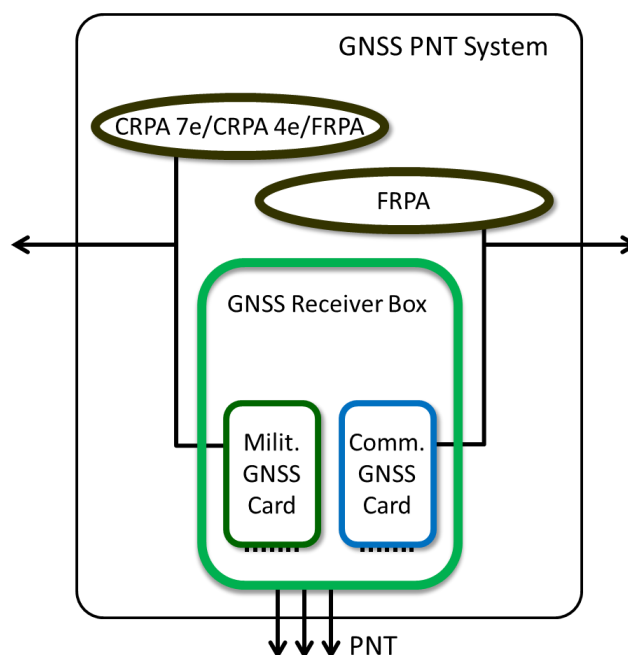


## Description of the project

The „GNSS with M-code” project deals with GNSS-based source of PNT information for land military platforms of the Czech Armed Forces. The GNSS PNT system for land platforms (e.g. armoured vehicles) would consist of GNSS receiver box, military GNSS receiver card, commercial GNSS receiver card and two GNSS antennas. Types of the antennas will depend on the requirements for resilience against GNSS jamming determined for each specific platform. All the elements of the GNSS PNT system are considered to be acquired between the years 2023-2029 and provided to the producer of the land platforms for integration. Data, power and radiofrequency signal cables (except the CRYPTO cables) are required to be a part of the delivery.

### 1 Elements of the GNSS PNT system

- GNSS receiver box;
- Military GNSS receiver card;
- Commercial GNSS receiver card;
- 2 GNSS antennas different types:
  - 7 element CRPA<sup>1</sup>;
  - 4 element CRPA;
  - FRPA<sup>2</sup>



Basic schema of the GNSS PNT system

<sup>1</sup> Controlled Reception Pattern Antenna

<sup>2</sup> Fixed Reception Pattern Antenna

## **2 Special requirements**

- MPE-M (part number 987-2618-011) military GNSS receiver card is the only one that meets the requirements for use in land military platforms and requirements for GPS M-code capability. MPE-M military GNSS receiver card can be procured via G2G (FMS) procedure only.
- GNSS receiver box must be ready for MPE-M integration;
- Items: GNSS receiver box, commercial GNSS receiver card and GNSS antennas must be fully compatible and delivered by one contractor;
- Commercial GNSS receiver card must be integrated in the GNSS receiver;
- CRPA GNSS antennas are requested in two versions: with minimum number 4 and 7 anti-jam antenna elements.

## **3 Technical requirements**

### **3.1 GNSS receiver box**

- Construction suitable for integration in ground military platforms;
- Two slots for GNSS receiver cards for simultaneous use;
- Compatibility for integration of:
  - Military GNSS receiver card type MPE-M (part number 987-2618-011);
  - Commercial GNSS receiver card (multi-constellation GNSS receiver card);
  - Precondition for Galileo PRS (Public Regulated Service) GNSS receiver card integration;
- Firmware/Software for PNT data fusion;
- Minimum communication interfaces: Ethernet, CAN-Bus, USB, RS232, RS422, DS 101/DS 102; 1PPS, HAVE QUICK, RTCM;
- Minimum standard communication protocols: ICD GPS 153, NMEA-0183, capability for future GNSS communication protocols integration (e.g. Galileo PRS);
- Data connectors with Mil DTL 26482 specification;
- Power connector with Mil DTL 26482 specification;
- At least two antenna connectors;
- CRYPTO connector;
- At least IP67 environmental protection;
- Accessories: CRYPTO cables.

### **3.2 Military GNSS receiver card**

- Determined for integration to GNSS receiver box;
- type MPE-M part number 987-2618-011;
- Capability of military GPS signals processing (GPS PPS M-code a P(Y)-code on L1/L2 GPS);
- Capability of open GPS signals processing at least C/A-code on L1 GPS.

### **3.3 Commercial GNSS receiver card**

- Determined for integration in GNSS receiver box;
- Capability of open GNSS signals processing at least: GPS, Galileo, GLONASS, BeiDou.

### **3.4 CRPA GNSS antenna**

- Determined for integration in land military platforms;
- Compatible with provided GNSS receiver box and military GNSS receiver card (MPE-M);
- Anti-Jam technology;
- 2 versions with minimum number of Anti-Jam antenna elements: 4 and 7;
- Capability of GNSS signals processing at least: GPS P(Y)-code and M-code on L1/L2 GPS and GPS C/A-code on L1 GPS;
- Environmental protection at least in accordance with MIL-STD810G.

### **3.5 FRPA GNSS antenna**

- Determined for integration in land military platforms;
- Compatible with provided GNSS receiver box, commercial GNSS receiver card and military GNSS receiver card (MPE-M);
- Capability of military GNSS signals processing: GPS P(Y)-code and M-code on L1/L2 GPS and open GNSS signals processing at least: GPS, Galileo, GLONASS, BeiDou;
- Environmental protection at least in accordance with MIL-STD810G.

## **4 Requirements for delivery and life-cycle**

- An assistance with the integration of the GNSS based PNT system to the land platforms of Czech Armed Forces by the provider is required;
- A training for 5 people in order to ensure the capability of Czech Armed Forces to change the GNSS receiver cards in the GNSS receiver box is required;
- Costs for shipping of the products to Czech Republic shall be paid by the supplier;
- Guarantee shall be provided for at least 24 months;
- Expected life-time period: at least 20 years;
- Please provide information about the possibility to guarantee availability of spare parts for 20 years.