

BRUNSWICK
STREET
PROJECT



MOLA
Architecture

CITA PRESENTATION
25.09.2018

- MOLA Architecture was founded in 2010
- Adopted first BIM pilot project in 2013
- Currently 45 staff – At least half of office now using Revit
- Some recent projects completed in Revit: 1 WML, TC1 & TC2 Cherrywood PA, Capital Dock fitout
- Currently 5no. BIM Level 2 projects in the office at different stages



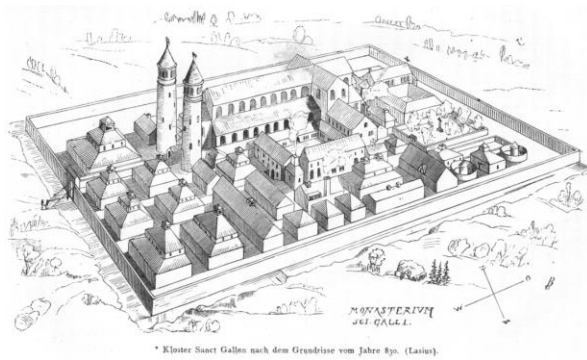
Capital Dock



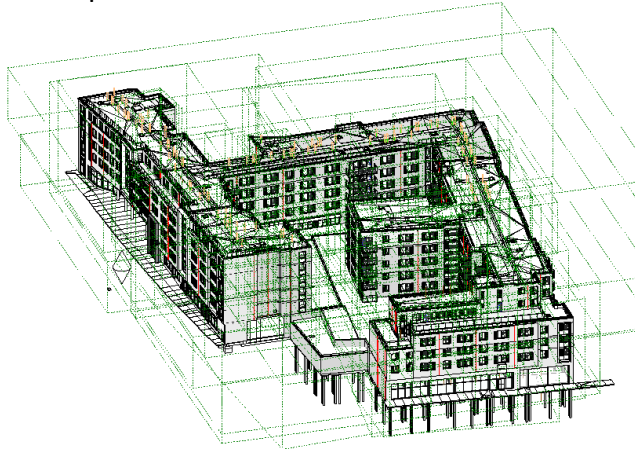
1WML



TC1 & TC2 Cherrywood



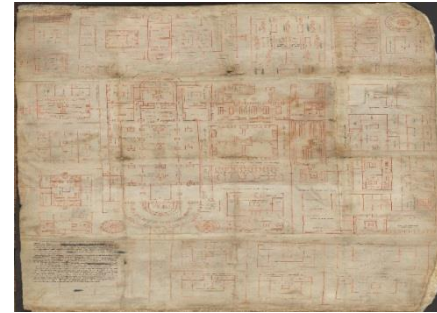
Artists reconstruction of the 'Plan of St Gall' (from the early 9th century) by J. Rudolf Rahn, 1876, Wikipedia 2017



3D view of the Brunswick Model

EVOLUTION OF STUDENT ACCOMMODATION

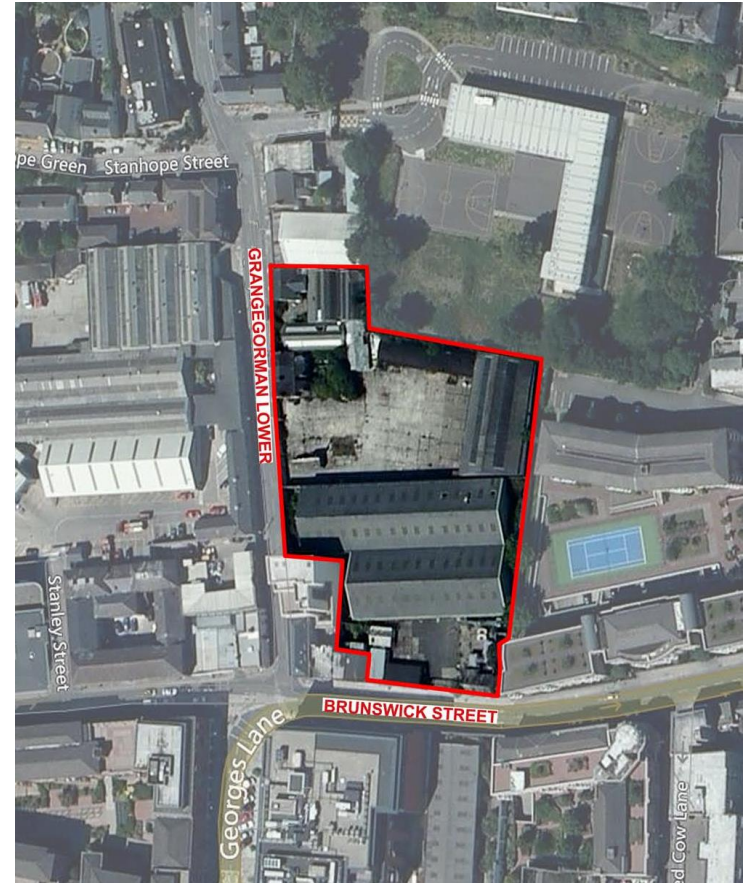
- Monasteries: Early dormitories for student accommodation
- Universities: 'Halls of residence' and 'houses' beginning with the University of Bologna in 1088
- Off campus student accommodation by private companies



Manuscript Plan of Gall, Early 9th century: Wikipedia 2017

- Client: Global Student Accommodation
- Site: 0.76 hectare sqm
- Area of Student Accommodation: 15,664 sqm
- Area of Retail: 5,335 sqm
- Main Contractor: Bennett Construction
- On site since January 2017 and due for completion September 2018

THE PROJECT – ARDCAIRN HOUSE



- My BIM training: Revit Essentials
- Took over as Project Architect in August 2017
- Like learning a new language: An unending list of standards, acronyms and programs.... PAS 1192-2:2013, BS1192:2007, EIR, BEP, Navis Works, Dynamo, COBie, RVT Exporter/Xrev Transmit
- Importance of understanding Revit and the BIM Level 2 process



PROS

- Collaboration and shared information
- Seeing the project from every angle
- Realistic images possible to aid design
- Quick design options possible
- Scheduling + 2000 doors
- Clash Detection



CGI of Entrance area

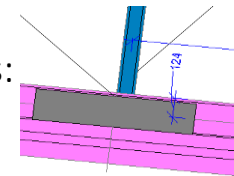
CONS

- Re-learning how long it takes to prepare drawings/packages
- Difficult to generate good quality 2D drawings
- Design decisions need to be considered early on to avoid repetition of work



Progress photo of Entrance area

- Communication: Like in any other project, good communication is essential for its success. Within our team it was particularly important to monitor the 'health' of the model and to programme the issue of information to site
- Model the same way as you build, for example flooring:
- Determine what level of development is required: Refer to the BIM Execution Plan (BEP) for Level of Detail (LOD's)
- Think before you model or create a family, for example walls:
- Agree on a strategy for modelling/graphical data



- Better visualisation
- Realistic CGI's for Marketing
- Clash detection
- Asset Information
- Facility Management and Building Operations

ADVANTAGES FOR THE CLIENT



CGI of Bedroom



CGI of Block B/C Courtyard



Progress photo of Block B/C Courtyard

It was developed in line with an initial Employer's Information Requirements (EIR), followed by a BIM execution Plan (BEP) and a Master Information Delivery Plan – as per PAS 1192-2:2013:

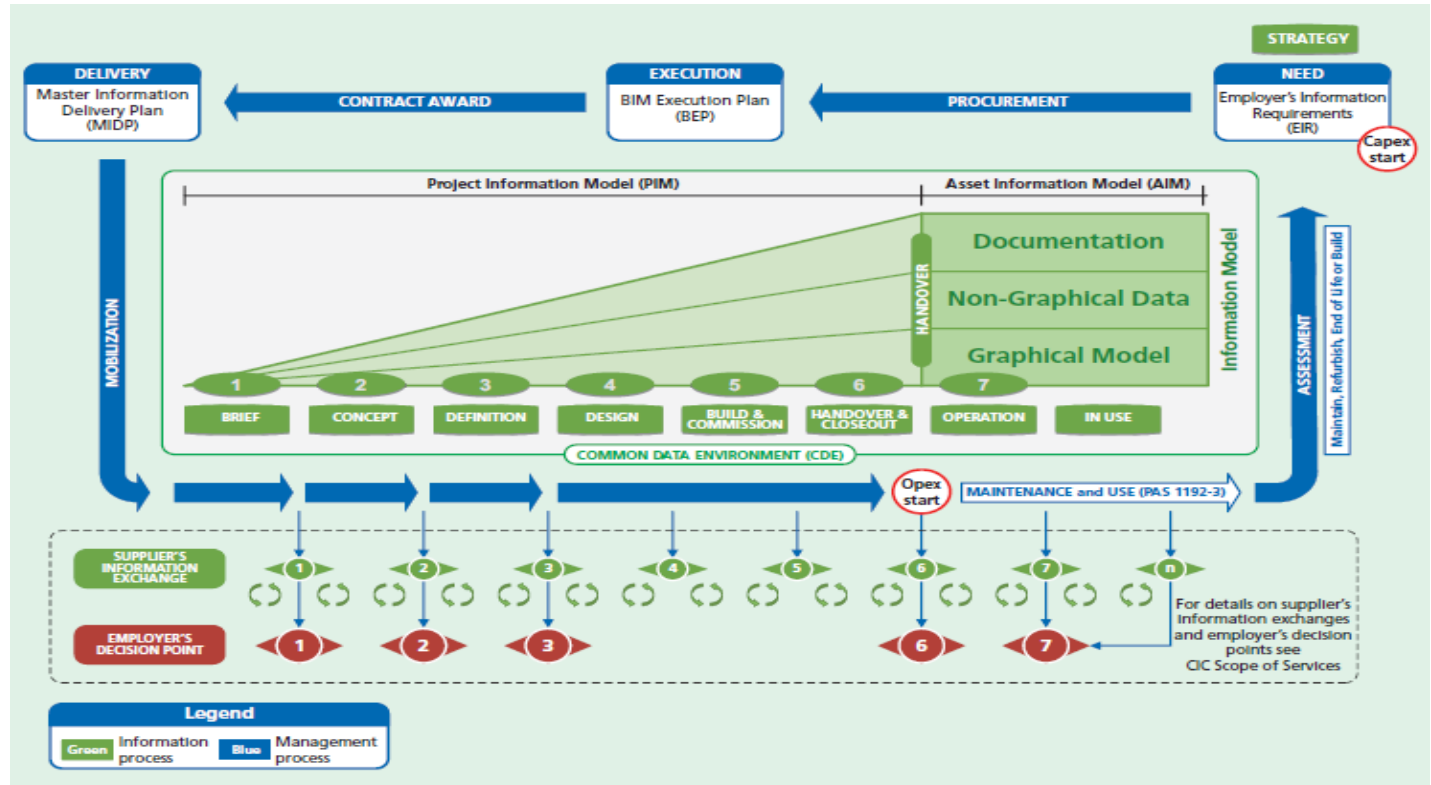


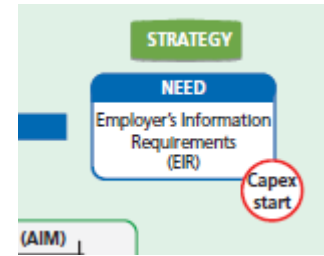
Figure 4: Extract of PAS 1192-2:2013 "The information Delivery Cycle" – Specification for information management for the capital/delivery phase of construction using building information modelling (British standards, 2013)

Employer's Information Requirements (EIR)

"Pre-tender document setting out the information to be delivered, and the standards and processes to be adopted by the supplier as part of the project delivery process" (PAS 1192-2:2013)

In Brief the Content of the EIR:

BIM PROCESS



PROJECT INFORMATION	TECHNICAL	MANAGEMENT	COMMERCIAL
<ul style="list-style-type: none"> • GENERAL • TYPE OF CONTRACT • PROGRAMME & PHASES 	<ul style="list-style-type: none"> • SOFTWARE PLATFORM • DATA EXCHANGE FORMAT • CO-ORDINATES AND ORIGIN • LEVEL OF DETAIL • TRAINING 	<ul style="list-style-type: none"> • STANDARDS • ROLES & RESPONSIBILITY • PLANNING WORK AND DATA SEGRETATION • SECURITY • COORDINATION & CLASH DETECTION • COLLABORATION PROCESS • H&S • SYSTEM PERFORMANCE • COMPLIANCE PLAN • DELIVERY STRATEGY FOR ASSET INFORMATION 	<ul style="list-style-type: none"> • DATA DROPS AND PROJECT DELIVERABLE • CLIENT'S STRATEGIC PURPOSE • DENINED BIM PROJECT DELIVERABLE • BIM-SPECIFIC COMPETENCE ASSESSMENT

This is the Employer's statement of what actually want in their BIM objectives:

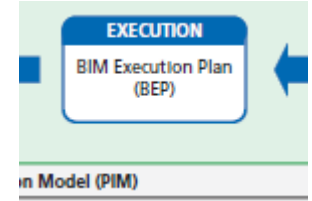
What are we doing? & **Why** are we doing?

BIM Execution Plan (BEP)

“Plan prepared by the suppliers to explain how the information modelling aspects of the project will be carried out” (PAS 1192-2:2013)

In brief the Sections of the content of the BEP :

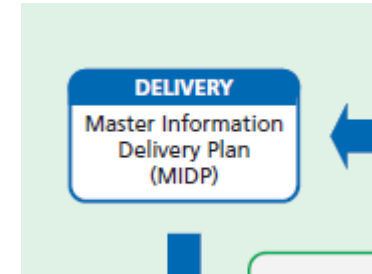
- Project Information
 - Information Required by the EIR
 - Management
 - Planning and Documentation
 - Standard Methods & Procedures
 - IT Solutions



The project **BIM Execution Plan (BEP)** defines how the modelling and information exchange aspects of the project are to be carried out and how the model and data are formatted

Master Information Delivery Plan (MIDP)

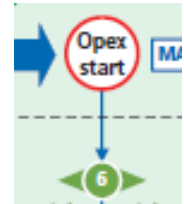
“primary plan for when project information is to be prepared, by whom and using protocols and procedures, incorporating all relevant Task Information Delivery Plat (TIDP)” (PAS 1192-2:2013)



In this project, the MIDP was developed based on networked approach, that combines information production, information deliverables, and construction work activities.

Construction Operation Building Information Exchange (COBie)

“structured facility information for the commissioning, operation and maintenance of the project often in a neutral spreadsheet format that will be used to supply data to the employer or operator to populate decision-making tools, facility management systems ” (PAS 1192-2:2013)

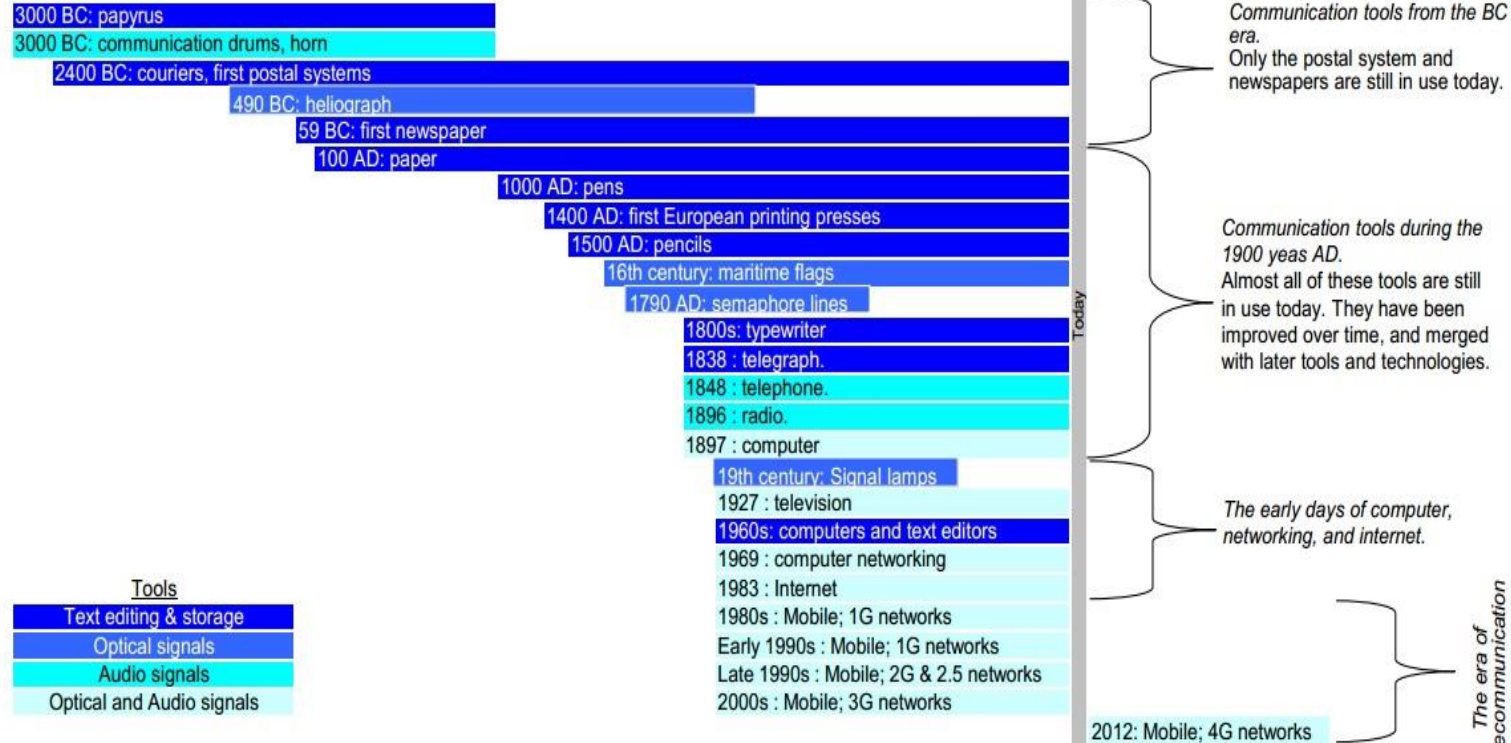


The Asset Information Model (AIM) is to be delivered in accordance with the BS 1192-4:2014 (COBie) data schema, including in a .xlsx format. Supplier information exchange requirements – COBie

COBie FIELD	EXAMPLE	REQUIRED	NOTES	RESPONSABILITY	WORKSTAGE
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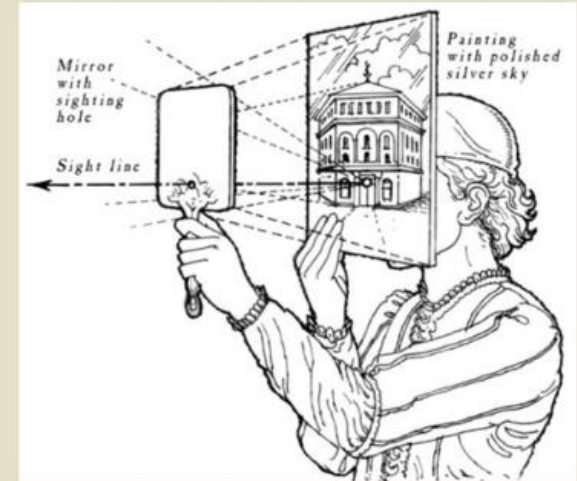
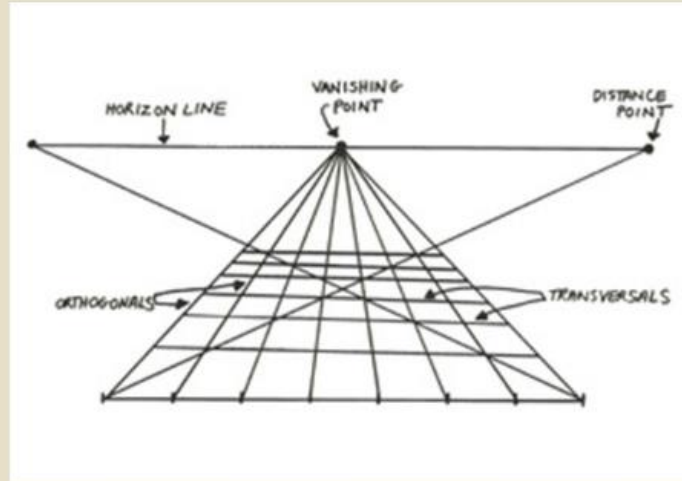
The end deliverable, is a Federated Model formed by three BIMs: Architectural, Structural & MEP.

Timeline of Communication tools



FILIPPO BRUNELLESCHI (1377 – 1446)

Brunelleschi on Linear Perspective



<http://smarthistory.khanacademy.org/Brunelleschi.html>

“The UK programme based on the UK BIS-BIM Strategy is currently the most ambitious and advanced centrally driven programme in the world.”

...”Construction is heavily influenced by direct and indirect levers from public sector, which procures around 30% of the industry’s output”.

...”Building Information Modelling (BIM) technology should be seen as a ‘collaboration’ between the construction sector and the software industries and create an environment in which there are opportunities and synergies for both”. (HMG2012)

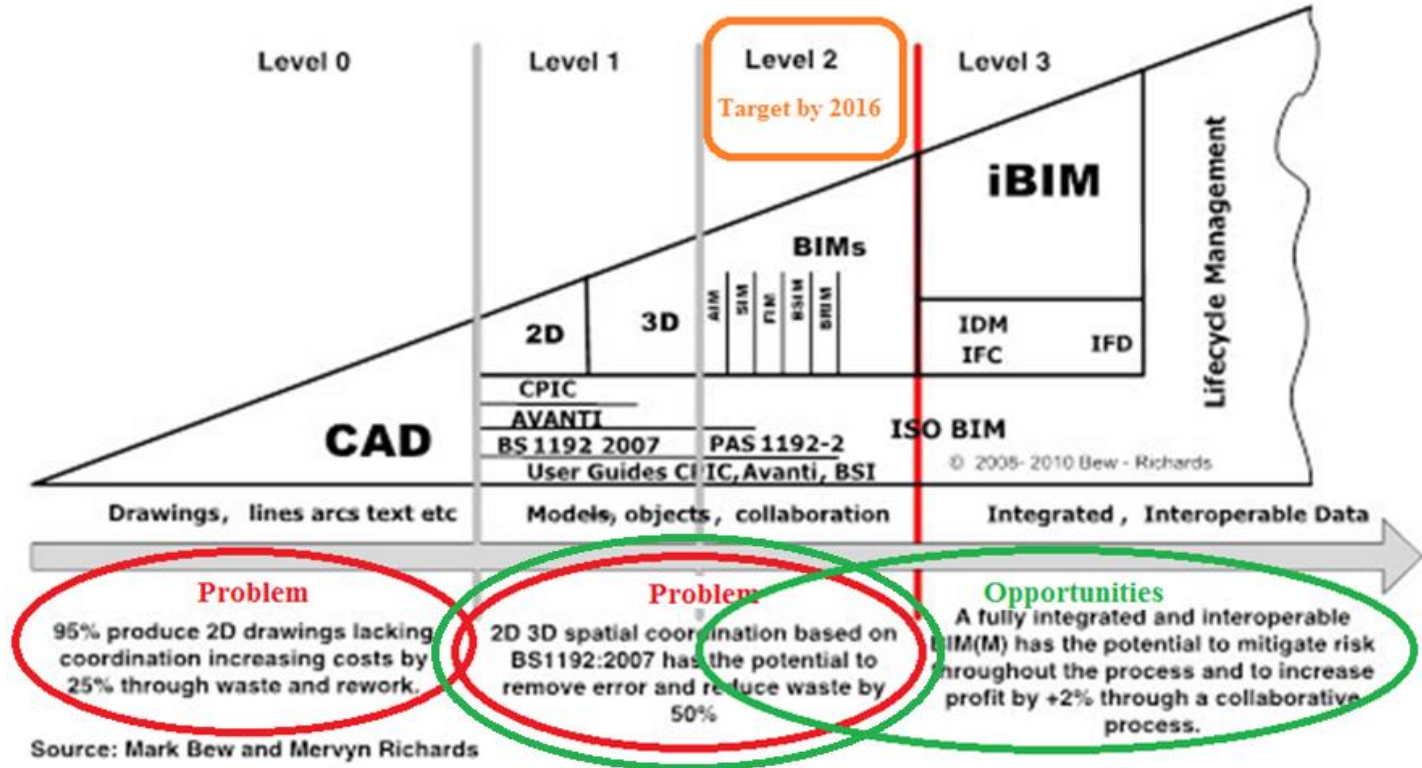
To realise this ambition in the UK they have developed a three part of action plan, these are:

- ✓ Fully commit to the existing BIS-BIM programme to create critical mass.
- ✓ Aim for Growth.
- ✓ Help create the future by continually developing our capabilities.

The target of this strategy was to implement BIM mandatory on public projects by 2016 with the adoption of the following criteria:

- ✓ Minimum "Level 2" BIM
- ✓ Construction Operation Building Information Exchange Format (COBie) in Excel.

Targets/Problems/Opportunities



Digital Roadmap 2021
Construction Sector



FIGURE 1. NBC ROADMAP TO 2021

Implementing Digital Transition

FROM ROAD MAP TO IMPLEMENTATION

VISION – SKILLS – INCENTIVES – RESOURCES – PLAN

The foundation for any successful transition must contain Vision, Skills, Incentives, Resources and a Plan as outlined in Figure 4.(Knoster T, 1991).

“Without Vision you will have confusion; without Skills you will foster anxiety; without Incentives you will meet resistance; without Resources you will breed frustration; without a Plan you’ll go on to make false starts.”



Q&A