

ANNEX II TO THE INVITATION TO TENDER

TECHNICAL ANNEX

PROVISION OF TRANSMISSION SERVICES

OPEN CALL FOR TENDERS

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Launched by the Audiovisual Services of the European Commission

Disclaimer

Due to the technical nature of this document, it is only available in English.

Throughout this document, reference may be made to specific equipment, manufacturers, norms or standards. This is done in the interest of clarity, the phrase ‘or equivalent’ may be assumed in all cases.

The present annex details the technical requirements for the provision of transmission services. It forms an integral part of the tendering specifications.

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1. INTRODUCTION

The tendering specifications attached in Annex I to the invitation to tender describe the principal characteristics of the contract and specify the provisions common to both Lot I and Lot II. The tenderers must refer to those.

The present annex details the technical requirements for both Lots, and forms an integral part of the tendering specifications.

2. DETAILED SUBJECT OF THE CONTRACT

2.1. Lot I - Provision of a technical infrastructure necessary for the transmission of High Definition television services via satellite

2.1.1. Lot I(a)

Transmission of TV services, EbS and EbS+, operating permanently, 24 hours a day, 12 months per year.

The Contractor must provide:

1. Digital capacity on one satellite transponder whose footprint covers at least the whole of geographical Europe and the Mediterranean region.

(a) Dish sizes must be similar to those required by the current service on Eutelsat 9A.

- The satellite coverage diagram and a table showing recommended dish sizes at points throughout the coverage area must be provided.

(b) This capacity must be permanently available.

(c) The channel must carry two services, EbS and EbS+.

(d) The transponder bandwidth provided must be sufficient for the primary purpose of the services, which aims to feed, via satellite, live and unedited TV news items to media professionals.

2. DVB-S services.

(a) Modulation and compression:

- The channel is to operate in DVB-S2 in High Definition.
- Programme material is to be compressed using techniques that are compatible with the primary purpose of the service for media professionals and based on modern MPEG standards in order to provide the highest quality within the available bandwidth.
- The reasons for the choices made must be fully presented with the advantages and disadvantages made clear.

- (b) For **each** service, the parameters are:
 - A single HD video with 32 mono audio signals: each audio channel within the transport stream must have unique PID. All the audio channels must be synchronous with the video channel.
 - (c) The two services must share the available channel bandwidth using statistical multiplexing techniques. Each service will be allocated a minimum bandwidth.
 - The tender documents must show the reasons for the choice of algorithm used for the dynamic distribution of bandwidth, and explain in detail the options available and the advantages and disadvantages of each of these options.
 - (d) The encoding parameters and the satellite modulation parameters must be chosen to be compatible with a wide range of available IRDs.
 - The reasons for the choices made must be fully presented with the advantages and disadvantages made clear.
 - (e) An Electronic Program Guide (EPG) attached to both services should be included.
 - The EPG should be compliant with DVB Service Information (SI) structure and transmitted via the Event Information Table (EIT) of the transponder. The Contractor will be responsible for the multiplex of the EIT with the transponder's SI signalling.
 - The EPG/SI generating equipment should be located at the Berlaymont building.
3. The terrestrial and ground station services that are required to send a signal to the proposed satellite capacity.
- (a) The **content** of the four original HD-SDI signals provided by the European Commission and the EPG must be transported from the point of origin, in the Berlaymont building in Brussels, to the uplink ground station. The chain between the SDI source signals in Brussels and the satellite uplink must be fully protected by redundant equipment and transmission paths.
 - The DVB encoding equipment may be located in the Berlaymont building or at the Contractor's premises.
 - The Commission will provide a suitably air-conditioned location with protected 220v single phase supplies to standard 19" racks. The Contractor will not have exclusive access to this location.
 - The Contractor's equipment located in the Berlaymont building must be remotely monitored with remote control where appropriate. The Contractor alone will be responsible for the operation of the equipment. If remote control is required, the provision of this remote control is entirely the Contractor's responsibility, specifically the Contractor must not base the system on the Commission's internet access.

- The technology used to transport the signals from the European Commission server room to the ground station must avoid the problems associated with concatenation of codecs. It is for the Contractor to describe in detail the proposed system and to explain the choice of technology.
- (b) The SDI switching equipment should be installed in the Berlaymont building;
- A single control panel is to be placed in the MCR. The SDI signals are always to be switched as a pair. The control panel must have physical or electrical protection to avoid unplanned switches.
 - The SDI switching is to allow either programme (EbS or EbS+) to feed either or both services.
4. The monitoring equipment in the Commission's technical areas for the satellite transmissions.
- The Commission will supply a standard L band signal.
5. The maintenance and administration of the equipment and services for Lot I(a).
- (a) All administrative contacts with third party supplies are to be managed by the Contractor.
- (b) Full details, with drawings, of the proposed systems must be given in the tender documents.

2.1.2. Lot I(b)

An emergency infrastructure that will be used during a crisis involving the European Commission's headquarters.

1. The content of an **HD-SDI** signal with embedded audio, provided by the European Commission, is to be transported to a suitable switching centre or ground station.
 - (a) The ground station must have access to a range of communication satellites commonly used for back-haul operations in Europe. The ground station used for the permanent uplink of the EbS services in Lot I(a) must have downlink access to these same satellites.
 - (b) This back-haul path must not be replaced by a direct fibre link to the ground station used for Lot I(a) because it is possible that during an emergency other institutions, for example the European parliament, will need to send material to EbS. Under these conditions the European Parliament would book capacity on the back-haul satellite and uplink from a ground station of their choice.
2. The maintenance and administration of the equipment and services for Lot I(b) is the responsibility of the Contractor. All administrative contacts with third party supplies are to be managed by the Contractor.

The Contractor must provide:

- (a) A High Definition video link with 4 embedded audio channels between the Breydel building of the European Commission, located at 45, avenue d'Auderghem, 1040 Brussels, and a site having access to the contribution satellite networks.
 - The link must be permanently operational and will carry test signals during periods when there is no programme material.
 - This link may use compression techniques compatible with the uplink in item (b) or may be SDI.
 - The site may be a switching centre that has fixed connections to a ground station or it may be the ground station itself.
- (b) A satellite uplink for a single service of video and 4 audios.
 - The uplink need not be permanent, but must be guaranteed to be available within the one-hour period following an alert, at all times.
- (c) Satellite reception equipment at the same ground station used for Lot I(a),
 - This need not be permanent, but must be guaranteed to be available in the one-hour period following an alert, at all times.
- (d) A permanently available and powered encoder at the same ground station used for Lot I(a) for a single video and 4 audios.
 - This encoder will use the same DVB parameters, including PIDs for video and the first 4 audios, as the permanent EbS service. In an emergency situation this single service will occupy the full bandwidth.
- (e) A permanently available and powered graphics generator at the same ground station used for Lot I(a) able to provide a full screen HD image.
 - This image will take the place of the video feed during programme breaks.
 - Access to this graphics unit must be via a secure internet connection for upload and management of new content.
- (f) Switching of the input to the DVB encoder between the video feed and the graphics generator.
 - Control of this switch must be both at the ground station used for Lot I(a) and also at the European Commission in Brussels via a secure internet connection.
- (g) Switching of the encoder output to the permanent uplink used for the EbS/EbS+ services.
 - Control of this switch must be both at the ground station used for Lot I(a) and also at the European Commission in Brussels via a secure internet connection.

This infrastructure, with the exception of items (b) and (c), must be permanently available, 24/7. The whole system, including the back-haul, must be tested at regular intervals. These tests are to be free of charge to the European Commission.

Upon request by the European Commission, this system must be put into service within one hour. Once in-service it may be required for a lengthy period. The European Commission will decide, based on the prevailing situation, as to how the back-haul capacity will be used and the periods during which it will be required. The European Commission may require frequent switching operations of the uplink; these requests will be at short notice. The Contractor must ensure that these requests are fully supported.

2.2. Lot II - Supply of bi-directional video links and provision of services for *ad hoc* transmissions of audiovisual material

2.2.1. Ad hoc transmissions

The Commission will announce, frequently at short notice (same day or less), the requirement **to transmit or receive video signals to or from any part of the world**. Standards conversion may be required. The requests may be in standard definition (SD) or in high definition (HD). The most frequent request will be for a contribution circuit to receive material for transmission on EbS; requests will also be made for the transmission of our own material to a third party.

Examples of *ad hoc* transmission requests:

At 10:00 a TV station in a European country wants to establish a live HD duplex link with EbS TV Studios (in the Berlaymont building in Brussels) for a news production at 21:00 the same day.

- On a Monday, a non-European TV station needs to receive EbS HD with 4 audios by the next day. EbS TV Studios will provide the signal through the permanent bi-directional link to the Contractor, who will establish the transmission chain to the non-European TV station.
- Establish two outgoing HD links from the EbS Studios and one incoming HD link simultaneously.

The tender documents must show the technical infrastructure and booking procedures that support the ability to rapidly respond to requests.

Tenderers may propose a combination of fibre-optics, satellite and/or other technologies, for instance SNG.

- It should be noted that the Commission does not have any capability for direct transmission to any satellite and does not have any C-band reception capability. The Commission does have KU-band digital reception capability, in SD and HD.
- Where a circuit requires the use of a bandwidth other than KU-band, or requires the use of other means of transmission, then it is the responsibility of the Contractor to propose a suitable transmission chain such that the video material is available at the Berlaymont building.
- Where specialised receivers (IRDs) or software is required in Brussels, these must be included in the offer.

For each specific operation:

- The Contractor must provide full contact information for each point in the transmission chain.
- In many cases, the provider of the audiovisual material to be transmitted will be another Contractor working for the AV services unit in any part of the world. The Contractor must co-operate with other Contractors to the European Commission who may be providing other audiovisual services.

2.2.2. Links

Suitable links must be provided into and out of the Berlaymont building of the European Commission, to support the ad-hoc requirements described under 2.2.1 above. These links must support transmissions in both SD and HD.

The remote end of these links must be at a point that has wide and easy access, though not necessarily a permanent connection, to satellite uplink and downlink capacity for both reception and transmission.

These links:

- will be used in cases where the signal originates from the Berlaymont building (Brussels) headquarters or where direct satellite reception is not possible at the Berlaymont;
- may be used by specialized receivers for direct reception of EBU (European Broadcasting Union) material.

Links quantity, capacity and interfaces:

- Two outgoing (origin Berlaymont) links and one incoming link are required.
- These links must be permanently available and connected.
- The equipment at each end of the links must accept and deliver embedded SD/HD SDI and should automatically switch between SD and HD without human intervention. The bandwidth of the communication link must be able to support high quality HD signals. The incoming feeds must be synchronised to the local reference.
- All three links must be able to be used simultaneously.
- All interface equipment, for example electrical to optical converters, is to be provided, installed and maintained by the Contractor.
- The physical connections, between the Berlaymont and the remote site are to be provided and maintained by the Contractor. The Contractor may use a third party for the provision and maintenance of the fibre circuits; however, the Contractor is responsible for all contacts with this third party.
- The fibre circuits must have redundancy/protection.

3. INSTALLATION AND MAINTENANCE

3.1. Installation

The Contractor is required to install the necessary equipment, and to make the necessary verification of the correct functioning of the system. All electrical and mechanical installations must conform to appropriate standards. Proof of conformity must be supplied if requested.

The installation will only be accepted following the adoption of the complete system, as well as the supply of suitable documentation related to the equipment provided, as well as the installation plans.

It will consist of:

- the functional check of the technical equipment installed;
- the checking of the conformity of the equipment.

This reception may be:

- refused;
- given with reservations;
- given without reservations.

If the reception is refused, the Contractor will have, without expenses for the Commission, to carry out the necessary changes within fifteen days.

The reception could be pronounced with reservations, if the system is considered operational but has minor defects, which will then have to be corrected within fifteen days.

Once the reservation is withdrawn, the reception will become final.

3.2. Maintenance

The Contractor will be responsible for the preventive and corrective maintenance of all the equipment and software provided by as part of the contract. Regular software updates are to be considered as part of the normal maintenance requirement. If parts of the system have been provided by a third party, the Contractor is responsible for all technical and administrative contacts with this third party.

3.3. Quality and continuity of the services

In all circumstances, the European Commission must immediately be informed of any problem that might, or has already, affected the normal running of the service. Particular attention is to be paid to preventive maintenance planned by third parties. Procedures will be put in hand for problem reporting. Routine maintenance on the equipment or circuits must be pre-planned and the time periods accepted by the Commission.

The Contractor must put in hand corrective measures to restore the service as soon as possible and must demonstrate that the necessary resources have been deployed in order to restore the service.

There must be no single point of failure in systems that are under the control of the Contractor.

4. TIMETABLE

For each Lot, the tenderer must specify in his offer the proposed timetable, in calendar days, for the introduction of the services, taking into account the following steps:

4.1. Lot I - Provision of a technical infrastructure necessary for the transmission of High Definition television services via satellite

<i>J = signature of the contract</i>	
J + (x) days	Bilateral meetings with the European Commission on functional aspects of the contract and installations
J + .. days	Presentation of the installation and acceptance tests by the European Commission
+ .. days	First operational day (01/03/2017)

4.2. Lot II - Supply of bi-directional video links and provision of services for *ad hoc* transmissions of audiovisual material

<i>J = signature of the contract</i>	
J + (x) days	Bilateral meetings with the European Commission on functional aspects of the contract and installations
J + .. days	Presentation of the installation and acceptance tests by the European Commission
+ .. days	First operational day (10/03/2017)