



ATKINS

Member of the SNC-Lavalin Group

Zooming Out: Net Zero and the Need for Systems Thinking

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Technical Director DfMA – Atkins

21st June 2022

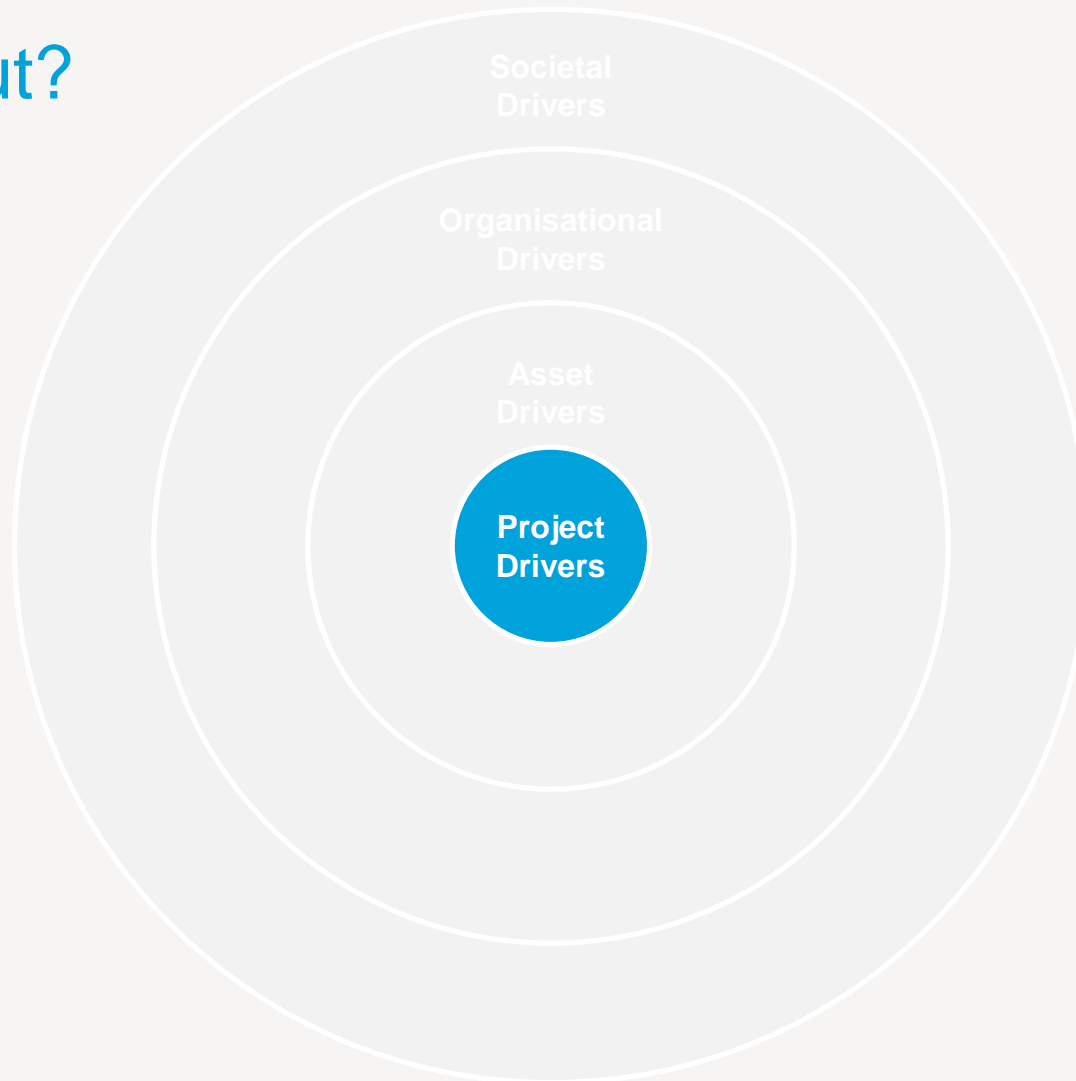
About Me

- 1:1 (hons) [BSc Architectural Engineering and Design Management](#)
- Originally worked as an [architectural technologist / design manager](#)
- Last 10 years working in the [industrial research and innovation strategy](#) space
- [MSc Construction Innovation and Management](#) (Loughborough)
- 4 years with the gov. funded [Construction Innovation Hub](#), most recently as Chief Technical Officer
- Led development of the [Value Toolkit](#)
- Co-author of the [Product Platform Rulebook](#) (May 2022)
- Now [Technical Director for DfMA](#) at Atkins



So: Why 'Zoom Out'?

Why Zoom Out?



What are the project value drivers?

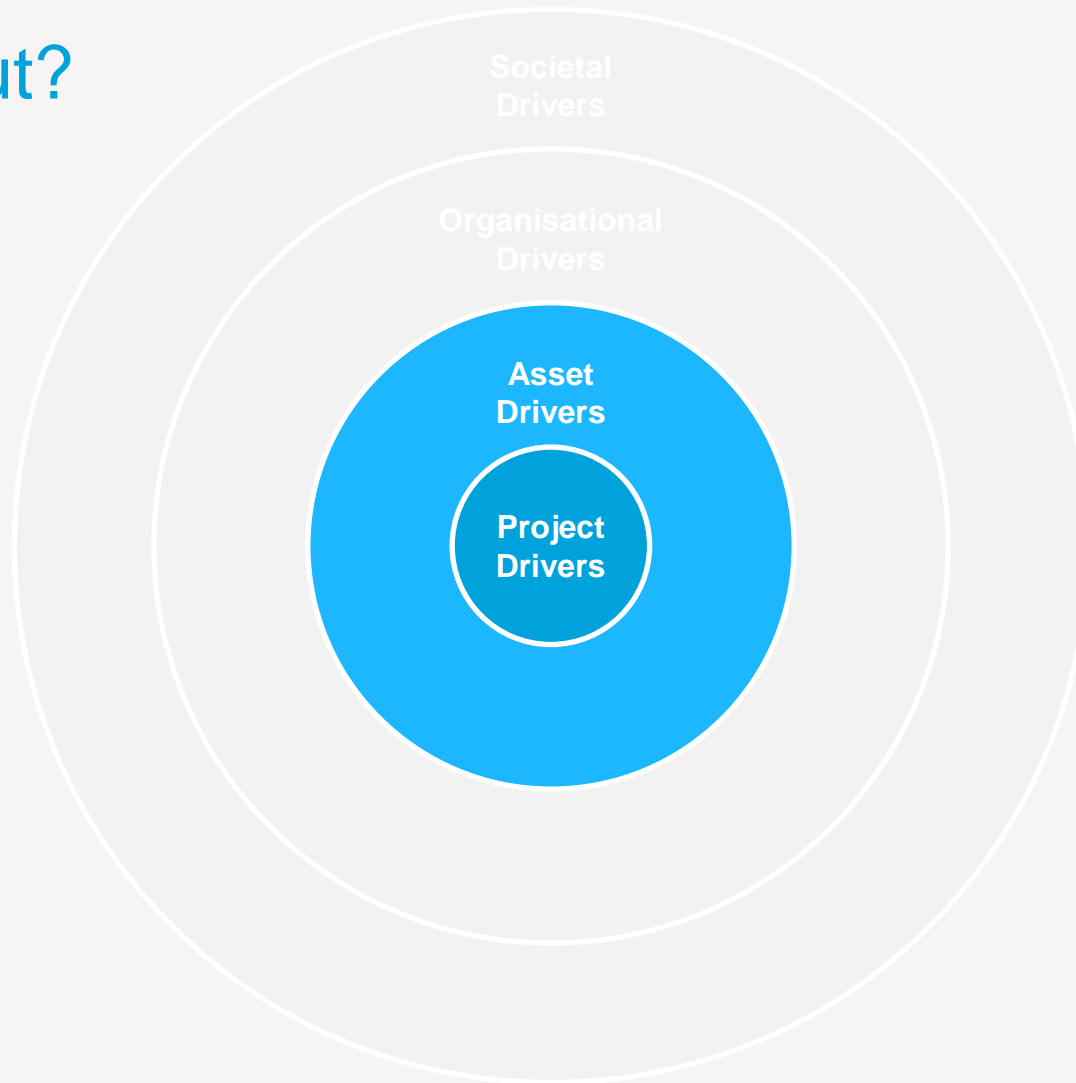
- Programme certainty
- Health & Safety
- Environmental Protection
- ...

What are the project constraints?

- Time
- Budget
- Labour
- ...



Why Zoom Out?



What are the asset drivers?

- Whole life carbon
- Operational cost
- Health and wellbeing
- Biodiversity net gain
- ...



Why Zoom Out?



What are the organisational drivers?

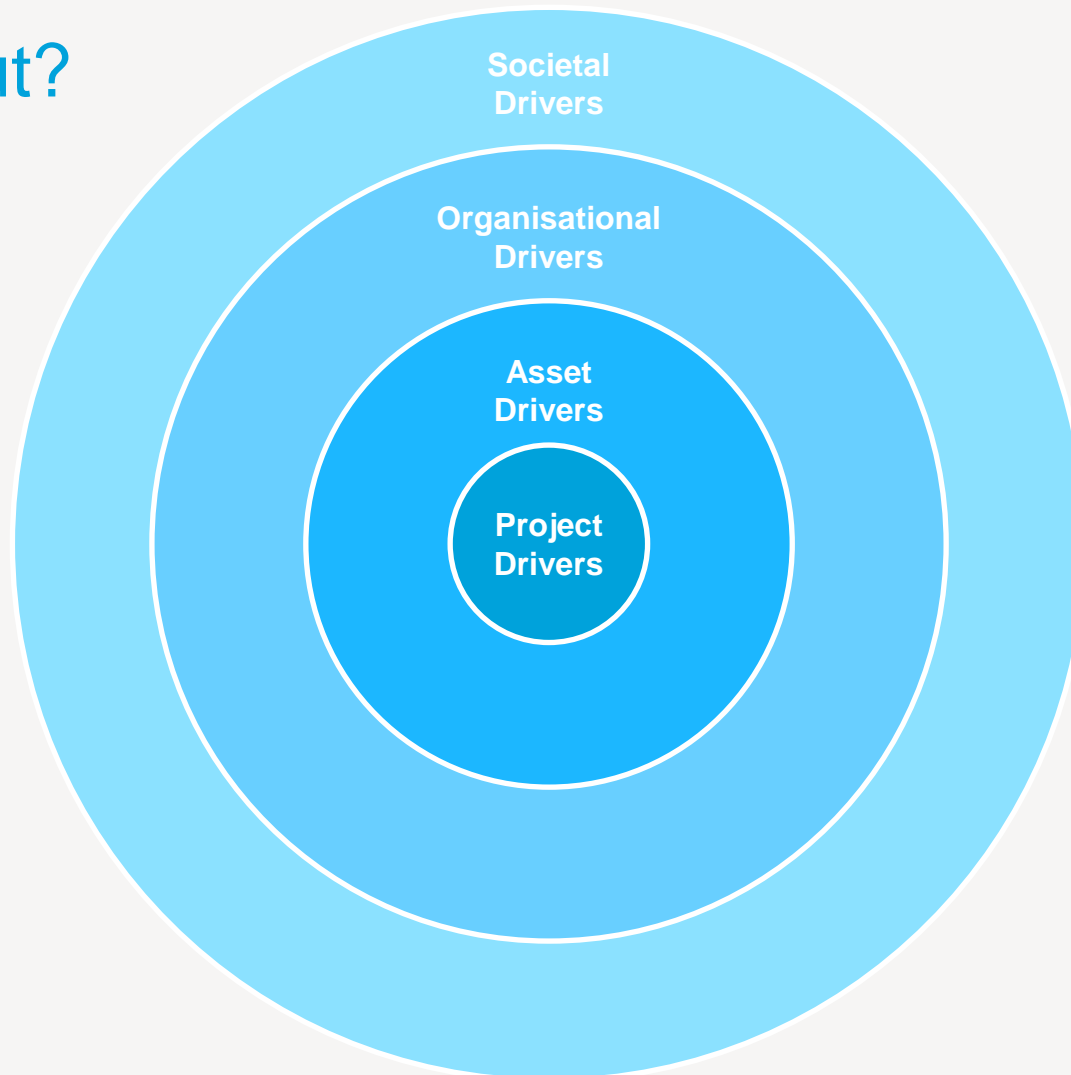
- Resilience
- Asset Utilisation
- Staff Retention
- ...

What are the organisational values?

- Net Zero
- ED&I
- Local Employment
- ...



Why Zoom Out?

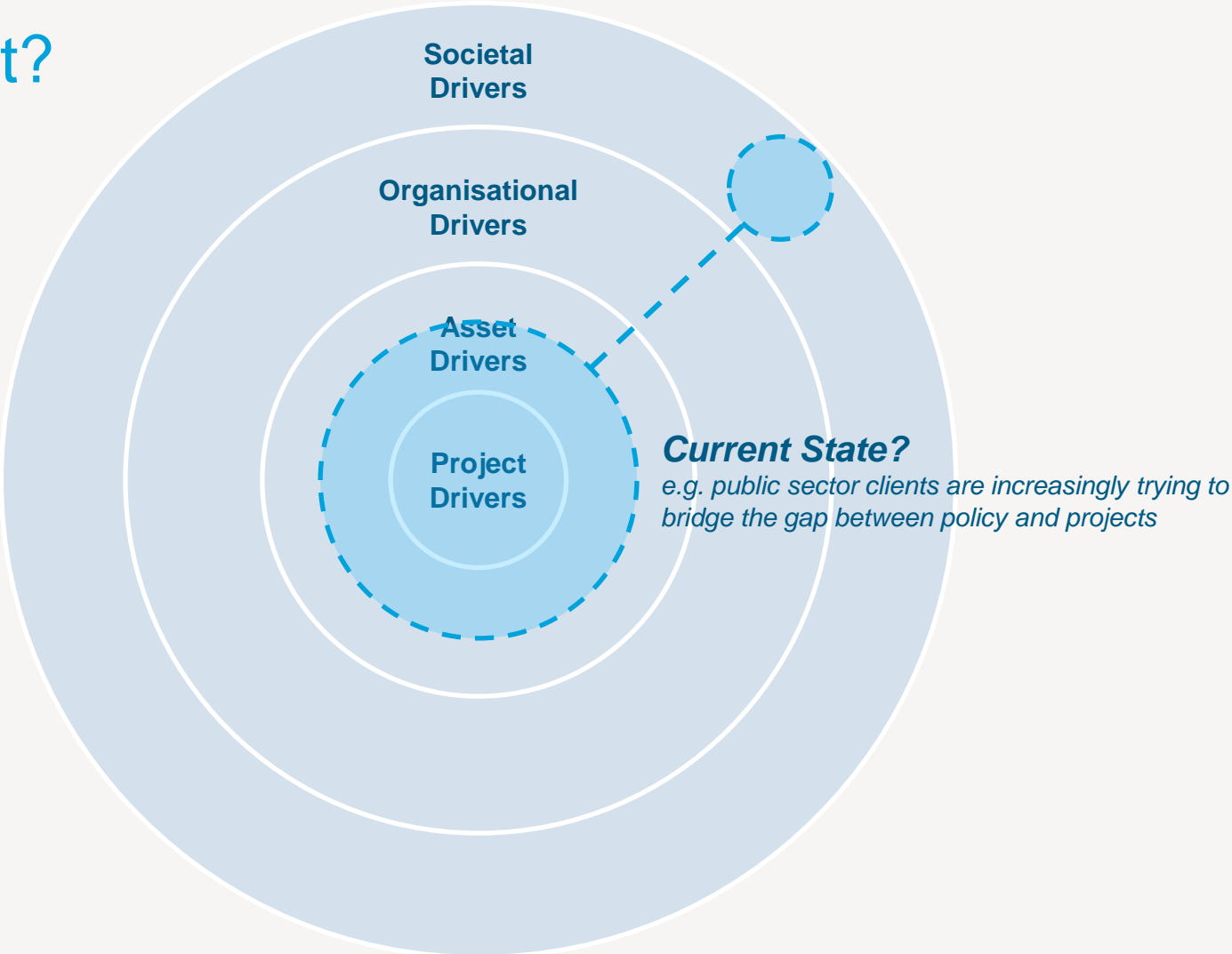


What are the societal drivers?

- Net Zero / Climate Change
- Levelling Up
- Food Resilience
- Health and Wellbeing
- ...



Why Zoom Out?



So how do we make
value-based decisions?

The 'MMC' Example



Project Drivers

- Speed of build
- Local employment
- Biodiversity net gain
- ...

Asset Drivers

- Health and Wellbeing (users)
- Operational Cost
- Adaptability / Resilience
- ...

Org Values

- Net Zero
- Equality, Diversity and Inclusion
- Ethical Sourcing
- ...



Attributes are only benefits if they bring value to - or align with the values of - the client

Inherent Attributes of Offsite Manufacture

- Reduced waste
- Less time on site
- Programme certainty
- Higher quality
- Sustainable employment
- Lower embodied carbon
- ...
- Upfront cashflow
- Early design freeze
- Logistics
- Supply chain resilience
- Fixed Locations
- ...



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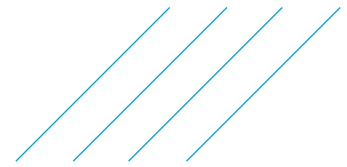
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I want to maximise the use of offsite manufacture

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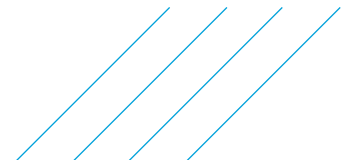
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Dare we look beyond the client...



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- Biodiversity net gain
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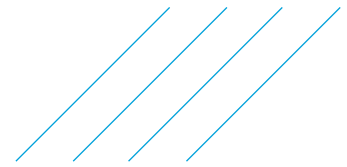
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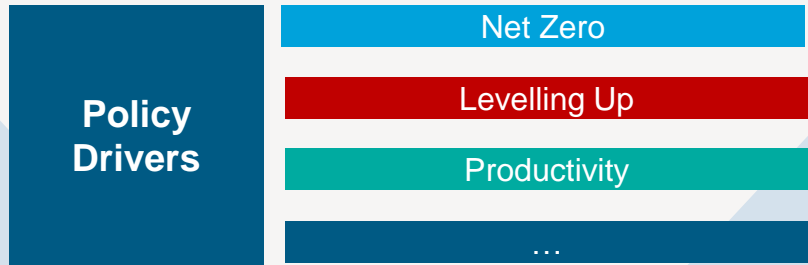
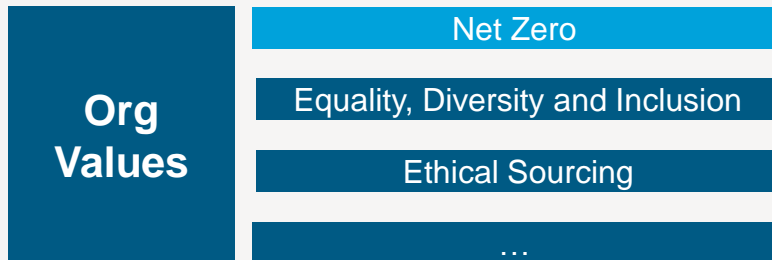
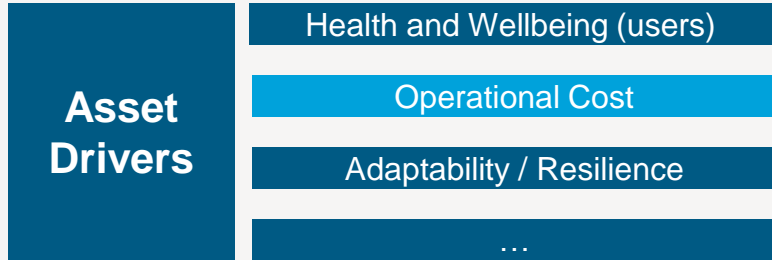


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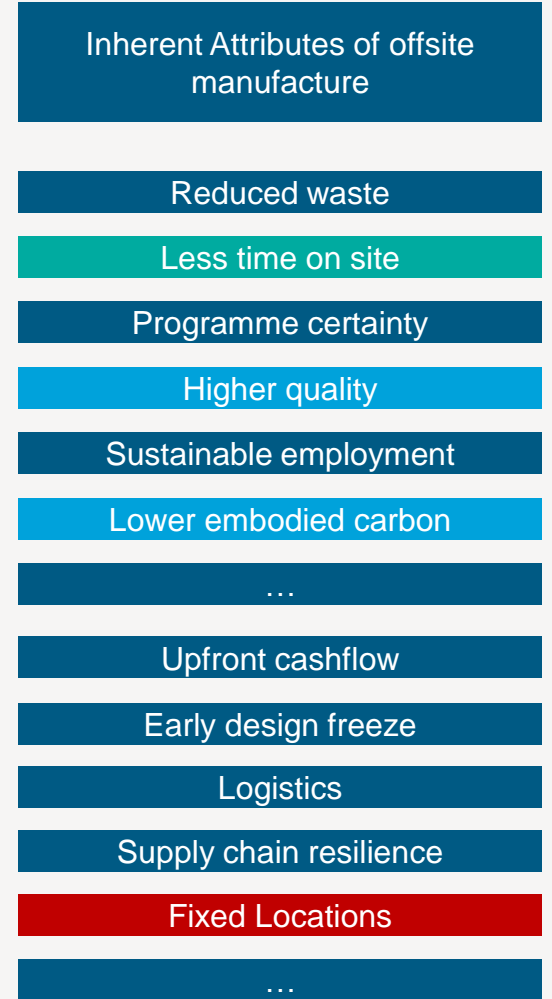
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I want to maximise the use of offsite manufacture





But that's just one decision...

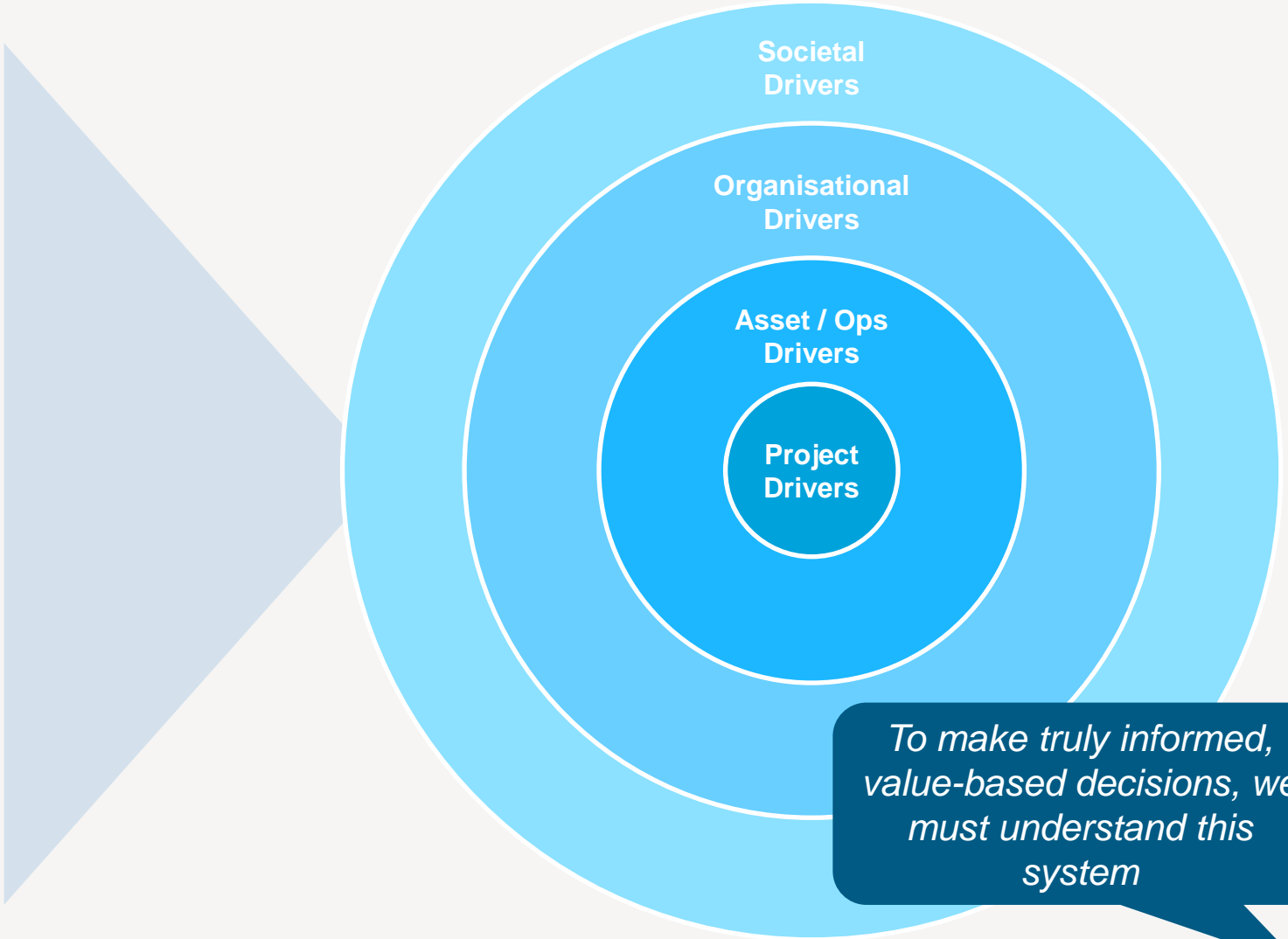


Design Decisions

- Choice of materials
- Building layout / orientation
- Lighting levels
- Ventilation strategy
- Blue green infrastructure
- Structural approach
- ...

Delivery Decisions

- Labour sourcing
- Material sourcing
- Plant and equipment
- Logistics and handling
- Build sequence
- Health, Safety and Welfare
- ...



To make truly informed, value-based decisions, we must understand this system





Current State?



Systems Thinking?



Incidentally...



...and are all these things equal?

My Value Profile

Ethical sourcing

Plastic use / waste

Local Sourcing

Wellbeing

Employment

Capital cost

...



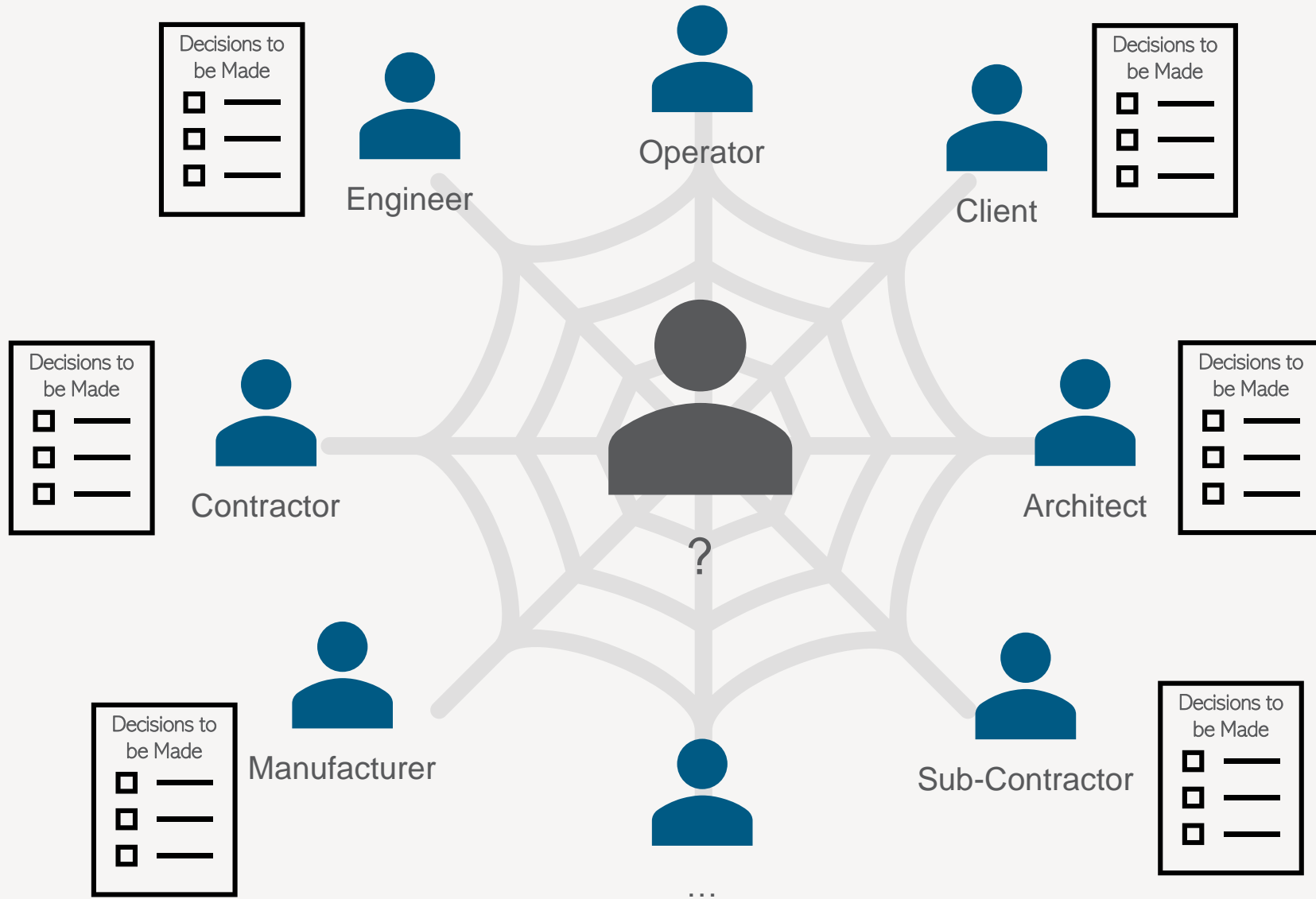
The 'Profession' Challenge

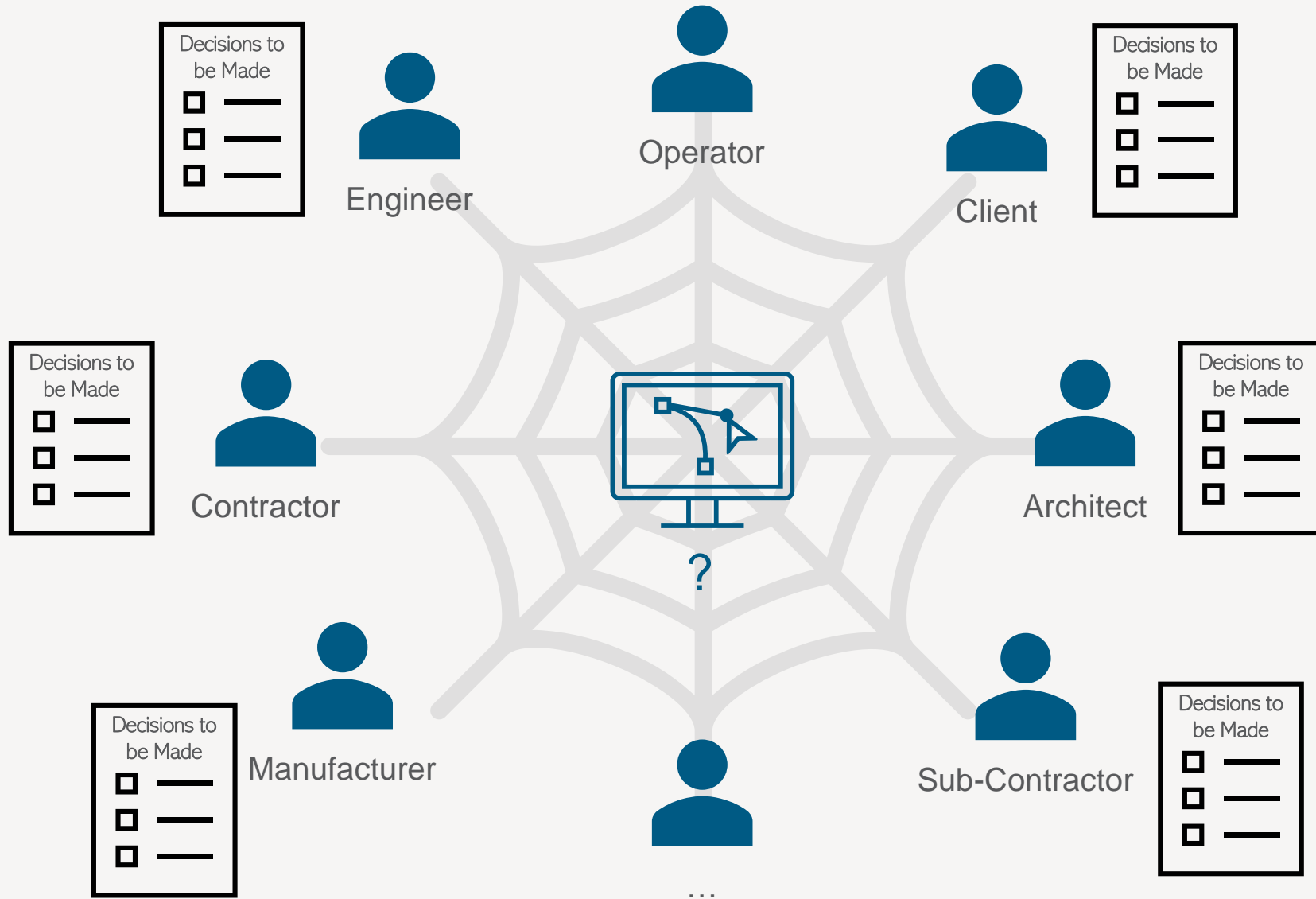


JOB PLACEMENT BOARD

OCCUPATION	TOTAL POSITIONS	AVAILABLE POSITIONS	STATUS	SHIFT
HAIR REMOVAL	0000020	0000000	OPEN	THIRD
WAX MONKEY	0000102	0000000	OPEN	SECOND
CHEF	0000099	0000000	CLOSED	SECOND
STIRNER	0000102	0000102	CLOSED	THIRD
FRONT DESK	0000000	0000102	CLOSED	SECOND
POLLIN COATING	0000000	0000000	OPEN	FIRST
HIVE KEEPER	0000000	0000000	CLOSED	THIRD
ANTS WRANGLER	0000000	0000000	CLOSED	FIRST
VISCOSITY	0000000	0000000	CLOSED	SECOND
STRIP SUPERVISOR	0000000	0000000	OPEN	SECOND
ANTHROPOMORPHIC	0000001	0000102	CLOSED	THIRD
HAND REMOVAL	0000102	0000000	CLOSED	FIRST
ANT	0000000	0000000	CLOSED	THIRD
HEATING 1	0000000	0000000	OPEN	SECOND
WING MAINTENANCE	0000000	0000000	CLOSED	FIRST

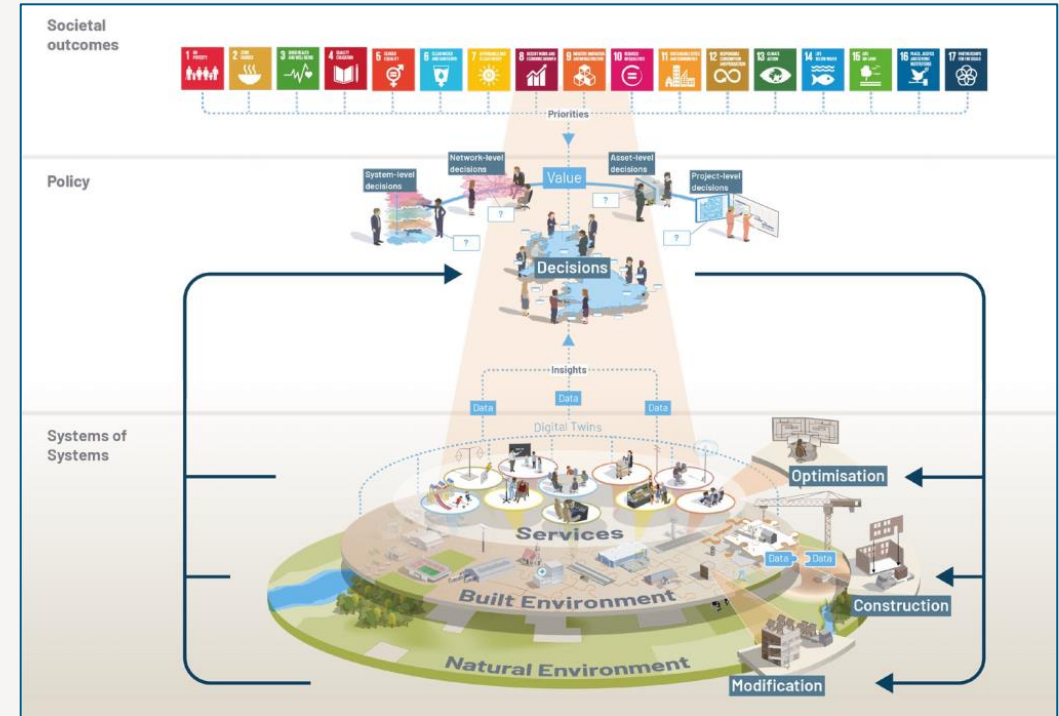






Closing Thoughts

1. We must develop a better, more granular understanding of the built environment as a system and leverage technology and data to help us to interrogate it
2. We must appreciate that construction 'projects' are simply an intervention into that existing system and adjust our perspective to suit
3. The emergence of built environment, systems engineering professionals will be critical to solving our biggest challenges – not least, net zero



IPA (2021) Transforming Infrastructure Performance: Roadmap to 2030



Thank you.

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