

Smart Delta Cities

Deltas in Times of Climate Change
Session DP FR 4.1: Smart Flood Control in Deltas
Rotterdam, 30th September 2010



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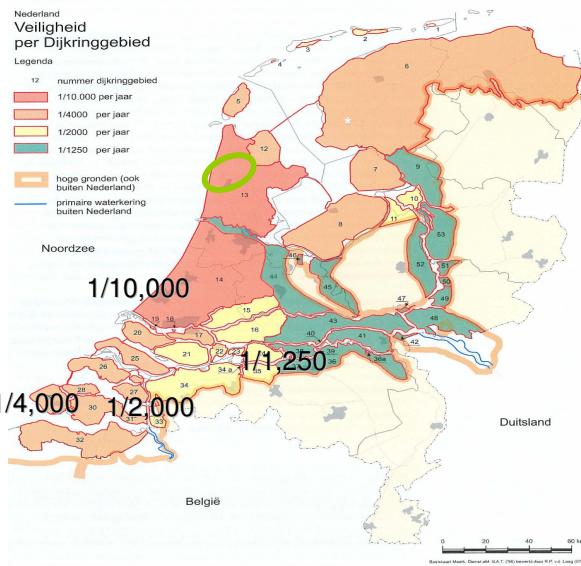
Imagine the result



2050: 70 % of world population lives in **Delta Cities**



Smart Dutch National Flood Protection: Safety level per levee area (dike ring)



Imagine the result

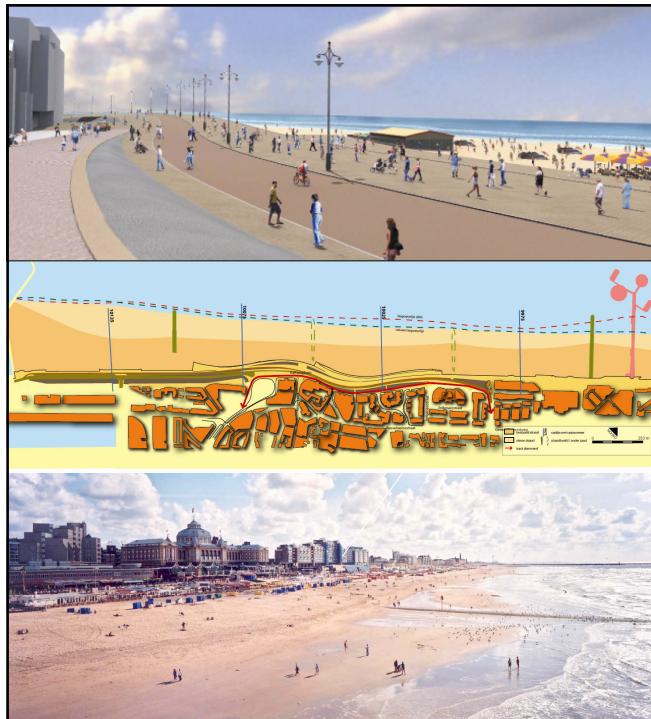
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Smart Flood Protection: Dutch Delta Plan(s) & Rotterdam Barrier(s)



Imagine the result

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Smart solutions for Dutch Coastal resorts

Scheveningen

Reinforcement and Boulevard Development

- Boulevard design Morales
- Included within the existing infrastructure of Scheveningen.
- Complicated process due many interests in the coastal zone

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Smart solutions for Dutch Coastal resorts

Noordwijk

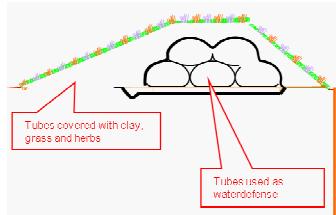
Wide but low dune reinforced by an invisible sea dike

- optimal design taking into account the safety requirements, the view at sea from the existing boulevard and the maintenance cost.

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Flood defenses with smart use of local sediments

concept allows for the realization of flood defenses, using geotextile tubes filled with sediments as a sustainable building material



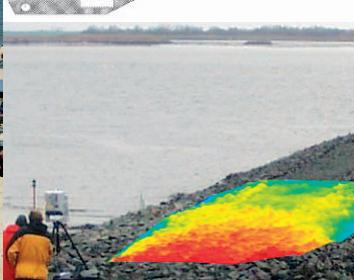
sustainable riverbank-recovery in Zutphen near river IJssel - 18.000 tons sediment, 450 meters

- cost effective flood defense • use of local materials • easy to construct • advanced application of sediments • cradle to cradle solution

Imagine the result



Innovations in smart materials: BASF elastocoast, wave & overtopping resistant



Imagine the result



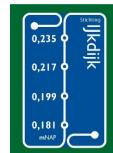
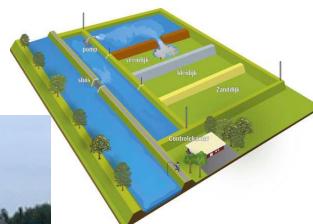
Smart multifunctional urban dikes



Imagine the result

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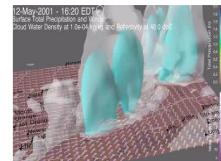
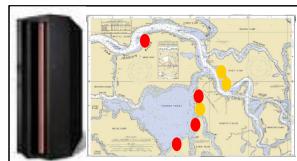
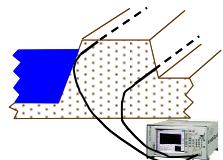
Smart levee testing facility



Imagine the result

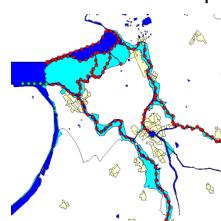
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Flood Control 2015: Smart Integration of IT



Towards a smart flood control organization

- Improve quality of decision making during emergencies
- Fast & real time prediction of calculated risks



Imagine the result

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Smart water storage in parking garages



Imagine the result

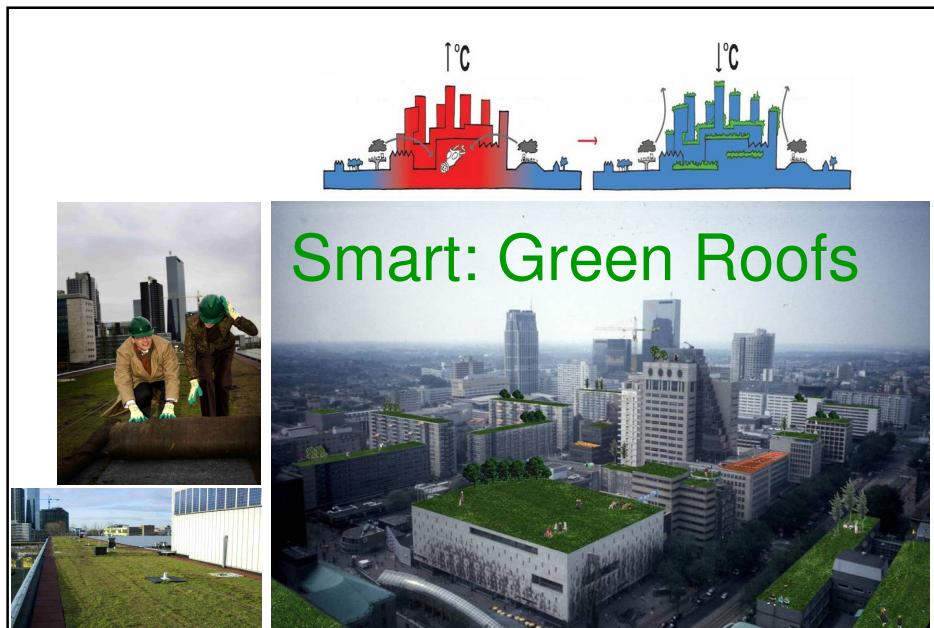
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Also smart: Water Plazas



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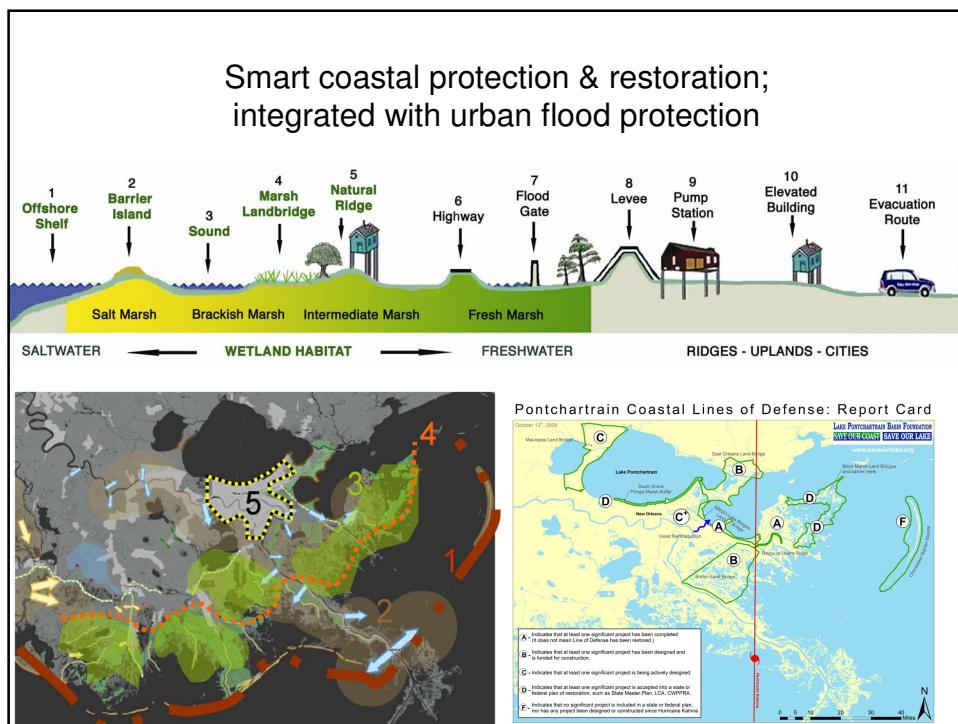
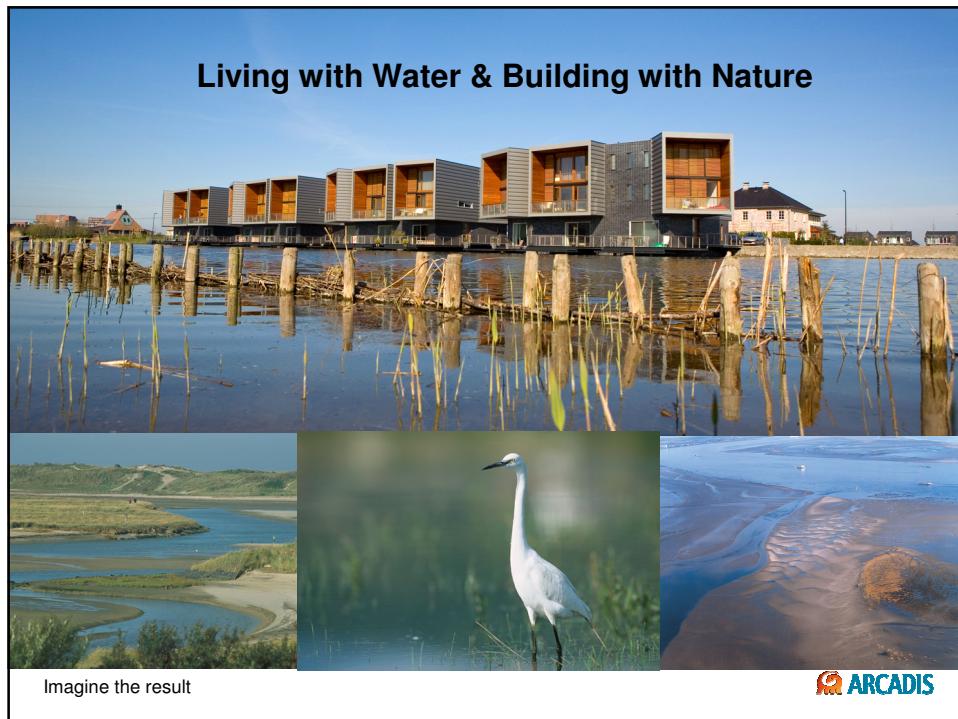


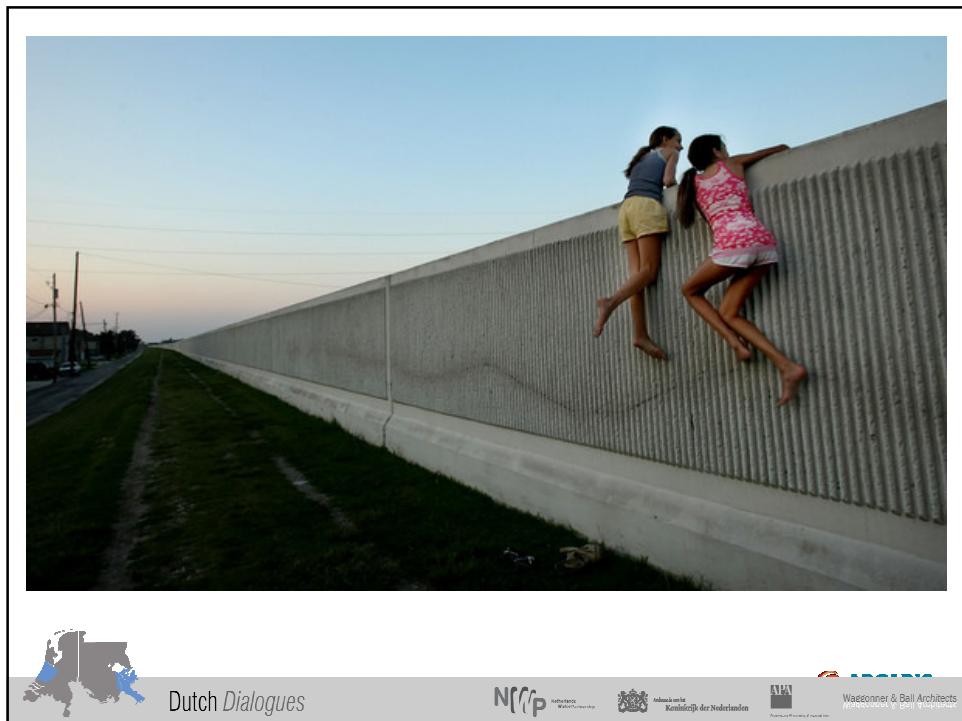
Smart: Green Roofs



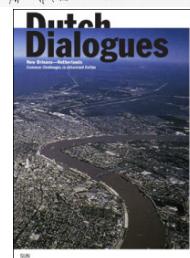
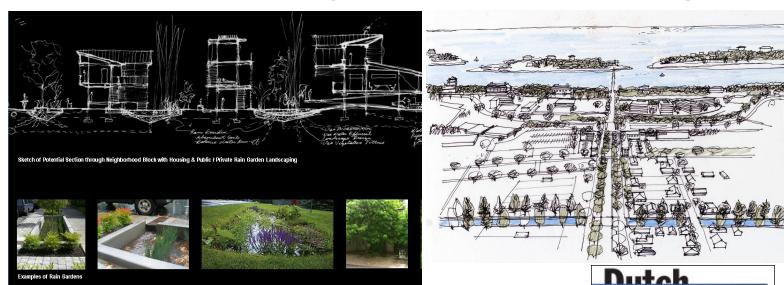
Imagine the result

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Delta Urbanism: Smart integration of urban planning, architecture, landscaping, ecology in urban water management; Dutch Dialogues



Imagine the result

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Smart climate adaptation: Silicon Valley

Sixteen Inch Sea Level Rise
and
Fifty-five Inch Sea Level Rise



Smart climate adaptation: Silicon Valley

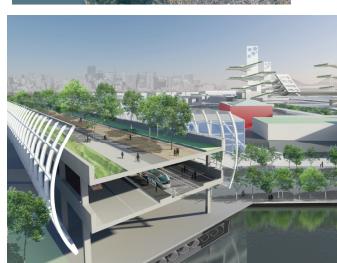
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Smart climate adaptation: Silicon Valley

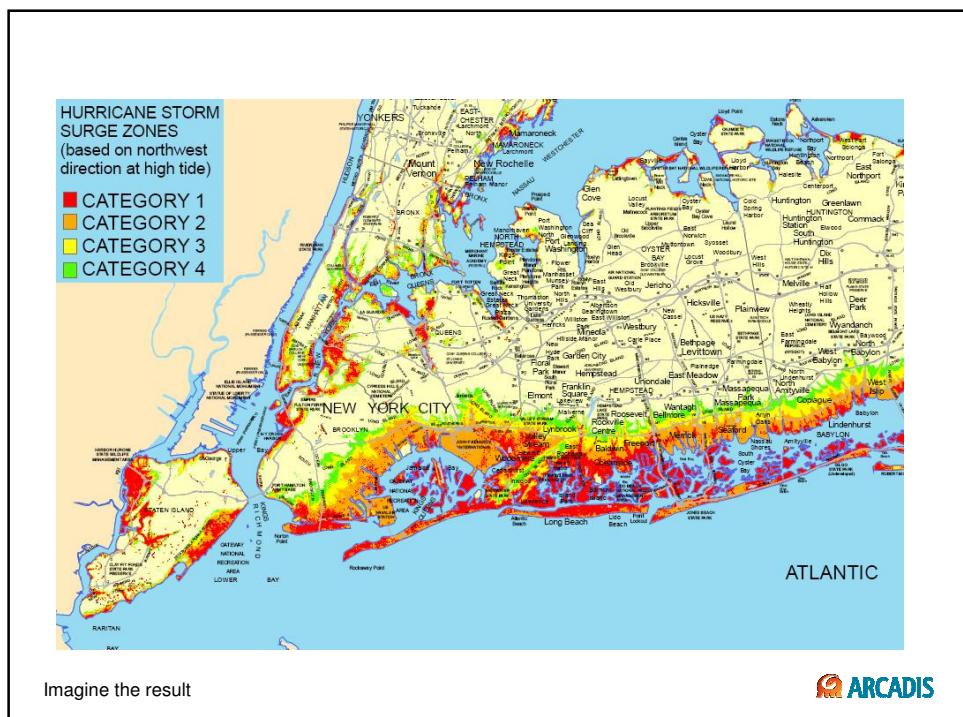


San Francisco Bay BCDC Smart climate change adaptation strategy



Imagine the result

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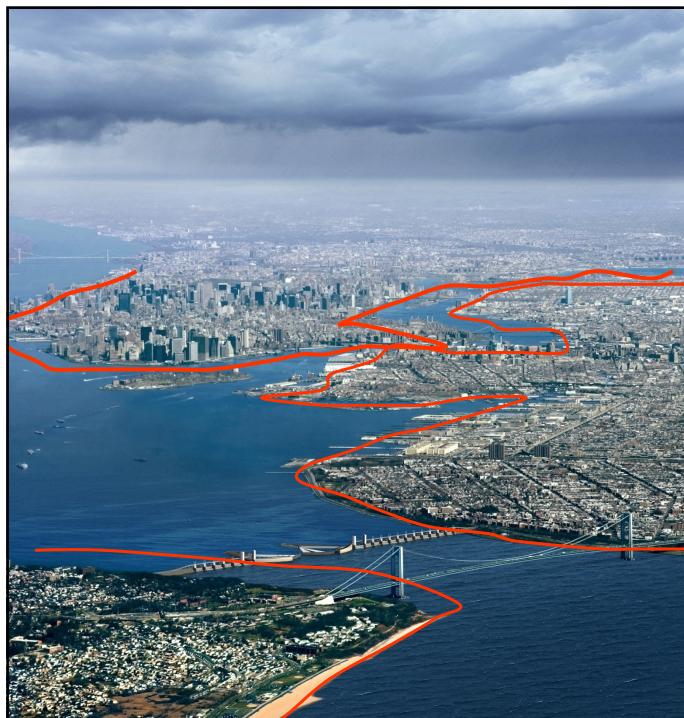


Verrazano Narrows Barrier Artist impression



Imagine the result

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Smart alternative :

**Sustainable
robust
Climate
Proof
Waterfronts**

**Resilient
communities**

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Climate Robust Waterfronts



turning the threat into an opportunity

Imagine the result

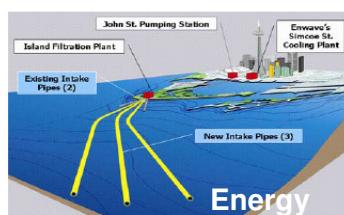


Brooklyn – Rotterdam Waterfront exchange: Community Resilience and Innovation





Resilient Communities



Energy



Transportation
Food



Transportation

Food



Education & Business
Development

Waste



Water & housing

Imagine the result

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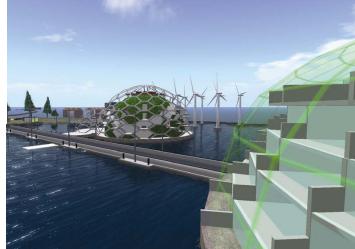
RDM Campus Rotterdam: Research, Design & Manufacturing



Imagine the result

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Smart Climate Adaptation & Knowledge development



Connecting Delta Cities

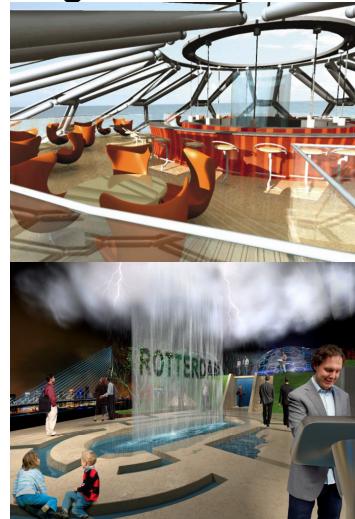
Connecting Delta Cities unites the Delta Cities who strive to make their cities climate proof. They join forces in their quest for innovative adaptation strategies, sharing knowledge and best practices.

Connecting Delta Cities virtually combines the knowledge, experience and convictions of Rotterdam, Tokyo, Jakarta, Hong Kong, Shanghai, New York, London and others.

New York London Rotterdam Shanghai Tokyo Jakarta

www.deltacities.com

Gemeente Rotterdam



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Smart Knowledge Networks: Connecting Delta Cities

Jakarta



New York



Shanghai



Memorandum

Hudson 400 H2O9

World Expo



Rotterdam NWC national water Center



Imagine the result

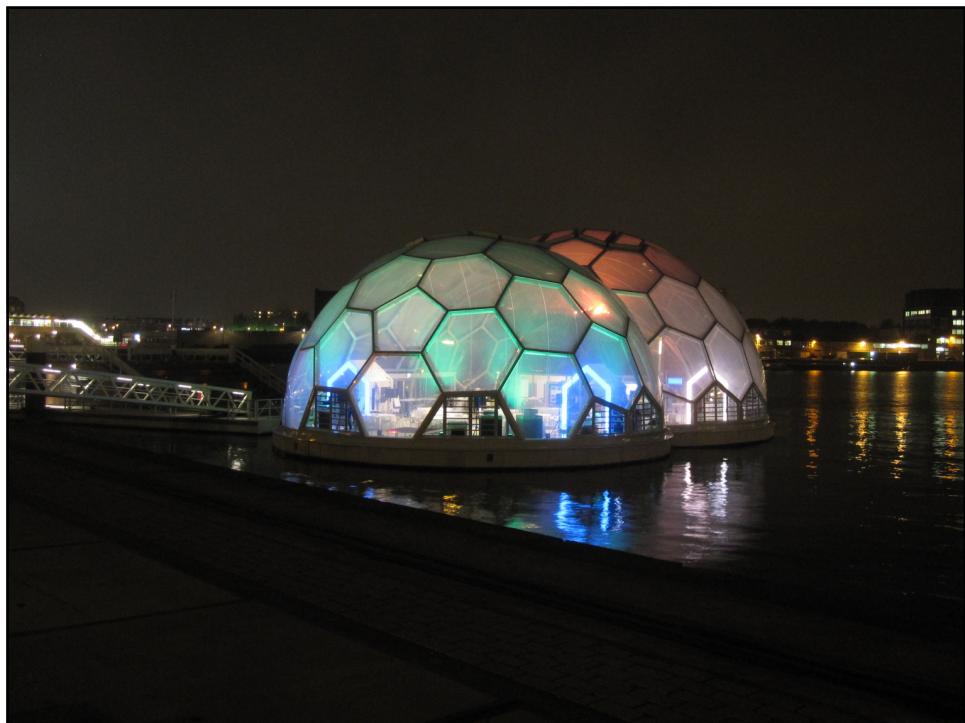
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Rotterdam NWC national water Center



Imagine the result

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**Next step: smart solutions
Smart flood control & smart energy ??**



Thank you!!

