

**Inspired Systems** ©

**ELECTRONIC TRAIN ORDERS**

**and**

**TRAIN CONTROL**

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# ELECTRONIC TRAIN ORDERS

When you just don't have signals

## INSPIRED SYSTEMS

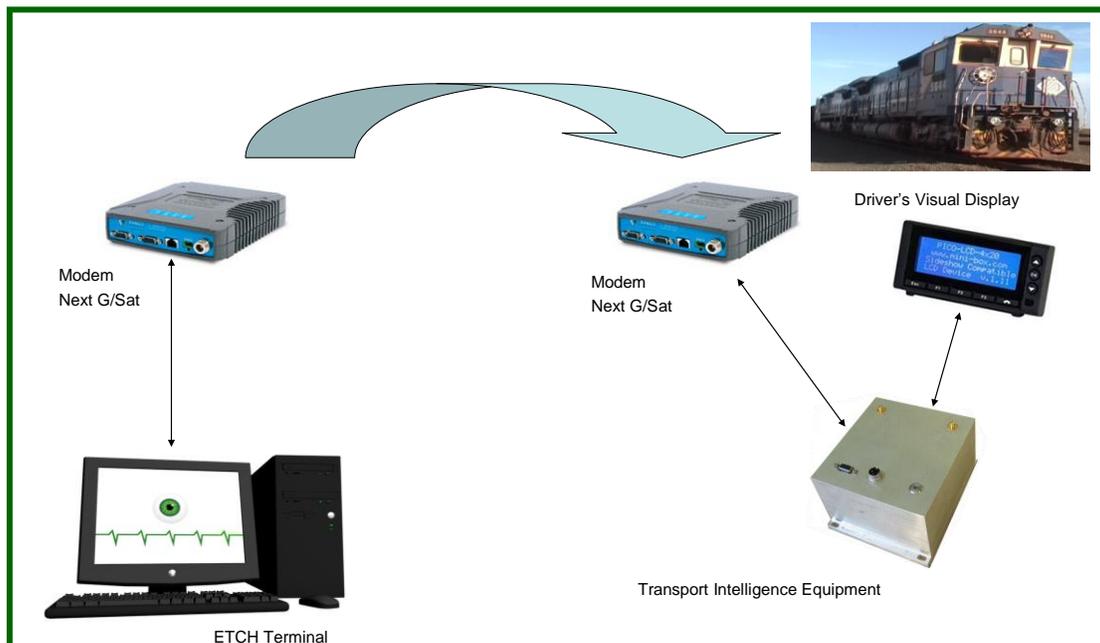
“VERIFIED ORDERS TO PROCEED”

Electronic Train Orders will ensure that messages are relayed correctly.

Not only does it give a visual display of the order to proceed, it also provides a full audit trail with a documented record of the orders sent as well as the time and the location of trains or work crews.

Applicable to Locomotives, Light vehicles or Work Crews.

MINIMAL “FIELD BASED” INFRASTRUCTURE



## **SIMPLE YET EFFECTIVE COMMUNICATION**

“ORDERS TO PROCEED” sent from TRAIN CONTROL to DRIVER

Electronic acknowledgement back to say that the message has reached the target.

Manual acknowledgement from the DRIVER to let Train Control know that it has been received and noted.

The system automatically knows when a train has fulfilled its order and is awaiting instructions.

### **FEATURES**

- Simple user interface, point-and-click.
- Train and crew locations are automatically logged and accurately displayed onto a track map, using their GPS location and track circuits.
- Advisory system prevents dead-locking sidings or track sections, through automatic route and meet setting.
- Train Control can not give conflicting orders for the one section of track.
- All orders must be confirmed by the controller prior to dispatch to the receiver
- Orders sent and received are acknowledged at multiple points, providing a complete audit trail in the event of an incident
- Telemetry system to control and monitor remote points, nodes, and level crossings.
- Web Supervisor to remotely monitor operations, using a web browser

### **BENEFITS**

- Increased safety through authority enforcement and speed limit enforcement
- Additional protection for trackside workers
- Increased rail capacity by closer train operations
- Improved availability and reliability by better on-time performance
- Improved efficiency and flexibility in network use
- Increased savings for fuel, wheels and brake hardware
- Reduced operation and maintenance cost for trackside infrastructure
- More efficient passing of trains

## **ADDED BENEFITS**

- Full record of train location and time.
- Full record of actual speed versus authorised speed limits.
- GPS location of all vehicles with a ETO control unit.
- Various alarms with degrees of escalation.
- Warning on any deviation from the authorised route.
- Warning of any movement without authority.
- Orders can not be deleted or removed from the system without an audit trail.
- The time of the order
- The time acknowledged by the driver
- The GPS position of the train at that time
- Full tracking of train speed, location, direction at regular intervals
- Exception reporting

## **DRIVER ALERT WARNING**

- Entering a Red Zone
- Approaching destination
- Failure to follow route
- Failure to acknowledge

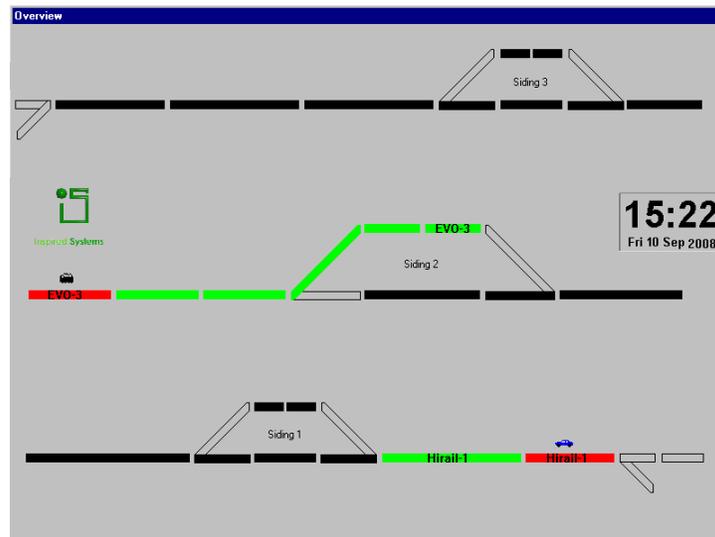
## Standard Operation

In a standard installation, Controllers view a track layout screen.

Clicking on any train, or track crew with fitted receivers, will display a list of options that have been calculated automatically by the Electronic Train Orders Central Host (ETCH).

If the controller selects “Proceed to...”, they are then prompted for a destination location. The destination must be ahead of the train’s current location, and cannot conflict with existing routes set for other trains.

The controller selects the destination, a passing track at the next siding some 15kms down track, and is prompted to confirm the train order: “Proceed to next siding at 75km/h. Slow to 45 and enter passing track. Stop at South exit board.”



The controller acknowledges that this is accurate, and there are no other instructions to issue. The control interface shows the new route in green, indicating the train and the destination.

ETCH receives the command from the controller, and forwards the Order to EVO-3.

EVO-3 is fitted with ETCH’s counterpart, a Transport Intelligence Engine (TIE), which receives the order, and presents a visual and audible alert to the driver, requesting acknowledgement of the new order.

The driver checks TIE to verify the order, and hits the “Acknowledge” button on TIE’s screen. TIE then sends the acknowledgement back to ETCH. ETCH logs the acknowledgement, and the order is locked in on the controller’s screen.

TIE then continues to monitor EVO-3’s location, and regularly reports it back to ETCH, to keep the controller updated on EVO-3’s progress.

## **SUMMARY**

The result of using the Electronic Train Orders system will be an efficient, organized operation, with clear and accurate communication, and less stressed controllers. Electronic Train Orders will be the perfect solution to optimize operations and reduce maintenance requirements.

The Inspired Systems Electronic Train Orders can use nearly any form of data communication including Mobile phone, Local Area Network over wireless mesh or simply using the existing UHF/VHF radio network.

Electronic Train Orders is a simple yet effective platform for providing Train Control.