

Asset Management System Implementation & Integration



MTA Long Island Rail Road

July 17, 2012

4th FEDERAL TRANSIT ADMINISTRATION
State of Good Repair Roundtable
July 16-18, 2012 ■ Philadelphia, PA

 U.S. Department of Transportation
Federal Transit Administration

About the LIRR

- Chartered April 24, 1834
- Agency of the Metropolitan Transportation Authority (MTA)
- Commuter Railroad Serving Nassau and Suffolk Counties (Long Island) and Queens, Brooklyn and Manhattan (New York City)
- 11 Branches
- 3 Western Terminals –
 - Penn Station (Manhattan)
 - Atlantic Terminal (Brooklyn)
 - Hunterspoint Av (Queens)
- Jamaica Station - LIRR's hub, served by 10 Branches



MTA Metropolitan Transportation Authority
MTA Long Island Rail Road

Key

- Full Time rail station
- Part Time rail station
- Major Transit Hub
- Accessible station

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About the LIRR

FLEET

- 1,006 Electric MU Cars
- 134 Bi-Level Coaches (Diesel-hauled)
- 23 Diesel Locomotives
- 22 Dual Mode Locomotives



INFRASTRUCTURE

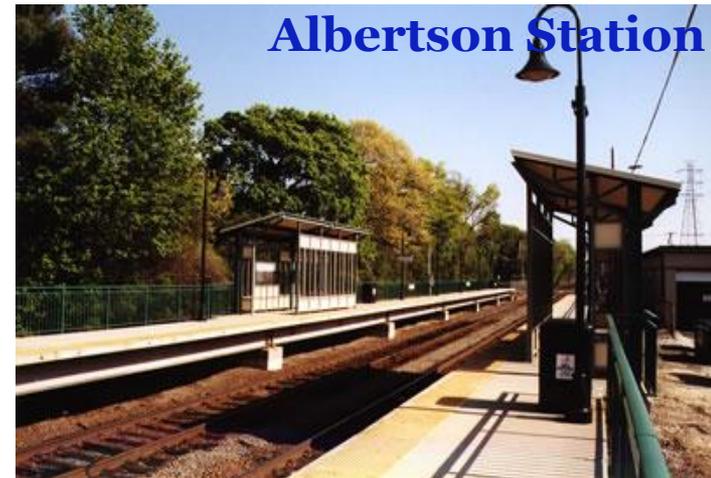
- Over 661 miles of track
- 124 Passenger Stations
- 294 Grade Crossings
- 750 Overgrade/Undergrade Bridges
- 29 Viaducts
- 73 Interlockings
- 328 miles of 3rd Rail
- 108 Substations

Asset Management – Drivers

- Since 1982, the MTA agencies have had a series of 5 Year Capital Programs, totaling \$75 billion in capital investments (1982-2009)
- Capital Planning Process
 - Asset Inventory
 - Twenty Year Needs Assessment
 - Development of 5 Year Capital Program
- Recent Financial Challenges – Re-examine future assumptions of both funding and project scoping

Transformative Projects

- In past LIRR Capital Programs, much of the investments were large scale:
 - Large Scale Fleet Replacement
 - Construction of High Level Platforms at all Diesel Stations
 - Major Investment in Jamaica Station and Atlantic Terminal



Jamaica Station – Before

Station built 1913



Jamaica Station – After

Station Renovation 2002 - 2005



Atlantic Terminal – Before

Station building built 1907 & Demolished 1988



Station Building - 1986

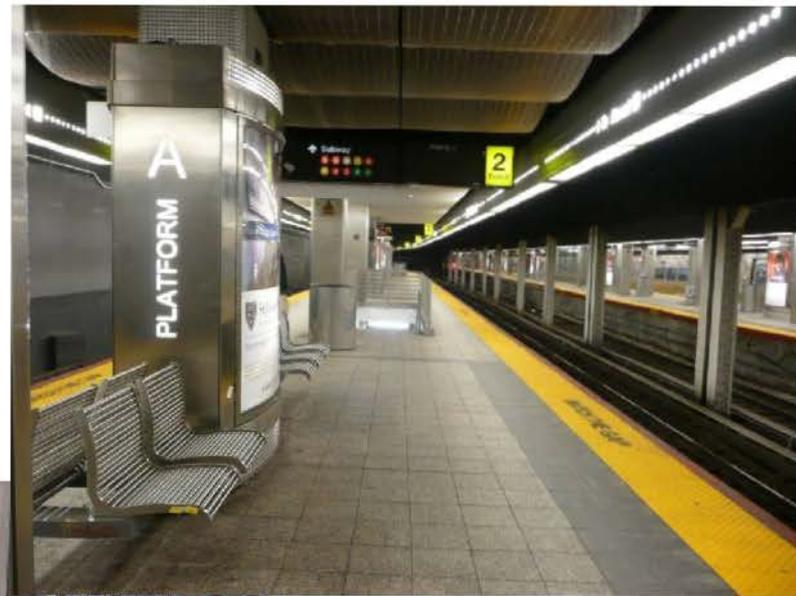


Platform - 2001



Atlantic Terminal – After

Station Renovation 2004 - 2010



Increased Focus on Lifecycle Costs

Moving forward, the LIRR's focus will be more on minimizing lifecycle costs of assets:

- Examination of Inspection and Maintenance Practices
- Identify Candidates for Component Replacement, focusing on Signals and Substations
- Assess & Prioritize Assets in a more detailed way (i.e. risk, criticality and interdependency)
- Recognition of our unmet data needs, particularly in regards to Maintenance / Repair Costs / Decision Support

Enterprise Asset Management (EAM)

- Implement an EAM program to achieve systematic, optimal and sustainable asset management at the lowest lifecycle cost:
 - Deliver necessary outputs to the asset managers and decision-makers
 - Deliver outputs valued by customers, funders and other key stakeholders
- EAM Benefits:
 - Understand Risks associated with Capital Assets & how these Risks change over time
 - Corporate impact / consequences of increasing or decreasing capital investment levels of a particular asset
 - Provide asset data and information to decision makers on multiple levels that facilitates knowledge-based decisions
 - Consistent asset management framework company-wide

Path Towards EAM

- **Rolling Stock**

- Rolling Stock Maintenance – Replaced legacy software system with Maximo
- Fixed locations – Hillside, West Side Yard, Morris Park / Richmond Hill
- Major Fleet Replacement Effort
- Implementation of Reliability Centered Maintenance (RCM) Program
 - Need for Data
- Three Types of Rolling Stock:
 - M-3 Electric Multiple Units (1984 – 1986)
 - M-7 Electric Multiple Units (2002 – 2007)
 - Diesel / Dual Mode Locomotives & Bi-Level Coaches (1998 - 1999)

Planning EAM

Business Process Analysis

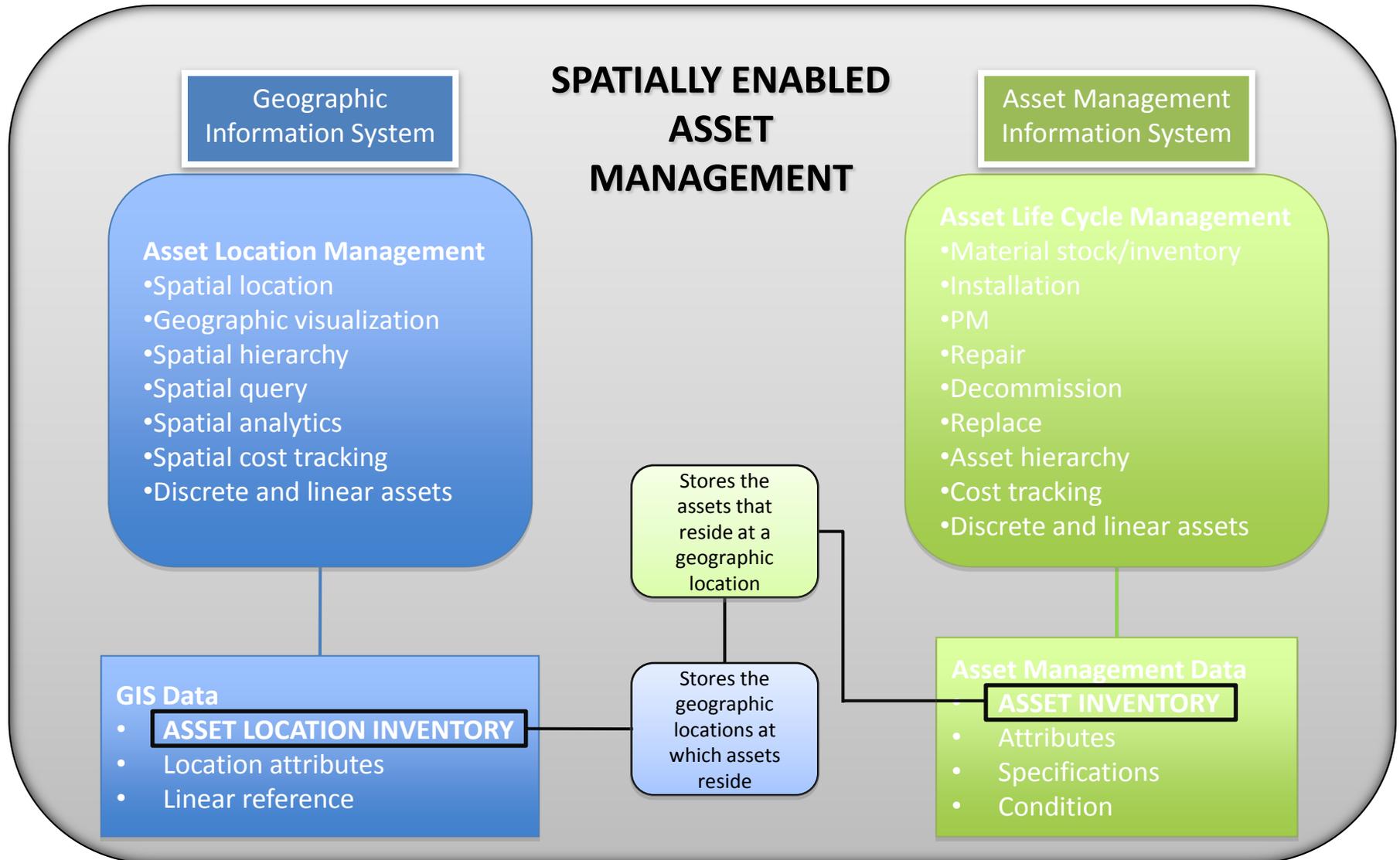
- Understand how assets are managed today
 - Identify Current Inspection / Regulatory Requirements
- Compare to industry best practices (PAS55)
 - Determine EAM maturity level
- Examine:
 - LIRR's business needs and data required for informed decision making
 - What level of detail and frequency of inspection is appropriate
 - Changes / modifications to inspection process
 - Risk and criticality of assets
 - Policies / Resources needed to implement changes
 - Support and training requirements for business process change and technology implementation

Bringing It Together

Building Upon Recent Experiences

- Lessons Learned
 - Already implemented new RCM program for Fleet, done in conjunction with large-scale fleet replacement
- GIS
 - Recent substantial investments in Corporate GIS
 - Training / Maintenance of GIS network
 - Active Users throughout Engineering, System Safety, etc.
- Recognized Unaddressed Data Needs
 - Make informed investment decisions / prioritization
 - Coordinate / refine data that was being collected / maintained by various departments / divisions with goal of migrating to corporate resource

EAM and Geospatial Technology



Map Interface - Bridge Flags

Find: Select Action

Infrastructure - Where to Start?

- **Line Structures (Bridges, Viaducts, Tunnels & Culverts)**
 - Set Inspection / Reporting Requirements
 - Biggest Rehabilitation Backlog
 - Majority of Bridge Projects are not full Replacements
 - Need for Data
 - Structures Department Strong Supporter of EAM
 - Deterioration / Hidden Problems / Bridge Strikes
 - Impact on Service
 - Concentrated in high traffic areas
 - Age of Bridges
 - Capital & Operating Funded Work
 - Geographic Nature / Involves other Assets (Signal, Power, Comm., etc.)



Strategy Planning

• Power Substations

- Total of 108 Substations / Breaker Houses
- Six date from 1945 - 1948
- 57 Substations were built between 1970 and 1972
 - Electrification to Huntington
 - Power Demands of M-1 Fleet
- Operational Challenges
- Property Challenges
- Balance resource availability with Operational Demands, while factoring in Risk
- Critical nature of Queens substations
- East Side Access Service Requirements



Requirements for Success

- Corporate Buy-in / Long-term commitments at all Levels
- Dedicated resources and support at the department level and the capital level
- Clearly defined EAM framework including policy, strategy, initiatives, and measurable goals
- Clearly defined roles, responsibilities, and processes that focus on achieving corporate goals
- EAM Working Groups – project level support and coordination
- EAM Executive Committee – EAM monitoring and issue resolution