# Draft Use Cases - 2022-09-21

The following use cases are examples to provide input for the development of technical service specifications (WG2).

General descriptions on exchange of routes in the S-421 format in described in the Annex of S-421 description in detail.   
  
The below Use Cases include examples of data needed, consult document *VTS51-9.1.6.1 - Appendix 1, MS 1 - 3, Information requirements* for further possible datasets needed.

**Use Case 1**

Use-case (name): Pre-arrival route reporting

Description: Vessel sends prior to its arrival the intended route through the VTS area to the VTS. VTS validates the intended route or sends a recommended route to the vessel. Vessel approves the recommended route.

Actors: Vessel, ECDIS/other on board systems , VTS

Frequency of Use: Typically triggered before or when entering VTS area.

Pre-conditions: The service instance is known to the ECDIS/ECS, or the ECDIS/ECS has access to a service registry in which the service instance can be discovered.

Ordinary Sequence:

1. The route is planned in ECDIS/ECS by the mariner
2. The ECDIS sends intended route, which includes the schedule[including ETA] , to VTS
3. VTS validates the route
4. If the route is recommendable, VTS acknowledges the received route
5. If the route deviates from recommendations, VTS sends new recommended route to the ECDIS/ECS, including justified reason for the changes.
6. The new recommended route is accepted or denied on-board
7. The data is rendered and displayed to the user.

Post-conditions: The vessel's intended route is incorporated in the VTS system.

If the route cannot be agreed, VTS operator contacts the vessel by VHF.

**Use Case 2**

Use-case (name): Pre-arrival / arrival notification

Description: Vessel sends pre-arrival report with information relevant to the VTS/destination

Actors: Vessel, ECDIS/other on board systems , VTS

Frequency of Use: Typically triggered once or when the information changes.

Pre-conditions: The service instance is known to the on-board system, or the on board system has access to a service registry in which the service instance can be discovered.

Ordinary Sequence:

1. The on-board system requests reporting requirements from the VTS
2. The VTS provides the requirements automatically, including what are the mandatory elements
3. On-board system compiles the information required
4. On-board system sends the report with all of mandatory information to VTS
5. VTS validates the information
6. In case of failure VTS asks for revised information
7. if succeeded, VTS acknowledges the received report

Post-conditions: The status of vessels report, and validated reporting information is incorporated in the VTS system and if needed shared to other stakholders.

**Use Case 3**

Use-case (name): Retrieve VTS Navigational Information.

Description: When entering the VTS area ship-user requests navigational information from the VTS using ECDIS/ECS.

Actors: Mariner, ECDIS/ECS, VTS

Frequency of Use: Typically triggered before vessel enters VTS area or leaves berth and the information is updated until leaves the VTS area.

Pre-conditions: The service instance is known to the ECDIS/ECS.

Ordinary Sequence: Step-by-step description of the process.

1. The vessel enters VTS area.
2. The ECDIS/ECS requests VTS navigational information from the service.
3. The service directly answers the request with timely and relevant information on factors that may influence the vessel's movements during the passage in the VTS area.

Information elements may include:

1. Navigational warnings
2. Navigational situations (including traffic and route information)
3. Status on AtoN's
4. VTS traffic image of vessels and their movements in a VTS area
5. Restrictions and limitations along in the fairways (UKC, Restricted area, speed limits)
6. Changes in the delivery of other services (pilots, tugs, ports)
7. VTS receives acknowledgement that information is received by the vessel
8. The data is rendered and displayed to the user on board.
9. When information changes VTS sends update to the ECDIS/ECS

Post-conditions: The correct VTS navigational information is displayed on the ECDIS/ECS.

**Use Case 4**

Use-case (name): Retrieve VTS Meteorological Information.

Description: Ship based user requests meteorological information from the VTS using ECDIS/ECS.

Actors: Vessel, ECDIS/other on board systems, VTS

Frequency of Use: Typically triggered once before vessel enters VTS area or leaves berth and the information is updated until leaves the VTS area.

Pre-conditions: The service instance is known to the ECDIS/ECS.

Ordinary Sequence: Step-by-step description of the process.

1. The vessel is approaching the VTS area or is leaving the berth.
2. The ECDIS/ECS requests VTS meteorological information from the service.
3. The service directly answers the request with timely and relevant information on meteorological and/or hydrological conditions in the VTS area.

Information elements may include:

1. Meteorological: wind, visibility, temperature etc.
2. Meteorological warnings
3. Hydrographical; tide, water level, waves etc.
4. VTS receives acknowledgement that information is received by the vessel
5. The data is rendered and displayed to the user.
6. When information changes VTS sends update to the ECDIS/ECS

Post-conditions: The correct VTS meteorological information is displayed on the ECDIS/ECS.

**Use Case 5**

Use-case (name): Retrieve information related to the management of ship traffic.

Description: VTS provides vessel permission to proceed, impose conditions or deny entry.

Actors: Mariner, ECDIS/ECS, VTS

Frequency of Use: Typically triggered once before vessel enters VTS area or leaves berth.

Pre-conditions: The service instance is known to the ECDIS/ECS.

Ordinary Sequence #1:

1. Vessel wants to leave berth
2. The mariner sends ETD through ECDIS/ECS to the service and requests permission to leave berth.
3. VTS sends response which may include conditions on when vessel can leave the berth
4. Service delivers response to ECDIS/ECS
5. The mariner acknowledges revised ETD in ECDIS/ECS and send response to the VTS.

Ordinary Sequence #2:

1. The vessel enters VTS area
2. The ECDIS/ECS requests permission to proceed from the service
3. Vessel's planned ETA is suitable. VTS sends new recommended ETA to ECDIS/ECS of the vessel through the service
4. The mariner acknowledges to reach the ETA in ECDIS/ECS and sends response to the service.
5. New ETA is confirmed by the VTS

Ordinary Sequence #3, including route plan:

1. Vessel wants to leave berth
2. The mariner sends in route plan with schedule through ECDIS/ECS to the service. The schedule includes the planned ETD.
3. VTS sends response which may acknowledge the ETD or include new ETD
4. Service delivers response to ECDIS/ECS
5. The mariner acknowledges revised ETD in ECDIS/ECS and send updated route plan with schedule to the VTS.

Ordinary Sequence #4, including route plan:

1. VTS uses intended route and schedule from prearrival information provided by the vessel
2. Vessel's planned ETA is suitable. VTS sends new updated route plan which includes recommended ETA to ECDIS/ECS of the vessel through the service
3. The mariner acknowledges to reach the ETA in ECDIS/ECS send updated route plan with schedule to the VTS.
4. New ETA is confirmed by the VTS

Post-conditions: The correct traffic management information is displayed on the ECDIS/ECS and VTS equipment

**Use Case 6**

Use-case (name): Risk of grounding

Description: In addition to voice communications, the vessel can be provided with an electronic route recommendation or waypoint.

Actors: Mariner, ECDIS/ECS, VTS

Frequency of Use: Typically triggered when unsafe situation is observed by VTS

Pre-conditions: The available digital communication methods of the vessel is known to the VTS.

Ordinary Sequence:

1. VTS detects a potential grounding situation
2. VTS system will alert the VTS operator about the situation
3. VTS system sends information automatically or triggered by the VTS operator to ECDIS
4. No navigational changes are detected by the VTS, or vessel has not acknowledged information from VTS
5. If the risk of grounding is not avoided, VTS send route recommendation, waypoint or course to the vessel
6. VTS operator will contact the vessel by VHF
7. Vessel alters course and updates its route plan

Post-conditions: Vessel continues voyage safely

**Use Case 7**

Use-case (name): Providing VTS route

Description:

Actors: Mariner, ECDIS/ECS, VTS

Frequency of Use:

Pre-conditions:

Ordinary Sequence:

Post-conditions:

**Use Case 8**

Use-case (name): Regulation violations

Description: VTS send information when vessel violates the rules in the VTS area, such as COLREG 10 and VTS act

Actors: Mariner, ECDIS/ECS, VTS

Frequency of Use:

Pre-conditions:

Ordinary Sequence:

Post-conditions: