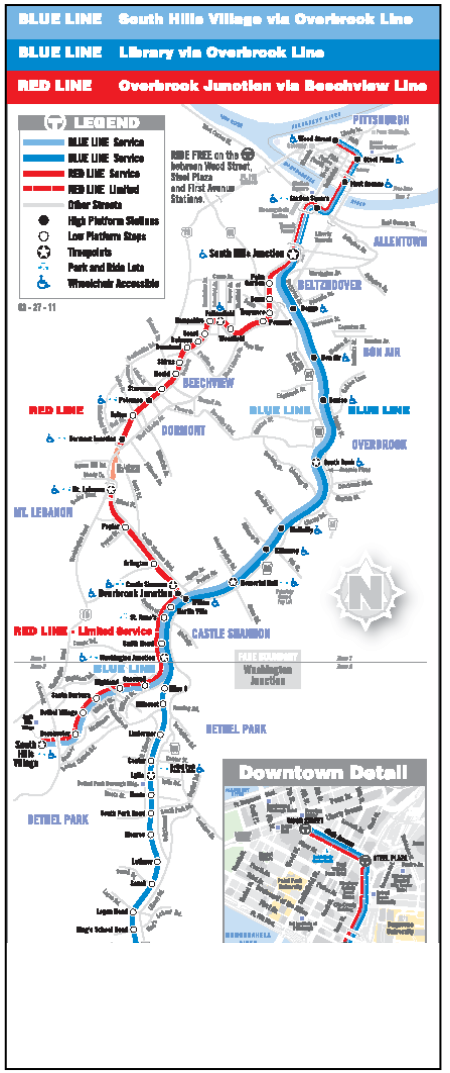
Asset Management Systems Information

Required to

Maintain Service Delivery

and

Asset State Of Good Repair



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Agenda

- Introduction and Objective.
- EAM Needs / Drivers.
- Asset & Location Hierarchy and Asset Management.
- EAM Business Process Design Example.
- EAM & ERP Integration Design..

Complexity of Transit Asset Management

Transit Business	Service
Transit Services	Rail Transit Service
	Bus Transit Service

EAM Needs / Drivers

EAM Needs / Drivers
Service Availability, Maintenance & Legislation

- **Asset Availability to Support Train Service:**

  Provide the foundation against which availability of Primary Assets are measured, in terms of cost and the cause for service disruption.

- **Asset Lifecycle Management :**

  Provide structured maintenance management information that will support asset life cycle assessment. The typical question is whether to renew an asset or continue to maintain. The assessment is whether the cost of maintaining the asset to function to the standard required is lower than the cost of replacing the asset.

- **Legislations:**

EAM Needs / Drivers
State of Good Repair (SOGR)

What is SOGR?

A condition in which the existing physical assets, both individually and as a system, (a) are functioning as designed within their useful lives, and (b) are sustained through regular maintenance and replacement programs.

What is required to compile a comprehensive Capital Investment Program?

SOGR assessment.

Future capacity requirements.

Future performance requirements.

What Management Information is required to reliably make assets available for service and ensure a State Of Good Repair

Structured set of asset management information that enables a manager to determine the operational and financial performance of their primary assets.

- ***Operational performance*** *is determined by the level at which the assets support the service delivery measured by unplanned and planned minutes of delay.*
- ***Financial performance*** *is determined by the resources consumed to make the assets available for service.*

Asset & Location Hierarchy and Asset Management

Management Information Systems Required

Physical Asset Management

An asset Inventory structured in a hierarchy that rolls-up from maintainable components to Primary Assets & Service.

- Provide the work order planner with a logical set of assets from which the person can chose the correct asset against which a work order has to be assigned.

A Work and Asset Management system supported by an up to date configured asset hierarchy that manages all work against assets on work orders.

- Support analyses of maintenance resource consumption.
- Support analyses of work type and cause of work.

Service Management

A Service delivery and event management information system that integrates vehicle and infrastructure availability.

Resource Management

A Resource Planning system that ensures resources are available.

EAM Assets & Location
Rail Infrastructure Assets Groups - Example

Track & RoW Structures (TK)
- Track Segment
- Turnout
- Wayside Support
  - Lubricators
  - Drainage
  - Expansion Joint
  - etc.





Communication & Signals (CS)
- Train Detection Circuits
- Switches, Crossing Control
- RoW Support
  - Signals
  - Insulated Joint
  - Instrument Components
  - etc.





Electric Traction (ET)
- Switching Sections
- Transmission Lines
- Wayside Support
  - Catenary
  - Section Break
  - Transformer
  - etc.



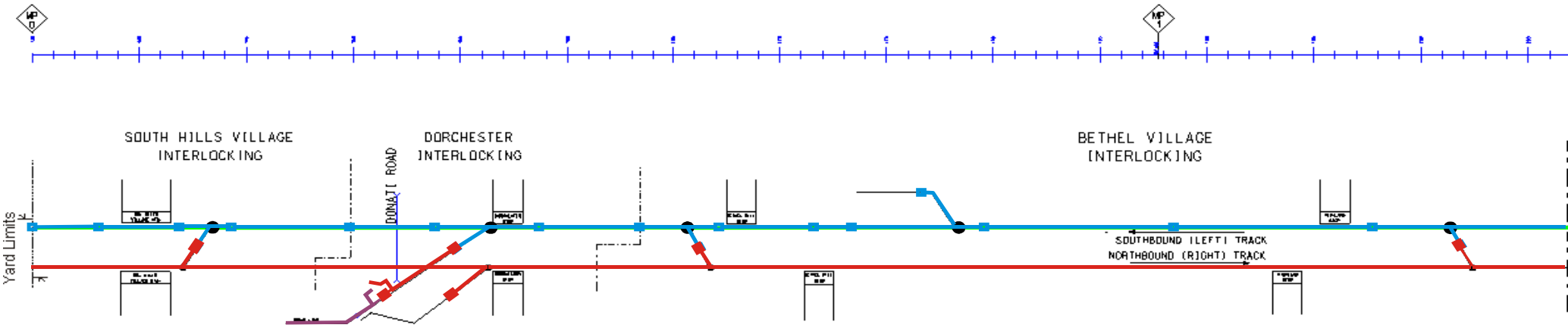


Buildings & Bridges (BB)
- Service Support
  - Facilities
  - Buildings
  - Etc.
  - etc.





Track Specific Primary Assets Supporting Service Delivery



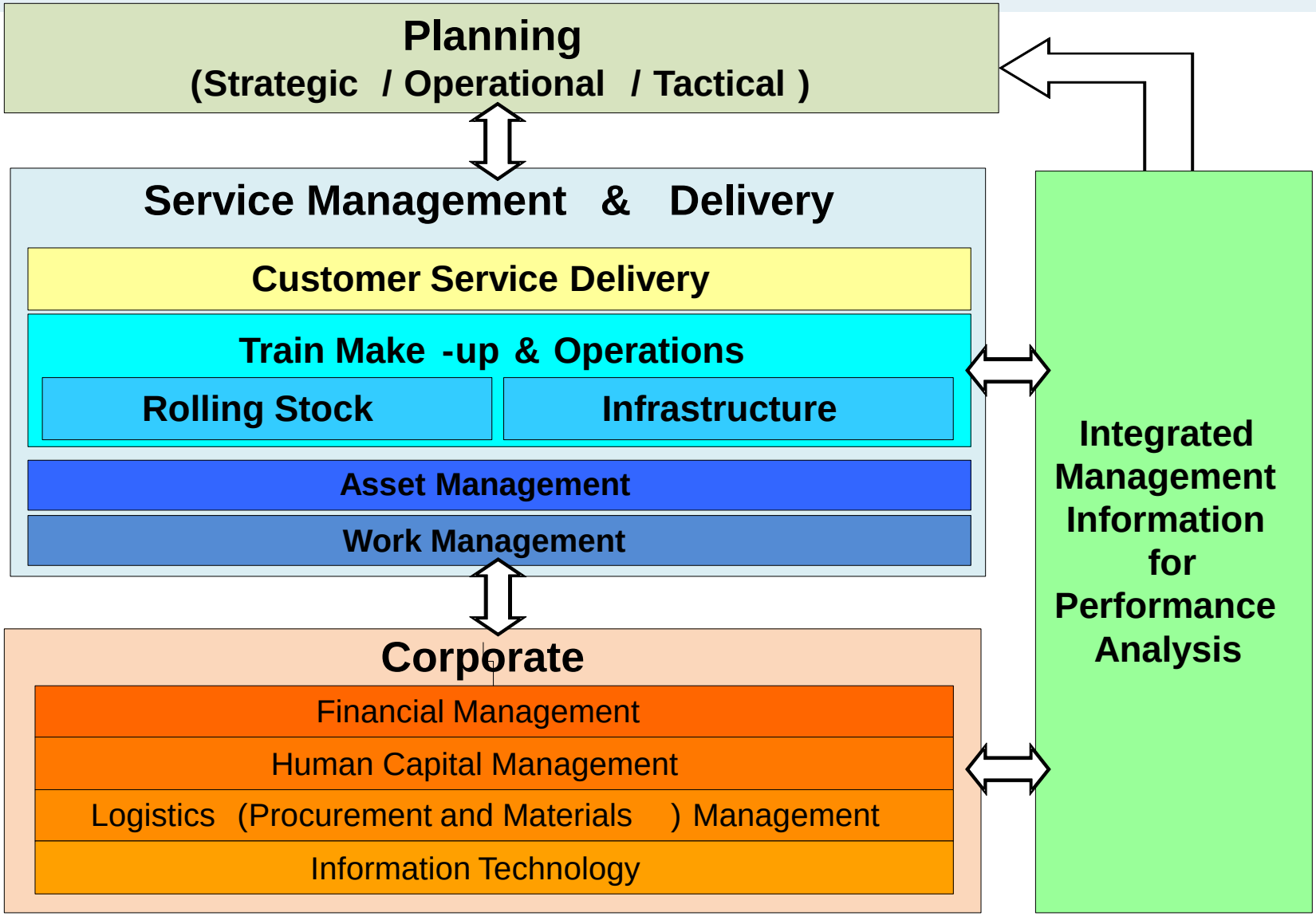
Roll Up Asset Hierarchy

Service	Service Asset	Primary Asset	
		Level 1	Level 2
Impact the Customer	Impact the performance of the Service	Impact the performance of the Service Asset	Sub Asset
Rail Transport	Sequencial Track Segment and Turnout Route	Track Segments	Joints Bolted
			Joints Expansion
		Turnout	Switch Points
			Frog
			Switch Machine - Hand Thrown
	Train Detection Circuit Route	Signal/Track Circuit	Insulated Joints
			Impedance Bonds
			Signals
		Switch Circuit	Switch Machine/s
			Fouling Wires
			Insulated Joints
			Controllers
	Traction Power Circuit Routes	Catenary Circuit	Overhead Wire Configuration
			Tie Switch
			Section Insulatord

EAM

Business Process Design Example

Level 0: Enterprise Business Process



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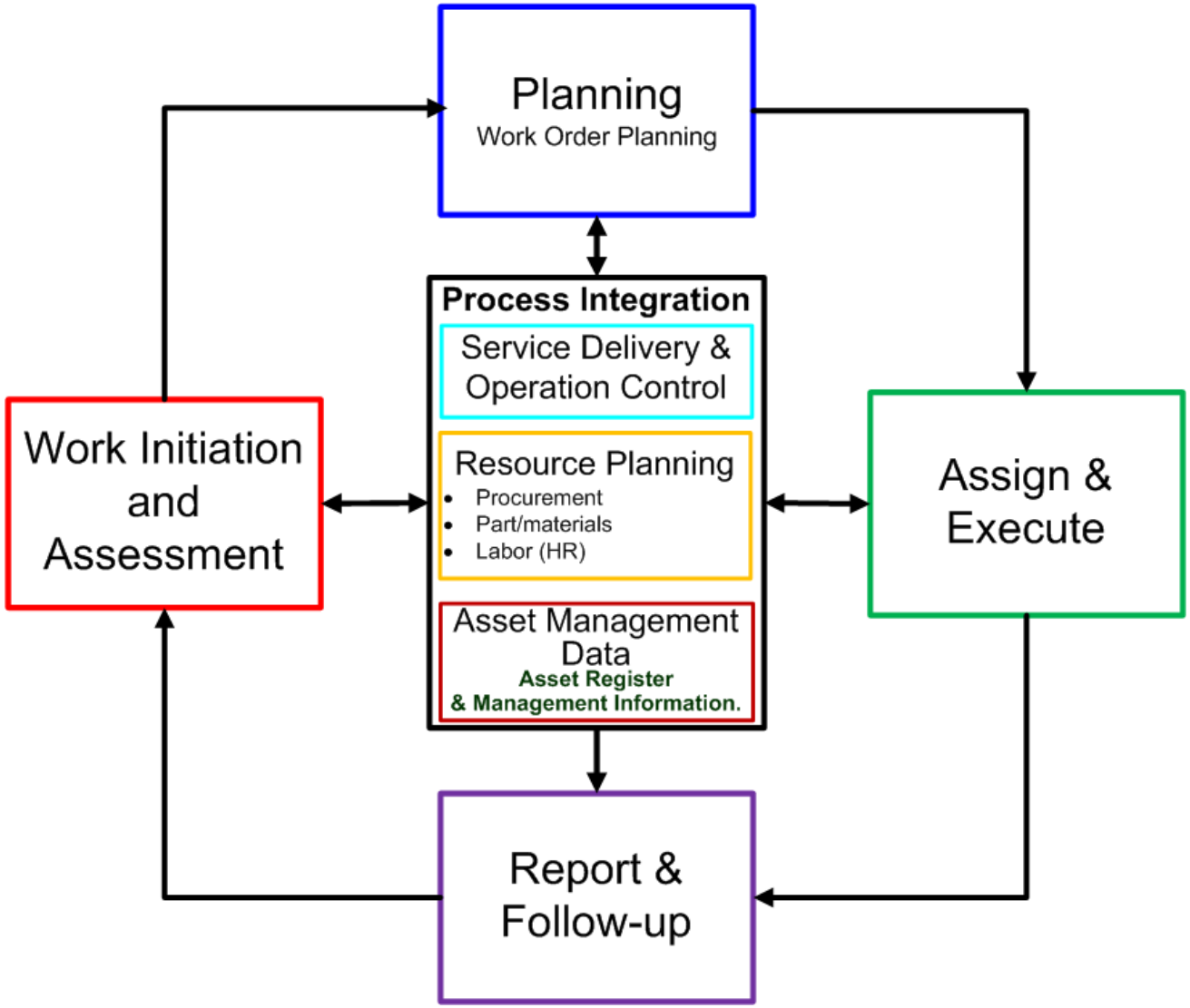
Level 1: Standard Maintenance Business Process Flow (Activity Based)

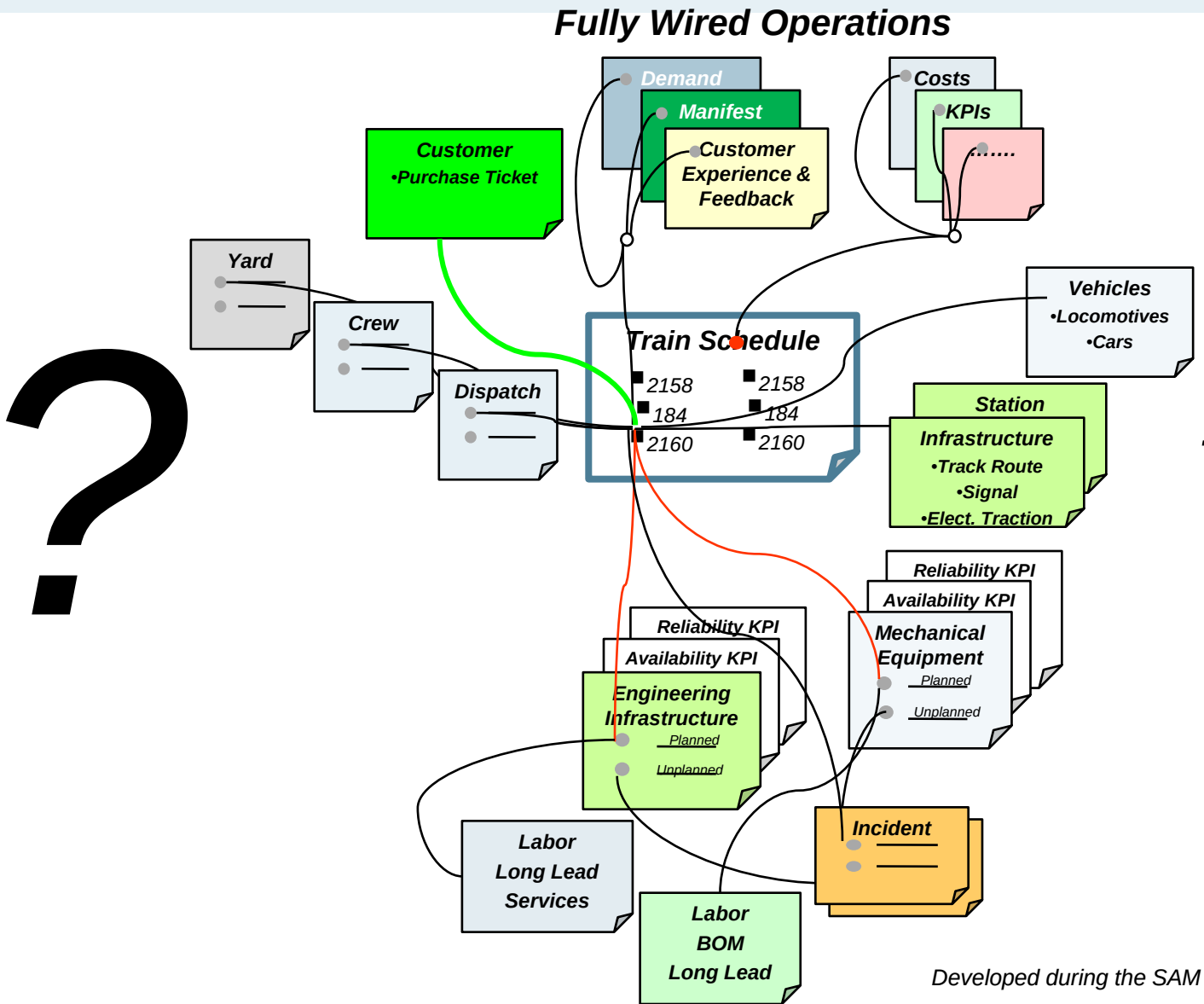


Level 2: Business Process Flow

Activity Based Flow with:

1. *Roles and responsibilities in horizontal swim lanes*
2. *Level 1 Activities in vertical swim lanes*

Railroad Data Model



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Challenge

Transform data into management information

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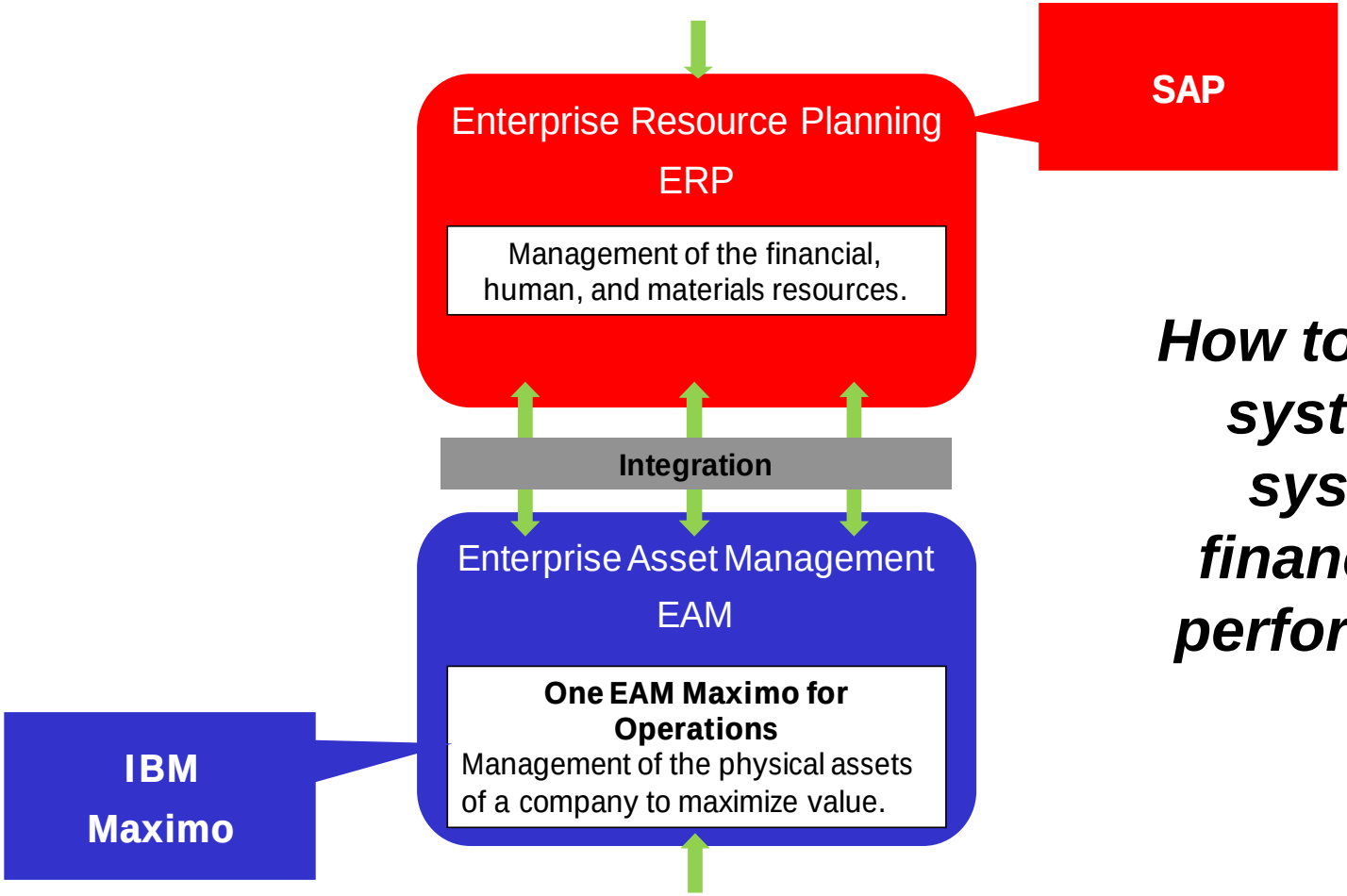
EAM & ERP
Integration Design

EAM & ERP Integration
Maximo & SAP Example



How to integrate the EAM system with the ERP system to measure financial & operational performance of the train service.

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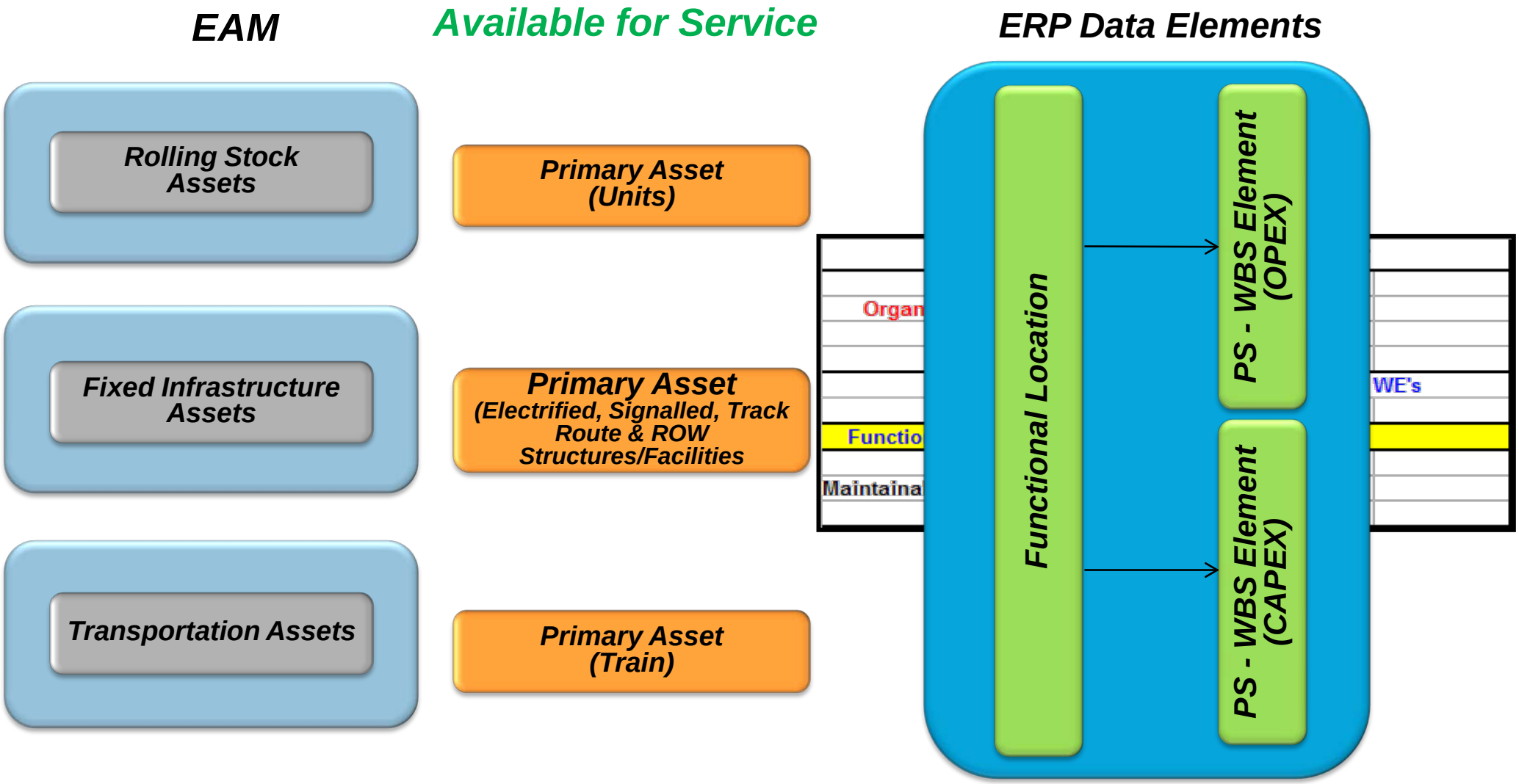
EAM & ERP Integration
Data Relationship Model



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