

**CitA**  
BIM GATHERING 2019

# Digital Design & Collaboration in the Construction Industry



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

Delivering **better outcomes**  
for Irish Construction



### **Mark Costello**

Director BIM & Technical Services RPS | Consulting UK & Ireland  
Adjunct Lecturer GMIT | Board Director CitA



### **Gerard Nicholson**

Lecturer GMIT | Chair Programme Board HDIP ENG BIM

## **Digital Design & Collaboration in the Construction Industry - Our BIM Journey**

4<sup>th</sup> CitA BIM Gathering 26<sup>th</sup> September 2019 Galway Ireland.

[rpsgroup.com](http://rpsgroup.com) | [gmit.ie](http://gmit.ie)





## OUR BIM / DIGITAL JOURNEY – Around the world and back!



AUTODESK  
UNIVERSITY



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 [autode.sk/au2018](#)  Joined August 2007

1'157 Following 65.3K Followers



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## RPS ACHIEVES ISO 19560 STANDARD - 2019

**RPS** achieves  
new **ISO 19650**  
international  
**BIM** standard

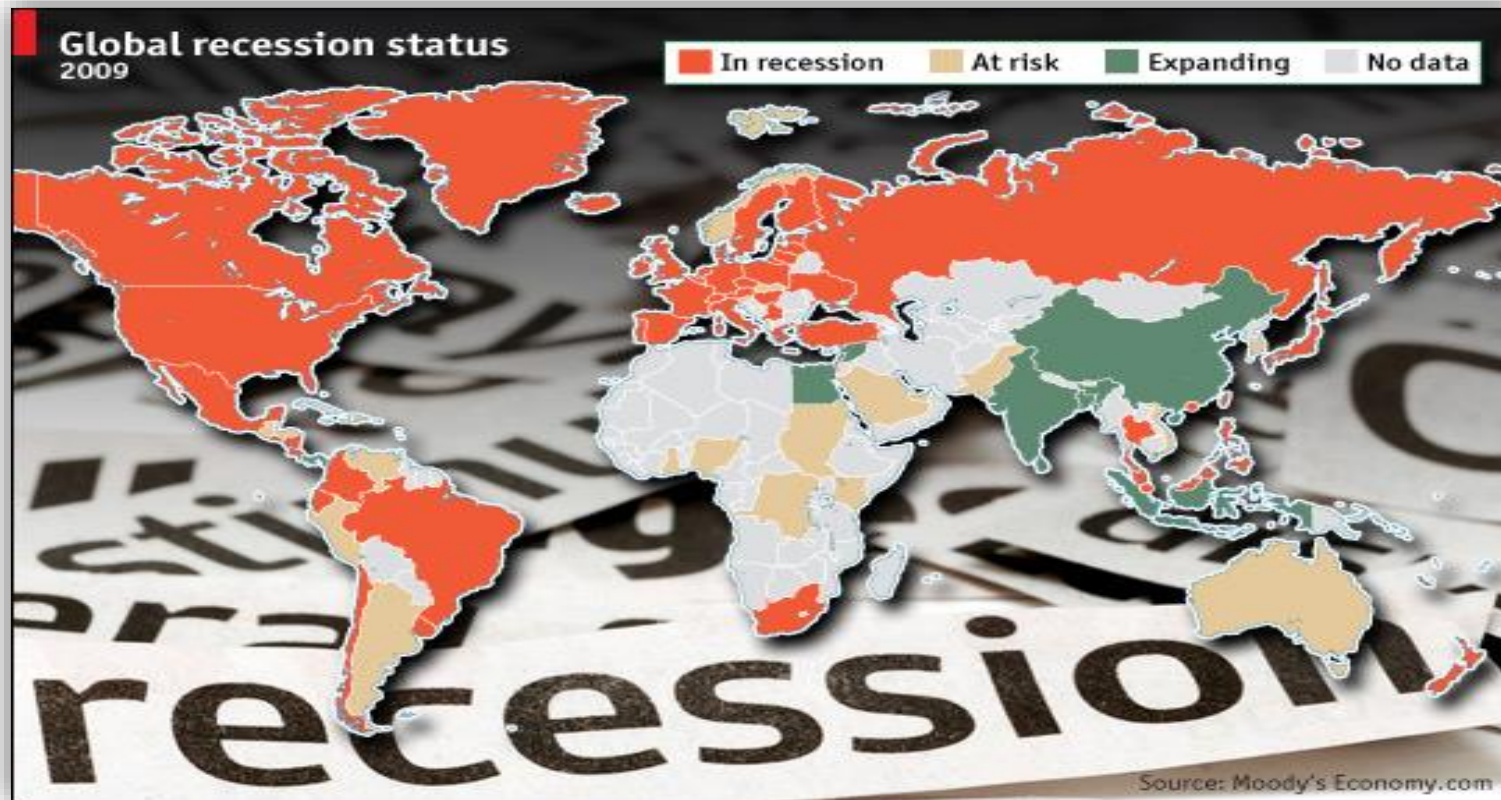


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# Our BIM / Digital Journey

## WHY?

## BACKGROUND



....we all remember the global recession in 2009...

.....new skills required to survive in business.....

....new lean practices / better workflows / reduced risk...

...we would need to work together, to grow and transform the business.....





**6500** Talented people  
**250** Diverse services  
**125** Countries  
**6** Continents  
**1** Secure company

## OFFICE LOCATIONS

### UNITED STATES

Atlanta  
 Austin  
 Beaumont  
 Boston  
 Charleston  
 Chicago  
 Corpus Christi  
 Dallas  
 Houston  
 Irvine  
 Mountain View  
 Oakland

Plano  
 Round Rock  
 San Antonio  
 Seattle  
 South Kingstown

### CANADA

Calgary

### UNITED KINGDOM

Aberdeen  
 Abingdon  
 Alton  
 Albourne  
 Axminster  
 Bedford  
 Belfast  
 Birmingham  
 Brentford  
 Bournemouth  
 Brighton  
 Bristol

Cambridge  
 Cardiff  
 Chepstow  
 Cheltenham  
 Clevedon  
 Derby  
 Dorchester  
 Edinburgh  
 Ellesmere Port  
 Exeter  
 Glasgow  
 Grangemouth  
 Huddersfield

Irlam  
 Kirkintilloch  
 Leeds  
 London  
 London Wall  
 Manchester  
 Middleton  
 Milton Keynes  
 Newark  
 Newcastle  
 Northwich  
 Nottingham  
 Sheffield

Southampton  
 Stafford  
 Warrington  
 Warrington  
 Woking  
 Wolverhampton

### IRELAND

Cork  
 Dublin  
 Galway  
 Letterkenny  
 Sligo

### THE NETHERLANDS

Amsterdam  
 Breda  
 Delft  
 Leerdam  
 Zwolle

### NORWAY

Alesund  
 Kristiansand  
 Oslo  
 Stavanger  
 Trondheim

### RUSSIA

Sakhalin

### AUSTRALIA

Adelaide  
 Brisbane  
 Cairns  
 Canberra  
 Darwin  
 Gold Coast  
 Ipswich  
 Mackay

Margaret River  
 Melbourne  
 Newcastle  
 Perth  
 Port Douglas  
 Sunshine Coast  
 Sydney  
 Townsville  
 Whitsundays  
 Wollongong

### NEW ZEALAND

Wellington

### INDONESIA

Jakarta

### MALAYSIA

Kuala Lumpur

### PAPUA NEW GUINEA

Port Moresby



## UK & Ireland

**1200** staff 2019

## Ireland

**700** staff 2019

## Galway Office

**2** staff 2001

**45** staff 2009

**140** staff 2019

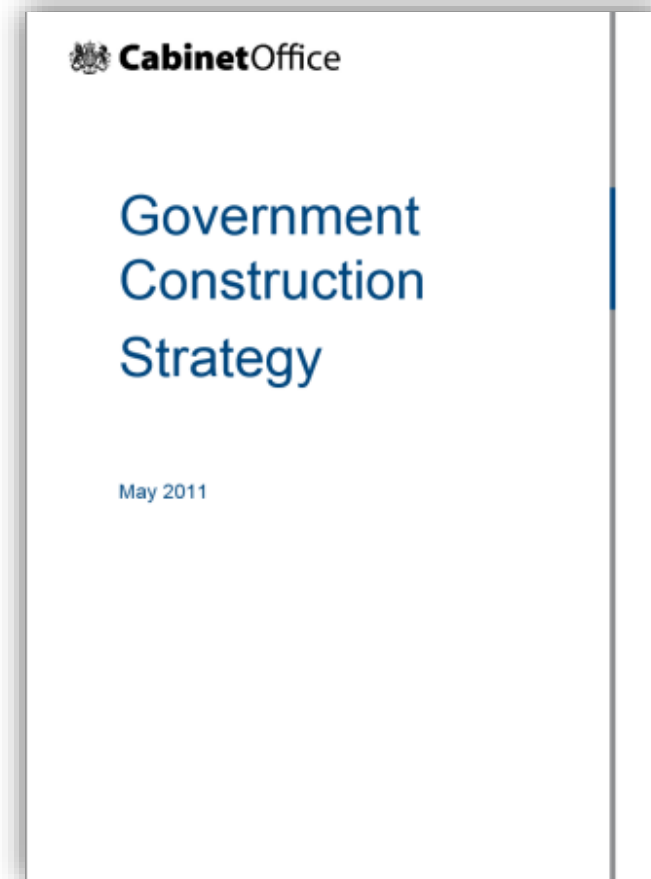
**New markets / New business**



## WHY BIM - External requirements?

### UK Government Construction Strategy 2011

- Requirement for fully collaborative 3D BIM by 2016
- Europe and the US stipulating similar requirements
- Opportunities for RPS to work on major projects
- New markets & exciting new projects



## DIGITAL TRANSITION IN IRELAND



### Roadmap to Digital Transition

For Ireland's  
Construction Industry  
2018-2021



Rialtas na hÉireann  
Government of Ireland

Project Ireland 2040

### Building Ireland's Future



**Digital Transformation Series 2019**  
CITA | NBC  
Delivering better outcomes for Irish Construction

Event Title:  
Leveraging Commercial Advantage by  
Securing BIM Certification  
Date: 12<sup>th</sup> June 2019  
Time: 7:30am - 10:30am  
Venue: The Alex Hotel, Dublin

#### Speakers



Claire Penny  
IBM - CITA



Geraldine Larkin  
NSAI



Léon Van Berlo  
TNO - BIM Supporters



John Whyte  
BRE



Mark Costello  
GMIT - CITA



Calogero Marino  
C&W O'Brien  
Architects

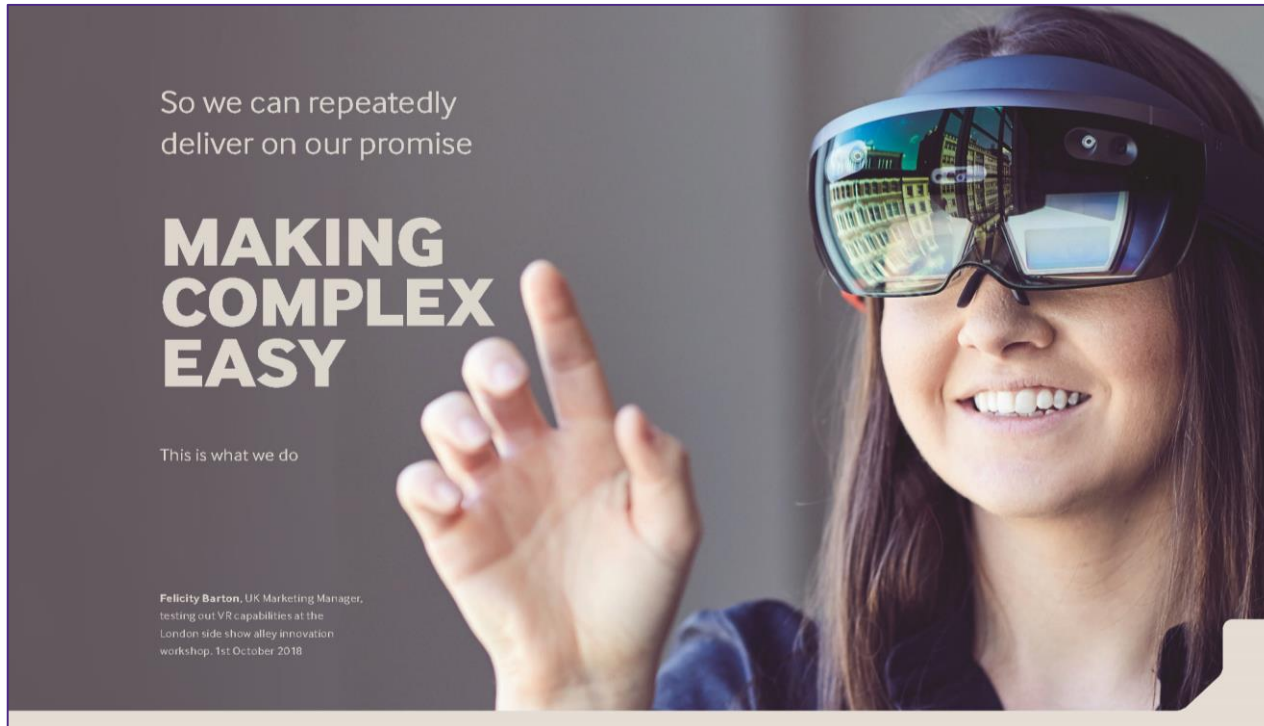


William Power  
C&W O'Brien  
Architects



Barry McAuley  
TU Dublin - CITA

Speaker	Position/Title	Presentation title
08:00 - 08:05	Dr. Claire Penny Global Industry Leader for IBMs Smart Facilities, IBM, Watson IoT and Director of CITA	Opening Address
08:05 - 08:15	Geraldine Larkin NSAI	NSAI BIM Certification Update
08:15 - 08:55	Léon Van Berlo Senior BIM Innovator and Trailblazer, BIM Supporters, Netherlands	Finding your competitive advantage in a standardised market
08:55 - 09:10	John Whyte Business Development Manager, Ireland, BRE	BIM Certification and Update
09:10 - 09:30	Mark Costello Director BIM & Technical Services RPS, Adjunct Lecturer, GMIT	BIM Certificate Case Study
09:30 - 09:50	Calogero Marino BIM Manager C&W O'Brien Architects	Planning Towards BIM Certification
	William Power Project Manager C&W O'Brien Architects	
09:50 - 10:10	Barry McAuley Q & A	BIM in Ireland Update
10:10 - 10:25	Dr. Claire Penny	Closing Address
10:25 - 10:30	Global Industry Leader for IBMs Smart Facilities, IBM, Watson IoT and Director of CITA	



## WHY BIM - Internal requirements?

- A unified **RPS** business process
- People / Technology / Innovation / Skills
- New opportunities / Project delivery



Our Purpose – Why we exist

Our Promise – What we do

Our Behaviours – How we do it

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# Our BIM / Digital Journey

## How?



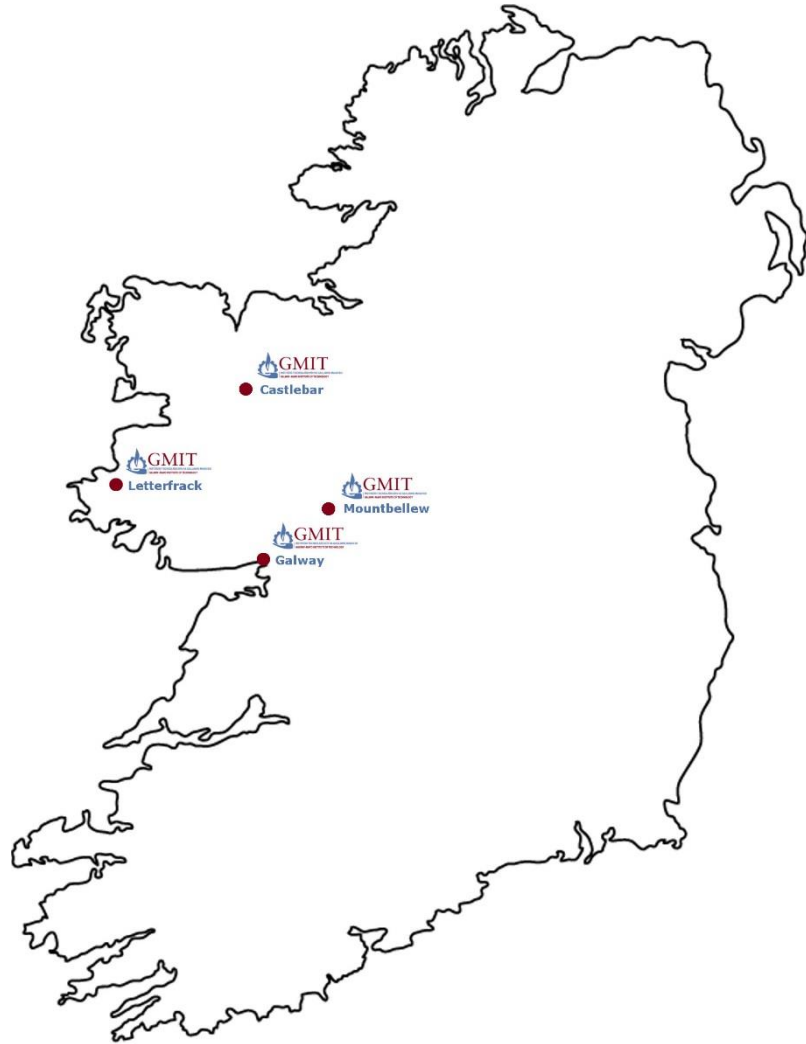
## OUR BIM / DIGITAL JOURNEY



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# **Galway-Mayo Institute of Technology (GMIT)**

## **Higher Diploma in Engineering in BIM**

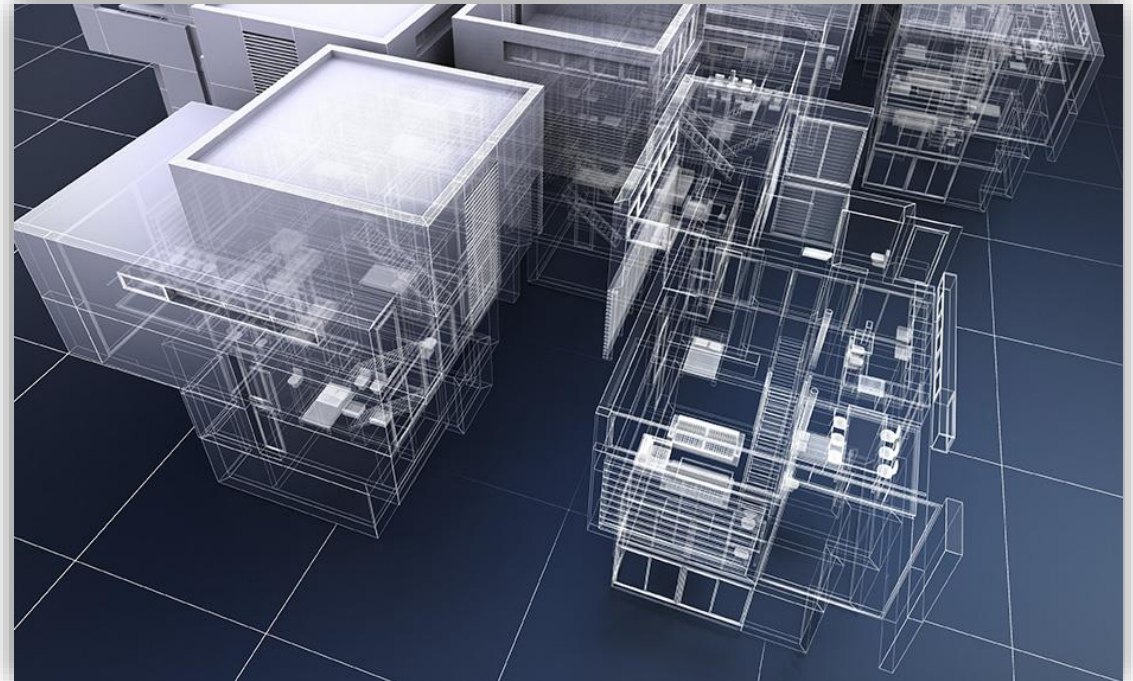


## GMIT

- Galway-Mayo Institute of Technology is a third level institute of education and is based at four locations in the west of Ireland
- GMIT encourages new research activities driven by academic staff and researchers, in areas of critical importance to industry and the region.
- The Galway Campus is the largest of GMIT's four campuses and a huge variety of courses are available in the areas business, science, engineering and tourism.

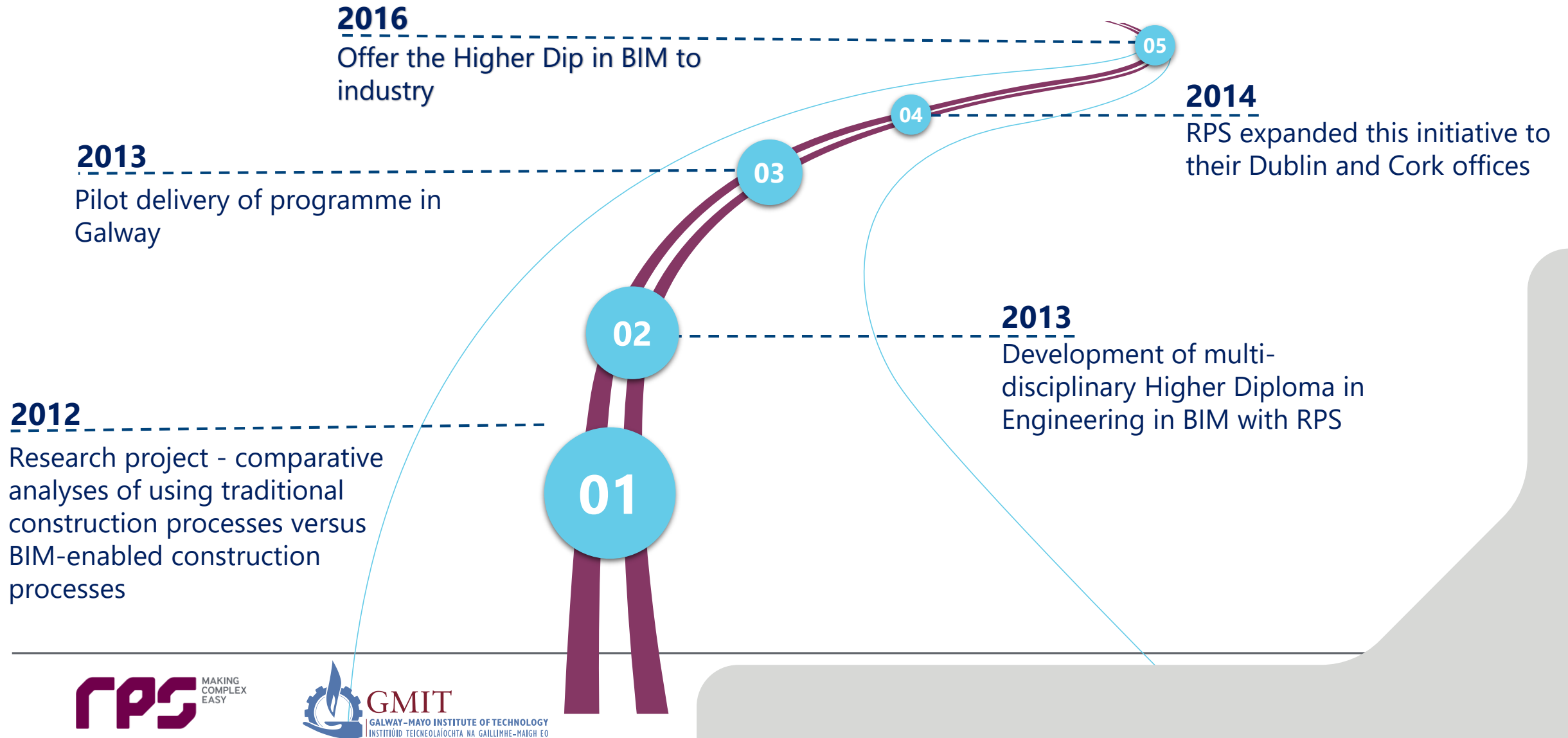
## PRE INDUSTRY ENGAGEMENT

- AutoCAD (in 1987) packages to ArchiCAD (2001 to 2005)
- Key moment was the decision to fully embed 3D building modelling (Revit) into the Architectural Technology programme in 2005
- Ad-hoc attempts made at integrating elements of BIM
  - construction process,
  - contractual and legal,
  - collaborative working environments,
  - information management and,
  - lifecycle analysis.

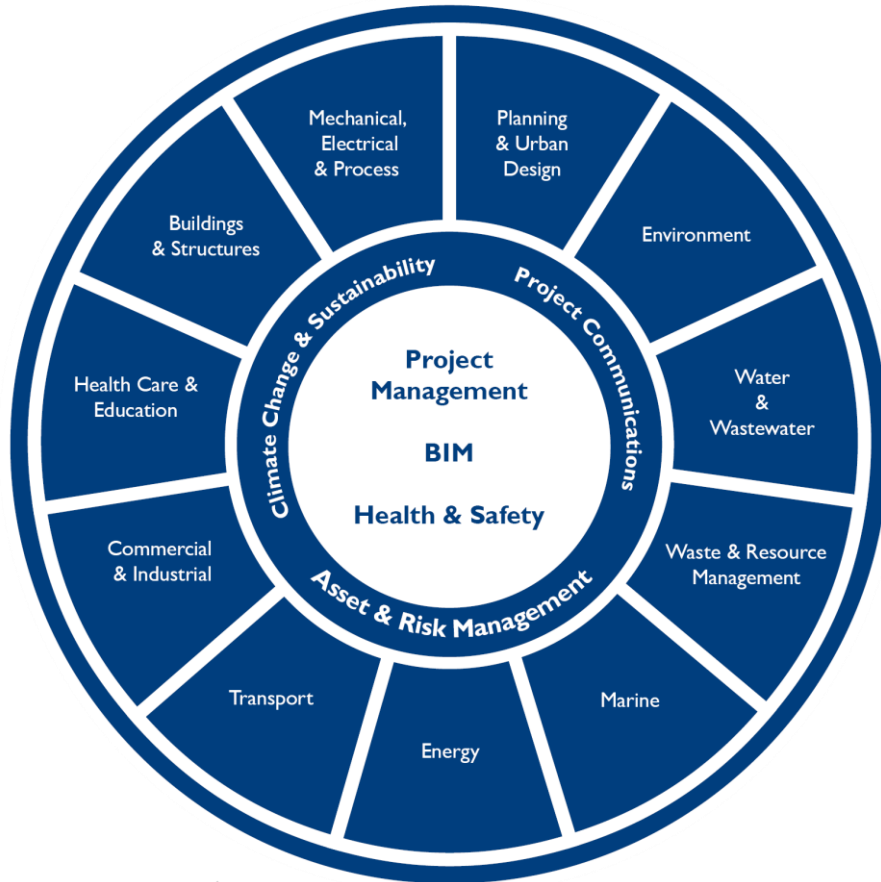




## GMIT RPS - Road to Success



## GMIT RPS – Development of New Programme



- Understanding and implementation of BIM processes to meet the UK Level 2 BIM requirement
- Up skilling in various software packages (mainly BIM authoring software)
- Flexible learning modes
- Flexible assessment modes
- Flexible delivery modes
- Recognised certification for up skilling
- Multi-Disciplinary

10 Credit

BIM Virtual Modelling Fundamentals



01

**Electives**  
10 Credit

BIM Architecture



02

BIM Infrastructure



03

BIM Mechanical, Electrical & Plumbing



04

BIM Structure



05

10 Credit

BIM Collaboration



06

30 Credit

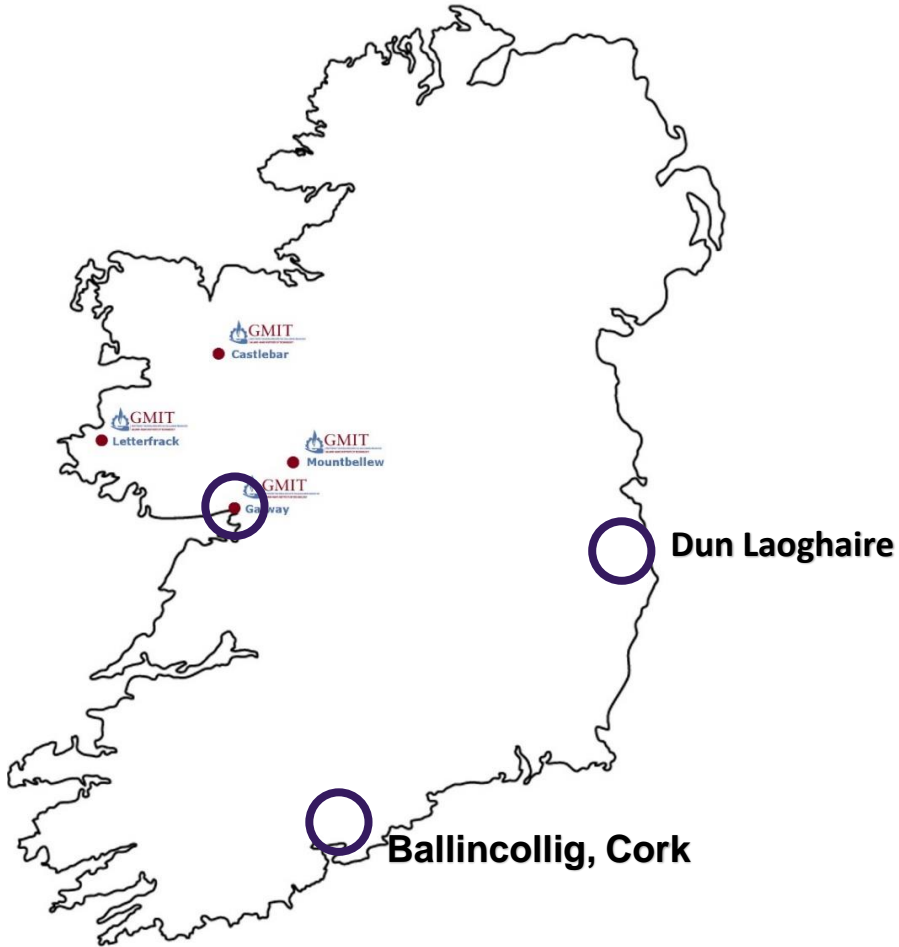
BIM Research Project

07

Minor  
Award  
for  
each  
module

Level 8  
Award

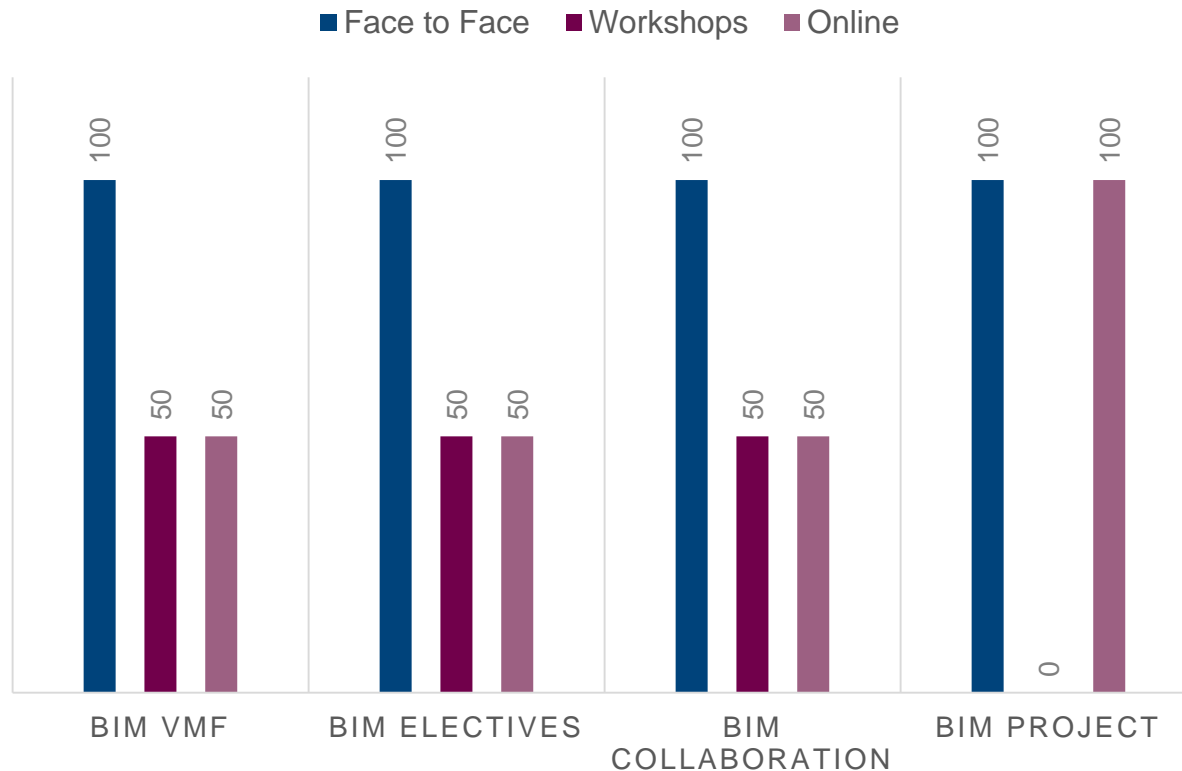
## HDIP ENG BIM - Implementation Stage



- Pilot delivery of programme to 8 Galway-based RPS staff over a 12-week period.
- RPS expanded this initiative, with training commencing in their Dublin and Cork offices in September 2014
- Over 70 people to date have been registered on this out reach programme



## HDIP ENG BIM - Recent Developments



- All 10 Credit modules are now delivery 50% online and 50% at face to face workshops.
- Our BIM Research Project 30 credits is being delivered as a fully online delivery.

**75% online / 25% face to face**

## Professional Certification – BRE BIM AG

- Collaborated with BRE in the pilot of their new BIM Accredited Graduate content on the Higher Diploma
- Content embedded into 4 programmes in the department
- Full online with resources for lecturers



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## Benefits to Industry Academia Collaboration

### Industry Academia Industry Academia Collaboration

- Graduate employment rates across a diverse range of employers:
  - building contractors,
  - engineering consultants,
  - facilities management specialists
  - design teams
- More industry engagement, research
- Recognition (6 Awards)
- Encouraged other programmes in the Department to integrate this mode of delivery into their curricula (with some reluctance)

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# **Our BIM / Digital Journey**

## **How? – Change Management!**



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“New Technologies are Transforming all Stages of the Engineering and Construction Process”

McKINSEY 2017

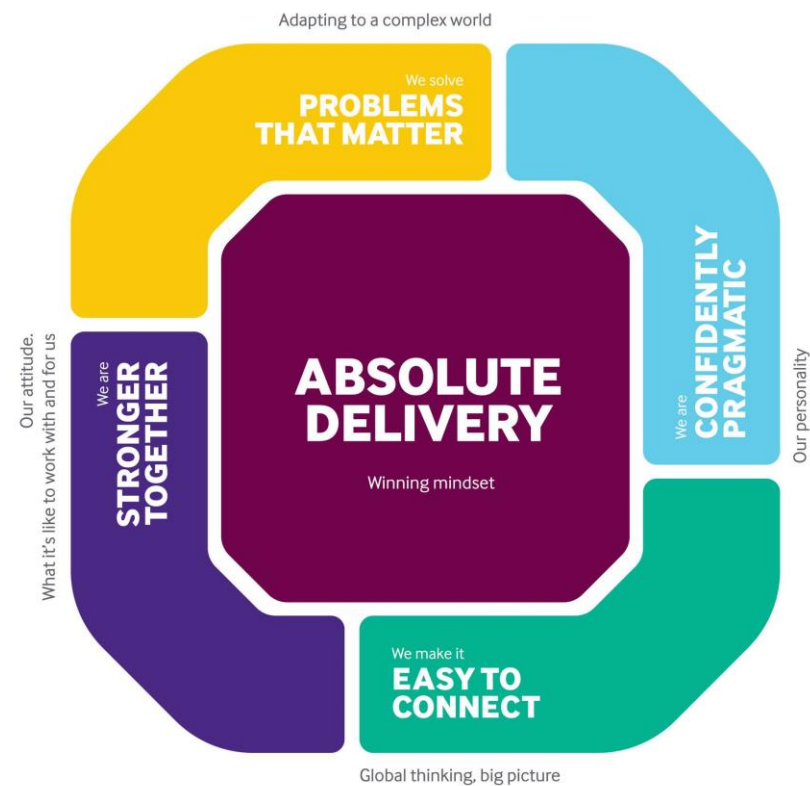
- New applications and tools are changing how companies **design, plan, and execute projects**
- Projects are becoming increasingly complex and expensive - **pressure to improve costs, timelines, and efficiency**



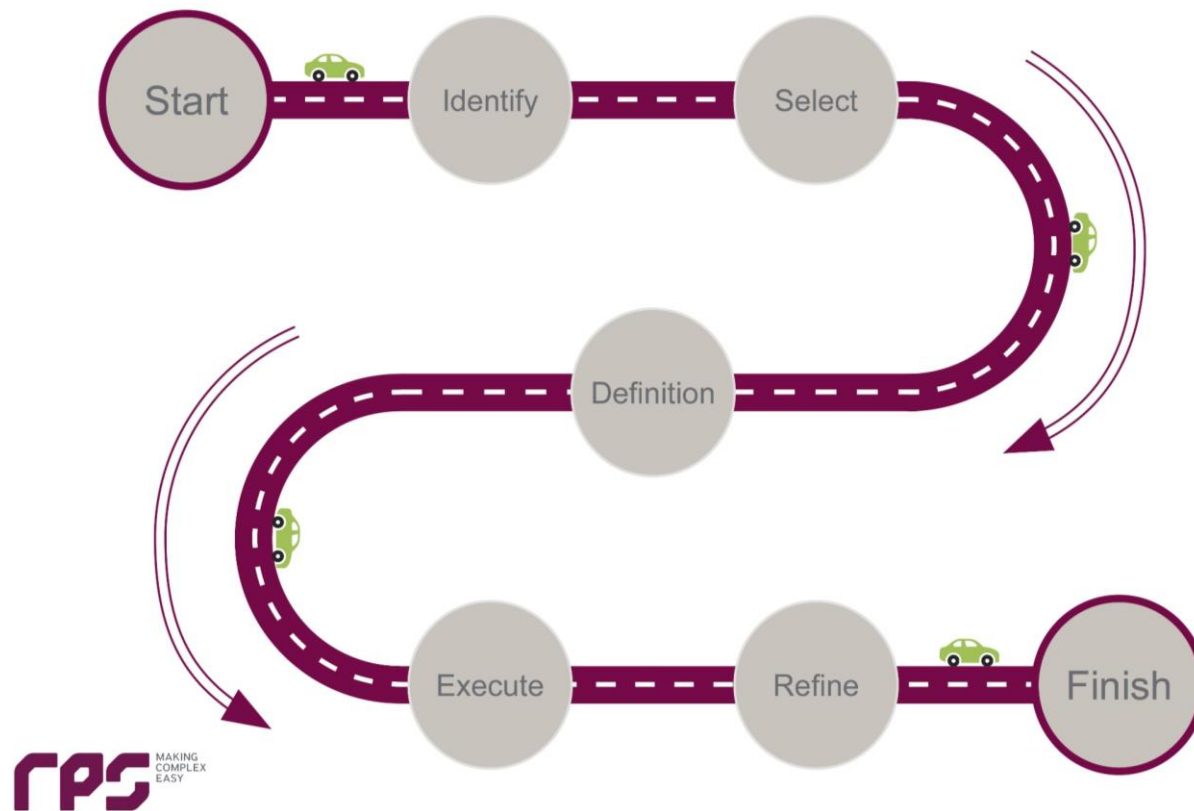
But how do we manage change?

RPS				
Engineering	Environmental	Planning	Project Management	
<b>Finance</b> M Clarke	<b>Eastern Region</b> P Brennan	<b>Managing Director</b> G Carty	<b>Southern Region</b> J Shalloe	<b>Western Region</b> W Madden
<b>Buildings &amp; Structures</b> F Maguire B Kelly R Tegart	<b>Mechanical, Electrical &amp; Process</b> D Fleming T James N O'Mahony K Higgins	<b>Transportation, Bridges &amp; Geotechnical</b> C O'Sullivan M Noonan K Ruane E Cox C McGuinness J O'Donovan R O'Callaghan A O'Brien T Patterson P Kelly	<b>Water &amp; Wastewater</b> G McGrath A Curran A Carty PJ Griffin D Conneran P Maxwell P O'Riordan B Brice G Bracken	<b>Energy, Environment &amp; Resources</b> O Gaillet G McElhinney A Gaughran P Kearney W Phelan R Staunton P Chadwick A Fitzgerald
<b>Gas</b> PJ Rudden C Butler P Kelly	<b>Health &amp; Safety</b> J Leahy	<b>Planning</b> L Kenny M Lombard	<b>Project Communications</b> N Kane-Fine M Donnelly D O'Boyle	<b>Cost Management</b> T Kennedy T Patterson
<b>HR</b> D Went	<b>IT</b> D Hooban	<b>Marketing</b> P J Rudden	<b>Business Development</b> C O'Sullivan W Phelan	<b>BIM, GIS &amp; Technical Services</b> M Costello S Khan

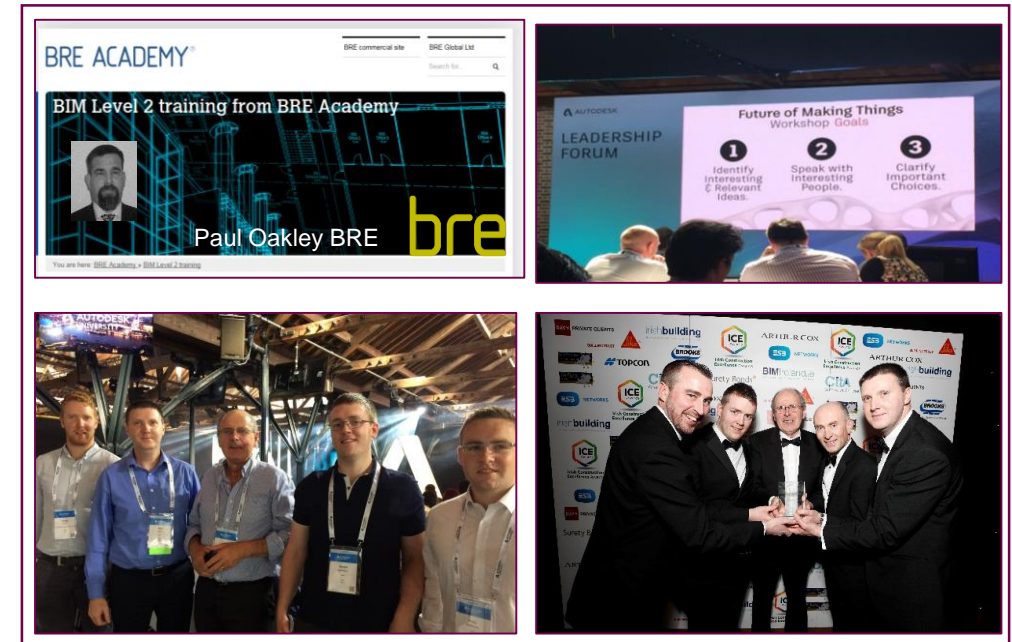
**RPS - Management Structure**



## OUR BIM / DIGITAL JOURNEY – The Road Ahead...



...a couple of false starts.....*but we persevered*....we learned from our mistakes...  
.....*new opportunities came our way*.....teamwork.....*education & skills*....



## OUR BIM / DIGITAL JOURNEY – We needed a plan



## Our Journey



**New Markets / New Projects** - Model creation & Point cloud data extraction for **Gold Coast Airport Australia** / Addition of Health & Safety data into a multi-disciplinary **HS2** model / Use of Photogrammetry surveys for use in large **Motorway Projects** - Public Consultations / Model creation & Point cloud data extraction for **MLC Shopping Centre Australia**.



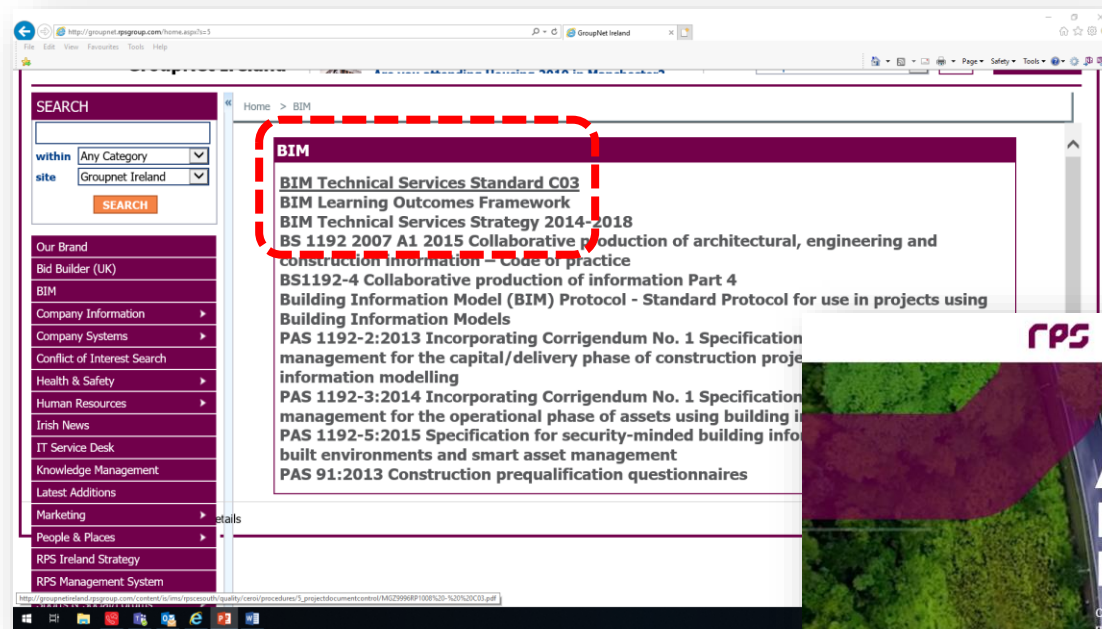
## OUR BIM / DIGITAL JOURNEY – Standards in Transition





## Roadmap to Digital Transition - RPS



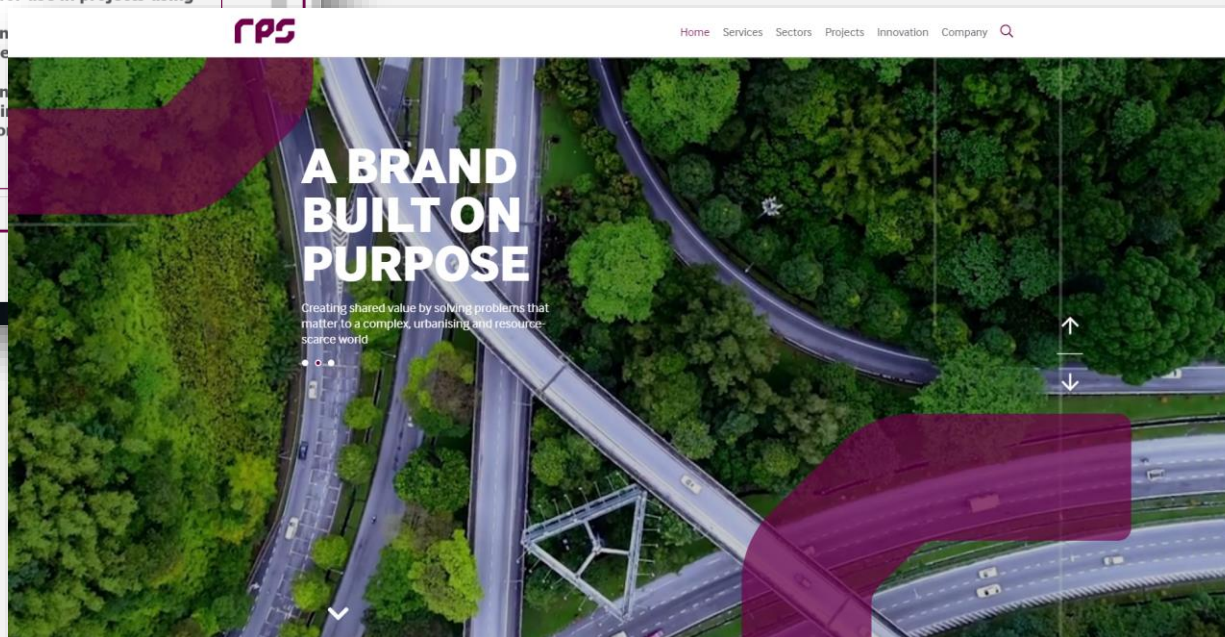


RPS

GroupNet & Intranet

Please contact

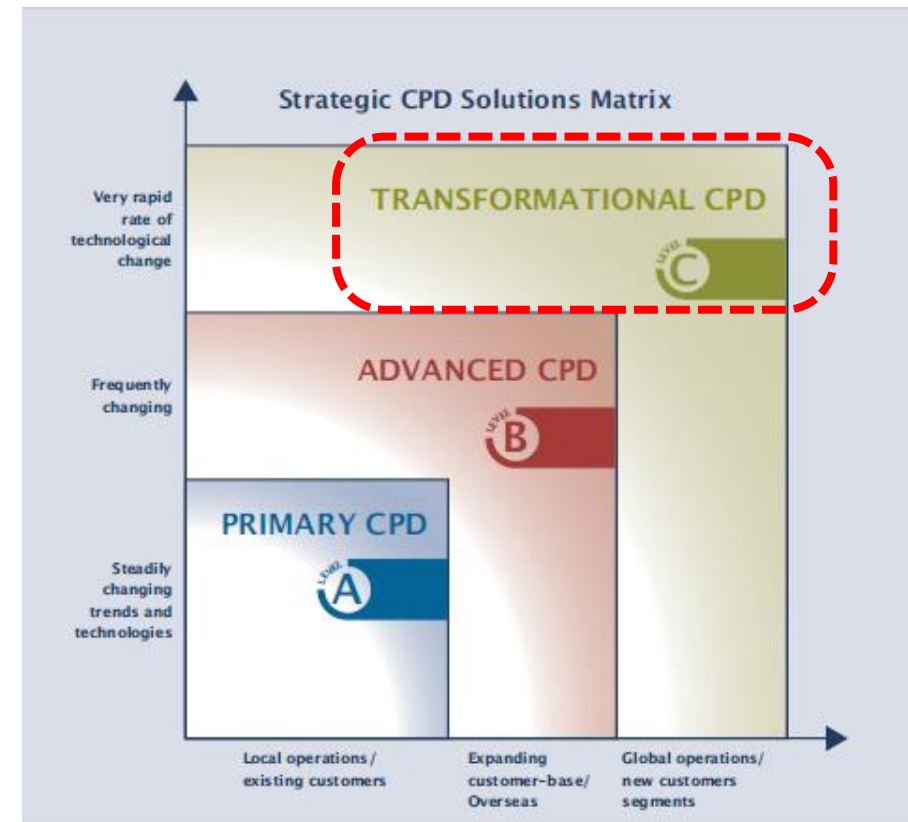
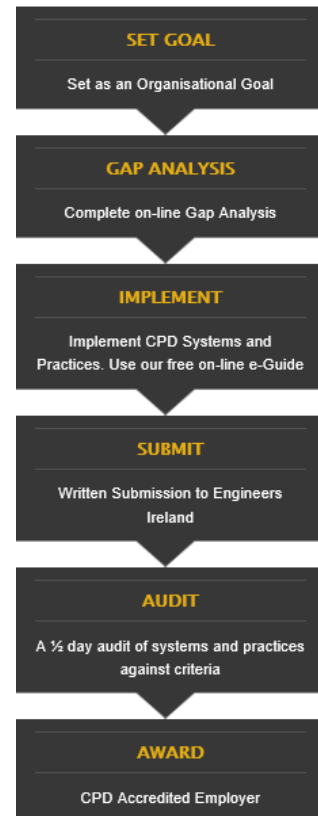
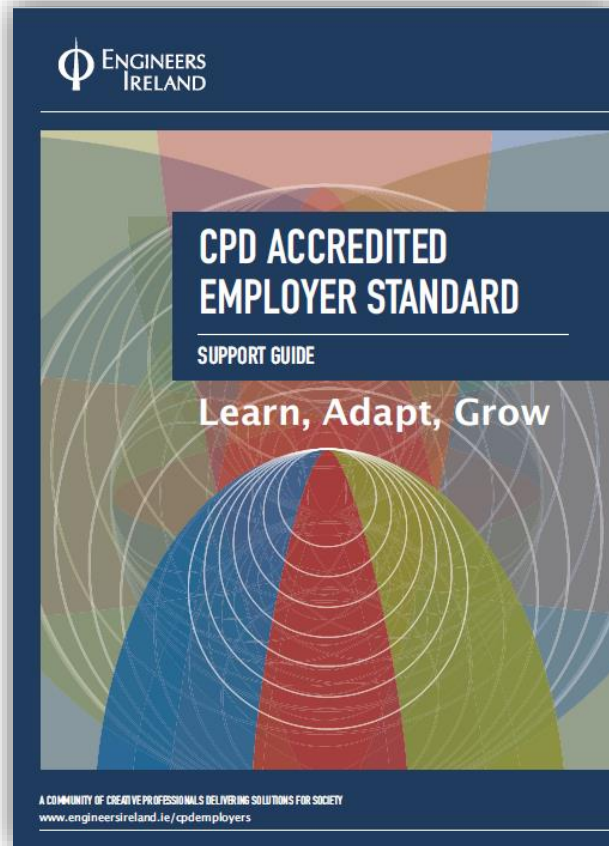
Mark Costello – Director BIM  
& Technical Services RPS



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# Our BIM / Digital Journey Results?

## OUR BIM / DIGITAL JOURNEY – Transformational CPD – Level C





# MULTI-AWARD WINNING HIGHER DIPLOMA IN ENGINEERING IN BIM (Hons Level 8)



## OUR BIM / DIGITAL JOURNEY – Project Experience

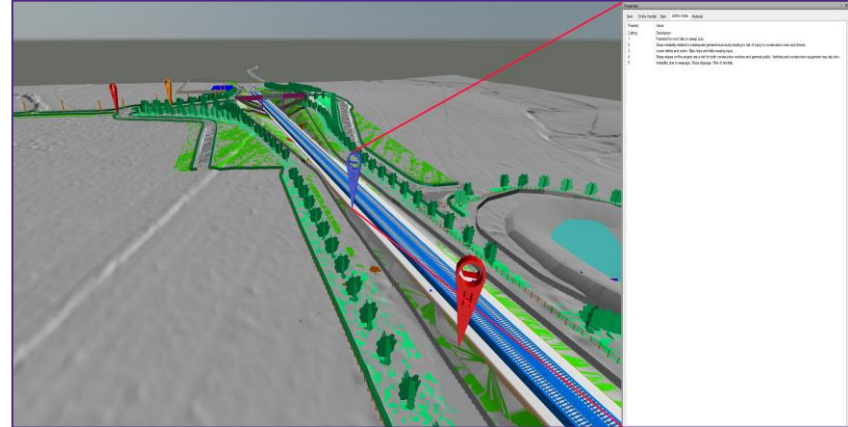
### Project Experience

Model creation & Point cloud data extraction for **Gold Coast Airport Australia**

Addition of Health & Safety data into a multi-disciplinary **HS2** model

Use of Photogrammetry surveys for use in large **Motorway Projects** - Public Consultations /

Model creation & Point cloud data extraction for **MLC Shopping Centre Australia**.





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# Our BIM / Digital Journey

## Next Steps?

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# RPS Digital Design & Collaboration (DDC)

## Centre of Excellence

Introducing smart methods of working within business streams and extending these practices into all corners of the business thus maximising value, creating efficiencies and making complex easy.

## Objectives

To inspire and create opportunities for design teams and team members - enabling them to influence what we deliver, how we deliver, embracing digital working and best available technologies to become a leader in digital delivery of infrastructure.



Thank you!

# Digital Design & Collaboration in the Construction Industry