



NCC- Solent Large Structures Centre Scoping Study

Jan 14th 2015

To E-LASS Meeting

Presented by

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Background



“Creating a ‘Large Structures Composites Centre’

– a satellite of the National Composites Centre. We propose - with the National Composite Centre (NCC), the University of Bristol, the University of Southampton and drawing on support from Lloyd’s Register and leading local companies and universities - to create a new satellite of the NCC in our area: the ‘NCC – Solent Large Structures Composites Centre’.”

Two Main Opportunities

Performance

- Durability
- Strength
- Lightweight
- Reduced installation time
- Reduced thru life costs
- Sustainable (recycle carbon fibre)

Intelligence

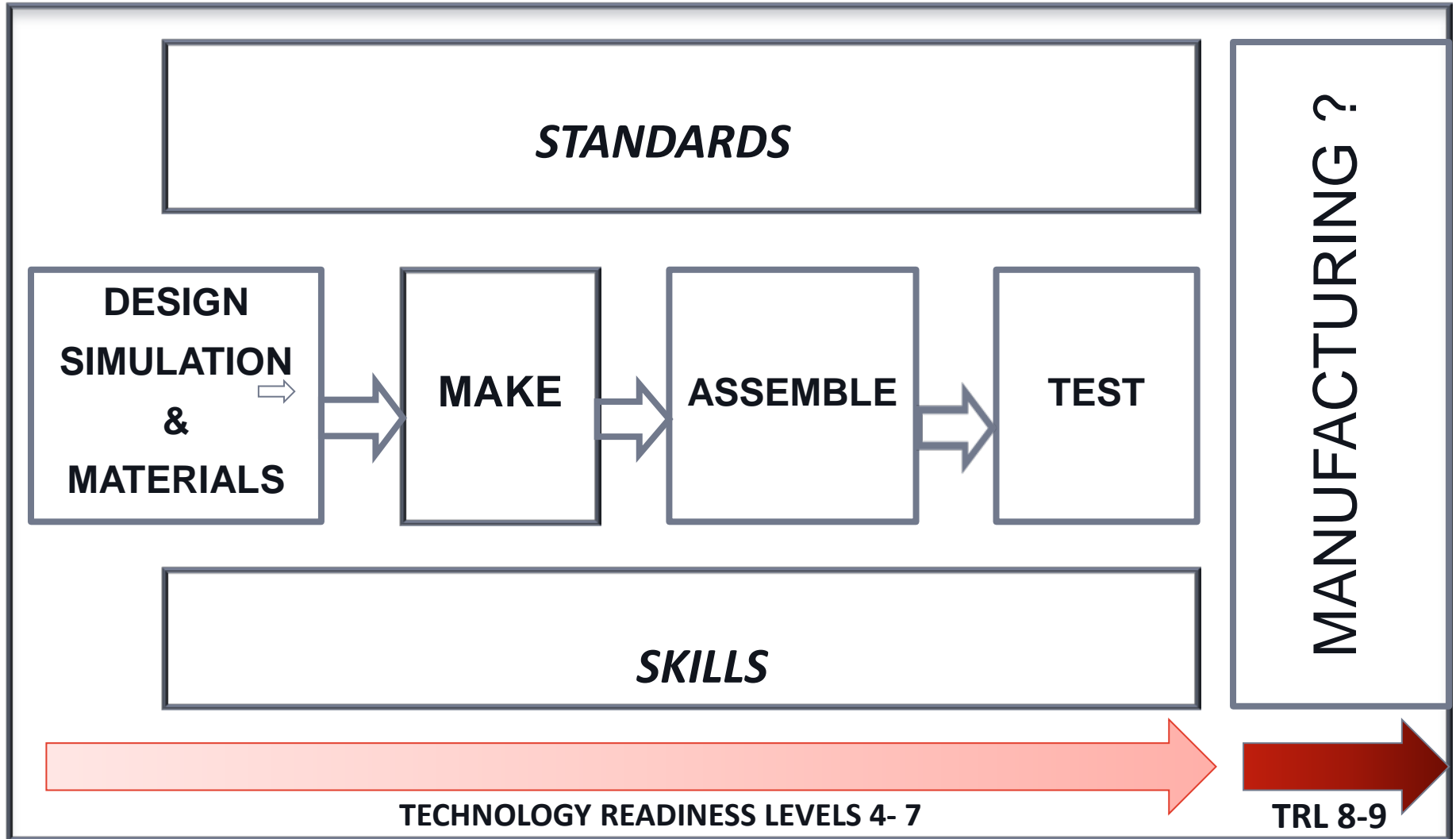
- Self-monitoring
- Self-reporting
- Self-repair

Design envelope/ capabilities

- Large structures:
 - 100m x 30m x 10m ?
 - >200mm thick panels?
 - ~100 tonnes structures?
 - Bridges, beams, pipes, tanks, super-structures, modular cabins, nacelles, tidal blades, propellers, rail carriages & infrastructure, hulls.
 - Fabricate and assembly
 - Testing/Equivalence : Fire, Smoke, Toxicity, post impact strength
 - Training
 - Hybrid development and manufacturing facility?

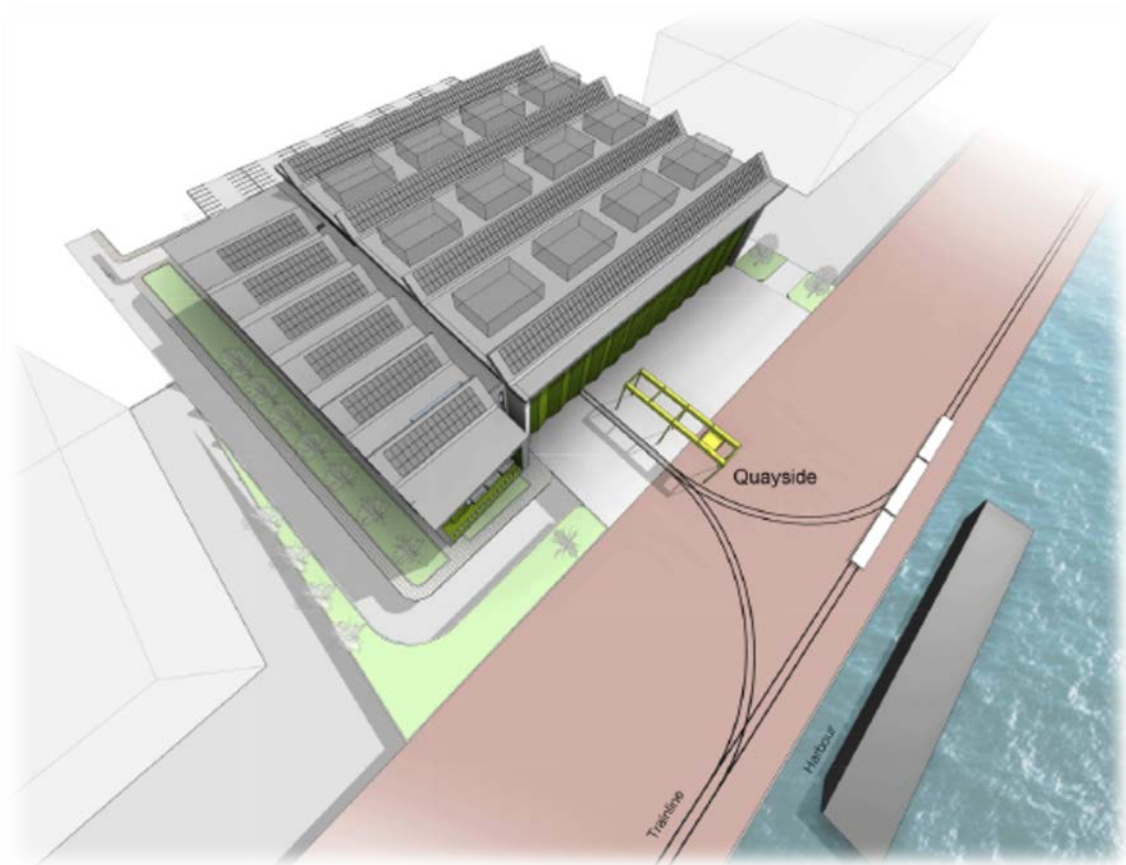


NCC-SLSC: POSSIBLE SCOPE OF ACTIVITIES

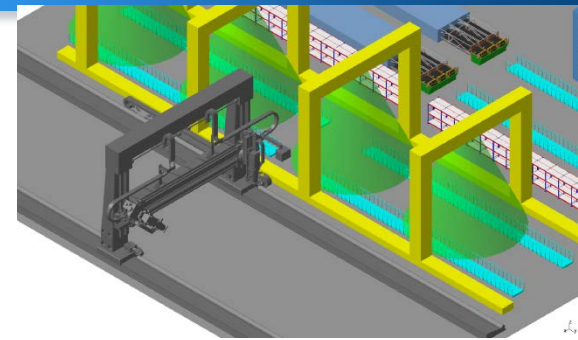


Building 'straw-man' ideas

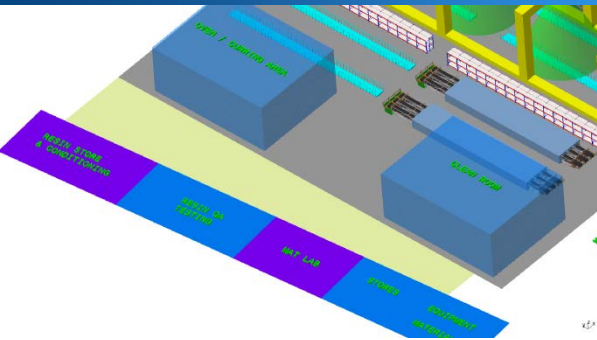
- Waterside access
- Rail access
- Large flexible space
- Testing facilities
- Office, meeting rooms
- Training space



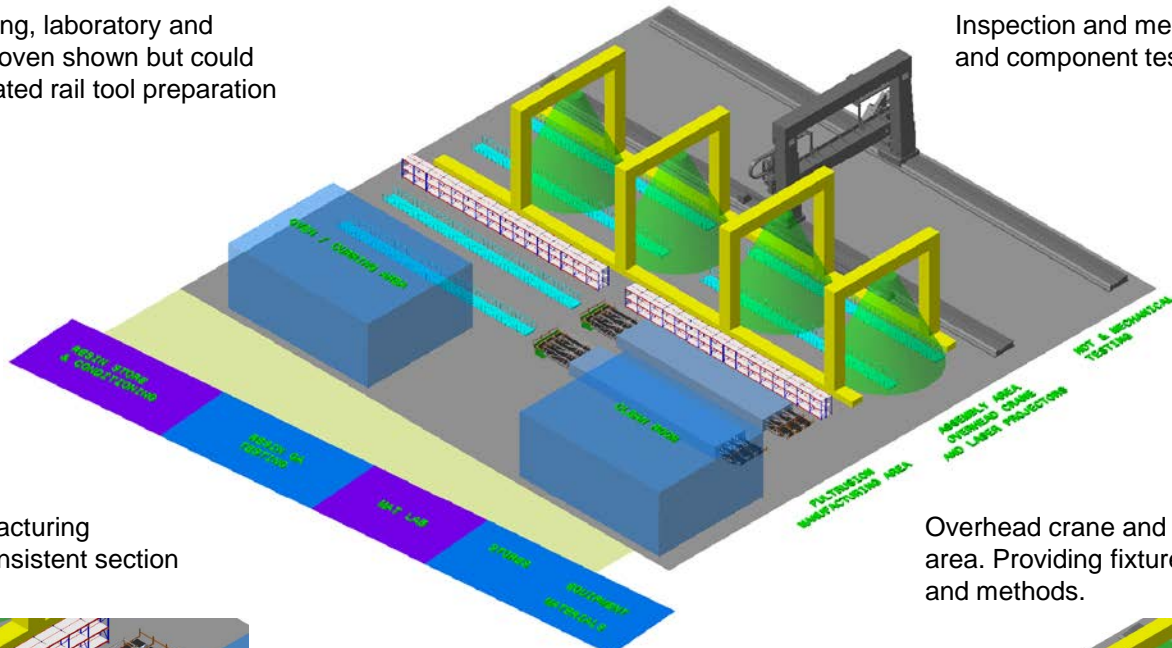
Construction Theme: Bridge Manufacture, Assembly and Test



Inspection and mechanical testing area. NDT and component testing (fatigue/endurance).

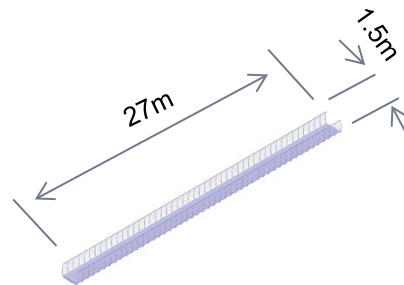
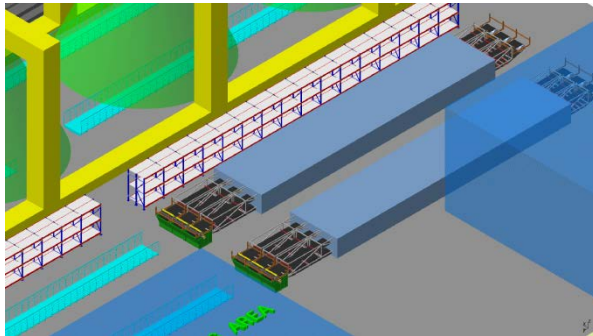


Stores, small component testing, laboratory and freezer area. Cleanroom and oven shown but could be located adjacent to automated rail tool preparation area (slide 2)



Overhead crane and laser projection assembly area. Providing fixture-less assembly process and methods.

Large scale pultrusion manufacturing equipment for extrusion of consistent section components.



Prototype R&D production layout based on a foot-bridge component assembly scenario.

