

Chartered Quality Institute – Nuclear Sig
Digital Engineering and Information Governance
Energus - 30th September 2015

An introduction to BIM4Nuclear and Integrated Nuclear Digital Environment (INDE)

Philip Isgar – Director Sunbeam Management Solutions and a member of the BIS BIM Task Group – Nuclear
Dr Manon Higgins-Bos – Strategic Business Development Manager – National Nuclear Laboratory (NNL)



CabinetOffice

BIS | Department for
Business Innovation & Skills

Cabinet Office

- The Government Construction Strategy has mandated the full implementation of BIM to Level 2 by 2016, the initial policy decision in May 2011 being further reinforced by Francis Maude, Minister for the Cabinet Office in July 2012.
- *“This Government’s four year strategy for BIM implementation will change the dynamics and behaviours of the construction supply chain, unlocking new, more efficient and collaborative ways of working. This whole sector adoption of BIM will put us at the vanguard of a new digital construction era in the UK to become the world leaders in BIM”*



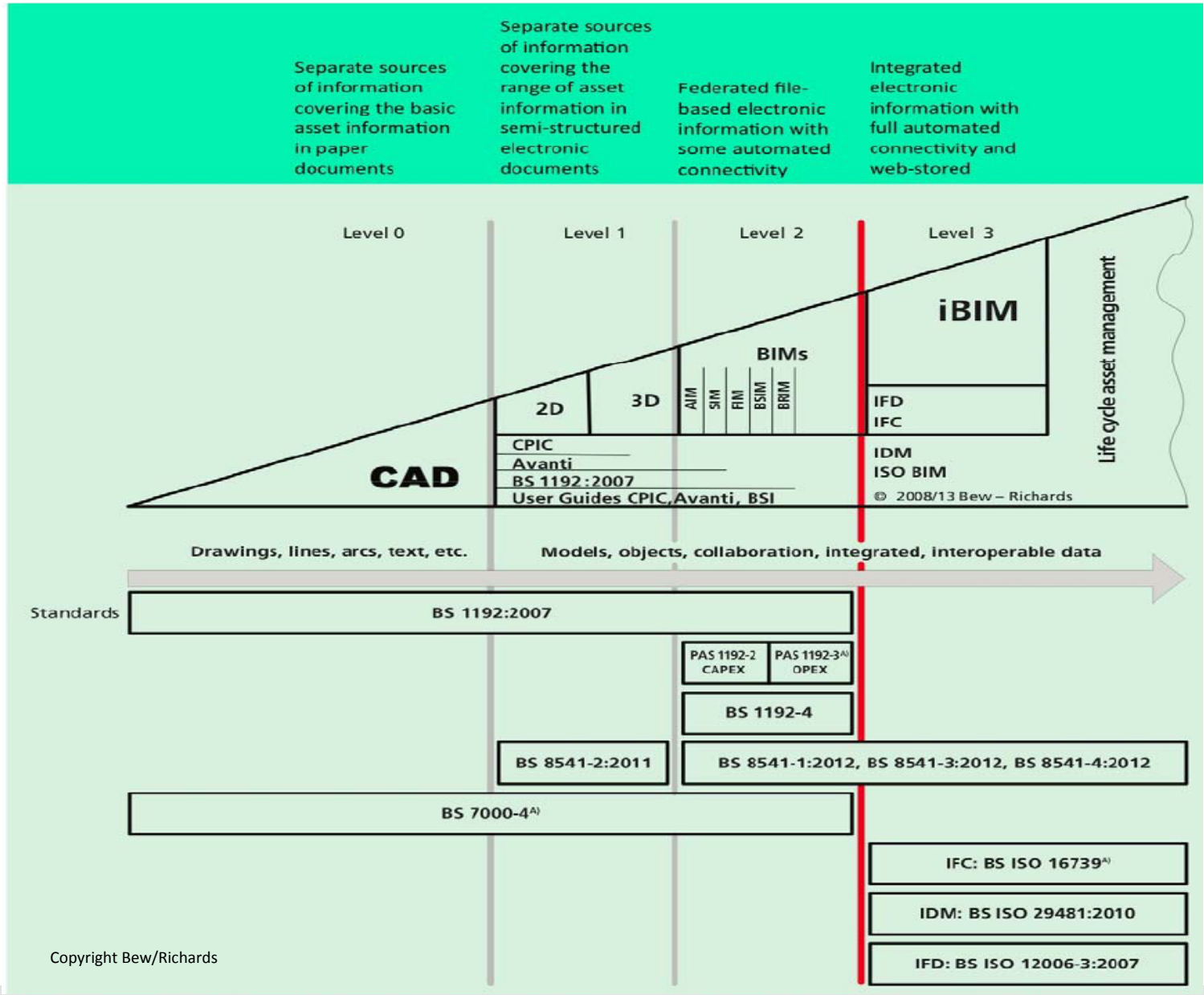
The screenshot shows the Cabinet Office website with the following content:

- Header:** Cabinet Office logo and navigation links: Contact us | Press Office | Subscribe | News | Resource Library.
- Navigation:** About the Cabinet Office, National Security, Constitutional Reform, Government Efficiency, Transparency, Big Society, Government: How it works.
- Main Article:**
 - Title:** Government Construction Strategy to reduce costs
 - Date:** 31 May 2011
 - Text:** The Minister for the Cabinet Office, Francis Maude publishes the Government's new Construction Strategy today. The strategy will reform the way in which government procures construction across all sectors, and in doing so will reduce costs by up to 20% by the end of this parliament, helping both the government and the construction sector. The Government's Plan for Growth, published alongside Budget 2011, and the Infrastructure Cost Review Implementation Plan (ICRIP, 527K3), published earlier this year, highlights the critical importance of an efficient construction industry to the UK economy and the need for reform of public sector construction procurement to improve value for money to taxpayers and enable the construction industry to focus on bringing forward innovative solutions. This strategy sets out the detailed programme of measures Government will take to reform the way in which it procures construction.
 - Image:** A photograph of Francis Maude speaking.
- Related links:** Government Construction Strategy, Infrastructure UK cost review, Growth review.
- Related News and Media:** Government to invest £22 billion in construction projects, £4 billion to flow directly to SMEs through Government construction projects and a new construction pipeline, Taxpayers get more for their money on construction projects.
- Footer:** View all news



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BIM Standards and working through Level 2

PAS1192:2:2013

- This document describes the production of co-ordinated design and construction (CAPEX) information, it is designed to be independent of any procurement route or form of contract is used. Each task needs to be carried out in a particular order for the mutual benefit of all those involved, otherwise known as "collaborative working". In a collaborative working environment, teams are asked to produce information using standardised processes and agreed standards and methods, to ensure the same form and quality, enabling information to be used and reused without change or interpretation. If an individual, office or team changes the process without agreement, it will hinder collaboration – a participant insisting on "my standard" is not acceptable in a collaborative working environment.
- Wherever possible, the principles of lean are also described to reduce the expenditure of resources for any goal other than the creation of value for the employer. The document references BS 1192:2007 which promotes the avoidance of wasteful activities such as:
 - waiting and searching for information
 - over-production of information with no defined use
 - over-processing information, simply because the technology can
 - Defects, caused by poor co-ordination across the graphical and non-graphical data set which require rework.
- The document clearly describes the data descriptions and processes to enable this lean delivery process. The document also deals with the decommissioning processes at the beginning of the cycle. It may be that this area will require further development to suit the demanding markets of Nuclear and Offshore.

PAS1192:3:2014 (Available)

- This document describes the same data and process delivery and use definitions as described above, but for the operational phase of the asset. Of key focus is the development of PAS 55 compliance operational strategies and the effective transfer of data across into operations to aid soft and effective landings

BS1192:4:2014 (Available)

- This document is the final development of COBie-UK-2012, which is the interim data definition for information deliveries. This has been further enhanced and developed through work carried out in the infrastructure market to develop "COBie for all"

PAS1192:5 (Consultation closed on 2nd March 2015) (Available)

- Specification for security-minded building information, digital built environments and smart asset management

BIM Protocol (Available)

- A suite of BIM commercial and contractual advice documents and standard forms

Government Soft Landings (Available)

- A suite of documents describing Soft Landing policy and processes to ensure effective involvement of users and operators in the development of scope, design and delivery. Also ensuring effective training and handover into operations and finally the structured gathering of Post Occupation (Operational) Effectiveness data, to enhance both the current and future assets.

Uniclass 2 (Available)

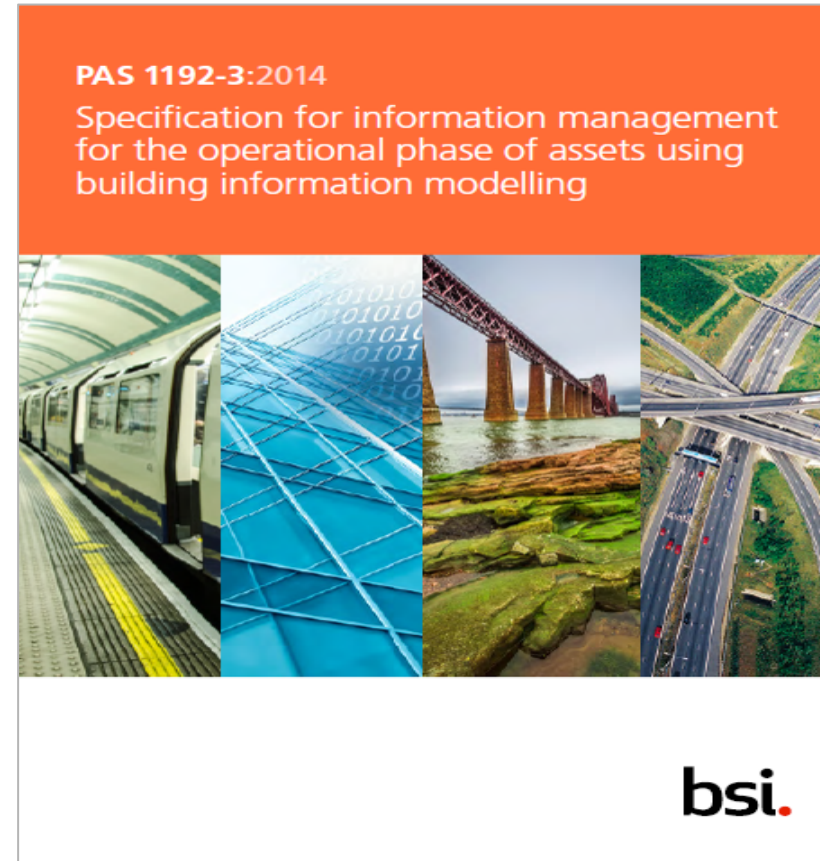
- A structured and standardised information classification system

The Digital Plan of Works (Available)

- An industry standard method of describing geometric, requirements and data deliveries at key stages of the project cycle



PAS1192-2 BIM & Information Management in the Capital Phase
February 2013



PAS1192-3 BIM & Information Management in the Operational Phase
March 2014

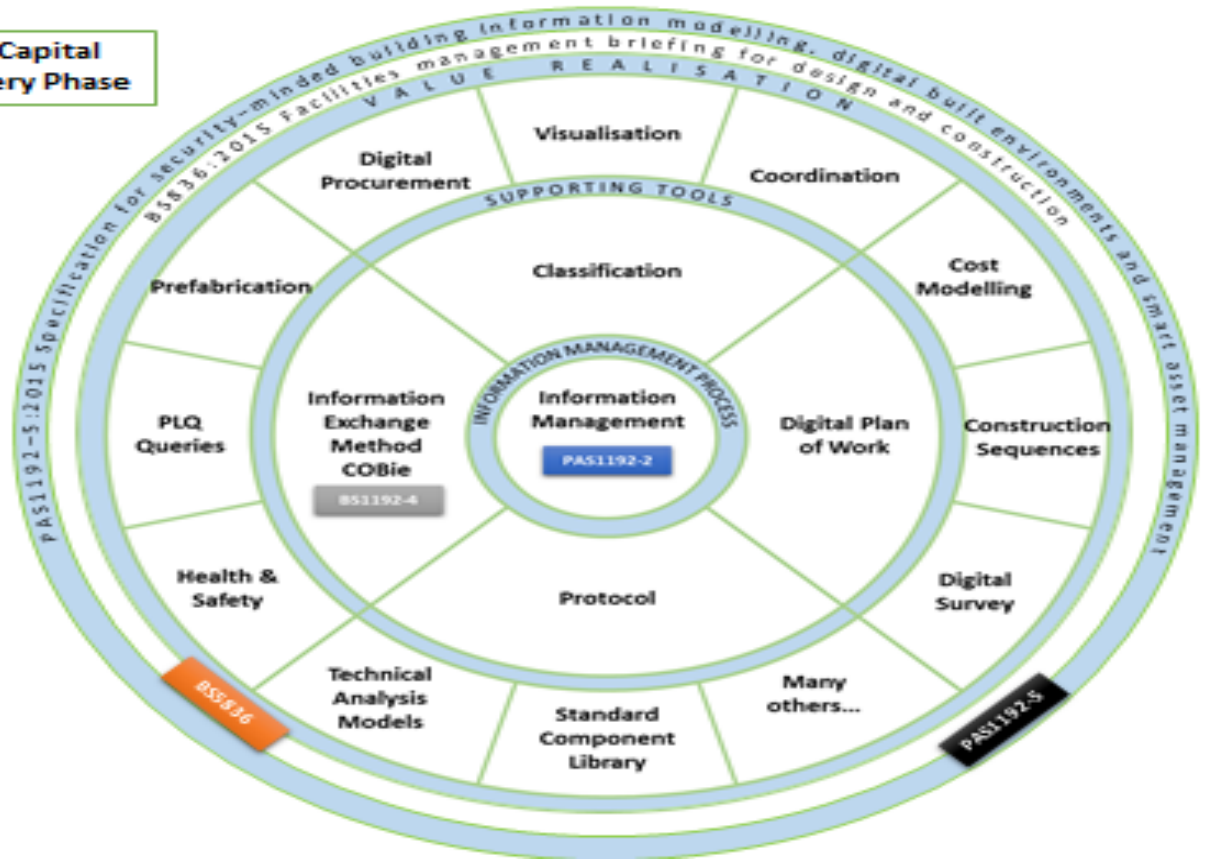
PAS 1192-2:2013

Specification for information management for the capital/delivery phase of construction projects using building information modelling



bsi.

Asset Capital Delivery Phase



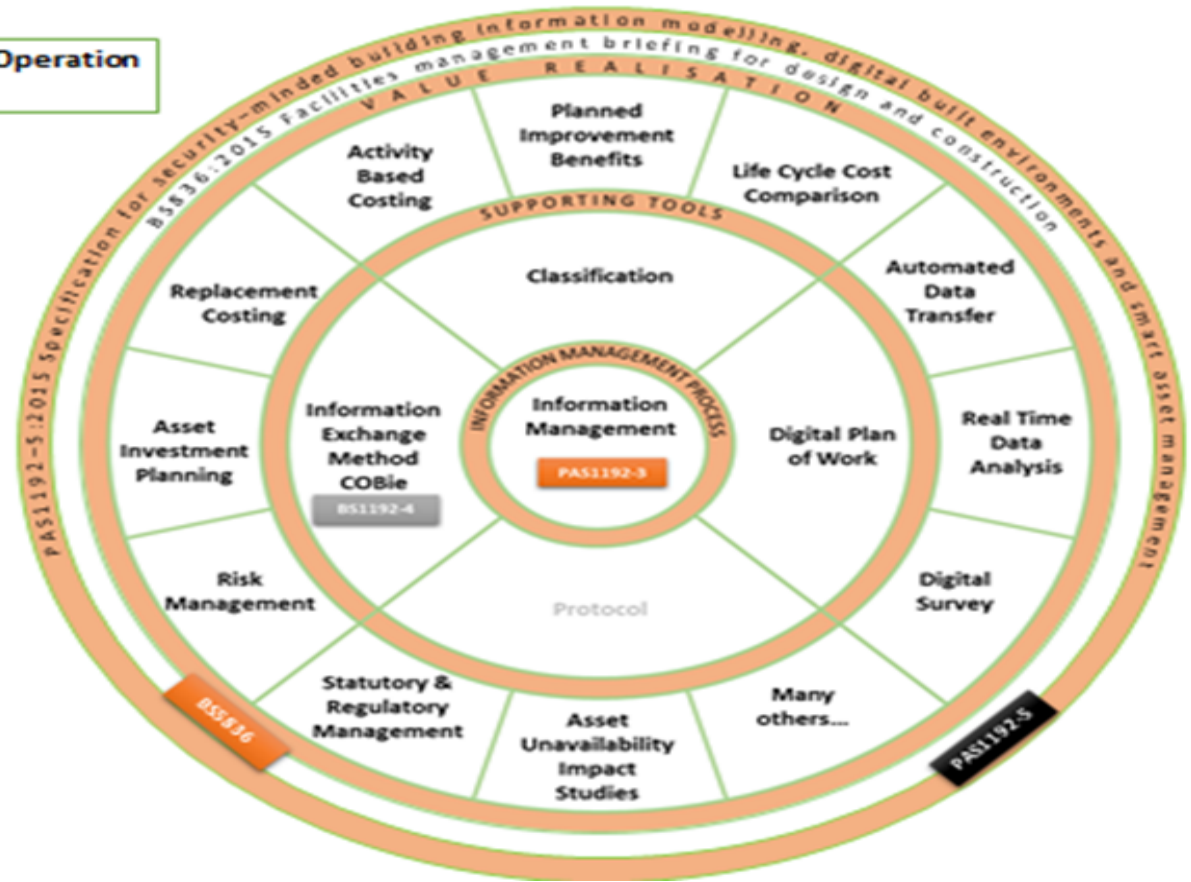
PAS 1192-3:2014

Specification for information management for the operational phase of assets using building information modelling

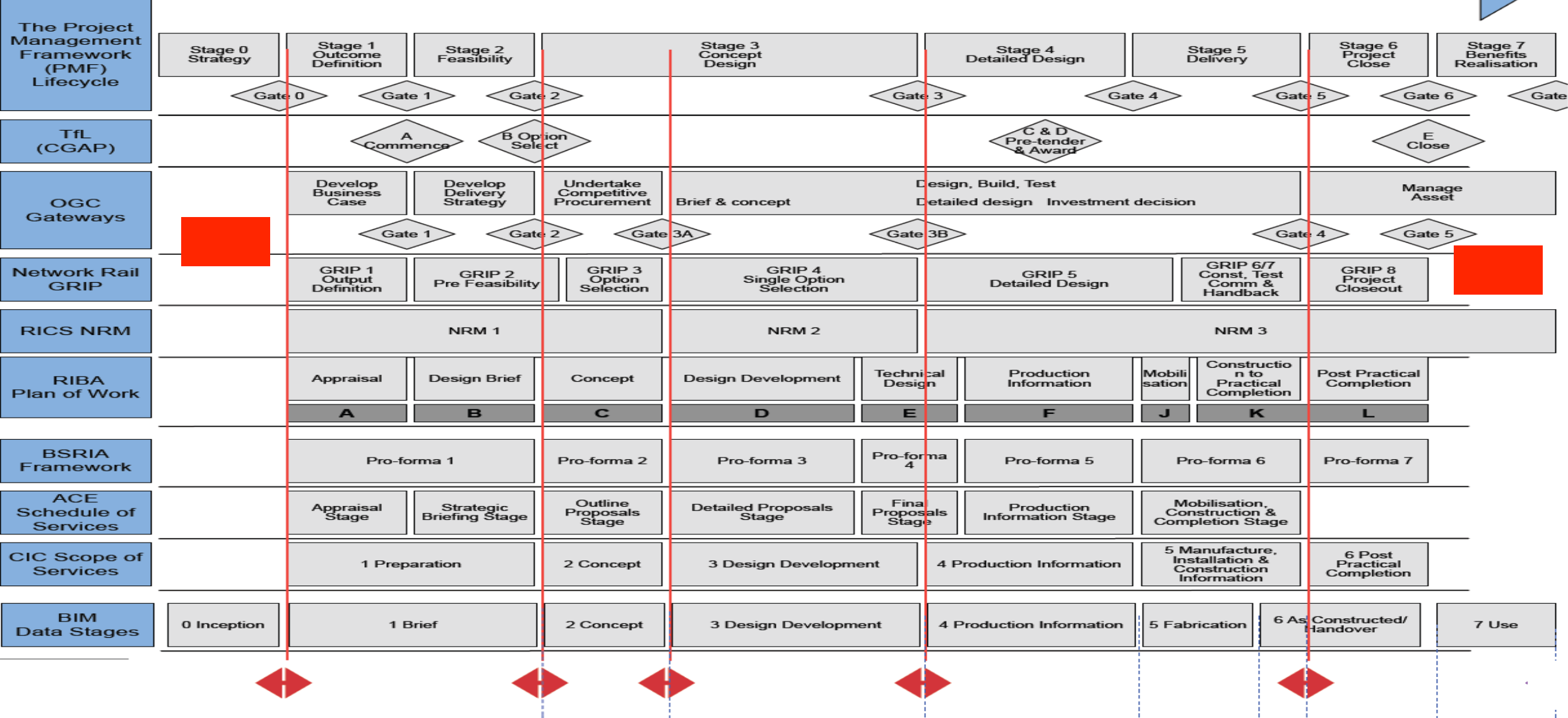


bsi.

Asset Operation Phase



Existing Work Stages



A plan of work for deliverables.

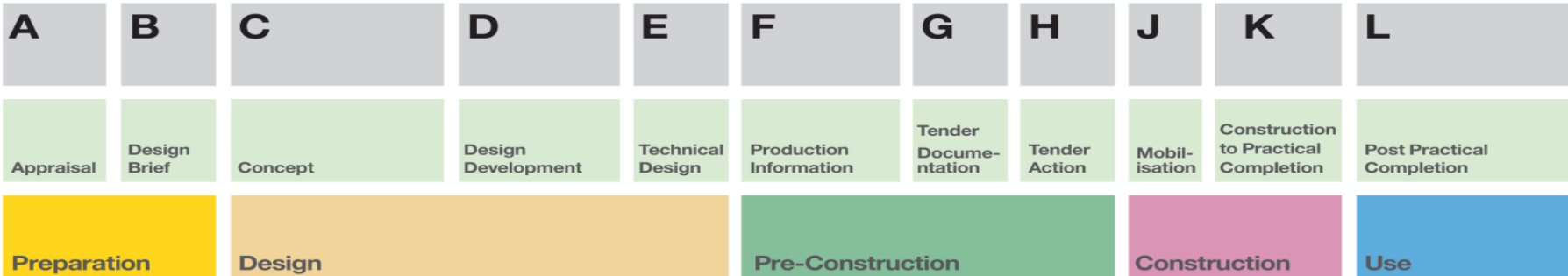
RIBA Plan of Work 2013



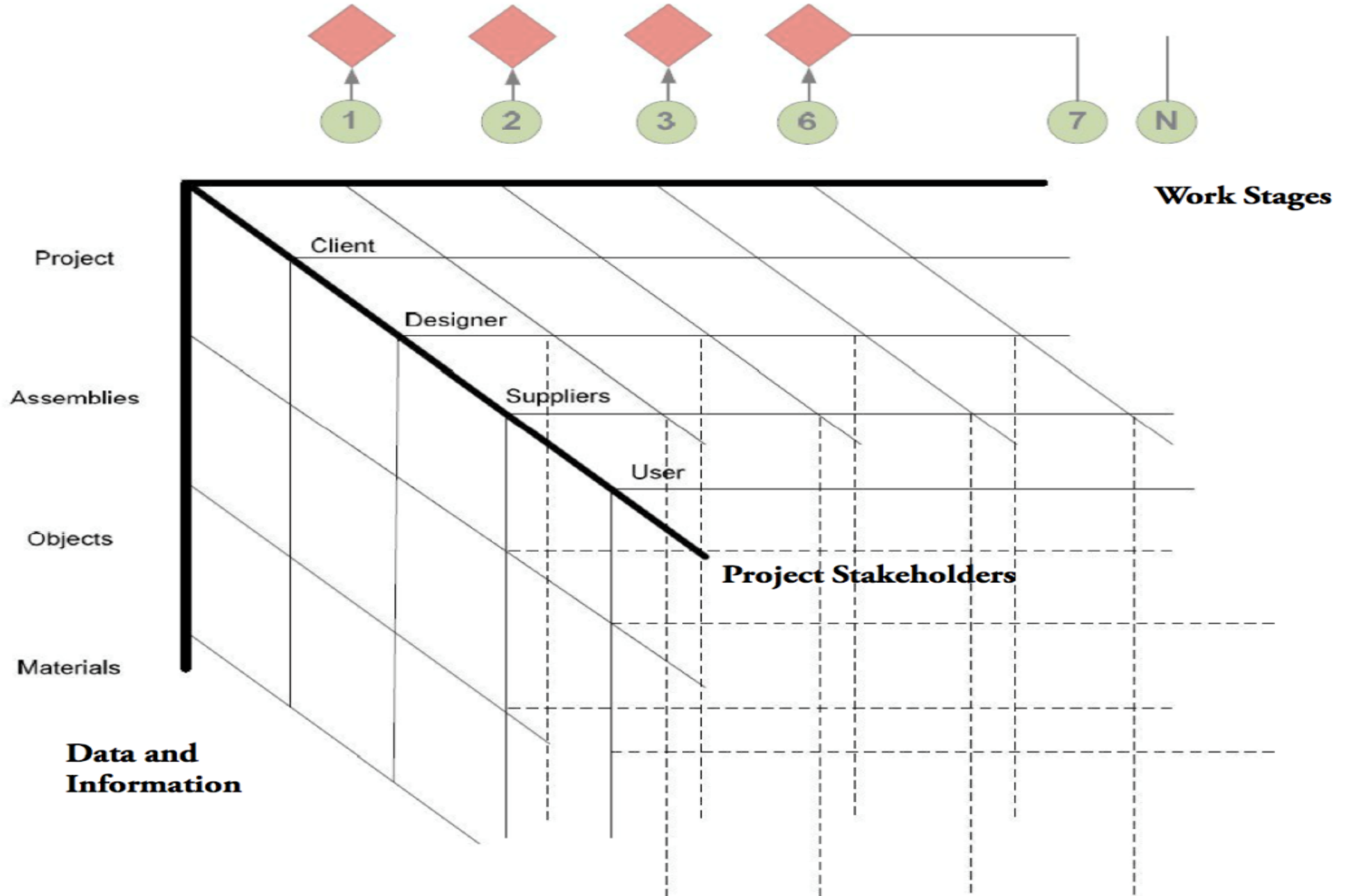
UK Government Digital Plan of Work



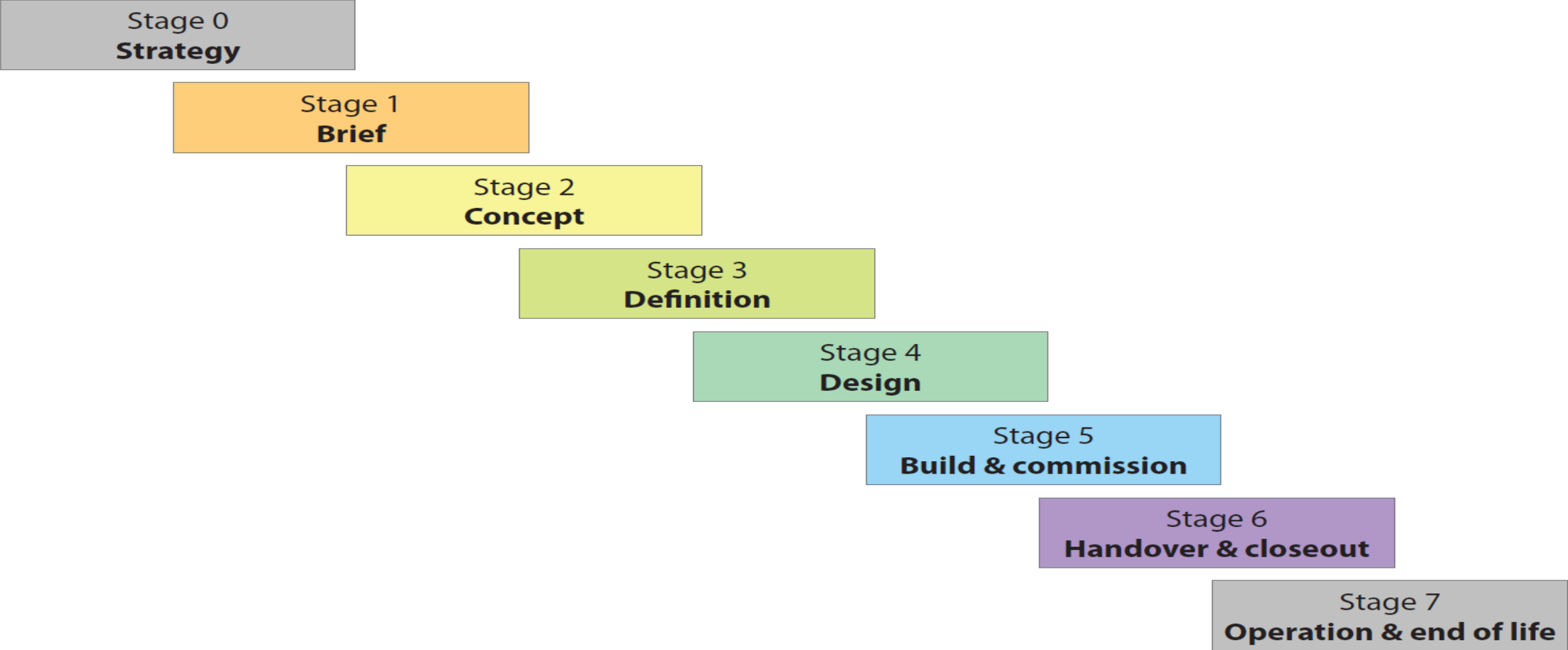
RIBA Outline Plan of Work 2007



Why do we need a 'digital' plan of work?

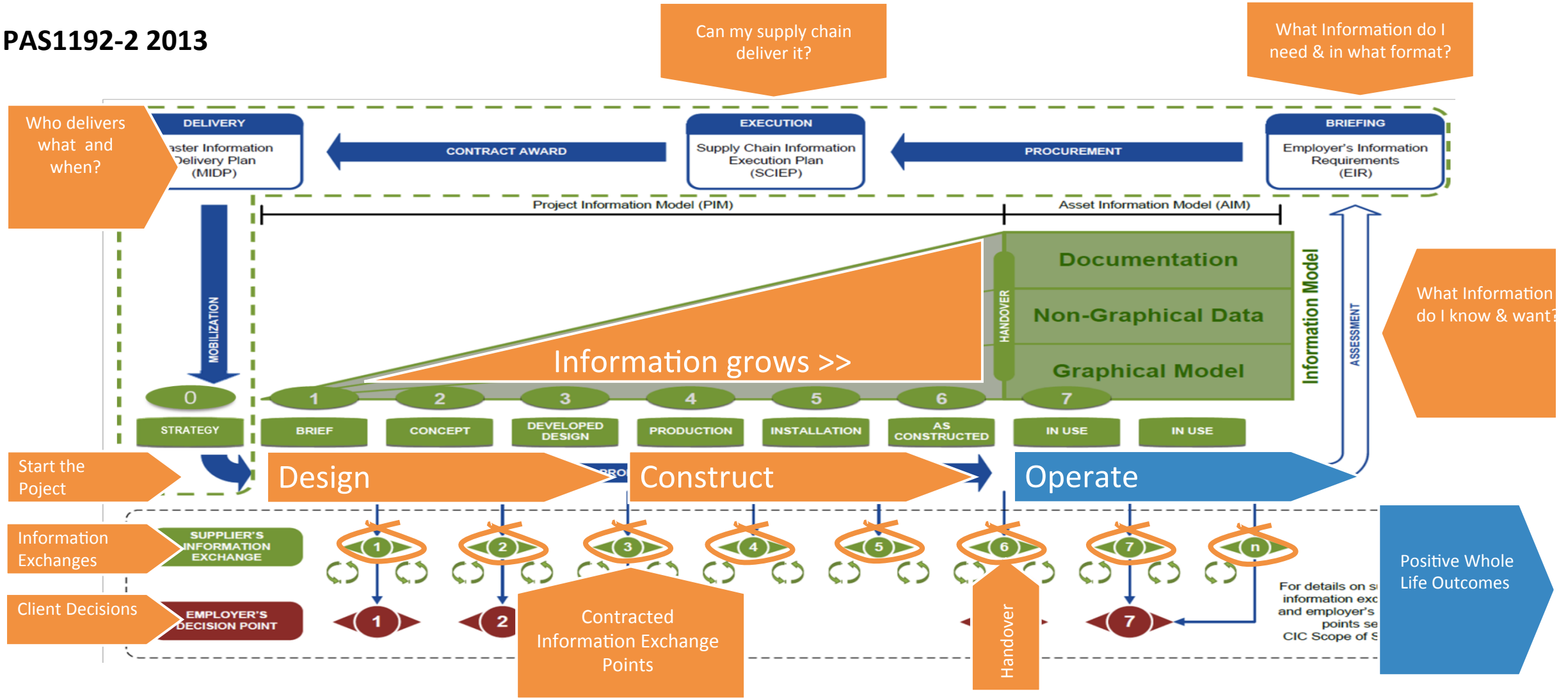


UK Government Digital Plan of Work

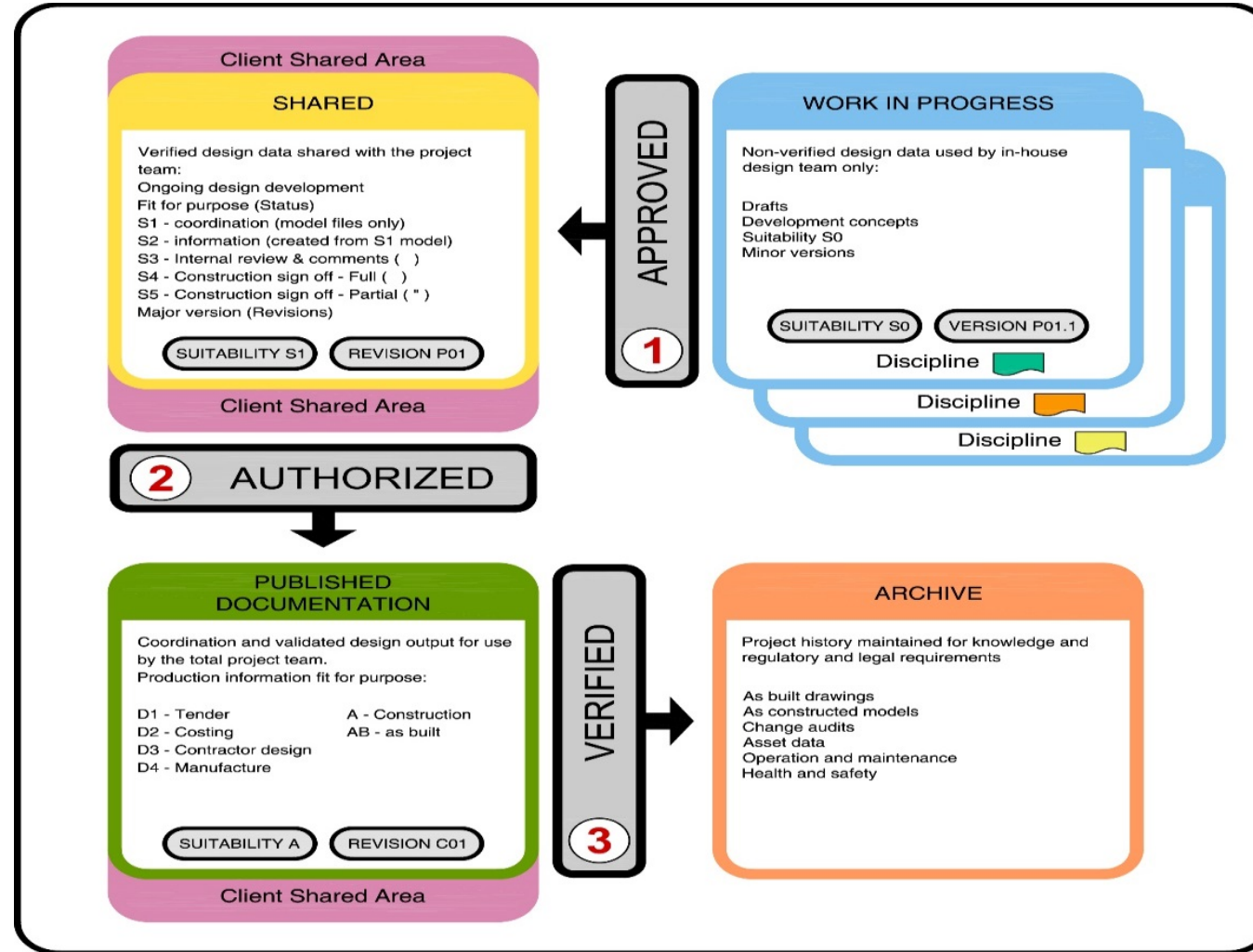


Capital Project Information

PAS1192-2 2013



Governance: Project Information Model CDE



Modified from
BS1192:2007

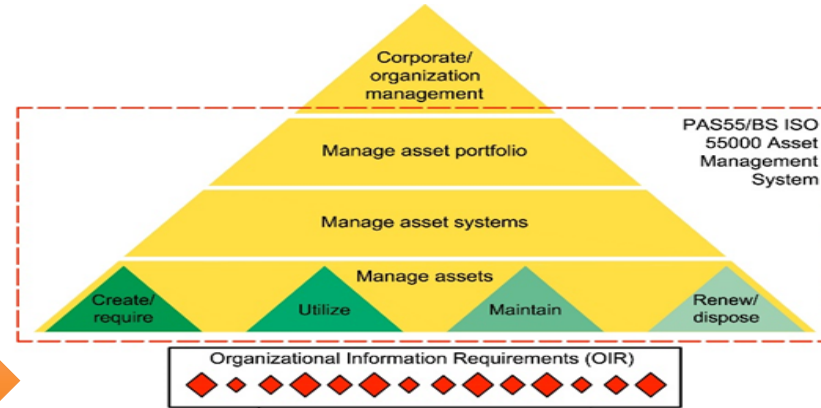
An Asset Information Model

PAS55/ISO5500 Standards Compliant

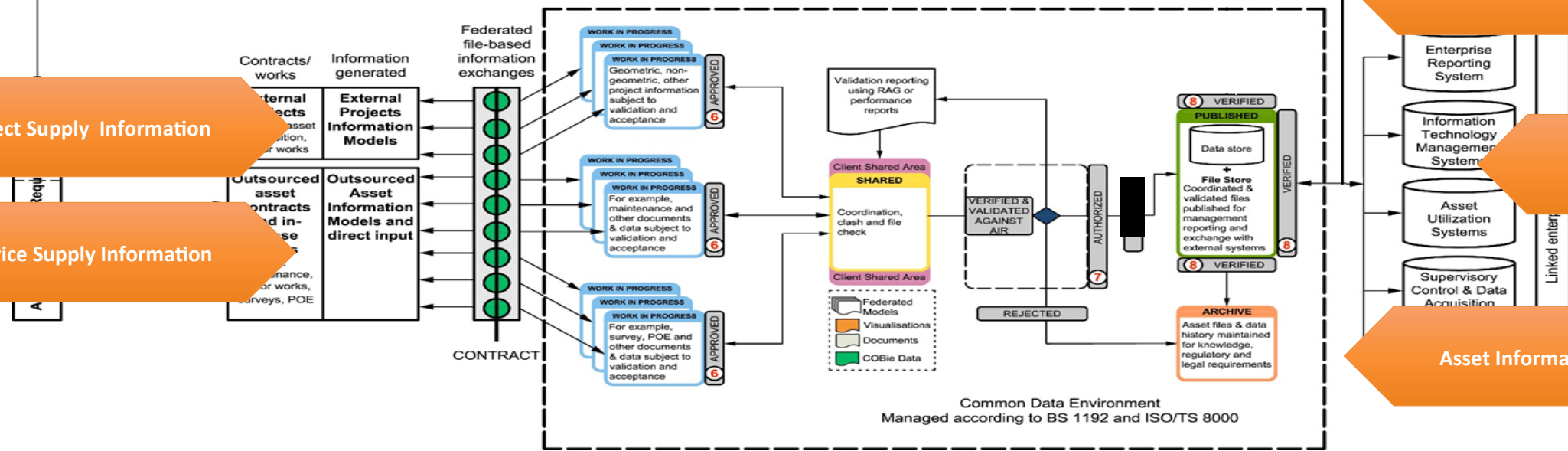
Defined Organisational Information Requirements

Project Supply Information

Service Supply Information

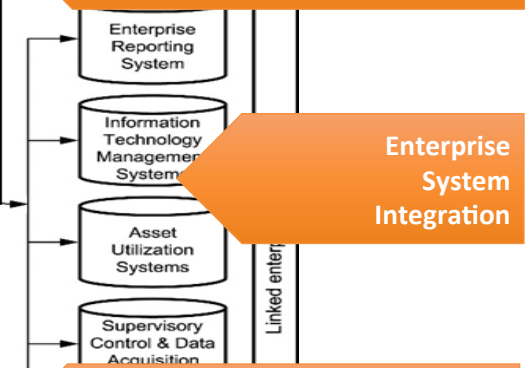


Integrated Information Reporting

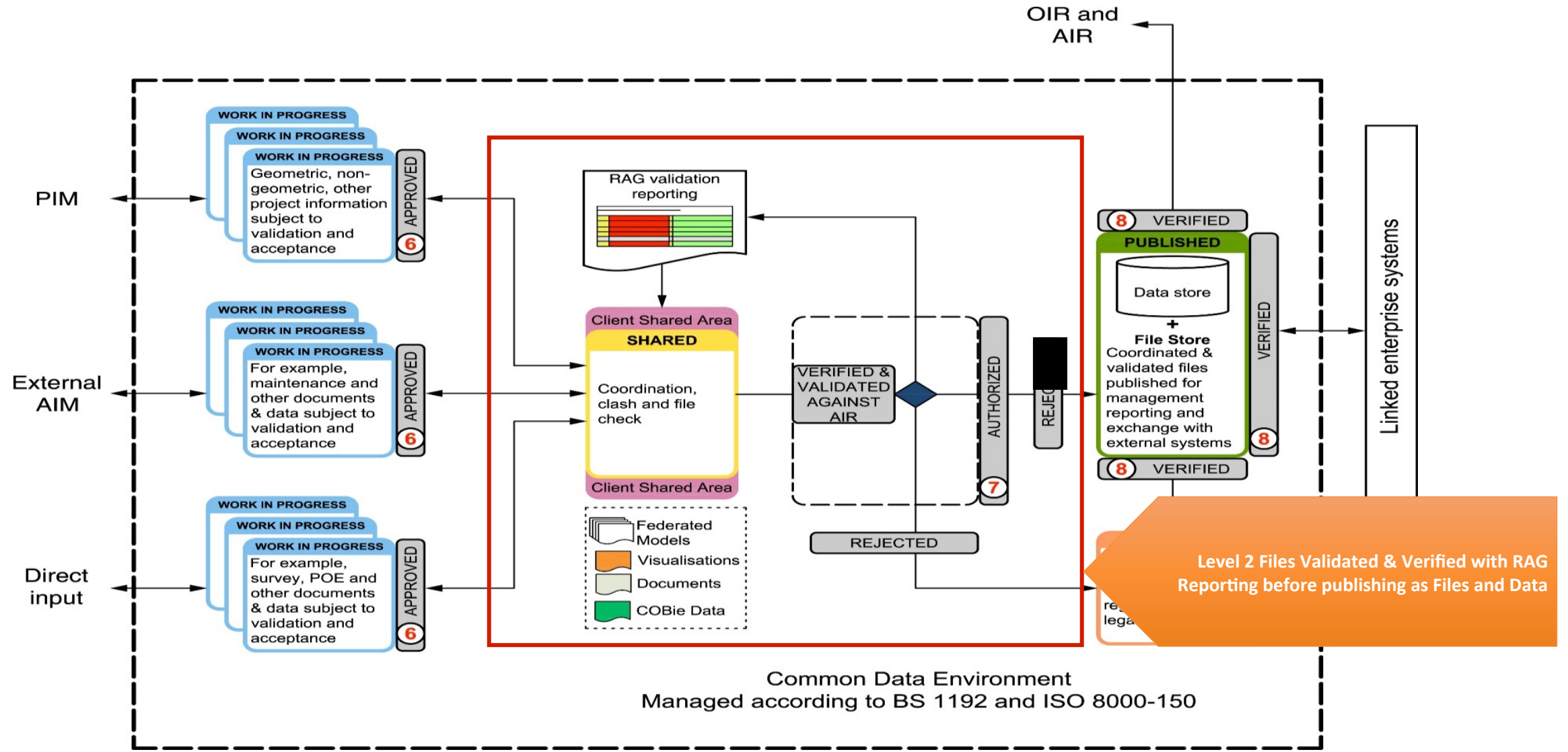


Enterprise System Integration

Asset Information Model (BIM)



Asset Information Model: Governance Reporting



Whole Life Information

PAS1192-3 2014

ISO 55000 and PAS 55 drive Asset Management

PAS55 Asset Management System

Corporate/ organization management

Manage asset portfolio

Manage asset systems

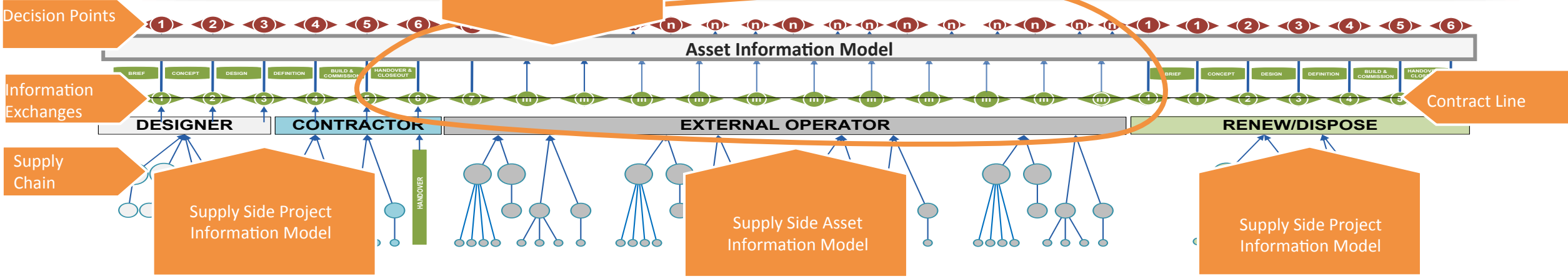
Manage

Create/ acquire

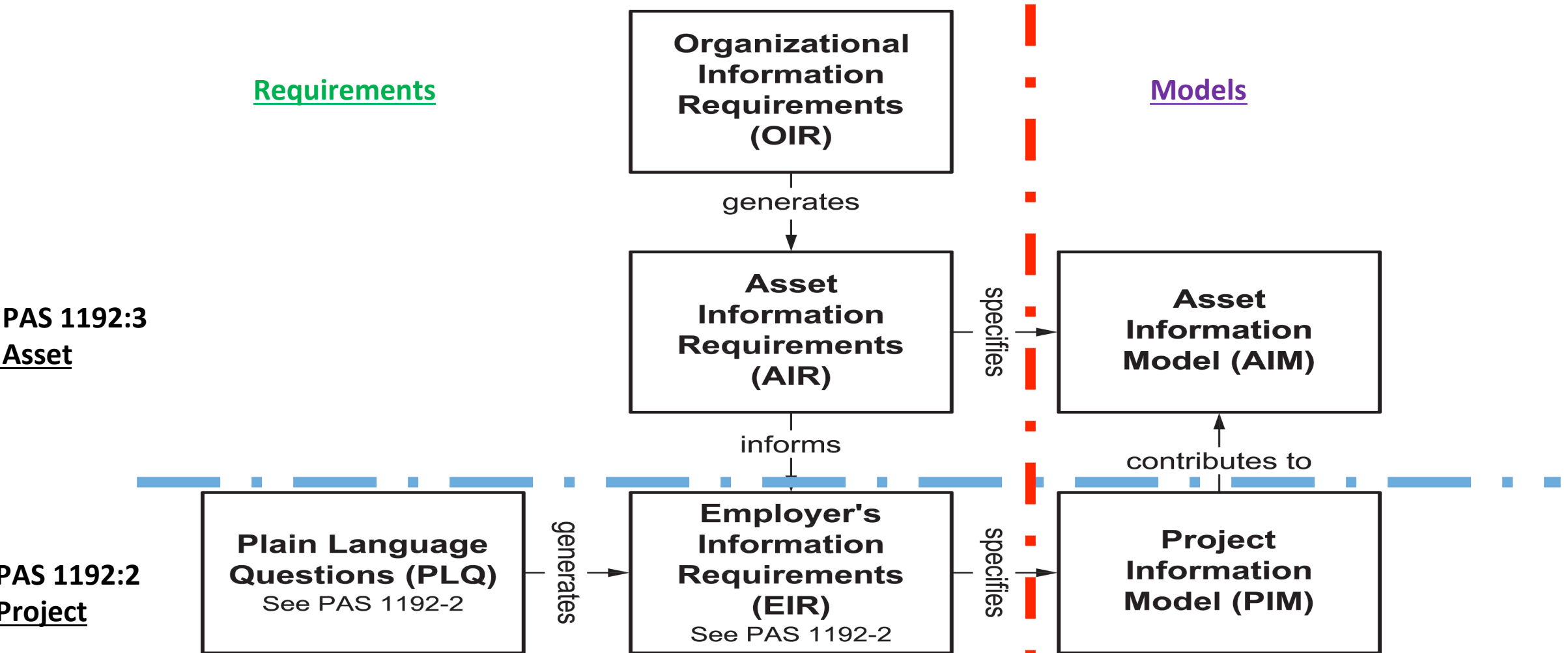
Renew/ dispose

Information Exchange Points & Decision Points DO NOT always align

Whole Life Client Side Asset Information Model

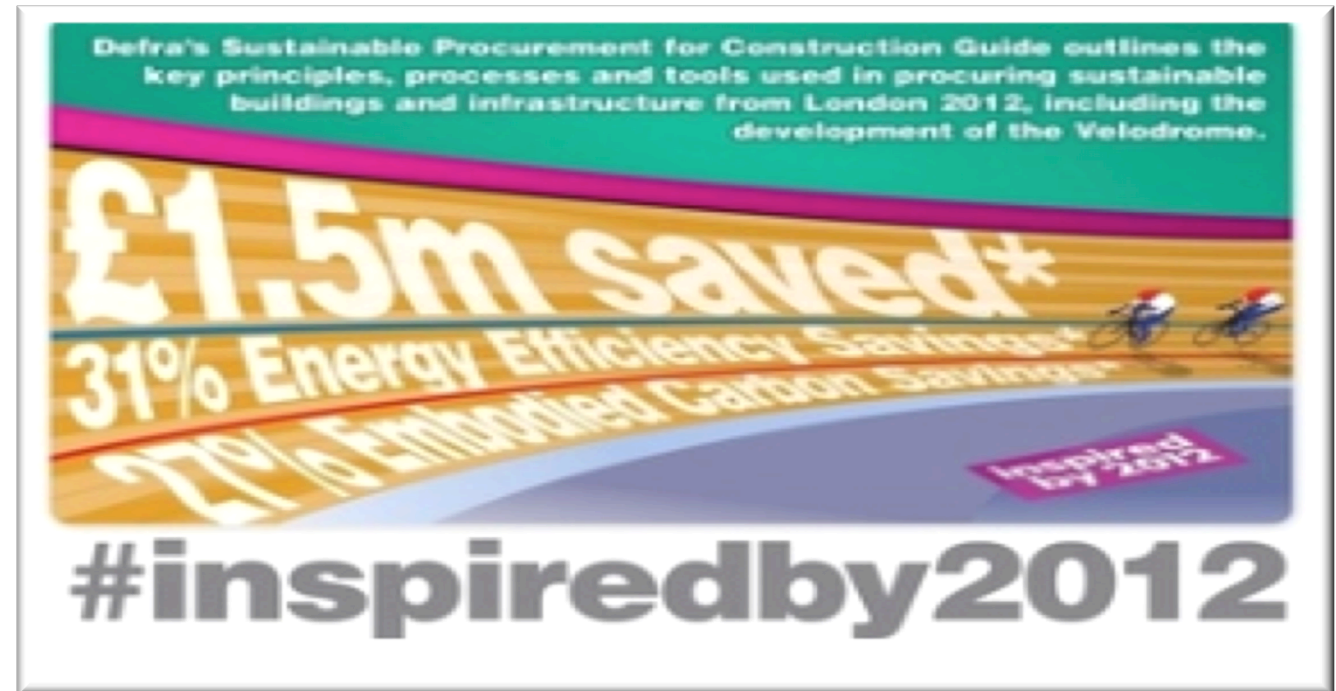


Essential components to develop the model diagram.



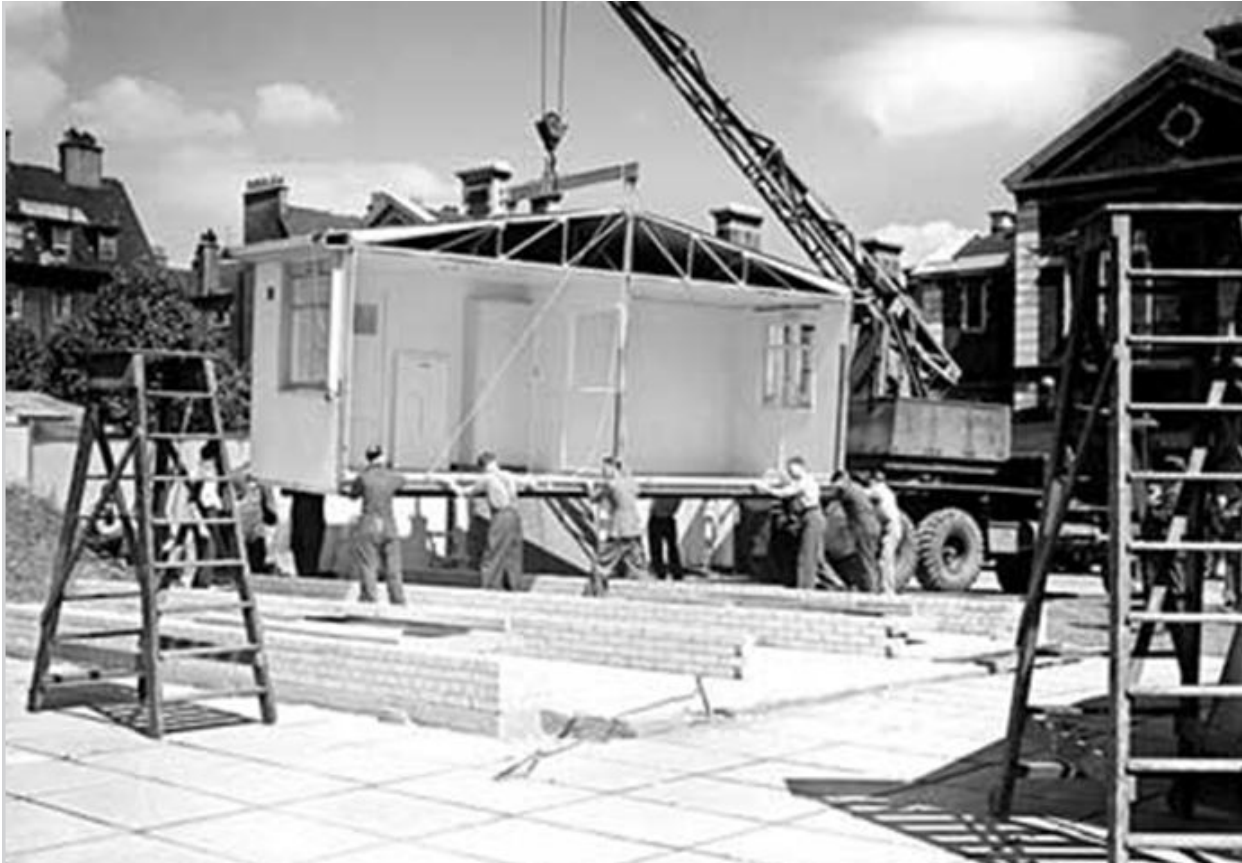
We have a history of promoting reform In the UK construction industry

The Simon Report published in 1944 was the first in a long line of major, public reports criticising the modern construction industry in the UK.



1944 The Simon Report

'The Placing and Management of Building Contracts' chaired by Sir Ernest Simon investigated how the placing and management of contracts could improve the efficiency of the construction industry.



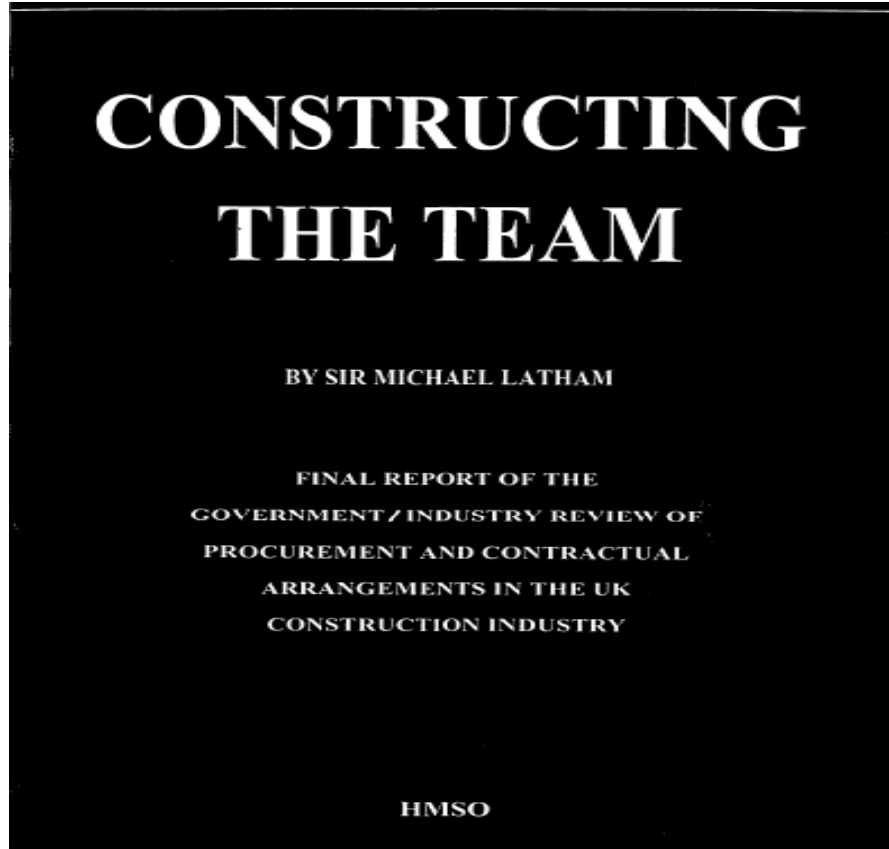
The report criticised the practice of open tendering (rather than using a **pre-qualification process**) and suggested that the tendency of clients to simply accept the cheapest price created a situation where tenderers would submit low bids, and then make up their income by reducing quality or making claims.

The report also recommended:

- **better training of construction managers**
- **a more collaborative approach to design and construction**
- **earlier contractor involvement**

1994 The Latham Report,

Constructing the Team By Sir Michael Latham, 1994. Reviewed procurement and contractual arrangements in the UK construction industry, aiming to tackle controversial issues facing the industry during a period of lapse in growth.



- The government should commit itself to being a best practice client.
- The private sector should get together to establish a construction clients forum.
- Create a guide to briefing for clients.
- A checklist of design responsibilities
- The use of co-ordinated project information should be a contractual requirement.
- A set of basic principles is required on which modern contracts should be based.
- Adjudication should be the normal form of dispute resolution.

1998 The Egan Report, *Rethinking Construction*



The report by Sir John sought to improve performance through eliminating waste or non-value-adding activities from the construction process.

It identified five key drivers of change:

- **committed leadership**
- **a focus on the customer**
- **integrated processes and teams**
- **a quality driven agenda, and**
- **commitment to people.**

The put the client's needs at the very heart of the process, it advocated an integrated project process based around several key elements including:

- **partnering the supply chain, and**
- **production of components.**

2009 Never Waste A Good Crisis

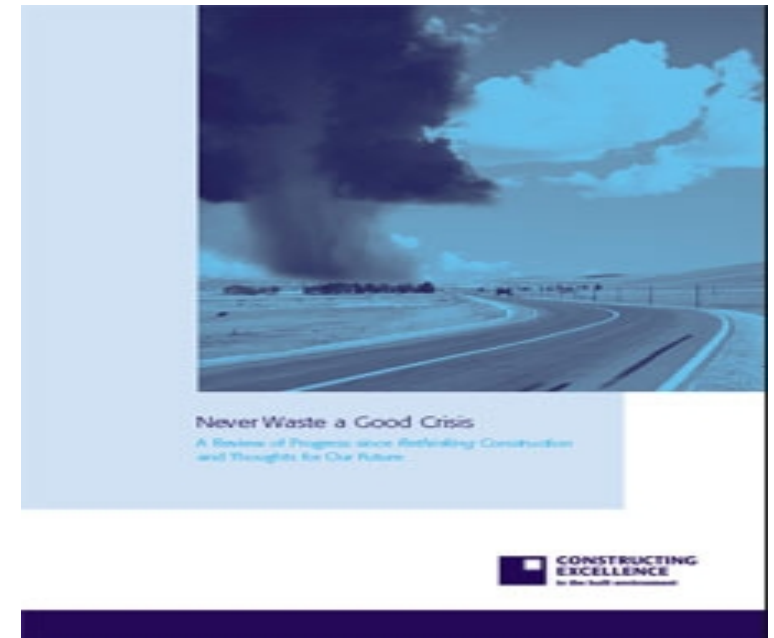
Did we?

“Since we published Never Waste a Good Crisis in 2009, the Olympic Development Authority has delivered world class outputs and now Crossrail has taken up the baton to move the industry forward. With the UK Government fully engaged about the key role that infrastructure plays in the economy, there are signs of real momentum in our industry.

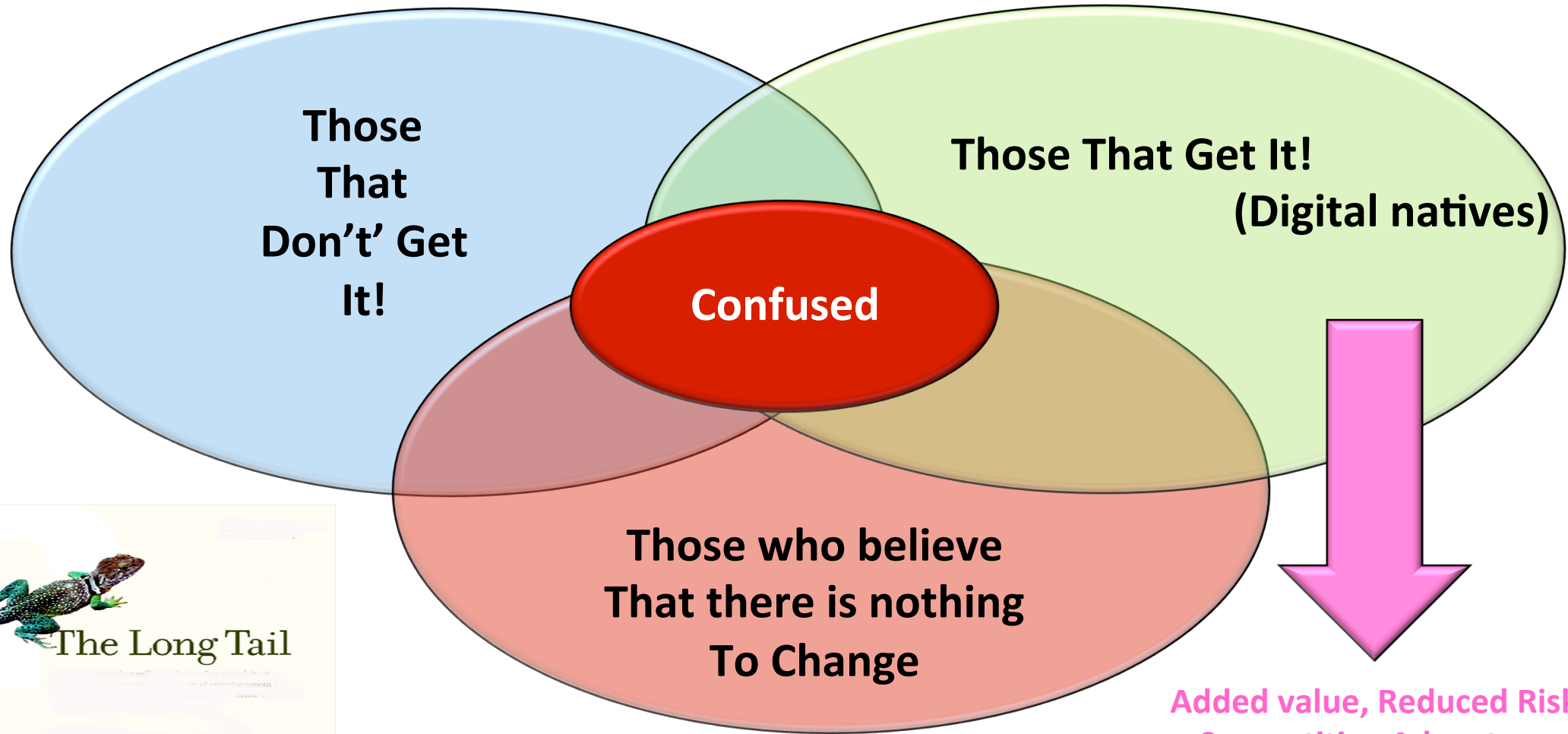
It is clear to me that the new generation entering our profession understands why we need to look at how value is created over the whole life cycle of an asset.

We are also seeing an increasing take up of game-changing technology such as BIM. My concern though is that our industry will become increasingly polarised between those who ‘get it’ and those who do not.”

Andrew Wolstenholme OBE
20th Nov 2013



New aspects of working and interacting in a digital world? Got it? Get it!

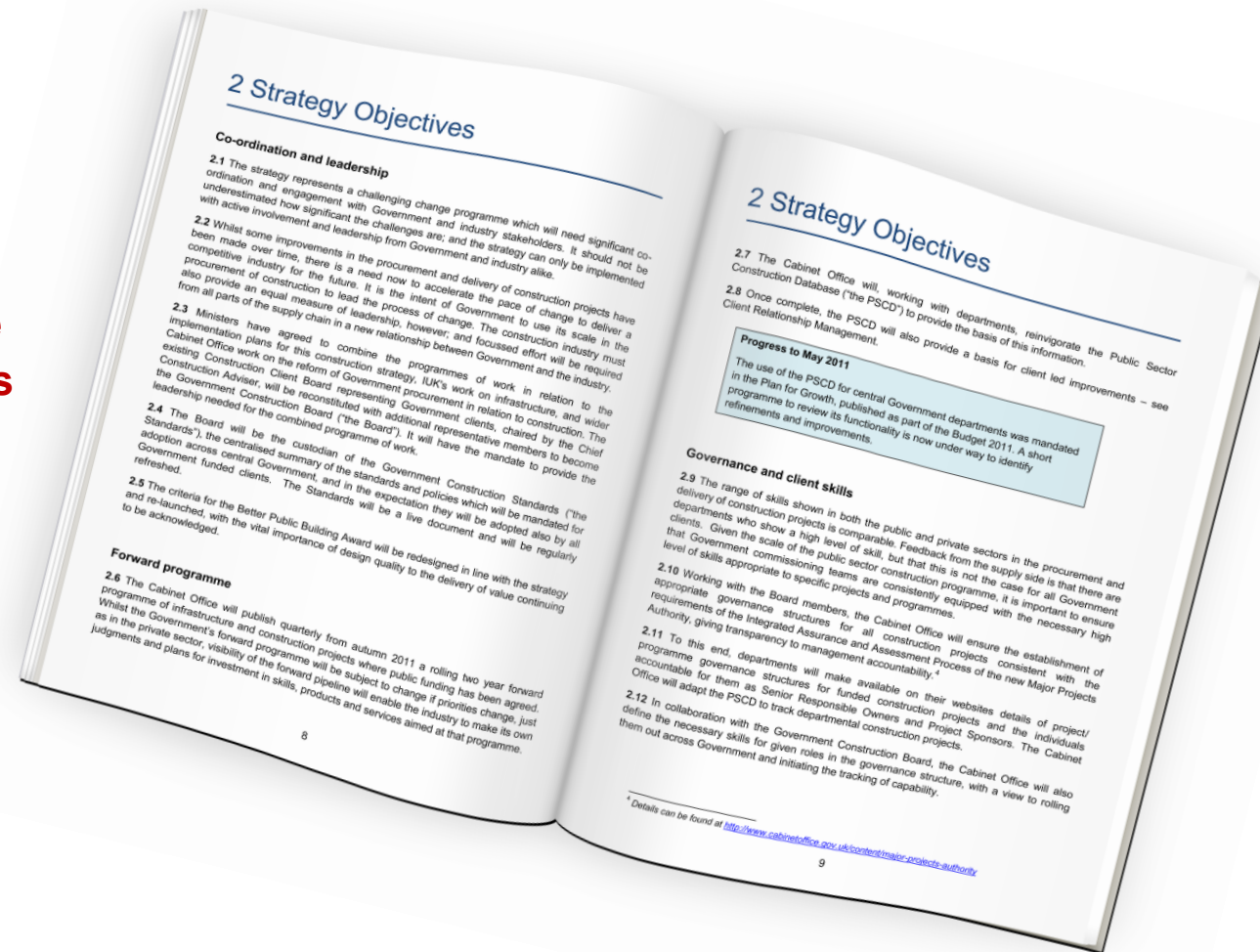


2011 Government Construction strategy

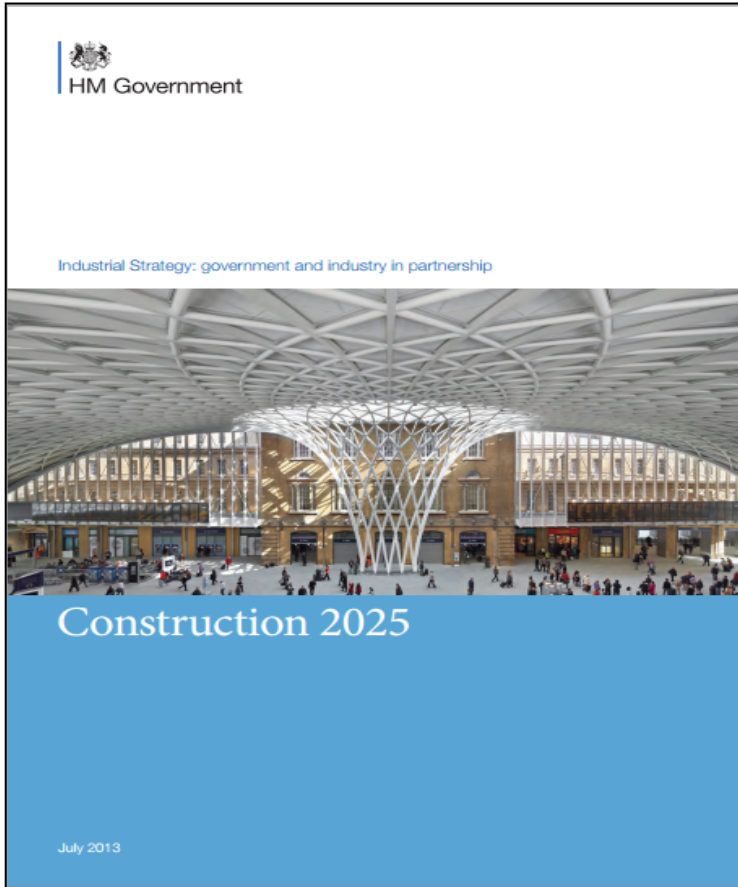
The Government Construction Strategy is the framework for a range of work-streams, all of which have the ultimate aim of **reducing the cost of government construction projects by 15-20%** by the end of the current Parliament.

Ensures the Government consistently gets a **good deal and the country gets the social and economic infrastructure it needs** for the long-term...'

- Procurement / Lean Client
- Standards / Lean Supply
- FM / Soft Landings
- Data and Benchmarking.
- BIM Strategy
- Performance Management



2013: Industrial Strategy Construction 2025...Key Ambitions



HM Government 2013

Lower costs

33%

reduction in the initial cost of construction and the whole life cost of built assets

Faster delivery

50%

reduction in the overall time, from inception to completion, for newbuild and refurbished assets

Lower emissions

50%

reduction in greenhouse gas emissions in the built environment

Improvement in exports

50%

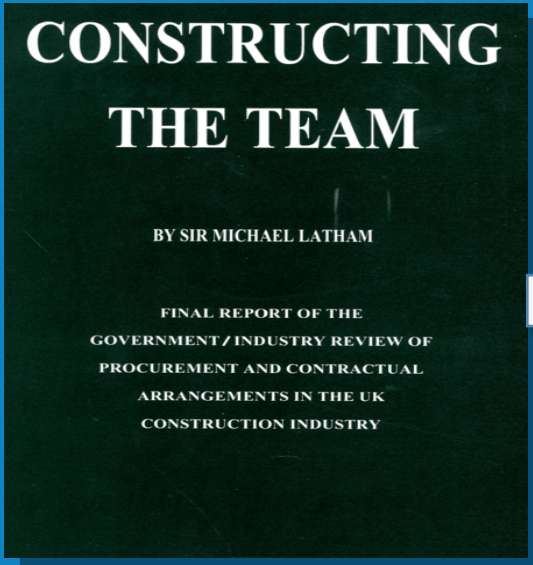
reduction in the trade gap between total exports and total imports for construction products and materials

**Towards a Digitally Built Britain
With 21st Century Assets**



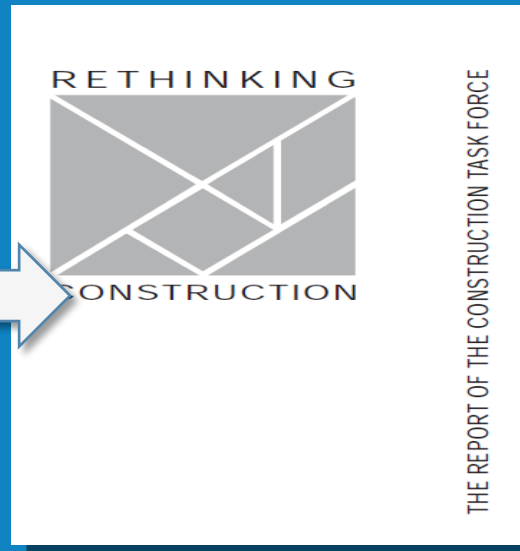
Transforming Construction

Latham



1994

Egan



1998

Wolstenholme



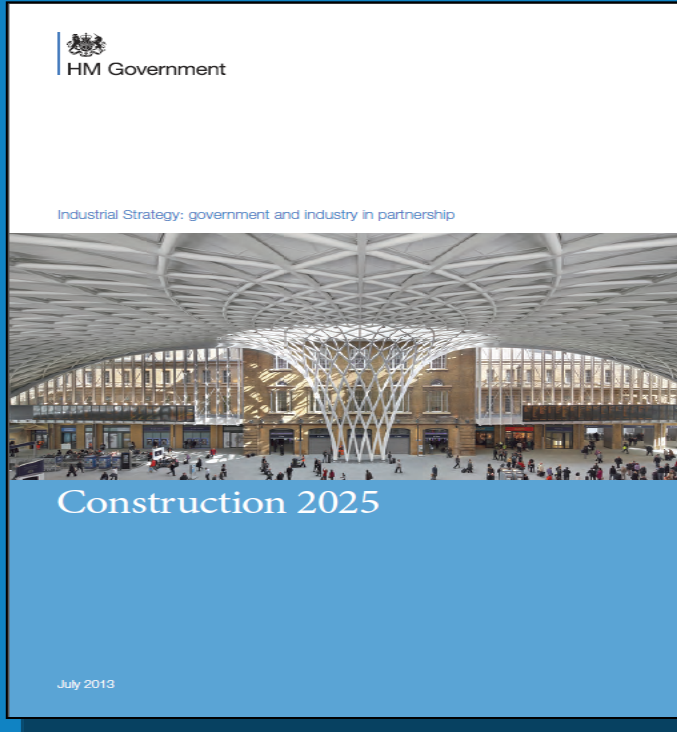
2009

Construction 2025



2013

Construction 2025



Lower costs
33%
Lower
emissions
50%

Faster delivery
50%
Improvement
in exports
50%

People

Smart

Sustainable

Growth

Leadership

Leadership Council - Workstreams

People & Skills

Green & Sustainable

Supply Chain & Business
Models

Smart & Innovation

Exports & Trade

Industry Communication

Workstream Leads

People & Skills

Anna Stewart

Green & Sustainable

Mike Putnam

Supply Chain & Business
Models

Madani Sow

Smart & Innovation

Andrew Wolstenholme

Exports & Trade

David Cash

Industry Communication

Simon Rawlinson

...Constructing Britain productively

‘ Collaboration a key component at the very beginning –
From **Initiation** through all phases to decommissioning ’

- Aligning 3 BIS Industrial Strategies –

BIM (Issued 2012), Nuclear (Issued March 2013) and Construction 2025 (Issued July 2013), with an update from the ‘Governments Construction Summit – 8th / 9th September 2015

With the BS 1192 and PAS 1192 Standards and process

- Building Information Modelling & Data Management – Nuclear Strategy (*Isgar, Elsdon and Bew*)
- Reducing information loss across all phases as a driver to lowering costs and ensuring out-turn cost certainty
- The overarching government and nuclear specific imperatives going forward
- Where are we today? What’s the Work Plan for 2015-16 and Level 2 by 2016?
- Digital Built Britain – Level 3 Building Information Modelling – Strategic Plan and the Integrated Nuclear Digital Environment (INDE).
- Early Adopters across the NDA Estate and how this can support ‘New Build’ and the existing Edf Fleet
- New Build and the journey so far, . . .



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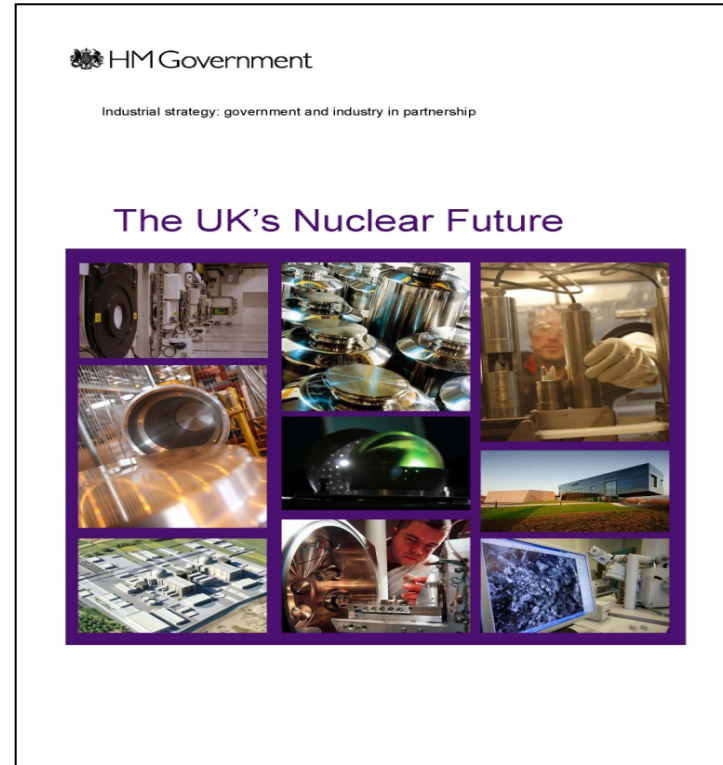
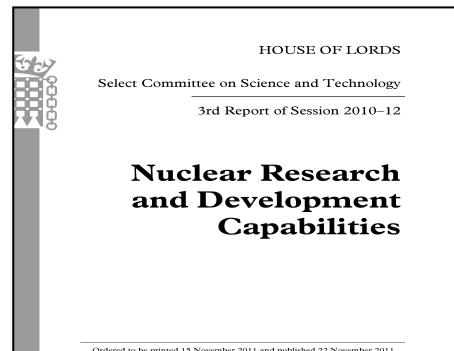
Development of UK Nuclear Industry Strategy

DECC & BIS Inputs

Nuclear Industry Views and Inputs

Academic and NNL Views and Inputs

HoL Select Committee



BIM4Nuclear input provided by BIS, NNL and Sunbeam Management

Nuclear Industry Strategy – Aspirations for BIM

The Client Group will also work with Government to ensure that Building Information Modelling (BIM) is able to be implemented by developers and driven through all the relevant levels of the supply chain where appropriate. Government, through the BIM for Nuclear Programme, will support the clients in this approach in helping to raise efficiency and quality in the supply chain.

Case study - Building Information Modelling for the Nuclear Industry

BIM is a collaborative way of working, underpinned by digital technologies which unlock more efficient methods of designing, creating and maintaining assets. BIM embeds key product and asset data and 3D computer models that can be used for effective management of information throughout a project lifecycle – from earliest concept through to operation. It has been described as a game-changing information and communication technology (ICT).

In 2011, Government announced its intention to require collaborative 3D BIM on its publicly procured projects by 2016. This has helped to ensure the UK is now recognised by its peers as one of the leading nations in the exploitation of BIM technology. In November 2012, Government and industry set out how it will take advantage of this leading role in the BIM Strategy.³⁶

In the nuclear industry, at a strategic level BIM offers the capacity to address many challenges, including waste reduction, value creation, transparency and improved productivity, with all parties involved having access to the same data..

A specific working group focused on facilitating adoption of BIM in the nuclear sector has been set up by Government ('BIM4Nuclear') and is already developing initial work from the NNL, NDA and EDF Energy.

"The nuclear industry has regulatory requirements for continuous safety reviews; the need for up to date integrated information to inform these reviews is paramount for their safe and efficient operations. In the past considerable time was expended trawling through reams of data trying to find salient information. The introduction of BIM across the project lifecycle will provide the framework for capturing and integrating data to inform safety reviews, subsequent decision making and opportunities for efficient delivery."

Joe Gallagher Director URS

HM Government

Industrial strategy: government and industry in partnership

The UK's Nuclear Future



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Linking the BIS Strategies

BIM – Nuclear - Construction

However, it is clear that the implementation of BIM has its areas of complexity; people, process and technology. Evaluation of the benefits of BIM looks across the whole of the project lifecycle. Realising the full benefit involves integration and collaboration into the extensive Supply Chain supporting the Industry. In 2012, BIS issued the 'Industrial Strategy: government and industry in partnership' Building Information Modelling.

A quote of significant relevance to the introduction of this strategy and the nuclear industry is, 'BIM will be the future IT solution in China; The Chinese Government is strongly supporting BIM' Tsinghua University, Beijing'



Building Information Modeling & Data Management Nuclear Strategy

Authors,

Philip Isgar – BIM Task Group and Sunbeam Management Solutions

Andy Elsdon - National Nuclear Laboratory

Mark Bew – Head of Government BIM Task Group

- **DRAFT**
18 December 2014 V9
- **Executive Summary**
- Centrally funded Government departments will be required to procure new built assets using BIM by 2016, departments have been given five years to mobilise capability in this area and Early Adopters have seen savings of up to 20% of CAPEX.
- The nuclear industry is a significant holder of complex built assets and is keen to make use of these techniques to create efficiencies in the industry, by leveraging the core government departments. To do this they will have to create a sector capability and the purpose of this document is to outline the key drivers and tasks necessary.
- A sector liaison resource, Philip Isgar (Sunbeam Management Solutions), has been made available from the BIM Task Group to assist with the coordination of this task. Work to date undertaken as a discovery phase has identified several areas where progress in BIM strategy is already occurring in the nuclear sector.

Paul Howarth (NNL MD) has said;

- *'The Nuclear Industrial Strategy identified BIM as an important collaborative approach in delivering a safe, secure and cost effective nuclear sector. The proposals outlined in this paper will further develop the BIM nuclear strategy and provide a solid foundation.'*

Michael Fallon when Minister of State for Business and Energy stated at the ICE Conference for Developing the UK's Nuclear Industry;

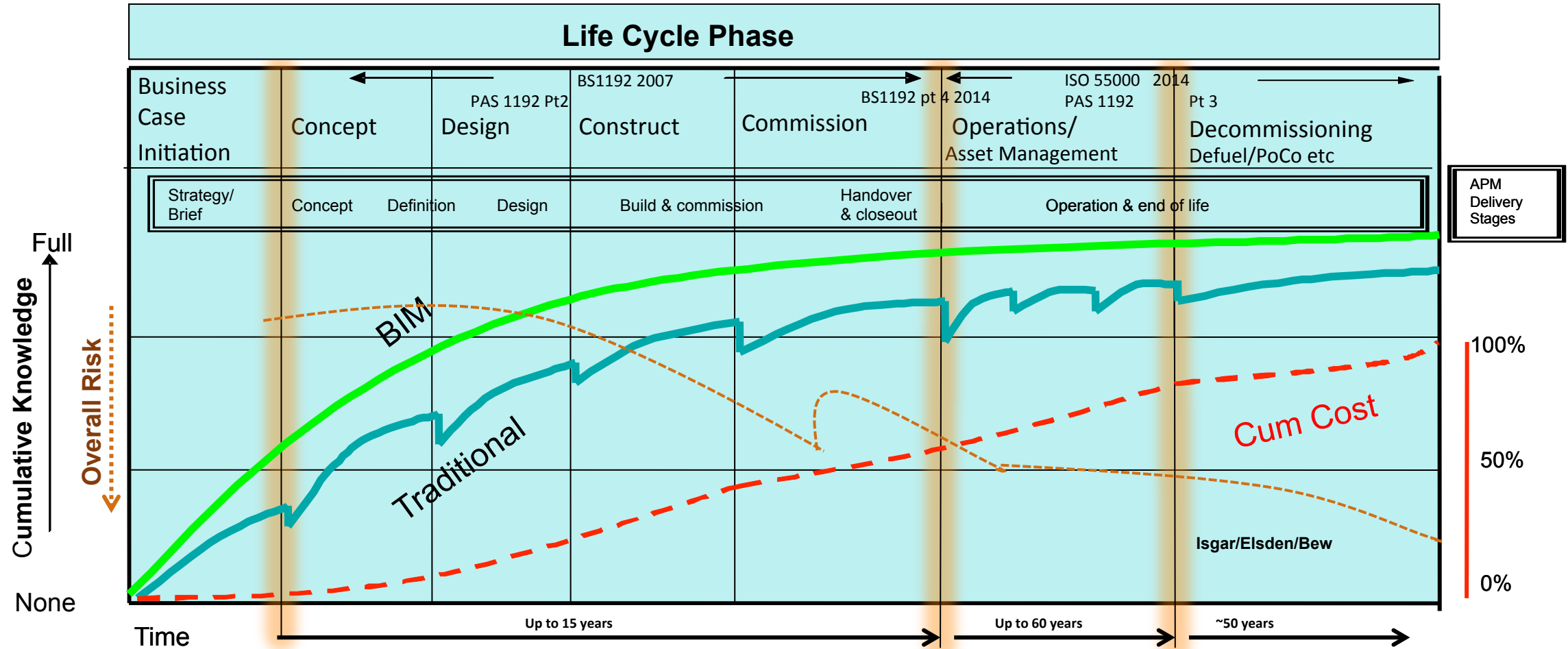
- *'We want to see a sector where strong project management, collaboration, effective planning, early engagement, knowledge and data capture and effective decision- making permeates throughout the whole of the supply chain to deliver projects to time and to budget.'*
- *'This is why Government, through the Building Information Modeling for Nuclear Programme, will support the developers in this approach in helping to raise efficiency and quality in the supply chain. You will hear later today how this is progressing, and I look forward to consideration of the Strategy at the Nuclear Industry Council.'*

Dame Sue Ion, Chair of the Nuclear Innovation Research Advisory Board (NIRAB) at a recent meeting with Nuclear Innovation Research Office (NIRO) said;

- *'Capturing information and knowledge in a common data environment from all the parts of the asset lifecycle and ensuring that knowledge is successfully archived for both the present and future usage represents tremendous potential value to UK plc.'*

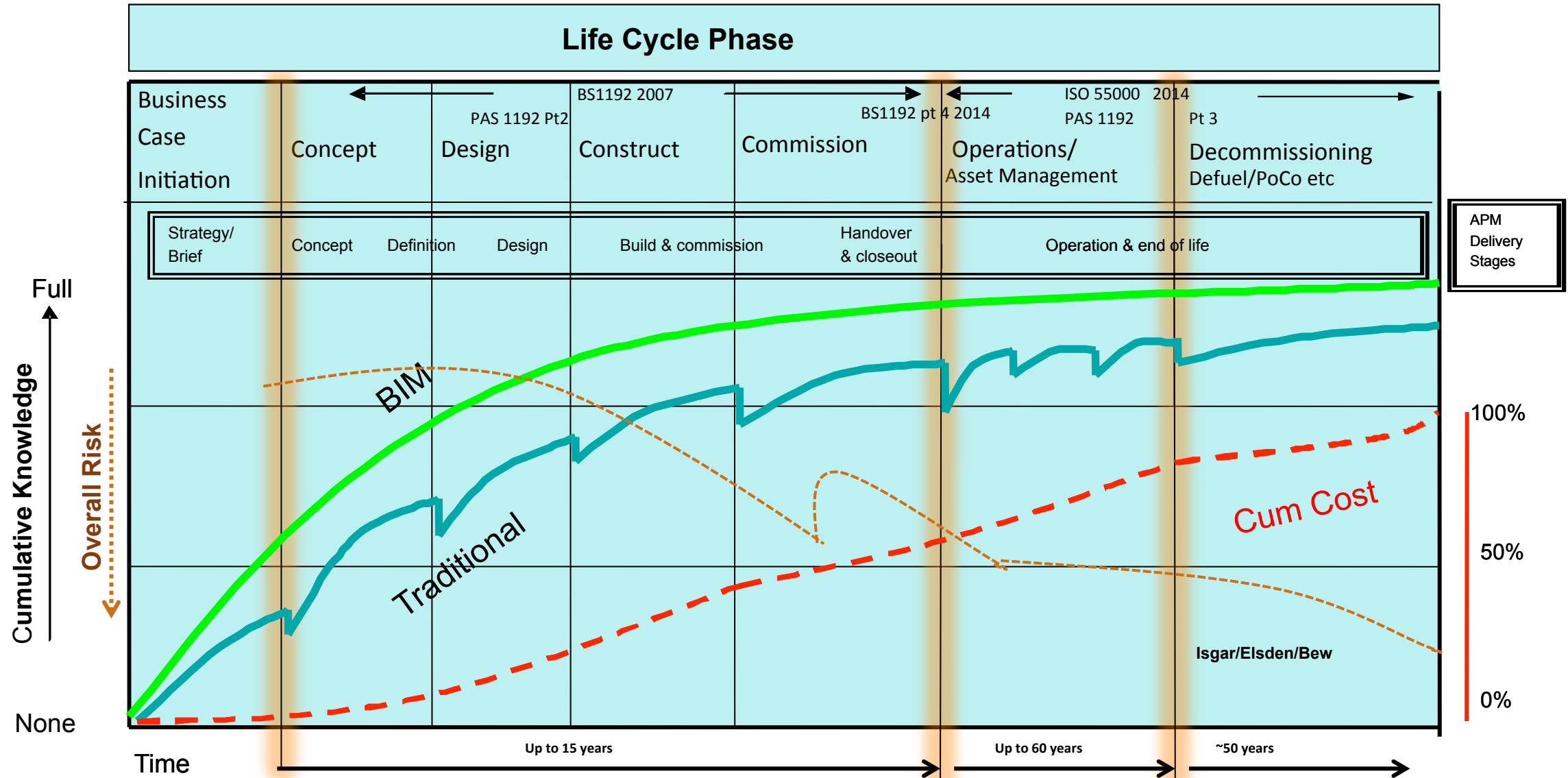
To proceed to the next stage in the evolution of the overall sector strategy a series of next steps have been identified.

Removing loss, waste and duplication of information



The management of assets –

Business Case – Project Initiation – Delivery – Operations and Decommissioning



The overarching government and nuclear specific imperatives going forward

- Government must be seen to “see the programme through” to a successful outcome by April 2016.
- There must be an effective handover to the private sector to establish an on-going legacy capability, which sustains and grows the Level 2 legacy over the next five years
- There are also Nuclear Sector imperatives that must be taken account of:
- An ‘innovative’ BIM information environment could be seen as the next major hurdle to achievement of higher cost effectiveness, safety and compliance
- In a ‘national asset management’ scenario where assets and liabilities may have a very long-term life (60 years +) through build, operation and decommissioning, the value of a common information strategy centred on BIM could be greater than 20%?.
- A future BIM strategy could also help to further reduce incidents, accidents, human error traps, inadvertent security risks/ threats and improve review processes and timeliness and succinctness of information.

Where are we today?

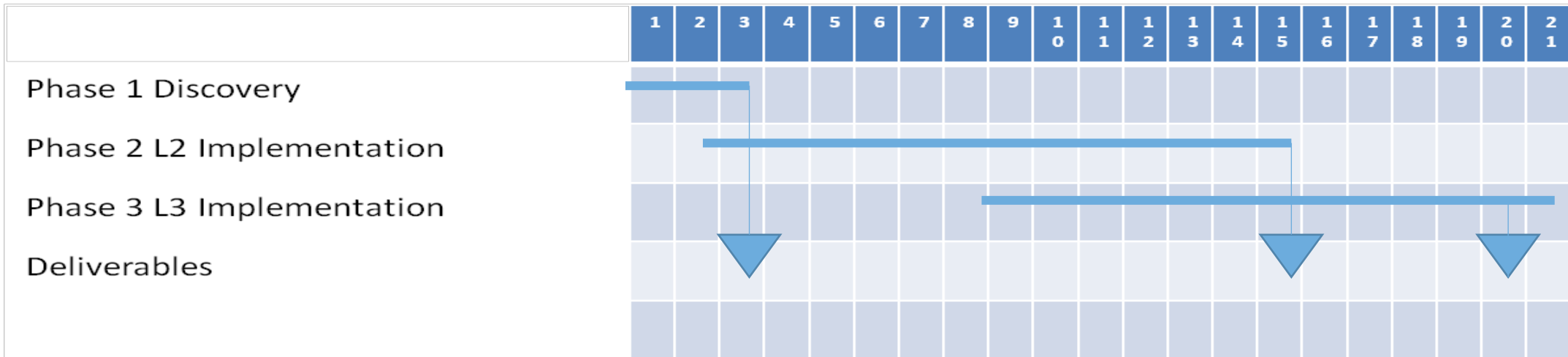
- *Historically, . . . In April 2013 the BIM Task Group supported by Sunbeam Management Solutions and the National Nuclear Laboratory (NNL) entered in to a structured early Discovery Phase with the nuclear industry to establish the level of industry knowledge and whether industry application of BIM was evident. A number of sectors were identified, each one requiring its own Discovery Strategy. The key organizations in the development and implementation of BIM are the Site License Companies (including prospective SLC's). These organisations have the vast majority of the expenditure and have every incentive to seek efficiencies in their operations. The Supply Chain currently are engaged in developing their own BIM strategies driven by competitive advantage in the marketplace. **An outline BIM strategy for the whole civil Nuclear Sector has been developed and was presented to the Nuclear Industry Council in December 2014 and more recently in March 2015 as part of the Cost Reduction Working Party report.***

Phase 2 Implementation of BIM Level 2 by 2016 target and targeting Phase 3 for the BIM Level 3 by 2017

- Phase 2 Implementation of BIM Level 2 by 2016 target and targeting Phase 3 for the BIM Level 3 by 2017
- Investigate existing processes, systems, information and projects across the asset lifecycle with particular emphasis on Business Case and Realising the Benefits, establishment of an Intelligent Customer led Common Data Environment (CDE) and Programme Management Office (PMO).
- This will involve interviews with key project managers and personnel to ascertain experiences with data, information, current interactions, issues, learning from experience and opportunities for rationalisation that may exist.
- Review these findings from the above against the wider national and industry BIM Strategy requirements and expectations and their implications on a Facility 'life cycle' BIM Strategy
- Establish a graphic conceptual timeline of existing systems and their role in the project and facility 'life cycle' (including modelling and simulation activities)
- Rank and rate which systems would readily be integrated or could provide information to enhance a converging BIM Strategy
- Review what information and activities undertaken during design and construction could be revised and incorporated into a BIM Strategy to improve commissioning, handover, operation and decommissioning activities
- Development of benefits and outcomes associated with enhancements to current systems
- Summarise findings in a paper and disseminate to the NDA and NDA estate on behalf of DECC.

Schedule & Resourcing

The Schedule below covers all 3 Phases as described above and is indicatively a 21month programme of work (which fully embraces the intent of this 2015 – 2016 Work Plan and beyond) that will encompass a substantial part of Phase 1 by April 2015 and shows an integrated approach for Phases 2 and 3 as defined. The work as described in the Activity Summary will part of this Work Plan and Sunbeam Management Solutions and NNL remain fully committed to deliver this.



Digital Built Britain – Level 3 Building Information Modelling – Strategic Plan

2. Industry Foreword
3. Executive Summary
4. Introduction, Context and Outlook
5. The Vision
6. Actions
 - a. Delivery Mechanisms
 - b. Commercial
 - c. Technical
 - d. Cultural
 - e. Research Requirements
 - f. Domestic & International Growth
 - g. Sustaining the UK Leadership Position
7. Convergence of the Industrial Strategy – Construction 2025, Information Economy and Smart Cities
8. Acknowledgements
9. References
10. Glossary

Front Page

The FIATECH James B Porter Jr. Award, presented to HM Government (UK) and UK Construction industry in 2013 in recognition the success of the Level 2 BIM programme

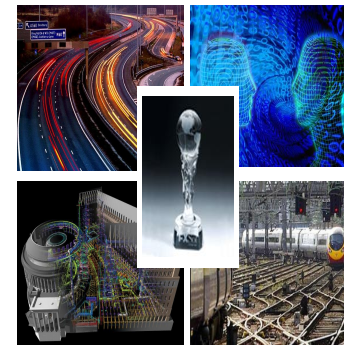
Revision

1	Initial Document	15/06/14	1000
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Digital Built Britain

Level 3 Building Information Modelling - Strategic Plan



February 2015

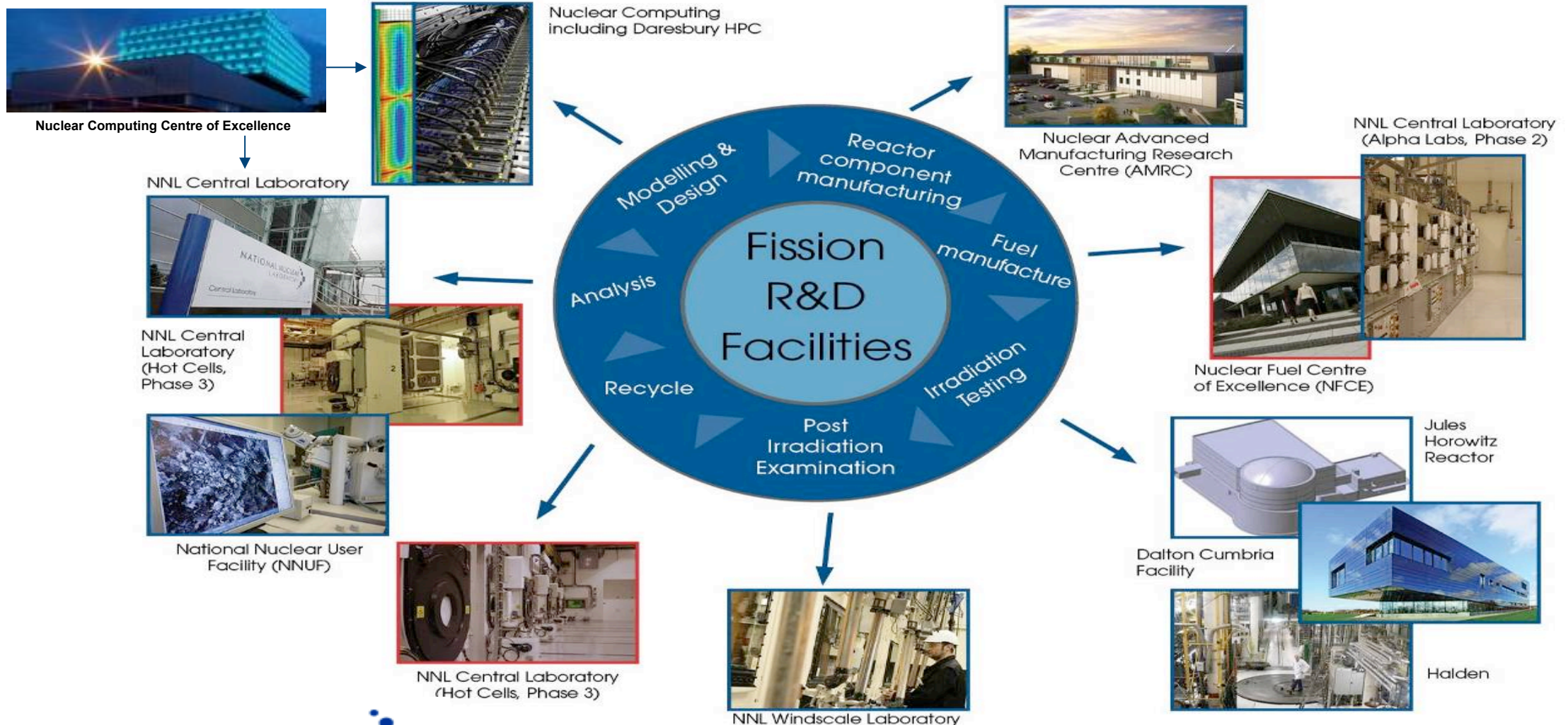


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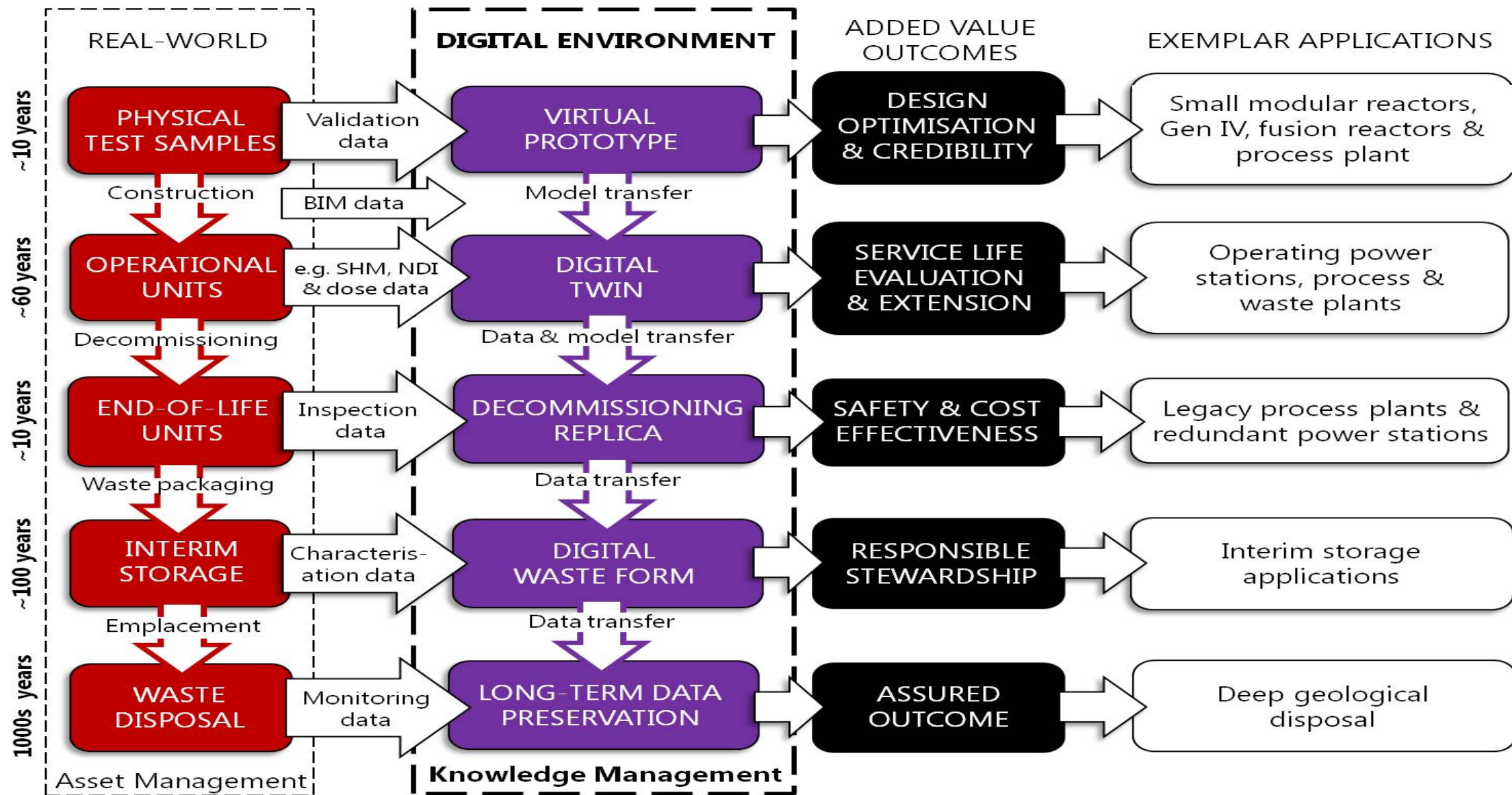
- INDE[®] represents a World Class Science and Engineering vision and its innovation is in the integration of models and simulations across the vertical axis (up as well as down), utilising the maximum benefit of HPC developments:
 - * UK World class expertise in theoretical physics and computer science can reduce barriers to vertical integration.
 - * UK expertise in validation by understanding risk and uncertainty (probabilistic modelling) with a strong independent regulator that allows us to innovate.
 - * UK has world leading skills in nuclear fuel life cycle, including decommissioning science and engineering. Benefit from this emerging learning (retrieval through to decommissioning operations / data) to inform future 'New Build' operations And beyond.

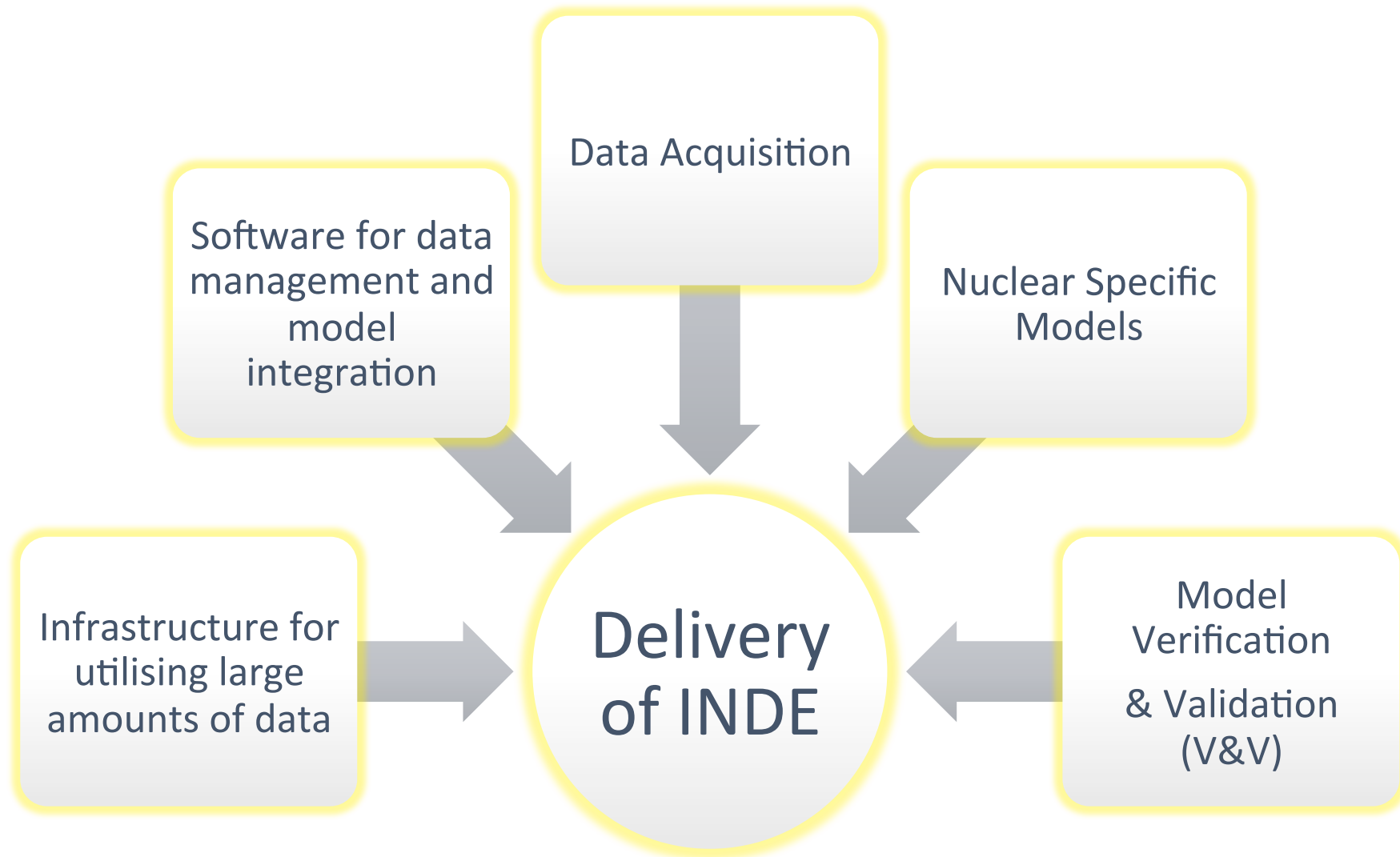
Nuclear Industry Strategy



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Early Adopters across the NDA Estate and how this can support 'New Build' and the existing Edf Fleet

- Target successes of BIM level 2 implementation and Benchmark by March 2015
- Optimum benefits by Dec 2015 with industry adoption by March 2016
- A welcomed presentation was made to the Nuclear Liabilities Fund Board (NLF) November 2014. The opportunity for '*lessons yet to be learnt*' for the existing Edf Fleet of 8 Stations (*as they go through extension of life issues*) from the adjacent Magnox Fleet is tremendous and shouldn't be missed

Early Adopters, . . .

- The Silo Maintenance Facility (SMF)' a Sellafield Ltd project
- The Geological Disposal Facility (GDF)', an NDA – RWM Ltd project
- Hunterston 'A' Reactor a 'Care and Maintenance' Magnox Ltd project
- NDA Properties Ltd 'Property Portfolio'

New Build, . . .

- NuGen, . . . Edf, . . . Horizon, . . . All on the journey, . . . But at different stages, . . .

Sellafield Ltd – *‘Early Adopter’ – ‘Silo’s Maintenance Facility (SMF)’*

NCE BIM Round Table London 25 Nov 2014, . . .

What I said?, . . .

“One of the big areas that I’ve noticed, which is probably an underused tool, is the use of visualisations. Something that Sellafield Ltd, the Client together with the Cavendish / Balfour Beatty JV used successfully on the Sellafield Silo's Maintenance Facility (SMF) project was how they showed their crane build drawings on the screen and they actually got approval through the visualisations rather than through just a written report. That for me is a real game changer. The cranes committee said ‘we like this, we can see it, we can understand it’. So for me, It’s not just BIM, it’s about visualisations and about how you put the right message across to the people who make the decisions.”

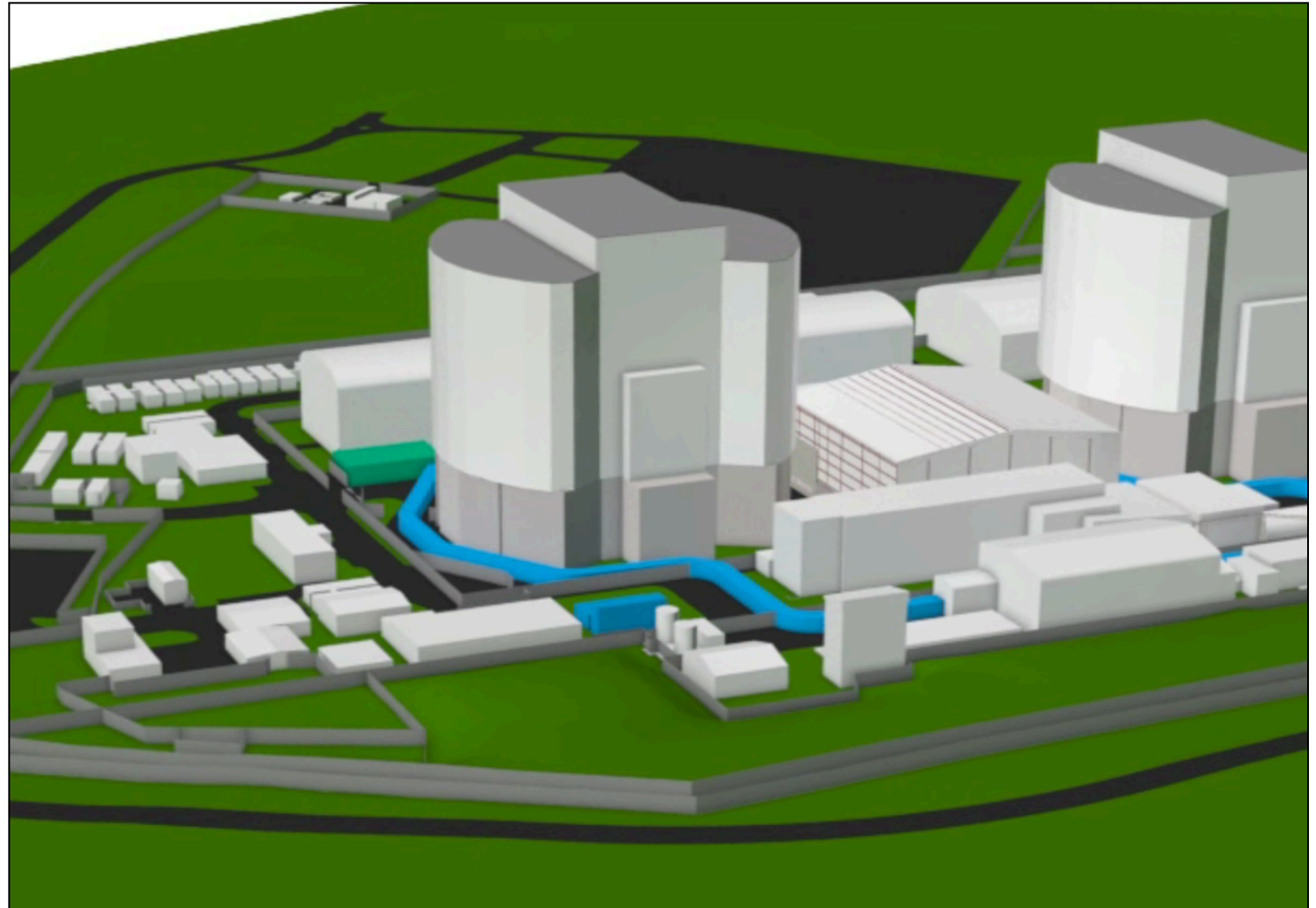
Magnox Ltd
*'Early Adopter,' . . . 'Hunterston 'A'
Care and Maintenance'*
Jon Dolphin Project Manager

Jon Dolphin is at the cutting edge in his organisation, . . . Jon found me in early 2014, . . . Supporting Jon is easy, . . .

- He believes in what he's doing, . . .
- He will push it to the top in his organisation, . . . I'm just an enable wherever I can, . . .
- Key requisite? He has passion about his work, . . .

Jon's publications within the last 3 months, . . .

- Project Magazine Spring Edition (an APM publication), . . . 'The Power of BIM – 5 Dimensions Building Information Modelling'
- New Civil Engineer 'BIM Decommissioning – Leaving a Legacy'
- Nuclear Institute Magazine, . . . (due in April / May edition, . . .)



Potential Benefits of utilising BIM in Care and Maintenance

On the run up to C&M:

- **Reduce the Cost** of the Decommissioning Programme through better planning and better collaboration
- **Improve Cost Certainty for the Programme** through better scope definition and better estimates
- Facilitate **Efficient Waste Logistics**
- Facilitate **Transfer of Information**
- Facilitate **Safe Delivery of Work**
- Facilitate **Stakeholder Engagement**
- Facilitate **Regulator Confidence**

During C&M or the quiescent period:

- Provide a platform to provide **access to information** that does not rely on individual knowledge.
and importantly, . . .
- Support FM and asset care.

What kind of information are we dealing with for Care and Maintenance?

H&S Information

- Remaining hazards
 - Radiological
 - Chemical
 - Asbestos
 - Physical (e.g. voids)
- Safe access/ egress routes
- CDM Health and Safety File

Technical Information

- Drawings, reports, assessments, surveys.

Operational Knowledge

- Individual knowledge

Maintenance & Inspection Information

- Equipment that must remain serviceable
 - Schedule, Cost, procurement
 - Replacement/ failure rates, warranty
 - Maintenance & Inspection records
 - Maintenance/ operation procedures.
- Defect tracking

Emergency Planning Information

- Section 9.2d of Fire(Scotland) Act 2005
- Security
- Scenario planning exercises

Monitoring Information

- Environmental
- Integration of GIS and BIM
- Site License Compliance

- ' Take-aways for the afternoon, . . .
- ' The NDA 5yr Strategy and Information Governance

- **Quote NDA, . . .**

' The Energy Act 2004 requires NDA to review, update and consult on our Strategy every 5 years.

This document is an early version of our draft Strategy and published in order to share our emerging thinking ahead of a formal consultation process which we anticipate will start in January 2016.

The timing of the formal consultation has been moved in order to ensure that our final draft Strategy is informed by the outcome of the government's spending review.

This document gives stakeholders the opportunity to provide their input whilst we complete our review.

As well as any general observations we would like this engagement opportunity to particularly focus on: 'Are we asking the right questions?'

Critical Enablers – Section 7, Item 7.7 of the Strategy – Information Governance,

Is there a place here for BIM and Digital?