Asset Health Strategic Initiative (AHSI)

ACACSO

November 2015

Asset Health Strategic Initiative (AHSI) Description

➢ Multi-year strategy for improvement of asset health driven by yearly industry targets and measures for improvement,

➢ Solves problems with rolling stock that need a network view of asset information and industry coordination,

➢ Applies information technology solutions and processes.

Prevent   **Detect**   **Plan**

SAFETY

Move

Settle   **Repair**
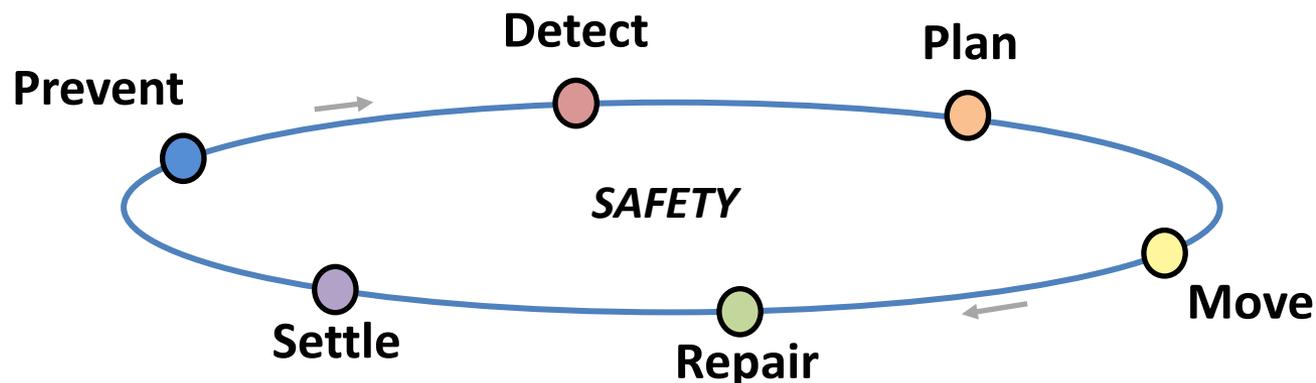
Asset Health Strategy Committee

Member	Representing
Rex Beck	UP, Chair
Paul Steets	Amtrak
Hark Braren	BNSF
Darrell Iler	CN
Rodney Campbell	CP
John Murphy	CSX
Rick Grossman	FURX
Tom Mordock	GATX
Rudy Bernard	KCS
Jamie Williams	NS
Amy Herbel	Trinity
Mike Kelly	TTX
Rick Koenig	UTLX

Committee Focus:

‣ Continue to provide leadership to the work of the Asset Health Strategic Initiative.

‣ Coordinate work of a number of technical committees and champion prioritized initiatives that improve industry safety, reduce variability, streamline mechanical operations, and reduce or eliminate non-value added activities.
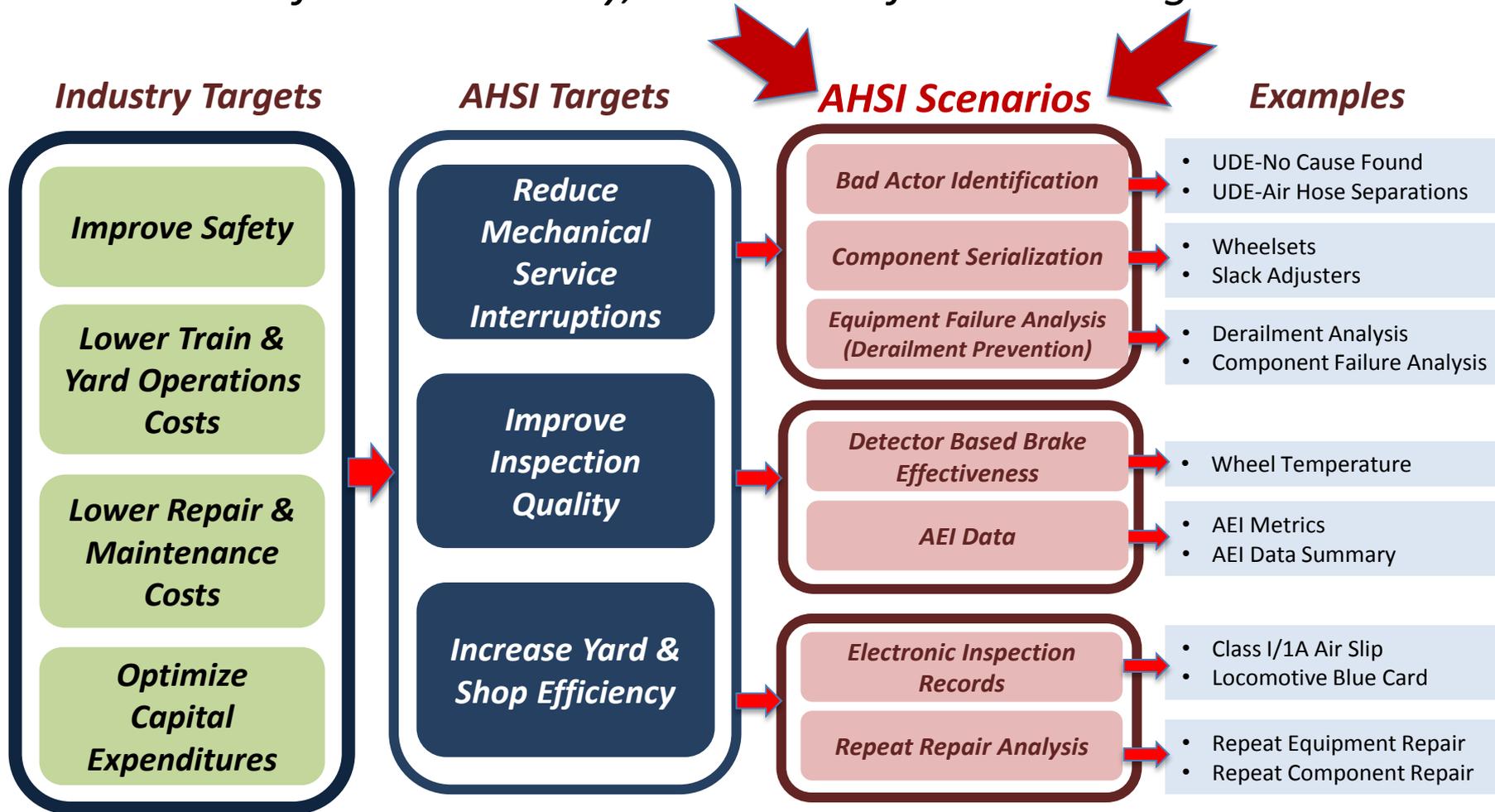
‣ Interface with FRA in promoting regulatory change.

Asset Health Strategy Committee
2015 SOMC Deliverables

1. **Refine AHSI performance goals and measure results for prioritized metrics** in each of the three AHSI target categories.

2. **Execute the multi-year AHSI projects** to build upon the established foundation and move forward on "detector based brake effectiveness" and "bad-actor identification."

3. Continue to **refine the AHSI roadmap** to confirm or revise priorities for future year activities.

4. Develop **plan to address the targeted opportunities** carried forward from the Advanced Safety and Efficiency Committee and others groups.

Note: SOMC = Safety and Operations Management Committee

Investments in AHSI are addressing a number of high value scenarios for the industry, with initial focus on Freight Cars.

Industry Targets	AHSI Targets	AHSI Scenarios	Examples
Improve Safety	**Reduce Mechanical Service Interruptions**	*Bad Actor Identification*	• UDE-No Cause Found • UDE-Air Hose Separations
Lower Train & Yard Operations Costs		*Component Serialization*	• Wheelsets • Slack Adjusters
		Equipment Failure Analysis (Derailment Prevention)	• Derailment Analysis • Component Failure Analysis
Lower Repair & Maintenance Costs	**Improve Inspection Quality**	*Detector Based Brake Effectiveness*	• Wheel Temperature
		AEI Data	• AEI Metrics • AEI Data Summary
Optimize Capital Expenditures	**Increase Yard & Shop Efficiency**	*Electronic Inspection Records*	• Class I/1A Air Slip • Locomotive Blue Card
		Repeat Repair Analysis	• Repeat Equipment Repair • Repeat Component Repair

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The RPSWC prioritized 8 AHSI-related projects for 2015 investment.

▸ **Asset Information Repository - Production and New Value Expansion**

  ▸ UDE-No Cause Found methodology utilized to reduce line of road failures

▸ **E-Train and Train Inspection Data Visibility - Production and New Value Expansion**

  ▸ Facilitates sharing of train information at interchange; Electronic air slips availability

▸ **Inspection Quality (IQ) - Production and New Value Expansion**

  ▸ Wheel temperature detector data in full production; Waiver process supported; Repair decisions prioritized; AEI and Wheel-Profile detector standards

▸ **Real Time Event Processing for Mileage (AIR Roadmap)**

  ▸ Enables more effective performance monitoring; Supports 1A waiver process

▸ **Repeat Repair Visibility and Component Failure Analysis (AIR Roadmap)**

  ▸ Derailment prevention; Consolidated industry data to identify and isolate recurring issues

▸ **Location Management Design and Standards (MRR Roadmap)**

  ▸ Foundational; Design of routable track master; Standardization of geo-spatial location data sharing

▸ **Interchange Rule 83 Qualifier Expansion**

  ▸ Data field expansion in the Car Repair Billing System; more efficient repair categorization

▸ **Component Tracking - Slack Adjusters**

  ▸ Leveraging component framework to register and associate slack adjusters

2015 AHSI AIR, E-Train, IQ Projects
Anticipated benefits are on track

Capability Developed	Year Build	Benefit	Value Begins	Status September 2015
Identification of "Bad Actor" equipment through network level analysis	2014	Reduction of Line of Road Failures in the 'UDE No Cause Found' category	2015	More than 200 identified bad actors repaired via MA-0146 study. Positive results continue.
Improved and enhanced health information available to Class I Railroads and car owners	2014	More detailed equipment level analysis based on available health indicators	2014	Line of Road Data Failure data summaries established for UDE-no-cause-found and air hose separation events.
Sharing of Class I, IA, and Extended Haul inspection data	2015	Reduction in duplicate or non-required inspections between railroads	2015	3 railroads sending mechanical conducted Class I Air Slips; Work is underway for railroads to submit inspections this year.
Determination of Brake Effectiveness for a Consist (via wheel temperature detector data)	2014	Higher quality inspection data and future reduction of manual Class IA inspections	2015	Brake Health Data Summary in production for industry. Rule-making process underway with Brake Systems Committee to support further use of the data.

Line of Road Failure Reduction Results and Update

Line of Road Failure (mechanical) - Reduction Forecast Summary							
Line of Road Failures (LORF) (Non-Loco)	2014	2015	2016	2017	2018	2019	Cumulative
Total Reduction Target	(100)	(600)	(2,765)	(3,910)	(4,980)	(6,060)	(18,415)

AHSI Mitigation Efforts

- **Bad Actor Identification** with primary focus on line of road failures in the following categories:
    - **UDE – No Cause Found** (beginning 2014/2015) and
    - **UDE - Air Hose Separations** (beginning 2016).
- **Repeat Failure Analysis** (equipment and component level) using consolidated industry data to identify and isolate recurring issues (beginning 2016).

*Notes:
- Reduction of Line of Road Failures is based on projected maturity of Asset Health capabilities and the corresponding adoption rate by industry
- Reduction assumption: 3 LORFs prevented per repair of identified bad actor

Results

2014 Results
- Target: Reduction of 100 in UDE – NCF category
- Results of Bad Actor Identification Pilot (MA-0146)
    - 52 cars identified failed SCABT
    - 56 additional cars identified had contributing issues
    - **Estimated impact: ~300 LORFs prevented***

2015 Target & Initial Results
- Target: Reduction of 600 in UDE – NCF category
- Results of Bad Actor Pilot as of 10/8/15 (MA-0146)
    - 75 cars identified failed SCABT
    - 146 additional cars identified had contributing issues
    - **Estimated impact: ~650 LORFs prevented***

2016 Target
- Target: Reduction of 2,765 in multiple LORF categories
- Forecast: 2015 project work underway to extend Bad Actor Identification (AIR/E-Train), and initiate Repeat Repair and Component Failure Identification.

Sharing of Electronic Air Slips

Air Slips

▸ Class I

▸ Class IA

▸ Extended Haul

Mileage

▸ Ability to calculate
  miles per car for
  current air slip

Sharing of Electronic Consist

Scenarios:

▸ AskRail

  ▸ First Responders

  ▸ Live April 2015

▸ Chicago

  ▸ Chicago Gateway

  ▸ POC fall 2015

Benefit Realization is Underway from Investments in the Inspection Quality Detector Platform.

Scenario Developed	Year	Benefit	Value Year
Cold Wheel Scenario **- Analysis** **- Brake Health Indicator** **- Air Brake Test/Umler/ Mileage Integration**	2013-2015	• Higher quality brake inspection data, • Future brake test regulatory relief, • Indicator for establishing brake condemning limits.	2015/2016
AEI Bad Tag Scenario **- Analysis** **- Bad Tag Data Reporting** **- AEI Merging Capabilities**	2015-2016	• Reduce improperly identified components, • Identify detector issues, • Increase AEI merging capabilities.	2017

Component Registry Mandatory Timelines
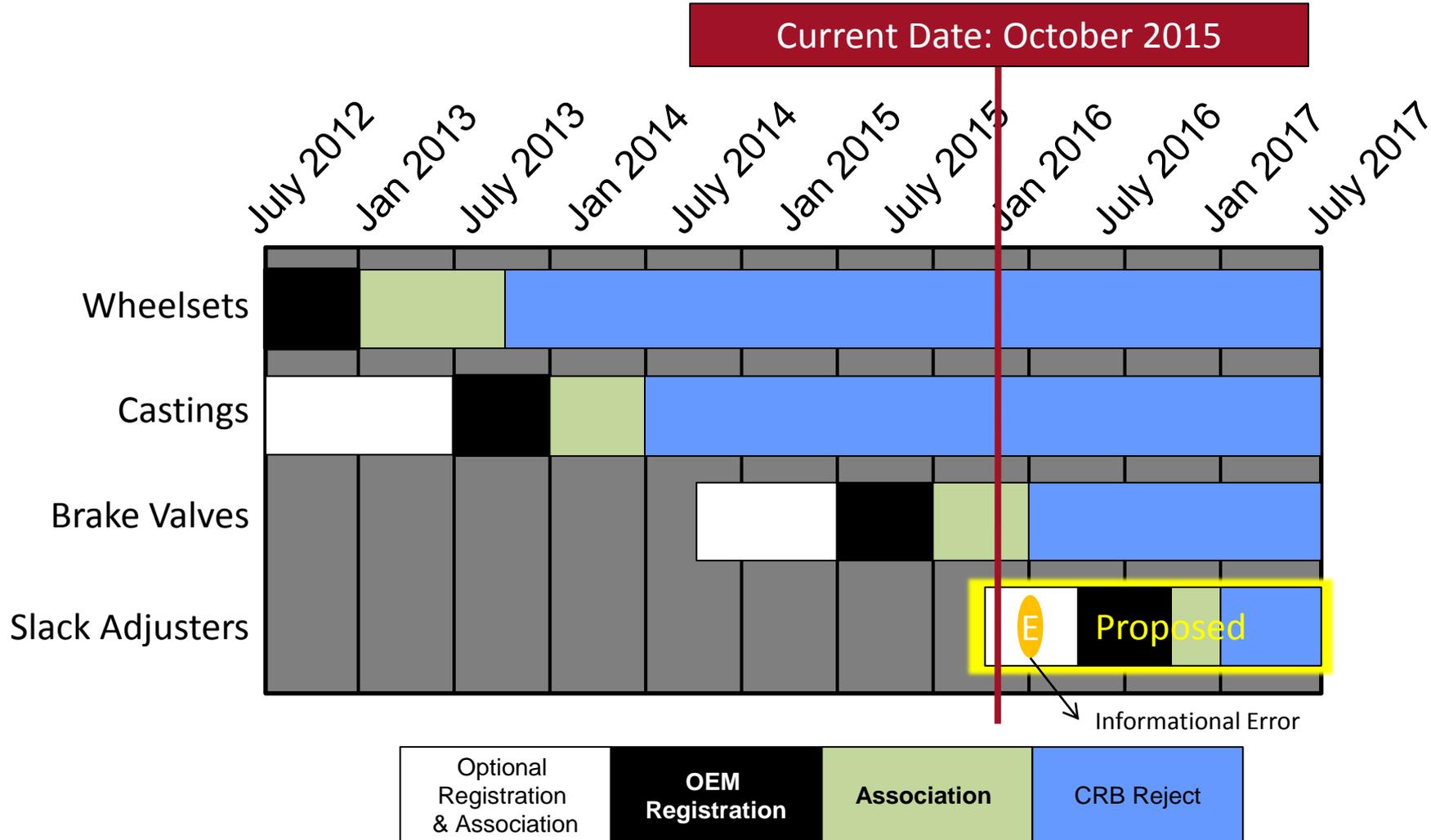
Current Date: October 2015

Informational Error

| Optional Registration & Association | OEM Registration | Association | CRB Reject |

Asset Health Strategy Committee
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*The RPSWC prioritized 6 AHSI-related projects for 2016 investment.**

‣ **Asset Information Repository (AIR) - Value Expansion 2016**

  ‣ Bad Actor Identification; Includes additional failure types and data

‣ **E-Train - Value Expansion 2016**

  ‣ Facilitates sharing of train Information; Consist and inspection related work

‣ **Inspection Quality (IQ) - Value Expansion 2016**

  ‣ AEI Data Summary in full production; WILD and THD processing, Hot Box, Hot Wheel message formats, Wheel profile design

‣ **Detector Quality Monitoring**

  ‣ Data Quality; Ensure consistent application of permissible values and data integrity

‣ **Equipment Failure Analysis (Phase 2)**

  ‣ Derailment Prevention; Enhance methods and data related to derailment prevention analysis; Automate submission of one Mechanical Defect report

‣ **Location Management Implementation (Phase 1)**

  ‣ Foundational; Design of routable track master; Standardization of geo-spatial location data sharing

*Pending finalization of 2016 funding by Railinc Board.

Next Steps – Initiate 2016 planning and 2017 opportunity definitions based on RPSWC prioritization.

	Meeting	Activities	Deliverables	Milestones
Sept		Plan Next Year Projects and Identify Roadmap Updates for Following Year		
Oct	Conference Call (10/1)			
Nov				
Dec	Face to Face (12/9-10)			
Jan		Identify Concepts		
Feb	Face to Face*	Draft Opportunity Definitions		
Mar	Conference Call*	Review / Refine Opportunity Definitions	Submit 1st Draft Opportunity Definitions	RPSWC Preliminary Pipeline Review
Apr		Refine Priorities, Develop 2nd Draft Opportunity Definitions	Submit 2nd Draft Opportunity Definitions	
May	Face to Face*			RPSWC Prioritization
Jun	Conference Call*	Develop Business Cases	Submit Business Cases	
Jul	Conference Call*			RPSWC Project Selection
Aug	Conference Call*			

*Proposed Meeting Dates

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AHSC has developed an initial plan to address Targeted Opportunities. New mini-TAGs are framing up several opportunities for presentation at the December AHSC face-to-face meeting.

- Opportunities Currently Being Reviewed
  - Class 1A (1000 Mile) Brake Test Waiver (IQ - Wheel Profile Detector)
  - Multi level Pool Billing (2016 – Automate Multi-Level Pool Billing)
  - Automated Single Car Test Devices (2016 - SCABT Analysis for Bad Actor Identification of Brake Valves)
- Opportunities Prioritized for Research
  - Multi-Wear Wheels
  - FRA Regulations Review
  - Total Design for Reliability
- Opportunities Pending Prioritization
  - Four Hour "Off-Air" Requirement for Air Brake Test
  - Extended Haul (1500 Mile) Inspection Notification Requirements
  - Industry Wayside Detector Network Strategy
  - New Wayside Technologies (progress through EHMC)

ASHI Next Steps

✓ 2015 project closeout for the 8 projects in progress

✓ 2016 project planning for 6 projects

✓ Research and Analysis for 2017 related priorities

✓ Railinc will work with individual PCOs to understand priorities and determine how to best assist with utilizing the new capabilities.

▸ Questions?