tools to support decision making

Context

Urban area

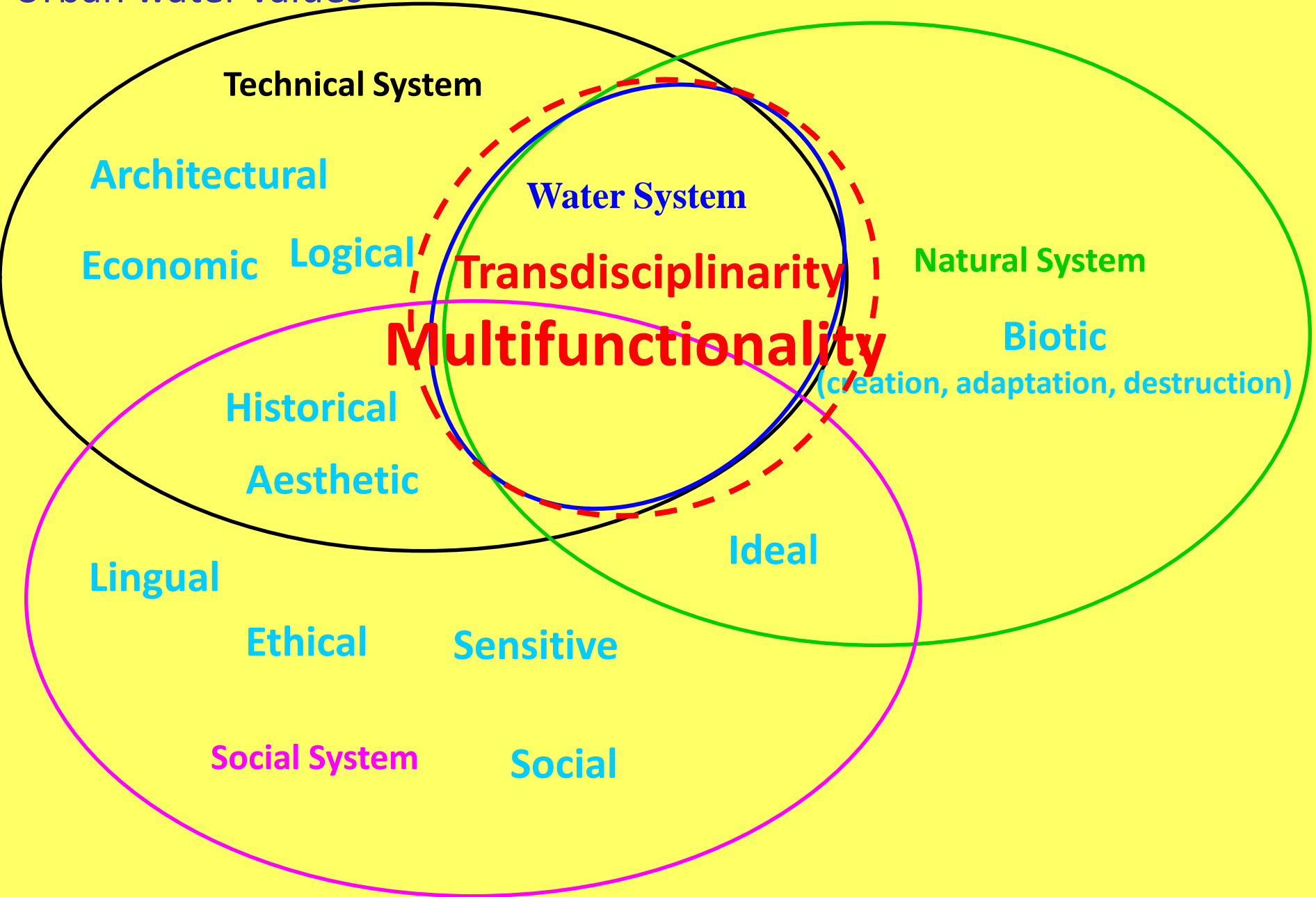


How to use the 3PA?



MICRO INTEGRATION on a DAY-to-DAY base

Urban water values



Multifunctionality: Water Square



Conclusions

- Urban flood risk management is complex
 - Multiple actors and multiple systems,
 - Multiple aspects need to be considered, multifunctional solutions are needed
 - Social awareness provides a stronger base for prioritizing maintenance
 - Different professionals need a common structure easy to understand but able to represent the complexity of reality
- The 3PA can be used as:
 - A **thinking system** at all three levels of knowledge
 - A **communication tool**: easy to understand, describe complexity
 - A **structure** to organize future strategies in the direction of adaptation to climate change



Thanks for your Attention!

