

# Component Tracking

Oct 18<sup>th</sup> - MARTS 2010 – Montreal  
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ASSOCIATION OF  
AMERICAN RAILROADS



# Component Tracking Objectives

- 1-Support Recall of Critical Components  
Safety related defects (Wheelsets, Castings...)
  - High Risk Wheels
  - Sideframes, Bolsters, Couplers
  - Unmachined Bearing Adapters
  - Loose Wheels – Wheel Bore Machining Errors
- 2-Support Mileage-Based Analysis/Actions for Components
  - Impact Wheelsets – Higher Miles = bad
  - Bearings – Low mileage break-in, High Mileage Failure
  - Life Cycle Costs (Wheels, Bearings, Brake Shoes...)



## Industry Requirements

- Require Automated Methods – (Bar Code or RFID)
  - Data Integrity
- Establish industry rules for reporting component details
  - Application to and Removal from equipment
- Develop a re-usable framework that can support future needs for tracking castings, couplers, PTC, GPS devices, etc.
- Maintain Confidentiality of reported data

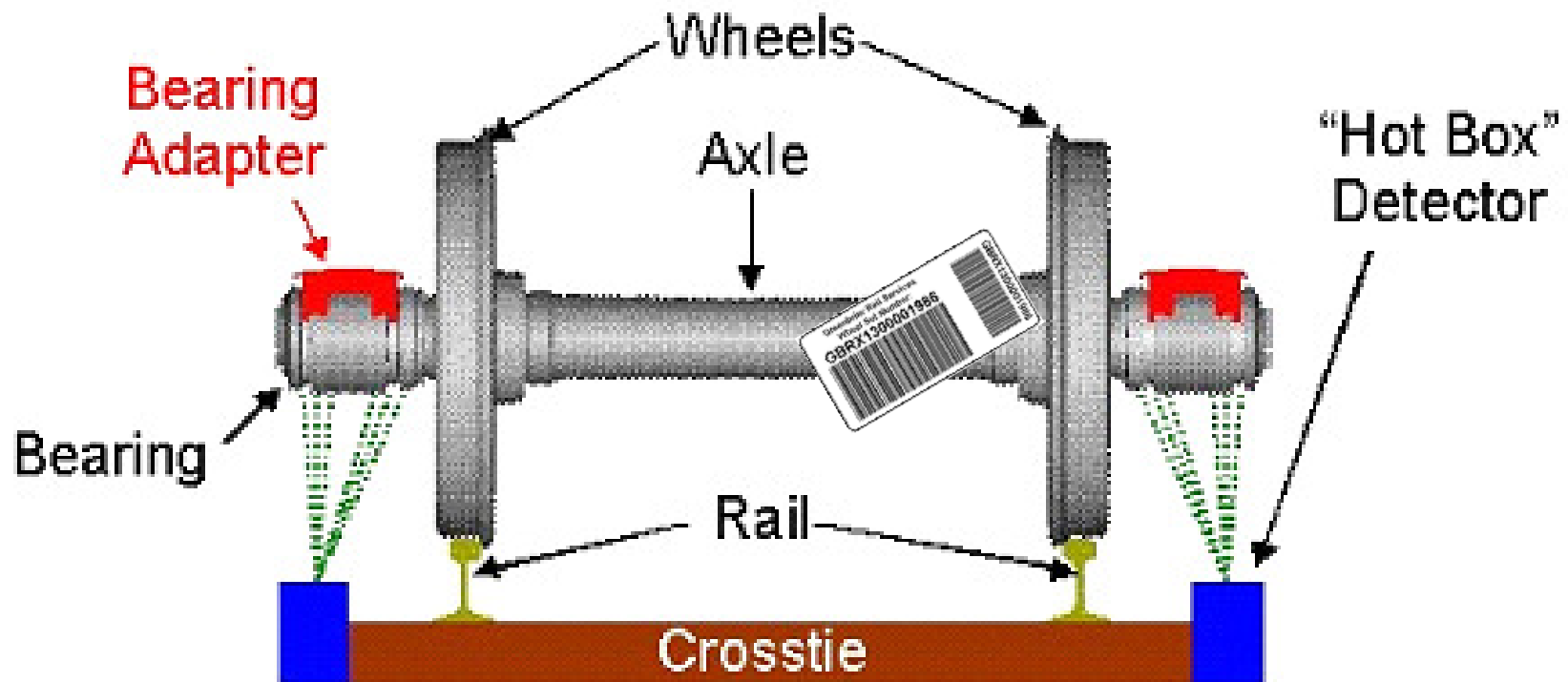


## Benefits

- Effective Recalls (note: Regulatory Direction)
- Support use of Bar Code or RFID
  - Minimize Workload at the Time of Repair
  - Reliable Reporting Accuracy
  - Increased Attributes for Tracking
    - Wheel Shop ,Reconditioner, Seal Type, ...
  - Improved Maintenance Prioritization
    - Mileage-Based (Impacts, Bearings)



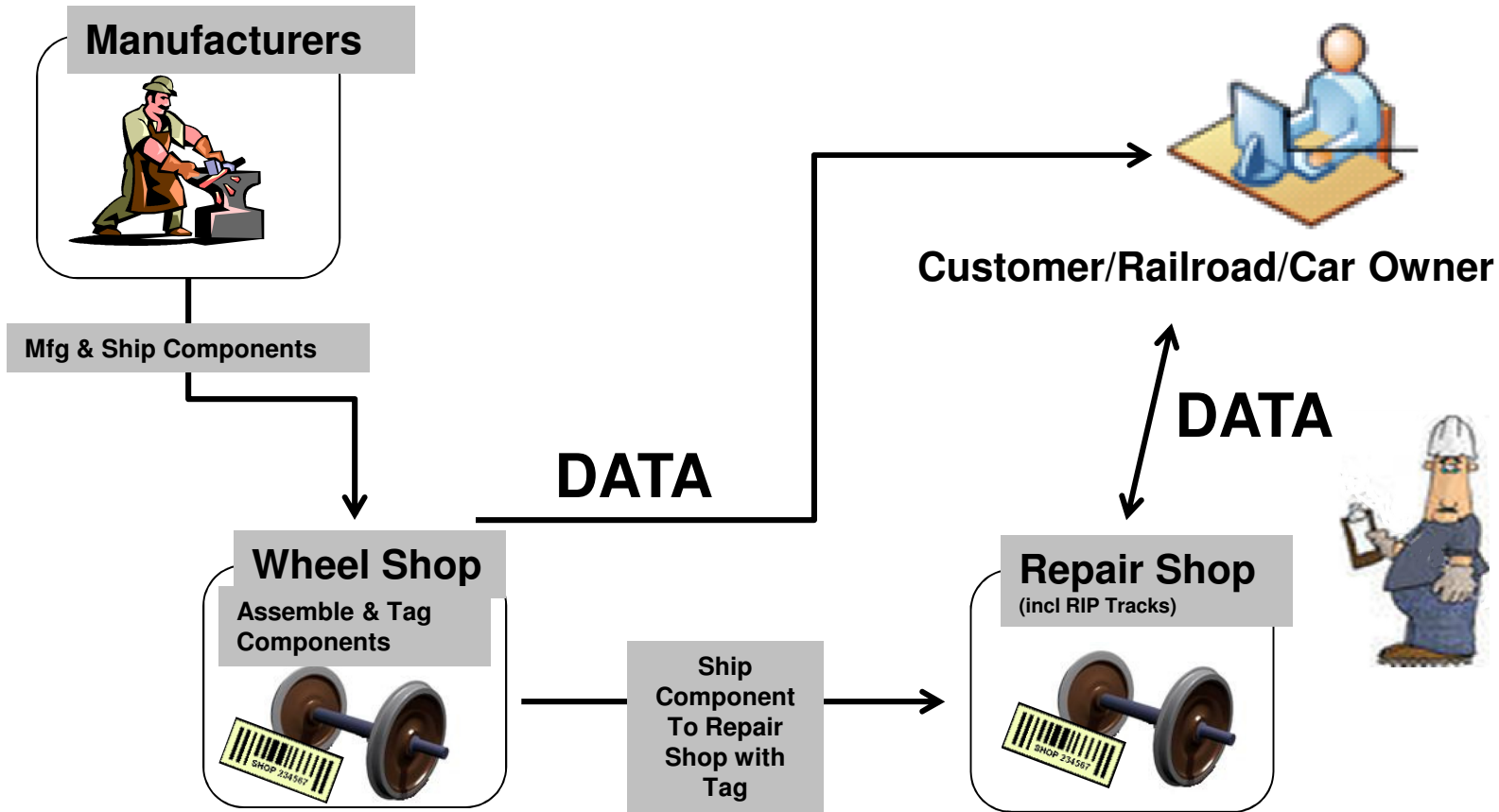
# Wheel Set Component Tracking



**The TAG is not the Technology**

# Process Flow (UPRR Pilot)

**The DATA is the Technology**



# THE KEY

- Component Tag ID
  - AAR Company Code
  - Component ID Number
- All other data is stored digitally in database



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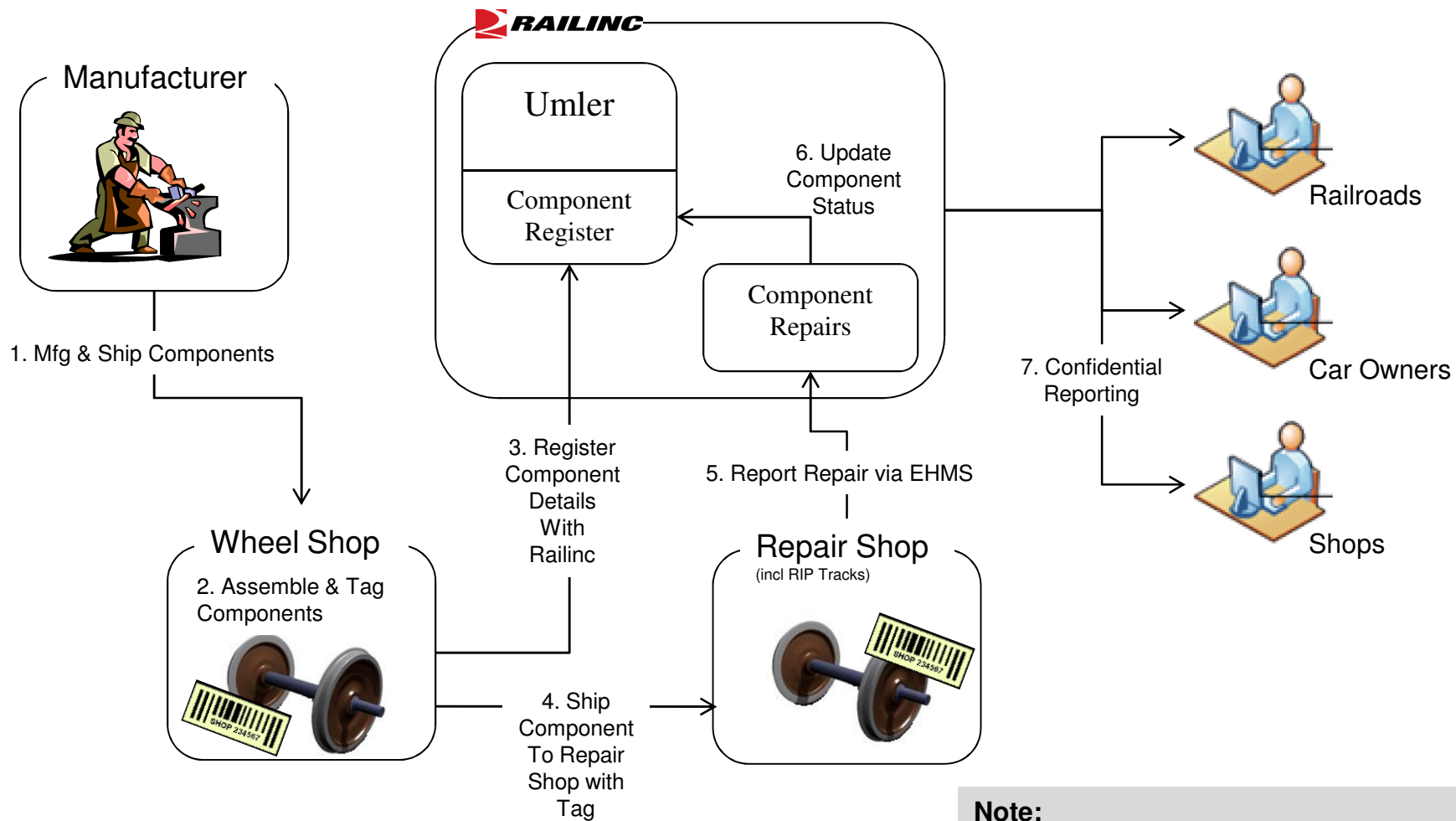
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# Industry Process Flow

## RailInc - Registration and Clearinghouse



**Note:**  
Only high level processes displayed





## Process Steps (Wheelsets)

- 1) **Manufacture and Ship Wheelset Components**
  - Include Necessary Data for Wheelshop Compilation
- 2) **Tag Component at Wheel Shop (Bar Code, RFID, Etch)**
  - Wheel Shops maintain Serialization of component  
GRBX 1234567890 (Company maintains unique ids across shops)
  - Tag Method is determined by the Shops/Customers
  - Shop must have a valid Railinc Shop Code (QAC, FM, ... in Findus.Rail)
- 3) **Register Component (Wheelset)**
  - Web UI, Web Services, Upload CSV will be supported
- 4) **Ship Component to Repair Shop or Builder**
- 5) **Apply Component**
  - Report application to Railinc via EHMS
  - Higher Data Quality in Scan vs Data Entry (support both)
- 6) **Railinc updates Component Status (Validation Response, Error Handling)**
- 7) **Access Provided for Authorized Data**
  - Railroads, Owners, Manufacturers, Shops



## What this Means to You

- **Manufacturers:**
  - Registration in Findus.Rail
  - Downstream Communication of Component Data (**Digital or Tagged**)
- **WheelShops:**
  - Additional Data to Capture and send to Customer/RailInc
    - Wheel Serial Numbers, Bearing Reconditioner Code, Wheel Shop Code
    - Electronic Registration/Communication Means
- **All Repair Facilities, Car Builders, Mobile Repair Units:**
  - Reporting All Wheelset Applications
    - To RailInc
    - Utilizing Component Tag ID (XXXX0000000000)



## Industry Systems Affected

### UMLER

- Equipment Characteristics
- Store confidential and non-confidential component details and association to equipment

### EHMS

- Equipment Health
- Reporting Mechanism

### CRB

- Repair Billing
- Addition of Component ID ?

### Findus. Rail

- Company/Shop Registration



## Industry Rules/Standards Needed

### Required Facility/Location Registration (Findus.Rail)

- One System for All Applications

### Required Component Application Reporting

- Not Currently Required – Self Billing, New Builds

### Data Format Standards (Electronic, Bar Codes)

- ATSI TAG, IT Focus Group, RailInc

### Required Data Element Rules (What must be Reported)

- AAR Committees (WABL, EEC, ARB)



## Timeline

2010

Communication and Project Estimation (Current)

Project Approval (Sep)

Requirements Definition begins (Oct)

Industry Rule Changes (Dec)

2011

Component Registration Development

Component Repair Development

2012

Registration/Application Reporting Begins

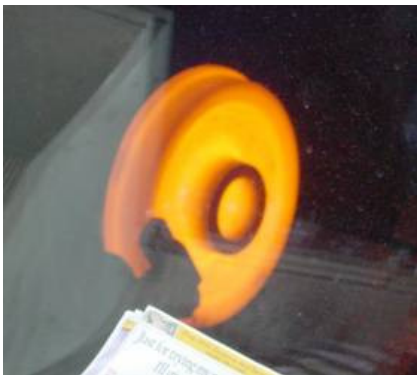
Backfill Repair History into Component Database



## Re-Usable Framework

The system for registering and reporting of wheel set component application to equipment must support future requirements for other components;

- Bearings, Couplers, Castings, GPS Devices, PTC modules, etc.



**Component ID (XXXX1234567890) Standard**



## Confidentiality

Umler data security and confidentiality rules support requirements for component details.

Security would exist for different groups

Wheel Shop that reports the component details

Repair Shop that reports component application

Industry systems as needed for processing

Car Owner for component detail on their equipment

Data available for public consumption

Security configurations would be configurable for component details of other component types as well





## Recall Example

Railinc would maintain component detail to support criteria related to recall requests

Upon request Railinc would identify all equipment with Components matching the criteria and provide to AAR

AAR would file Early Warning on the equipment for inspection related to the recall criteria





## Use of Bar Codes and RFID

Railinc recommends the use of RFID for component tracking due to the lower operational costs

Bar Codes have lower up front costs

Both Bar Code and RFID will reduce rejected records due to data quality

Railinc will support manual and automated processes for reporting registration and application of components

Data Entry via Web User interface

Upload of data via CSV

Web Services for 3<sup>rd</sup> party software integration



## TAG FAQs

### How durable do Physical Tags need to be?

Currently, Tags are only planned to be used in the process between manufacture and application to the car. Durable RFID tags could be used to track the wheel set beyond the shop, but so far, the stored data associated to the position on the car has been deemed sufficient.

### Who maintains the Component Tag IDs?

It is up to the Parent Companies to maintain their own serial numbers for their tags. (ie. ABCD1234567890)

Internal Management of Multiple Shops for Same Company  
Re-using ComponentTag IDs will not be permitted.



## Mileage Reporting and Use

Railroads to Ensure Reporting of Equipment Miles to RailInc

RailInc to Support Mileage-Based Query

e.g. How many Miles did Car travel  
between 4/2/2008 and 10/10/2010

Wheelset Applied on 5/1/2003. How many miles today?

Each car will have a table of dates and miles travelled.



# THE END