

Offsite Manufacturing in building services



Agenda

- Introduction
- History of offsite
- Developments
- Benefits
 - Health & Safety
 - Quality
 - Environment
 - Prelims/design
 - Program
 - Controls/commissioning
 - Whole life costs
- Challenges
- The future



History of offsite

Necessity is the mother of all invention...

- Shortage of raw materials
- Lack of skilled labour
- Housing shortage
- Manufacturing base
- Industrialisation of construction



Developments

Move towards integration



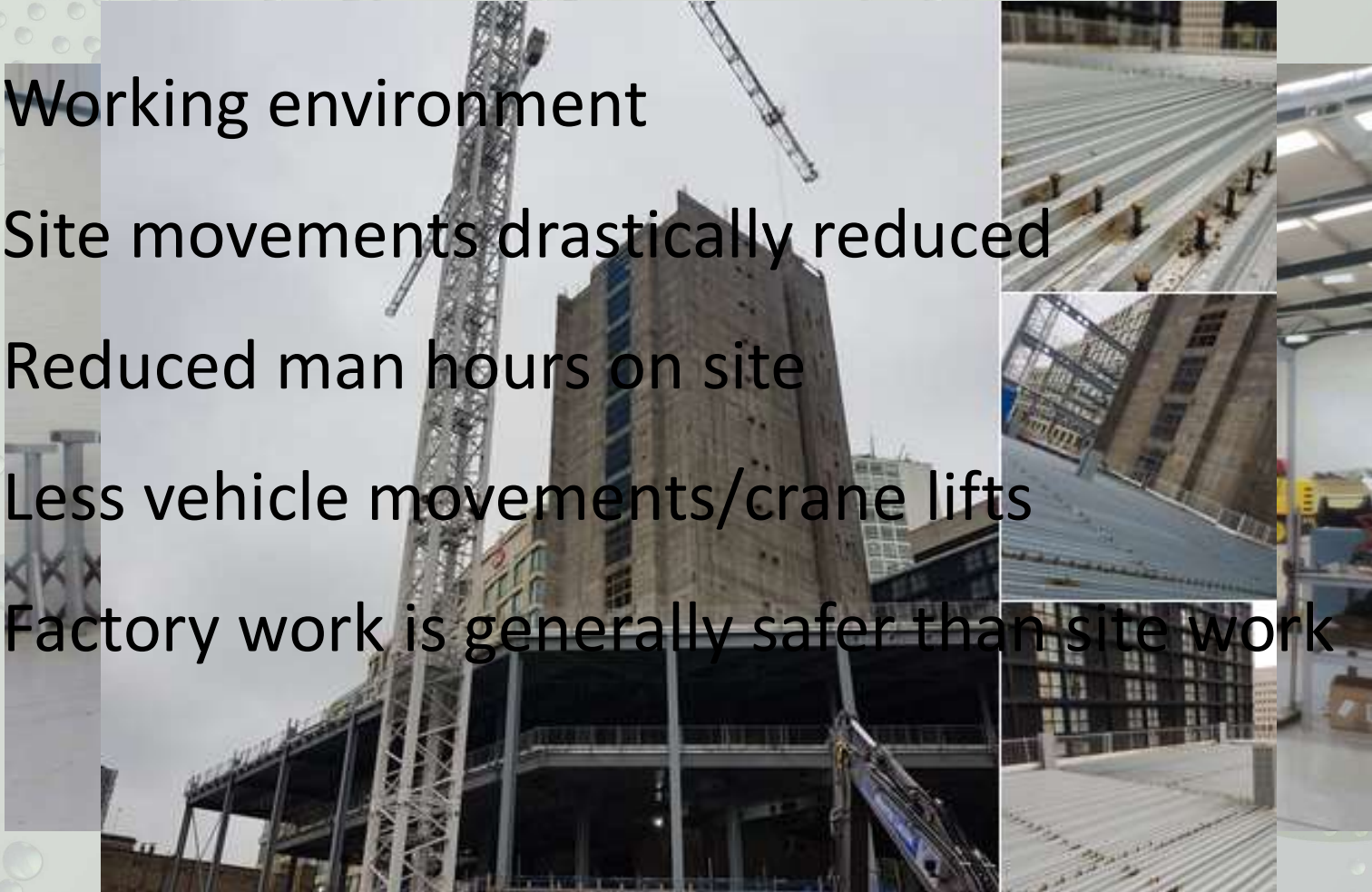
Developments

Move towards integration



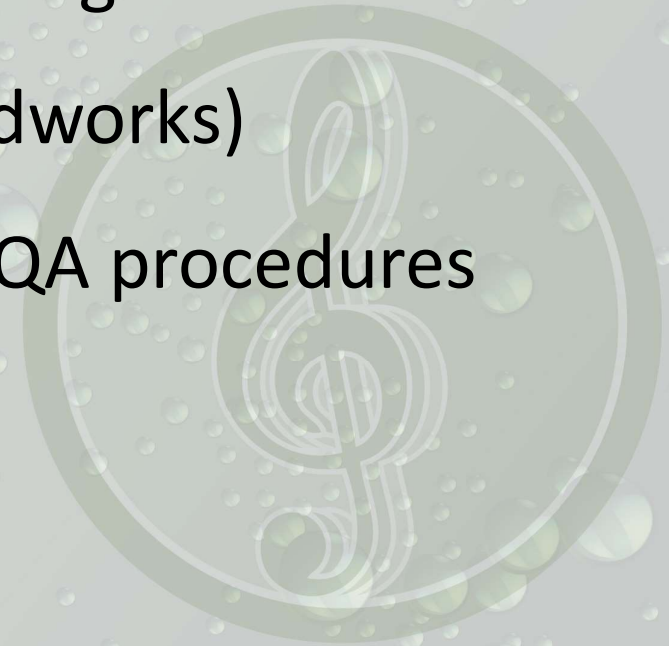
Health & safety

- Working environment
- Site movements drastically reduced
- Reduced man hours on site
- Less vehicle movements/crane lifts
- Factory work is generally safer than site work



Quality

- ISO 9001
- Tooling directly linked to 3D modelling
- Use of mm accurate software (Solidworks)
- Rigorous and easier to implement QA procedures
- 5C's & lean etc.
- Factory finish and testing

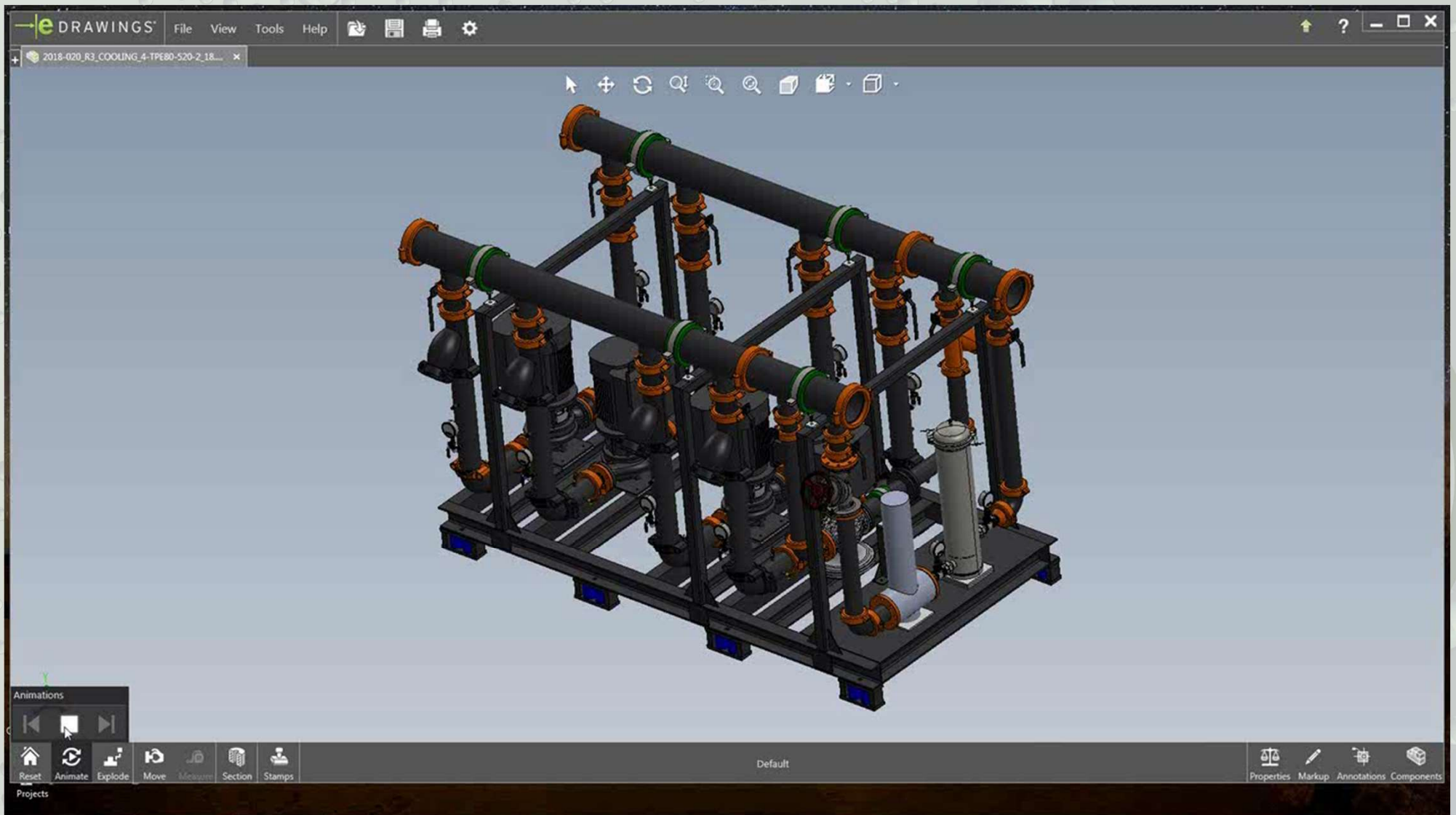


Sustainability

- Reduced deliveries to site
- Reduced packaging
- Reduced & easier to quantify CO2 output
- Reduced urban pollution
- ISO 14001 compliance



Prelims/Design



Program

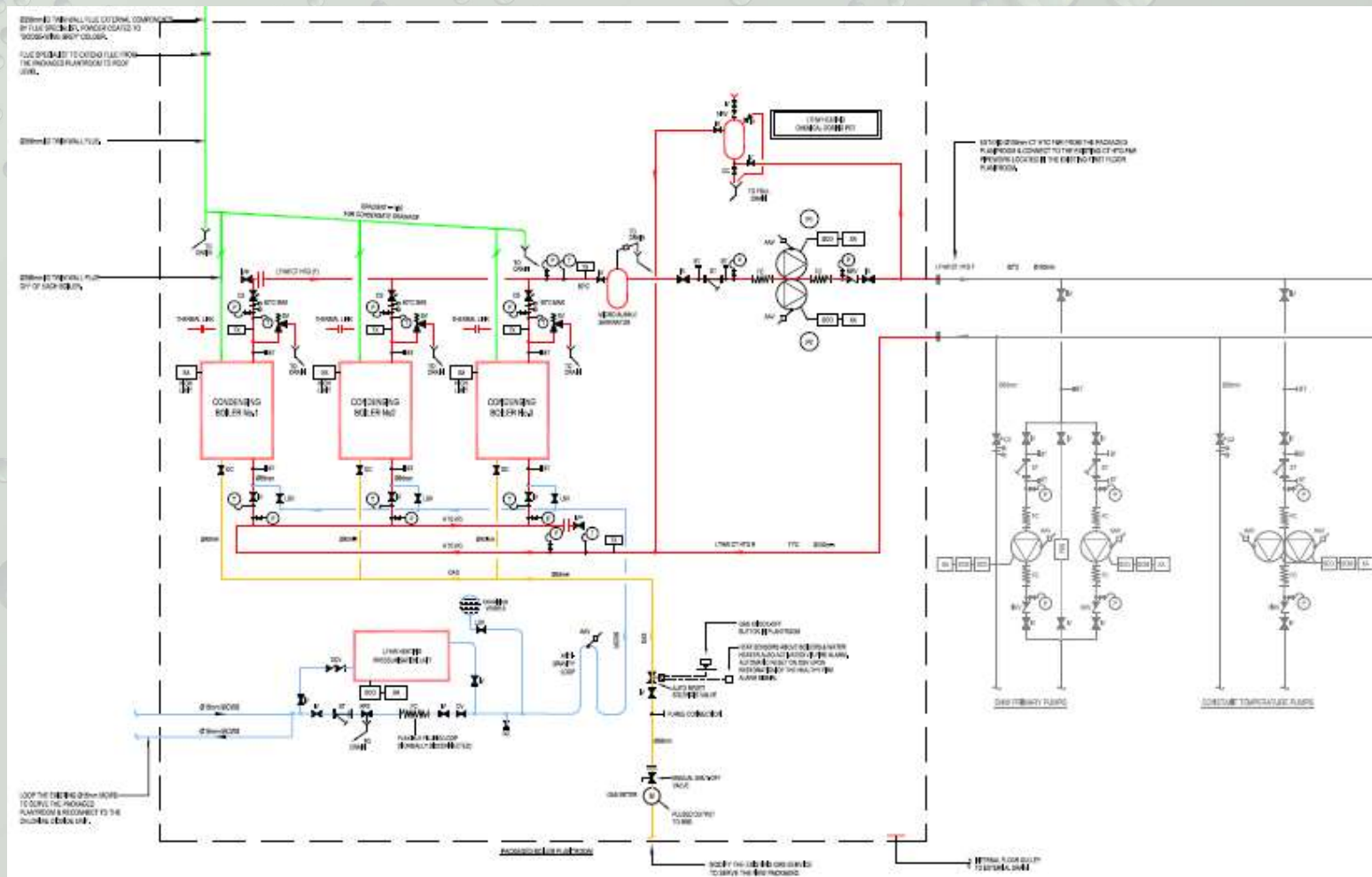
- Large plant construction/installation can start before building fabric is in place
- Plant can be taken off the project critical path or moved later.
- Complex operations moved off site
- Less “hook” time required for crane



Controls integration



Controls integration



Whole life costs

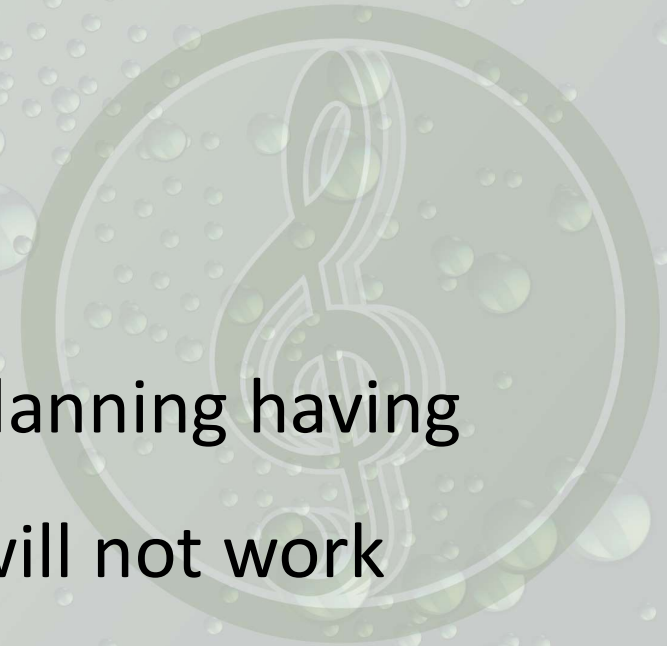
- Improved construction quality
- Possible improved running costs
- Improved PPM
- Lower over all installed cost*
- Accelerated delivery of building



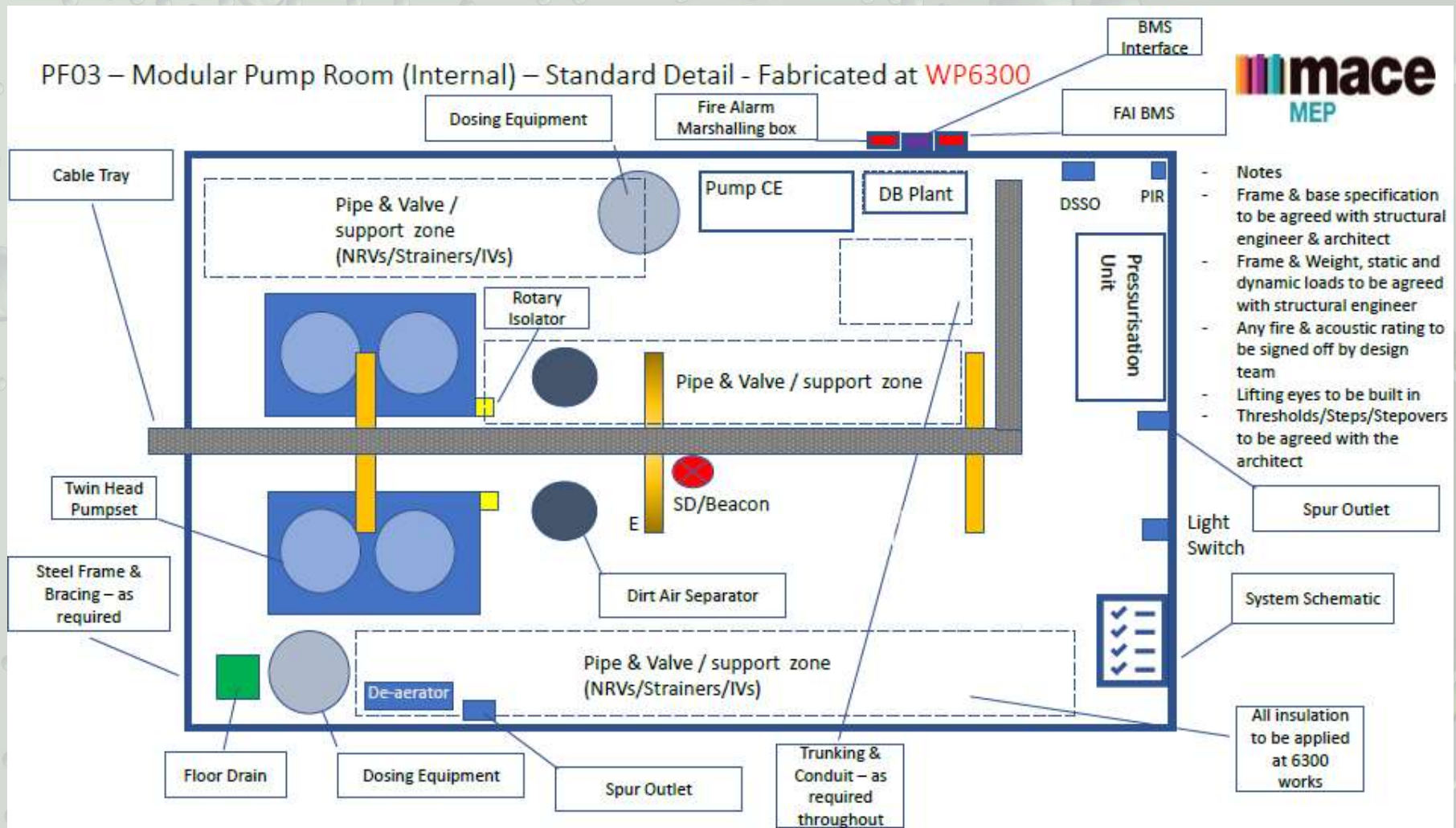
Challenges

- Lead time
- Design
- Lead time
- Design

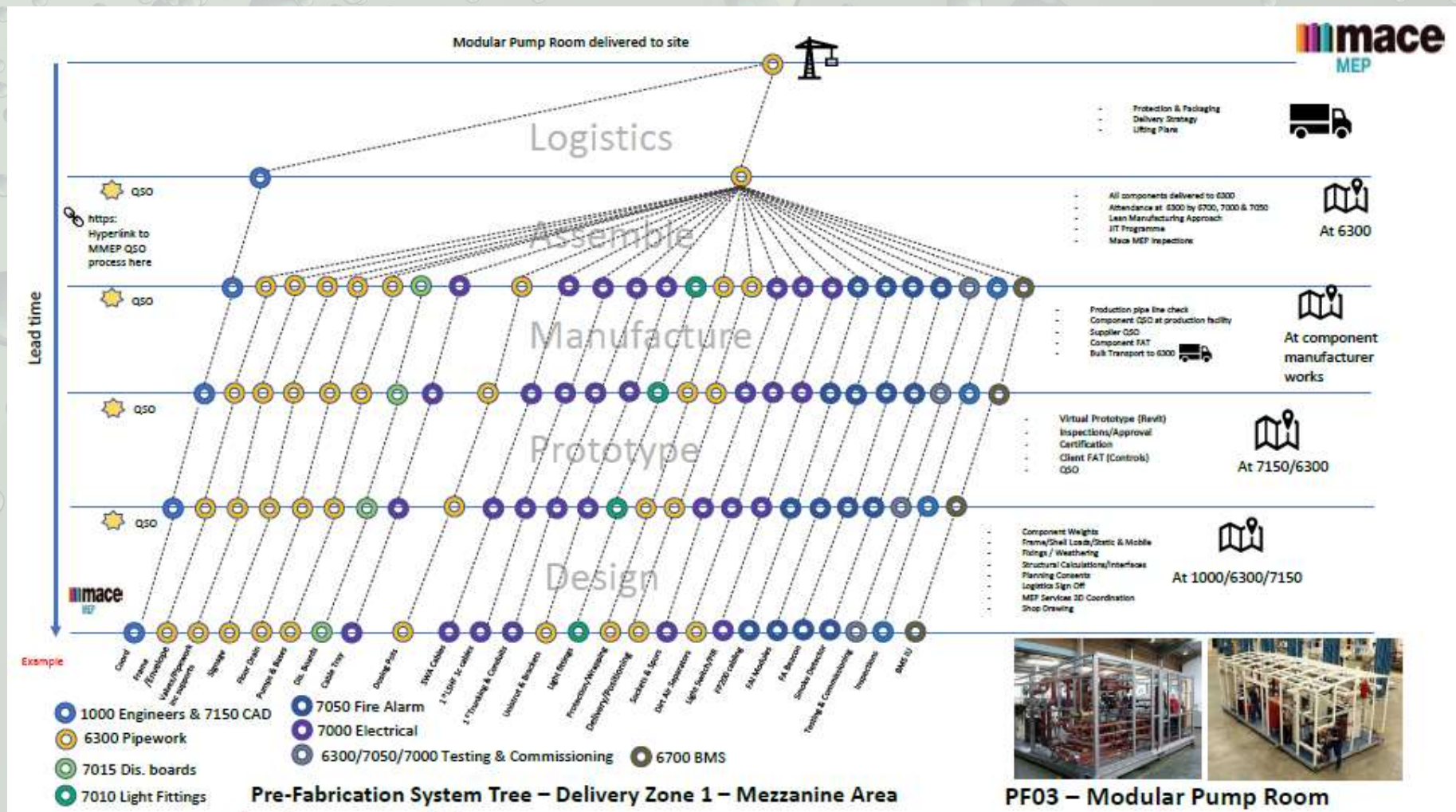
Good prefab can only happen with planning having
a conventional design with no time will not work



The future



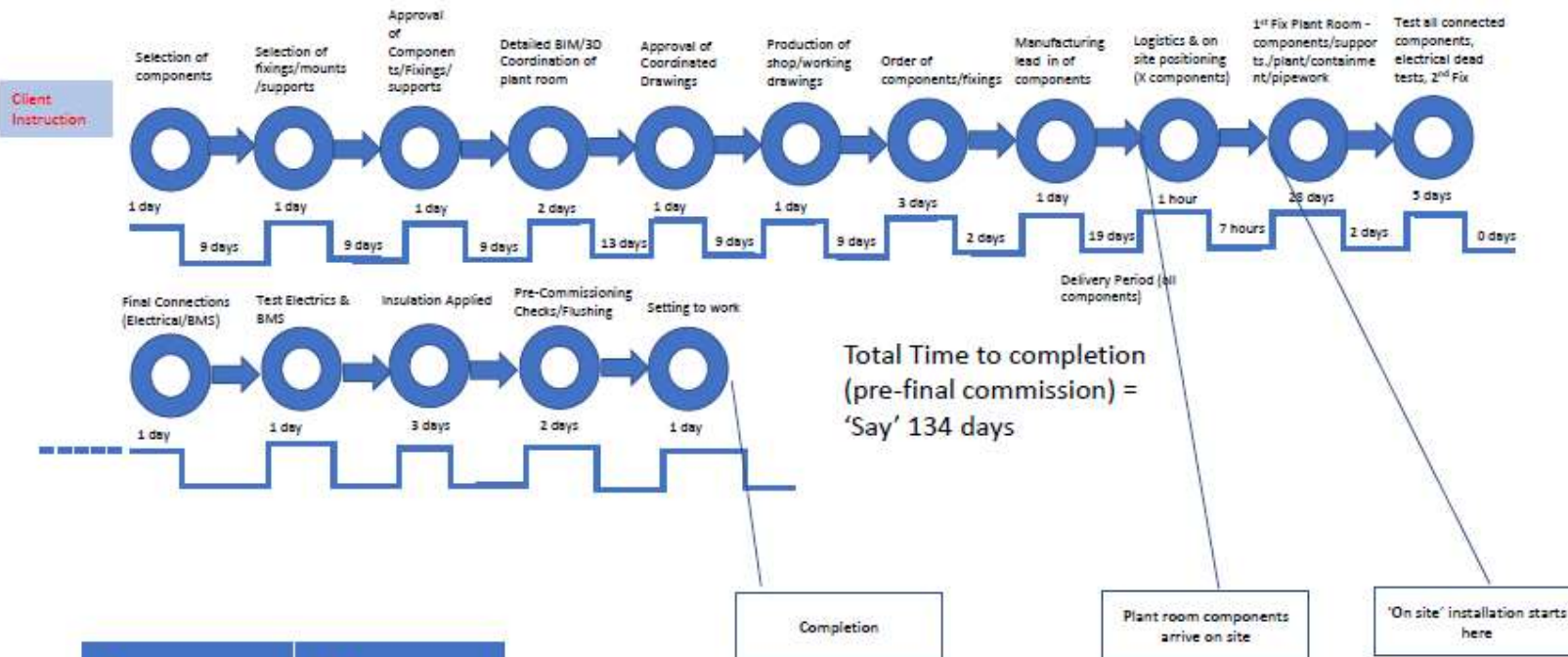
The future



The future



LPHW/CHW Pump Plant Room – Current State – On Site Assembly – ‘Example’

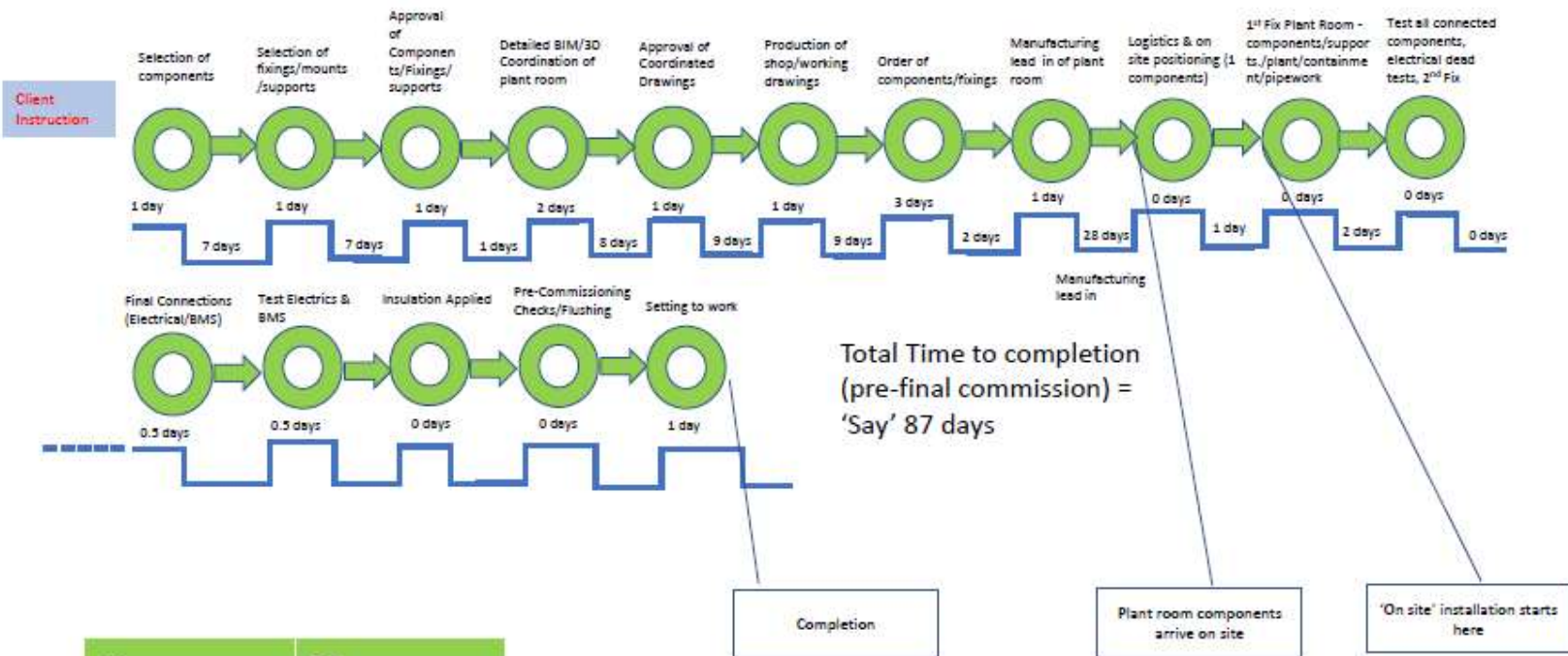


Ct	134
NVA	90.87
VA	43.13

The future



LPHW/CHW Pump Plant Room – Future State – Off Site Assembly – ‘Example’



Ct	87
NVA	74
VA	13

Thank you

