

# SIGMA

## Improving railroad track visibility

**C**GI's SIGMA is an award-winning, state-of-the-art system that gives railroad administrators the ability to see a geographic and schematic representation of a railroad track network.

### Extensive graphic overview of tracks and their surroundings

SIGMA combines information about a railroad track's design and dimensions and develops a generic data model that represents the track as well as different objects around the track, such as signs or platforms. Track switches are also depicted. The geographic and schematic representation generated by SIGMA can be used to develop an even more extensive graphic overview of the track using ArcGIS Schematics.

*Graphic overview of Netherlands rail network*



### Multiple scenario views

SIGMA uses track data to develop multiple scenarios. Users can view scenarios for the entire track or a subset of the track. The system reconstructs the track's surface and surroundings to sub-centimeter precision, including location, cant, slope, height, curvature, design-speed and other dimensions.

### CAD/GIS integration through FME server



### BENEFITS:

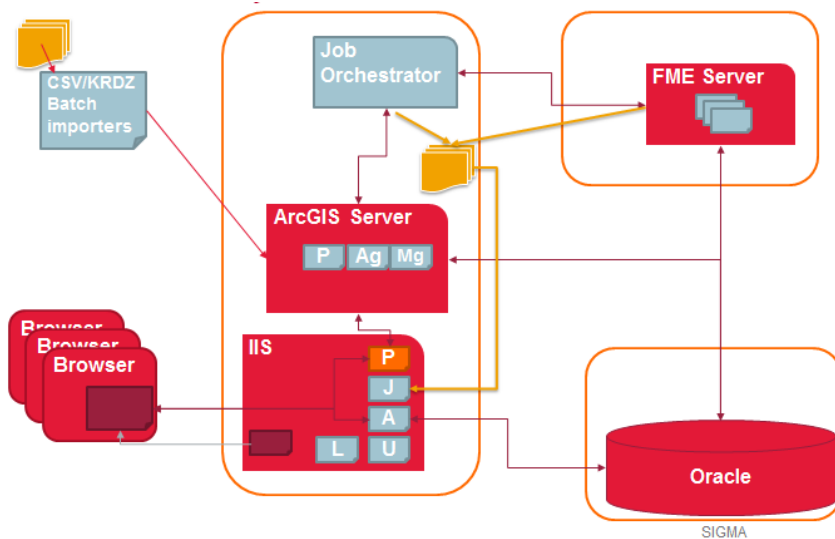
- One data model for track and surrounding objects
- Highly interactive interface
- Based on proven technology (COTS)
- CAD/GIS integration through FME
- Multiple scenarios for design and analysis

A key feature of SIGMA is its ability to import and export data in various formats with a feature manipulation engine (FME). The FME is used to export track information to .dgn files for use in a Bentley MicroStation or with 3D models.

### Solid technology base

SIGMA is based on proven technologies combined with a custom designed interface for track representation. The system consists of an Oracle Spatial database with ArcSDE schema. ArcGIS Server is used to disclose data to the client application. The client application is built in Microsoft Silverlight, enabling it to be easily accessed from a browser but still allowing for a highly responsive, interactive GUI. It uses a layered architecture and follows Microsoft best practices.

**SIGMA architecture**



### Flexible platform

Security within the SIGMA system is role/permission based, and the system can be linked to an Active Directory domain to provide a single sign-on experience. Using open standards, the system can be extended with third-party GIS services.

### Winner of 2014 Esri Partner Conference Award

Each year, the Esri Partner Conference Awards recognize partners that develop innovative and practical uses of the ArcGIS platform's latest features and take geographic visualization to the next level. In 2014, CGI received the Esri "Internal Web Application" award for SIGMA. CGI developed SIGMA with ProRail, which is responsible for the management and safety of the Dutch railway network.

Jort Engels, Esri partner manager, noted: "This award is a recognition of the partnership between CGI and Esri Netherlands. This shows that our partner uses the power of the ArcGIS platform and creates value for its customers. In the future, we will continue to work with CGI to deliver solutions to our customers."

### ABOUT CGI

Founded in 1976, CGI is a global IT and business process services provider delivering high-quality business consulting, systems integration and managed services. With 68,000 professionals in 40 countries, CGI has an industry-leading track record of delivering 95% of projects on-time and on-budget, aligning our teams with clients' business strategies to achieve top-to-bottom line results.

For more information, contact us at [info@cgi.com](mailto:info@cgi.com) or visit [www.cgi.com](http://www.cgi.com).