

**I-VMS Functional Requirements Specification**

Updated 07/09/21 amendments to the wording:

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| --- | --- | --- | --- |
| **Section** | **Change** | **To read** | **Updated** |
| 3.3c | Word ‘antenna’ removed | Any part of the I-VMS device exposed to the elements must provide acceptable service in the marine environment and be waterproof to IP67 standard as a minimum | 07/09/21 |
| 7.1d | Reworded from ‘The antennas connected to the I-VMS device must not be obstructed, disconnected, or blocked in any way.’ | The I-VMS device must not be obstructed or blocked in any way to prevent transmission of data | 07/09/21 |
| 4.1h | Insert new point | All I-VMS transmitted data must be encrypted | 07/09/21 |

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# 1. Definitions

For the purposes of this Marine Management Organisation (MMO) I-VMS Device Functional Requirements Specification, unless the context otherwise requires, the following terms shall have the meanings given to them below.

|  |  |
| --- | --- |
| **Term**  | **Meaning**  |
| AIS  | The Automatic Identification System is a tracking system used on ships and by vessel traffic services for identifying and locating vessels by electronically exchanging data with other nearby ships and AIS base stations. AIS information supplements marine radar, which continues to be the primary method of collision avoidance for water transport.  |
| Authority  | MMO and IFCAs  |
| Defra  | Department of Environment Food and Rural Affairs  |
| Devolved Administrations | Marine Scotland (MS); Department of Agriculture Environment and Rural Affairs Northern Ireland (DAERA); Welsh Government (WG) and non-UK Bodies: Department of Environment, Food and Agriculture Isle of Man (DEFA), Jersey and Guernsey |
| EMC  | Electromagnetic Compatibility is defined by the International Electrotechnical Commission (IEC) as; The ability of a device, equipment, or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.  |
| Firmware  | The fixed, usually rather small, programs and/or data structures that internally control various electronic devices.  |
| Geofence   | A defined spatial perimeter for real-world geographic areas. In this Specification it specifically relates to certain marine areas which require a level of monitoring, whether it is to protect certain marine features or habitats or manage levels of fishing activity.  |
| GPRS  | General Packet Radio Service is a packet oriented mobile data service that operates over the Global Systems for Mobile communications (GSM).  |
| GNSS  | Global Navigation Satellite System is the standard generic term for satellite navigation systems that provide autonomous geo-spatial positioning with global coverage.  |
| GSM  | Global System for Mobile communications (originally Groupe Spécial Mobile).  |
| HTTP  | Hypertext Transfer Protocol  |
| HTTPS | Hypertext Transfer Protocol Secure |
| IFCA  | Inshore Fisheries and Conservation Authority of which there are ten separate authorities who have a duty to regulate, manage and enhance the inshore sea fisheries within the authorities’ districts between 0 to 6 nautical miles seaward.  |
| ‘IN PORT’ | Physical button to suspend data transmission to the UK VMS Hub |
| IP67  | The protection classification offered by an enclosure is shown by the letter IP (Ingress Protection) and two digits. The first digit indicates two factors: 1. Protection for persons 2. Protection for equipment. The second digit indicates the protection against water.  |
| IP  | Internet Protocol  |
| I-VMS   | Inshore Vessel Monitoring System. An MMO approved system able to report vessel position using mobile phone technology in accordance with this Specification.  |
| Managed Areas   | Any area detailed through statutory or non-statutory legislation including, but not limited to a statutory instrument, MMO and IFCA byelaws, voluntary agreements, and national measures.  |
| MMO  | Marine Management Organisation  |
| MRCC  | Maritime Rescue and Coordination Centre  |
| MPA   | Marine Protected Areas are areas in which human activity may be placed under some restriction in the interest of conserving and/or maintaining the natural environment, its surrounding waters, and the occupant ecosystems, and any cultural or historical resources that may require preservation or management.  |
| National Reporting   | Position reports transmitted through GPRS utilising electronic vessel positioning devices set up by any UKFA or IFCA in accordance with relevant national and/or local regulations.  |
| PGP Key  | Pretty Good Privacy is a data encryption and decryption computer program.  |
| PKI  | Public Key Infrastructure the purpose of which is to facilitate the secure electronic transfer of information.  |
| Polling | Polling is a mechanism used by the UK VMS Hub to request current and/or past positions from the I-VMS device.  |
| Power Conditioner  | Also known as a line conditioner or power line conditioner. A component to improve the quality of the power that is delivered to the I-VMS device, e.g., a component that delivers a voltage at the correct level and with the correct characteristics to enable load equipment to function properly.  |
| SMTP  | Simple Mail Transfer Protocol  |
| SOAP  | Simple Object Access Protocol  |
| SSL  | Secure Sockets Layer (TLS 1.2)  |
| UKFAs  | United Kingdom Fisheries Authorities which include the Welsh Government, Department of Agriculture & Rural Development NI, Isle of Man Department for Environment Fisheries & Agriculture, Marine Scotland, Marine Management Organisation, Dept. of Environment States of Jersey, Bailiwick of Guernsey.  |
| UK VMS  | Vessel Monitoring System installed on UK fishing vessels 12m and over.  |
| URL  | Uniform Resource Locator  |
| UTC  | Co-ordinated Universal Time  |
| VMS   | Vessel Monitoring System (see UK VMS and I-VMS for further definition).  |
| UK VMS Hub  | Operational software provided for the UKFAs and the IFCAs by a third-party supplier, for receiving EU and National VMS position reports from UK and non-UK vessels.  |
| WSDL  | Web Services Description Language is an XML-based interface description language that is used for describing the functionality offered by a web service. |
| XML | Extensible Markup Language |

# 2. Introduction

The purpose of this specification is to set out requirements for suppliers to provide to the fishing industry an approved I-VMS device.

An I-VMS device must meet the functional requirements detailed in this document. The device must be able to provide position reporting requirements as laid out in the legislated management conditions.

Information highlighting supplier’s service and support offerings to the fishing industry will also appear alongside the list of MMO I-VMS approved devices on gov.uk

One of the distinguishing characteristics of I-VMS is the use of GSM/GPRS rather than satellite technology to transmit position reports, to reduce operating costs, unlike the VMS requirements under certain fisheries rules.

In 2018 Defra sought views on the introduction of Inshore Vessel Monitoring Systems for all licensed British fishing boats under 12 metres in length operating in English waters. The consultation[[1]](#footnote-2) sought to gain public views on the proposal to introduce Inshore Vessel Monitoring Systems (I-VMS) for all licensed British fishing boats under 12 metres in length operating in English waters (with English boats also covered outside of English waters). Defra proposes to make this a legislative requirement by means of a statutory instrument and applicable to all under 12 fishing vessels regardless of nationality when within English waters.

The Authority requires a robust solution that can be deployed on all fishing vessel types below 12 metres in overall length. This includes vessels which may not have wheelhouses or sufficient on-board electrics. The I-VMS solution must have the adaptability to cater for all these vessel types. This Specification sets out the requirements needed from the proposed solution/s.

The English under 12 metre fishing fleet is estimated to contain approximately 2,150 licenced vessels. Of which it is expected around 870 of these vessels will not have a wheelhouse and sufficient on-board electrics, predominately from vessels below 6 metres in length and some from the 6 to 8 metre bracket. It is expected that all other vessels will have sufficient on-board power sources and wheelhouses to permanently house an I-VMS solution.

I-VMS positional reports must be pushed into the UK VMS Hub for every vessel below 12 metres to meet regulatory requirements. Where a change of event such as loss of GPS signal or hardware tamper has been detected by the I-VMS device, all status/event messages must be visible on the UK VMS Hub system.

# 3. General Device requirements

**3.1 Configuration**

1. As set out in the introduction, the I-VMS device must provide transmission of position reports to the UK VMS Hub using mobile phone network e.g., GPRS/GSM, non-satellite communication services in accordance with national reporting requirements.

**Please note:** As technologies and GPRS networks evolve, suppliers must ensure products are configurable and able to adapt when certain technologies are superseded (such as the 2G network) and subsequently are shut down so that carriers can reclaim those radio bands and re-purpose them for newer technologies. Any changes to the I-VMS device must be funded by the supplier.

1. It is important to understand what additional capabilities these I-VMS devices hold beyond what is stipulated within these requirements. Suppliers should be aware that either Defra, MMO and/or IFCAs may consider and seek additional forms of remote electronic monitoring technology and ways to report to support I-VMS data in the future.

We want to understand whether the submitted device has capabilities to:

* report via other means e.g., satellite reporting, on top of the mandated GPRS/GSM reporting means.
* Be polled by an Authority to obtain instant positional information from a device.
* connect/operate an ‘IN PORT’ system.
* connect to fishing gear or winch sensor products to identify fishing gear deployment,
* connect to on-board camera systems to validate catches and discards.

These additional capability questions will be asked of suppliers to confirm for information purposes. However, it will not form part of the pass/fail criteria for I-VMS type approval status. See 3.3 and Annex C for further information.

Should there be a new policy requirement for any of these technology solutions then it is expected that further consultation procedures will apply.

**3.2 Certification Requirements**

1. Suppliers submitting their I-VMS device for approval must provide the approval panel evidence of the following certificates:
* IP67 certification (IP minimum)
* IEC 60945[[2]](#footnote-3) (to provide assurance on EMC test, emission test, environment test and safety test)
1. Suppliers must ensure that the solution conforms to the CE (Conformity European) / UKCA (UK Conformity Assessed) marking as per <https://www.gov.uk/guidance/using-the-ukca-marking>

**3.3 Physical Requirements**

1. The device solution must have a minimum operational lifespan of 5 years whilst in use in the marine environment.
2. All goods, wiring and connections must be built with materials able to withstand normal conditions at sea and must meet safety requirements and standards as appropriate for maritime installation.
3. **Any part of the I-VMS device exposed to the elements must provide acceptable service in the marine environment and be waterproof to IP67 standard as a minimum.**
4. Each I-VMS device must have a unique serial number indelibly marked on the outer casing e.g., embossed, or laser engraved or on a metal security tag that must be visible after the installation is complete. Suppliers must maintain accurate records of serial numbers assigned to vessel owners.
5. In addition, the unique serial number of the I-VMS device must be stored in its Firmware in such a way that does not allow deletion or amendment.
6. The external casing of the I-VMS device must be physically sealed before being installed, and the means provided to detect any unauthorised opening or other physical interference or ingress of the I-VMS device. The supplier must have the ability to identify occurrences of unauthorised physical interference or ingress of the I-VMS device as well.
7. Once the I-VMS device is sealed, any adjustments or reconfiguration to scripts, reporting frequencies and other software and firmware functionality must only be possible via a communications link by the device supplier and by engineers authorised by the supplier opening the I-VMS device on board the vessel.
8. The I-VMS device should have connection points to allow the potential for the device to report additional forms of technology as referenced in 3.1b.

Additional capabilities (where supplied)

1. See Annex C for polling and ‘IN PORT’ requirements

**3.4 Power Arrangements**

As not all vessels will have a sufficient on-board power source to operate electronic equipment, all I-VMS devices must hold the capability to be either;

1. connected and powered directly from the vessel’s primary on-board power (if present on vessel) or
2. powered through other sustainable power means (which does not rely on vessel power)
3. or both

All power solutions must enable the device the capability to fully function and operate whilst the vessel is at sea.

The device must display external electronic indicators to indicate to the vessel master that a vessel’s I-VMS primary power source is connected to the device. It is desirable to have the indicator to indicate when the battery source is drawn.

Please see the specific requirements (3.4.1 and 3.4.2) most relevant to the proposed device below.

**3.4.1 Powered directly from the vessel’s primary power supply**

Where a device is using a vessel’s primary power, the I-VMS device must have the capability of being continuously powered and meet the following:

1. The I-VMS device must be able to cope with power fluctuations likely to be experienced on board fishing vessels without any degradation to performance. These arrangements must include provisions for:
* working across a range of voltages typically in use by fishing vessels at sea, as a minimum coping with variations between 8 to 36 volts, allowing a nominal supply of 12v or 24v DC;
* protection from: voltage surge, voltage spiking, and reverse polarity events;
* power conditioner (also known as a line conditioner or power line conditioner).

**3.4.2 Powered through other sustainable power means**

Where a device is using other sustainable power means (autonomous or semi-autonomous), the I-VMS device must have the capability of being continuously powered and meet the following:

1. A connectable power solution to the I-VMS device:
* All connectable power solutions must be tested to ensure the device can fully function and operate as per the Specification whilst the device is at sea.
* The connectable power solution must provide the device the ability to report for a minimum of 50 hours.
* When the solution is detached from the device the rechargeable battery, together with a recharging facility, must activate when primary power is lost or not available. See section 3.5 internal battery.
* Only the connectable power solution component can be detached and removed from the vessel. The I-VMS device must remain secured to the vessel.
* Upon activating the power solution on the I-VMS device, the first positional report must be generated and transmitted within five minutes of connection.

Or

1. Alternative power solutions inbuilt onto the device itself must meet the following:
* The inbuilt power solution must be tested to ensure the device can fully function and operate as per the Specification whilst the device is at sea.
* The power solution must provide the device the ability to report for a minimum of 50 hours.
* If the power solution is disconnected in any way from the device the rechargeable battery, together with a recharging facility, must activate when primary power is lost or not available. See section 3.5 internal battery.
* Upon activating the power solution on the I-VMS device, the first positional report must be generated and transmitted within five minutes of connection.

**3.5 Internal battery within device**

1. A rechargeable battery, together with a recharging facility, must be provided within the I-VMS device to provide the capability when primary power is lost or not available. The purpose of this requirement is to enable the I-VMS device to:
* transmit an appropriate status code to the UK VMS Hub with position report indicating change in power status;
* maintain its settings throughout the period of primary power loss;
* provide up to 1,000 national or local I-VMS reporting transmissions to the UK VMS Hub, whilst in port and at sea, when relying upon battery power alone; and
* allow fishing vessels which do not have sufficient on-board power supply to fit an I-VMS device and operate permanently on the I-VMS rechargeable battery.
1. When the rechargeable battery power falls below the level required to sustain transmissions, the I-VMS device must maintain its settings at that point.
2. When primary power is restored the I-VMS device must:
* recommence normal functioning with the settings in place at loss of power and not with any default factory settings; and
* transmit a position report immediately to the UK VMS Hub, with an appropriate event status code, see section 4.3.
1. The device must be able to generate a positional report within five minutes from a dead battery state once power has been restored to the device.

# 4. Position Monitoring and Output Requirements

**4.1 Positional requirements**

1. The I-VMS device must employ a GNSS augmentation accurate to +/- 5m to meet national reporting requirements.

The device must demonstrate that:

* 50% of all reports must be accurate to +/-5m
* 95% of all reports must be accurate to +/-10m
1. There is to be no external input to the positioning system, such that it must not be possible to change the positional fix by manual intervention.
2. The I-VMS device must transmit position reports individually and automatically in real time, where a communication link is available, at the specified intervals and in accordance with the API specification (Annex B).
3. The I-VMS device must provide the correct date and time in UTC for all position reports.
4. Following a break in the communications at the time a position report is required to be transmitted, the data report must be stored, batched, and forwarded on restoration of the communication link. See section 5.1(c).
5. The I-VMS supplier must have the capability of setting the reporting frequency in accordance with our requirement. Please refer to 5.2 for full details.
6. All device positional reports must be visible through the UK VMS Hub for each vessel. All status/event messages must also be visible on the UK VMS Hub.
7. **All I-VMS transmitted data must be encrypted.**

**4.2 Status code list**

1. As a minimum, the following event status codes must be provided from the device to the UK VMS Hub with an appropriate position report for national reporting requirements:

|  |  |
| --- | --- |
| Status Code | API Mapping (Refer to Annex B section 2.2.5) |
| loss of primary power/switch to battery (when lost);  | SC\_EXT\_POWER\_LOSS |
| restoration of primary power (when restored);  | SC\_EXT\_POWER\_RESTORED |
| loss of connection with the GSM/GPRS network (when restored);  | SC\_NETWORK\_LOSS |
| upon opening the I-VMS device;  | SC\_TAMPER |
| antenna blockage or no position fix obtained at appointed time (when restored);  | SC\_GPS\_LOST |
| stored position forwarded;  | SC\_POSITION\_LATE |
| low battery alert;  | SC\_LOW\_BATTERY |
| where there are no exceptions to vessel location reporting  | SC\_NULL |

The following status codes must be provided from the device if the ‘IN PORT’ functionality is provided. Please refer to Annex C.

|  |  |
| --- | --- |
| vessel is in port when ‘IN PORT’ function is enabled  | SC\_IN\_PORT |
| vessel out of port when ‘IN PORT’ function is disabled  | SC\_LEAVE\_PORT |
| exit from sleep mode, if 'IN PORT' function is enabled and vessel travels more than 500 metres its previous location  | SC\_EXIT\_SLEEP |

1. Where suppliers provide functionality that is aimed to reduce data transmissions when the vessel in inactive and in port then a status code with the reduce reports must be provided. Please note if this service is offered then the device must be able to recommence transmitting positional reporting at the stipulated rate as soon as the vessel is intending to go to sea, otherwise it will be in breach of I-VMS regulations.
2. All relevant event status codes must be transmitted to the UK VMS Hub.

**4.3 Positional data outputs**

1. Each transmitted position report for I-VMS reporting must contain:
* national report flag to indicate this report is as a result of national reporting regulations;
* most recent geographical position of the fishing vessel to 5 decimal places (in WGS84);
* date and time (in UTC) of the fixing of the said position;
* instant speed and course of the vessel (equivalent to 0.1 knots and course expressed in degrees (true not magnetic) to 0.1 degree);
* unique serial number of transmitting I-VMS device; and
* status code (as listed above in section 4.3).
* an indicator of the strength of the positional report accuracy to check for example if the accuracy is impacted because the device reads less than five satellites at point in time. Refer to Annex B section 2.2.4 - GPSQuality=3D fix/2D fix/No fix.
1. Data exchanges and formats from the supplier must use XML files and be delivered over a HTTPS (TLS 1.2) connection using web services description language (WSDL) specification – see section 5.3 for further details

# 5. Communication into the UK VMS Hub

**5.1 General communication requirements**

1. The I-VMS device must provide GSM/GPRS based communications through a transceiver embedded within the I-VMS device to transmit position reports. The antenna must also be contained within the I-VMS device.
2. The service used must be capable of roaming across international networks.
3. Following a break of the communication link, at the time a position report is required to be transmitted, the report to be sent must be stored. On restoration of the link, the I-VMS device must be capable of:
* immediately transmitting reports that provide the current position along with an appropriate status code to indicate there had been a broken link;
* and then transmitting all stored reports between those times, earliest first.
1. As a minimum the I-VMS device must be capable of taking position fixes every 1 minute. Further, the I-VMS device must either store each of these position fixes on an internal log for a minimum rolling period of 3 months or captured and stored by the device supplier, then transmitted from the supplier to the UK VMS Hub.

**5.2 Report transmissions**

Once MMO type approval has been granted, then the supplier must integrate with the supplier of the UK VMS Hub to ensure that a secure communication interface has been established as per 5.3 and 5.4 and that the data has been correctly formatted as per Annex B web service specification.

It is required that all data can be continuously transmitted in real time from the Device to the UK VMS hub with not more than one minute delay. The supplier solution must be operated from an I.T environment hosted in the UK or European Union, with a strong preference for UK based hosting. Evidence of the location (area only) must be provided. For further information on the communications interface between the supplier and the UK VMS Hub see section 5.3.

The national reporting frequency to the UK VMS Hub is expected to be set at a rate of every 3 minutes.

However, the I-VMS device supplier should be able to support the potential for different national reporting frequencies. For example, we may require the national I-VMS reporting frequency to the UK VMS Hub is set at a rate of every 3 minutes when located inside the six nautical mile limit of the English coastline and 10 minutes at all other times in English waters. Where the device is able to support different national reporting frequencies through geofence management, I-VMS device suppliers must provide the evidence.

If and when an IFCA's or Devolved Administration’s (DA) reporting frequency differs from the above, they will be managed using pre-defined geofences supplied by the MMO (on behalf of the IFCA or DA) and sent to the device supplier in advance. The vertices/coordinates will relate to an area defined in legislation. **Suppliers must not interfere, amend, alter, or reduce the coordinates contained within the geofence without strict permission from the MMO.**

A set of geofences depicting the English extent of the six nautical mile limit will be provided to approved suppliers. Below details the volume of vertices to be expected within the six nautical mile geofences.

1. England Main\_6nm = Vertex count 10,854
2. North West\_6nm = Vertex count 2,244
3. Scilly Isles\_6nm = Vertex count 529

Image of the English sections of the six nautical mile limit



These geofences should not be stored on devices unless they have sufficient memory capacity to accept them unaltered. The optimum solution would be that geofences are stored on a supplier’s server which still enables the device to alter its reporting rate when in a geofenced area.

Arrangements must be put in place by suppliers to enable vessel owners to be charged for the communication of all transmitted reports.

**5.3 Communications interface between supplier and the UK VMS Hub**

1. The operational data flow for a newly integrated supplier hub or device will be bi-directional. That is, the need to exchange data for;
* Establishing a secure connection
* API response codes from the UK VMS Hub to the Supplier Hub or device
* Data transmissions from the Supplier Hub or device to the UK VMS Hub for vessel location records

Additional data requests (See Annex C for polling and ‘IN PORT’ requirements)

If additional capabilities are provided, then the need to exchange data for the

following will also apply;

* API requests from the UK VMS Hub to the Supplier Hub or device for a range of vessel location records
* API requests from the UK VMS Hub to the Supplier Hub or device instructing the device to send location reports at shorter intervals
* Data transmissions from the Supplier Hub or device to the UK VMS Hub for vessel location records as the result of a polling request
1. The communications interface between the supplier and the UK VMS Hub must use WSDL (refer to Annex B) specified as follows:
* all position reports transmitted by the device must be exchanged as XML files and must be based on web services using communication protocol SOAP v1.2 over HTTPS (TLS 1.2) internet protocol.

**Using communication protocol SOAP:**

* for each communication two asynchronous one-way message connections are established between each SOAP node: one with the message and one with the acknowledgement;
* the UK VMS Hub will acknowledge all data reports from the supplier using the SOAP protocol;
* the supplier shall monitor that any sent message to the UK VMS Hub is acknowledged;
* for security a 2-way SSL (TLS 1.2) shall be used when an internet connection (HTTPS) is established;
* data security, based on a two-way certification using PKI digital keys, URL, and IP addresses, is required for all communications over the internet between the supplier and UK VMS Hub.

**5.4 Security**

In line with ISO/IEC 27001 and industry best practice the supplier needs to provide IT security management. Security patching, bug fixes or issues identified need to be resolved in timely manner, in line with industry best practice, and are the responsibility of the supplier to resolve.

The supplier will ensure appropriate security and integrity of the data, including protection against unauthorised or unlawful access to the data, tampering with the data, corruption of the data and against accidental loss, destruction or damage, using appropriate technical or organisational measures in order to protect the integrity and confidentiality of the data.

# 6. Additional Data Destinations

**6.1 Additional destinations for I-VMS position reports**

1. With the agreement of the vessel owner, (and where appropriate at the owner’s expense), the I-VMS device may be configured to transmit I-VMS reports, to additional destinations, (e.g., vessel owner, their agent, or producer organisation systems) as long as such transmissions do not interfere with the priorities for reporting to the UK VMS Hub and data protection rules are followed. Provision of this service is the sole responsibility of the supplier.
2. Device alert system for vessel owners: vessel owners must have the capability to check whether their device is transmitting data in line I-VMS reporting regulations.

# 7. Installation and support

**7.1 Installation**

1. External electronic indicators must be located where clearly visible to the master while helming the vessel (e.g., inside the wheelhouse), to indicate that the vessel’s I-VMS primary power supply is connected to the device (see section 1.4c).
2. All I-VMS device mechanisms (such as software, communication scripts and I-VMS device serial numbers) for reporting and other functionality must be pre-loaded before the I-VMS device is sealed and installed.
3. It must be possible to securely fit the components of the I-VMS device to the infrastructure of the vessel. However, the supplier (or sub-supplier) must ensure the I-VMS transponder that obtains GPS fixing is securely attached to the vessel and cannot be removed or damaged by routine fishing operations.
4. **The I-VMS device must not be obstructed or blocked in any way to prevent transmission of data.**
5. The supplier (or sub-supplier) must install I-VMS devices at fishing ports throughout the UK. Engineers from sub-suppliers may be used by the supplier provided they are trained in the I-VMS device installation process. The majority of vessels will be located at UK ports listed in Annex A. Arrangements must also be allowed for installations in other UK locations.
6. If engineers from sub-suppliers are used for repair of the I-VMS device, the supplier must ensure that these personnel are authorised and trained in maintenance/installation procedures, to ensure that when the I-VMS device is reinstalled on vessel, its security status has been kept and no tampering has been conducted or can be conducted
7. Suppliers must endeavour to meet the I-VMS project installation rollout timeframes. Failure may result in fishers unable to secure funding reimbursement from those suppliers unable to meet the stipulated schedule. Please refer to the I-VMS condition of participation document.
8. Prior to installation, supplier or engineer must inform MMO the vessel details (name of vessel and PLN), model of the device and serial number by sending an email to ivms@marinemanagement.org.uk with ‘**Applicant Name; IVMS Installation - Vessel and Device Details**’ clearly denoted in the subject header, to allow the linking between the device and vessel record to be done in UK VMS Hub.
9. Following completion of installation, engineers must also provide to MMO by sending an email to ivms@marinemanagement.org.uk with ‘**Applicant Name; IVMS Installation - Completion Evidence**’ clearly denoted in the subject header, to provide evidence of the work conducted by using the agreed supplier device installation paperwork. This must confirm the successful installation and include as a minimum the following;
* Name of engineer and company
* Date, time, and location of installation
* Vessel details (name of vessel and owner, PLN)
* Model of device and serial number
* Installation start and finish times
* Confirmation device transmitting data
* Photo evidence of device installed on vessel

**7.2 Support**

1. The I-VMS device firmware, software, communication scripts, geofencing, reporting frequency etc. must be upgradeable over the communication links whilst at sea as well as from shore-side engineer visits.

|  |  |  |
| --- | --- | --- |
| **Item** | **Provider** | **Installation and Upgrades** |
| Firmware |  | Supplier |
| Software |  | Supplier |
| Communication Scripts |  | Supplier |
| Geofencing | MMO (on behalf of IFCAs and DAs) | Supplier |

1. In the event of the Authority changing its UK VMS Hub Provider the supplier must provide in a timely way such development resource as required to redirect all transmissions from installed I-VMS devices to an alternative UK VMS Hub during the term of the device’s contract and provide testing response to both the nominated Authority’s Test Manager and Project Manager for this transition and the newly appointed provider of the replacement UK VMS Hub.
2. If the Authority does not receive I-VMS data transmission and it is affecting the Authority's vessel monitoring capability then the Authority may raise the issue with the supplier directly for investigation, prior to conducting a full investigation with the fisher or fishers affected.

# Annex A: List of ports

**Please note this is not an exhaustive list.**

* Aldburgh (beach)
* Aldingham
* Amble
* Appledore
* Arnside
* Axmouth
* Bardsea
* Barling
* Barnstaple
* Barrow
* Beer
* Bembridge
* Bideford
* Blakeney
* Blyth
* Bognor Regis
* Boscastle
* Boston
* Bradwell
* Brancaster
* Branscombe
* Braunton
* Bridlington
* Brightlingsea
* Brighton
* Brighton & Selsey
* Brixham
* Broadstairs
* Bude
* Budleigh Salterton
* Burham-on-Crouch
* Cadgwith
* Caister (beach)
* Chapel Point (beach)
* Charlestown
* Chichester Harbour
* Church Cove
* Clacton (beach)
* Cley (beach)
* Clovelly
* Coverack
* Cowes
* Cromer (beach)
* Dartmouth
* Deal (beach)
* Dover
* Dungeness
* Dungeness (beach)
* East Runton(beach)
* Eastbourne
* Exmouth
* Falmouth Est
* Faversham
* Felixstowe Ferry
* Filey
* Flamborough Head
* Flookburgh
* Folkestone
* Foulney Island
* Fowey
* Gibraltar Point
* Gillan
* Gorleston
* Gorran Haven
* Gosport
* Grange-over-sands
* Great Yarmouth
* Grimsby
* Guernsey
* Hamble
* Harrington
* Hartlepool
* Harwich
* Hastings
* Haverigg
* Hayle
* Helford
* Herne Bay
* Heysham
* Holehaven Creek
* Hornsea
* Hull
* Hythe
* Hythe (beach)
* Ilfracombe
* Instow
* Ipswich
* Isle of Man
* Isle of Scilly
* Jersey
* Keyhaven
* Kilnsea
* Kings Lynn
* Knott End
* Lancaster
* Langstone
* Leigh-on-Sea
* Littlehampton
* Lizard
* Looe
* Lowestoft
* Lyme Regis
* Lymington
* Lynmouth
* Maldon
* Manningtree
* Margate
* Marske
* Maryport
* Mevagissey
* Milbrook
* Millom, (Lancashire)
* Minehead
* Morecambe
* Morston
* Mousehole
* Mudeford
* Mullion
* Mundesley (beach)
* Newbigging
* Newhaven
* Newlyn
* Newquay
* North Shields
* Orford
* Overstrand (beach)
* Padstow
* Paglesham
* Pakefield (beach)
* Par
* Parton
* Peel Island
* Penberth
* Penzance
* Plymouth
* Polkerris
* Polperro
* Poole
* Port Gaverne
* Port Isaac
* Port Loe
* Port Quin
* Porthgwarra
* Porthoustock
* Portland
* Portleven
* Portreath
* Portscatho
* Portsmouth
* Pothallow
* Potheras Cove
* Queenborough
* Ramgate
* Ramsgate
* Ravenglass
* Redcar
* Roa Island
* Robinhood's Bay
* Rochester
* Rochester
* Rock
* Roosebeck
* Runswick Bay
* Rye
* Salcombe
* Saltburn
* Sandwich
* Scarborough
* Sea Palling (beach)
* Seaham
* Seahouses
* Seascale
* Selsey Bill
* Sennen
* Sheerness
* Sheringham (beach)
* Shoreham-by-Sea
* Silloth
* Sizewell (beach)
* Skinnigrove
* South Gare
* South Shields
* Southend-on-sea
* Southwold
* St Agnes
* St Ives
* Staithes
* Sunderland
* Sussex
* Swanage
* Teignmouth
* Thornham
* Torquay
* Trenow
* Tunstall
* Ulverston
* Wallasea
* Walney
* Walton
* Watchet
* Watermouth
* Wells
* West Bay
* West Mersea
* Weybourne (beach)
* Weymouth
* Whitburn
* Whitby
* Whitehaven
* Whitstable
* Winterton-on-Sea (beach)
* Withernsea
* Wivenhoe
* Workington
* Yarmouth

# Annex B: UK VMS Hub device integration - API WSDL



# Annex C: ‘Polling’ and ‘IN PORT’ requirements if supplied

**Polling -**

Polling is a mechanism used by the UK VMS Hub to request current and/or past positions from the I-VMS device.

If supplied the device must be able to respond to a polling request or a series of scheduled poll requests from the UK VMS Hub for:

* the vessel’s current position;
* a download of position reports stored internally for a time period specified in the request

I-VMS devices must be capable of responding in real time to poll requests regardless of whether it is directly powered or running on battery, providing it has sufficient power to do so.

I-VMS Device's internal log must be capable of being interrogated remotely by poll request from the UK VMS Hub, that specifies the dates and times for which reports are required, to enable the MMO to download this data electronically for the required period.

Poll requests must be transmitted via GPRS or Satellite based communications service and the poll responses must be received via the same communication channel used for the request.

I-VMS Device will be required to identify incoming poll requests, prioritise, and transmit these via the appropriate communication channel. Poll requests may be for a single position report, a series of stored reports, or an instruction to the device to send I-VMS reports at shorter intervals (which may be as little as 1 minute).

The communications interface between the Supplier and MMO will use web services specified as follows:

* The supplier shall acknowledge all poll requests from the UK VMS Hub using the SOAP protocol;
* All poll requests and responses will be exchanged as XML files and shall be based on web services using the communication protocol SOAP v1.2 over HTTPS internet protocol.

The latency times are specified as follows:

* the execution of poll requests and the processing of poll responses by the supplier to the UK VMS Hub should not exceed 10 minutes for each poll request, (It is accepted that a poll request representing larger volumes may exceptionally exceed this)

With reference to 6.1(a), if the I-VMS device is configured to transmit I-VMS reports to additional destination (e.g., vessel owner, their agent, or producer organisation systems), the supplier must ensure such transmission does not contain position reports provided in response to Authority poll requests.

**IN PORT functionality -**

Where an ‘IN PORT’ function is offered the I-VMS device must enable the master of the vessel to be able to switch off the I-VMS device (only when in port). This is to be provided by way of an in-port button.

If supplied, the function must adhere to the principles below.

1. The I-VMS device will suspend the transmission rate of I-VMS reporting until the vessel has re-established power or leaves port from its stationary position (whichever happens first). Whilst deemed ‘IN PORT’, activated by the fisher, the I-VMS device must regularly between 4 to 8 hours and check to ensure the position has not changed by a great margin.
2. If the position has changed by a maximum of at least 500 metres from original in port position, the I-VMS device must resume I-VMS reporting at the correct rate with immediate effect through whatever power the device has available.
3. When the vessel master powers up the vessel and switches the ‘IN PORT’ function off, the I-VMS device must transmit a position report with immediate effect, which must correlate to the position at the time of switch off. If it does not and is more than 500 metres from the original position the position report should contain an appropriate status code. Please refer to 4.2(a)
4. Suppliers must ensure that if the ‘IN PORT’ function has been pressed whilst the vessel is at sea, the device does not suspend the data transmissions. This is to eliminate any instances where the ‘IN PORT’ function has been enabled during a fishing operation which could suspend any positional information being generated and thus placing the vessel in breach of reporting conditions.

If an ‘IN PORT’ service cannot deliver on all of these principles, **it must not be offered to the fishing industry.**

1. <https://consult.defra.gov.uk/marine-management/introduction-of-inshore-vessel-monitoring-systems/> [↑](#footnote-ref-2)
2. <https://www.iecee.org/about/what-it-is/> [↑](#footnote-ref-3)