

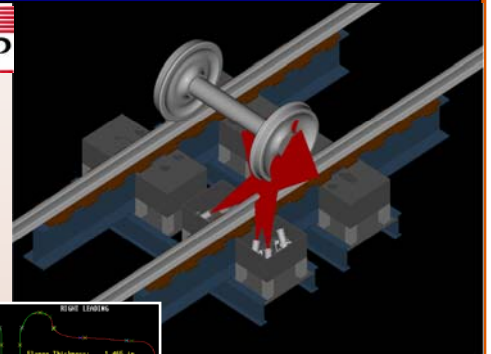
## Providing an integrated and open system to supply train information to manage risk and cost

- Real-time exceptions
- Condition monitoring and trending
- Targeted selection
- Maintenance planning
- Aggregate stress and loading
- Operations
- Train Control
- Real time exceptions and alarms
- Track and Structures
- Operators and Rollingstock owners

### Structure dynamics and loading

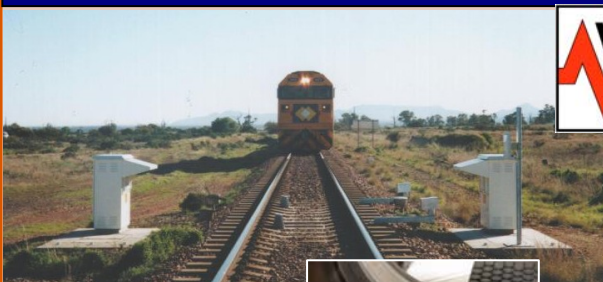


### Wheel inspection and profiling

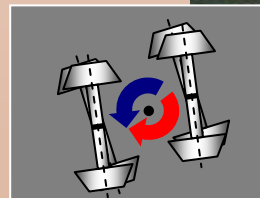
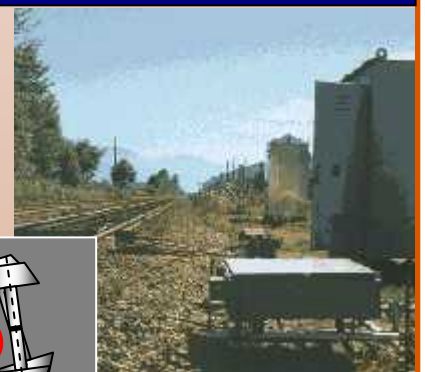


LEFT TRAINING		RIGHT TRAINING	
Flange Thickness:	1.400 in.	Flange Thickness:	1.400 in.
Flange Height:	1.400 in.	Flange Height:	1.100 in.
Rim Thickness:	1.373 in.	Rim Thickness:	1.340 in.
Wheel Diameter:	36.347 in.	Wheel Diameter:	36.347 in.
Axi Sequence: 7			
Speed (mph): 237			
Tread Hollow:	-8.23 mm.	Tread Hollow:	-8.23 mm.
Tread Taper:	5.00 mm.	Tread Taper:	5.10 mm.
Flange Angle:	86.3 deg.	Flange Angle:	86.0 deg.
Flange Flange:	1.708 in.	Flange Flange:	1.528 in.
Vertical Flange:	8.232 in.	Vertical Flange:	8.202 in.
Angle of attack:	-3.3 read.	Angle of attack:	-1.2 read.

### Acoustic condition monitoring



### Vehicle geometry and tracking



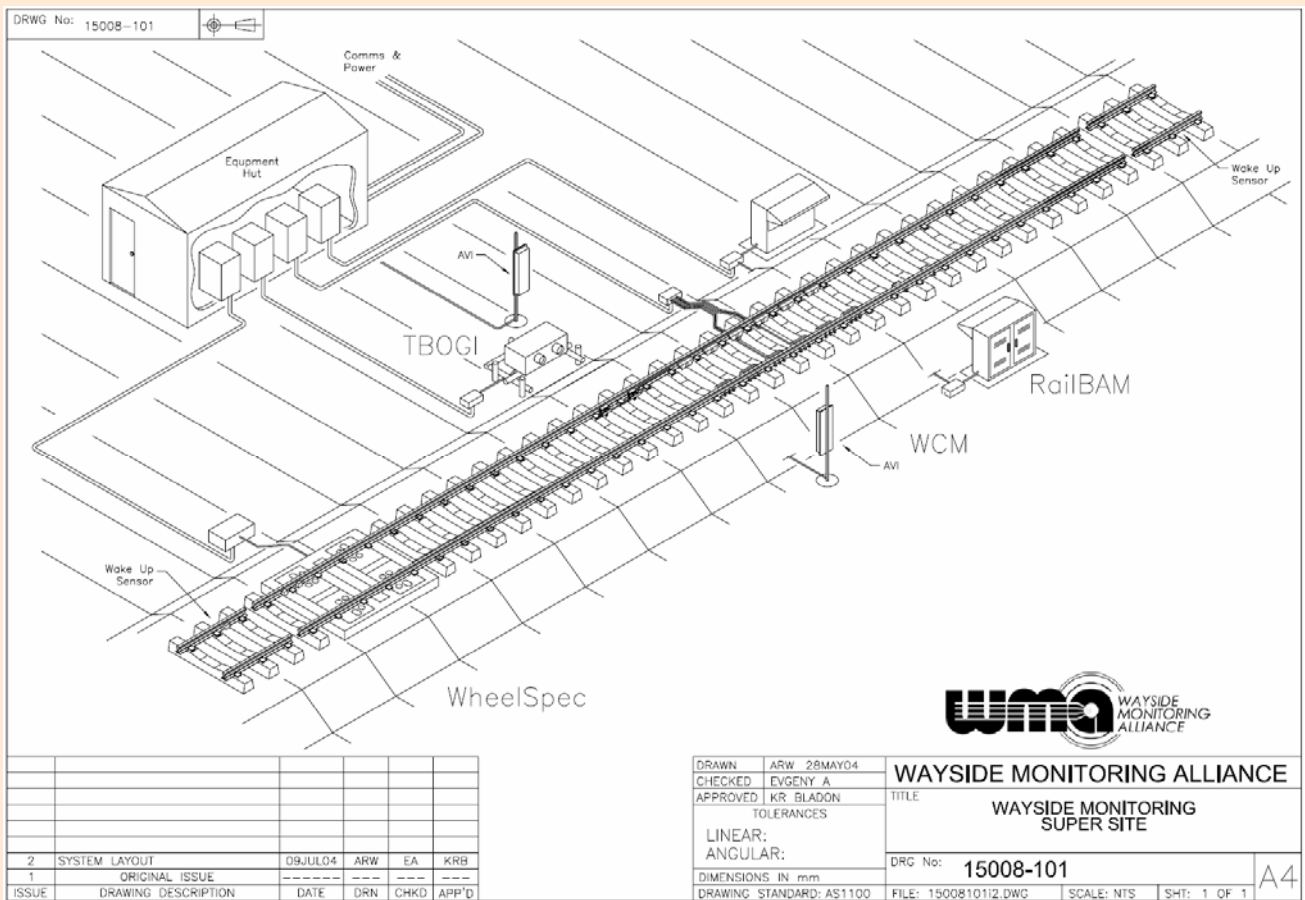
**Machine Condition Monitoring for planned maintenance instead of exception reporting**

**Integration of wayside data and use of statistical methods.**

**Analysis of root cause within complex interactions**



The Supersite is comprised of six sub-systems, WheelSpec, TBOGI, RailBAM, WCM, WMS, and AVI. Each subsystem is designed to operate autonomously to optimize system availability. The illustration below shows the general layout of this type off site with standard AVI units. Track-mounted wheel sensors are shared across the subsystems. The SuperSite is ideally located on a tangent section of normal track. The WMA philosophy is to monitor trains running on standard customer track and the Supersite requires no special track structure other than the installation of the WheelSpec system's tie-box.



The data from the wayside location is typically forwarded to a dedicated Alliance ftp site in real-time Data is also forwarded to a central Customer location where it is processed to local requirements and stored in an SQL Server database.

The WMS application provides distribution of reports and email, analytical tools and data browsing from standard Microsoft equipped workstations. The WMS also provides a secure WEB browser access to the customer's SQL Server database if appropriate. Alternatively, the Alliance can provide full turn-key solutions including Internet WEB based data services directly to registered/authorised users.