

# Breaking Down Silos

HOW AI AGENTS UNIFY GIS, BIM, PMIS & EAM TO AUTOMATE WORKFLOWS,  
SURFACE INSIGHTS & TRANSFORM DECISION-MAKING



# What We'll Cover

## The Problem

- Why silos on infrastructure projects cost billions by slowing decision making
- What the various systems do and where they fail

## The Solution

- How Intelligent agents bridge the gap across siloed systems
- How it delivered measurable outcomes in real world scenarios

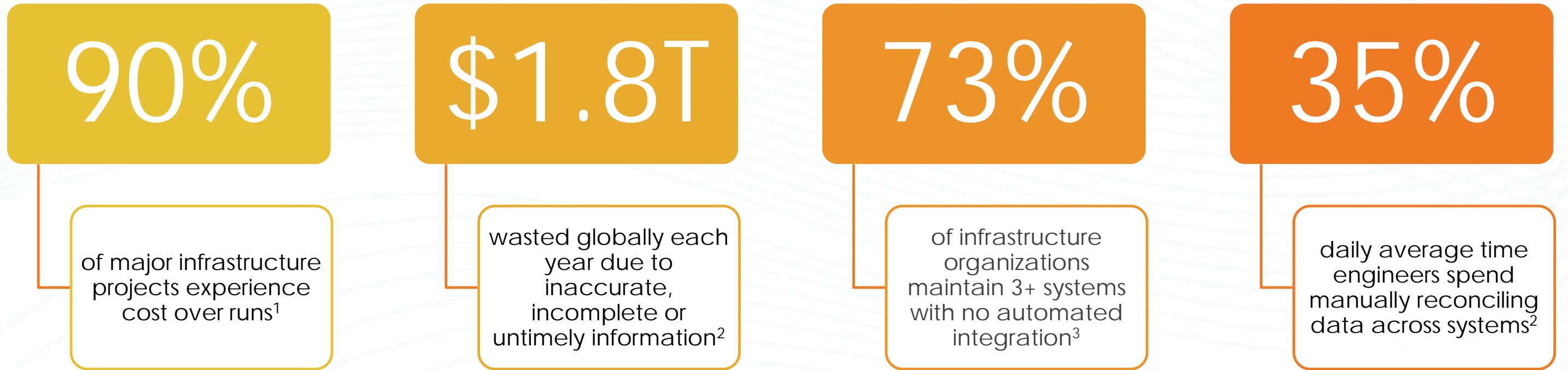
## Next Steps

- Where to start, what to avoid, and what comes next



# The Infrastructure Data Crisis

*Disconnected systems are silently draining project value, delaying decisions, and multiplying risk*



# The Fragmented Reality

- ▶ A capital project mobilizes and damages an unmapped utility because the EAM failure log wasn't cross-referenced with the GIS
- ▶ A maintenance team is dispatched to an asset that a PMIS project has already scheduled for replacement next month
- ▶ A readiness report shows green on schedule while GIS and PMIS data reveal risks have not been fully mitigated
- ▶ EAM team updates asset location; GIS still shows old coordinates
- ▶ Maintenance team can't find the right drawing version in BIM




# The Downstream Impact

- ▶ Delayed Decisions: Leaders lack real-time integrated insight
- ▶ Reworks Costs: Errors propagate across systems undetected
- ▶ Compliance Risk: Audit trails fragmented across systems
- ▶ Inherent Inefficiency: Skilled staff spend 35%+ time on data management
- ▶ Missed Deadlines: Coordination gaps cascade into schedule slippage



# The Systems of Record




**GIS**  
Geographic Information System

The spatial layer. Knows where everything is – assets, networks, environmental zones, terrain, underground utilities.

**IT OWNS:**

- Asset & utility locations
- Environmental zones
- Spatial relationships
- Topography & terrain




**BIM**  
Building Information Model

The engineering layer. Knows what everything is made of – geometry, specifications, clash detection, design intent.

**IT OWNS:**

- 3D structural geometry
- Material specifications
- Design documentation
- Clash / conflict data




**PMIS**  
Project Management Information System

The programme layer. Knows when and how much – schedules, milestones, budgets, resource allocation, risk registers.

**IT OWNS:**

- Project schedules & milestones
- Budget & cost tracking
- Resource allocation
- Risk & change management



**EAM**  
Enterprise Asset Management

The lifecycle layer. Knows the health of everything – maintenance history, failure patterns, condition ratings, work orders.

**IT OWNS:**

- Maintenance history & schedules
- Condition ratings & defects
- Work order management
- Asset lifecycle & criticality



# Real-World Impact

FOUR USE CASES SHOWING WHAT'S POSSIBLE WHEN THE SILOS COME DOWN



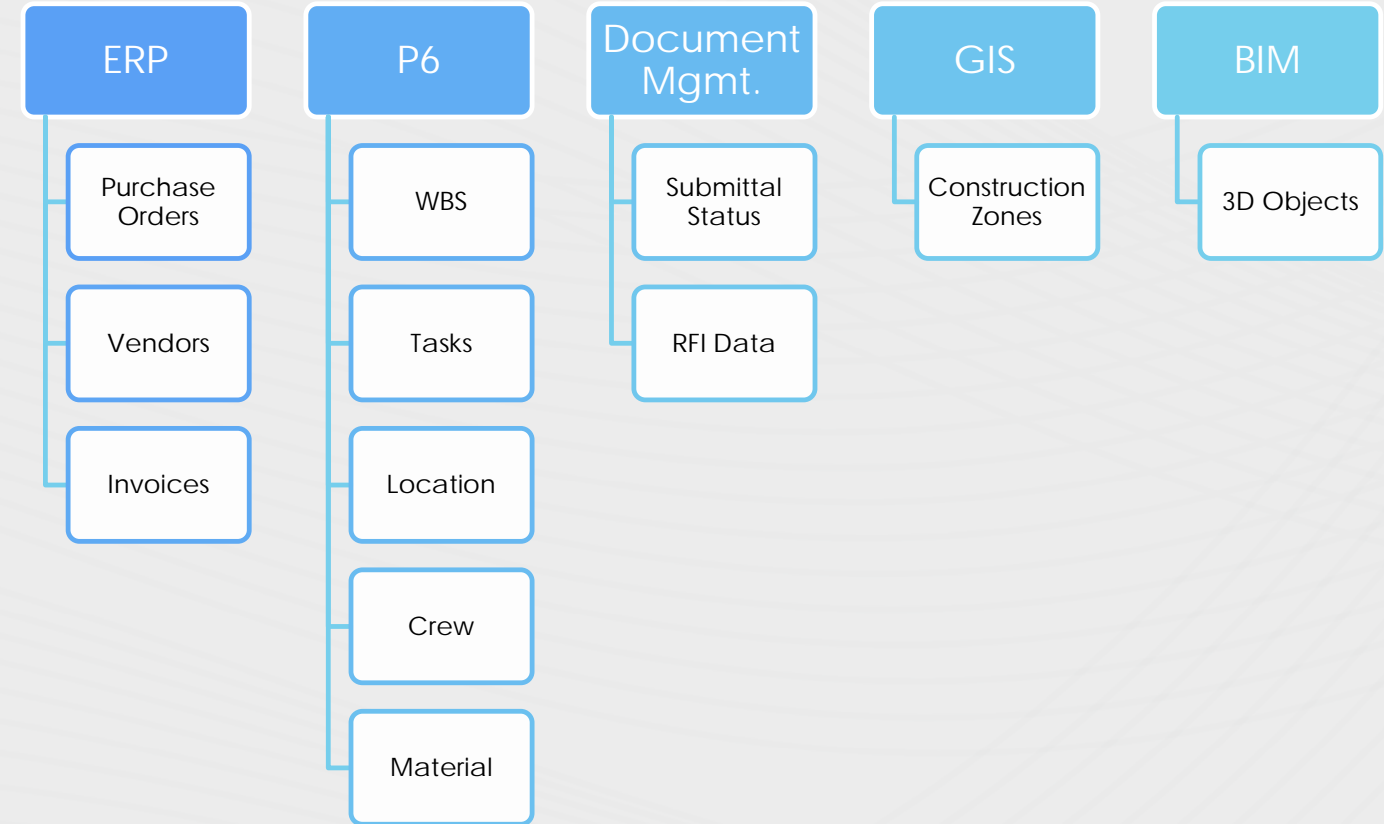
# Construction Management Readiness Score

## Scenario

For all activities starting in the next 2–4 weeks, what is the readiness score based on submittals, material delivery, RFIs, predecessor completion, and labor and equipment availability

## Benefit

Turns schedule dates into probabilistic readiness indicators by aggregating other related information resources



# Construction Management

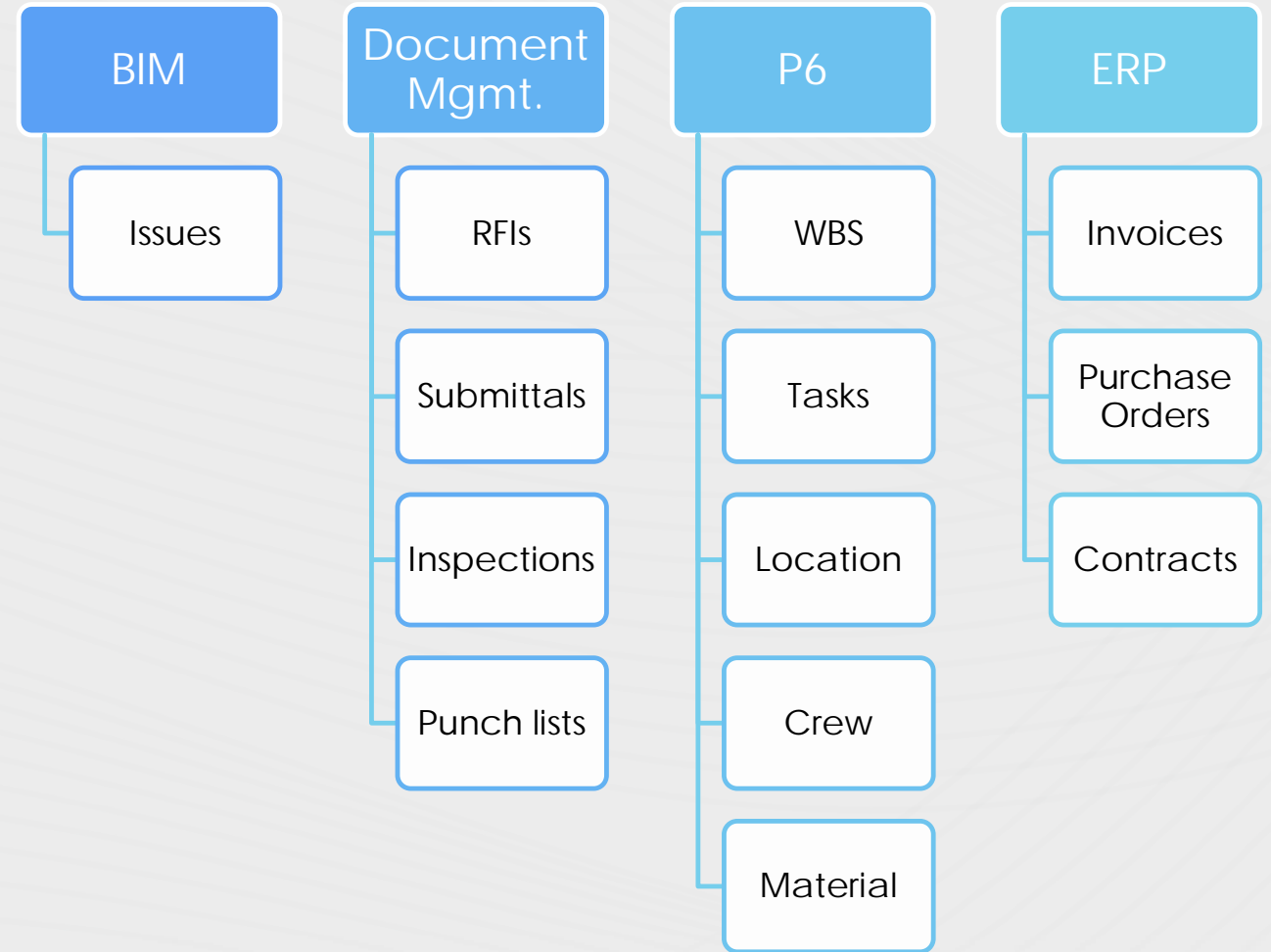
## Quality Drift

### Scenario

Which active subcontractors show increasing defect density over the last 3–4 weeks?

### Benefit

Early intervention reduces exponential rework growth.



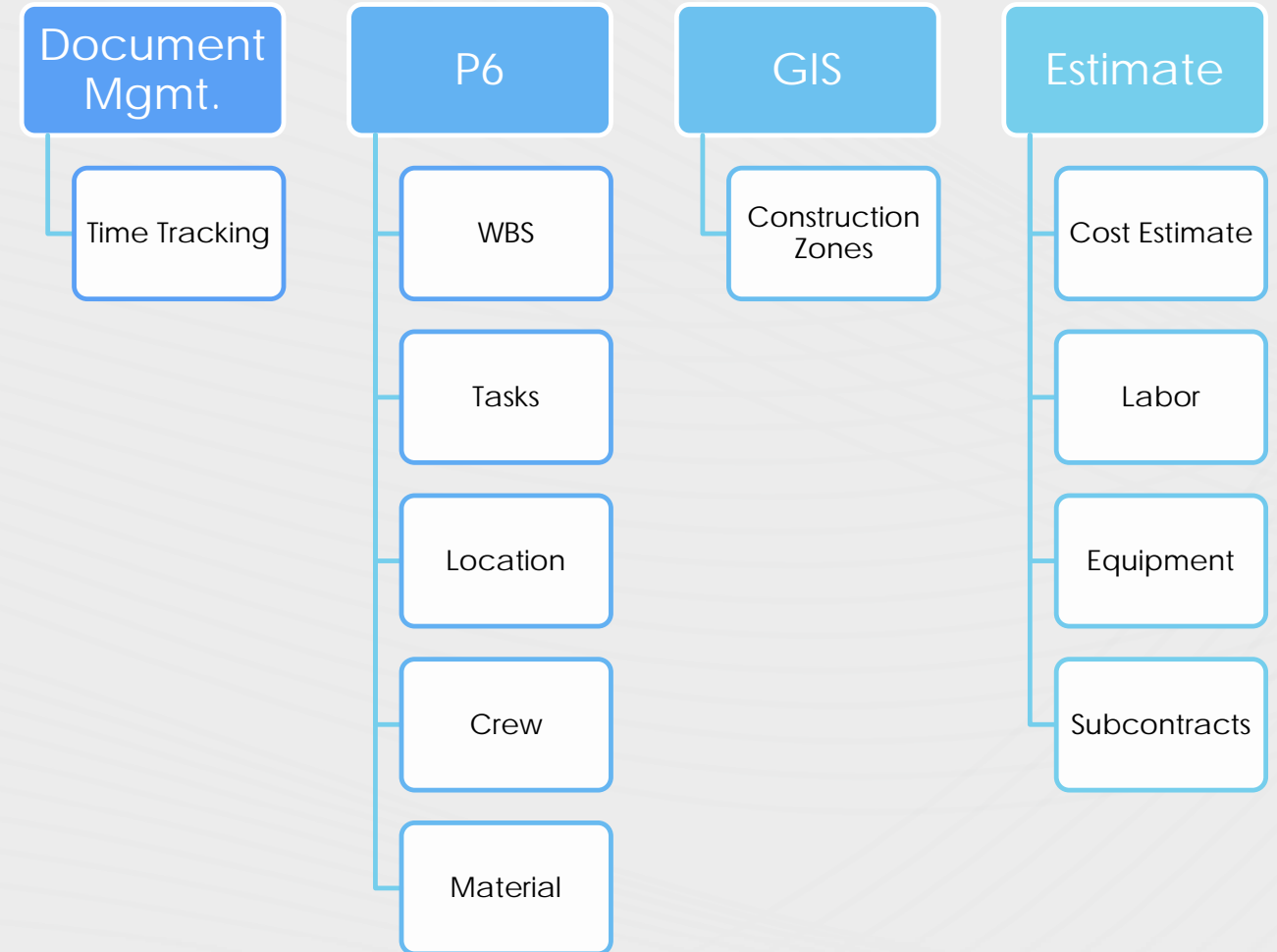
# Construction Management Productivity Comparison

## Scenario

Which active work packages show declining earned-value performance over the last 10 days and are on the critical path?

## Benefit

Allows timely interventions before major schedule delays and budget overruns



# Asset Management

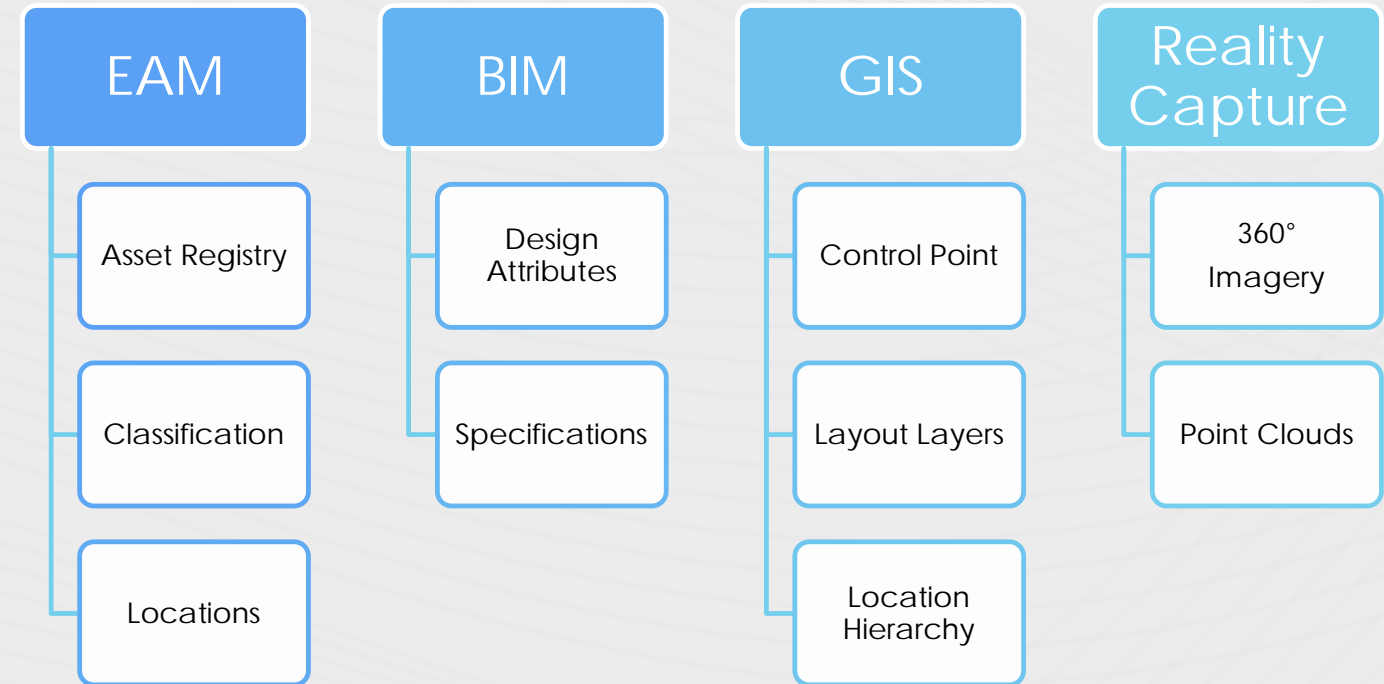
## Asset Registry Update

### Scenario

Update the asset registry for existing facilities through comprehensive condition assessment using reality capture and mobile inspections data

### Benefit

Automate the entire workflow using machine learning based vision recognition and location determination pipeline



05

Analytics & Decision Support



Predictive Maintenance



Sub-surface Context



Capital Projects Analytics



Contextual Insights

04

Visualization & Interaction



GIS Module



CAD/BIM Module



Reality Capture Modules



PowerBI Module



Query Agent Module

03

Data Sync & Management



2D/3D Basemap



Asset Management



Subsurface Utilities



Infrastructure & Facilities



Environmental Zones



Capital Projects

 Common Data Environment (CDE) — Microsoft Fabric

02

Data Acquisition, Integration & Processing

Data Integration and Processing through Domain specific Large Language Model (LLM)

Data Acquisition



LiDAR & Photogrammetry



CAD / BIM Models



Asset Management



Inspections



GIS Layers



IoT Sensors



Legacy Datasets

01

Governance & Trust



Data Stewardship



Authentication & Authorization



Data Lineage



Quality Control

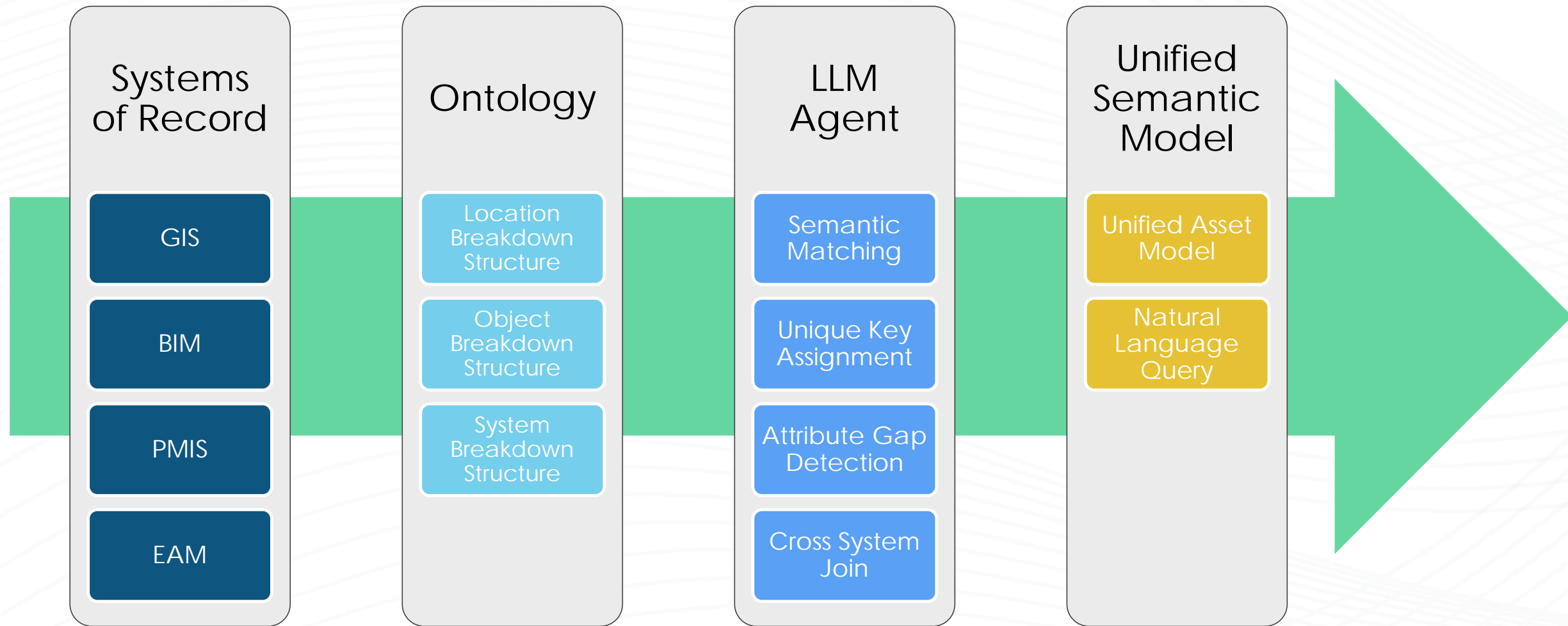


Ontology & Knowledge Graph



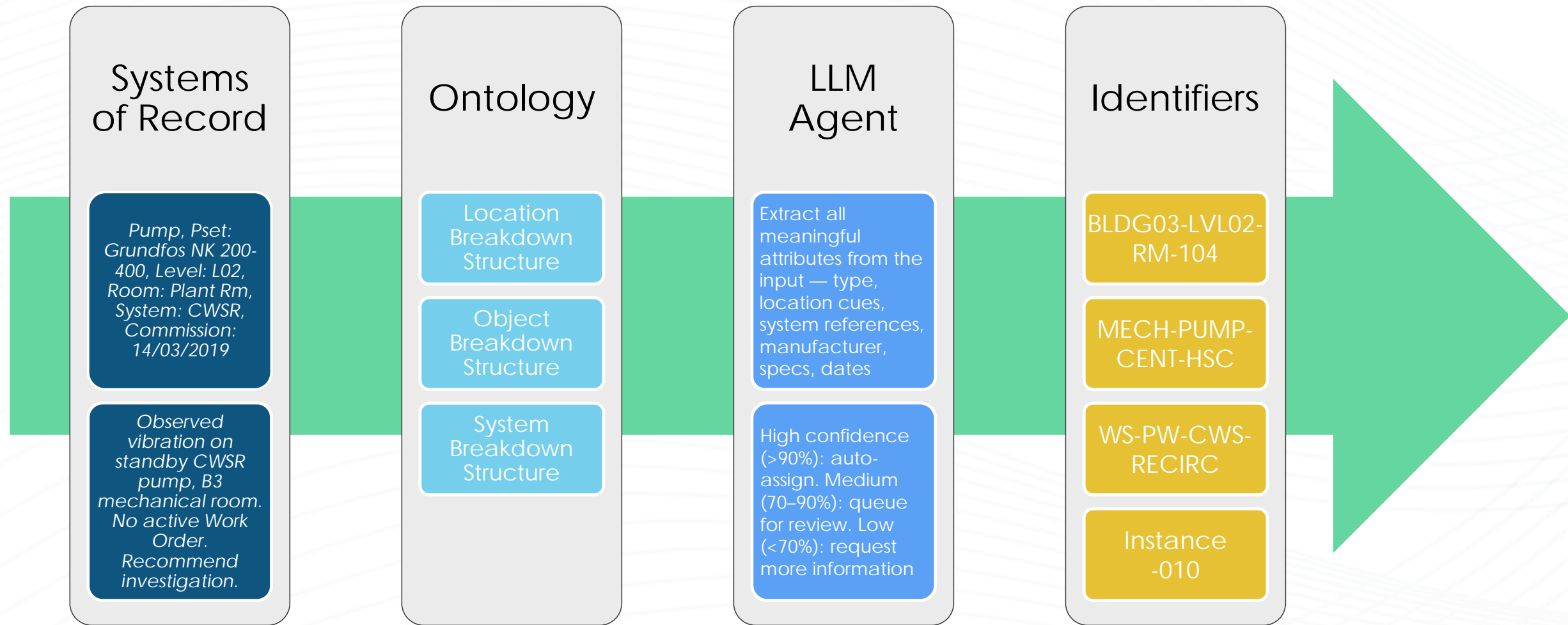
Audit & Compliance

# LLM as the Integration Intelligence Layer



# LLM as the Integration Intelligence Layer

*From messy incoming information to a precise, composite identifiers*

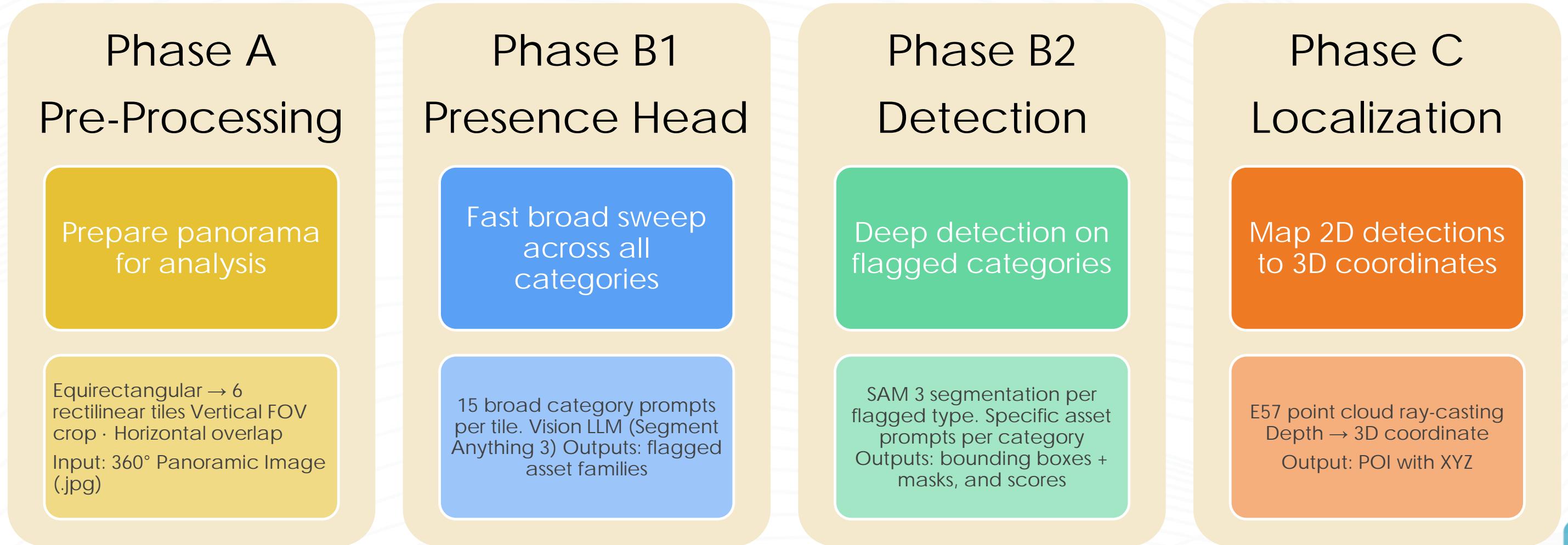


# Automated Asset Detection

*Automatically identify, locate and record physical assets from reality capture*



# Asset Detection Workflow



# Live Demo



# Challenges and How to Overcome Them

## Common Barriers

- ▶ Data quality is inconsistent across systems
- ▶ Organizational silos mirror the system silos
- ▶ Legacy systems with poor or no APIs
- ▶ Security & sovereignty concerns with AI processing
- ▶ Fear of job displacement among technical staff
- ▶ Lack of AI literacy in leadership

## Proven Mitigations

- ▶ Start with your cleanest dataset; automate data scoring
- ▶ Form cross-functional AI steering group from day one
- ▶ Use middleware/API gateways to wrap legacy systems
- ▶ Deploy on-premises or private cloud AI where needed
- ▶ Position AI as amplifying expertise, not replacing it
- ▶ Run AI literacy workshops for executives and managers



# Five Things to Take Away Today

01

Silos are a choice, not a constraint

GIS, BIM, PMIS, and EAM can share a unified data fabric; the technology exists today.

02

AI agents reason, not just integrate

The step change isn't connecting systems; it's the reasoning layer that acts on those connections.

03

Start small, think enterprise

One workflow, two systems, measurable ROI in 90 days. Then scale from a foundation that works.

04

Data quality is your first investment

AI amplifies what's there. Great AI on bad data delivers bad answers faster. Fix the data first.

05

Leadership is the catalyst for change

The organizations winning with integrated AI have executive sponsors, not just IT champions.



# Thank You

QUESTIONS & DISCUSSION

