

# Gathering21

Construction Innovations  
for Future Generations

CitA

Can the implementation of Building Information Modelling (Digital Construction) improve delivery of Capital Projects (Design and Construction) for the Health Service in association with the development of a new National Estates Information System?

Michael Martin, Anna Boch, Kevin Furlong

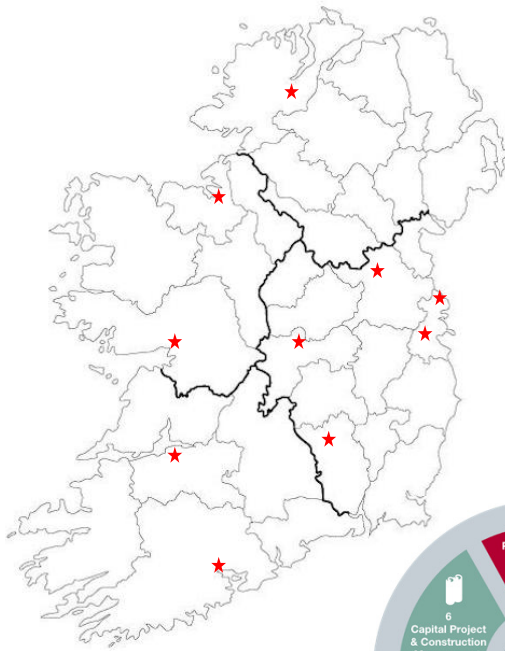


**5th CitA BIM Gathering Virtual Conference**

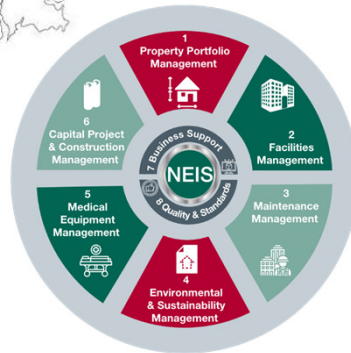
21 - 23 September 2021



## HSE Capital & Estates



- HSE Established in 2005 (previously 11 independent Health Boards)
- 10 Regional Offices
- Responsible for over 4,000 Property blocks
  - Acute Hospitals
  - Primary Care Centres
  - Community Nursing Homes
  - Office Accommodation
  - Laboratories
  - Warehouses
- Annual Capital Budget almost €1bn in 2021
- Estate Reinstatement Value €14bn



- Need Identified to integrate business processes & provide single source of Information
- National Estates Information System (NEIS)



### Established 11 Themes

- Benefits of BIM
- Healthcare
- Visualisation
- Policy
- Education / Training
- Technology
- Client
- Industry
- Public Works Contracts
- Implementation / Information Management
- Restrictions / Barriers



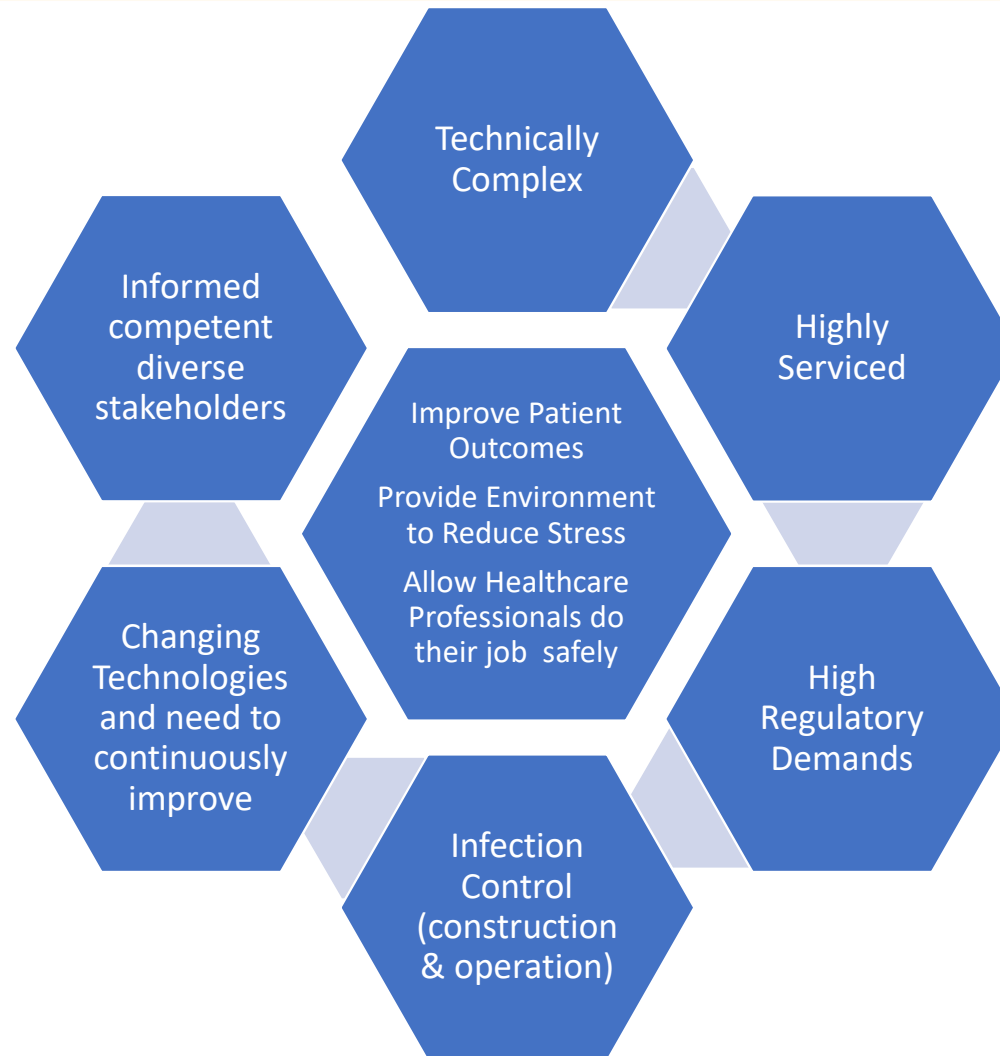


- A lot of information available on the benefits of BIM adoption
- Catalyst for transparency, better integration and increased productivity in AEC sector
- Changing how buildings look, how they function and how they are managed
- Encourages stakeholder engagement and early involvement
- Major benefit is associated productivity and collaboration the technology encourages
- Knowledge sharing and Integration between design professionals
- Improving communication efficiency, time saving and more efficient decision making
- Provides opportunity for standardisation
- Facilitates early production of detailed information and reduces changes
- Offsite construction – less time on site reducing costs and improving health & safety

Energy Analysis  
Benchmarking  
Encourage Reuse  
Structural Analysis  
Lighting Assessment  
Clash detection

Reduce conflict / rework  
Change tracking  
Information management  
Information retrieval  
Drawing & Schedules  
Production







5th CitA BIM Gathering Virtual Conference  
21 - 23 September 2021

## Visualisation

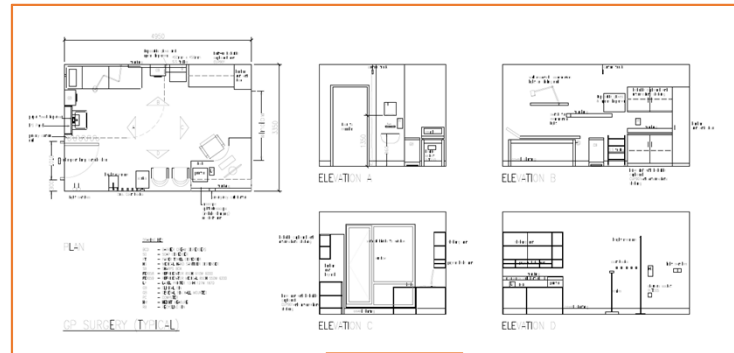
End Users have  
limited ability  
to read 2D  
Drawings

Ability to  
communicate  
design is  
critically  
important

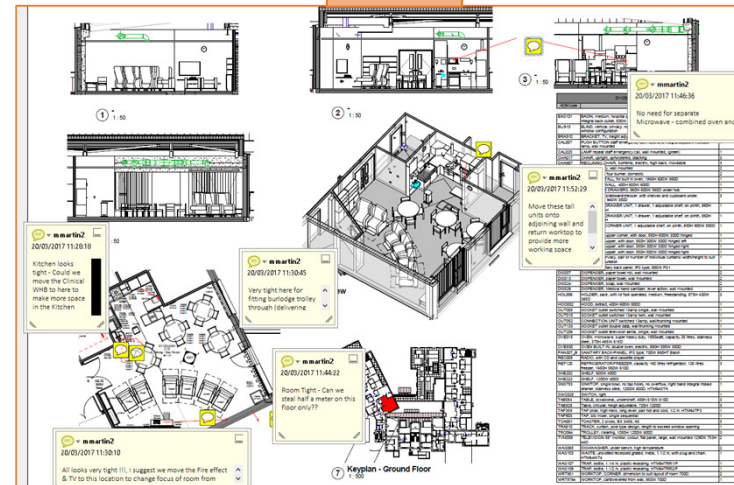
Rapid Visual  
Creation at  
Feasibility

Ability to  
Visualise  
Phasing

Understand impact  
of Construction  
work on existing  
facilities



VS



NCH  
Use of Google  
Cardboard to Visualise  
Theatres  
Key Tool for Planning  
Approval  
Visual Impact  
Assessment



Reduces consultation time  
Minimises reworks  
Saves money!

Gathering21  
Construction Innovations  
for Future Generations



Public Sector Bodies & Governments around the world have mandated BIM to address declining productivity



- Leadership
- Standards
- Education
- Procurement

#### Targets

- 20% saving (time)
- 20% saving (cost)
- 20% increase in const. exports

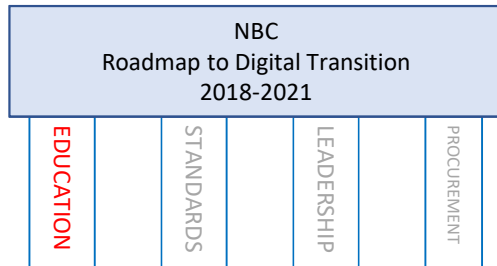


Construction Sector Group

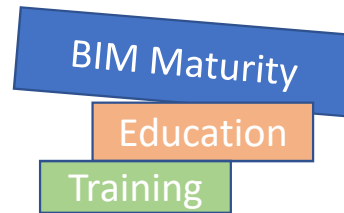
Industry & Government discussions on how best to achieve and maintain a sustainable and innovative construction sector

- Irish Construction Industry is adequately positioned to respond to a BIM Mandate
- Education Sector has responded to need for training and appropriate academic qualifications
- Architecture is largely in place (ISO Standards, Institutional templates and NBC Roadmap)
- Chronic Barriers
  - Lack of Funding
  - Low Client Demand
  - Absence of suitable contractual frameworks

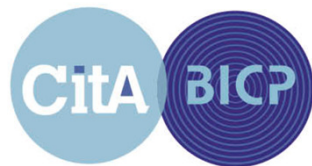
CitA have been advocating the use of ICT and BIM since 2011, have published numerous papers on the state of readiness and adoption of BIM in Ireland and continue to be champions within the industry



Irish Education ranks amongst  
best in the world for adaption of  
its construction related  
programmes for BIM



Educational Institutions  
are Key Partners & have  
responded rapidly to  
industry requirements  
despite the absence of a  
national mandate



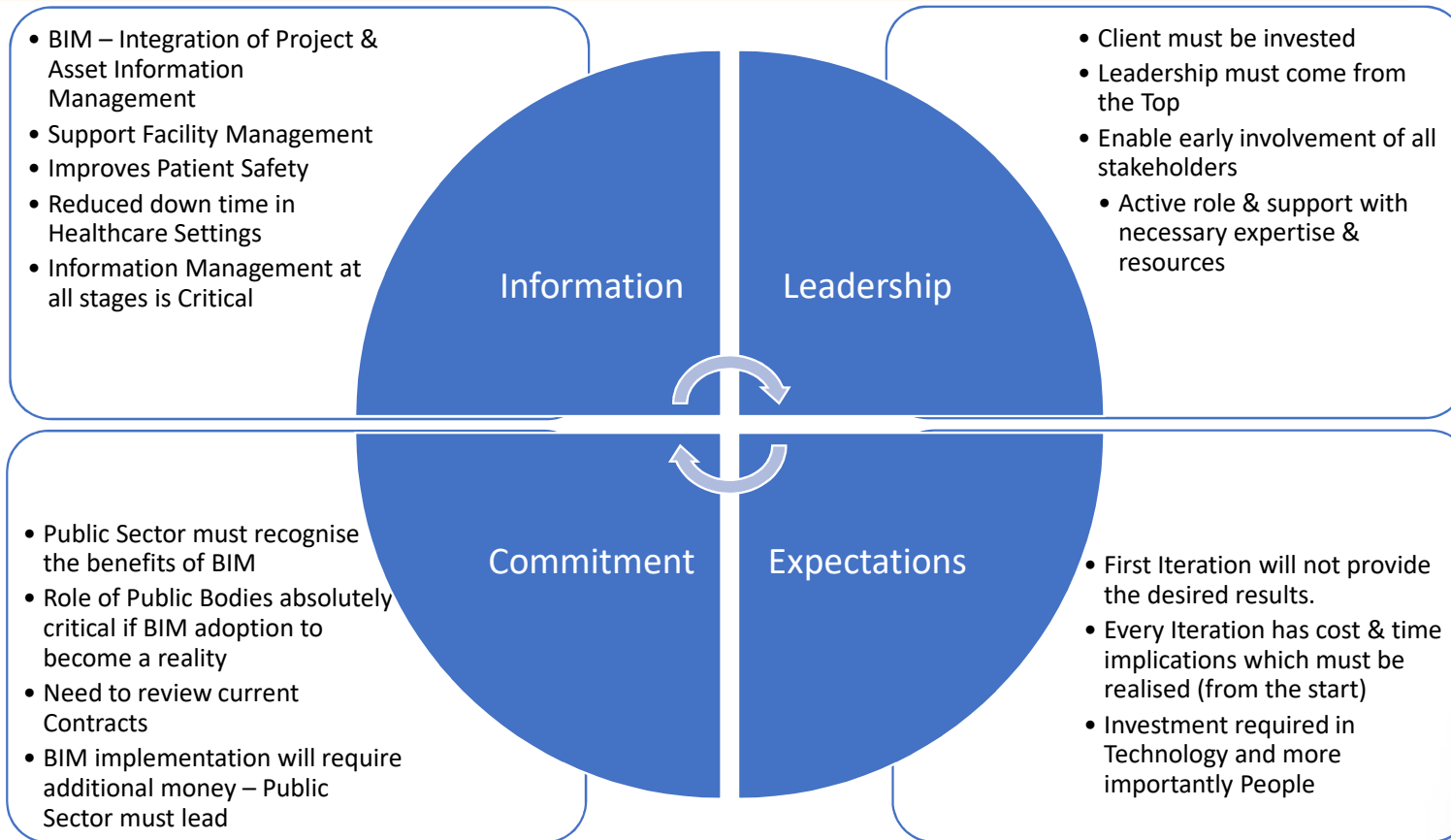
Cita: **BIM** Innovation  
Capability Programme

- Significant Upskilling Required
- Education is Key for Government Representatives
- Staff need to be upskilled in software and processes
- Focus should be on Client Requirements
- Education and Training will empower BIM ready staff to take up leadership roles



Intentionally  
left  
Blank







Construction Industry  
is one of the last large  
industries to  
significantly embrace  
technology & its  
opportunities

Poor  
collaboration  
with Supply  
chain

Outdated  
regulatory  
practice &  
monitoring

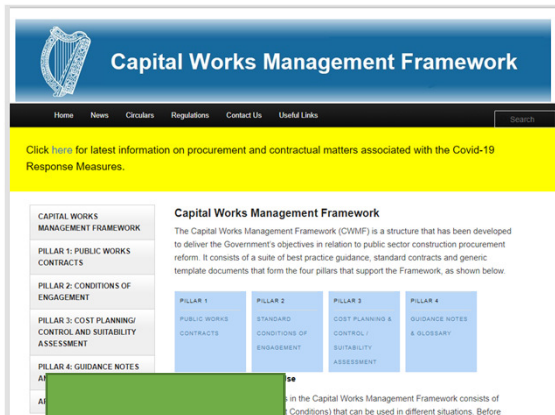
Fragmented  
and often  
polluted with  
duplication

Difficulty  
recruiting  
and retaining  
diverse talent

- Foreign Direct Investment Companies have promoted use of BIM in Ireland - Contractor Upskilling
- Public Works Contracts became lifeline for Contractors post recession (despite their problems)
- However consistency across all projects is required (so industry does not have to keep reinventing itself).
- Sector is full of adversity between members
- Information is closely guarded as Information is Power....
- Confrontational behaviour must change if potential of BIM is to be realised.
- Collaboration Processes and Policies must Improve

BIM is now the  
centrepiece of  
Construction  
Industry's  
digitalisation

Government  
and Industry  
must work  
together to  
embrace the  
change



Greater Cost  
Certainty

Better Value  
for Money

Efficient  
Project  
Delivery

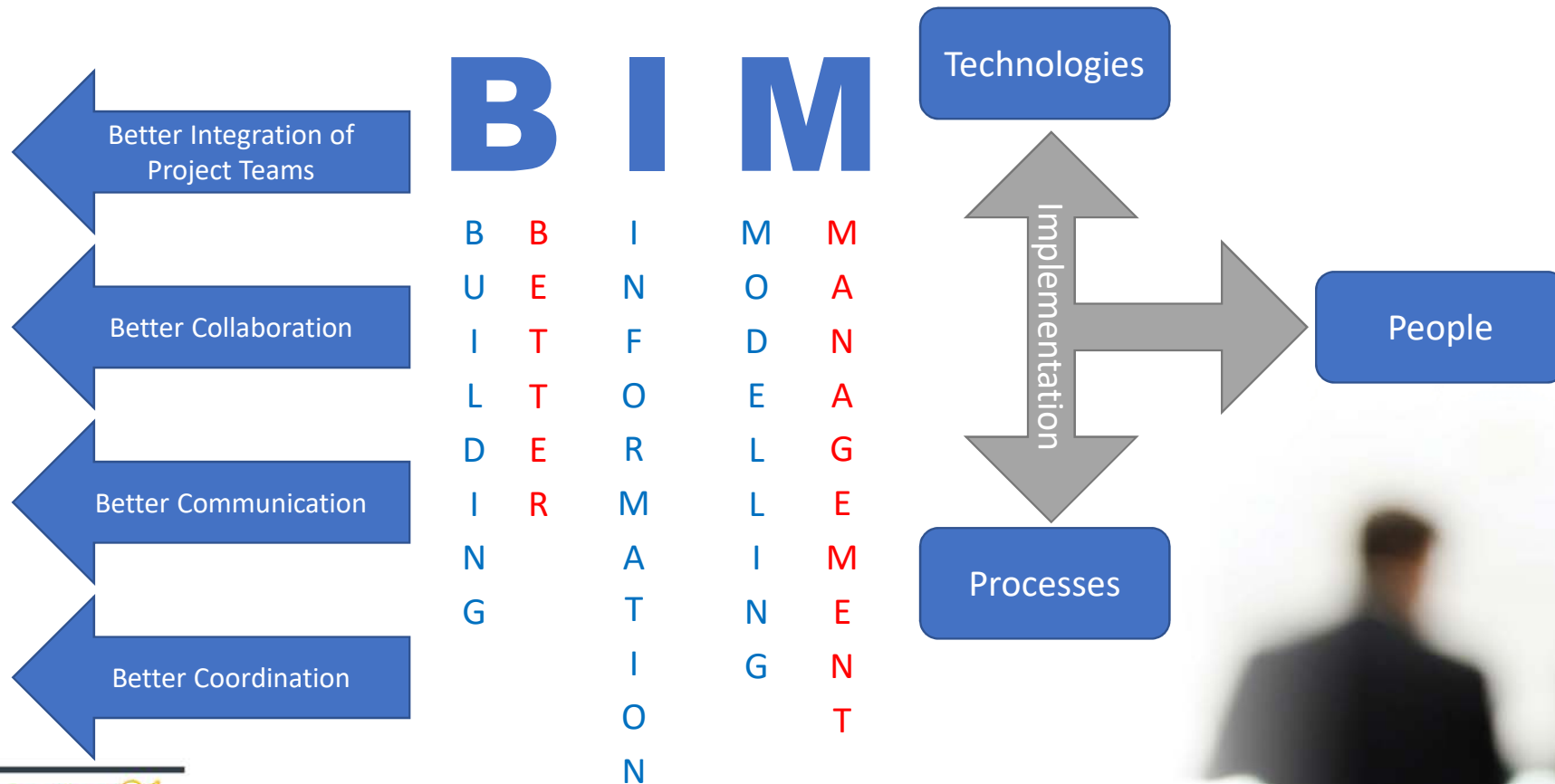
- Drafted in a different economic environment
- Oppressive environment for struggling contractors
- Experience – Reduced Fees, increased responsibilities and higher client expectations
- Principle – transfer of risk based on high quality of information
- Information is Power .... Appropriate risk transfer does not happen

Work is required to amend the existing suite of Contracts to incorporate at least a BIM amendment and to promote more collaborative processes

Current forms of Contract do not support the collaborative nature required for Design Teams to deliver using BIM

Design Team members experience duplication of work as BIM Implementation is overlaid on traditional programmes

Clear protocols are required – who is responsible for what & when – To allow design teams price accordingly





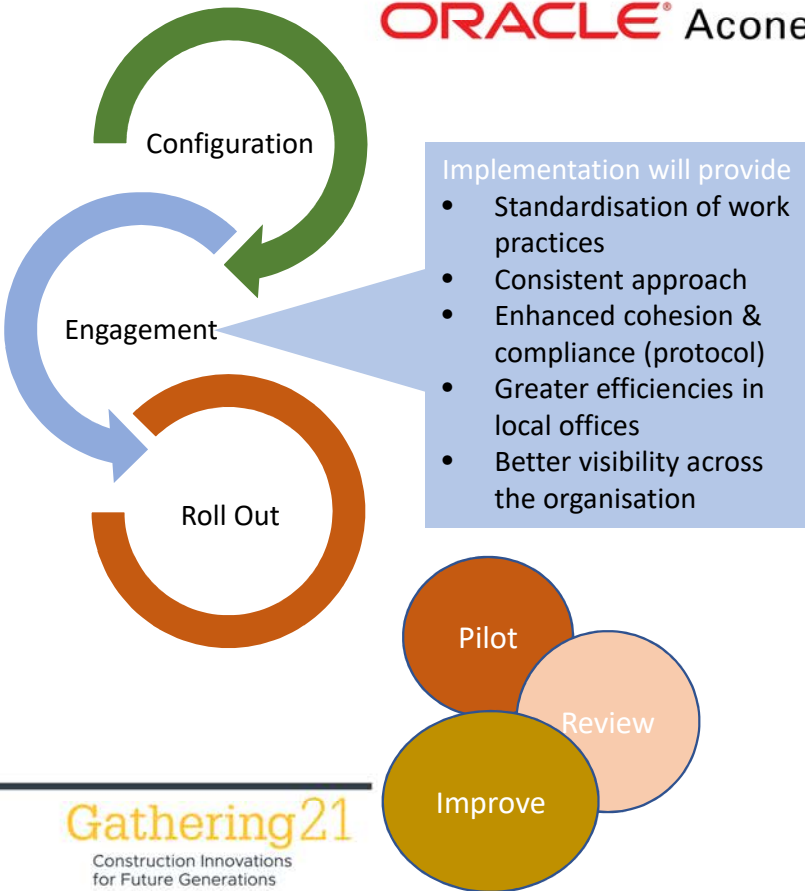
Challenges are well documented and include

- Fear of Low Success / Failure
- Lack of Senior Management Support
- Available skills and ability
- Cost of technology
- Time to Learn
- Current designs are often weak with no proper risk allocation leading to conflict
- Lack of adequate training (time and cost)
- Lack of clear and consistent standards
- Appropriate Contract Conditions
- Legal protection and policies (design liability, design delegation & ownership)
- Current practices of operating in silos
- Confrontational nature of current contracts

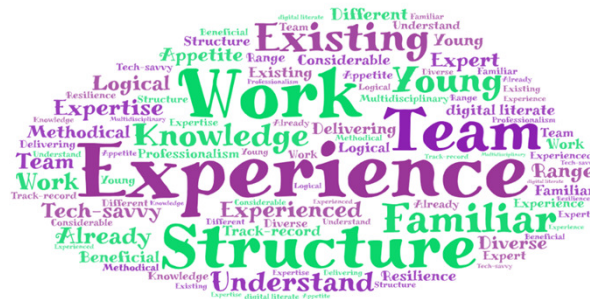




**ORACLE® Aconex**



### Strengths of Existing Team to enable change / Digital Transformation



Key Issues Identified to make implementation a success



HSE Capital & Estates  
National BIM Working  
Group





### Education & Training

### National BIM Council Roadmap

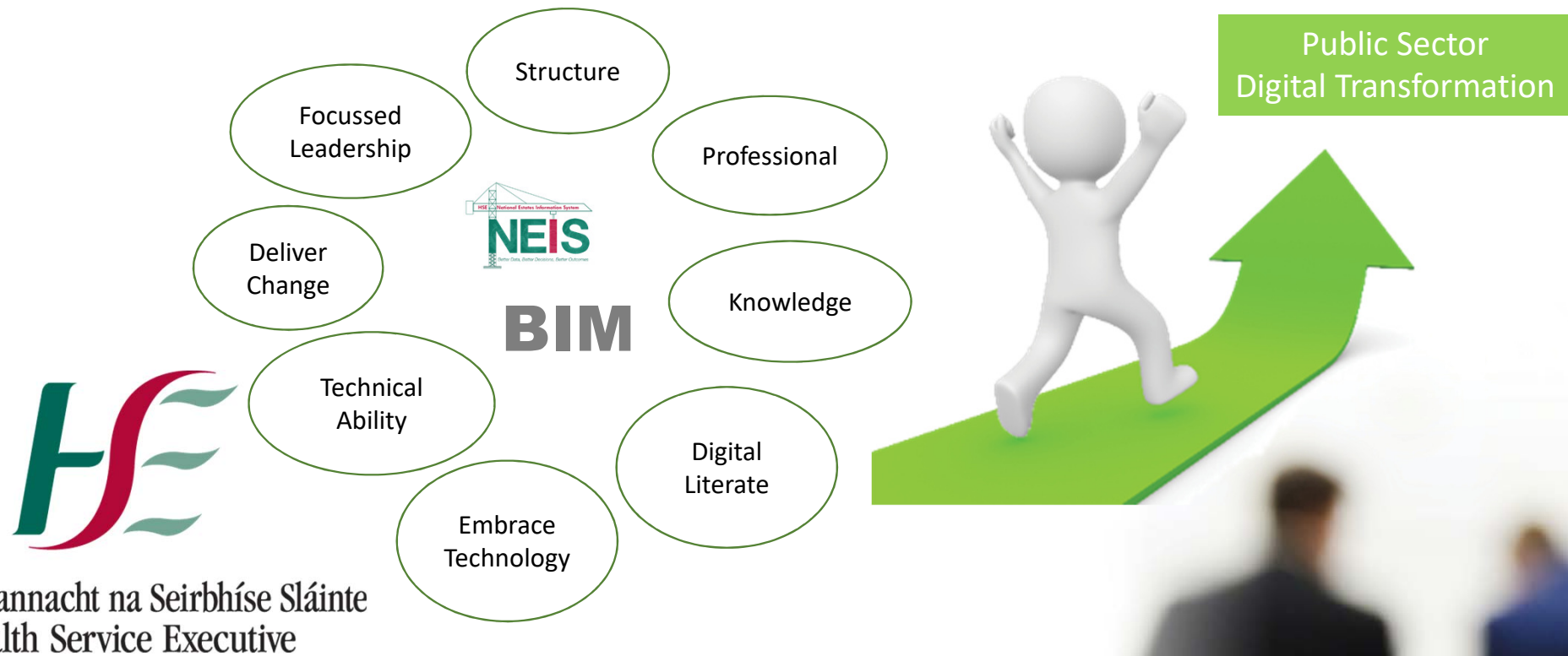
### ISO Standards

- ✓ Benefits of BIM are wide ranging
- ✓ Significant for Healthcare because of complexities
- ✓ Innovation and new technologies advancing at pace
- ✓ BIM is more than software
  - Productivity
  - Standardisation
  - Collaboration
  - Knowledge Sharing
  - Better Decision Making



- Invested Clients
- Public Sector
  - Leading
  - Revised Contracts
  - Funding
  - Training

- Construction Industry is fragmented
- Information is seen as power
- Unrealistic expectations on actors
- Risk not being appropriately transferred
- Contracts are adversarial rather than collaborative



Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive

Please refer to Conference Proceedings for  
full paper and more information