



**We make
highways
talk™**

- **MANAGEMENT**
- **SAFETY**
- **PRESERVATION**

International Road Dynamics Inc. develops and maintains traffic management products and systems technology that make highways talk. What are they saying? They are providing information that roadway administrators need to manage traffic, preserve infrastructure and provide safety warnings to drivers.

IRD's multi-discipline, innovative and customer-focused team is expert in advanced technologies, advanced traffic solutions and custom-designed systems.



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OCTOBER 2011, REV A
PRINTED IN CANADA

HTMS (Highway Traffic Management System)

The **Highway Traffic Management System (HTMS)** integrates multiple technologies to improve the flow of vehicle traffic and improve safety. Real-time traffic data from a traffic detection system flows into a Traffic Control Center (TCC) where it is integrated and processed and may result in actions (e.g. traffic routing, VMS messages) with the goal of improving traffic flow and minimizing losses.



IRD's Highway Traffic Management System provides an innovative solution by utilizing state-of-the-art system technologies and proven field equipment. IRD's HTMS system consists of a Traffic Control Center and a combination of various complementary technologies to meet highway operational requirements:

HTMS complementary technologies include:

1. Automatic Vehicle Classification and Counting (AVCC)
2. Incident Detection (Speed, Crash detection) (IDS)
3. Closed Circuit Television Surveillance (CCTV)
4. Meteorology Data Station (MDS)
5. Emergency Call Box (ECB)
6. Variable Message (VMS)
7. Toll Collection (TCS)

Traffic Control Center provides:

- Live map view of roads and traffic
- Centralized database to log traffic data, event/incident and actions
- Management and control reports for highway operations
- Traffic and incident data analysis and reports
- Co-ordination of event/incident response
- Remote monitoring, troubleshooting and control for all subsystems and field equipment
- Export and sharing of traffic data to external agencies
- Communications and networking



HTMS field equipment includes:

- Vehicle detectors and classifiers
- Weigh-In-Motion (WIM) sensors
- Speed detectors (radar, video, loops)
- Collision sensors, readers
- CCTV cameras
- Weather and visibility detectors
- ECB (Emergency Call Box)
- VMS (Variable Message Signs)



HTMS System Architecture

Each subsystem has its own server and processing system. The Central system will perform management, data analysis, monitoring, remote troubleshooting and control of all subsystems.

Notes:

- The selection of field equipment is subject to specific project requirements, e.g. vehicle counter and classifier can either be based on conventional loop, piezoelectric, or non-intrusive detector.
- Subsystems servers can be virtualized in order to save cost and space
- Storage capacity is subject to traffic record and video retention requirement

How does IRD's HTMS work?

Step 1: Field equipment detects vehicle and road information and sends to a subsystem; vehicle record and event/incident data is processed by individual subsystems and forwarded to a central system.

Step 2: The event/incident is immediately handled and responded to in accordance with operational rules. Traffic data is stored for further analysis and reporting; videos are saved in a DVR for retrieval with video and/or voice record. When an event/incident occurs, the HTMS logs the type, location, date and time of the event/incident associated with the video and/or voice record.

Step 3: Traveller guidance information is distributed by VMS (Variable Message Sign), SMS, or radio broadcasting for traffic incident alerting and traffic rerouting.

Event/Incident

Events occurring at the highway can be divided into "Planned" and "Unplanned":

- "Planned events" are events for which there is prior knowledge such as roadwork/construction events, meeting, sports and concert events or any other event that may impact traffic conditions. HTMS provides a pre-programmed plan for planned events to avoid traffic jams and maximize the usability of the highway.

- “Unplanned events/incidents” are those events/incidents for which there is no prior knowledge, such as traffic accidents, traffic jam events and weather events.

Unplanned events/incidents can be detected by:

- Incident detection subsystem: Reports traffic incident by detecting vehicle speed or by video incident detectors.
- Emergency Call Box: Report incident by the driver who is personally involved in an incident or witnessing incidents.
- Closed Circuit Television: Report incident by the operator at the Control Centre who is monitoring the CCTV surveillance videos.
- Meteorological Data Station : Detect and report severe weather events to the HTMS.

All events reported to the HTMS will generate a response consisting of an advisory response by the operator, Variable Message Sign (VMS) guidance, and/or external agencies response.

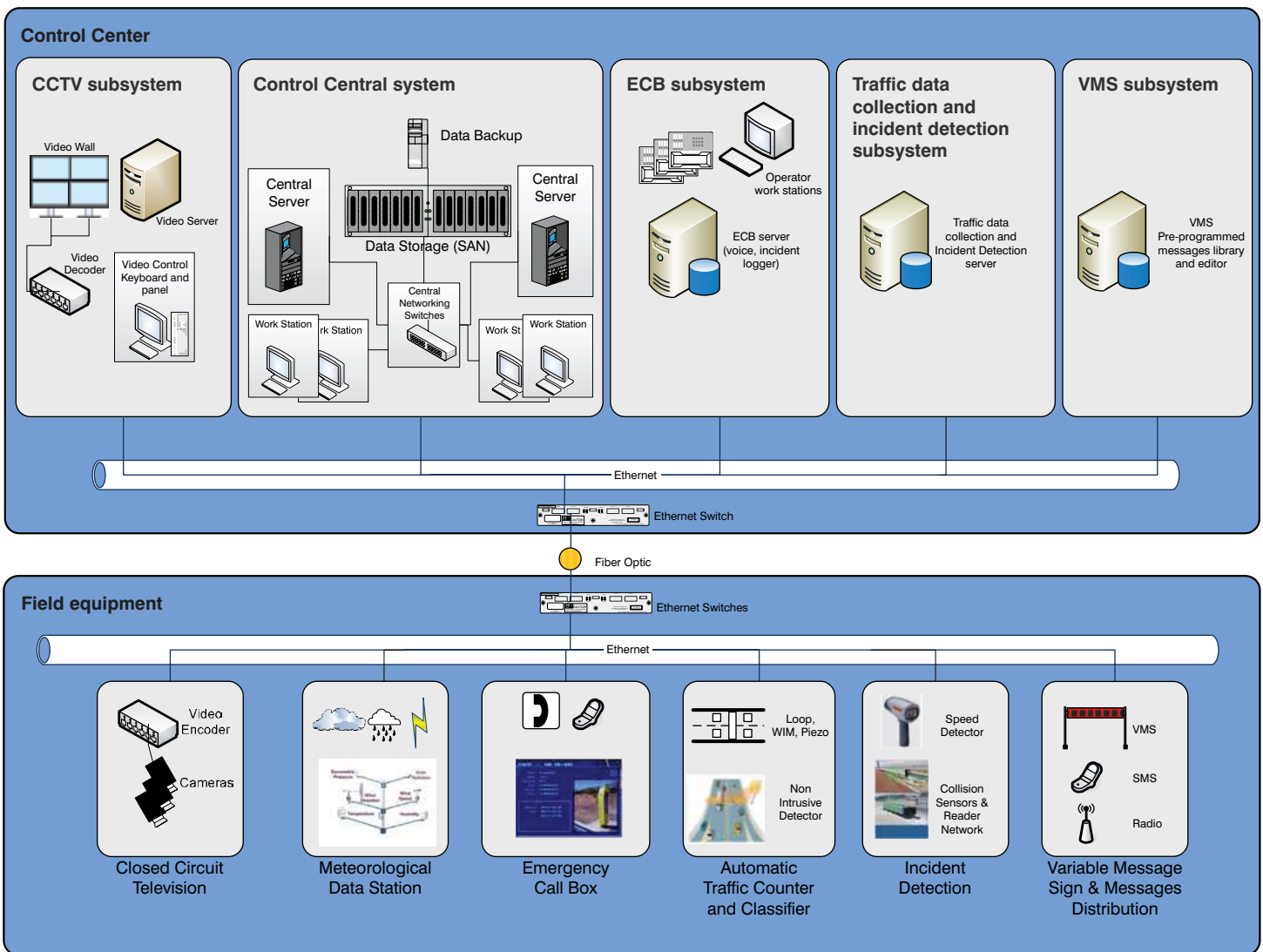


Figure 1 – HTMS system architecture

Data flow chart of the HTMS system is illustrated as below:

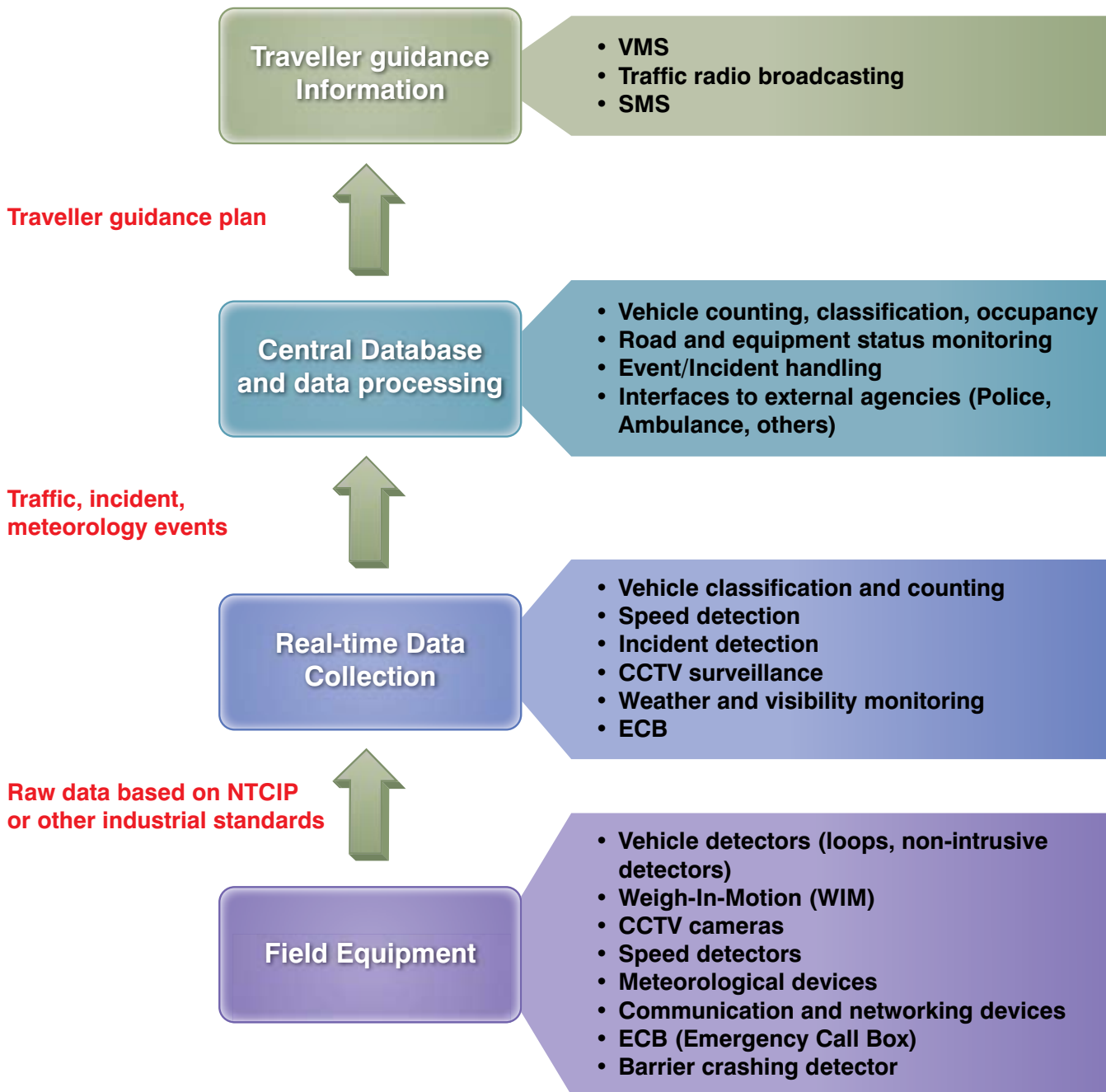


Figure 2 – HTMS data flow chart



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