ROTTERDAM
STADSHAVENS
LOCATION WITH EXTREMES
INDUSTRIAL
CONTRAST
EXPOSURE TO THE ELEMENTS
These four elements have a lot of potential to be used in a (passive) climate system. Potential use for Sustainable Design:

- **Wind**: energy, ventilation, cooling, motion, draft, transport - temp,
- **Water**: cooling, humidifying, motion, light-reflection, transport-temp,
- **Light**: energy, atmosphere, heating, air-movement,
- **Soil**: storage, mass/buffer, cooling/heating, constant
THE URBAN PLAN
VISION: STRENGTHEN RDM AS CAMPUS AND BE THE INNOVATION-DOCK OF ROTTERDAM

- DIVERSITY, OLD ALONG NEW

- BOULEVARDS > NEW WATERFRONT

- URBAN CHAMBERS

- SHUTTLE
Restriction:

envelope 50 x 50 x 30m.
Compact / Deep volume...

four elements acting on it...

Wind
Water
Sunlight
Soil
Problem definition:
How?

Increase contact surface area...
Integration
Integration
Orientation and Hierarchy slabs
Orientation > Wind & Sun

18 degrees
Directing the slabs

wind

wind / light

wind / light / program
Integration PCM slab
PCM SLAB
PhaseChangeMaterial (PCM)

basic principle

[ ] from solid > liquid it stores energy

[ ] from liquid > solid it releases energy
Three heat-exchange moments

1] Air-pcm
2] Pcm-water
3] Water-maaswater
Analyses ‘heat-bell’
Development slab
Concept of ‘opening’ the slab to embed PCM
One continuous surface with local adaptations
Visual of the PCM-slab and the two auditoria
Concept infill PCM-units > Increase surface area for AIR-PCM heat exchange
What about the PCM-water heat-exchange?
Watersystem

`COLD WATER`

`HOT RETURN WATER`

`COLD WATER`
In detail
In detail
Physical Model
Horizontal section sl.[#1.], PCM-integration
Visual embedded PCM-bars
Integration SOLAR slab
Mirror surfaces track the azimuth and altitude
Incoming solar rays, curvature requires unique angle per mirror
Rotation X-axis

Rotation Z-axis
Architecture / Slabs
User Experience, Volume vs Space
Walkways
Loopplanken NOG RENDEREN
User Experience, Library
DAKZONE
Thank You...