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Exploring Interdisciplinary Collaboration in the Detailed Design Phase of Construction Projects

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Research Overview

- The interdisciplinary collaborative process is defined as "the process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their limited vision of what is possible" (Gray, 1989).

- The detailed design phase is when preliminary design is refined, the scope of alternatives is reduced, the level of design detail is higher, and design documents, specifications and cost estimates are created.

- The study focuses on the detailed design phase of construction projects – specifically, the collaborative processes between designers and contractors because this stage represents the transition from design intent to physically achievable reality.

Interdisciplinary Teams in Construction Projects

- Complex construction projects commonly have many participants drawn from a wide range of disciplines and organisations forming a temporary interdisciplinary team to deliver a specific project.
- Participants from diverse backgrounds have different values, attitudes and goals, which affect their interactions to resolve conflicts, communicate effectively, and exchange knowledge.
- Collaboration in this setting demonstrates how participants tend to work together to find better, more streamlined ways of delivering what the client needs despite their diverse perspectives.

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Unveiling Collaboration Dimensions in the Design and Construction Literature

- **Co-location** *(big room, one common place, frequent meetings)*
- **Defined roles & responsibilities** *(clarifies participants 'contribution)*
- **Common means of accessing project information** *(up-to-date design and program information, design progress, RFIs)*
- **Team diversity** *(including subcontractors at early stages, cross functional teams)*

- **Aligning incentive interests** *(bonuses linked to value-adding, innovation, performance - regular workshops to reach common understanding of technical issues)*
- **Collective design making** *(the involvement of participants who possess the required skills and knowledge to address potential solutions before reaching an agreement)*
- **Interactive coordination** *(engaging downstream stakeholder to improve construction processes)*

- **Achieving value for money** *(best design for money spent)*
- **Achieving design integrity** *(design intent is not compromised for construction reasons)*
- **Improving working processes** *(controlling project constraints, instant responses reduces RFIs)*
- **Trust in expertise & capabilities** *(develops over time, creates a sense of belonging to the team , encourage generating ideas)*

The Lack of a Holistic Collaboration Framework

	Normative stream	Practice-based stream
Theoretical perspective	Network forms of organisation New institutionalism and collective actions Multi organisational implementation	Inter-organisation relationships Network analysis Network performance Cooperation theory Resource dependence Collaboration perspective
Addressing problems related to	Increasing complexity new forms of organisations, reconstruction of society	The need for expertise, financial resources, risk sharing, high levels of interdependence
Objectives	Improving existing situations, what ought to be	Focus on antecedents

Representation of Thomson's work on collaboration frameworks (2003, 2006)

Developing a Framework for Explaining Collaboration

Representation of Gray's model (1989)

The Proposed Collaboration Framework

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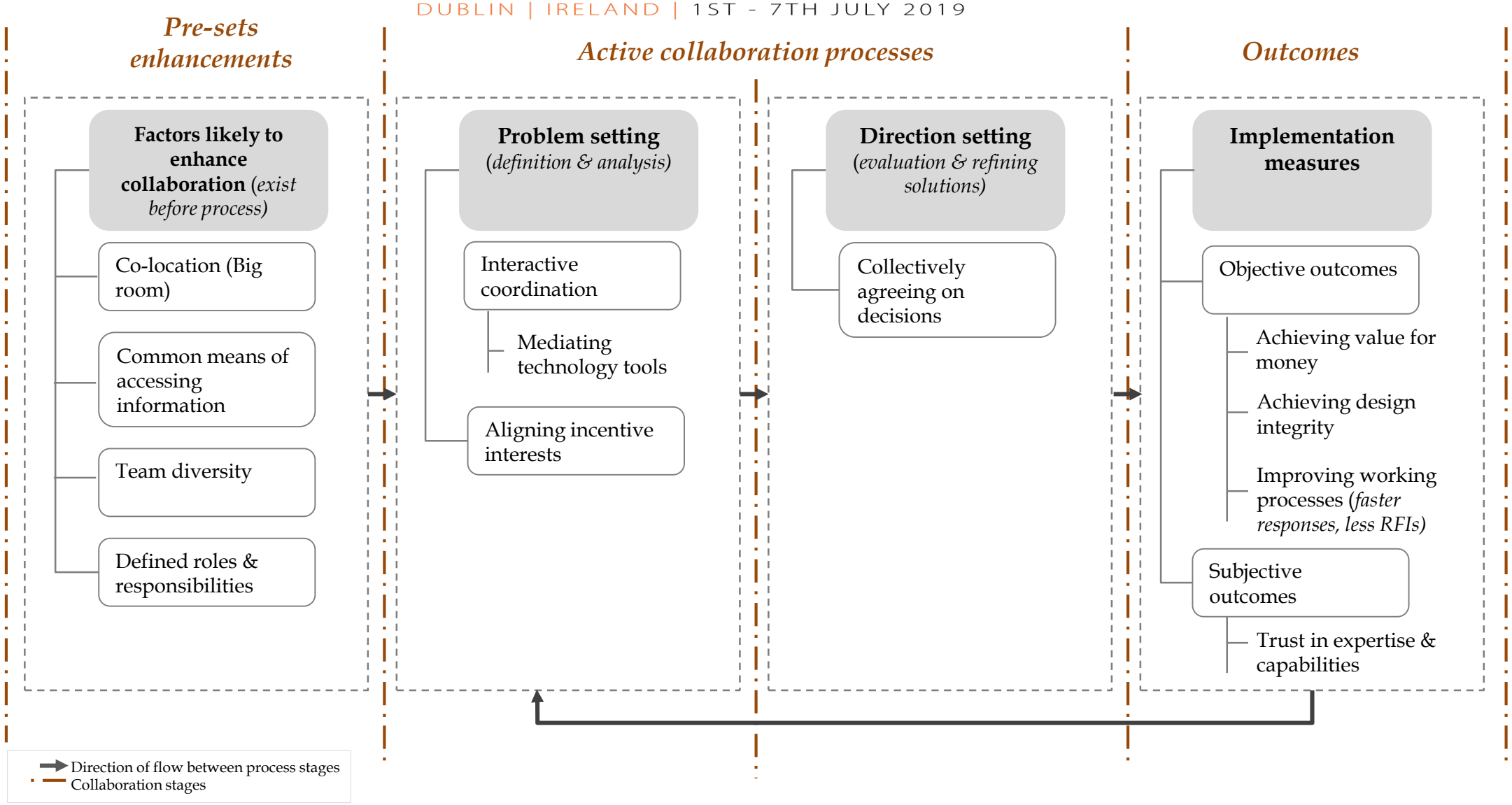

Research Design - Method of Inquiry

- Collaboration is a relatively subjective and unpredictable concept, as participants in construction projects cannot say in advance that a specific meeting will be collaborative or not.
- The subjectivity is strong because the construction industry relies heavily on humans.
- The diversity of participants involved in the detailed design phase is expected to bring a variety of collaboration perspectives.
- Collaboration is not a constant process but changes over time, fluctuating between easier and more difficult discussions.
- The proposed framework enables a detailed investigation of the collaborative processes by employing a **practice-based longitudinal** study approach.
- Research Questions:
  1. *How active are collaboration enablers in the detailed design phase of construction projects?*
  2. *Are there patterns of good and poor collaboration in the detailed design meetings?*
  3. *What is the relationship between:*
     a) *behavioural actions during the meetings*
     b) *perceptions after the meetings?*

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Thank You