Brix

BUILD TOGETHER – CREATE TOGETHER!

CDS 3 – Merlin Mößle (266601)

REPORT

1. Introduction

1.0. Overview

1. Introduction

1.1. Reimagining learning spaces – The BRIX story

The initial situation

For years, students and teachers have dealt with rigid, uninspiring learning environments. Heavy furniture fixed in place, whiteboards out of reach, and inflexible designs have limited collaboration, creativity, and inclusivity. These spaces no longer serve the dynamic needs of modern education, where teamwork, innovation, and sustainability are key.

Classrooms and seminar rooms, while functional, often failed to adapt to different teaching methods – whether for interactive group work, presentations, or quiet individual tasks.

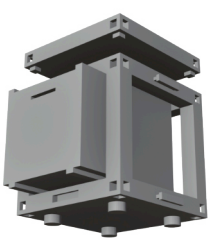
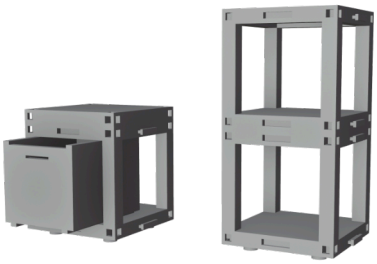
Students in wheelchairs struggled to access workspaces, and rearranging furniture disrupted the flow of activities. The result? A growing disconnect between the evolving needs of learners and the physical spaces intended to support them.



BRIX: The catalyst for change

Experience BRIX, an innovative modular furniture system designed to transform static, inefficient spaces into dynamic hubs of collaboration and creativity. BRIX is not just furniture – it's a movement. It empowers students and lecturers to adapt their environments in seconds, creating spaces that reflect their evolving needs and values.

With BRIX, the user becomes the designer. A rigid classroom transforms into an agile brainstorming zone within seconds. Furniture isn't just moved – it's reimagined. Every BRIX cube represents the promise of sustainability, inclusivity, and adaptability, aligned with HNU's vision of fostering innovative leaders for a sustainable future.

1. Introduction

1.1. Reimagining learning spaces – The BRIX story

The conflict

Resistance to change is natural and so I wonder: Can modular furniture really meet the demands of higher education? Will it disrupt traditional learning dynamics? For BRIX to succeed, it must prove its worth – not only as a tool for collaboration but as a game-changer in sustainability and accessibility.

There is also the deeper challenge of fostering a cultural shift at HNU. Students and faculty need to embrace the idea of “creating together” rather than relying on fixed setups. BRIX isn’t just about solving logistical issues – it is about inspiring a mindset of agility, inclusion, and environmental responsibility.

The resolution (still fictional)

I envision BRIX as a transformative element in a pilot project at HNU, starting with seminar rooms. Students will quickly realize its potential. During group discussions, they will seamlessly reconfigure BRIX modules into collaborative hubs, fostering dynamic and inclusive environments. The once static and inaccessible whiteboards will now become adaptable, allowing users to adjust them to any height, position or dimension making brainstorming sessions fluid and engaging.

For presentations, BRIX cubes will be effortlessly stacked and stored, clearing the space in seconds. Accessibility will be redefined – students using wheelchairs will no longer encounter big tabels as barriers, as pathways can be created instantly. This adaptability will not only enhance inclusivity but also inspire a shared sense of responsibility for the space among its users.

With BRIX, HNU's classrooms will evolve into vibrant, living ecosystems, capable of adapting to diverse needs. Sustainability will no longer be an abstract concept; students will tangibly experience how recycled materials and modularity contribute to waste reduction and promote circularity. BRIX will embody a vision of innovation, inclusivity, and environmental consciousness, setting a new standard for educational spaces.

These three images were created with DALL-E

1. Introduction

1.1. Reimagining learning spaces – The BRIX story

The goal

BRIX isn't just about reconfiguring spaces; it's about reimagining how we learn, collaborate, and innovate at HNU. It embodies the principles of "New Work," where agility, inclusion, and sustainability drive productivity and well-being. With every cube, BRIX will transform HNU into a model for the future of education – one where students and lecturers are empowered to shape their environment, where creativity flourishes, and where sustainability isn't a distant goal but an everyday practice.

This introduction provided a brief overview of the BRIX concept. In the subsequent sections of this report, you will find a more detailed exploration of the BRIX system, its transformative impact, and the competitive advantages it offers over existing solutions.

Additionally, three accompanying PDFs provide further insights into the concept:

- "Prototype" PDF: This document contains visual representations of the BRIX modules. It also includes details on how I created the 3D models using Blender, offering a behind-the-scenes look at my design process.
- "Communication Plan" PDF: This PDF outlines strategies for effectively communicating the BRIX concept. It identifies target audiences, key communication channels, and provides examples of materials designed to engage these audiences.
- "Presentation" PDF: This file further illustrates the BRIX concept in a tangible, hands-on way, providing a clear and practical perspective on its application.

1. Introduction

1.2. Current study environment at HNU

The Hochschule Neu-Ulm has made significant strides in creating an innovative and collaborative study environment, reflecting its commitment to sustainability, modern pedagogy, and practice-oriented learning. Facilities such as the Innovation Space, Founders Space, and other purpose-designed rooms embody this vision, enabling students to explore dynamic and engaging educational experiences. However, challenges remain in scaling these innovative spaces and updating traditional rooms to meet the growing demands of HNU's diverse and expanding student body.

Innovation Space and Founders Space

The Innovation Space at HNU stands as a flagship example of the university's commitment to fostering creativity and collaboration. This space is equipped with cutting-edge tools and a flexible layout designed to support Design Thinking workshops, interdisciplinary teamwork, and entrepreneurial activities. The Founders Space complements this by offering students and lecturers a dynamic environment to ideate, prototype, and collaborate on innovative concepts. Together, these spaces symbolize HNU's dedication to blending education with real-world application.

CDS room

The Communication and Design for Sustainability room represents a bold step forward in reimagining traditional classrooms. Here, conventional chairs and desks have been entirely replaced by seating cubes and height-adjustable tables, encouraging agile collaboration and engagement. This room exemplifies the adaptability and creativity that HNU seeks to encourage in its students, aligning with our university's goal of promoting forward-thinking, sustainable education.

CDS room with square seating cubes

Innovation Space with whiteboards

Innovation Space with adaptable tables

1. Introduction

1.2. Current study environment at HNU

ZfW room

The Centre for Postgraduate Studies (ZfW) has recently equipped a dedicated room with innovative tools to enhance collaboration and engagement, catering to the needs of postgraduate students and professionals.

Library

The library now offers specialized spaces, including rooms with monitors for group projects, open spaces, and single learning seats for focused individual work. These enhancements have made the library a central hub for both academic and personal development.

Club rooms

HNU also provides club rooms where students can relax, socialize, or organize group activities in a less formal setting. Notably, one of the club rooms includes a children's play area, making it particularly welcoming for students or visitors with young children. These spaces contribute to fostering a sense of community and well-being among students, accommodating diverse needs and creating a more inclusive campus environment.

Cafeteria with square seating cubes

Club room with relexation efforts

Club room with children's play area

1. Introduction

1.2. Current study environment at HNU

Despite these impressive advancements, there are still notable limitations and gaps in HNU's study environment:

Insufficient creative spaces

The number of innovative and collaborative rooms remains limited compared to the size of HNU's student body. Many students struggle to access these spaces during peak times, which can limit their ability to engage in collaborative learning or creative problem-solving.

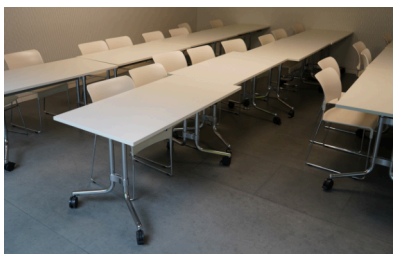
Over-specialized furniture

While some rooms feature specialized furniture, such as large whiteboards or square seating cubes, these items often lack flexibility. For instance:

- Whiteboards: Although large and effective for brainstorming, the boards are often mounted on bulky, immovable stands, making them space-consuming and difficult to adapt to various uses when not in use.
- Square seating cubes and Innovation Space chairs: These seating options are not safely stackable and challenging to store, resulting in inefficient use of space.
- Outdated furniture in many rooms: A significant number of seminar rooms are still equipped with outdated, heavy tables and uncomfortable chairs, which do not support ergonomic comfort or mobility. These setups hinder the flexibility required for modern teaching methods and collaborative learning. However, there are already a few rooms where newer, more comfortable chairs and tables with wheels have been introduced, showcasing the potential for more adaptable and user-friendly setups across the campus.

Chairs in the Innovation Space

Outdated furniture



Tables with wheels

2. Problems and needs

2.0. Overview

2. Problems and needs

2.1. Issues with traditional workspaces

Traditional university workspaces are increasingly out of step with the evolving needs of modern education. Despite the growing emphasis on interdisciplinary collaboration, agile teaching methods, and sustainability, many educational institutions continue to rely on static, one-size-fits-all designs that fail to support these demands effectively.

Most university spaces are characterized by fixed seating arrangements and rigid furniture that cannot be easily reconfigured. This lack of adaptability limits opportunities for active, collaborative learning, where students must be able to move freely between individual tasks, group discussions, and hands-on activities. Such setups conflict with agile and creative teaching methodologies, such as Design Thinking, which are frequently utilized at HNU in many study programs.

Many classrooms and seminar rooms at HNU still feature outdated, uncomfortable chairs and heavy, cumbersome tables. These setups hinder both physical comfort and productivity. Research in environmental psychology underscores that poor ergonomic design negatively impacts cognitive function, focus, and engagement, further reducing the effectiveness of the learning environment, particularly during extended sessions. (Bene, The Future of Work Report)

Another significant issue arises with large, traditional seating arrangements, particularly when students do not know each other well. In these settings, people tend to avoid sitting directly next to one another, resulting in unused seats and wasted space. This phenomenon not only leads to inefficient use of room capacity but also hinders interpersonal interaction and collaboration, as the physical distance between individuals becomes a barrier to spontaneous connection and teamwork.

Traditional furniture, especially large tables and heavy chairs, creates additional logistical challenges. Large tables cannot be easily moved or stacked, making it difficult to clear space for alternative learning or collaborative activities. This rigidity consumes a significant amount of usable floor space when flexibility is required.

Furthermore, room designers often face a dilemma: whether to prioritize seating and tables or allocate space for essential storage elements, such as cabinets or lockers. In many cases, the inclusion of both leads to cramped spaces, forcing compromises that reduce the overall functionality and adaptability of the room.

2. Problems and needs

2.1. Issues with traditional workspaces

Traditional furniture is also often made from non-recyclable materials, contributing to environmental waste and misalignment with sustainability goals. Additionally, bulky items, such as non-stackable seating cubes and immovable whiteboards, occupy valuable space even when not in use.

While HNU has made strides in introducing innovative spaces (see 1.2.) the number of adaptable and creative rooms remains insufficient relative to the university's growing student population, which has reached an all-time high of over 4,100 students. (HNU, 2024) During peak times, students often struggle to access these specialized spaces, leaving them reliant on traditional, uninspiring settings that stifle creativity and limit collaboration.

These challenges underscore the urgent need for flexible, modular solutions that can accommodate diverse learning styles, optimize space usage, and align with HNU's sustainability goals.

2. Problems and needs

2.2. Need for adaptability

Research underscores the importance of adaptable and ergonomic environments for enhancing productivity, creativity, and overall well-being:

- A study by Bene in their “Future of Work” report emphasizes that collaborative spaces and modular furniture designs significantly improve engagement and innovation in group settings.
- Environmental psychology research links sustainable, interactive workspace designs to increased satisfaction, reduced stress, and enhanced collaboration among users.
- Studies have shown that furniture designed for flexibility and mobility not only improves efficiency but also reduces the physical and cognitive barriers to effective teamwork

Despite evidence supporting the value of adaptable workspaces, such designs are underrepresented in educational environments. Solutions like Pixel by Bene or Xbrick (see 3.2.) demonstrate market demand for modular, flexible furniture, but these products are often expensive (see 3.1.), narrowly focused (see 3.3.), or impractical for broad-scale educational use. They lack the balance of affordability, functionality, and scalability required to meet diverse needs.

Corporate and creative industries increasingly adopt agile workspaces that adapt to team sizes, workflows, and project needs. These environments inspire collaboration, innovation, and well-being. In contrast, most university spaces lag behind, as they lack modularity, sustainability, and technological integration.

The challenges in HNU’s current environment (see 1.2. and 2.1.) also highlight the urgent need for more versatile, ergonomic, and scalable solutions. Spaces must be designed to support a wider range of activities, accommodating both individual and collaborative needs. Modern furniture should prioritize modularity, stackability, comfort, and ease of mobility to ensure maximum flexibility while improving the overall learning experience for students.

3. Existing solutions

3.0. Overview

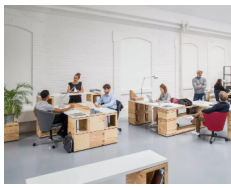
3. Existing solutions

3.1. Overview of existing offerings in modular furniture

The market for modular furniture designed for creative environments offers a range of innovative solutions, each catering to different user needs. One notable example is **Pixel by Bene**, which excels in providing adaptable and multi-functional furniture for dynamic team settings. These modular boxes can be configured into tables, seating, or storage solutions, creating a highly flexible environment for collaboration. Pixel's focus is on fostering creativity and group dynamics, and its sustainability credentials are strong, as it uses FSC-certified plywood and post-consumer recycled materials. However, Pixel is predominantly aimed at corporate users, and its premium pricing limits its accessibility to educational institutions and smaller creative hubs. (Pixel by Bene, 2025)





Another prominent player is **Xbrick**, a lightweight and multifunctional seating module designed for both indoor and outdoor use. Made from 100% recyclable expanded polypropylene (EPP), Xbrick emphasizes sustainability and portability. Its applications range from seating to tables and even stepping aids, making it ideal for spaces requiring quick reconfiguration. Despite these strengths, Xbrick's minimal storage integration and limited modularity place it at a disadvantage compared to systems that offer a broader range of features. (Xbrick, 2025)




3. Existing solutions

3.1. Overview of existing offerings in modular furniture

Werkbox by Werkhaus takes a more traditional approach with its focus on modular wooden storage systems. The system's simplicity and functionality make it a popular choice for both personal and collaborative spaces. While Werkbox excels in providing durable and eco-friendly storage solutions, it does not offer the flexibility required to serve as a comprehensive system for creative environments, as its primary function is confined to storage. (Werkbox by Werkhaus, 2025)





Studio.Tools targets creative professionals with its sleek, design-forward modular systems. These high-end solutions are particularly well-suited for industries that prioritize aesthetics and functionality. However, the brand's premium pricing restricts its reach to select markets, leaving smaller organizations and educational institutions underserved. (Studio.Tools, 2025)



3. Existing solutions

3.1. Overview of existing offerings in modular furniture

Similarly, **System 180** emphasizes precision engineering and high-quality construction, making it an attractive option for both corporate and educational settings. Its modular furniture is highly customizable, yet its complexity and cost can be barriers for users seeking more accessible solutions. (System 180, 2025)




Stocubo specializes in modular shelving systems that prioritize simplicity, high-quality craftsmanship, and ease of assembly. The brand's minimalist design aesthetic makes it a popular choice for home and office environments, where adaptable and visually appealing storage solutions are essential. Stocubo's modular shelves are crafted from durable materials, ensuring longevity, and are designed to be easily rearranged to meet changing needs. However, Stocubo's focus is primarily on storage, which limits its functionality in dynamic and interactive spaces like classrooms or collaborative workshops. While it offers excellent flexibility for organizing spaces, its lack of versatility and engagement features makes it less suited to environments requiring multi-functional furniture tailored to creative or educational use cases. (Stocubo, 2025)



These existing solutions collectively highlight the diversity of offerings in the modular furniture market. Each product brings unique strengths, from Pixel's dynamic configurations to Werkbox's durable storage and Xbrick's lightweight versatility. However, they also share common limitations in terms of cost and applicability across different market segments.

3. Existing solutions

3.2. Gaps in the market

Despite the variety of modular systems available, several gaps in the market remain, particularly when it comes to addressing the needs of educational institutions and small-scale creative environments. One significant issue is the **high cost** of current solutions. Products like Pixel by Bene and Studio.Tools cater predominantly to corporate clients with substantial budgets, making them inaccessible to institutions operating within financial constraints. This pricing barrier limits the ability of schools and smaller creative hubs to invest in high-quality, adaptable furniture that can enhance learning and collaboration.

Another critical shortcoming is the **limited versatility** of many systems. For instance, Xbrick is highly portable and offers multiple uses as seating or a table, but it lacks integrated storage and broader modularity. Similarly, Werkbox is an excellent choice for storage but falls short in providing the comprehensive adaptability needed for dynamic environments. These limitations restrict their utility in spaces that demand multi-functional solutions capable of accommodating a variety of tasks and group sizes.

Sustainability, while a growing focus, is another area where improvements are needed. Although some brands, such as Pixel and Xbrick, prioritize the use of recycled materials and eco-conscious manufacturing, many products lack features that promote circularity. Repairability and long-term usability are often overlooked, leading to increased waste as furniture reaches the end of its lifecycle. This is a missed opportunity in a market that increasingly values environmental responsibility.

The current offerings also fall short in fostering **interaction and engagement**, particularly in educational and highly collaborative settings. Most solutions prioritize functionality or aesthetics but neglect the importance of creating environments that encourage hands-on learning and active participation. For example, while Pixel supports dynamic team activities, its premium pricing limits its availability in classrooms where collaborative tools are most needed.

Finally, the market lacks a truly affordable, sustainable, and adaptable solution designed specifically for the **unique needs of educational institutions**. This segment requires furniture that is both cost-effective and versatile, capable of serving as seating, storage, workstations, and more, while also aligning with modern sustainability goals. The absence of such a product represents a significant gap, leaving many potential users without access to the tools they need to create dynamic, engaging spaces.

4. Solution

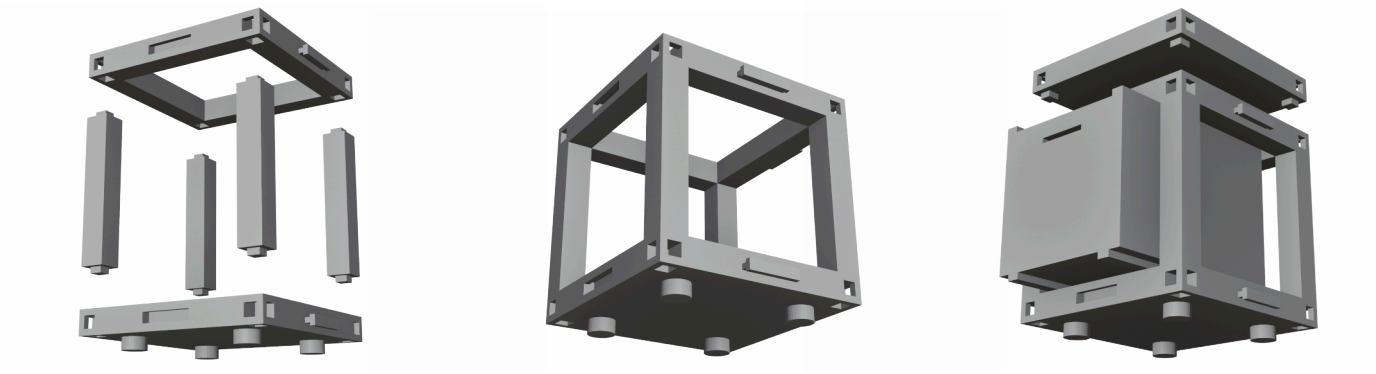
4.0. Overview

4. Solution

4.1. What is BRIX?

BRIX is a modular, sustainable furniture system designed to transform static spaces into dynamic, adaptable environments that foster collaboration, creativity, and well-being. Each BRIX cube will be crafted from recycled materials, measuring approximately 50 cm^3, and can be configured into various functional setups such as seats, tables, shelves, walls, or whiteboards. Designed with the principles of sustainability and user engagement at its core, BRIX is lightweight, robust, and stackable, making it suitable for diverse environments ranging from educational spaces to corporate settings.

The "BRIX Prototype" document highlights how these features should be tested in real-world applications, such as equipping seminar rooms at HNU. This ongoing testing process would allow continuous optimization, ensuring the system meets practical needs.

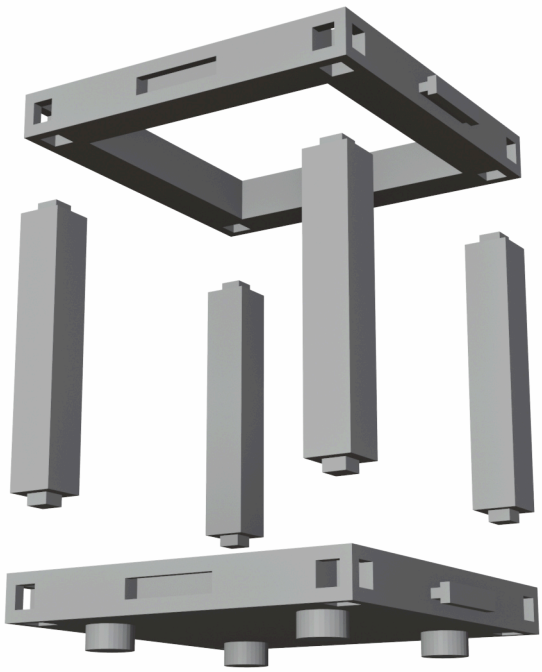


4. Solution

4.2. Overview of BRIX's innovative features

BRIX sets itself apart through several key innovations:

- **Modularity**: BRIX cubes are designed to be stackable, connectable, and reconfigurable. This versatility supports quick adaptations for various group sizes and activities, particularly in interdisciplinary teaching approaches like Design Thinking and agile workshops, as outlined in the BRIX Communication Plan.
- **Sustainability**: Each component is made from fully recyclable materials. The system emphasizes circularity, durability, and ease of repair, reducing environmental impact while aligning with Sustainable Development Goals 9, 11, and 12.
- **User engagement**: BRIX integrates features such as magnetic modules, security clips, built-in storage, and plates (e.g. whiteboard plate). These features encourage active participation and creativity, making the system user-centric.
- **Practicality**: BRIX supports dynamic reconfiguration without tools, making it easy to adapt spaces for various needs. This capability was showcased during pilot tests in seminar rooms, where furniture was rearranged to facilitate both individual and group tasks



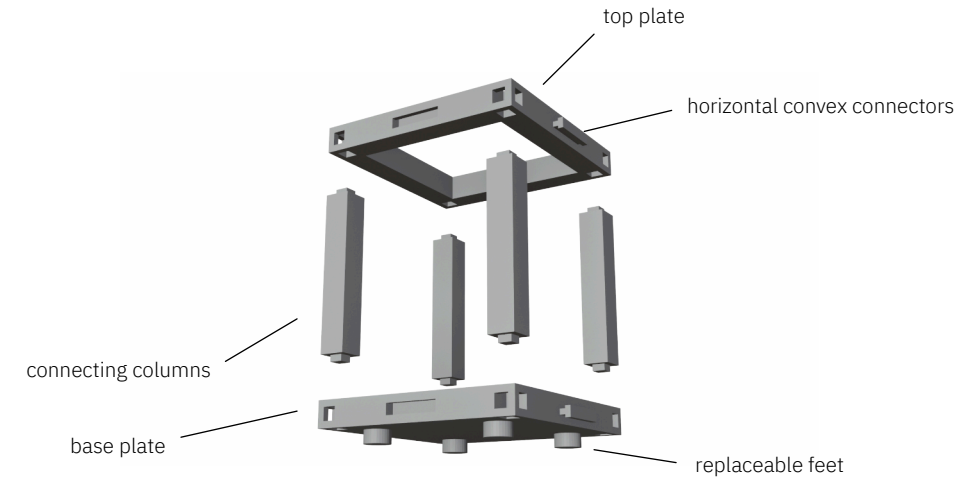
4. Solution

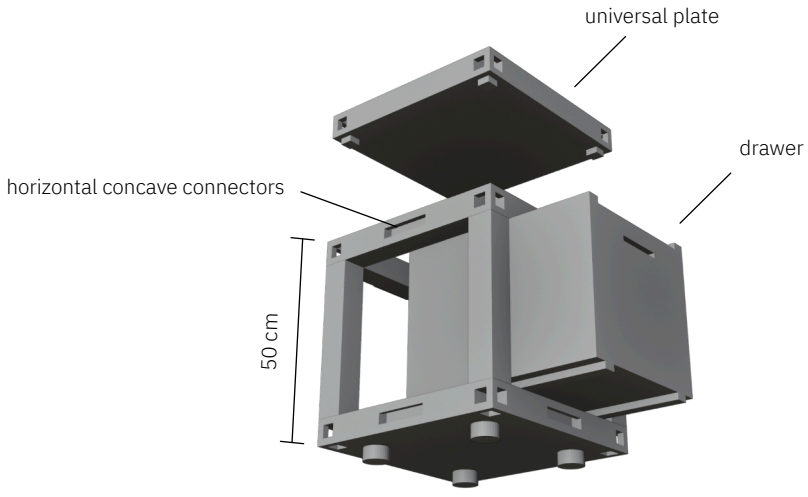
4.3. Detailed description of BRIX and components

The modular BRIX system includes the following components:

- **BRIX cubes**: Measuring 50 cm³, these cubes provide the foundational building blocks for various configurations
- **Universal plates**: Serve multiple purposes, including seating, tabletops, and whiteboards, depending on their orientation
- **Drawers** and storage modules: Enable practical organization within the system
- **Feet and rollers**: Facilitate secure mobility and stability, allowing configurations to be moved and reassembled effortlessly

Magnetic systems and security clips provide additional functionality, ensuring the modules stay firmly in place during use. Furthermore, more modules are planned. The "BRIX Prototype" document specifies additional modular elements and modules.





4. Solution

4.4. Alignment with SDGs (9, 11, 12)

BRIX embodies the principles of sustainable development through its design and production:

- SDG 9 (Industry, Innovation, and Infrastructure): By promoting modularity and flexibility, BRIX supports the creation of resilient, innovative infrastructure in educational and urban workspaces.
- SDG 11 (Sustainable Cities and Communities): BRIX enhances urban spaces by offering sustainable, multifunctional solutions that align with the needs of modern, compact environments.
- SDG 12 (Responsible Consumption and Production): The system prioritizes recycled materials and a circular production model, minimizing waste and resource usage while extending the lifecycle of its components.

These goals are integrated into BRIX's vision, as outlined in both the Prototype and Communication Plan documents, which emphasize its alignment with sustainability standards.

4. Solution

4.5. How BRIX addresses current challenges

Modern workspaces demand furniture systems that are both sustainable and versatile. BRIX directly addresses several challenges in traditional workspace design:

- **Inflexibility**: Conventional furniture often lacks adaptability, hindering collaboration and creativity. BRIX's modular design enables seamless reconfiguration, supporting diverse teaching and working styles (from individual study to group collaboration).
- **Environmental waste**: Traditional furniture contributes to resource depletion and landfill waste. BRIX counters this through the use of recycled materials and designs that prioritize repairability and recyclability. With that BRIX supports HNU's commitment to environmentally responsible practices.
- **Static spaces**: BRIX transforms static environments into dynamic hubs for innovation, as demonstrated in its pilot applications in HNU seminar rooms.
- **Scalability**: BRIX provides an affordable alternative to premium solutions, ensuring its viability across various spaces and institutions.
- **Ergonomic design**: Lightweight, easily reconfigurable modules reduce physical strain and improve usability for all students, including those with disabilities.

By integrating BRIX, HNU can overcome the limitations of traditional workspaces, creating a campus environment that aligns with its forward-thinking pedagogy, sustainability goals, and focus on student well-being. BRIX is not just furniture – it's a catalyst for a new era of adaptable, sustainable, and engaging education. (see also 1.1. The BRIX story)

5. Positioning

5.0. Overview

5. Positioning

5.1. Key messages

The foundation of BRIX lies in its ability to convey a strong, unified message: BRIX transforms traditional workspaces into dynamic, sustainable environments, empowering users to adapt their spaces to meet evolving needs. This core idea encompasses five key themes:

- **Dynamic workspaces:** BRIX redefines the concept of workspace design by offering modular furniture solutions that adapt seamlessly to various tasks and activities. Traditional offices often fail to support the dynamic nature of modern work. In contrast, BRIX encourages creativity and innovation through flexible configurations, from collaborative settings to individual focus areas. This modularity makes BRIX an indispensable tool for fostering team dynamics in educational institutions, corporate environments, and creative spaces.

- **Sustainability at the core:** Every BRIX module is crafted from recycled materials, aligning with circular economy principles and ensuring minimal environmental impact. The system's low-energy production process and fully recyclable components underline its commitment to sustainability. For organizations focused on reducing their ecological footprint, BRIX offers an actionable, tangible way to demonstrate responsibility.

- **Engagement through modularity**: BRIX invites users to actively engage with their surroundings by reconfiguring furniture to suit their needs. This interactive element not only promotes innovation but also builds a sense of ownership and collaboration within teams. By creating adaptable workspaces, BRIX transforms static environments into hubs of creativity.

- **Efficient, functional Design**: BRIX addresses the need for compact, functional furniture that maximizes space efficiency without sacrificing usability. Its intuitive design allows users to assemble, disassemble, and rearrange modules with ease, ensuring that spaces remain flexible and clutter-free.

- **Scalable and accessible**: BRIX caters to a wide range of settings, from small seminar rooms to large corporate offices. Its scalable nature ensures that it remains relevant across industries and use cases, making it an ideal solution for institutions and businesses alike.

Supporting these messages, BRIX leverages academic research, pilot project outcomes, and testimonials to demonstrate its transformative impact. For instance, pilot tests at HNU could show that BRIX significantly improved collaboration, reduced waste, and increased user satisfaction.

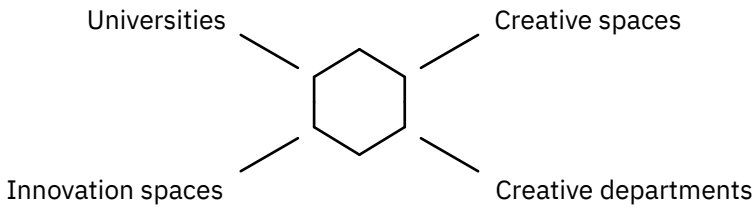
5. Positioning

5.2. Real-world use cases

BRIX's claims can be backed in the future by robust data and real-world validation. In pilot projects planned at HNU, BRIX's modular design can fostered greater collaboration and adaptability. For example, seminar rooms equipped with BRIX modules are able to transition effortlessly between lecture-style setups and interactive workshop configurations. This adaptability will not only reduce the need for additional furniture but also increase student and faculty engagement.

BRIX’s versatility is evident in its application across diverse environments:

- **Educational institutions**: At HNU, BRIX prototypes can transform seminar rooms into dynamic learning hubs. Professors will note improved collaboration and creativity among students, while the ability to reconfigure spaces will support a variety of teaching methods.
- **Corporate workspaces**: Innovation labs and coworking spaces will benefit from BRIX's adaptability. By enabling quick reconfigurations, BRIX will foster team collaboration and supports agile working styles, essential for modern businesses.
- **Creative spaces**: In interdisciplinary workshops and events, BRIX will provide the flexibility needed to accommodate diverse group sizes and activities. Its modular nature allows users to create everything from breakout areas to presentation setups effortlessly.



5. Positioning

5.3. Comparison to existing solutions

BRIX's competitive advantage lies in its holistic approach to modularity and sustainability. While competitors like PIXEL by Bene offer modular designs, they lack the eco-centric focus and scalability of BRIX. Similarly, Xbrick provides lightweight, versatile seating options but cannot match BRIX's multifunctionality and adaptability across diverse use cases.

In an industry where sustainability is often treated as an afterthought, BRIX integrates eco-friendly practices into its core design philosophy. This alignment with global sustainability goals positions BRIX as a forward-thinking solution.

Feature/Aspect	Brix	Pixel by Bene	Xbrick	Stocubo
Modularity	Highly modular with reconfigurable cubes and add-ons for various configurations	Modular with stackable boxes; less flexibility for complex setups	Limited to seating and basic uses	Stackable modular storage with limited functional diversity
Use cases	Seminar rooms, corporate offices, innovation spaces	Collaborative workspaces, team-building areas	Casual seating, lightweight outdoor/ indoor spaces	Storage, display spaces for home and office
Sustainability	Made entirely from recycled materials; low-energy production	FSC-certified plywood with post-consumer recycled plastics	Recyclable expanded polypropylene	Recycled materials but with limited emphasis on circularity
Interactivity	Encourages user engagement through adaptable designs	Allows for stacking and simple rearrangements	Basic functionality with minimal interactivity	Static storage; limited interactivity
Weight & portability	Lightweight yet sturdy, optimized for frequent reconfigurations	Moderate weight; requires some effort to stack and rearrange	Extremely lightweight and easy to carry	Heavier due to wood-based materials
Durability	Long lifecycle with easy repair and maintenance	Durable but more prone to wear due to wooden materials	Lightweight but less durable under heavy loads	Highly durable for static applications
Primary strength	Combines modularity with sustainability; multi-use versatility	Excellent for creative and team-building spaces	Best suited for casual and lightweight uses	Ideal for storage and display solutions
Weaknesses	Higher initial cost due to premium materials and design	Limited flexibility for diverse use cases	Not suitable for complex configurations	Lacks flexibility for active reconfiguration

5. Positioning

5.4. Target audiences

Primary audiences

- Institutions: Universities, schools, and training centers seeking adaptable furniture solutions to enhance learning environments
- Corporate decision-makers: Facility managers and innovation leaders looking for flexible, sustainable options for modern workspaces

Secondary audiences

- Eco-conscious consumers: Individuals and designers prioritizing sustainability in their choices
- Design professionals: Architects and interior designers focused on creating dynamic, innovative spaces

BRIX's ability to cater to both functional and emotional needs ensures its appeal across these target groups. By addressing pain points such as inflexibility and environmental impact, BRIX establishes itself as a trusted partner for organizations and individuals committed to creating better spaces.

For a detailed breakdown of these audiences and tailored communication strategies, please refer to the BRIX Communication Plan PDF, which outlines specific messaging, engagement channels, and outreach initiatives designed to maximize impact for each target group.

6. Development

6.0. Overview

6. Development

6.1. Creation process

The development of BRIX has been a comprehensive journey, drawing on methodologies such as design thinking and UX principles to create a modular furniture solution tailored to the needs of dynamic learning and collaboration spaces. Rooted in the mission of HNU to foster sustainable and innovative practices, BRIX exemplifies how research, prototyping, and stakeholder engagement can align to produce functional and sustainable outcomes.

This section outlines the processes and collaborations that shaped BRIX, highlighting the steps from initial research to prototyping and refinement. For a more detailed visual representation of the prototypes, including images and technical specifications, please refer to the provided BRIX Prototype PDF.

The development process began with a deep dive into understanding user needs, space utilization challenges, and environmental concerns. The ideation phase identified the inefficiencies in traditional learning spaces, such as fixed furniture that fails to support diverse activities. Additionally, key requirements for adaptability, modularity, and sustainability were uncovered.

- Research highlighted the need for workspace solutions that are lightweight, reconfigurable, and constructed from sustainable materials. These insights informed the foundational design of BRIX

- Aligning with Sustainable Development Goals (SDGs) 9, 11, and 12, the project incorporated principles of circularity, using recycled materials to reduce waste and improve environmental impact

This phase established the groundwork for subsequent design and prototyping, ensuring that BRIX was both user-focused and aligned with global sustainability standards.

The prototyping phase was integral to the development of BRIX, employing iterative methods to refine the design based on user feedback and testing. These stages illustrate the evolution from conceptual models to real-size functional prototypes.

- Initial prototypes: Early LEGO models were used to explore modular configurations and test the feasibility of different design concepts. This approach allowed for rapid iterations and collaborative input from stakeholders

- Advanced prototypes: 3D printing technology facilitated the creation of more precise prototypes, enabling the team to evaluate ergonomics, material

6. Development

6.1. Creation process

performance, and assembly processes.

- Full-scale prototypes: Real-size BRIX modules are planned. These prototypes should be piloted to gather data on usability, adaptability, and overall functionality.

Stakeholder collaboration was integral to BRIX's development, ensuring an adaptable design. HNU students participated in usability tests, providing direct feedback on prototypes. For a closer look at the prototypes and their applications, please refer to the visuals and technical details in the accompanying BRIX Prototype PDFs.

7. Challenges and risks

7.0. Overview

7. Challenges and risks

7.1. Material and production challenges

Implementing BRIX, a modular and sustainable furniture system, is an ambitious project. Despite its potential to transform workspaces and promote sustainability, there are significant challenges and risks in terms of material sourcing, market adoption, and environmental regulations.

- **Sourcing sustainable materials**: Ensuring a reliable supply of durable, lightweight, and recyclable materials is challenging. While some companies provided material samples, many required defined production quantities and timelines, which were not feasible at the prototype stage. For example, Polygood samples were too heavy, and costs for smaller prototypes (e.g., LEGO-based ones) were exessive, with a single prototype costing around €50.
- **Technical feasibility and scalability**: Producing real-size prototypes proved cost-intensive. Factors like energy consumption, ergonomic design, and manufacturing scalability could not be fully explored due to budget constraints.
- **Durability and ergonomics**: The materials need to strike a balance between strength, weight (under 2.5 kg per BRIX), and user comfort. Aspects such as fire resistance (brandschutz compliance) and surface safety must also be addressed.
- **Limited resource access**: Securing expertise in material testing and innovative manufacturing processes remains a hurdle. Collaborations with trusted suppliers, as seen with Xbrick and Pixel, show the importance of local production and circular material cycles.

7. Challenges and risks

7.2. Market adoption and regulatory risks

Adopting BRIX as a sustainable and modular furniture system requires overcoming market challenges and adhering to stringent regulatory frameworks. The path to market acceptance involves addressing both stakeholder perceptions and compliance with environmental and safety standards.

- **Resistance to change**: Institutions accustomed to traditional furniture setups may be hesitant to transition to modular systems like BRIX. This resistance could stem from a lack of understanding of the benefits or a preference for familiar setups. Engaging stakeholders through targeted campaigns, showcasing BRIX's flexibility and sustainability, and conducting interactive demonstrations can help alleviate concerns.
- **Affordability and pricing sensitivity**: While BRIX offers long-term value through adaptability and sustainability, its upfront costs might be seen as a barrier, especially in budget-constrained educational environments. Transparent communication about the system's durability, lifecycle cost savings, and sustainability benefits will be vital to building trust and justifying the investment.
- **Stakeholder engagement and training**: Successful adoption relies on faculty and staff training, as well as student awareness. Equipping users with the knowledge to utilize BRIX effectively will enhance its perceived value and encourage widespread acceptance.
- **Environmental compliance**: Adhering to environmental certifications such as EN ISO 14001 or EU Ecolabel will strengthen BRIX's positioning as a sustainable solution. Meeting these standards demonstrates a commitment to reducing environmental impact and aligns with institutional sustainability goals.
- **Fire safety and public space regulations**: Ensuring compliance with fire safety classifications like B2 (standard) or B1 (enhanced) is crucial for public and educational environments. This guarantees that BRIX not only meets functional needs but also adheres to safety expectations.

By addressing these adoption and regulatory challenges holistically, BRIX can position itself as an innovative, sustainable, and scalable solution for modern workspaces, fostering trust among stakeholders while aligning with sustainability and safety standards.

8. Transformation potential

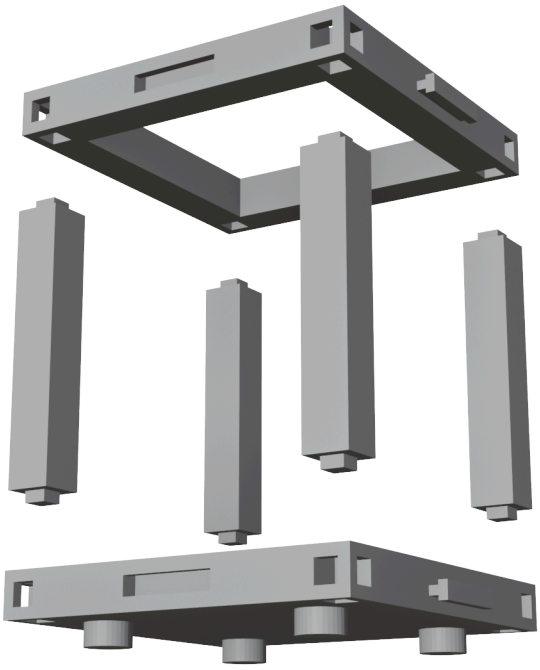
8.0. Overview

8. Transformation potential

8.1. Advancing sustainability and circularity

BRIX significantly contributes to the transition toward a sustainable future by embracing circular economy principles. Each modular component is designed with longevity in mind, using high-quality, recycled materials that are fully recyclable at the end of their lifecycle. This aligns with global sustainability goals, such as SDG 12 (Responsible Consumption and Production), while also reducing waste and dependence on virgin resources. Some details were already mentioned, but here are some additional points which are planned for BRIX:

- **Energy-efficient production**: BRIX minimizes its carbon footprint by leveraging sustainable energy and efficient manufacturing techniques
- **End-of-life recycling**: All components are easily repairable or recyclable, ensuring zero waste
- **Eco-conscious packaging**: Sustainable packaging solutions minimize the environmental impact during distribution



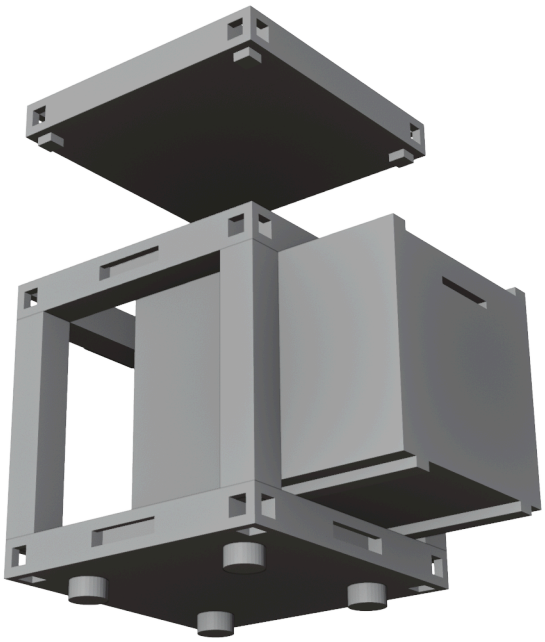
8. Transformation potential

8.2. Enhancing productivity and well-being

As mentioned, BRIX redefines the user experience by creating adaptive, inclusive spaces that cater to diverse needs. Its modularity fosters better engagement, collaboration, and comfort, making it a catalyst for productivity and well-being.

- **Dynamic configurations**: Students and educators can reconfigure spaces in seconds to suit various activities, from workshops to presentations
- **Inclusivity**: Designed with accessibility in mind, BRIX ensures barrier-free use, including options for wheelchair users, aligning with HNU's equity and inclusivity goals
- **Psychological and physical benefits**: Flexible, ergonomic designs reduce strain and promote comfort, while fostering a sense of control and empowerment in users

This adaptability supports interdisciplinary collaboration, critical thinking, and creative problem-solving, essential for preparing students for real-world challenges.



8. Transformation potential

8.3. Nudging agile collaboration and creativity

BRIX promotes a culture of agile collaboration and innovation by providing interactive and multifunctional furniture that inspires teamwork. It subtly nudges behavior toward dynamic interactions through gamification elements and playful design.

- **Collaborative innovation**: BRIX modules can be adapted to create brainstorming zones, project stations, or impromptu meeting areas, encouraging hands-on problem-solving
- **Educational impact**: By integrating storytelling elements and gamified interactions, BRIX enhances learning experiences and fosters creativity among students and faculty
- **Future-ready design**: The system supports emerging educational trends, such as hybrid and remote learning, by offering flexible, mobile configurations

BRIX is a transformational solution that addresses environmental, social, and educational challenges. By fostering sustainability, boosting productivity and well-being, and nurturing creativity and collaboration, it aligns with HNU's mission to lead by example in shaping sustainable futures. The potential applications of BRIX extend beyond HNU, offering scalable solutions for universities, creative agencies, and corporate spaces globally. This positions BRIX as a model for rethinking how we use and design our environments for maximum impact.

Brix

BUILD TOGETHER – CREATE TOGETHER!

CDS 3 – Report – Merlin Mößle (266601)