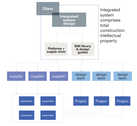
Delivery Platforms for Government Assets
Creating a Marketplace for Manufactured Spaces

Government will use the scale of its construction portfolio to help transform the market for creating high performing assets which improve the service for users, citizens and society and build a highly skilled and productive workforce.

It will improve the performance of assets towards international benchmarks, delivering enhanced quality, lower carbon and increased whole life value.

It will develop advanced manufacturing capability, products and services in the UK that could be exported globally.

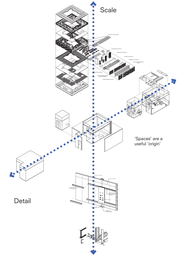


Current state + barriers

Elements of the strategy

Design

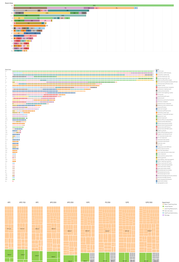
The importance of 'spaces'



The activities and processes that take place within a facility are governed by the physical attributes of the space such as:

- Dimensions (clear span, clear height);
- Number of storeys (how many spaces can be vertically 'stacked' on top of each other);
- Density / type of structural load that can be applied (dictating amount storage / equipment etc. that can be placed in a space);
- Availability or density of mechanical and electrical services such as heating, cooling, power, lighting;
- Specialised requirements for processes or equipment relating to the specific asset use;
- Specialised functional needs in terms of e.g. security.

Analysis of room type size / frequency + relative complexity



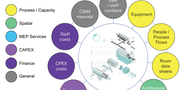
Degree of commonality and variation between the different space types in terms of:

- Size + frequency;
- Complexity (e.g. whether the proposed space is a simple enclosure or the intensity of power, data, MEP etc. or whether the space itself is relatively simple and the proposed use is simply dictated by the furniture and equipment that is placed in the room);

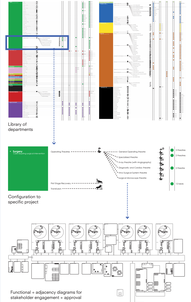
Patterns in e.g.:

- Distribution of the different room areas (e.g. whether such findings could be used to develop a reduced number of common room sizes but with and increase in the flexibility of use);
- Analysis of the most highly repeated and complex (high value) room types where the benefits of an industrialised approach will have the most impact.

Stakeholder Perspectives



Grouping of spaces to create a brief



Physical systems

Platform characteristics

It is hypothesised that a small number of platform types would be able to create the complete range of space types that would be needed.

The physical dimensions of any space will have two primary factors:

- Clear span
- Clear height

Level of complexity

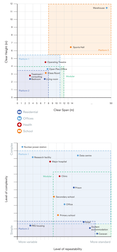
The physical attributes will suggest overall complexity of the asset type, from heavily serviced buildings with high operational and maintenance costs to simple buildings with minimal requirements for heating / cooling, lighting power distribution etc.

Level of repeatability

This would describe the overall degree of variation between the types of space or groupings of spaces within a particular building.

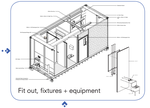
A typical housing scheme will have a mix of unit types from small flats to large family houses but a relatively regular layout on different floors and is therefore highly variable.

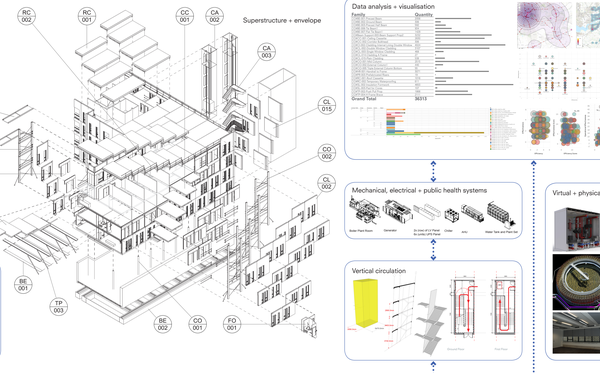
By contrast, student accommodation is highly standardised with little meaningful variation between the majority of spaces and floors.



Immersive visualisation + training

Fit out, fixtures + equipment





Classification

Uniclass 2015 is a unified classification system for the construction industry, divided into a set of tables which can be used for cost planning, specifying, ordering, briefing, etc. as well as when preparing specifications or other production documents.

The adoption of Uniclass will be critical for linking the 'spaces' and 'physical systems'. Uniclass provides the common 'thread' that will be used to link the different elements with the functional and spatial requirements of a facility.

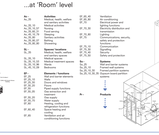
The tables are:

Ac – Activities
Co – Complexes
En – Entities
Sy – Spaces/ locations
EF – Elements/ functions
Sy – Systems
Pr – Products

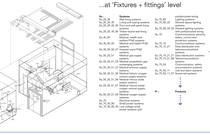
CA – Construction aids
FI – Form of information
PM – Project management

Uniclass at 'Facility' level...

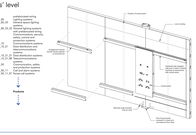
...at 'Room' level



...at 'Fixtures + fittings' level



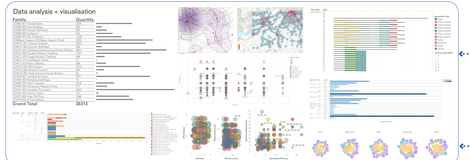
...at 'Components' level



...through to 'Delivery'

Manufacture

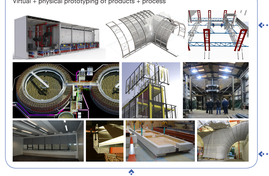
Data analysis + visualisation



Mechanical, electrical + public health systems

Vertical circulation

Virtual + physical prototyping of products + process

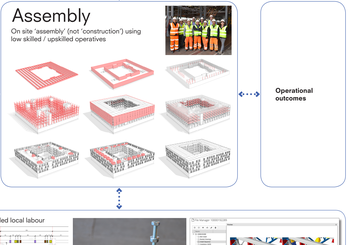


Supply chain mapping

'Mission control'

Assembly

On site 'assembly' (not 'construction') using low skilled / upskilled operatives



Operational outcomes

Operative training + simple installation facilitates use of low-skilled local labour

Find Out More at:
1. Delivery Platforms for Government Assets: Creating a marketplace for manufactured spaces
2. Mission Control: Bridging the gap between construction + manufacturing
3. Class Driven Infrastructure: From digital twins to manufactured components

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Version | Date | Changes
1.0 | 15/10/2019 | First issue for comment

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