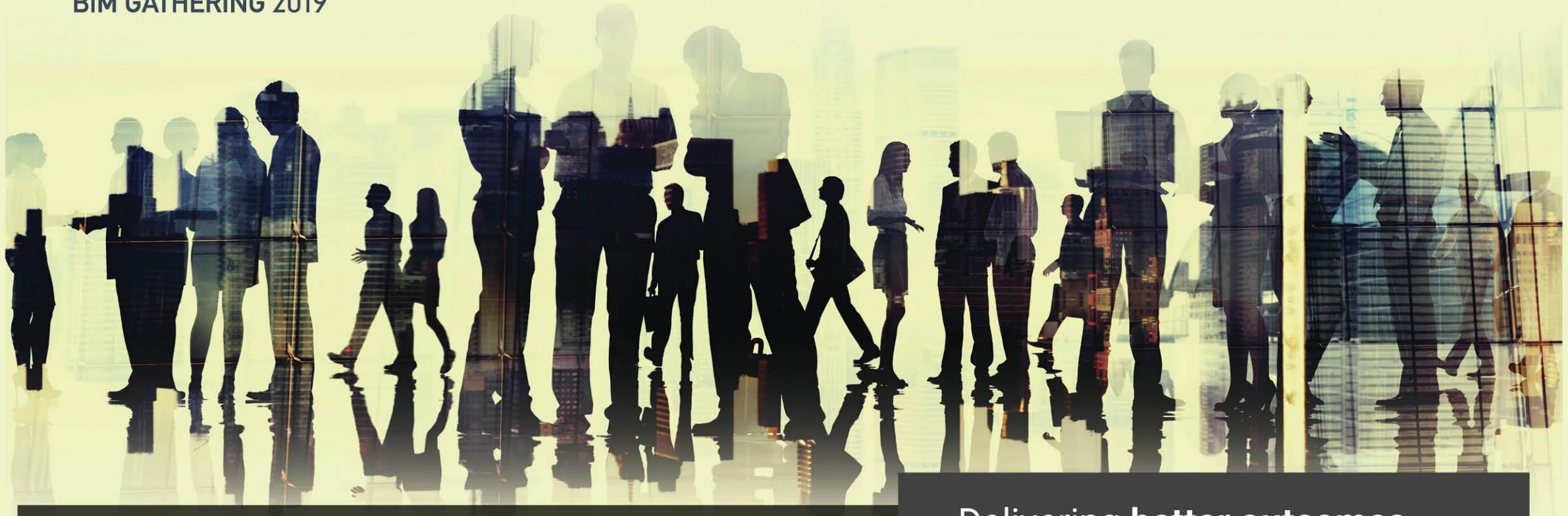


CitA
BIM GATHERING 2019

A Critical Review of the Requirements of Quantity Surveyors for Collaborative BIM Engagement and Success



4th CitA BIM Gathering 26th September 2019, Galway, Ireland.

Delivering **better outcomes**
for Irish Construction



Roadmap to Digital Transition

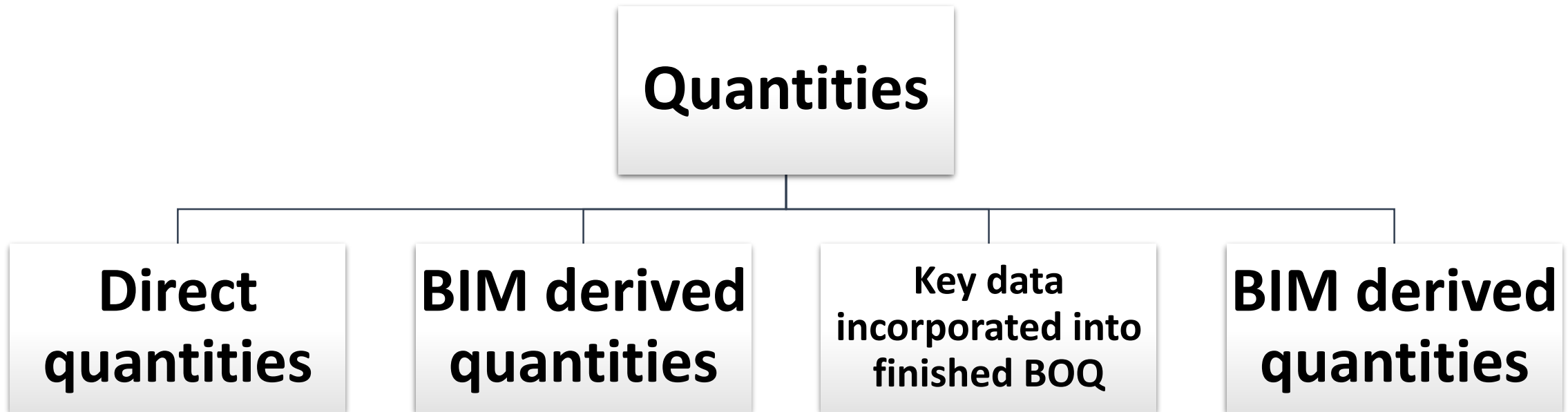
For Ireland's
Construction Industry
2018-2021

2021 - Key Roadmap Performance Targets



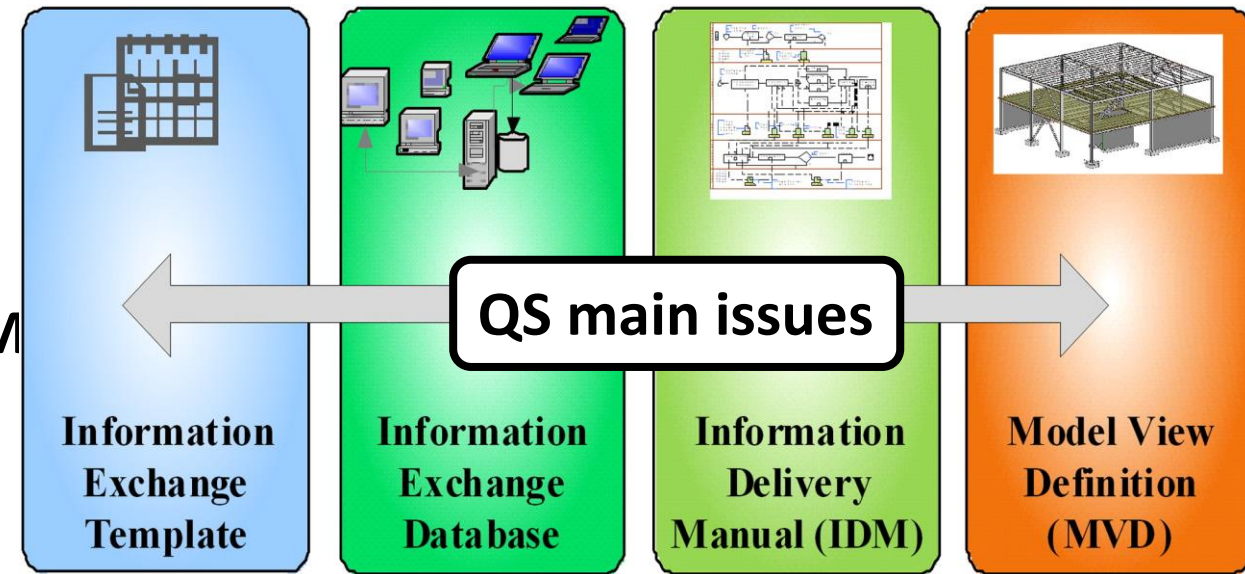


Current models have between 61-80% (at best) BIM enabled automated quantities, which is minimum at concept stage and maximum at construction stage.





- Very little faith in the data in most current BIM Models as they are incomplete, of poor quality & not modelled to a level suitable for the QS automatic quantification.
- There is a shortage of suitably skilled 5D BIM QS's who fully understand the BIM process & have the necessary digital skills for interrogating the models pushing & pulling cost rich information.
- Lack of understanding of the different disciplines.
- QS lack of ICT skills.
- Lack of fully functioning & integrated 5D BIM QS software.
- Lack of a QS MVD (model view definition).
- Lack of 5D case studies to learn from.



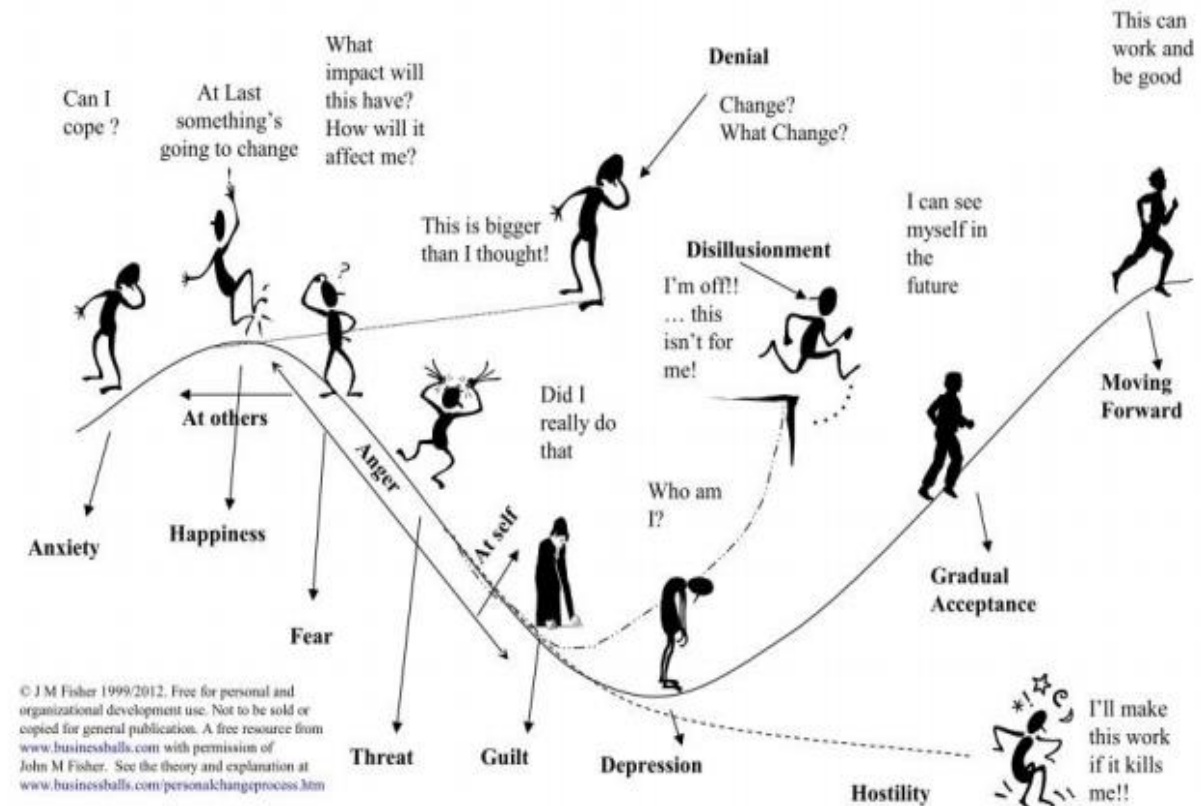


There are many risks inherent in the BIM Transformation Process, most of which can be eliminated, the remainder of which must be managed.

They broadly fall into three categories,

1. **People**
2. **Processes**
3. **Technology**

The Process of Transition



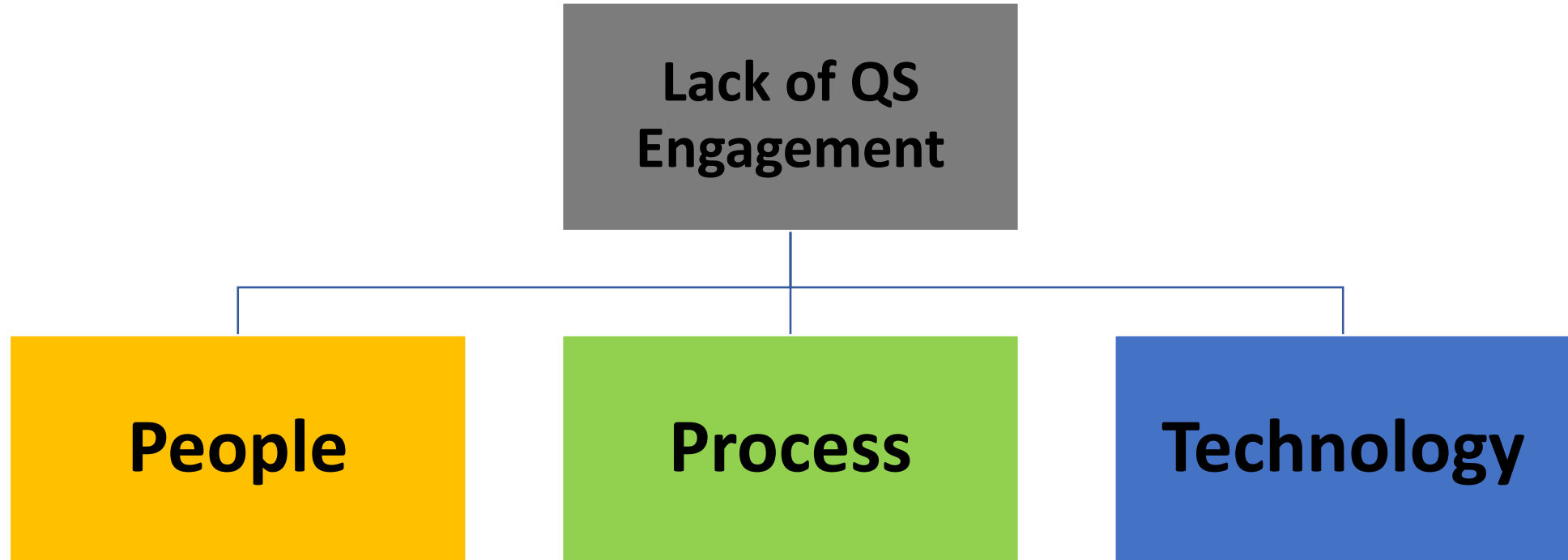


The real challenges of BIM & Digitization is not Technology.

Digitisation requires a cultural change. The mismatch between the current data sharing digital generation & the highly territorial Sector & Industry which is still tribal and defensive that they find themselves in.

“Barriers to BIM have been 10% learning a new technology and 90% changing a mindset.”

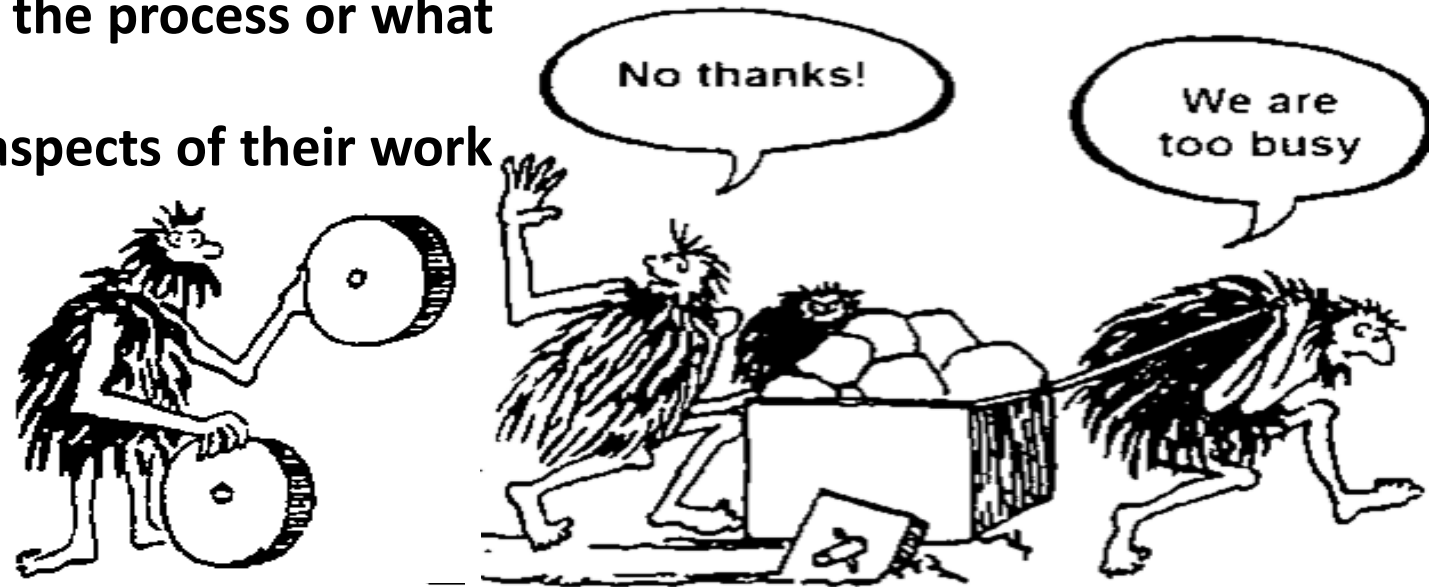






People

- Resistance to change, individuals have their own preferred ways and don't see the need to change, we have always done it this way.
- Fear of change, see the change as overwhelming, feel it is not a priority for them & besides they are too busy to make time to consider it.
- Do not understand the process or what it entails.
- Fears that certain aspects of their work may be adversely affected by automation and their value will be diminished.





People

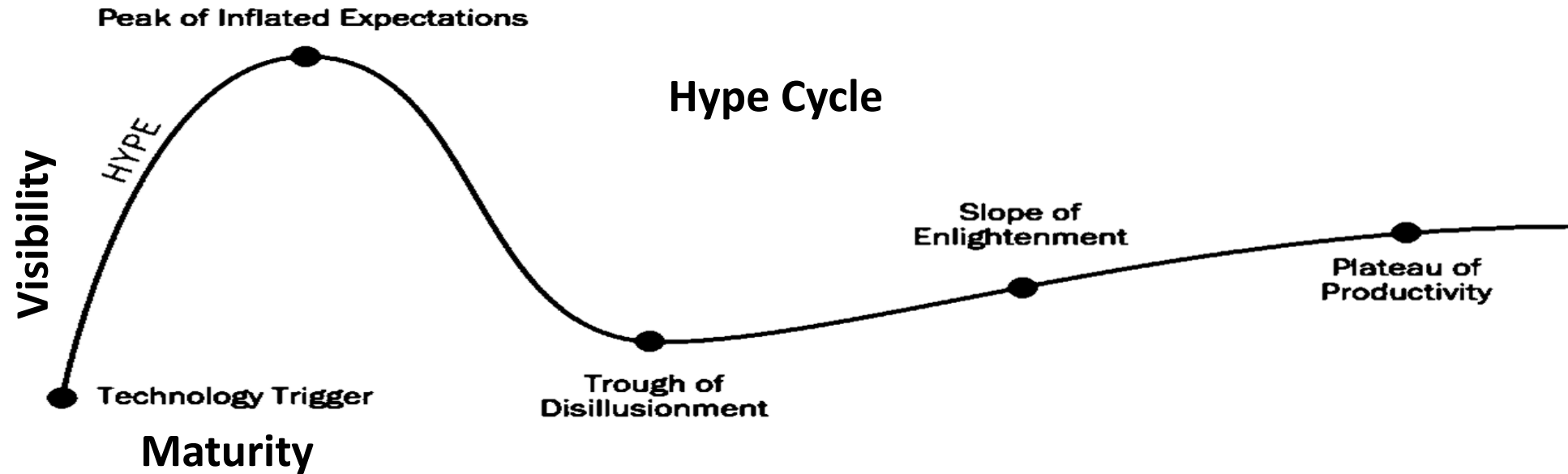
- Creation of new roles e.g. BIM Manager, Project Information Manager, BIM Technician.
- Lack of leadership, governance & direction.
- Skills shortages/recruitment of Key personnel.
- Demystification & simplification of the processes and terminology.
- Numerous myths & misconceptions e.g. BIM is only about software. BIM can be rolled out by CAD Technicians.
- Lack of management vision and buy-in.





- Difficulty engaging in collaboration coming from a silo background fear/blame.
- Fear of what organisational changes might mean to them as a person and what the future will look like.

People

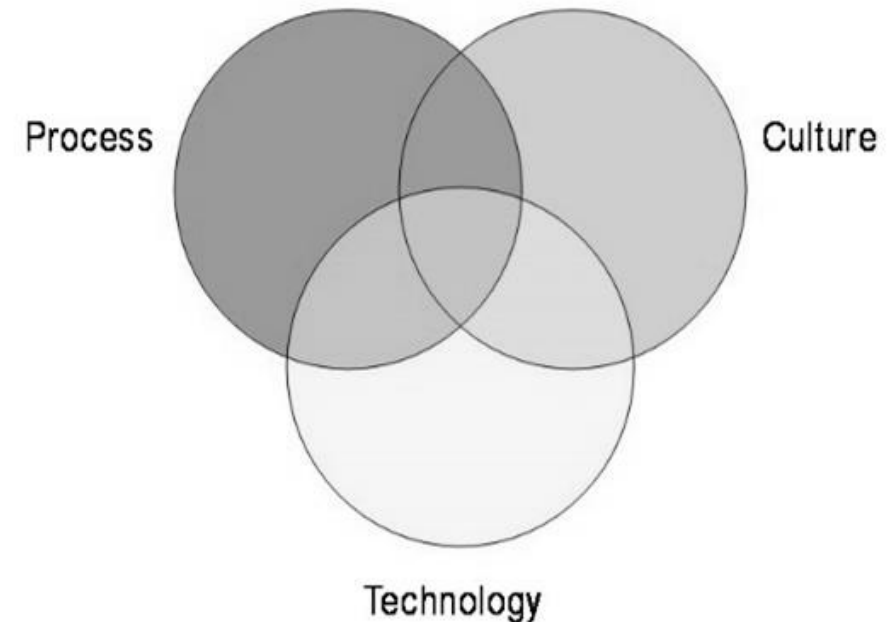




Process

- **Disruption, incremental.**
- **Lack of agreement of Industry standards.**
- **Lack of understanding of the processes.**
- **Risk averse culture.**
- **Risk management.**
- **Data security, confidentiality, privacy.**
- **GDPR.**

Success for BIM Relies on





Process

- **Difficulty of creating business process opportunities cross multiple silos.**
- **IT/OT gaps. Adopting IT systems to cloud based environments.**
- **Lack of SMP's, protocols etc.**
- **Insurance implications.**
- **Open data.**



Technology

- Significant rise in the use of IOT and other emerging technologies.
- Software interoperability issues, loss of data transfer.
- Sensitive information.
- Limited analytics talent.
- IT/OT.
- Who owns the Cloud?





Technology

- **Disruption.**
- **Legacy Technology requiring significant investment.**
- **Technology not suitable for streamlined processes.**
- **Use of Multi technologies to perform different functionalities.**
- **The rise of cyberattacks and security issues.**



Brexit

This has political,
economic, social &
legal implications,
creating turmoil and
uncertainty for the
UK, EU and Ireland.



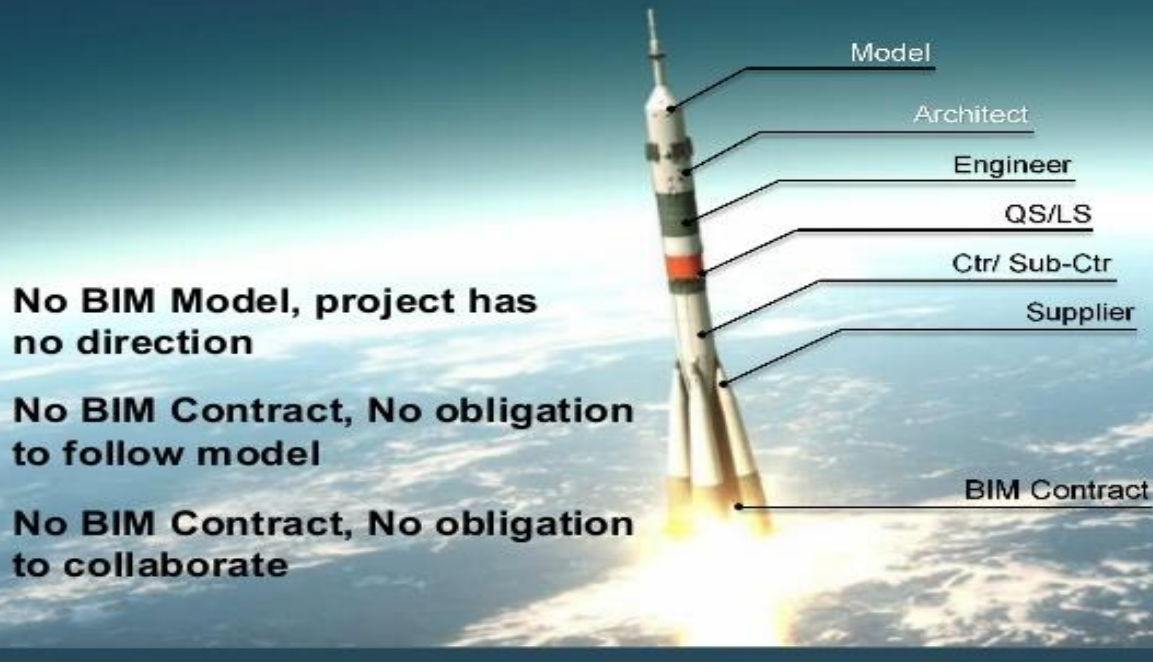


- **Legal & Contractual issues – issue of ownership of the model and intellectual property rights.**
- **Lack of clarity regarding roles and responsibilities.**
- **Procurement.**





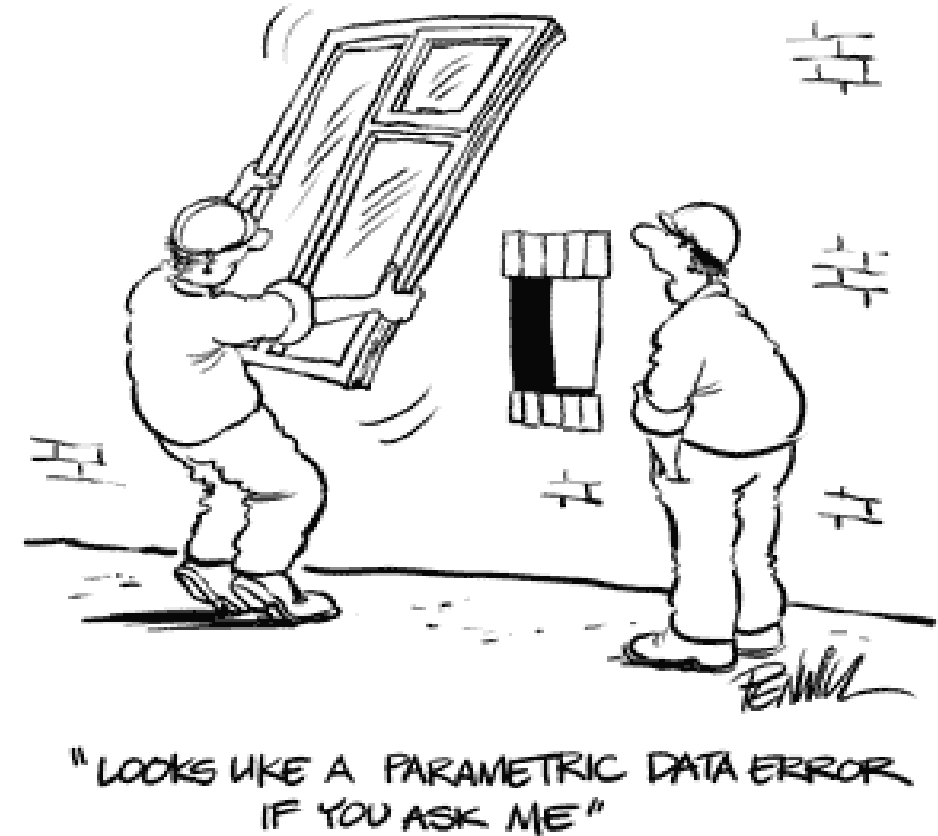
BIM-driven Process



- Lack of Government mandate until now , therefore not a requirement, the laggards.
- Supply chain capabilities.
- EU standards, CEN, ISO etc.
- High Initial cost for training, software & hardware upgrade especially for SME's who are unwilling or don't recognise the benefits of such an investment.



- A BoQ can be produced with the click of a button.
- All quantities reside within the model.
- Because the quantities came from the model they must be right.
- An Architect /Engineer can extract Quantities, there is no need for the QS.

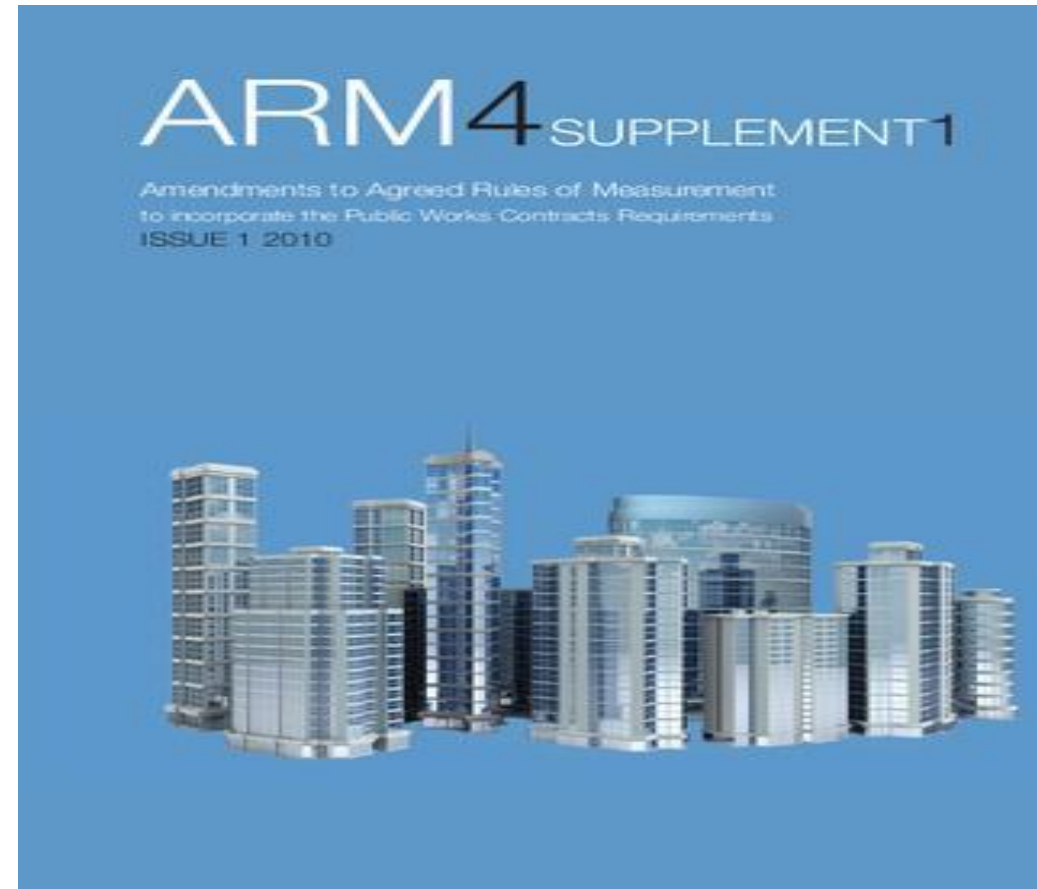




- To think of BIM as a value creator not as a cost factor.
- To get to become more aware of current trends & upskill.
- To be realistic & pragmatic in their expectations & realise that BIM is not a perfect digital solution but an imperfect digital advancement with great potential.
- To realise there is always some quantifiable data in bad models & QS's need to know how to navigate the model & articulate their requirements.
- To realise that this an ever evolving journey & they need to work with what they have & incorporate changes as they occur such as the ICMS and the revised ARM 4 (expected in Autumn 2020).



- Different methods of modelling by different design professionals (even within the same practice).
- Items missing entirely.
- Items not modelled.
- Items incorrectly labelled or modelled.
- Object detail versus cost detail.
- Lack of expertise in setting up BIM libraries.
- Unsuitability of ARM 4 , not publically digitised.
- Discipline roles not fully agreed & defined, who is responsible for what role.





- **What is BIM?**
- **The production & delivery of information.**
- **Team/ data exchange formats ...IFC, DWF, DWG, PDF....**
- **Information provided to the QS at the different stages...LOD.**
- **Data & Drawings not complying with the BEP (BIM Execution Plan).**
- **How to capture the requirements of the QS.**
- **Naming conventions.**
- **BIM object libraries.**
- **Data drops.**
- **The verification & validation process.**

**QS's need to
understand**



Why QS's need to engage in BIM & Industrialise Construction



- **Reduce costs.**
- **Reduced errors and rework.**
- **Reduce waste.**
- **Reduce delivery time to site.**
- **Reduced disruption to the local community during construction.**
- **Improve quality, better acoustic performance.**
- **Lower tolerances.**
- **Reduce fuel poverty, higher comfort levels.**
- **Shallow foundations with minimal site works due to lightweight construction.**
- **BIM & Digital Transformation.**
- **Eco efficient performance.**
- **Improved sustainability.**



- **Construction very labour intensive**
- **30% of resources on building sites are wasted**
- **40% of landfill is from construction**
- **Industry very fragmented and inefficient**
- **Trades often weather dependant**
- **Skills shortages at all levels as well as an ageing workforce.**
- **Carbon emissions, pollution, noise, traffic congestion, transport**
- **Low productivity, low margins**
- **Poor industry image, difficulty in attracting new people**
- **Reduced risk of injury and accidents**
- **Creating more regional jobs away from large conurbations.**



- Prefabrication using better detailing, precision engineering.
- Fourth industrial Revolution.
- Off-site manufacturing - safer, controlled, quicker.
- Just-in-time delivery.
- Lean methods.
- Use of cross laminated timber.
- Use digital collaboration and processes (Paperless).
- Use of generative design where computer algorithms are used to generate designs options based on requirements collected by the user i.e. digital design.
- Automation to help make pre-construction planning more accurate.



Thank you