**TU Delft 171 years!**

*History & Mission*

- TU Delft was established in 1842 by King William I.
- TU Delft is the oldest and largest University of Technology in the Netherlands.

With its unique technological infrastructure, broad knowledge base, worldwide reputation and successful alumni, TU Delft is contributing significantly to the development of responsible solutions to urgent societal problems in the Netherlands and the rest of the world.

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**Universities in the Netherlands**

*TU Delft largest university of technology*

- 3 universities of technology: 3TU
- Moli with Leiden and Rotterdam
- Programmes in science, design and engineering

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**European ‘Univer-cities’ in the top 150 world-wide**

Source: QS World University Rankings® 2011

More information: [http://managingtheuniversitycampus.nl](http://managingtheuniversitycampus.nl)
CONTENT

1. RESEARCH – Towards a sustainable campus
2. PRACTICE – The making of (sustainable) BK city

Towards sustainable campus

= future of sustainability + future of campus

(1) future of higher education

(2) future of sustainability

(3) future of sustainable campus

1. - before WW-II
   - small elite university
   - inner-city model, integrated

2. - from the 50’s to 90’s
   - growth / labs
   - on the edge of the city

3. - around 2000
   - city has grown around campus
   - what to do?

4. - 21st century
   - merge campus functions with city?
   - cities in knowledge economy: "univer-cities"

Source: Managing the university campus (Den Heijer, 2011 forthcoming)
1. **Strategy A: “Back to the future”**

- Traditional, classical university, academic rituals
- Condition for opportunities: selection, exclusive, elite
- Same m²
- Same resources, healthy, safe workplace
- No facility sharing: exclusive use for university
- Opportunity for more resources: higher tuition & alumni funding

2. **Strategy B: “Intellectual agora”**

- More institutions thoroughly mixed with urban fabric continued infusing in the urban domain with all campus spaces types (academic, housing, leisure etc.)
- Focus on university-industry-community collaboration
- Same space demand, more facility sharing
- Sharing resources → more quality for all stakeholders

3. **Strategy C: “Clicks & Mortar”**

- The physical campus is an inspiring meeting place: creative, stimulating and a focus on intellectual and social exchange
- Virtual “back office”, vital very modern state-of-the-art “front office” university
- M²: less (clicks replace part of the m²)
- Same resources available for less m² → higher quality

---

**4 Scenarios Higher Education – University of the Future**

1. **Future of higher education**

   - Scenarios that can happen
   - Strategies to choose

   - **(1) Future of higher education**
     - **University of the future**
     - **“Intellectual Agora”**
     - **Harvard Square “university-community collaboration”**

   - **(2) Higher education**
     - **“Winner takes it all”**
     - **“Clicks & Mortar”**
     - **“Let’s live together in a global village”**
     - **“Change the world: start with yourself”**

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**4 Scenarios Higher Education – University of the Future**

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     - **“Winner takes it all”**
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     - **“Let’s live together in a global village”**
     - **“Change the world: start with yourself”**
Fire destroyed Architecture building
May 13, 2008

more information: http://managingtheuniversitycampus.nl
Emergency management
< 3 days after the fire

Emergency management
< 3 days after the fire

Dean & staff at Faculty of Applied Sciences

more information: http://managingtheuniversitycampus.nl
Found a 'new' building within 10 days

sustainable = re-use

1. professors and professionals
2. all parties have studied or worked at faculty
3. hands-on mentality

ASSIGNMENT: relocate 3,300 students and > 800 employees
DEADLINE: renovate 320,000 sqft < 6 months
+ new construction 40,000 sqft < next 6 months

Project group representing
- policy makers
- board of executives
- dean
- controllers
- users
- architects that have known the faculty for years

more information: http://managingtheuniversitycampus.nl
What we started with in June 2008…

Facts

- 150 participating companies
- 25 consultancy / architecture firms
- 350 construction workers on site
- 800 orders
- 15 km sprinkler / 5500 sprinklers
- 30,000 litres paint
- 220 km data cables
- 5200 wall outlets

Challenge the future

Delft University of Technology

42,000 m²
32,000 m²

**Performance criteria university**

- Competitive advantage
- Profitability
- Productivity
- Sustainable development

Each university goal can be frustrated by the physical campus.

**Managing the university campus**

- Focus on university
- Focus on real estate
- Strategic policy makers
- Financial controllers
- Users
- Functional
- Technical managers
- Physical

**Every project or campus can be assessed from 4 perspectives**

- Strategic
- Financial
- Users
- Functional
- Technical managers
- Physical

More information: [http://managingtheuniversitycampus.nl](http://managingtheuniversitycampus.nl)
Brief in m2

- space reduction – 25%
- more students expected
- Berlageweg was already too small for # students / staff
- need to change concepts
- demand for large public spaces “blokkenhal”
  & modeling studies, workshop space

- additional space demand:
  - solution glasshouses
  - many alternatives... by many different architects...

Design the building as a city

Private → Public space

Contextual Concept: Connectivity and variety

GOALS ORGANISATION
1. Community building
2. More effective support of education, research & management
3. Creating the place to meet
4. Stimulate social interaction & intellectual interaction
5. Flexible use of facilities
6. Sustainable

Brief in m2

- Berlageweg 42.000 m2 bvo
- Julianalaan 32.000 m2 bvo

footprint
old → new

= new glasshouses 4.000 m2 bvo
= 36.000 m2

bvo = brutovloeroppervlak = gross floor area (gfa)
nv = nuttig oppervlak = usable floor area (ufa)

Campus of the future:
- sustainable solutions
- CO₂ neutral campus
- less m2, more quality

(photo: Wageningen)

Campus of the future: - lecture halls – only to share
(photo: VU Amsterdam)

more information: http://managingtheuniversitycampus.nl
Campus of the future:
- transparency, shared facilities
  (photo: VU Amsterdam)

Reducing m2, but improving…
Quality of place (interior design)


Reducing m2, but improving…
Quality of place (cultural heritage)

more information: http://managingtheuniversitycampus.nl
## Reducing m², but improving...

**Quality of life (campus & city)**

### Transition from old to new

<table>
<thead>
<tr>
<th>Functions</th>
<th>Berlageweg</th>
<th>Julianalaan</th>
<th>Julianalaan / Berlageweg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. studio space</td>
<td>3,650</td>
<td>3,440</td>
<td>+ 6% - student back at the faculty</td>
</tr>
<tr>
<td>2. office space</td>
<td>6,300</td>
<td>6,340</td>
<td>+ 1% - but other concept</td>
</tr>
<tr>
<td>3. lecture halls</td>
<td>1,050</td>
<td>1,110</td>
<td>+ 2% - and same capacity</td>
</tr>
<tr>
<td>4. library</td>
<td>650</td>
<td>870</td>
<td>+ 34% - with more places to study</td>
</tr>
<tr>
<td>5. educ. facilities</td>
<td>3,580</td>
<td>3,250</td>
<td>- 9% - more sharing, better use</td>
</tr>
<tr>
<td>6. laboratories</td>
<td>860</td>
<td>660</td>
<td>- 25% - more sharing at TU level</td>
</tr>
<tr>
<td>7. conference</td>
<td>1,100</td>
<td>770</td>
<td>- 30% - more sharing at TU level</td>
</tr>
<tr>
<td>8. restaurants</td>
<td>380</td>
<td>690</td>
<td>+ 82% - multi-functional use</td>
</tr>
<tr>
<td>9. public functions</td>
<td>1,220</td>
<td>2,050</td>
<td>+ 68% - more places to meet</td>
</tr>
<tr>
<td>10. storage</td>
<td>3,300</td>
<td>1,240</td>
<td>- 62% - (start with) less after fire</td>
</tr>
<tr>
<td><strong>Total (usable)</strong></td>
<td><strong>24,160</strong></td>
<td><strong>24,820</strong></td>
<td>+ 3% - more usable space</td>
</tr>
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</table>

### Challenge the future

- Delft University of Technology
- Transition from old to new
- Less BVO (gfa), more NO (ufa)

### More information:

http://managingtheuniversitycampus.nl
1. Studio space

- Student back at the faculty
- 6 m² usable per workplace
  - became less after decision process
- Tables are assigned to groups of students per semester (no permanent territory)
- Smart use of space (by smart scheduling)

2. Office space

- No individual territory
- 12 m² usable per floe
  - became more after design process
- Activity related concept

More facility sharing

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<td>1. lecture halls</td>
<td>1,090</td>
<td>1,130</td>
<td>+ 2% and same capacity</td>
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<td>2. library</td>
<td>850</td>
<td>870</td>
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<td>3,300</td>
<td>1,240</td>
<td>- 62% (staff) with less after fire</td>
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</table>
3. Lecture halls
- more shared use of large halls
- more small spaces locally

7. Conference rooms
- flexible floor plan
- differentiation of quality: also used for seminars / conferences

4. Library

5. Educational facilities

6. Laboratories

more information: http://managingtheuniversitycampus.nl
Creating the place to meet

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<tr>
<td><strong>Total (usables)</strong></td>
<td><strong>7,950</strong></td>
<td><strong>12,620</strong></td>
<td><strong>+ 62% more usable space</strong></td>
</tr>
</tbody>
</table>

8. Restaurants & bars

9. Public functions

Public space, like in a city

- usable space in corridors for informal meetings and work

more information: http://managingtheuniversitycampus.nl
10. Storage

- including digital storage

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### PRIMARY FACTS

<table>
<thead>
<tr>
<th>ORGANISATION</th>
<th>BUILDING</th>
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<tr>
<td>1400 BSc students</td>
<td>700 BSC STUDIO DESKS</td>
</tr>
<tr>
<td>1675 MSc students</td>
<td>830 MSC STUDIO DESKS</td>
</tr>
<tr>
<td>450 FTE staff</td>
<td>470 DESKS</td>
</tr>
<tr>
<td>800 employees</td>
<td>350 AVAILABLE EXTRA WORK SPACES</td>
</tr>
<tr>
<td>170 0.0 fte</td>
<td></td>
</tr>
</tbody>
</table>

- 270 PARKING LOTS
- 44 MEETING ROOMS
- 5 LECTURE HALLS
- 1 LIBRARY
- 1 RESTAURANT
- 3 BARS

AND SO MUCH MORE

---

### BK City Slim

Current situation: huge loss of energy

Transform BK City to an energy / CO2 neutral building

5 possible solutions

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more information: http://managingtheuniversitycampus.nl
presentation Alexandra den Heijer 17-10-13

Campus of the future:
model A – traditional university
- exclusiveness, elite & large
- can we still afford this?

Campus of the future:
model B – network university
- "campus is market place of knowledge"
- sharing the campus
- "univer-city"

Campus of the future:
model C – virtual university
work where you want

Campus of the future:
model D – University College
small, broad, Bachelor in English, selected talent

more information: http://managingtheuniversitycampus.nl
Strategic choices, linked to stakeholders

- Accommodate "exclusive" and "closed" vs. "shared" and "open"
- Low % of resources spent on the campus vs. high % of resources spent on the campus
- Only public funding vs. allow private funding
- Low space use per student or employee vs. high space use per student or employee
- Focus on individual needs vs. focus on collective needs
- Accept % buildings in bad condition vs. all buildings at least reasonable condition
- Small(er) ecological footprint vs. large(r) ecological footprint

Follow me on Twitter: @alexandra_dh
More about case BK city & book "Managing the university campus": http://managingtheuniversitycampus.nl

Questions / tour of BK City

PAPER

PAPER

more information: http://managingtheuniversitycampus.nl