Socio-cultural and individual inhibitors to the take up of digital innovation and off-site manufacturing in construction

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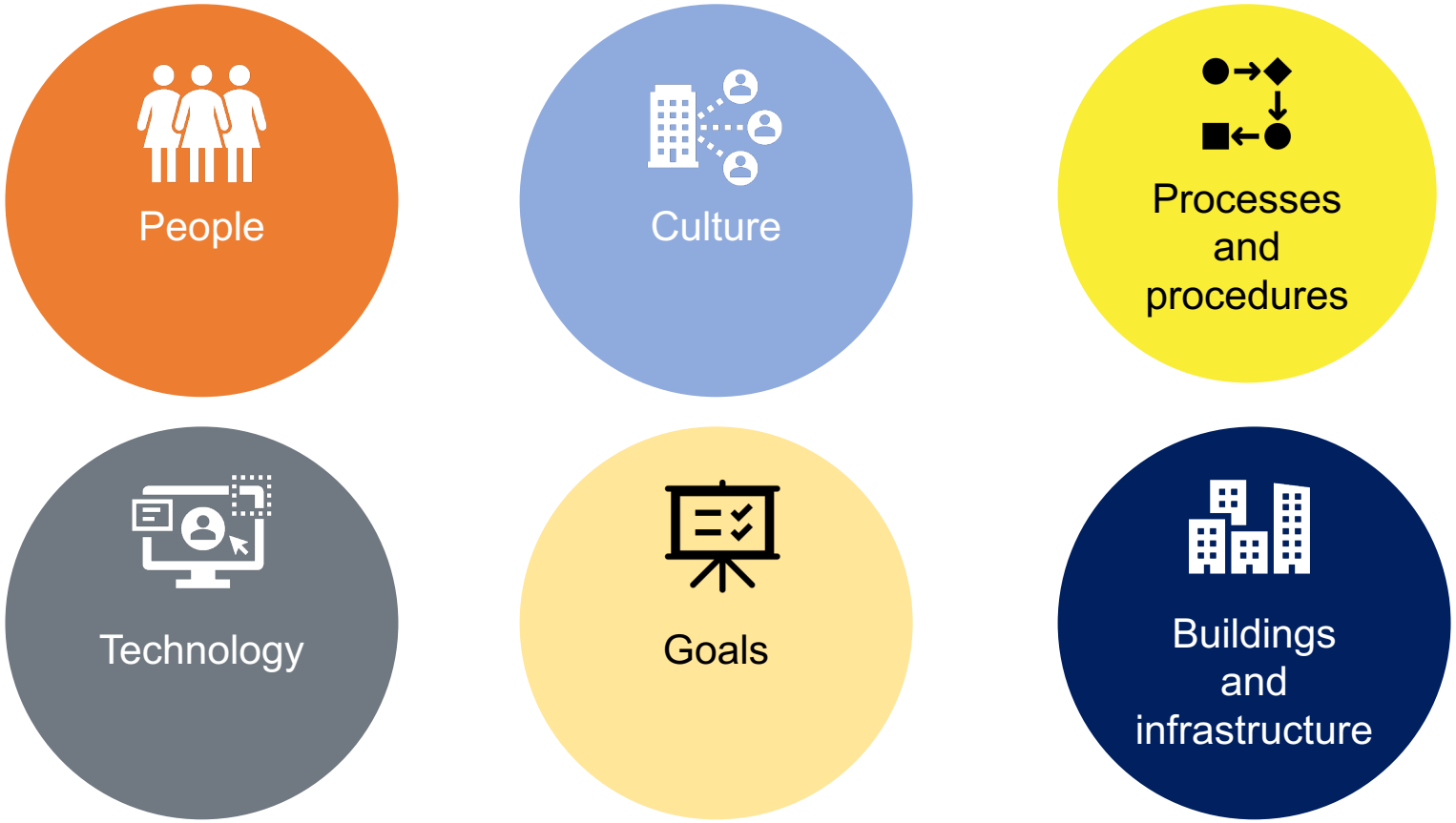
Inhibitors to the take up of digital innovation



Inhibitors to the take up of digital innovation

Technology

- Different levels of digital literacy to use digital technology
- Cost
- Time consuming
- Ease of use
- Complexity
- Usability and applicability
- Interoperability

Goals

- Focus on maximising profit
- Focus on reducing cost

Buildings and infrastructure

- Construction processes taking place on site

Inhibitors to the take up of digital innovation

People

- Leadership style
- Resistance to change
- Lack of training
- Lack of knowledge about the benefits of digital innovation
- Negative perceptions
- Lack of management support
- Lack of skills

Inhibitors to the take up of digital innovation

People

Lack of knowledge about the benefits of digital innovation	• There is still a significant gap at the individual level, and employees are not clearly informed about the positive impacts that digital technologies can have on their role and day to day performance
Lack of skills and training	• It is unclear what kind of competencies and skills are required from each party and at what stage of project • Disconnection between two skillsets: digital skills and construction knowledge
Resistance to change	• Resistance to change varies according to personality type and attitude to change • Resistance to change might be a result of facing uncertainty, perceived negative consequences such as loss of a job or power, or a reluctance to apply new things

Inhibitors to the take up of digital innovation

Culture

- Technology-centric mindset rather human-centric
- Organisational resources and support
- Competitiveness
- Lack of clarity in current roles regarding digital responsibility
- Risk aversion
- Lack of collaboration
- Lack of organizational resources and support

Culture

Technology-centric rather human-centric mindset	• Managers with a human-centric vision of BIM are more successful in bringing changes into their organisation, as they engage with people and bring them on board
Lack of clarity in current roles regarding digital responsibility	• The wider workforce, especially those who are in a non-digital role, need to have clear, role-specific, digitally-relevant responsibilities, as well as generic competencies
Lack of collaboration and communication	• There is a need for clear documentation indicating deliverables and data expected from each department, inside the organisation and through the supply chain

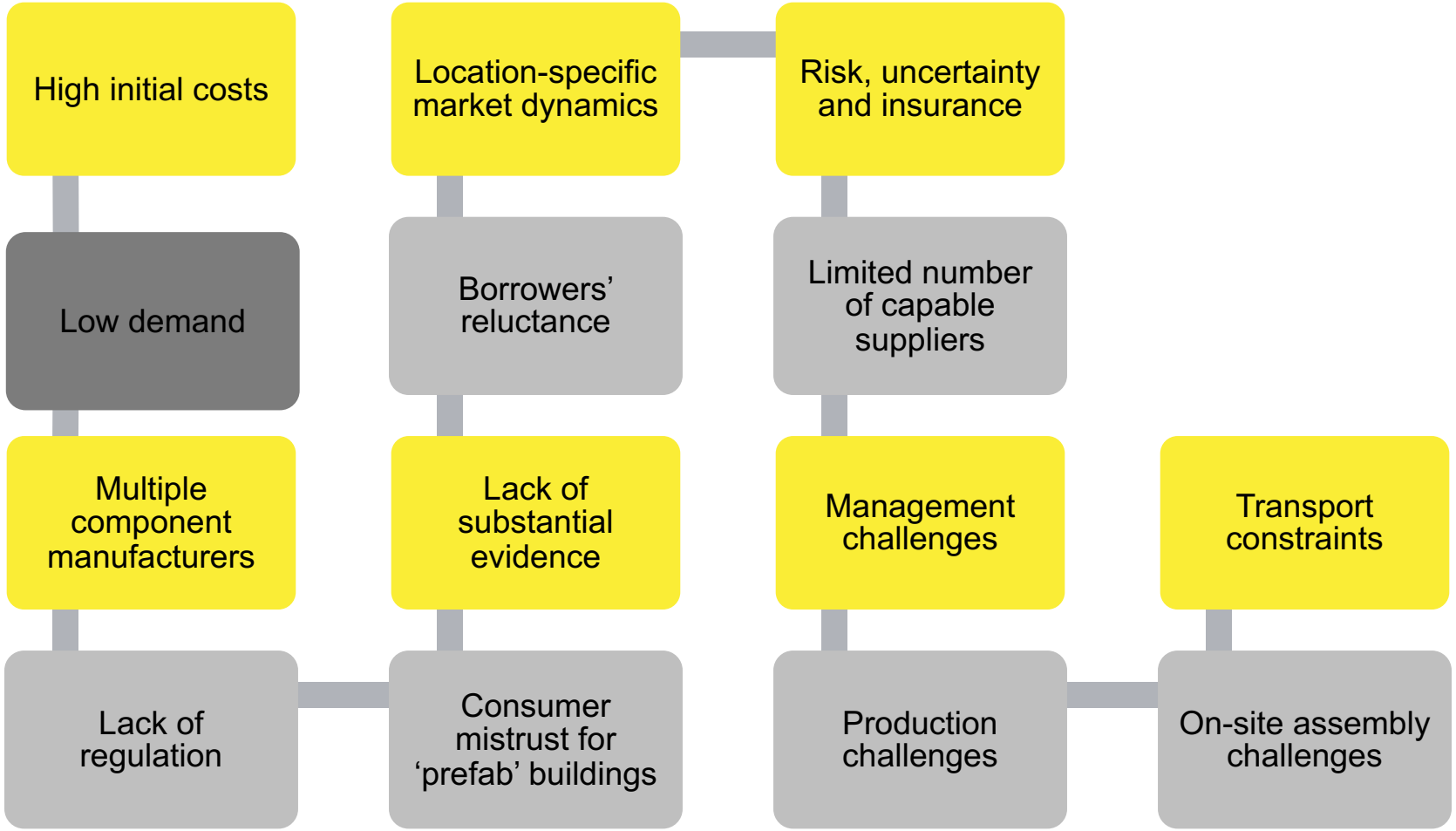
Process and procedures

- Involvement with supply chain at different levels of competency
- Coordination issues
- Lack of communication and collaboration
- Difficulty in keeping employees on board throughout the digitisation journey
- Challenges in designing digital strategy implementation path

Process and procedures

Challenges in designing digital strategy	• Absence of a clear and communicable digital transformation strategy that set out the steps to digital transformation
Difficulty in keeping employees on board throughout the digitisation journey	• The need to bring all employees on board and help them to understand and believe in the need for organisational change is neglected
Involvement with supply chain at different levels of competency	• SMEs and micro businesses are more likely to lack the time and money needed for investment in BIM technologies or their use

Barriers to and challenges faced in using OSM for project delivery



Barriers to and challenges faced in using OSM for project delivery

Borrowers' reluctance	Multiple component manufacturers	Lack of regulation	Risk, uncertainty and insurance	Management challenges
OSM approach is deemed new, and tagged as being of high risk	Multiple small scale manufacturers using different production systems Limited market for potential users to have the flexibility to procure components that are interchangeable to meet project needs	Lack of regulation governing the use of OSM in the construction sector is a source of worry for clients and contractors who decide to use the approach	OSM approach is deemed new, and tagged as being of high risk	• Supplier relationships • Design integration and quality control • Design platforms interoperability • Client relationship management • Design, factory production and on-site team communication • Cross-team learning, knowledge codification and contract administration

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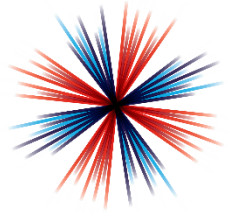

INDUSTRIAL STRATEGY

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