TOWARDS A NEW PRISON
Facilitating the cyber crime threat
1. **Introduction:** cyber & no man’s land
2. **Research:** traditional to cyber prison
3. **The concept:** unity, trinity, cavity
4. **The scheme:** construction, climate and materialization
SCHIPHOL 2050
Schiphol
Schiphol plaza
Ceintuurbaan
Restrictions
Automatisering maakt het passagiers gemakkelijk

Fritjof 28 april zal koningin Juliana het nieuwe Schiphol officieel openen. Zij zal met de prachtig een in loop hulten van staal, waar het eigenlijk moment van ingrediënt zal tot in de nacht van 7 op 8 mei. Dit zal van het ene uur tot het andere het oude al hopen worden gemaakt en de eerste toedden zijn passagiers alvorens in het nieuw ontstaande gebouw dat ongekende kilometer verder op in de Haarlemmerplas.
Schiphol is very dependent on technology for flows, over all functioning and security
And so are we...
Possibilities of the digitalization
Data does have **value** in **understanding, predicting and influencing** individual behavior and decisions.

Value of data
Individuals

Data

Companies

Tailored choices, goods and services

Value out of data
European data economy

335.5 billion euro
2018

769 billion euro
2025
Data is the new Oil
There is tremendous good that data sharing brings about. But data sharing raises legitimate concerns about economic and national security, citizen and consumer privacy, and loss of intellectual property.
Criminalization of data
Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do.

Jeremy Bentham, Principles of Morals and Legislation, 1832
Pleasure gained from crime

vs.

Pain of punishment
Probability $\times$ Impact $= \text{Risk}$
What role can Schiphol (and its no mans land) play in facilitating the increasing threat of cybercrime in the future?
Existing institutes and regulation
1995: Data protection directive (DPD)  
2018: General data protection regulation (GDPR)
The Hague International criminal court
Europol: European Cybercrime Centre, The Hague
The Hague Security Delta
Tracking – Judging – Punishing
Analogue Prison?

Digital prison?

Cyber crime Detention Centre?

Analogue Prison?
WHY SCHIPHOL?
Schiphol 2050: ‘Schip-hattan’
Traditional airport

vs.

Schip- "hattan"

Visa free
An International zone..

A “No mans land”
Location at Schiphol
Location at Schiphol
Location at Schiphol

37800M²
Location at Schiphol
Combination:
Vulnerability & “no man’s land”
What is a Cybercrime Prison?
RESEARCH
History of punishment and case studies
HISTORY OF PUNISHMENT

Literature research
WHAT IS PUNISHMENT?

1. It is imposed by an authority;
2. It deprives the offender of something valuable;
3. It is in response to an offence
HOW DID METHODS OF PUNISHMENT DEVELOP OVER THE YEARS?
History of punishment

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Changes</th>
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<tbody>
<tr>
<td>&lt;1700s</td>
<td>No prisons: only imprisoned awaiting punishment</td>
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<tr>
<td>1770s</td>
<td>House of corrections introduced in 1560s</td>
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<td>Mass incarceration</td>
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<td>Dormitory</td>
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<td>1850s</td>
<td>Cellular prisons</td>
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<td></td>
<td>Solitary confinement</td>
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<td>Individual cell</td>
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<td></td>
<td>1 type of prison</td>
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<td>1950s</td>
<td>Abolition of solitary confinement</td>
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<td></td>
<td>Individual cell</td>
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<td></td>
<td>More types of prison based on security level</td>
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<tr>
<td>1980s</td>
<td>Individual cell in department</td>
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<td>Ankle cuff</td>
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<td>Digitalization</td>
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<td>2018</td>
<td>Efficiency</td>
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Physical punishment
Psychological punishment
Active rehabilitation
Reducing harmful impact of detention
Future?
1600s: corporal punishment & house of corrections

1700s: suspending freedom as punishment

Early 1800s: introduction of the prison cell

Late 1800s: architecture as disciplinary tool

Late 1900s: isolation to resocialization

2000s: resocialization to efficiency
Typological development
HOW DOES PUNISHMENT WORK FOR CYBERCRIME?
1. It is imposed by an authority;
2. **It deprives the offender of something valuable**;
3. It is in response to an offence
Past
Digital
Physical

Present
Digital
Physical

Future?
Physical
Digital
Spatial isolation

Crime in physical space → Suspense from physical space → Rehabilitating for physical society

Rethinking punishment
Restriction of digital and physical freedom

&

Preparation to return to digital and physical society
PROGRAM & MASSING
Research
- PI Hoogeveen: 22,000 m²
- PI Zwolle I & II: 25,000 m²
- PI Alpehn aan den rijn: 31,000 m²
- PI Grave: 20,000 m²
- PI Nieuwegein: 25,000 m²
- PI de Berg: 17,000 m²
- PI de Schie: 25,000 m²
- PI Over Amstel: 85,000 m²
Gatehouse - Common facilities - Cells & departments
ADDITIONAL PROGRAM
Data center

Work rooms

Surveillance system
MASSING
Model studies
CONCLUSION
Program & massing
Program relations
THE CONCEPT
Unity, trinity and cavity
TRINITY
Unity, trinity and cavity
Gatehouse

Day facilities

Night departments
UNITY
Unity, trinity and cavity
Three buildings in one

Border

Gatehouse

Day facilities

Night departments

Entrance Office Visitation

Cell Common

Sanitary

Sport Labour Yard
Three buildings in one
Three buildings in one
East Facade
Surrounding body of water
CAVITY
Unity, trinity and cavity
Surveillance system independent of digital technology
Dome prison Haarlem
Panopticon blueprint by Jeremy Bentham, 1791
1.) Isolation;
2.) Total visibility;
3.) Asymmetric balance of power;
4.) Optimization of power
Unverifiable surveillance
&
Allowing social interaction
Cavity in section
Cavity in plan
Cavity in detailed section
Dilemma of privacy
Cybercrime is essentially an invasion of privacy and private data. Are you entitled to your own privacy if you take away someone else’s?
Controlled guidance
Security & control
Bottleneck
Bottleneck
Circulation
Entering the second courtyard
Entering the workspaces
Indirection
Indirection
Indirection
Entrance

*Prison as one institute*
The first courtyard

Coming and going
THE PLAN
Construction & materialization
UNITY
Facade of latticeworks
North Facade
Ultra-High Performance Fibre-Reinforced concrete (UHPFRC)
Facade Detail

1. Vertical UHPC lattice panel: 80 x 80 mm cross-section, 5400 x 3250 mm format

1.1. Dowel Pin, sealed threaded sockets with casting, polyurethane washers

2. External wall: PVC waterproofing, 100mm Hempcrete insulation panel in U-steelframe, 250mm precast concrete,

3. Pressed grating, carried by a steel beam

4. Bitumen layer, window sill 1 mm sheet stainless-steel, rigid foam insulation 50mm

5. Reinforcement connection, insulated

6. Double glazing (13 + 18 + 13 mm) in steel frame

7. Toughened glass panel (20 mm) with reflecting metal oxide coating

8. Precast reinforced concrete unit 250 mm

9. Precast reinforced concrete unit 250 mm, water tubes for heating

10. Precast concrete element, rubber support block

11. Lattice-facade support: reinforced-concrete edge beam

12. In situ reinforced concrete 300

13. Precast reinforced concrete roof units 250 - 100 mm

14. Extensive Planting, infill gravel, 40 mm substrate, 40 mm drainage layer, bitumen water proofing, rigid foam insulation EPS 200 mm, Precast reinforced concrete unit 150 mm, polished finishing

15. Precassembled concrete furniture 50 - 100 mm

16. U-steel, adjustable connection to cell, to correct spacing
HEATING
Concrete core activation
Taking advantage of thermal mass
Low temperature system
Stable occupation and heating demand

Depending on requirements, in combination with additional systems
1. Vertical UHPC lattice panel: 80 x 80 mm cross-section, 5400 x 3250 mm format
1.1. Dowel Pin, sealed threaded sockets with casting, polyurethane washers
2. External wall: PVC waterproofing, 100mm Hempcrete insulation panel in U-steel frame, 250mm precast concrete,
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15. Precast concrete furniture 50 - 100 mm
16. U-steel, adjustable connection to cell, to correct spacing

Concrete core activation
Entrance
$Prison$ as one institute
Entrance
3.1 Vertical UHPC lattice panel: 5400 x 3300 mm, air cavity 1350 mm, PVC waterproofing, Hempcrete insulation panels 100 mm, precast concrete unit 250 mm, polished finishing.

3.2 Steelpressed grating walkway 1000 x 1150 mm.

3.3 Concrete facade panel 100 mm, PVC waterproofing, Hempcrete insulation panels 100 mm, precast concrete unit 250 mm, polished finishing.

3.4 Prefab concrete unit 100 - 250 mm, pouring strip, correcting spacing.

3.5 Prefab concrete floor 300 mm, core heating tubes, polished terrazzo finishing.

3.6 Prefab concrete unit, floor 200 mm, walls 100 - 250 mm, ceiling 100 mm, integrated core heating tubes.

3.7 Integrated kitchen unit.
Visitation
Entering the second courtyard
Data is almost sacred
Glass walkway
Ventilation & Heating
Construction zoom
The third courtyard

Exercise
Plan
Common
Allowing social interaction
Common
Allowing social interaction
3.1 Vertical UHPC lattice panel: 5400 x 3300 mm, air cavity 1350 mm, PVC waterproofing, Hempcrete insulation panels 100 mm, precast concrete unit 250 mm, polished finishing

3.2 Steelpressed grating walkway 1000 x 1150

3.3 Concrete facade panel 100 mm, PVC waterproofing, Hempcrete insulation panels 100 mm, precast concrete unit 250 mm, polished finishing

3.4 Prefab concrete unit 100 - 250 mm, pouring strip, correcting spacing

3.5 Prefab concrete floor, 300 mm, core heating tubes, polished terrazzo finishing

3.6 Prefab concrete unit, floor 200 mm, walls 100 - 250 mm, ceiling 100 mm, integrated core heating tubes

3.7 Integrated kitchen unit

1.1 Vertical UHPC lattice panel: 5400 x 3300 mm, air cavity 1350 mm, PVC waterproofing, Hempcrete insulation panels 100 mm, precast concrete unit 250 mm, polished finishing

1.2 Steelpressed grating walkway 1000 x 1150

1.3 Double glazing (9-13-9 mm) in steel frame, Vertical UHPC lattice panel: 5400 x 3300 mm

1.4 Prefab concrete unit 100 - 250 mm, pouring strip, correcting spacing

1.5 Prefab concrete floor, 300 mm

1.6 Prefab concrete columns 250 x 250 mm

2.1 Vertical UHPC lattice panel: 5400 x 3300 mm, air cavity 1350 mm, PVC waterproofing, Hempcrete insulation panels 100 mm, precast concrete unit 250 mm, polished finishing

2.2 Steelpressed grating walkway 1000 x 1150

2.3 Concrete facade panel 100 mm, PVC waterproofing, Hempcrete insulation panels 100 mm, precast concrete unit 250 mm, polished finishing

2.4 Prefab concrete unit 100 - 250 mm, pouring strip, correcting spacing

2.5 Glass floor panel, wearing layer, 8 mm toughened safety glass, printed with dots to provide non-slip finish

2.6 Precast concrete floor, 250 mm, polished finishing

2.7 Ribfloor 550/650 mm, Insitu cast cantilevering element, terrazzo finishing

2.8 Concrete column 300 x 300 mm

Common
Allowing social interaction
Ventilation & Heating
What role can Schiphol (and its no mans land) play in facilitating the increasing threat of cybercrime in the future?