Industrialized Construction
Unleashing the power of automation throughout the project lifecycle

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Bryden Wood
To **improve societal outcomes** via a better performing built environment

Bryden Wood
Why haven’t any systems or solutions transformed the industry yet?
Platforms combine design, manufacture, and procurement principles holistically to ensure a greater degree of rationalisation and integration.
Platforms manifest themselves as a ‘kit of parts’ of pre-engineered components, assemblies and products that go together in pre-defined ways.
Standardised requirements
- Space types + performance characteristics;
- Adjacencies + flows;
- Technical specifications;
- Dimensional grids.

Central logic

Envelope

Digital tools

Configurator tools
- PRISM;
- SEISMIC;

Super structure

Fit out

MEP

Deliver

Congruity
Self optimisation based on data

Supply chain access to supply components

Grid harmonisation

Building physics + automated optimisation

Digital market place

Digital configurators

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Key areas of optimisation

**Design optimisation**
Most efficient use + distribution of material and space

**Material optimisation**
Minimum amount of material necessary to meet the technical + product requirements

**Process optimisation**
Eliminate inefficiency at every stage of briefing, design, procurement + assembly

**Automation**
Use of automation in design and delivery to increase speed + quality
Current state
Platform enabled
Platform 2

<table>
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<th>Task</th>
<th>Week</th>
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Reinforced concrete

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<tr>
<td>Superstructure Complete</td>
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</table>

Platform 2 fit out commences 18 weeks earlier
Prototyping facility in a live prison
“Platforms could achieve a 33% reduction in capital cost”
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
Automated design
Platforms = RULES

RULES = Automated Design
Automated Design

- different, but just as slow
- the same, but faster

faster + smarter

Intelligence

Speed
Automated Design

- Design Configuration Tool for Pre-fabricated Schools
- Speed Intelligence
- Automated Design = Configuration Tool for Precision Manufactured Housing
- Rapid Engineering Model for Highways England
- Design Configuration Tool for Pre-fabricated Schools
- Accelerated design for Platform-based Buildings
What is the **end state for Platforms?**
A new way to design, procure, assemble + operate
Design...
Procure…

Turbocharge the way you make custom parts

Massive Network Capacity
Instantly access the production capacity of over 3,000 manufacturers with wide-ranging capabilities and certifications across 50 states. From your desktop. Strict NDA agreements with our network protect privacy.

Instant Quoting Engine
Get DFM feedback, lead times, and pricing in a matter of clicks, not days. Xometry IQ™ puts Big Data to work for you so you can easily choose the optimal price/lead time option for your project. Compatible with STEP, Mesh, Parasolid, and ACIS files.

Guaranteed Quality
We are ISO 9001:2015 and AS9100D certified, ITAR registered, and offer CoC, material certifications, finishing certs, inspection reports, and hardware certs.
Assemble…
Operate…
Re-use...
Everything available,

everything open source
“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.”
A platform approach means we will use digitally designed components across multiple types of asset and apply those components wherever possible, minimising the need to design bespoke components.

For example, a single component could be used as part of a school, hospital, prison building or station.

The three principles are:
1. Design for manufacture;
2. Use a Platform approach;
3. Open for manufacture, use and procurement.
Join the Platform movement
Links to background material
Click on images to visit website

**Delivery Platforms for Government Assets**
Creating a marketplace for manufactured spaces
May 2017
Setting out the initial strategy and value proposition for adopting construction platforms

**Platforms**
Bridging the gap between construction + manufacturing
March 2018
Further developments on Platforms following work with the Ministry of Justice

**Proposal for a new approach to building**
Call for Evidence
November 2018
Strategy document published by the Infrastructure and Projects Authority proposing the adoption of ‘a Platform approach to Design for Manufacture and Assembly (P-DfMA)”

**Transforming performance + productivity in the construction industry**
January 2019
Documenting the collaboration between the Ministry of Justice, Bryden Wood and the Manufacturing Technology Centre in applying manufacturing expertise to Platforms

**Platform thinking for construction**
March 2020
Digest published by the Transforming Construction Network Plus (N+) exploring the impacts of a Platform approach on construction sector business models.

**Automated construction**
Platform 3 (commercial office) prototyping with Landsec and Easi Space testing automation on site - Innovate UK funded project

**PRISM**
Open source housing design app for London
Launched July 2019

**Seismic**
Open source primary schools configuration app - Innovate UK funded project
Launched July 2019
Thank you.