

# Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



## Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners ([Examencommissie-BK@tudelft.nl](mailto:Examencommissie-BK@tudelft.nl)), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Helena van Swaay De Marchi
Student number	4790049

Studio		
Name / Theme	Complex Projects	
Main mentor	Yağiz Söylev Hrvoje Smidihen	Architecture Architecture
Second mentor	tbd	[Academic field involved]
Argumentation of choice of the studio	<p>The graduation studio Complex Projects has appealed to me due to its structured and systematic approach towards the design process. By making the students write a design brief during the first semester, the studio challenges students to view the design process through different perspectives. The design brief is structured in terms program, site, and client. My interest in the studio derives from the mix of qualitative – often used - and quantitative – often underrated within architecture - methods of research. For example, the research of design projects through a benchmark of their programs is a very interesting method I had not come across before. Furthermore, the studio caught my interest due to its focus on complex public buildings. This seemed to be a good complement to the studios I have previously followed, which were focused on smaller scales (Interiors MSc1 and Methods of Analysis MSc2).</p>	

Graduation project	
Title of the graduation project	Crisis Hub: German Red Cross Center for Humanitarian Relief Operations at TXL
Goal	
Location:	North Area of Tegel Airport, vacant plot next to military apron – Berlin, Germany
The posed problem,	Airports lack space planning to effectively deal with disaster preparedness and response. During relief operations, the humanitarian

	<p>activities within the airport happen either in permanent or temporary airport facilities, which function as medical treatment areas, logistics centers, and base camps and staging areas (Polater, 2018). The need for temporary facilities, such as tents, trailer units and grass landing areas, is often prompted by the space constraints with which humanitarian stakeholders have to deal with when conducting relief operations in airports (Choi and Hanaoka, 2017). While this indicates that the airport logistics base planning should not be rigid, it also points to the importance of the maintenance of unbuilt areas or the elasticity of buildings.</p>
<p>research questions and</p>	<p><b>MAIN QUESTION</b> To what extent can the understanding of crisis architecture inform the design of efficient airport bases for humanitarian relief operations?</p> <p><b>SUBQUESTIONS</b> I. THESIS TOPIC: How can crisis architecture be defined?</p> <p>II. PROGRAM: What are the spatial requirements and constraints of humanitarian relief operations within airports?</p> <p>III. SITE: What is the potential of repurposed urban infrastructure to host humanitarian relief operations?</p> <p>IV. CLIENT: How can preparedness and response spatially coexist?</p>
<p>design assignment in which these result.</p>	<p>The goal is to design a crisis hub for the German Red Cross. The program includes key spaces related to both preparedness (research center, volunteer center, warehouse storage area) and response (warehouse staging area and relief team base).</p> <p>The design will be guided by the principles of standardization, modularity,</p>

	<p>scalability, speed, control, and efficiency. These principles are derived from the proposed research framework for the understanding of crisis architecture:</p> <p>ON PERSPECTIVE from demand to supply → standardization  ON EXPRESSION from humanitarian spaces to military bases → modularity  ON TEMPORALITY from transitional to permanent → scalability  ON ADAPTABILITY from change of plan to change of function → speed  ON TOOLS from contingency planning to scenario planning → control  ON MATERIALITY from residual to resilient → efficiency</p>
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**Process**

**Method description**

The proposed research framework involves the theory related to humanitarian relief operations, humanitarian spaces, crisis management, humanitarian supply chain management, crisis architecture, and functional design.

**PROGRAM**

The main research methods used to come up with a programme are benchmarking and case studies. Furthermore, more quantitative research methods will be applied, determining the programme requirements based on the number of victims and relief workers, as well as demand for supplies. In combination with the benchmarking and case studies, this calculation is expected to provide a sanity check on the predicted programme requirements. In addition, an analysis will be conducted related to the spatial consequences of the preparedness and response phase of the crisis management cycle.

**SITE**

The starting point for the site analysis are the location criteria defined by the "Future" Group, which graduated from Complex Projects in 2023. The location research conducted by the group then was supposed to inform their site analysis through the establishment of three criterias to be followed by all group members, who were each responsible for designing a different complex building. in 2022. The requirements were: location in urban development areas, lower population and building density, and areas with buildings constructed after the 1990s.

Despite these constraints set out, the proposed analysis for the development of this project prioritizes the potential for repurposing existing infrastructure and the criteria for humanitarian warehouse location. In relation to the former, the idea is to conduct

a research on possible case studies on infrastructure reuse as well as an in depth analysis of the Tegel airport, considering its possibilities and constraints. Regarding the latter, a literature review was conducted in an attempt to consolidate these criteria (Roh et.al., 2013; Nawazish et. al., 2022; Eligüzel et. al. 2023; Richardson et. al., 2016). By inverting the logic and focussing on where the warehouses should be located, instead of where the airports should be located, the emphasis is put on the operation efficiency of the humanitarian relief operations.

#### CLIENT

In order to decide upon the adequate client, literature review, institutional report, and general news were used as primary sources. Besides the actions performed by the client within the humanitarian sector, the choice for a client has taken into consideration the presence of the client in Germany, and more specifically in Berlin.

During the first stages of the research, a stakeholder mapping map was drawn, taking into consideration the interdependencies among stakeholders. The Berlin Brandenburg Airport (BER) was taken as an example and the stakeholders present on both its Express Center and Cargo Center were mapped out. By focusing on the cargo operations of the airport, this analysis provided insights into possible clients, such as German NGOs and public-private partnerships established in order to increase disaster response.

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## Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

The design of a crisis hub is hereby proposed as a medium to explore the meaning of crisis architecture and the ways in which the airport humanitarian spaces' layout can contribute to the optimization of humanitarian relief operations. This aligns with the studio theme "Bodies, Buildings, Berlin" and the theme of "Flow" chosen for the airport building typology. By choosing a specific lens through which I can try to understand the airport as a complex building, the design assignment becomes specific as well as challenging.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

### ARCHITECTURAL IMPLICATIONS

This research aims to contribute to the architecture field by providing insights into how functional spatial layout can increase operational efficiency. Therefore, the goal is to reinforce the role of architects beyond the aesthetic concerns of the built environment.

The construction of humanitarian spaces in airports - such as warehouses, base areas, and staging areas - follows specific standards and are typically replicated, such as in the case of the UNHRD, with very few regards to local conditions. This research sets out to explore what specific solutions can be found to repurpose local infrastructure for humanitarian relief operations, based on the case study of the Tegel Airport in Berlin.

#### INDUSTRY IMPACT

This research aims to integrate the architectural knowledge to the field to possibly provide new insights into spatial efficiency solutions for humanitarian relief operations. The effective collaboration among professions of the field of supply chain, logistics, operations, aerospace, engineering, and architecture is crucial when dealing with such a complex challenge. Therefore, the proposed multidisciplinary perspective could have cross-industry benefits.

For example, an optimal spatial layout of a warehouse could possibly increase efficiency standards upheld during humanitarian relief operations. In addition, optimal routing, including shortcuts, for relief teams in base camps can enhance efficiency. In the same way that the fire pole and the elevator were inventions that led to a paradigm change in the relation of people to the built environment, this research aims to provide innovative solutions for increasing operational efficiency.

#### POLICY AND REGULATION

The humanitarian relief operations are highly politicised, involving multiple stakeholders with often diverging interests. The solutions of the spatial constraints at airports' operations alone will doubtfully compensate for the inefficiencies deriving from political and bureaucratic issues intrinsically associated with such operations. Nevertheless, the research aims to contribute to insights on how the architectural expression and spatial qualities of the humanitarian spaces at airports could reflect the humanitarian principles. The spatial translation of such principles could possibly, in turn, aid their reinforcement.