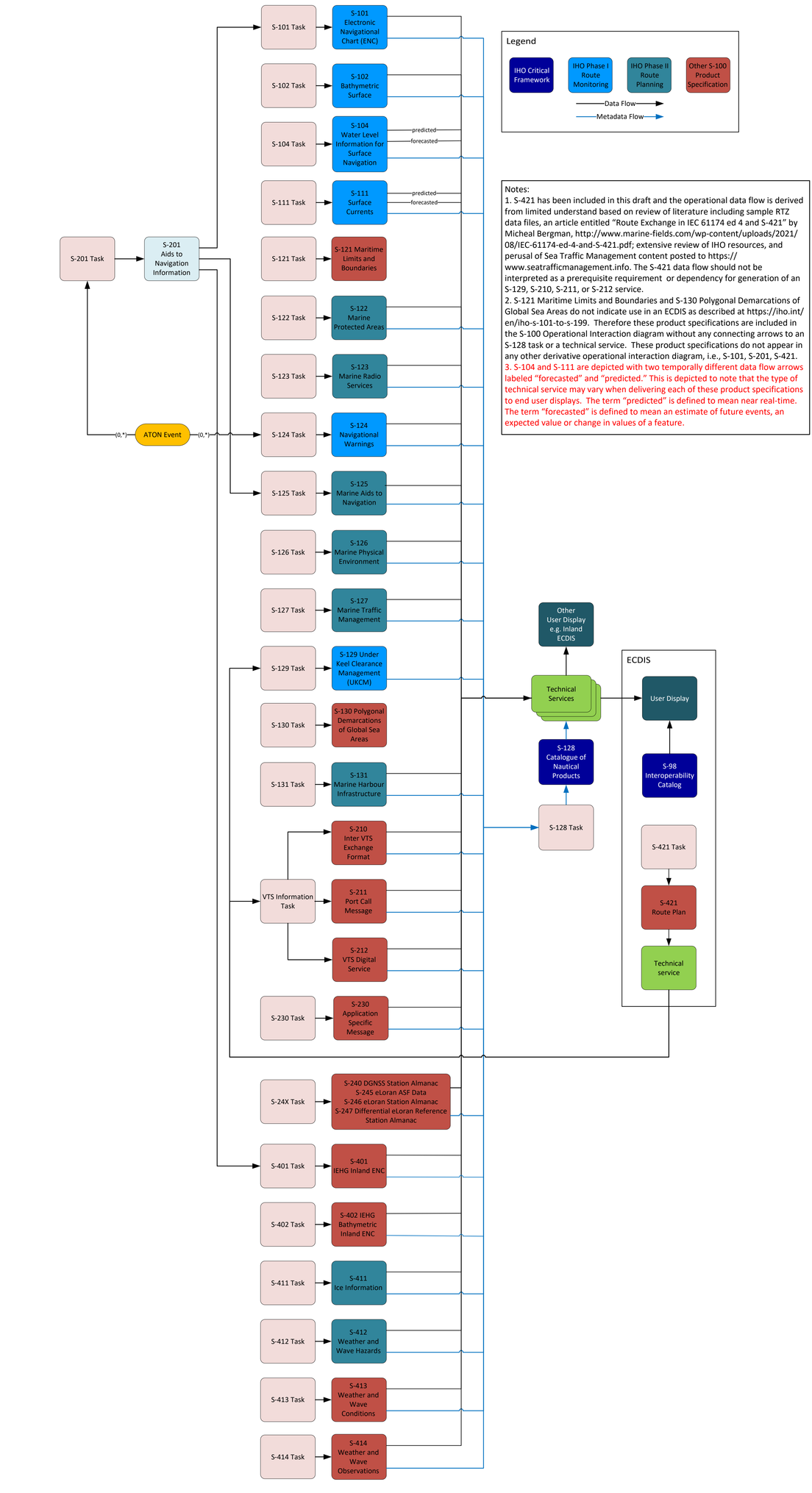
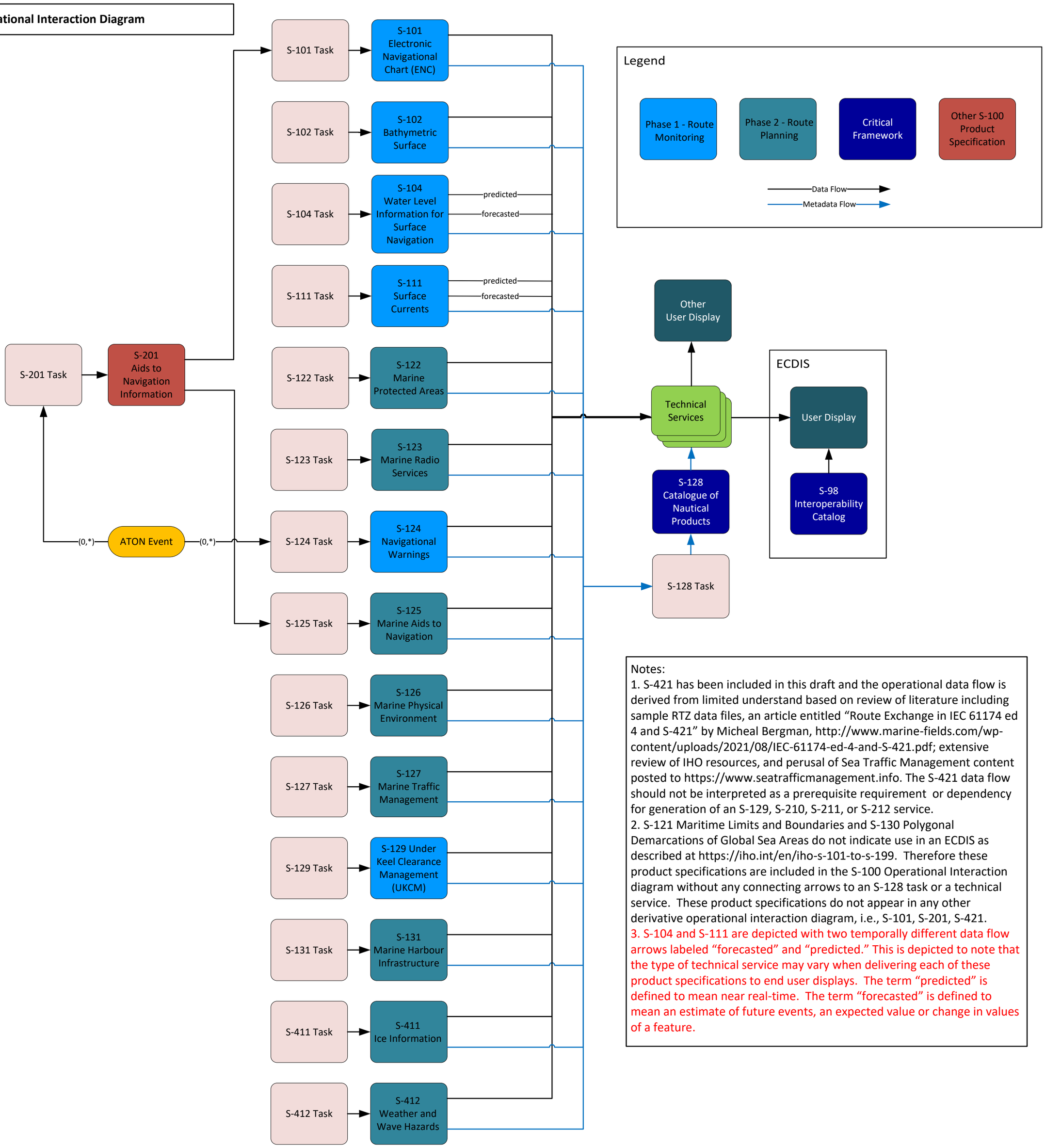
S-100 Operational Interaction Diagram



Notes:

1. S-421 has been included in this draft and the operational data flow is derived from limited understand based on review of literature including sample RTZ data files, an article entitled “Route Exchange in IEC 61174 ed 4 and S-421” by Micheal Bergman, http://www.marine-fields.com/wp-content/uploads/2021/08/IEC-61174-ed-4-and-S-421.pdf; extensive review of IHO resources, and perusal of Sea Traffic Management content posted to https://www.seatrafficmanagement.info. The S-421 data flow should not be interpreted as a prerequisite requirement or dependency for generation of an S-129, S-210, S-211, or S-212 service.
2. S-121 Maritime Limits and Boundaries and S-130 Polygonal Demarcations of Global Sea Areas do not indicate use in an ECDIS as described at https://iho.int/en/iho-s-101-to-s-199. Therefore these product specifications are included in the S-100 Operational Interaction diagram without any connecting arrows to an S-128 task or a technical service. These product specifications do not appear in any other derivative operational interaction diagram, i.e., S-101, S-201, S-421.
3. S-104 and S-111 are depicted with two temporally different data flow arrows labeled “forecasted” and “predicted.” This is depicted to note that the type of technical service may vary when delivering each of these product specifications to end user displays. The term “predicted” is defined to mean near real-time. The term “forecasted” is defined to mean an estimate of future events, an expected value or change in values of a feature.

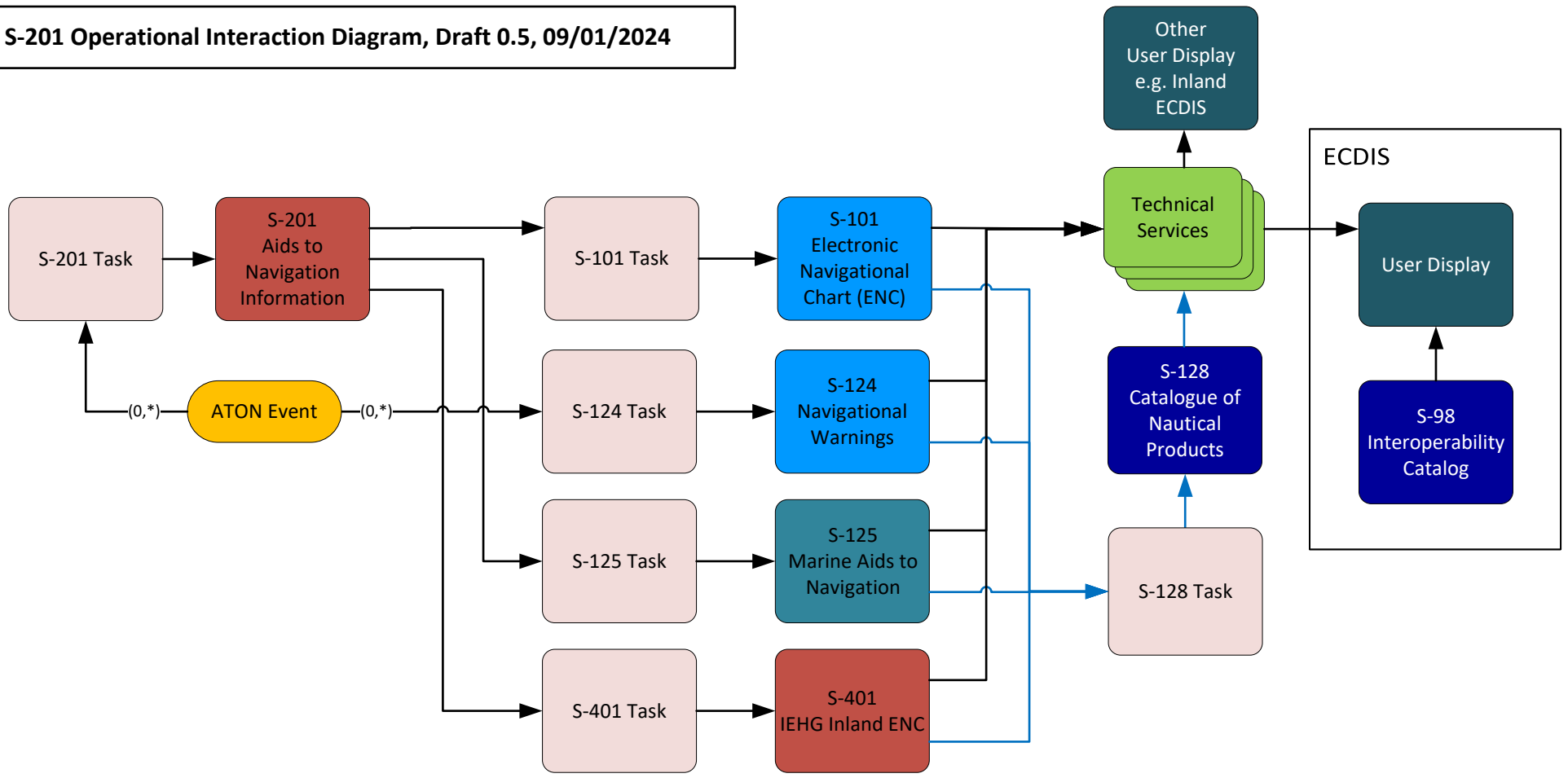
S-101 Operational Interaction Diagram



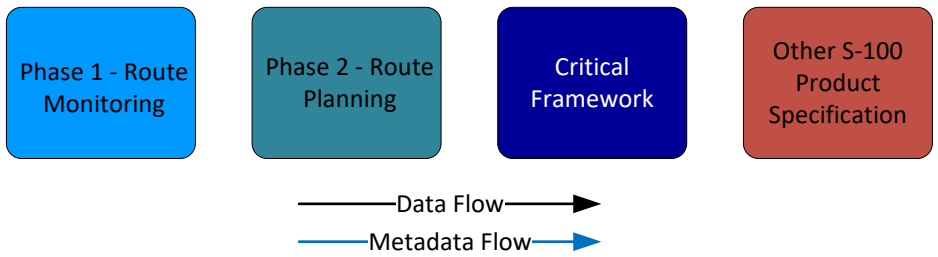
Notes:

1. S-421 has been included in this draft and the operational data flow is derived from limited understand based on review of literature including sample RTZ data files, an article entitled “Route Exchange in IEC 61174 ed 4 and S-421” by Micheal Bergman, http://www.marine-fields.com/wp-content/uploads/2021/08/IEC-61174-ed-4-and-S-421.pdf; extensive review of IHO resources, and perusal of Sea Traffic Management content posted to https://www.seatrafficmanagement.info. The S-421 data flow should not be interpreted as a prerequisite requirement or dependency for generation of an S-129, S-210, S-211, or S-212 service.
2. S-121 Maritime Limits and Boundaries and S-130 Polygonal Demarcations of Global Sea Areas do not indicate use in an ECDIS as described at https://iho.int/en/iho-s-101-to-s-199. Therefore these product specifications are included in the S-100 Operational Interaction diagram without any connecting arrows to an S-128 task or a technical service. These product specifications do not appear in any other derivative operational interaction diagram, i.e., S-101, S-201, S-421.
3. S-104 and S-111 are depicted with two temporally different data flow arrows labeled “forecasted” and “predicted.” This is depicted to note that the type of technical service may vary when delivering each of these product specifications to end user displays. The term “predicted” is defined to mean near real-time. The term “forecasted” is defined to mean an estimate of future events, an expected value or change in values of a feature.

S-201 Operational Interaction Diagram, Draft 0.5, 09/01/2024

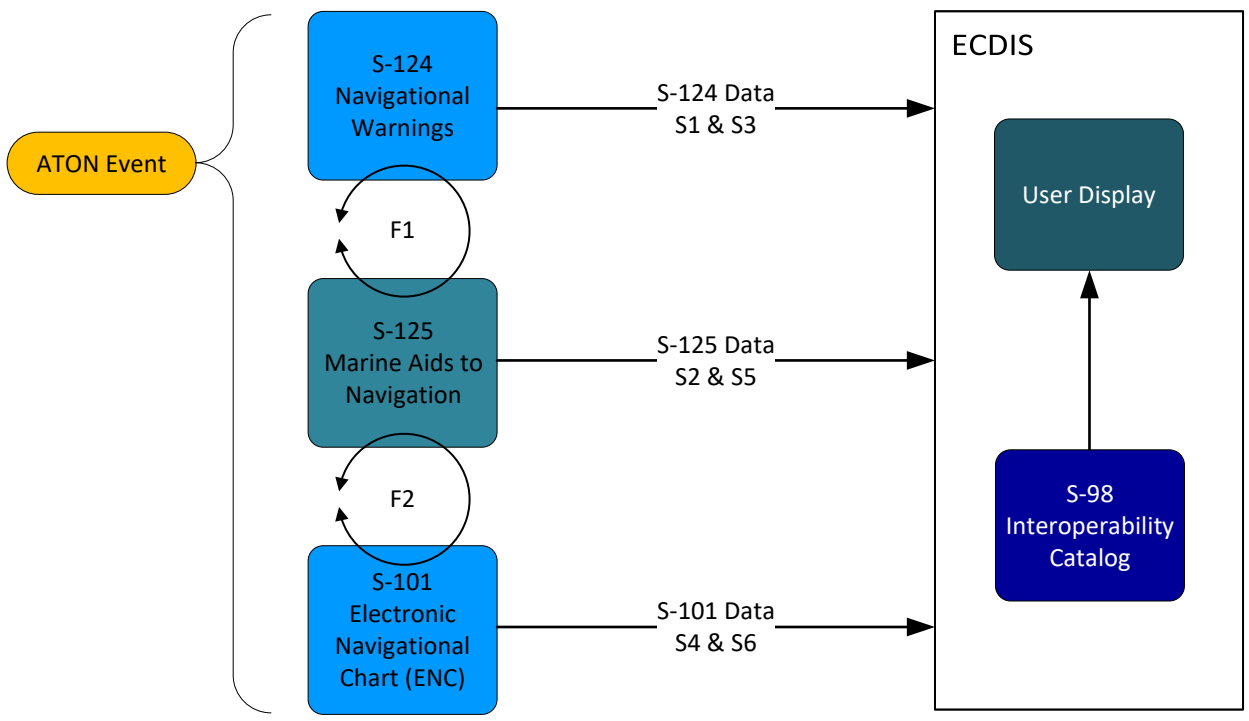


Legend



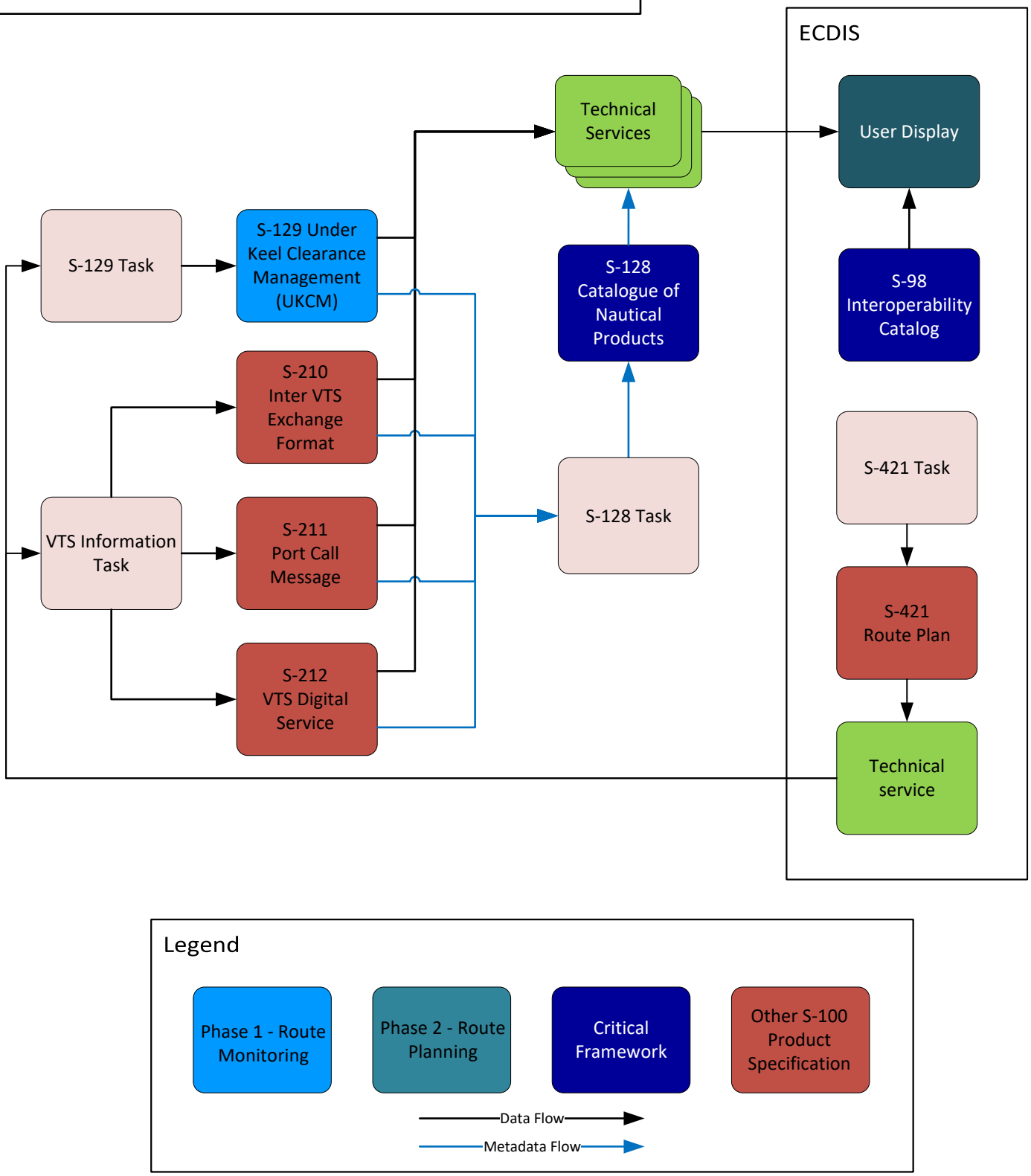
NOTE: An ATON Event includes navigation safety information such as AtoN casualties or changes which may impact navigational safety; notification of temporary changes, advanced notice of changes, and proposed changes to ATON. Tasks associated with an ATON Event may be completed independently, sequentially, or concurrently. See the Sequence Diagram below.

S-124, S-125, S-101 Sequence Diagram

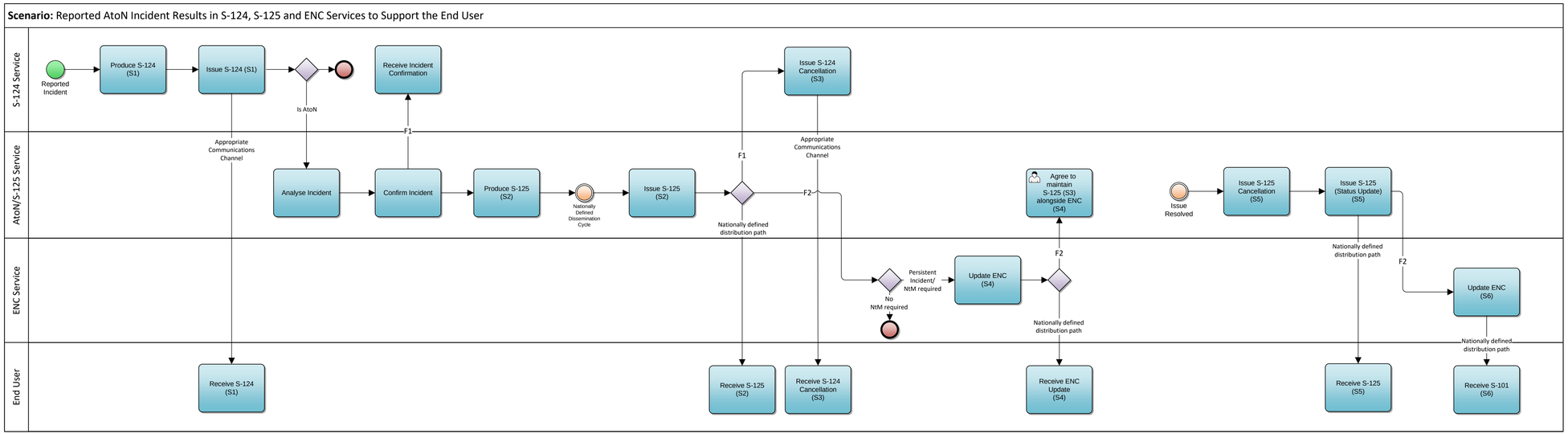


This diagram highlights one of several possible sequence scenarios. The diagram starts with an AtoN Event, such as a discrepancy report, and the creation of an S124 dataset (S1) created and sent to end users. The S124 dataset is received on the end user display using the appropriate communication channel. Within a defined time, e.g.: same day, the incident is analysed by the AtoN authority through the F1 feedback loop, which confirms the incident and generates an S125 dataset (S2) issued the next day, as per the nationally defined data dissemination cycle, and then received by the end user display. The publication of the S125 dataset triggers the S124 service via the F1 feedback loop to issue a cancellation dataset (S3) which is received by the end user display. There may be a period of several hours where the incident information is available in the end user system as both S124 and S125 datasets. Fine tuning the F1 feedback loop can virtually eliminate duplication. Moreover, the end user can be trained to easily understand the relationship between the services by way of visualization since S124 will be quite basic, while S125 will be specific to the AtoN information. The issue contained in the S-125 dataset (S2) is picked up in the feedback loop F2 and the ENC service is notified. A dialogue between the S125 service and the ENC service concludes that the incident will persist for a sufficient period resulting in a temporary NtM and a revision (S4) to the relevant ENC. The issue of the revision triggers feedback loop F2, which initiates a dialogue between the S125 service and the ENC service and a decision is taken to maintain both S125 dataset S2 and ENC dataset S4, since it gives an amplification for the end user to the seriousness of the incident. A period of time passes, and the incident is resolved, triggering the S125 service to remove the incident from its service. This triggers feedback loop F2, which results in the ENC service issuing an ENC revision (S6), which remove the temporary notice from the ENC.

S-421 Operational Interaction Diagram



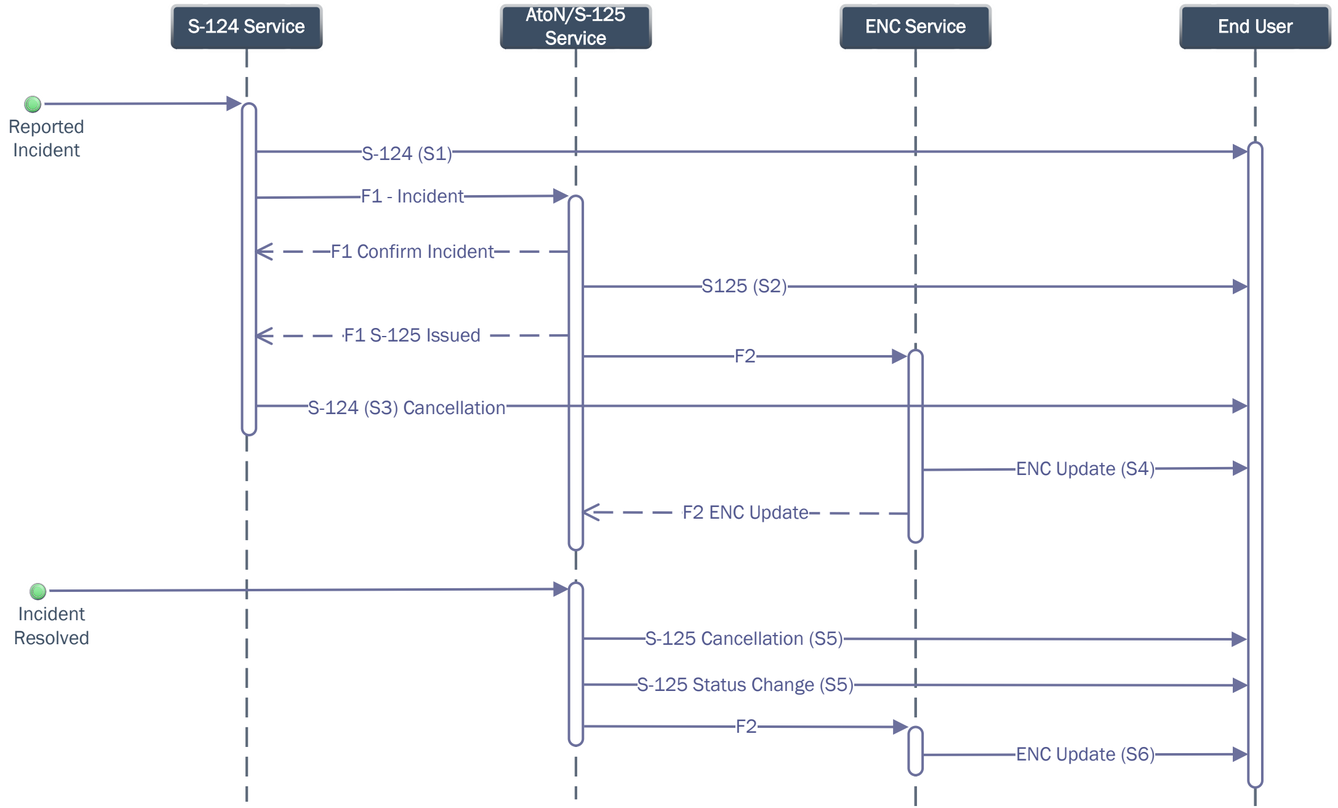
Note: S-421 has been included in this draft and the operational data flow is derived from limited understanding based on review of literature including sample RTZ data files, an article entitled “Route Exchange in IEC 61174 ed 4 and S-421” by Micheal Bergman, http://www.marine-fields.com/wp-content/uploads/2021/08/IEC-61174-ed-4-and-S-421.pdf; extensive review of IHO resources, and perusal of Sea Traffic Management content at https://www.seatrafficmanagement.info. The S-421 data flow should not be interpreted as a prerequisite requirement or dependency for generation of an S-129, S-210, S-211, or S-212 service.



Scenario: Reported AtoN Incident results in S-124, S-125 and ENC services to support the end user.

- An incident of an AtoN nature is reported and a S-124 dataset (S1) is produced and distributed to end users, using the appropriate communication channel.
- Within a defined time, e.g.same day, the incident is analysed by the AtoN Service through the F1 feedback loop, which confirms the incident and generates an S-125 dataset (S2) which is issued the next day, as per the nationally defined data dissemination cycle, and then received by the end user system.
- The publication of the S-125 dataset triggers the S-124 service via the F1 feedback loop to issue a S-124 cancellation dataset (S3) which is received by the end user system. There may be a period of several hours where the incident information is available in the end user system as both S-124 and S-125 datasets, but fine tuning the F1 feedback look can virtually eliminate this duplication.
- The issue of dataset S-125 (S2) is picked up in the feedback loop F2 and the ENC service is notified. A dialogue between the S-125 service and the ENC service concludes that the incident will persist for a sufficient period resulting in a temporary NtM and a revision (S4) to the relevant ENC, which is disseminated by the nationally defined distribution path. The issue of the revision triggers feedback loop F2, which initiates a dialogue between the S125 service and the ENC service and a decision is taken to maintain both S125 dataset S2 and ENC dataset S4, since it gives an amplification for the end user to the seriousness of the incident.
- A period passes, and the incident is resolved, triggering the S-125 service to issue a Cancellation S-125 dataset (S5) for S4 and a new S-125 dataset (S6) updating the status of the AtoN.
- This triggers feedback loop F2, which results in the ENC service issuing an ENC Update (S7), which remove the temporary notice from the ENC.

Scenario: Reported AtoN Incident Results in S-124, S-125 and ENC Services to Support the End User



Scenario: Reported AtoN Incident results in S-124, S-125 and ENC services to support the end user.

- An incident of an AtoN nature is reported and a S-124 dataset (S1) is produced and distributed to end users, using the appropriate communication channel.
- Within a defined time, e.g. same day, the incident is analysed by the AtoN Service through the F1 feedback loop, which confirms the incident and generates an S-125 dataset (S2) which is issued the next day, as per the nationally defined data dissemination cycle, and then received by the end user system.
- The publication of the S-125 dataset triggers the S-124 service via the F1 feedback loop to issue a S-124 cancellation dataset (S3) which is received by the end user system. There may be a period of several hours where the incident information is available in the end user system as both S-124 and S-125 datasets, but fine tuning the F1 feedback look can virtually eliminate this duplication.
- The issue of dataset S-125 (S2) is picked up in the feedback loop F2 and the ENC service is notified. A dialogue between the S-125 service and the ENC service concludes that the incident will persist for a sufficient period resulting in a temporary NtM and a revision (S4) to the relevant ENC, which is disseminated by the nationally defined distribution path. The issue of the revision triggers feedback loop F2, which initiates a dialogue between the S125 service and the ENC service and a decision is taken to maintain both S-125 dataset S2 and ENC dataset S4, since it gives an amplification for the end user to the seriousness of the incident.
- A period passes, and the incident is resolved, triggering the S-125 service to issue a Cancellation S-125 dataset (S5) for S4 and a new S-125 dataset (S6) updating the status of the AtoN.
- This triggers feedback loop F2, which results in the ENC service issuing an ENC Update (S7), which remove the temporary notice from the ENC.