The BIM Project Manager

Alan Espinoza

BIM Manager

AUTODESK. UNIVERSITY

About the speaker

Alan Espinoza

Alan brings worlds to life at Universal Parks and Resorts by helping creative minds and talented teams leverage and harness the power of BIM. He supports the team technically and creatively by generating ways of bringing ideas to life through emerging technology, new processes, novel techniques, and divergent thinking. As a BIM Manager, Alan strives to maximize the utilization and integration of model information by collaborating with stakeholders across departments.

The Project Manager

Closeout/Handover

Project Initiation

Objectives

- Learn what BIM tools can be used to manage a project's scope

- Learn what BIM tools can be used to manage a project's schedule

- Discover which BIM tools can be used to manage a project's budget

- Discover best practices for advanced BIM integration into project management

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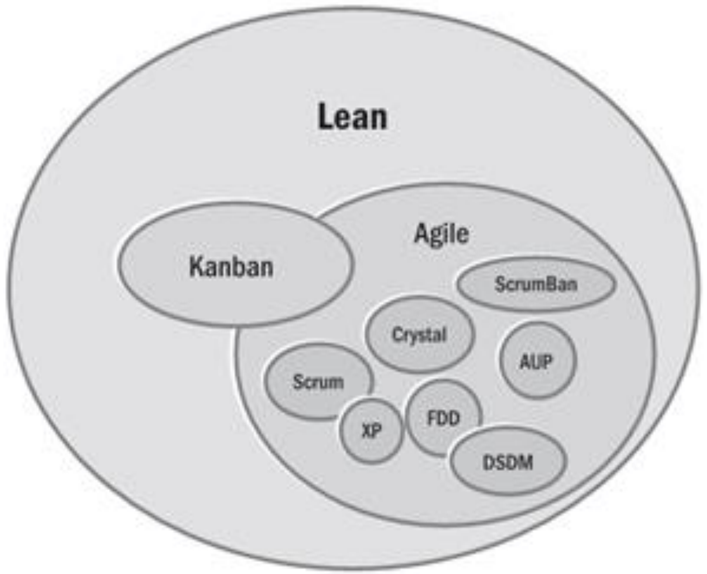
The Future of Project Management

Project Management Process Groups				
Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group



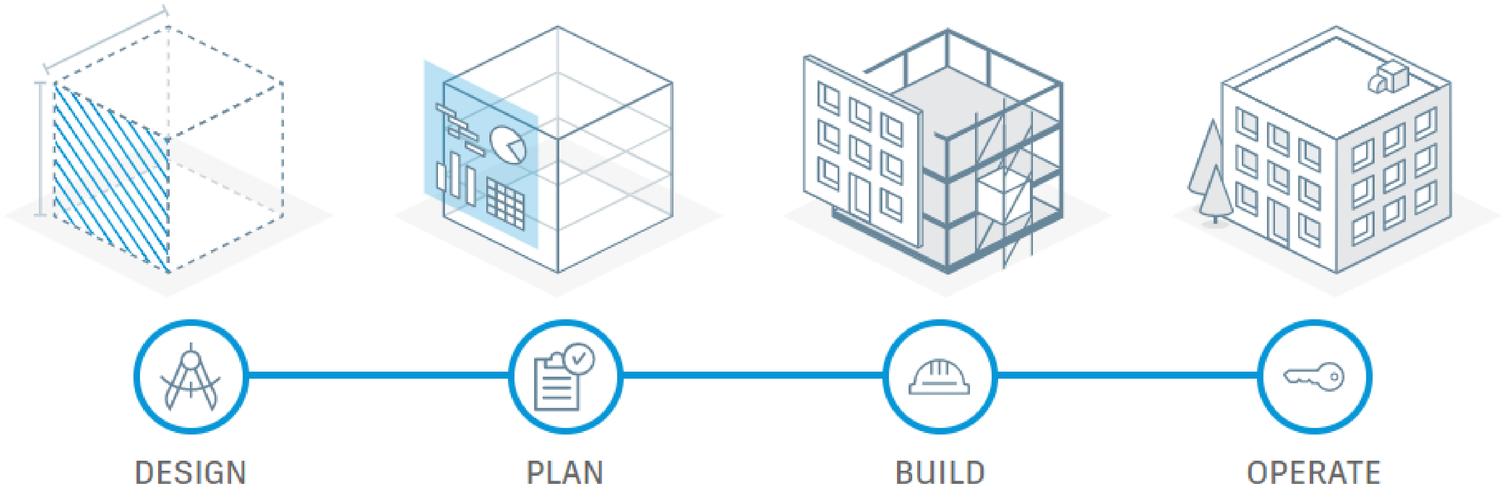
The Future of Project Management

"Around us all, perspectives are shifting; boundaries are disappearing; digital transformation is everywhere. And ***the tools at our disposal are entering new dimensions of connectivity, creativity, intelligence****, and, for project leaders, the emphasis is shifting too: from the technical to a much more diverse toolkit of approaches to project and value delivery.*

The future is now for project professionals…a future where project professionals can adapt and tailor the project approach based on the best solution…a future where essential processes are also evolving."

-PMI video regarding changes to the PMP Exam

Before We Even Begin...



BIM and Project Sourcing

BuildingConnected

BuildingConnected produces real numbers that count.

10 min

to send out a bid invite with BC Pro

BCCI Construction

25%

increased win rate with Bid Board Pro

Bowman Flooring Contractor

4

weeks of work eliminated with TradeTapp

Barton Malow

10 hours

saved per week on qualification tasks

Holt Construction

Managing Scope

BIM Scope of Work Language

Type	File Name	Guide link	Description
Word	SOW_BIM_v4_0.docx [DOCX - 62 KB] -	Statement of Work Guide	Editable Microsoft Word version of the BIM scope of work.
Word	SOW_BIM_Options_v4_0.docx [DOCX - 45 KB] -	Statement of Work Guide	Options for the BIM scope of work.
Word	SOW_3D_Imaging_v4_0.docx [DOCX - 64 KB] -	Statement of Work Guide	Laser scanning / imaging scope of work.
Word	GSA Region 5 - BEP Template v4.0.1.docx [DOCX - 130 KB] -	BIM Execution Plan Guide	Editable Microsoft Word version of the BIM Execution Plan
Excel	Model_Progression_Matrix_v4_0.xls [XLS - 61 KB] -	Level of Detail Guide	Sample model progression matrix used to define LoD for a project.
Word	Quality_Control_v4_0.docx [DOCX - 41 KB] -	Quality Report Guide	Editable Microsoft Word version of theQuality control report.

BIM Scope of Work Language

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Insert requirements for additional BIM based analyses or options SOW_BIM_Options~.docx include suggested text for:

A.1 BIM Data Reuse

A.2 3D Geometric Model (Design Alternatives)

D.1 Art in Architecture

D.2 Geometry Based Zone Analysis

D.3 Daylight Model

D.4 Interior Design.

D.5 Project Phasing

D.6 Tenant Relocation

D.8 Structural Member Strengths

D.9: Site / Campus Analysis

D.10 Energy Modeling

D.11 CFD Analysis Compatibility

D.20 Virtual Acoustics Test for Courtrooms

D.21 Virtual Lighting/Interior Finishes Test for Courtrooms:

C.1 Quantity Take Off

C.2 Cost Estimating

C.3: Construction Sequencing

FM.1 Building Operations

FM.2 Facility Management

GSA Alternate Options (SoW)

GSA Sample BIM Execution Plan – Levels of BIM Use

Maturity	BIM Uses
Visualization	Programming
	Site Analysis
	Design Reviews
	Phase Planning (for presentations)
Documentation	Existing Conditions Modeling
	Design Authoring
	Cost Estimation (Quantity takeoff)
	Record Modeling
	COBie
	BIM Requirements for FM
Model-Based Analysis	Space Management and Tracking
	Engineering Analysis
	a. Energy Analysis
	b. Structural Analysis
	c. Lighting Analysis
	d. Mechanical Analysis
	e. Other Engineering Analysis
	Sustainability (LEED) Evaluation
	Disaster Planning
	Cost Estimation (Estimating)
	Phase Planning (4D modeling)
	Site Utilization Planning
Integrated Analyses	3D Coordination
	Construction System Design
	3D Control and Planning (Digital Layout)
	Digital Fabrication (Supply chain)
	Building Maintenance Scheduling
	Building System Analysis
	Asset Management
Automation & Optimization	Code Validation
	Digital Fabrication (Off-site fabrication)

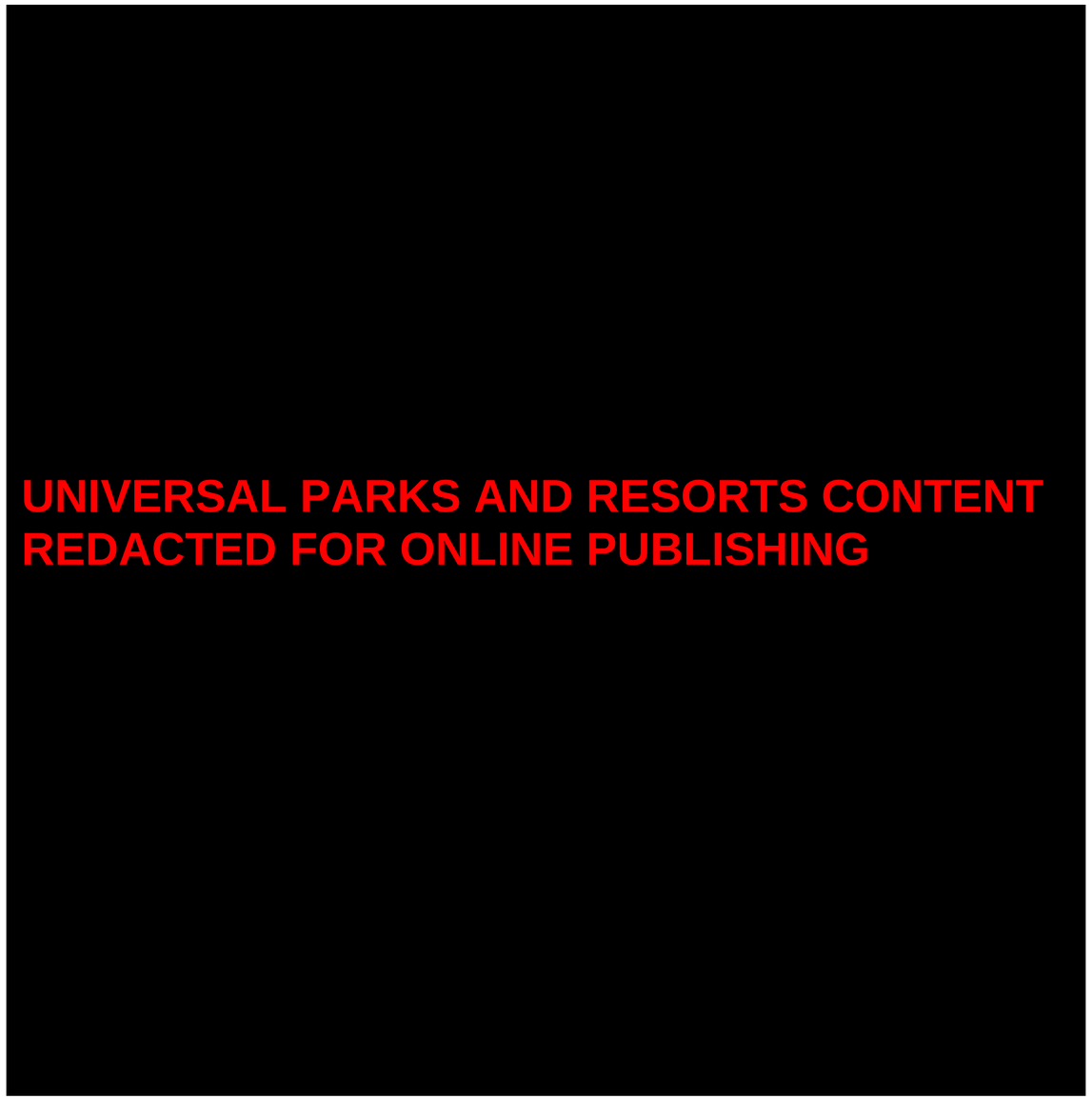
Program Validation (Scope)

PROGRAM VALIDATION

FACILITY NUMBER	ROOM NUMBER	NAME	PROGRAM AREA	CURRENT AREA	AREA DIFFERENCE	PERCENTAGE DIFFERENCE	DEPARTMENT	COMMENTS
			288 SF	144 SF	-144 SF	-50%	MECH / ELEC REQUIREMENTS	
			288 SF	144 SF	-144 SF	-50%	MECH / ELEC REQUIREMENTS	

The example above shows a snippet of a very simple schedule that can be generated in Revit to measure a space's program area versus what is designed in the model. The "percentage different" delta is shown orange when a difference of 10% or greater is present. This draws the attention of a PM who can then investigate why the designed space is greater or smaller than the programmed space and react.

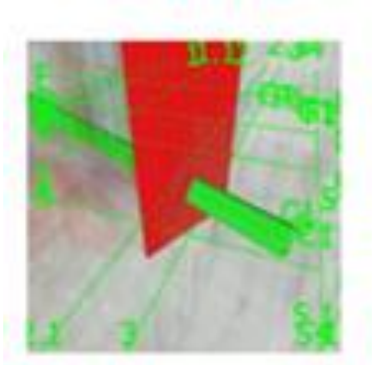
Coordination/Collaboration (Scope)



- Navisworks
  - Visualizations
  - Federated Model

- BIM360
  - Design Collaboration
  - Model Coordination
  - Issues

Clash Detection (Scope)



1412

Clash magnitude: 0ft 11in 3/4

Item 1

Item name:

[redacted]-A.nwc/MECH /Walls/Basic Wall/U--EXT-01E-STUD-152/Basic Wall

Item 2

Item name:

[redacted]-S.nwc/Level 2 - T.O. STEEL (3111)/Structural Framing/ Rectangular Hollow Section Column/-TUB150x8/ Rectangular Hollow Section Column/-TUB150x8

Clash detection is low-hanging fruit that can mitigate the risk of field corrections. Changing something during design is always cheaper than changing it during construction: clash detection should be utilized to minimize potential clashes before issuing construction documents

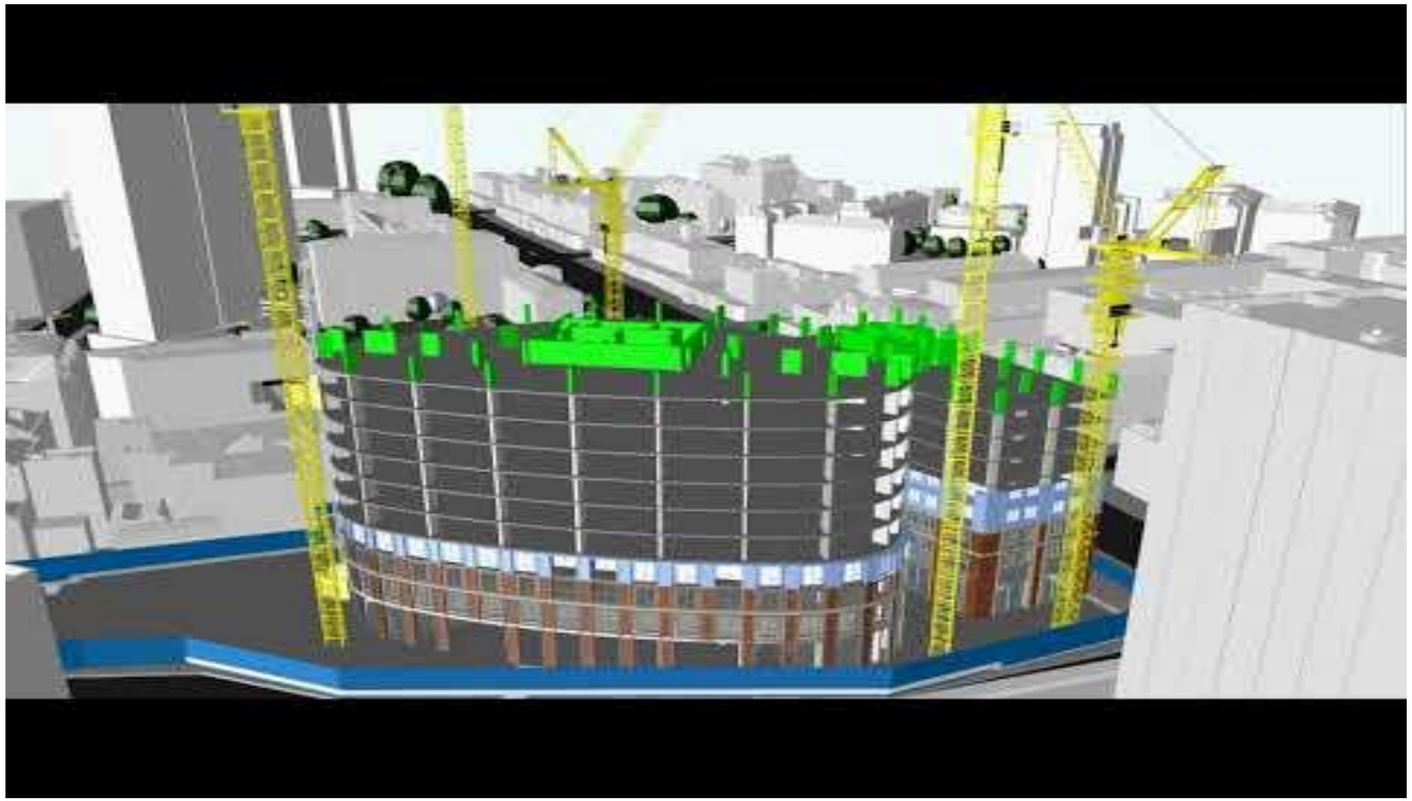
Managing Schedule

4D BIM (Schedule)

- Navisworks Timeliner

- **Synchro Pro**

- Assemble
    - Connect to Oracle P6
    - BIM-Based Schedule
    - BIM360 integration



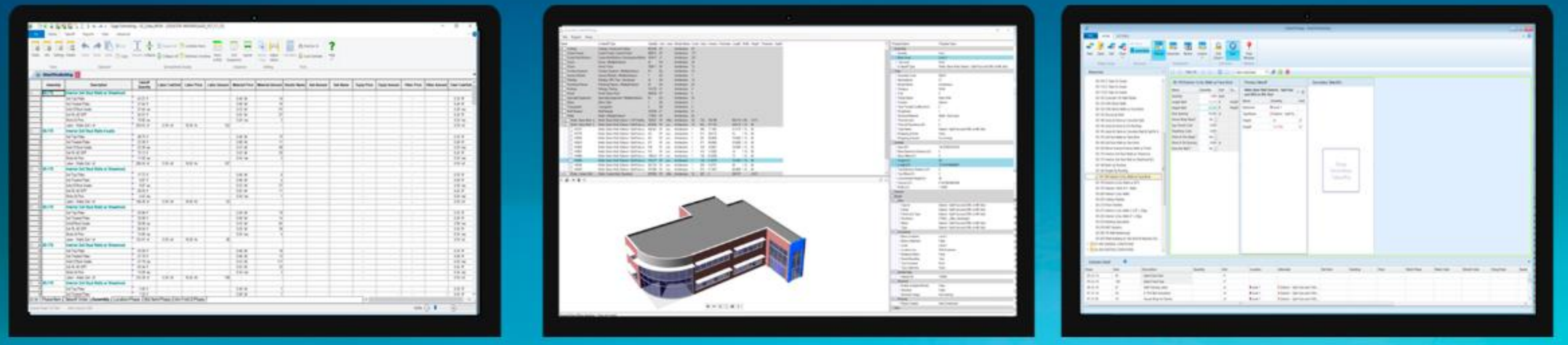
Managing Cost

5D BIM (Cost)

Assemble Systems and Sage
REAL-TIME 5D CONSTRUCTION SOLUTION

Combine 2D and 3D data and visuals to generate accurate estimates.

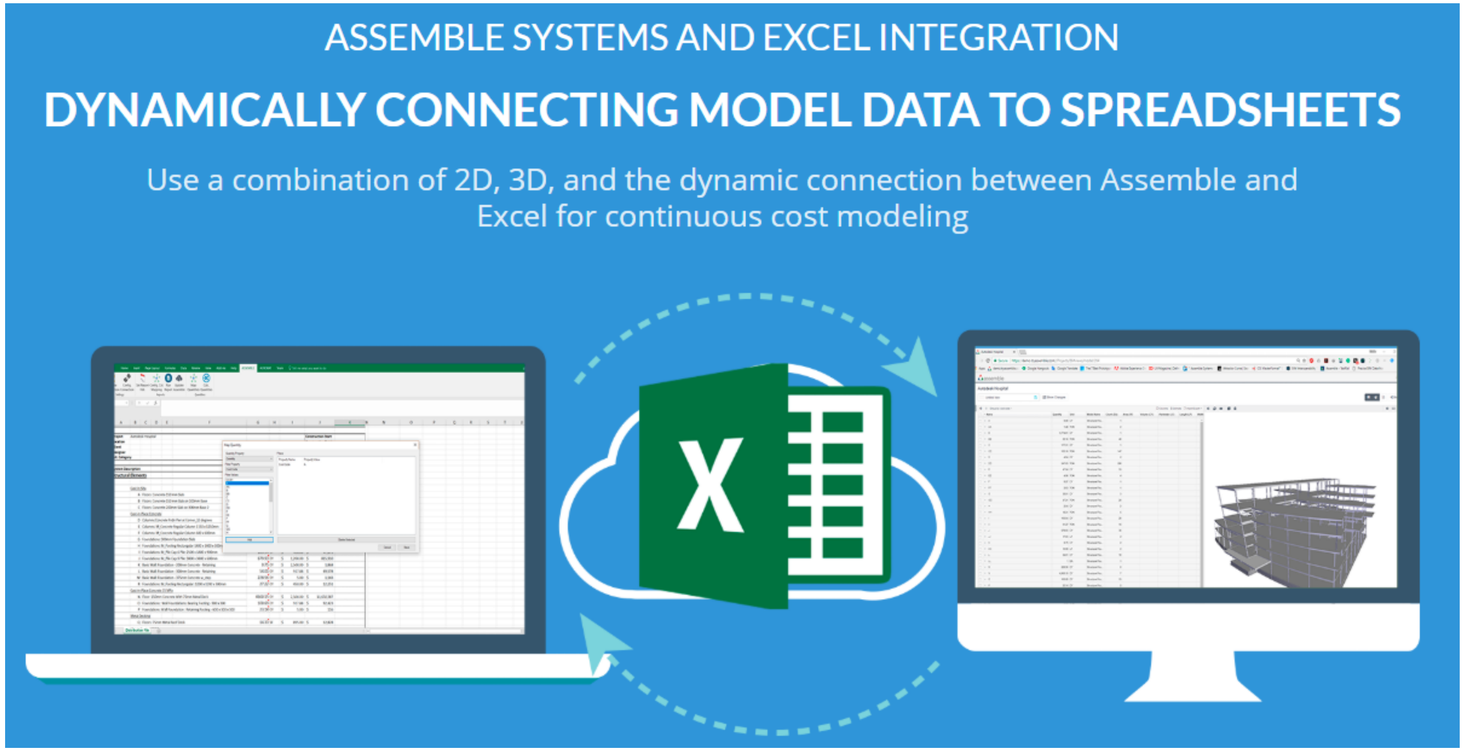
LEARN MORE



5D BIM (Cost)

- Can be used for quantification
- Estimates
- Change Management
- Connect to Sage or Excel

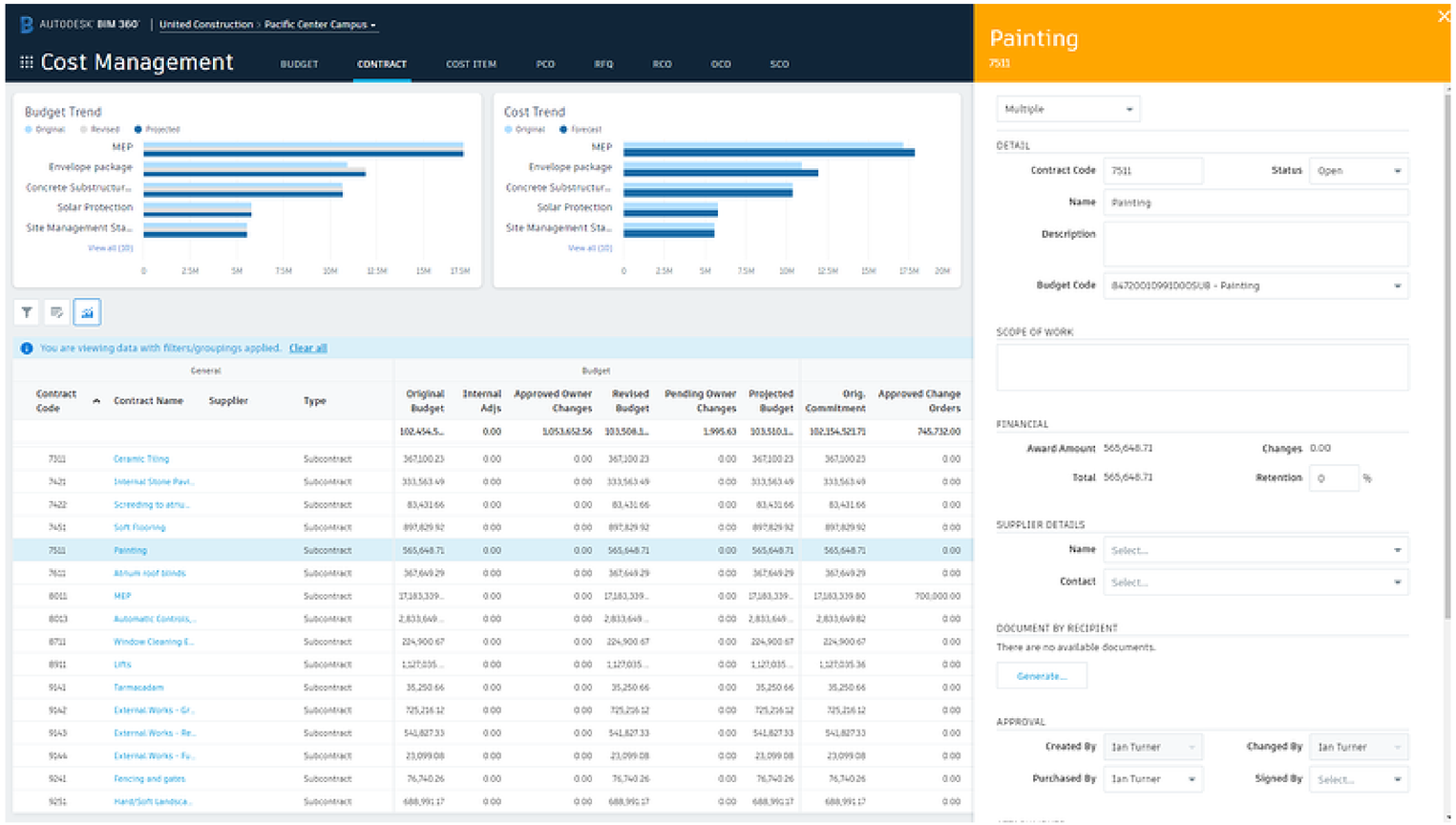
- Requires model discipline



5D BIM (Cost)

BIM360 Cost Module

- Flexible budget structures
- Detailed budget cost items
- Contracts
- Upstream and downstream change order processes
  - Potential change order (PCO)
  - Request for quotation (RFQ)
  - Request for change order (RCO)
  - Owner change order (OCO)
  - Supplier change order (SCO)
- Financial markups



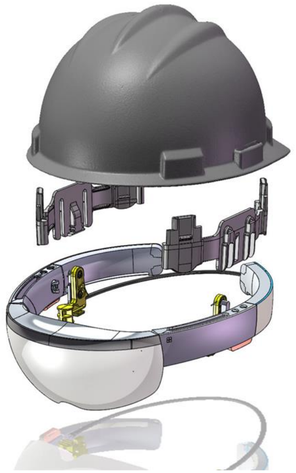
Advanced Integration

3D Imaging (Advanced)

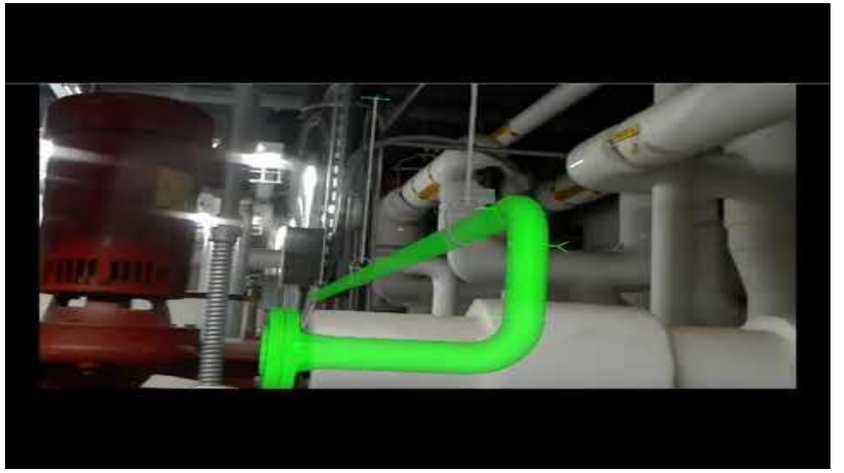
LASER
SCANNING

UNIVERSAL PARKS AND RESORTS CONTENT
REDACTED FOR ONLINE PUBLISHING

Immersive Visualization (Advanced)



-Immersive visualizations
-Realtime AR overlays
-Realtime VR collaboration



Field (Advanced)

- BIM360 RFIs and Submittals (now on mobile)

- Plangrid Punchlists, Field Reports and Tasks

- Bluebeam Studio Sessions for collaborative plan review

Tips

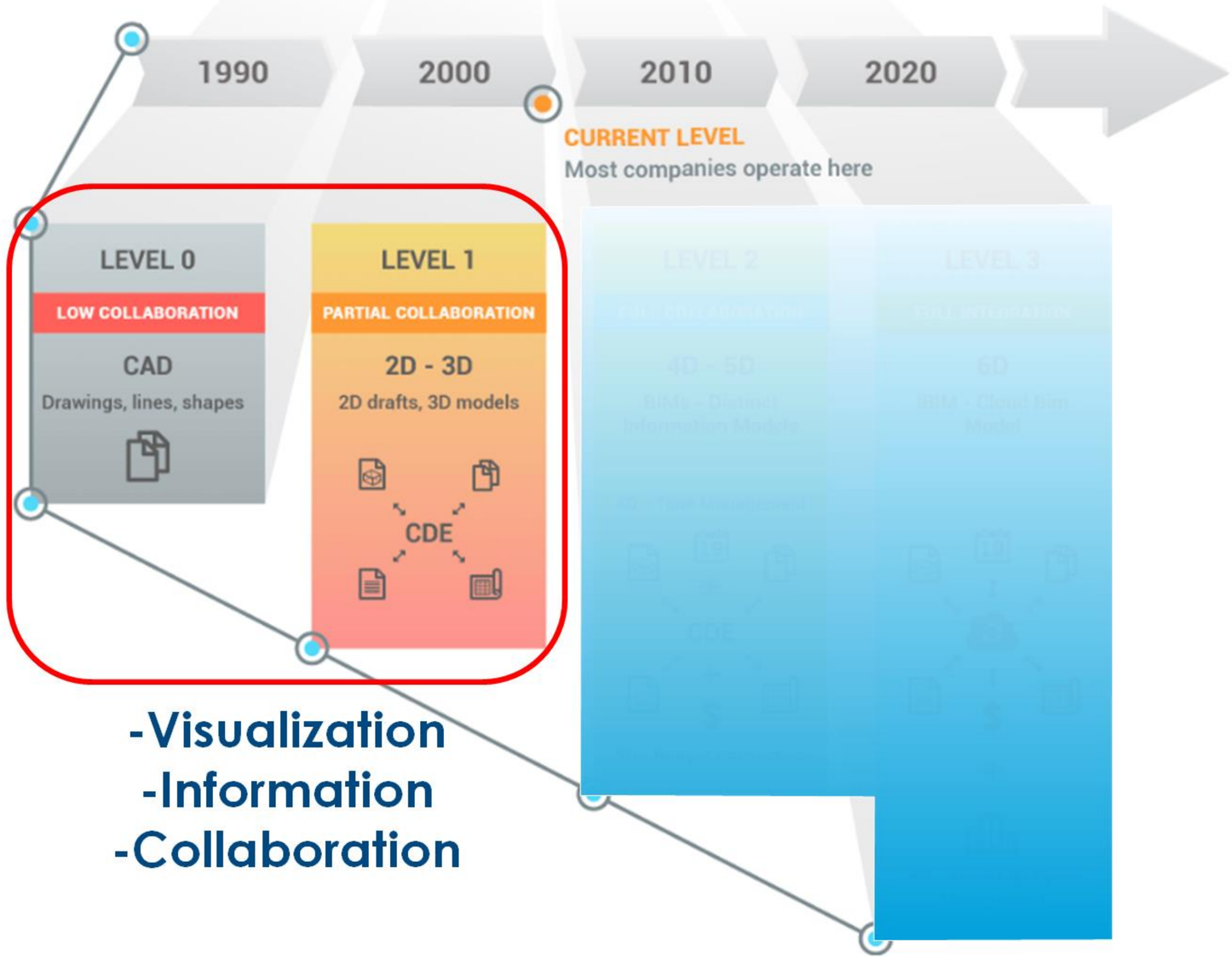
- Prioritize changes in processes according to the "pain scale"

- Mitigate "change fatigue" by focusing on one rollout at a time. Prove it out in small-scale first.

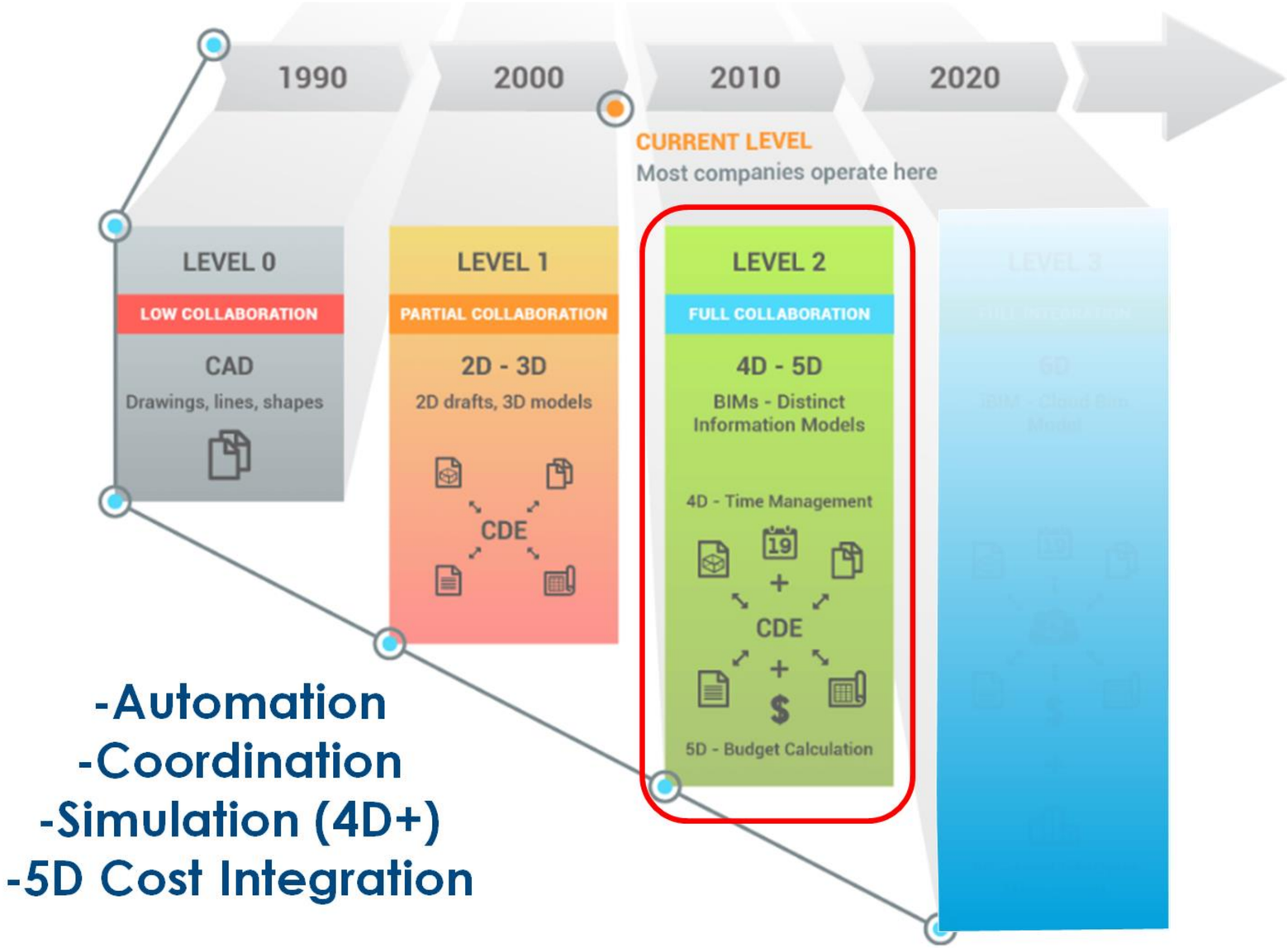
- "Decisions should be information-based, not on our gut/eyes"

- Dumb it down. Explain technology to PMO in terms of ROI. "If we do this, then we'll save this much by ____ "

BIM Maturity

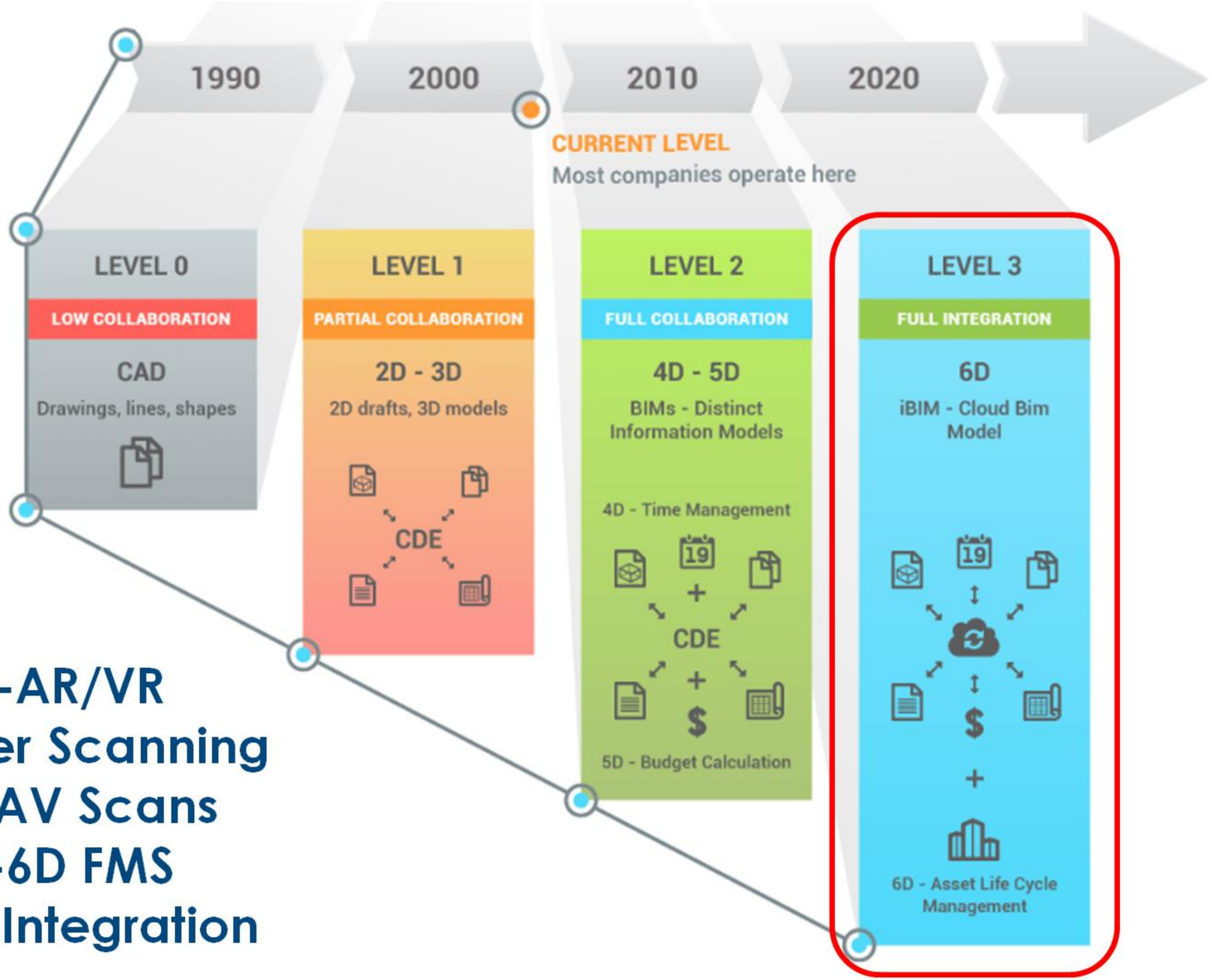


BIM Maturity



-Automation
-Coordination
-Simulation (4D+)
-5D Cost Integration

BIM Maturity



-AR/VR
-Laser Scanning
-UAV Scans
-6D FMS
-IoT Integration

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The best-in-class platform built for simplicity and power – uniting headquarters, office and field teams from design through construction and operations.

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The industry's largest network of owners, designers, builders and trades, enabling each to connect with the right partners and projects.

Predictive Insights

Predictive insights driven by analysis of previously siloed project data sources reduce project risk today and in the future.

Assemble

BIM 360

BuildingConnected

PlanGrid

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