



# Base2 ICE - Overview

## Overview

The base2 ICE, In-Cab Communications Equipment is a modular communications device specifically designed for the rail industry.

The modular system employs interoperability in its design marrying multiple communications systems to allow for high speed data storage and retrieval, with the security of fallback systems to provide consistent up times.

The ICE has been designed specifically to withstand harsh working environments, with all componentry and subsystems designed to meet Industrial temperature specifications for operation, in addition to being IP54 rated and meeting the requirements for IEC 61373, Rolling Stock Equipment, Shock and Vibrations Tests.

The ICE is split into two major subsystems which consist of the CCU Enclosure and the HMI. The CCU Enclosure is the hub for the communications equipment allowing the seamless integration of mixed communications mediums. Designed for a 19" Rack mounting solution the CCU Enclosure can be fitted into existing locomotive equipment compartments, running from a standard 24V or 74V rail power source.

The HMI is the driver interface to the ICE giving an easy to use, aesthetic portal through which the driver can utilise all communications mediums to contact Train Control Centres and perform geo-positional specific functions.

The ICE communicates through a data link back to the XLG server which is responsible for handling incoming voice and data calls, and directing information based on a wide criteria of locomotive specific information. The XLG server can interface with existing legacy systems simultaneously with new data connections, providing a unique solution which caters for risk free upgrading of existing systems or installation of new systems.

A client application to the XLG server is the Command Terminal Work Station (CTWS) which is a configurable touch screen communications device designed for Train Controller use to handle incoming and outgoing calls with any locomotive on any track.

Configuration and reporting information for locomotives is achieved through base2's iceGIS application server. This provides a secure, easy to use web based portal to enter locomotive configuration information, view reports and realtime events such as faults and monitored alarms.

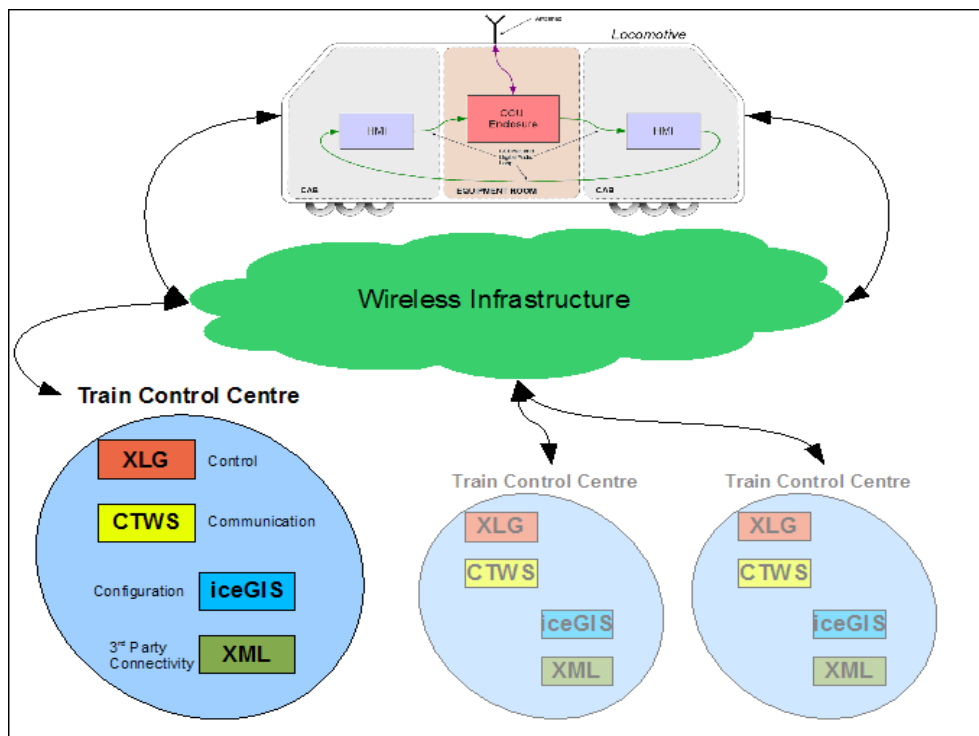


Figure 1 : Overview Diagram of ICE Solution

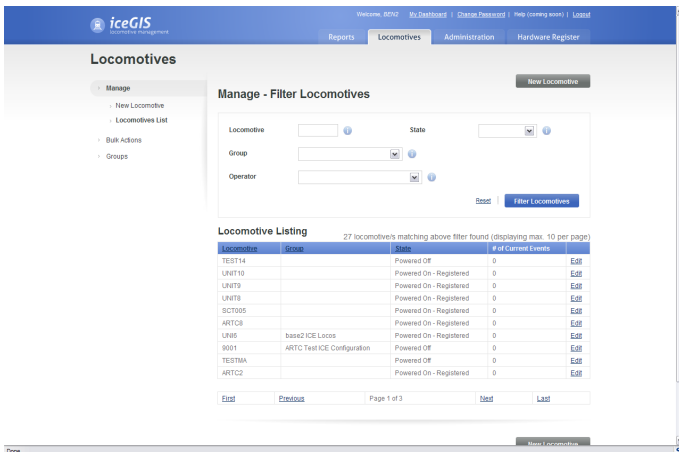


Figure 2 : iceGIS

Third Party Applications can retrieve data on any or all locomotives in the system as required through the use of the XML server. Current applications which are supported are : Train Location Systems, Network Operations, Train Authority Systems and Collision Avoidance Systems. This locomotive data is available in real time as updates are received by the XLG server.

**Modularity**

The ICE solution is designed to be modular, allowing up to four (4) HMI's to be connected to the one CCU Enclosure. This provides additional functionality to the Train Drivers, including having parallel operation for simultaneous medium use, as well as allowing the distribution of HMI's through the locomotives. For example a double ended locomotive would require as a minimum, an HMI at each end of the locomotive.

The design of the ICE is such that it can be modified to meet the customers requirements, easily incorporating additional communications mediums and endless configuration options. The HMI is currently available in several different sizes (3) and configurations (5), and can be rack mounted, panel mounted, or as a console mounted system as suitable to the driver workflow requirements and locomotive cabin layout.

**Specifications**

**Data Connections**

- Satellite
- GSM-R
- UHF (analog, digital)
- 3G (UTMS, HSDPA)

**Setup**

- Up to 4 HMI's to one CCU Enclosure
- Rack Mount
- Console Mount
- Panel Mount
- Small Form Factor
- Large LCD

**Audio**

- The HMI employs an on-board audio DSP to deliver high quality digital audio

**Design**

- IP54 Rated
- Meets IEC 61373 specifications
- Meets IEC 60068 specifications for environmental ruggedness
- Mil-spec connectors for proven reliability



Figure 3 : Console Mounted HMI for easier retrofit to existing locomotives

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