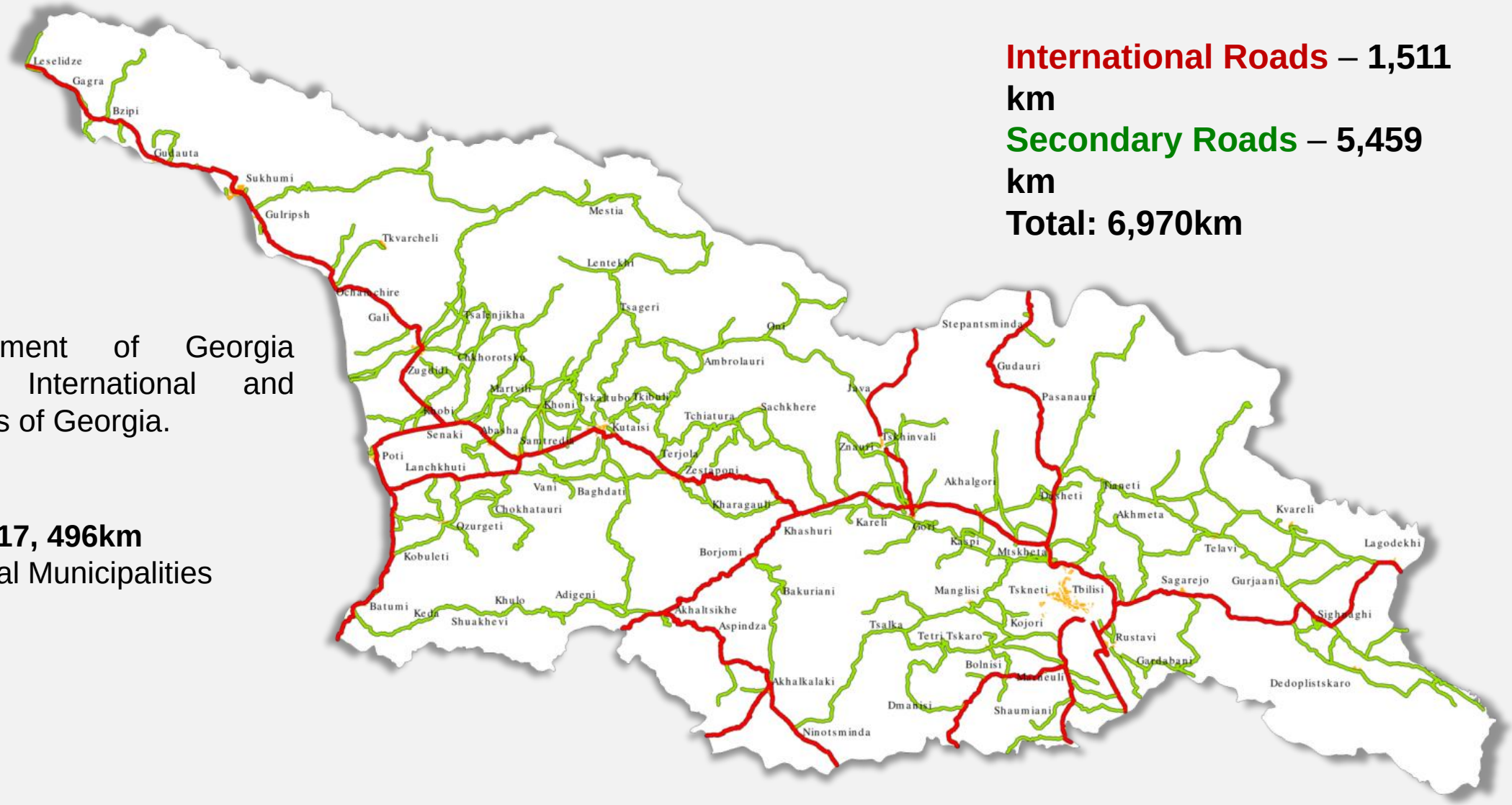
ESTABLISHMENT OF ROADS DEPARTMENT NATIONAL HIGHWAY CONTROL CENTER (RDNHCC)

Portorož, Slovenia– 18 June 2024

TEN-T Comprehensive/Core Road Network

Georgia TEN-T Comprehensive/Core Road Network

Road Network

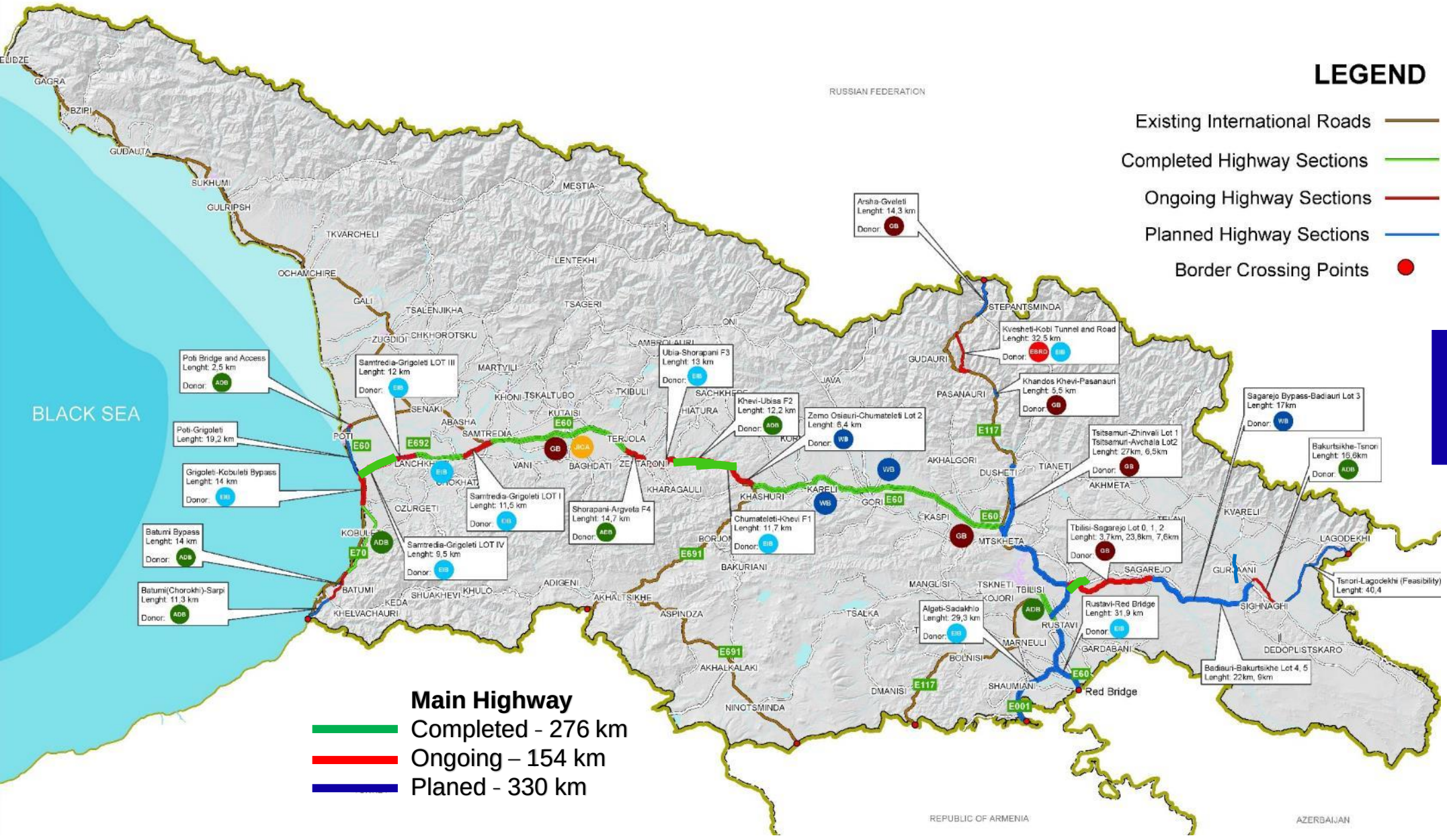


International Roads – **1,511 km**
Secondary Roads – **5,459 km**
Total: 6,970km

Roads department of Georgia manages all International and Secondary roads of Georgia.

Local Roads – 17, 496km
Managed by local Municipalities

Highways - Georgia



2024

Intelligent Transport System

- With the assistance of WB, RD is implementing a consultancy services for developing concept design, specifications and bidding documents for deployment of Road Department's National Traffic Control Center (RDNTCC)

- Primary objective of RDNTCC is to integrate all current and planned road ITS infrastructure under centralized management.

- ITS infrastructure under ongoing major construction projects are required to be in compliance with relevant industry standards and regulations, with EU states.

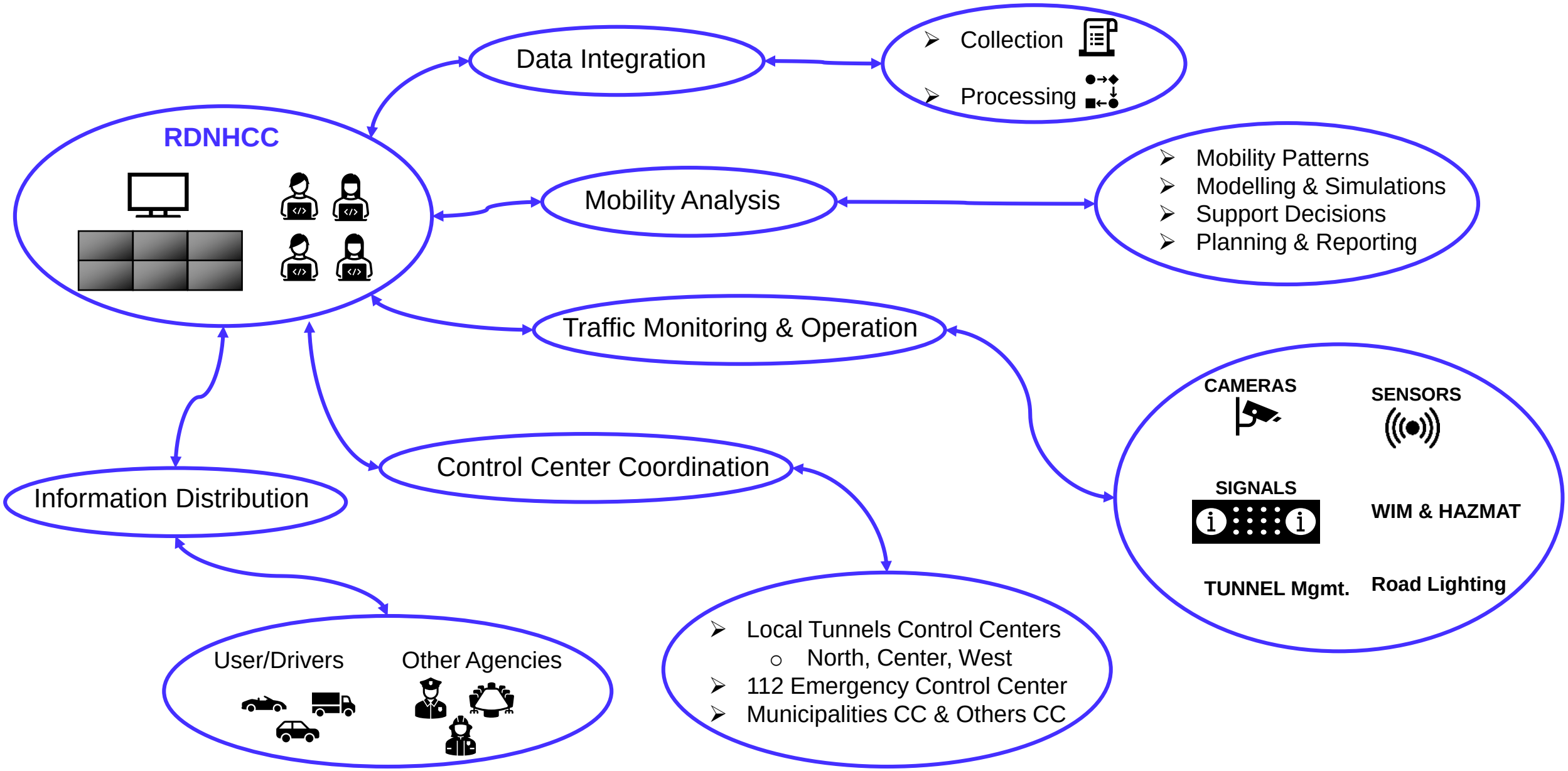
- To assist in the establishment of interoperable and seamless ITS services and to promote the harmonization with the EU standards and specifications in Georgia, the Consultant when developing the specifications and requirements for NHCC shall refer to the documents of the EU policy framework such as the ITS Directive 2010/40/EU, CEN/TC 278, Reference Handbook for harmonized ITS Core Service Deployment in Europe.

01. OBJECTIVE OF THE RDNHCC

Main objectives of the RDNHCC

- Overseeing the entire national roads under R.D. supervision (International and Secondary) and tunnels Infrastructure
- Continuous supervision of the traffic conditions using a variety of tools
- Management of traffic flow and congestion. Safety improvement
- Incident management. Emergency management
- Stakeholder coordinator
- Multiple data Integration
- Data Source for third parties
- Support to the Infrastructure Maintenance

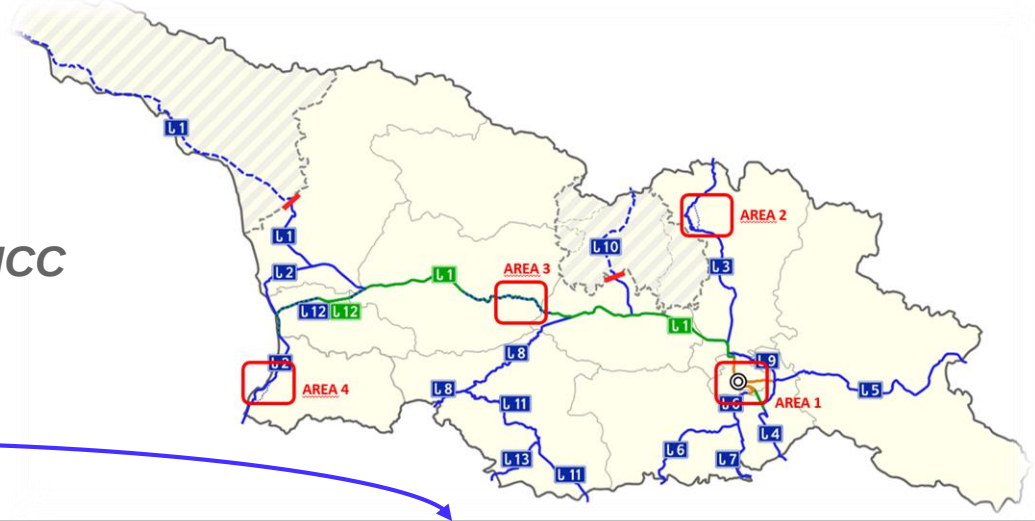
02. FUNCTIONS & TASKS OF THE RDNHCC



02. FUNCTIONS & TASKS – OPERATION & SUPERVISION DISTRIBUTION

KEY RULES:

- *All Tunnels are going to be controlled by Local Control Centers*
- *All Tunnels are going to be supervised and monitored by RDNHCC*
- *RDNHCC will be able to operate any tunnels when necessary*



GEORGIAN TUNNELS				CONTROL CENTER DISTRIBUTION			
Number	Tunnel	Tunnel length (m)	Underground length (m)	Local Control Center Operation	Local Technical Room	RDNHCC Operation	RDNHCC Monitoring & Supervision
AREA 3 - CENTER CC - RIKOTI- Gori + F0 + F1 + Rikoti + F2 + F3 + F4 Tunnels							
2	Gori Tunnel	783,00	783,00	V	V	X	V
AREA 3 - CENTER CC - F0							
1	Tunnel 1 RHS	1.520,00	1.480,00	V	V	X	V
2	Tunnel 1 LHS	1520.00	1.480,00	V	V	X	V
AREA 3 - CENTER CC - F1 - Rikoti Current + Rikoti New tunnel							
3	New Rikoti Tunnel	1.790,00	1.750,00	V	V	X	V
1	Rikoti existing Tunnel	1.750,00	1.750,00	V	V	X	V
AREA 3 - CENTER CC - F2							
4 to 11	TUN-2007-AT/TA - TUN-2009-AT/TA - TUN-2010-AT/TA - TUN-2011-AT/TA	XXX,XX	XXX,XX	V	V	X	V
AREA 3 - CENTER CC- F3							
12 to 23	TUN-3001-AT/TA - TUN-3002-TA/AT - TUN-3004-AT/TA - TUN-3005-TA/AT - TUN-3008-AT/TA - TUN-3009-TA/AT	XXX,XX	XXX,XX	V	V	X	V
AREA 3 - CENTER CC - F4							
24 to 31	TUN-4001 AT/TA - TUN-4003 AT/TA - TUN-4004 AT/TA - TUN-4005 AT/TA	XXX,XX	XXX,XX	V	V	X	V

GEORGIAN TUNNELS				CONTROL CENTER DISTRIBUTION			
Number	Tunnel	Tunnel length (m)	Underground length (m)	Local Control Center Operation	Local Technical Room	RDNHCC Operation	RDNHCC Monitoring & Supervision
AREA 2 - NORTH CC - Kvesheti-Kobi + Devdoraki Tunnel							
32	Kvesheti-Kobi Tunnel 5	9.000,00	9.000,00	V	V	X	V
33	Kvesheti-Kobi Evac. Tunnel	9.000,00	9.000,00	V	V	X	V
34	Kvesheti-Kobi Tunnel 1	1.533,00	1.533,00	V	V	X	V
35	Kvesheti-Kobi Tunnel 3	488,00	488,00	V	V	X	V
4	Devdoraki existing Tunnel	1.700,00	1.700,00	V	V	X	V
AREA 4 - WEST CC- Batumi Bypass + Chaqvi-Makhinjauri Tunnel							
36	TUNNEL -1	542,00	542,00	V	V	X	V
37	TUNNEL -2	807,00	807,00	V	V	X	V
38	TUNNEL -3	805,00	805,00	V	V	X	V
39	TUNNEL -4	1.067,00	1.067,00	V	V	X	V
40	TUNNEL -5	587,00	587,00	V	V	X	V
3	Chaqvi-Makhinjauri existing Tunnel	657,00	657,00	V	V	X	V

02. FUNCTIONS & TASKS - OPERATION & SUPERVISION DISTRIBUTION

SUPERVISION & MONITOR (*)

OPERATION & CONTROL

***(*)** RDNHCC Will be able to operate any tunnel when necessary*

- ***Existing Tunnel***

RDNHCC

West CC

Batumi Bypass
- TUNNEL-1
- TUNNEL-2
- TUNNEL-3
- TUNNEL-4
- TUNNEL-5
- **Chaqvi-Makhinjauri Tunnel**

Center CC

F0
- Tunnel 1 RHS
- Tunnel 1 LHS

F1
- New Rikoti Tunnel
- **Rikoti existing Tunnel**
- **Gori Tunnel**

F2
- TUN-2007-AT, TUN-2007-TA
- TUN-2009-AT, TUN-2009-TA
- TUN-2010-AT, TUN-2010-TA
- TUN-2011-AT, TUN-2011-TA

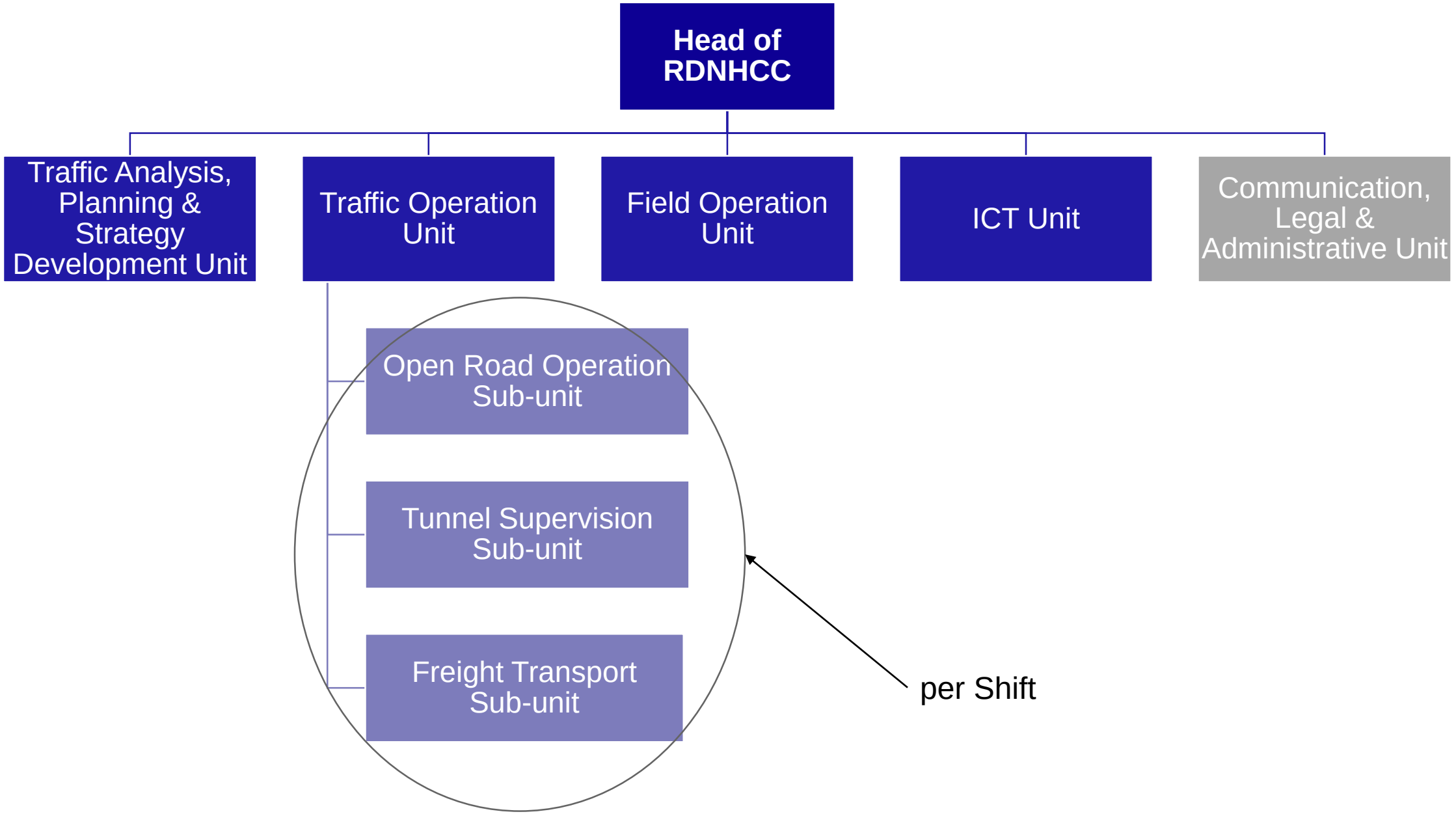
F3
- TUN-3001-AT, TUN-3001-TA
- TUN-3002-AT, TUN-3002-TA
- TUN-3004-AT, TUN-3004-TA

F4
- TUN-4001-AT, TUN-4001-TA
- TUN-4003-AT, TUN-4003-TA
- TUN-4004-AT, TUN-4004-TA
- TUN-4005-AT, TUN-4004-TA

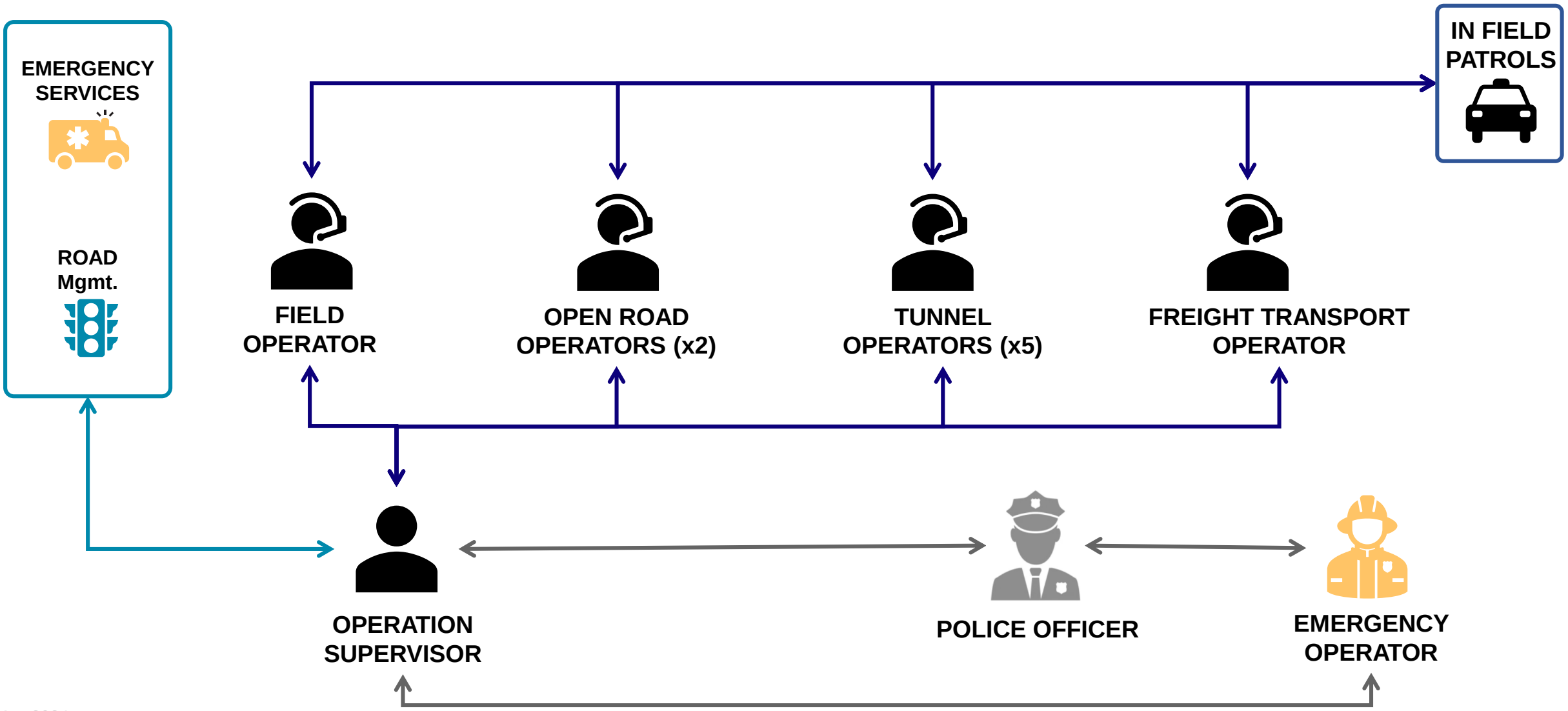
North CC

Kvesheti-Kobi
- Kvesheti-Kobi Tunnel 5
- Kvesheti-Kobi Evac. Tunnel
- Kvesheti-Kobi Tunnel 1
- Kvesheti-Kobi Tunnel 3
- **Devdoraki Tunnel**

02. FUNCTIONS & TASKS – RDNHCC ORGANIZATION CHART

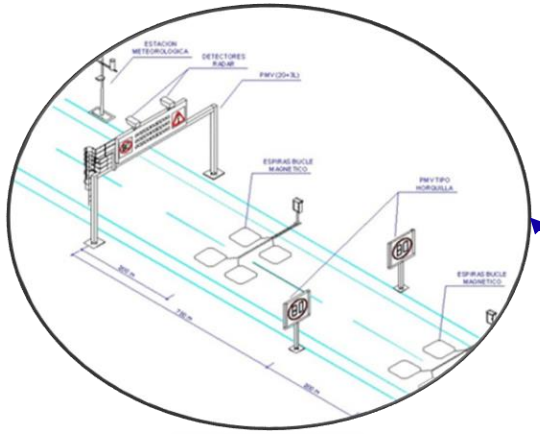


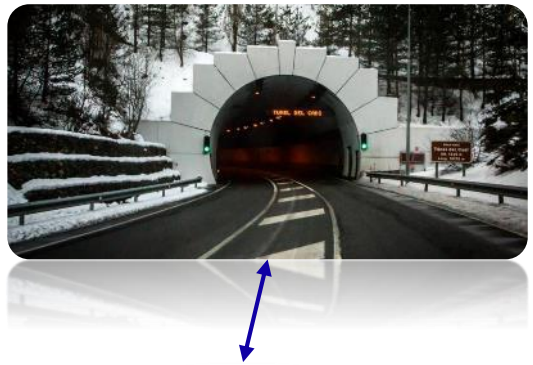
02. FUNCTIONS & TASKS – RDNHCC STAFFING

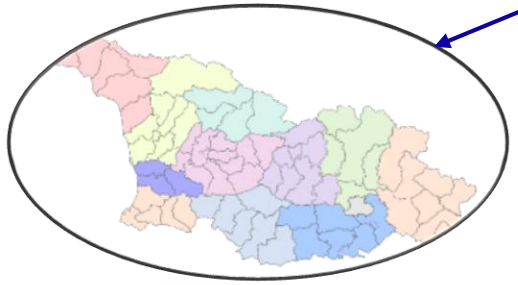


03. ITS SYSTEMS

RDNHCC Overview and links







MINISTRY OF REGIONAL DEVELOPMENT
AND INFRASTRUCTURE OF GEORGIA

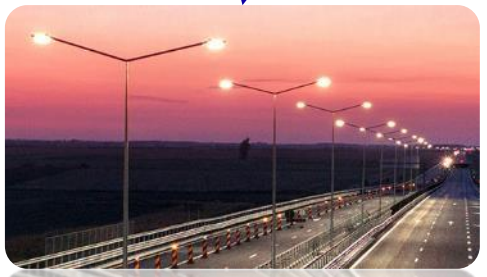
MINISTRY OF ENVIRONMENTAL PROTECTION
AND AGRICULTURE OF GEORGIA

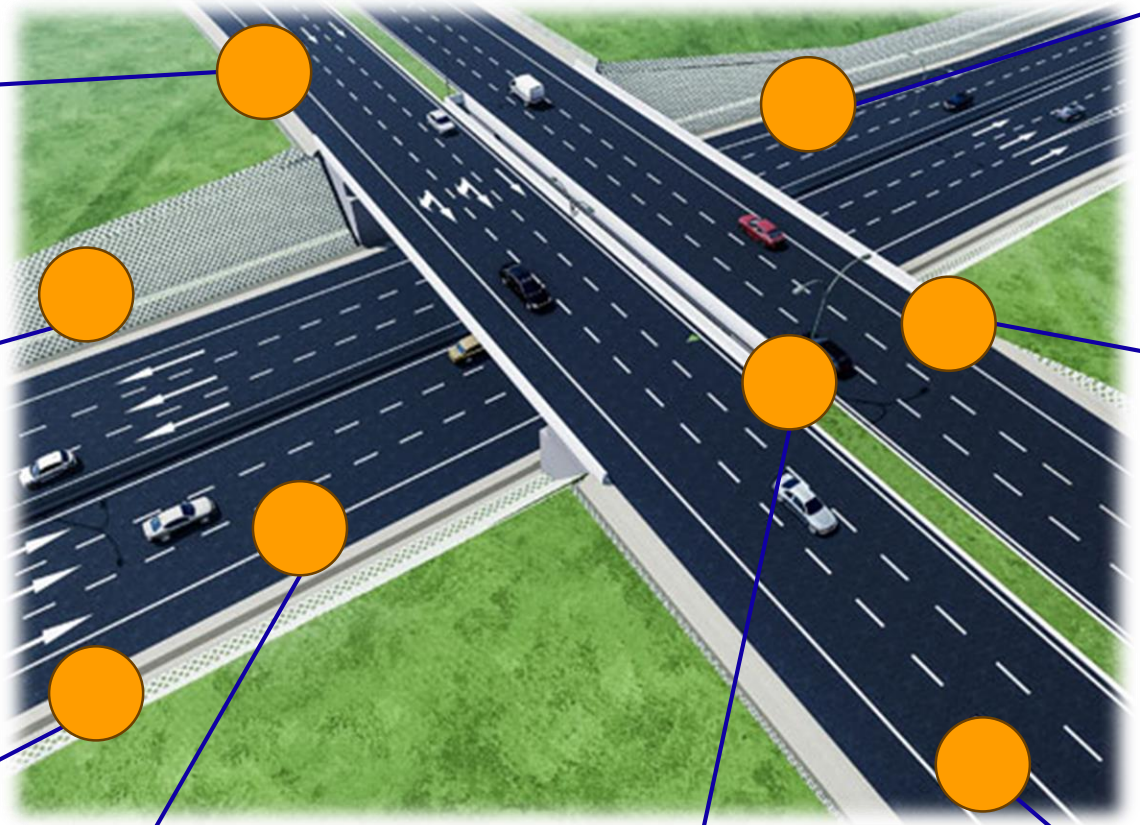
03. ITS SYSTEMS

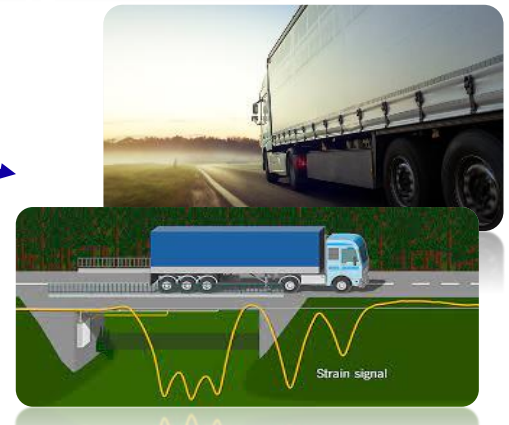
Tunnel Management Overview

03. ITS SYSTEMS

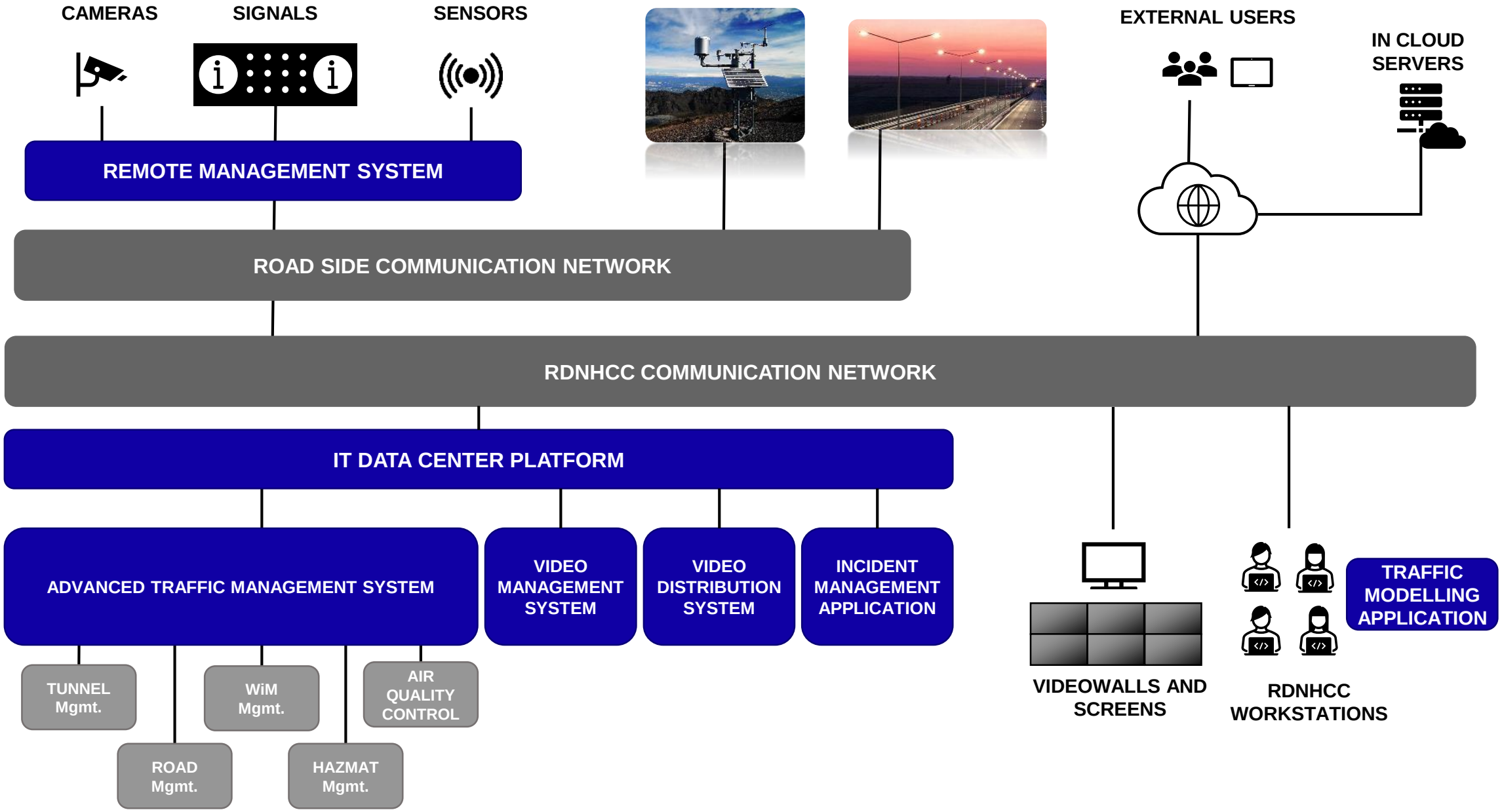
Road Management Overview







03. ITS SYSTEMS – GENERAL ARCHITECTURE

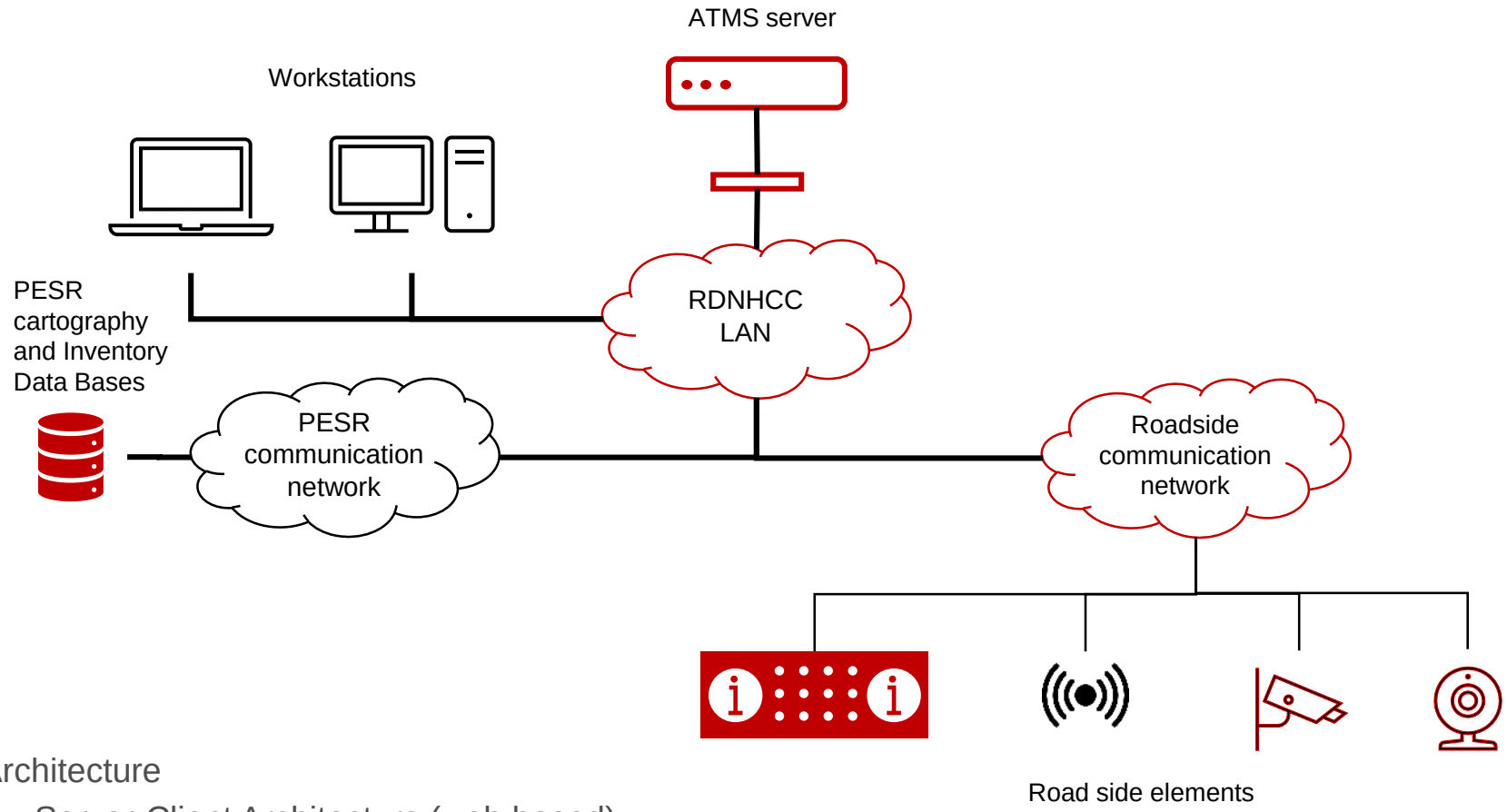


03. ITS SYSTEMS

Advanced Traffic Management

Main Functionalities

- Monitoring of Roadside Equipment
- Integration of Generated Data
- Operation and Control Roadside Equipment
- Action Logging
- Calculated Information
- Integration Equipment (CCTV, VMS, Meteos, traffic sensors…
- Future Expansion
- Specific Controls VMSs and Traffic Sensors
- Parameterization
- Operational Support
- Event Scheduling
- Historical Analysis
- Reporting
- User Interface
- Geographic Information System (GIS)
- Authentication



Architecture

- Server-Client Architecture (web based)
- Connection to external databases (Cartography Inventory)
- Clients from workstations connected in LAN from RDNHCC

03. ITS SYSTEMS – INCIDENT MANAGEMENT

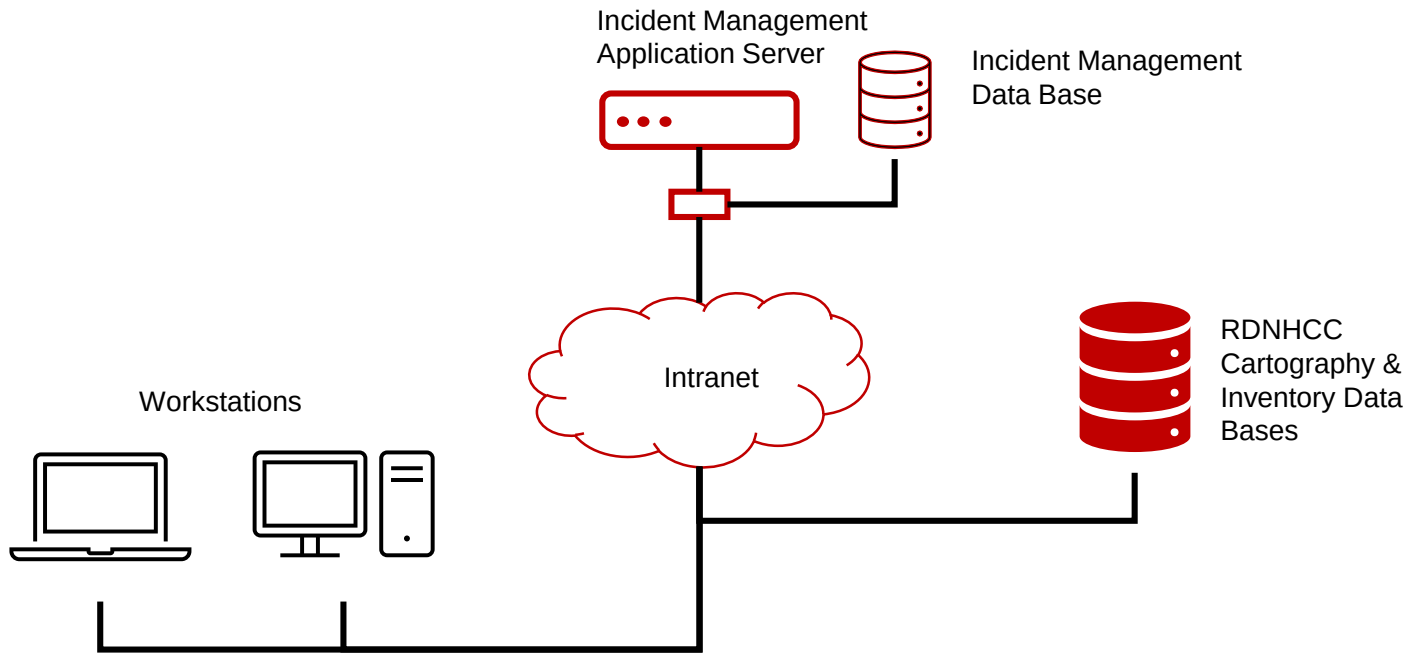
Incident Management

Main Functionalities

- Incident Creation
- Incident Management
- Display and Information Request
- Notification Management
- Template Management
- Reporting and Dashboard
- Help
- Authentication

Architecture

- Server based platform
- Connected data base for storage
- Connected to set of RDNHCC's databases or external databases (Cartography Inventory)



Life cycle of incident

Identification of Incident

- Register of information
- Definition of associated viabilities

End of Incident

- Response and/or evolution of the incident/Event
- Modification of associated viabilities, closure of those no longer necessary or activation of different ones

- Once all viabilities are finished

03. ITS SYSTEMS

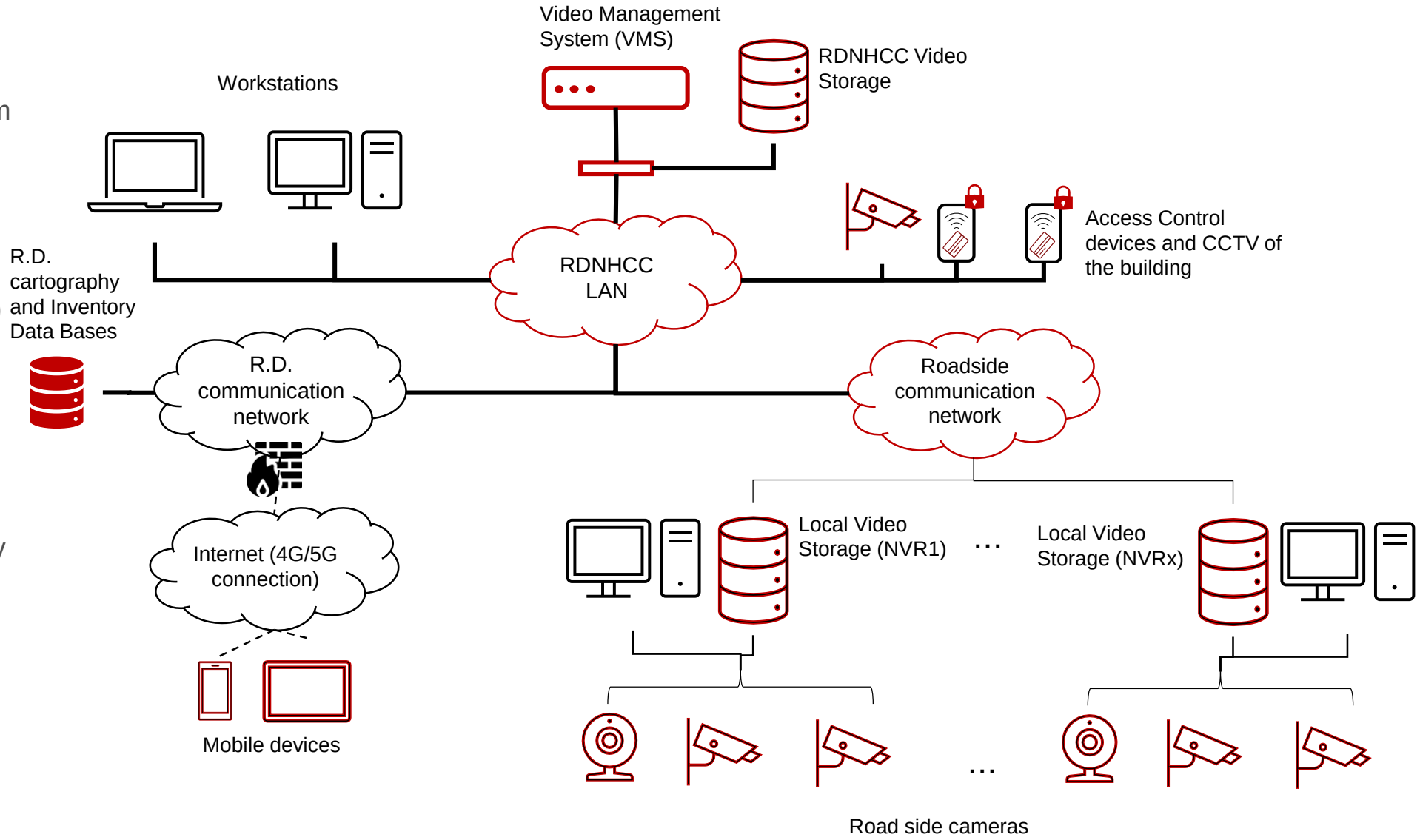
Video Management System (VMS)

Main Functionalities

- Global management of the cameras of the CCTV System
- Digital Video Capture
- Record, store & review video for post analysis
- AID alerts
- Remote access (web/mobile)
- Integration of Multiple manufacturers (VDS)

Architecture

- Server-Client Architecture (web based). High Availability
- Connection to external databases (Cartography Inventory)
- Local NVR to distribute records



03. ITS SYSTEMS

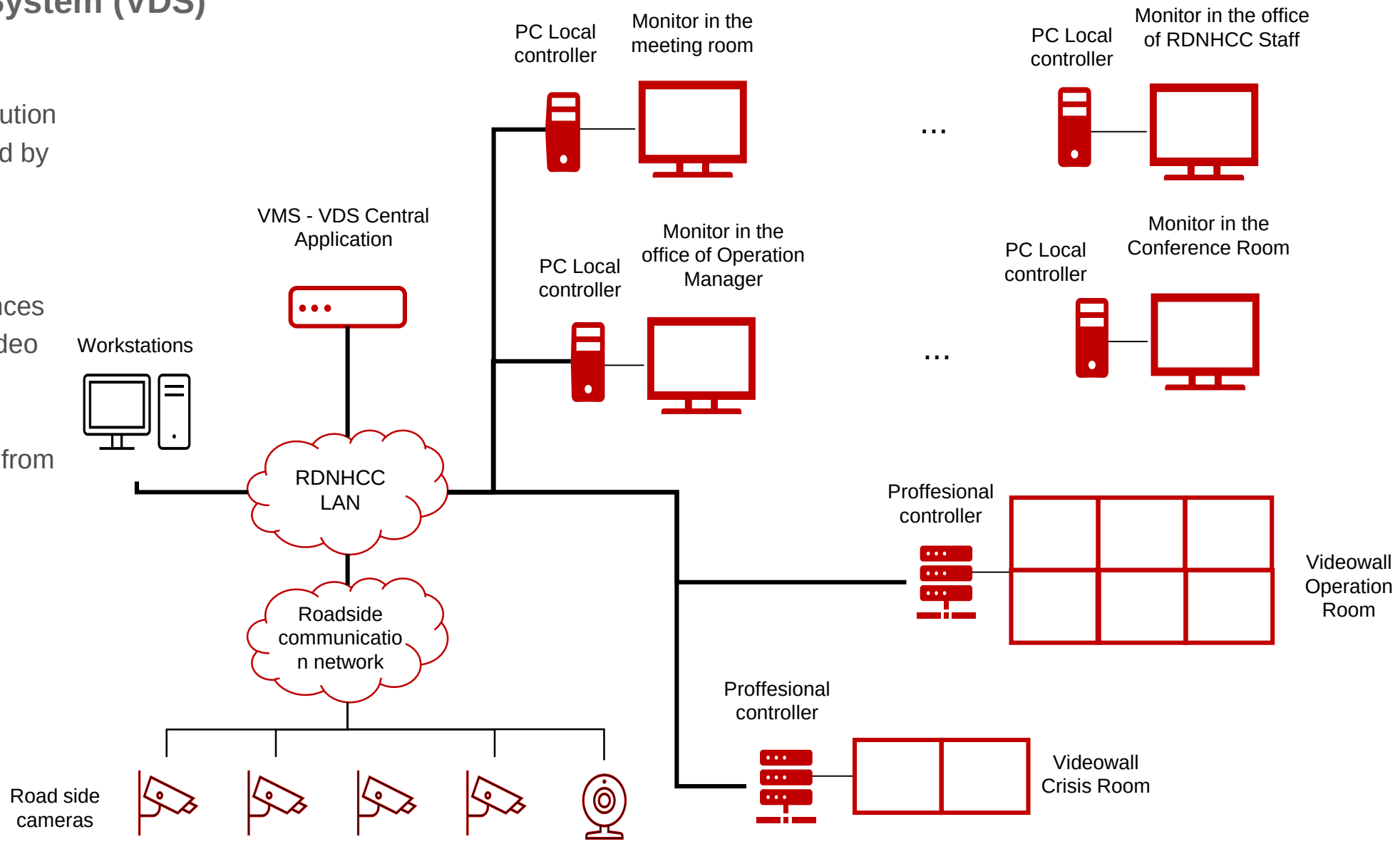
Video Distribution System (VDS)

Main Functionalities

- Shall support the distribution of video signals provided by any source available
- Design & registration of different layouts
- Configuration of sequences of multiple integrated video sources
- Visualization of multiple video sources obtained from multiple manufacturers

Architecture

- Distributed solution managed by a central application



03. ITS SYSTEMS

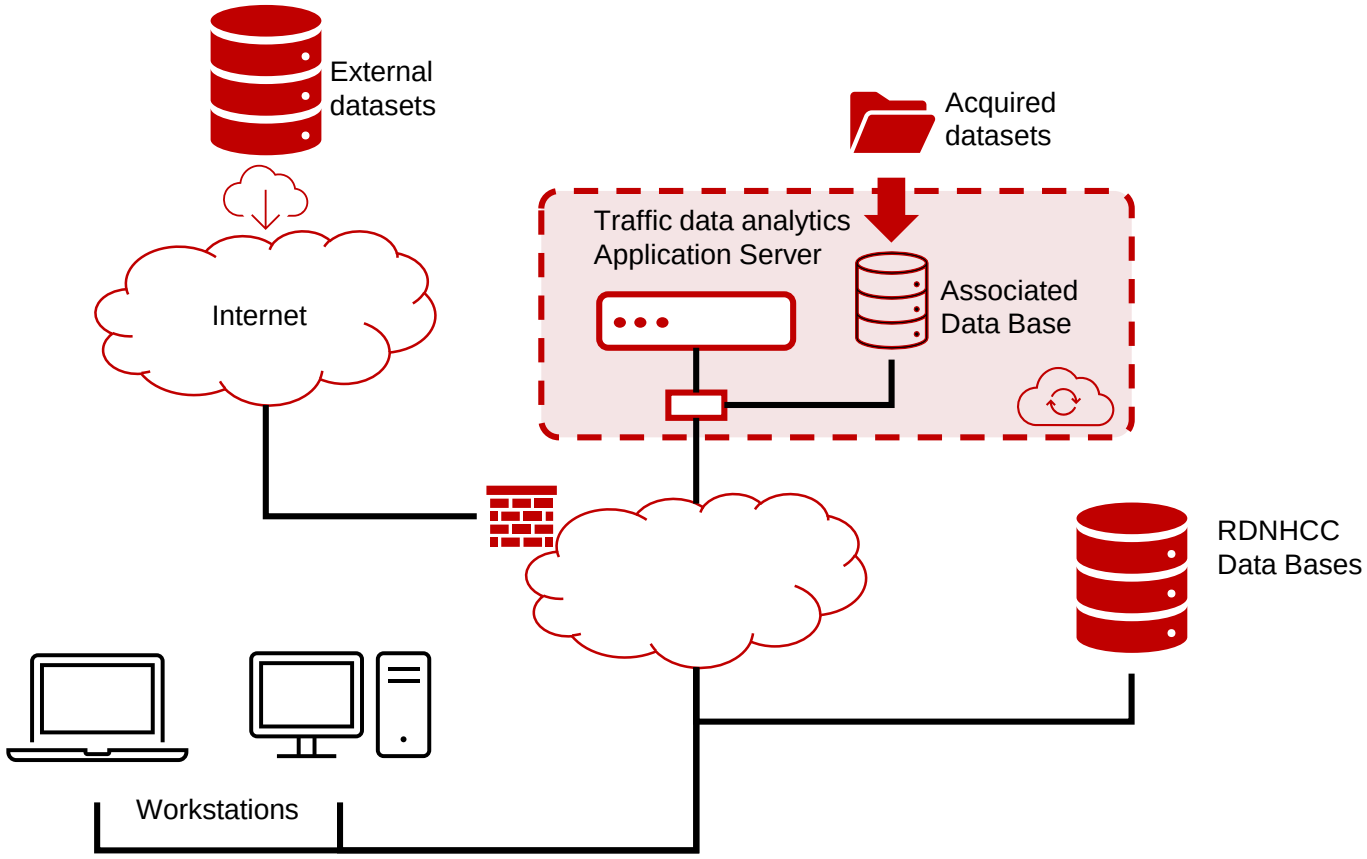
Traffic Data Analytics

Main Functionalities

- Data Ingestion
- Role Management
- Dashboard Customization
- Reporting
- Help
- Analytical Model
  - Temporal Series
  - Geographical Analysis
  - Unsupervised Analysis
  - Principal Component Analysis

Architecture

- Server base platform
- Connected to database to storage
- Connection to external databases (Cartography Inventory)
- Data hub (multiple data resources)
- Artificial Intelligent (identify behaviors, tendencies)
- Business Intelligent (user friendly interfaces)
- Based on data analytics processes



03. ITS SYSTEMS

Weight in Motion

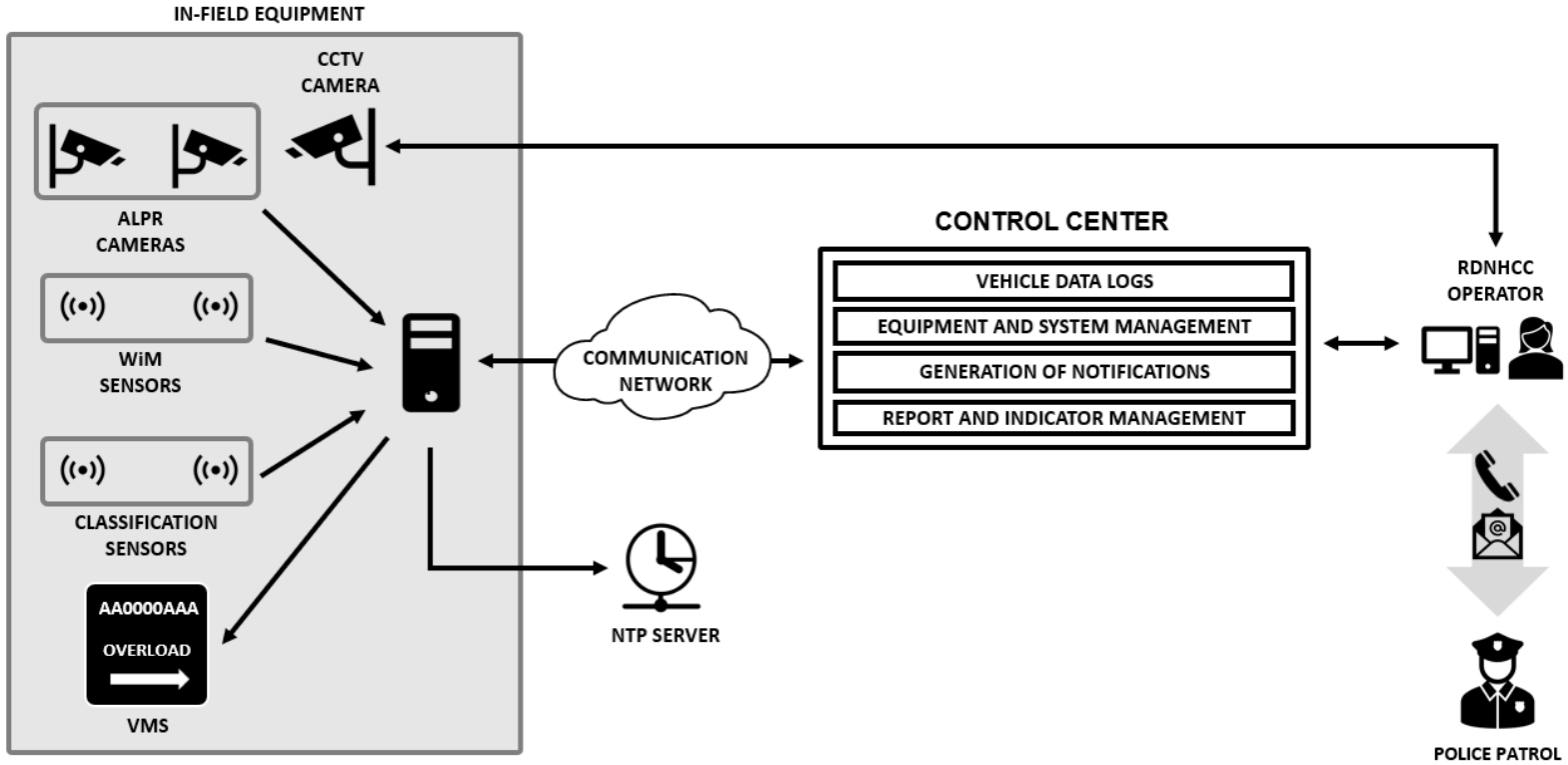
Main Functionalities

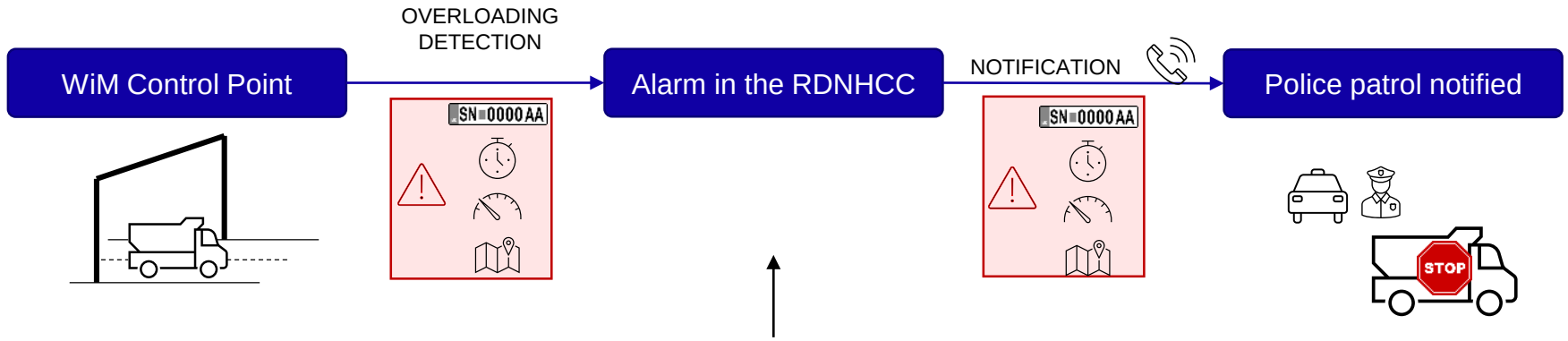
- Statistics
- Preselection
- Legal Purpose
- Control Points (lanes, velocity…)
- Central Application (Storage, alarms)
  - Monitoring alarms
  - Configuration and parametrization
  - Supervision and verification
  - Reporting and filtering

Architecture

- On-purpose metallic structures
- Sensors
- ALPR (Automatic License Plate Recognition cameras
- Complemental sensors
- Communication cabinet
- CCTV cameras
- Central Application
- Variable Message Signs (VMS)

(* optional)





Operational Flow Chart of WIM

03. ITS SYSTEMS

ITS Requirements – WiM

COMPONENTS

- **WiM Sensors** -> Measures gross weight and axle weight with 95% accuracy. (Low Speed vs High Speed uses different technologies and infrastructure for measuring weight)
- **Classification Sensor** -> It measures the dimension of the vehicle, and it classifies it. (Laser technology)
- **ALPR Cameras** -> Capture images of the license plate. 95% confidence minimum
- **Processing Unit** -> Core hardware that integrates all information to produce a complete register of the vehicle

- **Gantry** -> Infrastructure where some equipment must be installed
- **VMS** -> Equipment to interact with the road user and notify when a vehicle is overload.
- **CCTV** -> Surveillance of the WiM point (IP PTZ camera supported by VMS system)
- **Cabinet** -> The place where all equipment is installed and protected from
- **Central Application** -> Collection of data from different control Points. It must allow the operator to review all detections, supervise, configure and make reports.

03. ITS SYSTEMS

Hazardous Materials

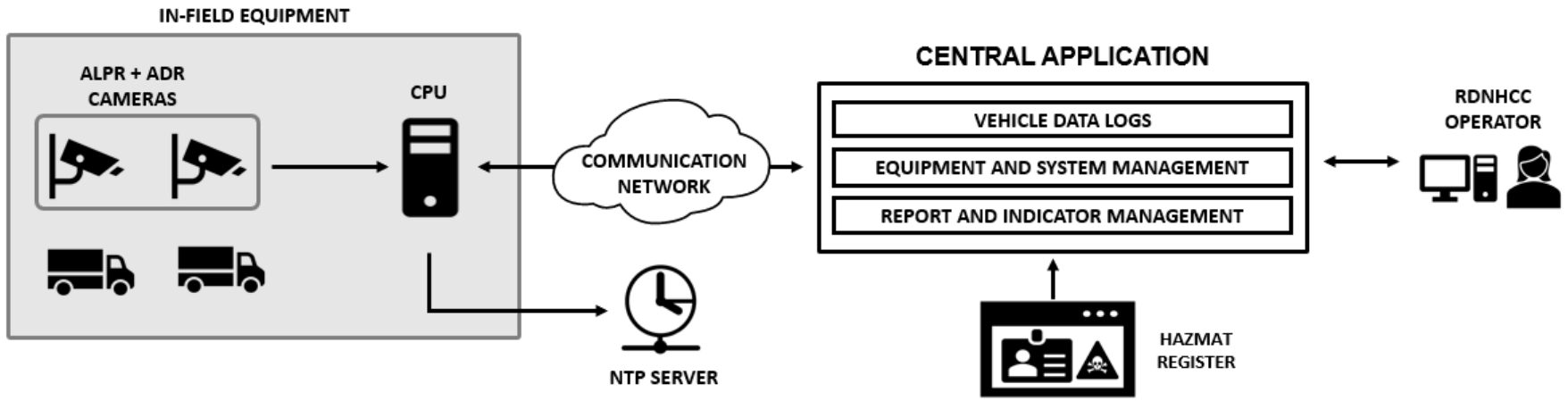
Main Functionalities

- Detection and Identification
- Data Collection
- Central Application
  - Operational Status Monitoring
  - Configuration and Parametrization
  - Alarm Supervision
  - Verification against National HAZMAT register
  - Reporting and Statical Analysis

Architecture

- ALPR and ADR (*) cameras on field
- Connected ALPR and ADR with RDNHCC
- HAZMAT central application

(*) European Agreement concerning the International Carriage of Dangerous Goods by Road



04. RDNHCC INFRASTRUCTURE

What rooms should the RDNHCC have?

Operation Room

Crisis Room

Conference Room

Meetings Room

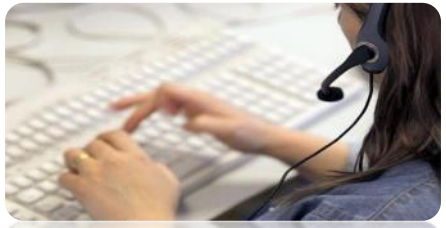
Data Center

Engineering Room

Head's Office

ICT, Legal, Administrative, Communication Offices

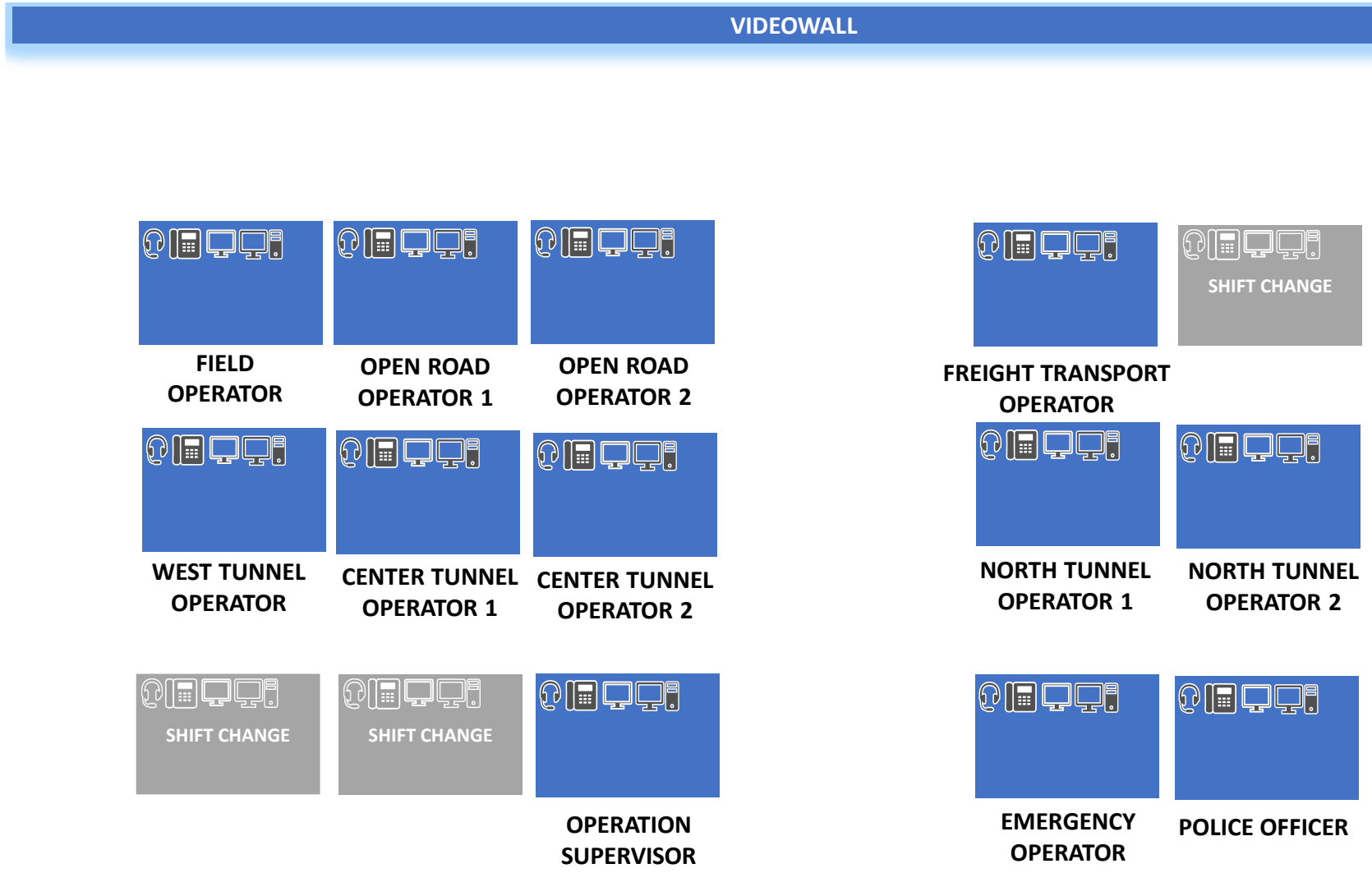
Teleassistance Room



Ancillary Spaces

04. RDNHCC INFRASTRUCTURE

Operation Room



Thank you!