complex projects

FINAL REFLECTION

MULTIMODALITY FORUM BERLIN

A PARK AND RIDE TRAIN STATION THAT ENCOURAGES MOTORISTS TO USE GREEN MOBILITY TO REACH BERLIN'S CITY CENTRE.

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COMPLEX PROJECTS
Bodies & Building Berlin
AR3CP100

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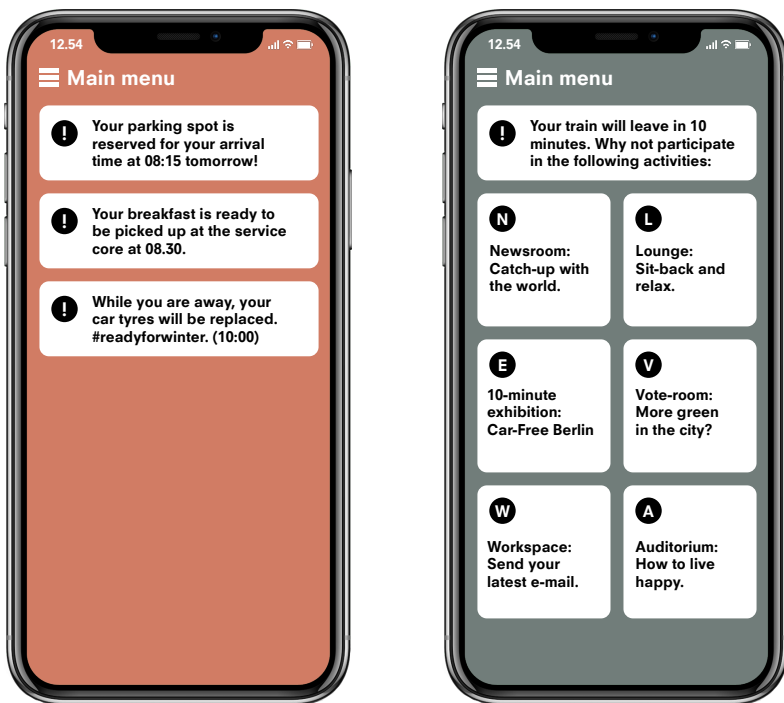**Figure 1.**
Phone as a tool to interact with the
building.

Train stations are becoming an increasingly important part of urban life. They are the connection between different transport hubs, a social interaction platform, and part of a culture or daily routine. However, many train stations are designed to meet only the first demand, "transporting people and making the city accessible". Many stations in Berlin are designed with these thoughts and are therefore unattractive to many passengers travelling to and from the city, leaving other modes of transportation dominant.

The design for a new train station in Berlin will primarily respond to creating a unique traveller experience to enhance the user experience. Digital media and automation technologies play an essential role in this, allowing the station user to configure their own experience at the station according to their needs. The station within which these technologies can serve the user will also have to change its character.

Adding features related to service and experience should ensure that a new platform is created that encourages travellers to use the public transport network. Moreover, adding these themes in a station reduces travel time and enhances the user experience.

The design extends the standard train station by integrating automation technologies that allow travellers to perform daily actions at the station faster. For instance, car and bicycle parking in the station is automated, eliminating parking operations. Moreover, the station will also feature service cores. Integrated into these cores are automated food and package services and digital media that can provide users with necessary travel information, daily news and weather, exhibition display and events.

Besides the addition of automation technologies, the building will also have various functions related to the traveller's daily routine,

facilitating social activities and providing work and study places. Through interactive screens in the station or the telephone, travellers can pre-select the desired functions they will use at the station. The station configures its layout using this data to make the required space available.

Finally, in addition to classifying their travel experience at the station, users can configure their space in terms of spaciousness and climate. By applying these new functions and techniques, the station will no longer be a monotonous building for the user but will be able to react to needs and adapt to current and future use.

THE RELATION BETWEEN THE GRADUATION TOPIC, THE STUDIO TOPIC AND THE MASTER TRACK

The graduation studio of the chair of Complex Projects resolves around the theme of the Body and the Building in Berlin. Within this theme, the emphasis is on investigating a person's need for a building and how the building meets that demand. The final project is a response to this study theme in which the possibilities for this connection have been further explored. For the application of this theme to a train station, this research took place in Berlin. In addition to the studio theme, the emphasis here was also on integrating the theme of environment and flow for determining a location in the city and bringing together different user flows in a building.

The graduation project focuses on Body and Building as an application to a railway station, which is classified as a building with a high user flow and frequency of usage. This project mainly focuses on integrating automation and digitalisation in the design whereby the building can respond to user needs and simplify or speed up daily tasks. As a result, the building is responsive to humans in a passive form and can also take new forms and learn from their behaviours and needs. These themes are therefore applied centrally in the design and form the connection between the station, travellers and social activity. This sets the building apart from many contemporary train stations that focus solely on the flow of passengers and the commercial activities surrounding it.

In addition, the building's location also distinguishes it from other stations of the same scale in Berlin, where the environment theme has played an important role. Because of its position on the outskirts of the city centre, the station focuses not only on public transportation but also on reducing personal mobility, as the vehicle is the most prevalent mode of transportation to and from the city. Moreover, the project focuses on integrating sensor technologies and how the collection of user data can reduce the building's energy footprint and optimise the use of space. Finally, the building is designed with as many renewable materials and optimised user comfort.

The results of my thesis research emerged from the knowledge I gained during my master's degree in architecture. Integrating this knowledge and exploring the relationship between academic research and design became a fundamental aspect of my thesis project. It was during the master track that I discovered the significance of pushing boundaries and looking for innovative solutions.

The research supported the design process and embodied the essence of conceptualisation and critical thinking I gained during my master's track, especially concerning contemporary architecture. This allowed me to develop a new perspective and point of view beyond conventional approaches.

Attending previous design studios and electives within my master's programme proved invaluable experiences. They taught me that research through design and creating academically informed strategies could contribute to a positive view of architecture. Guided by a critical mind, I learned to effectively articulate and justify the choices I made in my project while also adopting a critical attitude towards the far-reaching consequences of various design decisions. This allowed me to create a new perspective on the interaction between architecture and society.

As part of the Architecture, Urban Planning and Construction Master's programme, my project explores the fields of Architecture, Urbanism and Building sciences. Firstly, the research and design strategies establish a link between the building and the urban layers of the city of Berlin. Second, the practicality and sustainability of the building's construction are integrated into the design,

forming a link between the several disciplines interlaced in the design. Combing these aspects into the master track creates an integrated design and touches on all the fields involved in architecture.
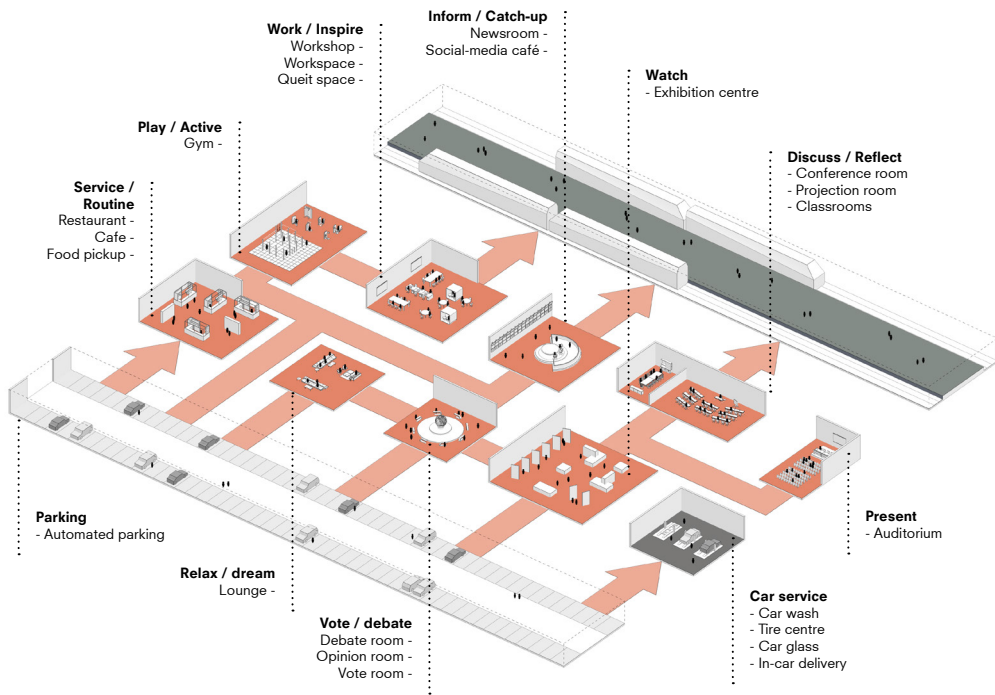
Work / Inspire
Workshop -
Workspace -
Queit space -

Inform / Catch-up
Newsroom -
Social-media café -

Watch
- Exhibition centre

Play / Active
Gym -

Discuss / Reflect
- Conference room
- Projection room
- Classrooms

Service / Routine
Restaurant -
Cafe -
Food pickup -

Parking
- Automated parking

Relax / dream
Lounge -

Vote / debate
Debate room -
Opinion room -
Vote room -

Car service
- Car wash
- Tire centre
- Car glass
- In-car delivery

Present
- Auditorium

Figure 2.
Station usage, General elements of the
buildings forum.

The development of the thesis project began with preliminary research on three main themes: First, the site in the greater context of Berlin. Second, the building programme and its integration into the city. Third, the client and need for the building.

This research formulated the entire problem statement of the design, which was summarised in a design brief. This brief formed a research question, which started the project's conceptualisation. By understanding the different layers of client, program and site, it emerged that travellers need to be motivated to use the current transportation networks in the city. The study revealed that three themes could make a difference here: The location of the station versus the existing infrastructure, A lack of user-beneficial services that can serve the user, and Time wastage between switching between different modes of transportation. These findings were also visible in the usage patterns of the stations and the overall network, where the current network focuses mainly on inner-city movement and not on forming a link between city and suburb. Thus, the design of a new train station ultimately has the potential to create a new connection within the existing network that does encourage more efficient and better use of the public transport network.

Starting with multiple users flows at a station, the research was expanded to include integrating several user flows throughout the building. However, a study into the building typology showed that adding user-beneficial services could also be accessible to other modes of transportation as well as the neighbourhood and immediate surroundings.

Two elements were critical in developing the program. First, investigate and develop characteristics that will benefit the commuter throughout their stay at the station. This included investigating case studies and theories on airports where waiting periods needed to be bridged, which demonstrated the benefits of user-beneficial services in a public facility. Researching urban living rooms as a building that serves the city through social and interactive functions revealed the challenge and potential for integration in a station. Both programme studies formed the basis for integrating travel and living in a building that can best serve people and relieve pressure on existing infrastructure.

THE VALUE OF THE WAY OF WORKING DURING THE GRADUATION PERIOD

In my research for the design of a new train station in Berlin, I employed various methodologies to explore the complexity of the city and the typology of train stations. This preliminary research helped me formulate a problem statement and gather valuable information for the design components.

In addition to this research, the themes of flow and environment were examined to understand the topics in general better. However, weeks were spent mapping and mapping the various elements with minimal intent to connect this to the final design. This method only provided general knowledge about the city and its layers, and it is not useful for the graduation project or for highlighting any specific issue.

Throughout the design process, I experimented with different methods such as presentations, diagrams, mapping, and storytelling to develop an architectural concept supported by research. However, I encountered difficulties translating this research into spatial design after P2. Describing the building in words alone proved that designing proved challenging to me, and this highlighted the significance of research through design that I had learned during my studies.

To overcome these challenges, I received valuable support from supervising tutors who helped me kick-start the project and compensate for lost time. I primarily used digital 3D modelling tools for design development, which offered advantages in creating integrated designs. However, I also realised that these methods could lead to excessive complexity, and I discovered the value of sketching and 2D drawings for faster results. Striking a balance between digital and traditional techniques became a crucial learning experience for me.

Throughout the process, my tutors played a vital role in guiding my decision-making and asking critical questions that pushed me to extract more from my design. This heightened my awareness of my choices and encouraged careful thought during the design process. However, I felt the need for more expert guidance from subject teachers, particularly in areas such as construction and climate. As a result, I had to invest more time and effort into ensuring that these aspects were properly implemented, especially in a complex building like a train station with multiple functions.

Reflecting on the overall process, I gained insights into optimising my workflow and learned valuable lessons for future projects. Overall, everything went well and resulted in an integrated design.
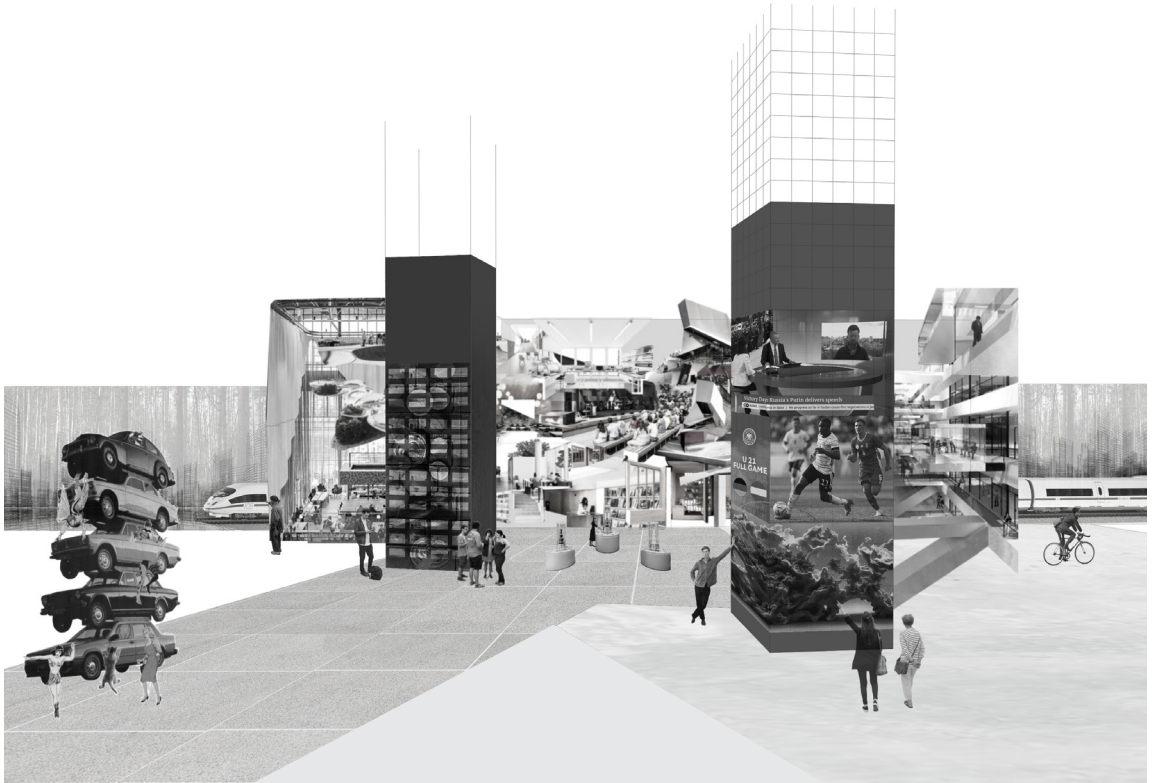
Figure 3.
Building concept diagram

THE ACADEMIC AND SOCIETAL VALUE, SCOPE AND IMPLEMENTATION OF THE PROJECT, INCLUDING ETHICAL ASPECTS

Changing a person's behaviour is very difficult and depends significantly on the income and culture in which a person lives. However, architecture and urban planning can anticipate future needs or be able to enable behaviours and actions. Everything depends on the service or spatial organisation possible within the built environment and how much freedom each person has to organise their way of life.

The project aimed to establish a user-centred design from the beginning of the design process. For the project, it was important for the building to serve the user by making suggestions and allowing them to adjust the configuration themselves. As a result, the built environment learns from the human and vice versa. This handling can also apply to future public buildings or an entire system integrated into a smart city.

Integrating all systems into the service cores of the building is immediately apparent to the visitor. Visibility and accessibility are critical regarding automation. On the other hand, there is also a downside to the project where privacy will have to be guaranteed, and there must be a limit at what level someone wants to participate in the system. The spatial interaction between the user takes place mainly with the help of the climate system and movable or opening partitions in the building. Here the flexibility of the building is strengthened in the columns and the structure, where the infill can be configured through automation.

Integrating these aspects adds value to society, the interaction between the body and the building, and how the building can serve the body. The project focused on integrating automation and digitalisation in architectural design and how it can benefit users and their needs.

THE TRANSFERABILITY VALUE OF THE PROJECT RESULTS

The project's outcomes and knowledge acquired from the thesis research can be applied in various ways, such as re imagining station typology and incorporating automation into architecture.

In the years ahead, as more people choose to live in cities, it becomes crucial to enhance accessibility within these regions. Train stations serve as vital connectors between urban and suburban areas. Thus, it is essential to establish stations at the boundaries where cities meet suburbs. Research has demonstrated that we can significantly reduce user journeys by adding features to train stations. Integrating elements that cater to the needs of passengers can greatly enhance convenience and encourage increased usage.

Moreover, the study highlights how these multifunctional spaces can also benefit the surrounding neighbourhood, transforming the station into a vibrant hub that enhances the quality of life and fosters social interaction.

Integrating automation technologies explored in the thesis research illustrates how buildings can better serve people. This concept extends beyond train stations and may impact various architectural types in the future. Consequently, when designing future public buildings, it becomes crucial to consider how these emerging techniques can contribute to a user-centred design approach centred around automation. This can involve optimising energy efficiency, maximising space utilisation, streamlining operations, and enhancing user interactions within the building.

In terms of design principles, the project is an initial ambition to create a new train station typology that introduces innovative transportation modes and transforms the station into a service-oriented facility, transcending its traditional role as a functional structure.

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