

LCI Session 3

Lean Liverpool 2014

Andy Fielding - Costain



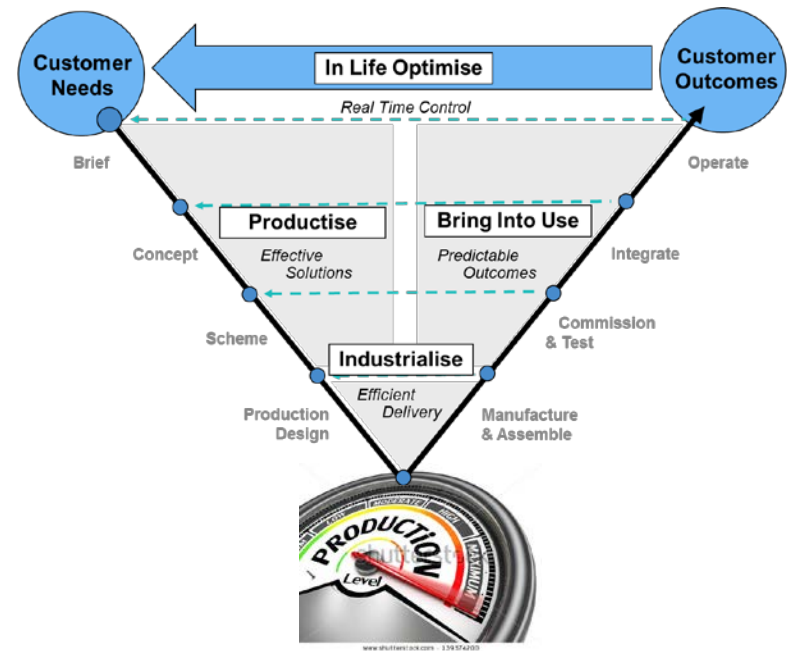
Lean Liverpool

ARE YOU
FACTORY
THINKING?

COSTAIN

AN EXAMPLE OF FACTORY THINKING?

1. Collaborative Planning
2. Pre-Cast & Modular Design
3. Building Information Modelling



Lean Liverpool – Why we did Lean!

- Past Experience from other Costain project successes
- Large Project £200Million demands special effort
- Repetitive Nature of project 16 cells 42m x 45m x 7m, why can't it work
- Time is our most Irreplaceable Resource
- Challenge to find efficiencies

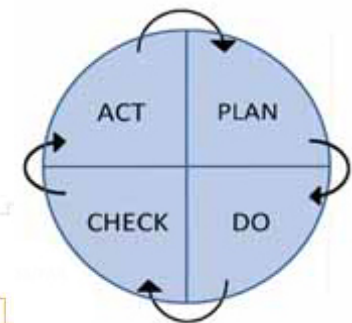
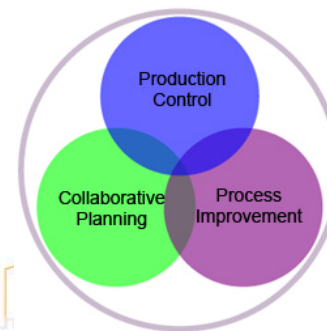


Lean Liverpool – Collaborative Planning

- Develop Strategy & Plan,
 - Think Big, Start small and build knowledge, skills
 - Think Factory, Off Site Manufacture & DfMA
 - Do Collaborative Planning
 - Develop Precast and Modular Knowledge
 - Challenge
 - Lean training and knowledge
 - Leadership
 - Need to think different, simultaneous not sequential



FORMULA 1 PRODUCTION

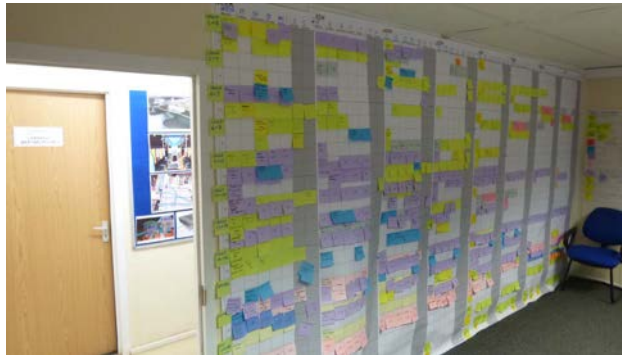


Lean Liverpool – Collaborative Planning

Master Planning
Session Every
3 months

Weekly Planning
max 1hr

Daily Planning
max 15mins

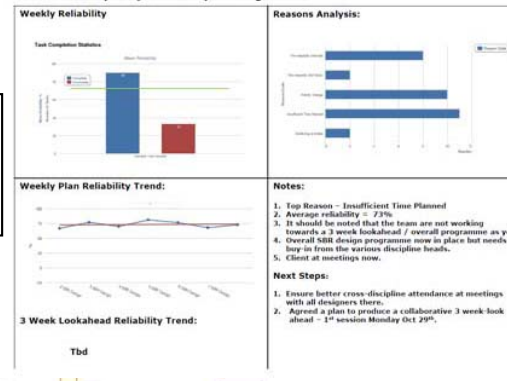


Use good visual displays of
the plan and results!

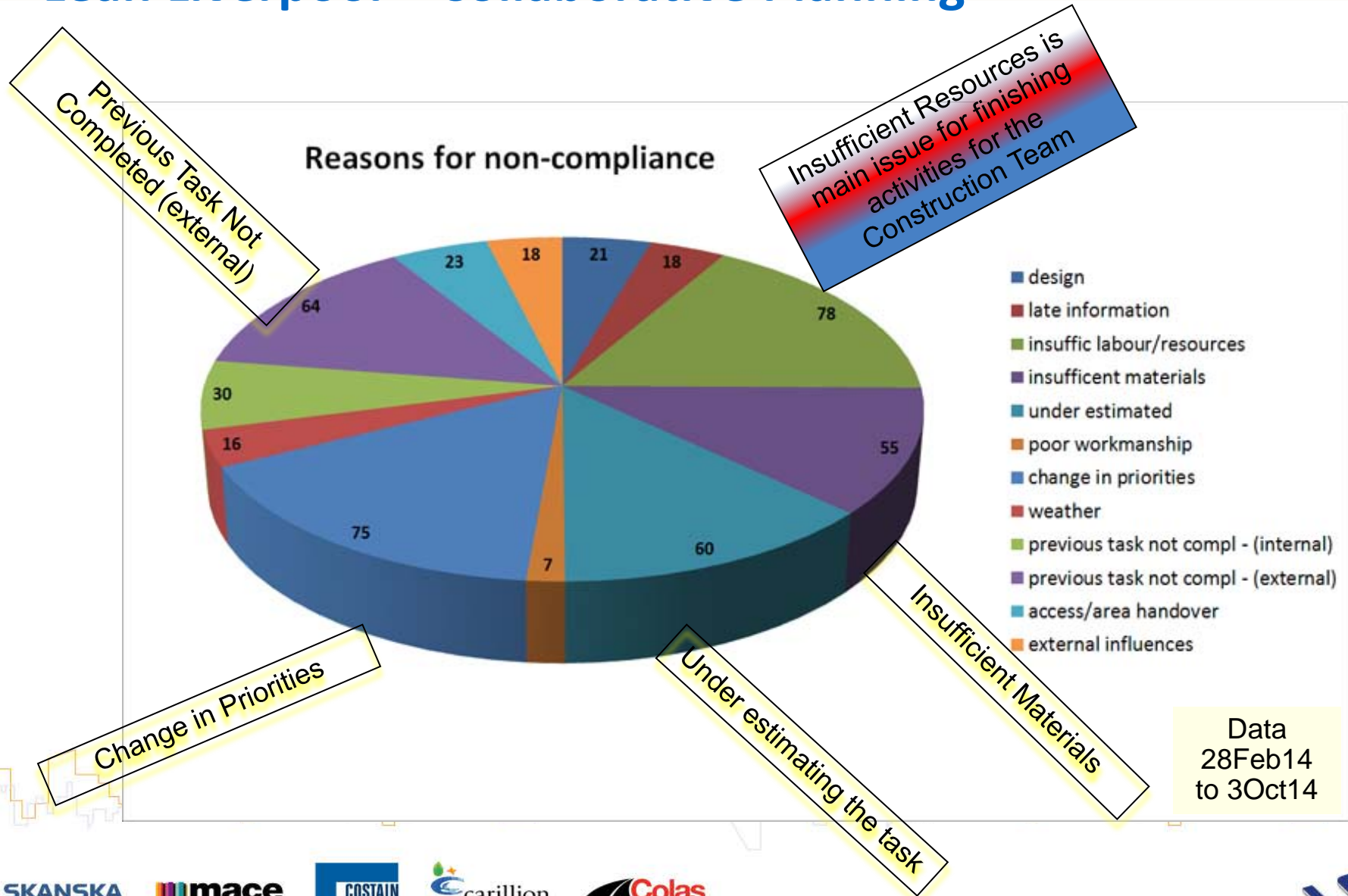
Live Data

Use the
data to
improve

Dashboard Report (22 Oct 12) - Design: SBR

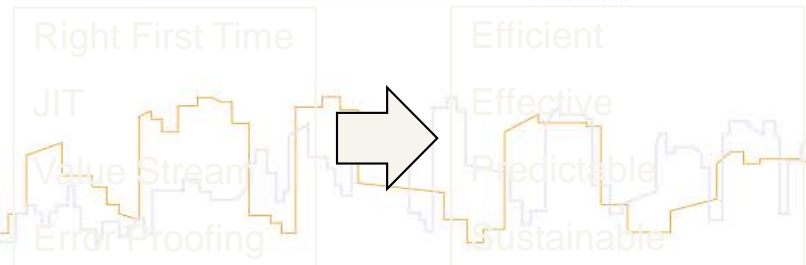
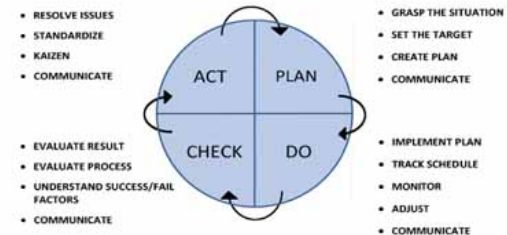


Lean Liverpool – Collaborative Planning



Lean Liverpool – Collaborative Planning

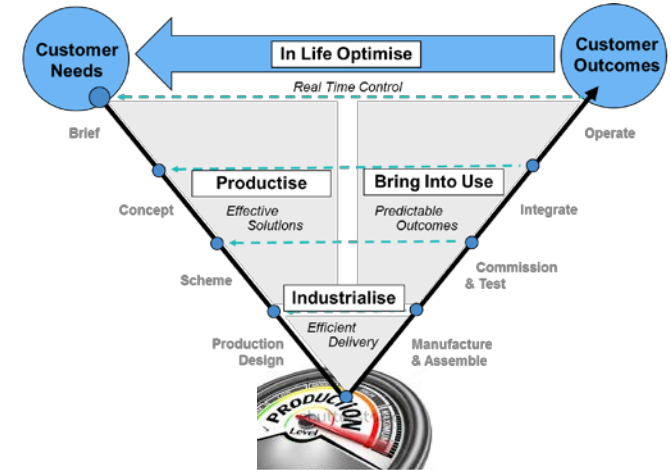
- Benefits & Lessons Learnt
 - Allows Knowledge Transfer & Learning
 - Implementation Strategy and Plan essential
 - Size & Selection of Teams to be Sensibly Selected
 - Allocation & Understanding of Daily/Weekly Tasks to be Clear
 - Requires Regular Collaborative Planning Sessions with Updated Master Planning Sessions
 - Needs Good Monitoring, Control and Influence from Leadership
 - Reduces the Risk of Things Going Wrong Or Things Being Missed
 - Builds collaboration
 - Builds Relationships
 - Creates Motivation
 - Allows Lean Team to Plan Better
 - Awareness of Critical Path and Critical Activities
 - Develop Clarity of Task to be done
 - Develops better sequence of activities
 - Helps improve safety performance



Lean Liverpool – Pre-Cast & Modularisation

Pre-Cast Concrete structure cast off site to minimise the on site construction time and activities

Modularisation (Assembled Off Site) (DfMA)



Pipe Bridges



Precast Retaining Wall



COSTAIN

Treatment	SBF Feed (kg)
Control	~85
100 mg/kg	~75
200 mg/kg	~65
400 mg/kg	~55
800 mg/kg	~45

Lean Liverpool – Pre-Cast & Modularisation

EXAMPLES

North and South Stair Towers

Reduced installation time on site by 2-3 weeks each



Decanter Walkways

Took 2 ½ Days to install
(typical install 2-3wks)



Decaners

Fabricated in 4 sections as
large as possible for transport



Lean Liverpool – Pre-Cast & Modularisation

Lessons Learnt

- Concrete alignment
- Errors in design and build
- Concrete damage
- Coordination
- Subcontractor understanding
- Package details

-Benefits

- Cost Saving Benefits
- Reduces time on site installation
- and construction activities
- Quality improvement
- Improves Safety



Lean Liverpool – BIM

- Building Information Modelling
 - It's more than a 3D model
 - It's a central database for anything you want
 - Technology is evolving and improving the access to more information available
 - 3D Scanning is evolving to make BIM easier to use
 - SBR Fly [Through 2mins](#)



Lean Liverpool – BIM

- Benefits & Lessons Learnt
 - Visibility, by all, of what is being built
 - Better Understanding of what will look like
 - Clash Detection can be easily evaluated
 - Subcontractors can assess their designs better but beware of access
 - Customer can see what it looks like, again access to the 3D model
 - Access, Lifting and Maintenance can be reviewed at many levels during design
 - Depending on Data Linked to Model Can be Used as a Central Database
 - Can be Time and Cost Loaded
 - Construction and Build Defects can be linked to the model
 - Modelling Requires 3D capable PC Software and Hardware
 - 3D Design Change Control needed for engineering and CAD
 - Contracts still want 2D drawings
 - Quality of 2D drawing
 - Design status awareness, 3D is not the end
 - Is a way of creating asset intelligence for lifecycle of asset

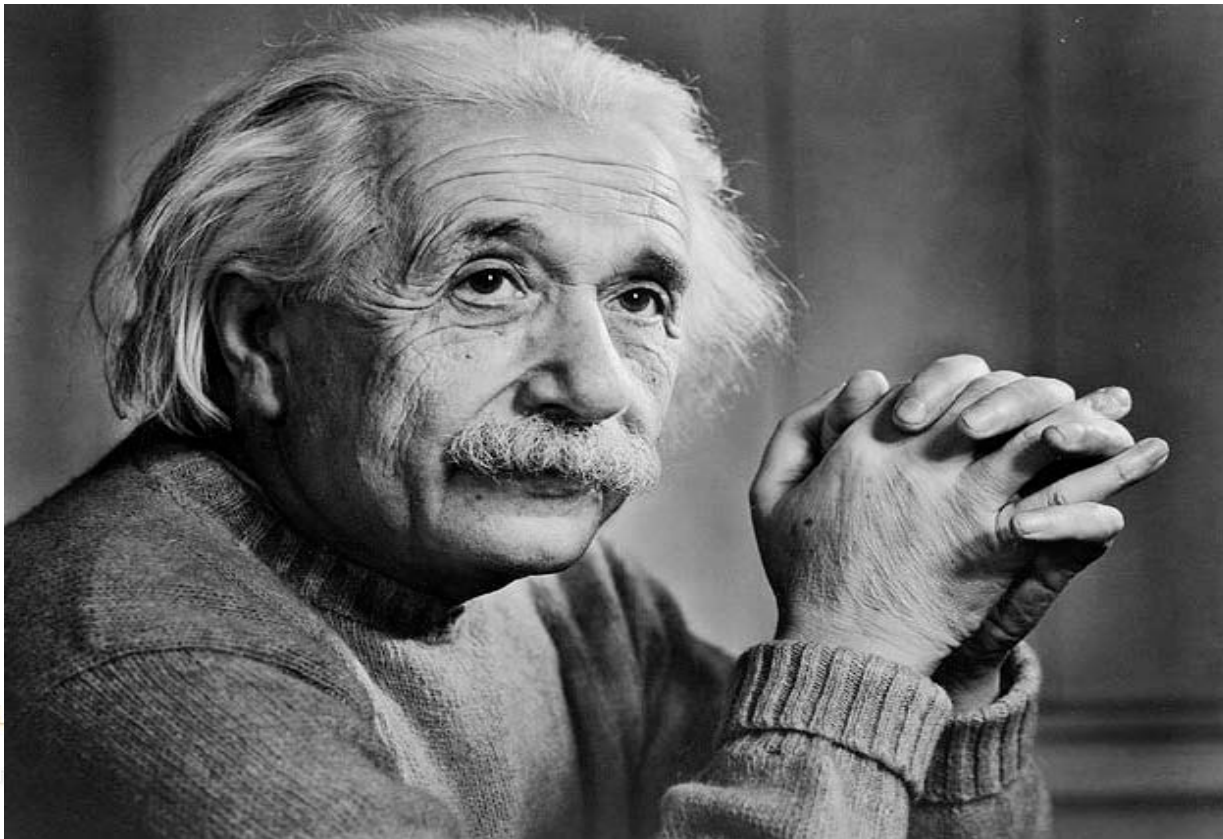


Thanks for Listening

ARE YOU
FACTORY
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COSTAIN

Any Questions?



SKANSKA

 **mace**

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 carillion

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