



Allied Practices



black mule

OPTIMA

Integrated Digital Solutions

**Transforming Buildings,
Campuses and Airport
Infrastructure**
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April 27 – May 01, 2026

**We
articulate
the future.**

From the Field — Six decades of building the Gulf's hardest infrastructure

Leading delivery of complex transport, water, power and special-projects programs across Saudi Arabia and the wider Gulf — including airport, mobility and giga-project assignments where digital integration is the difference between schedule and slippage.

Focus areas: digital delivery for infrastructure, program intelligence, BIM-to-Operations handover, and turning models into live operating assets.

KEO AT A GLANCE

62+
Years of
Regional
Delivery

2,700+
Multi-
Disciplinary
Professionals

ENR TOP
225
International
Design
Firms

#2
Consultancy
in the
Middle
East*

* ENR Middle East rankings, recent years.

THE PROBLEM WE'RE ALL
FACING

We Design in 3D, Build in 2D, We design in 3D, Build in 2D, and Operate in PDFs.

By the time an airport, campus or hospital opens, most of the data created during design and construction is already lost — locked in PDFs, point clouds nobody opens, and as-builts that don't match what's standing.

30%

Of capital project effort is spent finding or recreating information that already exists

9%

Of value is lost to data interoperability gaps (Global Infrastructure Benchmark)

70-80%

Of an asset's whole-life cost is incurred AFTER handover—where most data dies

The Kingdom is Building the Largest Concentration of Complex Assets on the planet.

There is no version of Vision 2030 that succeeds without integrated digital asset intelligence — the volume, complexity and inter-dependence simply break traditional handover models.



King Salman Intl. Airport

120M passengers by 2030 → 185M by 2050.
Six runways.
A new operational paradigm.



NEOM

A linear city, an industrial port and a regional airport — instrumented from day one



Diriyah

Heritage-led mixed-use district where BIM, GIS and IoT must coexist with conservation.



Red Sea & AMAALA

Resort destinations with their own airports, utilities and microgrids — fully digital.



Qiddiya

Entertainment giga-project requiring real-time crowd, mobility and venue analytics.

One Asset. One Source of Truth. Four Layers

The Unified Digital Asset Environment-KEO's Working Model for Buildings, Campuses and Airports.



DECISION & ACTION

Operations Dashboards, Command-and-Control, Autonomous Responses



INTELLIGENCE LAYER

AI / ML, Scenario Simulation, Predictive Analytics, Optimisation



DIGITAL TWIN

Live, Federated 3D + 4D Model — Geometry, Semantics, Behavior



DATA FOUNDATION

BIM · GIS · IoT · BMS / AMS · CMMS · ERP — Through a Common Data Environment

LIFECYCLE FLOW

PLAN

Master plan & feasibility

DESIGN & BUILD

BIM as the single source

OPERATE

Twin goes live at handover

OPTIMISE

AI-driven continuous improvement

A Twin Earns its Keep When It Changes a Decision Today, Not in Five Years

The Unified Digital Asset Environment-KEO's Working Model for Buildings, Campuses and Airports.

Real-Time Monitoring

- Live status of HVAC, baggage, people-mover and runway systems on one map.
- Anomalies surface in minutes, not at the next quarterly inspection.
- Single situational picture across landside, airside and terminal.

Scenario Analysis

- Test a runway closure, gate change or stand re-allocation before doing it.
- Pre-stage emergency, weather and security responses against the live model.
- Plan capacity expansions on the asset that exists, not the one we drew.

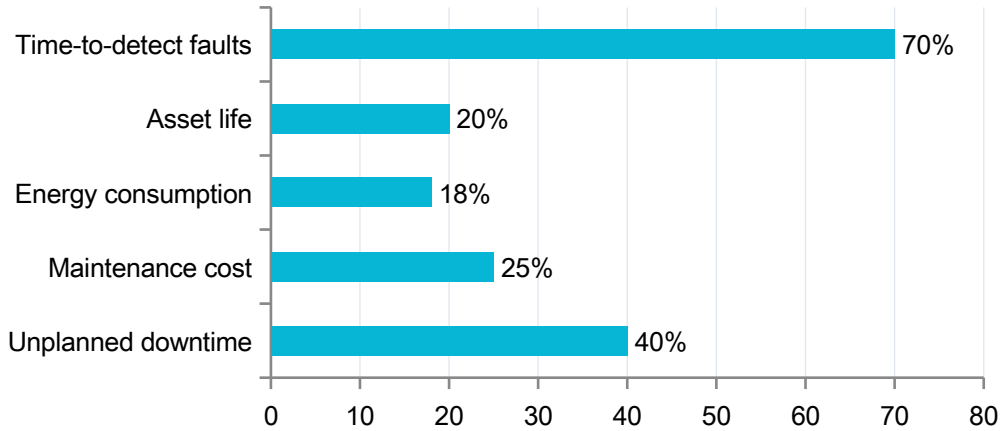
Capacity Optimisation

- Match passenger flow to gate, lounge and retail capacity in near real-time.
- Energy and water consumption tied to actual occupancy, not design assumptions.
- Smaller margins of error → larger margins for revenue and resilience.

Predicting Failure is More Valuable than Reacting to it.

Indicative Outcomes from Mature Digital-Twin + AI Programs on Infrastructure Assets

Typical Operational Gains



WHAT THE AI SEES



Failure Signatures

Vibration, Current Draw and Temperature Drift Days Before Breakdown.



Demand Patterns

Passenger Flow, Dwell Time and Queue Formation Matched to Staffing.



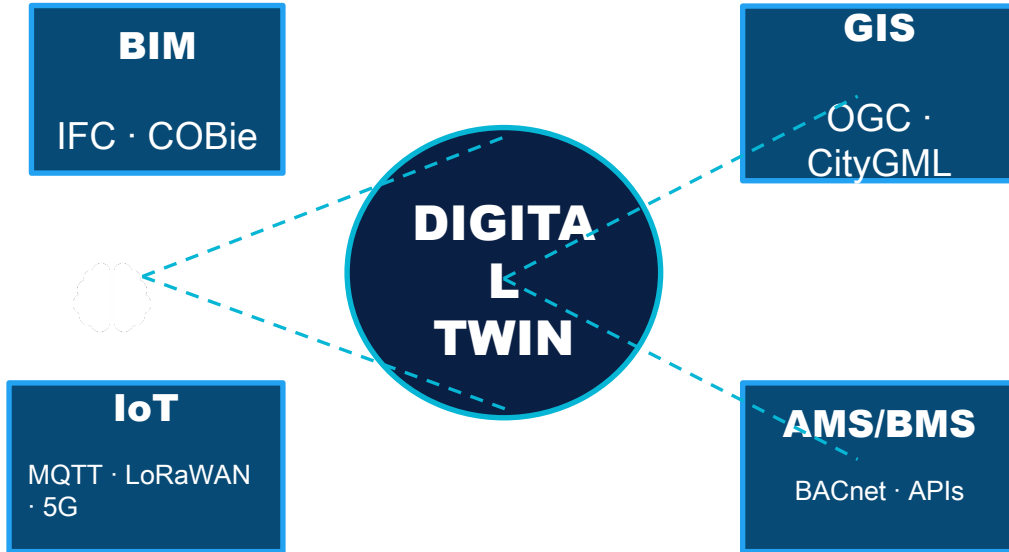
Risk anomalies

Unusual Access, Network Behavior or Perimeter Activity Flagged in Seconds.



Ranges drawn from World Economic Forum, Deloitte and ARC Advisory benchmarks for asset-intensive sectors.

If your stack only talks to itself, it's not a Digital Twin – It's a silo with a 3D viewer



FIVE PRINCIPLES WE LIVE BY


- 1 Open Formats by Default**
IFC, CityGML, OGC APIs Over Proprietary Exports.
- 2 API-First, Vendor-Second**
If we can't read it programmatically, we don't buy it.
- 3 Common Data Environment**
One CDE from Concept Design to Facilities Ops.
- 4 Edge-to-Cloud Integration**
Sensors, gateways and platforms talk natively.
- 5 Cybersecurity and Sovereignty**
Data Residency, Role-Based Access, OT/IT Segregation.

Federated, not consolidated — open standards keep the asset portable across vendors and decades.

Technology is not the Bottleneck. Governance, Skills and Capital Allocation are.



GOVERNANCE



Information requirements written into procurement. A single accountable digital owner per asset. Clear data-rights, IP and handover protocols across designer, contractor and operator.




SKILLS

Hybrid teams that speak BIM, GIS and operations. National training pipelines — not just imported expertise. Operators who trust the twin enough to act on it during a real incident.



INVESTMENT

Fund the operate-phase platform from CapEx, not OpEx. Measure ROI in avoided incidents, deferred CapEx and asset-life extension — not in licences purchased



Most failed digital programs don't fail technically. They fail because nobody owns the asset's data after handover.

Five Things I'd put on Every Airport, Campus and Giga-Project Agenda

1 **Treat the Digital Twin as the Asset, not a Deliverable.**

It is the operating model — fund it, staff it, govern it accordingly.

2 **Specify it in the Contract, not in the Kick-off Meeting.**

Information requirements belong in procurement — open standards, no exceptions.

3 **Engineer for Handover from Day One.**

BIM and GIS deliverables must be operations-ready, not just design-coordinated.

4 **Pilot Fast on One Terminal, One Campus, One Runway.**

Prove the loop-sense, predict, act, measure-before you scale.

5 **Build the Operator, not just the Platform.**

The twin only matters if the duty engineer trusts it at 03:00 in an incident.

LET'S CONTINUE THE CONVERSATION

Thank you.

Q&A.

Questions, Debate, and Counter-Examples are all Welcome — That's Why We're on a Panel.

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