

# 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	Jordy Wagemaker
Student number	5227437

Studio		
Name / Theme	<b>Architectural Engineering / 1 Million Homes</b>	
Main mentor	Thijs Asselbergs	Design
Second mentor	Pieter Stoutjesdijk Gilbert Koskamp	Research Building Engineering
Argumentation of choice of the studio	The Architectural Engineering studio addresses a lot of present-day challenges that we, as humans, all have to deal with sooner or later. Amongst these challenges, the 1m homes issue is mentioned. This issue, in combination with the transition to the circular economy, will play a major role in the early stages of the careers of the new emerging architects. To avoid falling back into old habits, new approaches are needed to deal with these issues, such as the ideas of John Habraken, Open Building, and Stewart Brand. The search for this new approach led to the choice of this studio.	

Graduation project	
Title of the graduation project	<b>Bridge the gap</b>
Goal	
Location:	Bruggebouw Oost, Juliana van Stolberglaan, The Hague
The posed problem,	The existing Bruggebouw Oost is an empty building that served only one function: an office. Due to major changes in the urban CS Oost kwadrant, the current idea is to temporarily house various Dutch ministries in the building for the upcoming 6 years. After this, the plans are to demolish the current building because it would not fit with the new ideas of the urban area. The municipality desires that the new urban area transforms to a lively, metropolitan area for living, working and recreation. According to the municipality, the current Bruggebouw Oost and its surroundings lack a lively atmosphere, the outside space is

	<p>cluttered and there are no clear walking routes, thus needs to be demolished.</p> <p>Like numerous Dutch cities, The Hague is experiencing a high degree of urbanization. Studies estimate that by 2040 The Hague will have grown by another 80.000 inhabitants. Since The Hague has reached its maximum urban boundaries, smart growth is essential. Smart growth is according to the municipality about life-proof housing that will be built flexibly in order to provide different social groups with a house at easily accessible dense locations, both now and in the future.</p>
<p>research questions and</p>	<p>Demolition of the Bruggegebouw Oost is against the principles of the emerging circular economy; A transformation will be a more logical solution. With the idea of smart growth in mind, transforming the Bruggegebouw into an open building seems the ideal solution. This is because residents are allowed to design their own floor plans, making flexibility number one priority. Each social group can thus be provided with a desired home at completion and in the future. This leads to the following design question: <i>How to implement demountable open systems when transforming an existing vacant Dutch postwar office building into user-specific adaptable dwellings?</i></p> <p>Since the existing building is declared energy inefficient and does not comply with today's standards, the façade will have to be upgraded anyway. For this reason, it is being studied how this facade upgrade can offer more value toward a successful future-proof transformation. So, the focus is not on achieving an almost energy neutral building, but a completely energy neutral building. Hence, the following research question is formulated: <i>How can a generic facade module with integrated installation elevate the design of flexible floor plans, when transforming an existing vacant Dutch post war office building to energy neutral dwellings?</i></p>
<p>design assignment in which these result.</p>	<p>A transformation of the existing Bruggegebouw Oost in The Hague from a vacant office that is not desired within the new future urban ideas to a multifunctional Open Building that adds value to the new urban plan.</p>

## Process

### Method description

First, literature research will be done to better understand and implement the underlying ideas of Open Building.

The first steps in the design process are based on analysis. Analyzing the existing urban context, analyzing the future vision of The Hague, analyzing the existing building, analyzing buildings that have been transformed into open buildings, and finally analyzing the potentials. Based on these analyses, a proposal will be made for additional new functions, an integration of the building into the future urban context, and steps will be taken to determine how the existing rigid building can be transformed into a flexible open building.

In-depth research of the facade modules should show how the vacant office building can be upgraded to serve its new function as an Open Building. Market research and research by design will show which energy neutral installation combinations are needed, determine the appearance of the facade modules and the size of the flexible floor plan units. This will result in several digital and physical facade mock-ups.

During the whole design process, drawings and sketches (from 1:1000 - to 1:5) are made with the help of a physical and digital building model.

### Literature and general practical preference

The key literature that will be utilized during the entire process is as follows:

Brand, S. (1995). *How buildings learn*. Penguin Putnam.

Habraken, N. J. (1961). *De dragers en de mensen: Het einde van de massawoningbouw*. Amsterdam: Scheltema en Holkema.

Van der Werf, F. (1993). *Open ontwerpen*. Rotterdam: Uitgeverij 010.

Supporting literature on the topic:

Alexander, C. (1977). *A Pattern Language, Towns, Buildings, Construction*. New York: Oxford University Press.

## Reflection

***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 '1M homes' studio focuses mainly on new smart ways of solving the housing shortage in the Netherlands. In this process trying to connect to the circular economy by combining it with the ideas of Open Building. By putting the focus on flexibility within the building industry '1M homes' distinguish itself within the master AUBS.

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

There is a huge demand for housing, a huge waste of vacant office space and a big part of the building stock that is not ready for the future. In Europa buildings are the

single largest energy consumers, responsible for approximately 40% of the EU's energy consumption and 36% of the greenhouse gas emissions. At this moment, about 35% of the EU's buildings are over 50 years old and almost 75% of the building stock is energy inefficient. Renovation of existing buildings can lead to significant energy savings, as it could reduce the total energy consumption of the EU by 5-6% and reduce CO2 emissions by approximately 5%. Smartly transforming these buildings into energy-neutral Open Buildings will be a good step towards finding a solution for cities affected by urbanisation. If this proves viable, it will be able to accommodate different social groups without damaging the climate.

## **Time planning**

**P1** begins by investigating where the interests lie within the field of architecture. During this period, it will become more clear what the focal points of the project will be. It appears that the transformation of existing vacant properties and the ideas of open building are the most important motives for this project. Behind this choice lies the current transition from a linear economy to a circular economy and the exclusion of residents in the current building process. On the basis of this, a context for the assignment will be sought, and a site visit will take place. During this period, the research plan will be made, presented, and finally assessed.

**P2** starts with a reflection on the points for improvement that follow from the given P1 presentation. This will be followed by extensive research into a new principle for transforming existing vacant Dutch office buildings built between 1950-2000 into flexible housing according to the ideas of Open Building. This will lead to principles for a generic facade module that can be used for the design in P3. The realisation of the facade module will be determined on analysing office typologies and open buildings. In addition, market research regarding installations and research by design will be done. After which the feasibility will be calculated by means of NZEB calculations within the UNIEC 3.0 tool. All this will be academically documented in the required paper for P2. Furthermore, the first urban and building analyses will be carried out to assess the interventions and design concepts during the presentation of P2.

**P3** starts again with a reflection on the remarks and points for improvement that follow from the P2 presentation. This will be followed by a more in-depth examination of specifying the facade module in areas that are still missing. The resulting facade module can then be applied to the Bruggebouw Oost. Designing will be the most important thing during this period, and research will be relegated to the background. All parts of the design will be dealt with, from the largest to the smallest scale. This will result in all required drawings, from situation to floor plans to sections, to show how the transformation of the Bruggebouw Oost will function.

**P4** will focus on the completion of all required products. The focus will be on the detailing, construction, physical model and renders. Within all parts of the design, flexibility will be the key word.

**P5** will focus on the final adjustments to the products that have been shown at the end of P4. After this, everything will be presented, uploaded, and finalised.