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**Hybrid environments for universities. A shared commitment to campus innovation and sustainability**

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# Hybrid environments for universities

## A shared commitment to campus innovation and sustainability

WAXMANN

# Hybrid environments for universities

*A shared commitment to campus innovation and sustainability*

Katja Ninnemann, Bettina Liedtke,
Alexandra den Heijer, Kerstin Gothe,
Cordula Loidl-Reisch, Suvi Nenonen, Jonathan Nestler,
Åse Tieva, Christian Wallenborg

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# Manifesto

Sustainable growth has become a necessity for universities. To ensure that our campuses remain vibrant and future-proof, we must all be committed to limited and shared resources.

This implies that we need to learn to *do more with less*. There is a need to find synergistic solutions and ways to measure and assess them. The overall goal is to work towards a sustainable future for universities by breaking barriers for change, which exist at many levels:

1. **We must expand beyond space barriers** with a holistic understanding of the campus as a hybrid environment.
2. **We must replace traditional power structures** with a holistic approach to campus management.
3. **We must create a sense of urgency** to make limited resources tangible.
4. **We must hold ourselves, and internal and external stakeholders responsible** for our as well as their need and requirements.
5. **We must establish co-committing processes** within the framework of limited and shared resources.
6. **We must scale up innovative and sustainable solutions** for hybrid environments at universities.

It is crucial to understand and communicate that material and technical artifacts, places and symbols, such as lecture halls, faculty buildings and university campuses, are a result of our activities as executives, contributors and practitioners at universities and in society.

*Signed by the co-committed book sprint contributors:*
Katja Ninnemann, Bettina Liedtke, Alexandra den Heijer,
Kerstin Gothe, Cordula Loidl-Reisch, Suvi Nenonen,
Jonathan Nestler, Åse Tieva, Christian Wallenborg

# 1. Introduction

This book has grown from the shared interest that we, as individual authors, have for developing and implementing sustainable and innovative university campuses.

We, the authors, were invited to join an international, interdisciplinary expert summit, *CAMPUS MASTER PLAN OR CO-CREATION?* at the Technische Universität Berlin, in March 2020. The aim of the expert meeting was to collaboratively write and publish a book, within five days, on the central question: *Which organizational structures and processes at universities support a strategic as well as innovative campus development?*

As experts with an interdisciplinary background including the social sciences, public real estate, urban planning, architecture and landscape architecture, we would be able to examine the central question from a **holistic perspective**.

Together as authors, we developed a manifesto with six statements. Each of these has a dedicated chapter, including examples. Each chapter in its own way elaborates upon the common challenge of universities to *do more with less* (referring to limited resources) and **to co-commit** more people within the university to this challenge. We chose the term **co-commit** to replace both CAMPUS MASTER PLAN and CO-CREATION, which assumes a predictable future of universities with physical campuses, but the dynamics of 21st-century universities and their resource-efficient strategies demonstrate otherwise. There is a need for more **hybrid environments**, combining the traditional

campus with an e-campus. We take this as the primary focus of this book.

The high-speed writing process was facilitated by Book Sprints Limited. Their support helped us to build a collective, shared vision and to identify the target readers for this book, illustrated by relevant actors, who will be introduced in this book. The process included intensive writing and mediated discussions which gradually strengthened the group consensus. The concept of co-authoring required us to work in different group constellations to ensure communication and cohesion of the content. Writing, reading, restructuring and editing this book was an incredible journey. We also consider it an achievement, not only to produce a book within five days, but also to establish an international network for future collaboration.

# 2. About the co-authors



FIGURE 2.1: THE INTERNATIONAL TEAM OF CO-AUTHORS

**Katja Ninnemann** works in practice and research in the field of Corporate Learning Architecture. Taking into account organizational, social and spatial aspects, she develops, implements and investigates innovative learning and working environments at universities. She studied Architecture and Urban Development at Technische Universität Darmstadt and wrote her doctoral thesis at Technische Universität Wien about innovation processes and the potentials of learning environments at universities. In 2019/2020 she held the visiting professorship Corporate Learning Architecture at Technische Universität Berlin to

teach and do research on the topic of spatial design processes and spatial design practices of hybrid environments.

**Bettina Liedtke** works as a project manager at the Technische Universität Berlin. She has set up a co-commitment process to create a hybrid environment on the university campus and to improve its accessibility to various user groups. She has an interest in how digitization processes transform teaching and learning within hybrid learning environments and how these environments open new paths to science communication. Her background is in Geography and Visual Culture; one focus being on the creation of images of identity through representations of space and objects in city museums and university collections.

**Alexandra den Heijer** is a full professor (chair, Public Real Estate) at the Faculty of Architecture and the Built Environment, Delft University of Technology (TU Delft). She has a background in Architecture (BSc) and Management (MSc). Her specialization is planning, design and management of university campuses and buildings. She focuses on generating management information for (public) real estate decisions. With her Campus Research Team, she has developed models, databases and theories that help universities to design and implement their campus strategies. Current research includes smart campus tools and changing concepts for the university and campus of the future.

**Kerstin Gothe** was full professor at the Institute of Urban and Landscape Design at the Karlsruhe Institute for Technology. She is an architect and urban planner and has conducted a study, with Michaela Pfadenhauer and Alexa Kunz (both sociologists), on how students use different campus spaces and how they feel about them. She was also active in campus development at KIT and in the administrative board of the dormitory of the KIT.

**Cordula Loidl-Reisch** is a full professor (Chair, Landscape Construction) at the Technische Universität Berlin. A degree in landscape de-

sign and ecology has sensitized her to the complex questions of sustainability and suitability for everyday use and comfort. As a landscape architect, she has much experience with project realization, calls for more attention to be paid to urban playability, and is interested in the successful integration of sustainability aspects into attractive open spaces.

**Suvi Nenonen** is a campus developer both in practice and research. She is the Specialist of Future Working and Learning Environments in University Properties of Finland Ltd. Her passion there is to support and facilitate co-commitment processes in small- and large-scale changes all over Finland. She is an adjunct professor at Universities of Tampere and Turku with research interests and projects focused on digital, physical and social spaces and realities. Her background is in social sciences and her doctoral thesis about the Nature of the Workplace for Knowledge Creation was conducted in the department of Real Estate Management at Aalto University (former HUT), Finland.

**Jonathan Nestler** coordinates the Campus Development Project at the Technische Universität Berlin. He is a trained architect and urbanist and focused his research on sustainable yet adaptive campus planning. He is interested in evaluating architecture on the level of interaction with, or the additional value for, the surrounding neighborhood / campus rather than by self-related criteria. With his latest research project, he has provided the Technische Univerität Braunschweig with a campus benchmark tool to estimate the potential of existing infrastructure and upcoming projects to benefit the entire university / campus.

**Åse Tieva** is an associate professor and educational developer at the Center of Educational Development at Umeå University. She has been actively engaged in developing student teaching methods in highly flexible learning environment but also contributes to the development of new learning spaces at Umeå University. Her research interests include the relationship between space, learning and teaching in higher

education. She is a member of the Swedish national network, *Spaces for Active Learning*.

**Christian Wallenborg** works as a strategic property developer for Akademiska Hus, a Swedish government-owned property company with a focus on facilities for higher education and numerous campuses in its portfolio. He develops campus plans, property development plans and projects in early phases. In addition, he is responsible for various initiatives in process methodology, new tools for assessment and sustainable development of spaces for research and education. Christian has previously worked as an architect and project manager and has a degree in architecture from the University of Oregon.

# 3.  The target readers

While we welcome anyone with an interest in universities and (e-)campuses to read this book, we have focused on a few specific groups as our target readers. We will introduce three actors who influence the future of universities and the campus: the executives (decision makers), the practitioners and the contributors. We will also refer to them throughout the book with images, text and thoughts.

**Executives**

People on the executive level are those who are responsible for making difficult decisions within an ecosystem of limited resources, which means they must often advocate for unpopular solutions.

They have a crucial role to play when dealing with limitations and in creating a sense of urgency within the university. Executives often act within a context that others do not oversee or are not aware of. This can be a lonely role.

We see executives as innovators and networkers who understand the conceptual challenges of reorganizing the spatial resources for new forms of teaching, learning and working, while, at the same time, achieving the sustainability goals. To reach these goals, executives must prioritize investments.
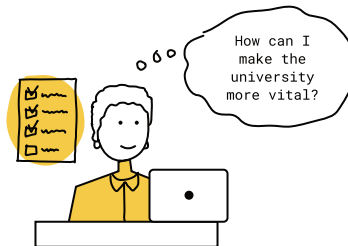
The tasks of executives are to link and convince external and internal stakeholders with university strategies to:

– Strengthen excellence and the international visibility of their university in research, education and innovation
– Negotiate benchmarks with external policy leaders
– Communicate the benchmarks for resources in internal topic-related committees
– Verified decisions are aligned with research insights

Practitioners work on the (e-)campus management level and encounter many obstacles in aligning the campus strategy with university goals. They are responsible for implementing changes. Practitioners can be viewed as change agents, since they often know who to involve and where resistance is likely to arise. Similarly, they are responsible for responding to bureaucratic restrictions, knowing which must be overcome and what can be readily approved. Due to the complexity of (e-)campus management, practitioners come from multiple disciplines, such as real estate, facility management, architecture, urban planning, user experience and ICT (information and communication technology). To understand the holistic approach of (e-)campus management, they need to integrate psychological, sociological, pedagogical, economic and ecological aspects, while combining insights from theory and practice in projects to change the teaching, learning and working environments.
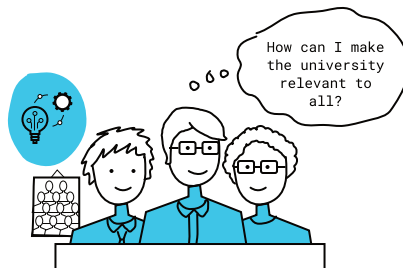
The task of practitioners is to manage and develop the (e-)campus in a responsible and sustainable way, working together with executives and contributors as well as users and other stakeholders by:

– Dealing with limited resources and how much energy the (e-)campus is consuming.
– Coping with the carbon footprint of facilities in (e-)campus architectures and associated maintenance costs.
– Coordinating the development of the (e-)campus environment according to the vision of the university and conflicting needs of users.

**Contributors**



Contributors are actively engaged in innovation and change processes within the university by understanding the challenges of hybrid environments and the sense of urgency to limit resources. The role of the contributors can be taken on by students, teachers, educational developers, researchers, faculty and administration staff, information and communications technology-persons, support service professionals and visitors.



How can I support the revitalization of the university?

Contributors are highly motivated, sometimes frustrated, but driven by the desire to change the situation. They must become **co-committers** in the process of change. The contributors' history might be long or short in the university, but it is their experiences and engagement which are invaluable for change creation and for informing executives and practitioners.

In the challenge to *do more with less* we consider all actors decision makers.
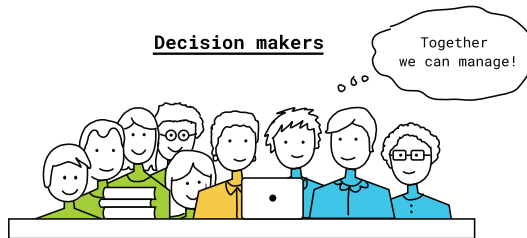
# PART A

# Where are we now and what do we have to consider?

# 4. Campuses are hybrid environments

**Manifesto # 1: We must expand beyond space barriers with a holistic understanding of the campus as a hybrid environment.**

*We define the term hybrid environment as an approach to merge physical and virtual spaces as well as to integrate formal and informal spaces in order to stress the need to overcome disciplinary and organizational boundaries. Space matters, but not just physical space. This perspective leads to new challenges.*

Key messages and challenges:
– Implementing separate virtual learning and working spaces on campus leads to parallel spatial structures which strains resources at universities.
– Integrating virtual learning and working spaces brings about new needs and requirements from the physical spaces which effects space supplies.
– With the integration of ICT, the differentiation of formal and informal spaces are eroding due to the ability to learn and work independently of time, place and people.
– Urban, outdoor and living spaces are also learning and working spaces which leads to an extended understanding of the university campus. This incorporates the opportunity to link university and society.

Figure 4.1 demonstrates the parallel structures of virtual e-campus and physical campus infrastructures. Due to new needs and requirements, users tend to claim more space. Hybrid learning environments do not need more space, but new qualities of space.

This chapter provides an overview of research insights on the context of space in higher education.
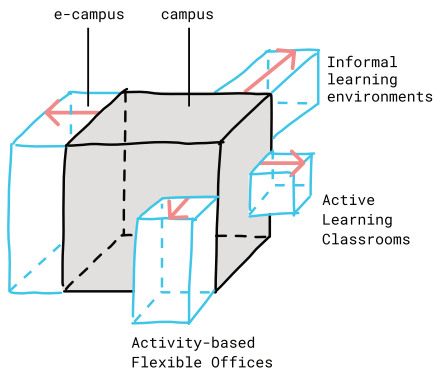


FIGURE 4.1: PARALLEL AND ADDITIONAL SPACE STRUCTURES ON CAMPUS

Over the years, university campuses have accommodated generations of students and facilitated an increasingly dynamic academic community. Much work has been done to make a campus attractive to students, visitors and the surrounding neighborhood. The campus can support collaborations between students, scientists, entrepreneurs and other industry partners. Spaces enable different stakeholders to come together (Huhtelin & Nenonen, 2015), support student learning success (Brooks, 2011; McArthur, 2015; Lundahl et al., 2018) and create symbolic significance for the picture of future universities (Ninnemann, 2018) – in other words, space matters for universities.

The dimensions of the buildings we find on campuses today, are often based on the way we were learning, teaching and working in the past. The promotion of e-learning and integration of ICT as well as virtual learning environments has not led to a rethinking of physical space on campus. Virtual and physical spaces are still produced separately and not in an integrated manner (see Figure 4.1). Lecture halls and cellular offices still exist, although learning and working can take place independently of space and time through the integration of ICT. Lecture halls are not dedicated to new usage possibilities, although lectures can be recorded, and blended-learning concepts are already linking the physical and virtual spaces. The limited amount of space as a resource makes it necessary to re-think the typologies of teaching and learning spaces, and re-model them accordingly, instead of just claiming more space.



Conceptualizing and realizing physical infrastructures in parallel with virtual infrastructures without interlinking them, as well as adding more buildings on campus, completely stretches financial and human resources at universities. These developments also have a strong negative effect on the carbon footprint of university campus sites and prevent the achievement of UN or national sustainability goals (see chapter 5 "Campus Management is a holistic approach"). The limitation of human, financial, ecological and sociocultural resources forces us to understand the campus as a finite ecosystem that is not endlessly

expandable. On the contrary, adding space and more resources is not innovative anymore – regardless of how fancy or technically advanced this may seem to be.



To keep the university and its campus innovative *and* sustainable, we must follow hybrid environment concepts that are aligned to the strategic goal of the university (see chapter 5). Processes or solutions that promote *more of everything*, which in effect reflect the self-conception of our societal mantra of growth, are not a realistic option. When facing global challenges, especially in the climate crisis context, we must understand that they will affect us personally in our daily lives on campus, in the city, state and nation. Innovation processes lead to change, so innovative learning and working environments are not only added to existing environments, but they change the already existing places and spaces. We must be aware of this and endeavor to understand, experience, and evaluate how this will affect us. In spatial innovation processes on campus, we need ways and methods to reach all actors and actor groups to ensure that the perspectives of executives, practitioners and contributors are included. Existing challenges and the complexity of the negotiating process must be clearly addressed in order to find the best solutions.

## Why space matters – developments that have shaped higher education

Higher education has undergone several transformational reforms over the last few decades, mainly due to the Bologna process. The main objective of the Bologna process was to ensure more comparable, compatible and coherent higher education systems in Europe. With this transformation, there was also a shift from teaching to learning – putting the learner at the center of the learning process (Barr & Tagg, 1995). Furthermore, learner-centered or active learning is a recurrent concept in contemporary national and international education policies, widely referred to as 21st-century skills (OECD, 2013). The competencies that are asked for are those abilities, social as well as cognitive, that today's students are expected to need for their future professional lives. Educating for the unknown future requires skills such as communication, collaboration, creativity and critical thinking (Harrison & Hutton, 2014). Educational learning theories such as social constructivism can change perspectives on the learning processes of students as well as the ways teachers teach (Illeris, 2009).

With the current demographic situation, life-long learning, a global education market and the shift from the industrialized era to a knowledge-based society, expectations and needs on what learning environments should offer and look like have changed. In general, the
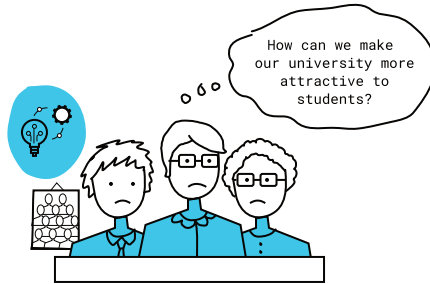
student body has become far more heterogeneous, which also makes space requirements more diverse. As a result, teaching and learning formats are more learner-centered and activity-based. The perceived accessibility of a learning environment, from the viewpoint of the user, depends on their former learning experiences and their expectations, and might differ greatly. Providing easy access to campus space, on- and offline learning environments, as well as 24/7 services, is key to meeting learners' needs. A more intensive around-the-clock use of the limited resource of space ensures that the campus becomes more sustainable. Demands for continuous education will have three user groups: pre-work learners, during-work learners, and post-work learners (so called silver surfers).

What unites all user groups is a basic set of human needs as described in Maslow's hierarchy of needs. These needs also have a spatial component and it is quite clear that hybrid environments have the potential to fulfill these needs in a much more comprehensive way than traditional spatial use patterns can (see Figure 4.2).

The interest in spaces for teaching and learning in higher education has grown considerably, despite being largely neglected in the early 2000s (Temple, 2008; Cox, 2011). Campus retrofitting processes currently just see the additions of new technologies, functions and services to existing systems: hybrid learning environments, new space
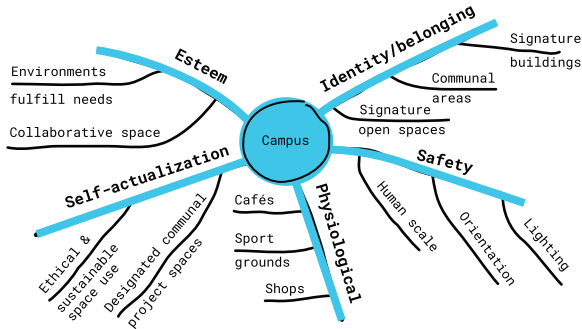
FIGURE 4.2: DIAGRAM OF SPATIAL NEEDS ON CAMPUS
(BASED ON MASLOW'S HIERARCHY OF NEEDS)

typologies and a variety of platforms (digital, physical and social) supporting collaboration both within the university and in connection with diverse stakeholders (Eriksson et al., 2014).

### Merging formal and informal spaces to create hybrid environments

The 21st-century campus consists of a range of different spaces such as laboratories, libraries, office areas, and lecture halls. Conceptualized and actualized hybrid environments must be rethought on the level of cross-scale space structures by integrating buildings, campuses as well as urban and outdoor spaces. The innovation pyramid of learning environments (see Figure 4.3) shows different arrangements of formal and informal learning spaces within this context (Ninnemann, 2018; 2020).

The first level of the pyramid shows the importance of informal learning spaces including student workspaces for individual and group work in addition to formal learning spaces such as lecture halls or seminar rooms. Due to the access of information at any time and any
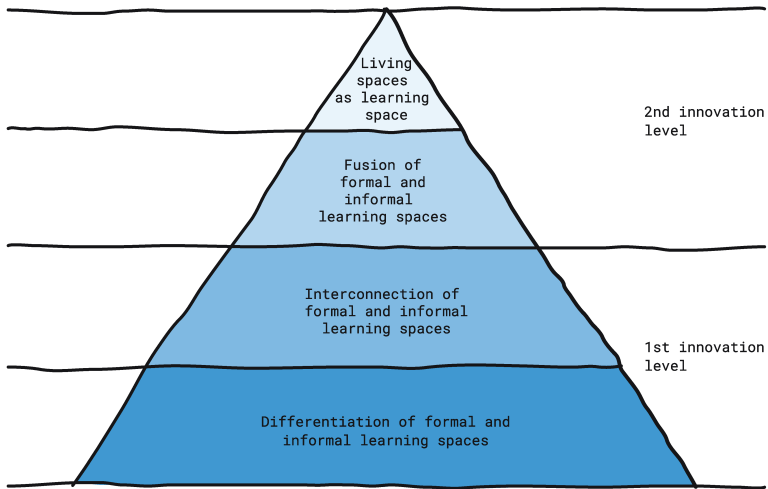
Figure 4.3: Innovation pyramid of learning environments (based on Ninnemann, 2020)

place, one central spot on campus is no longer enough. Against this background, interspaces such as corridors, niches and entrance areas are activated, project rooms are set up as break-out spaces and student lounges become informal learning locations for students in the direct vicinity of formal learning environments.

On the second level of the innovation pyramid, active and flexible learning space concepts completely remove the boundary between formal and informal learning environments, for example, in active learning classrooms (ALC) or flexible learning environments. This can lead to higher innovation levels when learning processes are integrated into urban spaces, as shown at the top of the pyramid. The selection and appropriation of socially accepted and legitimate spaces of everyday life for learning processes, such as student flats, co-working spaces and cafés, as well as public institutions and organizations, can meet the students' and teachers' individual preferences for learning envi-

ronments. Activating urban spaces also means considering outdoor spaces as places for learning and working.

Due to this development, universities gain a new role in urban society. Spatially they open to the city or even become part of the city. They offer open spaces for everyone, opportunities for urban society and university members to meet and make use of public spaces in the surrounding area as if they were part of the campus (Gothe & Pfadenhauer, 2010). The social fabric and the economic potential of the city changes through university engagement. This creates new opportunities for city-university collaboration.

Example: *TheaBib & Bar* – A co-working space for students in the Theater Karlsruhe
This is an example of a city-university collaboration. TheaBib & Bar provides an unusual place for 150 students to learn, work in groups and think creatively. For this project, the Theater Karlsruhe, the Karlsruhe Institute of Technology and a student group Enactus are jointly committed. The new co-working space in the foyer of the theater is open weekdays from 9 a.m. to 4:30 p.m. In addition to WLAN and a coffee bar, students also find learning advisors and workstations. The students greatly appreciate the additional learning facilities because the library is often overcrowded and TheaBib & Bar provides a good space for groups to work together.
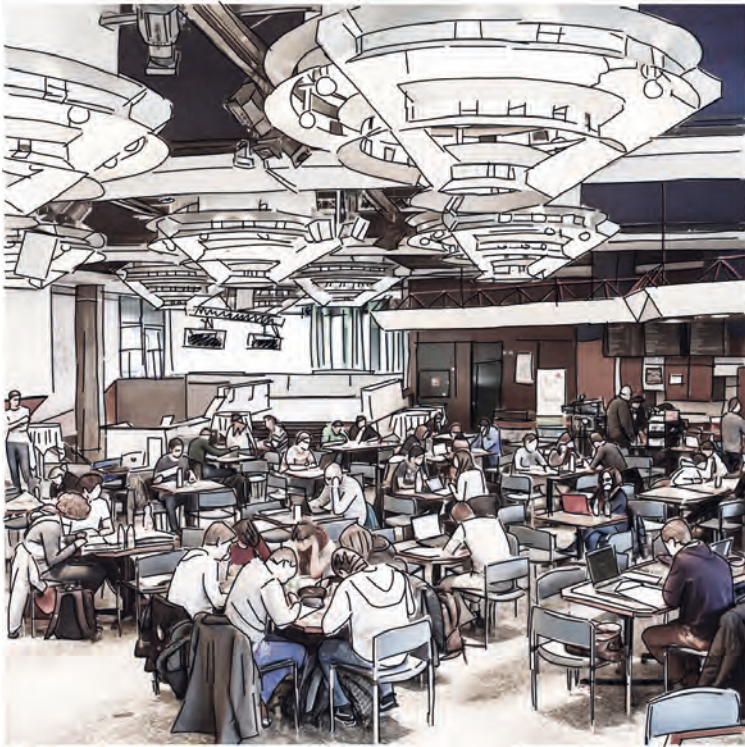
Figure 4.4: TheaBib & Bar (based on a photo by Kerstin Gothe)

## Merging physical and virtual spaces to hybrid environments

With the huge hype of emergent technologies at the beginning of the 21st century, digital innovations led to euphoric expectations of developing new learning environments at universities, "Students are changing, technologies are changing, and learning spaces are changing" (Lomas & Oblinger, 2006, p. 5–11).

However, campus structures, buildings and sites do not reflect this demand at the same pace. Student-centered teaching that supports the development of 21st century and sustainable development skills can be facilitated, when teaching is conducted in learning environments specifically designed to increase students' active learning (Dori & Belcher, 2005; Brooks, 2011; Lundahl et al., 2018; 2017). This can be done by creating hybrid environments containing both physical and virtual spaces. Therefore, the physical space should provide a technical interface. We have found from practice that virtual environments do not work without physical spaces. This insight is also driven by research findings that show that drop-out rates in online learning are closely related to the lack of social interaction (Brinton et al., 2014). Against this background, *hybrid environments* stress the importance of face-to-face encounters. A wide array of functions should be part of the physical and virtual learning and working experience.



When linking informal and formal as well as virtual and physical spaces, hybrid environments are emerging in completely different ways than the traditional *bricks and mortar* or *clicks and bytes* universities to support innovative teaching and learning processes. Taking a holistic view as a starting point, creating future hybrid environments means working across transdisciplinary borders. It is not only the specific cultures of different disciplines that must be bridged, but also the different views and assumptions from a wide range of external and

internal stakeholders at universities. We must make sure to speak a common language, so we understand one another. This also means creating a set of inclusive images and examples. Activating multiple spaces – physical, virtual, informal, formal, outdoor and urban spaces – under the umbrella of the *hybrid environment* will support heterogeneous needs and innovative methods in teaching and learning processes as well as change the image of the university in our society.

**Example:** *Phone application MY VOID that helps to share spaces*
This example shows that by using an app, private spaces (in this case identified as VOIDs which includes open spaces) can be made permanently or temporarily accessible as city residents and university members are invited to use them. The VOIDs are each identified with a profile; for example, some spaces can be used as rehearsal rooms, studios or for workshops. The information can be retrieved with appropriate search criteria on the MY VOID website or via QR codes. Anyone looking for a VOID with certain characteristics can easily find and book it. If social events are taking place, users can be invited to them via the app.
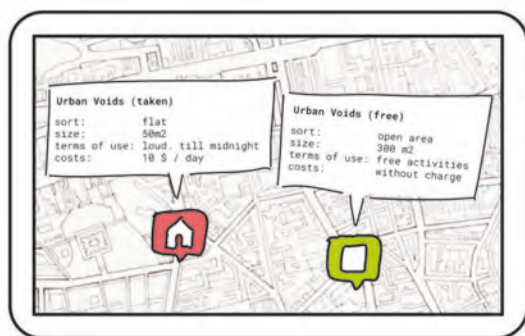


FIGURE 4.5: MY VOID app

Example: *Hybrid outdoor spaces*
The **ELIA seat** with an integrated table has Wi-Fi and electrical connections. Single seats allow for concentrated work and are easy to move into an open outdoor space. Outdoor seats for two or more people, and arenas for larger groups, allow for discussions and lectures, with seats moved as needed.
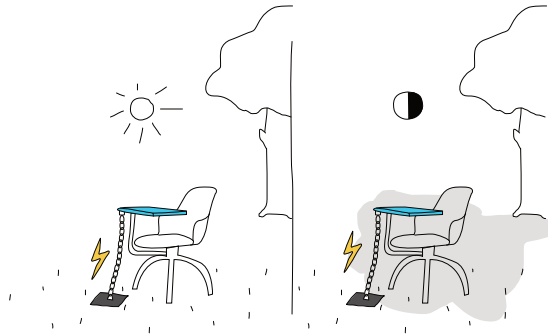


Figure 4.6: The ELIA seat as an example of a hybrid environment in the outdoor space

# 5. Campus management is a holistic approach

**Manifesto #2: We must replace traditional power structures with a holistic approach to campus management.**

*We understand the term campus management as a holistic approach to create and operate hybrid environments in order to secure innovative and sustainable solutions in line with university goals. This perspective leads to new challenges.*

Key messages and challenges:
- European universities have high ambitions with increasing pressure on their human, financial and spatial resources.
- The dominant challenge for universities is *doing more with less.*
- Campus management needs to follow university goals, making sensible use of resources.
- Decisions on hybrid environments impact all resources and need to be assessed accordingly.

Figure 5.1 demonstrates that we must deal with limited resources that do not allow building up parallel structures of virtual and physical campus infrastructures as well as adding more space due to new needs and requirements of users (see also Figure 4.1 in the previous chapter).

This chapter provides a holistic framework for innovative *and* sustainable campus solutions.
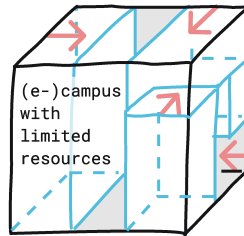
FIGURE 5.1: FINDING CAMPUS SOLUTIONS TO SUPPORT UNIVERSITY GOALS WITH LIMITED RESOURCES

Many universities have high ambitions for education, research, innovation and social engagement and – at the same time – need to adopt a strategy to be more effective and efficient with existing resources, to find ways *to do more with less*. This is demonstrated by research on European universities and the efficiency hub, set up by the European University Association (EUA, 2018) and confirmed by European campus research (Den Heijer & Tzovlas, 2014; Curvelo et al., 2019). It is safe to claim that there is a common challenge among universities to find innovative solutions and synergies, and ways to measure and assess them.

Campus management follows the university challenge and wants to contribute by making sensible use of available resources. We will elab-

orate upon the theory of campus management to provide a framework for innovative *and* sustainable solutions.
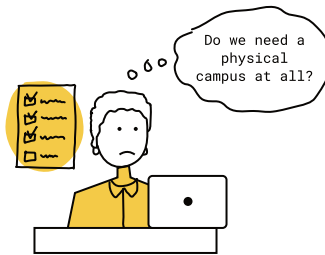
We have a holistic approach to campus management. The term *holistic* refers to assessing the effect of campus decisions on all resources to avoid suboptimal solutions. Suboptimal solutions solve one problem but create another. For example, the decision to create more space for a particular user has the following effects: it satisfies the user, but enlarges the footprint per person, increases the campus costs per person, and the money spent cannot be spent on other urgent matters. Are we aware of that and do we still want to decide that way? A holistic approach takes all effects into account.

According to theory, campus management can be considered as the alignment process between goals and resources, integrating four different perspectives (Den Heijer, 2011): the organizational perspective, the functional perspective, the financial perspective, and the spatial perspective. The latter includes both the virtual campus and the physical campus.

We will elaborate on the goals and three types of resources (human, financial and spatial) as introduced in Figure 5.2 to set the *solution space* for campus decisions. This solution space is visualized in this book as a three-dimensional box (see Figure 5.4).

| University goals | Financial resources |
|---|---|
| **Organizational** | **Financial** |
| Goals to support quality of education, research, innovation, setting an example | Costs, benefits, value, sensible use of financial resources |
| Campus management | |
| **Human resources** | **Spatial resources** |
| **Functional** | **Spatial** |
| User satisfaction, mix of functions / spaces, human resources and needs | $m^2$, software, hardware, condition, location, $CO_2$, energy use, ecological quality, hybrid environment |

FIGURE 5.2: CAMPUS MANAGEMENT DEFINED AS THE ALIGNMENT PROCESS OF UNIVERSITY GOALS AND THREE TYPES OF RESOURCES (DEN HEIJER, 2011)
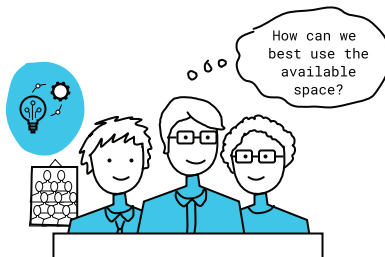


## Defining the solution space for campus decisions

The first step in setting the three-dimensional *solution space box* for campus management is putting the human, financial and spatial re-

sources on the X, Y and Z axis, as illustrated in Figure 5.3. Human resources are expressed in number of users (students, staff, etc.), spatial resources often in m$^2$ or $CO_2$ footprint, and financial resources in euros. Together, these three types of variables determine the quantitative context of campus management.



Financial
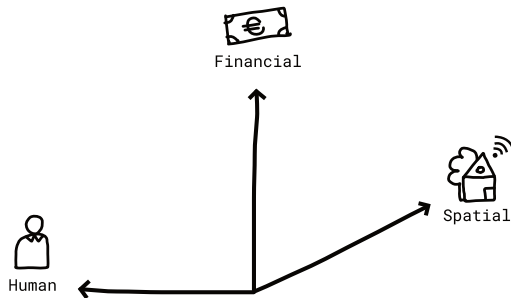
Spatial

Human

FIGURE 5.3: DEFINING THE SOLUTION SPACE FOR CAMPUS DECISIONS BY PUTTING HUMAN, FINANCIAL AND SPATIAL RESOURCES ON THE X, Y AND Z AXIS

Figure 5.4 illustrates the second step of setting the solution space, connecting the three resources, and limiting them by setting boundary conditions such as m$^2$ per user, $CO_2$ footprint per user, euros per m$^2$ and euros per user, which are common performance indicators for campus assessment models.

Of course, we acknowledge that campus decisions are assessed by more performance criteria than footprint per m$^2$, euros per m$^2$ and footprint per user. Therefore, we expand the campus management framework with the societal impact of campus decisions, zooming out from Figure 5.2 in the next section with Figure 5.5.
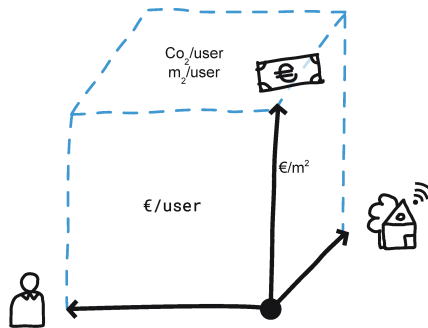
FIGURE 5.4: THE HUMAN, FINANCIAL AND SPATIAL RESOURCES ON THE X, Y AND Z AXIS, VISUALIZED AS A BOX, DETERMINED BY CRITERIA SUCH AS M$^2$ PER USER, EUROS PER M$^2$ AND EUROS PER USER

**Example:** *Solutions in the box: more intensive use of existing facilities*
If solutions need to be found inside the box, there are plenty of creative cases on campuses already. The common denominator is to use the same floor area more intensively. You can do this by expanding opening hours, allowing multifunctional use, making flexible configurations or making them more public and avoiding private territory. More tangible examples are:

– Temporarily turning more rooms into silent study places during exams.
– Using cinemas and theaters as lecture halls in the city during the first busy weeks of every semester or term.
– Making outside spaces – within the city – more functional with the Eduroam Wi-Fi.

Further information: Curvelo et al. (2019) and Den Heijer (2020)

## Addressing the complexity of campus decisions

We will specify both the university goals and three types of resources to provide a more comprehensive, holistic assessment framework for campus decisions. This framework is customized for hybrid environments but can be applied to more general contexts.

We have added the societal context to the university goals and resources for a more holistic approach. The societal context positions the university in its surrounding society, population, ecosystem and city. Figure 5.5 expands on Figure 5.2, adding the societal impact of campus decisions and introducing a range of performance indicators for campus decisions, including their impact on the environment.



FIGURE 5.5: HOLISTIC ASSESSMENT MODEL FOR CAMPUS MANAGEMENT WITH A RANGE OF PERFORMANCE INDICATORS, ZOOMING OUT TO THE IMPACT OF THE UNIVERSITY AND CAMPUS ON ITS ENVIRONMENT (DEN HEIJER, 2011: EDITED)

The *holistic assessment model* for campus management and decisions still contains the basis of aligning goals and resources (Figure 5.5). It takes public interest into account and 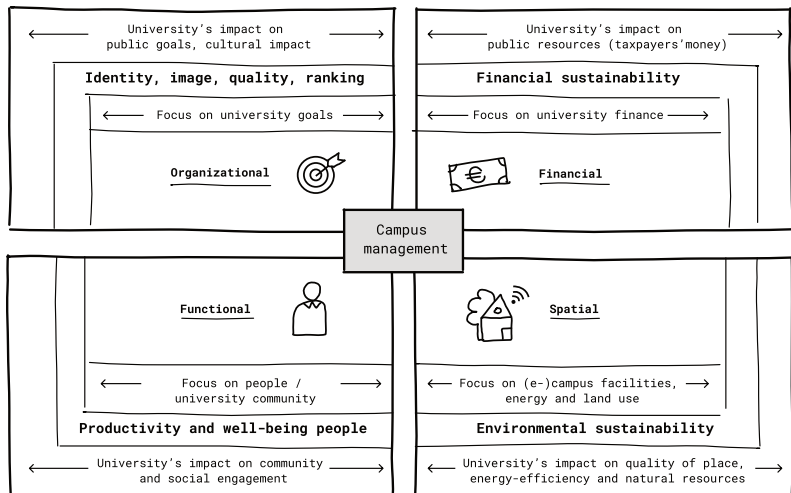adds new decision indicators, for example, the university's impact on the environment. We will elaborate on the elements of Figure 5.5 to set the more comprehensive solution space for campus decisions.

**The organizational perspective** considers the effect of campus decisions on the university's primary goals: education, research and innovation. The quality of their education, research and innovation determines their ranking, identity and image, which are important to attract talented knowledge workers, students and staff. Additionally, universities increasingly want to set an example for society, to practice what they preach in living labs on campus, to be responsible neighbors, to be energy-efficient, to cherish heritage buildings, and to responsibly spend taxpayers' money (Curvelo et al., 2019; Den Heijer, 2020). These challenges directly relate to the functional, financial and human resources.

From **the functional perspective** human resources are considered the most important resources of the university: students, professors, researchers and support staff. The extent to which campus decisions support their learning, teaching and working processes determines their productivity and well-being. Related to these human needs and resources is the importance of sociocultural and functional qualities (Richter et al., 2018), such as *Design for all*, which ensures that everyone feels included. How the campus influences the social engagement of the university depends on the local community's access to the campus.

**The financial perspective** covers the effect of campus decisions on the financial sustainability and resources of universities. These consist of funding from national governments, national and EU research funds, contracts with third parties and tuition fees from students. In many European countries, these financial resources are under pressure (European University Association, 2018; Curvelo et al., 2019). Universities

spend most of their financial resources on salaries. The costs of the campus usually range from about 10% to 20% of the total university budget, depending on recent investments and the number of specific spaces (Den Heijer & Tzovlas, 2014). Relevant conditions are cost-efficiency, flexibility for future needs, and an aim for low energy consumption (Richter et al., 2018).

**The spatial perspective** includes the effect of the campus on the environment, from the quality of place to their impact on natural resources. The ecological resources of universities include the land and buildings as well as technological aspects, such as software and hardware, of the university, and the materials and energy they consume. Natural resources such as water, soil, vegetation and biodiversity should be considered (Richter et al., 2018). Additional aspects that need to be considered are the location of the campus relative to the city, the importance of heritage – cultural, academic and industrial – and how the campus adds to the aesthetics and identity of the city.

Every campus decision will have a positive and negative effect on the goals and resources of the university and its environment. The campus management challenge is to find solutions with the maximum added value for all mentioned aspects. The following example provides an example of how universities find innovative *and* sustainable solutions for this challenge.

**Example:** *APP: reduce your campus $CO_2$ footprint*

"Ask not what your university can do to reach environmental goals, but ask what *you* can do for your university" (Den Heijer, 2020). TU Delft's Campus Research Team has made a prototype app for smart phones to compare your own $CO_2$ footprint with that of the average student or employee. But more importantly, it suggests how to reduce your own $CO_2$ footprint, which consists of the air miles you make for work, the way you commute to work, the spaces you use on campus, the amount of $CO_2$ imprints you make and if you eat vegan / vegetarian meals.

Reduce
your
campus
CO2
footprint
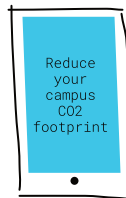
FIGURE 5.6: APP TO VISUALIZE YOUR
CARBON BUDGET

The prototype app creates awareness of the influence that the campus community has on the university's $CO_2$ footprint and suggests not only ways to reduce the footprint but also gives users a *carbon budget* they can spend on their preferred goals. You can earn *air miles* by claiming less space on campus, and the other way around. Obviously, this app is also developed to encourage discussion about the value and environmental costs of territory on campus. It also informs the community about easy ways to reduce their carbon footprint, in order to spend energy and money on the things that really matter.

Further information: *Campus of the future* (Den Heijer, 2020)

## Campus management as a shared responsibility

The *holistic assessment model* for campus management and decisions contains a range of goals and resources to consider but can still be summarized – and simplified – by the three-dimensional *solution space box* for campus decisions. Even without an internal desire for change, the solution space is under pressure and subject to constant transformation.

Spatial resources are under pressure from ambitious environmental agendas and user demands, financial resources are challenged by budget cuts in higher education funding, and human resources are stretched due to increased workloads (see Figure 5.7).
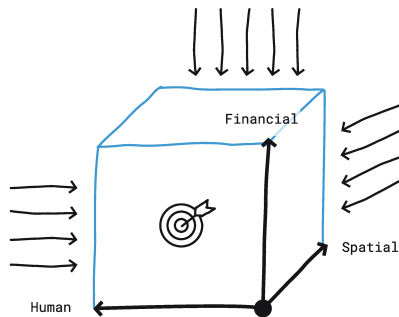


FIGURE 5.7: ALL RESOURCES ARE UNDER PRESSURE AND REDEFINE
THE SOLUTION SPACE

From a holistic point of view, we need to engage and empower all university stakeholders in the common challenge to find innovative *and* sustainable solutions. We understand that executives, contributors and practitioners are decision makers. In other words, the challenges faced by the university and campus are not just a responsibility for the board and policy-makers of the university, but for all university stakeholders. The common goal for all of us is to *do more with less*.

# PART B

# Where do we go and what do we have to focus on?

# 6. Create a sense of urgency

**Manifesto #3: We must create a sense of urgency to make limited resources tangible.**

Key messages:

- Executives, practitioners and contributors share challenges and a sense of urgency to achieve strategic goals with limited financial, spatial and human resources.
- Executives ensure that limitations also provide opportunities for innovative *and* sustainable solutions.
- Practitioners make the limited resources tangible so that all stakeholders can oversee the consequences of campus management decisions.
- Contributors can help to spread ideas and facilitate change processes.
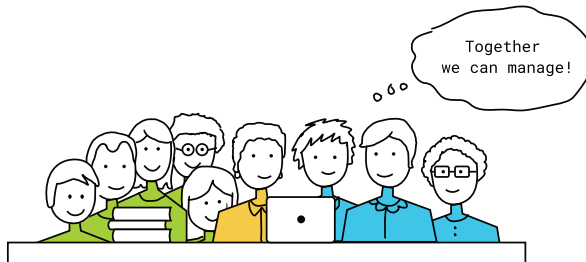


- Everyone should be invited to discuss campus solutions, but with a full overview of the consequences on resources, not only for specific needs.

– Good examples, frameworks and tools generate innovative but pragmatic solutions as well as the co-commitment of internal and external stakeholders.

The Figure 6.1 shows the pressure on resources and the urgency to deal with these limitations for innovative *and* sustainable solutions on campus.

This chapter will shed light on external and internal factors for creating a sense of urgency with a focus on the significance of limited resources and the need to follow a co-commitment approach.
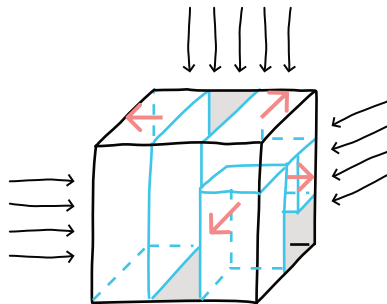


FIGURE 6.1: SHARE A SENSE OF URGENCY FOR MANAGING INNOVATIVE *AND* SUSTAINABLE SOLUTIONS

## Changes are accelerated by crisis

Change is often associated with both positive and negative attitudes and is experienced as both a possibility and a threat. In order to create a sense of urgency for change, a crisis is often needed. This is demonstrated by many examples on campuses where innovations were

accelerated: a crisis was often the reason for change. A graphic example was the fire on TU Delft's campus, which caused a whole faculty to reinvent the way of learning, studying and working and by sharing more facilities than before. "Never miss the opportunity of a crisis," they stated in various publications (Den Heijer, 2011).

**Example:** *Never waste a good crisis* – **TU Delft's BK city after the fire**
BK city is the name of TU Delft's Architecture building, close to the historical inner city of Delft in the Netherlands. In 2008, this building – designed in the 1910s – was transformed into a vibrant, creative learning environment and research workplace, after a fire destroyed the old Architecture Building (42.000 m²). Within six months of the fire, the BK city project team moved the faculty of about 3.000 students and more than 800 employees to a building that was 15 % smaller in terms of floor area.
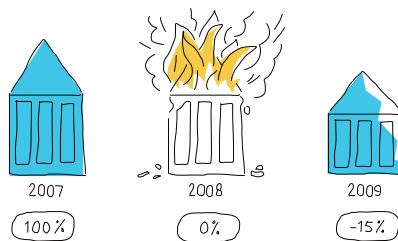


FIGURE 6.2: SPATIAL REDUCTION INITIATED BY CRISIS

This space reduction – with a growing faculty community – was possible, because TU Delft implemented shared concepts for practically every function type, experimenting with less private territory and more public space. In the evaluations, the team members

claimed that they would not have been able to make those changes without the urgency of the fire. BK city was supposed to be a temporary solution for the faculty, but within one year, the users of the faculty already claimed that they wanted to stay. After more than eleven years, the faculty is still using BK city and is not planning to leave.

Source and further information: Den Heijer (2011) – www.mana gingtheuniversitycampus.nl/case-bk-city

We must be aware that a crisis also can arise by other external factors. A comparative case study of universities with innovative campus concepts shows that spatial, social and organizational issues are closely related to innovative changes on campuses, such as unfavorable geographic situations, increasing international competition and changing needs on services and spaces due to the integration of ICT as shown with the following examples (Ninnemann, 2018).

**Example 1:** Unfavorable geographic situations may require major efforts for innovative campuses to attract students and researchers as well as academic and administrative staff to join the university. One example is Umeå University which already has a long history with use of creative learning environments and in setting up the goal to be one of Europe's leading universities regarding innovative physical and virtual environments.

Source: Ninnemann (2018)

FIGURE 6.3: LEARNING SPACE AT UMEÅ UNIVERSITY
(BASED ON A PHOTO BY KATJA NINNEMANN)

**Example 2:** Integration of ICT may affect rethinking university services and infrastructures, such as, for example, the libraries. Glasgow Caledonian University developed and implemented in 2006 a prototype to transform the library from a center of information to a learning center. They focused on urgent needs of students for informal learning environments on the campus where students can meet and collaborate. Learning centers are already spread now all over the world and have become relevant spaces when thinking about the campus as a hybrid learning environment.

Source: Ninnemann (2018)

**Example 3:** Increasing international competition between universities may lead to holistic approaches on rethinking learning environments to differentiate from other universities and to build up a unique selling point. SRH Hochschule Heidelberg, for example, initiated a university-wide change management process to realize the cultural shift from teaching to learning. This had to be secured

from a long-term perspective with new learning environments. As shown with virtual reality videos (see QR code, Figure 6.5), it is obvious that spatial conditions are carefully intertwined with learning, teaching and assessment methods to allow various didactic approaches, cultural change and shared spaces for formal and informal learning processes.

Source: Ninnemann (2018; 2020)
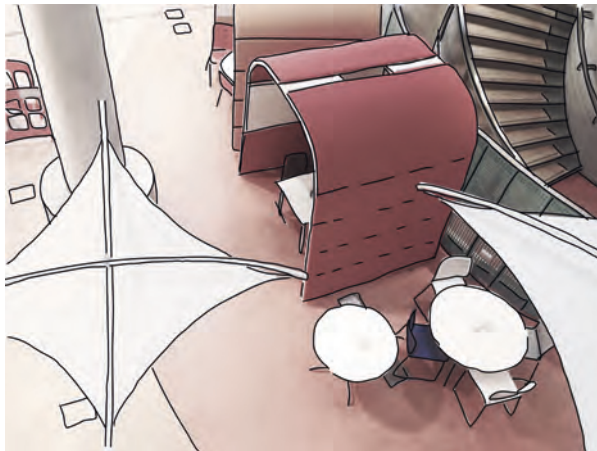


FIGURE 6.4: SALTIRE CENTRE AT GLASGOW CALEDONIAN UNIVERSITY (BASED ON A PHOTO BY KATJA NINNEMANN)

Furthermore, the current emergencies in society give enough reasons to worry about the future: climate change, the required energy-transition, the scarcity of space and other resources. The ambitious Sustainable Development Goals of the United Nations (UN) also reflect those emergencies (see examples with all relevant UN goals further down in this chapter).

FIGURE 6.5: LEARNING SPACE AT SRH HOCHSCHULE HEIDELBERG
(BASED ON A PHOTO BY SRH HOCHSCHULE HEIDELBERG)

## Change is accelerated by limiting resources

The chapter above showed that external factors are having a tremendous effect on spatial, social and organizational change processes at universities. But universities have the possibility to accelerate change without being afraid to get lost in a crisis.

Awareness of limited resources can help to create a sense of urgency and to promote the impulse for innovation processes. Case studies show that such limitations lead to creative new ways to use and activate places, for example prioritizing investments on hybrid environments integrating the physical and the virtual space. We can see that a restriction of resources, with the prioritization of a focus on investment

in either the physical or the virtual space, will make productive and creative use of potentials of learning space design (Ninnemann, 2018).

**Example:** *Minerva Schools at KGI – * **San Francisco, California**
Minerva Schools at KGI was founded in 2011 with the aim to establish an ivy league university with a rigorous focus on student success and fewer costs for student tuition. The university founders set up the challenge to develop a university with limited spatial resources.

The university does not operate any campus facilities with seminar and lecture rooms as well as additional service infrastructures.

Minerva focused the main investment on developing a virtual environment that supports an active learning approach. Understanding the urban space as an active learning environment, curricula are integrated into locally organized projects, organizations and activities (see Figure 4.3: Innovation pyramid of learning environments). Students live and learn together in student houses at different urban hotspots worldwide during their studies. With the focus on the development of the active learning platform, learning and teaching is in accordance with the guiding principle; *The world is our classroom*. Linking the physical and virtual space in a new manner, Minerva developed an innovative hybrid environment with limiting resources by understanding the urban environment as the university campus.

Further information: Ninnemann (2018) and Hasso Plattner Institute of Design at Stanford (2019)

Regarding campus development, we need to make sure that new spatial concepts are not just additional projects requiring additional resources. We must ensure that campus development can be realized within the potential capabilities of the university. It is vital to identify the limiting framework of what universities can provide, finance, endure and aim for in the very first phase of envisaging a project.

## Partnerships for achieving goals with limited resources

As one of the United Nation goals for sustainable development proposes (Goal No. 17), it is urgently needed to establish partnerships.



A successful sustainable development agenda requires partnerships between universities, government and civil society. These inclusive partnerships build upon principles and values, a shared vision, and shared goals that place people and the planet at the center. They are needed at the global, regional, national and local levels. Long-term investments are needed for developing the university. These include sustainable energy, infrastructure and transport, as well as information and communications technologies. The public sector will need to set a clear direction and the university can set an example on campus.

From the holistic point of view, having the goals of sustainability in mind, there are other UN goals to be considered and specifically addressed for universities at this point. UN goal 4 about the quality of education has been the most considered goal of universities and indirectly applies to all solutions in the hybrid environment. UN goals 3 and 5 are about the human resources; UN goals 11, 13 and 15 are about the spatial resources and – as stated previously – Goal 17 is about partnership/shared responsibility.
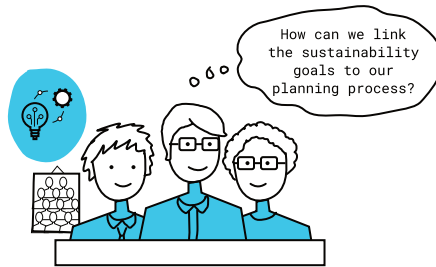
UN Goal 3 – Good health and well-being: Ensure healthy lives and promote well-being for all at all ages

Ensuring a healthy campus and promoting the well-being among all members of the university is essential to sustainable development. Healthy air in learning environments, low pollutant emissions from surrounding materials, enough sunlight in learning environments at any time of day, varying artificial light adapted to the needs of the learning environment, all provide incentives for movement and encourage people to stay outdoors. The exterior space of a university plays a diverse role, as it can compensate what buildings cannot achieve. Here, learning environments can be supplemented and integrated into the campus green open space to support biodiversity and provide respectful treatment of vegetative areas and existing trees.

Example: *Students build for students* – TU Berlin

The TU Berlin campus includes one example of use of outdoor spaces in which the objects developed by the students and derived from theoretical considerations are directly translated into practical application. The built seating objects now serve all students during breaks while chatting and regenerating. As an example of multiple use, the bollards, designed to keep cars out, now also

serve as seating. They are very popular with students and represent urban playability, because some of them rotate.



FIGURE 6.6: MULTIPLE USE OF BOLLARDS ON TU BERLIN'S CAMPUS
(BASED ON A PHOTO BY CORDULA LOIDL-REISCH)

**UN Goal 5 – Gender Equality: Achieve gender equality and empower all women and girls.** Gender equality is not only a fundamental human right but a necessary foundation for a peaceful, prosperous and sustainable world. Gender justice can be achieved through implementation of new learning spaces that are more open to new ways of thinking and acting.
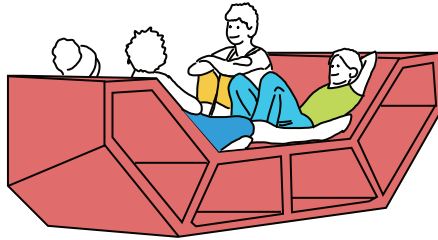
FIGURE 6.7: AN EXAMPLE FOR INCLUSIVE
SEATING IS THE SO CALLED ENZO. DEVELOPED
FOR THE VIENNA MUSEUMSQUARTIER, IT IS
EQUALLY POPULAR WITH ALL USERS, NO MATTER
HOW YOUNG OR OLD THEY ARE.

**UN Goal 11 – Sustainable cities and communities – Make cities inclusive, safe, resilient and sustainable.** Universities are hubs for ideas, science, culture, social development and much more. At their best, universities enable their members to advance. It's important that efficient campus planning and management practices are in place to deal with the challenges brought by urbanization. Many challenges lie in maintaining universities in a way that they continue to create research and learning commodities without straining land and resources.

Roof gardens are among those open spaces with the greatest future prospects worldwide: numerous existing campus buildings with bare roofs are waiting to be landscaped. Alternatively, there is an enormous potential for new campus buildings that have a compensatory effect as a replacement for green spaces and are advantageous for climate and water balance.
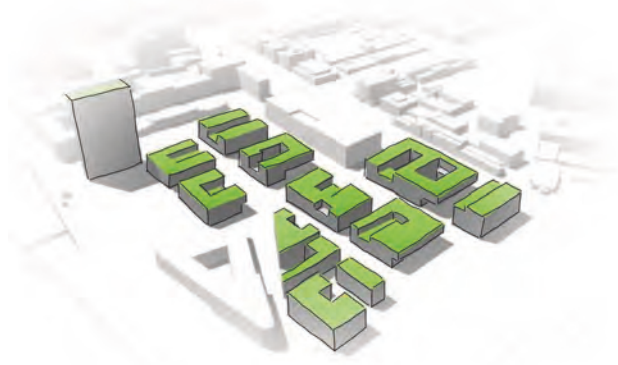
FIGURE 6.8: ROOF TOP GARDENS

**UN Goal 13 – Climate Action: take urgent action to combat climate change and its impacts.** Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies. The pace of change is quickening and universities are turning to renewable energy and a range of other measures that will reduce emissions and increase adaptation efforts.

**Example: Hertzallee – on the way to the car-free campus – TU Berlin**
Cars clogging up the campus are a common phenomenon. At TU Berlin, steps have been taken to get rid of parked cars. While re-designing an important main axis, the Hertzallee, stationary traffic disappeared and a relaces lounge and passageway was achieved. This increased the available area for seating and pathways which enabled students to create spaces for inclusive seating, socialization, team learning, and biodiversity. Moving cars away from these spaces, increased the freedom of movement students experienced in these spaces.

FIGURE 6.10: HERTZALLEE (2018) – CAR-FREE PASSAGEWAY
(BASED ON A PHOTO BY CORDULA LOIDL-REISCH)

**UN Goal 15 – Life on land: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss.** Integrate learning environments into the green open space while trying to support biodiversity and provide respectful treatment of vegetative areas and existing trees. One example is the campus gardening of TU Berlin which functions as an ongoing learning experiment of students to stop the loss of biodiversity and at the same time to learn about local food production.

FIGURE 6.11: CAMPUS GARDENING AT TU BERLIN
(BASED ON A PHOTO BY CORDULA LOIDL-REISCH)

However, it is ambitious and not straightforward for a university to agree on common goals. A wide range of interests, needs and ambitions must be carefully weighed up, openly discussed and constantly communicated to all parties involved. But to navigate any project through the challenging times of iterative development, common objectives are essential.

# 7. Become a co-committer

**Manifesto #4: We must hold ourselves, and internal and external stakeholders responsible for our and their needs and requirements.**

Key messages:

– A co-committer is the individual committed to co-creating hybrid environments focused on innovative *and* sustainable goals.
– Co-committers represent diverse stakeholders and interest groups.
– Co-committers will face several challenges and learn during the process.

Figure 7.1 shows that every project needs to be assessed according to limited financial, human and spatial resources. Co-committers are focusing on innovative *and* sustainable solutions.
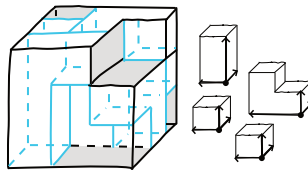


FIGURE 7.1: CO-COMMITMENT WITH FOCUS ON INNOVATIVE *AND* SUSTAINABLE SOLUTIONS

FIGURE 7.2: TU BERLIN (BASED ON PHOTO BY JÖRG GLÄSCHER)

This chapter provides an overview of what a co-committer is, how to become one, and what experiences and benefits are to be expected when engaging in this role.

**Example:** *Ensuring campus accessibility and creating a hybrid campus environment* – TU Berlin

TU Berlin acquired funding to make its university campus more accessible to a variety of users and to create a hybrid environment. A small exhibition building, barrier free navigation and orientation, and an app to explore the campus are all part of the project. From the start, the project aimed to involve as many different stakeholders as possible to present, discuss and further develop ideas from different user viewpoints. Finding a way to co-commit a big group of stakeholders to the aims of the project proved to

be a long and winding road. According to the user engagement ladder, which is presented in this chapter, the project has reached the fourth step by initiating a co-commitment process. It took two years to engage users to become co-committers and establish communication and decision-making structures that are flexible enough to keep everybody committed and informed. The benefits for everybody involved are tangible. Co-committers feel empowered and develop a sense of self-actualization by taking an active role in shaping and changing the environment they spend so much time in as users. All co-committers together make sure that the creation of the hybrid (learning) environments will help to reach the envisaged sustainability goals.

Further information: TU Berlin Hybrid Projects – https://www. tu-berlin.de/menue/einrichtungen/praesidium/projekte_des_ praesidiums/pavillon_wissenspfade/menue/startseite/
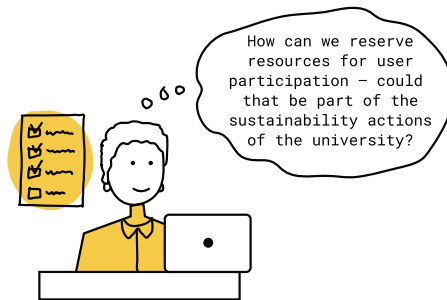
## Climbing the user engagement ladder

We define a co-committer as an individual who can modify the present and future user needs of hybrid environments and commit to sustainability goals both in design and use. Becoming a co-committer entails a step-by-step increase in their level of engagement. The change from co-creator towards co-committer follows the user engagement ladder as shown.

5  Scale up

4  Set up co-commitment process

3  Become a co-committer

2  Sense of urgency

1  Co-creation process

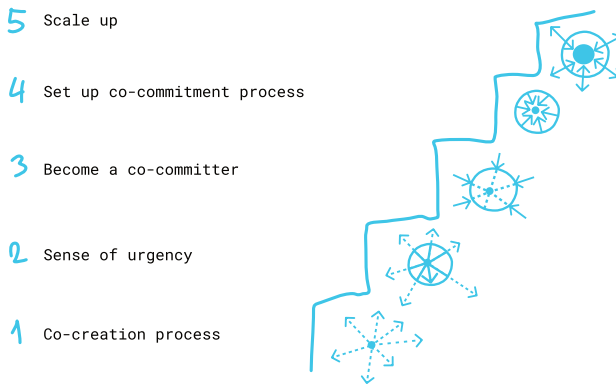FIGURE 7.3: CO-COMMITMENT LADDER

### Step 1: Co-creation

On the plus side, users co-create a huge amount of ideas. On the minus side, these ideas might be resource intensive and hard to realize.

### Step 2: Sense of urgency

On the plus side, users are aware of limited resources and sustainability principles as boundaries. On the minus side, this knowledge might cause frustration for co-creators.

### Step 3: Become a co-committer

On the plus side, users understand and accept the boundaries, and the knowledge about resources is internalized. On the minus side, there is a risk that not all essential stakeholders have been identified.

### Step 4: Setting up the co-committing process

On the plus side, users develop solutions together with common sustainable goals in mind to share, replace and use limited resources with minimal waste. On the minus side, there might be difficulties in adapting existing project management models to iterative processes.

### Step 5: Scale up

On the plus side, users commit themselves to scale up the innovative *and* sustainable solutions to achieve an effect on campus and make it more resilient. On the minus side, the larger scale projects might fail.

So, climbing up the ladder means that co-committers learn to see the need for and relevance of new and alternative organizational structures. On the way up, they put up with the constant drain of energy that is a characteristic feature of change processes. But the effort is rewarded, co-committers are empowered to act as decision makers.

## Organizational structures for co-commitment

The typical project organization strives to differentiate between those who take part in the project and those who do not. Project members have assigned roles and responsibilities, with their contributions and mandates defined and determined. Decision-making and distribution of information runs along structured lines, typically from the top to the bottom. Those who are not part of the project get to be consulted or informed to an extent and in a manner that the project management

decides. Project members are appointed by managers, or are managers themselves, thus bringing a top-down perspective to the project. Specialists may be consulted within their field. The project is typically measured by what it has or has not delivered according to the agreed upon scope, schedule and budget.

This type of setup and organization of change management is partially a practical necessity, but can at times hinder user engagement, acceptance and support for the project and the product itself. By limiting access to the project, some valuable input and innovative ideas never become heard. Moreover, the very reason for the project can get obscured by the focus on completing the project tasks and deliveries.

Thus, a more open organization with a bigger emphasis on user involvement is needed. This is what co-commitment is about. The organization needs to move from a formal, hierarchical and closed structure towards an open, networked and layered structure when dealing with projects or change (see Figure 7.4). Rather than having a sharp line between what and who is in a project, and what and who is not, a project should, at least in the early phases, have a porous boundary which changes as the organization learns. The formal organization, which is frequently siloed according to the university's organizational structure, gives the budget frame and the official mandate to the change process. The evolving informal structures do not have an official mandate but are a valuable source to identify the users' needs, dreams and fears – a source that brings tacit knowledge out into the open and delivers the material needed for sustainable and future-proof solutions.

Successful co-commitment does not create a project organization with participants and non-participants; rather they build an inclusive structure with layers of participants all engaging with one another to reach a common goal. Co-committers will have different roles and responsibilities, but the process is structured in such a way as to include, not exclude, their involvement. This requires a change in project management orthodoxy, where the project sometimes seals itself off
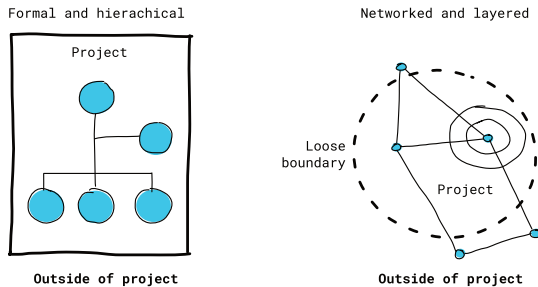
```
Formal and hierachical          Networked and layered

        Project

                                Loose
                                boundary
                                              Project

     Outside of project              Outside of project
```

**FIGURE 7.4: MOVING FROM A FORMAL, HIERARCHICAL AND CLOSED STRUCTURE TOWARDS AN OPEN, NETWORKED AND LAYERED STRUCTURE**

from the surrounding world. Instead, successful projects and co-commitment processes depend on active participation as well as fearless and agile project management.

Co-commitment relies on networked and layered project structures and processes, linking formal and informal organization patterns. When these structures are in place, co-commitment enables a wide range of stakeholders to participate around one table in change processes. In general, a wide range of stakeholders can contribute to a bigger variety of perspectives than only a limited group of users. Co-commitment processes and the rise in awareness of change dynamics makes user participation manageable.

This change in organization is based on the principle of give and take. A loss of power may result in gained insight. Letting others have their say results in being heard in return. Respect is due for all participants, some of whom might have ceded some of their power – professionals, including leaders, executives and specialists such as architects, ICT professionals and project managers – to further the process. The new and revised organizations used in co-commitment will not replace the formal decision-making structures, nor can they supplant professions and responsibilities. There is still a need for the formal organization.

## Co-committers represent diverse perspectives

In order to create an informal organization that supplements the formal structure, it is first necessary to identify who can be affected by the change initiative. In each phase of a change initiative, but particularly in the early phases, potential co-committers include stakeholders, interest groups and interested parties, who need to be identified. This can take the form of regular stakeholder identification and analysis, but instead of seeing those identified as groups and individuals to communicate with and inform about the project, they should all be viewed as decision makers and thus co-committers.

Examples of internal stakeholders are:

– University leadership such as vice-chancellors, presidents and advisory boards
– Academic leaders like provosts, deans, department heads
– Professors, researchers and teachers
– Students
– Support staff and administrative staff like human resources, ICT, etc.
– Facility managers, project managers, etc.
– Student unions and associations

Examples of external stakeholders are:

– Prospective students
– Visitors to the university
– Sponsors
– The public and local community members
– Taxpayers
– Industry
– Interest groups

There will be differences in opinion between the stakeholders and within each group of stakeholders, there will be different, and often conflicting, perspectives such as on financial, human and spatial aspects. It is important to reach different generations, genders and people with different socioeconomic backgrounds. The more the university, as an institution, makes a habit of organizing change along the lines of co-commitment, the more involvement by different stakeholder groups is to be expected. If co-commitment attempts to increase support for user engagement, questions arise such as what is being supported, by whom, and to what end. Experience needs to be gained in this field to further develop the idea and practice of co-commitment.

## Co-committers experience the change

Co-commitment processes will change the way things are prioritized, managed and funded as knowledge bearers of the digital, physical and social aspects join forces. For example, one could hypothesize that in order to create hybrid environments of the future, more resources will be put towards ICT furnishing instead of structural features. The emerging hybrid environments could become the first step towards sharing resources: digital and physical environments would no longer be funded from different budgets, thereby capturing synergy in its full potential. Creating meaningful hybrid environments that enhance the learning experience and well-being of its users is a good way to make co-commitment visible. This has made a positive impact on the intended result as well as producing satisfaction with the process itself. The development of innovative *and* sustainable hybrid environments will change the daily life of co-committers and all other users alike.

Regardless of what brought about the need for change, the change process generates questions such as: *What does the change mean to me? Why is change taking place? What are the consequences of the change?* With a community of co-committers, there will still be conflicts, but they can
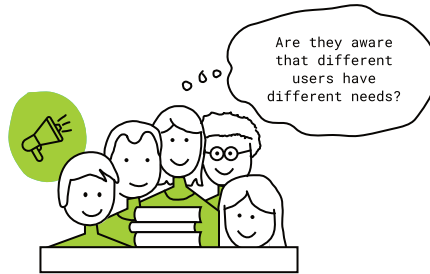
be handled and generate learning curves within the change process. There are ups and downs, but there is also light at the end of the tunnel.

> **Example:** *APP – find your study place*
> Students are often in search for study places. At the same time, facility managers indicate that many study places are still vacant, but students do not know how to find them. Many universities have already introduced apps for students to find a study place: Leuven (Belgium), Cambridge (UK) and Wageningen (NL) are just some examples.



FIGURE 7.5: APP FIND YOUR PLACE

Increasingly, universities use smart sensors to collect big data about real-time use of space, in order to intensify the use of scarce, expensive and/or energy-consuming campus facilities and generate management information for decision makers about the campus of the future. These so-called smart campus tools are the subject of PhD research that gathers data about the state-of-the-art innovations at European universities.

Further information: *Smart campus tools* (Valks et al., 2018)

**Co-committers generate different benefits**

The engagement of co-committers increases synergies and thereby generates benefits for all.

Benefits for the university:

– Implication of university sustainability strategy to campus retrofitting projects
– Sharing costs in synergy
– Engaging more people in *doing more with less*
– Committing users and stakeholders to change processes
– Ability to develop hybrid environments
– Possibility to use user-data for diverse purposes
– Commitment to pro-environmental solutions and practices
– Learning from users and challenging the user
– Offer opportunities to join the step-by-step processes: experience of being heard, sense of trust and development of ownership
– Finding new ways for realizing the sharing economy

Benefits for project management:

– Possibility to develop solutions which are inspired by the user
– Possibility to run sustainable solutions
– Learning from users and challenging the user
– Possibility to focus on technical administrative collaboration while the user is solving the practical challenges, e.g. in terms of digital connection in the infrastructure
– Getting future-proof solutions with a focus on sustainability
– Being in dialogue with users
– Learning from users and challenging the user

Co-committers also form a powerful community that sets an example for society and can contribute to a range of societal goals. Pressing questions, such as how we deal with limited resources, can only be answered by implementing new kinds of collaborative processes. But, acting as one, requires a high level of commitment of all stakeholders. Sharing resources and intelligently incorporating ICT means that rethinking spatial patterns becomes possible. It clears the way to create hybrid environments which we believe are a good starting point to generate positive images and experiences that can be shared and encourage users to become co-committers themselves.
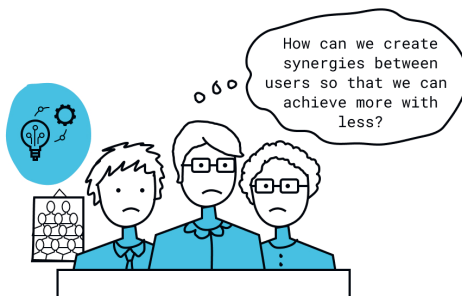
# 8. Set up a co-commitment process

**Manifesto #5: We must establish co-committing processes within the framework of limited and shared resources.**

Key messages:

– Co-commitment processes are iterative.
– Co-commitment processes integrate scope, time and scheduling to achieve synergies.
– Co-commitment processes mean active listening and engaging.
– Co-commitment processes have three phases: pre-project, project and post-project phases.
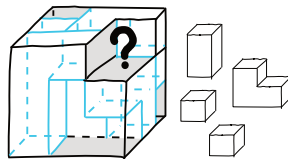
FIGURE 8.1: CO-COMMITMENT PROCESSES FOR INNOVATIVE *AND* SUSTAINABLE SOLUTIONS

Figure 8.1 shows that every project needs to be discussed according to limited financial, human and spatial resources. Co-commitment processes focus on innovative *and* sustainable solutions in order to support university goals.

This chapter provides an overview of a co-commitment process: what kind of process it is and what kind of methods can be used in different process phases.

**Example:** *Campus Nature: Biodiversity as a part of campus life, teaching and research* – Tampere University, Finland

In Spring 2019, Campus Nature, a research and development project, was launched at Tampere University. The project creates new green areas at the university's city center campus in collaboration with campus users: students, staff and other stakeholders such as Tampere citizens, visitors and passers-by. *Campus Nature* focuses on three sub-projects: a green roof, two campus meadows, and a vision for a roof garden. The sub-projects are realized in an open process of co-committed campus users to enhance biodiversity, collaboration and recreational opportunities at their campus and in the city of Tampere.

**The green roof** project redevelops an existing roof of an underpass (of 390 m$^2$) into a meadow of Finnish plant species. The main infrastructure was constructed in the 1960s and the roof deck is currently not used, but visible from the surrounding terrain and buildings. This roof deck is a central location at the city center campus and thus was identified in a co-created vision to be a fruitful opportunity to create a communal campus nature area. The co-commitment process involved also a green roof survey targeted at all campus users. Based on the survey results, the roof design was jointly decided as a dry meadow roof utilizing plants that are native to the local ridge area. This design was chosen because of the high biodiversity-enhancing potential.

Two campus meadows were constructed on two locations (both 200–250 m$^2$). Both areas are sun-exposed and next to central campus pathways. The existing terrain, grass lawn, was removed and native Finnish plant species were sown to generate a meadow. Uti-

lizing local seeds, the meadows were sowed in collaboration with campus users.

The overall idea of the project and the sub-projects is to enhance biodiversity on campus and to create opportunities for campus users to engage in the creation of campus environments. A summer course was offered for students interested in the project. In the voluntary study course, the students had the opportunity to create designs for the sub-projects. Also, the projects are platforms for future research and teaching – as objects and environments of research and teaching.

Further Information: *Campus Nature* – https://www.b2n.fi/kam pusluonto

## A co-commitment process is iterative

Co-commitment processes, methods and consciousness of change dynamics is a potentially huge resource which is not used often. The hybrid environments of the future require the representatives of virtual and physical as well as social and organizational aspects to join together to achieve them (Ninnemann, 2018). Co-commitment processes and hybrid environments are a step towards sharing resources: virtual environments and physical environments are so far mostly funded from different budgets without capturing synergy in its full potential.

Understanding the change process itself is essential for the successful co-commitment process to occur. A central part of the co-commitment process is a different approach from traditional change initiatives, where determining scope and then proceeding with a project has been the norm. The process is not linear or smooth in all the steps taken, but
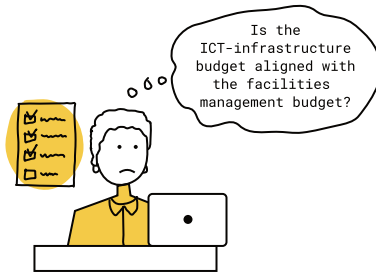
will take several turns along the way, so that users and stakeholders can get out of their comfort zone. During this process, participating stakeholders learn and engage with the new solutions and eventually create something that is aligned with the ideas of hybrid environments and sustainable goals. This is the first step to ownership. It may also help facility managers and project managers to overcome their frustrations from earlier projects.
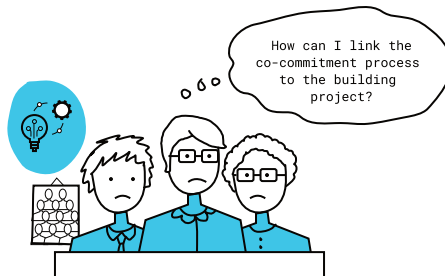


Typical process management as defined by the first global standard for project management (ISO 21 500:2012 Guidance on project management) has established a process in and of itself for each activity: initiating, planning, executing, monitoring/controlling and closing (see Figure 8.2).

Plan → Do → Act → Check
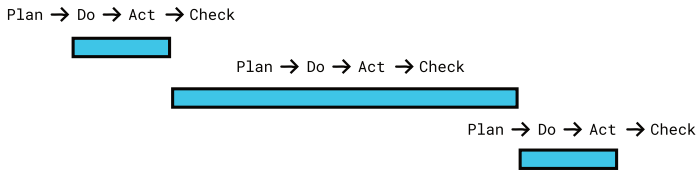
Plan → Do → Act → Check

Plan → Do → Act → Check

Figure 8.2: Project management model, linear

In a co-commitment process, there needs to be an even higher degree of iteration, such as shown in the PDCA wheel (Plan, Do, Check, Act), where participants go from planning, to doing, then checking and acting in an iterative process (see Figure 8.3). In order to unlock the full potential of the co-commitment, more and faster iterations of each process step are required.
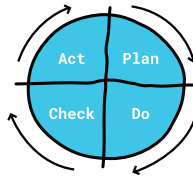
Act · Plan · Check · Do

Figure 8.3: The PDCA wheel – Plan, Do, Check, Act
(Based on W. E. Deming)

To reach a holistic perspective in a co-commitment process, the aspects cost, scope and time should serve the overall purpose, vision and goals of the project and not become fixed entities. If budgets stay the same, the necessary synergies will not be realized and the necessary changes for sustainability will not be made. To achieve synergies between budgeting, scope and scheduling in a co-commitment process, there needs to be a focus on flexibility in approaching them.

For instance, if the scope is decreased in one area (space) it can be increased in another (furniture, audio/video and ICT) and as a result, costs are moved between different budgets without exceeding the total

budget (see Figure 8.4). In conclusion, in order to transform the way resources are allocated, co-commitment projects must allow for negotiation of budgets.
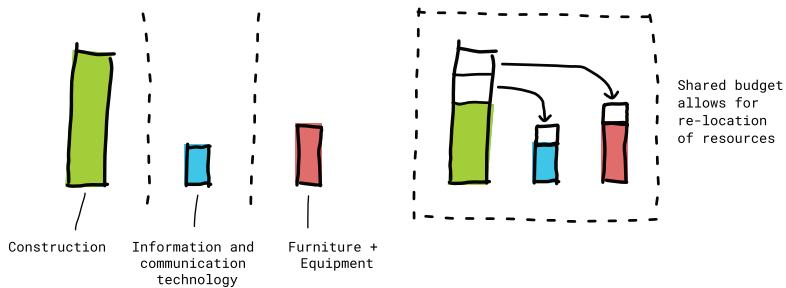


FIGURE 8.4: A CO-COMMITMENT PROJECT MUST ALLOW FOR NEGOTIATION OF THE BUDGETS AND ALLOW FOR AN ALLOCATION OF RESOURCES BETWEEN DIFFERENT BUDGET POSTS.

The intention is to achieve resource-conserving, synergistic solutions. We need to consider different solutions of different sizes and select the feasible solution.

**Co-commitment processes mean active listening and engaging**

A revised process also helps show that user engagement is wanted and helpful, and not just for show. Each of us has experienced the participation which is conducted because it is a formal must. The disappointment is shared when participants find out that the activity was just a formality without any consequences.

Co-commitment means listening to the users, hearing their message, and discussing it to gain a common commitment in the context of the strategic goals. This does not imply that every wish comes true, but it means that every voice is heard and discussed so that in the long run, all participants can get an understanding of and feedback to why not all wishes could be fulfilled. Co-commitment gives place to different feelings, opinions and perspectives and letting them resonate in the dialogue along the way. One can sense and exercise different levels of listening in co-commitment processes (see Figure 8.5) – at its best this process empowers people to generative listening and discussion with a common sense of purpose. It is typical to just download or incorporate what was heard in what we already know and verify what we assume. On the level of factual listening, we listen for data that doesn't fit our existing theories and assumptions. Empathetic listening in co-commitment processes creates an emotional connection to co-committers, and we start to see the situation from another's point of view. It is not important whether we agree with everything, or not, but it is essential to understand what others are seeing and experiencing. Generative listening enables us to listen at a level that changes us. It creates a shift in the direction of who we want to be and a different level of energy is produced. This is a source of tacit knowledge, innovation and empowerment.
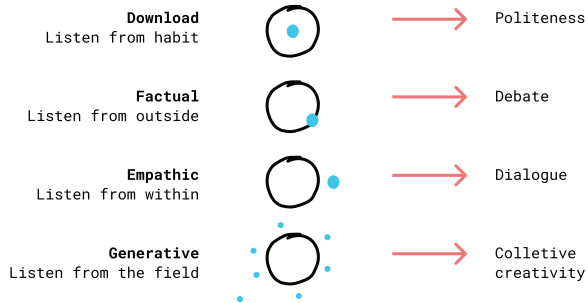
Download
Listen from habit

Politeness

Factual
Listen from outside

Debate

Empathic
Listen from within

Dialogue

Generative
Listen from the field

Colletive
creativity

FIGURE 8.5: THE DIFFERENT LEVELS OF LISTENING. THEORY U. (SCHARMER, 2009)

## Phases of co-commitment processes

Example: *Ruusupuisto* – University of Jyväskylä, Finland
*Ruusupuisto* is a new building at the University of Jyväskylä in Finland. Ruusupuisto was dedicated to users from different organizations. The challenge was to develop a learning and working environment for three different organizational cultures: research, education and training. Thus, it was challenging creating top quality, innovative and multidisciplinary research and learning environments when there were organizational boundaries and cultural differences. This caused confusion among the different stakeholders and complicated the co-commitment process. It was difficult to participate in the co-commitment process of thinking up a new building and creating a shared vision instead of protecting the existing separate academic work environments.

In the case of *Ruusupuisto*, the approach chosen was based on co-commitment and a holistic view of the work environment as a physical, digital as well as social and organizational entity. A core

Figure 8.6: Ruusupuisto Building at the University of Jyväskylä in Finland (based on a photo by Suvi Nenonen)

team was put in place during the project, called the place team, including a project manager, an architect, a human resource manager, user representatives, ICT specialists and an external change management consultant. The team coordinated user empowerment and engagement. To enable future users to think differently, the team fielded a user profile survey, conducted workshops and organized excursions to both private and public buildings with innovative spatial solutions in different cities and on different campuses. These strategies were intended to help users move away from traditional mindsets and to elaborate innovative solutions for the architect to use when designing the building. Such a co-commitment process, using different methods, is a learning process for the participants. The built environment was a realization of the education and research vision of the university (Nenonen & Huhtelin, 2019).

The project was not simply about constructing a building, but also about creating trust. Experiences of trust and safety can en-

hance the collective professional identity, which is seen to support the skills and attitudes needed in the 21st century (Kostiainen & Nenonen, 2016). The building was designed to suit modern methods of work. The spatial configuration was finalized in collaboration with the users. The result is a solution with a slightly smaller proportion of open and flexible use space than originally planned. Additionally, many areas promote collaboration and interaction. A favorite feature for students and staff are the large stairs, where they can sit, hang out, sleep, talk or read; they are continuously in use, including for organized events, such as presentations.

Further reading: Kostiainen and Nenonen (2016) and Nenonen and Huhtelin (2019)

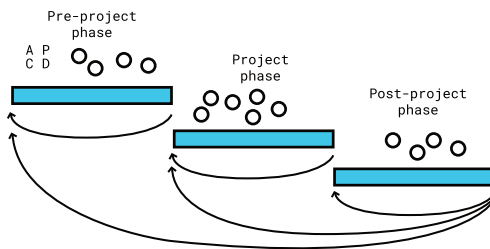Three phases can be identified in co-commitment processes (see Figure 8.7).

FIGURE 8.7: THREE PHASES IN CO-COMMITMENT PROCESSES

### Pre-project phase

The pre-project phase is the co-commitment to goals, visions and concepts. The first step in co-commitment is finding a shared vision by utilizing active listening and discussion to provide the chance for

different stakeholders to express their ideas, needs, feelings and experiences and to align it with the strategic sustainable goals of hybrid environments. In standard processes, the pre-project phase is frequently rushed, which leads to unnecessary costs and environmental impact. Instead, co-commitment puts an emphasis on value-based, goal-seeking processes followed by rapid implementation; the whole process is more agile. Briefings on the topic of sustainability are important in all phases of the co-commitment process of hybrid environments. In the pre-project phase, it is good to integrate the local sustainability visions as well as the university's vision. This is a joint effort with formal and informal organization structures co-existing. Users know the content and can contribute many different perspectives. The content is needed to generate co-commitment for physical, virtual, as well as social and organizational goals. It is also the pre-project phase that grounds the project in its context, and with co-commitment, context becomes even more important.



How is this achieved? Methods for the pre-project phase are (van Meel & Stordal, 2017; Arkesteijn, 2019):

– Future scenario workshops
– PESTE-analysis
– Future wheel
– Megatrend workshops
– Global trend navigation for the organization

– Personas
– Inventory and analysis of present conditions and expected future conditions
– Role-playing can be a way to build understanding and empathy
– Serious gaming
– Stakeholder inventory, outreach
– Literature review

With these methods, the co-committers can shape the project, process and product themselves without acting out a foregone conclusion. The pre-project phase is critical for the project. A lot, if not most, of the vision, direction, and content of the project is directly or indirectly decided in this phase. Furthermore, the pre-project phase is crucial in building support for the project; it is in the beginning that the attitudes, values, and contributions of participants, stakeholders and others who are affected by the project will have the biggest impact. This is the phase where you can really create an experience for your co-committers about being heard and given space for discussing common goals. There is no need to avoid potential conflicts but ways to solve any conflicts need to be kept in mind.

## Project phase

The project phase is when co-commitment to the concept is realized. The goal of this phase is to co-commit to the concept chosen as a realistic solution together. This phase means making the vision come true and it starts with agreeing on a few vision-based principles for steering the process of the project.

How do you do this? Methods for the project phase are:

– Walk-throughs in existing facilities
– Observational studies

– Continual outreach follow-up
– Pop-up-workshops
– Focus-group workshops
– Social network analysis
– In Space design-workshops
– Excursions to different places, benchmarking
– Moodboards
– Photo galleries
– Pilots
– User profile surveys
– Digital profile surveys
– Post occupancy surveys
– Interviews
– Occupancy rate measures
– Visits to construction site
– Kick off, intermediate and final seminars with design dialogue
– Document analysis
– Charrette method

The co-commitment process is a process of discussion; layouts of physical places are not the expertise of the architect alone. The layout of the social place and ways to use this space are being discussed in the community. Typical workplace discourses are:

1. Inspirational discourse: new ideas and how things can be done differently.
2. Rational discourse: reasoning the rational benefits of the change.
3. Worried discourse: identifying threats and risks due to the change.
4. Silent resistance discourse: resistance to see any need or benefit in the change.

Involving co-committers in co-commitment processes means allowing all kinds of discourses to take place and enabling the community to develop common goals and a common sense of purpose. It is important to identify the potential of the new physical solution to act as a change

catalyst. However, it is equally important to then identify how the new solution changes the way working, learning and teaching are done. Successful co-commitment projects also need a common language: There are a lot of professional expressions among different stakeholders and it cannot be taken for granted that people always dare to ask what is meant. Shared concepts and understandings are important to all communication during the process.

The outcome of this phase is that there is trust among the different stakeholders. Trust can be created in continuous dialogue and trust can be strengthened when co-committers see and feel how the co-commitment outcomes reflect the users' input in the actual physical layouts.

### Post-project phase

The post-project phase is the co-commitment of users to the realized concept in use. The goal of this phase is to make sure that the solution is used as it was meant to be used. In this phase sustainability is connected to pro-environmental behavior. The enhanced quality of life in the buildings we work in, in turn, increases user productivity and satisfaction which helps to create a willingness to raise environmental standards even further. The buildings are cost-effective seen over their whole life-span and comply with the ideas of the circular economy. In building project management terms, this is the handover-phase, but from the perspective of users, this is the beginning of the ownership of the place: how do we use this, how do we agree on the house rules and who has the right to change the space to be more usable. This phase is not the responsibility of the project group anymore but it remains crucial in order to achieve the goals set. The stakeholders of this phase are the representatives of the users, human resources and digital resources officers as well as facility management professionals.

How do you do this? Methods for the post-project phase are:

– Visits to construction site
– House rules workshops before and after the move
– Preparation workshops for the move
– Celebrations in the new space
– Feedback boxes (digital, physical)
– Walkthroughs
– Feedback workshops and events

This phase is the end of the tunnel and, in a successful co-commitment process, it is also the light at the end of the tunnel. It is important to reflect on the change process and on the feelings the co-committers had during the process when leaving their comfort zone, towards a new comfort zone.

In practice, the task in this phase is to agree upon measures and a process for fine-tuning and crafting the space to make it suitable for daily work. To give only two concrete examples: the house rules can be set before the move and then be adapted after a few months of trial. The basic principle here is to find ways to make the house rules so intuitive that it is easy for everyone to start using the space as it is meant to be used. Another best practice example that has worked in some contexts is a monthly meeting during the first months of use.

**Example:** *An activity-based work environment* – **University of Eastern Finland**
In January 2020, the University Services of the University of Eastern Finland moved to a retrofitted work environment called the *UEF Meeting Room*. The traditional single room office floor was renovated and changed into an activity-based work environment where all the spaces are now shared. The concept works with three different zones:

FIGURE 8.8: ACTIVITY-BASED WORK ENVIRONMENT IN THE UNIVERSITY OF EASTERN FINLAND

**Easy-to-meet zone –** This zone includes variously sized meeting rooms with state-of-the-art video conference technology. There are spaces for visitors to meet and rest before and after scheduled meetings. Coffee is also being served.

**Easy-to-work zone –** This zone has open workstations supplemented by different kinds of closed rooms for telephone calls, concentration and small face-to-face meetings. This zone has semi-silent and fully silent areas.

**Easy-to-be-free zone –** This zone has an exit area with a view of the lake.

The co-commitment process with the aim to set up this new space included excursions to several activity-based offices on different campuses in Finland. Also, a user profile survey was conducted to identify the diverse user needs. Furthermore, participatory workshops including vision creation, concept development and setting up house rules were held. The co-commitment process was coordinated by the project management team and the user-led place-team.

The co-commitment process was based on the understanding of the new ways of working. The Rector of the University of Eastern Finland noticed that interaction has increased, hierarchical structures have decreased and that meeting people is easier when they are not behind closed doors. In the end, offering the possibility to choose the workplace based on the work mode is easier than expected. Sustainability was used as a guiding principle throughout: the new office spaces are based on green office principles and the unit is now using up less space than before.

**Example: *Sandbox-project* – Technical University Braunschweig**
In 2014 the project platform *Sandbox* was introduced at the TU Braunschweig. The vision is that all members of the TU Braunschweig can contribute to the design of the campus through their own initiative. Since then, students and staff from a wide range of disciplines have been coming together in participatory projects and implementing their own ideas throughout the campus.

Before an idea is successfully implemented, it goes through four phases in which, among other things, the feasibility of the project and the benefits for everyone on campus are guaranteed.

1. The first idea is submitted by the initiator to a provided online-platform. This makes the idea visible. One can get the first feedback. This dialogue ensures that the project has the necessary support of the community. The successful project application certifies

the basic feasibility by the *Sandbox* committee. The committee, composed of professors, students, the construction department, the executive committee and other topic related experts, was set up to decide on behalf of the numerous stakeholders whether a project can be implemented on campus.

2. After a successful campaign, the idea becomes a tangible project with the support of the *Sandbox* team. In this phase, the sandbox experts help to clarify the legal, bureaucratic and financial aspects. In the meantime, the initiators and partners further develop the detailed concept in a cooperative process. The implementation concept confirms and approves the complete feasibility of the submitted idea.

3. For the realization, supporters and partners are sought and connected via the platform. To keep the community and supporters up to date, the progress is reported both on the *Sandbox* platform and on the diverse social media channels.

4. The project is implemented. Everyone on campus can benefit from it. In order to ensure this in the long term, sponsors will oversee maintenance of the project including potential repairs.

So far, 96 ideas and almost € 35,000 of project funds have been implemented within the framework of the *Sandbox* project. This is made possible by a large network of supporters from economy, culture and politics who provide the financial funding. The university itself supports the project today with more than € 10,000 per year.

Further information: https://www.sandkasten.tu-braunschweig.de/

# PART C

# Keeping hybrid environments innovative *and* sustainable

# 9. The relevance to scale-up

**Manifesto #6: We must scale up innovative *and* sustainable solutions for hybrid environments at universities.**

Key messages:

- Create a culture of demonstrations
- Collect evidence-based practices of social, organizational and spatial innovations
- Co-commit to expand from pilot to large-scale projects
- Establish campus management networks

Figure 9.1 shows that we must exchange experiences and findings on processes and projects at universities and establish an international network to scale-up innovative *and* sustainable solutions of hybrid environments.

This chapter provides insights on the steps towards large-scale projects.
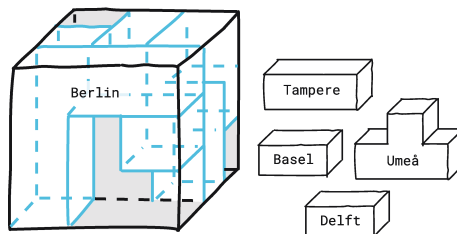


FIGURE 9.1: SCALE-UP INNOVATIVE *AND* SUSTAINABLE SOLUTIONS WITH AN INTERNATIONAL NETWORK

**Example:** *Oasis* – **University of Tampere, Finland**

At the University of Tampere, Finland, there was a desire to create a modern library that was more closely aligned to the needs of students, teachers and researchers of computer science; they needed a space where learning can take place by combining science, play, interaction design, games and the use of electronic media. The design process started two years before Oasis – as it became known – was completed, using a survey to map students' experiences of student facilities on campus as a starting point. The responses from nearly 500 students proved that there was extensive dissatisfaction regarding the accessibility and characteristics of the then available workspaces on campus. A group of students from various fields who responded to the survey committed themselves to take part in the next phase of the process.

Participants were invited to the future facilities of Oasis for group interviews in which the key themes related to the creation of the new concept were reviewed. The process continued by arranging several joint workshops for students and researchers and the participants were free to develop ideas for new concepts to achieve a better operating environment. The architect drew up designs for the space based on the wishes and concepts created by the participants. A user representative took part in the construction process to ensure that the implementation of the new kind of space and exceptional space solutions and needs were successful.

Once the work was completed, the computer science students tested the facilities for a month to enable the final development work to be carried out before the official opening. A strong influence behind the change was the *Oasis philosophy* that was developed during the process. It emphasized the potential use of the space along with communal and experiential goals. In practice, potential use refers to the user-friendliness of the space and the possible uses it offers, especially in the field of technology. The community

spirit and experimental nature of the space are created as students and staff meet outside lectures and create a close community that supports learning and fosters a sense of commitment and belonging.

Using previously unused space, Oasis made use of an existing budget for property renovation and for digital infrastructure. Oasis implemented new principles for space use that make it possible to scale up solutions and activities.

Further information: *Making of Oasis* – https://oasis.uta.fi/

## Create a culture of demonstrations

To build a culture of demonstrations, starting with smaller initiatives may be prudent. Once they have been successful and insights have been gained, co-commitment can be scaled up. Co-commitment in small-scale retrofitting processes is easy due to the small group of users, the limited scope and the likelihood of only a handful of stakeholders. However, the processes and tools of co-committing can also be used for larger-scale projects, with the same kinds of benefits.

Demonstrations and experiments can create great prototypes and test cases for bigger changes, helping to build a culture of user engagement and empowerment towards sustainability goals. The transition to sustainability is often seen as a top-down governing challenge, but it can include pioneering bottom-up ways to create change. Bottom-up innovations should be given recognition and be nurtured, as bottom-up initiatives often challenge systems that resist change (Pulkkinen & Staffans, 2015).

**Example:** *MyHealth* – Karlsruhe Institute of Technology

As a test case for broader impact on the well-being of the campus community, the project MyHealth is a pilot project for everyday life-oriented student health management and has been underway since 2017. In the project, participatory research approaches linked investigation and practical intervention. Health-promoting measures were developed, to meet the needs of different student groups with play and sports boxes, and mobile high desks to borrow from the library. The project *students on stairs* has the intention to increase the use of stairs on the campus through low-threshold impulses. The aim is to increase the awareness of their own health-related behaviors.

The Institute for Sports Science and the Methods Laboratory of the House of Competence (HOC) cooperates, among others, with a health insurance company.

Figure 9.2 includes the following work packages:

– A representative online survey of all KIT students on health-related attitudes.
– Qualitative studies from which student health types are reconstructed and then validated and quantified.
– The training of health scouts, who advise their fellow students in peer-to-peer counselling.
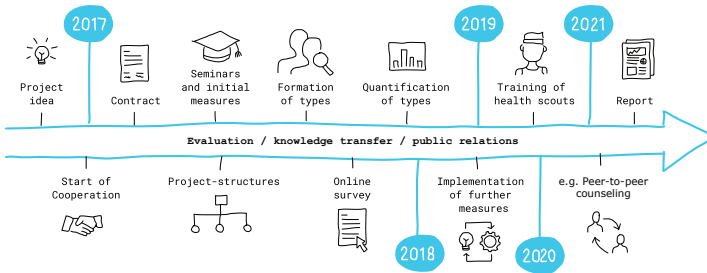
Further information: *MyHealth* – https://www.myhealth.kit.edu

**Figure 9.2: Reitermayer, Bachert, Hildebrand, Albrecht, & Kunz (2017) (Icons by Freepic, Madebyoliver and Dinosoftlabs from www.flaticon.com)**

**Example:** *Demonstration culture* – **University Properties of Finland Ltd**

University Properties of Finland Ltd have developed their campuses with joint demonstrations between universities and the property owner. The goal is to test and develop scalable solutions. Demonstrations are projects in which prototypes of future facilities and cultures are created. New ideas and experiments require user participation, making observations and learning from the process. The experimental and explorative approach of the demonstrations enables rapid and impressive changes that develop along with user needs. The decision to begin a larger retrofitting project is a significant physical, digital and social investment and can be a difficult decision to make. To help drive this step forward, the changes can be tested beforehand in campus retrofitting demonstrations.

Demonstrations are about identifying the change in the requirements of the space during its entire life span on campus. During the process, users and experts co-commit, build and test the new space and concepts operating it, adapting the demonstration to the physical and virtual social environment. The implementation of the change then follows. Co-evaluated and problematic items are developed as soon as they are detected.

Performing demonstrations and a culture of experimentation offer new opportunities to utilize a renovation budget: instead of updating the facilities to their original form, as is traditionally done, the facilities are renovated to correspond to modern and future functional needs. For this, the strategic, tactical and operational needs of the activities have been identified and agreed in cooperation with the users. Figure 9.3 describes the elements of the campus retrofitting (CARE) framework for demonstrations. It is about small-scale retrofits based on new ways of learning or working in hybrid environments – they are co-created, co-financed and co-evaluated in order to learn from them.
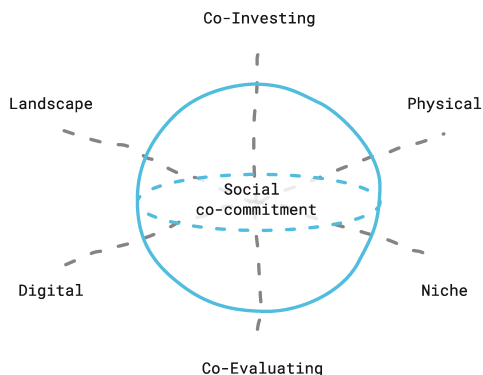


FIGURE 9.3: ELEMENTS OF THE CAMPUS RETROFITTING (CARE) FRAMEWORK
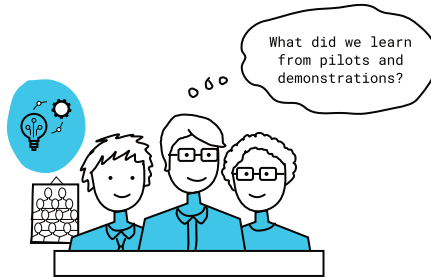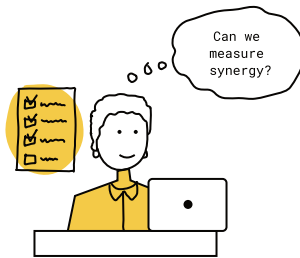
## Collect evidence-based practices

Co-committing lends itself to taking smaller initiatives and learning from them. Demonstrations are made to improve the existing campus, but they are also an important source of learning. Therefore, it is important to collect feedback from smaller scale project solutions and processes to get an informed idea about how things are done. Evidence-based design encompasses the design and operation of buildings to support positive health outcomes in the built environment. Through an expanding collection of solutions informed by research and practical knowledge this goal can be more often achieved (Hamilton, 2003). It is important to explore user experiences and then scale the evidence-based solution up to larger projects. Such a process can help build a culture of experiments.

There are many methods and tools for collecting feedback. The challenge is to forward feedback to all the stakeholders. One way to capture the lessons learned is to systematically assess usability and collect user experiences.

A usability walkthrough is a quick, easy way of getting data. The method focuses on understanding the operations that take place in the retrofitted environment. It is possible to conduct a walkthrough in different ways. On the one hand, a completely open structure with eval-

uations based on spontaneous, subjective, on-the-spot assessments by random participants can be used. But we can also predefine stops and evaluation criteria with selected participants and specific themes like sustainability. It is important to document all the emerging issues during the walk. Guides and checklists help ensure that the usability perspective is considered in future planning and large-scale projects (Blakstad et al., 2008; Hansen et al., 2011).

**Co-commit to expand from pilot to large scale projects**

It is not easy to scale up. A transformation from the traditional to something new enhances the potential for innovation and change processes. Rogers (1995) has illustrated the challenge (see Figure 9.4). The early majority tends to represent the critical mass. If the innovation proves to be successful in this group, it will probably become broadly diffused. The step from early adopters to early majority can be regarded as a chasm. It is both difficult and critical to *cross the chasm* and succeed with the transition between visionaries (early adopters) and pragmatists (early majority).

Larger projects can be broken down into smaller pieces, with each piece being its own co-commitment project. This can be, for exam-

Critical milestone to implement innovations on a big scale

2.5%
Innovators

13.5%
Early Adopters

34%
Early Majority

34%
Late Majority

16%
Laggards

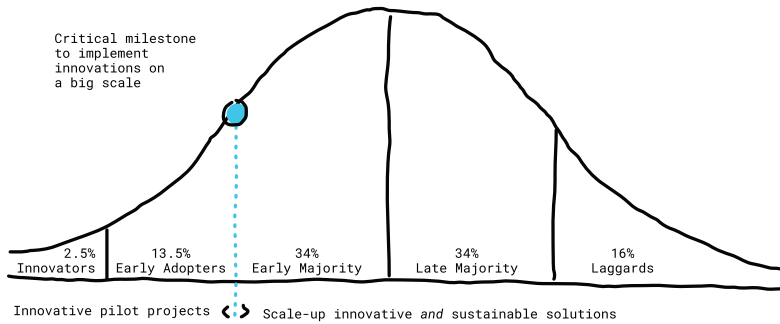Innovative pilot projects ‹ › Scale-up innovative *and* sustainable solutions

Figure 9.4: Technology adoption curve by Rogers (1995)

ple, designing faculty offices within a certain footprint or making a student hang-out and informal study area within a larger building. In terms of using co-commitment processes in large scale projects, one needs to proceed step-by-step. For example, there can be a collection of co-commitment projects embedded within a larger project (see Figure 9.5).



Which project makes me feel like I belong on this campus?
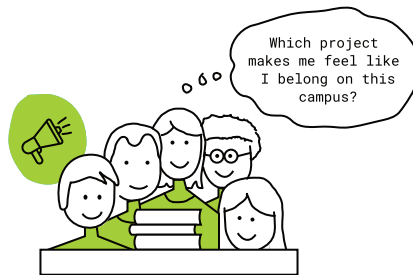
In order to effectively manage a campus and foresee the demands of the future, the management focus needs to shift from managing quantifiable empty facility walls, roofs and floors towards facilitating the user communities that act within the facilities. As the users
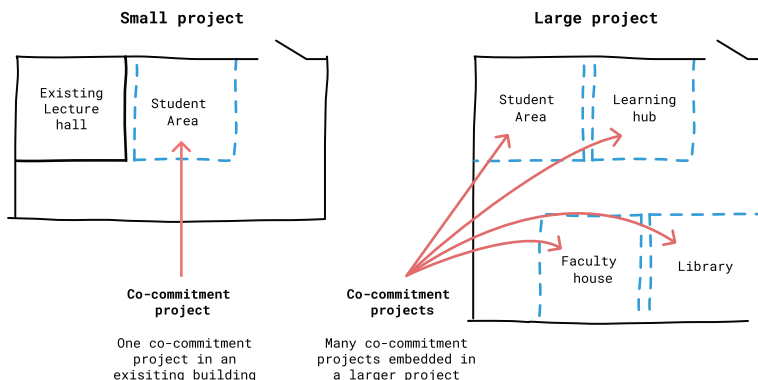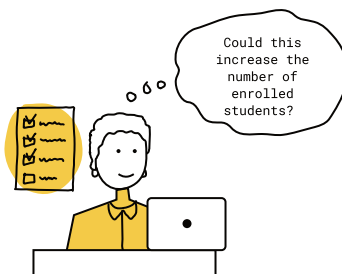
FIGURE 9.5: SCALING UP PROJECTS

increasingly act in both virtual and physical environments and have greater decision-making power over the ways in which they learn and work best, effective campus management becomes increasingly complex and tailored (Rytkönen, 2016).



Also, in large-scale projects based on sustainable concepts, it is essential to create ownership and understanding of the consequences, benefits and challenges for and among the users. This will prepare for higher user acceptance of challenges in the running-in phase after handover (Moum et al., 2017).

Based on the Norwegian experience with zero emission large-scale pilots, the following checklist is drafted for sustainable large-scale projects with co-committing processes:

1. The more ambitious your goals, the more careful your planning, management and follow-up needs to be.
2. Formulate clear goals connected to an understanding of purpose and legitimacy.
3. Commit all the clients, the executing parties, the building owners and users to the goals.
5. Motivate all parties to *master the unknown.*
6. Focus strongly on collaboration and involvement.
7. Utilize support and competence of experts (consultants or researchers) and enthusiasts to increase competence and personal engagement among the project parties.
8. Follow up the co-commitment and the sustainability goals after handover.
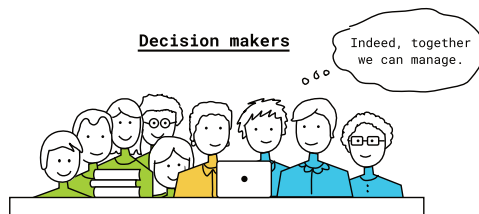


Sustainable growth has become a necessity for universities. To ensure that our campuses remain vibrant and future-proof, we must all be committed to limited and shared resources.

This implies that we need to learn to *do more with less*. There is a need to find synergistic solutions and ways to measure and assess them. The overall goal is to work towards a sustainable future for universities by breaking barriers for change.

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Katja Ninnemann

# Innovationsprozesse und Potentiale der Lernraumgestaltung an Hochschulen

Die Bedeutung des dritten Pädagogen
bei der Umsetzung des
„Shift from Teaching to Learning"

*„Die Arbeit liefert wichtige empirische Befunde für Architekten, Projektmanagement, hochschuldidaktische Akteure und Hochschulen, die für ihre Lernraumgestaltung Kriterien benötigen, um informierte Entscheidungen treffen zu können"*

Prof. Dr. Isa Jahnke,
University of Missouri, USA.

Mit dieser Publikation wird ein bisher nicht berücksichtigtes Forschungsdesiderat im Lernraumdiskurs thematisiert. Im Mittelpunkt steht die erkenntnisleitende Fragestellung, welche Faktoren die Integration von Innovationen bei der Lernraumgestaltung an Hochschulen beeinflussen. Ausgangspunkt dafür ist die bisher zurückhaltende Umsetzung innovativer Lernraumkonzepte an Hochschulen im internationalen Kontext. Mit der Untersuchung von fünf Hochschulen aus Deutschland, Österreich, Schweden, Großbritannien und den USA wurden Phänomene bei Innovationsprozessen identifiziert sowie Handlungsempfehlungen für die Gestaltungspraxis abgeleitet.

Reinhard Bauer, Jörg Hafer,
Sandra Hofhues, Mandy Schiefner,
Anne Thillosen, Benno Volk,
Klaus Wannemacher (Hrsg.)

# Vom E-Learning zur Digitalisierung

## Mythen, Realitäten, Perspektiven

Der Begriff „Digitalisierung" erscheint einerseits als Heilsversprechen, andererseits ruft er auch Skepsis und Ängste hervor. Zugleich fällt auf, dass „Digitalisierung" selten konkret definiert wird – vielmehr wird meist unhinterfragt vorausgesetzt, es gäbe einen Konsens, was im jeweiligen Kontext damit gemeint ist. Daher erscheint es besonders interessant, einschlägige Narrative im Zusammenhang mit dem Digitalisierungsbegriff offenzulegen und zu diskutieren sowie aus einer wissenschaftlichen und praktischen Sicht kritisch zu hinterfragen.

Im Band werden deswegen die Mythen und öffentlichen Vorstellungen rund um Medien und E-Learning in den Blick genommen. Hochschule bietet dazu den wesentlichen Referenzrahmen. Darüber hinaus wird nach Realitäten und Perspektiven in diesem unbestimmten Feld gesucht. In Zusammenhang mit dem Band hat die Fachgesellschaft GMW ganz unterschiedliche Personen und Akteure direkt sowie in einem Call dazu eingeladen, sich an der Diskussion um den Status quo der Diskussion über Medien in der Wissenschaft zu beteiligen. Dieser Band bildet damit sowohl den aktuellen Stand der Diskussion als auch ihre fachlich-inhaltlichen, methodischen und konzeptionellen Facetten ab.

Lukas Mitterauer, Philipp Pohlenz,
Susan Harris-Huemmert (Hrsg.)

# Systeme im Wandel
## Hochschulen auf neuen Wegen

**Mit Beiträgen von**
Michael Altmeyer, Helena Berg,
Yvonne Berkle, Manuela Berner,
Annika Boentert, Wiebke Drescher,
Andreas Drumel, Renate Euler,
Gerald Gaberscik, Marion Gottinger,
Susan Harris-Huemmert,
Susanne Helmschrott, Hanna Hettrich,
Kerstin Janson, Kathrin Kilian,
René Krempkow, Martin Lommel,
Michelle Mallwitz, Lukas Mitterauer,
Annette Münch, Jana Niemeyer,
Lena Opitz, Philipp Pohlenz,
Paul Reinbacher, Caroline Scherer,
Helena Schmedt, Jens Sir,
Elisabeth Springer, Daniela Wagner,
Lothar Zechlin, Hanno Zielke-Rings,
Marco Zimmer

Die Veränderungen der letzten drei Jahrzehnte,
insbesondere der Bologna-Prozess und die
Umstellung auf Steuerungsmodelle im Sinne des
wettbewerbsorientierten ›New Public Manage-
ment‹, haben an Universitäten und Hochschulen
Spuren hinterlassen. In der jüngsten Zeit sind
weitere Diskurse hinzugekommen, wie etwa die
Frage nach der Bewältigung steigender studen-
tischer Heterogenität oder die Nutzung digitaler
Lehr-/Lernmedien. Im Rahmen der Frühjahrs-
tagung 2018 des Arbeitskreises Hochschulen in
der Gesellschaft für Evaluation (DeGEval) wurde
erörtert, wie sich Qualitätsmanagementsysteme
angesichts dieser vielfältigen Herausforderungen
inhaltlich, organisatorisch und institutionell
weiterentwickeln müssen.

This publication is the result of an international and interdisciplinary expert summit at Technische Universität Berlin, in March 2020. The aim of the expert meeting was to collaboratively write and publish a book, within five days, on the central question: Which organizational structures and processes at universities support a strategic as well as innovative campus development?

As experts with an interdisciplinary background including the social sciences, public real estate, urban planning, architecture and landscape architecture, we could examine the question from a holistic perspective and gain new insights.

The resulting manifesto states necessary steps and strategies to create innovative *and* sustainable hybrid environments for universities. It addresses all decision makers – executives, practitioners and contributors alike – as all of us face the challenge of limited resources and needing to *do more with less*.

WAXMANN