

Embedding CDM 2015

Four years on

- Vision for the Pre –Con Phase**
- Focus on Principal Designer**

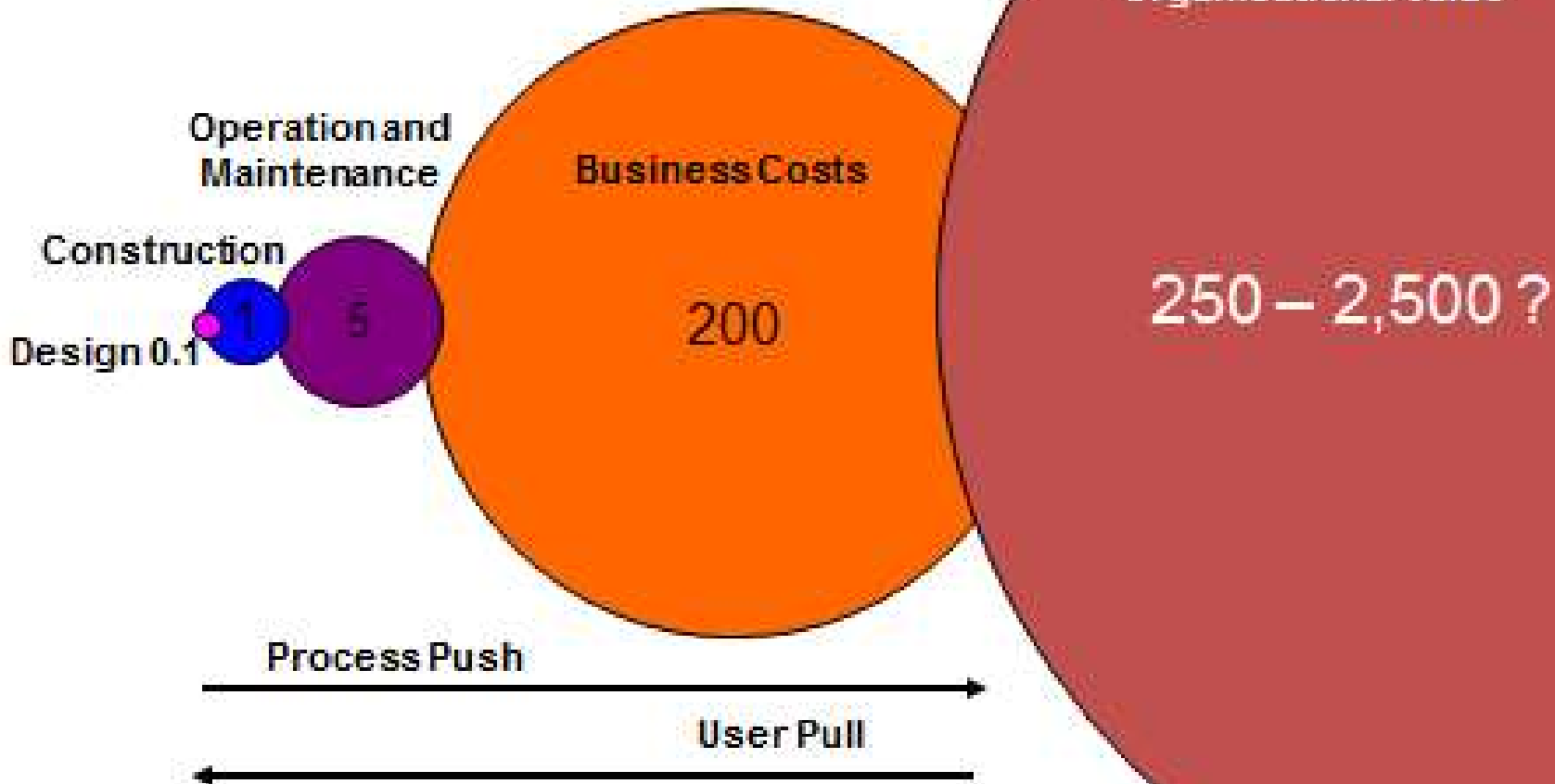
HSE Construction Sector

Summer 2019

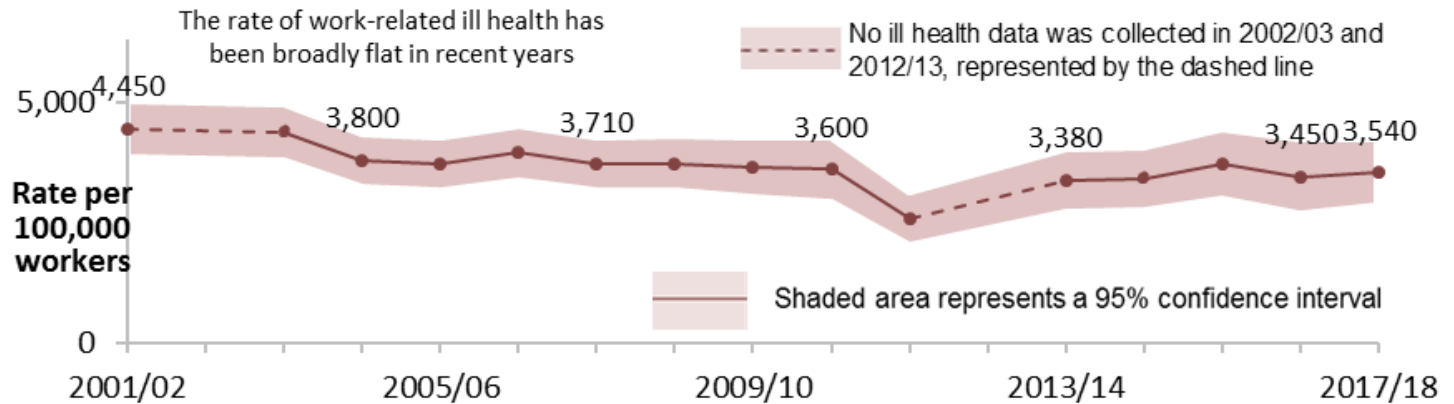
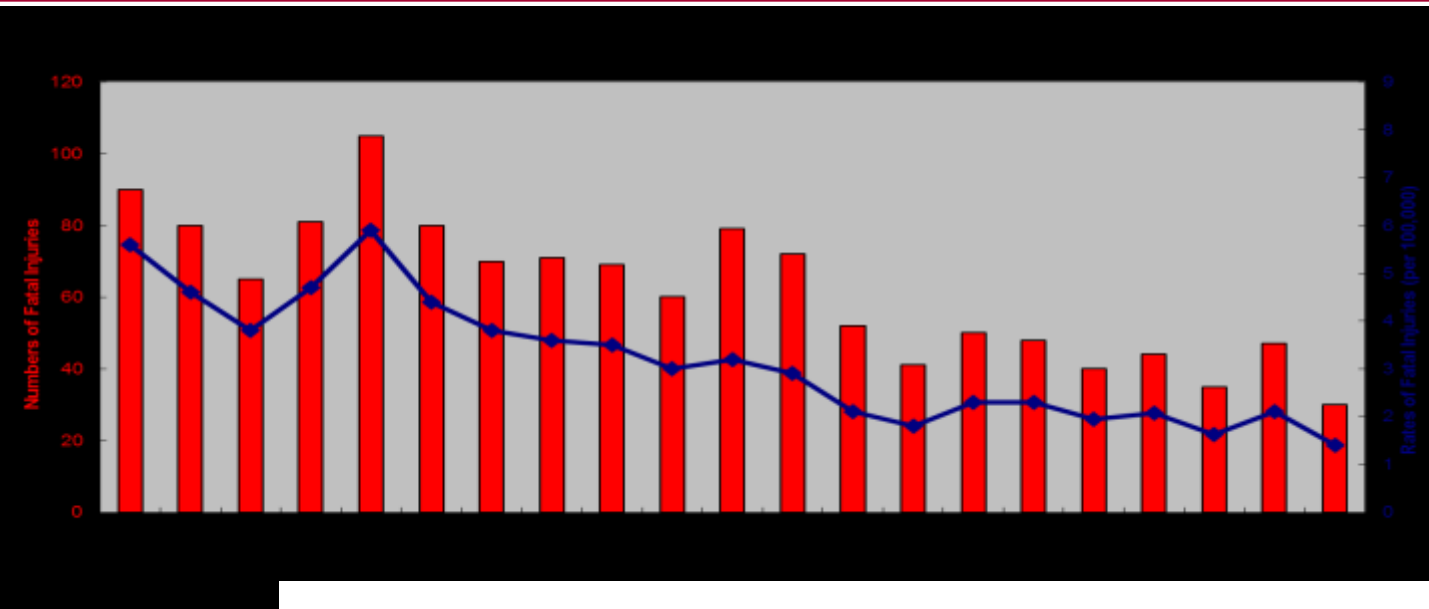
Embedding CDM 2015

- Three new priorities;
 1. Persuading Clients and their advisers that investment in planning the Pre-con stage will pay off.
 2. Working with Principal Designers to establish good practice
 3. Ensuring that the benefits of digital technologies for H&S are realised – application during design and planning leading to improved outcomes on site.

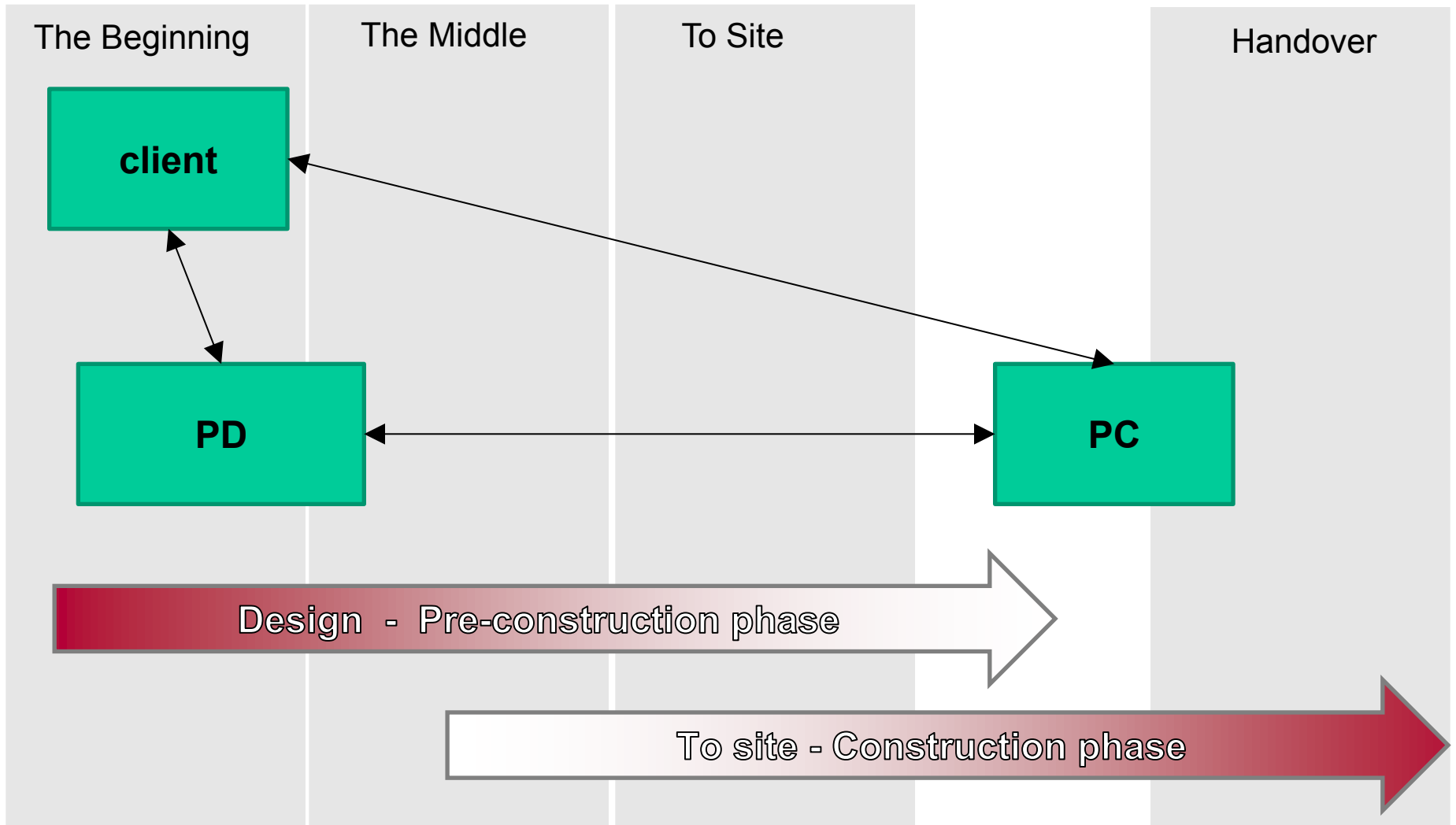
Influencing value



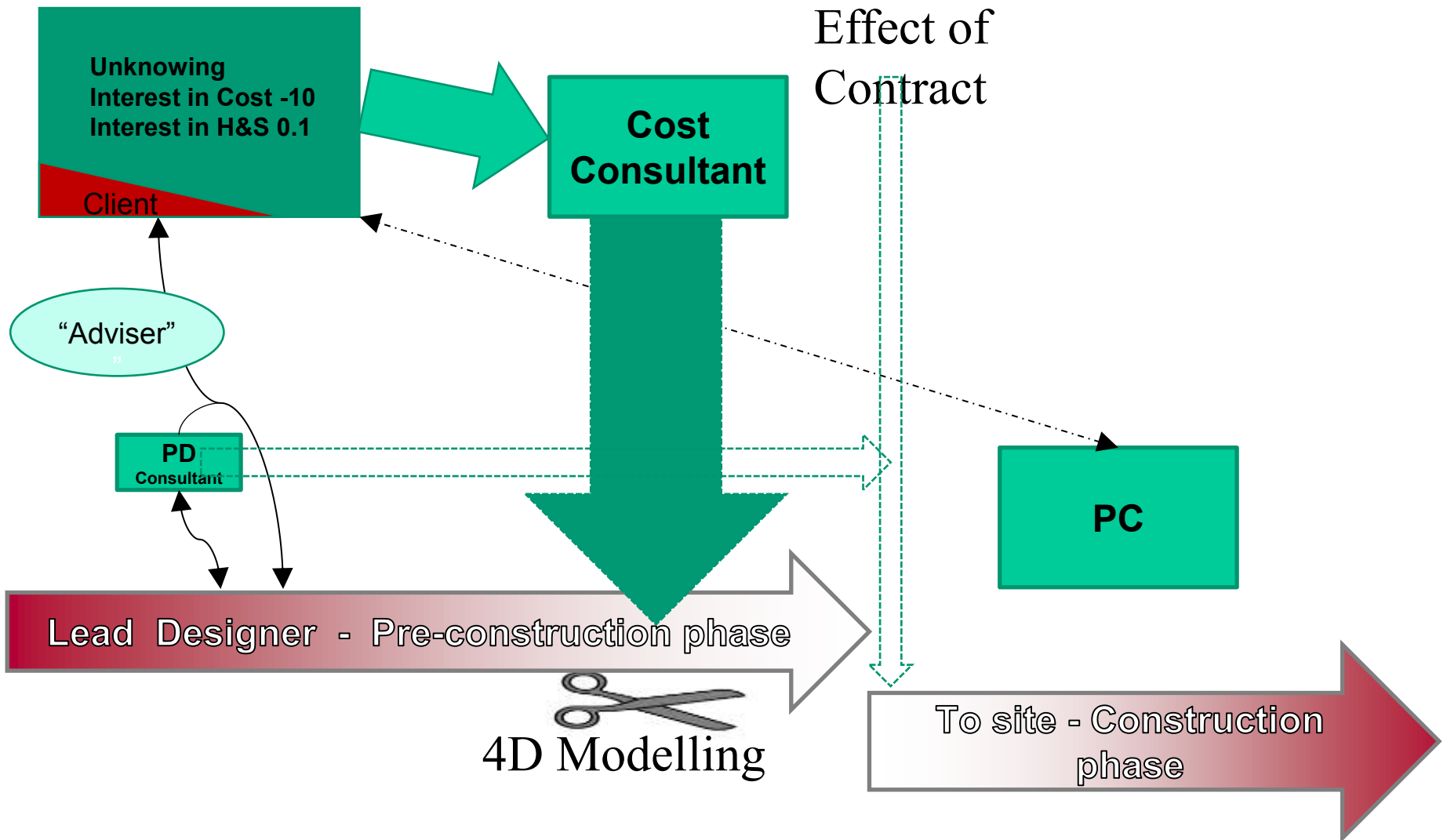
Fatal injuries & ill health in workers



Good Practice for Principal Designers



Current Negatives for Principal Designers



Good Practice for Principal Designers



client

Well structured Project Management System

Principal Designer led risk management

Principal Contractor led risk management

Design - Pre-construction phase

To site - Construction phase

The Beginning



- The Client – Logically and legally it all starts with the Client
 - The Brief
 - PCI
 - EIR – Expectations for BIM- BIM 4 H&S
 - Resources, CDE, Digital Twin etc
 - Time
 - Reg 4 (1) a. A client must make suitable arrangements for managing a project, including the allocation of sufficient time and other resources.

Example – Jacobs - Highways

- Planning a new Road- at the Options stage
- Using a GIS Platform to collaborate
 - *“A major benefit of the digitised, GIS-based SafetyWeb approach has been the creation of one single source of contemporary ‘truth’ that supports compliance with both the CDM Regulations and the ‘Management Regulations’.*
Traditionally, this information would have been held in several different spreadsheet systems maintained independently by different design disciplines across multiple offices. On a current project, the live system has delivered significant efficiencies for multi-office working with up to 300 staff interacting with the single dataset from throughout the UK and overseas.” Andrew Finch Operations Director

Plan, Manage, Monitor – the PD Role

The beginning



• What's the Plan?

Survey works
GSI Info
Preparatory works
Site establishment
Identified Hazards and risks
Survey findings
Risk studies

PD Plan

Significant/Major
Areas of risk
Specific risks
Risk factors
Risk Tolerance
Mitigation strategy
Mitigation objectives

**Client
PCI**

**PD Gap
Analysis**

**Design
Team
DRM**

**Design
Information**

Identify additional
Risk studies – Mtce & Use
Design Reviews
Temporary works reviews

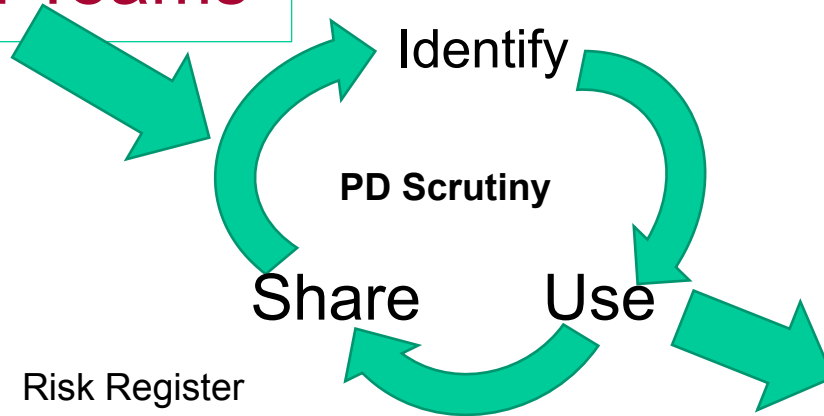
**Set Piece
Prelim Hazard
Analysis &
Safety Review**

All Stakeholders
Client
Design team leads
Other disciplines
Principal Contractor
Supply chain
Construction rep
Environmental
FM/End user

PD Manage and Monitor The middle



- Design Tasks
- Design Teams



Significant Risks
Critical information
Design assumptions
Mitigation decisions
Residual risks

Risk Register
Decision Log
Assumptions
Temp works schedule
Refer back to client
Risk Studies & review
meetings

- Design Outputs
 - BIM Tools
 - Federated Models
 - 4D Animations
 - Clash detection (to the max)
 - Risk schedules
 - Critical mtce & Use info
 - Temp Works

The Heart of the PD Role- RISK !



Co-ordinating
Health & Safety
Matters

BIM Tools

Model Federation

Clash Detection

4D Modelling

Going Deeper

The Principles of Prevention



- (a) avoid risks;
 - (b) evaluate the risks which cannot be avoided;
 - (c) combat the risks at source;
 - (d) adapt the work to the individual, especially regarding the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work, work at a predetermined work rate and to reducing their effect on health;
 - (e) adapt to technical progress;
 - (f) replace the dangerous by the non-dangerous or the less dangerous;
 - (g) develop a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors relating to the working environment;
 - (h) give collective protective measures priority over individual protective measures;
- and
- (i) give appropriate instructions to employees.

Risk Information – in Design

- Once the risks have been considered, the level of detail in the information provided to those who need it should be proportionate to the risks remaining. Insignificant risks can usually be ignored, as can those arising from routine construction activities, unless the design worsens or significantly alters these risks. L153 para 83
- PAS 1192-6:2018 Use of Symbols and Risk Registers

Design Symbol

Key Design Decisions
Design Assumptions
Critical Information
Major Risks
Not risk ranked, a narrative



Risk Symbols - Register

Specific risk named
Fully assessed
Specific mitigation stated
Who is responsible
Prioritised and managed

The Beginning

To Site



Plan, Manage, Monitor – the PD Role To site – the Construction Phase



• What's the Plan?

ECI means no surprises
Design for Temp works completed
Critical sequences identified
Info for H&S File identified

Plan

Significant/Major
Areas of risk
Specific risks
Risk factors
Risk Tolerance
Mitigation strategy
Mitigation objectives

Model
federation

Clash
detection

Design
Team Risk
Reviews

4D
Sequences
Modelled

IN ORDER TO : Optimise construction
performance
Review programme
Identify minor off site build opportunities
Check logistics requirements
Spot sequencing issues
Detail temp works review

Set Piece
Constructability
/Rehearsal
Review

All Stakeholders
Client
Design team leads
Other disciplines
Principal Contractor
Supply chain
Construction rep
Environmental
FM/End user



Acknowledgements to Premtech and National Grid

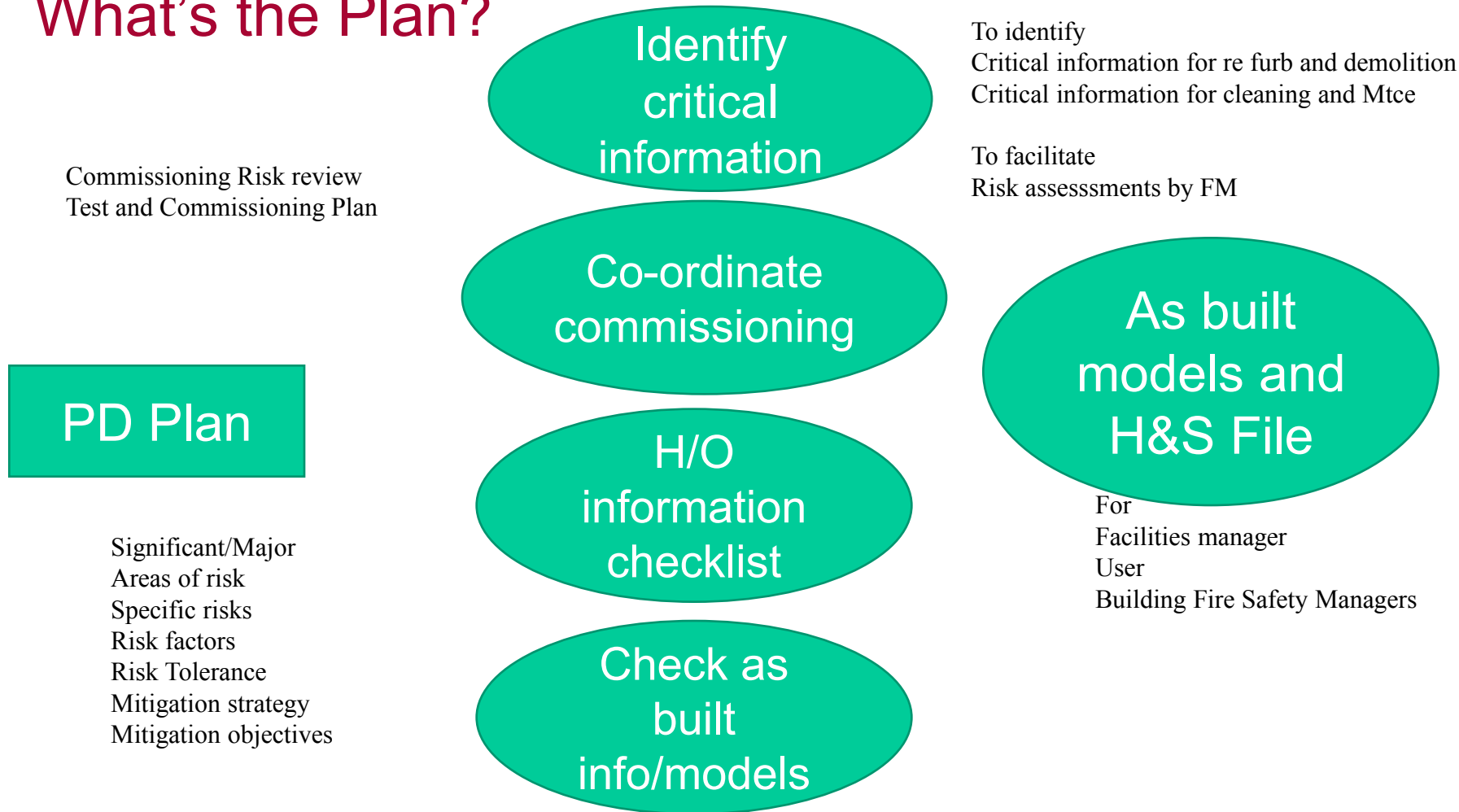
These are models created by Premtech (PD for Design phase) for National Grid to facilitate rehearsal events.



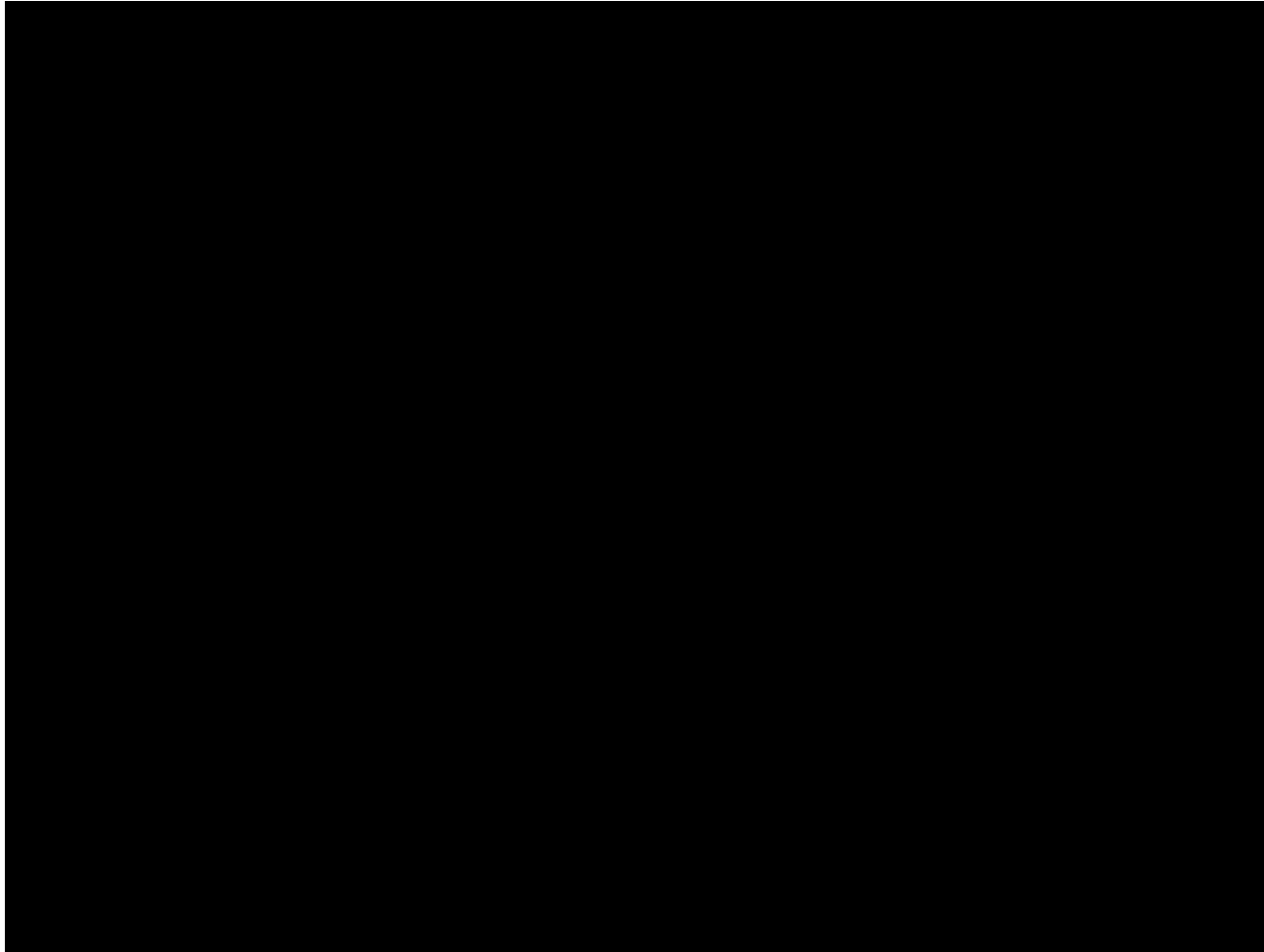
Plan, Manage, Monitor – the PD Role Commissioning and Handover



• What's the Plan?



The Digital H&S File



Structured H&S Information:

- Compliant H&S File
- Pertinent O&M data
- Readily accessible to end user
- Clarity through visualisation
- Pre Construction Information ready for future projects.

Metrics for the Pre Con Phase

1. Nos of escalated risks eliminated, reduced, controlled through subsequent design
2. Have design solutions used multiple mitigation strategies, eg considered substitution, HF review, technical innovation
3. Quantity and quality of model federation and clash detection – not just spatial clashes
4. Nos of RFI's returned to design team
5. Attendance/participation of key stakeholders at design reviews
6. Level of feed forward detail of constructability/rehearsal review
7. Quality of PD Plan - included all the green ovals
8. Assess quality of mitigation against Principles of Prevention
9. Engagement level of Client in risk management
10. Engagement level of PC/supply chain in ECI

Hulland Maturity Model

