# Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

# Graduation Plan: All tracks

| **Personal information** | |
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| Name | Laurèl de Gier |
| Student number | 4863402 |

| **Studio** | | |
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| Name / Theme | MBE - Game Changers | |
| Main mentor | Daniel Hall | MBE |
| Second mentor | Marja Elsinga | MBE |
| Argumentation of choice of the studio | The research will focus on Industrialized construction, a new method of construction. Because this method is relatively new and not yet comingle used it is a game changer in the "traditional" construction world. By focusing on the new actor roles and participation changes when implementing these new methods, the game in which traditional building process is played could be changed to a more collaborative and flattened hierarchy. | |

| **Graduation project** | |
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| Title of the graduation project | Rethinking the construction playbook |
| **Goal** | |
| Location: | The Netherlands |
| The posed problem, | In traditional construction, roles and processes are well-established and rooted in decades of practice. Stakeholders, such as contractors, architects and project managers, operate within familiar frameworks, often characterised by linear workflows and compartmentalised responsibilities. However, IC disrupts this paradigm. Industrialised construction (IC) is a modern approach to building that emphasizes the use of standardized, prefabricated and modular components manufactured off-site and assembled on-site. IC represents a transformative shift in how construction projects are conceived, designed and executed. While IC offers compelling benefits (Pan et al., 2012), its successful implementation requires a fundamental redefinition of roles and collaboration dynamics among project actors. Its |

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| | emphasis on pre-fabrication and off-site manufacturing demands early on intensive collaboration, seamless integration of design and construction phases and a shift from a project-specific mindset to one that prioritizes long-term system efficiency. |
| research questions and | Main question:<br>- How does implementing IC methods change the actor dynamics within urban (re-)development projects within the Netherlands.<br><br>Sub-questions:<br>- What are the main reasons for IC implementation per actor?<br>- What challenges and opportunities do actors perceive within collaboration when implementing IC methods?<br>- How do actor roles change when implementing IC methods compared to their roles during a traditional building method?<br>- How can collaboration practices and frameworks address these challenges to improve IC method adoption in urban environments? |
| design assignment in which these result. | The significance of this research lies in addressing a critical gap in the understanding of how actor roles and attitudes must adapt to effectively implement IC methods compared to traditional approaches. This research will address a pressing need to understand the intersection of technical innovation and human adaptation in the construction industry. By illuminating the pathways through which actors transition to industrialized construction methods, it not only advances theoretical knowledge but also provides practical solutions to accelerate the adoption of IC in urban development projects. The findings have the potential to shape how stakeholders collaborate, innovate and contribute to a more |

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| | sustainable and efficiently built environment. |
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## Process

### Method description

- Qualitative research – in-depth semi-structured interviews via an abductive approach. After which a comparative case studies will be made via the Eisenhardt method

The interview process forms the main component of this research, aiming to gather in-depth insights into the roles, responsibilities and collaboration dynamics of actors involved in IC projects. To ensure accessibility for all participants, the interview questions are available in both English and Dutch. Appendix 1 includes a full list of questions in both languages, enabling participants to respond in the language they feel most comfortable with. Considering the participants will be mostly from Dutch companies the likeliness of people being interviewed in Dutch is far higher than in English.

Each interview will begin with an introduction by the researcher, providing the context for the discussion. Participants will be informed about the purpose of the research, the scope of their role in the study and how their responses will be used. Consent will be obtained before proceeding and participants will be assured of confidentiality and anonymity in the reporting of findings. The interviews are semi-structured and will follow a abductive approach, allowing for a guided conversation that also accommodates emergent themes and participant-driven insights.

The research aims to strike a balance between gathering diverse perspectives and maintaining the depth of individual interviews. To achieve this, the number of interviews will be limited to a manageable sample size, focusing on quality over quantity. Ideally, the research will involve 12-15 interviews across the three selected case studies. This number is realistic given the scope of the research and the time constraints, while still allowing for a deep exploration of each participant's experiences and perspectives. Each case study will include 4-5 interviews, covering 1 or 2 key actors per group discussed in 3.3. Target groups. This allocation ensures that all critical actor groups are represented while maintaining a manageable workload for in-depth data collection and analysis.

The primary data collection method will be semi-structured, in-depth interviews with key actors from each project. These interviews are designed to elicit rich, qualitative data about the motivations, challenges and collaborative dynamics of IC implementation. Each interview will last ideally 1,5 hours, allowing participants to reflect deeply on their experiences.

## Literature and general practical references

Literature & theoretical frameworks

1. Industrialized construction (IC) methods
   - Research on modular construction, prefab and DfMA, emphasizing their efficiency, sustainability and implementation challenges (Gibb, 2001; Eastman et al., 2011).
   - Studies on how IC transforms construction workflows and disrupts traditional industry practices (Goodier& Gibb, 2007).
2. Collaboration and actor dynamics in construction
   - Theories on actor collaboration, stakeholder management and organizational change in construction projects (Olander, 2007; Kent & Becerik-Gerber, 2010).
   - Research on power dynamics, role adaptations and decision-making processes in multi-actor environments (Gibb & Isack, 2003; Meiling et al., 2012).

Practical experience

1. Case study projects
   - The selected case studies will serve as primary sources of empirical data.
2. Industry reports
   - Reports from professional organizations (e.g. Brink groep, Rijksvastgoedbedrijf and TU Delft's research on IC) will offer practical insights.
3. Policy and regulations
   - Governmental and municipal regulations affecting IC adoption in urban environments will be reviewed to understand legal and procedural barriers

## Reflection

1. My graduation project fits within the *Management in the Built Environment (MBE)* track and the *MSc Architecture, Urbanism & Building Sciences (AUBS)* programme by focusing on how industrialized construction (IC) impacts collaboration between actors in urban development. Within MBE, my research connects to construction management, stakeholder engagement, and process optimization. IC requires shifts in governance, contracts, and industry practices, which aligns with the track's focus on improving collaboration and efficiency in the built environment. At the AUBS program level, my project contributes to broader challenges like sustainability and housing shortages by exploring how IC can be integrated into urban development. While IC is often seen as a solution, its implementation remains complex. By studying real projects, I aim to bridge the gap between innovation and practice, offering insights for both academia and the construction industry.

2. The expected contribution of this research is twofold encompassing both theoretical advancements and practical recommendations. Theoretically, the study aims to deepen the understanding of how actors' roles and collaboration dynamics evolve when transitioning from traditional construction to IC methods. By examining the motivations, struggles and adaptations of actors, the research will contribute to the growing body of literature on IC and stakeholder management in the built environment. For instance, identifying how communication practices and decision-making processes shift in IC projects can

provide valuable insights into overcoming systemic barriers, such as misalignment or power imbalances (Eisenhardt, 1989).

On a practical level, the research aims to offer actionable lessons that actors in the construction industry can apply to enhance collaboration in future IC projects. By uncovering best practices and identifying opportunities for improvement, the findings will help stakeholders address challenges such as regulatory misalignment, cultural resistance and coordination complexities. This practical focus is particularly relevant in the context of urban development, where IC methods are increasingly recognized as a solution to housing shortages and sustainability goals but remain underutilized due to collaborative and systemic obstacles (GIbb & Isack, 2003).