The research began with a desk-based study of key strategic documents. This informed a survey of i3P members’ current and recent innovation projects and a series of interviews with key industry stakeholders. Two workshops were held to explore the findings with industry stakeholders and the i3P membership.

A key outcome from the study was agreement of a Framework within which to locate future innovation projects. The Framework aligns innovation activity according to:

• **Why** we carry out innovative projects, with investment outcomes focused on
  - improving process efficiency
  - improving process outcomes
  - reducing process harm; and

• **Where** in the project lifecycle we carry out innovative projects – that is, which of assets’ lifecycle processes are being impacted by investments?

The research team to locate members’ innovation investments, and to understand any investment gaps that need addressing to help meet the industry’s Construction 20251 aspirations. Investment needs were assessed in the context of the UK’s Transforming Construction Challenge2, which tasks the industry to become more productive, delivering increased lifetime value by increasing the digitisation of, and the application of manufacturing techniques in the industry.

This report recommends four strategic priority themes for the industry to meet these challenges. One theme relates to action on the ‘demand’ side, one theme to action on the ‘supply’ side, combined with two critical underpinning themes. The four strategic priority themes for the industry are as follows:

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How can we build and operate new industrialisation road maps that move businesses. Calls for ‘digitisation’, or the adoption of manufacturing perspective to avoid disrupting their existing development models. This includes the development of a series of roadmaps for delivering on these priorities to transform the industry. These roadmaps could be used to identify the necessary investments and activity in the industry, which can then be compared against the investment analysis undertaken during the research. As an industry, we will then be in a position to identify what further projects are required to deliver the necessary transformational change, focusing and encouraging collaborative and coordinated research, development and innovation activity. These projects can be located in the strategic Framework to ensure a coherence, while the development of communities of interest can build industry cohesion.

The benefits achievable by industrialisation in existing processes were seen to be inconsistent between projects and studies. This is due, in part, to a lack of clarity of the language used and the absence of a comprehensive, industry-wide strategic framework for locating and analysing the problems at hand. The industry should collaborate to develop common benchmarks, an agreed lexicon to describe interventions, and, building on the work of I3P, produce a map of the construction asset lifecycle. Adopting a common analytical framework will enable a more holistic perspective on the benefits of interventions in the project and programme environment.

The research has highlighted that the industry could make significant productivity gains by focusing on its current activities consistently – ‘doing what we do now better’. By analysing the construction process into its constituent sub-processes, each can be explored at a granular level and appropriate levels of industrialisation applied, up to and including the digitisation envisioned in ‘Industry 4.0’. However, developing a common understanding of what this means is an important early step. Industry could leverage work undertaken in academia to develop best practice guidelines as to how companies might obtain the benefits of the industrialisation of their processes.

The benefits of industrialisation can be most readily be achieved when early decisions are taken to adopt the necessary design protocols to facilitate manufacture and assembly (i.e. DfMA). However, currently, there is little consideration of project delivery model prior to the commencement of design. The Government departments with a presumption for offsite should introduce an early and unambiguous decision point as to the delivery model in infrastructure and construction projects.

The 13P membership is committed to collaborating to advance the infrastructure and construction industry, building on our members’ ongoing Elbn innovation investments. We look forward to working across the infrastructure and construction industry to address the challenges we face during the process of change, to help share knowledge, and to form communities of interest that we can deliver on the aspirations of the Transforming Construction agenda.

For example, the IET’s Project 13P (https://www.iet.org.uk/) is an important early step. Industry could leverage work undertaken in academia to develop best practice guidelines as to how companies might obtain the benefits of the industrialisation of their processes.

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The 13P Strategy Board is currently working closely with the Construction Leadership Council (CLC) to leverage this research. The next step is to identify the next level of detail and to ensure that we are able to articulate each of the four strategic priority themes with clarity across the whole industry.

This includes the development of a series of roadmaps for delivering on these priorities to transform the industry. These roadmaps could be used to identify the necessary investments and activity in the industry, which can then be compared against the investment analysis undertaken during the research. As an industry, we will then be in a position to identify what further projects are required to deliver the necessary transformational change, focusing and encouraging collaborative and coordinated research, development and innovation activity. These projects can be located in the strategic Framework to ensure a coherence, while the development of communities of interest can build industry cohesion.

Ownership of these strategic roadmaps should be vested in an adequately resourced Construction Leadership Council supported by the Infrastructure Industry Innovation Partnership (I3P) and other industry bodies.

It is clear from the research that in addition to these four priority themes, there are specific shorter-term opportunities for the industry to improve productivity, and reduce project uncertainty over costs and time. The following recommended actions are consistent with the strategic aims described.

Industry Action: Demystifying Industrialisation

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Industry Action: Introducing a New Project Delivery Model Decision Point

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Industry Action: Developing Funding Models to Support Pre-Competitive Industry Activity

Knowledge consolidation and transfer have a large role to play in the coming transformation. However, funding and coordinating the collaborative activities that advance the industry can prove challenging in such a competitive, fragmented, and margin-constrained industry. Funding models should be explored that facilitate a strategic view of technology change across the industry.