When it comes to railcars, planning ahead can mean the difference between controlling your maintenance efforts or maintenance requirements controlling you. By using wayside detection technology, TTCI gathers information from the following systems to creating valuable information that directly helps your bottom line:

- **Performance-Based Track Geometry Technology—PBTG™**
- Truck Performance Detector—TPD
- Trackside Acoustic Detection System—TADS™
- Fully Automated Car Train Inspection System—FactIST™
- Instrumented Wheelsets—IWS
- Integrated Railway Remote Information Service—InteRRIS®

**Performance-Based Track Geometry Technology (PBTG™)**

This system allows railroads to reduce track geometry-caused derailments and optimize track maintenance. Individual geometry defects do not always produce undesirable vehicle responses. Conversely, track locations that produce undesirable vehicle responses do not always relate to individual geometry defects. Experience shows that frequently the combined effect of geometry deviations, track features, operating speed, and vehicle characteristics causes poor vehicle performance. Our PBTG™ system identifies track sections that are likely to produce undesirable vehicle performance. TTCI is focusing its efforts on a number of performance-based track geometry technologies for:

- Improving current track geometry inspection by relating combined track geometry conditions and operating speed to vehicle performance
- Prioritizing track geometry maintenance
- Reducing track geometry caused derailment incidents
- Reducing vehicle/track dynamics and the stress state of railroads
- Developing performance-based track geometry maintenance guidelines

**Truck Performance Detector (TPD)**

This wayside defect detection system is capable of detecting and identifying railroad trucks that exhibit poor performance in curves. This system monitors safety performance in several regimes such as: potential of flange climb derailment, gage spreading, and rail over. This state-of-the-art system has the capability to benchmark truck performance on a fleet-wide basis.
Trackside Acoustic (Bearing) Detection System (TADS™)

This system is used to detect bearing flaws in freight cars as they pass the detector at track speeds. TADS™ detects and reports cup, cone, and roller defects in numerical severity levels from 1-5. This system can also be modified to include additional wheel diameters and bearing sizes. Other types of acoustic data like flat wheels and multiple defect bearings are detectable and can be refined to meet client objectives. By using TADS™ you can reduce the potential for bearing related derailments, lading damage, and damage to infrastructure. Customers can experience cost savings while optimizing operations and enhancing safety.

Fully Automated Car Train Inspection System (FactIS™)

This system consists of video camera imaging technology utilizing a combination of image selection, image capture, image analysis software, data processing, and data base management techniques. The image processing capabilities take it well beyond a presence detection system to a highly accurate quantitative measurement of component condition and dimensions. With added features, high speed image capture is able to perform inspection and measurement tasks at train speed “on-the-fly.” Advanced inspection systems which use machine vision technology can reduce the costs of train inspection and provide valuable data to the railroads.

Instrumented Wheelsets (IWS)

Dynamic vertical, lateral, longitudinal wheel/rail loads are key to understanding vehicle performance. TTCI’s load measuring wheelsets are documented and traceable to provide the confidence required for lightweight transit cars up to 125-ton freight cars and 210-ton locomotives. TTCI’s patented, multifaceted instrumented wheelsets respond to the need for accurate and proven measurement equipment. These high accuracy wheelsets provide information to improve design and management decisions, promoting safety and efficiency.

InteRRIS®

TTCI’s products and services are cutting edge technology that helps companies maximize efficiency. TTCI’s InteRRIS®, Integrated Railway Remote Information Service, is a large database of vehicle performance data, surrounded by application layers that allow users full access to the performance data at the most beneficial and useful levels. InteRRIS® consists of hardware and software that, together, form a cohesive system to advise rail-oriented users concerning rail vehicle performance. InteRRIS® collects, compiles, and analyzes the data from various types of vehicle performance monitoring devices, both wayside and on-board, to create a composite view of railway vehicle performance. This view can be selectively modified by the InteRRIS® user to create semi-custom event notifications and reports for individual vehicle performance or overall fleet performance.