ENGAGING IN HEALTH IN THE FUTURE CITY

P5 presentation

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By 2050 68% of world's population will live in cities.

Amsterdam is the fastest growing city in the Netherlands.

Amsterdam will have a population count of 1,567,349 in 2100.

United Nations
Het Parool
Municipality of Amsterdam
NOWADAYS

MATERIALISM

2100

EXPERIENCES
AMSTEL 2100 POPULATION TREND

- 1000 residents/km²
AMSTEL 2100 STRATEGY

1. Deal with infrastructure in the area in order to gain space for densification

2. Reinforce existing qualities in the area in order to emphasize local identity and hierarchy

3. Prepare for the vertical city and 3D urbanism
1. Deal with infrastructure in the area in order to gain space for densification

2. Reinforce existing qualities in the area in order to emphasize local identity and hierarchy

3. Prepare for the vertical city and 3D urbanism
THE FIRST WEALTH IS HEALTH

Ralph Waldo Emerson, 1860
CURRENT DEVELOPMENT WITHIN HEALTH

PHYSICAL

MENTAL

SOCIAL

HEALTH
CURRENT DEVELOPMENT WITHIN HEALTH
CURRENT DEVELOPMENT WITHIN HEALTH

Physiological needs: Health as a matter of survival
- air, water, food, shelter, sleep, clothing, reproduction

Safety needs: Personal security, employment, resources, health, property

Love & Belonging needs: Friendship, intimacy, family, sense of connection

Esteem needs: Respect, self-esteem, status, recognition, strength, freedom

Self-Actualization needs: desire to become the most that one can be

Health as self-enrichment

Prevention

Treatment
with the future population growth and technological developments the current healthcare system is not sustainable
HEALTH RESEARCH
CURRENT DEVELOPMENT WITHIN HEALTH

The current system of health works spatially in a wide network with different levels of care. The system works in a way where there is a limitation on connectivity when it comes to referral or other cooperations. It consists of multiple places with different care, all over a certain area. Not every facility has a connection with another one, no matter what type. An important point of this structure is that the medical data is stored in one place, and lacks good communication within the larger network.
CURRENT DEVELOPMENT WITHIN HEALTH

UNFRIENDLY CHARACTER OF HOSPITALS

- lack of privacy
- the farewell of friends and family
- spending the night with strangers
- minimum contact with responsible doctors
- overabundance of contact with different staff
- poor acoustics
- feeling of loss by logistics
The future system of health is seamlessly connected with all types of facilities. The patient will be treated in the place where he or she wants to be treated - very complex procedures or long stay excluded. The medical data is owned by the patient itself and he or she can choose with whom to share that data. In case of emergencies, the overall connected network knows where the quickest available emergency department is, and the data will be available for the urgent caretakers.
from sending patients to health care on their own
to providing health care to the patients
FUTURE OF HEALTH

wearable health trackers

virtual and robotic treatments
a house of health for the Amstel community

It has same day treatments, provides medical and environmental education, serves as a social meeting place and therefore has an important public role in the urban context of the Amstel
PROJECT STRATEGY

CONCEPT

A JOURNEY OF PROGRESSION
PUBLIC ROLE

ORGANISATION

EFFICIENT PATIENT LOGISTICS
DISTINCTION IN PATIENT FLOWS

MATERIALISATION

HEALING ENVIRONMENT
RESEARCH DESIGN PRINCIPLES

SOCIAL AND MENTAL HEALTH PRINCIPLES

access to green, active, social and safe places

HEALING ENVIRONMENT PRINCIPLES

facilitate autonomy, privacy, personalization, social comfort and workflow
PROJECT AMBITION

Amstel 2100 inhabitants: 150,000

1 emergency case per 10 inhabitants
1 clinical admission per 35 inhabitants

triple medical department focus

- acute care
- outpatient care
- mental care

a visit to the Amstel Health Base is autonomous and ambulantory
## PROJECT PROGRAM

<table>
<thead>
<tr>
<th>Category</th>
<th>General</th>
<th>Acute Care</th>
<th>Outpatient Care</th>
<th>Mental Health</th>
<th>Public</th>
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<tbody>
<tr>
<td>entrance</td>
<td>50 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>foyer</td>
<td>100 m²</td>
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<td></td>
</tr>
<tr>
<td>pod storage</td>
<td>500 m²</td>
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<td></td>
<td></td>
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<tr>
<td>logistic circulation</td>
<td>150 m²</td>
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<td></td>
</tr>
<tr>
<td>office</td>
<td>100 m²</td>
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<td></td>
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<tr>
<td>installation space</td>
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<td>drone logistics</td>
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<td>medical supplies storage</td>
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<table>
<thead>
<tr>
<th>Area</th>
<th>Acute Care</th>
<th>Outpatient Care</th>
<th>Mental Health</th>
<th>Public</th>
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<tbody>
<tr>
<td>Preparation center</td>
<td>80 m²</td>
<td>600 m²</td>
<td>50 m²</td>
<td>700 m²</td>
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<tr>
<td>Operation center</td>
<td>200 m²</td>
<td>60 m²</td>
<td>100 m²</td>
<td>400 m²</td>
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<tr>
<td>Treatment center</td>
<td>400 m²</td>
<td>200 m²</td>
<td>120 m²</td>
<td>400 m²</td>
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<tr>
<td>Recovery center</td>
<td>320 m²</td>
<td>50 m²</td>
<td>100 m²</td>
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<td>Employee space</td>
<td>50 m²</td>
<td>70 m²</td>
<td>30 m²</td>
<td>150 m²</td>
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<tr>
<td>Employee cafeteria</td>
<td>70 m²</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Toilets</td>
<td>30 m²</td>
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<tr>
<td>Installations</td>
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<tr>
<td>Circulation</td>
<td>200 m²</td>
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<tr>
<td>Installation space</td>
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<tr>
<td>Circulation</td>
<td>250 m²</td>
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</tbody>
</table>

### Public Areas
- Visiting area: 700 m²
- Food area: 400 m²
- Playground: 250 m²
- Exhibition space: 400 m²
- Preparation center: 80 m²
- Operation center: 100 m²
- Recovery center: 30 m²
- Employee space: 150 m²
- Employee cafeteria: 120 m²
- Toilets: 30 m²
- Installations: 40 m²
- Circulation: 60 m²

### Acute Care Areas
- Trauma center: 1600 m²
- Operation center: 1460 m²
- Treatment center: 1750 m²
- Recovery center: 1750 m²
- Employee space: 1750 m²
- Toilets: 30 m²
- Installations: 40 m²
- Circulation: 60 m²

### Mental Health Areas
- Exam room: 240 m²
- Group therapy: 250 m²
- Consultation rooms: 370 m²
- Employee space: 250 m²
- Toilets: 30 m²
- Installations: 40 m²
- Circulation: 60 m²

### Outpatient Care Areas
- Preparation center: 600 m²
- Operation center: 60 m²
- Recovery center: 120 m²
- Employee space: 150 m²
- Toilets: 30 m²
- Installations: 40 m²
- Circulation: 60 m²

### General Areas
- Entrance: 1330 m²
- Foyer: 1600 m²
- Pod storage: 1460 m²
- Logistic circulation: 1750 m²
- Office: 1460 m²
- Installation space: 1750 m²
- Drone logistics: 1750 m²
- Medical supplies storage: 1750 m²

### Project Program Overview
- Total area: 6740 m²
- Entrance: 20% (1330 m²)
- Acute care: 24% (1600 m²)
- Outpatient care: 22% (1460 m²)
- Mental health: 8% (600 m²)
- Public: 26% (1750 m²)
PROJECT SITE
FORM GENERATION; CONCEPT PUBLIC ROLE
FORM GENERATION; HEIGHT

27 m
27 m
8 m 14 m
13 m
21 m
9 m
21 m
27 m 33 m
FORM GENERATION; SHAPES

6700 m²
FORM GENERATION; SHAPES
FORM GENERATION; SHAPES
THE CONCEPT

3 DEPARTMENTS

MENTAL CARE

ACUTE

OUTPATIENT
THE CONCEPT

- MENTAL CARE
  - views / public / rest
- ACUTE
  - sensitive / private / acces
- OUTPATIENT
  - ambulant / views
THE CONCEPT

MENTAL CARE

ACUTE

OUTPATIENT

views / public / rest

sensitive / private / acces

ambulant / views

views

connection

SITE OPPORTUNITIES
THE CONCEPT

MENTAL CARE

ACUTE

OUTPATIENT

3 DEPARTMENTS

3 DEPARTMENTS

SITE OPPORTUNITIES

BRANDING

views / public / rest

views

creating recognition in the community

sensitive / private / acess

connection

ambulant / views
THE CONCEPT

3 DEPARTMENTS

MENTAL CARE
views / public / rest

ACUTE
sensitive / private / access

OUTPATIENT
ambulant / views

3 DEPARTMENTS

SITE OPPORTUNITIES
views

BRANDING
creating recognition in the community

A HEALTH BASE
the formal concept
MIDDLE PUBLIC SPACE
USERS

PODS

STAFF

PUBLIC
BUILDING TECHNOLOGY
ASSEMBLY BUILDING

mass penetration

vision

accent

structure
ASSEMBLY BUILDING

mass penetration

vision

accent

structure
ASSEMBLY BUILDING

mass penetration

vision

accent

structure

ASSEMBLY BUILDING

mass penetration

vision

accent

structure
STRUCTURE CONCEPT
1. elevator cores
2. stability disks
3. stability bracing
4. thickened floors
5. concrete ground floor and foundation
Concrete ground floor with elevator core
ASSEMBLY ONE BUILDING PART

CLT flooring

Laminated timber beams & columns

Laminated timber beams & columns
Steel stability bracing
ASSEMBLY ONE BUILDING PART

Timber facades
ASSEMBLY TOP TRUSS
STRUCTURE FLOORING

Beams

Grid: 8000 x 8000 mm
16000 x 8000 mm

- 500 mm width
  - 8000 mm length
  - 500 mm thick

- 500 mm width
  - 16000 mm length
  - 950 mm thick

CLT floor panels

Grid: 8000 x 8000 mm

- 1200 mm width
  - 170 mm thick

- 1600 mm width
  - 120 mm thick
SUSTAINABILITY
FACADE PRINCIPAL

South West facade

Interior timber wall finish

Insulating layer of nanowood

Exterior layer of burned wood

Window frames

Louvres fixing

Louvres - variable per facade orientation
FACADE MATERIAL

Insulating nanowood

- excellent thermal insulation properties; 0.03 W/m·K
- high mechanical strength
- sustainable

Exterior

Burned wood – shou sugi ban

- durability (repel insects, prevents fungal implantation and water infiltration)
- stability
- fire resistance
SUN ORIENTATION

(c) KNMI 2011
Klimaatdata- en advies
SITE
Amstel river - views

CONDITIONS
much wind & sun exposure – passive opportunities

WIND ENERGY
FACADE PRINCIPAL

SITE
Sports recreation – Activity Park

CONDITIONS
low wind & sun exposure – much daylight

GREEN

SITE
Amstel river – views

CONDITIONS
much wind & sun exposure – passive opportunities

WIND ENERGY
FACADE PRINCIPAL

SITE
Sports recreation – Activity Park

CONDITIONS
low wind & sun exposure – much daylight

GREEN

SITE
Amstel river – views

CONDITIONS
much wind & sun exposure – passive opportunities

WIND ENERGY

SITE
Housing block – closed facade

CONDITIONS
shadow & high sun exposure

DENSE
FACADE PRINCIPAL

SITE
Sports recreation - Activity Park
CONDITIONS
low wind & sun exposure - much daylight

SITE
Amstel river - views
CONDITIONS
much wind & sun exposure - passive opportunities

SITE
Square with green - waterfront
CONDITIONS
much wind & sun exposure - passive opportunities

SITE
Housing block - closed facade
CONDITIONS
shadow & high sun exposure

GREEN

NORTH EAST

NORTH WEST

SOUTH WEST

SOUTH EAST

WIND ENERGY

SOLAR ENERGY

DENSE
FACADE PRINCIPAL

NORTH WEST

NORTH EAST

SOUTH EAST

SOUTH WEST

WIND ENERGY

GREEN

DENSE

SOLAR ENERGY
CLIMATE DEMAND

MEDICAL FUNCTIONS;
Require clean and cool air

PUBLIC AND OFFICE FUNCTIONS;
Require steady temperature and good airconditioning

WET AREAS;
Require air supply and exhaust
CLIMATE SYSTEM SUMMER

Surface water from Amstel River

Groundwater

Heat exchanger

Heat pump

Thermal energy storage

Hot

Cold

20 ºC

12 ºC

5 ºC

30 ºC

22 ºC

17 ºC

19 ºC

Air handling unit + heat exchanger

Air supply

22 ºC

17 ºC

19 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

17 ºC

22 ºC
CLIMATE SYSTEM WINTER
1:20 FACADE FRAGMENT

SOUTH EAST FACADE

Public foyer
Pod entrance
Acute floor

Recessed glass facade for Pods
Difference in floor thickness
Difference in climate system
Fresh air supply
WATERFRONT