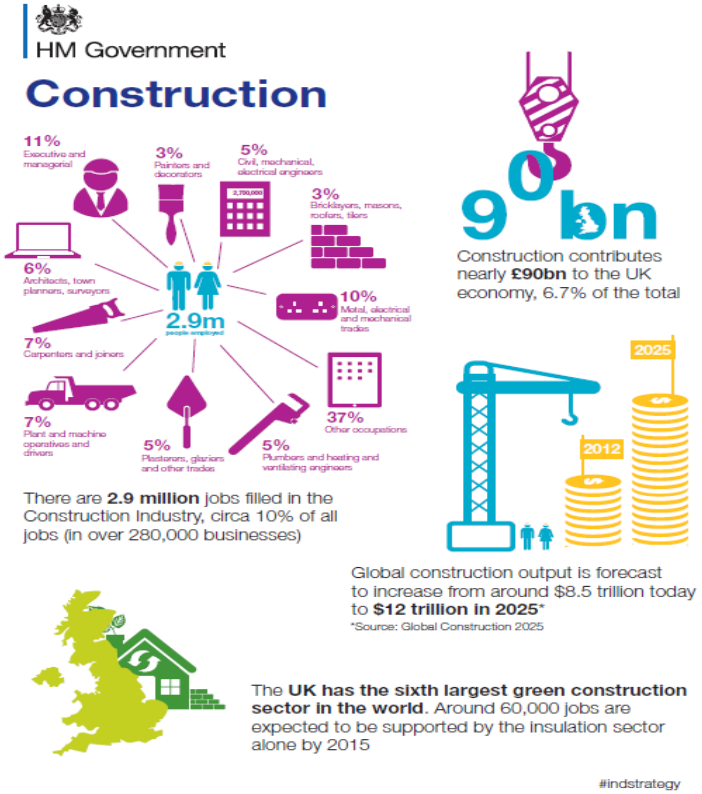
Experience from the UK Government's BIM Programme

Adam Matthews

Director of International Development

UK BIM Task Group

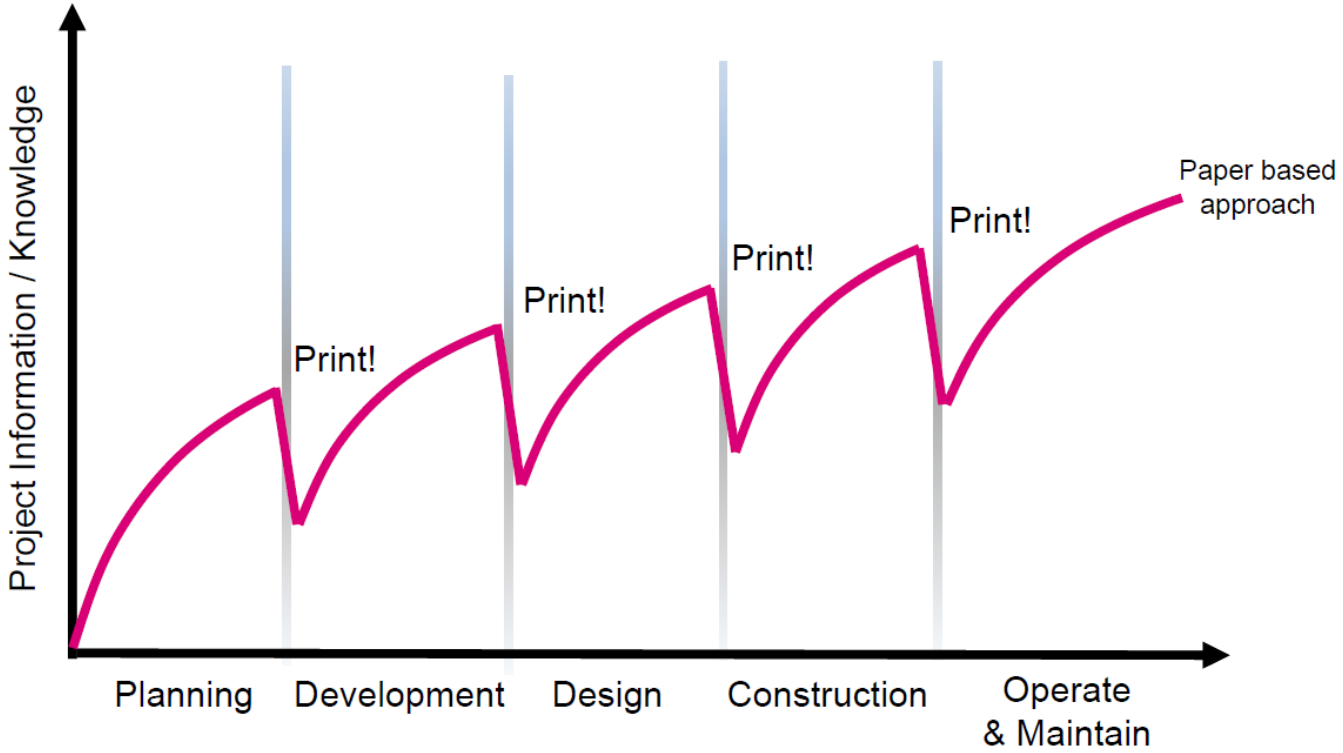
Tokyo, 13th October 2016



35%

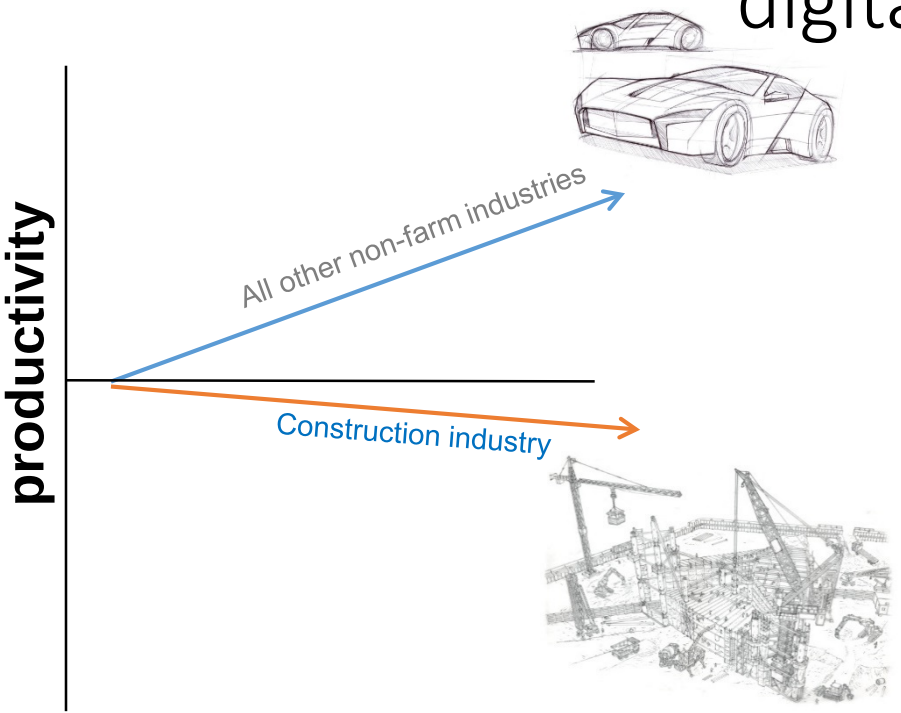
- Misunderstanding of client needs
- Miscommunication
- Rework and recreation of data
- Poor or no information management

Traditional Projects

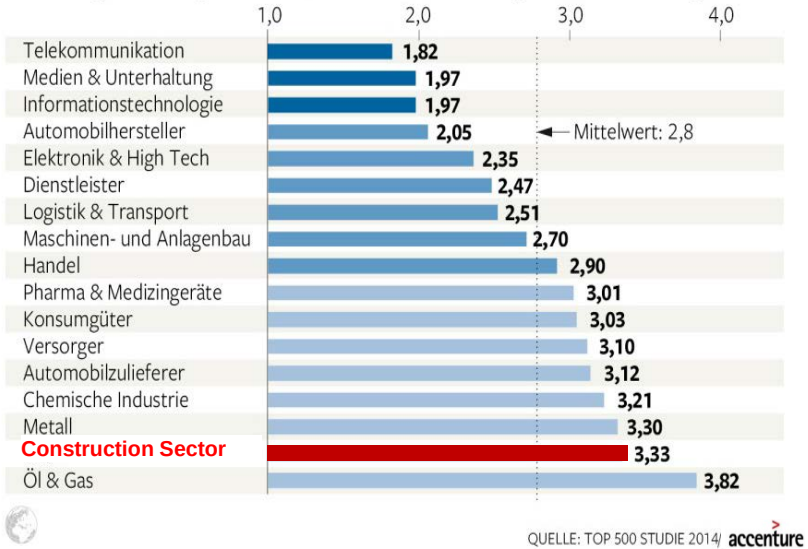


Paper based silos

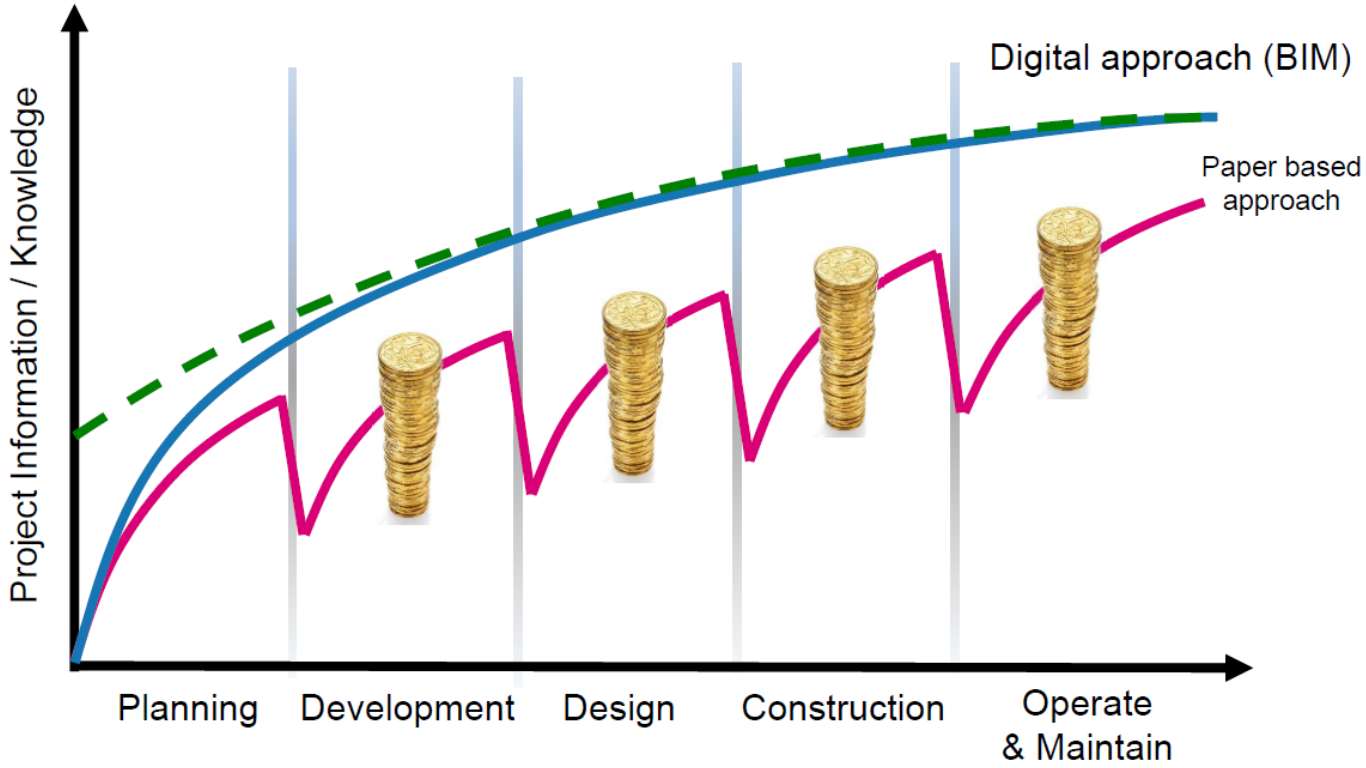
Declining productivity and low degree of digitalisation



Scale: 1 = mostly, 2 = partly, 3 = very little, 4 = rudimentary digitized



Reduce waste - flow of data using BIM



UK – Vision

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%

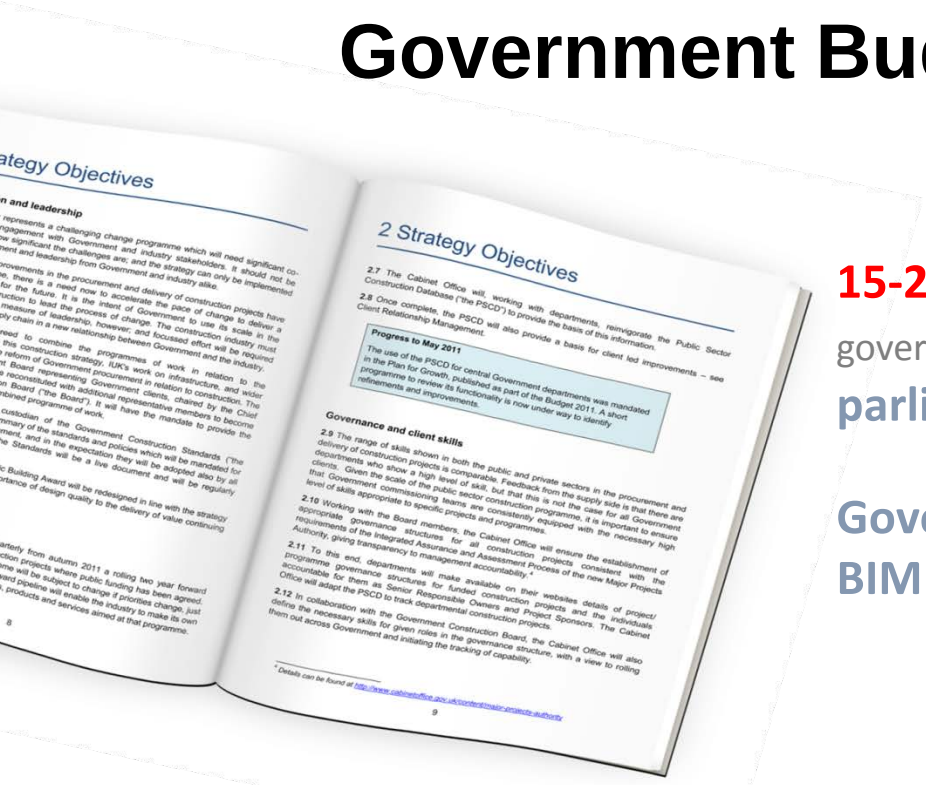
reduction in greenhouse gas emissions in the built environment

Improvement in exports

50%

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

Government Budgetary Goals



15-20% cost reduction on all centrally procured government construction projects **within the 2010/15 parliament**

Government will require fully collaborative 3D BIM ….. as a minimum by 2016

Government Soft Landings BIM

Construction Industry Council

CabinetOffice

BIS Department for Business Innovation & Skills

Construction Strategy

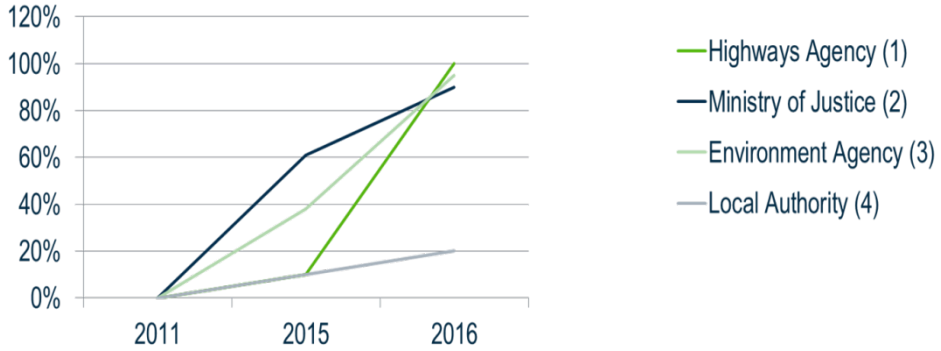
- Cost reductions
- Promote Early Contractor Involvement
- Improved Client Leadership
- **Government imperative to use BIM (Building Information Modelling)**

BIM Strategy

Government will require fully collaborative 3D BIM (with all project and asset information, documentation and data being electronic) **as a minimum by 2016**

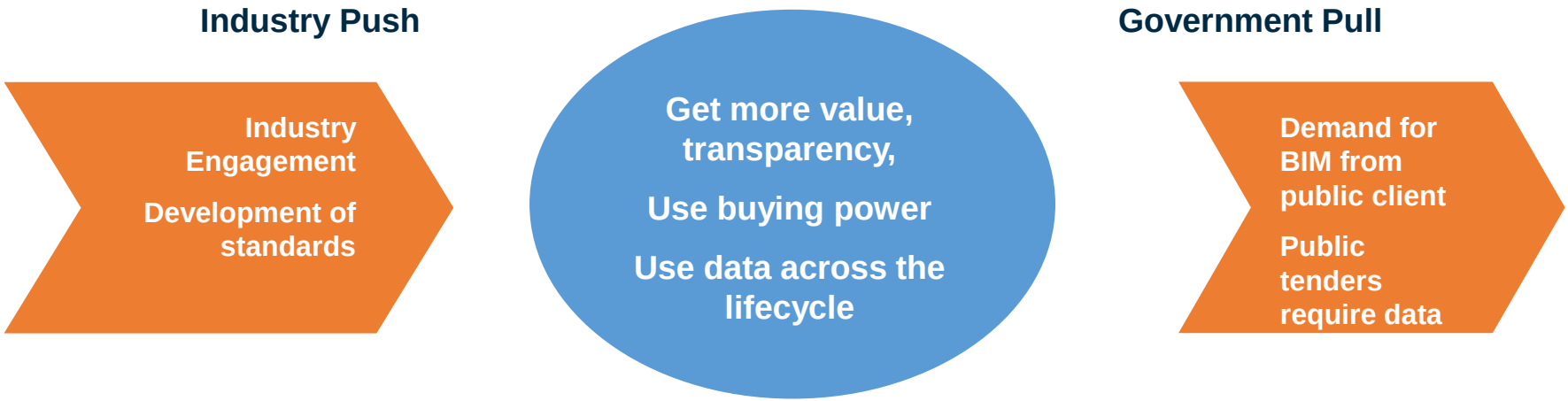
£20bn/$30bn

Government purchasing power



Total project value c £9.6bn (2014)
(Returns exclude , MOD, EFA, DoH, HS2)

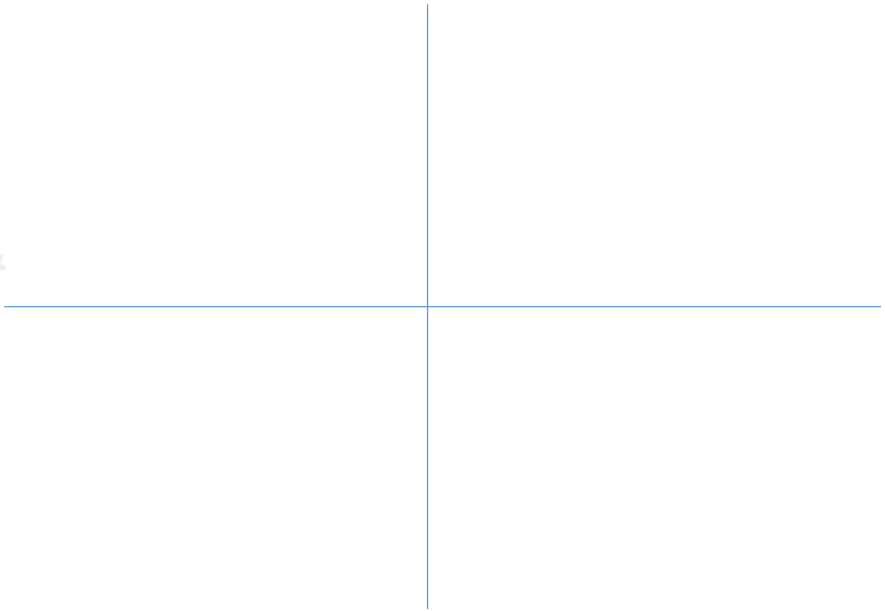
Strategy


Industry Push
Industry Engagement
Development of standards
Get more value, transparency,
Use buying power
Use data across the lifecycle
Government Pull
Demand for BIM from public client
Public tenders require data

Grow Industry Capacity

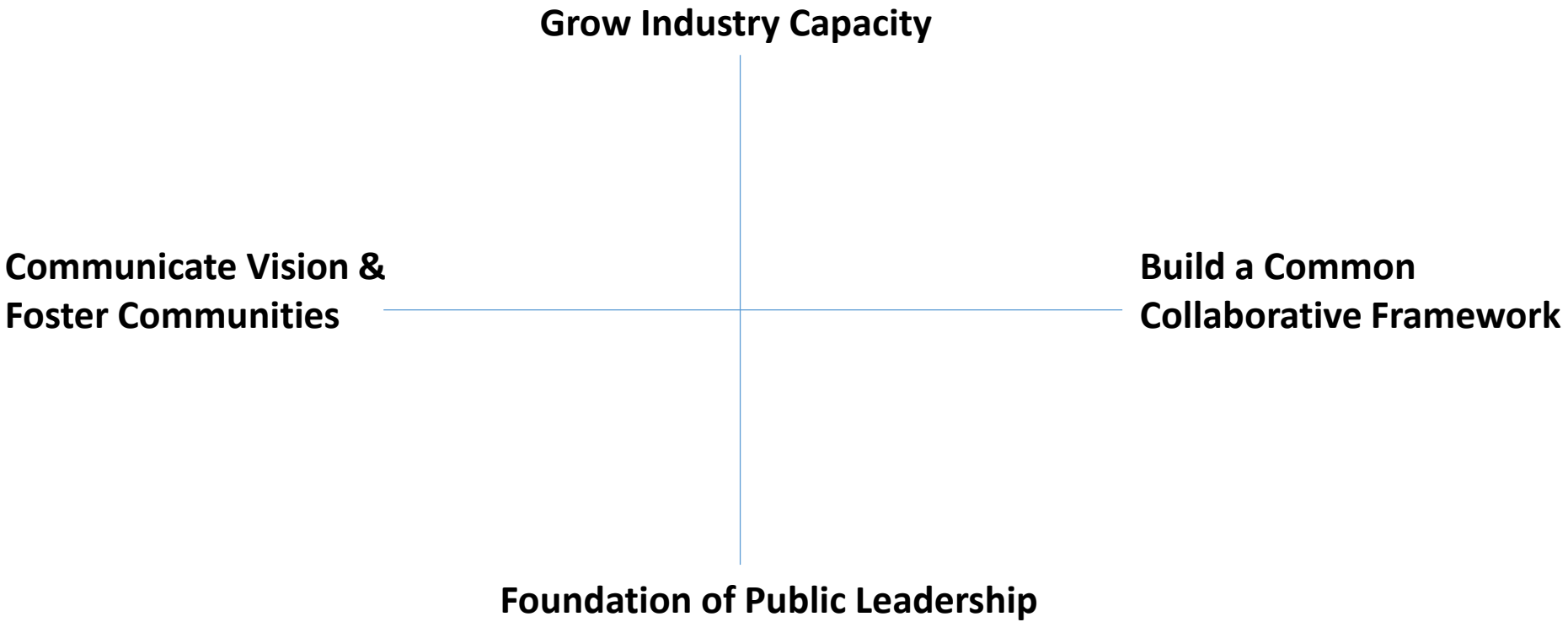
Communicate Vision & Foster Communities

Build a Common Collaborative Framework



Foundation of Public Leadership

- Compelling drivers, vision and goals
- Aligned value proposition and strategy
- Sponsor, funded programme, stewardship team


Grow Industry Capacity
Communicate Vision & Foster Communities
Build a Common Collaborative Framework
Foundation of Public Leadership

Grow Industry Capacity

Communicate Vision & Foster Communities

- Engage industry stakeholders
- Create regional and focus networks
- Media, events, web, social media

Build a Common Collaborative Framework

Foundation of Public Leadership

BIM4 COMMUNITIES CHARTER

Purpose of the BIM4 communities

The BIM4 communities are a collaboration of specialist interests groups who will champion BIM in their respective specialist areas. Their purpose is to raise awareness of BIM, promoting a shared understanding of the value proposition and issues affecting the implementation of BIM in their respective areas of interests.

The BIM4 communities will seek to develop consistency of messaging in a clear and concise manner to support both new and existing professionals in their respective BIM journeys.

What is BIM?

- **BIM is a digital representation of the functional aspects of an asset** and, as appropriate, its disposal and/or recycling.
- **BIM is a process for creating and measuring cooperation;** it enables greater levels of collaboration and better working practices across the industry and through the supply chain.
- **BIM is an improved way of working;** it reduces waste, mitigates risk and leads to tangible efficiency savings in both capital and operational expenditure.
- **BIM is a shared knowledge centre** for information about an asset and helps develop processes that cover the whole lifecycle of a building or asset.

Values of the BIM4 communities

- **BIM4 communities will focus on the goal** of promoting BIM adoption and providing support on an industry-wide basis with no single bias to any one platform, group or company.
- **BIM4 communities work will be mutually supportive and collaborative;** they will share instances of best practice to benefit the greater good.
- **BIM4 communities will be the forum for all specialist interest groups aiming to coordinate BIM activities;** they will do this by working together and pooling resources to provide an effective and practical conduit that is both knowledge-based and current.

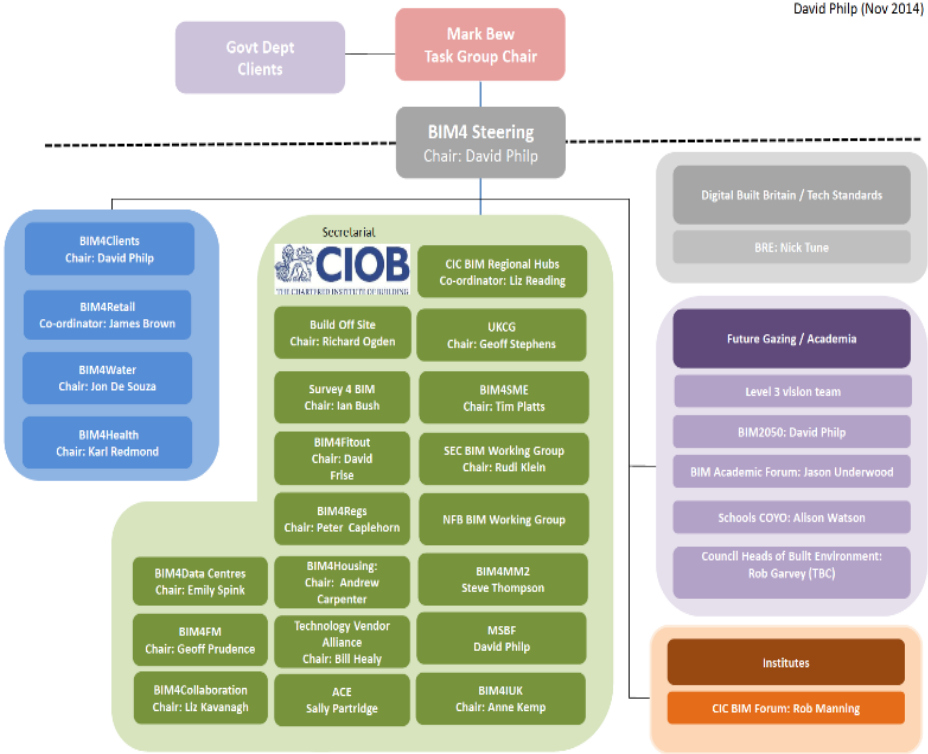
Desired end result

Instilling the adoption of BIM across the communities is as much a cultural challenge as a technical one. The BIM4 communities have a vital role in facilitating culture change whilst ensuring that the industry is equipped with the skills required to take up the BIM challenge as it spreads into the digital revolution that will be a transformation for the industry.

BIM Building Information Modelling (BIM) Task Group

BIM Task Group: BIM4Communities Organogram

David Philp (Nov 2014)

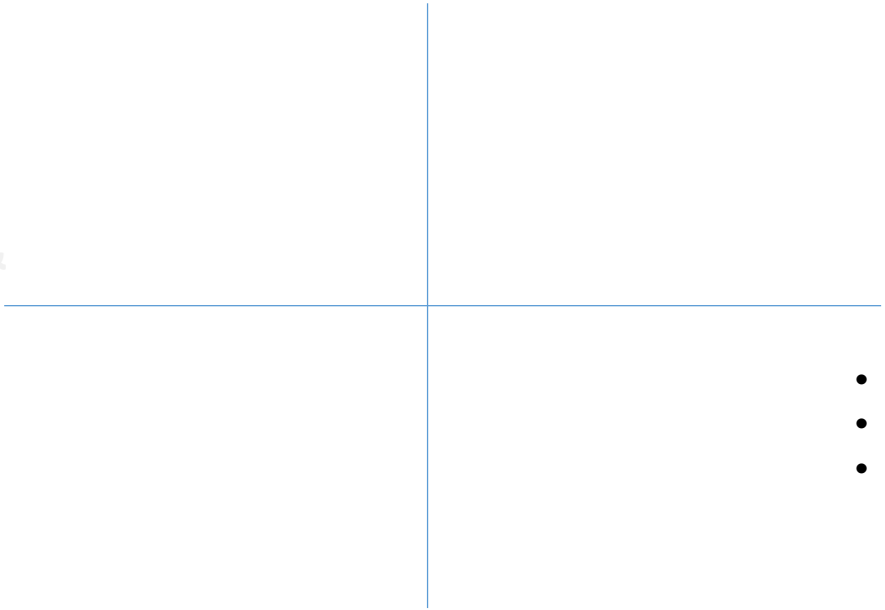


Communication

Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org

Grow Industry Capacity

Communicate Vision & Foster Communities

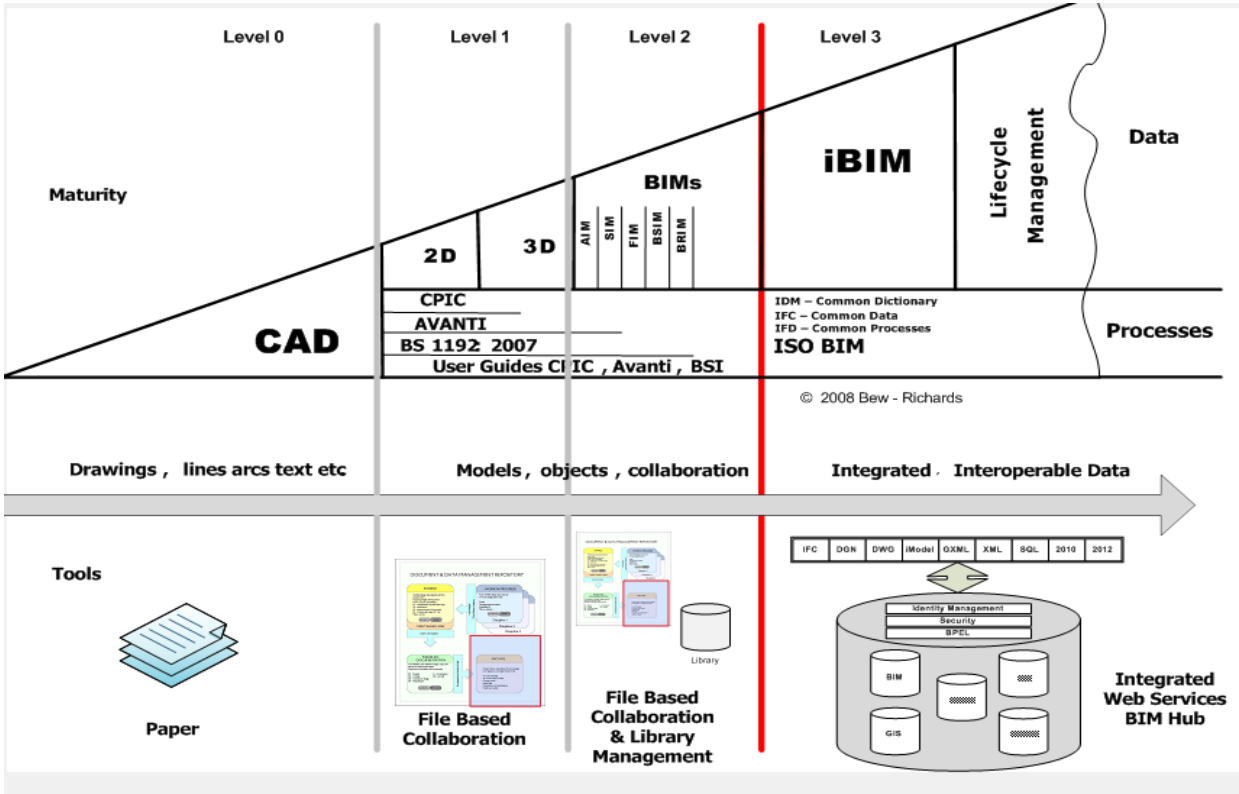


Build a Common Collaborative Framework

- Legal and regulatory framework
- Data and process standards
- Skills, tools, guidance

Foundation of Public Leadership

What is BIM?


Level 0
Level 1
Level 2
Level 3
Maturity
CAD
2D
3D
BIMs
AIM
SIM
FIM
BSIM
BRIM
iBIM
Lifecycle Management
Data
Processes
CPIC
AVANTI
BS 1192 2007
User Guides CPIC , Avanti , BSI
IDM – Common Dictionary
IFC – Common Data
IFD – Common Processes
ISO BIM
© 2008 Bew - Richards
Drawings , lines arcs text etc
Models , objects , collaboration
Integrated Interoperable Data
Tools
Paper
File Based Collaboration
Library
File Based Collaboration & Library Management
IFC
DGN
DWG
iModel
GXML
XML
SQL
2010
2012
Identity Management
Security
BPEL
BIM
GIS
Integrated Web Services BIM Hub

UK’s Framework for Collaborative BIM

PAS 1192-2

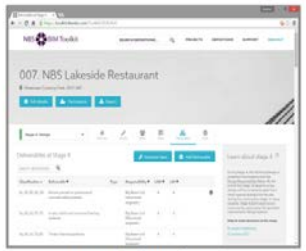
PAS 1192-3

BS 1192-4

PAS 1192-5

BS 8536-1

CIC BIM Protocol

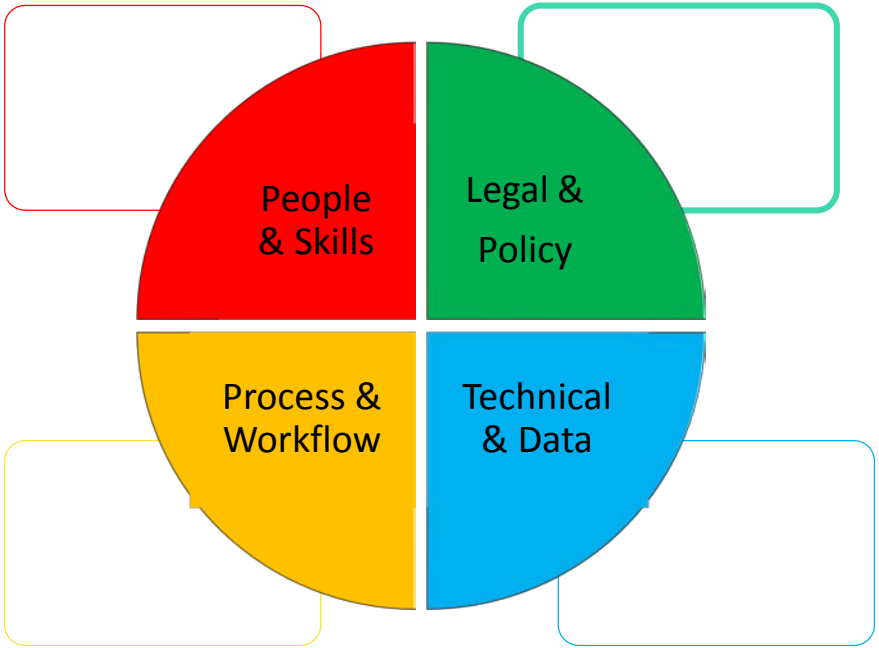


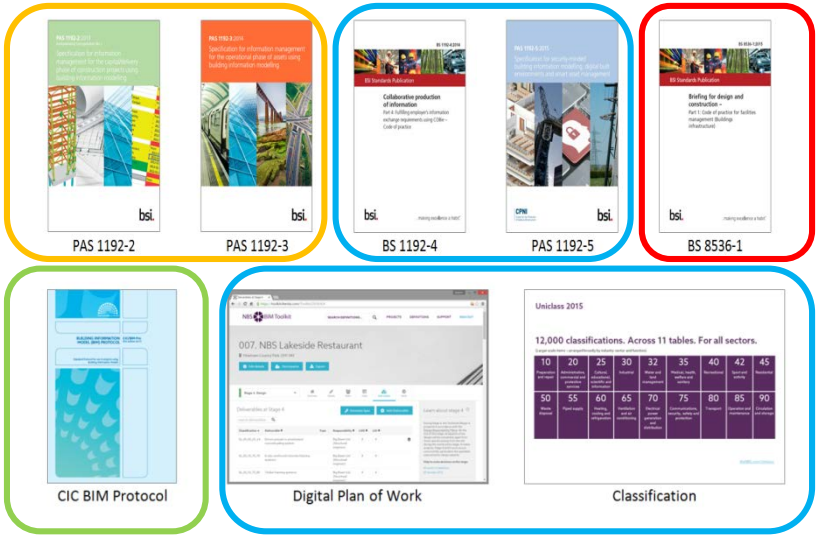
Digital Plan of Work

Classification

Legal, Technical, Process & People

Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org

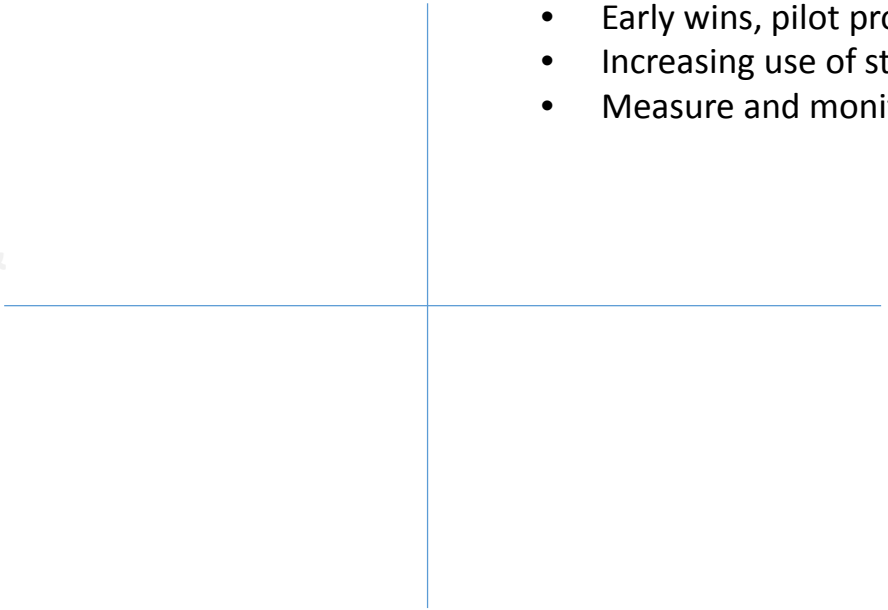




Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org

Grow Industry Capacity

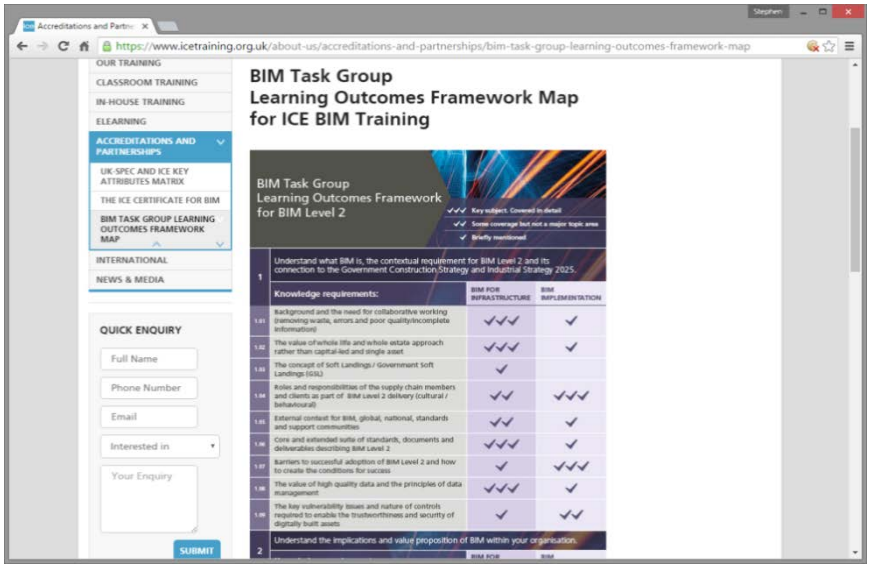
- Early wins, pilot projects, training
- Increasing use of strategic lever to grow capacity
- Measure and monitor, case studies, embed change

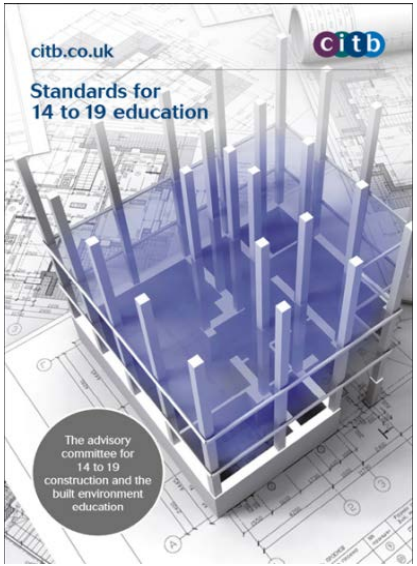


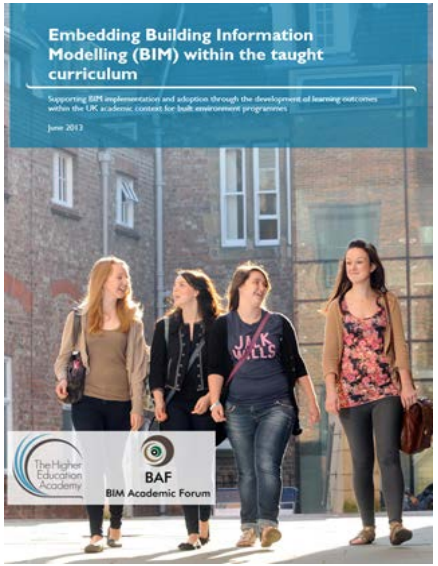
Communicate Vision & Foster Communities

Build a Common Collaborative Framework

Foundation of Public Leadership







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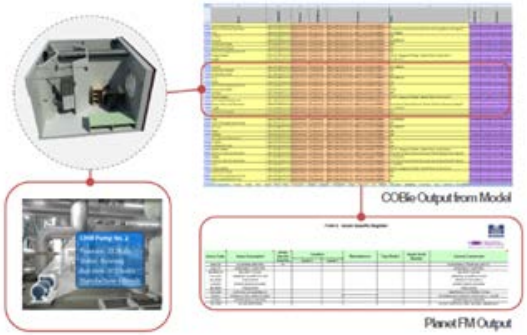
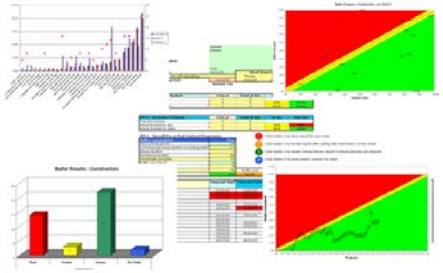
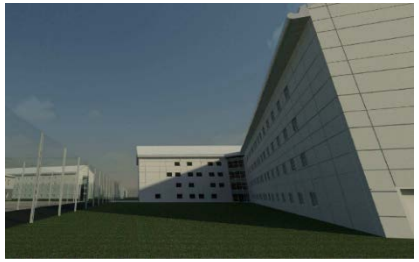
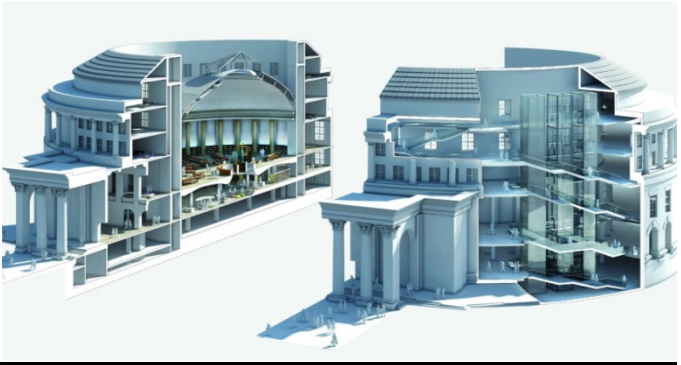
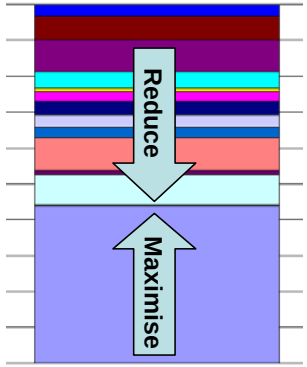


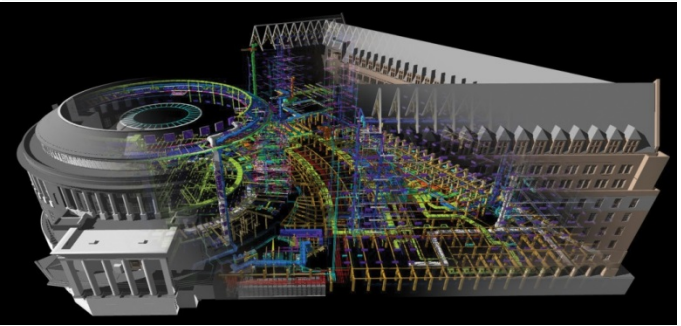


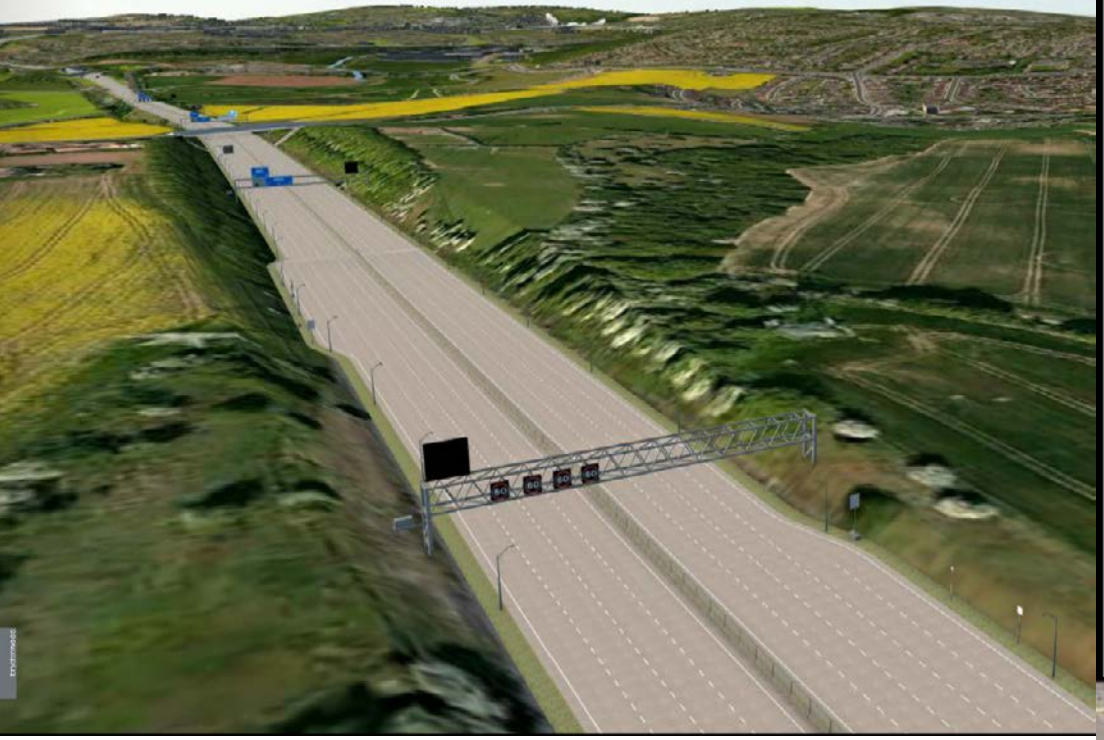


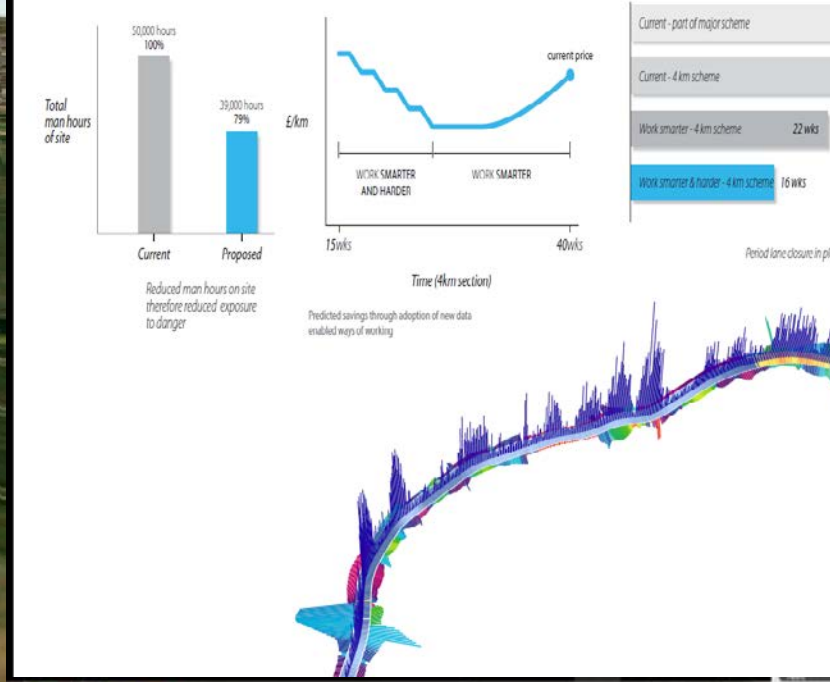


Cost Component Breakdown









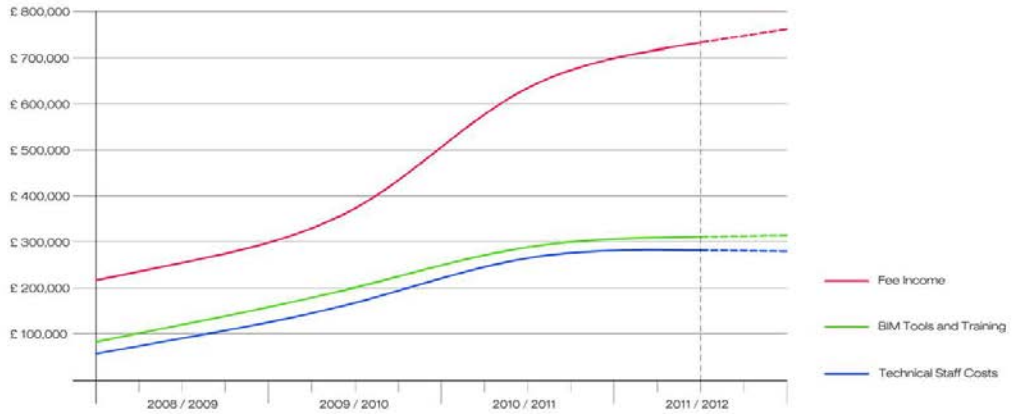

4
6
9 10
Way out
7 8

HIGH SPEED 2

£0.5BN SAVING

LINKED TO BIM

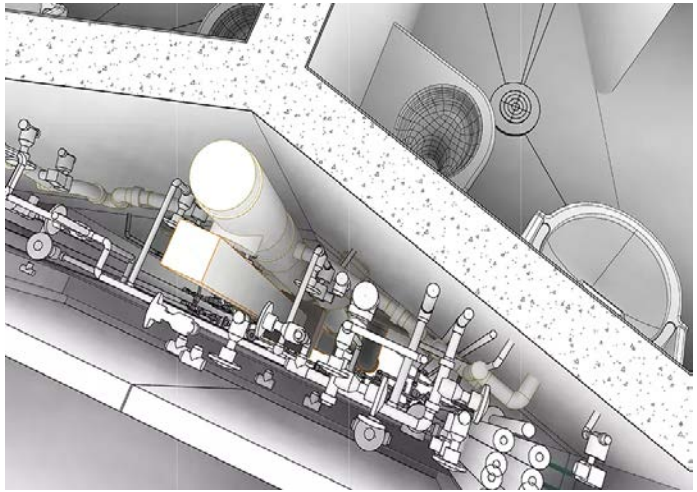
Organisation productivity benefits SME



Fee income against BIM costs

Year 1 Year 2 Year 3 Year 4

MINISTRY OF JUSTICE



HM Government

CONSTRUCTING EXCELLENCE in the built environment

Trial project:	New delivery model / procurement route:
Cookham Wood	Two Stage Open Book under PPC2000

Cost savings achieved: 20%

Other key benefits achieved:
Increased cost and programme certainty, innovation and reduced prospective operating costs

Trial report sequence:	Kick off meeting	Brief / Team Engagement	Decision to Build	**Build and Occupy**
Cost saving basis:	Outline saving aspiration	Challenging cost target	Award Cost	**Outturn Costs**

Trial project details

Project title	Cookham Wood Youth Justice Board New Build Young Offenders Institution
Client department	Ministry of Justice
Project value	£20 million (including construction cost, fees and escorts)
Form of project	New Build Young Offenders Institution
Main contractor	Interserve
Lead designer	Interserve supported by Arup
Key suppliers	SSC – Pre-Cast Volumetric Cell Provider EMCOR – Mechanical and Electrical Specialist Faithful & Gould – Client Representative HLN-Client architect/technical assessor Fob Deisgn Tier Consult Arup MJ Patch ICL

20%

Executive summary:

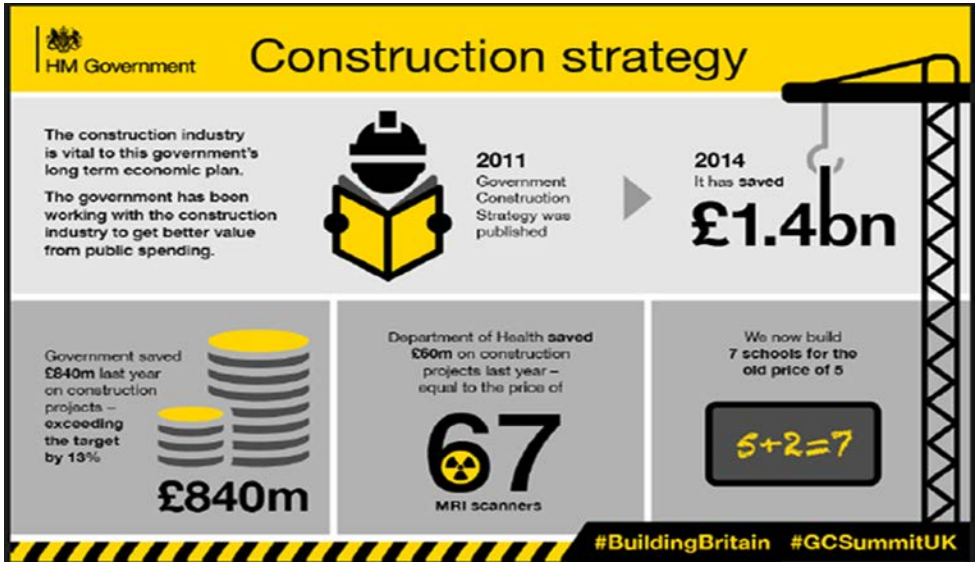
Ministry of Justice have created a collaborative culture so as to bring together the consultants, Tier 1 and Tier 2 contractors at the earliest stage and to develop cost savings innovations and improved efficiency prior to start on site.

The Cookham Wood Trial Project combines collaborative working under Two Stage Open Book with the adoption of BIM, Project Bank Accounts and informal implementation of Government Soft Landings. A fully integrated team have worked to a tight timescale to commence delivery on site of a new build Young Offenders Institution that to date has exceeded cost saving targets.

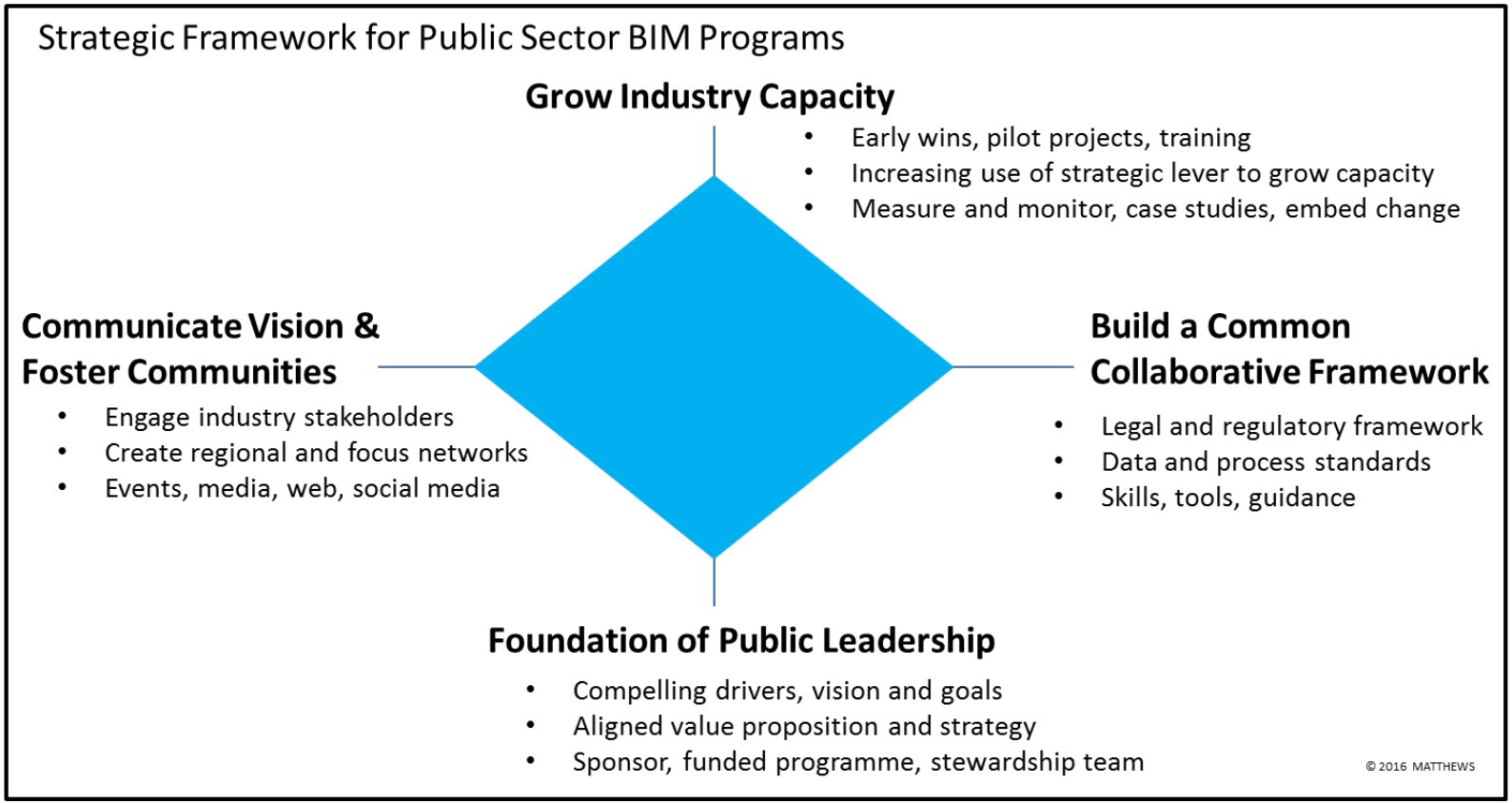
Despite problems on site with severe weather, the originally contracted project works were completed within both the agreed timetable and the Agreed Maximum Price.

Building More for Less

- Encourage collaborative working including early engagement of FM and Operation
- Visualisation & Lifecycle solution testing & preconstruction stage
- Accurate and complete data improving quality of bids, reducing risk allowances in target prices and lump sum bids
- 3D model input into the assessment of the impact changes at all stages in a project lifecycle
- Input of a populated asset data set into CAFM systems – saving time and avoid duplication



Experience & Lessons Learned



Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org

Rapidly evolving national digital programmes

EUBIM TASKGROUP

Germany	planen bauen 4.0	Norway	STATSBYGG
Finland	Senaatti	Spain	es.BIM Implantación del BIM en España
France	Plan Transition Numérique dans le Bâtiment	UK	BIM Building Information Modelling (BIM) Task Group
Netherlands	Rijkswaterstaat *Ministry of Infrastructure and the Environment*	Denmark	BYGNINGSSTYRELSEN

Others including; Sweden, Estonia and Lithuania

Austria
Belgium
Czech Republic
Germany
Denmark
Estonia
Spain
Finland
France
Ireland

Iceland
Italy
Lithuania
Netherlands
Norway
Poland
Portugal
Slovakia
Slovenia
Sweden
UK

International Collaboration & Next Steps

- Global public leadership
  - Consistent client demand
- Shared industry vision
  - Digital construction sector
- Principles of collaborative framework
  - Legal, technical and process
- Build industry capacity
  - Common skills to enable growth of global trade

Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org

Thank You

Adam Matthews

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www.bim-level2.org