Digital Transformation Strategies
Macro-Meso-Micro

Market-Organization-Project Specific

Industrial development	
Policy development	
Social connect	
Strategic connect	
Academia & Research	
Global connect	

Dr Amarnath CB

WhatsApp
+91 9686623376

Sustainable outcomes

This is Digital Built Britain

Smart contracts and procurement

Grow new career, business and export opportunities

Security-minded information management

Digital construction

Platform approach to design for manufacture and assembly. (P-DfMA)

Smart asset management and operation

Smart infrastructure

Champion human-centric design of infrastructure and services

Digitisation of existing assets

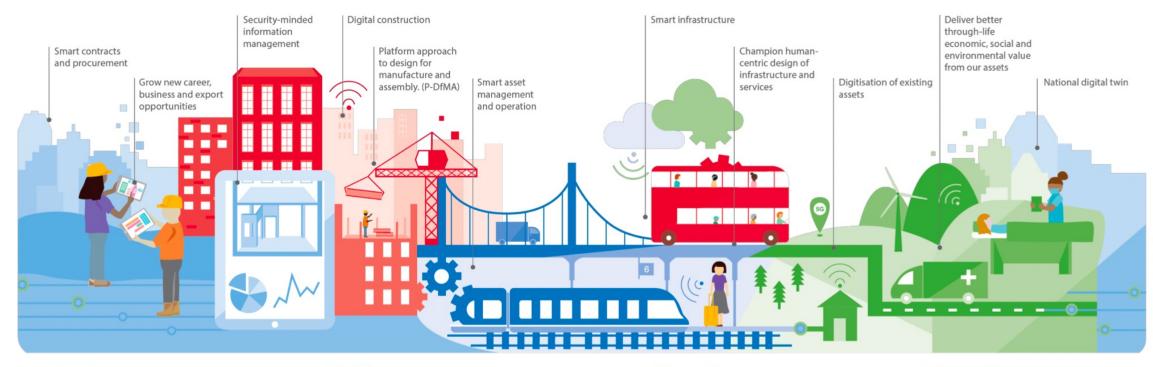Deliver better through-life economic, social and environmental value from our assets

National digital twin

Design

Use best practice, secure by default, information management and digital techniques to get data right from the start and design better-performing homes, buildings and infrastructure.

Build

Exploit new and emerging digital construction, information management, and manufacturing technologies and techniques to improve safety, quality and productivity during construction.

Operate

Use effective information management to transform the performance of the built environment and the services it delivers.

Integrate

Understand how the built environment can improve citizens' quality of life and use that information to drive the design and build of our economic and social infrastructure and the operation and integration of the services they deliver.

UNIVERSITY OF CAMBRIDGE

Department for Business, Energy & Industrial Strategy

Future city enablers

Artificial intelligence	Driverless cars	Circular economy	Smart agriculture	Increased automation	Virtual reality
Integrated planning	Valued data	Automated worksite	Digital twins	Internet of things	

National BIM Society - India BIM Association

About   Collaborators   Archive   Events   Join Us   Membership   Contact Us

About Us

Our vision is to serve as the voice of India's BIM community, India BIM Association (IBIMA) represents, supports and advocates on behalf of the entire Indian BIM community to build a positive business environment for the efficient deployment of BIM, for all engaged in utilizing BIM technologies, processes and protocols in India. We at IBIMA intend to take this further with the right opportunity and environment with non-political and non-profit agenda. India BIM Association is established on 12th May 2016 and we are registering IBIMA as a national level not-for-profit ... M Association is firmly moving ahead in spreading BIM ... IBIMA reaching to roughly thirty-five thousand Indian ... leased to announce its partnership as an Academic ... European BIM Summit 2019.

... tive voice dedicated to BIM technology, processes, and ... tunities and best practices for BIM in an Indian context

... aboration and communication with all the Indian BIM ... nal organizations focused on making BIM the standard ... ethodologies that allow BIM to develop as a standard.

... Operational Goals: (1) India BIM Association will host ... where our Members will discuss and decide upon key ... bership and professional affiliations for the purpose of ... e will continually improve upon the delivery of relevant ... (4) We will work towards developing BIM policies and ... ring BIM projects; (5) We will perform BIM maturity

Activating BIM field Players

Policy + Process Field Collaboration

POLICY FIELD

DELIVERABLES
- Educational programs
- Building standards
- Research projects
- Best practices
- Contractual agreements
- Benchmarks
- Guidelines

PLAYERS
- Regulatory bodies
- Educational institutions
- Research centres
- Insurance companies
- Regulators

Technology + Process Field Collaboration

PROCESS FIELD

DELIVERABLES
- BIM Models
- Components
- Drawings
- Documents

PLAYERS
- Owners
- Project managers
- Operators
- Architects
- Engineers
- Developers
- Contractors
- Facility managers
- Fabricators
- Suppliers
- Estimators
- Surveyors

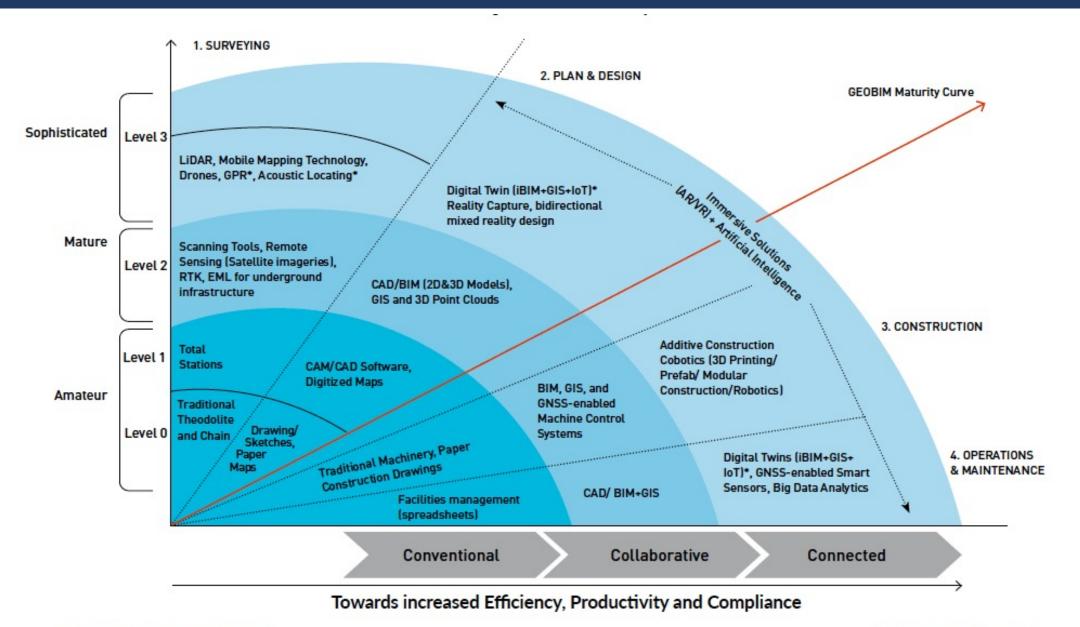**Technology + Policy + Process Field Collaboration**

TECHNOLOGY FIELD

DELIVERABLES
- BIM software
- BIM model servers
- Database technologies
- Graphic information systems
- Complementary technologies
- Equipment & Pheripherals
- Communication systems

PLAYERS
- Software developers
- Hardware developers
- Network providers

Technology + Policy field Collaboration

1. SURVEYING

2. PLAN & DESIGN

GEOBIM Maturity Curve

Sophisticated — Level 3

LiDAR, Mobile Mapping Technology, Drones, GPR*, Acoustic Locating*

Digital Twin (iBIM+GIS+IoT)* Reality Capture, bidirectional mixed reality design

Immersive Solutions (AR/VR) + Artificial Intelligence

Mature — Level 2

Scanning Tools, Remote Sensing (Satellite imageries), RTK, EML for underground infrastructure

CAD/BIM (2D&3D Models), GIS and 3D Point Clouds

3. CONSTRUCTION

Level 1

Total Stations

CAM/CAD Software, Digitized Maps

Additive Construction Cobotics (3D Printing/ Prefab/ Modular Construction/Robotics)

Amateur

Level 0

Traditional Theodolite and Chain

Drawing/ Sketches, Paper Maps

BIM, GIS, and GNSS-enabled Machine Control Systems

Traditional Machinery, Paper Construction Drawings

Digital Twins (iBIM+GIS+ IoT)*, GNSS-enabled Smart Sensors, Big Data Analytics

4. OPERATIONS & MAINTENANCE

Facilities management (spreadsheets)

CAD/ BIM+GIS

Conventional → Collaborative → Connected

Towards increased Efficiency, Productivity and Compliance

* For both above and underground infrastructure

Source: Geospatial Media and Analysis

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India BIM Association
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Countries with BIM Adoption

India BIM Association
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NORWAY
2016 Shared on open BIM Certification

SWEDEN
Restricted Commissions in place

FINLAND
2007 requires IFC for new buildings and operation based on intergrated models

RUSSIA
2017 BIM obligatory for all Federal orders

CANADA
2014-2020 BIM Implementation Programme

SCOTLAND
2017 Level 2 BIM to be introduced

BELGIUM
Plans going on for BIM adoption

DENMARK
2012 BIM for all government offices and university buildings

SWITZERLAND
Going strong on BIM adoption

GERMANY
2017 - 2020 Phased introduction

KOREA
2012 BIM standards of Korea

UK
2016 BIM obligatory for government projects

JAPAN
BIM Guideline

UNITED STATES
2008 BIM obligatory for Government project

FRANCE
2017 planned introduction

AUSTRIA
2015 BIM standards based on IFC

CHINA
Strong Government Support

MEXICO
2017 standards for BIM Projects

PORTUGAL
BIM Programme in place

SPAIN
Going strong in BIM adoption

DUBAI
Restricted Commissions in place

HONG KON G
Commissions in place since 2014

PERU
2022 BIM obligatory for government projects

NETHERLANDS
2012 based on open BIM

AUSTRALIA
Restricted Commissions in place

BRAZIL
Mandate BIM in 2021

ITALY
BIM mandatory from 2019 for projects above 100 Million Full implementation by 2022.

QATAR
2017 planned introduction

CZECH REPUBLIC
plans going on for BIM Adoption

SINGAPORE
2015 obligatory for all buildings > 5,000sqm

NEW ZEALAND
Going Strong in BIM Adoption

CHILE
2020 BIM Obligatory for Government Projects

BIM Related Initiatives

Courtesy: Adopted from buildingSMART International

Australia
Early stage of BIM adoption
TAFE colleges with BIM courses
BIM not yet taught as process
Training programs

Canada
Lagging behind in BIM adoption
No incentives from Government
Graduates are proficient in BIM
Certification programs

China
Embracing BIM education
Education presentations
Universities contributing for
BIM research in academia

United Kingdom
Very active in BIM adoption
Many universities offer BIM courses at
all tertiary education levels
Numerous events/conferences/shows

USA
Making significant progress
in adopting BIM
BIM is taught in over half of
the programs in USA

Norway
Few engaged faculties drive BIM education in universities
Government not seen as prerequisite for driving BIM
BuildingSMART releasing BIM educational program
BIM certification programs

Hong Kong
Optional BIM courses in university
Government's Housing Department
promoting BIM education
BIM training programs

Finland
BIM education widely
provided in universities
BIM training programs

Israel
Few university faculties are very active in
BIM education, research and
its adoption in curricula
BIM presently taught as a tool for
performing engineering tasks

Netherlands
Almost all universities provide
BIM education at different tertiary levels
BIM with trans disciplinary, inter-level &
multinational collaborative system
Concept BIM library development project

Brazil
Few university faculties are playing
active role in BIM education
Research on BIM education

Denmark
Few universities embraced BIM education
Research on BIM education

Korea
Few universities incorporated
BIM in tertiary education
Development of eduBIM
with open BIM library

UAE
Attempt made for BIM acceptance
in education system
BIM research in design schools that mediate
b/w physical & virtual classrooms

Taiwan
Many universities incorporated BIM
Government promoting
BIM education
BIM taught as tools,
technology & process

New Zealand
BIM taught in few tertiary
educational institutions
BIM training programs
Industry presentations
& seminars

Ireland
Many tertiary institutions has incorporated BIM
Setting up schools to cater today's
multidisciplinary, inter-organizational
BIM education

South Africa
BIM rarely adopted in education
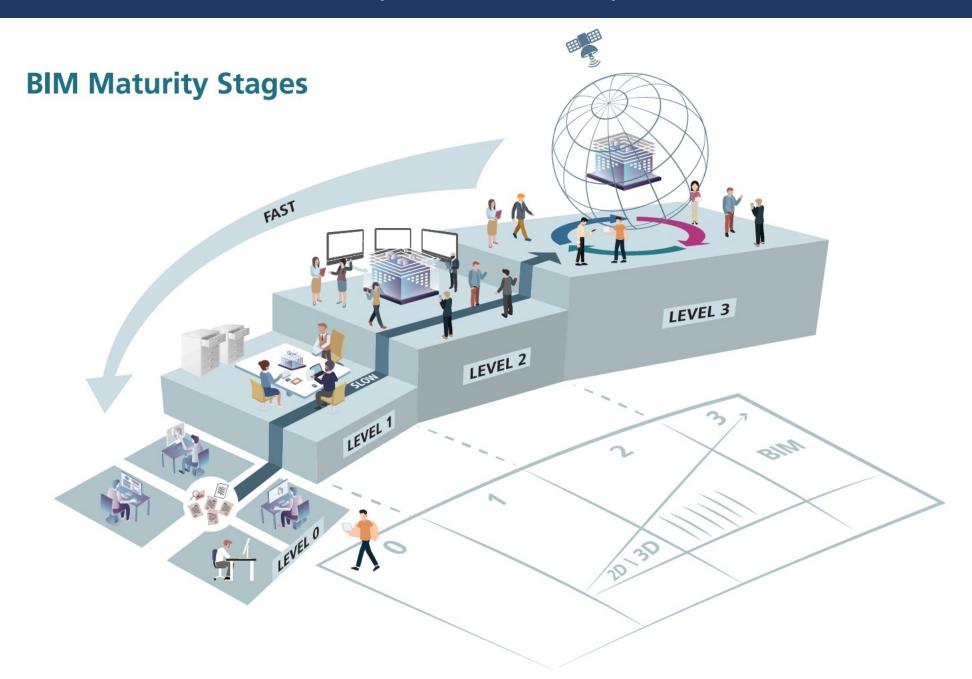Few university faculties and researchers
undertake BIM education

Belgium
Many universities have embraced
BIM in education
Taught on BIM concepts, tools, technology
and also as a process

Nigeria
Increasing BIM awareness
Suggestion for global
accreditation model

BIM Maturity Stages

L&T Construction

Buildings & Factories

Transportation Infrastructure

Heavy Civil Infrastructure

Power Transmission & Distribution

Water & Effluent Treatment

Metallurgical & Material handling

Geo-Structure

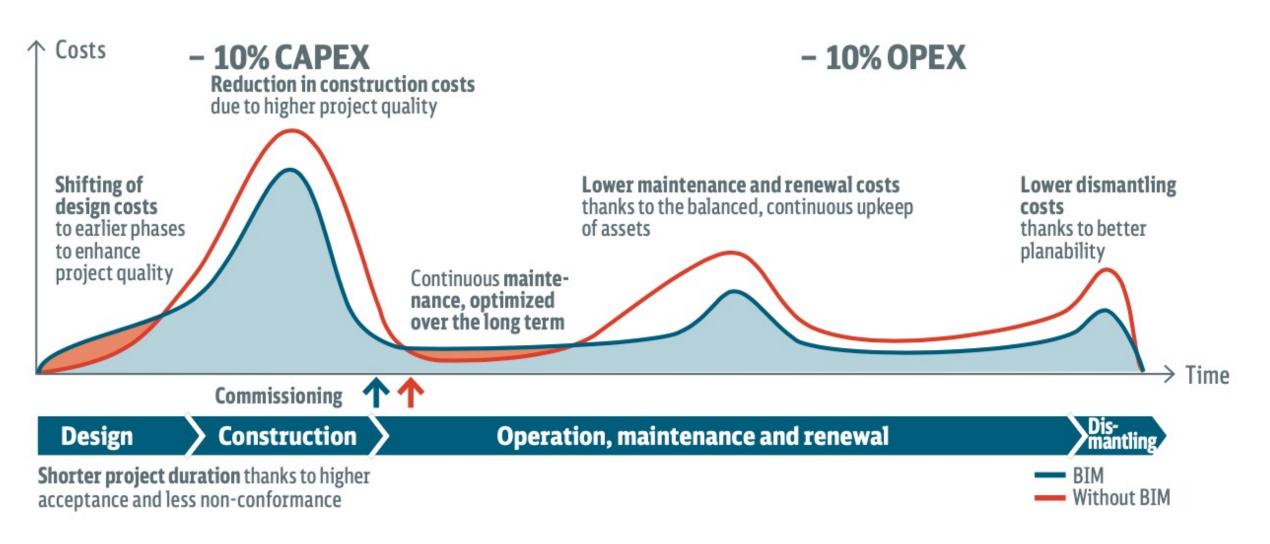Smart World & Communnication

Renewable Energy

Economic benefits of Implementing BIM

Figure 5-1: Hypothesis on the economic benefit of BIM (based on "BIM Revolution or Evolution", 2017 MEED Insight)

Benefits of Eight Measurement Categories

Time Savings

Material Savings

Cost Savings

Health & Safety Improvement

Risk Reduction

Improves Asset Utilization

Improved Asset Quality

Improved Reputation

Source: PwC, (2018) BIM Level 2 Benefits Measurement: Application of PwC's BIM Level 2 Benefits Measurement Methodology to Public Sector Capital
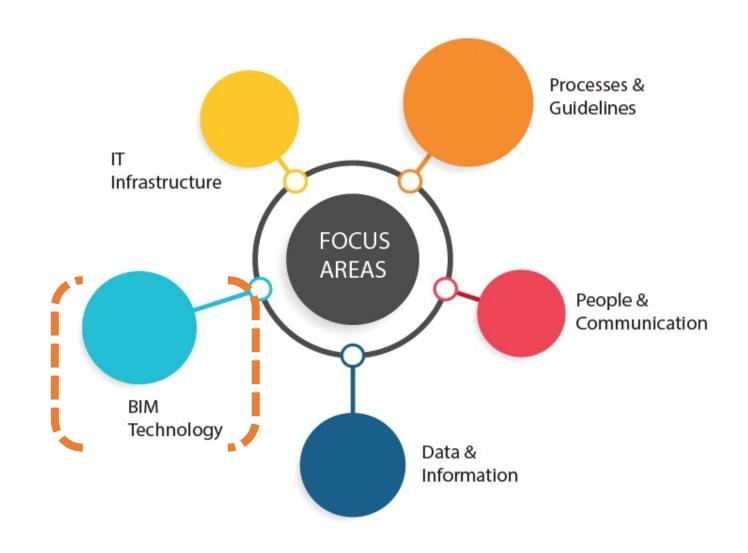
Digital Transformation Strategy
Organization Specific

BIM Implementation

FOCUS AREAS

- IT Infrastructure
- Processes & Guidelines
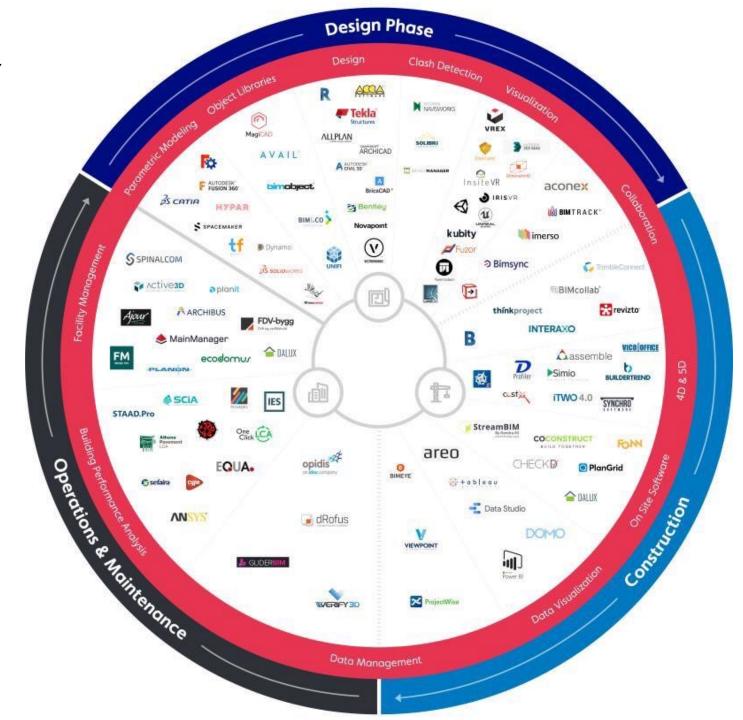- People & Communication
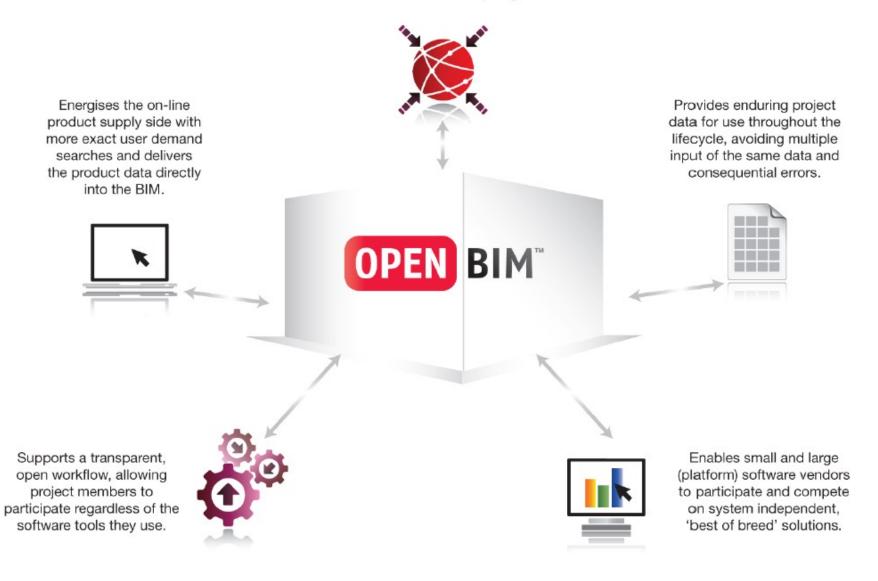- Data & Information
- BIM Technology

BIM Implementation

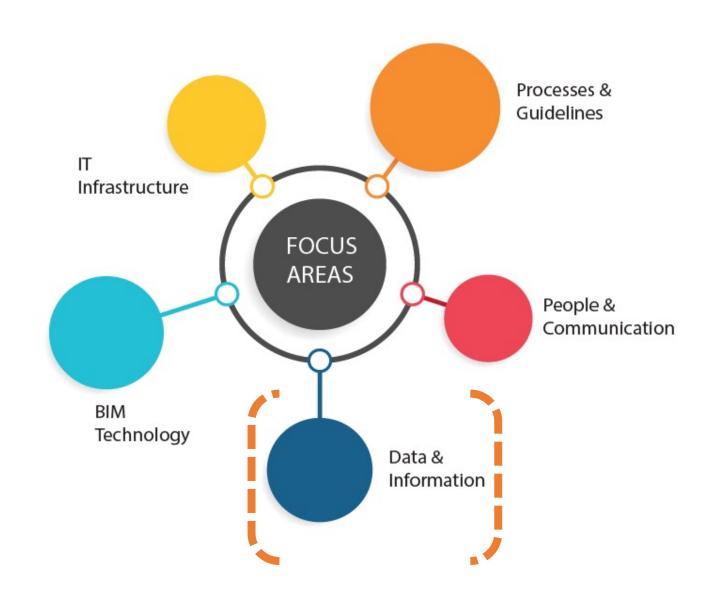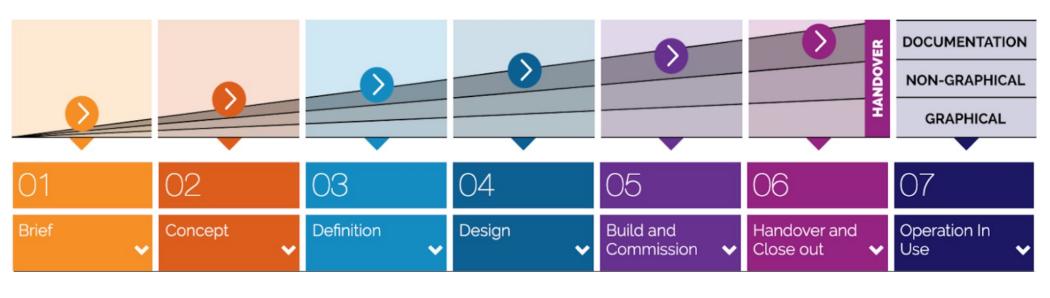# BIM Technology

Creates a common language,
facilitating procurement
via clear engagement,
comparable evaluation
and assured data quality.

Provides enduring project
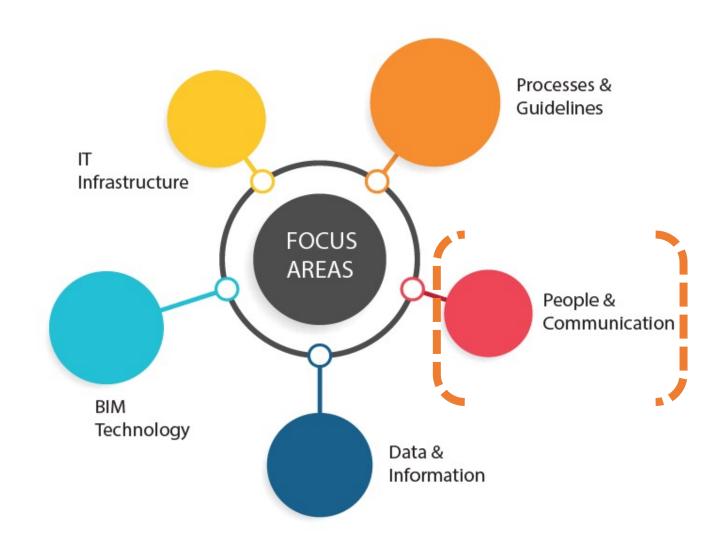data for use throughout the
lifecycle, avoiding multiple
input of the same data and
consequential errors.

Energises the on-line
product supply side with
more exact user demand
searches and delivers
the product data directly
into the BIM.

OPEN BIM™

Supports a transparent,
open workflow, allowing
project members to
participate regardless of the
software tools they use.

Enables small and large
(platform) software vendors
to participate and compete
on system independent,
'best of breed' solutions.

BIM Implementation

Data & Information

							DOCUMENTATION
						HANDOVER	NON-GRAPHICAL
							GRAPHICAL

01	02	03	04	05	06	07
Brief	Concept	Definition	Design	Build and Commission	Handover and Close out	Operation In Use

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BIM Implementation

People & Communication

Integrated Project Delivery

INVOLVE ALL TEAM MEMBERS DURING THE DESIGN PHASE INCLUDING STAKEHOLDERS FROM VARIOUS TRADES AND CONTRACTORS

FACILITATE COLLABORATION

MINIMIZE PAPER BASED PROCESSES AND COLLABORATE DIGITALLY

CREATE A CULTURE OF TRUST AND SHARING

INSTITUTE BUILDING INFORMATION MODELING

SETUP CONTRACTION MECHANISMS THAT ENABLE OPEN COLLABORATION

CHECK FOR AND MANAGE INTERFERENCE BETWEEN TRADES DIGITALLY

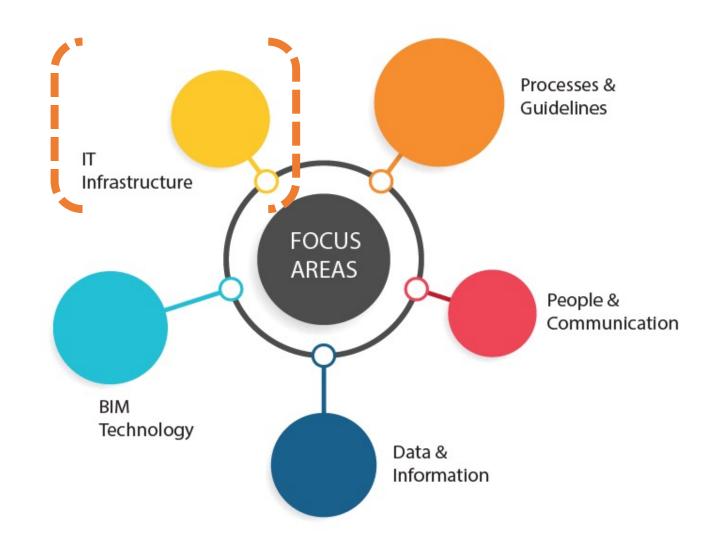COMMUNICATE DESIGN IDEAS USING 3D VISUALIZATION TO KEEP EVERYONE ALIGNED
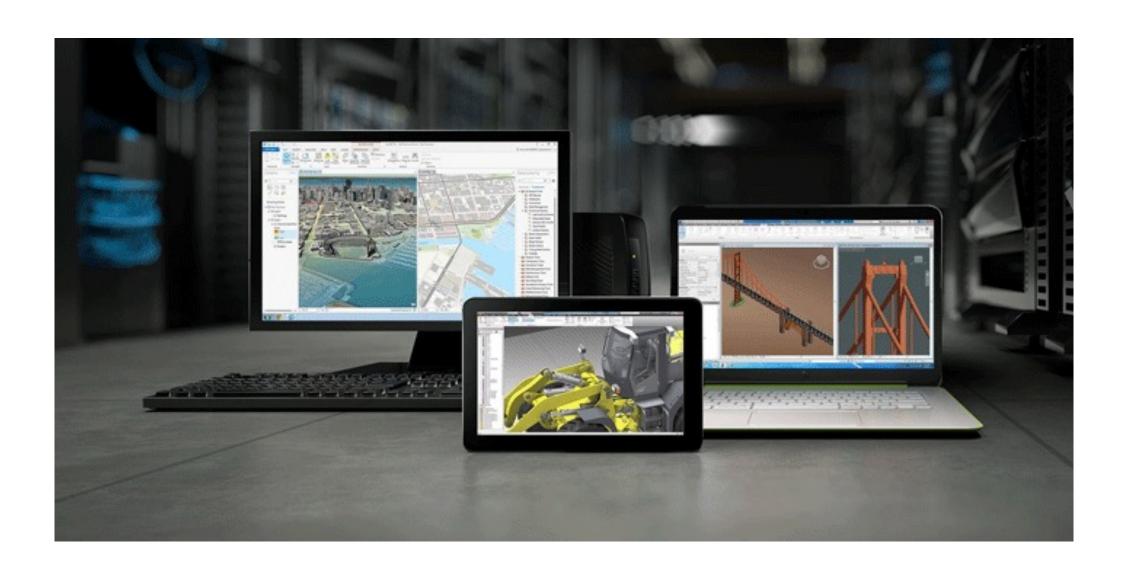
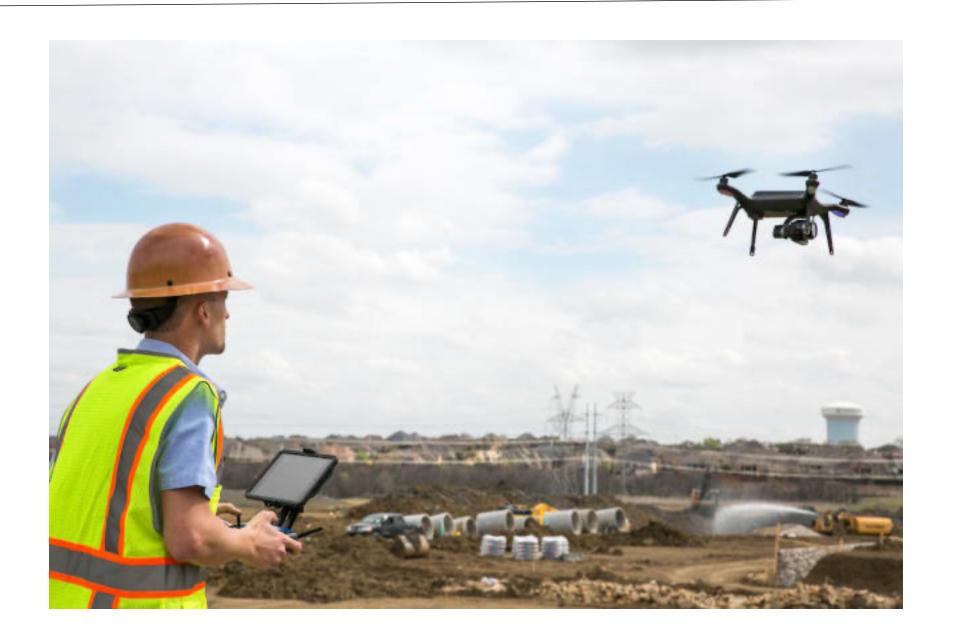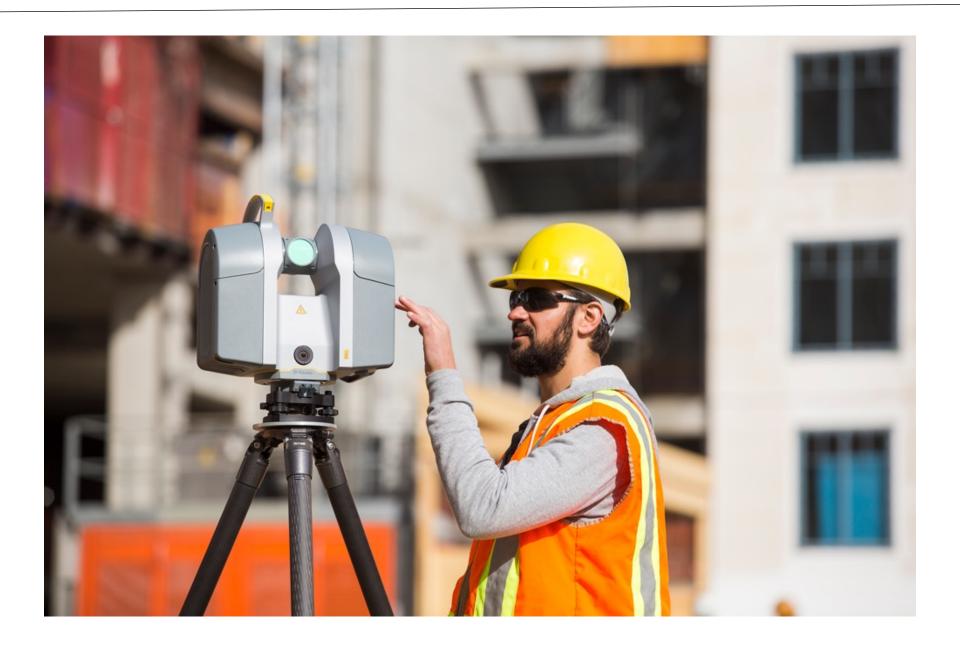# BIM Skill development

Technical

Managerial

Strategic

BIM Implementation
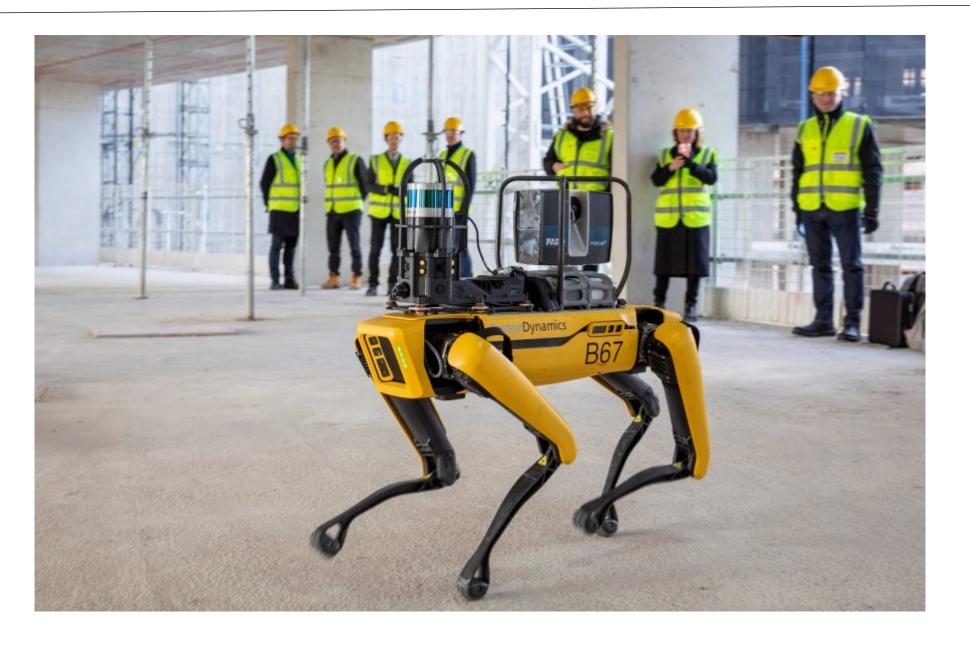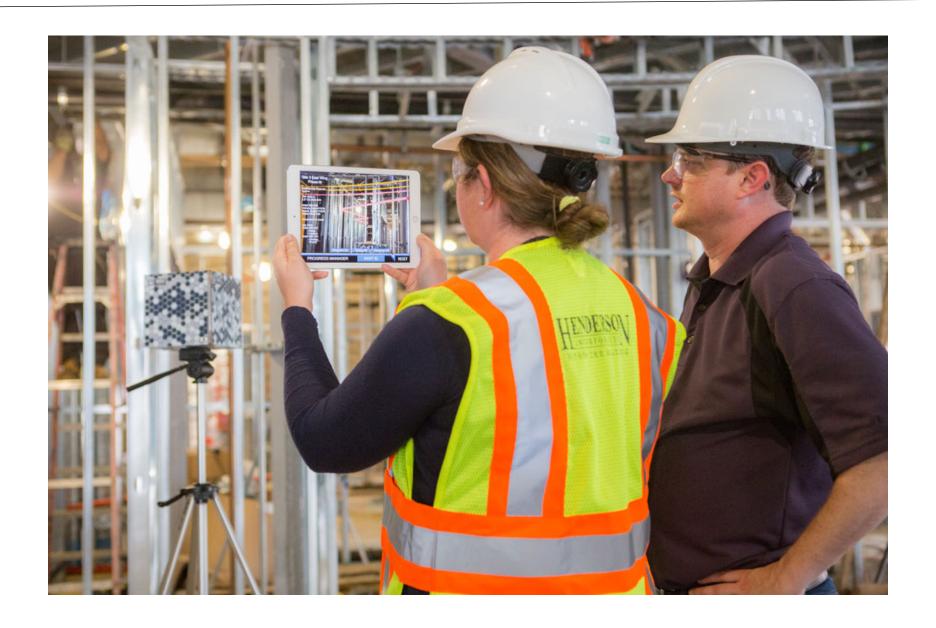
Workstation & Handheld devices
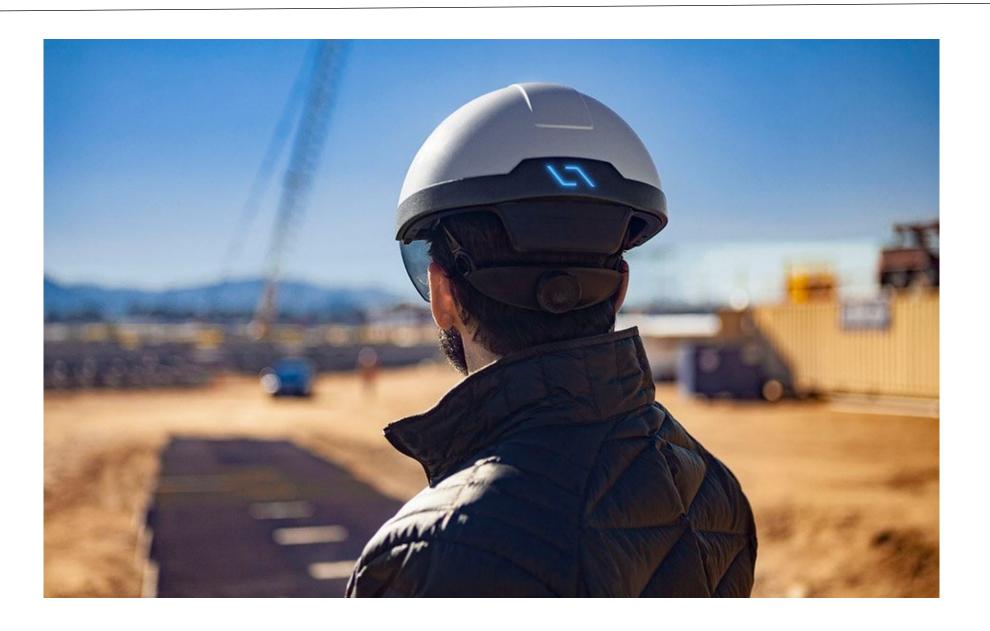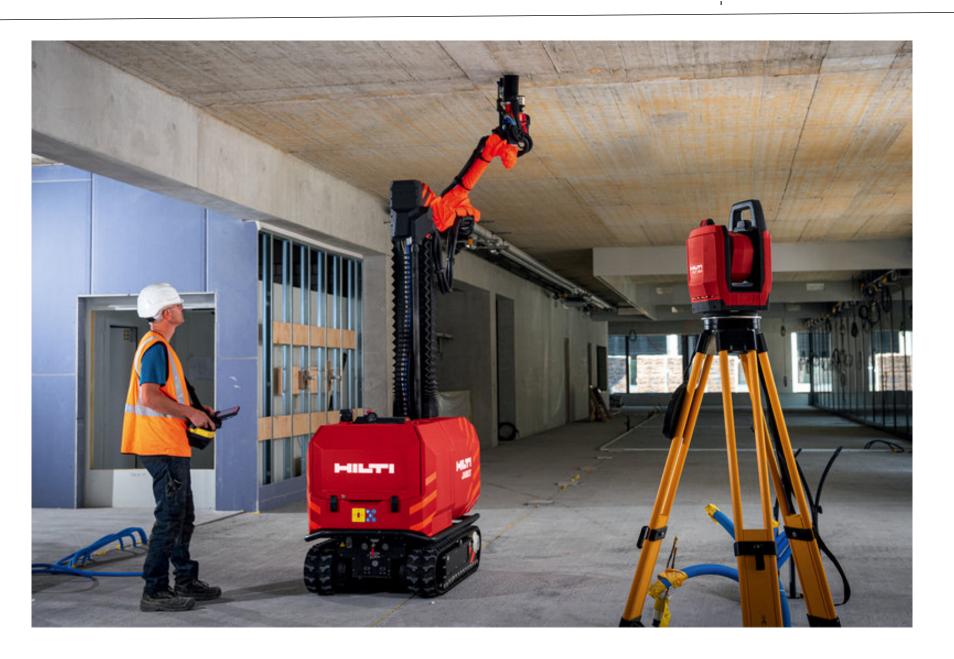
Drones

Laser Scanner

Cyber Dog for Built Environment

Smart Construction Helmet

Exo Skeleton

*Digital
Transformation*
Micro

**Building Record
"Safety File"
O&M Manual**

ACCA SOFTWARE

Active Construction Site

Awareness session on
Open BIM solutions
ACCA software

Register for ACCA Solutions
To register at acca software please use this link below

https://www.accasoftware.com/partner/go?idProvider=4E2B281B-9829-4CC1-8891-95F2F8BB6D8A&url=https://www.accasoftware.com/EN/register-now

Activate a free trial
To activate a free trial period, use this link and install one of the ACCA software. Users who install from this link will be able to use the software for 30 days for free. The trial period can be used by users only once for each software.

https://www.accasoftware.com/partner/go?idProvider=4E2B281B-9829-4CC1-8891-95F2F8BB6D8A&url=https://www.accasoftware.com/EN/download

Purchase a subscription
To buy a subscription, use the link below.

https://www.accasoftware.com/partner/go?idProvider=4E2B281B-9829-4CC1-8891-95F2F8BB6D8A&url=https://www.accasoftware.com/EN/abbonamenti

Proof of Concept dello sviluppo di progetti complessi di linee ferroviarie attraverso l'utilizzo del BIM con formati aperti non proprietari IFC 4.3
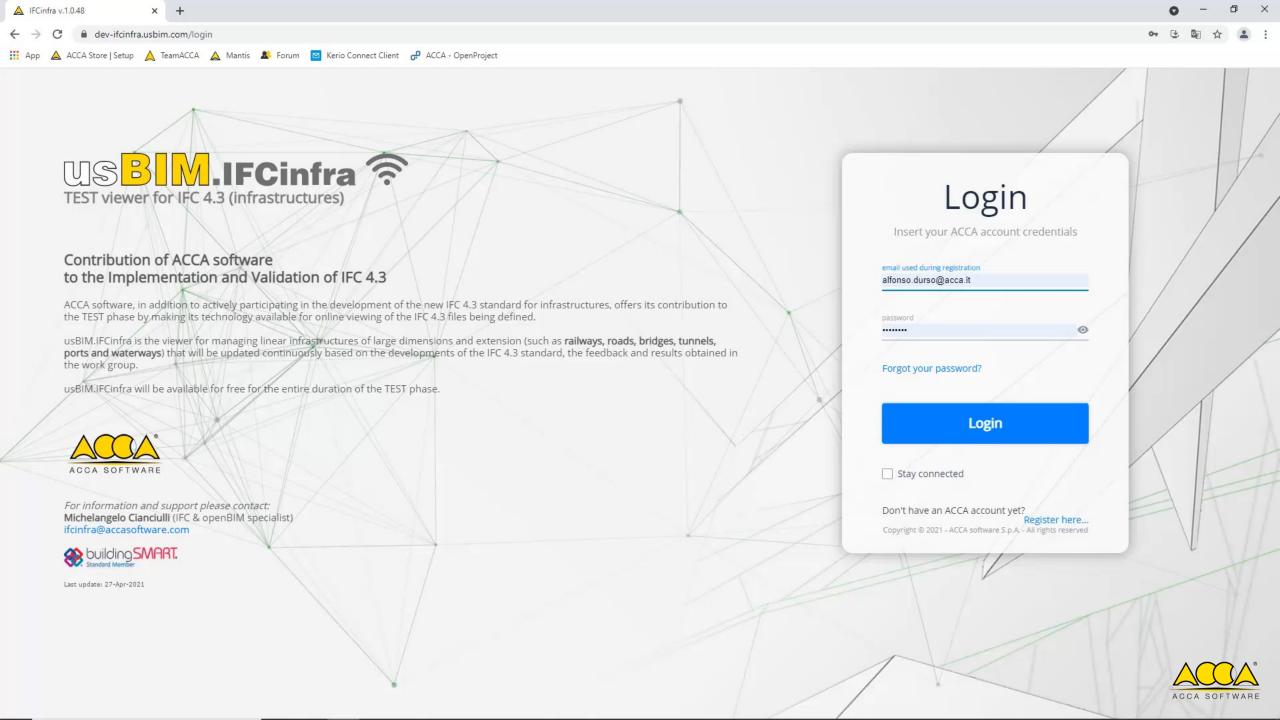
Tratta ferroviaria
NOLA - AVELLINO

per la realizzazione della linea ferroviaria
NAPOLI - AFRAGOLA - AVELLINO

usBIM.IFCinfra

TEST viewer for IFC 4.3 (infrastructures)

Contribution of ACCA software
to the Implementation and Validation of IFC 4.3

ACCA software, in addition to actively participating in the development of the new IFC 4.3 standard for infrastructures, offers its contribution to the TEST phase by making its technology available for online viewing of the IFC 4.3 files being defined.

usBIM.IFCinfra is the viewer for managing linear infrastructures of large dimensions and extension (such as **railways, roads, bridges, tunnels, ports and waterways**) that will be updated continuously based on the developments of the IFC 4.3 standard, the feedback and results obtained in the work group.

usBIM.IFCinfra will be available for free for the entire duration of the TEST phase.

For information and support please contact:
Michelangelo Cianciulli (IFC & openBIM specialist)
ifcinfra@accasoftware.com

Last update: 27-Apr-2021

Login

Insert your ACCA account credentials

email used during registration
alfonso.durso@acca.it

password
••••••••

Forgot your password?

[Login]

☐ Stay connected

Don't have an ACCA account yet?   Register here...

SCANNED IMAGE → BIM MODEL

Clash Detection is so important in BIM

Progress Diagram – Auto Clash Detection Services

Clash Detection Report

BEAM
Building Environmental Assessment Methods

BIM
Building Information Modeling

BPS
Building Performance Simulation

BIM
Building Information Modeling

BEAM
Building Environmental Assessment Methods

WHAT   HOW

CHANGES   ACHIEVED

BIM Data
(Skeleton model)

Displays a close up of the selected facility model when a facility is selected in FMS

Refer to the detailed data for facility management on the model

Migrate data

Share data

Share data

FMS
(Facility Management Ledger)

Data input
Tedious of a massive amount of data

BIM Uses

Existing condition modeling

SCANNED IMAGE
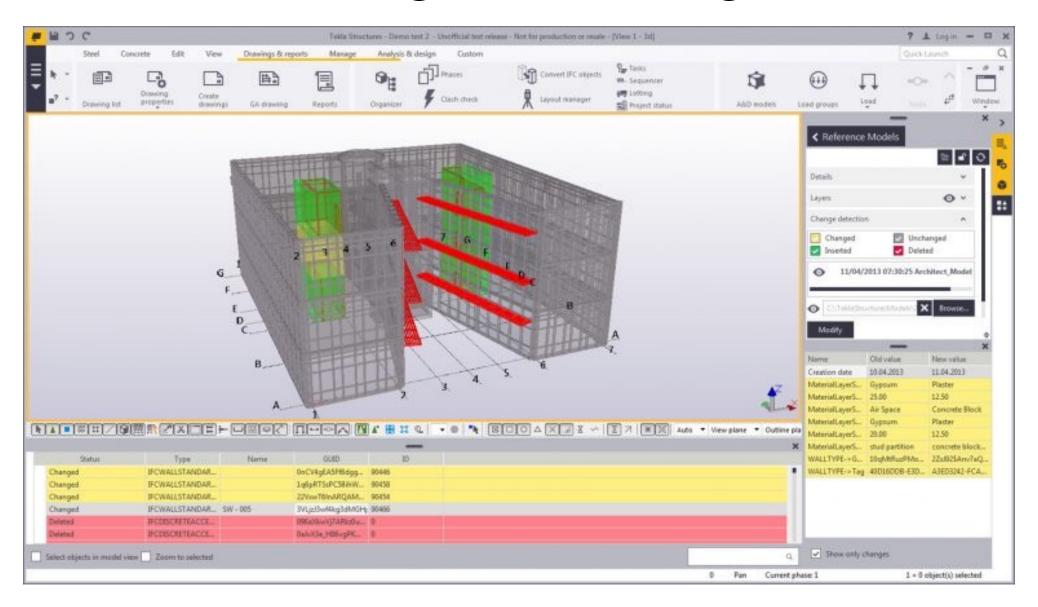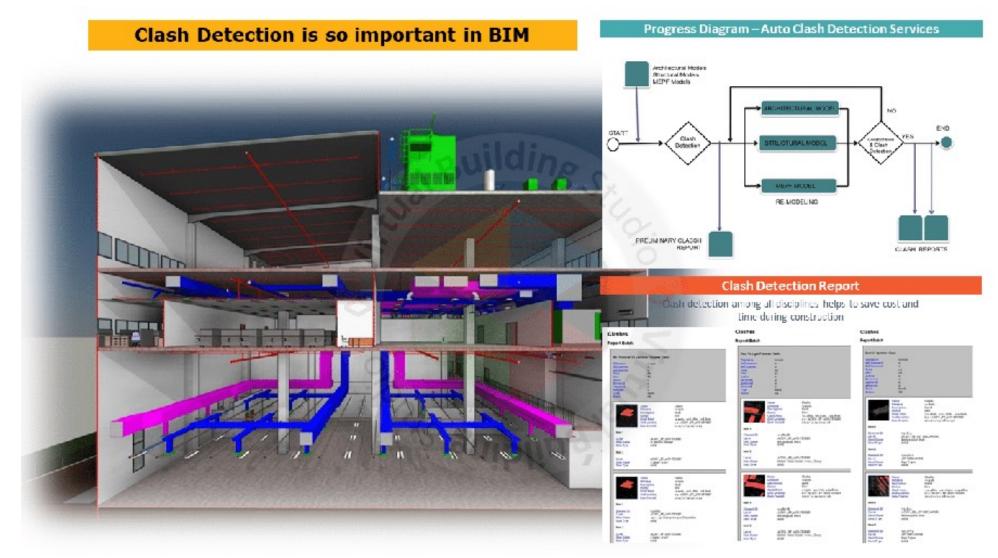
BIM MODEL

Source: Point Cloud Modeling: Point Cloud to BIM Conversion Experts (hitechcaddservices.com)

Design Authoring

Analysis & Reporting

Constructability reviews & coordination

Documentation

Commission & Handover

Source: The Complete Guide to Project Commissioning - Digital Builder (autodesk.com)

Facilities Data Integration

Industrial development

LARSEN & TOUBRO
It's all about Imagineering

Policy development

Bureau of Indian Standards
The National Standards Body of India

bsi. bre

Social connect

India BIM Association
ibima.co.in

FORUM OF CRITICAL UTILITY SERVICES

FHRAC
PEOPLE PROCESS POWER

CA
Council of Architecture

CREDAI

Strategic connect

CII

Ei

BUILDERS' ASSOCIATION OF INDIA
BAI

IGBC

GRIHA

MILITARY ENGINEER SERVICES
MINISTRY OF DEFENCE

Ministry of Housing and Urban Affairs
Government of India

Academia & Research

INDIAN INSTITUTE OF SCIENCE

INDIAN INSTITUTE OF TECHNOLOGY DELHI

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

INDIAN INSTITUTE OF TECHNOLOGY PALAKKAD

Indian Institute of Technology Mandi

Global connect

CanBIM

BIM FÓRUM BRASIL

UBA

TBIM
THAI BUILDING INFORMATION MODELING ASSOCIATION

BIM.Africa

BIM4TURKEY

Digital Transformation Activities

Macro - Micro