ASSET MANAGEMENT

Program Overview for MBTA Board of Directors

William Boyce, Sr. Director, Reliability Engineering

Ronnie E. Valdivia, Director, Asset Management

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Asset Management

Introduction

Purpose:

- The Asset Management Program establishes a data driven approach to implementing a strategic process for acquiring, operating, maintaining, upgrading and replacing its transit assets to support the agency's vision, mission, and values set forth in its strategic plan.
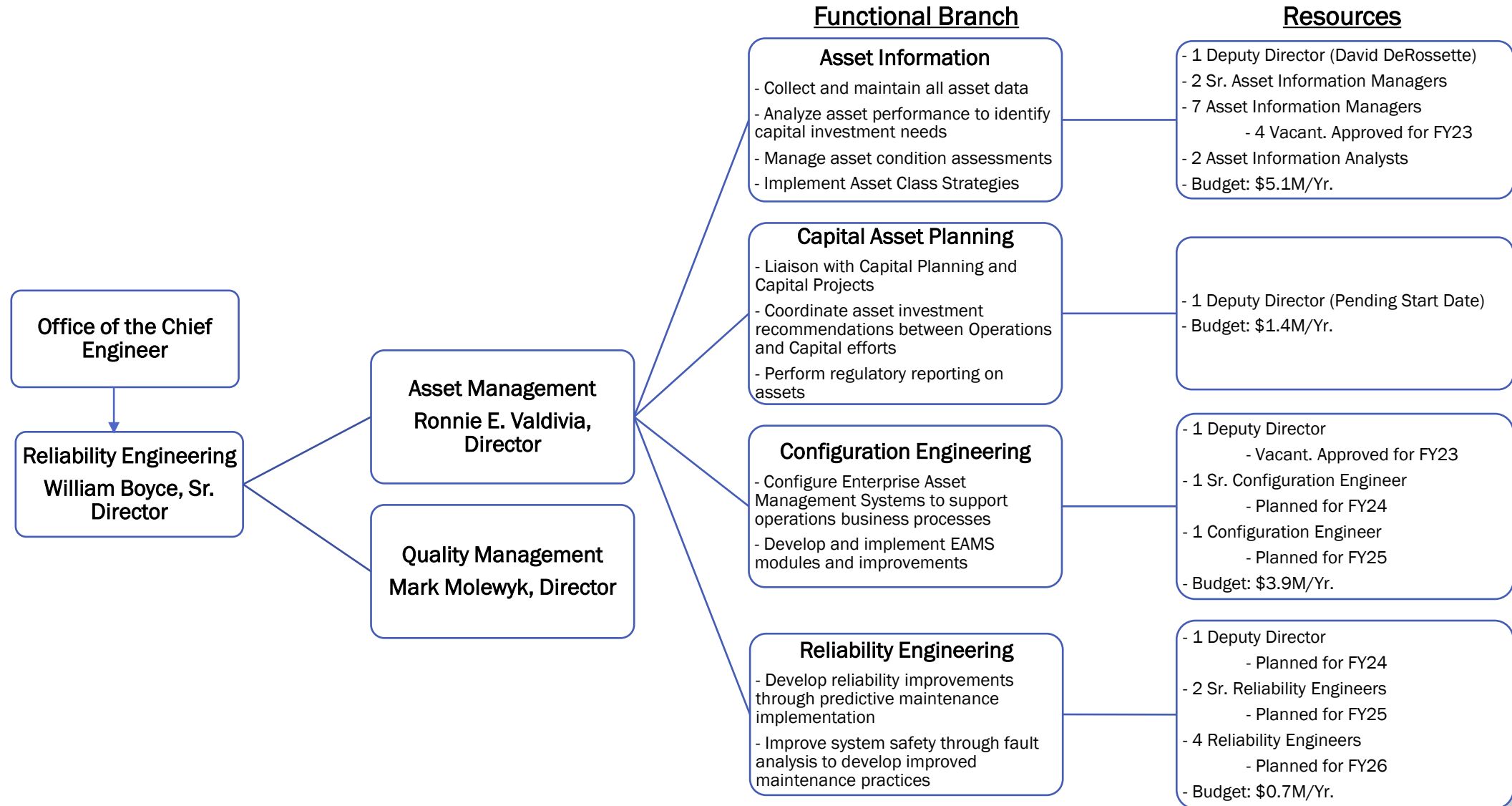
How:

- **Document the asset registry**: Inventory, Age, Condition, Criticality, Commissioning and Decommissioning of Assets
- **Create single source of asset data**: Partner with Vehicle Maintenance and Commuter Rail (Keolis) to consolidate repositories
- **Condition Assessments**: Establish standards, leverage internal data, continual field assessments, validate findings
- **Lifecycle Management**: Partner with Engineering & Maintenace (E&M) to establish work management processes and identify needs by asset class including maintenance, repair, overhaul, renewal and replacement
- **Capital Programming**: Provide objective, data-driven input to bring assets to a State of Good Repair (SGR) and partner with Capital Projects during asset handovers

Benefits:

- **Safety**: Supports the pillars of the Safety Management System (SMS) to systematically manage risk throughout the operation and lifecycle of our assets. Work Management and Condition Assessments help Identify, Assess, and Mitigate safety risks (SRM) while our efforts to digitize preventive & corrective maintenance, together with the efforts of our Quality Management team supports the Measure, Monitor and Evaluate cycle of Safety Assurance (SA).
- Improved **Reliability** to better serve our communities while improving investment decisions makes us responsible stewards of public monies.

Department Breakdown

Functional Branch

Resources

Office of the Chief Engineer

Reliability Engineering
William Boyce, Sr. Director

Asset Management
Ronnie E. Valdivia, Director

Quality Management
Mark Molewyk, Director

Asset Information
- Collect and maintain all asset data
- Analyze asset performance to identify capital investment needs
- Manage asset condition assessments
- Implement Asset Class Strategies

- 1 Deputy Director (David DeRossette)
- 2 Sr. Asset Information Managers
- 7 Asset Information Managers
    - 4 Vacant. Approved for FY23
- 2 Asset Information Analysts
- Budget: $5.1M/Yr.

Capital Asset Planning
- Liaison with Capital Planning and Capital Projects
- Coordinate asset investment recommendations between Operations and Capital efforts
- Perform regulatory reporting on assets

- 1 Deputy Director (Pending Start Date)
- Budget: $1.4M/Yr.

Configuration Engineering
- Configure Enterprise Asset Management Systems to support operations business processes
- Develop and implement EAMS modules and improvements

- 1 Deputy Director
    - Vacant. Approved for FY23
- 1 Sr. Configuration Engineer
    - Planned for FY24
- 1 Configuration Engineer
    - Planned for FY25
- Budget: $3.9M/Yr.

Reliability Engineering
- Develop reliability improvements through predictive maintenance implementation
- Improve system safety through fault analysis to develop improved maintenance practices

- 1 Deputy Director
    - Planned for FY24
- 2 Sr. Reliability Engineers
    - Planned for FY25
- 4 Reliability Engineers
    - Planned for FY26
- Budget: $0.7M/Yr.
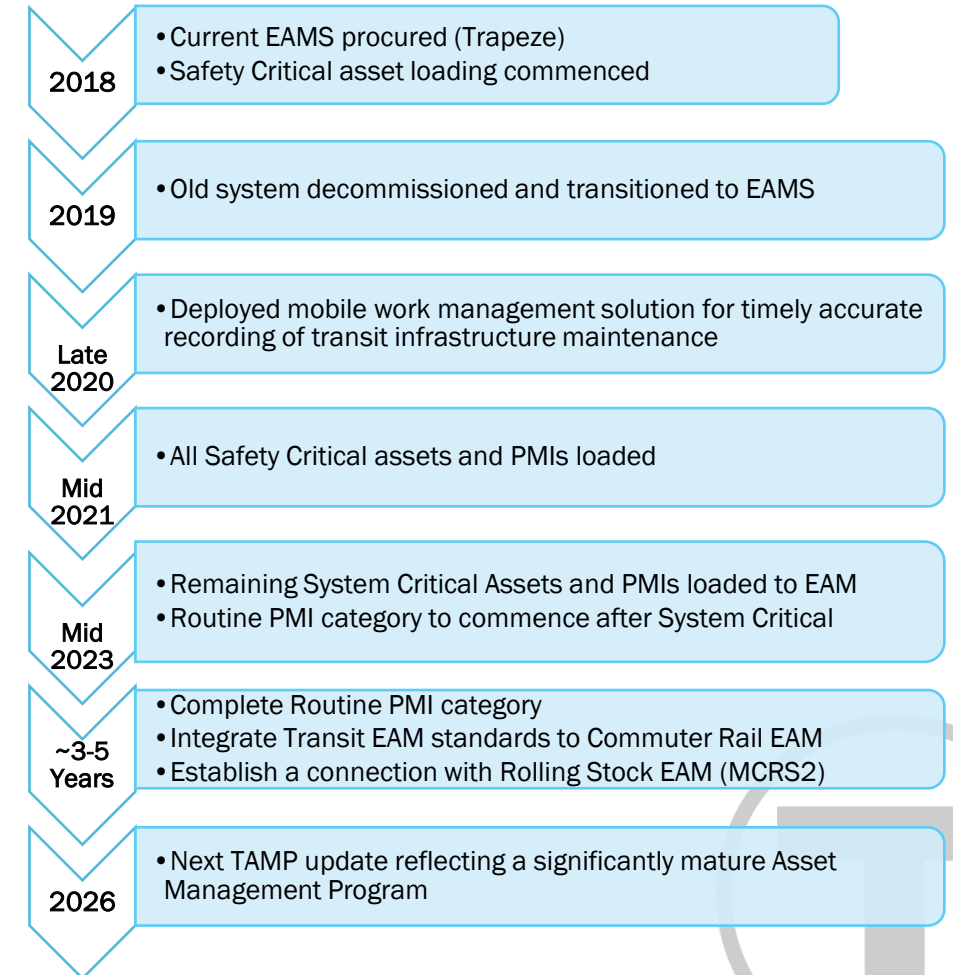
Asset Registry

GOAL: Enterprise Asset Management System (EAMS)/Trapeze should be the SOURCE OF TRUTH for all asset data.

Methodology for Asset Loads

- Based on criticality of Preventative Maintenance & Inspection (PMI) per Engineering &Maintenance:
  Safety Critical, System Critical & Routine PMI

Transit Infrastructure Assets Loaded into EAM/Trapeze							
	Track	**Power**	**Signal**	**Facility**	**Light Rail Veh**	**Heavy Rail Veh**	**Bus**
Safety Critical							
Assets	100%	100%	100%	100%	100%	100%	100%
PMI	100%	100%	100%	100%	100%	100%	100%
System Critical							
Assets	100%	95%	80%	100%	N/A	N/A	N/A
PMI	100%	50%	20%	65%	N/A	N/A	N/A
Routine PM&I							
Assets	100%	0%	0%	0%	N/A	N/A	N/A
PMI	100%	0%	0%	0%	N/A	N/A	N/A

Milestones

2018
- Current EAMS procured (Trapeze)
- Safety Critical asset loading commenced

2019
- Old system decommissioned and transitioned to EAMS

Late 2020
- Deployed mobile work management solution for timely accurate recording of transit infrastructure maintenance

Mid 2021
- All Safety Critical assets and PMIs loaded

Mid 2023
- Remaining System Critical Assets and PMIs loaded to EAM
- Routine PMI category to commence after System Critical

~3-5 Years
- Complete Routine PMI category
- Integrate Transit EAM standards to Commuter Rail EAM
- Establish a connection with Rolling Stock EAM (MCRS2)

2026
- Next TAMP update reflecting a significantly mature Asset Management Program

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Digital Work Management

Digitizing asset maintenance records leverages EAM to maintain asset information accuracy and improve maintenance work

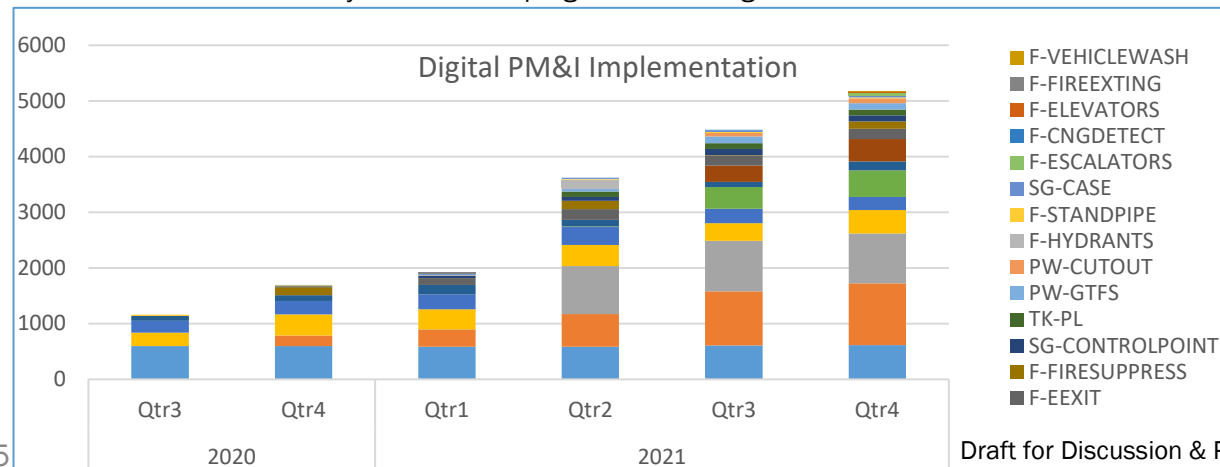| Traceability	Analytics	Resource Mgmt
• Audits • Compliance	• Root Cause Analysis • Predictive Maintenance	• Efficient Work Planning • Labor Analysis

Paper to Digital: Progress

PMI Category	Number of PMIs	PAPER	PAPER / EAM DESKTOP	D4	MAXTRAX / EAM DESKTOP	MOBILE FOCUS
SAFETY CRITICAL	42	0	17 →	5	5	15
SYSTEM CRITICAL	56	52	→			4
ROUTINE MAINTENANCE	43	43	→			

✓ All Safety Critical PM&I programs are being recorded in EAM in some format

Digital PM&I Implementation

Legend: F-VEHICLEWASH, F-FIREEXTING, F-ELEVATORS, F-CNGDETECT, F-ESCALATORS, SG-CASE, F-STANDPIPE, F-HYDRANTS, PW-CUTOUT, PW-GTFS, TK-PL, SG-CONTROLPOINT, F-FIRESUPPRESS, F-EEXIT

Mobile EAM Solution

- Allows for immediate data input from field

- 82 tablets deployed

- 68 with IT for configuration

- 300 by end of FY24

- Migrated to AWS in Sept 2021

- Next software update under test

- Full suite of training deployed

Tablets in Field: MOW, 5; SCM, 30; PSM, 20; TFM, 15; Training, 10; AM, 2; Not Deployed, 68

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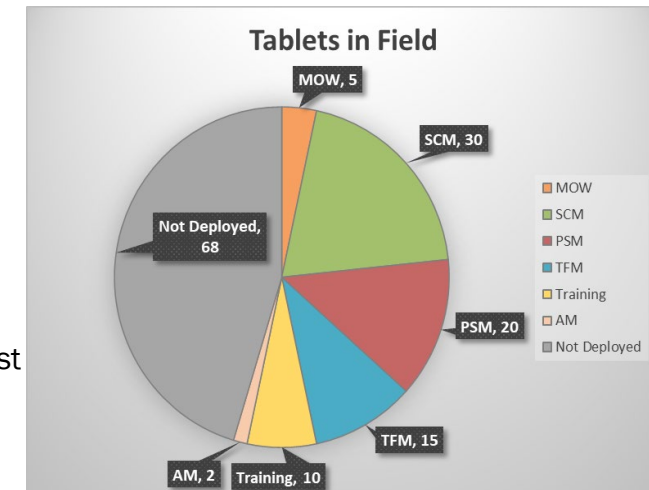
Enterprise Asset Management System Enhancements

- Modules are software enhancements to improve or add capabilities to EAM.

- Asset Management is developing EAM enhancements to improve maintenance work management, capital investment decision making and asset lifecycle management within the MBTA.

- All upgrades to the EAM system requires a thorough work process design, standards review, asset configuration analysis and training before implementing to maintenance crews due to the significant business process change involved.

- These system updates are crucial to Asset Management maturity, which is consistent with recent FTA corrective actions

Modules In Development

- **Network Restrictions Module**
    - More transparent process/status of a track restriction between MCC/OCC/Operations. Can track safety measures in place and create advanced dashboards.

- **Asset Configuration Management (ACM) Module**
    - Allows for the specification of an approved configuration for an asset type including components, attributes, and serialized parts. Implements an approval workflow upon changing the configuration.

- **State of Good Repair (SGR)/Capital Planning Module**
    - Record, assess and report on the condition of agency assets.
    - Digital solution for future Capital Needs Assessments

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Federal Obligations (MAP-21)

- Continual support of 49 CFR 625 (TAMP):
  - Transit Asset Management Plan (TAMP) establishes MBTA's approach to managing assets that deliver public transportation services. Its purpose is to document the physical asset portfolio, including condition; identify lifecycle management needs; assess the resources required to bring assets to a State of Good Repair; and establish action plans for improving asset management.
  - First publication was 2018 with an update required every 4 years.
  - 2022 TAMP update is in progress. Draft by Fall.

- Continual support of 49 CFR 630 (National Transit Database (NTD) Reporting):
  - NTD annual report: RY21 (MBTA FY21) Report Closed/Accepted in July 2022.
  - FY22 has commenced.
  - Formalizing NTD reporting policy.

- Inventory + Condition Assessments to support TAMP, NTD and EAM:
  - All inventory and condition assessments to support federal reporting are complete.

  - Next rounds will be cyclical, completing a quarter of the system every fiscal year to match the TAMP's 4-year cycle.

SEPTEMBER 2018

MBTA Transit Asset Management Plan
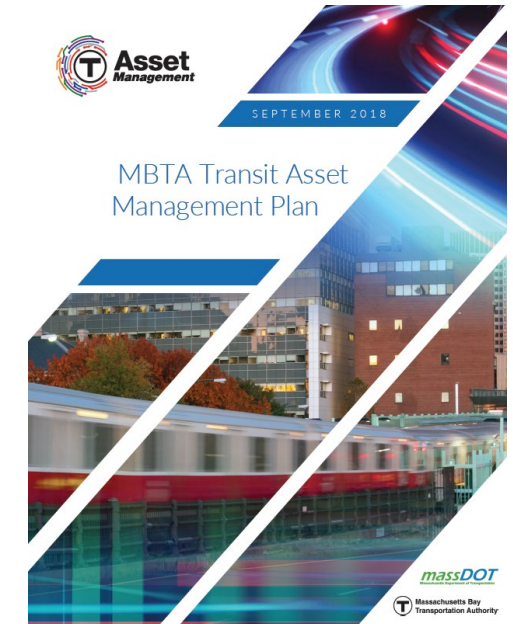
Interdepartmental Collaboration
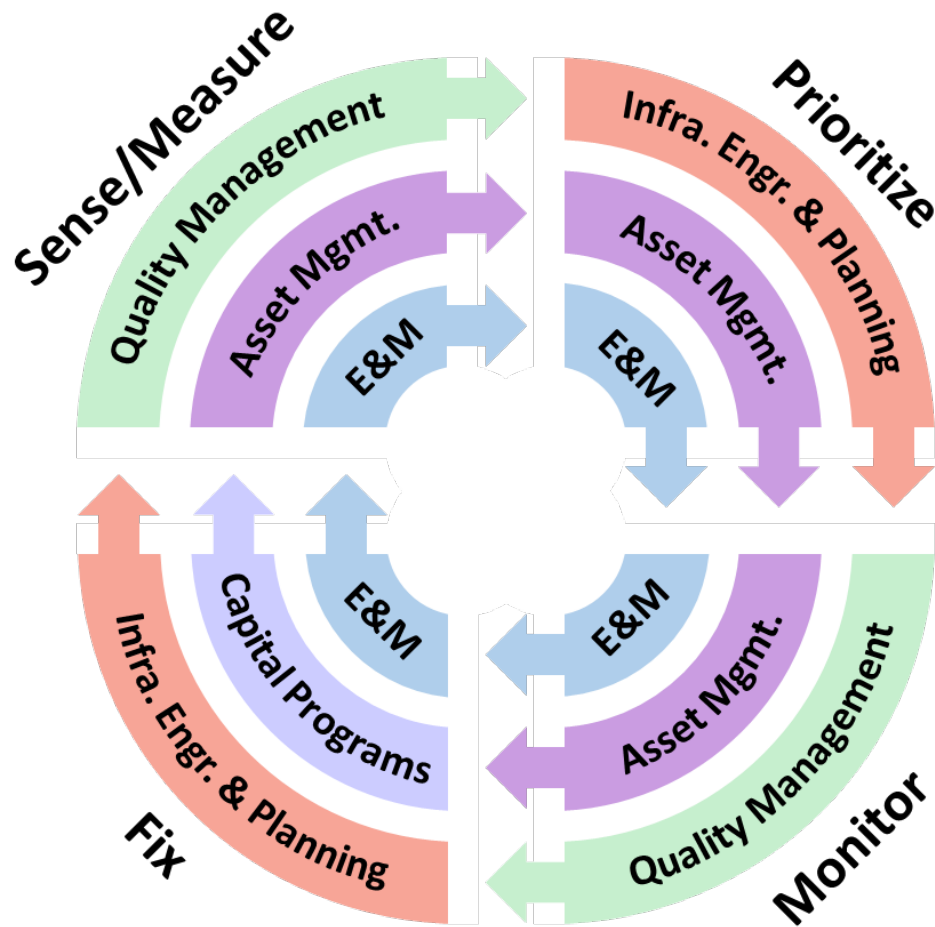
- Asset Handover
  - Developed asset handover process. Standard asset management contract language developed by end of 2022.
    - Currently supporting GLX asset data handover and coordinating with other ongoing Capital Programs (SCR, GLTPS, etc.)
  - Critical for Operations and E&M activities to properly manage assets from beginning of lifecycle.

- Prioritization of immediate repairs
  - Quality Management 3rd Party Inspections
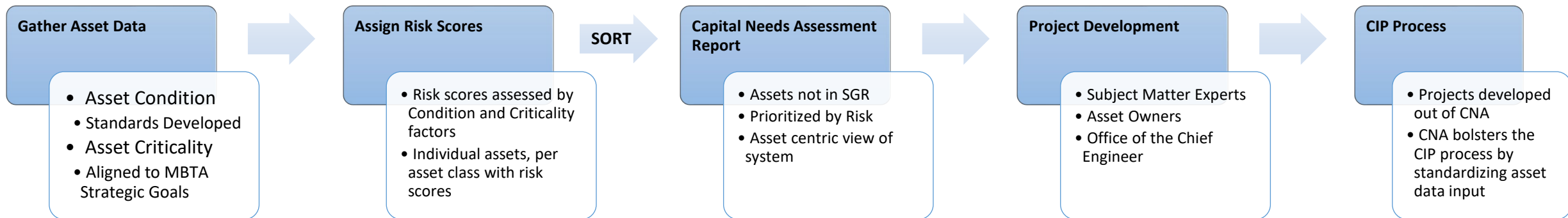 - Guideway condition analysis to leverage surges and on-call contracts

- Developing more robust work management tools and processes through EAM
  - Asset Condition Analytics

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Capital Needs Assessment

Asset Management is currently partnering with Capital Program Planning to update and expand the Capital Needs Assessment (CAN) approach by establishing an Asset Risk Prioritization Framework, integrate Resiliency, Equity and Social Justice, and produce an Asset Centric capital needs assessment.

Gather Asset Data
- Asset Condition
  - Standards Developed
- Asset Criticality
  - Aligned to MBTA Strategic Goals

→

Assign Risk Scores
- Risk scores assessed by Condition and Criticality factors
- Individual assets, per asset class with risk scores

SORT →

Capital Needs Assessment Report
- Assets not in SGR
- Prioritized by Risk
- Asset centric view of system

→

Project Development
- Subject Matter Experts
- Asset Owners
- Office of the Chief Engineer

→

CIP Process
- Projects developed out of CNA
- CNA bolsters the CIP process by standardizing asset data input

Progress: Condition and Criticality Standards Final Drafts under review for signatures. Asset risk scoring currently underway.

The overall outcome of the 2022 CNA is a more robust, repeatable, data-backed approach to identifying and prioritizing the replacement of the MBTA's most critical asset needs over the long term.

Next Steps

Near Term

- **2022 TAMP**
  - Draft and Finalize Updated TAM Plan
- **CNA Report**
  - Complete Risk Score Analysis
  - Draft and Finalize Report
- **Condition and Criticality Standards**
  - Finalize signatures and implement standards in next conditions assessment cycle
- **Asset Management Contractual Language**
  - Draft and Finalize language for Capital Programs
  - Draft and Finalize language for Commuter Rail Operator
- **Capital Programs Asset Data Handover**
  - Support GLX Branch 2 Revenue
- **FTA CAPs**
  - FTA-TRA-22-006 & FTA-TRA-007
  - Commence execution of action plans

Further into 2023 and Looking Ahead

- **System Critical Asset Loads and Digital PMIs**
  - Complete System Critical category and commence Routine PM&I category
- **RY22 NTD Report**
  - Collect NTD data and submit to FTA/NTD
- **EAM System Upgrades & Modules**
  - Execute EAM software update (Version 20 to Version 21)
  - Commence roll out of Modules
- **Next Condition Assessments Cycle**
  - Continual management of condition assessments to support RY23 NTD and 2026 TAMP
- **Capital Programs Asset Data Handover**
  - Support South Coast Rail and Green Line Train Protection System Programs
- **Staffing**
  - Fill 5 vacancies. FY23 approved headcount.

END

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Appendix

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Current & Future Org Chart

Chief Engineer
Erik Stoothoff

Sr Director Reliability Engineering
Will Boyce

Director Asset Management:
Ronnie Valdivia

Deputy Director Reliability Engineering
Vacant

Deputy Director Asset Management:
David DeRossette

Deputy Director Capital Asset Planning:
Vacant (in CORI process)

Deputy Director Configuration Engineering:
Vacant

Sr. Reliability Engineer:
Vacant

Sr. Reliability Engineer:
Vacant

Reliability Engineer:
Vacant

Reliability Engineer:
Vacant

Reliability Engineer:
Vacant

Reliability Engineer:
Vacant

Asset Information Analyst:
Darla Earl

Asset Information Analyst:
Jameson Brown

Sr. Asset Information Manager:
Hugh Quinn

Sr. Asset Information Manager:
William Tse

Asset Information Manager: (Systems)
Vacant

Asset Information Manager: (Power)
Dean Arnold

Asset Information Manager: (Rolling Stock)
Vacant

Asset Information Manager: (Civil)
Ben Losordo

Asset Information Manager: (Facilities)
Vacant

Asset Information Manager: (Track)
Vacant

Asset Information Manager: (SCM)
Sean Dacey

Sr. Configuration Engineer:
Vacant

Configuration Engineer:
Vacant

Phase 1 – FY22 Filled
Phase 2 – FY23 Approved
Phase 3 – FY24
Phase 4 – FY25
Phase 5 – FY26

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Capital Needs Assessment – Asset Centric Approach

Asset Risk Score Development

Determine Condition ✕ Determine Criticality ＝ Risk Score*

Unconstrained CNA Prioritization Report (Asset/Asset Class)

Determine appropriate asset intervention

O&M Intervention (e.g. asset redesign, change to lifecycle strategy, etc.)

Capital Intervention (e.g., capital replacement)

Identify Potential Projects

(Constrained) CIP Process

Risk Score Identifies High-risk Assets and Informs Determination of Appropriate Asset Interventions

Asset Level Decision-making

Project Level Decision-making

Led by AM

Led with Other Depts.

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