



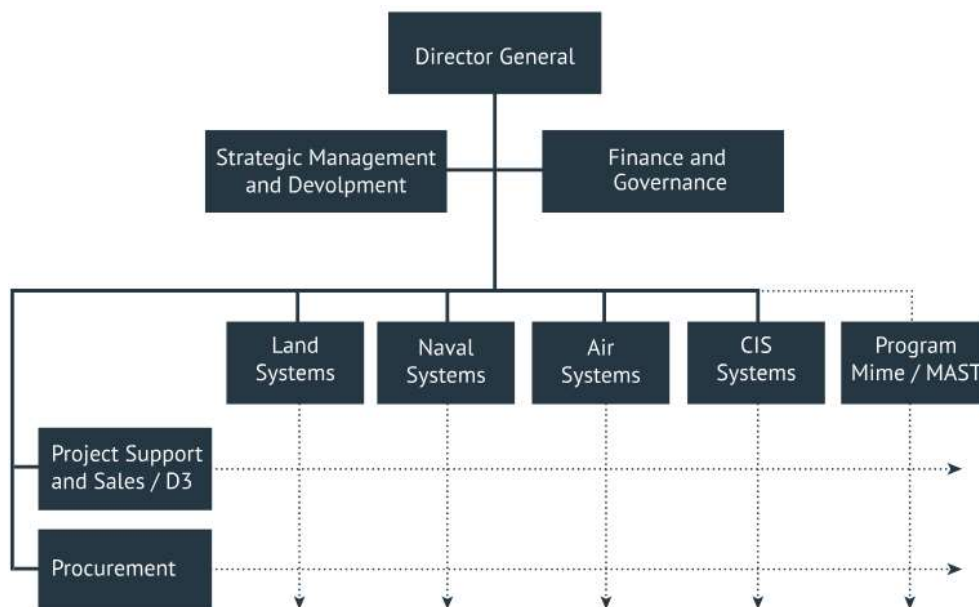
REQUEST FOR INFORMATION

PTZ Camera

1 Introduction

1.1 The Norwegian Defence Materiel Agency

The request for information is carried out by the Norwegian Defence Materiel Agency (NDMA). NDMA is an agency in the Norwegian Defence Sector, directly subordinate to the Norwegian Ministry of Defence (MoD). NDMA shall ensure that the Norwegian Armed Forces (Armed Forces) and other agencies in the defence sector shall have access to cost-efficient and safe materiel in accordance with adopted long-term plans. NDMA's main tasks are planning, procurement, management, and disposal of materiel for the Armed Forces and other MoD agencies.



More information is available at www.fma.no/en

2 Background and Purpose

The purpose of the RFI is to gather information from suppliers of pan-tilt-zoom (PTZ) camera systems for use in a UAV (unmanned aerial vehicle) detection, classification, and tracking system.

The system will be integrated into a broader sensor fusion platform capable of detecting, classifying, and tracking airborne objects — primarily small UAVs — in real time. Cameras will be slaved to radar and/or other sensors providing cue data, and must support tight integration with a command-and-control (C2) software layer.

NDMA encourages all suppliers to respond even if their solutions, systems, products do not meet all the listed criteria.

We thank you for the time you are willing to use to provide us information.

3 Intended Use

Parameter	Description
Primary mission	Detection, classification, and tracking of UAVs and other aerial objects
Integration	Part of an integrated sensor fusion system; radar slew-to-cue anticipated
Environment	Outdoor, all-weather, fixed or semi-permanent installation
Operation	Continuous, unattended operation with remote monitoring

4 Requirements

Requirements are classified as **mandatory** (shall) or **desired** (should). Suppliers are asked to confirm compliance with each requirement and provide supporting technical data.

4.1 Mandatory Requirements

ID.	Requirement	Reply
M-01	The camera shall support continuous 360° pan rotation without end-stops	
M-02	The camera shall support tilt up to +90° (zenith)	
M-03	The pan/tilt unit shall achieve a maximum pan speed of $\geq 90^\circ/\text{s}$ and a maximum tilt speed of $\geq 30^\circ/\text{s}$	
M-04	The daylight and thermal cameras shall be integrated as a single self-contained unit (one housing, one cable connection, one mount point)	
M-05	The daylight camera shall provide an optical zoom with an HFOV range of approximately 60° to 3°	
M-06	The daylight camera shall have a sensor resolution of ≥ 2 MP	
M-07	The thermal camera shall use an uncooled LWIR microbolometer	
M-08	The thermal camera shall have a sensor resolution of $\geq 640 \times 512$ pixels	
M-09	The thermal camera shall be available with a fixed lens providing a maximum HFOV of $\leq 8.5^\circ$ (optical FOV only; digital zoom does not count)	
M-10	The system shall stream video via RTSP or equivalent open streaming protocol over Ethernet	
M-11	The system shall transmit absolute pan/tilt position and angular velocity telemetry at a minimum rate of 50 Hz over Ethernet, with low latency	
M-12	The system shall accept pan/tilt velocity commands at a minimum rate of 30 Hz over Ethernet, with low latency	
M-13	The system shall be delivered with custom cabling using M12 (Ethernet) and D38999 (power/signal) connectors	
M-14	The system shall have an ingress protection rating of IP66 or better	
M-15	The system shall provide absolute pan/tilt position feedback with sub-degree accuracy	
M-16	The system shall be compact and lightweight , with a total weight of < 5 kg (camera head, excluding mounting hardware)	

4.2 Desired Requirements

ID.	Requirements	Reply
D-01	The system should support NTP time synchronisation	
D-02	The system should consume less than 50 W under typical operational conditions	
D-03	The system should support ONVIF Profile S and/or T	

D-04	The system should support H.264 (AVC) video compression	
D-05	The system should be operational across a temperature range of at least −30 °C to +65 °C	
D-06	The system should support onboard custom code execution for control and processing tasks	
D-07	The system should provide dedicated, synchronised timestamps for pan/tilt telemetry and image frames	
D-08	The video stream should have an end-to-end latency of below 100 ms	
D-09	The pan/tilt unit should be gyro-stabilised to maintain pointing accuracy on vibrating or mobile platforms	

5 Questions to Suppliers

Responding Suppliers are requested to provide written answers to the following questions, together with relevant technical documentation:

1. **Thermal FOV:** What is the narrowest available optical HFOV for the thermal channel, and with which fixed lens and sensor combination? Can a $\leq 8.5^\circ$ optical HFOV be achieved at $\geq 640 \times 512$ resolution with an LWIR sensor?
2. **Pan/tilt speeds (M-03):** What are the maximum achievable pan and tilt speeds? Is speed continuously variable from low values up to maximum?
3. **Telemetry streaming (M-11):** Can the system stream absolute pan/tilt position (in degrees) and angular velocity at ≥ 50 Hz over Ethernet? What is the protocol, data format, and typical end-to-end latency?
4. **Command interface (M-12):** Can the system accept pan/tilt velocity commands at ≥ 30 Hz over Ethernet? What protocol is used, and what is the typical command-to-motion latency?
5. **Custom cabling (M-13):** Can the system be delivered with M12 (per IEC 61076-2-101) and D38999 / MIL-DTL-38999 connectors? What is the lead time and cost impact?
6. **Power consumption:** What is the typical and maximum power consumption under full operational conditions (active PTZ motion, both channels streaming)?
7. **Integration API and onboard compute (D-06):** Is a documented HTTP/REST or equivalent API available for pan/tilt/zoom control, status readout, and telemetry streaming? Does the platform support onboard custom code execution (e.g. an SDK, scripting environment, or open application platform)? Is a developer reference available?
8. **Timing and synchronisation (D-07):** Are image frames and pan/tilt telemetry timestamped from a common hardware clock? What is the accuracy and resolution of these timestamps, and can they be synchronised to an external reference (e.g. PTP/NTP)?
9. **Video latency (D-08):** What is the typical end-to-end video latency from scene capture to first decoded frame at the receiver, under H.264 streaming?
10. **Gyro stabilisation (D-09):** Is the pan/tilt unit gyro-stabilised? If so, what is the stabilisation bandwidth and residual pointing error under specified vibration levels?
11. **Export compliance:** Are the camera subject to any export restrictions?

12. **Delivery and support:** What are current lead times for a standard configuration (1,10,50,100,300 units)? Is local support or maintenance available?

6 Response Format

Suppliers are requested to provide a written response including:

- Company and product overview
- Itemized compliance statement against each requirement in Section 4
- Answers to the questions in Section 5
- Relevant datasheets and technical documentation
- Indicative unit pricing, including options for cabling and spares
- Production capacity. Possible delivery schedule for up to 300 units.
- References for comparable deliveries, if available

7 Terms and Conditions

This RFI is issued for market survey purposes only and does not constitute a tender or an obligation to procure. All information received will be shared by agencies subordinate to the Norwegian MoD. NDMA is a public organization, and must provide access to information in accordance with the Norwegian Freedom of information Act. If any answer to this request for information contains any information that is business confidential or otherwise should be kept secret by law, please clearly identify such information, and state the reason as to why the information is under a duty of secret. NDMA kindly ask you to also provide a proposal for public version, so we can handle requests of access to information more easily. This RFI does not in any way commit NDMA to make a later procurement, and any costs relating to replying to this RFI will not be reimbursed. The issuing organization reserves the right to proceed with, modify, or cancel any subsequent procurement process at its own discretion.

8 Information Date

The requested information should be at NDMA's disposal no later than 1st of June 2026.