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WELCOME

to virtually, the most important conference
in Irish Construction this year

5th CitA BIM Gathering Virtual Conference

21 - 23 September 2021

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

Keynote Speaker

Mary Flynn FRICS FSCSI MAPM aBIMM

In Ireland most QS Practices fall into the SME Category

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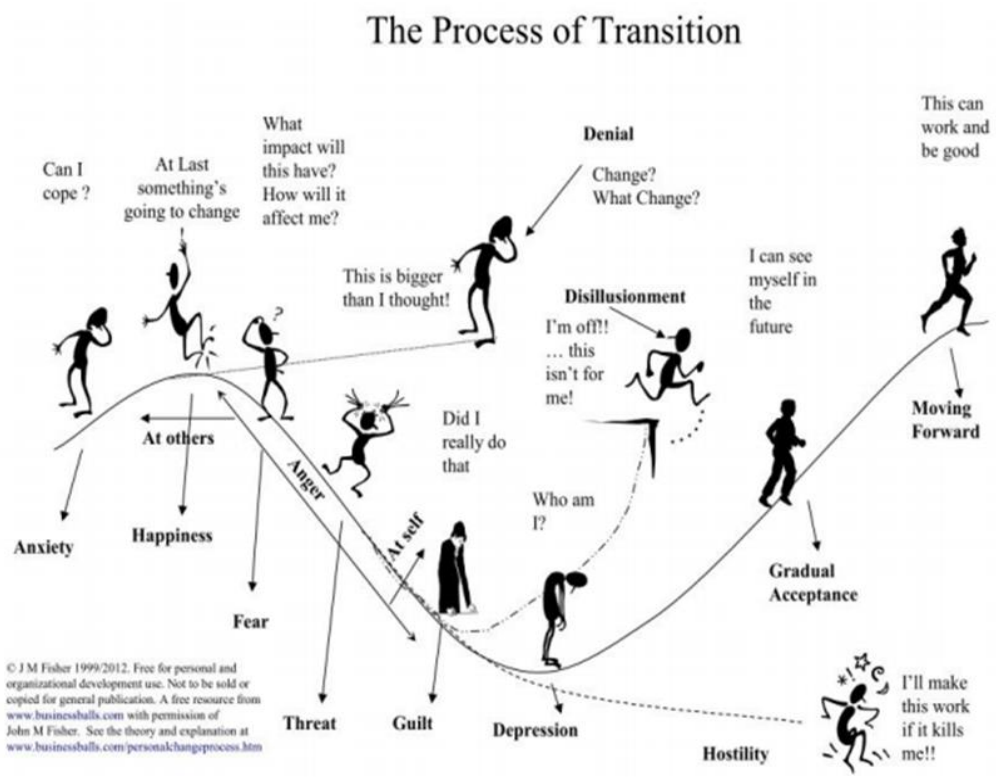
There are many risks inherent in the BIM Transformation Process, most of which can be eliminated, the remainder of which must be managed.

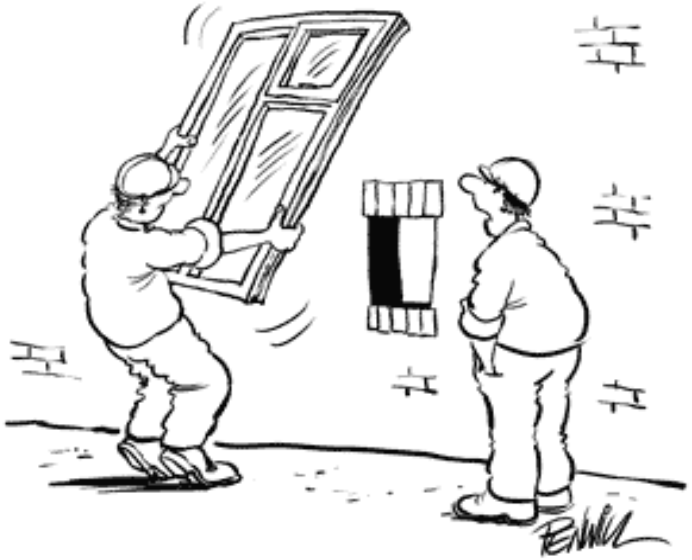
They broadly fall into four categories :-

- ***People***
- ***Processes***
- ***Technology***
- ***External influences***



Common QS Myths

- 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



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QS's need:-

- 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 ICMS2 and the New ARM5

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QS's need to realise

- 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

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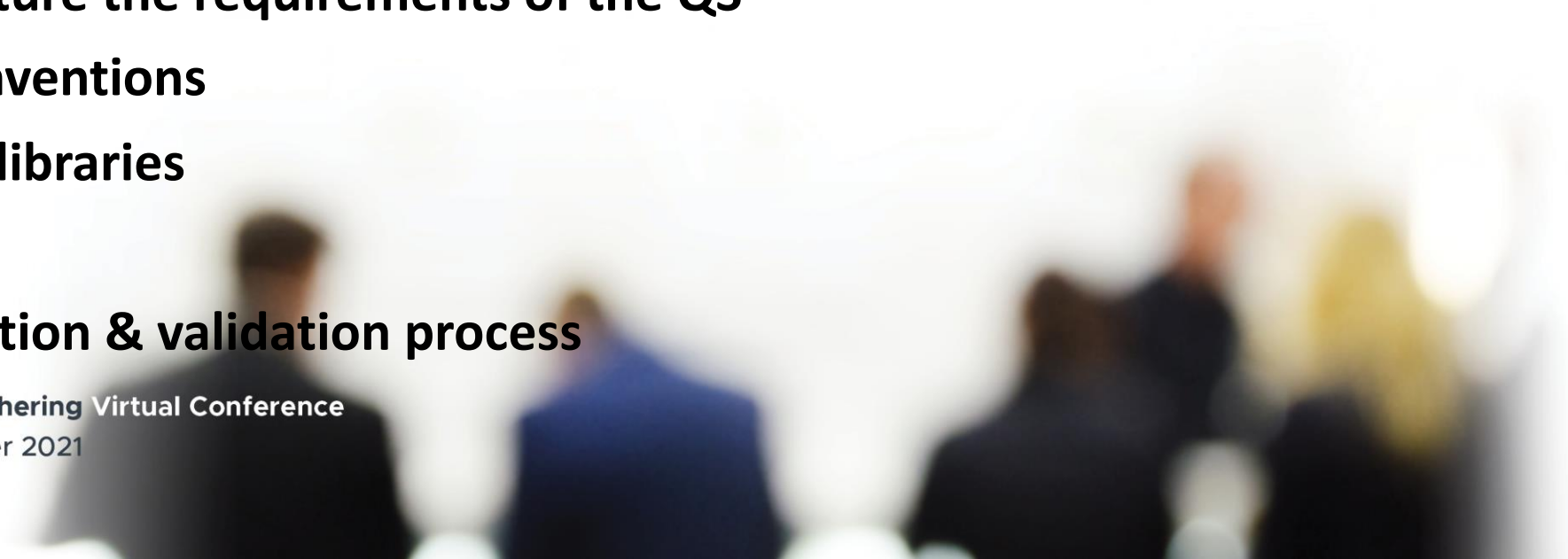
QS's need to understand:-

- 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



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QS main issues

- 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
- Very little faith in the data inmost 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

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QS's need to ask:-

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What are we Building?
Will it suit our needs, our image?

3D BIM

Is it well-designed, well-constructed, and durable?

6D BIM

What will it cost to Maintain, Manage & Operate?

7D BIM

4D BIM

When will it be Delivered?

5D BIM

How much will it Cost?

Are we getting good Value for money?
Are our Risks being effectively managed?

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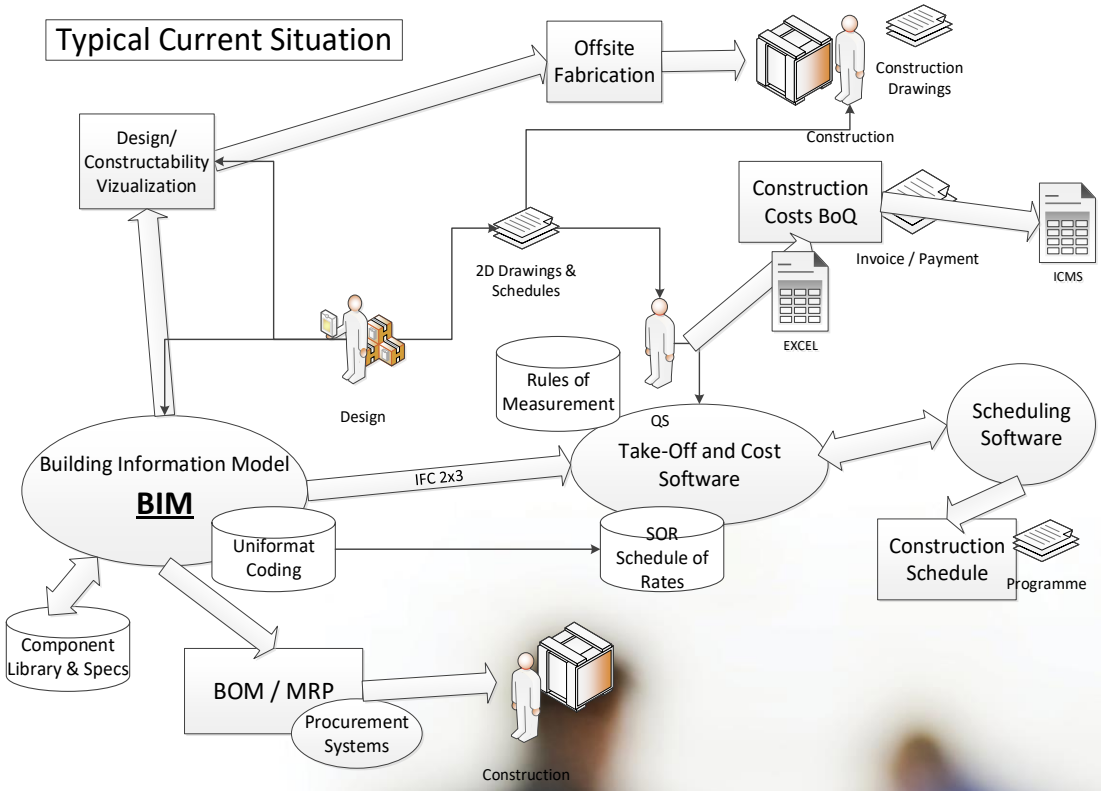

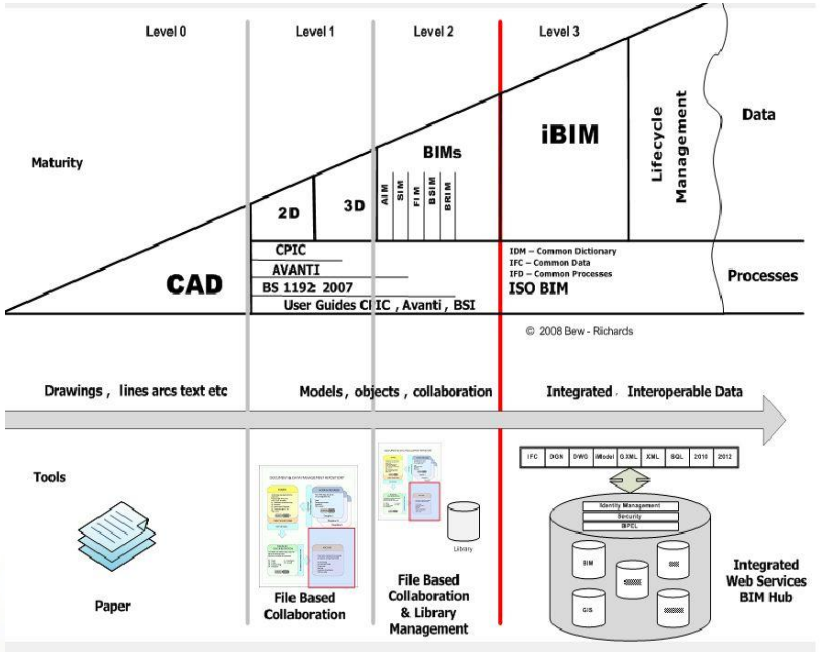

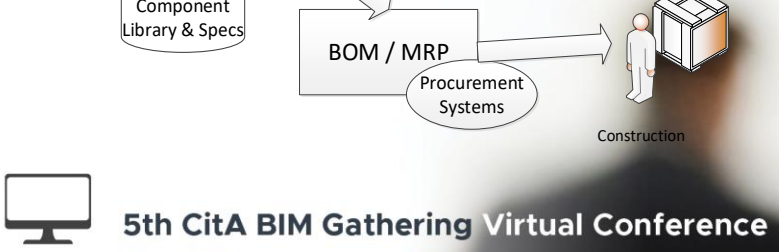

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Opportunities – Why QS's need to engage in BIM & Industrialise Construction

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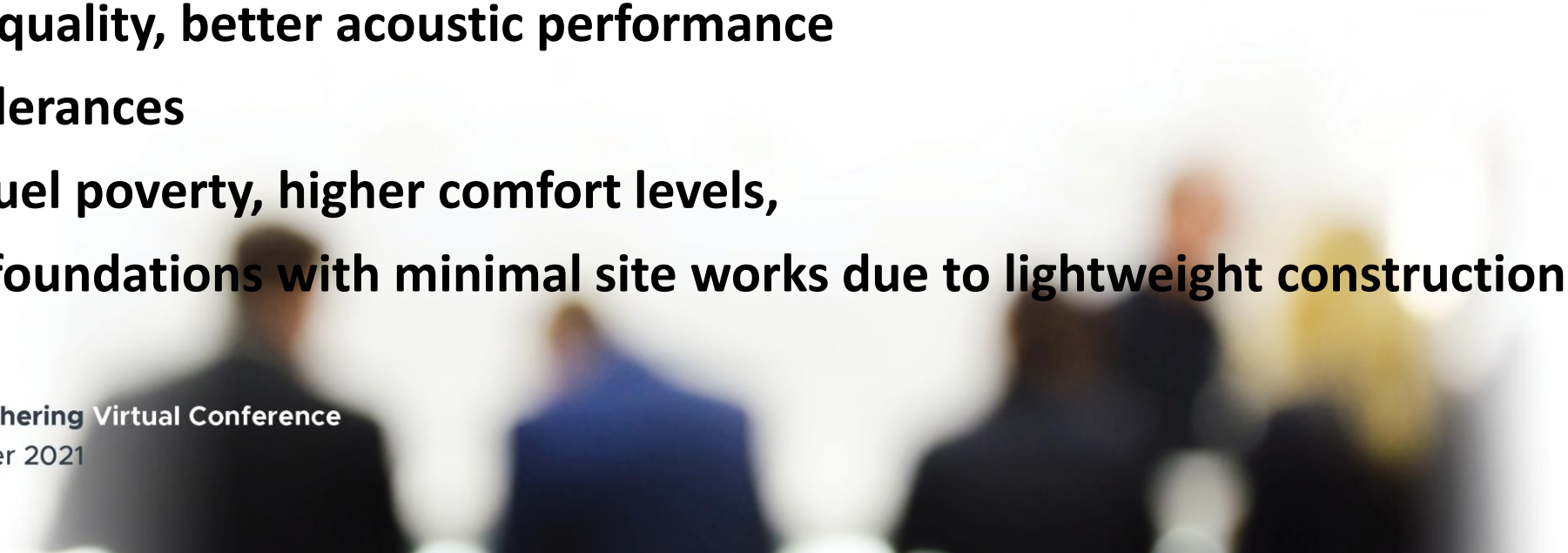
Reduce costs

- 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

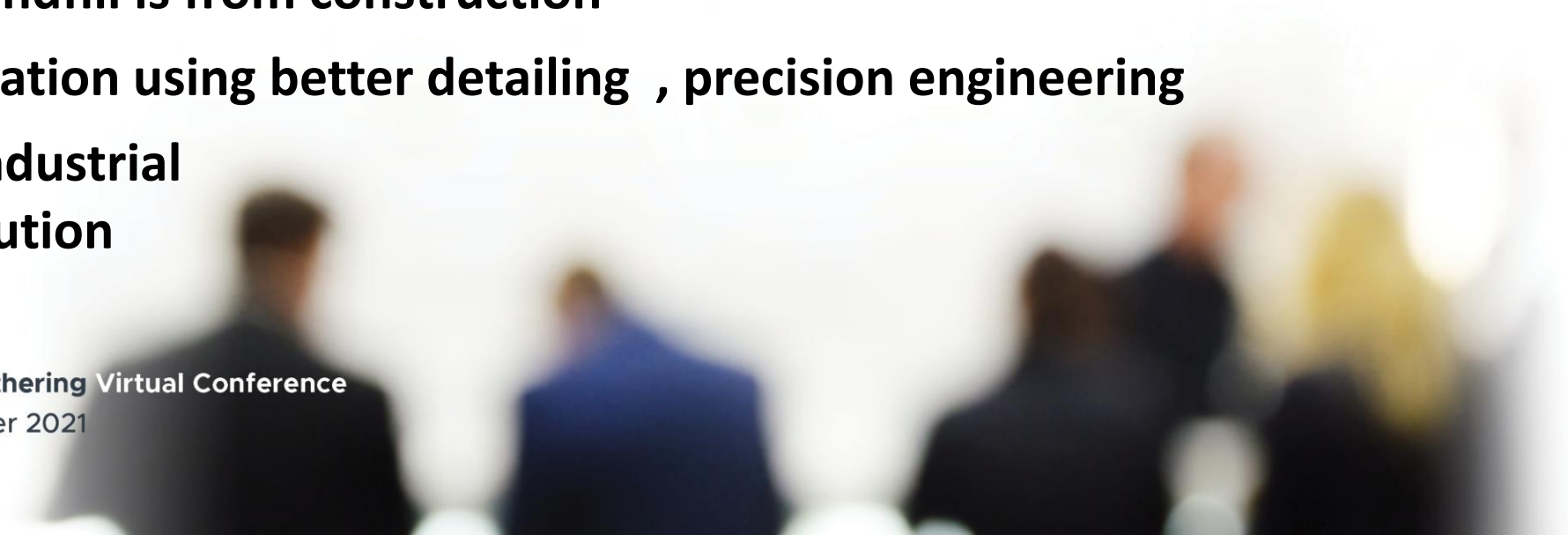


- **Eco efficient performance**
- **Improved sustainability**
- **And a host more reasons**

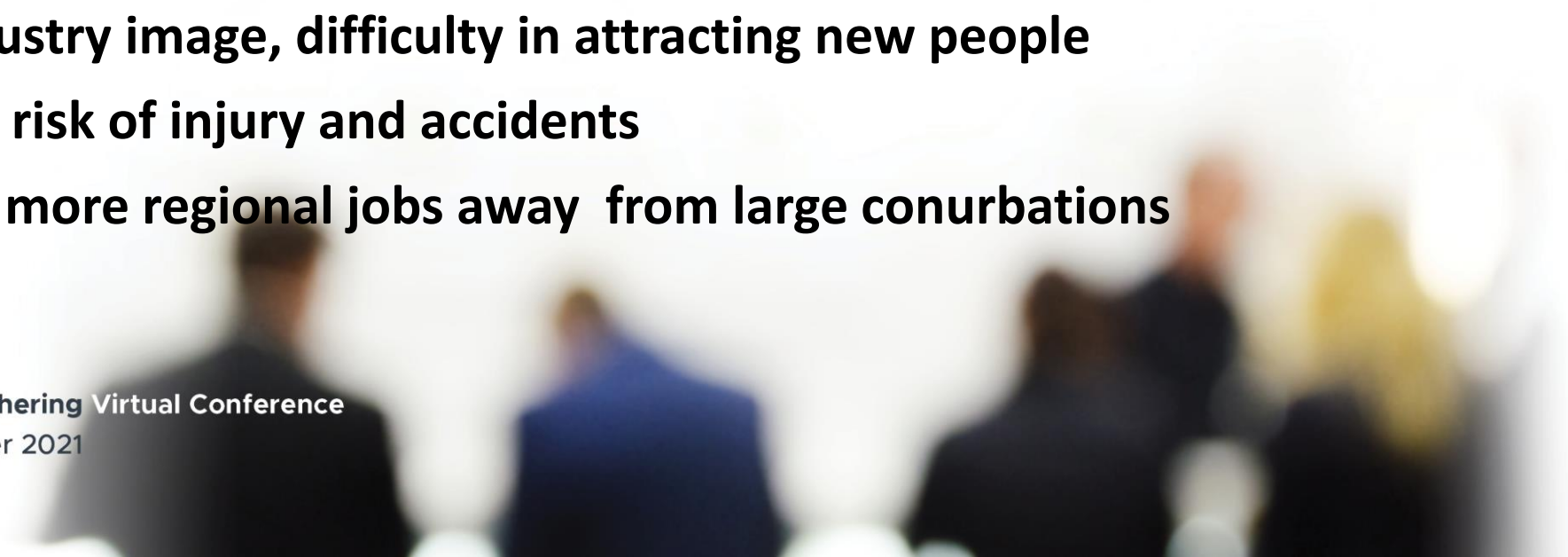
- **Construction very labour intensive**
- **30% of resources on building sites are wasted**
- **40% of landfill is from construction**

- **Prefabrication using better detailing , precision engineering**

- **Fourth industrial Revolution**

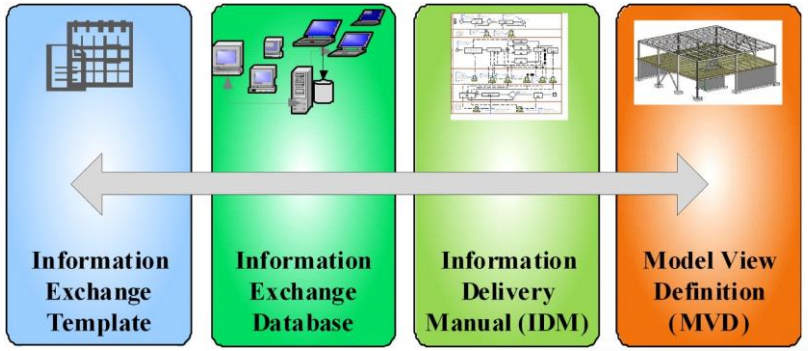


- Industry very fragmented and inefficient
- Trades often weather dependant
- Skills shortages at all levels as well as an ageing workforce
- Carbon emissions, pollution, noise, traffic congestion, transport
- Low productivity, low margins
- Poor industry image, difficulty in attracting new people
- Reduced risk of injury and accidents
- Creating more regional jobs away from large conurbations



- **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**

"**Model View Definition**“ or MVD, is a subset of the overall IFC schema to describe a data exchange for a specific use or workflow.



The Irish QS needs to collaborate with other designers and software vendors to develop a QS MVD to deliver the full benefits of what BIM can offer such as carbon & energy costing, cost data analytics.

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The Future QS
The 5D BIM QS

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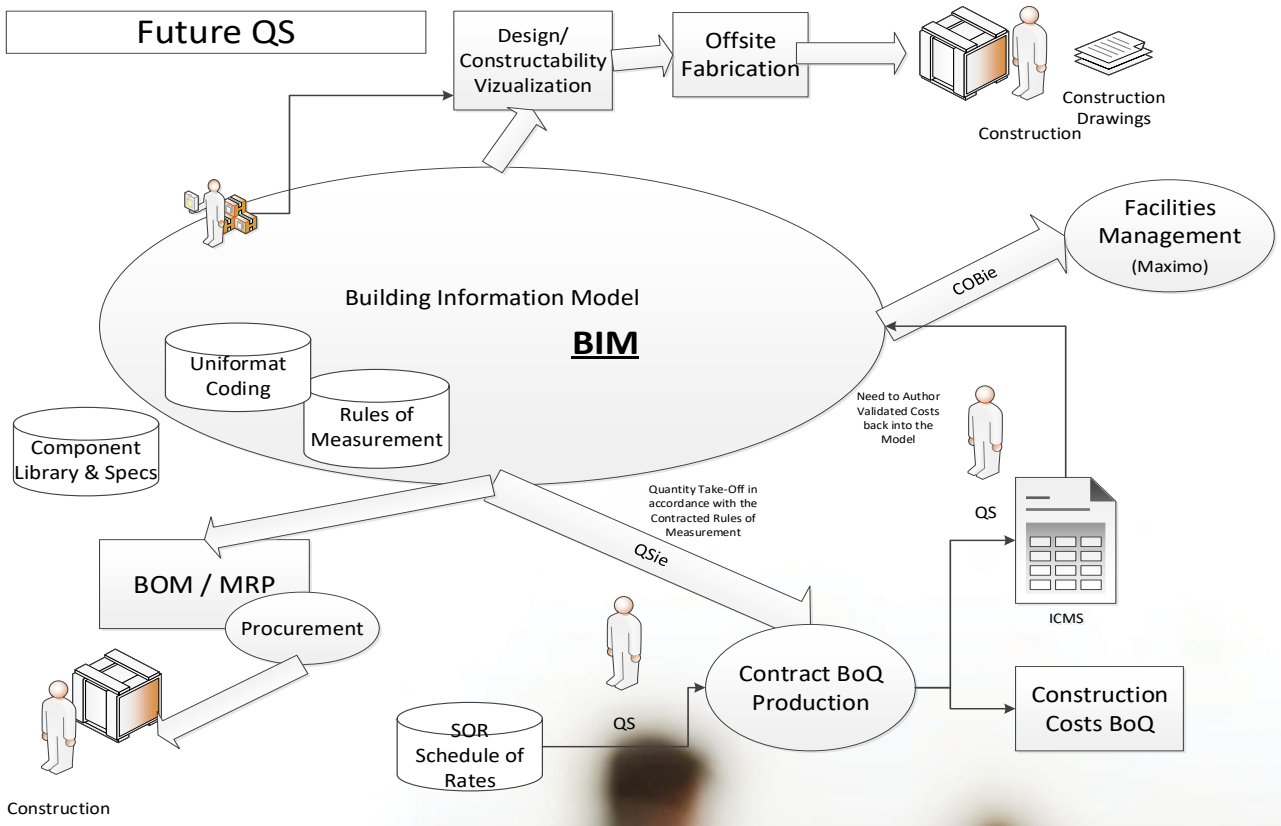

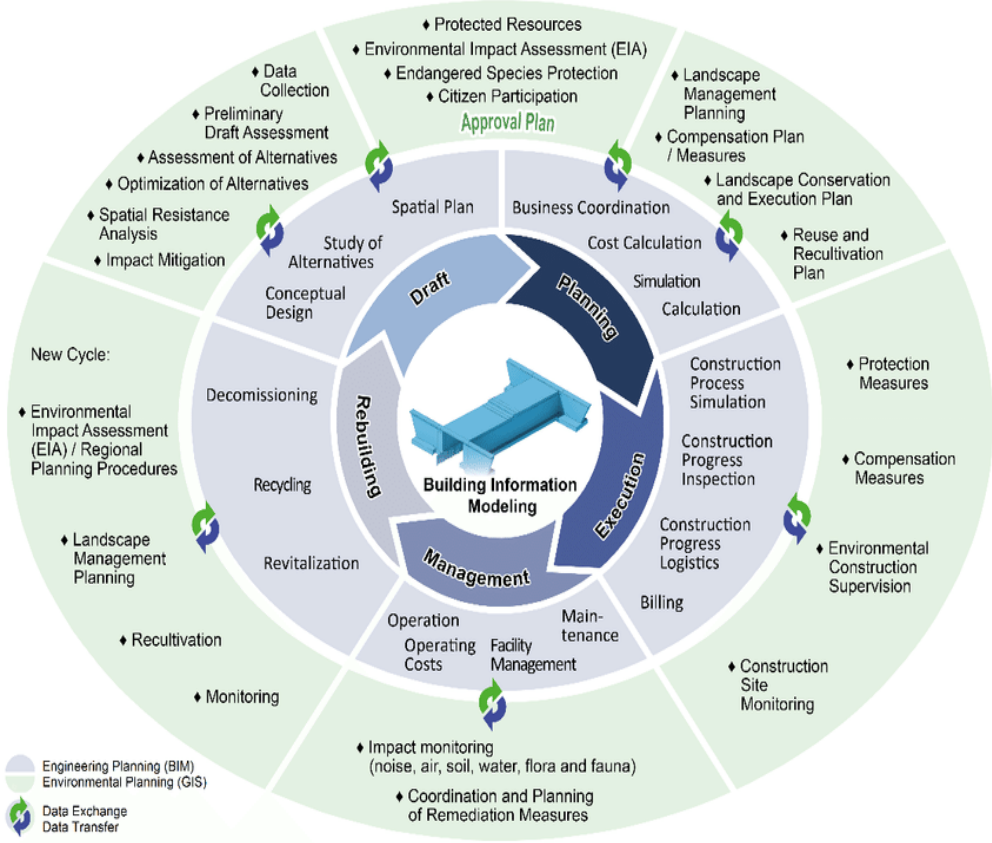

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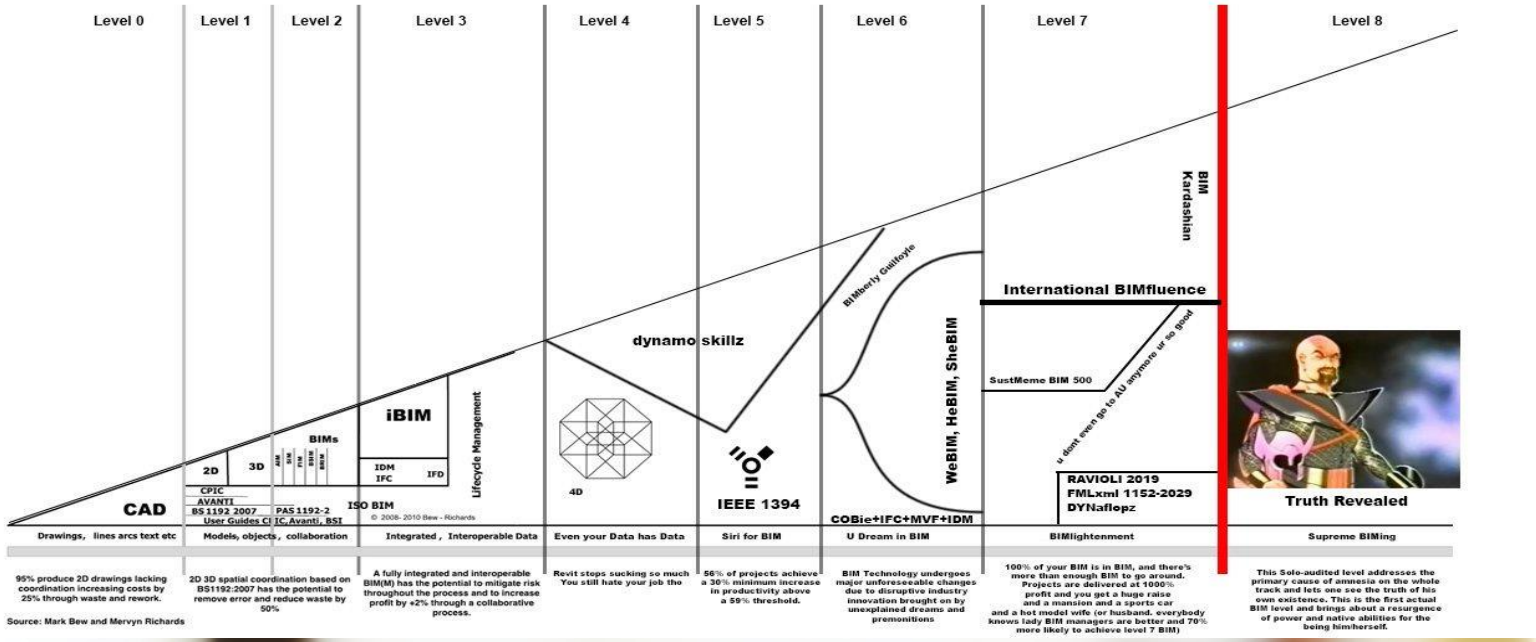
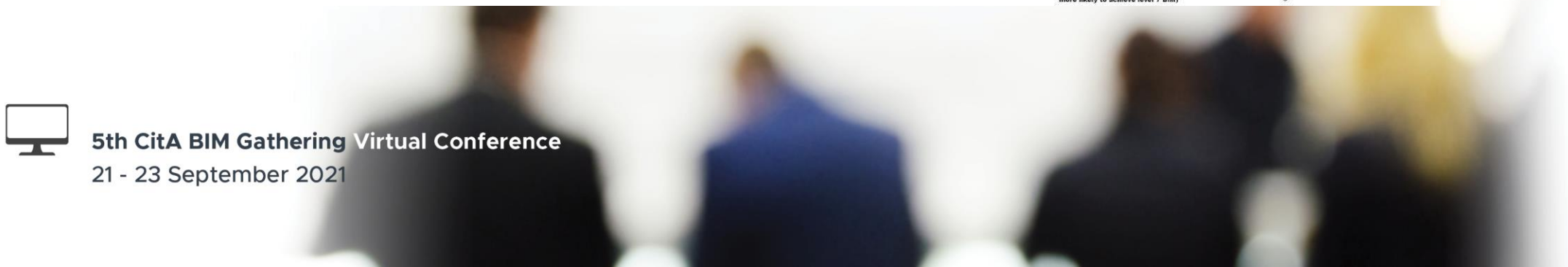
Future 5 to 10 years





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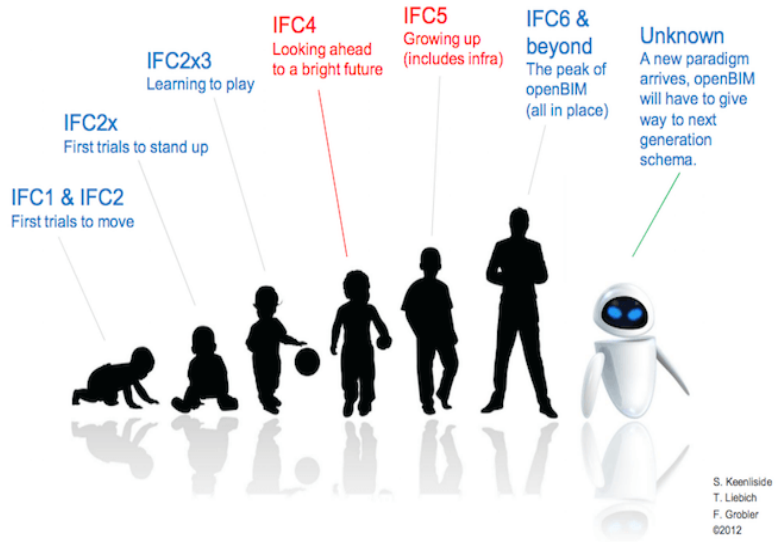

IFC Overview Presentation

IFC 4

Property Sets for Objects

The Property Sets for Objects concept template applies to this entity as shown in Table 436.

PredefinedType	PsetName	Properties
	Pset_AirTerminalBoxTypeCommon	15
	Pset_SoundGeneration	1
	Pset_ElectricalDeviceCommon	10
	Pset_EnvironmentalImpactIndicators	19
	Pset_EnvironmentalImpactValues	17
	Pset_Condition	3
	Pset_ManufacturerOccurrence	5
	Pset_ManufacturerTypeInformation	7
	Pset_ServiceLife	2
	Pset_Warranty	8

Table 436 — IfcAirTerminalBox Property Sets for Objects

87 total properties

may be exchanged without being already assigned to occurrences.

The occurrences of the *IfcAirTerminalBoxType* are represented by instances c
or its subtypes.

IFC 2X3

Property Set Use Definition:

The property sets relating to this entity are defined by the *IfcPropertySet* anc
IfcRelDefinesByProperties relationship. It is accessible by the inverse *IsDefine*
The following property set definitions specific to this entity are part of this IFC

- Pset_AirTerminalBoxTypeCommon: 15mmon property set for all air terr

HISTORY: New entity in IFC Release 2x2.

15 total properties

EXPRESS specification:

```
ENTITY IfcAirTerminalBoxType
  SUBTYPE OF (IfcFlowControllerType);
    PredefinedType   : IfcAirTerminalBoxTypeEnum;
  WHERE
    WR1      : (PredefinedType <> IfcAirTerminalBoxTypeEnum.USERI
               ((PredefinedType = IfcAirTerminalBoxTypeEnum.USERI
              EXISTS(SELF\IfcElementType.ElementType));
END_ENTITY;
```

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Major game changers

- COVID19 Pandemic
- Climate Action
- The CSG (Construction Sector Group)
- Data analytics

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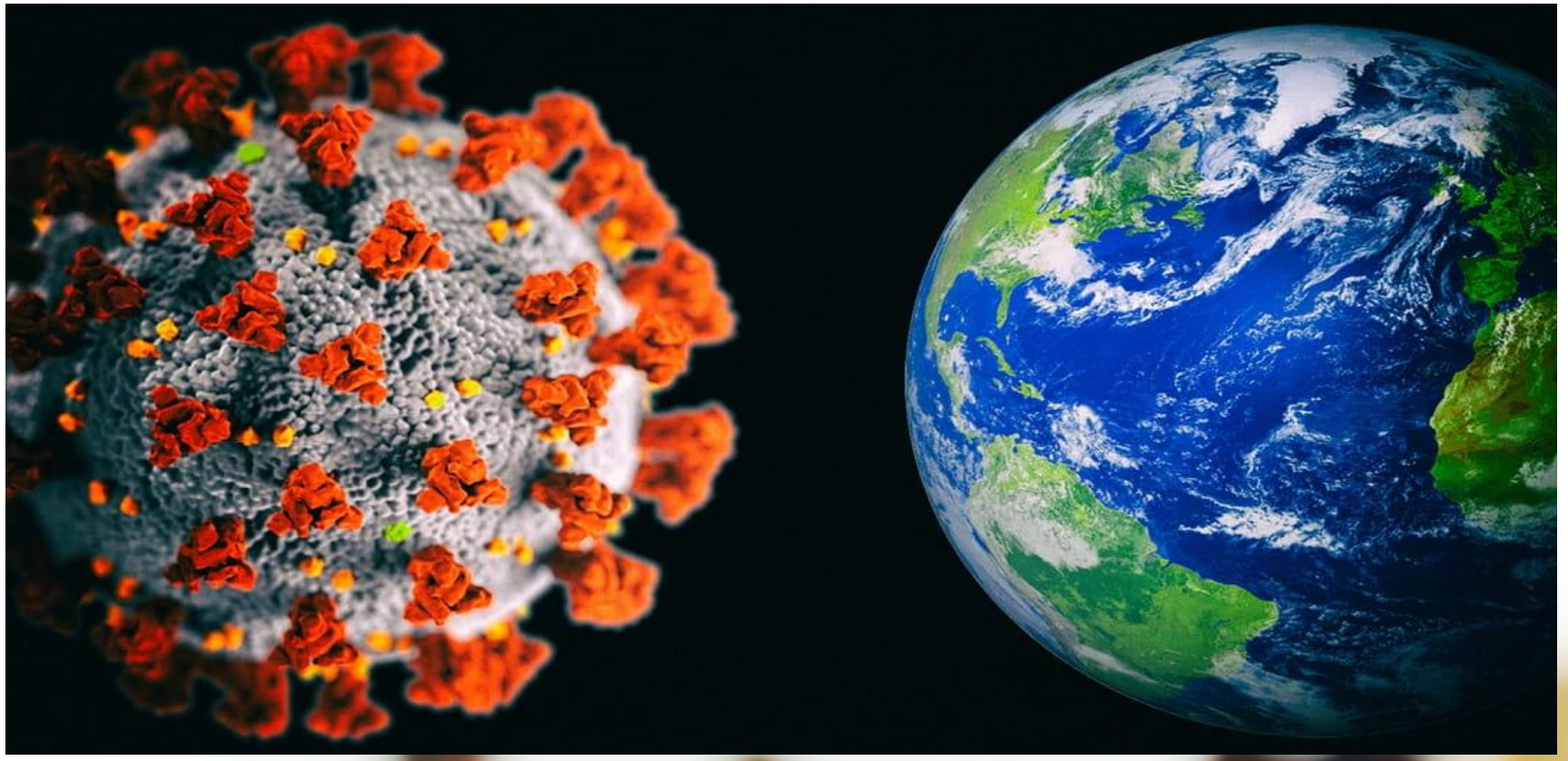

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New QS Streams

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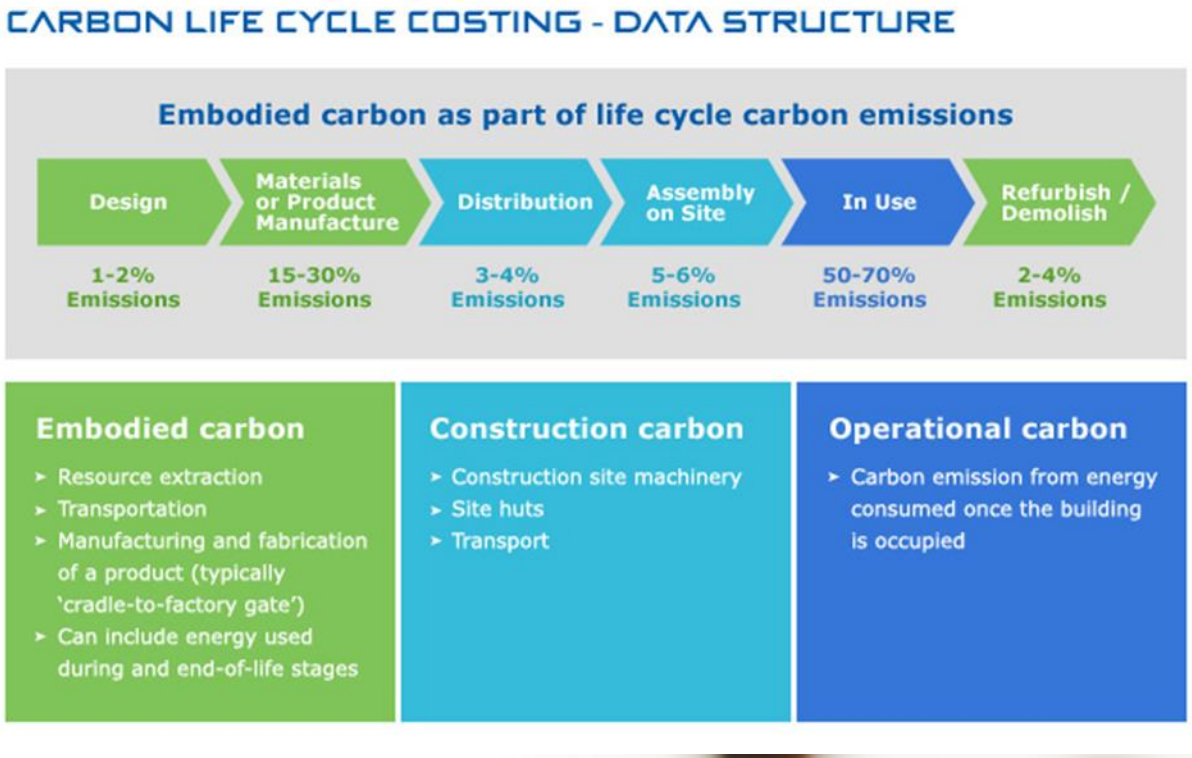

- Carbon Counting
- Carbon proofing major investments
- Green Construction
- New emerging materials
- Modern methods of Construction (MMC)
- Manufacturing off site (MOS)

HIGH LEVEL STAKEHOLDER & PROJECT TEAM

Construction Sector Group – Chair Robert Watt

Meet Every 12 weeks

Construction Sector Innovation and Digital Adoption Group – Chair PJ Rudden

Meet Every 4-6 weeks

DPER	Eng. Ire.	BMF	RIAI	CIF	Ent. Ire.	NSAI	DBEI	SCSI	LGMA/LAs	ACEI
Ronnie Downes Kevin Meaney	Richard Manton	David Duffy	David Browne	Sean Downey	Neil Kerrigan	Sean Balfe	Alan Kelly	Patrick King	Eileen Dennan	Sarah Ingle

Innovation 7 Actions - Project Team – Chair PJ Rudden

Meet Every 2 weeks

1	2	3	4	5	6	7
Construction Research Forum carries out industry needs assessment	Identification of Funding Sources	Guide the development of Modern Methods of Construction (MMC)	Construction Technology Centre	Establish a digital network under the Construction Skillnet	Digitise the Planning Application Process	Establish & Fund Build Digital CoE for BIM and digital adoption
1. Chris Chambers (CIF) *(Sean Downey CIF)	2. Sarah Ingle (ACEI) Marcus Keane (Eng. Ire.) Declan McGee (EI)	3. Martin Searson (CIF) Joe Kennedy (RIAI) William Power (CIF) Sean Downey (CIF) Stephen Ashe (SCSI) Jim Clifford (SCSI) *(David Browne RIAI)	4. Declan McGee (EI) Sean Downey (CIF) Martin Searson (CIF) Fionn Jenkinson (DPER) *(Neil Kerrigan EI)	5. Cillian Kelly (CIF) Diarmuid Mollin (Eng. Ire) *(Sean Downey CIF) *(Neil Kerrigan EI)	6. Eileen Dennan (LGMA) Brian Beck (Tipp CC) Teresa Kiely (Tipp CC) *(Neil Kerrigan EI)	7. Fionn Jenkinson (DPER) Siobhán Moneley (ACEI) Diarmuid Mollin(Eng. Ire.) Coman DeBurca (RIAI) Cillian Kelly (CIF) Mary Flynn (PublicBIM) Trevor Wood (SCSI) Noel Walsh (SCSI) Neil Kerrigan (EI) *(David Browne RIAI)

* (Denotes mentor/reviewer)

Figure 1

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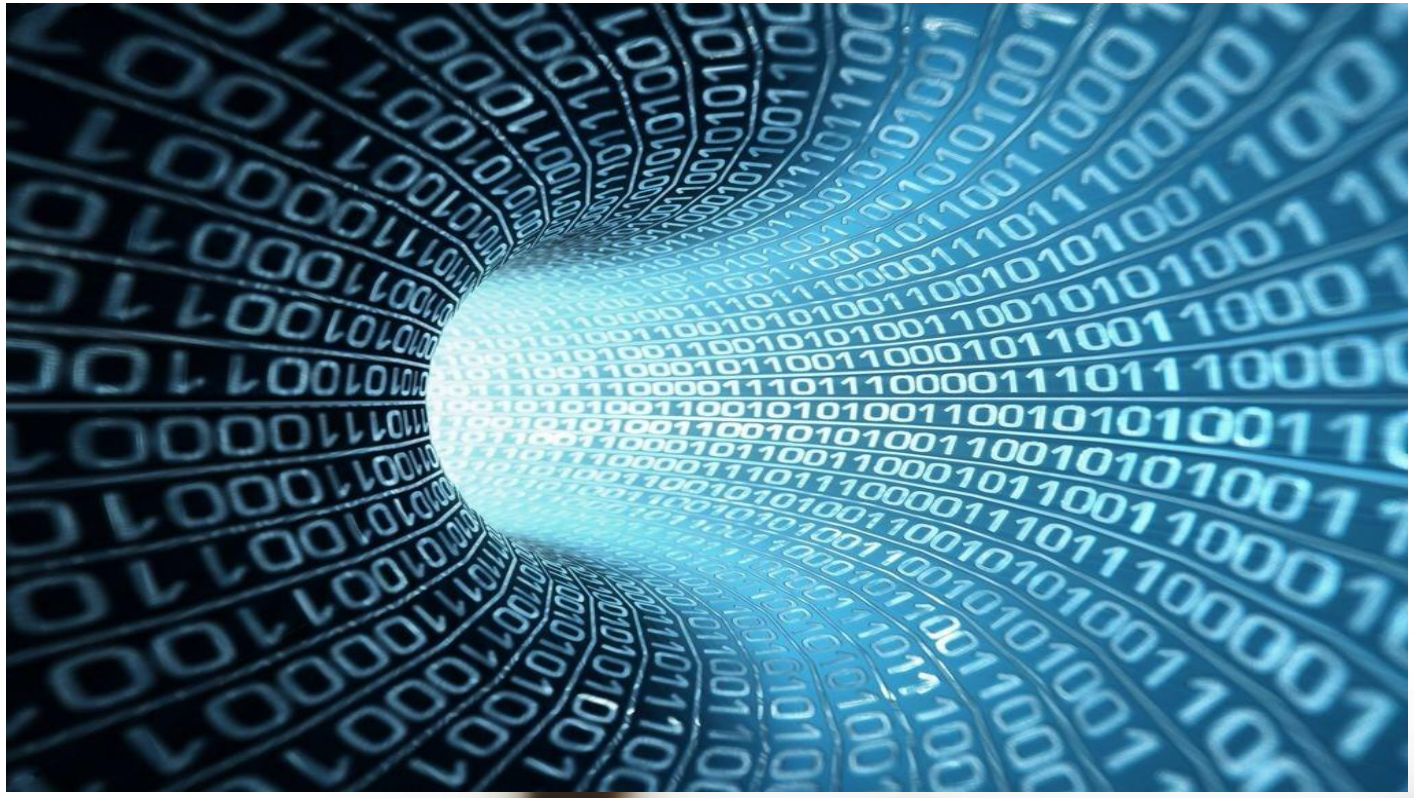

"Information is the oil of the 21st century and analytics is the combustion engine "

Peter Sondergaard, Gartner Research

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New QS Streams

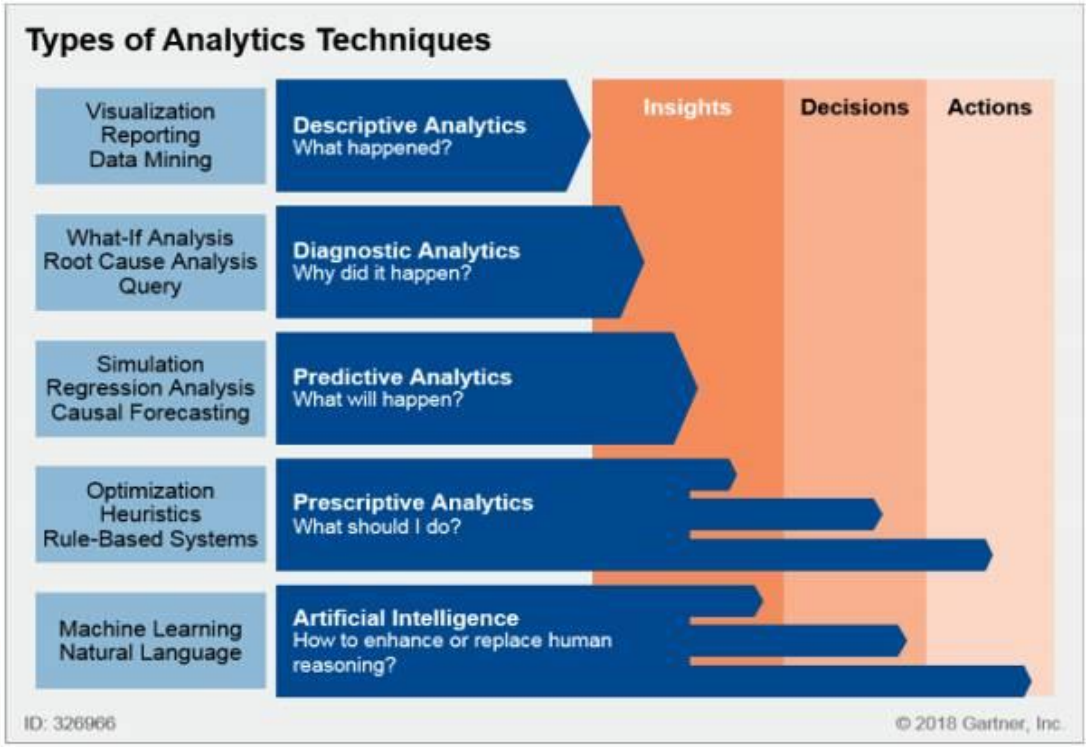
Data Analytics:-

Creation of data lakes for downstream processes.

Creating data warehouses for specific purposes such as LCC

Data mining to derive business value and benefit

Data management through Infonomics as information is an asset and has an intrinsic value



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There has never been a better time in history to be a Quantity Surveyor than the present

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Go raibh maith agat

Thank you

Day Three

Thursday 23rd September 2021