

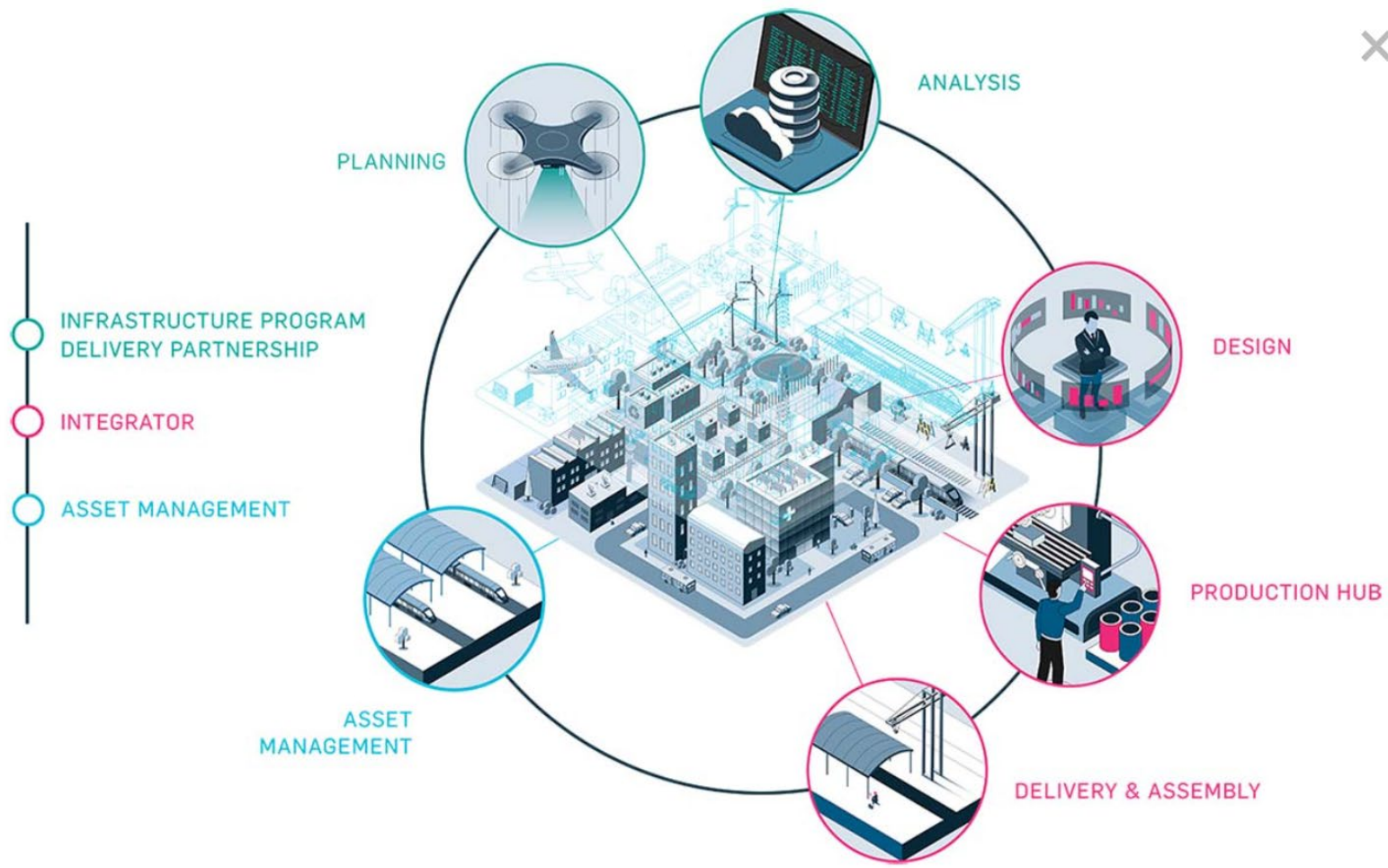


Getting good asset information
automating information handover
processes on the journey towards the
'digital twin'



Mark Stilwell is an associate director at Atkins Realis, specialising in project handover and asset integration. Currently working within the defence and aviation sectors to develop new ways of integrating geographical and non-Geographical information into client systems, notably collaborating with Manchester Airport Group to develop a systemised approach to project information management and asset integration.

With a career that has spanned 22 years as an electrical systems and commissioning engineer and 9 years asset management experience within the aviation sector, having previously lead the Asset Integration and Operational Readiness teams at Heathrow Airport; successfully ‘bringing into use’ assets totalling over £3Bn. Mark was the project handover subject matter expert and part of the steering group within Heathrow Airport that developed the project gateway lifecycle model, and the successful award of ISO 55001.



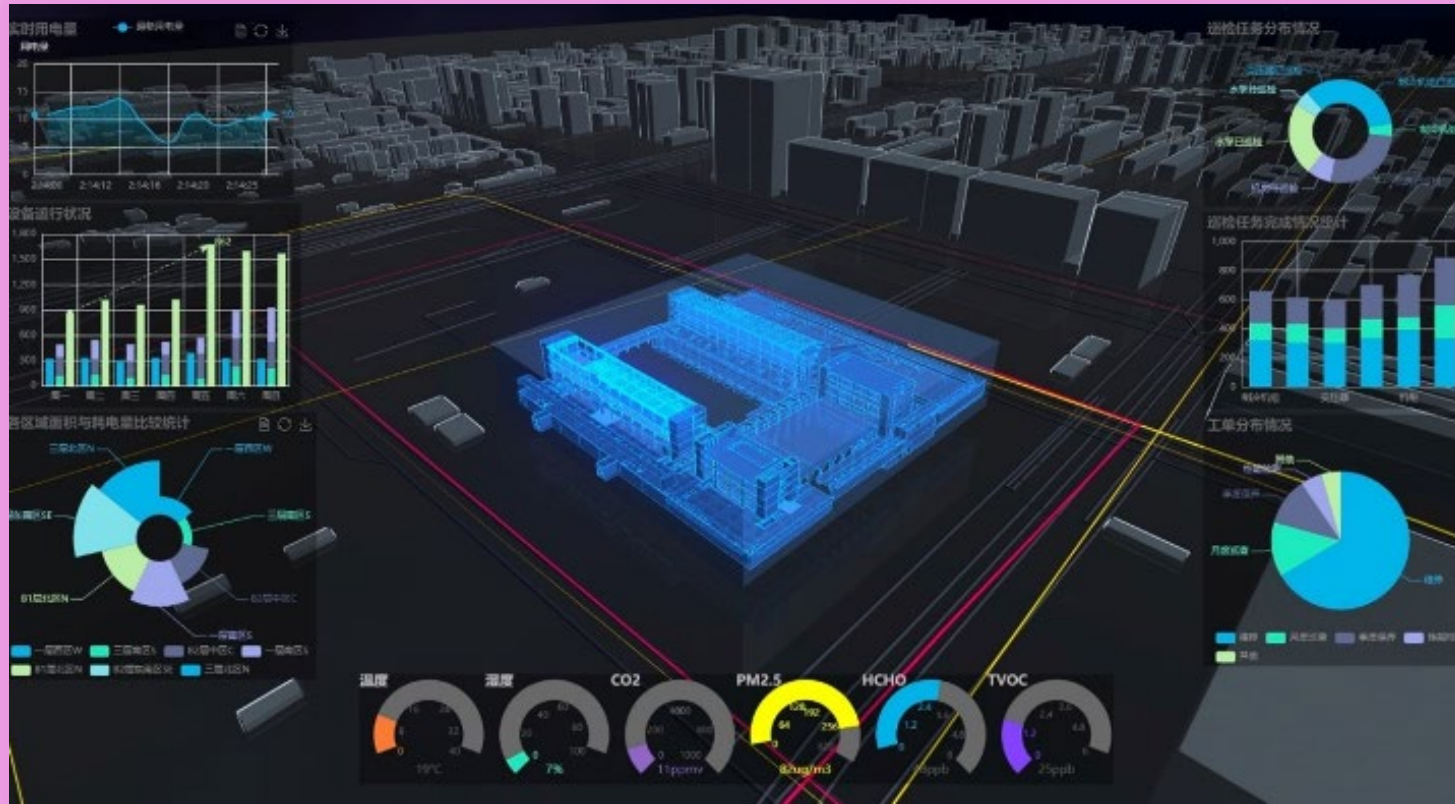
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Asset Management considerations to determine the appropriate digital twin:-

- What do you want it to be not what is it?
- Is it adding value to the business?
- What quality will it improve?
- How will it make Asset Management decision making clearer, based on accurate information?

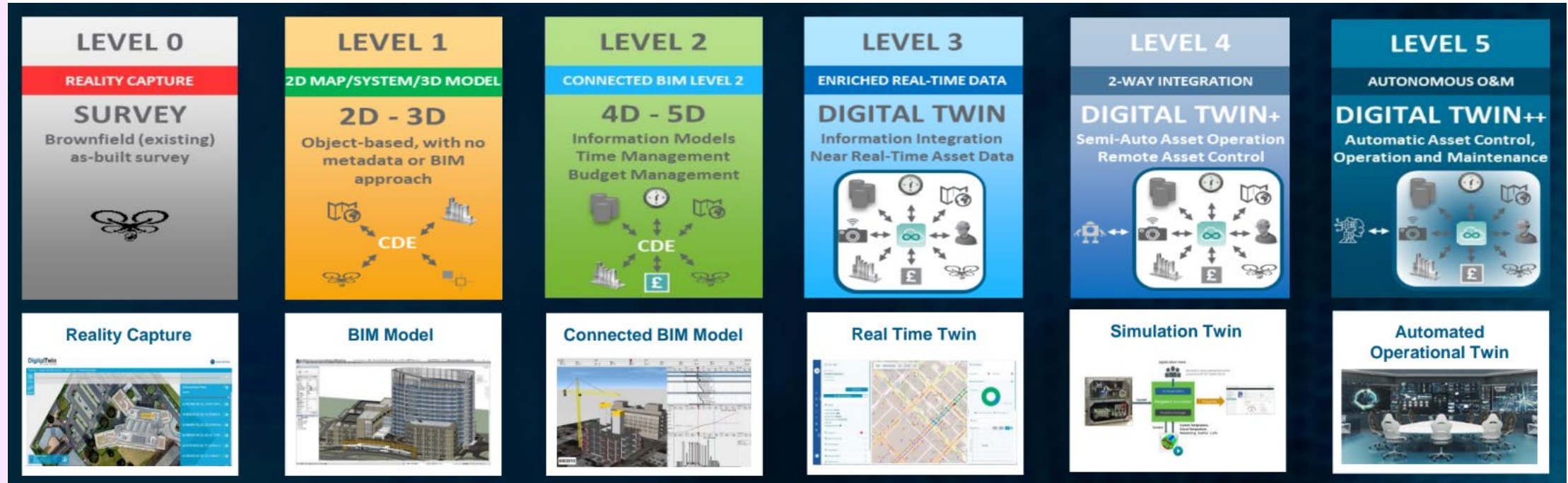
A digital twin enables data-driven and informed decision-making about an asset-related task or activity



THE DIGITAL TWIN IS COMPRISED OF 2 CORE COMPONENTS:

1. A virtual representation of the physical asset – this could be very simple or highly sophisticated, depending on user requirements.
2. A data connection between the physical and virtual worlds – the degree of this connection indicates the maturity of the twin, ranging from no data connection to live streamed sensor data to enable autonomous asset operation.

Our digital twin services are mapped to Digital twin maturity levels. This mapping enables us to focus on delivering the right services to our Clients based on their maturity and objectives.



The required benefits of a digital twin



- Accessibility to all Asset Information, by everyone. You don't need to be an IT expert.
- Visualisation of the asset.
- Real time asset health.
- Information anywhere via mobile devices.

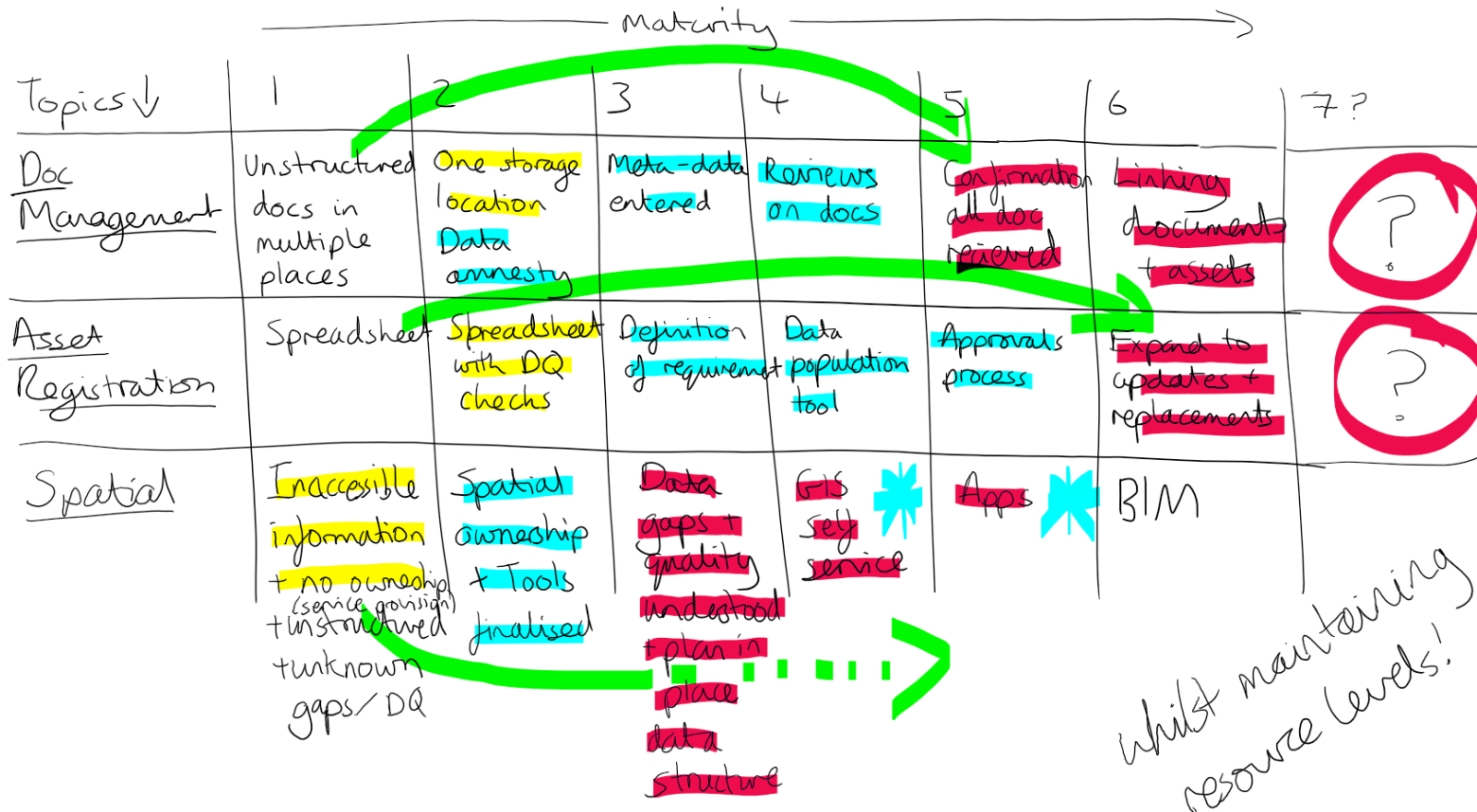


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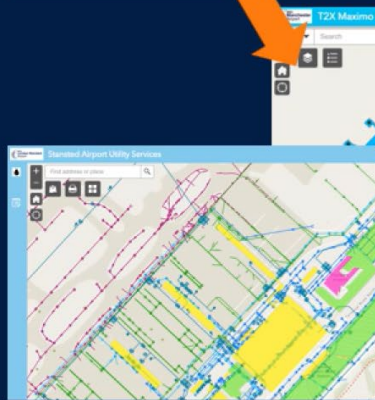
Asset Information Manager for Manchester Airport Group



“I’ve been on a journey and I’ve not left the airport”



New mobile enabled homepage



Interactive spatial self-service portal – site maps, terminal layouts, asset locations, utilities drawings

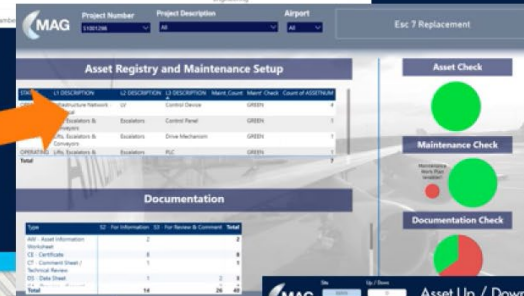
MAN Assets Information Submissions Training MANTP File-Zone References Recycle bin Edit

+ New Upload Share Copy link Sync Add shortcut to OneDrive Download Automate Integrate Handover

Documents > Asset Documentation > MAN-TP O&M Handover Documentation > Terminal 2 Extension (PP01) O&M Handover PDF Documents

Name	Title	Project	Originator Code	Discipline Code
1. MAN000-ARC-2-0000-XXX-RG-900-000-114.xlsx				
MAN000-BHE-C-0000-L00-GA-752-000-122.pdf	Vehicle Tracking Analysis Fire Tender L00	MAN000 - General	BHE - Euro Haggard Engineering	C - Civil Engineering
MAN000-BHE-C-0000-L00-GA-752-000-127.pdf	Vehicle Tracking Analysis Trolley Unloading Fire Tender	MAN000 - General	BHE - Euro Haggard Engineering	C - Civil Engineering
MAN000-BHE-C-0000-XXX-DE-824-000-100.pdf	PP10 Proposed High Voltage Details	MAN000 - General	BHE - Euro Haggard Engineering	C - Civil Engineering
MAN000-BHE-C-0000-XXX-RG-624-000-001.pdf	Proposed High Voltage PP10 Changes	MAN000 - General	BHE - Euro Haggard Engineering	C - Civil Engineering

Document management system for approving project submissions, fully searchable meta-data



Project information deliverables tracking, enabling contractor and approvals management

MAG Asset Up / Down Stored Services

ASSETNUMBER	DESCRIPTION	LOCATION	STATUS	UP / DOWN
100801	ARRANGE EST CURVE	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100802	ARRANGE GAA	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100803	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100804	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100805	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100806	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100807	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100808	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100809	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP
100810	ARRANGE GCL UNITS	MAN000-ARC-2-0000-XXX-RG-900-000-114	ACTIVE	UP

Maximo asset information reports e.g. work order analysis

Problem	Solution
Accuracy / clarity	We developed a asset registration tool which not only clearly defines specific asset record requirements, but documentation, drawing and asset tagging requirements too.
Time / efficiency	We developed an automated process to populate a MIDP, enabling IT to do the IT and allowing the team to focus on the quality of the documentation they are delivering not the administration.
Delivery / trackability	Using Confidence Points to prescribe the last responsible moment for information to be delivered. Ensuring information is seen as important as the physical assets they support.
Disparate record keeping	By generating asset information requirements from our EAMS we have been able to link the requirements to specific asset records
Digital twin	Challenged the status quo that a digital twin needs to be 3 or even 4D and focussed on the interconnectedness and availability of our data



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Asset Information Manager for Manchester Airport Group



“I’ve had the sat nav programmed for a while now, so I’ve known where I’m heading”

Topics ↓	1	2	3	4	5	6	7?
Doc Management	Unstructured docs in multiple places	One storage location Data annexes	Metadata entered	Business processes	Approvals processes	Integration of data into systems	Integration of data into systems
Asset Registration	Spreadsheets	Spreadsheets with Data checks	Digitisation of spreadsheets	Data population tool	Approvals processes	Integration of data into systems	Integration of data into systems
Spatial	Information not connected to GIS/DG	Spatial characterisation Tools analysed	Data capture (point cloud, photos, etc.)	3D modelling	Apps	BIM	BIM

Handwritten notes:
 - Green arrows connect cells from column 2 to 3, 3 to 4, 4 to 5, and 5 to 6.
 - Red circles with question marks are around the cells (5,6) and (7,6).
 - A red arrow points from the (5,6) cell to a large red circle containing a question mark.
 - Text next to the red arrow: "not maintaining resource levels!"



DIGITAL TWIN

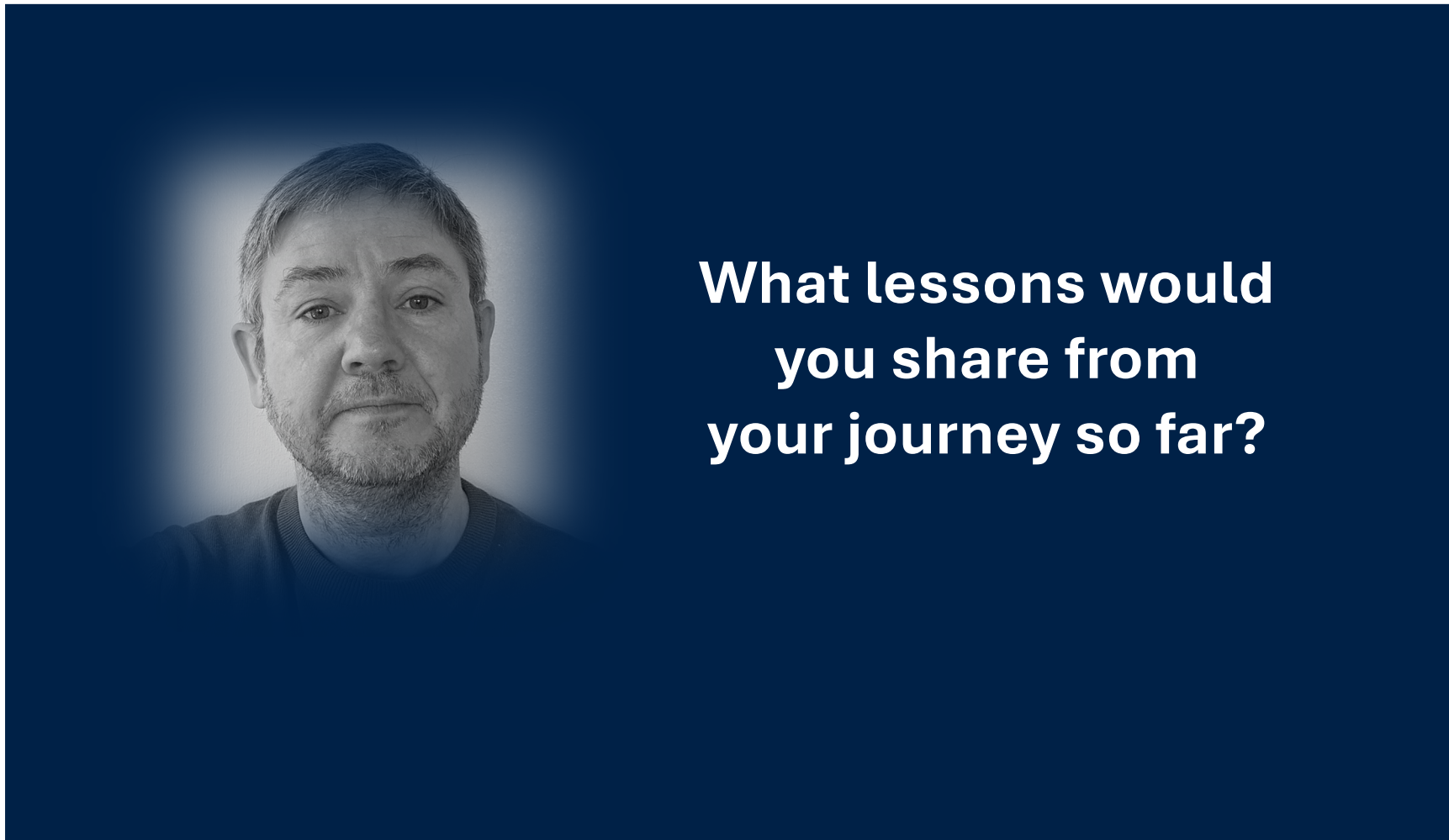
- New mobile enabled homepage
- Document management system for approving project submissions, fully searchable meta-data
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- Interactive portal - site maps, terminal layouts, asset locations, utilities drawings
- Maximo asset information reports e.g. work order analysis



**Why do you think you need
good asset information –
what benefit does it bring?**



**What have been the
biggest challenges on
your journey so far?**





What has MAGs journey created?

- Accessibility – through interconnected systems
- Simplicity – through clarity and consistency
- Time – through automation
- Quality – through systemisation



Our tips?

Start thinking digital now

Figure out an appropriate target

Map your journey

Collaborate!