TOWARD LEAN MANAGEMENT
FOR
A REVIEW OF THE SHARED PRACTICES OF LEAN, DfMA AND DFAB

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PRESENTATION OUTLINE

PROBLEMS & MOTIVATION
STATE-OF-THE-ART
RESEARCH QUESTIONS
METHODOLOGY
FINDINGS
DISCUSSION
FUTURE
RESEARCH
CONCLUSION
PROBLEMS &
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LEAN

DfMA
PROBLEMS & MOTIVATION

LEAN

DfMA

DFAB
DATA

STATE-OF-THE-ART

THINGS


Things Data

STATE-OF-THE-ART

QUALITY, PRODUCTIVITY, ROI

CAD

CAM
STATE-OF-THE-ART

VALUE-ADDING

WASTE REDUCTION

SUPPLY-CHAIN INTEGRATION

EARLY STAKEHOLDER’S INVOLVEMENT

QUALITY IMPROVEMENT

State-of-the-Art

Value-adding

Waste Reduction

Concurrent Engineering

Supply-Chain Integration

Set-Based Design

Early Stakeholder’s Involvement

Choosing by Advantage

Target Value Design

Quality Improvement


(Left) “Over the wall” design, historically the way of doing business (Boothryod et al. 2002). (Right) DfMA model (RIBA 2013).
STATE-OF-THE-ART


Traditional construction

Feasibility → Funding → Design & Engineering → Site Preparation → Construction → Fit-out & Finishing → Testing & Commissioning

Design for Manufacture and Assembly

Feasibility → Funding → Design & Engineering → Site Preparation → Manufacture → Assembly → Fit-out & Finishing → Testing & Commissioning

Impact of DfMA on Design and Construction programme (Liang O’Rourke 2013).
POTENTIAL SYNERGIES LEAN, DfMA & DFAB

what are the shared practices?
how to manage dfab for innovation adoption?
Table 1: Keywords used in the literature search

<table>
<thead>
<tr>
<th>LEAN CONSTRUCTION</th>
<th>DfMA</th>
<th>DIGITAL FABRICATION</th>
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<tbody>
<tr>
<td>Pull-Planning</td>
<td>Customisation</td>
<td>Automation</td>
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<td>Just-in-Time</td>
<td>Modularisation</td>
<td>Robotics</td>
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<td>Concurrent Engineering</td>
<td>Design for Automation</td>
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SEARCH WITH KEYWORDS

JOURNAL & CONFERENCE PAPERS

FURTHER SELECTION & FILTERING

FINDINGS: SHARED PRACTICES & REVIEW OF 19

LITERATURES FUTURE RESEARCH
LEAN x DfMA x DFAB (3)

LEAN x DfMA (7)

DfMA x DFAB (6)

LEAN x DFAB (3)
DISCUSSION

INNOVATION
DISCUSSION

DESIGN & CONSTRUCTION MANAGEMENT

LEA

INNOVATION

DIGITAL FABRICATION
FUTURE RESEARCH

LEAN DESIGN MANAGEMENT FOR DFAB

DfMA FOR BESPOKE BUILDING SYSTEMS USING LEAN & DFAB

DESIGN GUIDELINES FOR DFAB WITH LEAN & DfMA

ORGANISATION MODELS FOR DFAB FOR LEAN ADOPTION
POTENTIAL SYNERGIES
LEAN, DfMA & DFAB

9 shared practices
Lean management for dfab
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