Annex II

Terms of Reference

Frontex OP/625/2016/RS

Purchase of the Digital Surface Model along external EU borders

1. Background information

1.1 Situation Monitoring and supporting IT systems

Frontex was established in 2005 to assist both EU member states and other countries within the Schengen passport-free area in the management of their external borders and to bring greater consistency and harmonisation to EU border control. The agency facilitates cooperation between border authorities by providing the necessary technical support and expertise available where and when it is needed. Frontex also promotes solidarity among the member states by coordinating assistance to those facing disproportionate pressures at their external borders.

One of the Frontex' principle tasks is situation monitoring and crisis management. The situation is monitored at the external Schengen air, land and sea borders and different types of information are automatically ingested into Frontex systems and applications.

The IT systems used to compile and maintain this situational picture are GIS centric and the information is displayed on top of background maps for an increased situational awareness. These systems used in Frontex are mainly built on the Microsoft and ESRI technology stack but there are also open source solutions in Frontex.

This tender is a response to requirements collected from end users in the Member States but also in Frontex asking to display detailed surface model along external EU borders.

1.2 Scope and deliverable

The required data is a set of a Digital Surface Model (DSM) spatial data which can be used for analyses and visualizations.
The Digital Surface Model (DSM) is understood as a digital elevation model which include "first surface" elevations (e.g. vegetation and man-made structures).

The Digital Surface Model (DSM) shall have the following specification. Please take note that DSM must meet all of the presented requirements otherwise the offer will be rejected.

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1.2.1 Description

- Coverage:

The exact coverage will be disclosed to the awarded bidder only however the following basic information are provided to allow for estimation of the services:

- The spatial data of the total area of interest width equal 10 km and shall include a 2 km buffer inside the EU country with the external land border and a 8 km buffer in the neighbouring third country
- The estimated total area is 57150 sq km calculated in ETRS89 / LAEA Europe (EPSG:3035)

- Resolution and accuracy:

Maximum raster resolution: ~ 12 m
Absolut Horizontal Accuracy: up to 10 m
Absolute Vertical Accuracy: up to 10 m
The Digital Surface Model shall have assured hydrological consistency (i.e. flattening of water bodies, consistent flow of rivers).

- Delivery format:

The DEM data shall be provided in GeoTIFF or ESRI File Geodatabase raster format. Each border segment shall be delivered as separate seamless raster dataset. The data shall be made available as a download service.

- Coordinate system:

The raster data shall be provided in WGS 1984 (EPSG:4326) geographic coordinate system.

The raster data shall be provided in the default height reference system of DSM product. Height units shall be meters.

- Metadata:

Provide metadata in XML format, compliant with ISO 19115.

- Maximum age:

The maximum age of at least 70% of the DSM source data shall not exceed 4 years (shall be more recent than the 1st of January 2012).
The date of data acquisition as well as date of data processing should be clearly stated.

- Source:

The tenderer shall propose a suitable source taking into consideration point 1.5 and provide a detailed explanation (i.e. fit for purpose) for the selection.

- Redistribution rights:

Redistribution rights are required by Frontex for hardcopy renditions, static, electronic map images (for example, .tiff, .jpeg, vector data formats) that are plotted, printed, or publicly displayed (e.g. on the Internet network) as results of analysis of the DSM dataset. Products made of the DSM are freely redistributable. DSM can be edited by indefinite number of Frontex' staff members.

1.2.2 Deliverable quality criteria

	Quality requirements
1	Understanding of spatial coverage requirements is demonstrated (potential border sections mentioned or graphically depicted)
2	The DSM rasters have grid resolution not greater than ~ 12 m
3	Data respect the given maximum age, with clear date of data acquisition and processing
4	The DSM rasters have the specified horizontal and vertical accuracy
5	Data is provided in the requested format
6	Data is available as a download service
7	Data is provided in the coordinate system specified in the ToR
8	The DSM rasters align properly with reference vector data
9	The DSM rasters do not contain voids, artefacts and NoData values
10	Hydrological consistency of DSM is ensured
11	The data is provided as separate seamless data sets for each border segment
12	Metadata is provided in XML format, compliant with ISO 19115
13	Detailed explanation on expected data source is given
14	Redistribution rights can be granted as required by Frontex
15	Ability to deliver within the given timeframe is demonstrated (see 1.5)
16	Proposal is compliant with the elevation data source licensing policy and does not violate any copyright or IPR

1.3 Licenses and intellectual property rights (IPR)

Proposals must be compliant with the elevation data source licensing policy and not violate any copyright or IPR.

1.4 Delivery timeframe

The DSM raster data sets shall be delivered within 10 weeks after the contract is in force. Where it is justified that due to a national law some permit(s) are to be obtained to cover specific areas, the delivery time of that specific data can be extended after a mutual written agreement between Frontex and the Contractor.

1.5 Acceptance Criteria

The deliverables shall meet the following acceptance criteria:

- All deliverables must meet the deliverable quality criteria set in 1.2.2.

The acceptance for each deliverable shall be confirmed by Acceptance Form signed by Frontex Project Manager.