

H2 Technical Day

April 9th, 2024

BIM

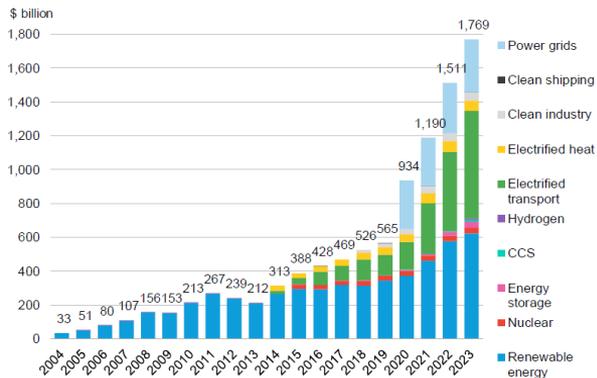


Energy Transition (ET) infrastructure is the **most well funded and fastest growing market** in the world, with few challenges to face though

Still, **investment must triple** in the next few years to get on track for **net zero by 2050**.

\$1.77 trillion	Global energy transition investment in 2023
\$84 billion	Global climate-tech equity finance raised in 2023
17%	Increase in energy transition investment 2022-2023

Global energy transition investment, by sector



Source: Bloomberg NEF



Challenges to overcome

1. There are **more ET funding/projects planned/committed** to stakeholders **than quality resources available** to cost effectively execute and deliver those projects
2. The **ongoing environmental requirements** to safely and ecologically deploy assets **will make clean energy more costly** to deliver within current ROI targets and funding mechanisms
3. Most companies are trying to **revise traditional Generation & T&D capabilities** to deliver infrastructures (Funding / Development / Construct / MOC / Asset Management capabilities)
4. Energy players are **trying to use legacy tools and processes** to deliver on ET commitments **which will negatively impact on player's TCO and reliability**

Energy transition leaders, do have common characteristics in the way they lead and deploy infrastructure



Design their **organisation from the ground up** to be a “Energy Transition” Business not a modified T&D company



Implement **Digital and cutting edge Technologies** (AI, ML, Analytics) that drive automations



Start with a **full specific business target operating model and data model** covering Project Inception to Asset Optimization which is used to drive technology choices



Leverage **proven standards** such as BIM (ISO 19650), LEAN6 Σ , C/SCSC Earned Value, Management of Change (MOC)/Configuration Management, ISO-55, A10 Construction QA, Z359 Fall Protection

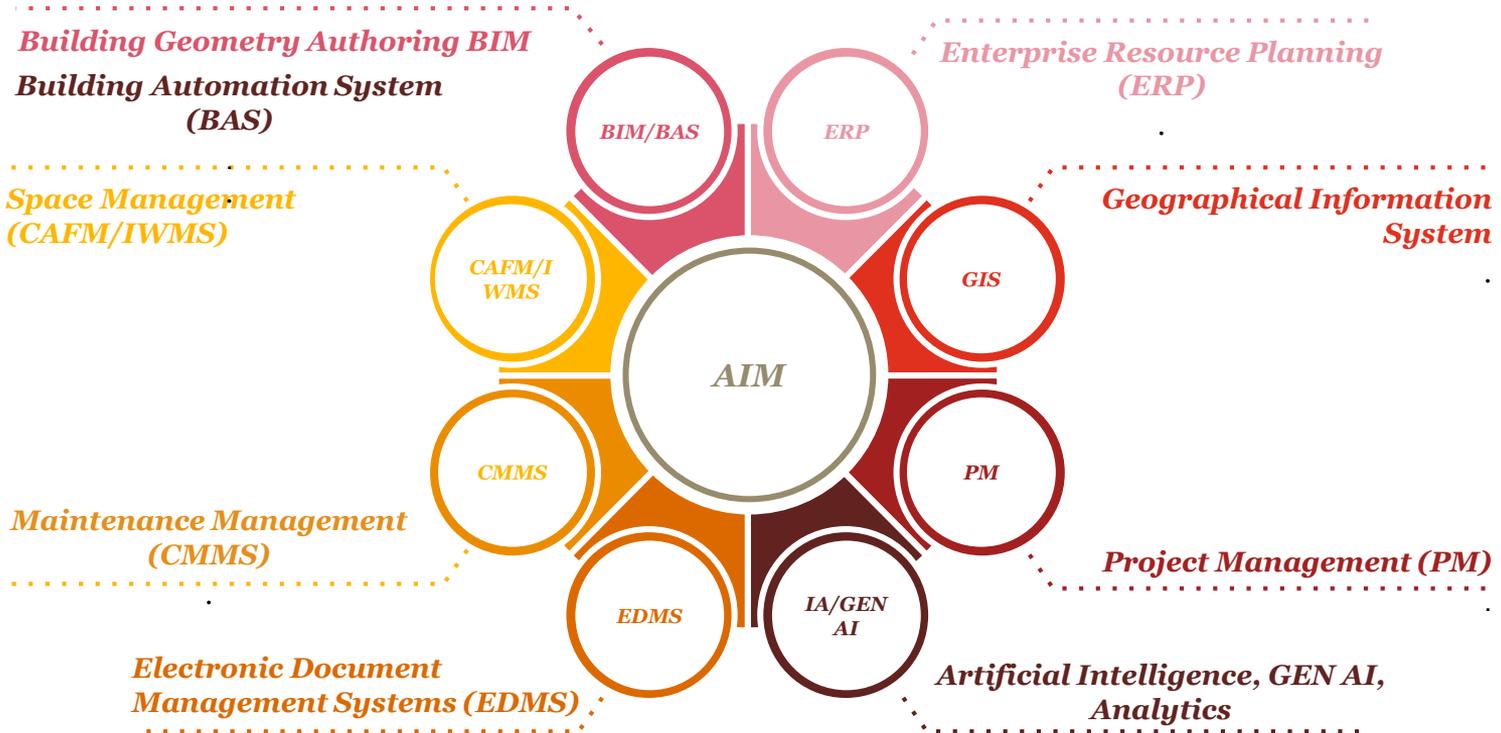


Have modern **Cloud Centric technology architectures** with embedded analytics

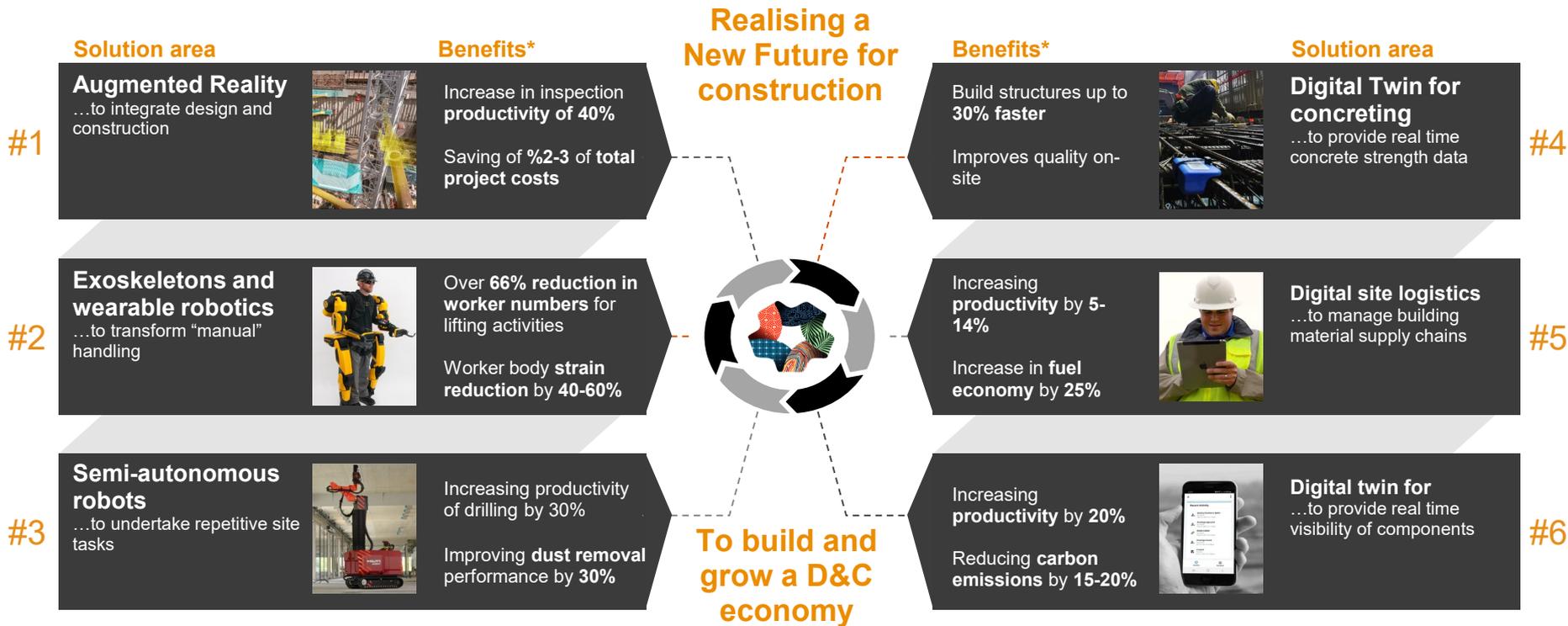


Adopt **User Centric Digital Worker and Mobile Everywhere principles**

Regarding Asset information management (AIM), Digital and cutting edge technology can play a key role



To achieve required **productivity improvements in CAPEX** programs of the future, we need to focus on **transformative technologies** for #Building and #Operations



BIM is the methodology based on ISO 19650 which rules the asset information management throughout its lifecycle using dynamic and modelling 3D in real time



*This process produces **the asset information model which includes** geometry, space relationships, geographic information, amounts and **attributes of every component***

Within the BIM process, every component of the team is part of the project on an early stage facilitating from the beginning the decisions to take on design, structures, economics, etc, consistently related and responding to each and every part of the project



Governance

BIM governance establishes and enforces consistent standards and protocols.



Focused on the model

BIM centralizes the design process, enabling real-time visualizations, automatic document updates, and seamless interdisciplinary coordination.



Collaboration

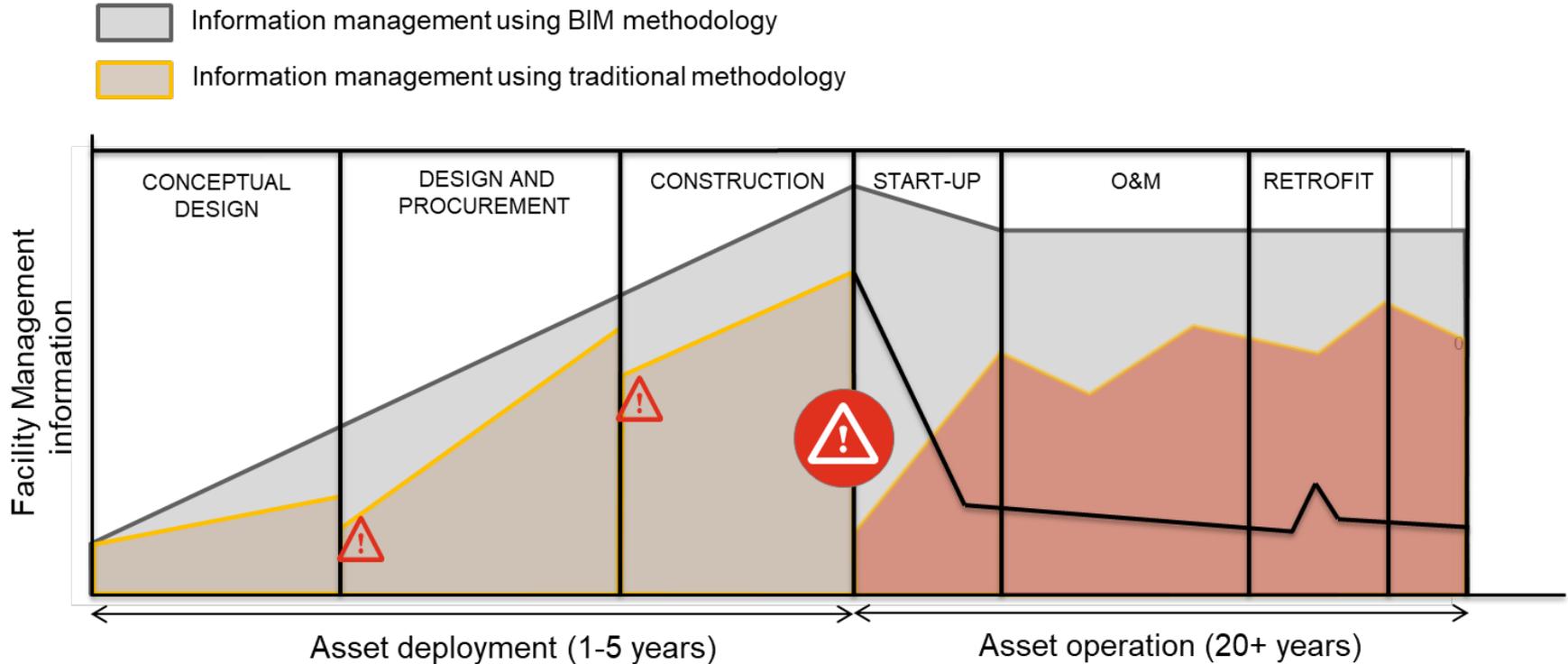
With BIM, stakeholders work on a unified platform. This centralized approach encourages immediate communication, early conflict detection, and timely feedback.



Data model

BIM acts as a comprehensive data repository, enabling informed decision making throughout the lifecycle of the asset.

Building Information Modeling (BIM) is about **obtaining benefits through better specification and delivery of the right amount of information** related to the design, construction, O&M of assets



BIM methodology is implemented based on **BIM capabilities/uses** generating profits clasified in seven main groups



BIM capabilities provided by using 3D

- 3D computer-aided design (CAD) models, GIS content, simulation content
- BIM's ability to **capture reality** using a combination of aerial imagery and digital elevation gives a **much better visualization** of the project.
- **Detect mistakes** and reduce error during the design phase and **resolves conflicts** in design before actual construction, **reducing rework and waste**
- Reduce and **eliminate field conflicts**; reduces RFI (Request for Information)
- **Decrease construction time and cost** (i.e. less change orders) by **detecting clashes in design phase**

Categorías beneficio

- Time savings**
- Material savings**
- Cost savings**
- Health and Safety**
- Risk reduction**
- Asset quality**
- Improved reputation**

..... Profits from BIM are obtained not only during Design and Construction pahse but equally during the O&M phase

**BIM capabilities provided by using 7D
(Digital twin)**

- **Full transactional history**, including complete life cycle costs, facility repairs and facility modifications
- **Real-time insights**: Provides real-time data, e.g., room temperatures, energy use, greenhouse gas generation.
- **Security: Integrates with facility security systems and climate control** for enhanced monitoring.
- **Predictive Analysis: Uses the real-time data to predict** future maintenance requirements.

