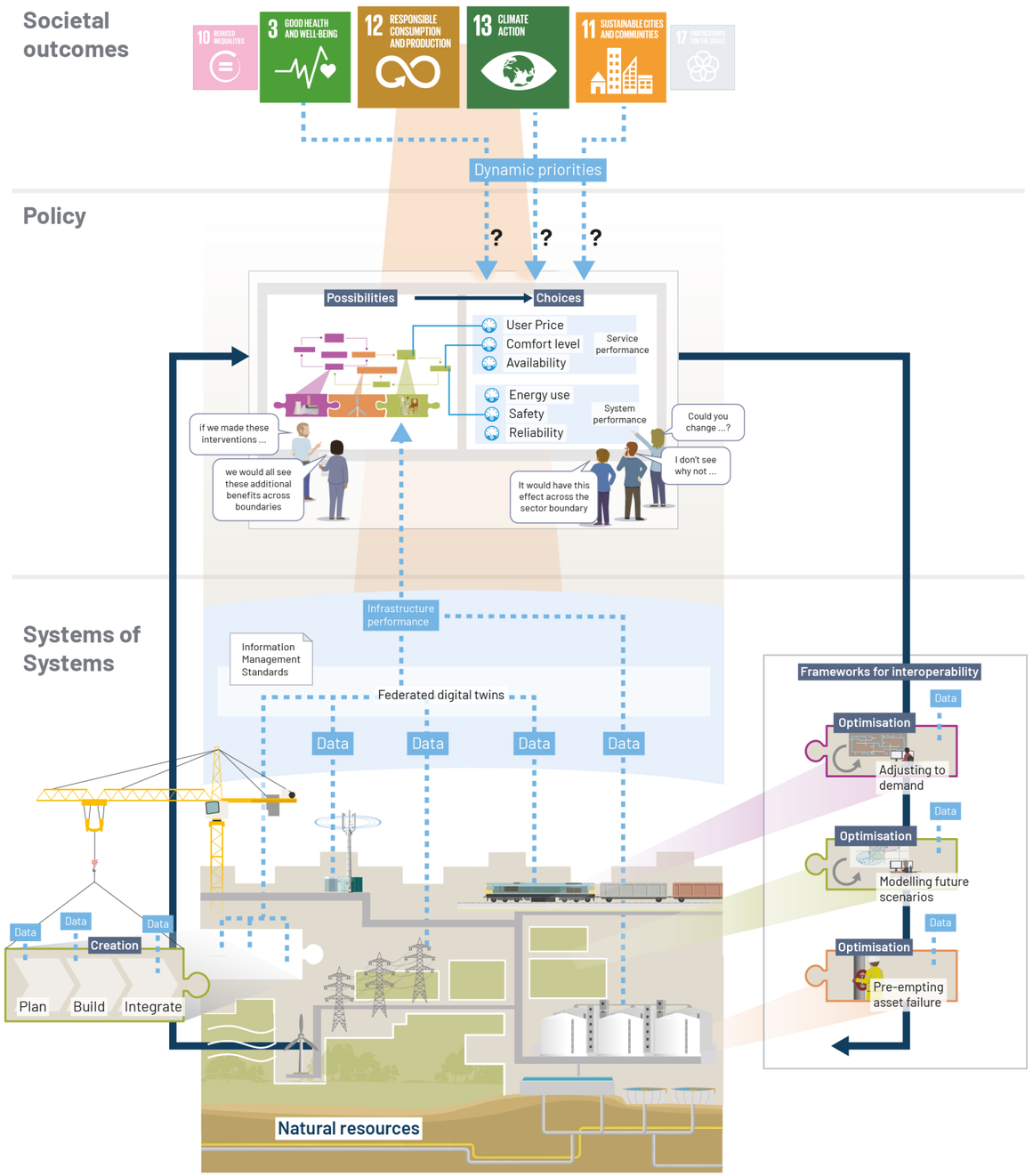
Optimising the performance of our existing built environment

Infrastructure and Projects Authority



The Problem

Historically, it has been more straightforward to add new infrastructure to the built environment rather than trying to derive better outcomes from what we already have. This is predominantly because our built environment has evolved as an intricate system of systems, without an overall design or a strategy for its interconnections, resilience or long-term outcomes. Our current preference to add new assets is unsustainable given resource constraints and the requirement to achieve net zero greenhouse gas emissions by 2050.

The Vision

We would understand the existing system and would be able to assess the effects of our interventions and their integration into it. This understanding would be founded on information generated, captured and recorded in accordance with information management standards adopted across the industry. Information would be shareable across sector and network boundaries, and would be stored and available over the lifetime of the asset.

We would then be able to make better, outcome focussed decisions about how to optimise our infrastructure across the system, with the protection and restoration of nature embedded in our decision making.

The Benefits

- Creation of an optimised system in terms of performance and resilience, that takes into account our various societal priorities and impacts less on the natural environment.
- Achieve better overall outcomes in a more resource efficient way, and we can achieve those outcomes in timescales that will often be significantly faster than the delivery of new assets.
- From the use of interconnected and interoperable digital twins we will be able to optimise across the boundaries which exist at present, allowing the benefits from our system of systems to be greater than the constituent parts.