



The 23rd International Asset Facility and Maintenance Management Conference

An Integrated BIM-Value Engineering Driven Framework For Enhancing Real-Time Decision Making In Building Maintenance



12-14 January 2026

Riyadh, KSA

www.omaintec.com #OmaintecConf

Organized by



Executed by



Saudi Arabia's Construction Boom



Vision 2030

Unprecedented wave of transformative development



Mega Projects

NEOM, tourism destinations, infrastructure, industrial zones



Economic Impact

Reducing oil dependency, enhancing investment appeal



Value Engineering Importance



VE Evaluation Phase Delays



Outdated Methods

Reliance on traditional, inefficient evaluation processes.



Sluggish Approvals

Inefficient approval cycles hinder timely project delivery.



Resource Constraints

Limited budget and personnel allocation slow down evaluation efforts.



Knowledge Gaps

Poor understanding of Value Engineering principles delays decision-making.



BIM-VE Integration Gap

Integration

Disconnected BIM and VE workflows

1

2

Automation

Manual processes slow decision-making

Real-Time Analysis

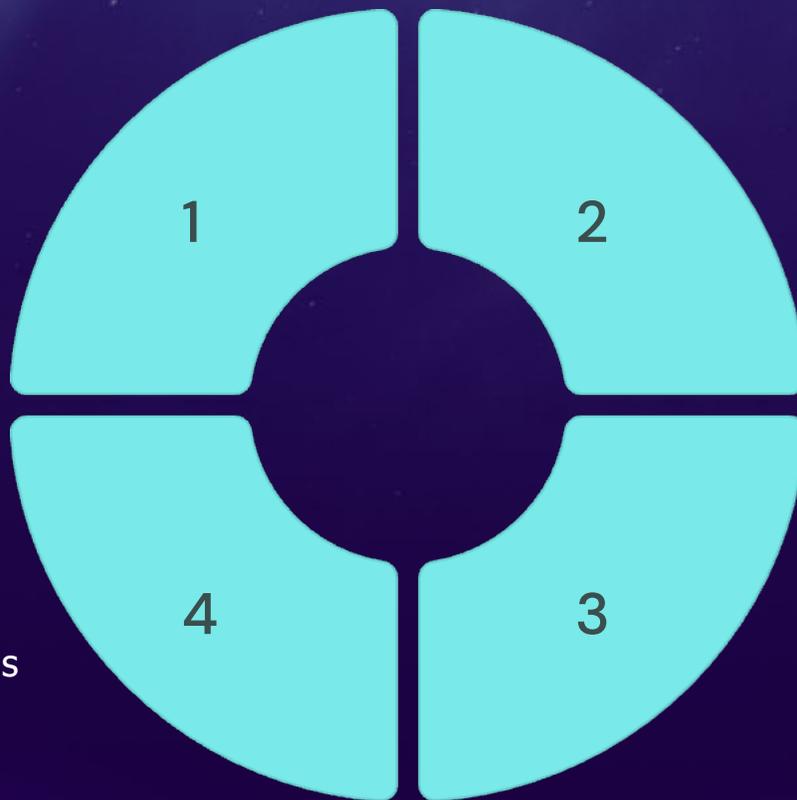
Lack of instant feedback systems

4

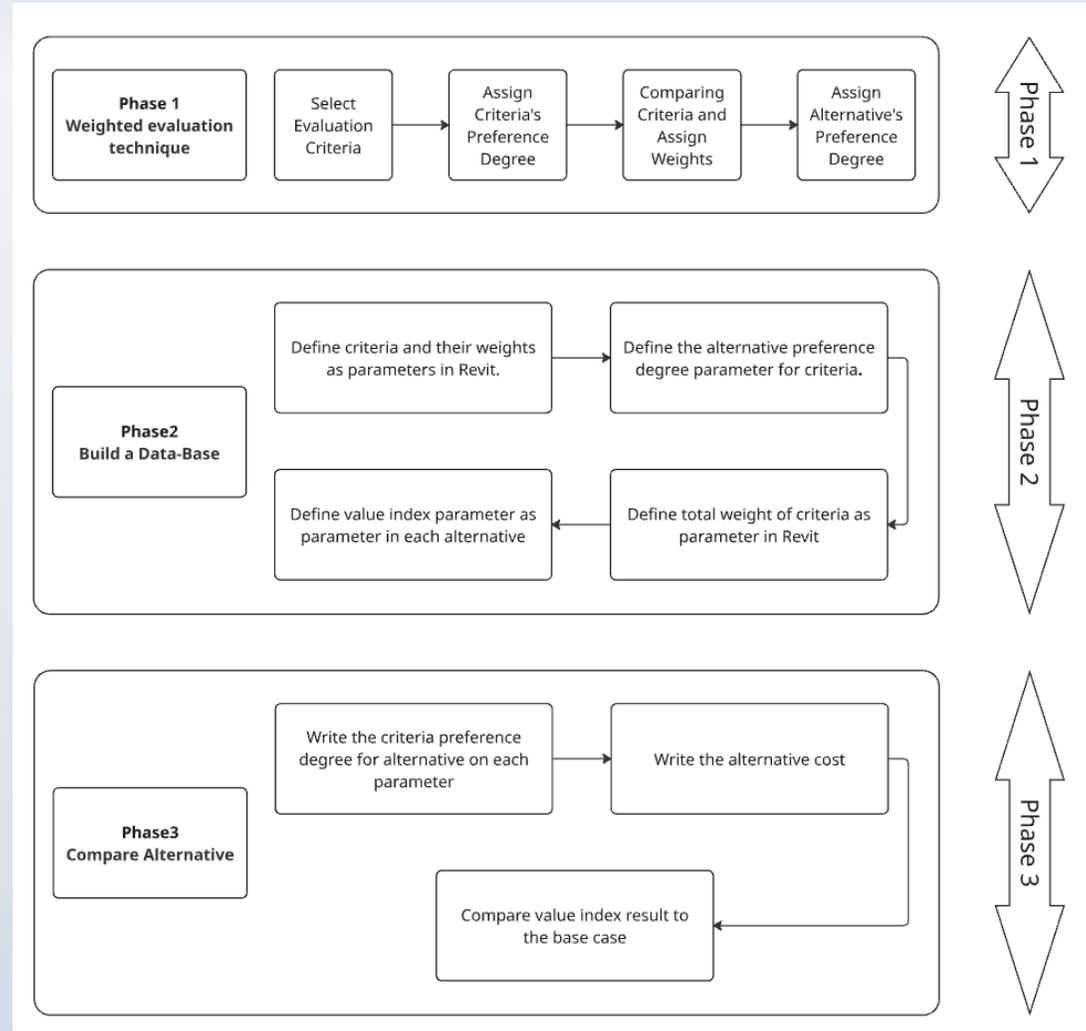
3

Visualization

Limited visual comparison of alternatives



BIM Model Hierarchy



BIM Model Hierarchy

Phase 1: Weighted evaluation technique



BIM Model Hierarchy

Phase 2: Build a Data-Base

-  Define criteria and their weights as parameters in Revit
-  Define the alternative preference degree parameter for criteria
-  Define value index parameter as parameter in each alternative
-  Define total weight of criteria as parameter in Revit



BIM Model Hierarchy

Phase 3: Compare Alternative



Write the criteria preference degree for alternative on each parameter



Write the alternative cost



Compare value index result to the base case



Case Study Application

Case Study Description:

[REDACTED]

A simplified case study involving a small-scale building model created in Autodesk Revit.

[REDACTED]

The window element was selected as the case study component.

[REDACTED]

Two alternative window designs were proposed to demonstrate value-based comparison.

[REDACTED]

Evaluation criteria (cost, sustainability, maintenance, delivery, and operational cost) were defined based on stakeholder priorities.

Case Study Application

Phase 1: Weighted evaluation technique

Criteria rate Preferences	Scale
Major preference	2
slight preference	1
equal preference of each	1

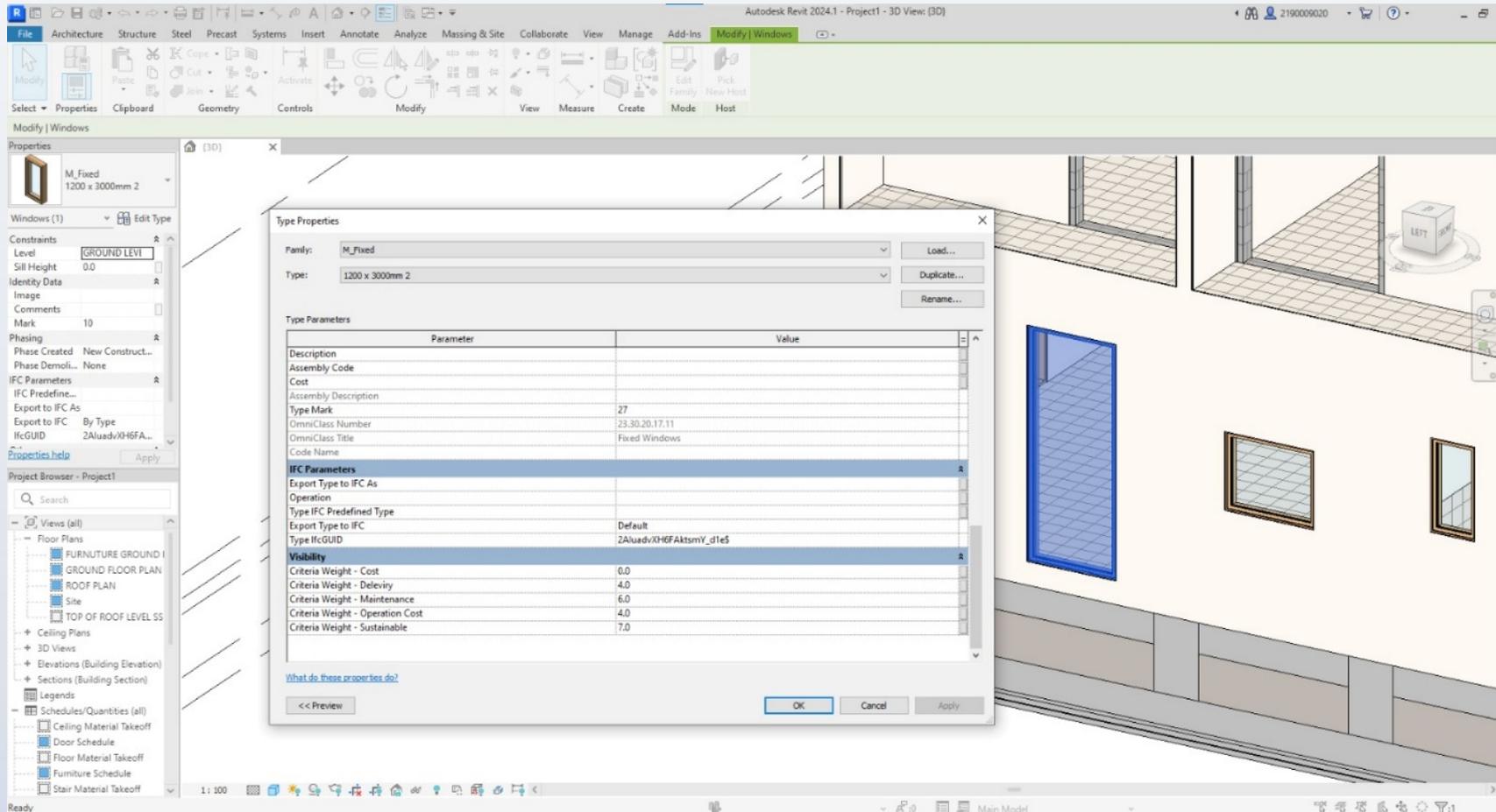
Alternative Preferences Degree	Degree
Excellent	5
Very Good	4
Good	3
Fair	2
Poor	1

Criteria	Criteria	A	B	C	D	E
Cost	A	A	A/B	A1	A2	A/E
Sustainable	B		B	B/C	B2	B/E
Maintenance	C			C	C2	C/E
Deleviry	D				D	E2
Operation Cost	E					E

Criteria	A	B	C	D	E
Weight	6	6	5	1	6

Case Study Application

Phase 2: Build a Data-Base



Case Study Application

Phase 2: Build a Data-Base



Type Properties

Family: M_Fixed Load...

Type: 1200 x 3000mm 2 Duplicate... Rename...

Type Parameters

Parameter	Value
OmniClass Number	23.30.20.17.11
OmniClass Title	Fixed Windows
Code Name	
IFC Parameters	
Export Type to IFC As	
Operation	
Type IFC Predefined Type	
Export Type to IFC	Default
Type IfcGUID	2AluadvXH6FAktsmY_d1e\$
Visibility	
Criteria Weight - Cost	7.0
Criteria Weight - Sustainable	6.0
Criteria Weight - Maintenance	4.0
Criteria Weight - Deleviry	2.0
Criteria Weight - Operation Cost	6.0
Alternative Preference - Cost	5.0
Alternative Preference - Sustainable	3.0
Alternative Preference - Maintenance	4.0
Alternative Preference - Deleviry	4.0
Alternative Preference - Operation Cost	3.0

[What do these properties do?](#)

<< Preview OK Cancel Apply

Case Study Application

Phase 2: Build a Data-Base



Autodesk Revit 2024.1 - M_Fixed.rfa - 3D View: View 1

File Create Insert Annotate View Manage Add-Ins Modify

Modify Extrusion Blend Revolve Sweep Swept Blend Weld Form Model Component Model Opening Model Control Electrical Connector Connector Connector Connector Connector Reference Line Reference Plane Set Show Viewers Load into Project Load into Project and Close

Select Properties Forms Model Control Connectors Datum Work Plane Family Editor

Family Types

Type name: 0610 x 1220mm

Search parameters

Parameter	Value	Formula
Construction		
Wall Closure	By host	=
Construction Type		=
Materials and Finishes		
Frame Exterior Material	Sash	=
Frame Interior Material	Sash	=
Glass Pane Material	Glass	=
Sash	Sash	=
Dimensions		
Height	1220.0	=
Default Sill Height	915.0	=
Width	610.0	=
Window Inset	19.0	=
Rough Width		=
Rough Height		=
Analytical Properties		
IFC Parameters		
Visibility		
Criteria Weight COST	7.000000	=
Criteria Weight SUSTAINABLE	6.000000	=
Criteria Weight MAINTENANCE	4.000000	=
Criteria Weight DELIVERY	2.000000	=
Criteria Weight OPERATION COST	6.000000	=
Alternative Preference COST	5.000000	=
Alternative Preference SUSTAINABLE	3.000000	=
Alternative Preference MAINTENANCE	4.000000	=
Alternative Preference DELIVERY	4.000000	=
Alternative Preference OPERATION COST	3.000000	=
TOTAL WEIGHT OF ALTERNATIVE	95.000000	=(Criteria Weight COST * Alternative Preference COST) + (Criteria Weight SUSTAINABLE * Alternative Preference SUSTAINABLE) + (Criteria Weight MAINTENANCE * Alternative Preference MAINTENANCE) + (Criteria Weight DELIVERY * Alternative Preference DELIVERY) + (Criteria Weight OPERA
Identity Data		

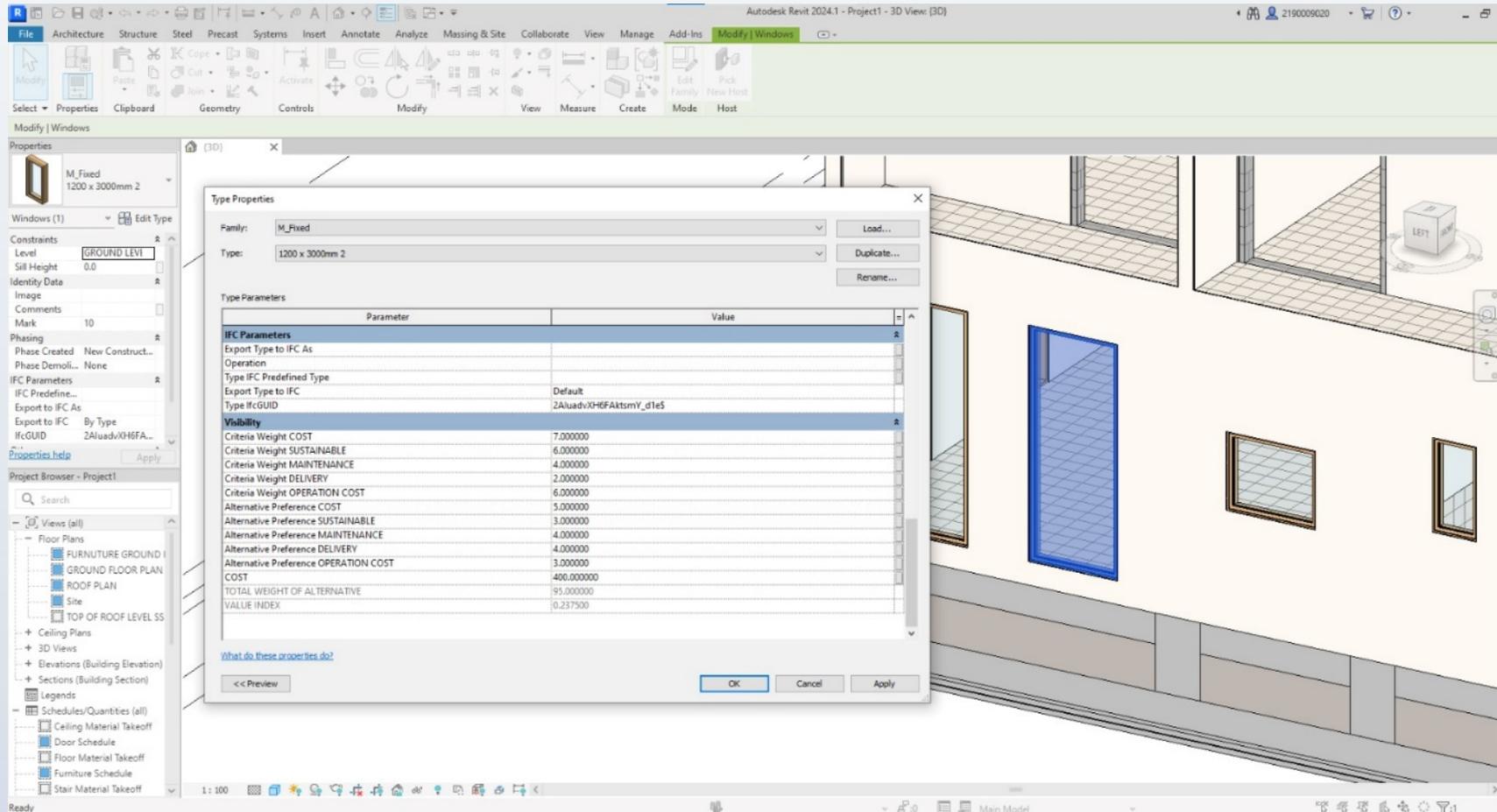
Manage Lookup Tables

OK Cancel Apply

Ready

Case Study Application

Phase 2: Build a Data-Base



Case Study Application

Phase 3: Alternative Comparison

Type Properties

Family: M_Fixed

Type: 1200 x 3000mm 2

Parameter	Value
IFC Parameters	
Export Type to IFC As	
Operation	
Type IFC Predefined Type	
Export Type to IFC	Default
Type IfcGUID	2AluadvXH6FAktsmY_d1eS
Visibility	
Criteria Weight COST	7.000000
Criteria Weight SUSTAINABLE	6.000000
Criteria Weight MAINTENANCE	4.000000
Criteria Weight DELIVERY	2.000000
Criteria Weight OPERATION COST	6.000000
Alternative Preference COST	5.000000
Alternative Preference SUSTAINABLE	3.000000
Alternative Preference MAINTENANCE	4.000000
Alternative Preference DELIVERY	4.000000
Alternative Preference OPERATION COST	3.000000
COST	400.000000
TOTAL WEIGHT OF ALTERNATIVE	95.000000
VALUE INDEX	0.237500

What do these properties do?

<< Preview OK Cancel Apply

0.2375

Value Index - Alternative

Derived from a total weighted score of 95 and a cost of 400 SAR

Type Properties

Family: M_Fixed

Type: 1200 x 3000mm 3

Parameter	Value
IFC Parameters	
Export Type to IFC As	
Operation	
Type IFC Predefined Type	
Export Type to IFC	Default
Type IfcGUID	0mgGAAhrDCDwxJGMcG2pVM
Visibility	
Criteria Weight COST	7.000000
Criteria Weight SUSTAINABLE	6.000000
Criteria Weight MAINTENANCE	4.000000
Criteria Weight DELIVERY	2.000000
Criteria Weight OPERATION COST	6.000000
Alternative Preference COST	4.000000
Alternative Preference SUSTAINABLE	4.000000
Alternative Preference MAINTENANCE	4.000000
Alternative Preference DELIVERY	4.000000
Alternative Preference OPERATION COST	4.000000
COST	500.000000
TOTAL WEIGHT OF ALTERNATIVE	100.000000
VALUE INDEX	0.200000

What do these properties do?

VALUE INDEX
Family parameter
Number

<< Preview OK Cancel Apply

0.20

Value Index - Alternative 2

Derived from a total weighted score of 100 and a cost of 500 SAR

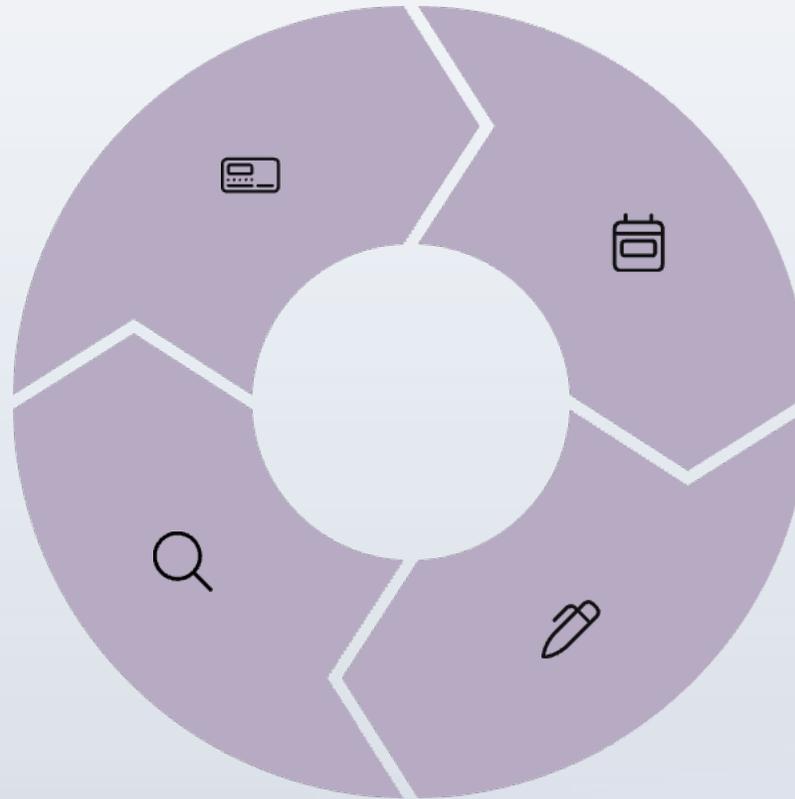
Discussion and Conclusions

Faster Comparison

The framework enables quicker evaluation between design options

Enhanced Collaboration

Improved transparency and ease of collaboration during evaluation discussions



Objective Decision-Making

Decisions based on quantifiable data rather than subjective judgments

Dynamic Updates

Changes in inputs or criteria weights immediately reflected in the BIM model



The 23rd International Asset Facility and Maintenance Management Conference

THANK YOU!



 12-14 January 2026

 Riyadh, KSA

www.omaintec.com  #OmaintecConf

Organized by

OMAINTEC In Partnership with
المجلس العربي لإدارة الأصول والمرافق والصيانة
Arab Asset, Facility and Maintenance Management Council

 **SAFMMA**
الجمعية السعودية لإدارة الأصول والمرافق والصيانة
Saudi Asset, Facility & Maintenance Management Association

Executed by

Organizational Partner
TSG | EXICON.
شركه مجموعه المختص • The Specialist Group