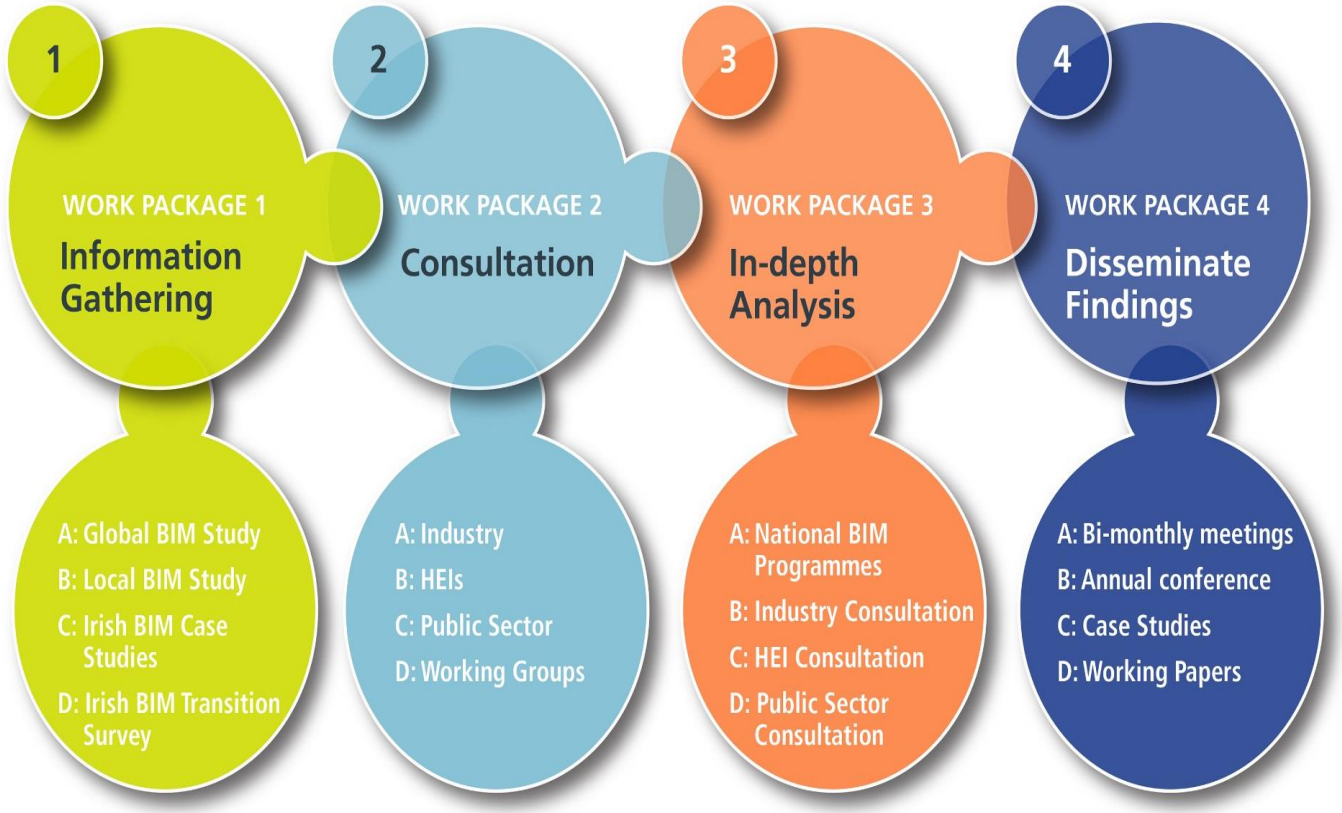
CitA
BIM GATHERING

Building Capabilities
in Complex Environments

Stewardship of International BIM Programmes: Lessons for Ireland

Presented by Dr. Barry McAuley



Building Information Modelling | Innovation | Capability | Research Programme

ENTERPRISE IRELAND

CitA Construction IT Alliance

DIT

NBC NATIONAL BIM COUNCIL

CitA BIP CitA: BIM Innovation Capability Programme

www.bicp.ie/bicp-global-bim-study

Global BIM Study

Lesson's for Ireland's BIM programme

Focus

Mandate Yes/No
Key Champions/Drivers
Noteworthy Publications

28

Countries reviewed within the BICP Global Study

Austria	Denmark	Switzerland	Hong Kong
England	Norway	Brazil	Australia
Scotland	Italy	Chile	New Zealand
France	Portugal	Canada	Dubai
Germany	Spain	USA	Qatar
Netherlands	Czech Republic	Singapore	
Finland	Belgium	China	

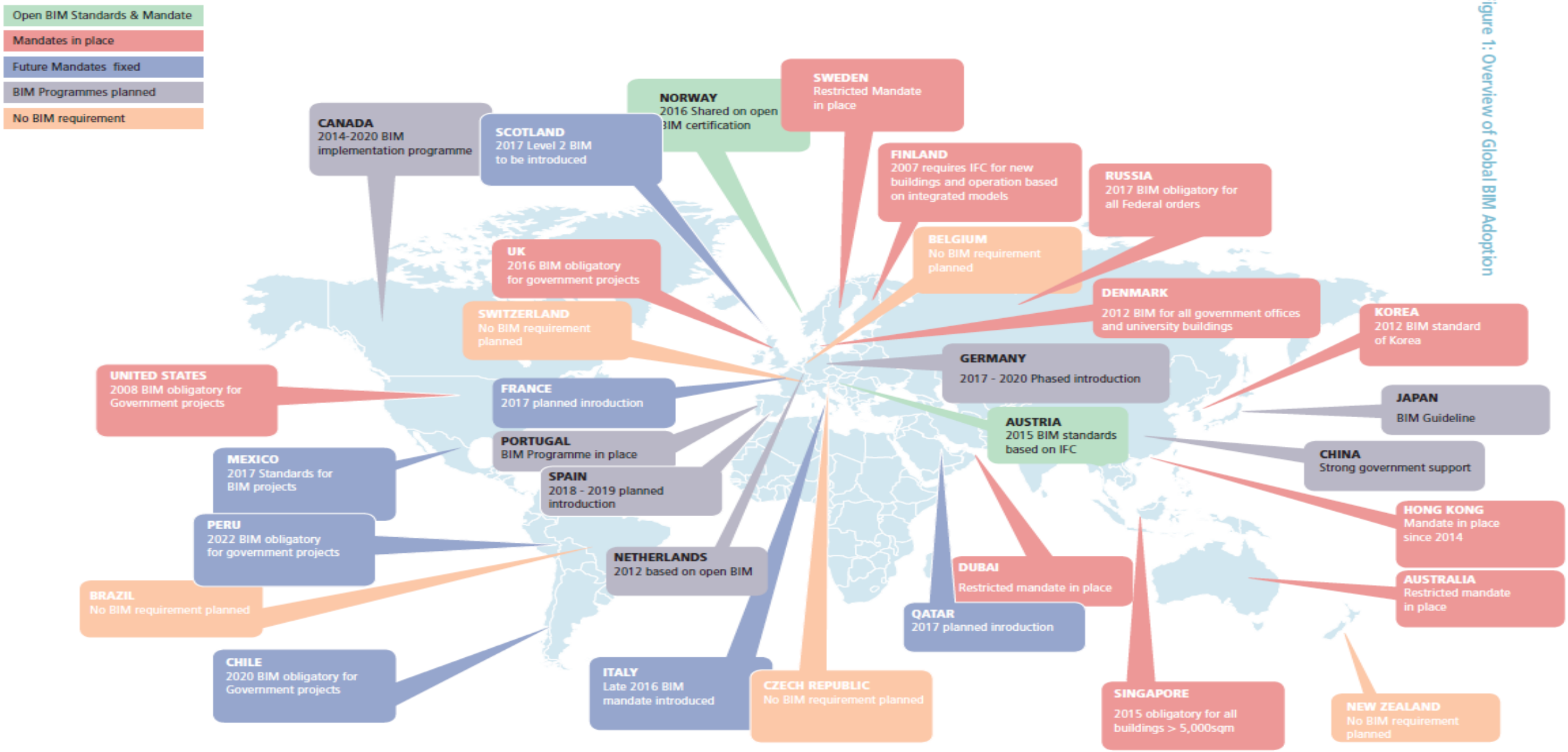


Figure 1: Overview of Global BIM Adoption

Recurring Themes within International BIM Initiatives	
Procurement	Efforts have been made internationally to align or adjust the various contractual procurement methods in the light of the requirements for more collaborative work-practices. This requires a review of managing risk, intellectual property, insurance and warranty requirements for clients, consultants and constructors.
BIM Guidelines	These guides provide industry and government clients, consultants and constructor on collaborative working, open standards and general alignment with global best practice.
Education	Efforts have been made internationally to develop and roll out a national awareness programme for governmental clients, the development of national BIM curriculum, vocational training and professional development.
Process Data Exchange	Adoption of best practice in respect to open BIM data exchange that will support collaborative working across the project life cycle from early design inception to maintenance and operational phases.
Regulatory Framework	Establishment of a regulatory mechanism or order that requires planners, regulatory bodies, local government and government agencies and departments to require the use of BIM protocols and open standards on all or specific centrally funded projects.
Pilot Projects	Many countries have identified pilot projects, in which to "learn", "test" and verify the readiness of the above programmes in an economy wide basis.

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CitA BICP
CitA: BIM Innovation Capability Programme

Building Information Modelling in Ireland 2017

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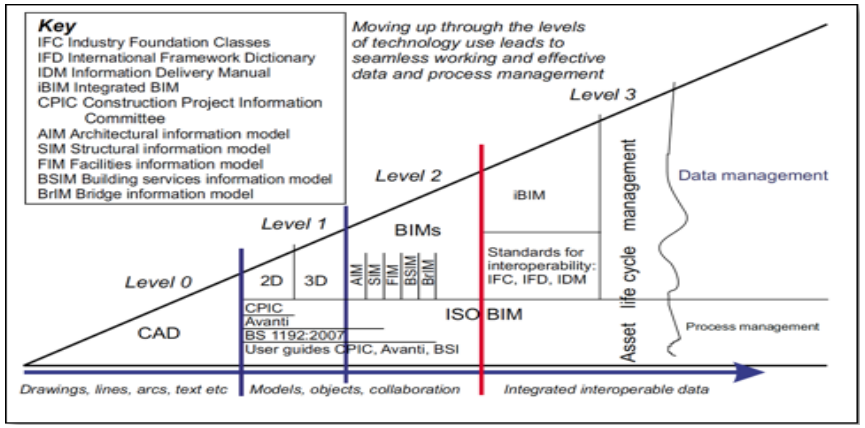
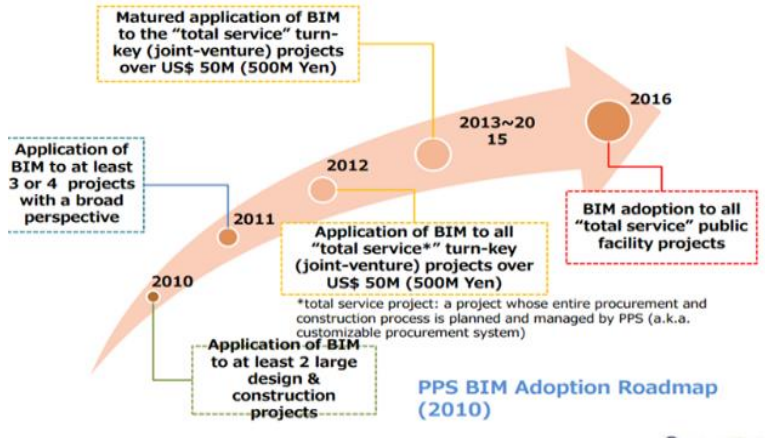
Contents

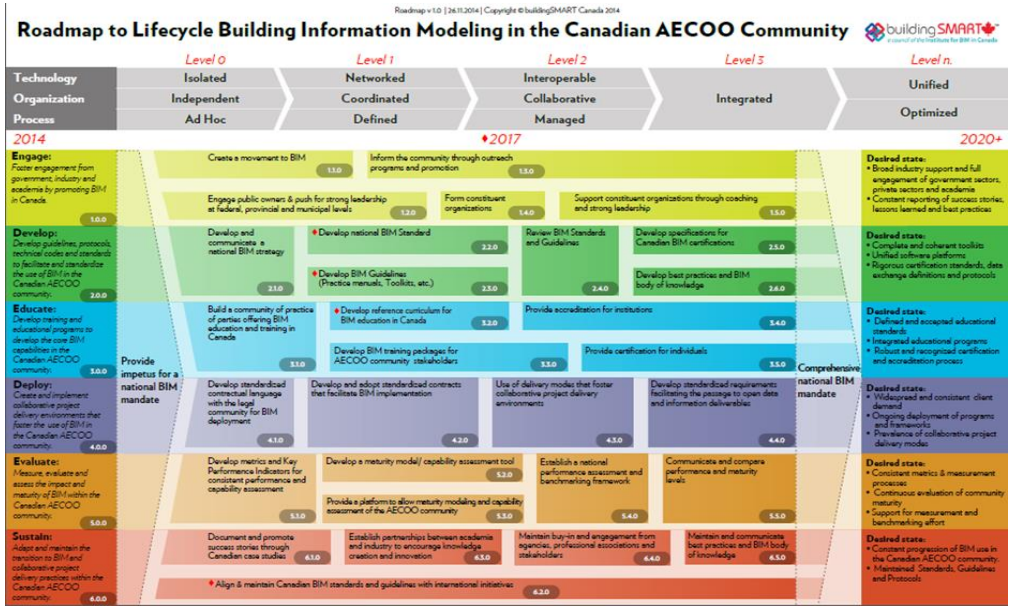
Country	Country	Name
Australia	Dr. Bilal Succar	Change Agents AEC
	David Mitchell	QSx Tech
Canada	Susan Keenliside	buildingSMART Canada
China	Ming Peng	THS Hi-Tech Ltd.
	Paul Doherty	The Digit Group
Finland	Tarja Mäkeläinen	VTT Technical Research Centre of Finland
	Dr. Arto Kiviniemi	University of Liverpool
France	Alix	Plan Transition Numérique dans le Bâtiment
Germany	Dr. Jan Tulke	Planen-bauen 4.0 GmbH
	Dr Ilka May	Planen-bauen 4.0 GmbH
Scotland	Paul Dodd	Scottish Futures Trust
South Korea	Dr. Youngsoo Jung	Myongji University
United Kingdom	John Eynon	BIM Regions UK

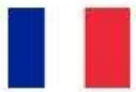
1. Do you have a BIM regulatory requirement or a national BIM programme in your country?
2. Can you explain the timeline of your national BIM initiative?
3. Do you have any particular entity managing the BIM programme in your country?
4. Do you have any centres of BIM excellence in your country?
5. How is the national BIM programme managed (stewardship) in your country?
6. Are buildingSMART in any way active in your national BIM programme?
7. Are there any noteworthy publications or online resources detailing your national BIM programme?
8. What are the key ingredients of your national BIM programme?
9. What support mechanisms for industry (if any) are evident in your national BIM programme?
10. Are their any metrics / benchmarks in place to measure the performance of your national BIM initiative?
11. What is the likely future direction for your national BIM programme?


BIM Implementation For Scottish Government Projects
Horizon 1 Plan & Launch
Horizon 2 Mobilisation
Horizon 3 Pathfinder Projects
Horizon 4 BIM Guidance
Horizon 5 Launch of BIM Level 2
BIM Implementation Plan
WORKSTREAMS
- Implementation Plan
- Capability Assessment
- Project Launch
- Define BIM Level 2
- Qualifying Projects
WORKSTREAMS
- Governance
- Communication
- Research
- Education & Training
- Resource
WORKSTREAMS
- Identify Pathfinder Projects
- Form Delivery Team
- Pathfinder Delivery
- Link to Guidance
WORKSTREAMS
- Review of BIM Level 2
- Draft Guidance
- Consultation
- Publish Final Guidance
WORKSTREAMS
- Communication
- Support
- Monitor adoption


Key
IFC Industry Foundation Classes
IFD International Framework Dictionary
IDM Information Delivery Manual
iBIM Integrated BIM
CPIC Construction Project Information Committee
AIM Architectural information model
SIM Structural information model
FIM Facilities information model
BSIM Building services information model
BrIM Bridge information model
Moving up through the levels of technology use leads to seamless working and effective data and process management
Level 3
Level 2
Level 1
Level 0
BIMs
iBIM
Standards for interoperability: IFC, IFD, IDM
ISO BIM
2D
3D
AIM
SIM
FIM
BSIM
BrIM
CAD
CPIC
Avanti
BS 1192:2007
User guides CPIC, Avanti, BSI
Data management
Process management
Asset life cycle management
Drawings, lines, arcs, text etc
Models, objects, collaboration
Integrated interoperable data


Matured application of BIM to the "total service" turn-key (joint-venture) projects over US$ 50M (500M Yen)
Application of BIM to at least 3 or 4 projects with a broad perspective
2010
2011
2012
2013~2015
2016
Application of BIM to all "total service*" turn-key (joint-venture) projects over US$ 50M (500M Yen)
BIM adoption to all "total service" public facility projects
*total service project: a project whose entire procurement and construction process is planned and managed by PPS (a.k.a. customizable procurement system)
Application of BIM to at least 2 large design & construction projects
PPS BIM Adoption Roadmap (2010)


Roadmap to Lifecycle Building Information Modeling in the Canadian AECOO Community
buildingSMART
Level 0
Level 1
Level 2
Level 3
Level n.
Technology
Organization
Process
Isolated
Networked
Interoperable
Integrated
Unified
Independent
Coordinated
Collaborative
Optimized
Ad Hoc
Defined
Managed
2014
2017
2020+
Engage:
Develop:
Educate:
Deploy:
Evaluate:
Sustain:
Provide impetus for a national BIM mandate
Comprehensive national BIM mandate
Desired state:

Country	BIM Requirement		TimeLine	Entity Managing		BIM Centres	Stewardship	Building SMART	Key ingredient	Support mechanism	Bench marks
	Govt	Ind		Govt	Ind						
 **Australia**					Australasian BIM Advisory Board	Centre of BIM in Western Australia		Yes			
 **Canada**		Yes	6+ year		Building SMART Canada	IBC bSc	Building SMART Canada	Yes	1. Engage 2. Develop 3. Educate 4. Deploy 5. Evaluate 6. Sustain	• Published Documents • Seminars/ Webinars • Presentations at industry conferences • Affiliate program • Workgroups	Yes
 **Finland**	Yes		Staggered	KIRA - DIgi		RT VTT Universities	Finish Government - Kira-Digi	Yes	1. 25% better productivity 2. 25% growth of the sector business 3. 50% less waste, 4. 75% less mistakes	Funding of 16 million for Kira-Digi	Yes
 **France**	Yes		3 Years	PTNB			The Minister of Housing, Equality of Territories and Rurality	Yes	1. Experiment, capitalise and convince all stakeholders. 2. Support the enhancement of the skills of professionals and stimulate. 3. Develop a trusted digital ecosystem through neutral, stable data formats.	French Strategy for the sharing of pre - standardization and standardization BIM applied to buildings XP P07-150 standard enables BIM project professionals to use e-catalogs for products / a dictionary of properties	Yes

Country	BIM Requirement		Time-Line	Entity Managing		BIM Centres	Stewardship	Building SMART	Key ingredient	Support mechanism	Bench marks
	Govt	Indus-try		Govt	Industry						
 Ger	Yes		5 year	Planen-bauen 4.0 GmbH			• Federal Ministry of Transport and Digital Infrastructure • Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety. • Federal Ministry for Economic Affairs and Energy	Yes	The Mandate will see a requirement for an increasing number of pilot projects that will apply open and neutral data formats, as well as the use of partial domain models	• Road Map for Digital Design and Construction • Digital Planning and Building - Step-by-Step Guide to Building Information Modeling • Planen-bauen 4.0	
 Scotland	Yes		5 years 18 months	Scotish Future Trsut		CSIC	BIM Delivery Group		1. Plan and launch 2. Mobilisation 3. Pathfinder proj. 4. BIM guidance 5. Launch of BIM Level 2. Proportionality, innovation and appropriateness for the Scottish Procurer	• BIM Supplier Group • BIM Buyers Group • BIM Academia Group • BIM Maturity Compass • Grading Tool • ROI tool	Yes
 South Korea	Yes		5 years		Korea Institute of Construction Technology BuildSmart Korea		• South Korean Ministry of Land, Infrastructure and Transport (SKMLIT) • Public Procurement Services	Yes	Unknown	SKMLIT have provided $5.8 million over a period of three use Documents i.e. National Architectural BIM Guide, etc	
 UK	Yes		5 Years	UK BIM Alliance		BIM Academy	• UK Government • UK BIM Alliance	Yes	• Standards, 1192 series etc. • Government Soft Landings • CIC BIM Protocol • NBS BIM Toolkit	• UK BIM Alliance • BIM Regions • BIM4 Communities	

Time-Line
The average time to execute a mandate is within the region of 5 years. However, in countries such as France, who had a previously high maturity of BIM within the sector, the mandate is three years.

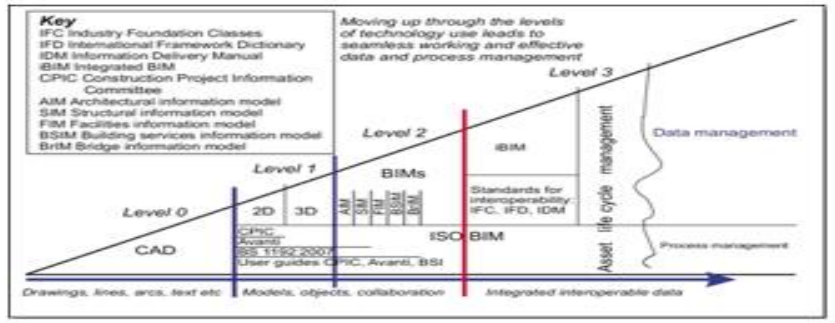
Stewardship and Management
5 out of the 6 countries with mandates in place have an appointed government representative managing their BIM requirements. The UK BIM Alliance, Planen-bauen 4.0 GmbH, KIRAdigi, PTNB and Scottish BIM Delivery Group represent professional bodies that have been appointed by respective Governments and have been armed with significant funding.

BIM Centres
The UK have their BIM Academy, Scotland have the CSIC, South Korea have the Korea Institute of Construction Technology and Finland have RT. The IBC, bSC and CanBIM all serve as centres of BIM excellence.

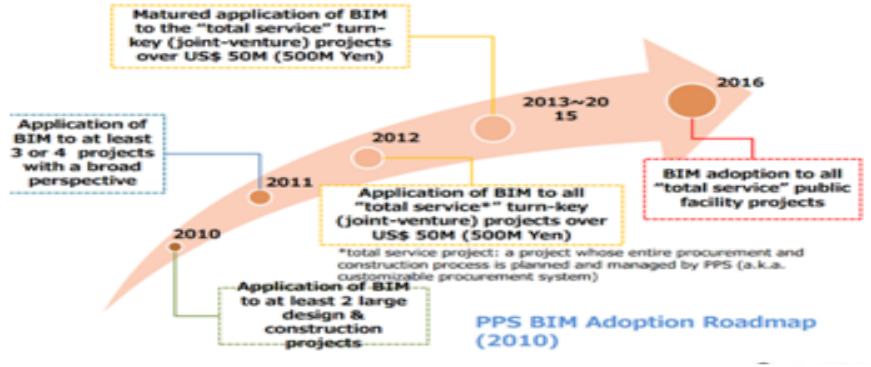
buildingSMART
Except for Scotland, buildingSMART has played an advisory role in all of the mandates.

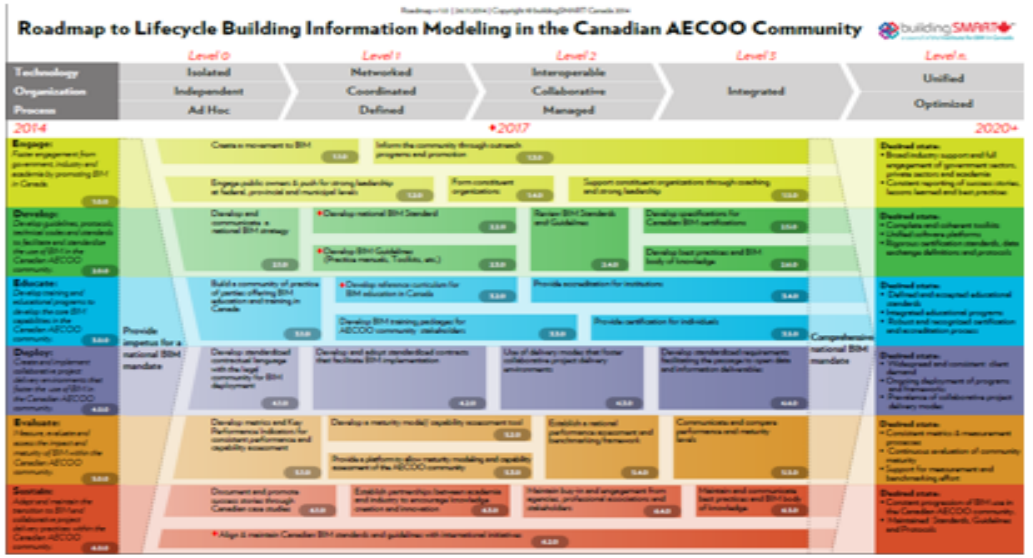
Support mechanisms
Most of the countries who have a mandate in place have developed a number of guidance documents on standards and professional practice.

Benchmarks
Benchmarks are still an underdeveloped area in a number of countries. The likes of Scotland are one of the most advanced in this area as seen through their return on investment tool



- The key ingredients for each country is varied but some common themes can be established with regards to leadership.
- All of the mandates require high levels of engagement with government, industry and academia to create a movement to BIM. This is usually the responsibility of a government appointed Task Group which will shepherd this consultation process.
- The development of guidelines, protocols and technical codes to standardise the use of BIM is paramount in which buildingSMART has been seen to play an increasing role.
- A number of specialised communities are usually established to help guide this process. The development of training and educational programmes through different training bodies has been an obvious area which has required significant attention.
- Each jurisdiction has or will investigate their contractual frameworks to ensure a collaborative project delivery environment is present.
- In a number of countries, such as the UK, Germany and Scotland, their programmes have required specific pilot projects to serve as a key learning tool.





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Thank you