CEPM

Webinar #1 – Introduction to CEPM-Wheelsets and Barcoding Specifications

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Railinc

ASSOCIATION OF AMERICAN RAILROADS

Introduction to CEPM-Wheelsets and Barcoding Specifications

This session will cover basic information about CEPM-Wheelsets and how you can begin registering components through CEPM-enhanced systems.

Thursday, September 8, 2011

2 p.m. to 3:30 p.m. (ET)

Recommended for wheel shops, OEMs and software providers

"CEPM"
Comprehensive Equipment Performance Monitoring

Information Online – www.railinc.com/cepm

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 <u>industry rules</u> for reporting component details and application to equipment

- Develop a <u>re-usable framework</u> that can support a list of priorities for tracking wheelsets, castings, valves, PTC, GPS devices, brakes, cushioning, traction motors, etc.

- Maintain <u>Confidentiality</u> of reported data

- Support <u>Bar Code</u> and RFID standards

CEPM-Wheelsets Process Flow
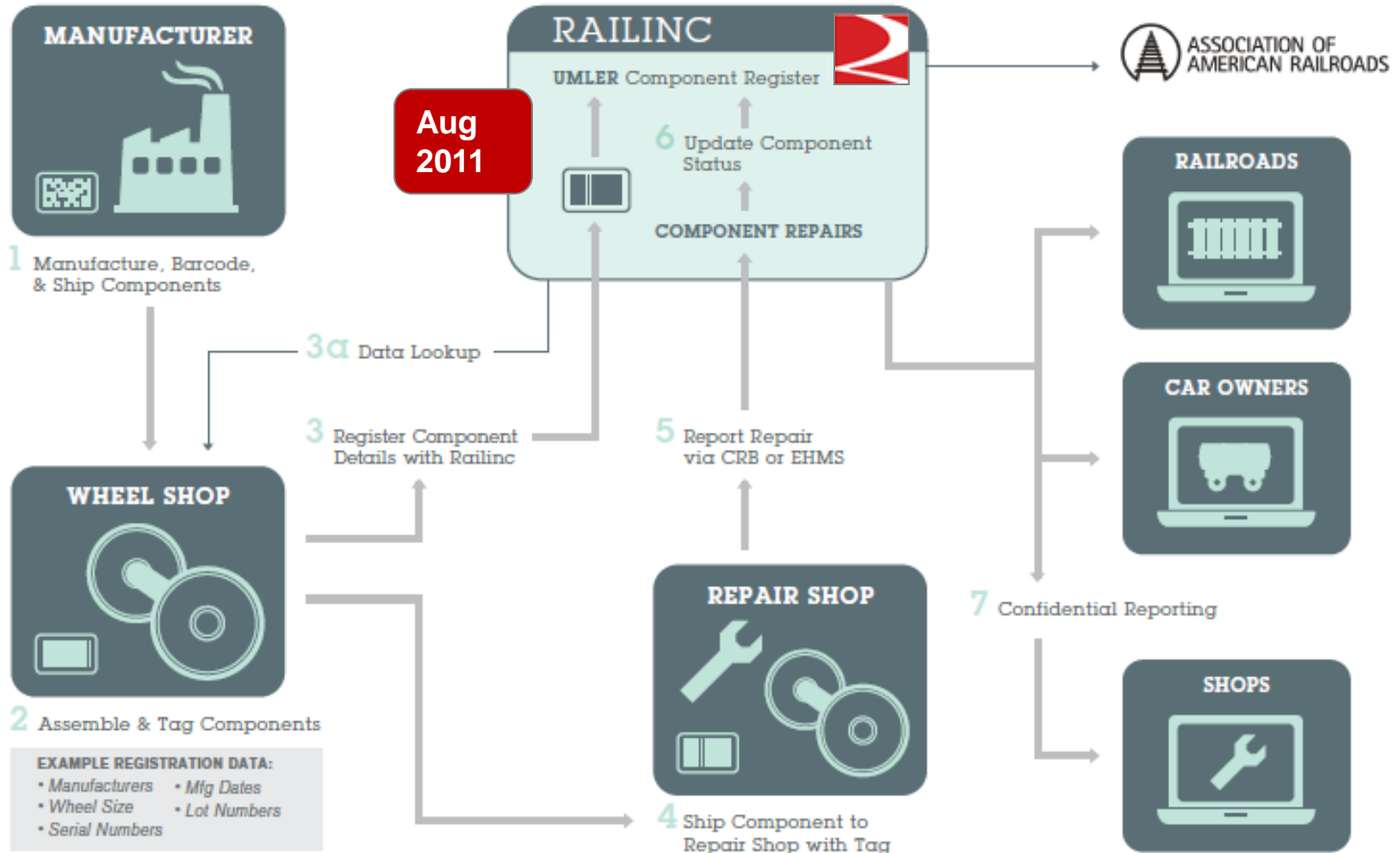
Key Contributions for Success

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

AND the 3rd party SW providers!

Bar Codes, RFID primer

BarCode: 1D BarCode

ABCD1234567890 =

Used for AAR Component Identification, Little Data

BarCode: 2D BarCode or Bar Code Matrix

ABCD1234567890 =
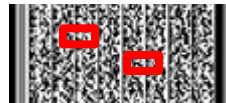
Used for Carrying much data, with redundancy

RFID: Example: AEI

Used for Carrying much data, wireless/remote

Costs, Equipment/Reliability, Longevity – Wheelsets: Survive until application

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.

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

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.

MANUFACTURER

```
<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

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 Recon dition	Wheel shop by Axle Manufactur er		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	
WHEEL: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 <u>exactly</u> 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
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 Readir	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_Definitions / Element_Valid_Values

ELEMENT_VALID_VALUES_SQN	ELEMENT_DEFINITION_ID	VALID_VALUE	VALID_VALUE_LABEL	SORT_ORDER	I:
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	

Element_Definitions / Element_Valid_Values

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
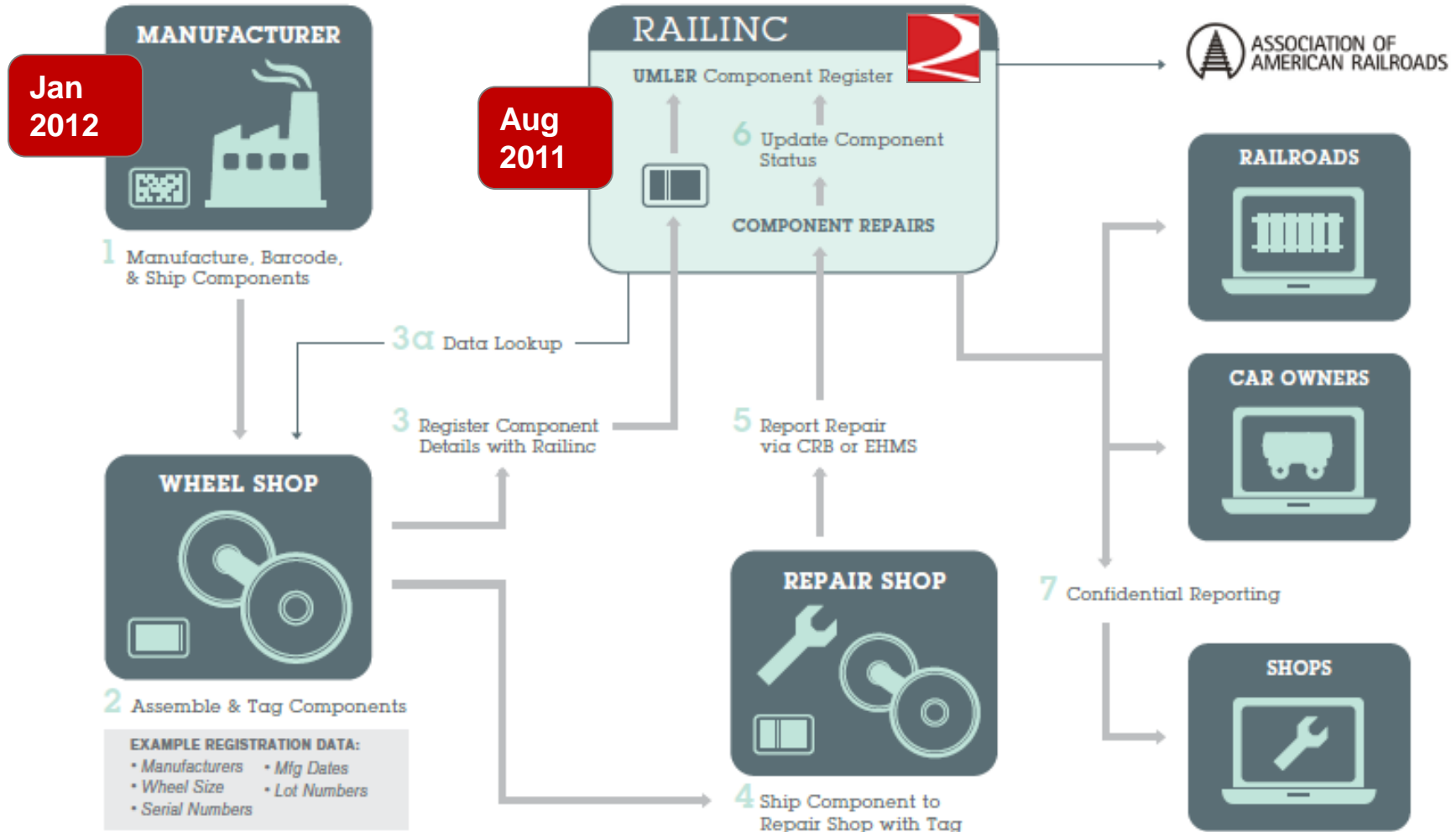
Railroad Axle Corp

BEARING   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

MANUFACTURER

CEPM-Wheelsets Process Flow

Jan 2012

Aug 2011

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1 Manufacture, Barcode, & Ship Components

RAILINC

UMLER Component Register

6 Update Component Status

COMPONENT REPAIRS

ASSOCIATION OF AMERICAN RAILROADS

3a Data Lookup

3 Register Component Details with Railinc

5 Report Repair via CRB or EHMS

WHEEL SHOP

2 Assemble & Tag Components

EXAMPLE REGISTRATION DATA:
- Manufacturers
- Wheel Size
- Serial Numbers
- Mfg Dates
- Lot Numbers

REPAIR SHOP

4 Ship Component to Repair Shop with Tag

RAILROADS

CAR OWNERS

7 Confidential Reporting

SHOPS

Wheelset Assembly

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

Wheel, Axle and Bearing OEM 2D Bar Codes

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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   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 SHOP

Wheel Shop – Bar Coding Specification

MANUFACTURER

WHEEL SHOP

Note: Specs for 1D and 2D bar code are in the same document

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For Wheel Shops, they will want to verify that the data on the bar code is valid before registering with Railinc.

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Element_Definitions   Element_Valid_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

Railinc.com

- Input one wheelset at a time
- Upload CSV

XML via Web Services – Real time transactional integration

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

Comp Registration via the railinc.com website
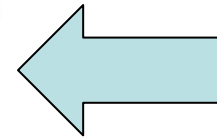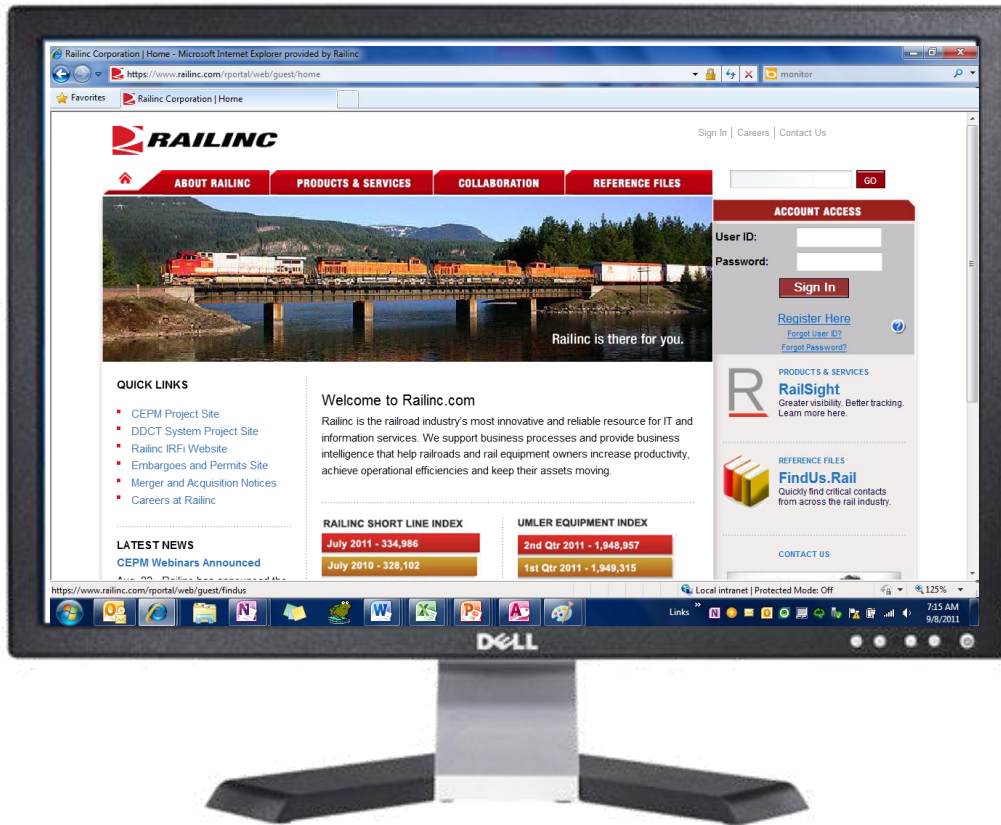
Login with your SSO User ID

Login to the Umler system

Select Registration from the Component Registry Menu

If the Registration menu is not visible, request "Component Maintenance Access" from your Umler Administrator.

Option #1 - Component Registration Interface

Enter information for each component to register. Good for beginners.

Option #2 – Upload via CSV

More Efficient way to register components. Refer to the CSV Upload Guide as well as templates that are available.
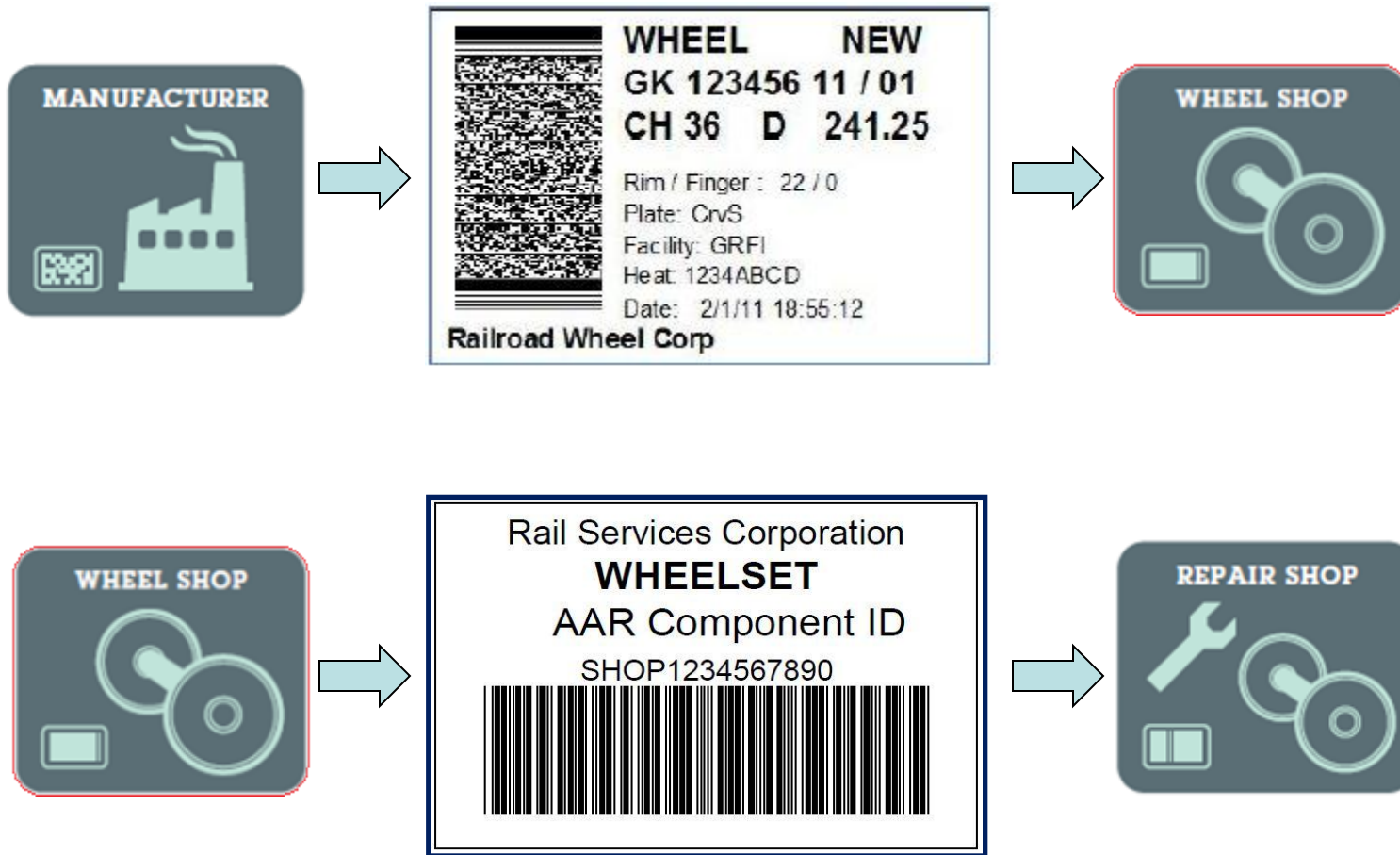
Option #3 – Web Services Integration

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

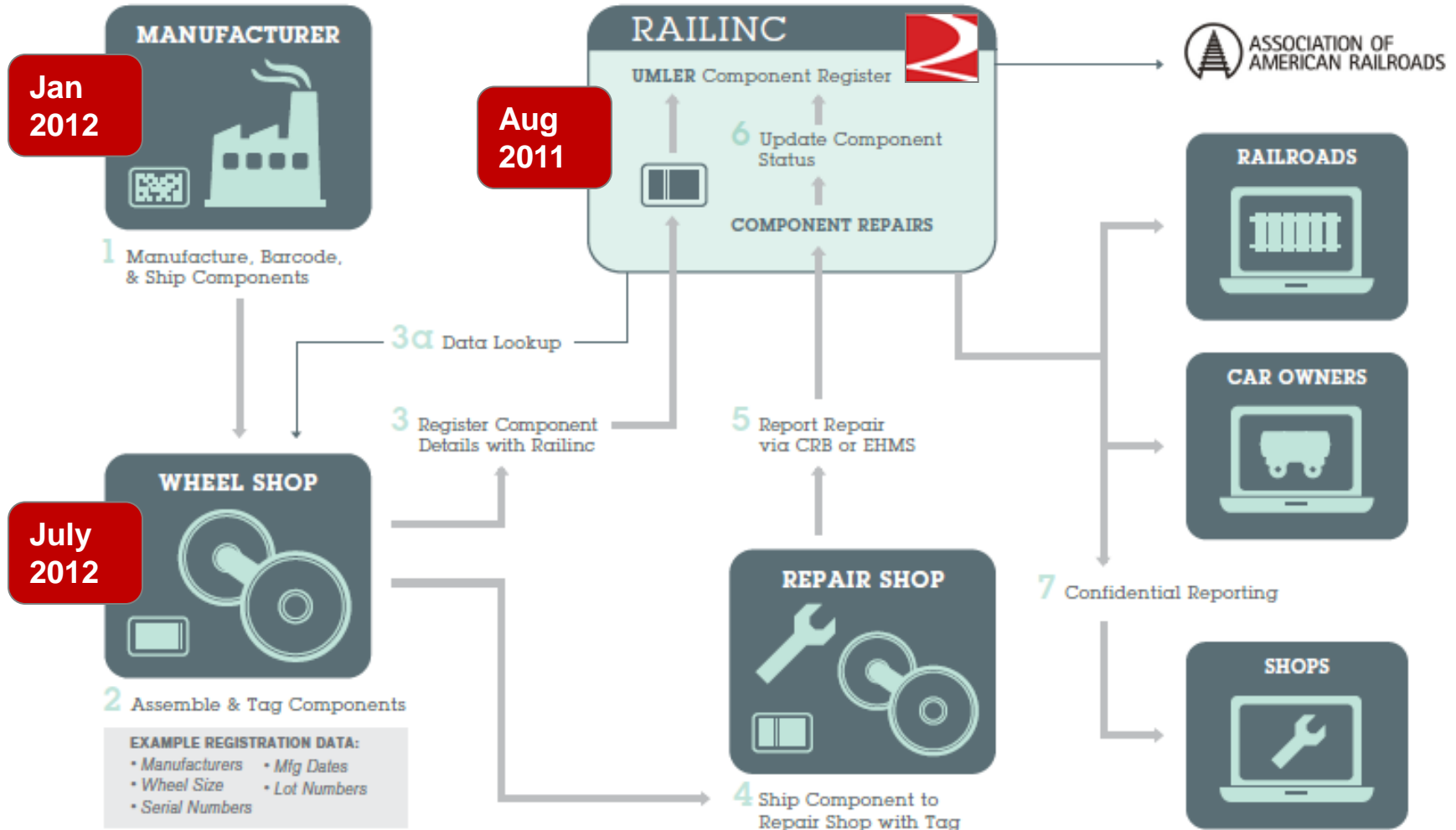Railinc can provide WSDLs and technical specifications to get you started.
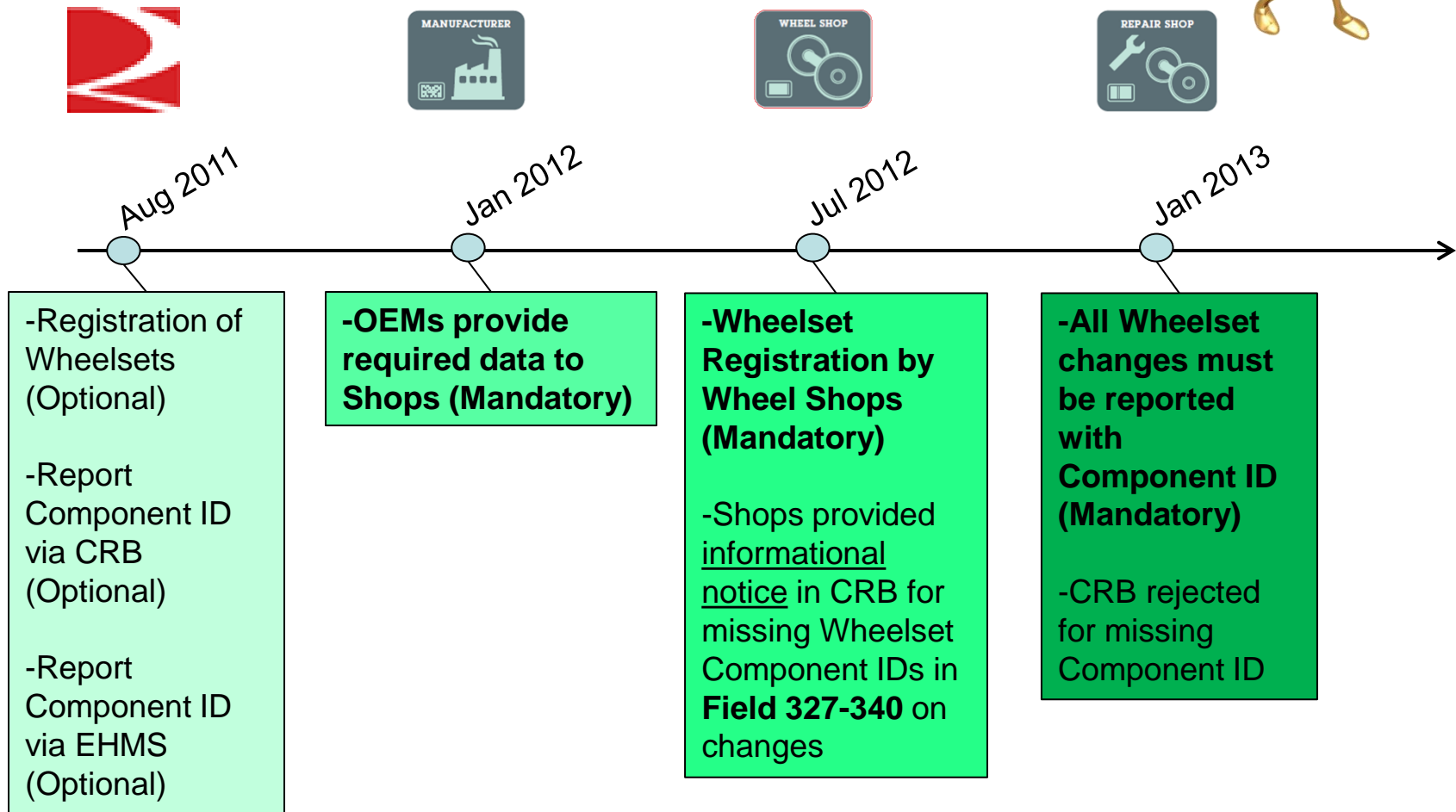
Communicating data through Bar Codes

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CEPM-Wheelsets Process Flow

CEPM Industry Timeline

Aug 2011

Jan 2012

Jul 2012

Jan 2013

-Registration of Wheelsets (Optional)

-Report Component ID via CRB (Optional)

-Report Component ID via EHMS (Optional)

-OEMs provide required data to Shops (Mandatory)

-Wheelset Registration by Wheel Shops (Mandatory)

-Shops provided <u>informational notice</u> in CRB for missing Wheelset Component IDs in **Field 327-340** on changes

-All Wheelset changes must be reported with Component ID (Mandatory)

-CRB rejected for missing Component ID
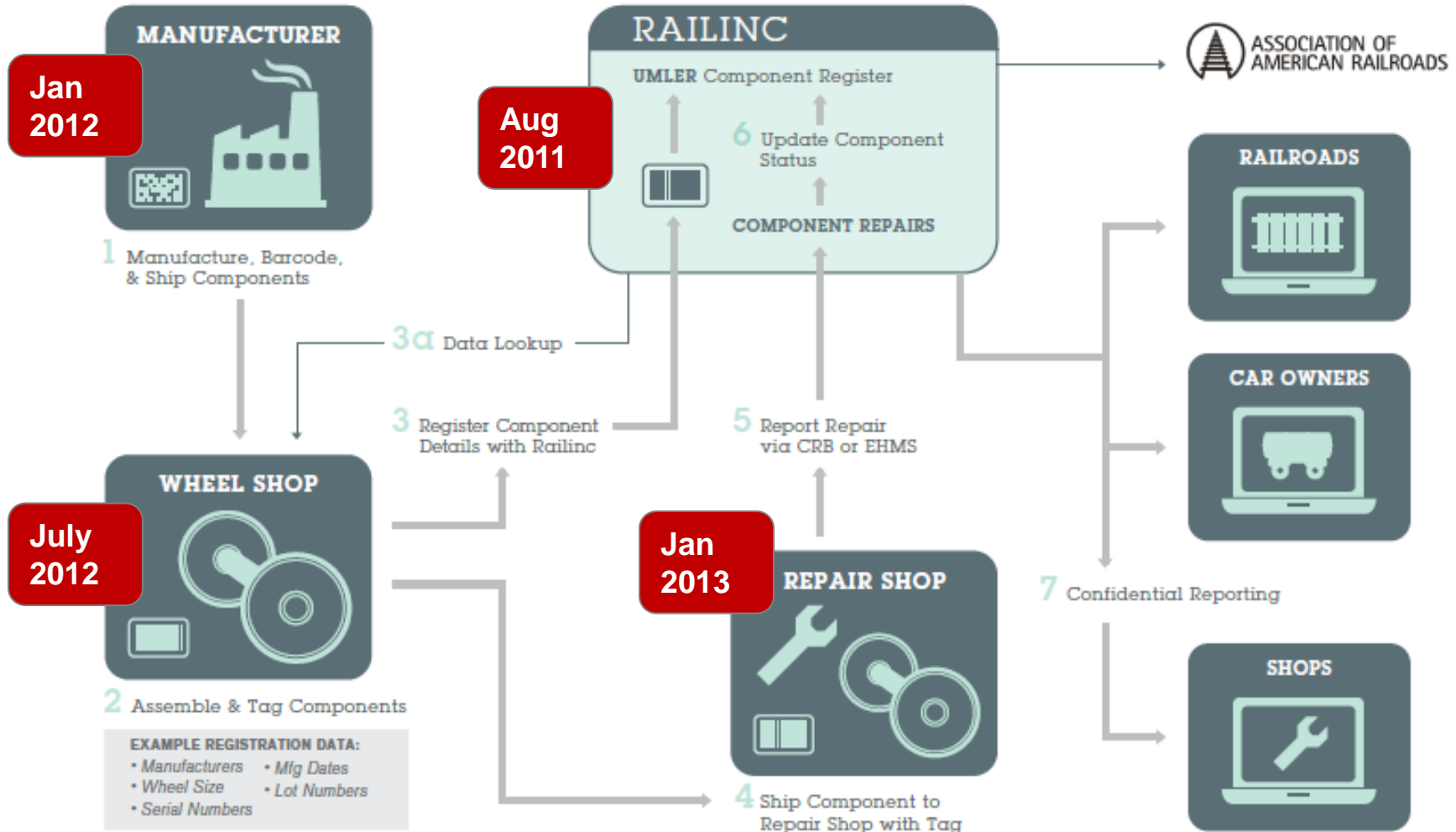
CEPM-Wheelsets Process Flow

CEPM-Wheelsets Progress to-date

- Major capabilities for CEPM registration and tracking are already in place
- 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)

CEPM Roadmap

2012 – Wheelsets (Freight Cars)

2013 – Castings – Side Frames, Bolsters, Couplers

2014 and Beyond

    Locomotive – Engines, Turbochargers, Traction motors

    Tank Car – Valves, Appliances

    Intermodal Components – Hitch, Auxiliary Power

    Tracing - PTC Devices, GPS

Need More Information

WABL Committee - *Ken Rownd – AAR Committee Manager*
csc@railinc.com – Registration and Web Services
www.railinc.com/cepm - project website

Component Registration Requirements for Wheel Shops and OEMs: This session will provide wheel shops and OEMs with an overview of requirements associated with component registration, component barcoding and data requirements.

Thursday, October 6, 2011
2 p.m. to 3:30 p.m. (ET)
Recommended for wheel shops, OEMs and software providers