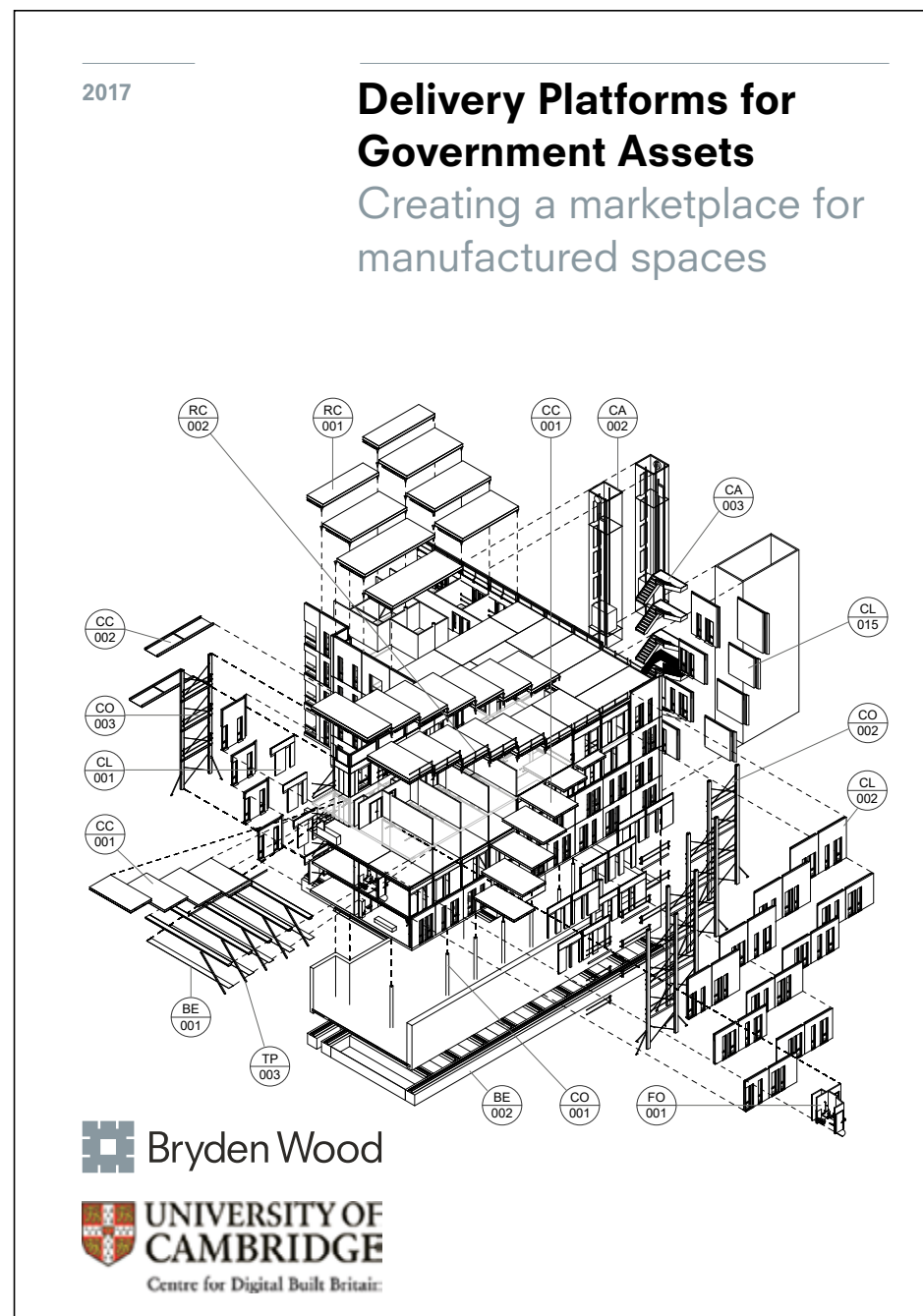


Platforms

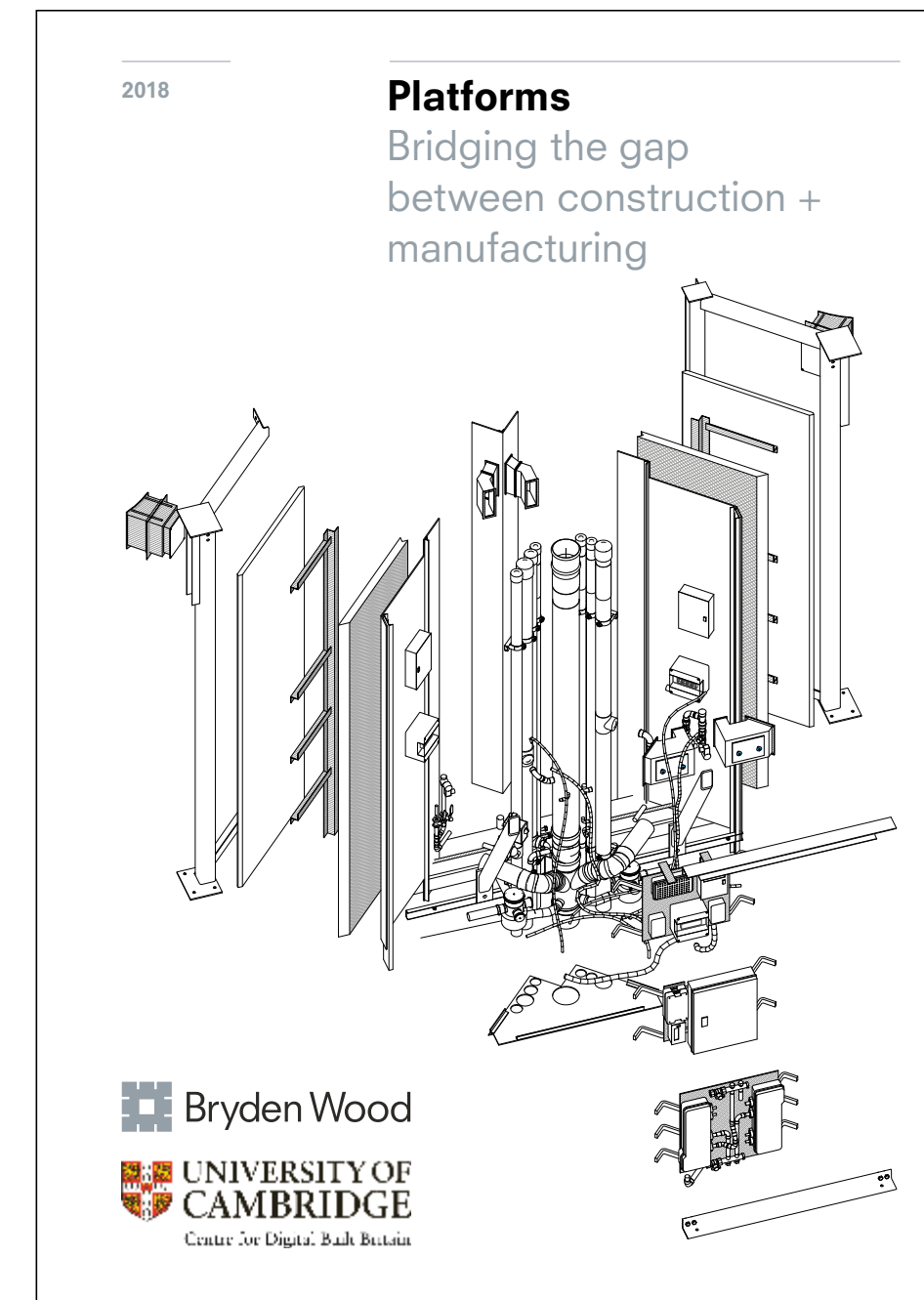
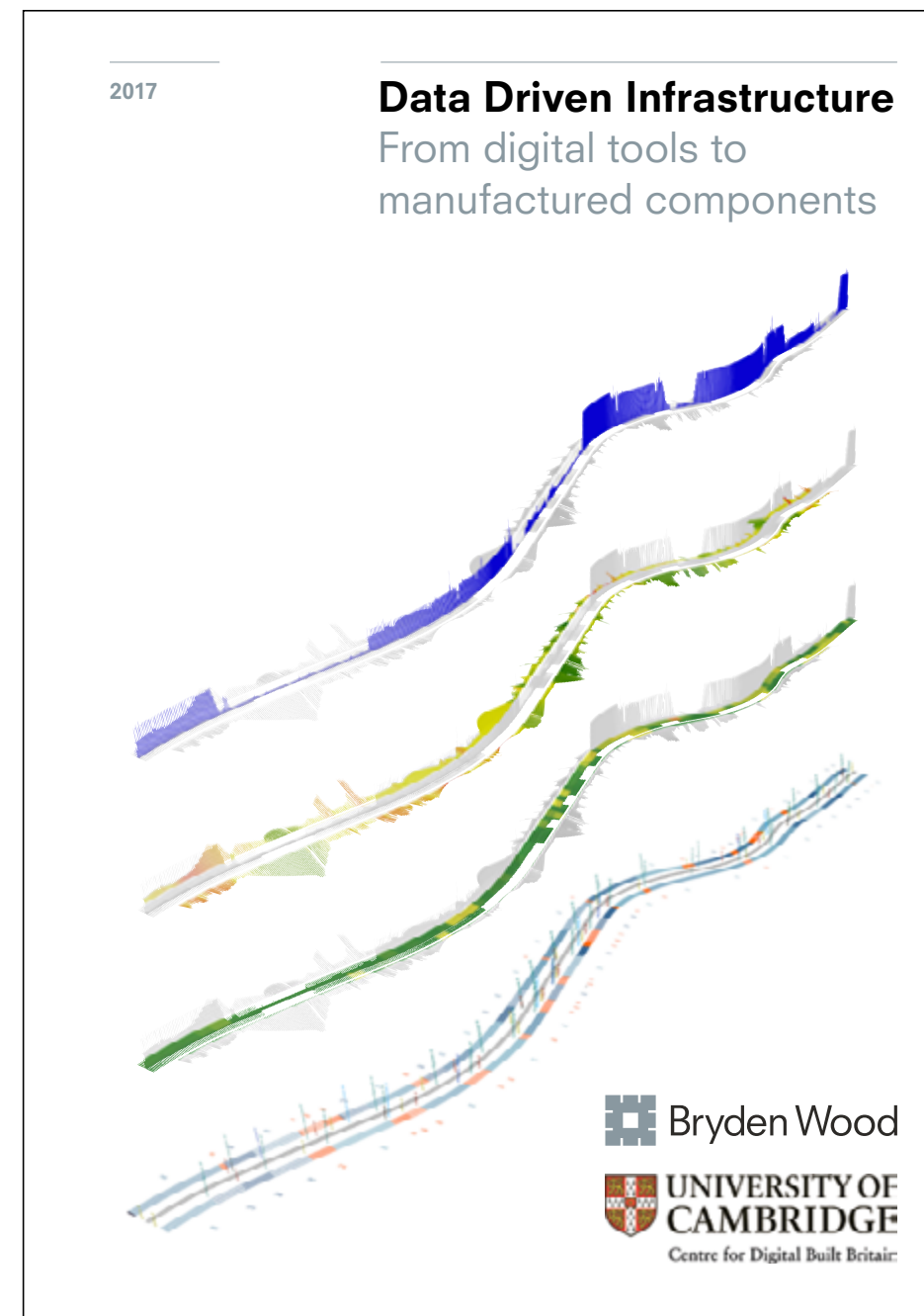
Bridging the gap
between construction
+ manufacturing

22 March 2018

Jaimie Johnston, Bryden Wood
Director + Head of Global Systems



www.brydenwood.co.uk/filedownload.php?a=18-59db7e15aa5f8
www.brydenwood.co.uk/filedownload.php?a=17-59db7e158287a
www.brydenwood.co.uk/filedownload.php?a=360-5aaf9367d5105



What are platforms?

Component



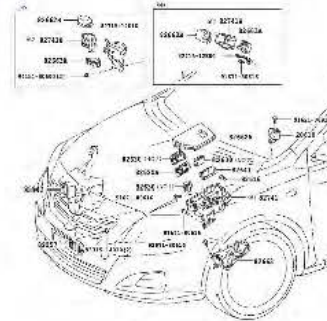
Platform



Product



Engine block



Chassis



Car



Shipping container



Global freight infrastructure

Low cost, reliable
global trade + supply
chains



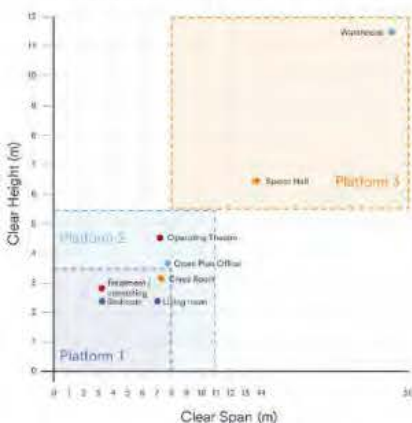
Uber

Apple iPhone

iPhone

Peer-to-peer ride
sharing, food delivery
and transportation
network

Platforms consist of...



Components, products + sub-assemblies may be used in multiple Platforms

Products

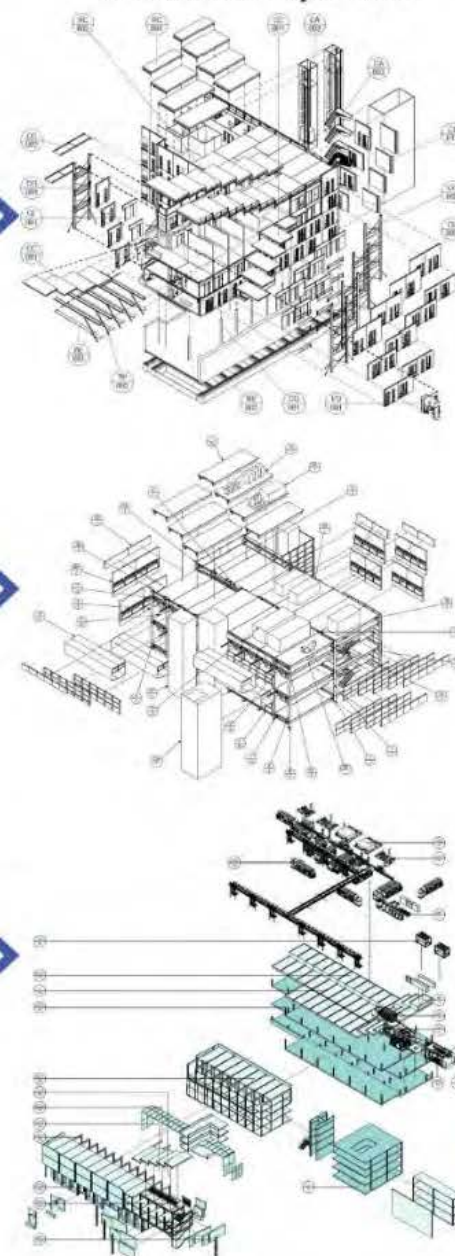
Sub-assemblies

Standardised manufacturing processes

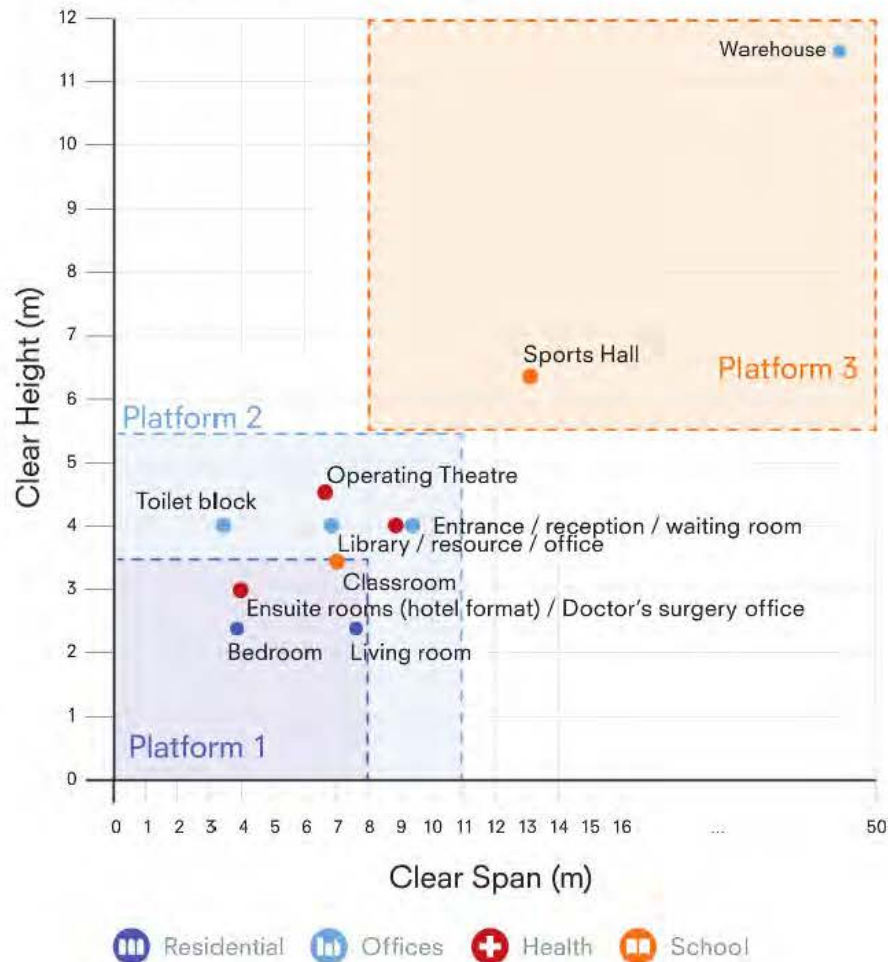
used to create

Sub Assembly Workstations

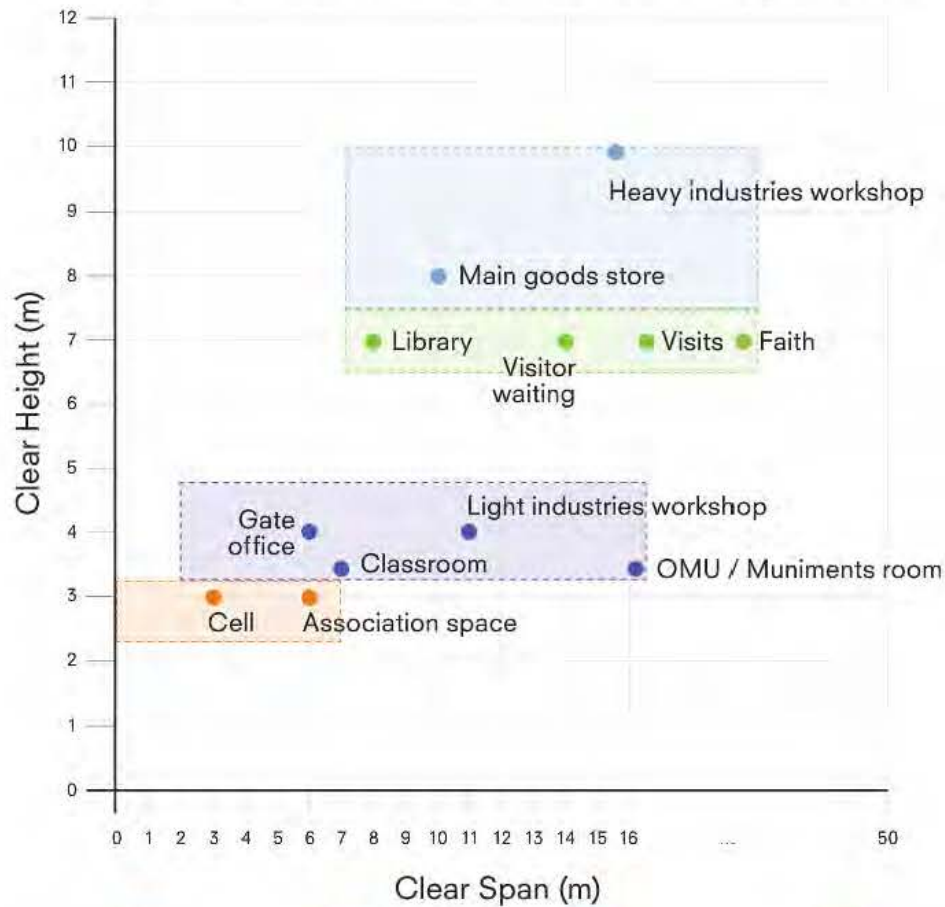
**High performing assets,
networks + systems**



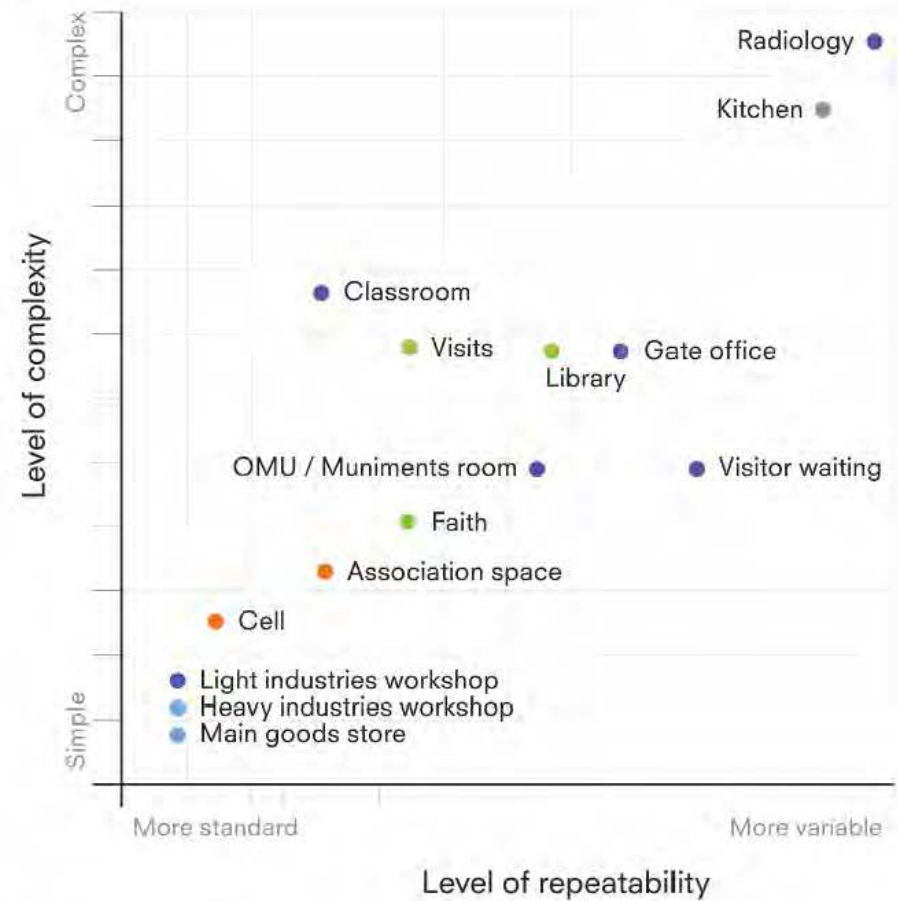
Platform boundaries



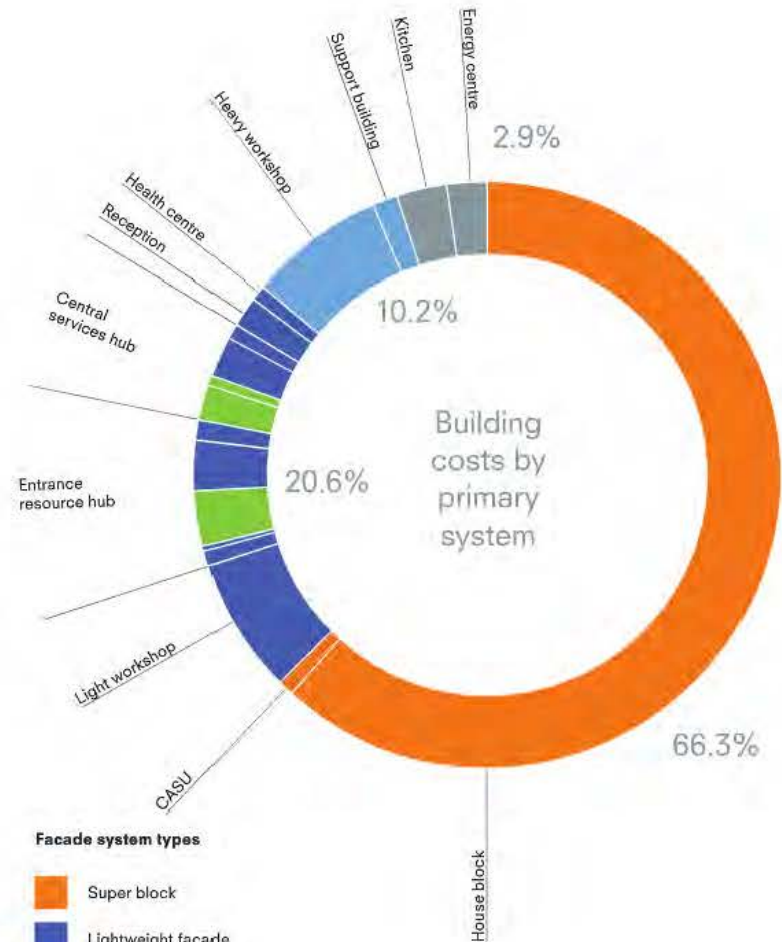
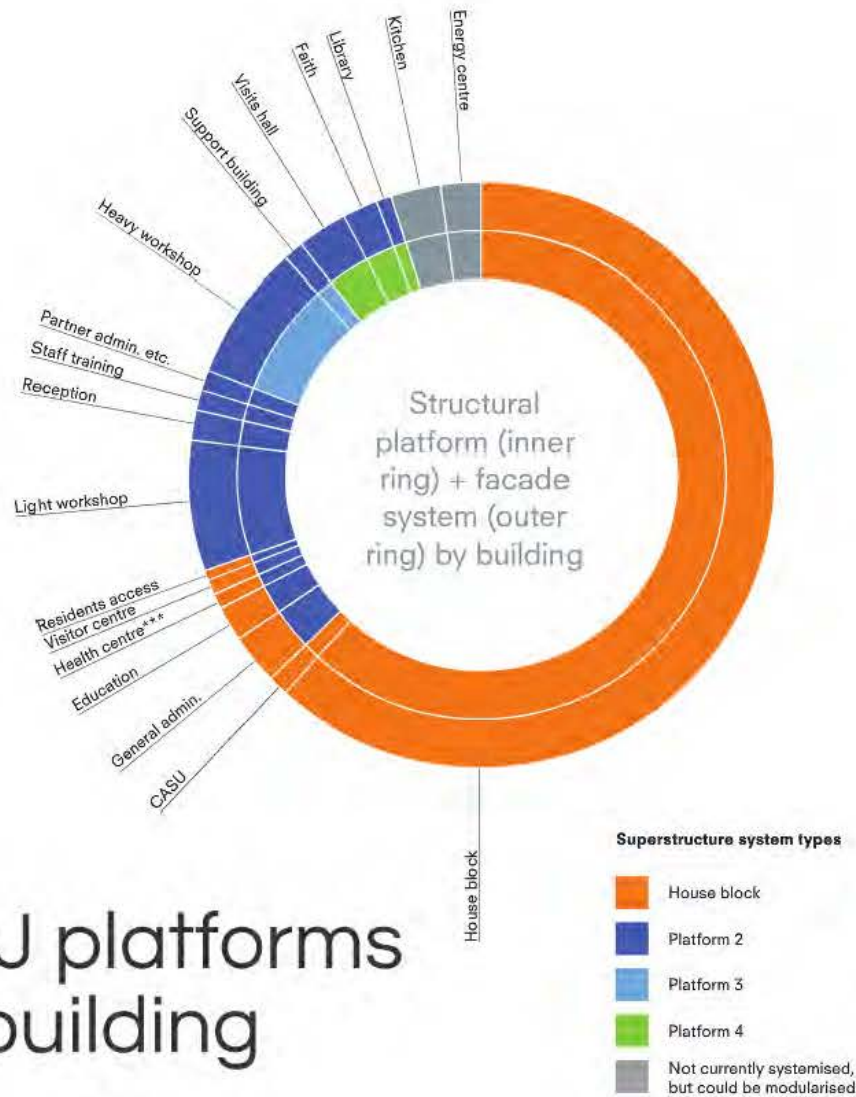
Ministry of Justice platforms

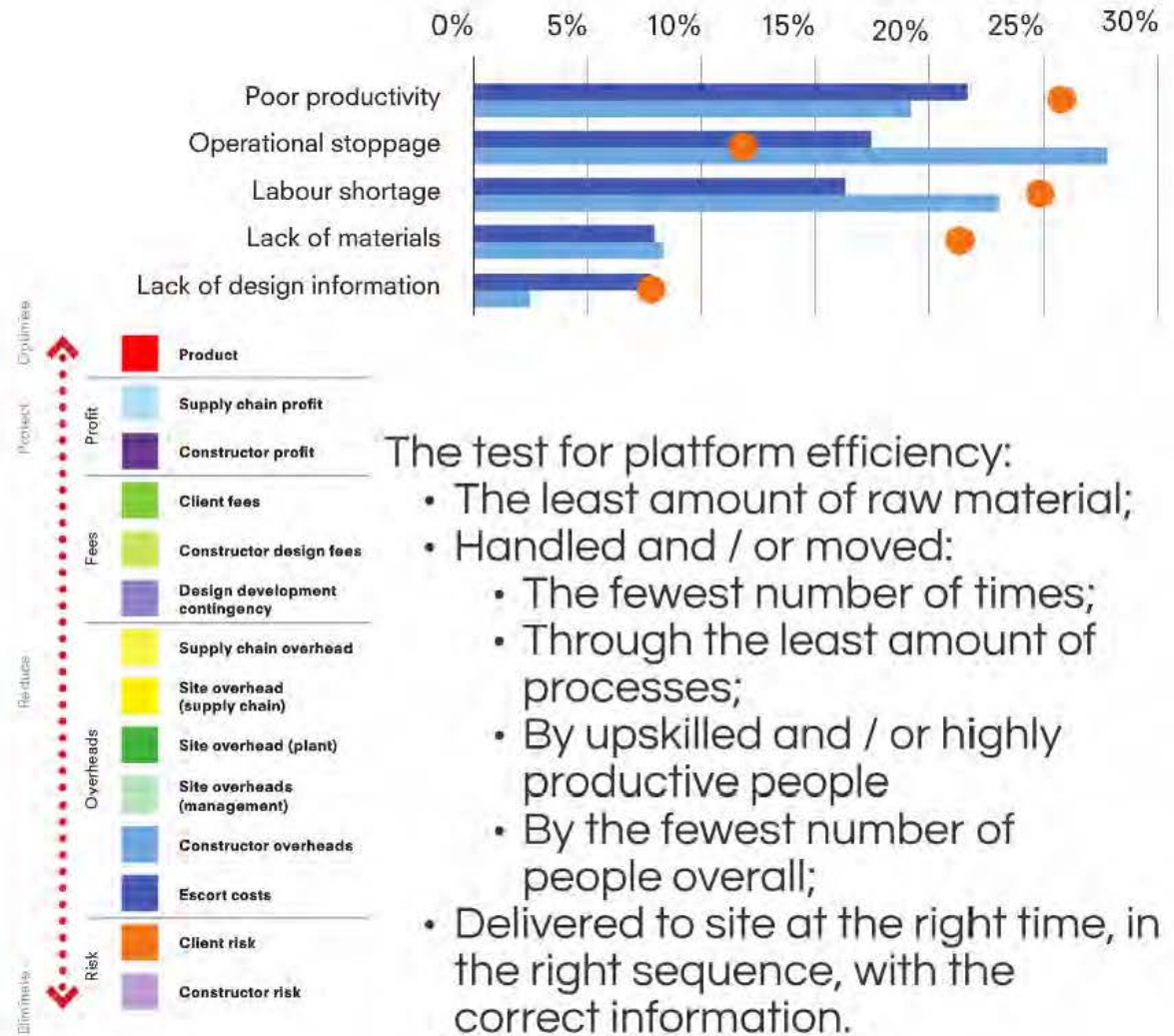
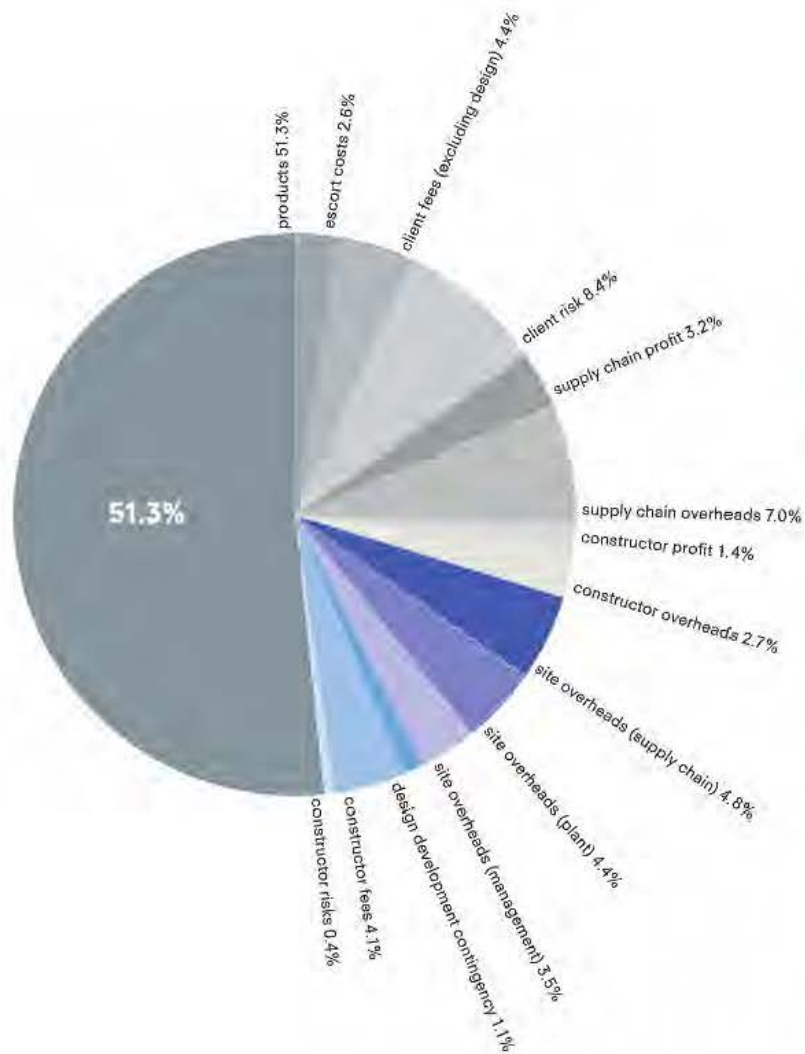


■ House block
 ■ Platform 2
 ■ Platform 3
 ■ Platform 4
 ■ Not currently systemised



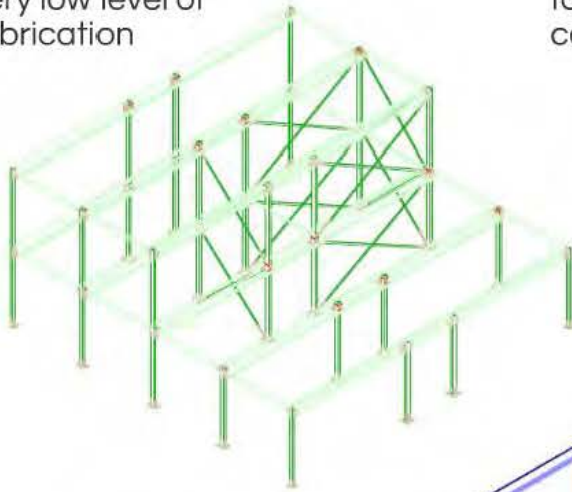
MOJ platforms by building



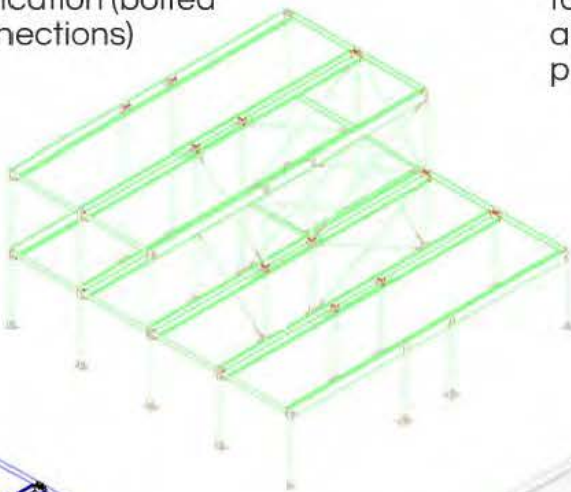


Platform 2

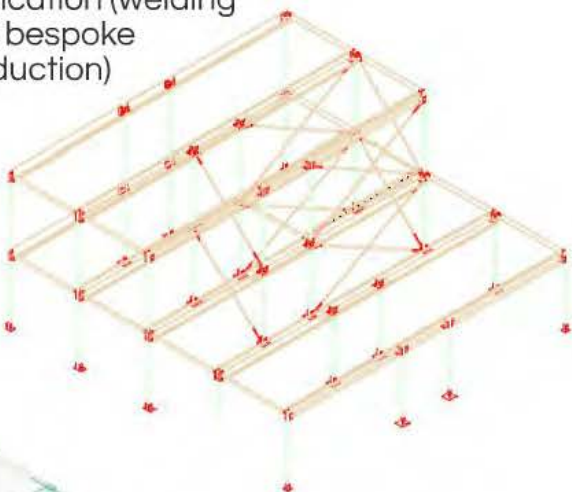
No fabrication /
very low level of
fabrication



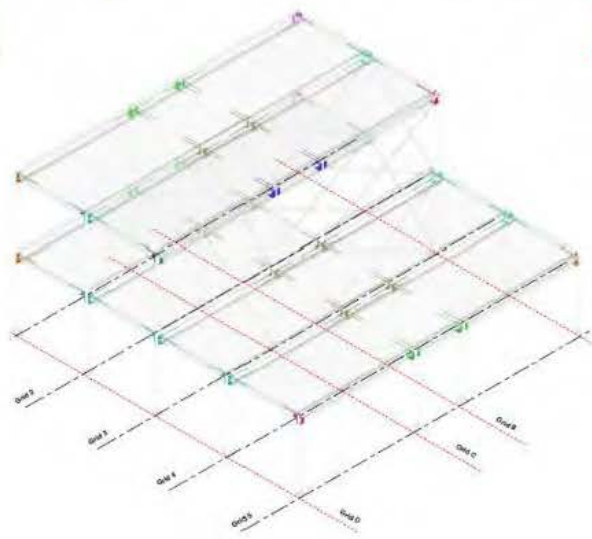
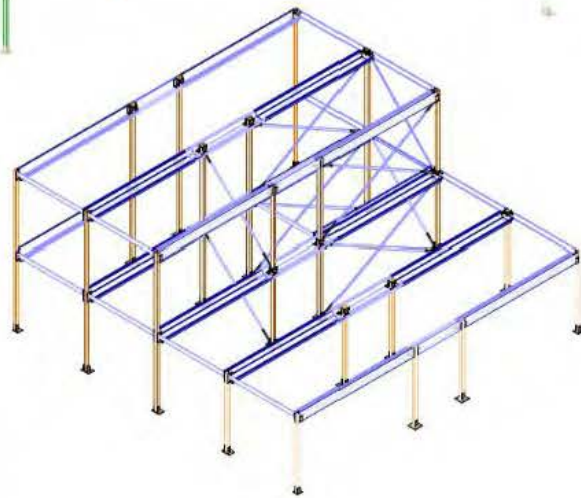
Low level of
fabrication (bolted
connections)



High level of
fabrication (welding
and bespoke
production)



Weight of beams:



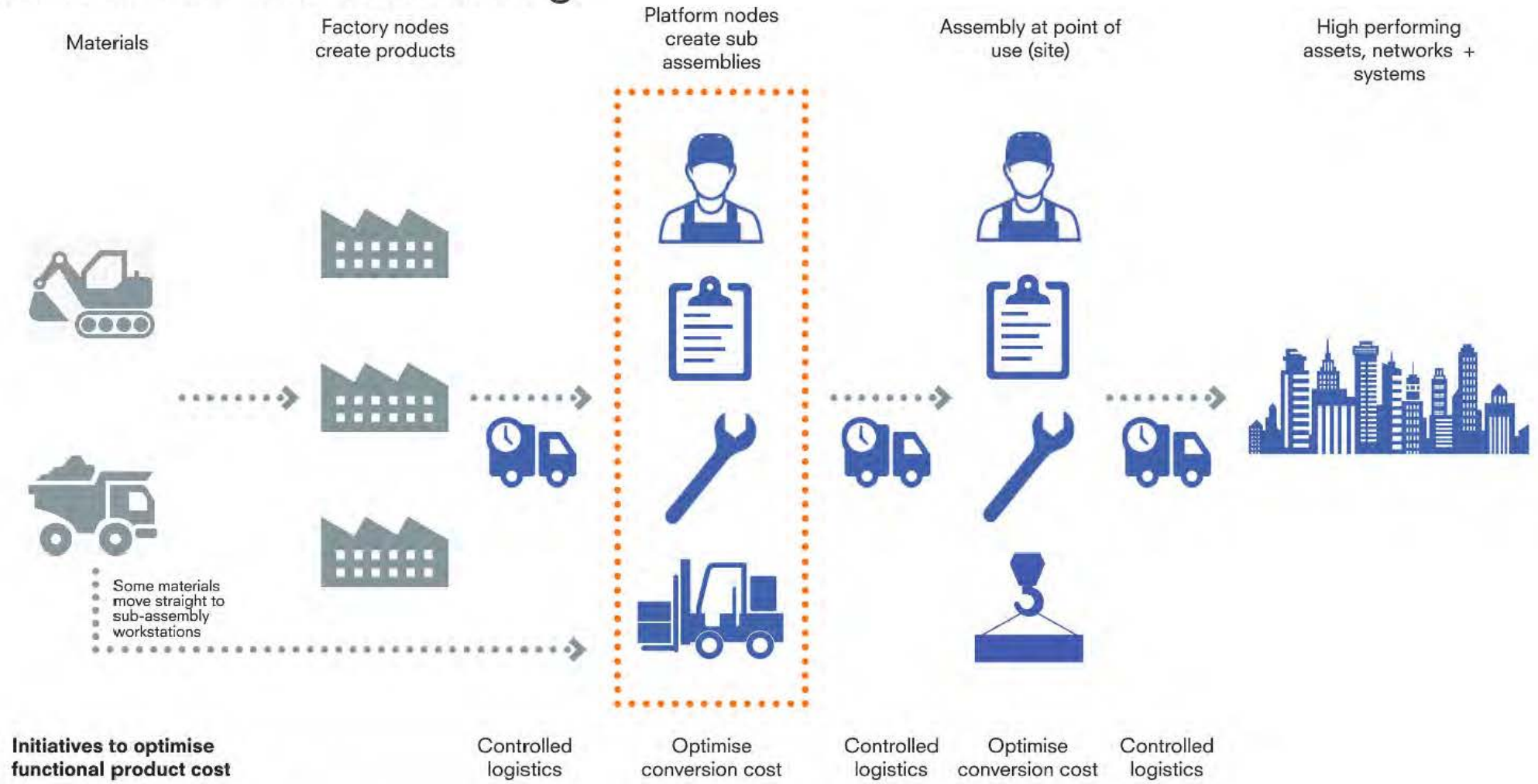
- 8 types of column brackets;
- 10 types of baseplate brackets;
- 12 types of bracing brackets.

Benchmarking summary

	Flat slab concrete frame £/m ² GIFA		Composite slab steel frame £/m ² GIFA		Platform 2 £/m ² GIFA	
Concrete	£	41.57	£	16.93	£	27.93
Reinforcement	£	37.54	£	4.80	£	18.20
Formwork / Deck	£	43.55	£	25.85	£	21.00
Steelwork	£	-	£	118.37	£	45.74
Construction Cost Sub Total	£	122.67	£	165.96	£	112.87
Preliminaries	£	30.67	£	38.17	£	22.57
Overheads and Profit	£	15.33	£	20.41	£	13.54
Cost per m ² GIFA	£	168.67	£	224.54	£	148.99
Programme						
Procurement (weeks)		7		14		8
Construction (weeks)		3		2		2
		10		16		10

- ~12% cheaper than flat slab
- Re-use of shutters would dramatically reduce cost
- At least as quick

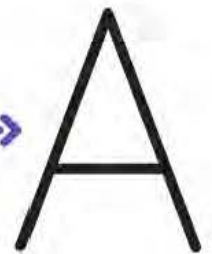
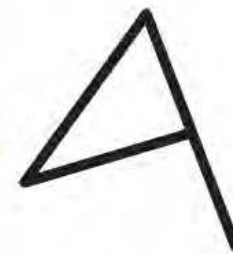
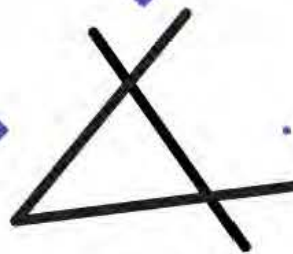
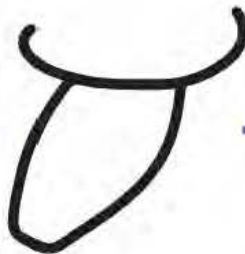
Bridging the gap between construction + manufacturing



The alphabet effect

First level of abstraction
Symbol represents real object

Second level of abstraction
Limited, abstract symbols
can be used to represent
real objects + concepts



Reality

Egyptian
hieroglyphs
3,000 BCE
~5,000 characters

Sinai script
1,850 BCE

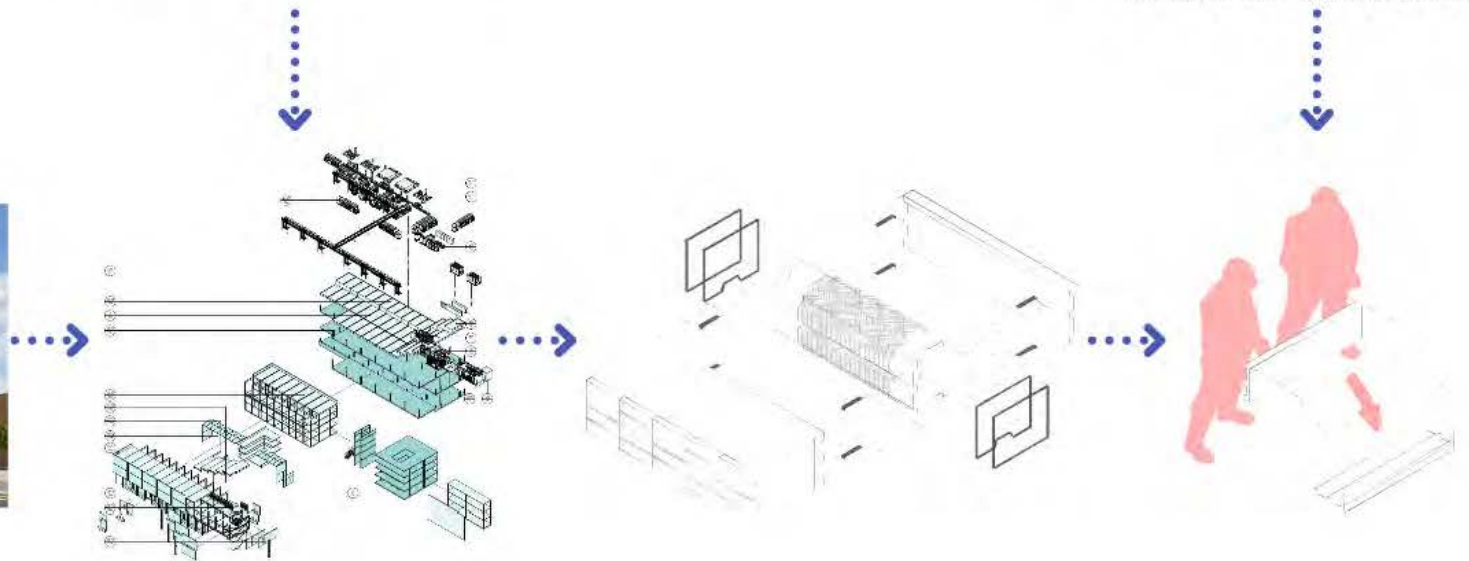
Phoenician
alphabet
1,250 BCE
22 characters

Ancient
Greek
alphabet
600 BCE

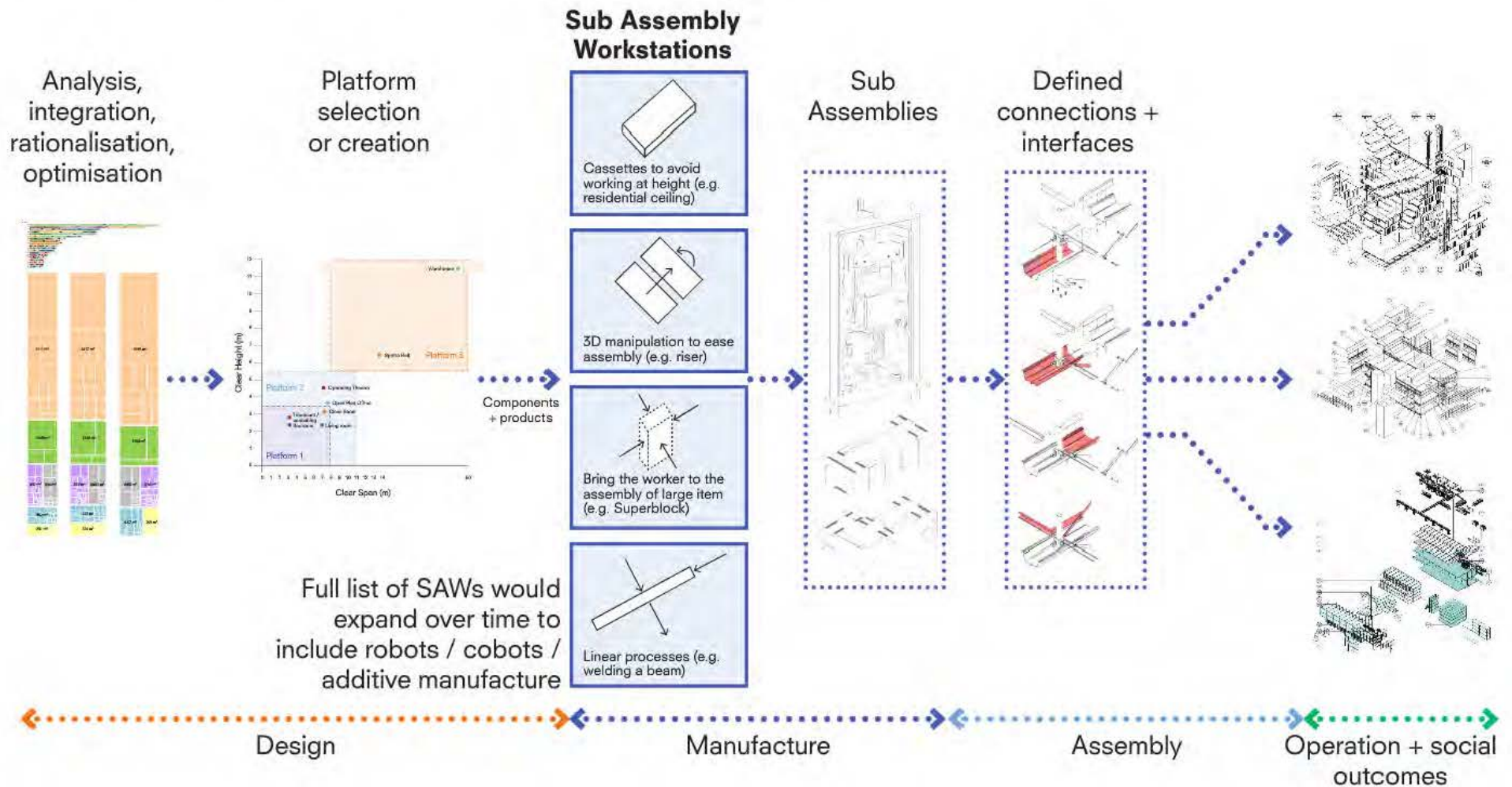
Roman
alphabet
100 CE

Platforms are a first
order of abstraction

Manufacturing
processes are a second
order of abstraction



Sub Assembly Workstations (SAWs)



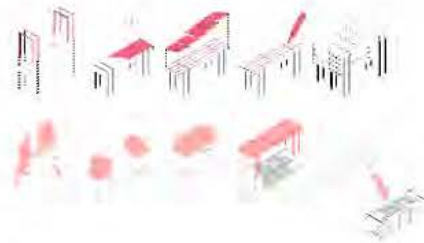
SAWs are the meeting place of:

Labour



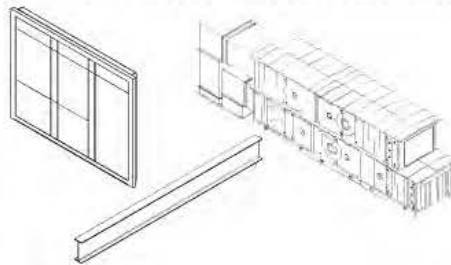
Information

Skills + training
Standardised
processes / APQP /
standard operating
procedures / guided
instruction

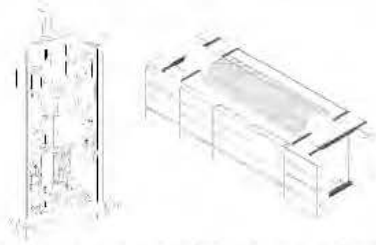


Materials

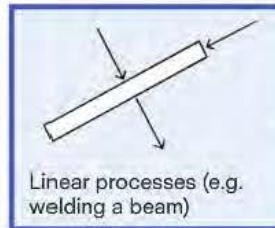
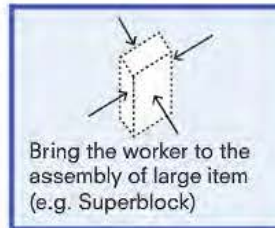
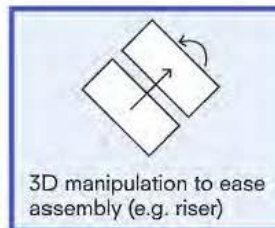
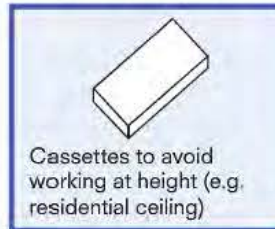
Existing products (+
those developed by
manufacturers)



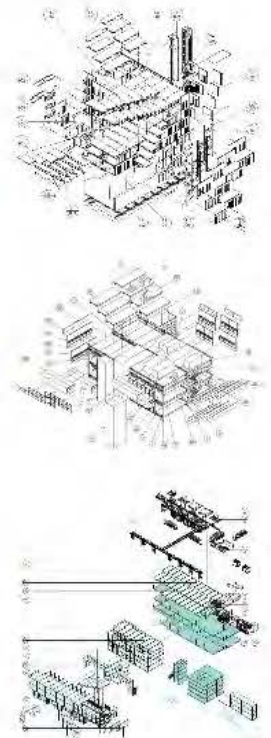
Products developed
specifically for
departments (may be
applicable to multiple
building types)



Manufacturing facilities

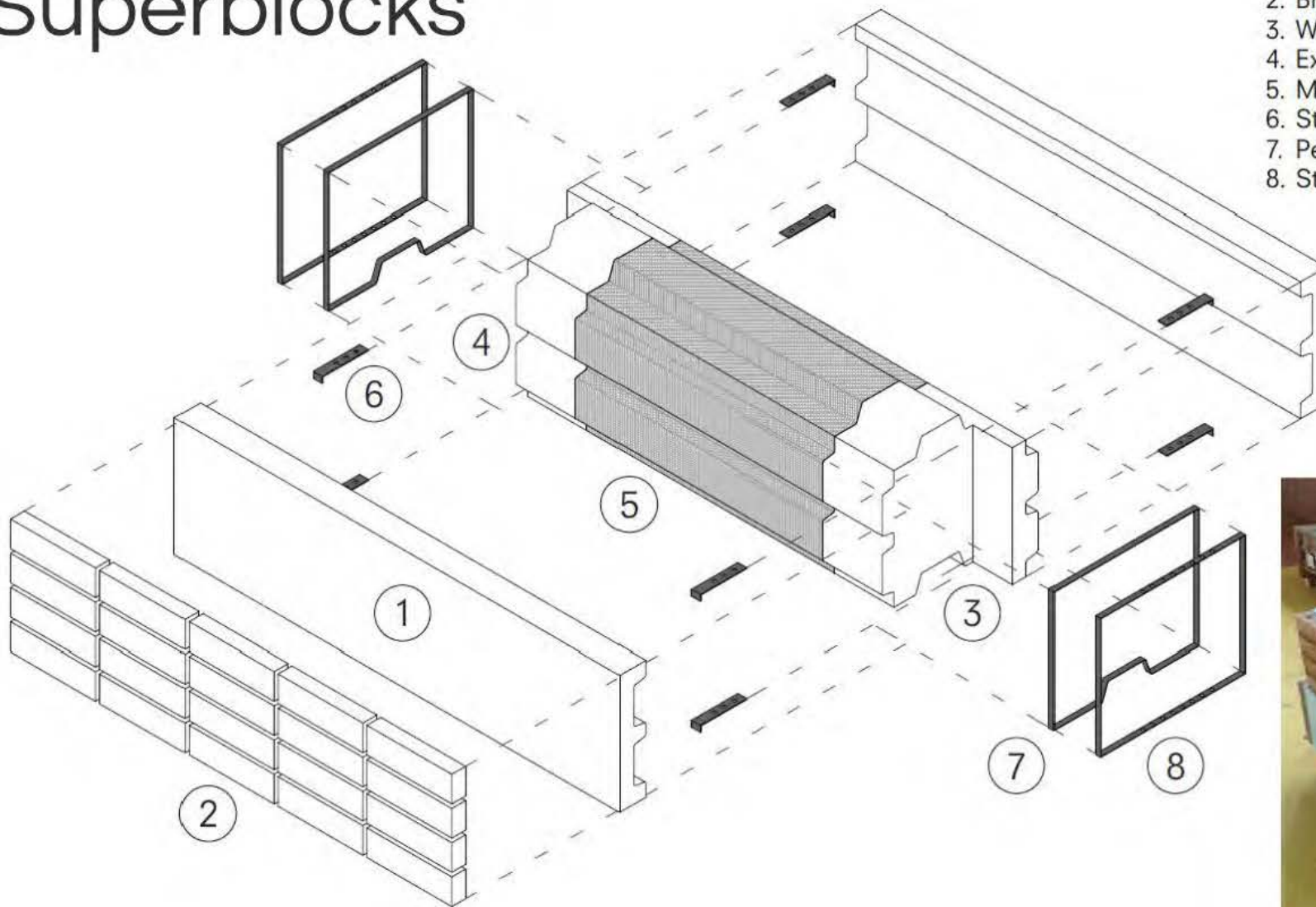


High performing assets, networks + systems



- Existing suppliers could already map their capability to SAWs
- SAWs become a unit of capacity + capability

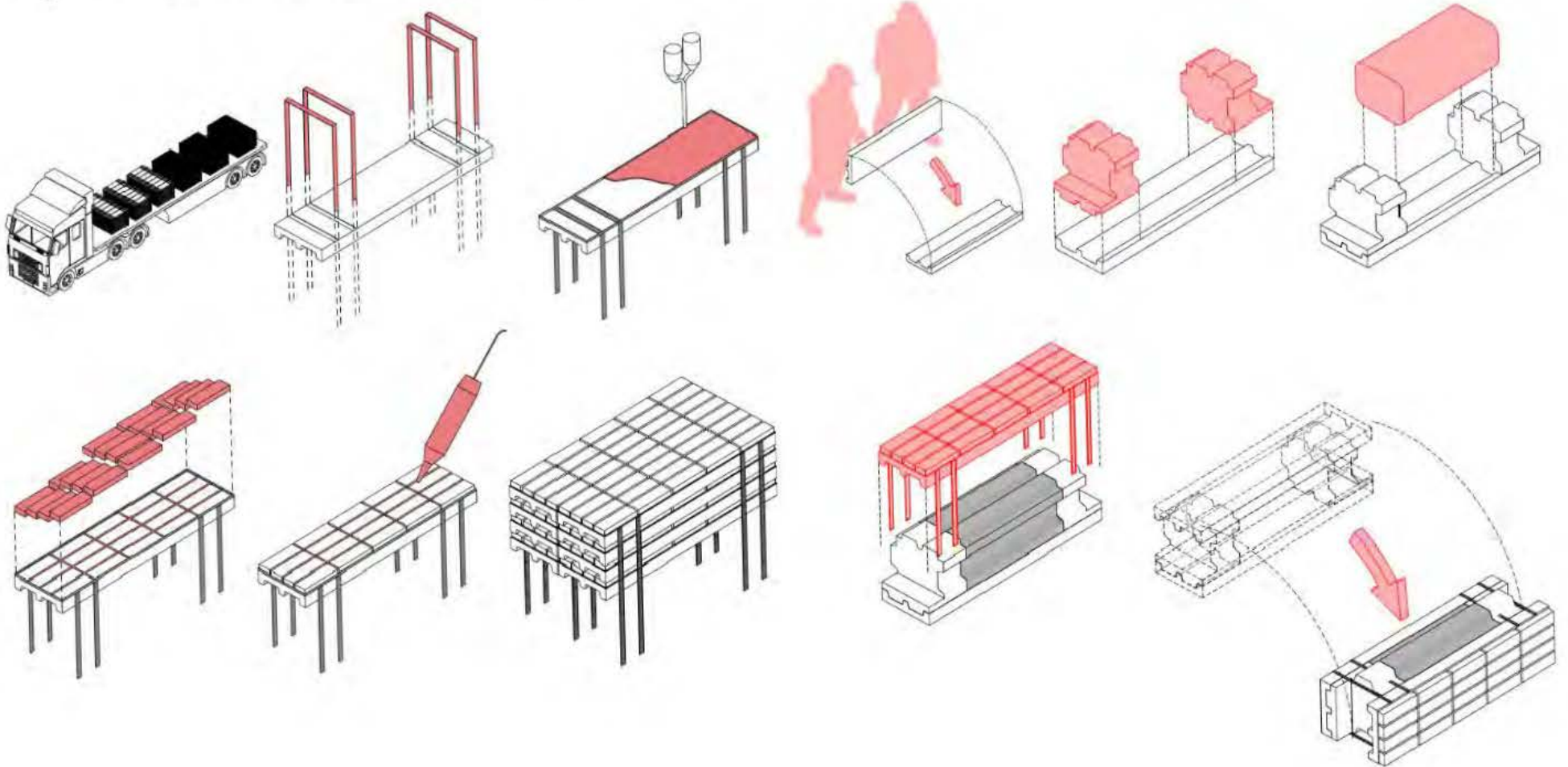
Superblocks



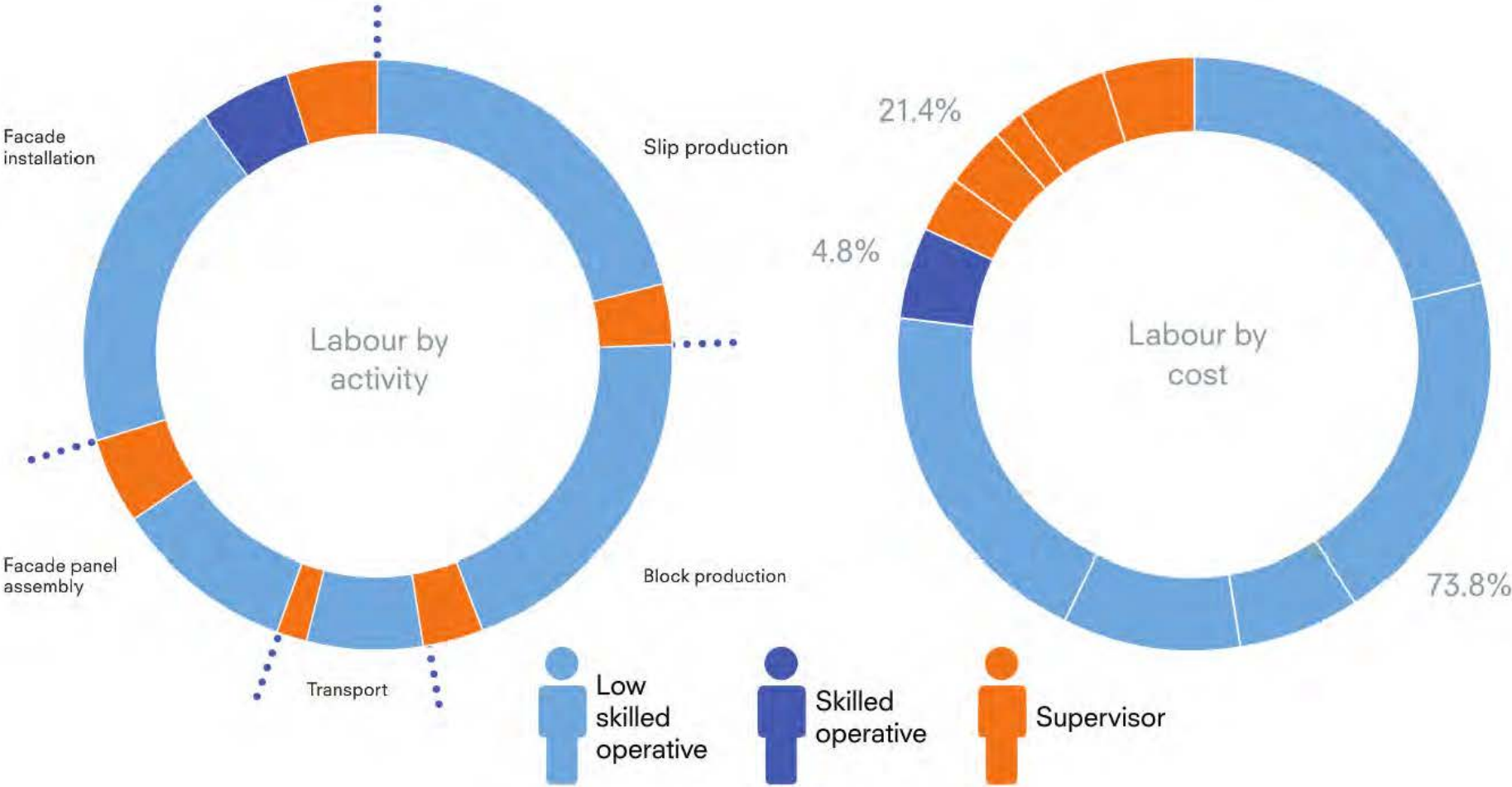
1. Gravel board
2. Brick slips
3. Wind post oid
4. Extruded phenolic insulation
5. Mineral wool insulation
6. Stainless steel spacers
7. Perforated stainless steel band strap
8. Stainless steel band strap



Superblock manufacture



Activities by skill



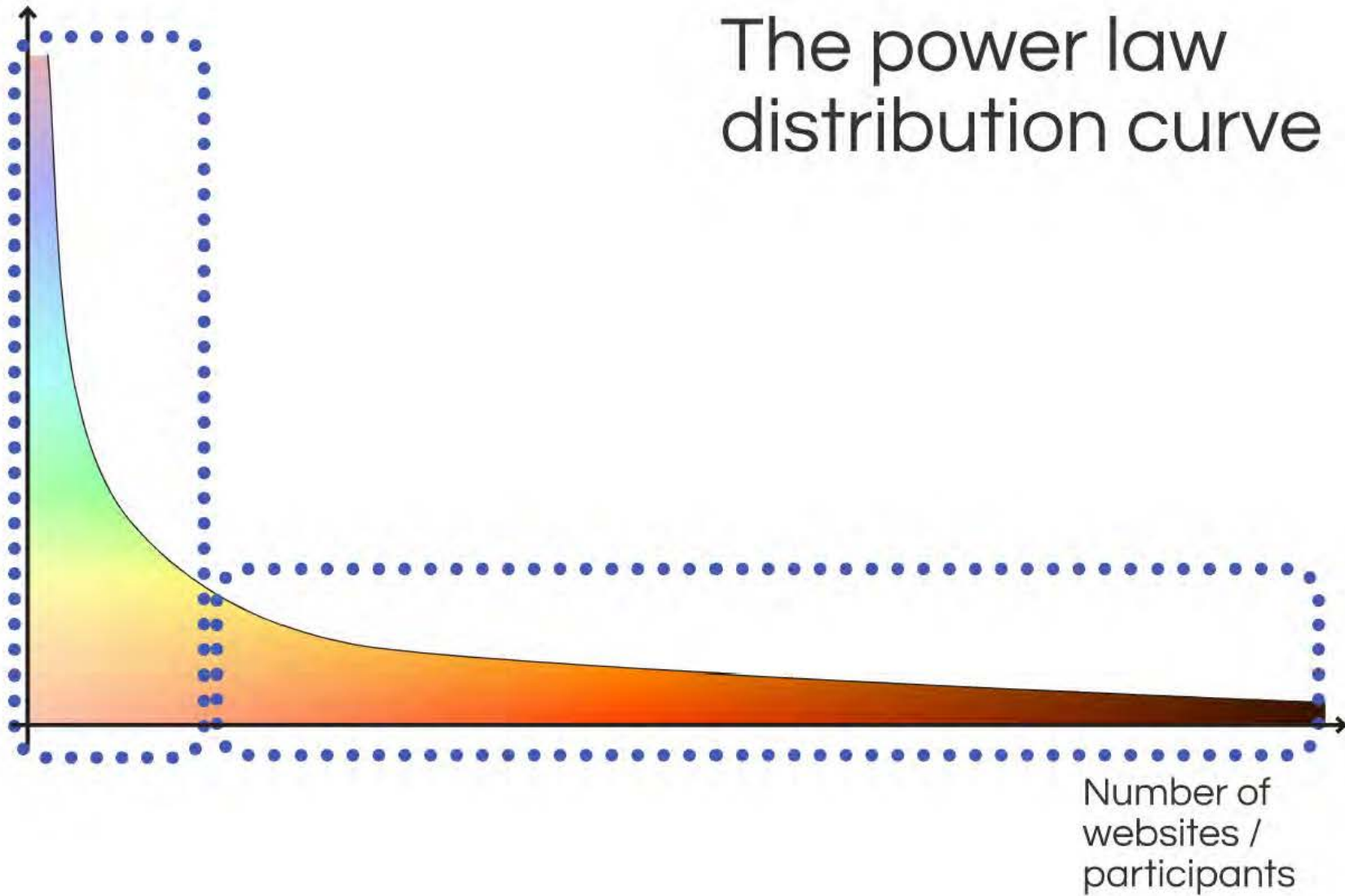
Superblock SAWs





Number of
visitors / amount
of investment

The power law distribution curve



Component



Platform



Product



Shipping container



Global freight
infrastructure

Low cost, reliable
global trade + supply
chains

Component> Platform> Product

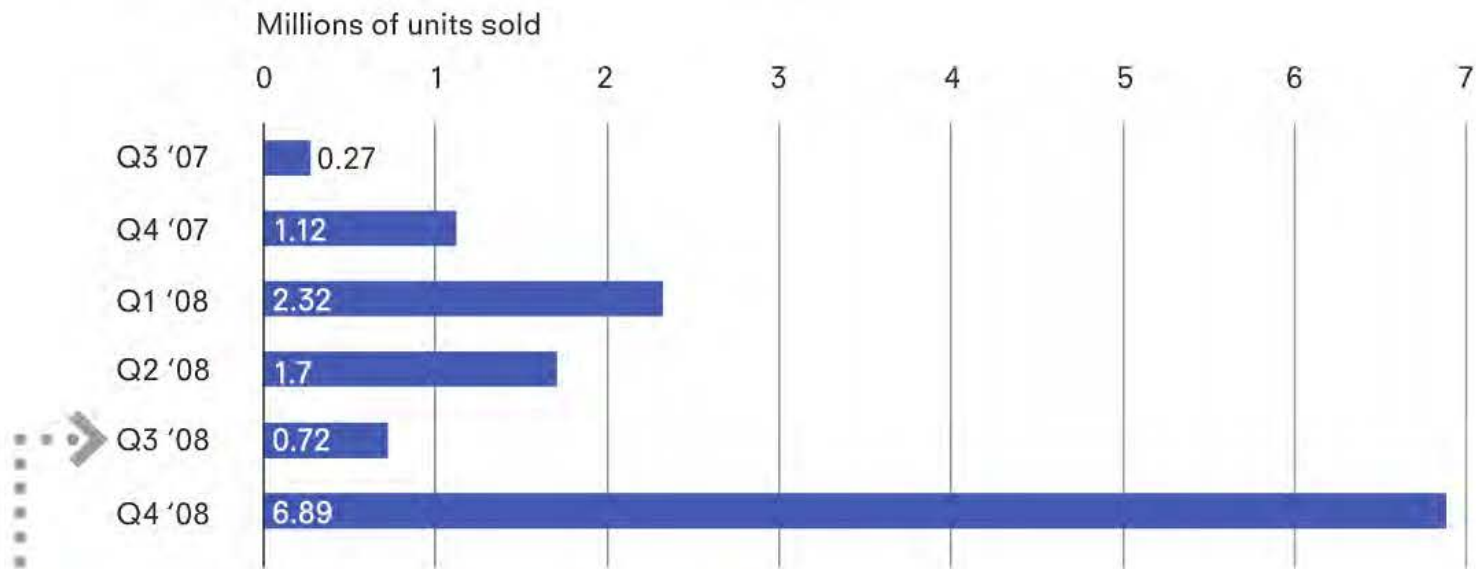


Uber



iPhone

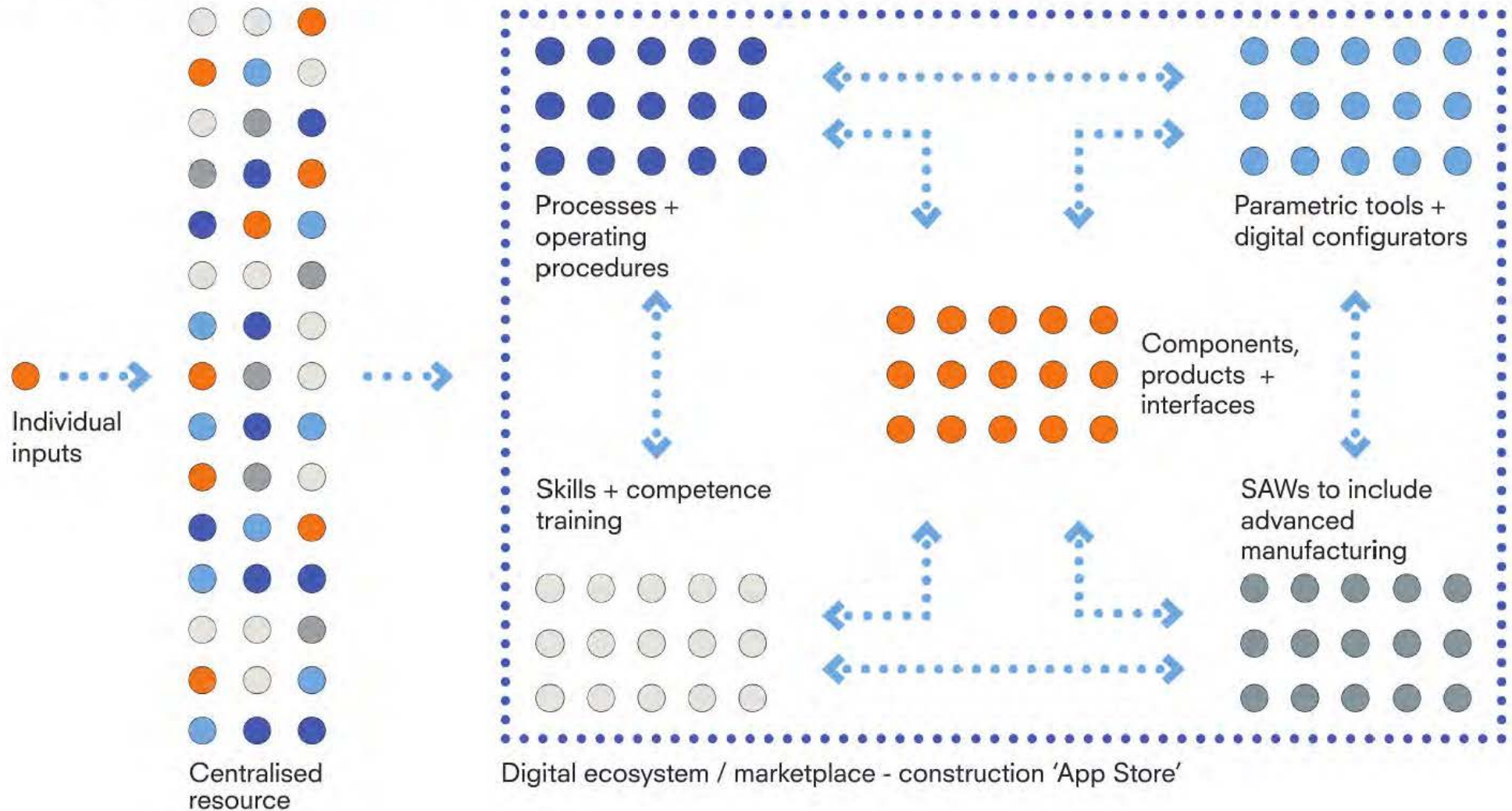
Peer-to-peer ride sharing, food delivery and transportation network



App Store opened 10 July 2008

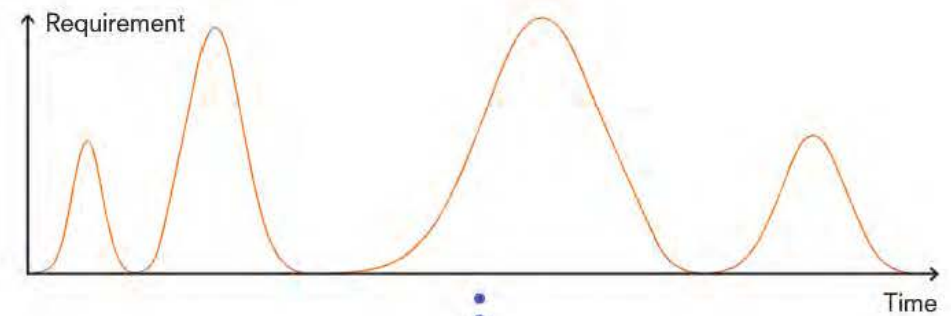
The designer grants the Client
an irrevocable, royalty-free,
worldwide and non-exclusive
licence in perpetuity to use, copy
and reproduce the Materials for
any purpose whatsoever.

Lowering the barriers to entry

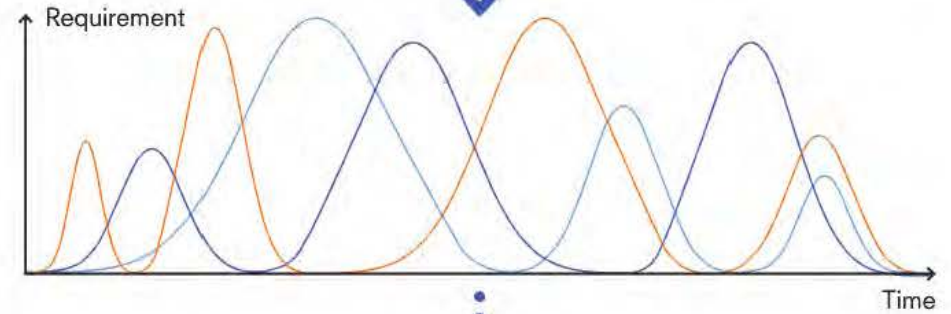


Factory + workforce sharing

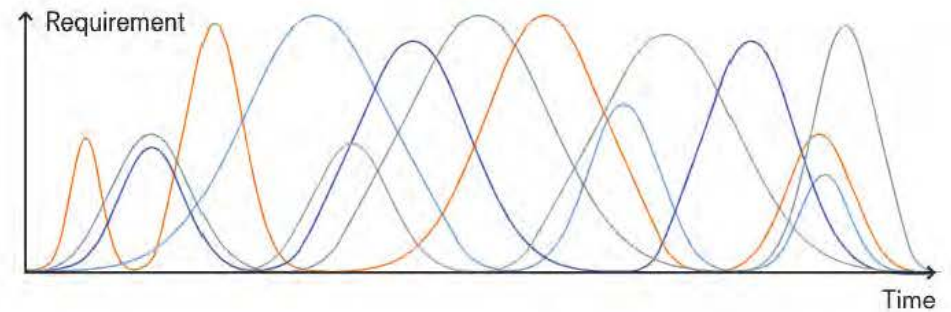
Requirements for single programme - often currently served by one factory



Aggregating the requirements for multiple programmes (through the use of shared components) starts to create a consistent pipeline



Eventually a level workload is created, which can be split across multiple facilities working at a known and predefined level of output



CONSTRUCTING THE TEAM

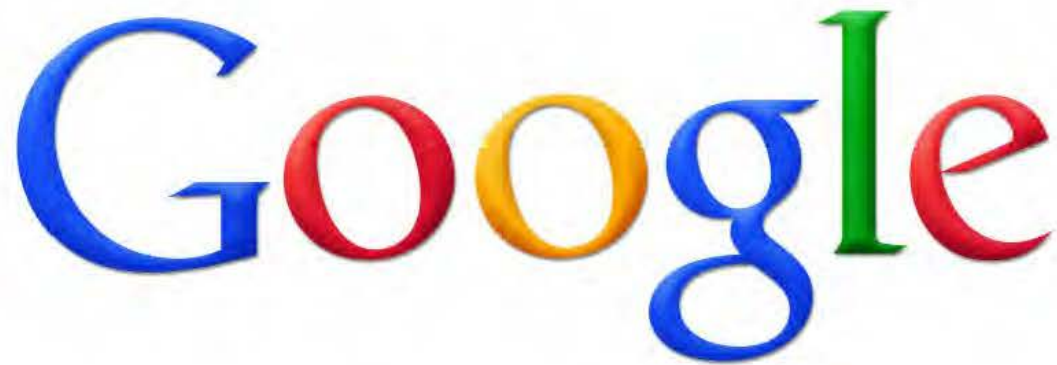
BY SIR MICHAEL LATHAM

FINAL REPORT OF THE
GOVERNMENT/INDUSTRY REVIEW OF
PROCUREMENT AND CONTRACTUAL
ARRANGEMENTS IN THE UK
CONSTRUCTION INDUSTRY

IIMS0

- Implementation begins with clients - Clients, and **especially Government, continue to have a role in promoting excellence in design;**
- **Government should commit itself to being a best practice client;**
- **A productivity target of 30% real cost reduction by the year 2000** should be launched;
- There is scope for improvements through **greater standardisation of components and design details and more off-site prefabrication.** This will require effective teamwork by designers, contractors, subcontractors and manufacturers;
- Private clients have a leading role and should come together in a Construction Clients' Forum;
- Tenders should be evaluated by clients on quality as well as price.

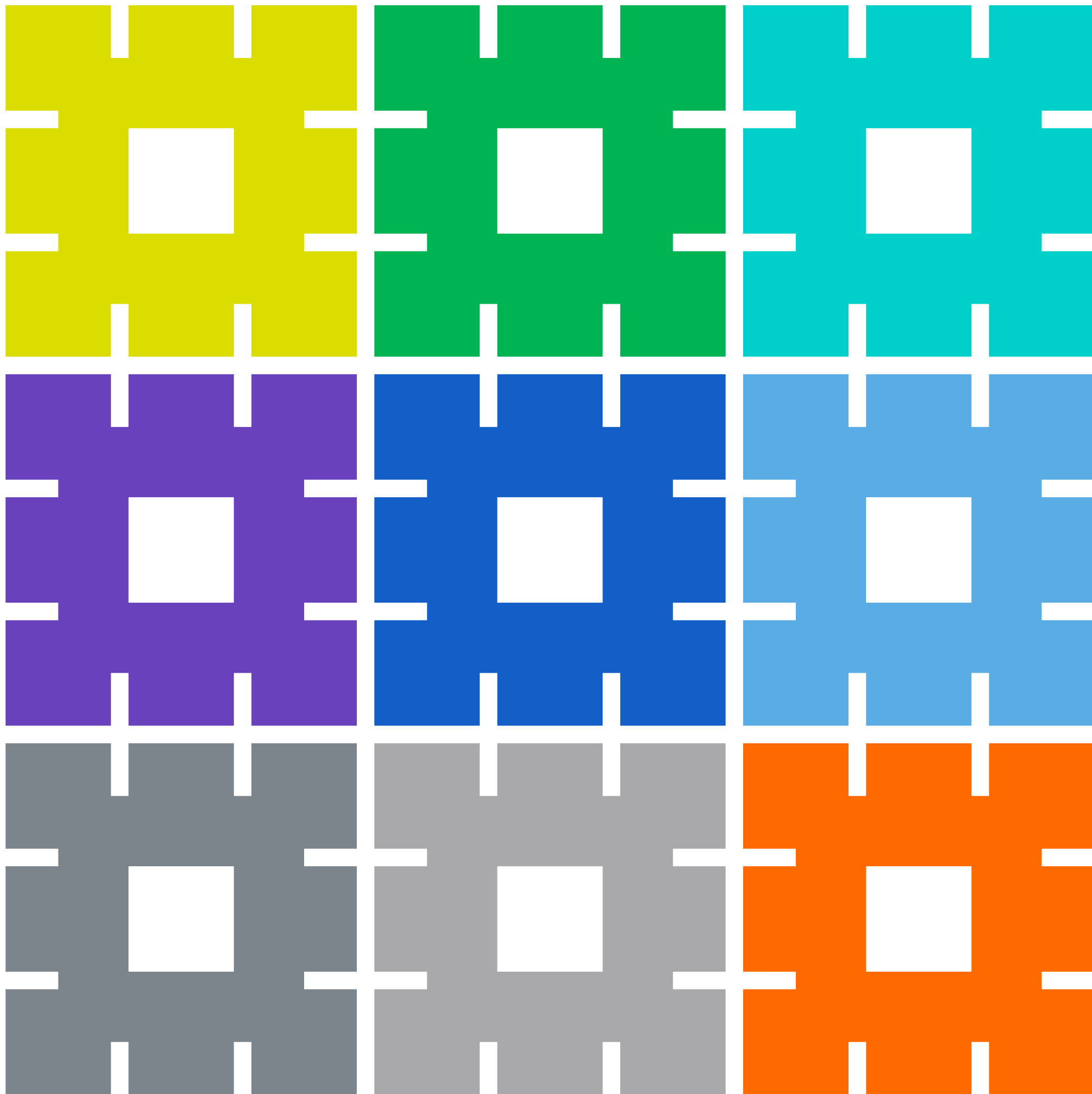
Things that happened in 1998...

The Google logo, featuring the word "Google" in its signature multi-colored font: blue 'G', red 'o', yellow 'o', blue 'g', green 'l', and red 'e'.

04 September 1998



01 November 1998



Thank you.



@Jaimie_BW



@BrydenWood



BrydenWood

brydenwood.co.uk