Shared Spaces in Campus Real Estate

Leveraging shared space strategies to align resource constraints with institutional challenges

P5 Presentation

19/06/2024

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BK Bouwkunde

aestate /ontrafel experts

(Entreehal Echo, Bloem, n.d.-b)
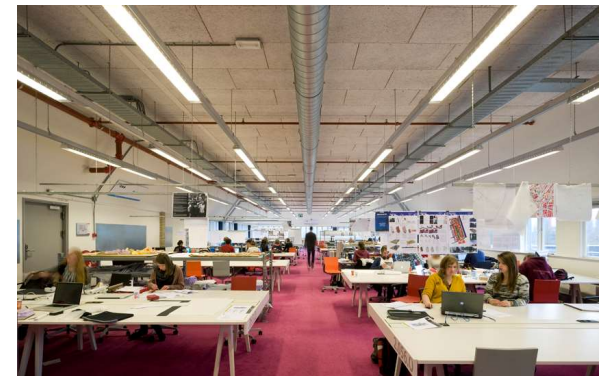
(Entreehal Echo, Bloem, n.d.-b)
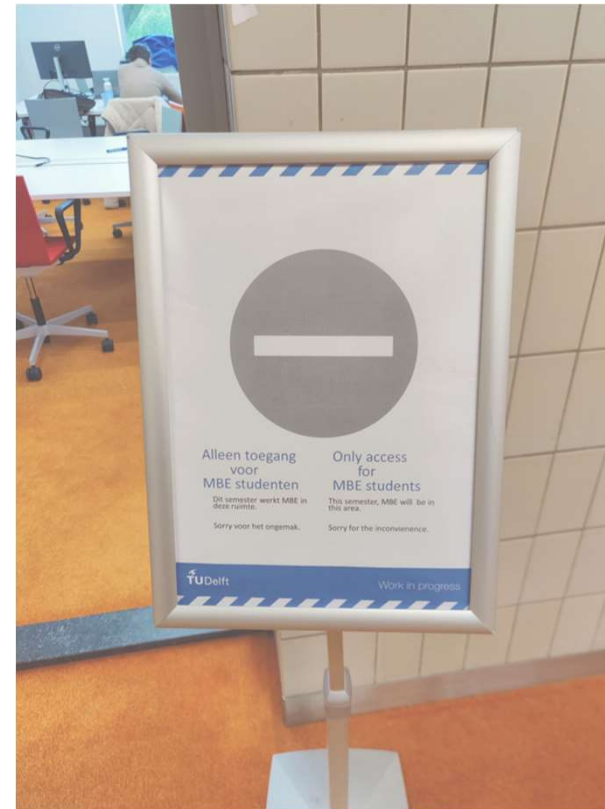
What are shared spaces?

BK-City

Laboratory

Study spaces

What are shared spaces?

Shared spaces

Definition

Polak (Paul de Ruiter Architects n.d.)

6
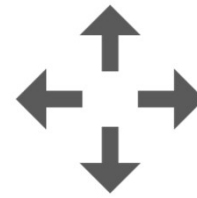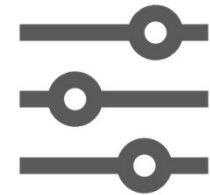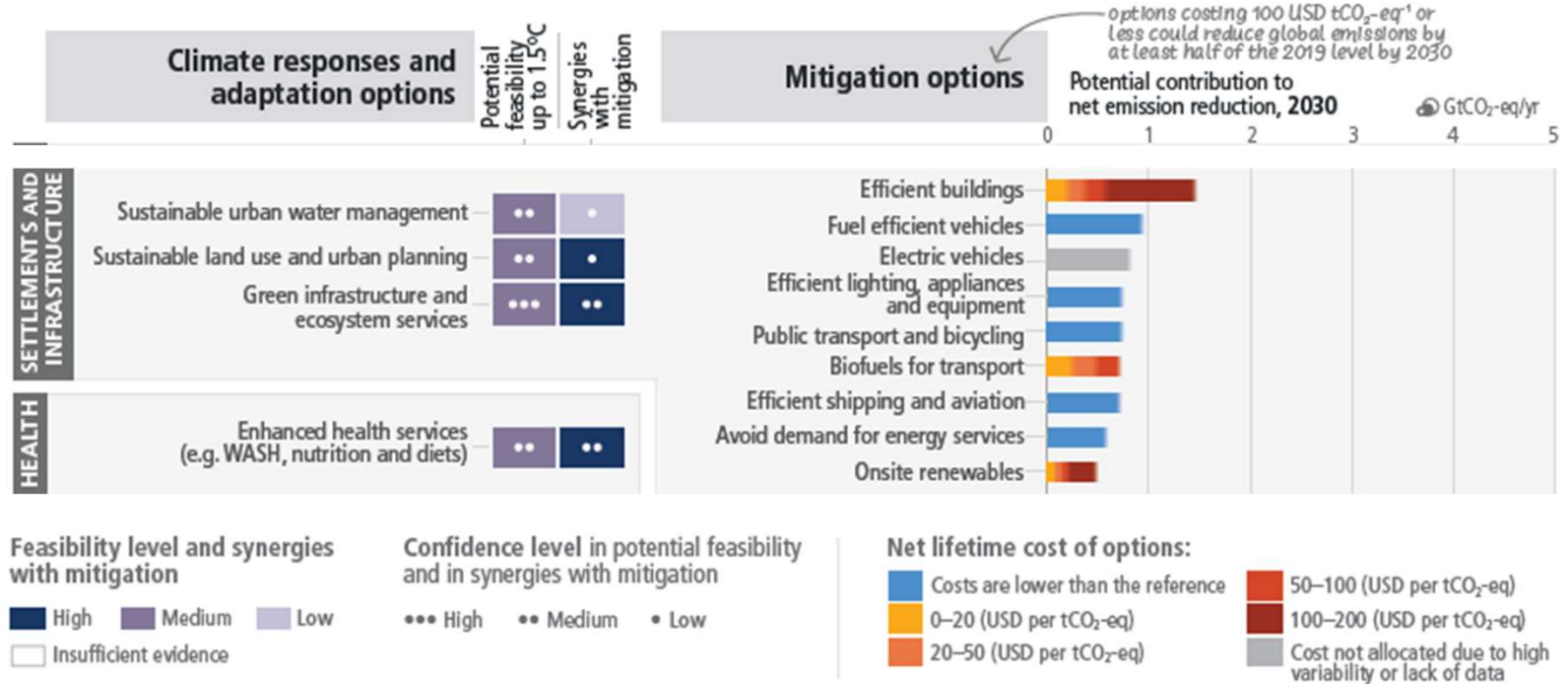
Generic
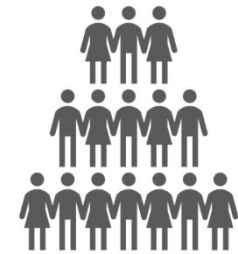
Internal + external users

Non-territorial

Adaptable

Context

IPCC 2023

a) Feasibility of climate responses and adaptation, and potential of mitigation options in the near term

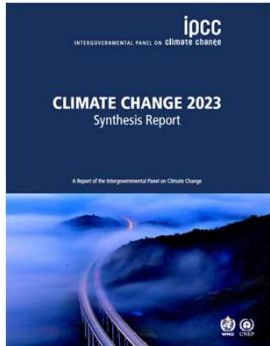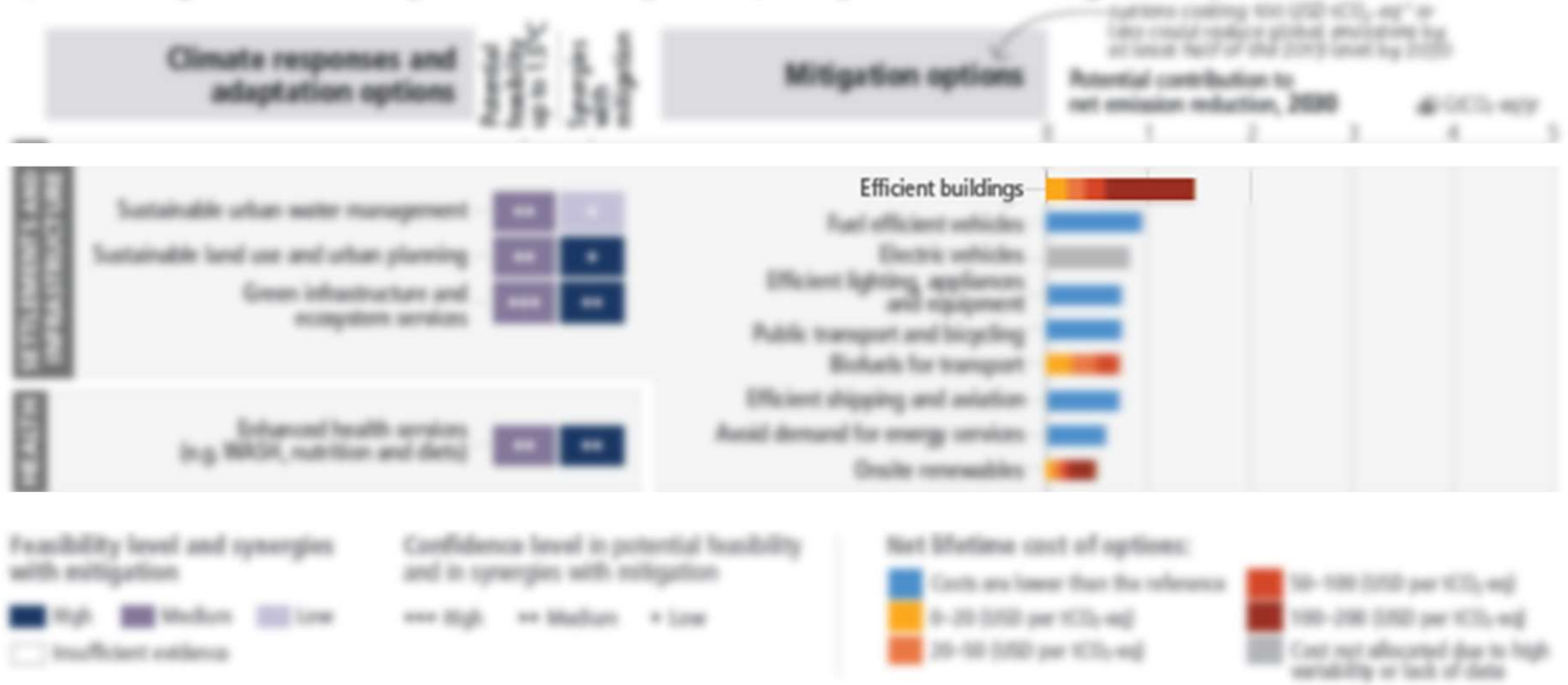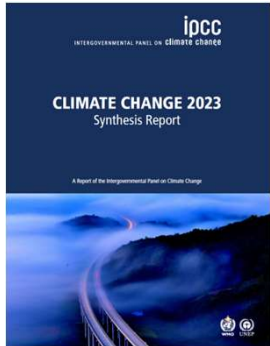(IPCC, 2023, p. 103)

Context
IPCC 2023

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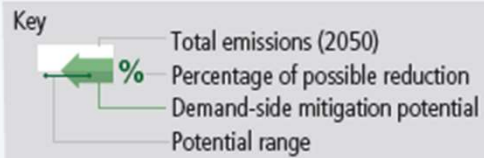
(IPCC, 2023, p. 103)

Context

IPCC 2023

(IPCC, 2023, p. 103)

Context

IPCC 2023

"Effective mitigation can be advanced at each of the design, construction, retrofit, use and disposal stages for buildings."

(IPCC, 2023, p. 105)

Context
IPCC 2023

"

Mitigation interventions for buildings include:

- at the construction phase, low- mission construction materials, highly efficient building envelope and the integration of renewable energy solutions;

- **at the use phase,** highly efficient appliances/equipment, **the optimisation of the use of buildings** and their supply with low-emission energy sources;

- and at the disposal phase, recycling and re-using construction materials. Sufficiency measures can limit the demand for energy and materials over the lifecycle of buildings and appliances.

"

(IPCC, 2023, p. 105)

Context

Sharing economy

Context

Dynamic demand

Context

Dynamic demand

🎓 **+113%**

⬛ **+14%**

🧱 **+2,5%**

Problem statement

Optimisation of building use → Dynamic demand vs. Static supply → Changed use of campus space → Increased shared space practices
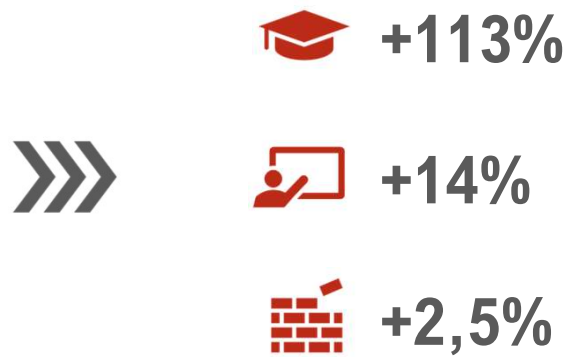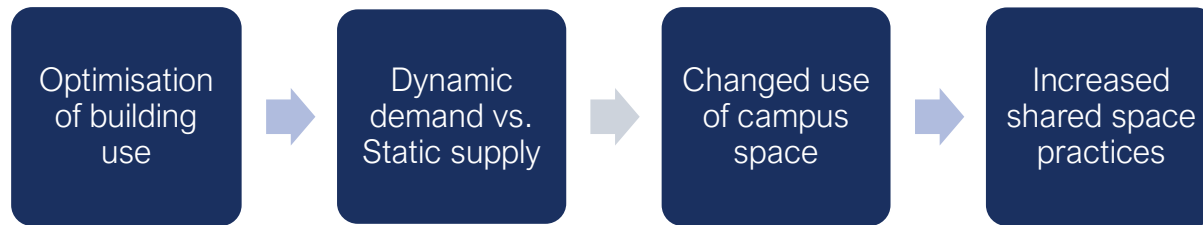
This research aims to:

This research, therefore, aims to examine the role of shared spaces on campus in promoting and achieving university real estate goals.

(Aurora, Wageningen University & Research n.d.)

Research questions

Main research question

How do shared spaces on the university campus align with organisational, functional, financial and physical real estate objectives?

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New University Building VU Amsterdam
(interior) (CSM Stravitec, n.d.)

Research questions

Main research question

How do shared spaces on the university campus align with organisational, functional, financial and physical real estate objectives?

SQ1: What trends can be discerned influencing university real estate objectives, and the demand for and supply of shared spaces on campus?

SQ2: How are universities implementing shared spaces and buildings in their real estate portfolio and what characterises these facilities?

SQ3: How can shared spaces be aligned with the needs of the university and campus users?

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New University Building VU Amsterdam (interior) (CSM Stravitec, n.d.)
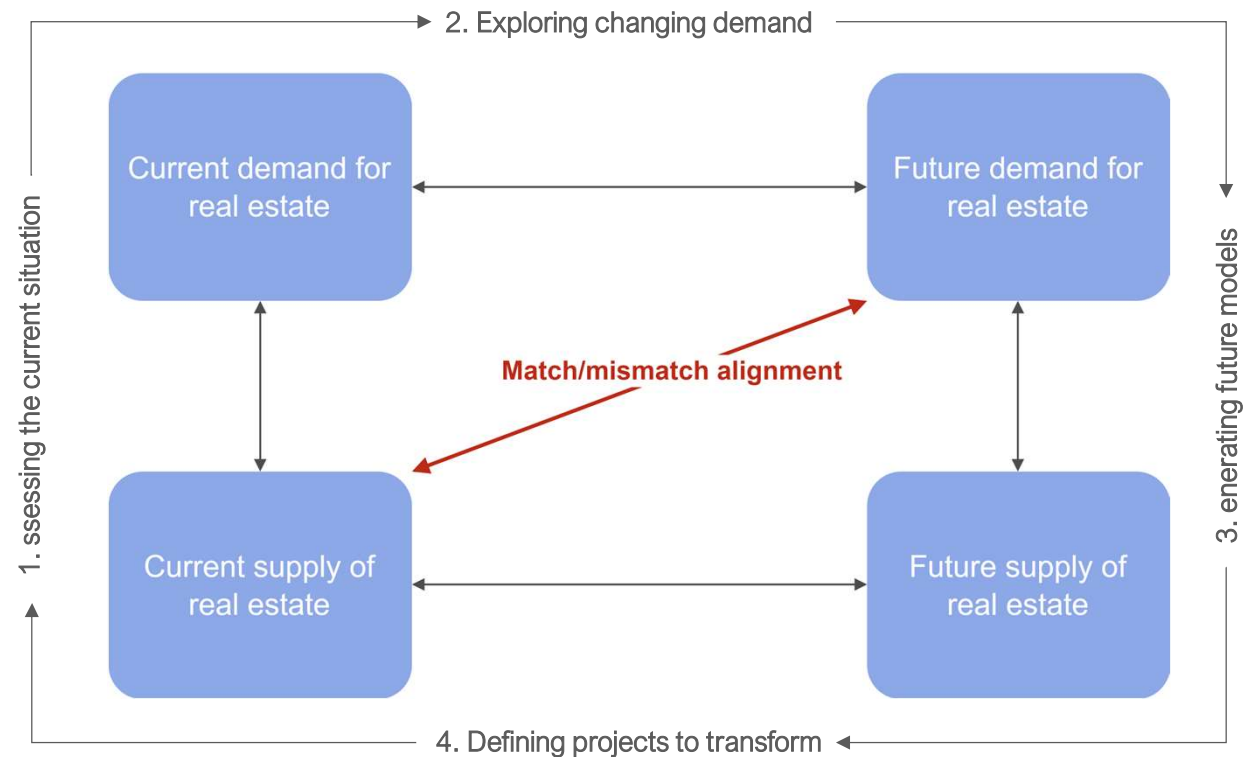
Conceptual Framework

Main research question

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SQ1: What trends can be discerned influencing university real estate objectives, and the demand for and supply of shared spaces on campus?

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2. Exploring changing demand

Current demand for real estate

Future demand for real estate

1. ssessing the current situation

Match/mismatch alignment

3. enerating future models

Current supply of real estate

Future supply of real estate

4. Defining projects to transform
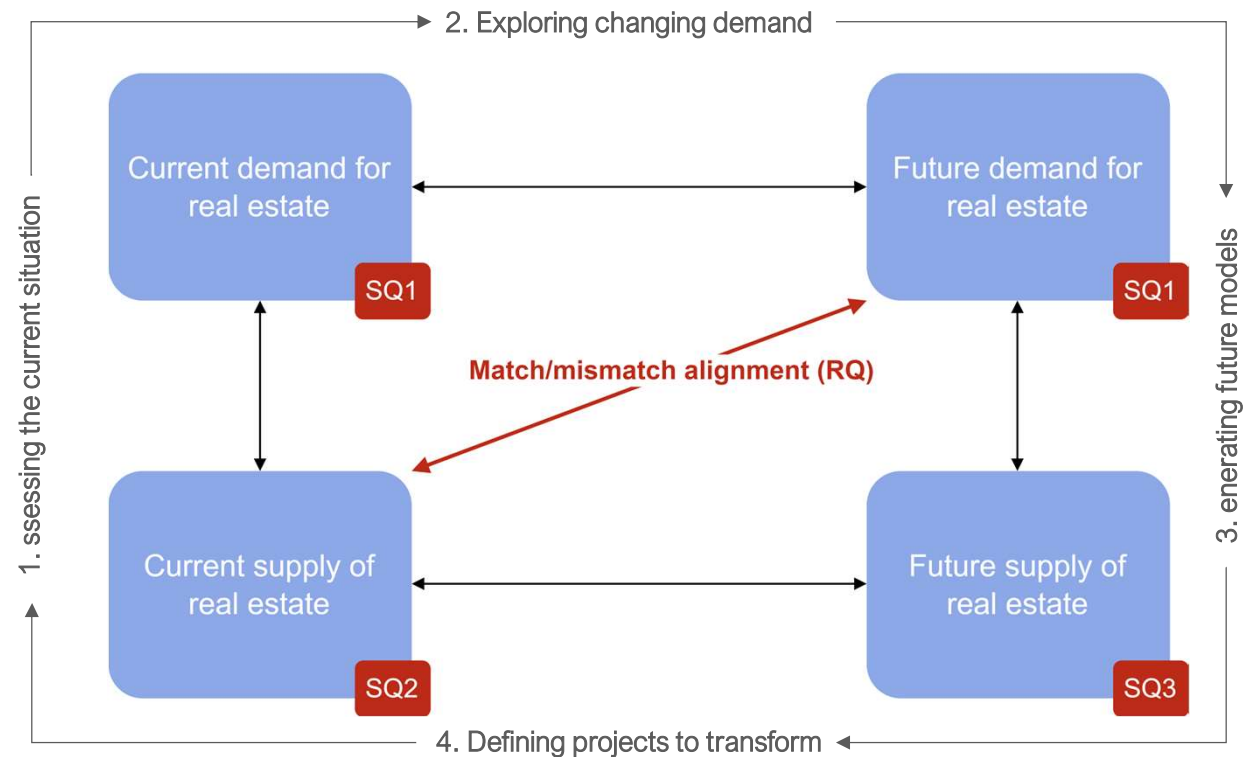
(De Jonge et al., 2011)

Conceptual Framework

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(De Jonge et al., 2011)

Relevance

How can shared spaces improve the resilience of the organisation?

To what extent are users willing to share, and what do users need to effectively use these spaces?

What is the financial impact of increased sharing? Can operational costs be reduced and are investment schemes more effective?

Do investments in physical resources for constructing shared facilities realise a significant demand-side mitigation

O|2 (EGM Architecten, n.d.)

Four perspectives model
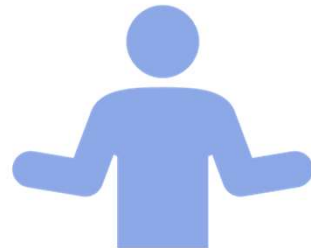
Public real estate management
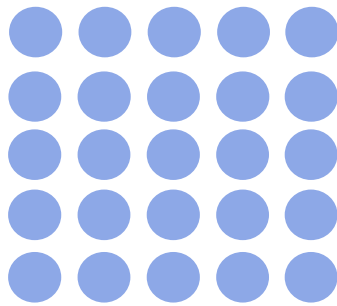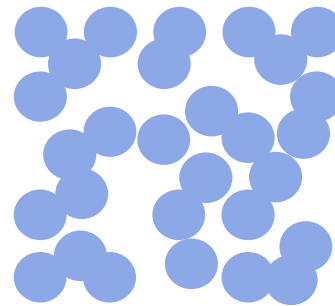
Strategic

Financial
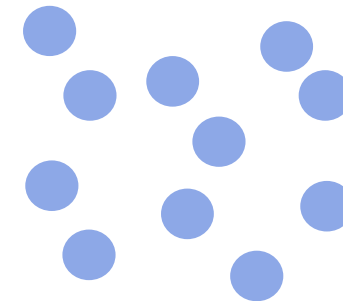
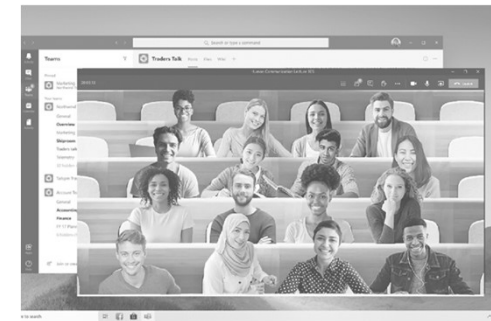Campus Manager

Functional

Physical
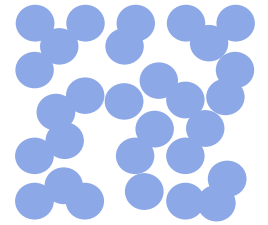
(Den Heijer, 2011)

Changing Campus

Solid
Traditional

Liquid
Network

Gas
Virtual

(Den Heijer, 2021)

23
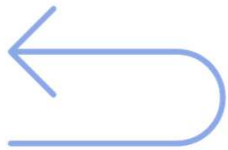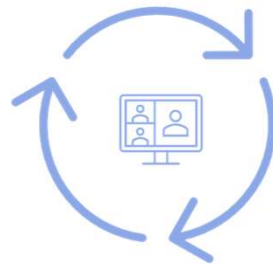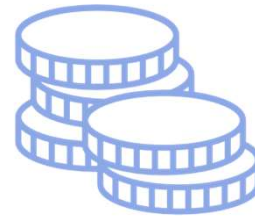
Changing Campus

Liquid
Network

Horizontal
organisation

Multiple
workplaces

Multiple funding
sources
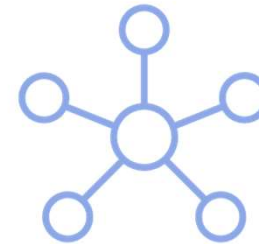
Shared
facilities

(Den Heijer, 2021)

O|2 Lab (Fokkema en Partners Architecten, n.d.)

Methods

Desk Research   **Case study**

| Literature review | Database analysis | Document analysis | In-depth Interviews | Data analysis |
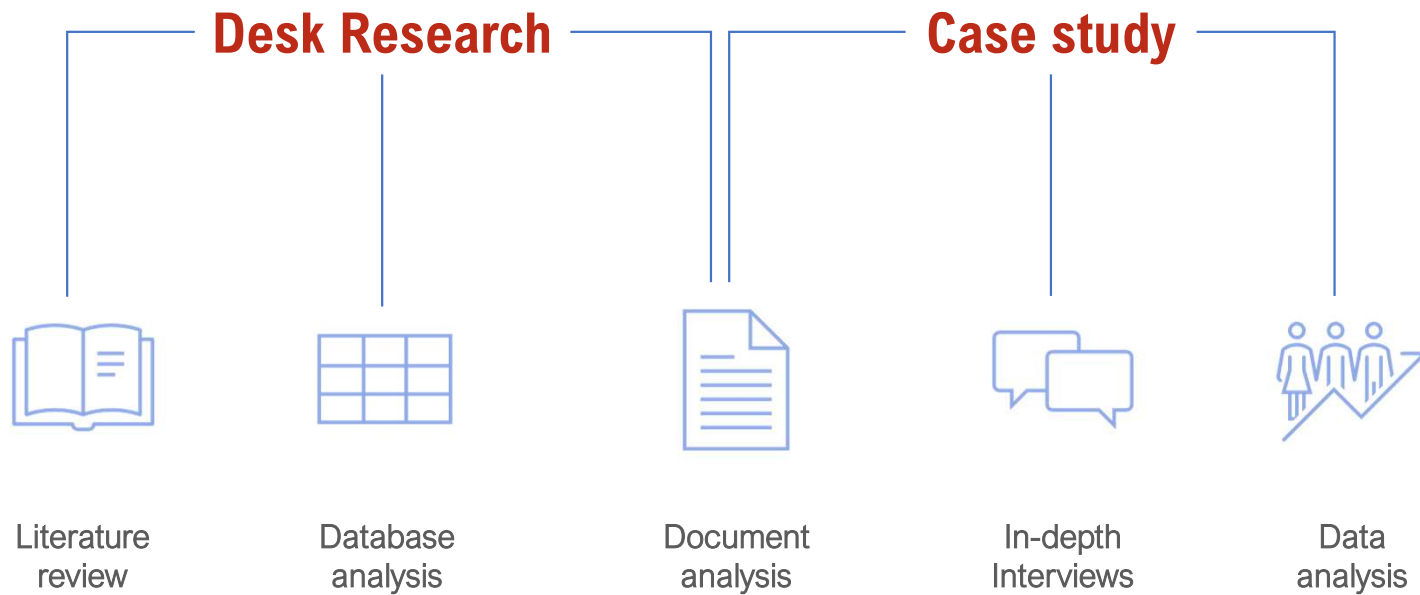
Methods

Deliverables
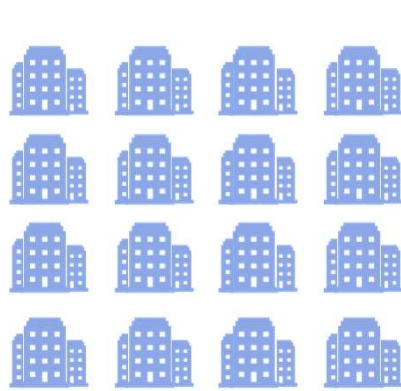
Case Overview

Case study
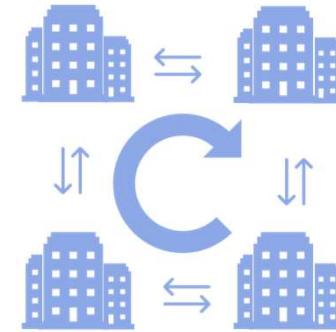
Cross case analysis

Echo debate hall (van Oosten, n.d.)

Case Overview

(See report for a complete overview)

Musashino Art University Building
(Hasegawa, 2020)

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Case Overview

User types

Internal use
External use

8

25
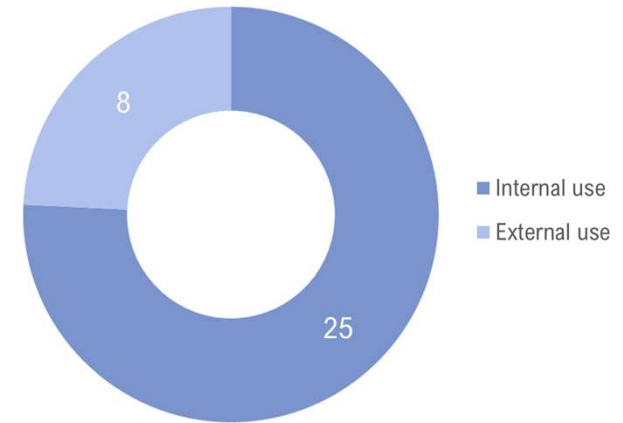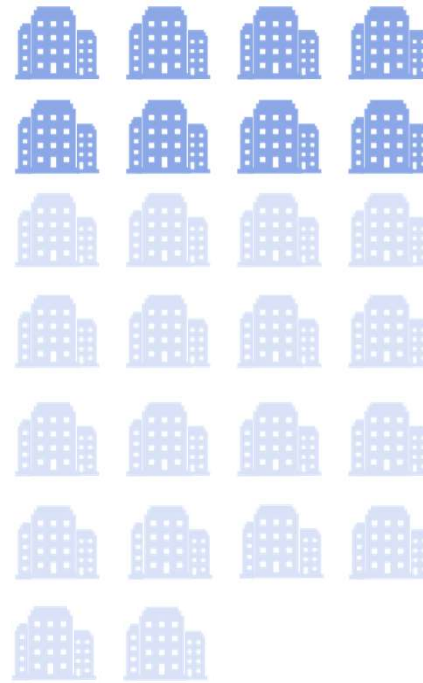
(Not mutually exclusive)

Buildings with external users

Teaching and learning centre university of Birmingham (University of Birmingham, 2020)

Case Overview

Institutions
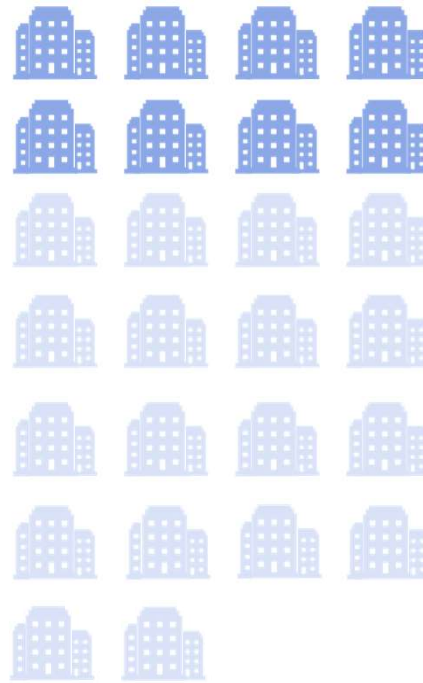
- Wageningen University
- Erasmus University Rotterdam
- Delft University of Technology
- Tilburg University
- Vrije Universiteit Amsterdam
- Eindhoven University of Technology

VU, WUR & TU Delft

Musashino Art University Building
(Hasegawa, 2020)

Case Overview

Year of delivery

14

5

3

2   2

<2010 2010-2015 2015-2020 2020-2024 not yet delivered

< 10 years & in use

32

College & University Centre Coeur
D'Alene (Swimmer, 2019)
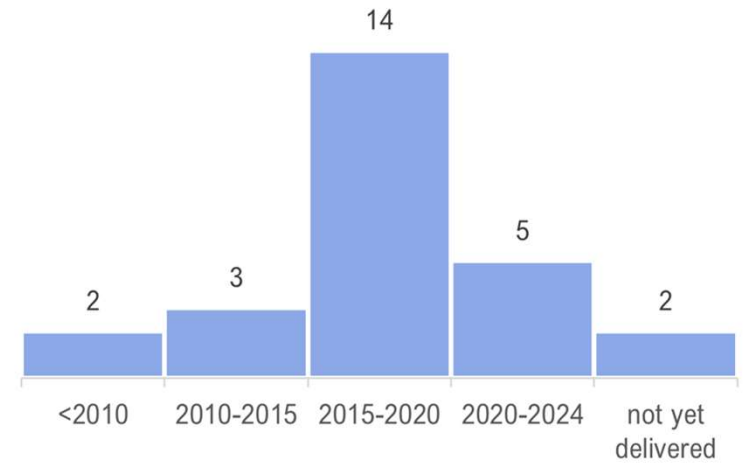
Case Overview

Campus themes

14. Circularity — 8
13. Showroom — 3
12. Storage — 2
11. Silence — 8
10. Sustainability — 15
9. Smart Tools — 2
8. Circulation Space — 12
7. Opening hours — 6
6.Heritage — 4
5. Non-academic functions — 18
4. Laboratories — 10
3. Academic mixed use — 4
2. Learning environments — 26
1. Working environment — 11
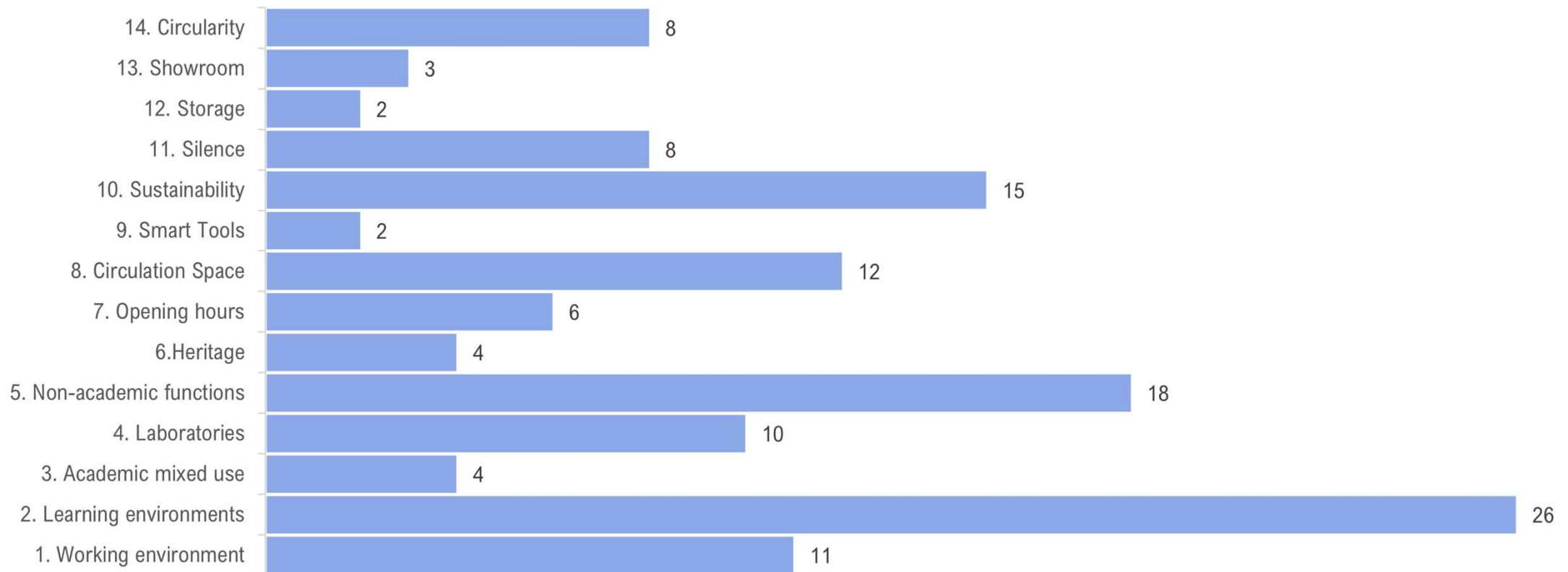
Case selection
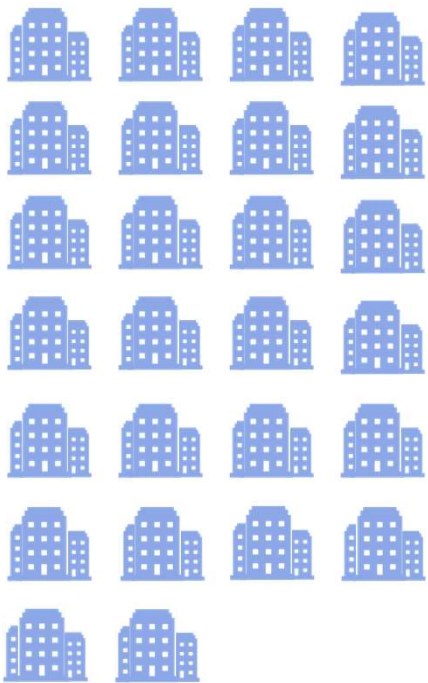
Case Overview

Selection criteria

Selection

(See report for a complete overview)

Location	Functions
Location	Functions
University	Year of delivery
Users	Accessibility of data
Number of shared buildings	

VU VRIJE UNIVERSITEIT AMSTERDAM

TUDelft

WAGENINGEN UNIVERSITY & RESEARCH

Cases

Echo

OI2

NU

Forum

Aurora

Cases

Echo – TU Delft	
Functions:	Education, study, office, catering
Gross floor area:	8.300 m²
Year of delivery:	2022

NU

OI2

Forum

Aurora

Echo (Bloem, 2022)

Cases

Echo

NU - VU

Functions:	Education, study, office, catering, culture
Gross floor area:	31.000 m²
Year of delivery:	2020

OI2

Forum

Aurora

NU VU (Steinbach n.d.)

Cases

Echo

NU

OI2 - VU

Functions: Lab, office, education, catering

Gross floor area: 33.000 m²

Year of delivery: 2018

Forum

Aurora

OI2 labgebouw (Duivenbode, n.d.)

Cases

| Echo |
| NU |
| OI2 |
| Forum - WUR |

Functions:	Education, study, library, catering
Gross floor area:	36.500 m²
Year of delivery:	2008

| Aurora |

Forum (Author)

Cases

Echo

NU

OI2

Forum

Aurora

Functions: Education, study, catering

Gross floor area: 14.050 m²

Year of delivery: 2021

Aurora (Author)

Cross-case analysis

Cross-case analysis	
Cross campus analysis	**Cross building analysis**
TU Delft, WUR, VU	Echo, NU, O|2, Forum, Aurora

Cross-campus analysis

Trends affecting demand for shared spaces on campus

Organisational

Complex society

More and integrated research activities

Internationalisation

Inter-disciplinary collaboration

Organisational Growth (Student & Staff)

Financial

Declined (government) funding

Uncertain research funding

Rising construction costs

Competition for academic talent

Functional

Personalised & Flexible education

Hybrid working

On-campus education
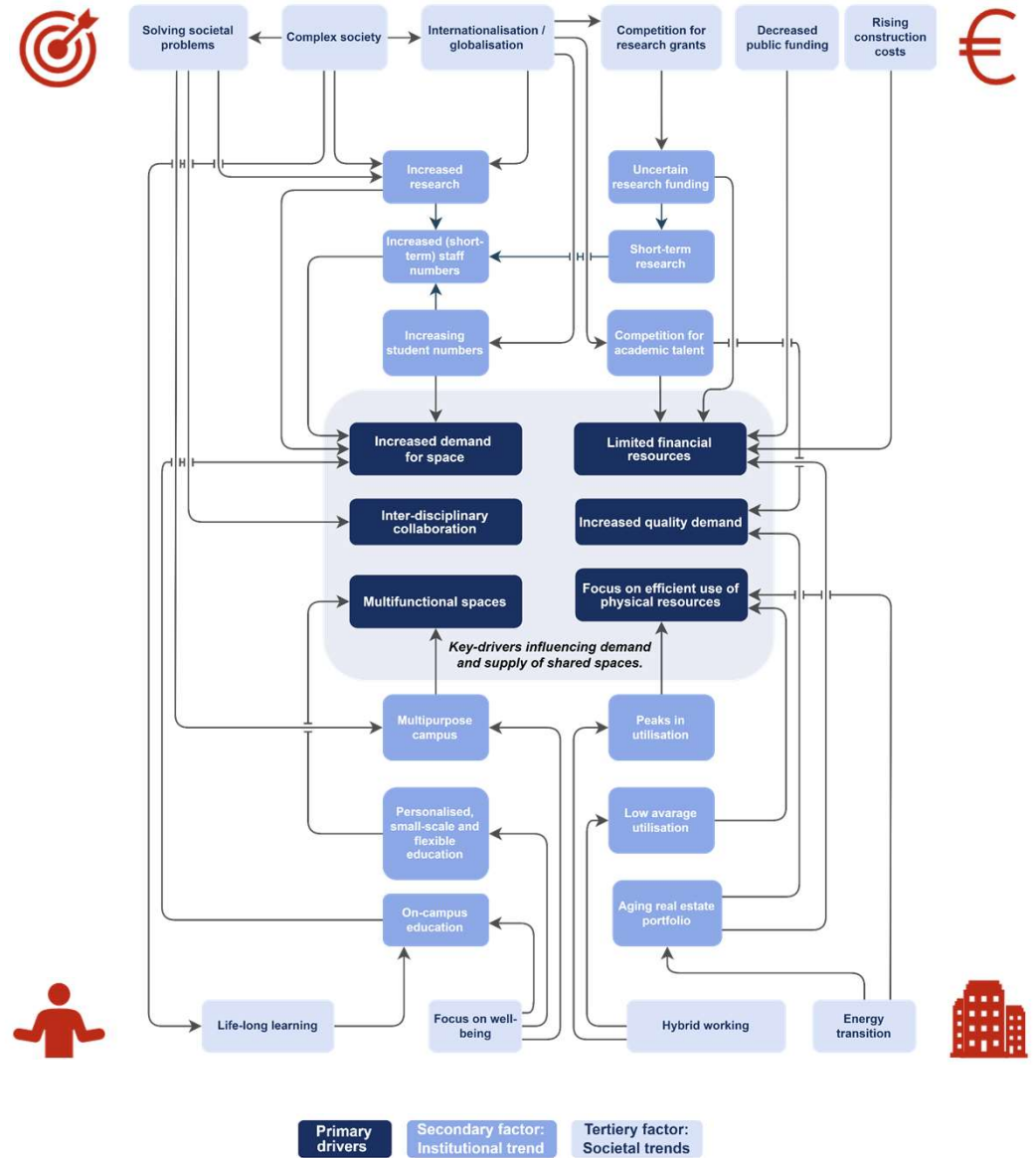
Physical

Focus on sustainable use of scarce resources

Ageing real estate portfolio

Low utilisation

Busy and quiet days due to hybrid working

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Cross-campus analysis

Trends & Connections

Key-drivers influencing demand and supply of shared spaces.

| Primary drivers | Secondary factor: Institutional trend | Tertiery factor: Societal trends |

Cross-campus analysis

Drivers & Catalysts

Drivers (supply)

Declined financial resources.
Necessitating shared usage: Individual facilities are no longer feasible due to decreased government funding and academic competition.

Focus on efficient use of physical resources.
Stemming from the energy transition, overall low utilisation, hybrid working and an ageing real estate portfolio.

Catalysts (demand)

Increased demand for space.
Caused by overall organisational growth and uncertainty in student group sizes and hybrid working patterns.

Demand for multifunctional spaces.
Multifunctional spaces cater to the need for a multipurpose campus, facilitating changing learning patterns, liveliness and user well-being.

Increased quality demands.
For high-quality research and education facilities, stemming from competition for academic talent, high-quality education, and ageing real estate.

Inter-disciplinary collaboration.
Shared spaces facilitate interaction between user groups to increase research and education quality.

TU Delft Campus (TU Delft, n.d.)

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Cross-campus analysis

Strategy

Clustering of research themes from different faculties per facility
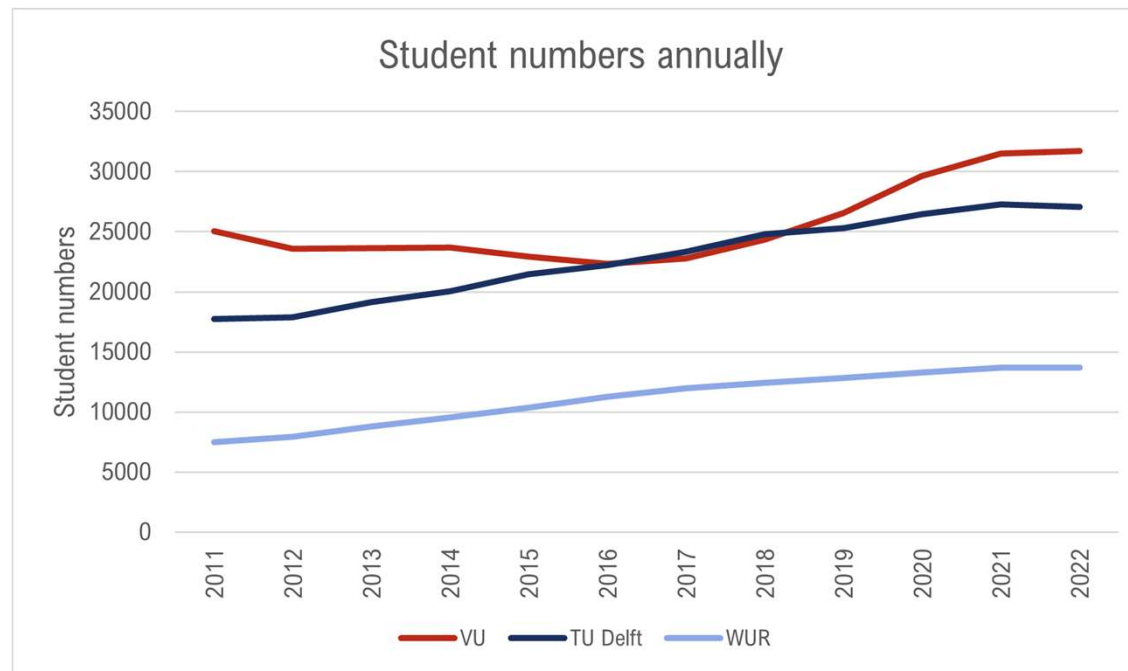
Seperate facilities for education & research

Inter-faculty facilities for education

Cross-campus analysis
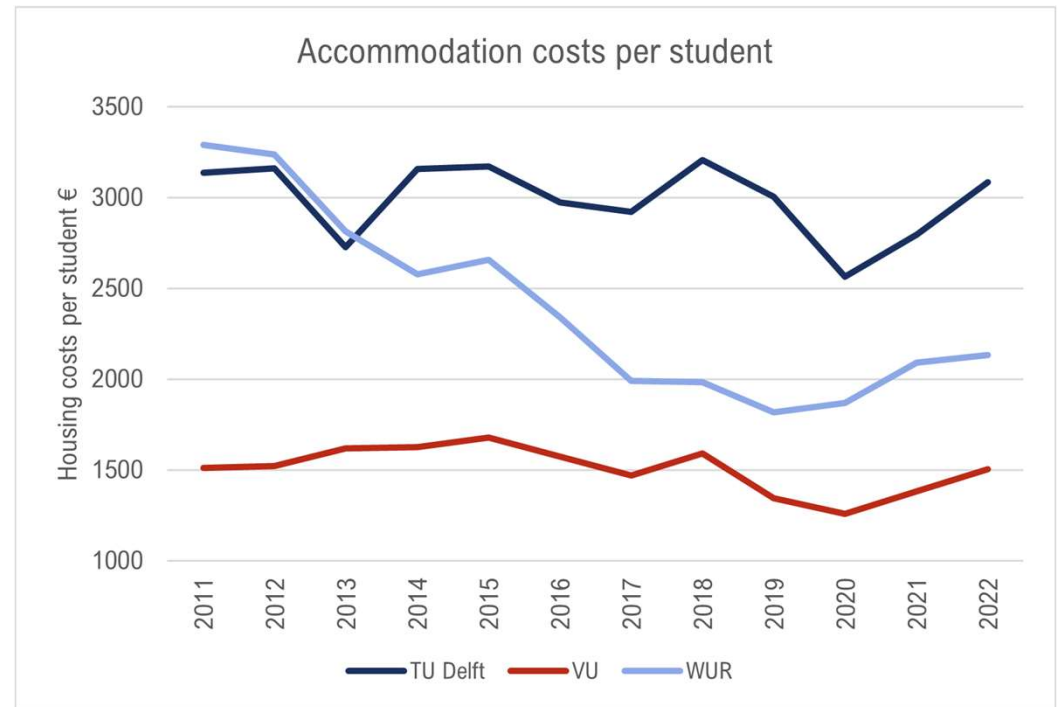
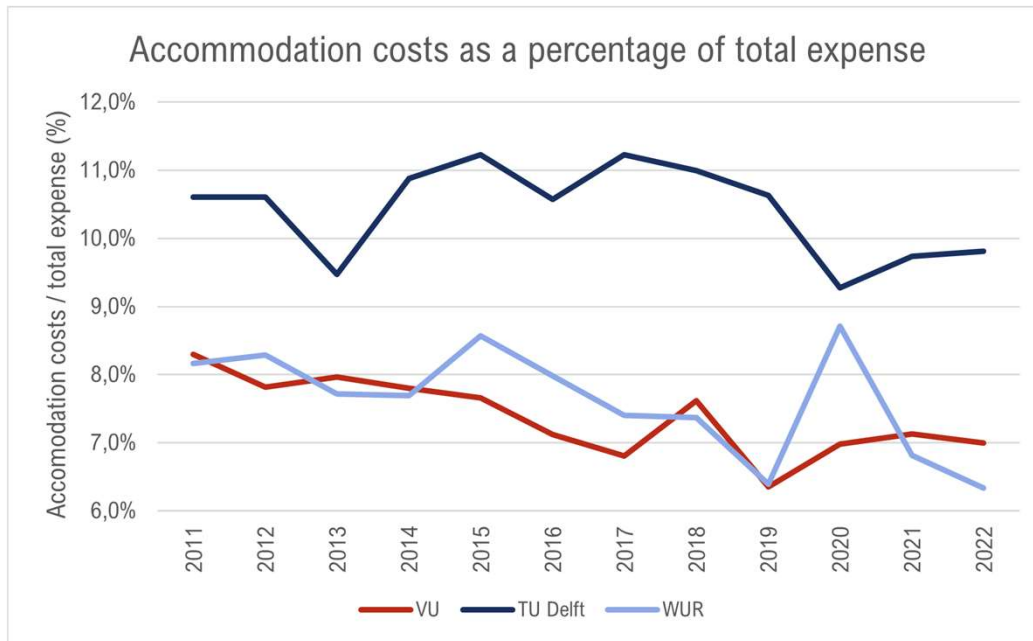Organisational developments

Student numbers annually

Cross-campus analysis
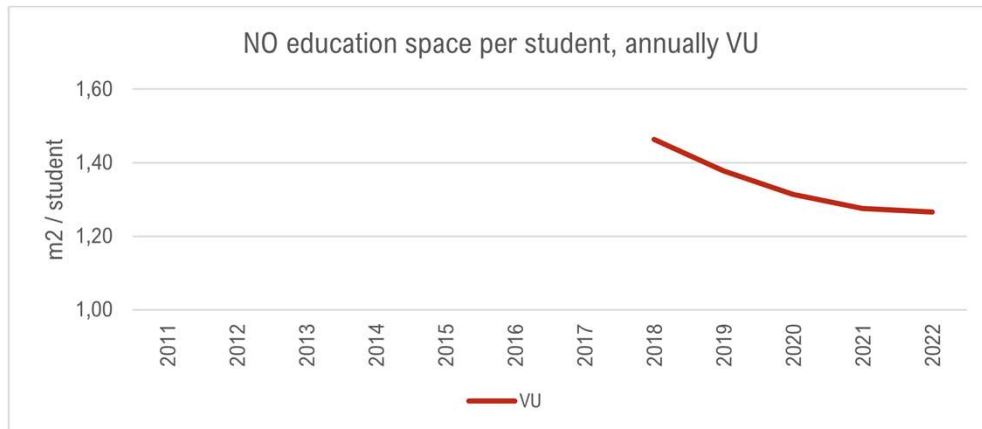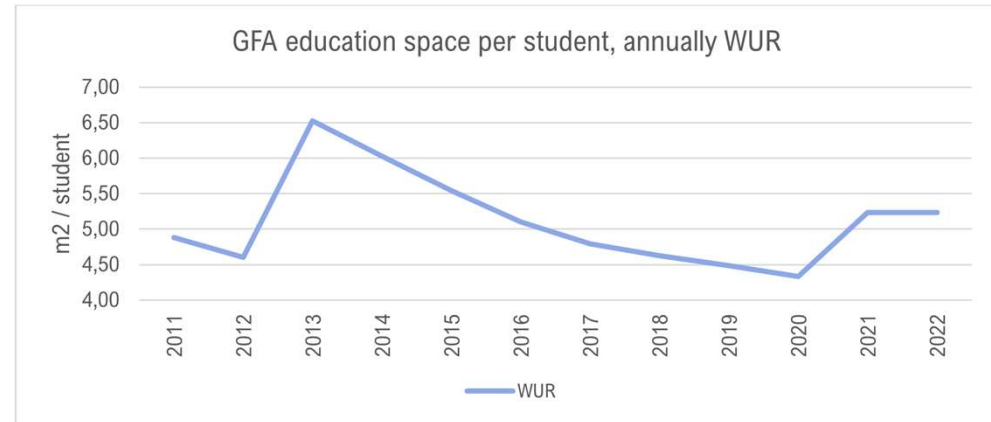
Financial developments

Cross-campus analysis

Financial developments

Accommodation costs as a percentage of total expense

Accommodation costs per student

Cross-campus analysis

Physical developments
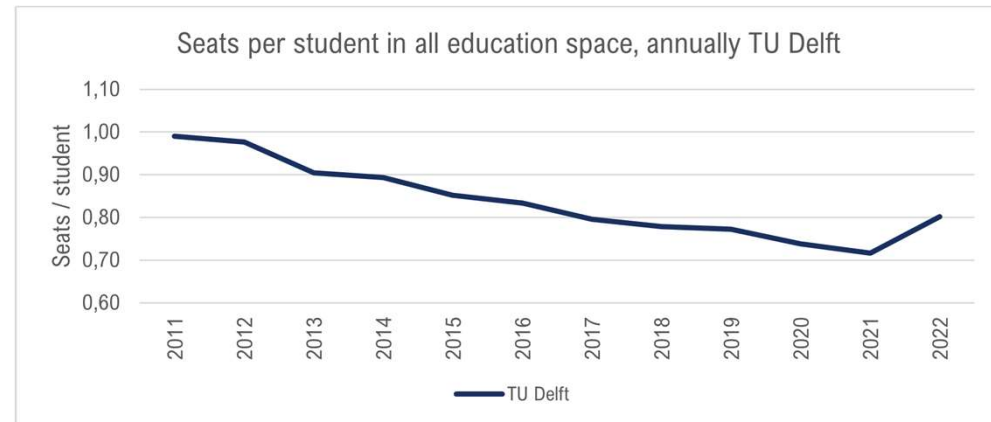
Cross-case analysis

Cross-case analysis	
Cross campus analysis	**Cross building analysis**
TU Delft, WUR, VU	Echo, NU, O|2, Forum, Aurora

# Cross-building analysis

Public Values associated with shared spaces

SHARED SPACES ON CAMPUS
PUBLIC VALUES

ORGANISATIONAL
- Increased capacity through shared utilisation.
- Interdisciplinary cooperation and knowledge sharing.
- Enhance campus liveliness.
- Integrate program with surrounding environment.

FUNCTIONAL
- High-quality facilities.
- Multi/Mono-functionality.
- Generic spaces.
- User support and a sharing culture.

Financial
- Short-term and long-term risk control.
- Total cost of ownership (TCO)

Physical
- Efficient utilisation.
- Decreased footprint.
- Pleasant and stimulating environment.

Cross-building analysis

Lessons learned derived from cases

1 Designing for generic use

2 'Pooling' functionalities

3 Facilitate cross-discipline interaction

4 Continuous Monitoring and Adjustment

5 Resource scarcity and sharing culture

6 Collective Decision-Making and Compromise

7 Integrated governance model

8 Resource Efficiency

9 Consider total cost of ownership

10 Learning from Experience

Education spaces
Study places
Practical classrooms
Academic office
Academic laboratories
External (cultural) organisations

Cross-building analysis

Lessons learned derived from cases

1 Designing for generic use

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5 Resource scarcity and sharing culture

Generic labs at O|2

Lecture hall with seperations at Echo

Lecture hall and cinema at NU

Classroom for mixed didactics at Echo

Education spaces   Practical classrooms   Academic laboratories

Study places   Academic office   External (cultural) organisations

Cross-building analysis

Lessons learned derived from cases

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5 Resource scarcity and sharing culture

Regular education

Post-graduate education

Cinema / Theatre

54

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- Study places
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- Academic office
- Academic laboratories
- External (cultural) organisations

Cross-building analysis

Lessons learned derived from cases

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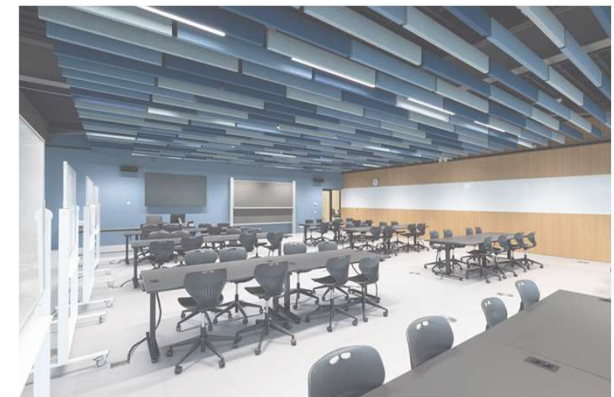
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8. Resource Efficiency

9. Consider total cost of ownership

10. Learning from Experience

Education spaces   Practical classrooms   Academic laboratories

Study places   Academic office   External (cultural) organisations

Cross-building analysis

Lessons learned derived from cases

If cost per €/m2 ↑
but total m2 ↓

─────────────────── +

TCO (€) potentially ↓

6 Collective Decision-Making and Compromise

7 Integrated governance model

8 Resource Efficiency

9 Consider total cost of ownership

10 Learning from Experience

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Study places
Practical classrooms
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Academic laboratories
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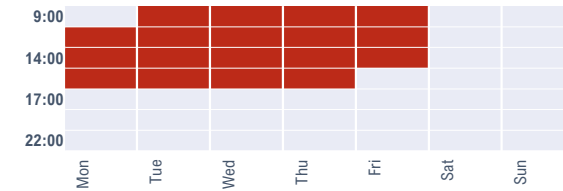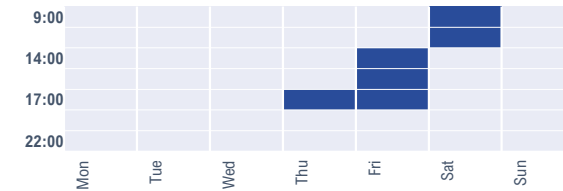
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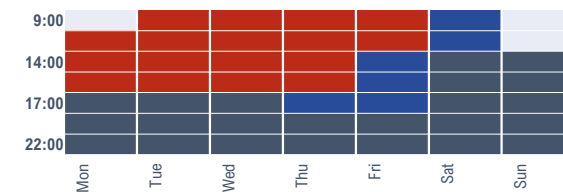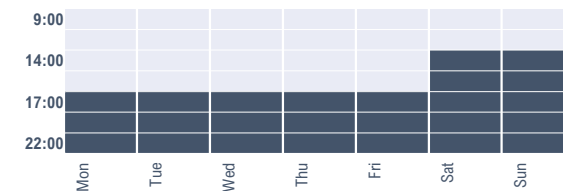
5. Resource scarcity and sharing culture

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10. Learning from Experience

Education spaces   Practical classrooms   Academic laboratories
Study places   Academic office   External (cultural) organisations

(Zaal B Echo, Bloem, n.d.-c)

Sub-questions

SQ1: What trends can be discerned influencing university real estate objectives, and the demand for and supply of shared spaces on campus?

- *Demand-driven to supply-driven.*

- *Physical and financial scarcity as drivers.*

- *Organisational and functional as catalysts.*

SQ2: How are universities implementing shared spaces and buildings in their real estate portfolio and what characterises these facilities?

- *Educational areas, offices, and labs.*

- *Cautious trend towards sharing with external users.*

- *A comprehensive institutional strategy is required.*

SQ3: How can shared spaces be aligned with the needs of the university and campus users?

- *Understand the distinct public values of the four perspectives.*

- *An integrated approach is essential to address challenges.*

- *Continuous monitoring and promoting a sharing culture.*

Echo TU Delft collegezaal,
(Van Oosten, n.d.)

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Sub-questions

SQ1: What trends can be discerned influencing university real estate objectives, and the demand for and supply of shared spaces on campus?

- *Demand-driven to supply-driven.*

- *Physical and financial scarcity as drivers.*

- *Organisational and functional as catalysts.*

SQ2: How are universities implementing shared spaces and buildings in their real estate portfolio and what characterises these facilities?

- *Educational areas, offices, and labs.*

- *Cautious trend towards sharing with external users.*

- *A comprehensive institutional strategy is required.*

SQ3: How can shared spaces be aligned with the needs of the university and campus users?

- *Understand the distinct public values of the four perspectives.*

- *An integrated approach is essential to address challenges.*

- *Continuous monitoring and promoting a sharing culture.*

Echo TU Delft collegezaal,
(Van Oosten, n.d.)

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Main Research Question

How do shared spaces on the university campus align with organisational, functional, financial and environmental real estate objectives?

Shared spaces improve the adaptability and resilience of the instiution to changing academic demands and external pressures.

Shared spaces can be aligned with functional objectives, provided these are designed to be sufficiently generic to accommodate multiple uses and the transition is managed effectively.

Financing campus real estate without shared space concepts is often no longer feasible. Shared spaces can help reduce total cost of ownership and mitigate risks.

Shared spaces increase the potential to use physical resources efficiently. A growing organisation can be accommodated with fewer physical assets.

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Main Research Question

How do shared spaces on the university campus align with organisational, functional, financial and environmental real estate objectives?

A strategic and integrated approach to campus management aligns shared spaces with real estate objectives, and has the potential to mitigate downsides of increased shared space practices.

This alignment optimises resource use and enhances university campuses' functionality, flexibility, and sustainability, ultimately supporting the institution's primary academic objective and operational effectiveness.

Bioscoopzaal NU (Rialto Film, n.d.)

Discussion

Limitations

Scope

Data collection

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Echo TU Delft collegezaal
(Van Oosten, n.d.)
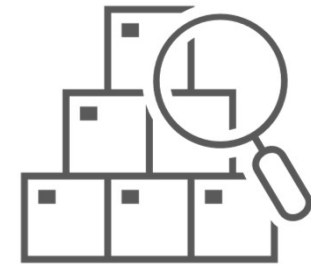
Discussion

Unsolved and new questions

- The extent of the trend toward shared spaces internationally or a comparison of the trends and impacts in Dutch universities with those in other countries.

- How the varied metrics and methods used by different campus real estate departments can be standardised for more consistent quantitative data collection and analysis.

- How to resolve the practical challenges of implementing shared spaces through for example change management to ensure user satisfaction and an effective cultural shift.

Entreehal Echo (Bloem, n.d.)

Discussion

Research recommendations

Broaden scope

Narrow scope

Musashino Art University Building
(Hasegawa, 2020)

Discussion

Practical recommendations

College & University Centre Coeur D'Alene (Swimmer, 2019)

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Long-term strategy

Organisational policy

Shared Spaces in Campus Real Estate

Leveraging shared space strategies to align resource constraints with institutional challenges

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