Singapore BIM Roadmap

by Cheng Tai Fatt
Building & Construction Authority

Target

Why?

Challenges & Strategies

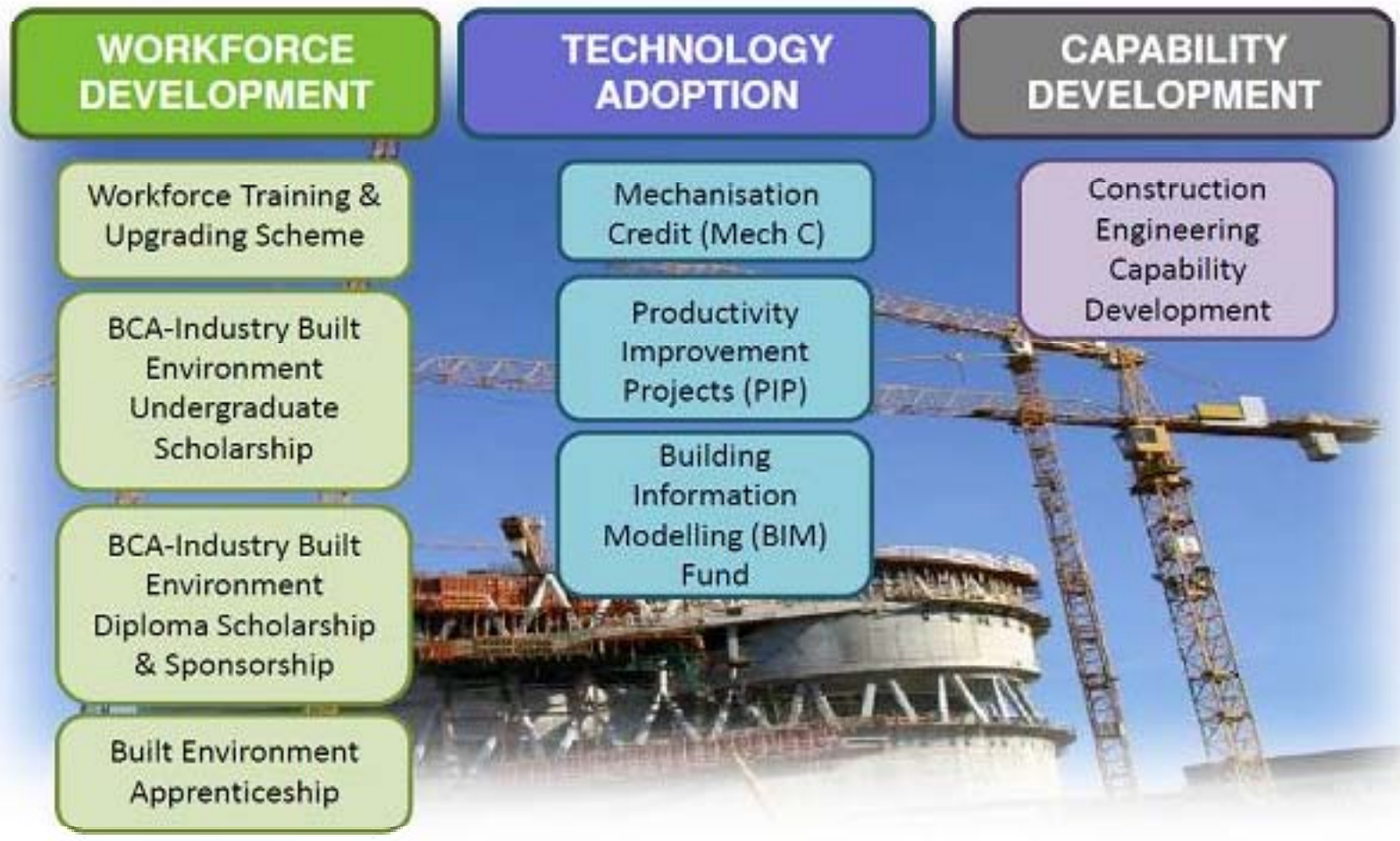
TARGET

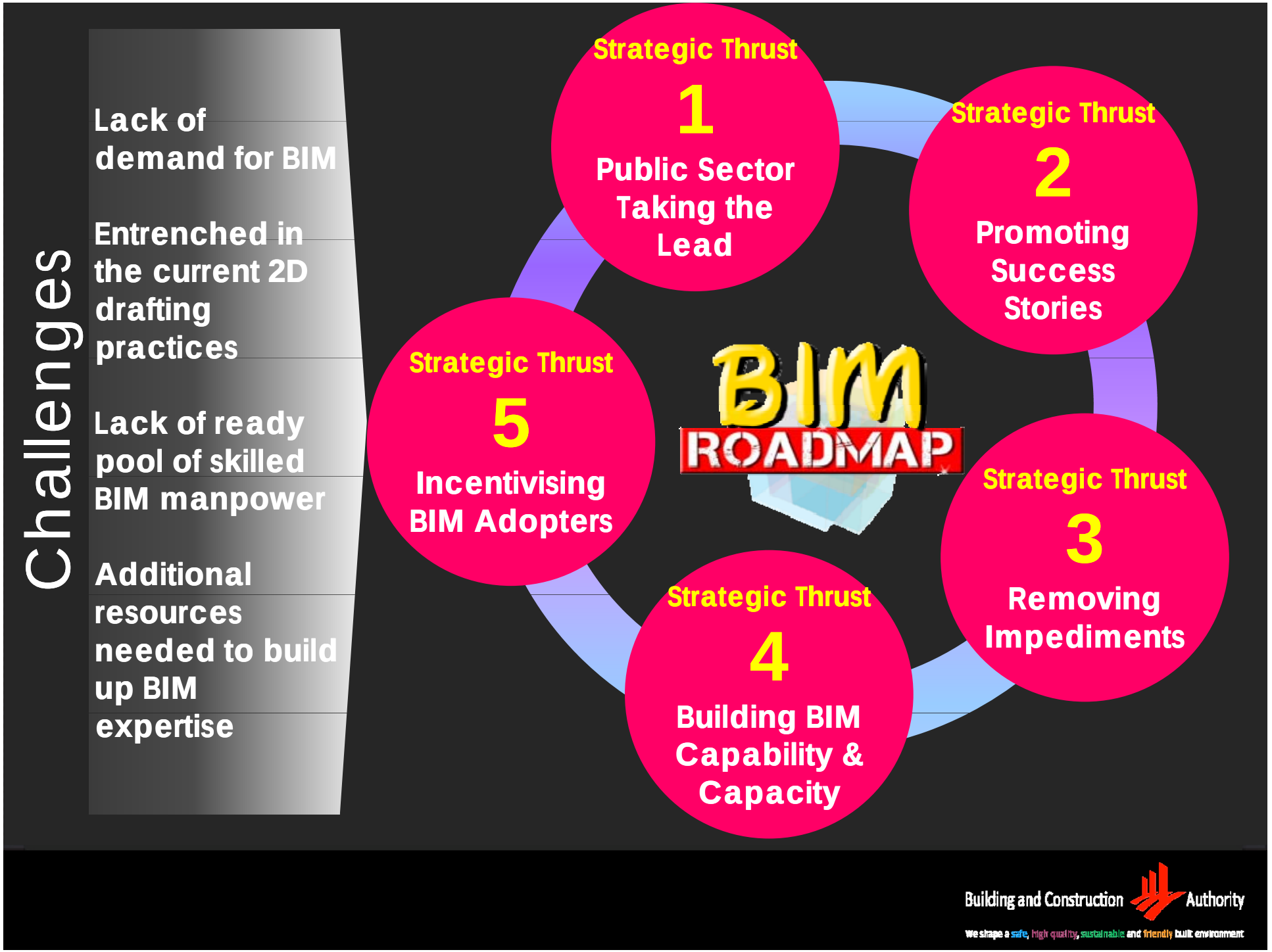
Singapore Construction Industry to Use BIM Widely by 2015

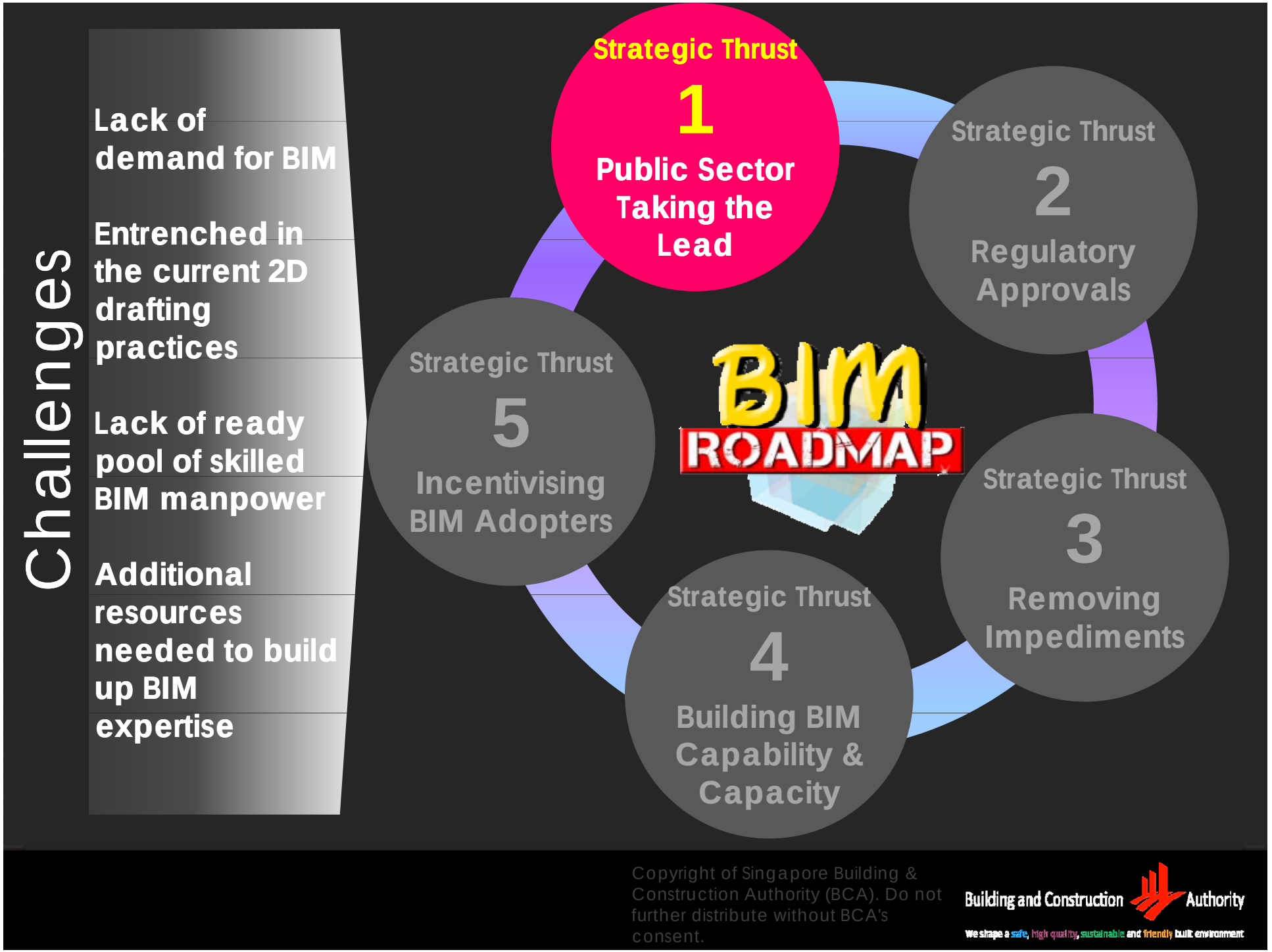
Productivity

3. To address these challenges, MND/BCA have formulated a Construction Productivity Roadmap in consultation with the industry and international experts. The Roadmap aims to realise the **vision of a highly integrated and technologically advanced construction sector that will be led by progressive firms and supported by a skilled and competent workforce in 2020.**

CONSTRUCTION PRODUCTIVITY & CAPABILITY FUND (CPCF)




Challenges
Lack of demand for BIM
Entrenched in the current 2D drafting practices
Lack of ready pool of skilled BIM manpower
Additional resources needed to build up BIM expertise
Strategic Thrust 1
Public Sector Taking the Lead
Strategic Thrust 2
Promoting Success Stories
Strategic Thrust 3
Removing Impediments
Strategic Thrust 4
Building BIM Capability & Capacity
Strategic Thrust 5
Incentivising BIM Adopters
BIM ROADMAP
Building and Construction Authority
We shape a safe, high quality, sustainable and friendly built environment



Building and Construction Authority

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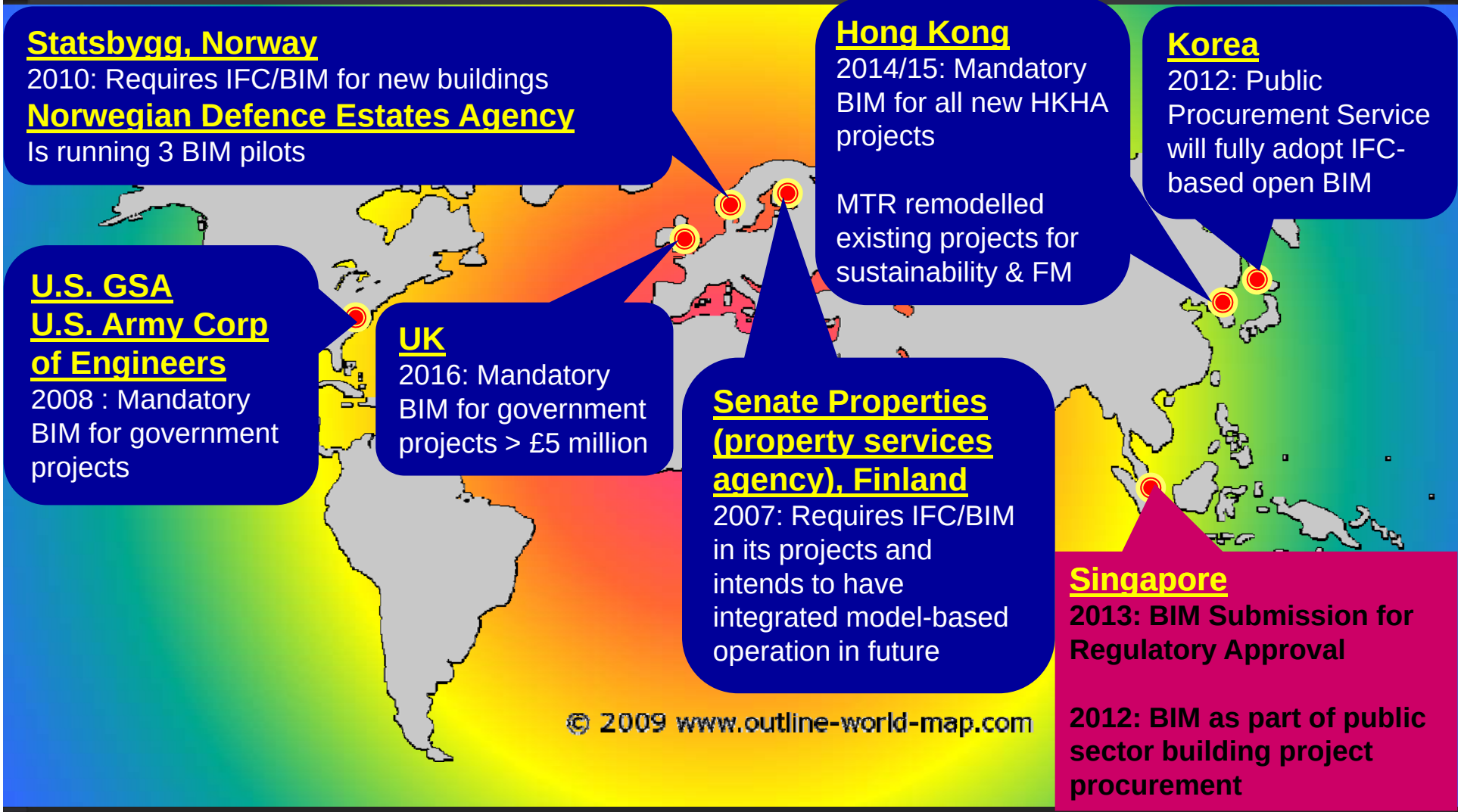
GLOBAL PERSPECTIVE



PUBLIC SECTOR TAKING THE LEAD

For Government Procurement Entities (GPEs)

2010-2012	2012 and beyond
GPE Pilot Projects GPE Engagement	GPE to stipulate BIM as part of project requirements

MANDATORY BIM SUBMISSION

July 2013*	Architecture Submissions for all new building projects > 20,000 m^2
July 2014	Engineering Submissions for all new building projects > 20,000 m^2
July 2015	Architecture & Engineering Submissions for all new building projects > 5,000 m^2 – 80% target

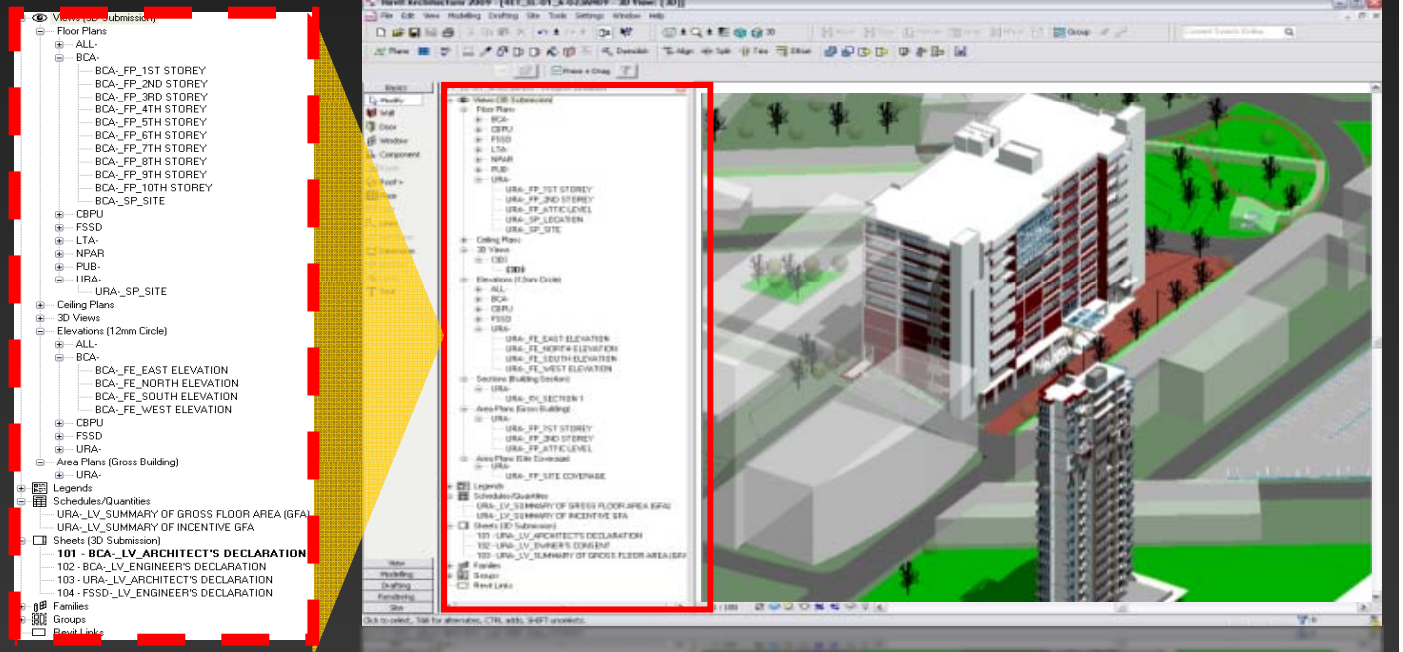
*From 1st July 2013 – 31 Aug 2013, 100% of QP working on building projects > 20k m^2 could meet the architectural BIM e-submission requirements

Templates
for BIM submissions

Guidelines
for BIM submissions

Step-by-Step Guides/Tips & Tricks

Add-On Modules



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Step-by-Step Guides/Tips & Tricks

Add-On Modules

E-learning

CHAPTER 1: CUSTOMISATION

CHAPTER 2: GETTING STARTED

CHAPTER 3: PROJECT ELEVATION/DATUM LEVEL

CHAPTER 4: SITE CONFIGURATION

CHAPTER 5: GFA TABULATION

CHAPTER 6: SITE & SITE COVERAGE TABULATION (ONLY AFFECTING SITE PLAN)

CHAPTER 7: ANNOTATION & SYMBOLS

CHAPTER 8: A&A WIRKS/RE-SUBMISSION/AMENDMENTS

CHAPTER 9: ENDORSEMENT & DATA INFORMATION

CHAPTER 10: EXPORT/PUBLISH TO DWF

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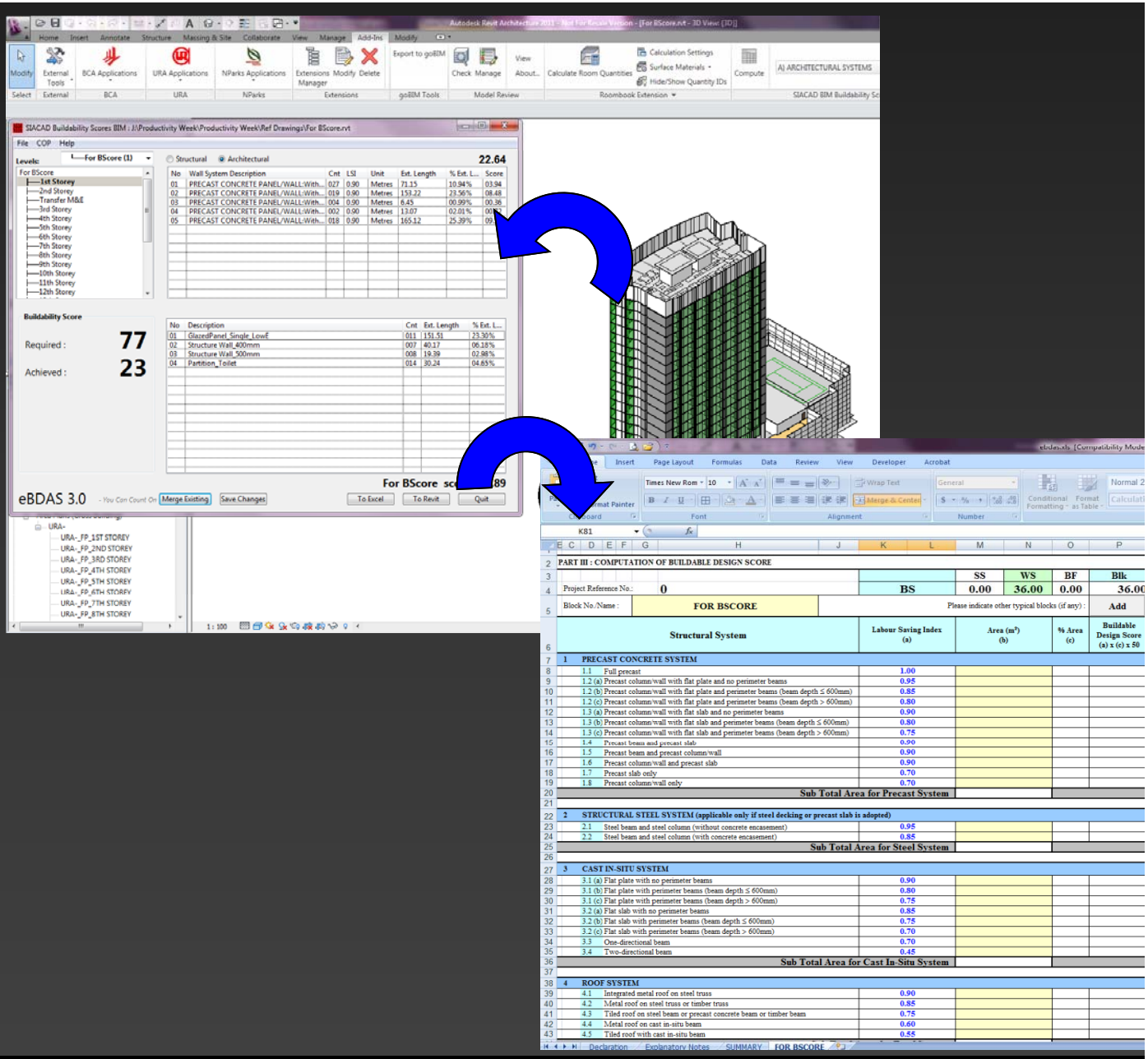

BIM Singapore **B**uilding **I**nformation **M**odelling Roadmap

Building and Construction Authority
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Challenges

- Lack of demand for BIM
- Entrenched in the current 2D drafting practices
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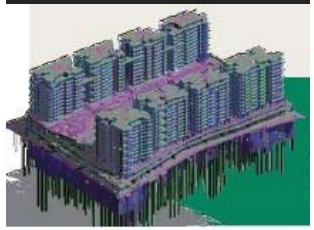
PROMOTING SUCCESS STORIES



TECHNOLOGY

BIM LEADERS
IN STRUCTURAL ENGINEERING
Hear from two companies in Singapore that are leading the way in harnessing BIM technology

Build Smart speaks to two local engineering companies on how they have successfully implemen Modelling (BIM), and on how the technology has benefited their work processes and productivity

Ir Teoh Eng Bin
Executive Director, AECOM

Q What are the initial challe adopting BIM, and how d overcome it?

A The first hurdle was the lac both engineers and drafter We recruited an experience look into the training and h requirements.

AECOM is a Public Sector Panels of Consultants (PSPC)

BUILDING INFORMATION MODELLING

BIM LEADERS IN ARCHITECTURE
Hear from three firms in Singapore who are using the emerging technology to design, collaborate and build smart

We hear you: Building Information Modelling (BIM) implementation can be a challenge, but BIM technology has also numerous advantages. Three local architecture firms share with us their experiences of transiting into BIM and how they have benefitted from the technology.

For these companies, BIM is not just a technology to produce 3D models or high quality visualisations. The value of BIM really lies in its ability to generate critical information for early decision. With the knowledge, these architectural firms have been empowered to become master builders as they use the data to facilitate collaboration, smarter construction and integrated work processes.

As you will discover, BIM implementation is as much about investing in people and processes as it is about technology. Full support from the senior management of the company is crucial to move the implementation forward. The selection of a core BIM team with members who are eager to learn and who have a positive mindset to build internal BIM capability is another secret ingredient in the recipe for BIM success.

ONG&ONG Pte Ltd
Tai Lee Siang, Group Managing Director, and Daniels Chandra, BIM Director

ONG&ONG tapped into BIM for one of its pilot projects at Kung Chong Rd. The 360° Design Solution project involved the use of BIM/Revit. It was a big challenge as many in the team were inexperienced BIM/Revit users. However, the firm eventually improved productivity for architecture,

Tai Lee Siang,
Group Managing Director

Q at are the initial challenges faced when opting BIM and how did ONG&ONG ercome them?

A implementation of BIM was our first challenge. overcome this, we adopted a centralised roach by setting up a specialist department hin our organisation to handle its implementation

t, there were costs involved in adopting BIM. wever, through BCA's BIM Fund, we were able et up a room comprising 10 dedicated BIM rkstations for staff training. We are also upgrading company's IT infrastructure to accommodate the reasing use of BIM-related equipment.

biggest challenge is to find people with h BIM capabilities and design experience. instance, it is very difficult to convince our erienced designers to adopt BIM due to their ference for and familiarity in working with traditional CAD system. On the other hand, signers with less experience are re willing to learn BIM. overcome this, we send staff for regular training nducted by our in-house l specialists or external ties.

anish Chandra,
BIM Director

BIM LEADERS
IN PROPERTY DEVELOPMENT
Hear from two developers that have adopted BIM successfully, and their plans for the way forward

City Developments Limited and Wing Tai Property Management Pte Ltd are household names in the real estate industry. But how do they fare when it comes to adopting Building Information Modelling to improve their productivity?

Mr Lawrence Leong, Manager in the Projects Division of City Developments Limited, and Ms Quek Chay Hoon, General Manager of Projects in Wing Tai Management, walk us through their company's BIM implementation process, highlighting the benefits, challenges, and the future of BIM.

Mr Lawrence Leong, Manager, Projects Division
City Developments Limited

Ms Quek Chay Hoon, General Manager, Projects
Wing Tai Property Management Pte Ltd

Q How has BIM helped in enhancing the developer aspects of your projects?

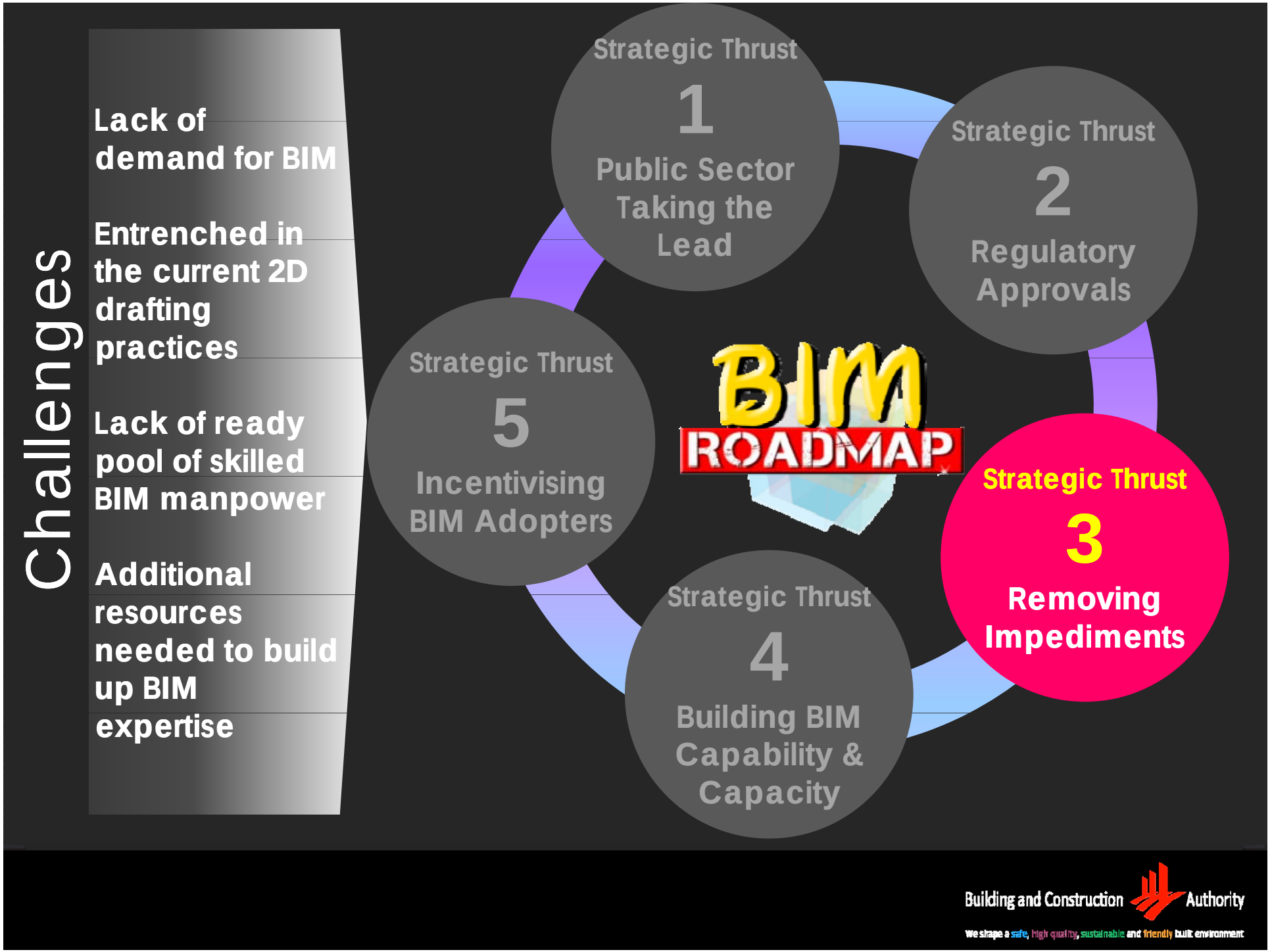
A Our designers are able to better visualise the interior and exterior views of a building to minimise design error, mitigate buildability and ensure safety of construction.

Without a doubt, there is also improved coordination across different disciplines in a single model, which helps us resolve clashes between design elements at an early stage. Early co-ordination and clashes resolution remove the need for much abortive work on the part of contractors.

All these lead to savings in time, where plans, elevations and section drawings can be generated easily, and where there is speedier delivery of

PROMOTING SUCCESS STORIES

- 2011
  - 1st Singapore BIM Competition
- 2012
  - 2nd Singapore BIM Competition
- 2013
  - 3rd Singapore BIM
  -
  -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REMOVING IMPEDIMENTS

- National BIM Leadership through the BIM Steering Committee

- **Develop and use local BIM standards**
- **Advise on effective implementation of BIM**

- **BIM Guide Workgroup**
- **Legal & Contractual Workgroup**
- **Inter-disciplinary Workgroups**

- Growth of BIM communities

BIM Interest Group — Association led

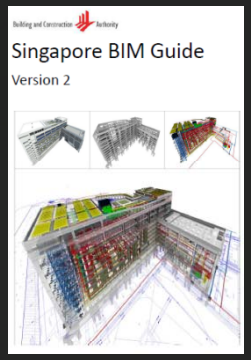
BMF BIM Manager Forum — Cross-discipline

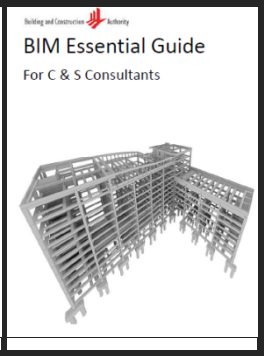
SINRUG Singapore Revit User Group — Users led

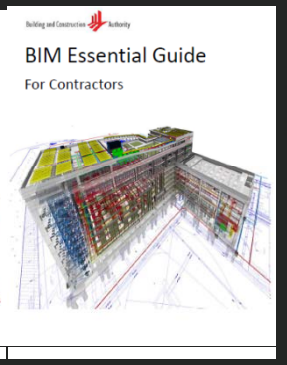
AUTODESK. BIM Clinic — Vendor led

REMOVING IMPEDIMENTS

Launch of Singapore BIM Guide V2 and BIM Essential Guides on 1st Aug 2013

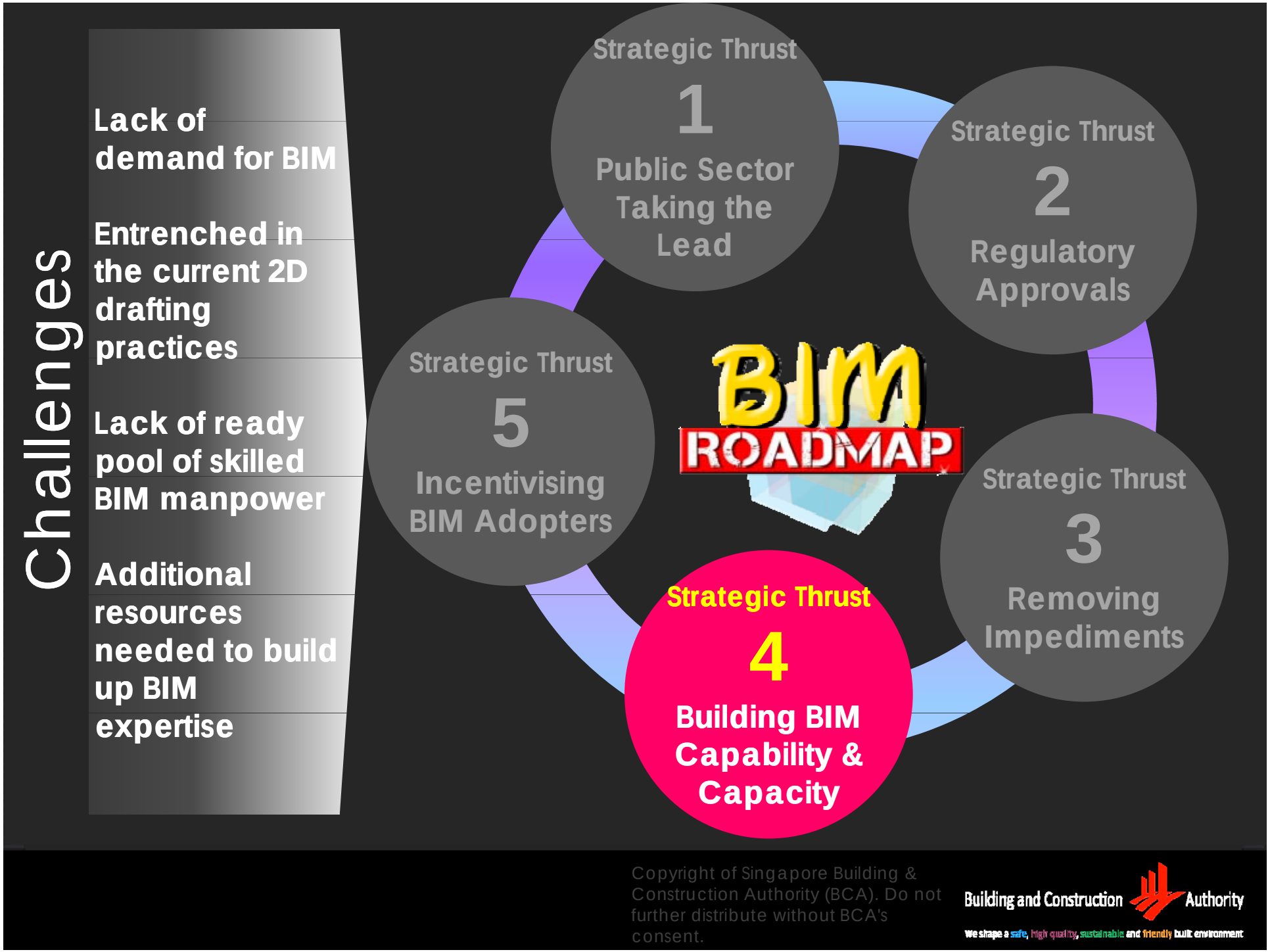




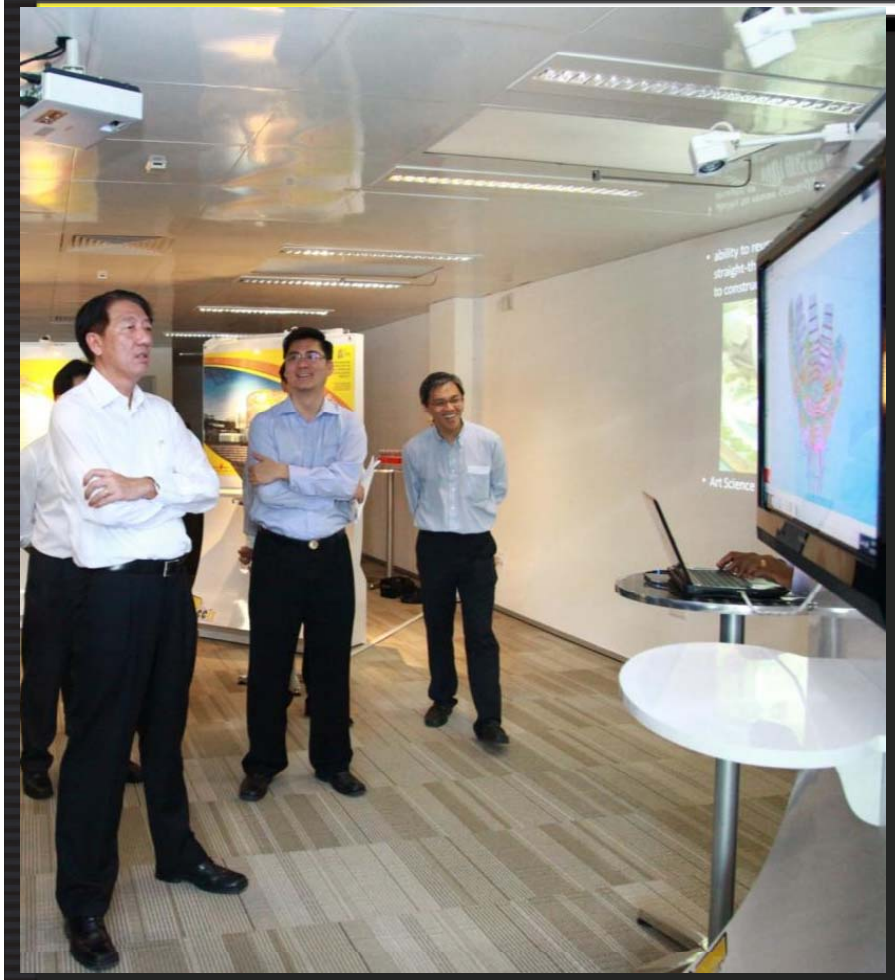


http://bimsg.wordpress.com/singapore-guide/bim-guide/

http://bimsg.wordpress.com/singapore-guide/essential-guides/



CENTRE FOR CONSTRUCTION IT (CCIT)



- Outreach Programs
- Chaperon/Handholding
- Trainings
- Standards

BIM Management Training

3-6 months OJT

Handholding

Existing CAD Managers

BIM Modeling Skill Certification

- CCIT
- CCIT + IHLs
- Software ATCs

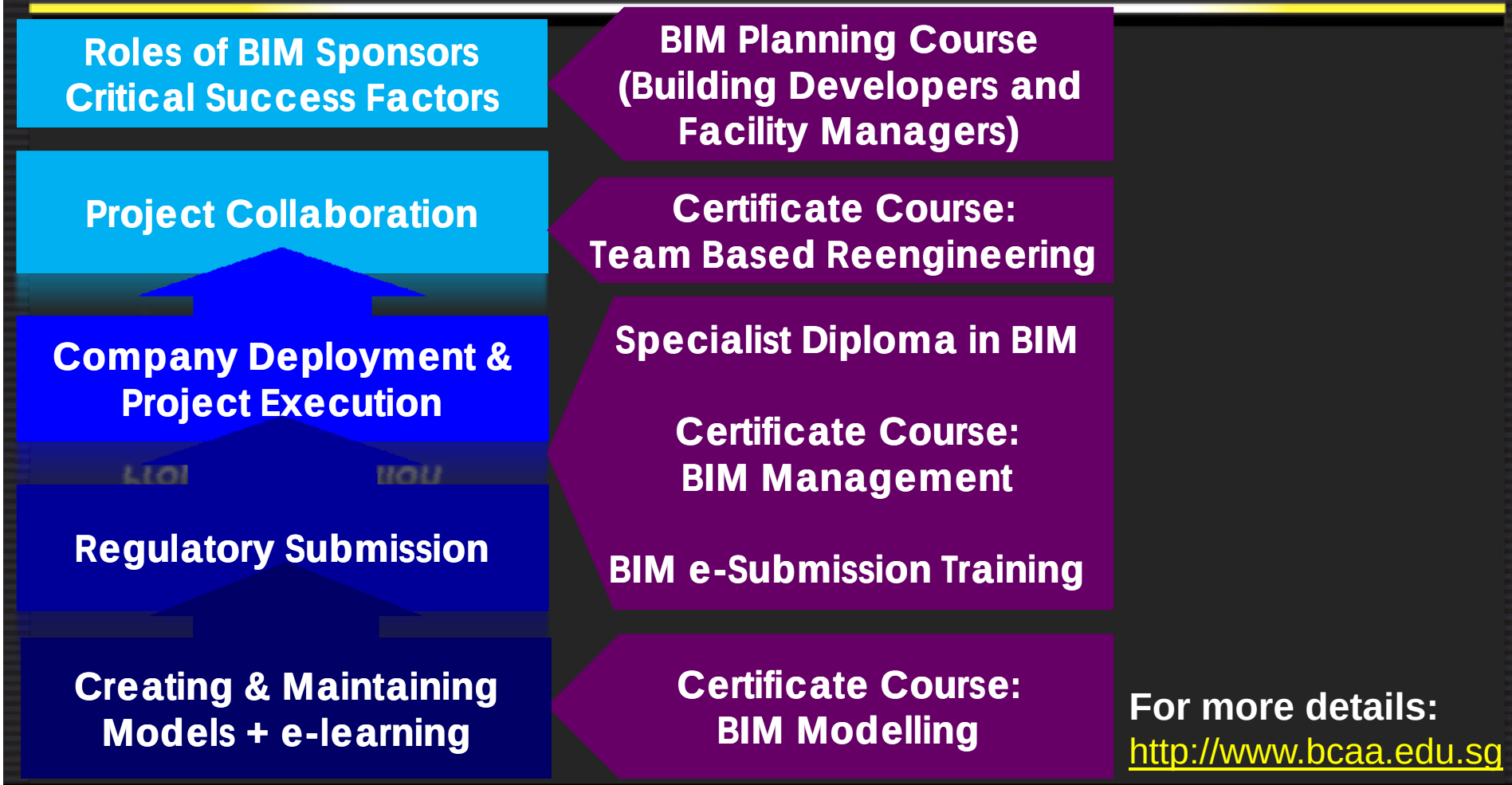
IHL BIM Programs

Software Training

Students

Existing Draftspersons

EQUIPPING EXISTING PRACTITIONERS



For more details:
http://www.bcaa.edu.sg

EQUIPPING FUTURE GENERATIONS

NUS National University of Singapore

SINGAPORE POLYTECHNIC

BCA ACADEMY

NANYANG TECHNOLOGICAL UNIVERSITY

NGEE ANN POLYTECHNIC

ITE Institute of Technical Education

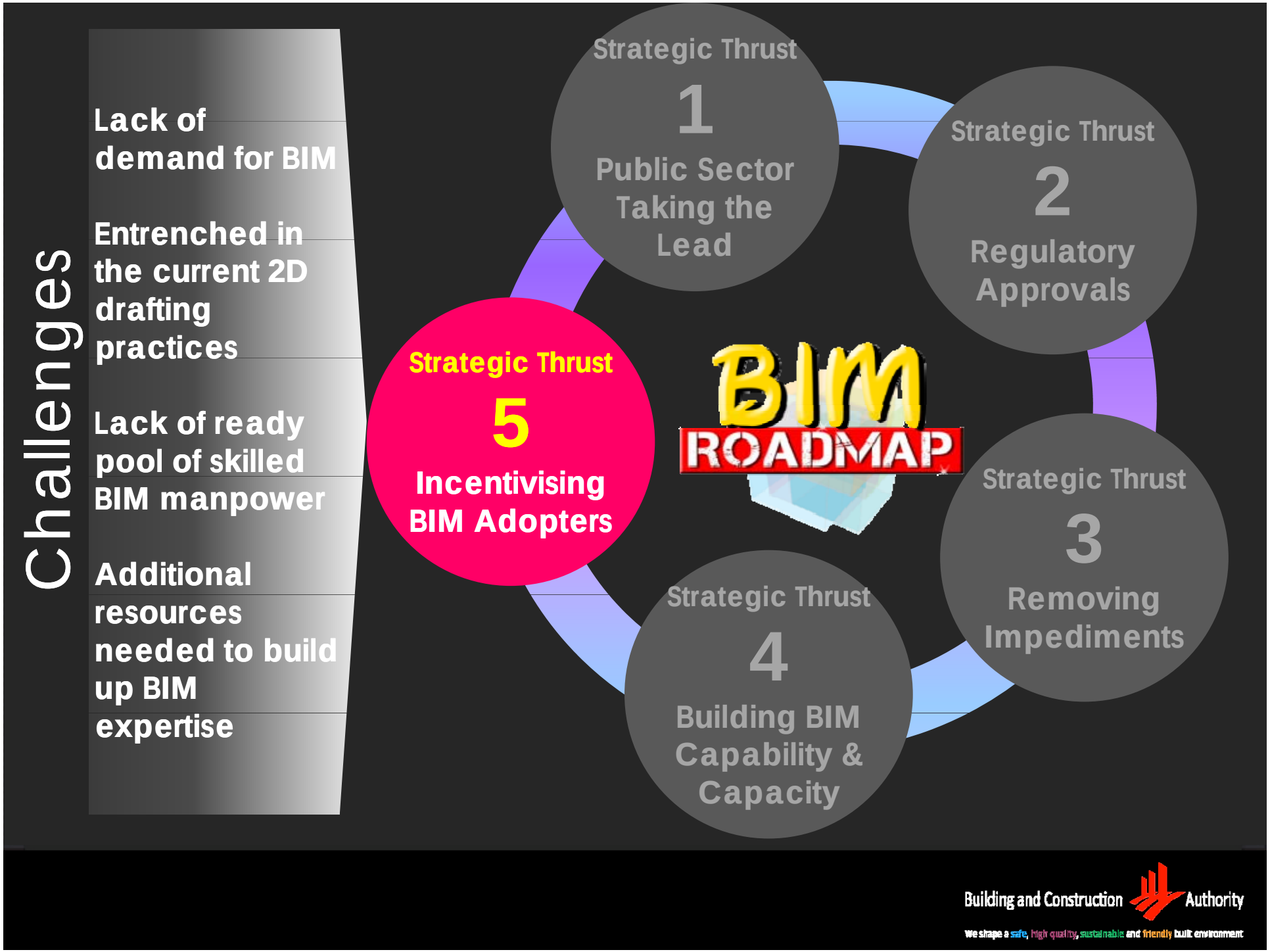
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

TEMASEK POLYTECHNIC
bringing education to life and life to education

SIM UNIVERSITY

Nanyang Polytechnic

- Awareness Seminars
- BIM Curriculum
- Graduation Workshops
- Competitions
- Students' Expert Program
- Internship Program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Funded >500 Firms
Committed >$12mil

Construction Productivity & Capability Fund (CPCF)

Building Information Model (BIM) Fund

Firm Level Scheme

50% of supported items capped at $20k per application

Project Collaboration Scheme

50% of supported items, or capped at $35k per discipline

Help defray cost of software, hardware, training, manpower & consultancy

For more details: http://www.bca.gov.sg/BIM/bimfund.html

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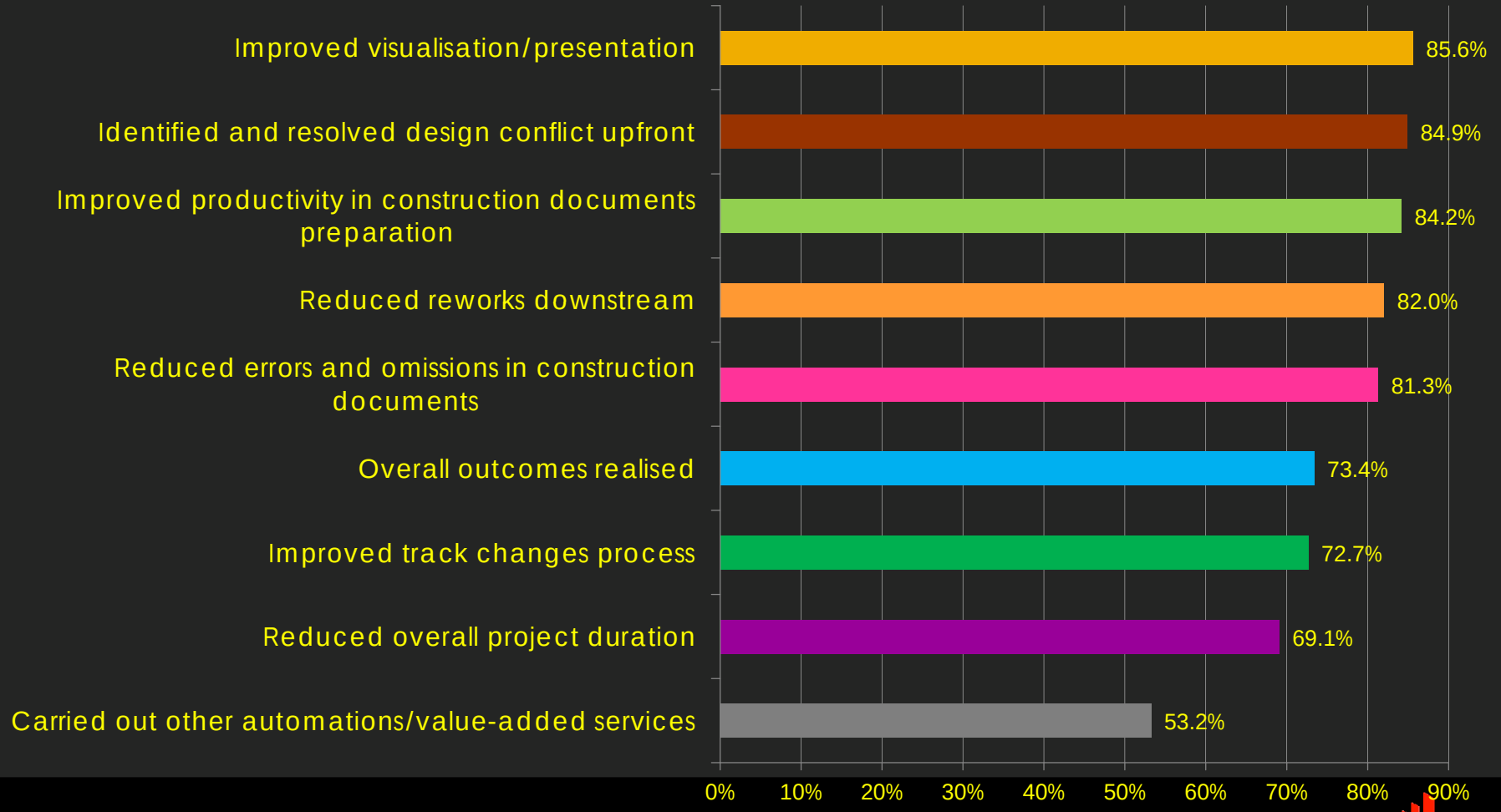
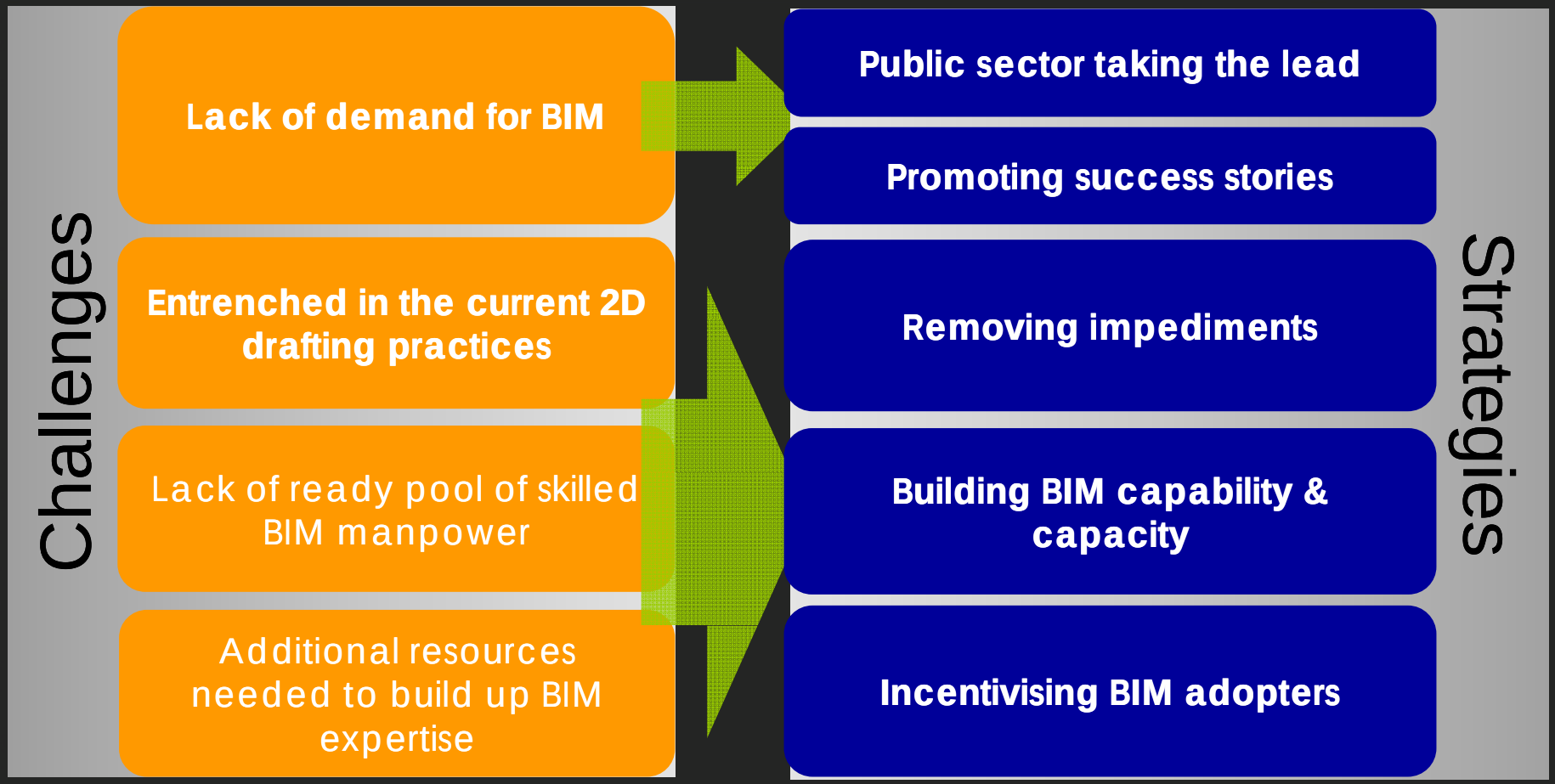
IMPROVEMENTS MADE

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Promoting success stories
Removing impediments
Building BIM capability & capacity
Incentivising BIM adopters

Key Recommendations

- Public Sector Leadership
- BIM for Facility & Asset Management
- Accelerating Process Transformation
- Strengthening Centres of Excellence for BIM R&D

Strategies

- Public sector taking the lead
- Promoting success stories
- Removing impediments
- Building BIM capability & capacity
- Incentivising BIM adopters