

MARTS
Annual Technical Meeting
September 19, 2011
10:30 am

CEPM-Wheelsets

Ron Tsolis, CEPM Program Manager, Railinc
Jerry Bohacik, Director, GATX
Nichole Fimple, Product Manager, Railinc



**ASSOCIATION OF
AMERICAN RAILROADS**



Discussion Topics

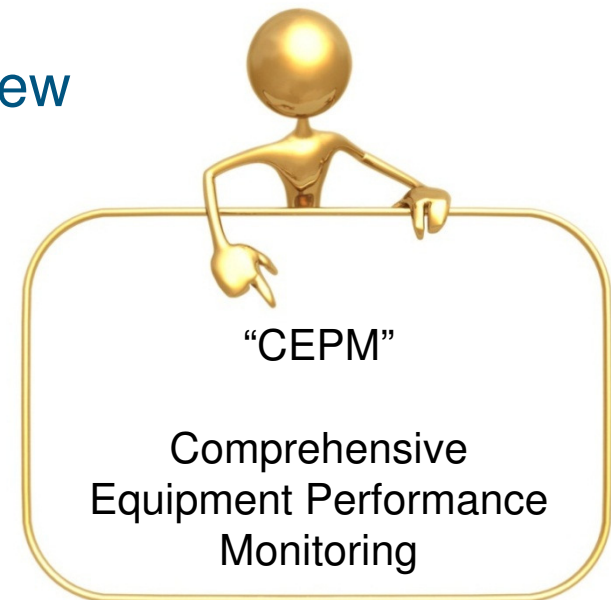
- Introduction to CEPM
- Manufacturers
- Wheel Shops
- Repair Shops
- CEPM Next Steps



CEPM Introduction

The goal of the CEPM Program is to identify and track critical components on Railcars. The industry has been working with Railinc on the systems to support component tracking and rollout freight car wheelset tracking in Phase I.

This presentation will provide an overview of CEPM and provide information to manufacturers, wheel shops, and repair shops to get them ready for CEPM reporting requirements.





About Railinc



Railinc applications and services are critical in operations and financial systems throughout the industry and support railroads, equipment owners and rail industry suppliers.

As subsidiaries of the AAR, Railinc and TTCI support standards and systems to ensure the safe and efficient operation of the North American fleet.



CEPM Component Tracking Objectives



- Support Recall of Components identified with safety issues
- Support equipment owners with details of components on their equipment
- Capability to track performance of components related to component life, failure rates, and history of the component.



Industry Requirements

- Establish industry rules for reporting component details and application to equipment
- Develop a re-usable framework that can support a list of priorities for tracking wheelsets, castings, valves, PTC, GPS devices, brakes, cushioning, traction motors, etc.
- Maintain Confidentiality of reported data
- Support Bar Code and RFID standards



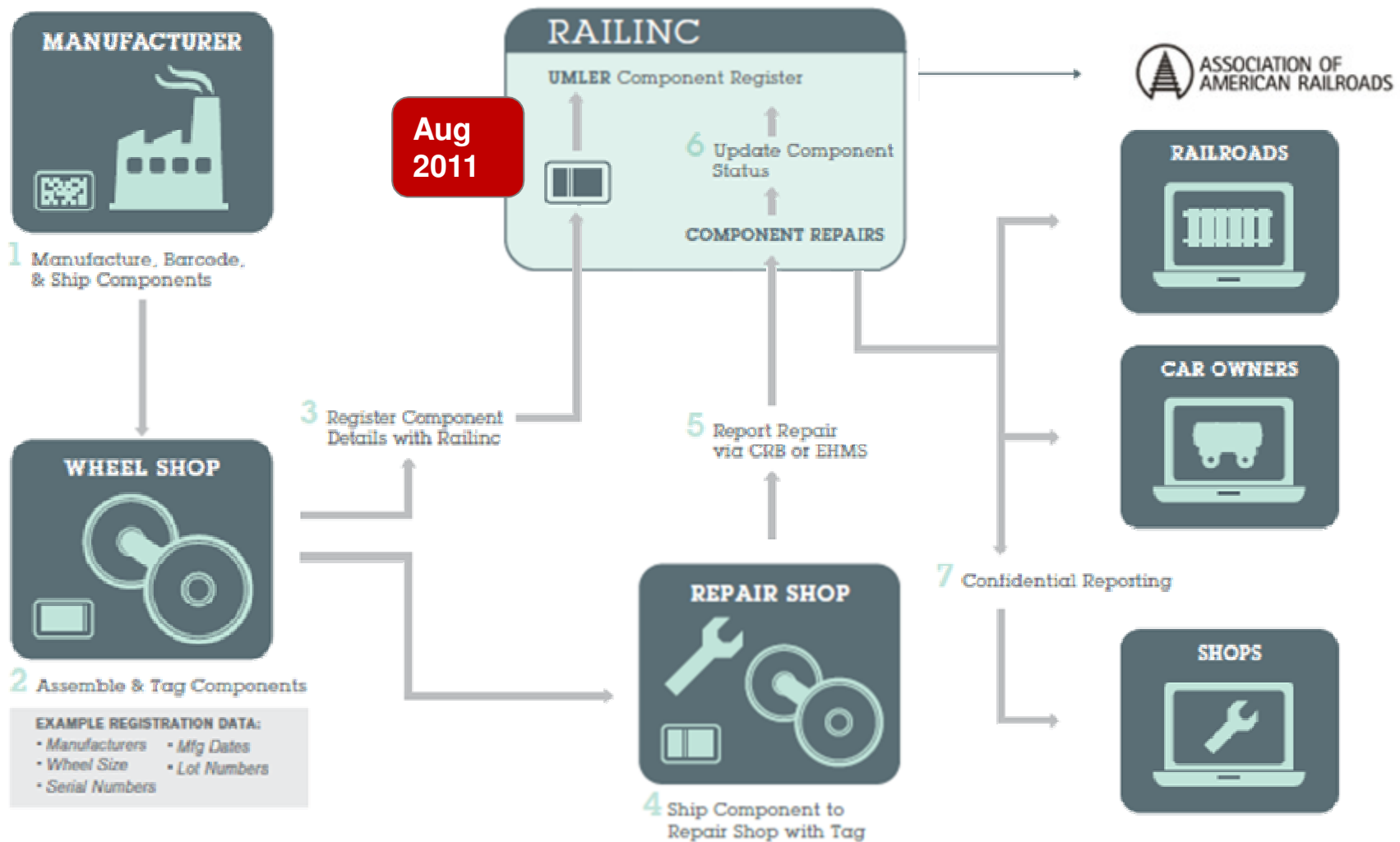
CEPM Task Force

The CEPM Task Force is chaired by Dr. Todd Snyder (UP) and includes members and representatives from across the Industry.

- Equipment Owners
- Wheel Shops & Repair Shops
- Manufacturers
- Railroads
- Software Providers
- Industry Committees, AAR, & TTCI



CEPM Wheelset Process Flow





Key Contributions for Success



Manufacturers – Communicate Specs to Shops via Barcode



Wheel Shops – Data Entry to register wheelset details



Repair Shops – Report wheelset application to equipment



Railinc – Data processing and Integration



Railroads – Event reporting for mileage



3rd Party Software Providers – System changes for Shops



Circular Letter C-11496 (Bar Coding)

Thomas J. Stahura
Executive Director, Rules and Standards



Thursday, August 25, 2011

C-11496

Circular Letter

Subject:SOLICITATION FOR COMMENTS – Comprehensive Equipment Performance Monitoring (CEPM) Standards

To:MEMBERS AND PRIVATE CAR OWNERS

File Number:ATSI & EHMS SC

This Circular Letter is soliciting comments to the proposed Comprehensive Equipment Performance Monitoring (CEPM) Standards.

The Association of American Railroads (AAR) Comprehensive Equipment Performance Monitoring (CEPM) task force (sponsored by ATSI), in conjunction with the Wheels, Axles, Bearings, and Lubrication (WABL) Committee invite your review of the following documents that pertain to the newly developed bar-coding standard and the data definitions that support the electronic tracking of wheel sets. This request is being done in anticipation of the January 2012 implementation that will require component manufacturers to label wheels, axles and bearings for use in the AAR system.

There is an overview of the entire component tracking project at Railinc.com/CEPM. That overview contains proposed timelines and additional background.

One attachment is for the bar code standard. The other attachment details the data that will be required.

Comments from interested parties are herewith solicited under the provisions of AAR Standard S-050. Please submit any comments or questions to Ken Rownd, Manager, WABL Committee at TTCI.



Bar Codes, RFID primer

BarCode: 1D BarCode

ABCD1234567890 =



Used for AAR Component Identification, Little Data



BarCode: 2D BarCode or Bar Code Matrix

ABCD1234567890 =



Used for Carrying much data, with redundancy



RFID: Example: AEI



Used for Carrying much data, wireless/remote



Discussion Topics

- Introduction to CEPM
- **Manufacturers**
- Wheel Shops
- Repair Shops
- CEPM Next Steps



Manufacturers – Keys to Success



Manufacturers of Wheels, Axles, and Bearings will be responsible for accurate barcoding that includes necessary data to support Wheel Shop reporting requirements.

Circular for Comments to WABL by October 15th.

Key Documents;

- AAR CEPM Bar Coding Specification (Wheelsets)
 - What the OEM 2D bar code should look like
- Wheelset Data Glossary
 - Data Elements that need to be reported
- Reference File
 - Permissible Values



Documents online at www.railinc.com/cepm



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CEPM-Wheelsets Reference Materials

Reference materials play an important role in helping you understand CEPM-Wheelsets and the Umler Component Registry. Here are some essential resources for doing work related to CEPM-Wheelsets:

The [CEPM User Guide](#) (.pdf) – This is a key resource for understanding how to accomplish tasks related to CEPM-Wheelsets. The guide lists topics in the order they appear in the Umler user interface.

[Umler Component Registry Reference Files](#) (.xls) – This spreadsheet contains much of the data that supports CEPM-Wheelsets and provides an offline reference resource for data elements used in the Umler Component Registry.

[CEPM FAQs](#) (.pdf) – These frequently asked questions provide a quick reference resource for the CEPM program and CEPM-Wheelsets.

[Wheelset Data Glossary](#) (.pdf) – This document contains detailed specifications on the data recorded about wheelsets and key information to help manufacturers and wheel shops meet reporting requirements.

[AAR Component ID Bar Code Specification](#) (.pdf) – This key resource for manufacturers and wheel shops helps them meet the requirements for bar code specifications for AAR components. Future components will follow similar standards for tagging CEPM-related components.

[CSV Upload Guide](#) (pdf) – This document provides guidance for users who want to enter information into a spreadsheet offline and upload the data for

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csc@railinc.com

7001 Weston Parkway
Cary, NC 27513
(877) 724-5462



Manufacturers – Bar Coding Specification



AAR Manual of Standards and Recommended Practices

S-XXX

SEGMENT 1.0

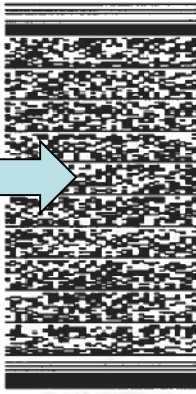
- 1 AAR Component Identification (CID) Bar Code Specifications
- 2 Specification M-XXX
- 3 Adopted: XXX 1, 2011
- 4 Purpose and Scope
- 5 The purpose of this specification is to establish an industry standard for the AAR Component Identification Bar Code.
- 6 This standard defines the method and content of bar code labels on components to be tracked within the AAR systems. This will better support the management, administration and maintenance of railroad equipment assets by providing traceability of component performance throughout their life cycle.



Manufacturers – Bar Coding Specification



```
<Wheel>  
<C101></C101>  
<C102></C102>  
<C103>GRFI</C103 >  
<C104>2/1/2011 18:55:12</C104 >  
<C105>11</C105 >  
<C106>01</C106 >  
<C107>GK</C107 >  
<C108>D</C108 >  
<C109>22</C109 >  
<C110>0</C110 >  
<C111>1231</C111 >  
<C112>1234abcd</C112 >  
<C113>36</C113 >  
<C114>CH</C114 >  
<C115>CrvS</C115 >  
<C116>241.25</C116 >  
<C117>N</C117 >  
<C118>AMST1234</C118>  
</Wheel>
```



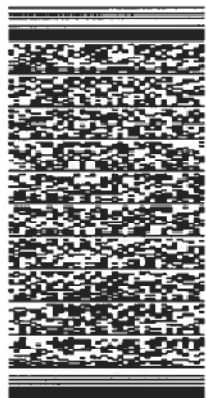
WHEEL NEW
GK 123456 11 / 01
CH 36 D 241.25

Rim / Finger : 22 / 0
Plate: CrvS
Facility: GRFI
Heat: 1234ABCD
Date: 2/1/11 18:55:12

Railroad Wheel Corp



Wheel, Axle and Bearing OEM 2D Bar Codes



WHEEL NEW
GK 123456 11 / 01
CH 36 D 241.25

Rim / Finger : 22 / 0
Plate: CrvS
Facility: GRFI
Heat: 1234ABCD
Date: 2/1/11 18:55:12

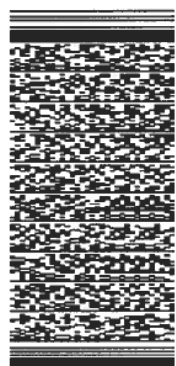
Railroad Wheel Corp



AXLE 6.5 x 12 F+

SN / Heat: 123123 ABCDEF
Type: RWS
Class: 7
Condition: 2
Facility: GRFI
Converter: ABCD
Plating: AXIS1234
Conv Date: 6/1/11 18:55:12
Mfg Date: 2/1/11 18:55:12

Railroad Axle Corp

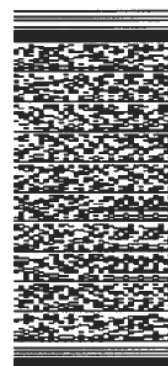


BEARING
12345678
11 / 01

Facility: TRBC
Seal: HDL
Cert: 01A
Ring: SureFit
Cage STD
Grease: 3201
Date: 2/1/11 18:55:12

Railroad Bearing Corp

NEW
6.5 x 12
GG





Decoding the Data in the Bar Code

The Data Glossary describes the data, who is required to report the information, and which barcode the data should be reported on.

CSV Heading	Element ID		What is this?	Sample(s)	On What?	Field by Wheel shop	Wheel shop by Wheel OEM	Wheel shop by Bearing OEM	Wheel shop by Bearing Recondition	Wheel shop by Axle Manufacturer		by Wheel OEM	by Bearing OEM
WHEEL:1-C112	C112	Wheel Heat/Melt	Wheel(1) Heat/Melt	1234abcd	Wheel OEM 2D Bar Code		Yes				Yes	Yes	
WHEEL:1-C113	C113	Wheel Nominal Diameter	Wheel(1) Nom Diam	36	Wheel OEM 2D Bar Code		Yes				Yes	Yes	
WHEEL:1-C114	C114	Wheel Design Code	Wheel(1) Design Code	CH	Wheel OEM 2D Bar Code		Yes				Yes	Yes	
WHEEL:1-C115	C115	Wheel Plate Type	Wheel(1) Plate	StrPl, CrvS, CrvParab	Wheel OEM 2D Bar Code		Yes				Yes	Yes	
WHEEL:1-C116	C116	Wheel Tape Size	Wheel(1) Tape	241.25	Wheel OEM 2D Bar Code		Yes				Yes	Yes	
WHFFL:1-C117	C117	Wheel New or	Wheel(1) New/Turn	N	Wheel OEM		Yes				Yes	Yes	



The Reference File lists permissible values

For some data, the information must be recorded exactly as defined in the reference files. Incorrect data on a barcode will effect the value of barcoding for customers.

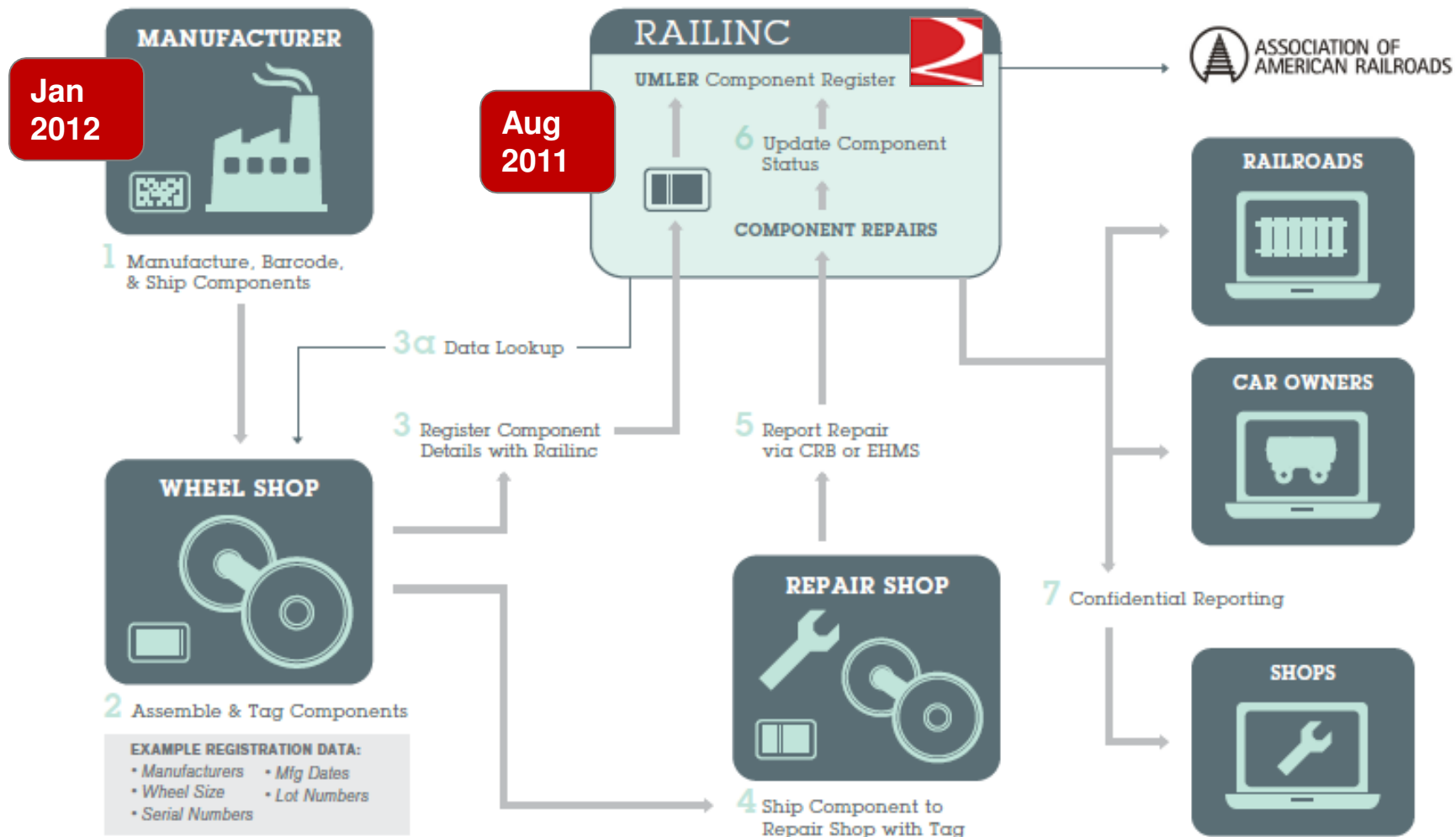
ELEMENT_DEFINITION_SQN	ELEMENT_ID	ELEMENT_NAME	DESCRIPTION
10	C003	Component AAR Facility Code	4-letter code uniquely identifying the facility whe
20	C004	Component Assembly Timestamp	Date/time when wheelset assembly is finalized at the
25	C005	Extended Wheelset Codes	These are internal codes, but designed to be includec
30	C006	Component Vendor Shipment Information	Optional. For use by component manufacturer/assem
60	C103	Wheel AAR Facility Code	Up to 4 character "QA Facility Code" maintained by A
70	C104	Wheel Manufactured Timestamp	Date that identifies the month, day, year and time of t
80	C105	Wheel Stamped Year	Wheel stamped year from manufacture. Physically s
90	C106	Wheel Stamped Month	Wheel stamped month from manufacture. Physically
100	C107	Wheel Stamped Manufacturer Code	1 (prior to 3-78) or 2-letter code that identifies the mar
110	C108	Wheel Stamped Class	The stamped wheel material class: A,B,C,D, U. Also
120	C109	Wheel Rim Thickness Side Scale Reading	2-digit number reporting the measured thickness of th
130	C110	Wheel Finger Gauge Reading	2-digit number reporting the flange thickness using St
140	C111	Wheel Stamped Serial Number	Serial number stamped into or cast on the wheel.
150	C112	Wheel Heat/Melt	Up to 8 digits or characters according to manufacture
160	C113	Wheel Nominal Diameter	2-character wheel diameter size, based on Wheel De

ELEMENT_VALID_VALUES_SQN	ELEMENT_DEFINITION_ID	VALID_VALUE	VALID_VALUE_LABEL	SORT_ORDER
1360	110	B	Heat Treated Wheels	1
1370	110	C	Heat Treated Wheels	2
1380	110	D	Alloy Wheels	3
1390	110	U	Non-Heat Treated or Unmarked	4
1400	160	28	28 inch wheel	1
1410	160	30	30 inch wheel	2
1420	160	33	33 inch wheel	3
1430	160	36	36 inch wheel	4
1440	160	38	38 inch wheel	5
1450	170	A	A Wheel Design Designation	1





CEPM-Wheelsets Process Flow



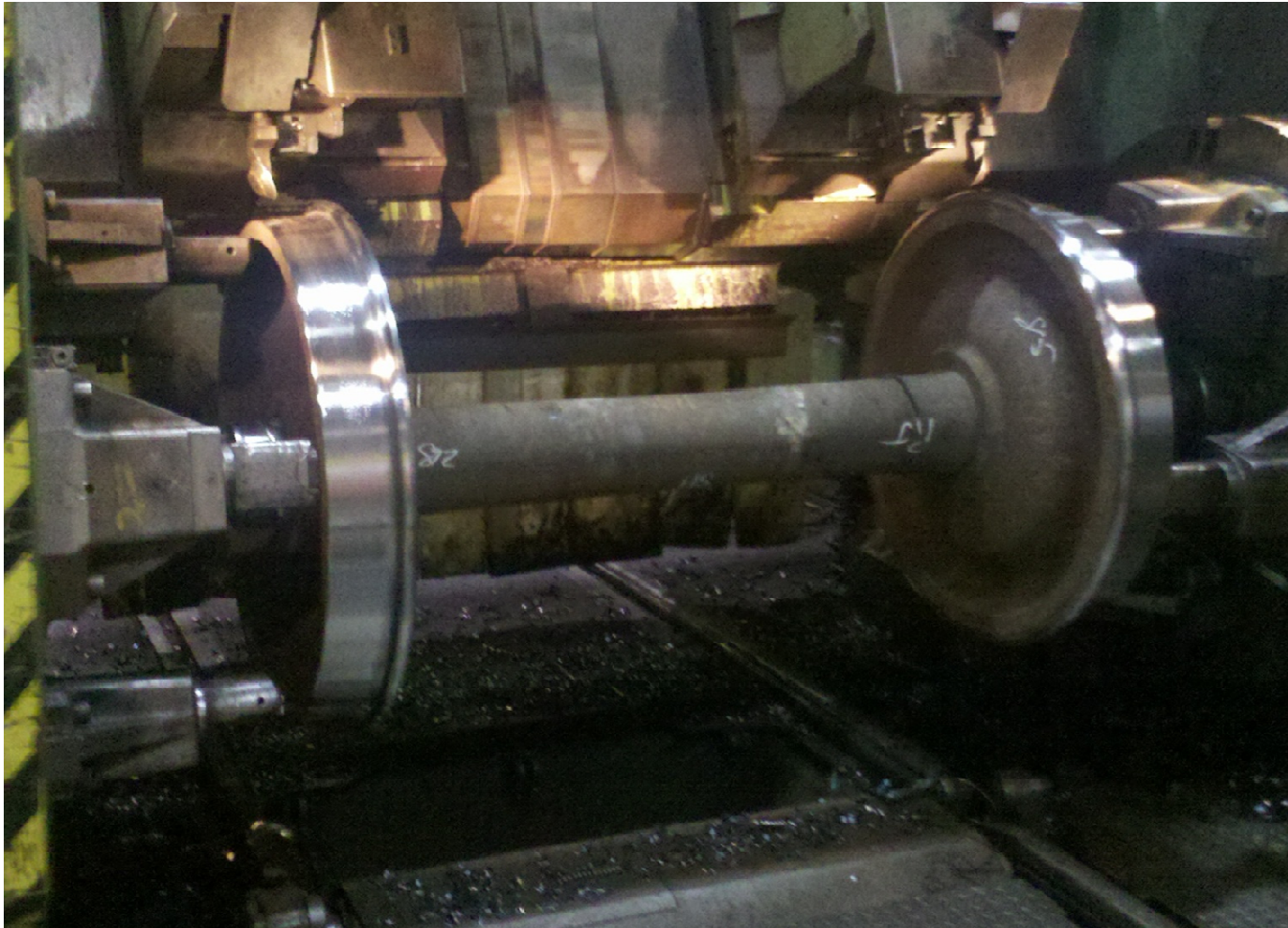


Discussion Topics

- Introduction to CEPM
- Manufacturers
- **Wheel Shops**
- Repair Shops
- CEPM Next Steps

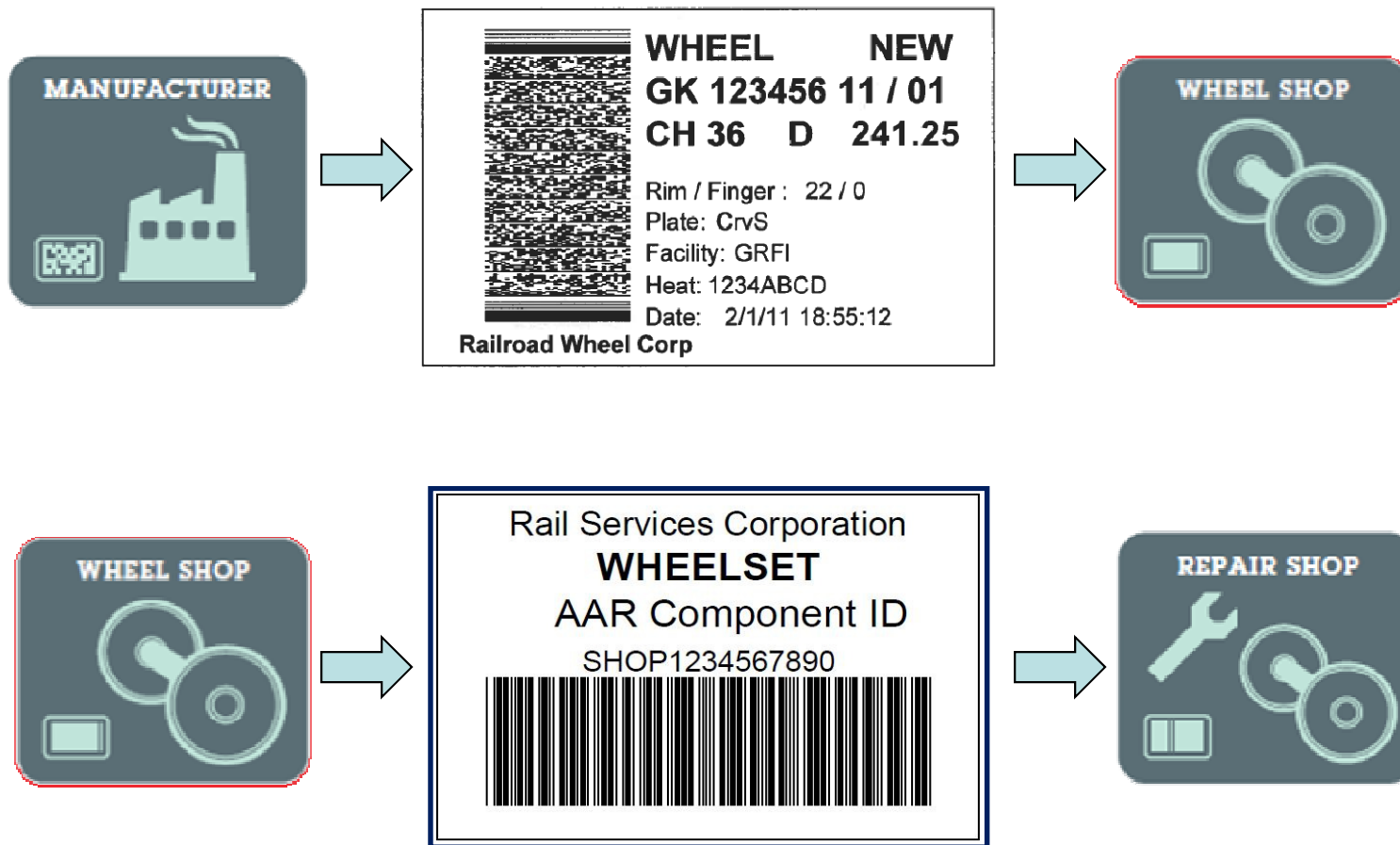


Wheelset Assembly



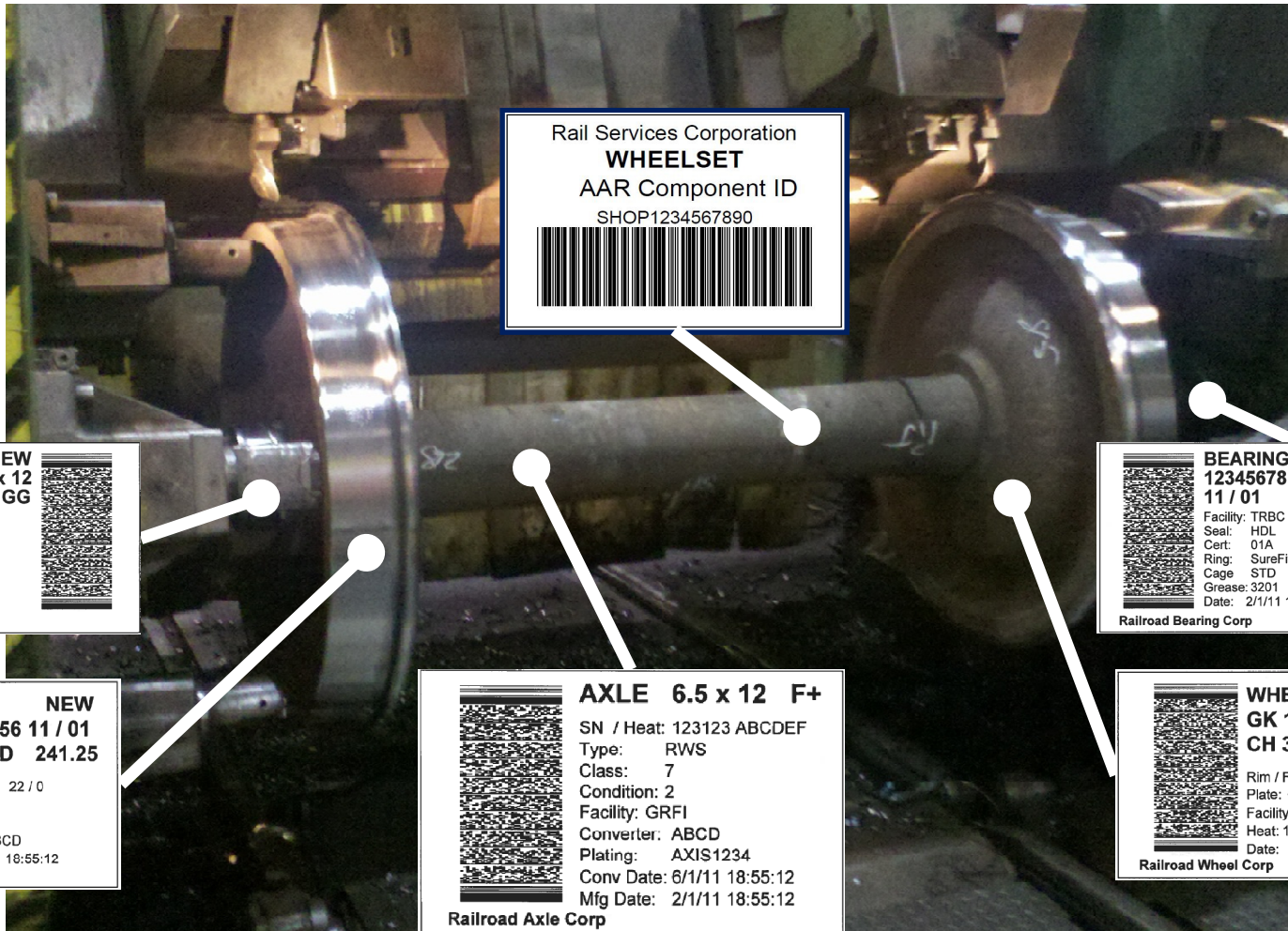


Communicating data through Bar Codes





Wheelset Barcodes



Rail Services Corporation
WHEELSET
AAR Component ID
SHOP1234567890



BEARING NEW
12345678 6.5 x 12
11 / 01 GG

Facility: TRBC
Seal: HDL
Cert: 01A
Ring: SureFit
Cage: STD
Grease: 3201
Date: 2/1/11 18:55:12



Railroad Bearing Corp

BEARING NEW
12345678 6.5 x 12
11 / 01 GG


Facility: TRBC
Seal: HDL
Cert: 01A
Ring: SureFit
Cage: STD
Grease: 3201
Date: 2/1/11 18:55:12



Railroad Bearing Corp

WHEEL NEW
GK 123456 11 / 01
CH 36 D 241.25


Rim / Finger : 22 / 0
Plate: CrvS
Facility: GRFI
Heat: 1234ABCD
Date: 2/1/11 18:55:12



Railroad Wheel Corp

AXLE 6.5 x 12 F+


SN / Heat: 123123 ABCDEF
Type: RWS
Class: 7
Condition: 2
Facility: GRFI
Converter: ABCD
Plating: AXIS1234
Conv Date: 6/1/11 18:55:12
Mfg Date: 2/1/11 18:55:12



Railroad Axle Corp

WHEEL NEW
GK 123456 11 / 01
CH 36 D 241.25

Rim / Finger : 22 / 0
Plate: CrvS
Facility: GRFI
Heat: 1234ABCD
Date: 2/1/11 18:55:12



Railroad Wheel Corp



Wheel Shops – Keys to Success



Assemblers of Wheelsets will be responsible for accurate collection of bar code data from wheels, axles, and bearings. They will associate that data to a pre-printed 1D barcode that is applied to the assembled wheelset.

The complete wheelset data will be sent to Railinc and constitutes the Wheelset Registration.

Key Documents;

- **AAR CEPM Bar Coding Specification (Wheelsets)**
 - Read the OEM 2D bar code for each wheel, axle, & bearing
 - Creation of 1D bar code for the wheelset
- **Wheelset Data Glossary**
 - Data Elements that need to be reported
- **Reference File**
 - Permissible Values



Prerequisites to Component Registration



1. Contact Railinc
 - Get a Company ID
 - Register for an SSO User ID
2. Read the User Guide and Specifications to understand the requirements for reporting
3. Request Access to Umler from your Umler Company Administrator (that may be you)
4. Request Component Maintenance Access from your Umler Company Administrator
5. Determine how AAR Component IDs will be managed by your company



Wheelset Registration with Railinc



Companies have two ways to register a wheelset

1) Railinc.com

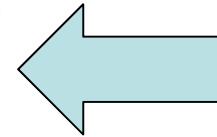
- Input one wheelset at a time
- Upload CSV

2) XML via Web Services – Real time transactional integration

Web Service will allow Wheel Shops to automate reporting of information through their own systems



Component Registration via the railinc.com website



Login with
your SSO
User ID



Option #1 - Component Registration Interface

RAILINC | Umler | RTSOLIS : RAIL - RAILINC CORPORATION | Launch Pad ▾ | Contact Us | Sign Out

Home | Query | Maintenance | Upload / Download | Railinc Admin Functions | Account Administration | Contact List | Component Registry | Help | References

Search | Add New | Upload CSV

Add New Component to Registry

AAR Component ID:

Company Code:

Component ID Number:

Component Type:

Done | Local intranet | Protected Mode: Off | 100%

Enter information for each component to register. Low Volume users.



Option #2 – Upload via CSV

The screenshot displays the RAILINC Umler web application interface. At the top, the RAILINC logo is on the left, and the user name 'Umler' is on the right. The main navigation bar includes links for Home, Query, Maintenance, Upload / Download, Railinc Admin Functions, Account Administration, Contact List, Component Registry, Help, and References. Below this, a sub-navigation bar has tabs for Search, Add New, and Upload CSV. The main content area is titled 'Browse files to find a components CSV'. It features a text input field for 'Filename.csv:', a 'Browse...' button, and a link for 'Download csv format templates'. A 'Submit' button is located at the bottom right of the form area. The browser's status bar at the bottom shows 'Done', 'Local intranet | Protected Mode: Off', and a zoom level of '100%'.

More Efficient way to register components. Refer to the CSV Upload Guide as well as templates that are available.



Option #3 – Web Services Integration

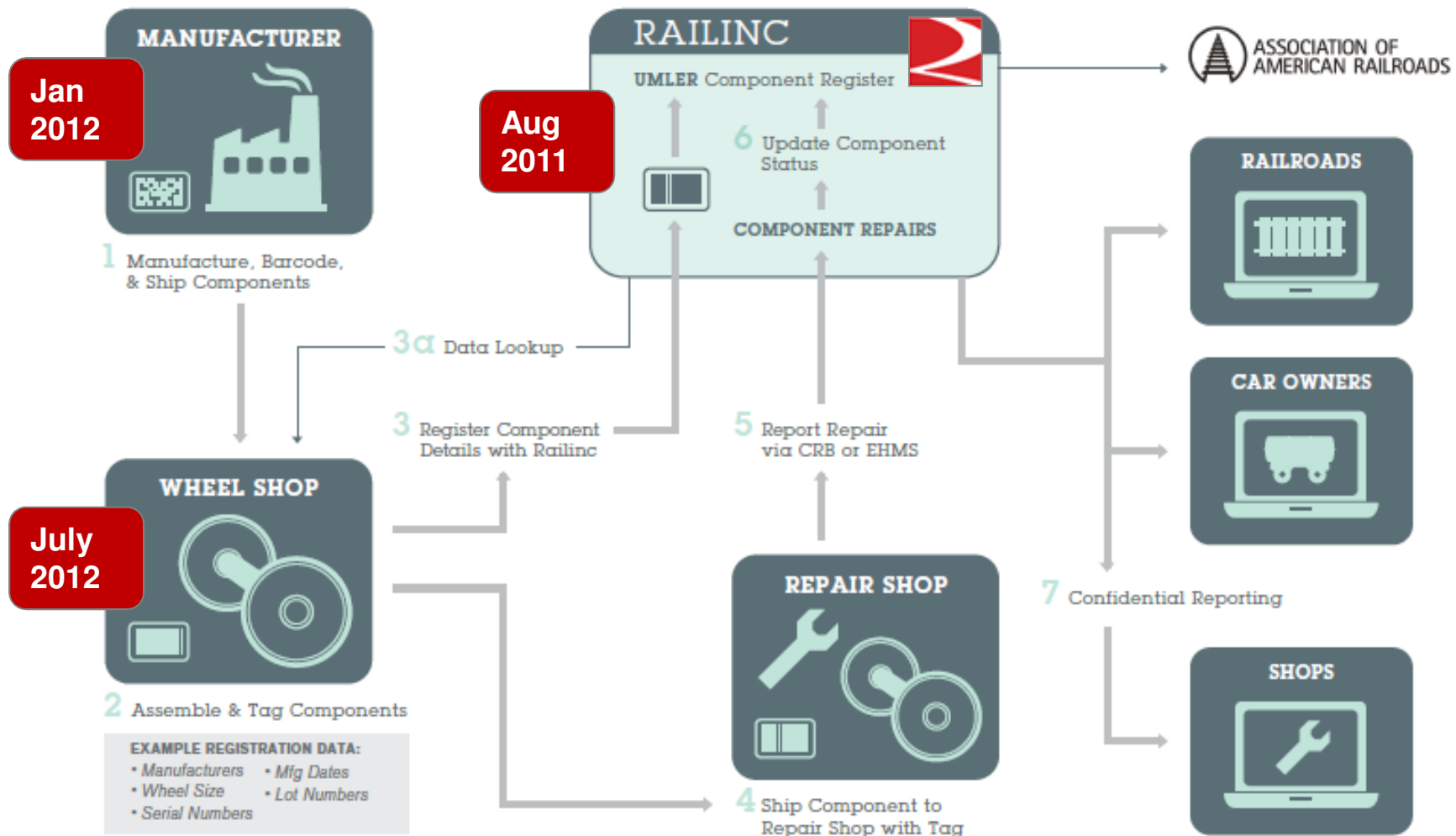


If your company is interested in the technical specification for integrating your products with the Umler Component Registry, please contact csc@railinc.com

Railinc can provide WSDLs and technical specifications to get you started with data integration.



CEPM-Wheelsets Process Flow





Discussion Topics

- Introduction to CEPM
- Manufacturers
- Wheel Shops
- **Repair Shops**
- CEPM Next Steps



Communicating data through Bar Codes





CEPM Systems to report association

Umler

Component Registry – Components can be registered, as well as associated to equipment

CRB – Changes to include AAR Component ID with reporting

EHMS - Changes to include AAR Component ID with Alert Closure reporting



Circular Letter C-11430 (CRB Format 327-340)

Betty J. Pague

Manager-Car Repair and Interchange
Services



April 29, 2011

[C-11430]

Circular Letter

Subject: Version 7.3 of the Car Repair Billing Procedures Manual is Available

To: MEMBERS AND PRIVATE CAR OWNERS

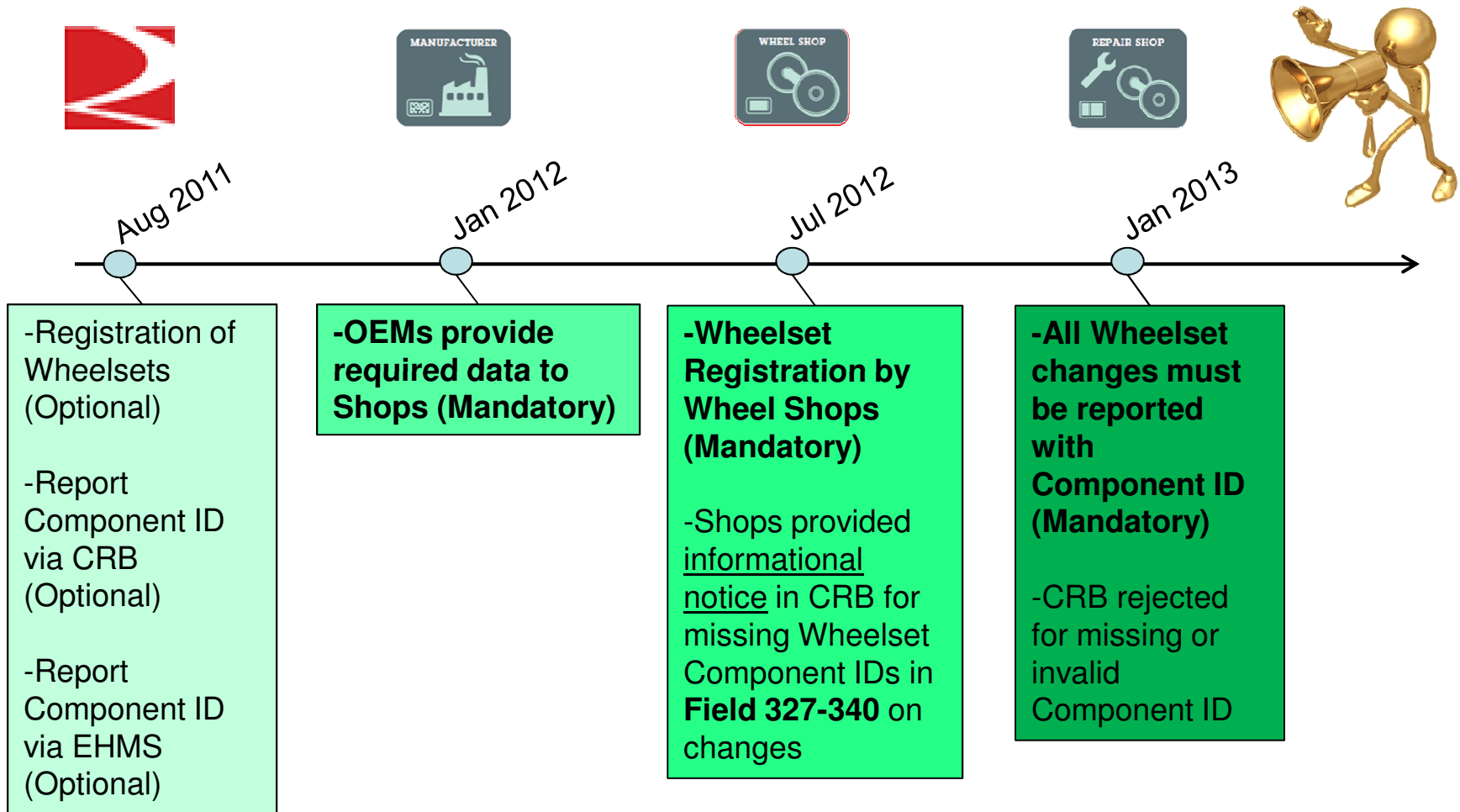
File Number: CRB-1499

IMPORTANT NOTE: It is critical that this information be distributed to all Car Repair Billing and IT personnel with your company that work with or are responsible for Car Repair Invoices submitted to and/or received from Railinc's Data Exchange.

Please refer to previous industry efforts to launch the on-going Paperless/Electronic Billing initiative referred to in the most recent Circular Letters:

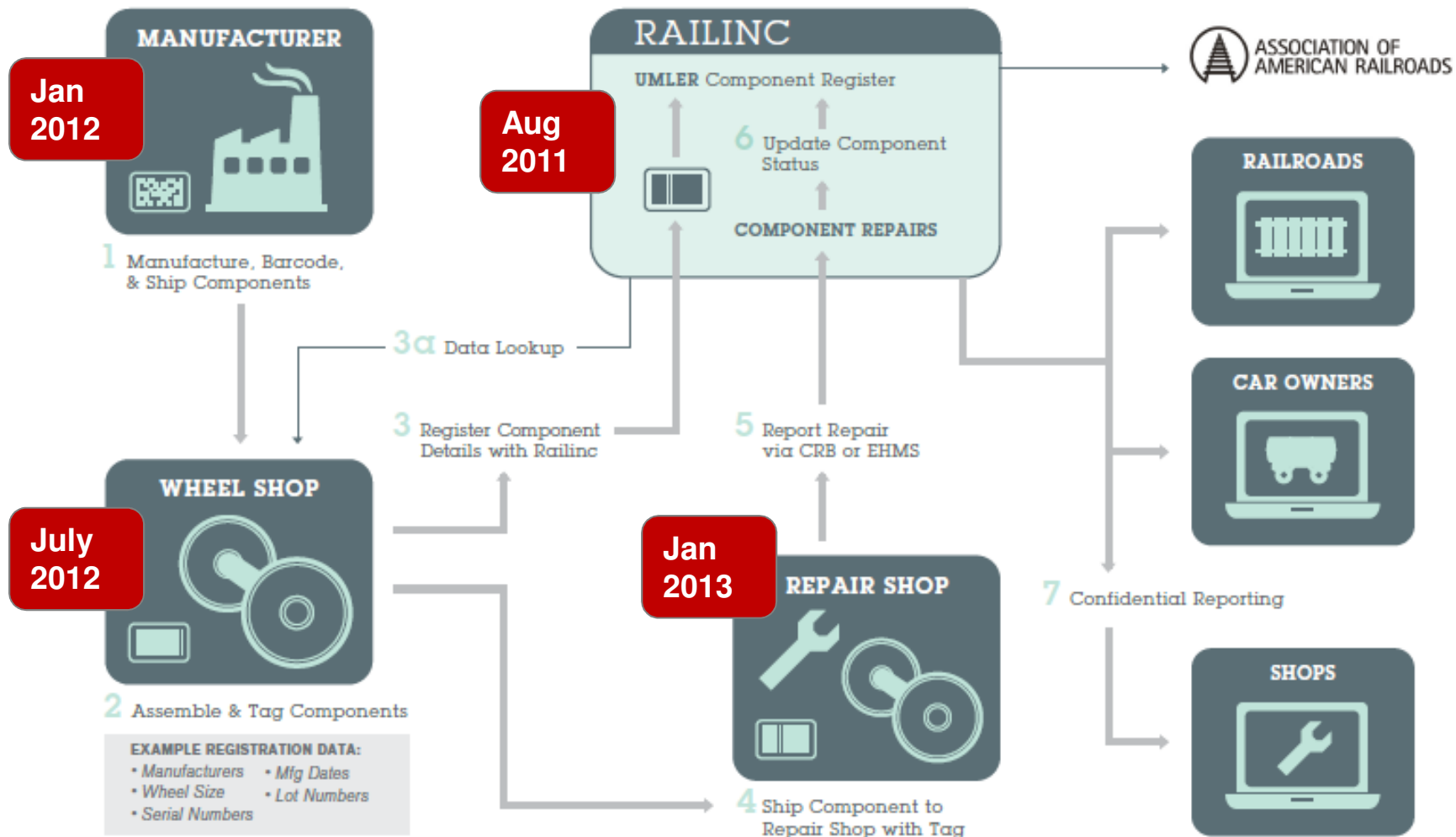


CEPM Industry Timeline





CEPM-Wheelsets Process Flow





Discussion Topics

- Introduction to CEPM
- Manufacturers
- Wheel Shops
- Repair Shops
- **CEPM Status and Next Steps**



CEPM-Wheelsets Progress to-date

- Major capabilities for CEPM registration and tracking are already in place (Umler, EHMS, CRB)
- Railinc.com/CEPM website launched in June to provide central place for communications
- June Circular formally introduced CEPM to the industry
- July 12th AAR/CEPM Town Hall in Chicago to discuss CEPM with wide audience of stakeholders
- Broad communication effort to educate committees regarding CEPM program objectives and timelines
- August launch of initial Umler Component Registry capabilities to facilitate communication and planning for CEPM
- Circular letter requesting feedback and comment to WABL by Oct 15th Bar Code and Data Glossary.
- AAR/CEPM Town Hall #2 tentatively set for November (circular will be forthcoming)





Tentative Rules Timeline

January 2012

- MSRP F -Data definition of Wheelset attributes
- MSRP G, GII,H, HII – OEM/Reconditioner Attributes to be supplied to Wheelshops via 2D Barcode

July 2012

- MSRP GII – Wheelset component attributes must be captured at wheelshop and Registered at Railinc prior to Shipment with 1D Barcode

January 2013

- FM/OM - Wheelsets applied to any car must have the industry standard component identifier associated with the car and position reported to Railinc
- FM/OM - All wheelset changes must be reported to Railinc



CEPM Roadmap

2012 – Wheelsets (Freight Cars)

2013 – Castings – Sideframes, Bolsters, Couplers

2014 and Beyond

Brake Systems

Locomotive – Engines, Locomotive Wheelsets,
Turbochargers, Traction motors

Tank Car – Valves, Appliances

Intermodal Components – Hitch, Auxiliary Power

Tracing - PTC Devices, GPS

Passenger Car Wheelsets



CEPM Roadmap

Mileage

Railinc is currently tracking equipment and component mileage to provide better performance analysis on wheelsets for equipment owners and manufacturers

Car Health Reporting

Railinc will provide easier visibility to equipment owners and manufacturers by consolidating equipment and fleet information and analytics to assist with identification of performance issues



Information Online – www.railinc.com/cepm

Railinc Corporation | CEPM Project - Microsoft Internet Explorer provided by Railinc

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Damage Prevention and Loading Services

Early Morning

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CEPM Program Overview

The Comprehensive Equipment Performance Monitoring (CEPM) program is a multi-phase, multi-year initiative to create a rail industry process and related technology tools for capturing data around railcar equipment components. CEPM will help railroads, rail equipment owners, repair and wheel shops, and other industry participants have a complete view of rail equipment health and performance. This will enable managers to make decisions that improve rail safety, lower the cost associated with equipment maintenance, and run more efficient and effective rail operations.

The program's first phase—CEPM-Wheelsets—centralizes the registration of wheelset component details and identifies the application of wheelset components, including AAR and non-AAR repairs. The component-level data created through the CEPM program will be available through Railinc's Umler™

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Need More Information

WABL Committee - Ken Rownd – TTCI Committee Manager

*CSTCC Committee – Jon Hannafious – TTCI Committee
Manager*

ATSI Committee – Mike Fore – AAR Committee Manager

csc@railinc.com – Registration and Web Services

www.railinc.com/cepm - project website