



ModalNET: The digital backbone of the SEAMLESS logistics ecosystem



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From vessel autonomy to integrated logistics

Operation challenges

- Information distributed across vessels, ports, terminals and logistics providers
- Maritime operations disconnected from hinterland planning
- Different planning and execution systems
- Disruptions affecting interconnected transport legs
- Autonomous and remotely supervised operations

ModalNET supports the SEAMLESS objectives

ModalNET acts as the digital integration and coordination platform of the SEAMLESS ecosystem.

1. **Connect:** Integrates autonomous vessel operations, ports, terminals, optimisation services and external logistics platforms.
2. **Coordinate:** Synchronises vessel schedules, consignments, transport modes, bookings and operational events.
3. **Monitor:** Provides end-to-end visibility through event aggregation, timeline-based traceability and a shared operational picture.
4. **Adapt:** Supports alternative route calculation, synchromodal planning and replanning when disruptions occur.
5. **Secure:** Enables cybersecure, interoperable and scalable information exchange between heterogeneous systems.

ModalNET Functionalities Overview

Logistics coordination

- Loop service management
- Vessel schedule management
- Consignment registration and lifecycle management
- Multimodal transport coordination

Situational awareness

- Real-time operational monitoring
- Event aggregation from multiple systems
- Timeline-based event traceability

Intelligent transport planning

- Dynamic route calculation (CERL)
- Synchromodal transport support
- Re-routing support in case of disruptions

System integration

- Integration with ROC
- Integration with VCOP
- Integration with logistics platforms

Vessel Schedule Management

Provide visibility and coordination for autonomous vessel services operated within SEAMLESS

Main functionalities

- Creation of loop services or recurring vessel services
- Definition of ports in the service
- Management of arrival and departure schedules
- Automatic generation of vessel schedules

Benefits

- Improved planning visibility
- Better coordination between ports and logistics actors
- Reduced uncertainty in transport operations



Vessel Schedule Management

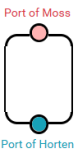
Loop services

Transport query, please select the search criteria Items: 10 1-7 of 7 Update

Search Moss Equal Start Contains Ends Order By Date of update Ascending Descending From Until

New service

Service	Carrier	Start date	End date	Frequency of service
Moss-Horten Wednesda...	ASKO Maritime AS	27-05-2026 00:00	29-05-2026 00:00	Each 7 days



Service	Carrier	Start date	End date	Frequency of service
Moss-Horten Tuesday 12...	ASKO Maritime AS	26-05-2026 00:00	28-05-2026 00:00	Each 7 d



Loop service

Service edition

Service data

Service *	IMO	A Vessel name *	Carrier *
Moss-Horten Tuesday 12.30	9921776	Marit	ASKO Maritime AS
Start date *	End date *	Frequency of service	Days
26/5/2026	28/5/2026	Each 7	

Ports of call
Select one element to see



Place	Address
Port of Moss	Stengata 1
CP	City
1531	Moss
Province	Country
	Norway
Arrival time *	Arrival offset *
16:30	0 days
Departure time *	Departure offset *
12:30	0 days



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Vessel Schedule Management

Vessel transports

SEAMLESS

SEAMLESS

Home

SEAMLESS

Loop services

Transport schedules

Multimodal

Vessel

Road/Rail

Consignments

Events

Loading and discharging

Administration

Messages

ACCESS

Access Options

Vessel transports

Transport query, please select the search criteria

Items: 10

1 - 2 of 2

Update

Synchronize

Search

Equal

Start

Contains

Ends

As Order By

ETA (Estimated Arrival)

Ascending

Descending

From

Until

Requested

Accepted

Planned

Executing

Finished

Rejected

Cancelled

New Transport

Ports of call

Moss

Horten

Location's name

Port of Moss

City

Moss

Country

Norway

Mode

-

Estimated time of departure

26-05-2026 12:30

Transport view

Transport data

Service

Moss-Horten Tuesday 12.30

Trip Number

Moss-Horten Tuesday 12.30-1

Mode

Maritime

Carrier

ASKO Maritime AS

IMO

9921776

Vessel name

Marit

Start date

26/5/2026

End date

26/5/2026

Ports of call

Select one element to edit

Moss

Horten

Moss

Place

Port of Moss

Address

Stengata 1

CP

1531

City

Moss

Province

-

Country

Norway

Estimated time of arrival

-

Actual time of arrival

-

Estimated time of departure

26/5/2026, 12:30:00

Actual time of departure

-



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Consignment Management

Provide end-to-end management and visibility of transport consignments

Main functionalities

- Consignment registration
- Multimodal consignment support
- Automatic decomposition into modal consignments
- Consignment hierarchy management
- Automatic booking

Benefits

- End-to-end traceability
- Improved operational transparency
- Better coordination across transport modes
- Simplified management of multimodal operations



Consignment Management

Consignments

SEAMLESS

Light



ASKO Transport

Home

SEAMLESS

Loop services

Transport schedules

Multimodal

Vessel

Road/Rail

Consignments

Multimodal

Vessel

Road/Rail

Events

Loading and discharging

Administration

Messages

ACCESS

Access Options

Multimodal consignments

Enquiry of consignments, please select the search criteria Items: 10 1 - 10 of 71 Update

Search Equal Start Contains Ends Order By Ascending Descending From Until

☐ Requested ☐ Accepted ☐ Planned ☐ Executing ☐ Finished ☐ Rejected ☐ Cancelled

New consignment Download Excel

	Consignment	Status	Operation type	Request Date	Consignment Ref.	Associated consign...	Requestor reference	Consignor	Carrier	Agent
	202688846-N	Accepted	-	26/05/26 09:19	202688846-N	202688846-N-Moss-Hort...	NO999320600	ASKO Transport AS	ASKO Maritime AS	-
Consignee: ASKO Oslofjord AS Requested pickup date: 26/05/26 12:30 Requested delivery da...: 04/06/26 00:00 Transport: CE_Moss-Sandei Vestfo...										
Moss Sande i Vestfold										
	202688846	Finished	-	26/05/26 09:19	202688846	202688846-Vestby-Moss	NO999320600	ASKO Transport AS	ASKO Maritime AS	-
Consignee: ASKO Oslofjord AS Requested pickup date: 25/05/26 00:00 Requested delivery da...: 28/05/26 00:00 Transport: CE_Vestby-Sandei Vestfo...										
Vestby Sande i Vestfold										
	202688845	Executing	-	26/05/26 09:17	202688845	202688845-Vestby-Moss	NO999320600	ASKO Transport AS	ASKO Maritime AS	-
Consignee: ASKO Oslofjord AS Requested pickup date: 25/05/26 00:00 Requested delivery da...: 28/05/26 00:00 Transport: CE_Vestby-Sandei Vestfo...										



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Consignment Management

New Consignments



Consignment edition

General data

Consignment hierarchy

Goods

JSON View

Consignment Ref. *

202688845

B/L

Requestor reference

Mode *

Multimodal

Requested pickup date

25/5/2026

Requested delivery date

28/5/2026

Parties

Consignor *

ASKO Transport AS

CIF

NO999320600

Consignee *

ASKO Oslofjord AS

CIF

NO930622974

Carrier *

ASKO Maritime AS

CIF

NO925216534

Agent

CIF

Route

By default, if not origin is specified, the origin identifier shall be the identifier of the sender (consignor). In the same way, if not destination is specified, the destination identifier shall be the identifier of the recipient (consignee).

Origin

Place

ASKO Transport AS

Address *

Delivelen 33

CP *

T540

City

Vestby

Province

Norway

Destination

Place

ASKO Oslofjord AS

Address *

Hanekleiva 76

CP *

3070

City

Sande i Vestfold

Province

Norway

Associated transport

Search across all fields

Source	Transport mode	Origin	Start date	Destination	End date	route	Carrier	Actions
CERL	Multimodal	Vestby	26-05-2026 11:00	Sande i Vestfold	26-05-2026 14:30	Vestby, Moss, Horten, Sande i Vestfold	ASKO Maritime AS	

Items: 10 1 - 1 of 1

Various

Observations

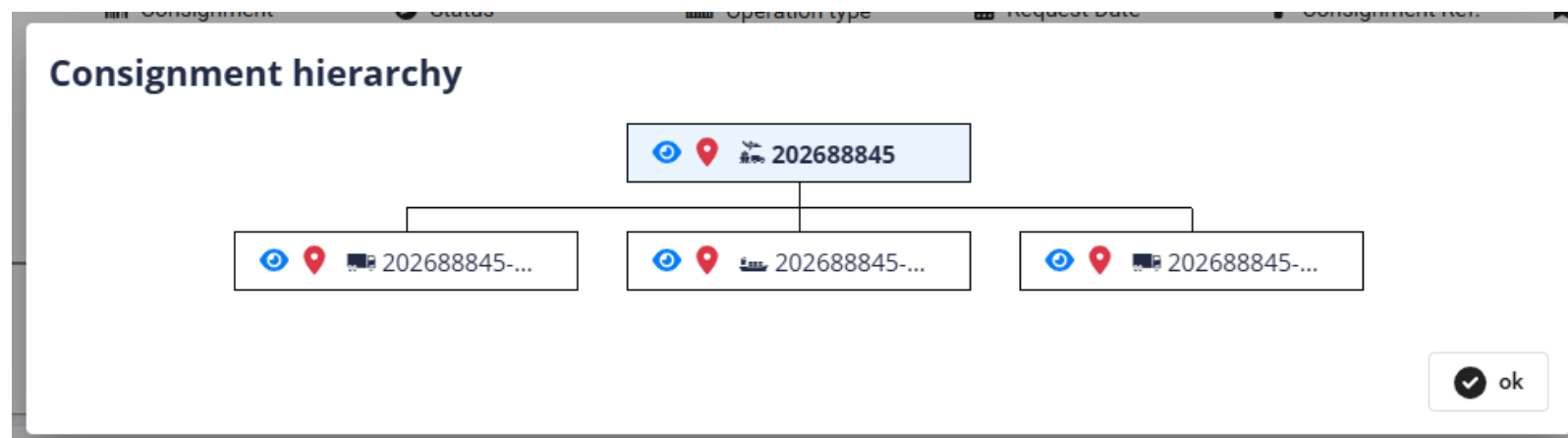
Cancel Save



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Consignment Management

Consignment Hierarchy





ModalNET: The digital backbone of the SEAMLESS logistics ecosystem



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Event Handling and Situational Awareness

Provide a real-time operational picture across the logistics chain

Main functionalities

- Aggregation of events from multiple systems
- Chronological event timelines
- Event filtering and monitoring
- Provides operational traceability
- Integrated with different platforms
 - ROC, VCOP, terminals, logistics platforms

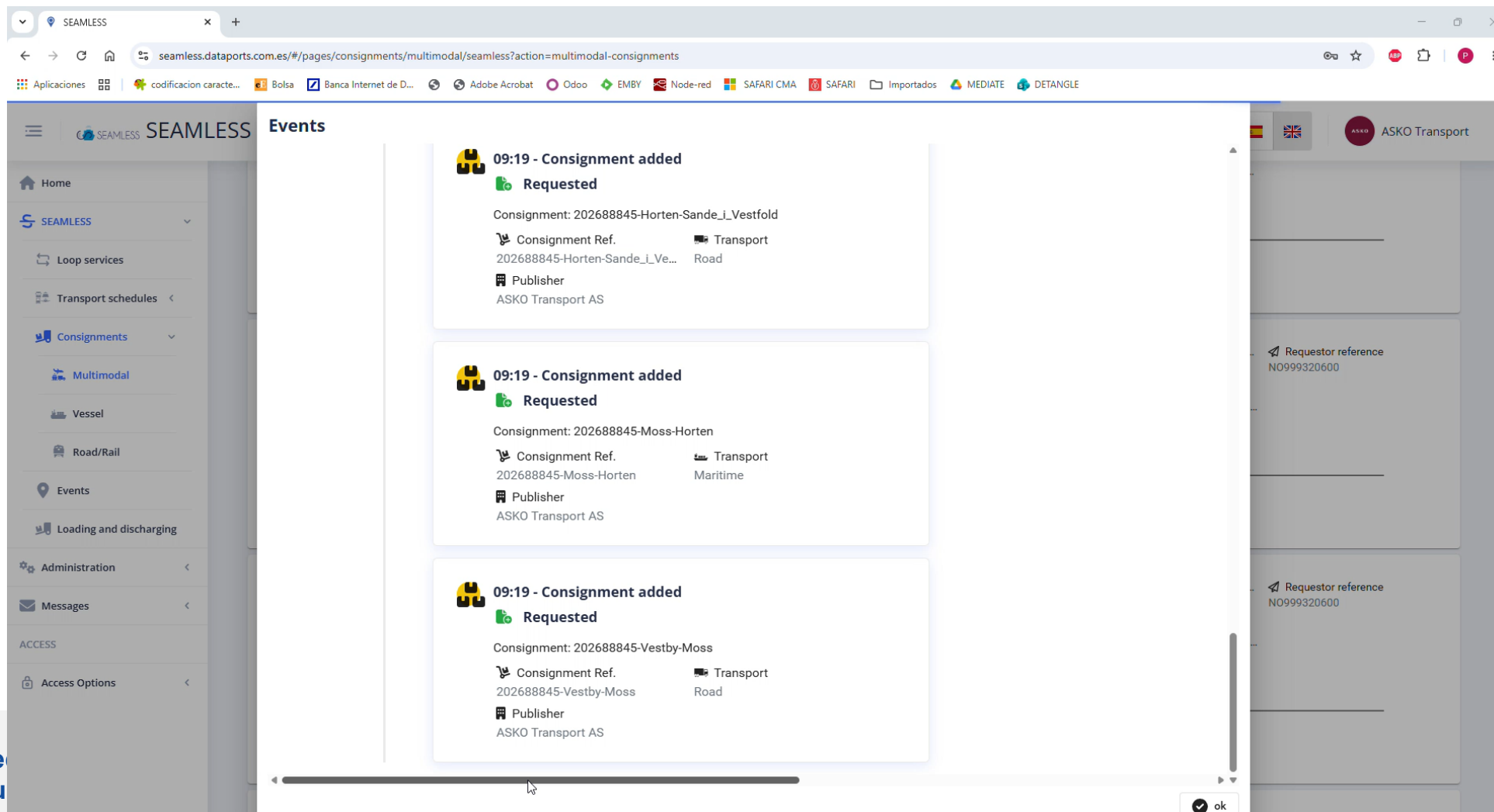
Benefits

- Real-time situational awareness
- Faster reaction to disruptions
- Improved operational coordination
- Full transport lifecycle visibility



Event Handling and Situational Awareness

Consignment Events



The screenshot displays the SEAMLESS web application interface. The browser address bar shows the URL: `seamless.dataports.com.es/#/pages/consignments/multimodal/seamless?action=multimodal-consignments`. The left sidebar contains a navigation menu with the following items: Home, SEAMLESS, Loop services, Transport schedules, Consignments (selected), Multimodal, Vessel, Road/Rail, Events, Loading and discharging, Administration, Messages, ACCESS, and Access Options. The main content area is titled "Events" and lists three consignment events, all occurring at 09:19 and marked as "Requested".

Time	Status	Consignment	Consignment Ref.	Transport	Publisher
09:19	Requested	202688845-Horten-Sande_i_Vestfold	202688845-Horten-Sande_i_Ve...	Road	ASKO Transport AS
09:19	Requested	202688845-Moss-Horten	202688845-Moss-Horten	Maritime	ASKO Transport AS
09:19	Requested	202688845-Vestby-Moss	202688845-Vestby-Moss	Road	ASKO Transport AS

On the right side of the interface, there is a panel for "ASKO Transport" with a language selector (Spanish and English flags) and a "Requestor reference" field showing the value "NO999320600". At the bottom right, there is an "ok" button.

Event Handling and Situational Awareness

Events


SEAMLESS

Light




ASKO Transport

[Home](#)

[SEAMLESS](#)

[Loop services](#)

[Transport schedules](#)

[Consignments](#)

[Multimodal](#)

[Vessel](#)

[Road/Rail](#)

[Events](#)

[Loading and discharging](#)

[Administration](#)

[Messages](#)

[ACCESS](#)

[Access Options](#)

Events

Event query, please select search criteria Items: 10 1 - 10 of 10 [Update](#) [Synchronize](#)

Search: 202688845
 ☐ Equal
 ☐ Start
 ☒ Contains
 ☐ Ends
 Order By: Date
 ☐ Ascending
 ☒ Descending
 From Until

[+ New Event](#)

	Type	Publisher	Date	Place	Transport	Participants
> < 🗑️ 📄 🔍	Pick Up Picked Up Confir...	ASKO Transport AS	26/05/26 15:44	HAVNETERMINAL HORT...	-	-
> < 🗑️ 📄 🔍	Arrival Arrival Confirmed	Kongsberg ROC	26/05/26 13:00	Horten terminal	1202688834 9921776 M...	-
> < 🗑️ 📄 🔍	Departure Departure Con...	Kongsberg ROC	26/05/26 12:08	Moss terminal	1202688833 9921776 M...	-
> < 🗑️ 📄 🔍	Delivery Delivered Confir...	ASKO Transport AS	26/05/26 09:54	HAVNETERMINAL MOSS	-	-
> < 🗑️ 📄 🔍	Pick Up Picked Up Confir...	ASKO Transport AS	26/05/26 09:33	ASKO SENTRALLAGER O...	-	-
> < 🗑️ 📄 🔍	Consignment Booking re...	trackableEvent.status confirmed	26/05/26 09:26	-	CE_Vestby-Sandei Vestfo...	N0999320600



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Loading and Discharging Operations

Provide operational visibility and controlled access to cargo loading and discharging operations

Main functionalities

- Registration of loading and discharging operations
- Dedicated operational view for cargo operations
- Container-level visibility within each operation
- Role-based access management

Benefits

- Improved operational transparency
- Controlled access to operational cargo information
- Enhanced traceability of loading and discharge activities
- Support for secure multi-stakeholder collaboration



Loading and Discharging Operations



SEAMLESS

Light

ASKO Transport

Home

SEAMLESS

Loop services

Transport schedules

Consignments

Events

Loading and discharging

Administration

Messages

ACCESS

Access Options

Loading and discharging operations

Enquiry of loading and discharging operations, please select the search criteria

Items: 10 1 - 10 of 21

Update

Search

Equal Start Contains Ends

Order By Performed date

New operation

ETD

Operation 1779694121412-L-VCOP

Status Finished

Type Load

Transport ID

ETD

Operation 1779694412407-D-VCOP

Status Finished

Type Discharge

Transport ID

ETD

Operation 1779694605444-L-VCOP

Status Finished

Type Load

Transport ID

ETD

Operation 1779263569754-L-VCOP

Status Finished

Type Load

Transport ID

Operation

Transport unit

Quantity: 0

Search

Transport unit ID	Type	Container type	Consignment ID	Confirmed date	
SL8563		22G0	202688845	26-05-2026 13:18	
Provider	Container status	Movement type	Gross mass type	Gross mass value	Gross mass UOM
ASKO Transport AS	Full				

Items: 10 1 - 1 of 1

ok

Automatic Replanning and Rebooking

Ensure transport continuity and operational resilience when cargo is not available on time for the planned vessel departure

Main functionalities

- Reception of cargo not available events
- Automatic creation of a new consignment
- Search for next available vessel trip
- Reassignment of cargo to the new transport plan
- Preservation of traceability between original and replanned consignments

Benefits

- Increased logistics resilience
- Reduced operational disruption impact
- Faster recovery from cargo delays
- Reduced manual replanning effort



Automatic Replanning and Rebooking

Screenshot of the SEAMLESS web application interface showing a list of consignments.

The interface includes a sidebar with navigation options: Home, SEAMLESS, Loop services, Transport schedules, Consignments (Multimodal, Vessel, Road/Rail), Events, Loading and discharging, Administration, Messages, ACCESS, and Access Options.

The main content area displays a table of consignments with columns for Consignment ID, Status, Operation type, Request Date, Consignment Ref., Associated consignm..., and Requestor reference. Below the table, there are two detailed views of specific consignments, each showing a timeline of events.

Consignment 1 (202688846-N):

- Status: Accepted
- Operation type: -
- Request Date: 26/05/26 09:19
- Consignment Ref.: 202688846-N
- Associated consignm...: 202688846-N-Moss-Hort...
- Requestor reference: NO999320600
- Consignor: ASKO Transport AS
- Carrier: ASKO Maritime AS
- Agent: -
- Consignee: ASKO Oslofjord AS
- Requested pickup date: 26/05/26 12:30
- Requested delivery date: 04/06/26 00:00
- Transport: CE_Moss-Sande i Vestfol...
- Timeline: Moss -> Sande i Vestfold

Consignment 2 (202688846):

- Status: Finished
- Operation type: -
- Request Date: 26/05/26 09:19
- Consignment Ref.: 202688846
- Associated consignm...: 202688846-Vestby-Moss
- Requestor reference: NO999320600
- Consignor: ASKO Transport AS
- Carrier: ASKO Maritime AS
- Agent: -
- Consignee: ASKO Oslofjord AS
- Requested pickup date: 25/05/26 00:00
- Requested delivery date: 28/05/26 00:00
- Transport: CE_Vestby-Sande i Vestfo...
- Timeline: Vestby -> Sande i Vestfold

Conclusions

ModalNET is the digital coordination layer of the SEAMLESS ecosystem, enabling interoperable, scalable, and event-driven coordination of autonomous multimodal freight transport operations.

- **Connect:** Autonomous vessels, ports, terminals and logistics operators operate using a common information framework.
- **Awareness:** Schedules, consignments and events are transformed into real-time operational visibility.
- **React:** Disruptions can be detected, evaluated and mitigated through route selection and replanning.





Thank you for your attention



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