

**LDCCC**

**Local Deployable  
Coordination & Communication Centre**

**Specification Document**

# **1 Introduction**

## **1.1 Purpose**

This document provides the operational and technical requirements for a Local Deployable Coordination & Communication Centre (LDCCC) to be temporary deployed at FYR Macedonia (area of BCP Bogorodica).

## **1.2 Scope**

This document includes operational and technical requirements for equipment including (infrastructure, surveillance sensors and communication), applications and services to be provided for the LDCCC.

## **1.3 Acronyms and Abbreviations**

C2	Command & Control
C2ISR	Command & Control, Information, Surveillance and Reconnaissance
C2ISR-SW	C2ISR Software
COP	Command Operational Picture
GIS	Geographic Information System
HMI	Human Machine Interface
HQ	Headquarter
LAN	Local Area Network
LDCCC	Local Deployable Coordination & Communication Centre
PMR	Private Mobile Radio
RRT	Rapid Response Team
RSP	Recognised Surveillance Picture
WAN	Wide Area Network
WLAN	Wireless LAN / WiMax
AoI	Area of Interest
OoI	Object of Interest

**As the required delivery time of the LDCCC is short and the system shall be immediately operational, the manufacturer shall prove that similar systems, delivered by the manufacturer, are in operation.**

## **2 Operational Requirements**

The LDCCC shall be used as a deployable coordination centre for Border Police operation. It shall be positioned on a suitable location with good visibility (line of sight) to the area of interest. In a regular surveillance mission, the LDCCC will be positioned not directly at the border line, but a few km inside the territory. The area between the LDCCC and the border will be used for operations.

The LDCCC shall be equipped with a Surveillance capability and a Command and Control capability.

The operators in the LDCCC shall be able to communicate via Tetra voice communication system (GFE), with other operational units.

In order to broaden the operational situation awareness, the LDCCC shall be able to receive surveillance inputs from deployable solutions being integrated on Pick-up vehicles.

It shall be possible to operate the system 24/7, up to several weeks of continuous operation. For this purpose the LDCCC shall be run by two operators: one to operate the sensors and compile a Common Operational Picture, and a second operator with Command and Control tasks, that is able to communicate with the deployable solutions in the pick-ups, with response units or with hierarchically higher Border Police Stations / national coordinaton centre.

The primary operational task is to detect persons or vehicles crossing illegally the international border line. The intention of the illegal people is unknown; they might be terrorists, smugglers or immigrants. In order to achieve a pre-alarm time, the surveillance system shall be able to detect such threats by EO/IR cameras and radars before they enter the own territory.

Quick reaction vehicles might be commanded to the potential crossing point or to a suitable intercept point in order to stop the persons, clarify their identification and deal with them in-line with the national standard operational procedures.

The LDCCC shall be based on an integrated shelter configuration with 2 operator work positions for the representation of a deployable command centre including sensor control, surveillance and command and control capabilities. The shelter shall be combined with an erectable mast attached to the shelter and suitable to host the payload of a sensor suite composed of a ground surveillance radar, electro-optical

sensor (infrared and daylight) and laser range finder. The sensor performance must ensure the detection of a single person up to 10 km. The deployed operation shall be supported by a power supply unit.

The LDCCC shall be further equipped with following communication means to support voice and data communication:

- ***Communication Equipment*** to exchange data between the LDCCC with other deployable unit types.
- ***TETRA communication equipment*** to be installed in the LDCCC.

The LDCCC will be used in 24/7 operation under all weather conditions and shall be designed to support shift operation. During deployment the LDCCC shall be capable to be operated at least 24 hours in autonomous mode without connection to a power grid. The LDCCC shall support the following tasks:

- sensor configuration and control;
- surveillance for the defined area of interest;
- classification and identification of detected objects;
- event generation and handling;
- mission planning and resource assignment;
- mission order and monitoring;
- archiving of surveillance data;
- reporting.

### 3 Technical Specifications

#### 3.1 Shelter & Mast

No	Requirement	Comment
	<b>General</b>	
3.1.1	The LDCCC shall be able to host sensor kit, ground electronic equipment and protect it against environmental impacts (rain, sun, heat)	
3.1.2	The LDCCC shall be made of anti-corrosive material or corrosive protected metal material	
3.1.3	The LDCCC shall be made of metallic material as a self-supported structure	
3.1.4	The LDCCC roof shall be designed without deepening to prevent the accumulation of water or debris (ether a smooth curve or flat).	
	<b>Container / Shelter</b>	
3.1.5	The LDCCC shall be based on a standard 10 ft ISO 1D Shelter in accordance with ISO 668 (Length: 2991 mm; Width: 2438 mm; Height: 2438 mm)	
3.1.6	<p>It shall be possible to transport the LDCCC on a vehicle independent platform (standard commercial platform), that is nevertheless qualified to transport at least a 10 ft ISO 1D Shelter in accordance with ISO 668 (Length: 2991 mm; Width: 2438 mm; Height: 2438 mm).</p> <p>Remark: Max. overlap of the mast with sensors shall be 500 mm distance between shelter ISO corner and outer outline of mast with sensors in transportation position.</p> <p>A max. distance of 1000 mm between vehicle rear lights and outer outline of load with special signalization)</p>	
3.1.7	The Shelter shall include fork lift pockets in	

No	Requirement	Comment
	<p>accordance with ISO 1496:</p> <p>Distance between pockets (from the middle): 900 +/- 50 mm</p> <p>Width of each pocket: 305 mm</p> <p>Height of each pocket: 102 mm</p> <p>Vertical distance between pocket (lower level) and ISO (lower level): 20 mm</p>	
3.1.8	Max. Weight of the LDCCC shall be 4000 kg (excluding potential options i.e lifting jacks)	
3.1.9	<p>LDCCC shall have the capability to be deployed on the ground by crane, lifting jacks or forklift.</p> <p>Lifting jacks are provided as option.</p>	
3.1.10	LDCCC shall be endowed with levelling jacks, that should be able to level 2deg	
3.1.11	LDCCC shall be equipped with a main access door and an emergency exit door or flap.	
3.1.12	Dimensions of the emergency Exit door or flap shall be with a clear width of door min. 760x660 (W x H)	
3.1.13	Dimensions of access door shall be approx. : 900 x 2000 mm (W x H) (Clear width).	
3.1.14	The locking system of the door shall have exterior and interior handle.	
3.1.15	The LDCCC shall provide a possibility to open it from inside even if locked from outside.	
3.1.16	The LDCCC shall host two operator working places, one with two screens 24" and one with one Notebook.	
3.1.17	The LDCCC shall be able to host a tempered ITCOM Rack.	

No	Requirement	Comment
	<b>Air Conditioning Unit</b>	
3.1.18	The LDCCC shall ensure that for the internally hosted operators and equipment appropriate climate conditions are provided (i.e. internal temperature between 10 °C and 32 °C,	
3.1.19	An air conditioning unit for the equipment and operator compartment shall be included. The air conditioning unit shall be designed in accordance with EN378. An automatic controlled fresh air cooling mode with dust filtering (without active cooling) shall be included.	
3.1.20	The noise level generated by the air conditioning unit shall not exceed 60 dB(A) in the middle of the operator compartment under full operation.	
3.1.21	The longest heat up duration to the specified operational temperature inside of the shelter shall not exceed 60 min.	
	<b>Telescopic Mast / Sensors</b>	
3.1.22	The LDCCC shall provide the mounting ,hosting and operation facilities for the sensor kit including compass:	
3.1.23	<p>The sensor payload atop the LDCCC mast shall consist of:</p> <ul style="list-style-type: none"> <li>- Mechanical interface (sensor – mast)</li> <li>- Radar, as specified in Ch. 3.3.1</li> <li>- EO and IR Camera system as specified in Ch. 3.3.2</li> </ul>	
3.1.24	<p>The LDCCC shall be endowed with a telescopic mast that is erectable to a height ensuring the sensor kit centre of approx. 4 m above the ground.</p> <p>Optionally a 6 m erectable mast shall be offered.</p>	



No	Requirement	Comment
3.1.25	The LDCCC shall provide the possibility to control the mast erection and retraction from outside the shelter.	
3.1.26	The mast shall allow manually retraction and sensor parking (without electrical power).	
3.1.27	The LDCCC shall provide the possibility to control the setting of the sensors, including their orientation (azimuth), from inside the shelter	
3.1.28	<p>The telescopic mast including mechanical interface (sensor – mast) shall support at the top a payload (sensors, mount-ings, turning / pan and tilt mechanisms) of maximum 120 kg, providing the needed stability for ensuring accurate target detection at a wind speed of maximum 60 km/h. At wind speed above 80 km/h the mast shall lowered into a safe position.</p> <p>Orientative mast parameters at full sensor load and wind speed of 60 km/h :</p> <ul style="list-style-type: none"> <li>- oscillation frequency at top: &lt; 3 Hz</li> <li>- oscillation amplitude shall be &lt; 0,5° (vertical and horizontal )</li> <li>- angular deflection around the vertical axis shall not exceed 0,5°</li> </ul>	
3.1.29	The LDCCC shall provide the capability that when the mast is completely retracted, the sensors are stowed in a way to ensure full sensor protection during transportation.	
	<b>Electrical requirements</b>	
3.1.30	The LDCCC shall be able to be safely connected to an external AC 230V/50Hz/single phase - power supply and be protected against any malfunction of this in accordance with IEC 60038.	

No	Requirement	Comment
3.1.31	The total power demand of LDCCC, for the complete configuration including Air conditioning (heating, cooling), ITCOMM equipment, sensors and spare power shall not exceed 6,5 KW.	
3.1.32	The labelling of all electrical equipment shall be in English.	
3.1.33	There shall be an emergency light installed in the shelter. It shall be rechargeable.	
3.1.34	The LDCCC shall be endowed with an internal DC backup power supply, which allows critical functions (operational relevant) to run for minimum 15 min., excluding mast retraction, sensor parking and AirCon	
3.1.35	Electrical sockets shall be integrated:  Spare: 1 socket	

## 3.2 Command & Control

### 3.2.1 Surveillance Operation

- component interfaces directly with the sensors (radars, cameras and laser range finder) for operational settings and control;
- receives and processes sensor plots and/or single tracks and video streams;
- tracks can be associated with various attributes by the operator (e.g. regarding their affiliation: friendly/hostile/neutral);
- the entirety of recognised and attributed tracks is made available as "Recognised Surveillance Picture" (RSP). This component deals directly with the sensors (radars, cameras and laser range finder);
- HMI provides controls in order to operate the sensors (power on/off, movement of cameras, setting the radar mode, activation of scan sectors, etc.), set monitoring focus to specific areas, etc.

No	Requirement	Comment
3.2.1.1	The Application shall provide functions for	

No	Requirement	Comment
	Sensors Mode Setting and Control	
3.2.1.2	The Application shall provide functions for Sensor Configuration and management	
3.2.1.3	The Application shall provide advanced tracking algorithms and signal processing for environmental clutter rejection	
3.2.1.4	The Application shall support Target Detection, Classification, Recognition	
3.2.1.5	<p>The Application shall include a Video Analysis engine that provides at least the following functions:</p> <p>Video encoding/decoding (H.263/H.264)</p> <p>Video stabilization</p> <p>Change Detection</p> <p>Template matching (classification proposal)</p> <p>Video recording</p> <p>Video overlays</p>	
3.2.1.6	The Application shall provide Camera cue on selected track (slew to cue)	
3.2.1.7	The Application shall provide Automatic and manual Track creation	
3.2.1.8	The Application shall provide Automatic Target tracking	
3.2.1.9	The Application shall provide Track Correlation, Fusion and Management	
3.2.1.10	The Application shall provide Simultaneous Multiple Target Tracking	
3.2.1.11	The Application shall provide Geo-Fencing with alarming	

No	Requirement	Comment
3.2.1.12	The Application shall provide Surveillance Alarm Management	
3.2.1.13	The Application shall provide a friendly and ergonomic User Interface	
3.2.1.14	The application shall provide easy remote access with workstation over IP network for live monitoring and playback mode. This remote access should be done without additional licenses	

### 3.2.2 Response Operation

- facilitates the composition of the Common Operational Picture (COP built from the RSP and further information if available like Blue Force movements);
- includes mission planning, mission control as well as border guard personnel/organisation and equipment/material administration.

No	Requirement	Comment
3.2.2.1	The Application shall provide Resource management and planning	
3.2.1.2	The Application shall provide Events, Operations and Order management	
3.2.2.3	The Application shall provide Response /Coordination engine	
3.2.2.4	The Application shall provide Common Operational Picture (COP) display	
3.2.2.5	The Application shall provide operational data Searching and Filtering	
3.2.2.6	The Application shall provide Blue Force Tracking display (if appropriate RF links are available with the Response Units)	
3.2.2.7	The Application shall provide Report generation engine	

### 3.3 Sensor Suite

#### 3.3.1 Radar

No	Requirement	Comment
3.3.1.1	The Radar shall allow persons detection(RCS 1sqm) to a distance of 10 km in good weather conditions and in direct visibility	
3.3.1.2	The Radar shall allow vehicle detection (RCS 10 sqm) to a distance of 18 km in good weather conditions and in direct visibility	
3.3.1.3	The Radar shall allow multiple target tracking (min. 40 targets)	
3.3.1.4	The Radar shall provide a coverage of 180° in azimuth, 4° elevation beam width; opt. +/- 20° elevation	
3.3.1.5	The Radar shall provide an MTBF of min 50000 h	

#### 3.3.2 EO/IR Camera System

No	Requirement	Comment
3.3.2.1	The Camera system shall consist of a daylight and an infrared sensors with pan & tilt mechanism and laser range finder	
3.3.2.2	The Camera system shall provide a detection range for persons (RCS 1sqm) of 10 km, in good weather conditions and in direct visibility with variofocal lens (optical zoom and focus) and minimum X26 continuous optical zoom	
3.3.2.3	The Camera system shall provide a detection range for vehicles(RCS 10 sqm) of 18 km, in good weather conditions and in direct visibility with variofocal lens (optical zoom and focus) and minimum X26 continuous optical zoom	

No	Requirement	Comment
3.3.2.4	The Camera system shall allow operation in sector scan mode or 360 <sup>o</sup> , independently from the movement of the telescopic mast	
3.3.2.5	The Laser Range Finder of the Camera System shall be eyesafe and provide a measuring accuracy of +/- 5 m in a range of 50-20000m	

### 3.4 Communication equipment

#### 3.4.1 Router (quantity 1 piece)

No	Requirement	Comment
3.4.1.1	In order to meet the security requirement of end-to-end transmission providing security functions.	
3.4.1.2	Offered Router shall be with modular design with security license and to support a range of features, including: <ul style="list-style-type: none"> <li>• Crypto acceleration (IPSec and SSL)</li> <li>• DES, 3DES, AES</li> </ul>	
3.4.1.3	Ports: <ul style="list-style-type: none"> <li>• LAN/WAN: 10/100(RJ45) x 3</li> <li>• Console</li> </ul>	

#### 3.4.2 Switches (quantity 1 piece)

No	Requirement	Comment
3.4.2.1	In order to assure network flexibility and resilience, on the LDCCC site a switch shall be installed	
3.4.2.2	The offered switch has to support L2 networking	
3.4.2.3	The offered switch shall be of manageable switch type, with inbuilt switch management feature.	
3.4.2.4	The offered switch shall have at least 24 Ethernet port 10/100 capacity.	

No	Requirement	Comment
3.4.2.5	The offered switch shall have Power over Ethernet on all LAN ports with nominal power per port of 15,4 W simultaneously	
3.4.2.6	Configuration and control port shall be achievable through <ul style="list-style-type: none"> <li>• console</li> <li>• Telnet</li> <li>• Web browser</li> </ul>	
3.4.2.7	The offered switch shall provide following basic control features <ul style="list-style-type: none"> <li>• QoS for traffic classification</li> <li>• Baseline Network Admission Control</li> <li>• Autosense 10/100</li> <li>• Auto-Negotiation</li> </ul>	
3.4.2.8	The offered switch shall provide at least following capacity <ul style="list-style-type: none"> <li>• Switching bandwidth: 10 Gbps</li> <li>• Forwarding Packets per Second : 3,5 Mpps</li> <li>• VLANs: 64</li> </ul>	
3.4.2.9	The offered switch shall provide following protocols: <ul style="list-style-type: none"> <li>• Dynamic Trunking Protocol</li> <li>• Spanning Tree Protocol</li> <li>• Internet Group Management Protocol</li> </ul>	
3.4.2.10	Power Supply The switch shall be equipped and operate on 220 V AC input voltage	
3.4.2.11	All cables and installation materials for 19" rack mounting shall be included	

**3.4.3****Professional Mobile Radio (TETRA) (quantity 1 piece)**

No	Requirement	Comment
3.4.7.1	The LDCCC shall include for voice communication a fixed Tetra radio station, with antenna system and GPS antenna	
3.4.7.2	The Tetra Terminal shall allow individual, group and emergency calls in a standard Tetra-ETSI Network	
3.4.7.3	The Tetra Terminal shall be with integrated GPS module for position reporting	
3.4.7.4	The Tetra Terminal shall allow calls to pre-configured terminals or groups in Direct Mode Operation (i.e. when Tetra Network coverage is not available)	
3.4.7.5	The Tetra Terminal shall allow IP packet data transfer and WAP 2.0 over Tetra IP (narrow band data transfer).	
3.4.7.6	The Tetra Terminal shall support authentication and Air Interface Encryption TEA 2 Class 3	
3.4.7.7	The Tetra Terminal shall support temporary and permanent disable (i.e if stolen)	
3.4.7.8	The Tetra Terminal shall provide audio alert for out of network coverage	
3.4.7.9	Programming tool for parametrization of the Tetra Terminal shall be provided with all necessary cables and adapters	
3.4.7.10	UPS shall be provided for uninterruptable power supply of the Tetra Terminal	



**3.4.4****Power Supply -48V DC Rectifiers (quantity 1 piece)**

No	Requirement	Comment
3.4.4.1	The offered power supply system shall provide DC power of -48V /2000W	
3.4.4.2	The offered power supply system shall operate in 1+1 configuration (Hot Stand By mode)	
3.4.4.3	The offered power supply system must have input and output protection: transient protection, high voltage shutdown >300VAC, short circuit protection, high temperature protection, soft start capability.	
3.4.4.4	The offered power supply system shall provide 100% of rated power at +55°C and >80% of rated power at +65°C.	
3.4.4.5	The offered power supply system shall have a control unit with LED indicators for presence of alarms.	
3.4.4.6	The control unit shall have options for controlling and monitoring overall function and alarms. The controller shall be designed for stand-alone and remote operation Ethernet interfaces. SNMP protocol must be supported for remote control and management.	
3.4.4.7	The control unit must have protected local and remote access.	
3.4.4.8	Operating efficiency >90%	
3.4.4.9	Power factor (PF) - 0,95	
3.4.4.10	The offered power supply system shall be in 1+1 rectifier configuration (Hot Stand By) with available slots for upgrade with rectifiers of minimum 4x2000 Watts additional DC power.	
3.4.4.11	The offered power supply system shall have DC distribution with minimum 10 (ten) MCB circuit breakers for the DC consumers.	
3.4.4.12	The offered power supply system shall have 2 (two) MCB circuit breakers for the batteries.	

No	Requirement	Comment
3.4.4.13	Nominal input voltage range 200-250 VAC	
3.4.4.14	Frequency range 45-55 Hz	
3.4.4.15	The offered power supply system shall be able to work from single phase and from 3 phases configured based on the specific site conditions	
3.4.4.16	Output voltage range -42 to -58 VDC	
3.4.4.17	Nominal Output Voltage -48VDC.	
3.4.4.18	Operating temperature range 0°C-50°C.	
3.4.4.19	The batteries shall have nominal capacity of 2 battery fields of 100Ah each.	
3.4.4.20	The battery field shall have nominal voltage of 48V.	
3.4.4.21	The offered batteries must be VRLA (Valve – Regulated Lead-Acid) type intended for telecommunications.	
3.4.4.22	The designed lifecycle of the batteries must be min. 10 years. The Bidder is obliged to submit certificate for batteries' lifecycle.	
3.4.4.23	The offered power supply system and the batteries shall be delivered into rack. If the capacity and size of the battery group justifies, the batteries may be placed on a separate holding structure.	

#### 3.4.5 LDCCC Power Generator (quantity 1 piece)

No	Requirement	Comment
3.4.8.1	LDCCC can be optionally powered from a silent power generator, min 9 KVA, 230V/400V, 50Hz, cos φ 0,8	
3.4.8.2	The power generator shall be installed and fixed on a one axle trailer	

No	Requirement	Comment
3.4.8.3	The power generator shall use Diesel fuel	
3.4.8.4	The power generator shall be endowed with a fuel tank that provides operational autonomy of min. 24 h at 75% of maximum delivered power.	
3.4.8.5	The power generator shall have a consumption of max. 1,5 l/h at 75% of the maximum delivered power.	
3.4.8.6	The power generator shall produce max 70 dB noise at 7m distance	
3.4.8.7	The power generator shall be endowed with 50 m power cable.	

#### 3.4.6 Facility Security for LDCCC (quantity 1 set)

No	Requirement	Comment
3.4.9.1	The LDCCC shall be endowed with surrounding protection consisting of security CCTV sensors , alternative complemented by PIR	
3.4.9.2	The CCTV sensors shall report alarms and status to an operation console inside the shelter	
3.4.9.3	The CCTV sensors shall provide day and night imaging (max 30 m), with zooming capability	
3.4.9.4	The CCTV sensors shall be detachable, in order to be stowed inside the shelter during transportation	