Project Controls Expo UK - 13th November 2019
Emirates Arsenal Stadium, London

Role of Innovative Project Management Tools in the delivery of a Megaproject

Maged El Hawary – Managing Director
Tamer El Gohari – VDC & Innovation Manager
Mohamed Nagi - Digitalization & BI Manager

Analytica (ASGC Group)

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About the Speakers

Maged El Hawary
Managing Director

- More than 20 years of experience in the field of Construction Industry at GCC& North Africa.
- Certified Consultant in Construction Management- Egyptian Syndicate of Engineers
- Guest Lecturer - Heriot Watt University
- President of AACEI-UAE June-2014 to May 2016

Tamer El Gohari
VDC & Innovation Manager

- VDC established expert with more 10 years of experience in UAE, GCC & Egypt.
- Specialized in the 4D/ 5D simulation, construction project management solutions and integrated reporting systems, besides innovation management
- 4D BIM section editor for BIM Arabia Magazine

Mohamed Nagi
Digitalization & BI Manager

- 10 Years of construction experience within UAE & Egypt.
- Experienced in construction planning, project controls, integrated reporting systems, construction digitalization and business intelligence & automation
- Lead within ASGC digitalization & Business Intelligence Committee

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About Analytica Management Solutions

Analytica Management Solutions is the Controls arm of ASGC group with a focus on project controls services and construction digitalization and technology solutions that caters to the group companies and the outside market.

Analytica offers unique construction management and consultancy services spiraling out of mixing a contractor's experience and the project management consultancy service.

Spinning off a major middle-east-based contractor; Analytica is offering unique, award-winning and tested services cemented by the deep-rooted local experience.

Analytica is adding new dimensions to management solutions through offering agile, smart & innovative services catering to all client needs while relying on track-record experience, technology expertise and an established and award-winning team that worked on transforming ASGC in the past few years

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Industry 4.0

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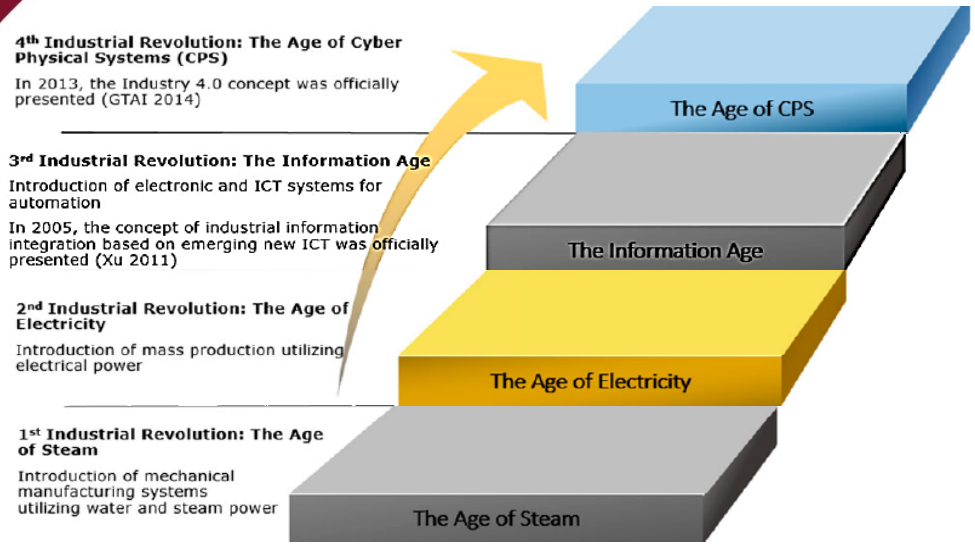
Industry 4.0



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Industry 4.0

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Industry 4.0

The future will be characterized by smart devices delivering increasingly insightful digital services everywhere.

This is called …

Intelligent Digital Mesh.

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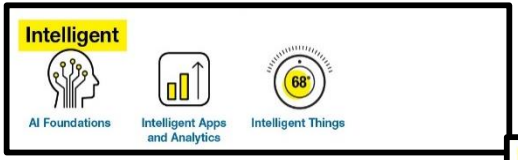
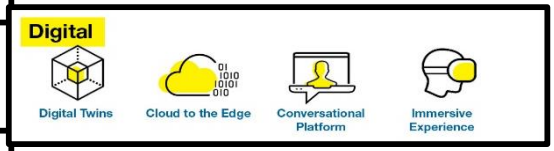
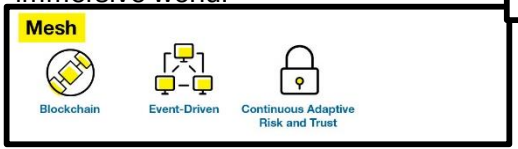
Industry 4.0



Intelligent: How AI is in virtually every existing technology and creating entirely new categories.

Digital: Blending the digital and physical worlds to create an immersive world.





Mesh: Exploiting connections between expanding sets of people, businesses, devices, content and services.

Trends under each of these three themes are a key ingredient in driving a **continuous innovation process** as part of the continuous next strategy.

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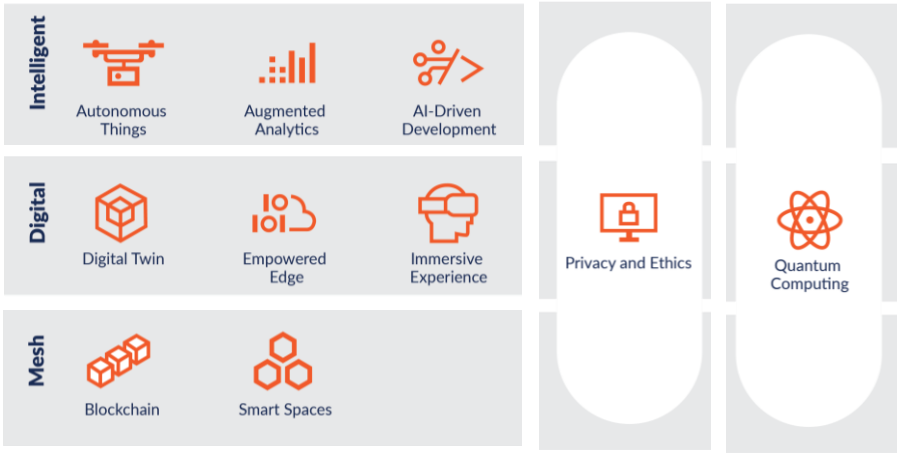
Industry 4.0



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Innovation

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Innovation

Innovation is the implementation of a new or significantly improved solution for the company. It could be a product (goods& services), process or organizational or marketing method. With the objective to refocus their competitive position, increase performance, or knowledge.

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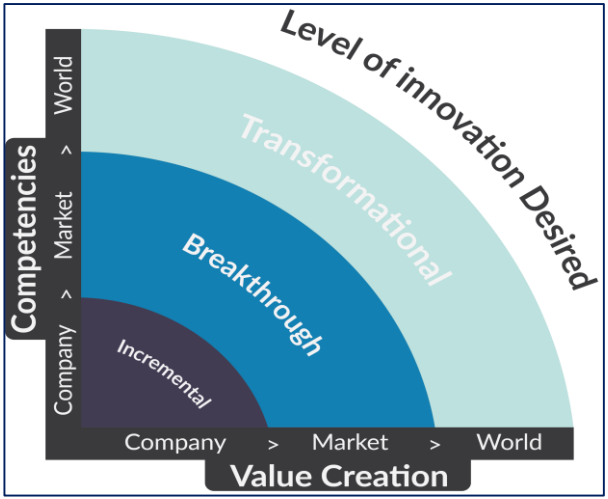
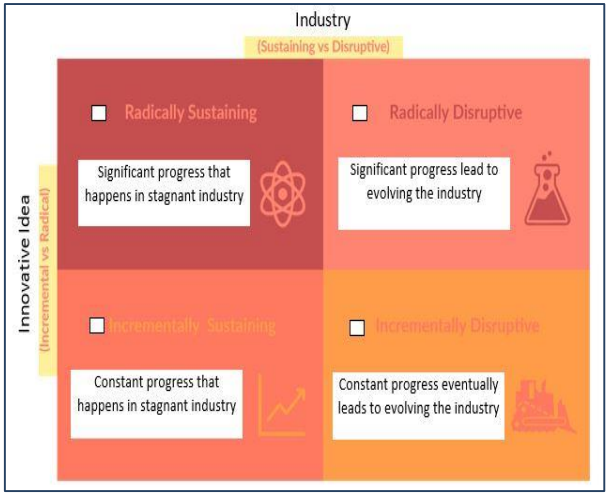
Innovation





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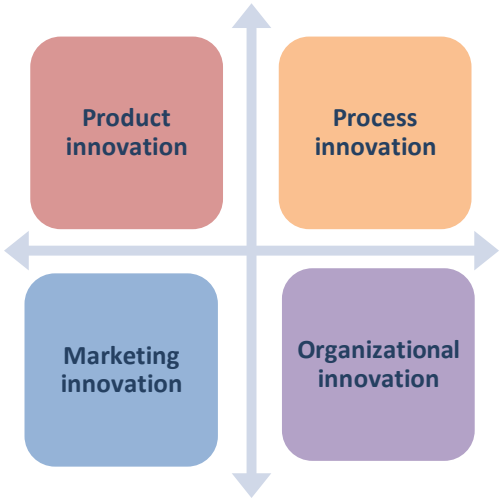
Innovation

Product innovation: A good or service that is new or significantly improved.

Process innovation: A new or significantly improved production or delivery method.

Marketing innovation: A new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

Organizational innovation: A new organizational method in business practices, workplace organization or external relations.



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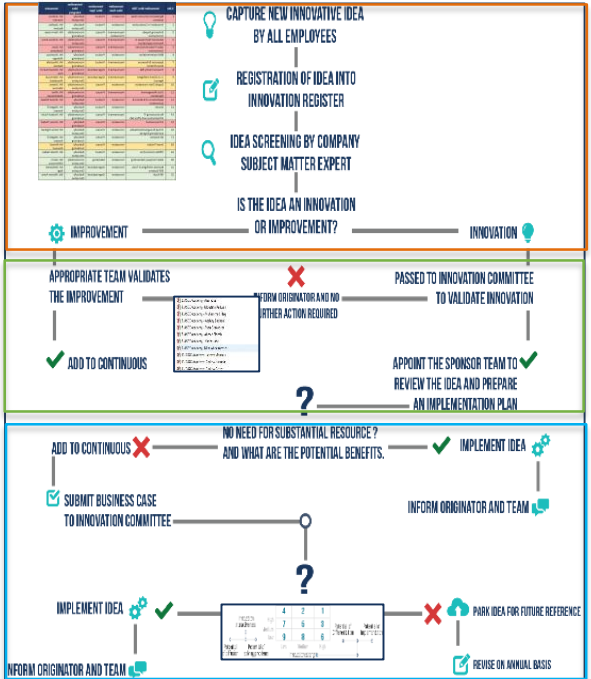
Innovation



1. **The Initiation Stage** (Innovation Pre-proposal report)

2. Then, the **Implementation Stage** (Innovation implementation proposal report)

3. Finally, The Evaluation Stage (Innovation evaluation report)

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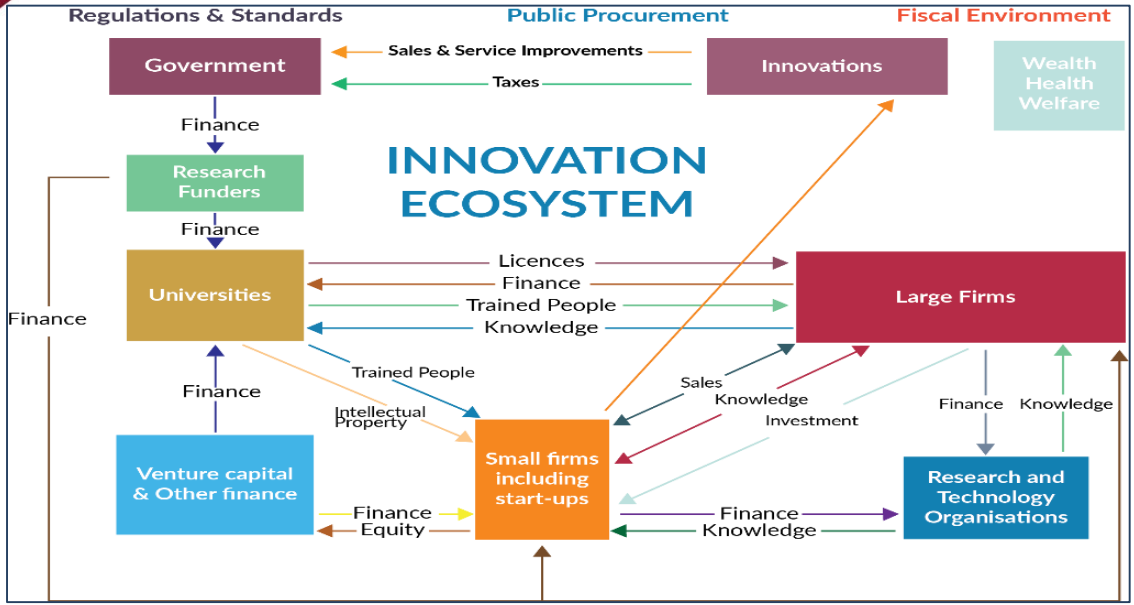
Innovation



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Project Controls in Megaprojects

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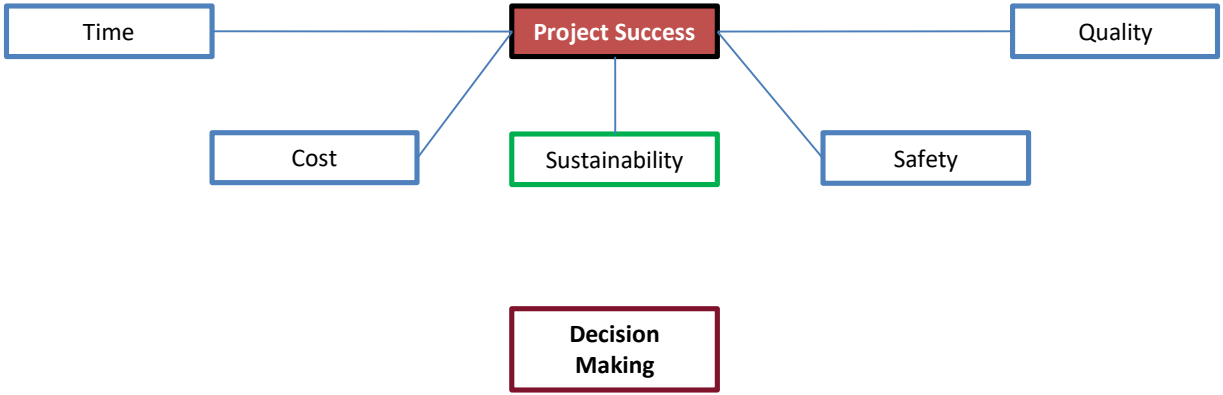

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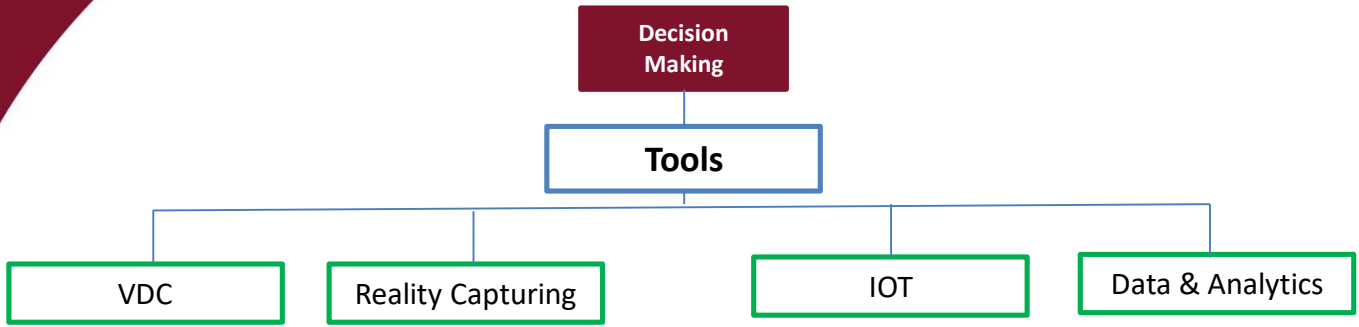

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Virtual Design & Construction

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BIM is a process involving the generation and integration of digital representations includes the physical and functional characteristics of construction project.

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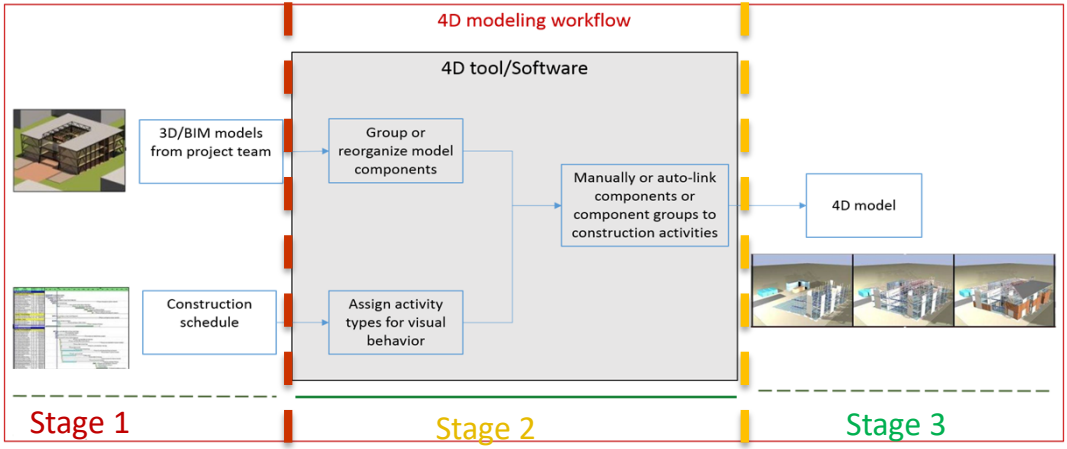
4D Modeling: Simulating the planning sequence of construction activities and space requirements on a building site (Visualization of the construction schedule).



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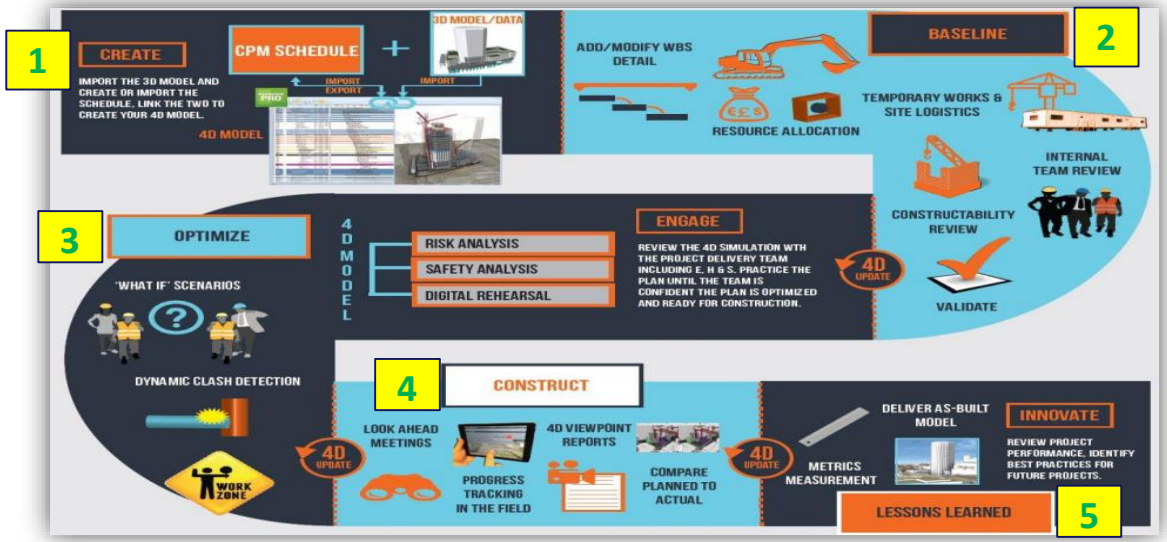

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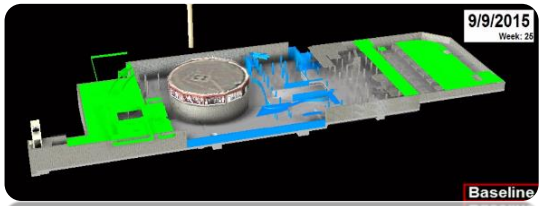
Virtual Design & Construction

1. Initiation Stage



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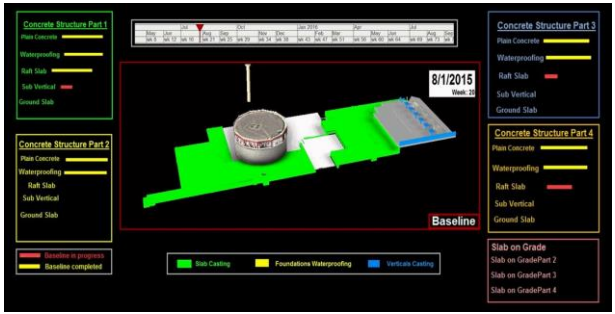
1. Initiation Stage



Etihad Museum - Dubai

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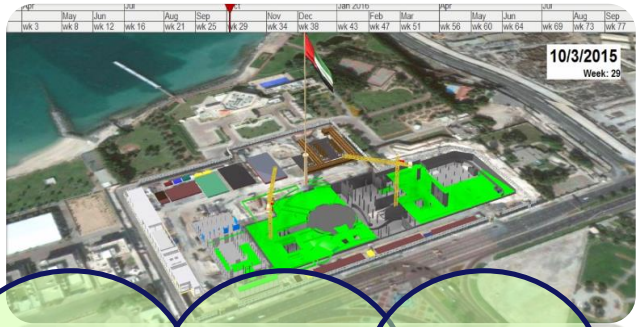
Virtual Design & Construction

2.Baseline Stage



Zone/Move Management

Construction methodology simulation

Site Coordination/ Logistics

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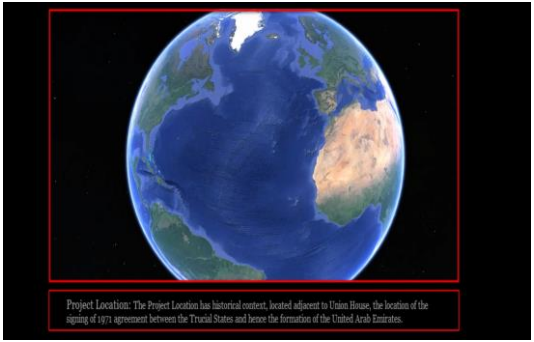
Virtual Design & Construction

2.Baseline Stage



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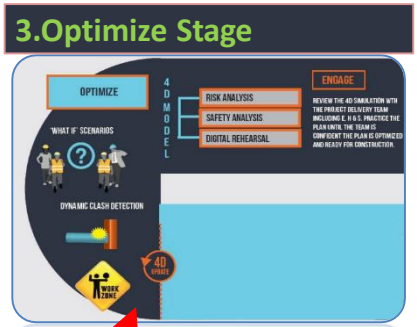
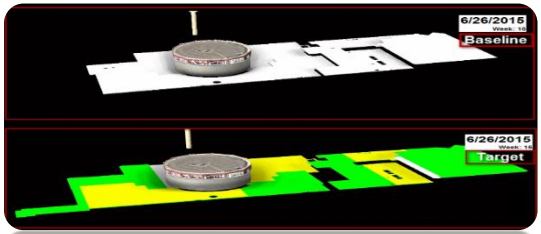
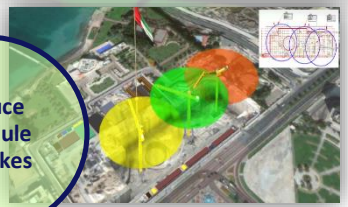




Crane and safety analysis

Value engineering / What if scenarios

Reduce schedule mistakes



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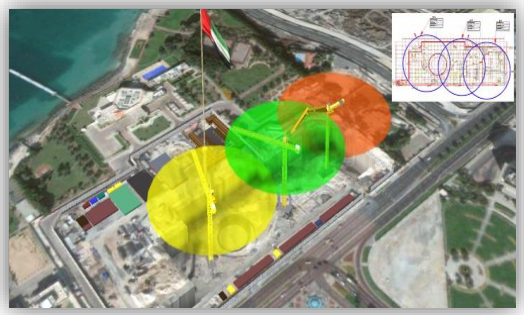
3.Optimize Stage : Cranes Study



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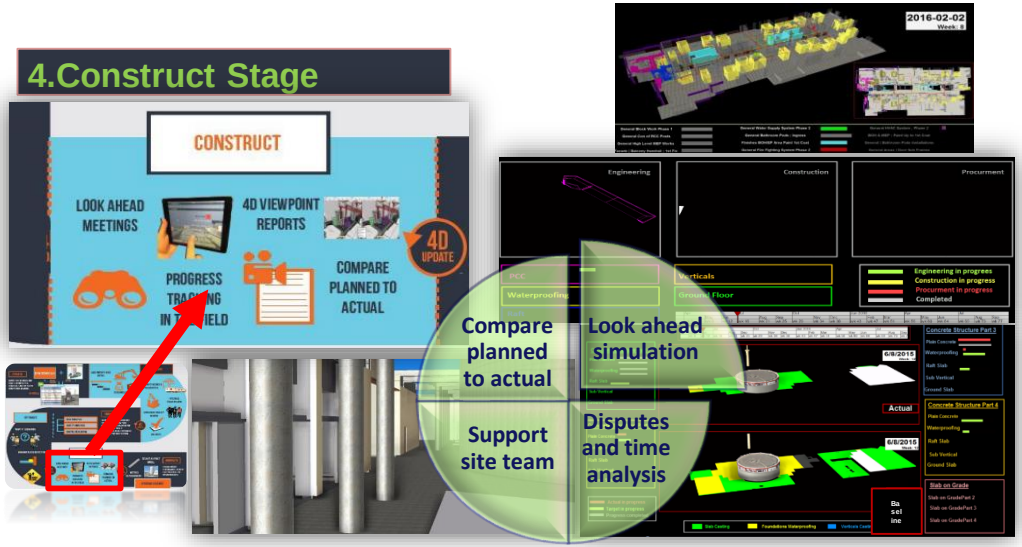

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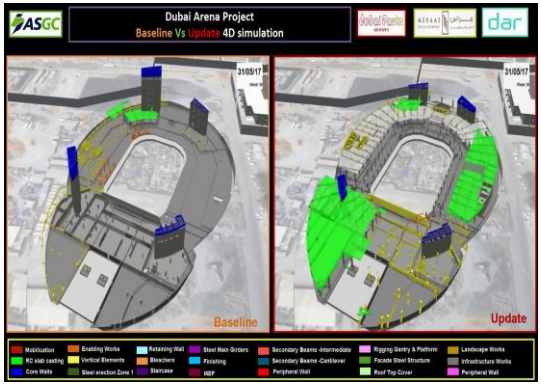
4.Construct Stage : Baseline Vs Actual



Coca-Cola Arena

Virtual Design & Construction

4.Construct Stage : Typical floor finishing works cycle

Bluewaters Project

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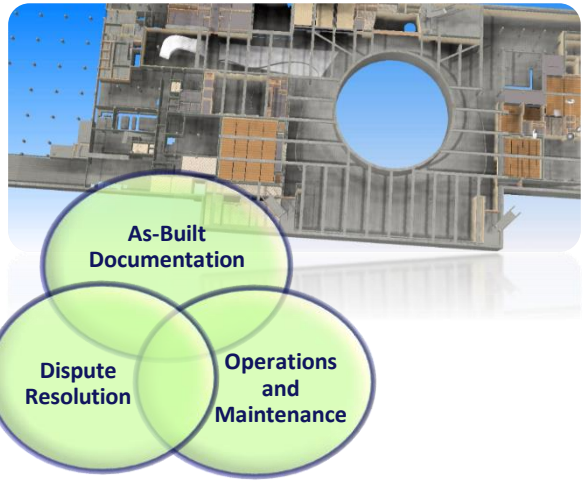
5.Lessons Learned Stage



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Reality Capturing

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Reality Capturing

Reality Capturing & VDC

Integrations

- The integration between the BIM 4D modeling and gaming engines.
- The integration between the 4D and Mixed reality.
- The integration between the 4D and Drones.

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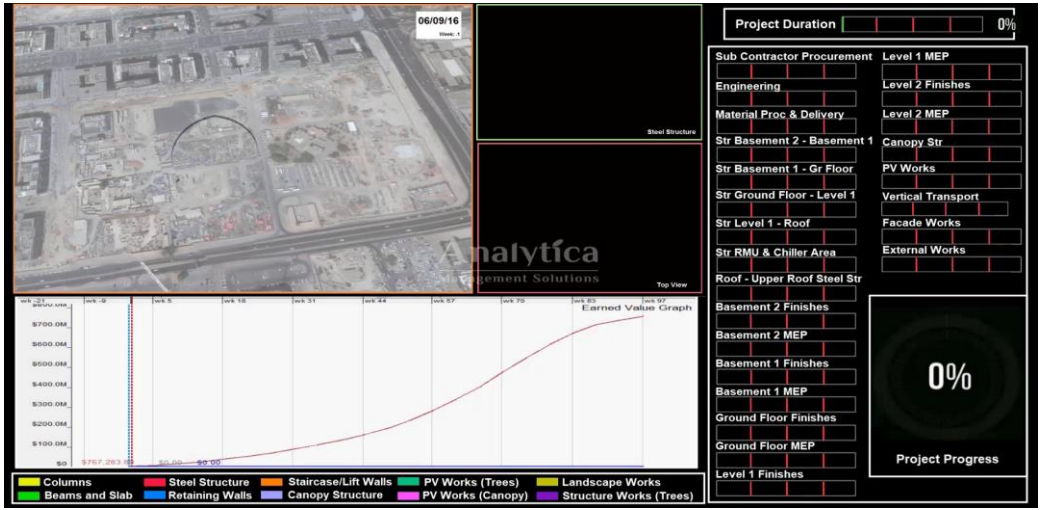
Reality Capturing & VDC

Integrations



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Data & Analytics

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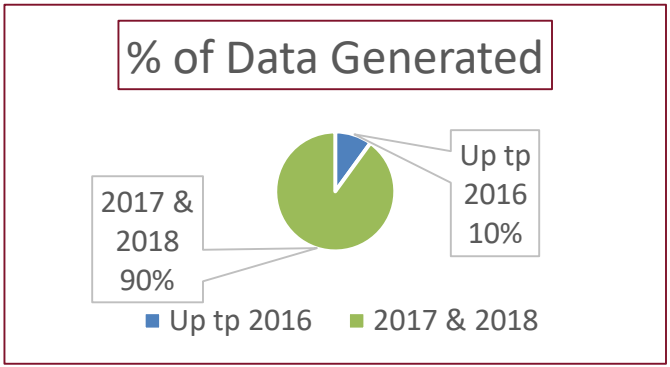
Data & Analytics in Megaprojects

Data



From the beginning of time and until **2003**, humankind generated **5 exabytes** of data. Now we produce **2.5 Exabytes of data daily** and the pace is accelerating.

1 EB
=
1 Million TB

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Data & Analytics in Megaprojects

ANY BUSINESS THAT DOESN'T SERIOUSLY CONSIDER THE VALUE OF DATA RUNS THE RISK OF BEING LEFT BEHIND.

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Data & Analytics in Megaprojects

Construction?

A report by McKinsey Global Institute indicates that in the US (up to 2009):

- Total stored data for the **construction** industry was **51 petabytes**,
- Compared to **966 petabytes** for **manufacturing**
- And **846 petabytes** for **government**.

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Data & Analytics in Megaprojects

Construction?

This ratio simply reflects how the industry is:

- Fragmented
- Working in Silos
- Labor intensive
- Heavily relies on paperwork
- Historically among the latest to adopt technology

Which simply leads to:

- Repetitive reporting
- Multiple data systems
- Unprioritized and unorganized data
- Lack of system connectivity
- Delayed decision-making

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Data & Analytics in Megaprojects

THE CHALLENGE LIES IN **COLLECTING DATA** AND OUR ABILITY TO **MAKE USE** OF THOSE MASSIVE VOLUMES OF DATA.

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Data & Analytics in Megaprojects

How do we get the data?

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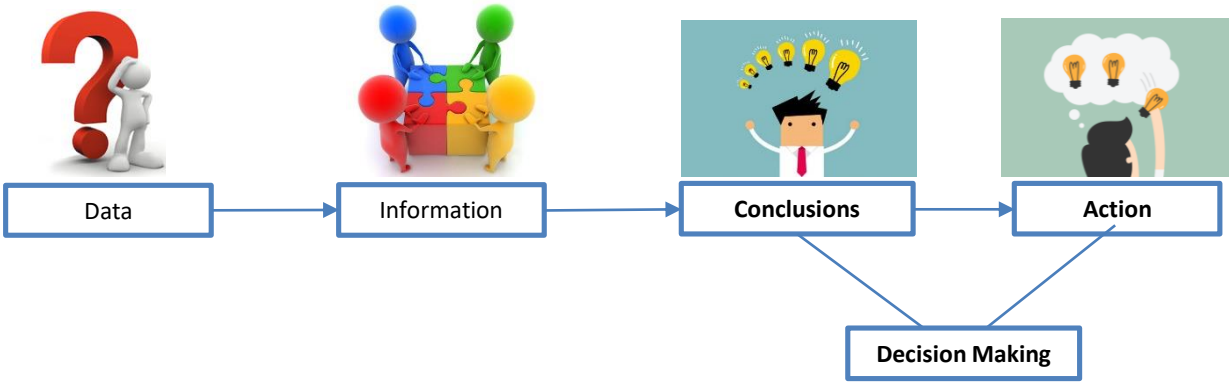
Data & Analytics in Megaprojects

Collecting data is a challenge but technology has made it way easier:

- Photo and video image data
- Sensors' data
- IoT data : (Internet of Things) technology can monitor and collect data from equipment and tools, machinery and other assets on the jobsite.
- Planning Software
- ERP Systems
- Modeling Software
- Laser scanners and other reality capturing tools

Data & Analytics in Megaprojects

How do we turn data into value?



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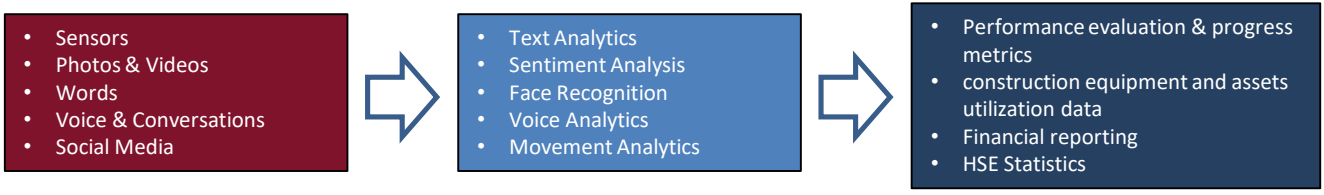
Data & Analytics in a Megaproject

How do we turn data into value?



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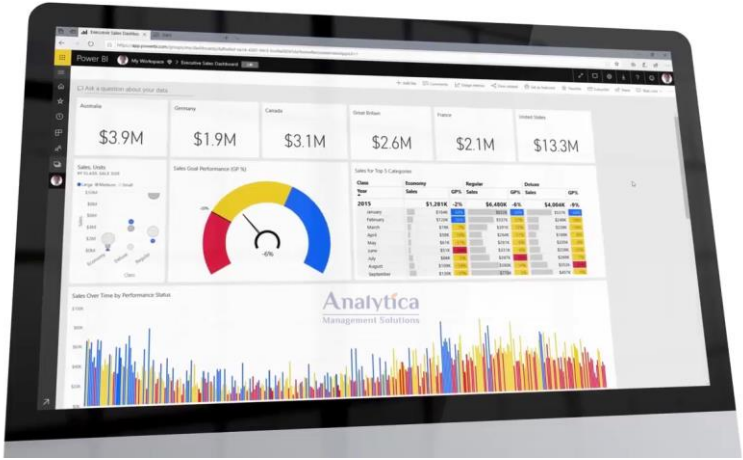
Data & Analytics in Megaprojects



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Data & Analytics in Megaprojects

Benefits:

- Eliminated geographical barriers related to the reporting of different business units
- Help create insight not just observations; which contributes to timely decision making
- Reduced risks & Problem prevention
- Improved Business & Financial Planning
- Effective Portfolio & Project Management
- Improved HSE on construction sites

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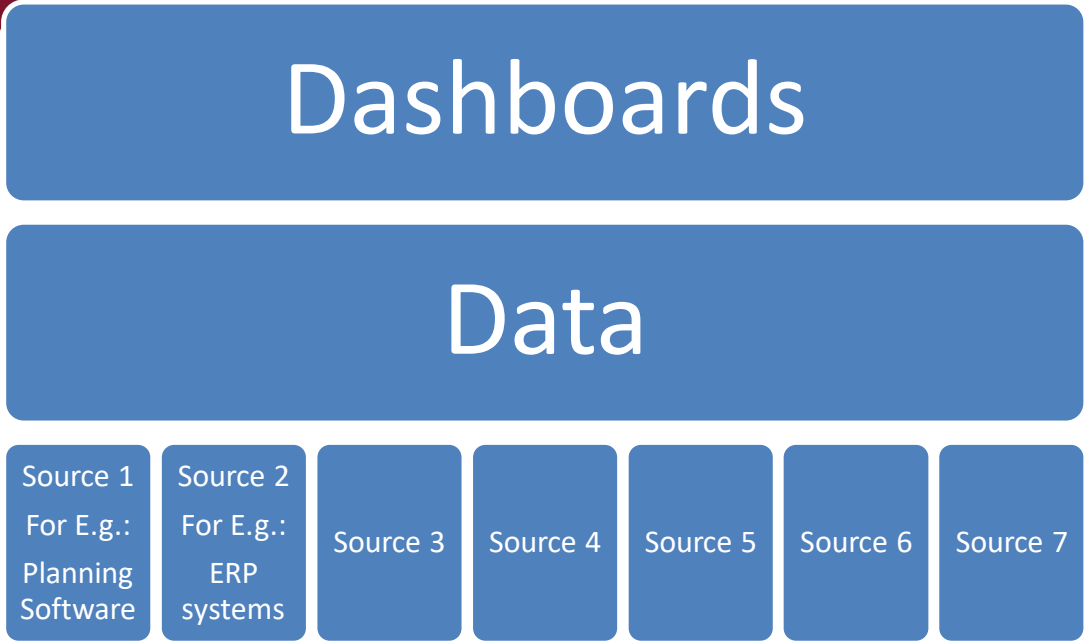

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What is next?

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Blockchain?

"Effective decision-making can be seen as an optimal link between memory of the past, ground-realities of the present and insights of the future"

Amit Ray

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Questions?

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Analytica Management Solutions / ASGC Awards

Analytica Management Solutions and ASGC are award-winning companies with wealth of experience that resulted from being involved in numerous mega-projects in the middle east region.

Most Prestigious International Project Management Awards
“Hamdan Bin Mohammed Innovation in Project Management Awards”

Innovation in project management – Runner-up 2017

Innovation in Portfolio management – Runner-up 2017

Innovation in Portfolio management – Runner-up 2018

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Analytica Management Solutions and ASGC are award-winning companies with wealth of experience that resulted from being involved in numerous mega-projects in the middle east region.

Global Project Controls Innovation Award – Project Controls Expo UK

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Analytica Management Solutions / ASGC Awards

Analytica Management Solutions and ASGC are award-winning companies with wealth of experience that resulted from being involved in numerous mega-projects in the middle east region.

Most prestigious regional business awards

Mohammed Bin Rashid Al Maktoum Business Excellence Award 2018

Mohammed Bin Rashid Al Maktoum Business Innovation Award 2018

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Analytica Management Solutions / ASGC Awards

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UAE Innovation Award

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