

What we learned from you

for the last 6 months

TFMS Seminar 2010

「 Are we on the right track and right speed !? 」

To save one more MT and one more mile

Optimum Ship Routeing

From “Recommendation” to “Communication”



Voyage Planning Service Group
Group Leader OGATA, Mitsuhiro



What we learned from you

for the last 6 months

Optimum Ship Routeing with higher level communication

- mutual trust with Master
- real time Monitoring
- real time Communication



What we learned from you

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何度も何度も、もう一度 Communicationのありかたを 考えよう！

Workshop output

1. Weather routing Optimum Ship Routeing
Recommendation Communication
全く異なるサービス
2. Liner PCTC Bulker Tanker LNG Business Consideration
船種、ビジネス、経営の正体を抑えた取り組みへ
No over simplification
3. 陸上との相互信頼 船長との相互信頼
Mutual Trust with Shore side and offshore side

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Workshop output

4. 現場感覚 User friendly Communication
Real time monitoring

RTA > Weather > Ave.Speed > rpm > FOC

同じ気象条件下での必要とされるOG Speedと
RPMの変化とFOC の変化を共有化する。

必要なタイミングで必要な人が判断できる
MonitoringとCommunication

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What we learned from you

for the last 6 months

Optimum Ship Routeing with higher level communication

▪ Safety 安全性

Dangerous (DASH) /Threshold / (海気象)

Sea Ice (海氷) WNI Sat

Pirates (海賊) 印度洋全体へ拡張

安全目標の設定と共有化 (目標管理型)

三者(船長、陸上、WNI)の合意形成によって、
より合理的な(距離の短い)運航が可能になってきた。

We can save one more mile based on 3 parties
(Master, Operator, WNI) confirmed threshold.

What we learned from you

for the last 6 months

Optimum Ship Routeing with higher level communication

▪ Mutual Trust between the Master

based on real time monitoring

- 現場感覚を捉えた船長との相互信頼

- Real Time Monitoring for Real Time Communication

- 船長と確認すべきこと、運航管理者と確認すべきこと

- Confirming procedure for Master or Operator

What we learned from you

for the last 6 months

Optimum Ship Routeing with higher level communication skill

・目標管理型

Target Management

Schedule

Target RTA

Cost

Target FOC by RPM management

Environmental

Target Emission

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What we learned from you

for the last 6 months

Optimum Ship Routeing with higher level communication skill

・目標管理型による全体最適化

Total Optimization of your fleet

– Safety

– Schedule

– Cost

– Environmental

by Target management

What we learned from you

for the last 6 months

Optimum Ship Routeing with higher level communication skill

- 全体最適化
Total Optimization of your fleet
- 船上と陸上の関係の確認 Policy making
 - 全任 All responsibility
 - 支援 Support
 - 管理 Management
 - 制御 Control

What we learned from you

for the last 6 months

Performance Status Monitoring with Plan, Do, See process

- Liner Business のPro forma Optimization
- 専用船の定時運航化に向けて
from Tramper Fleet Earliest Arrival
to Punctuality Operation
 - Practical Voyage Planning
 - Profitability Monitoring
 - Asset Management

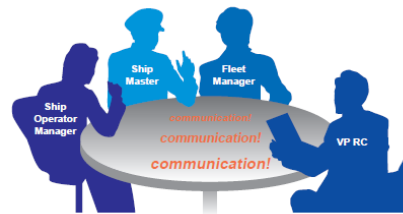
What we learned from you

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Optimum Ship Routeing
with higher level communication skill

Performance Status Monitoring
with Plan, Do, See process

▪ Voyage Planning Risk Communication



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What we learned from you

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何度も何度も、もう一度 Communicationのありがたさを 考えよう！

Dos list やること

顧客にとってよりよいCommunication (Customer Driven)

- 顧客毎の方針に基づく航海計画 (Voyage Planning)

安全性、定時性、経済性、環境性の優先順位

船陸関係 (全任、支援、管理、制御)

(InstructionとしてのOSR / 基本情報としてのOSR)

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何度も何度も、もう一度 Communicationのありかたを 考えよう！

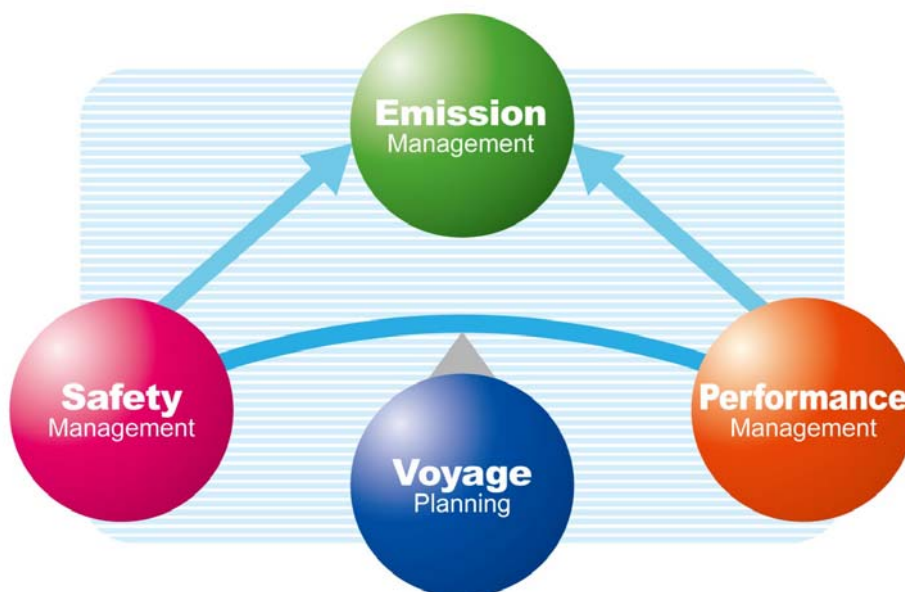
Don'ts list やらないこと

自分たちの都合のCommunication (Arrogant service)

- Over Simplification
- Risk Over Estimate
- 漫然とした航路選定
- 文脈、意図のない混乱を来すCommunication
- Dataのみの提供

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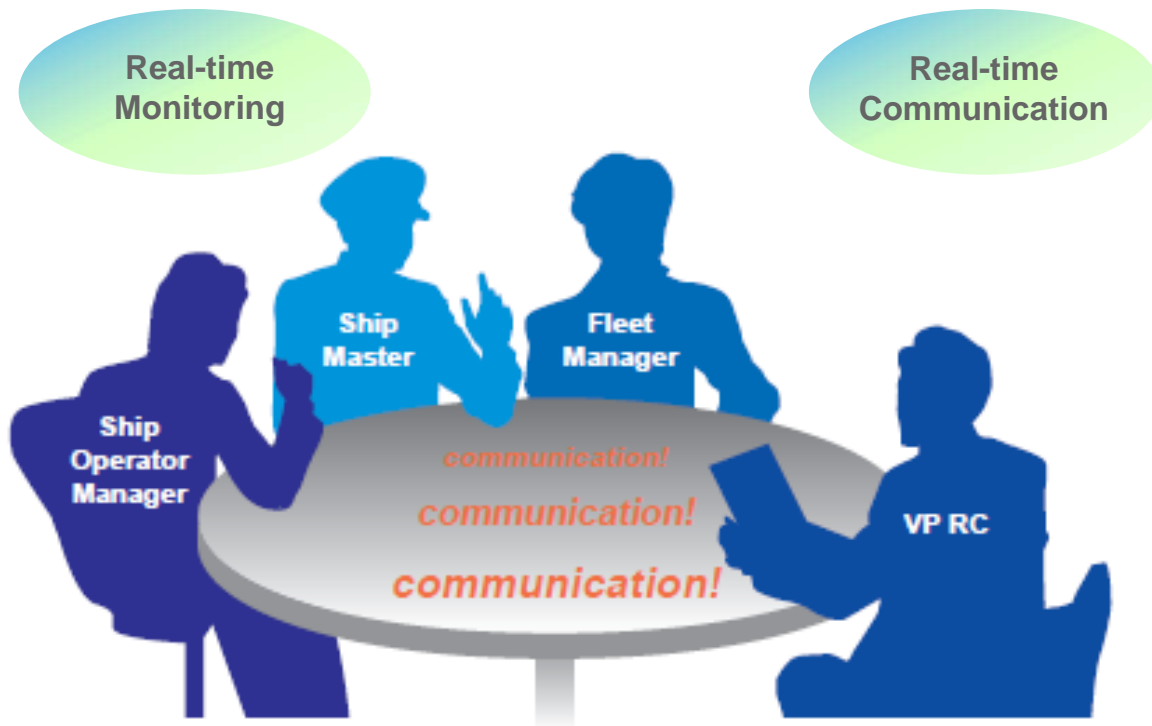
Concept of Voyage Planning Service



- Real-time communication based on “real-time monitoring”
- Unified weather/customer database shared among all parties
- Visualized and easily-understood Voyage Planning Service
- Full-fledged service structure designed to achieve your requirements

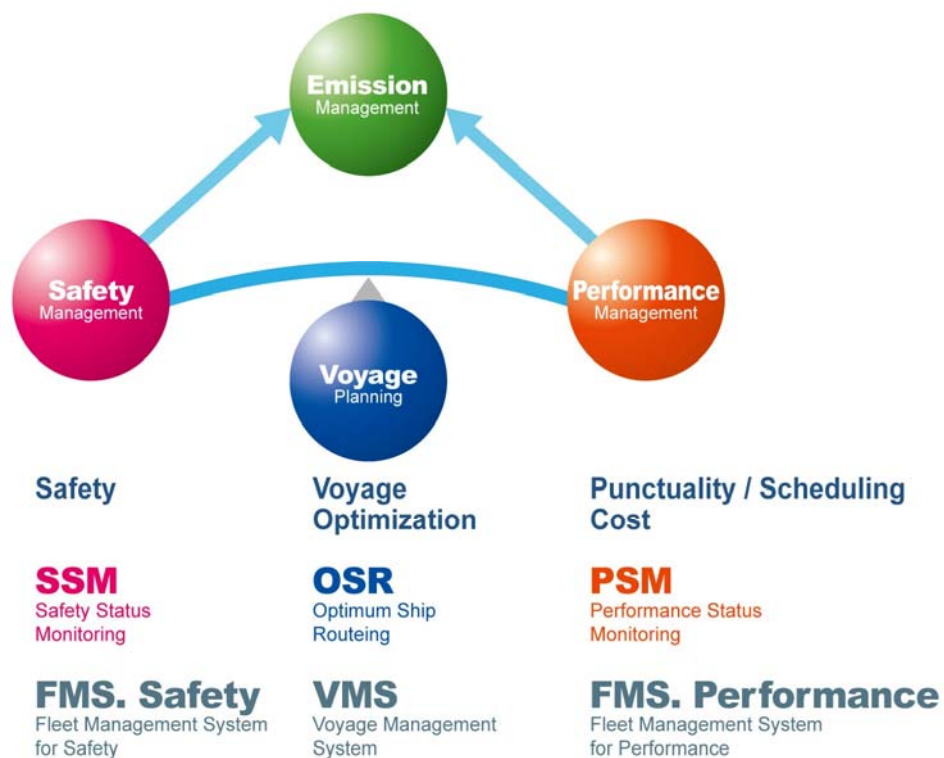
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Communication, Communication, Communication



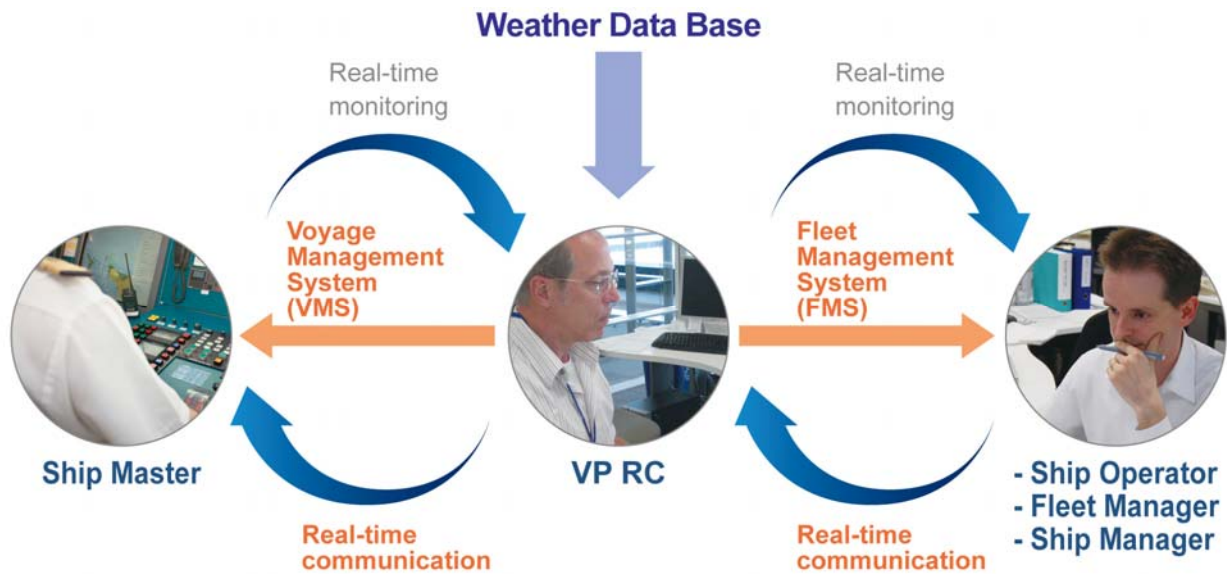
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Voyage Planning Service Menu







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Communication, Communication, Communication



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Risk Communication for each Fleet

Container Liner Fleet Management		
	RTA Management	RTA based Route, RPM, FOC and ETA management with no damage for Container fleets. New operational technology: Super Slow Steaming is also considered in VP RC and OSR.
Pure Car Truck Carrier Fleet Management		
	RTA Management ETA Control	Route optimization for cargo safety and ETA Management for the consignee. Control of individual voyage ETA deviation (best and worst ETA) is one of keys for the scheduling.
Dry Bulk COA Fleet Management		
	ETA Control Virtual Arrival System (VAS)	Performance and ETA management for lay time / cancellation and demurrage for COA and spot chartering of Cape, Panamax and Handy size bulk carriers.
Energy Carrier Fleet Management		
	ETA Control Virtual Arrival System (VAS)	Voyage Planning and Route Optimization for oil and gas trading with safety, operability, cost and emission management. OSR will work for VAS of energy trading.

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Voyage Planning Risk Communication



Monitoring for management of safety and performance

First Response Desk (Operation One)

VP RC for each trade

VP RC is specialized each market; Liners, PCTC, Bulkers and Tankers.

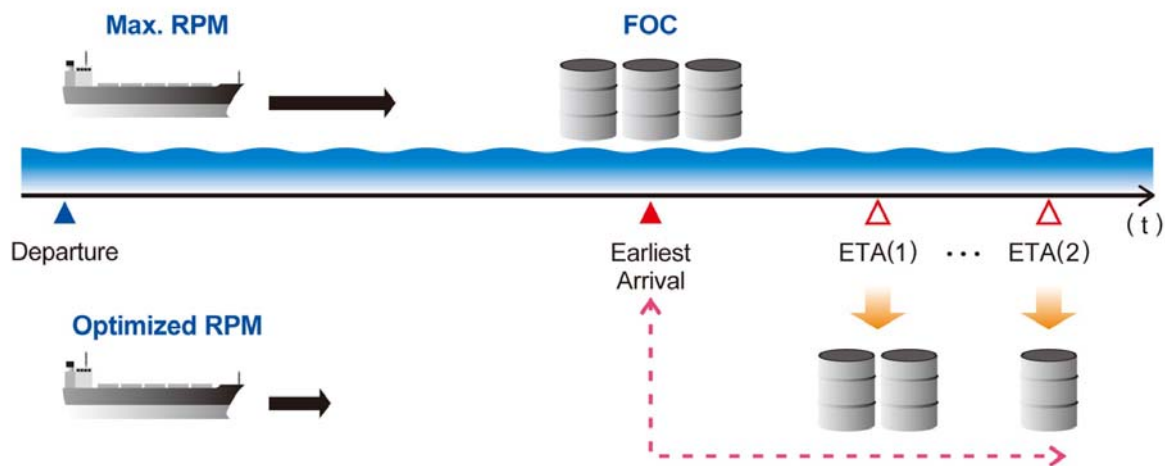
VP Risk Communicator monitors all TFMS customers' entire fleet and all voyages, 24 hours a day, 365 days a year and communicates directly with the Masters and Operators in order to optimize fleet navigation.

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Optimum Ship Routeing

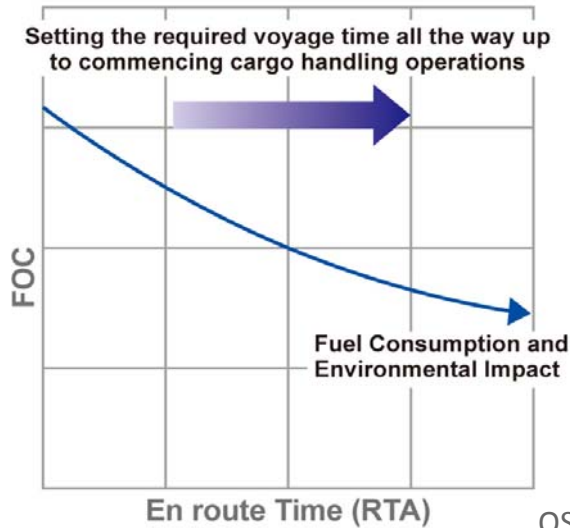
Optimum Ship Routeing (OSR) Service uses close communication with the Master and Operator, always taking safety as the first consideration, in order to support the Master in making important navigational decisions. In addition, the service also makes it possible to set the Optimum RTA based on the total sailing time from departure to arrival or start of cargo operations, as well as setting the Optimum Route and Speed Allocation to achieve fuel savings.



Voyage planning that complies with your business requirements for total optimization (RTA / ETA, Route and RPM / FOC)

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Setting the Optimum RTA

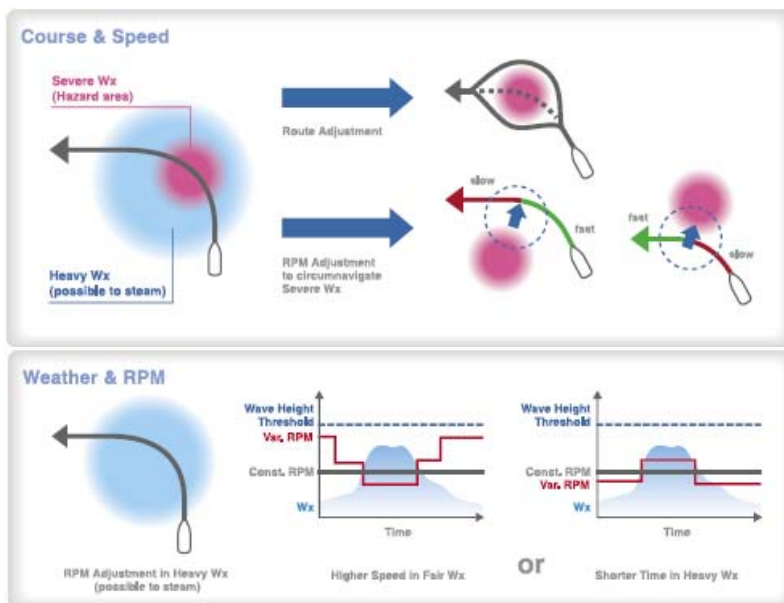


Because FOC is proportional to the cube of speed. If a 1% increase in en-route time can be achieved, 2% fuel saving are possible.

OSR provides various ETA and associated FOC along various routes, taking into consideration the RPM based performance of the main engine, in order to support the setting of an RTA that achieves cost (time/FOC) optimization.

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Setting the Optimum Route and Speed Allocation



OSR provides the optimum route selection based on the business priority of the voyage, as well as optimum RPM selection based on Speed Allocation (lowering speed in heavy weather and increasing in calmer conditions). The route and RPM based on risk priorities and forecast weather conditions en route are designed to improve operational efficiency.

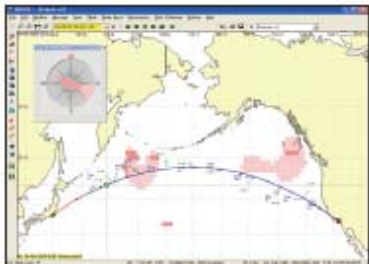
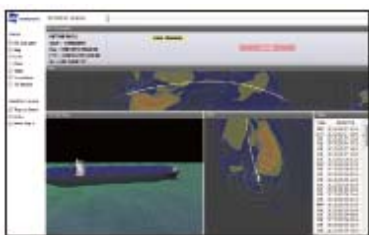
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Weathernews



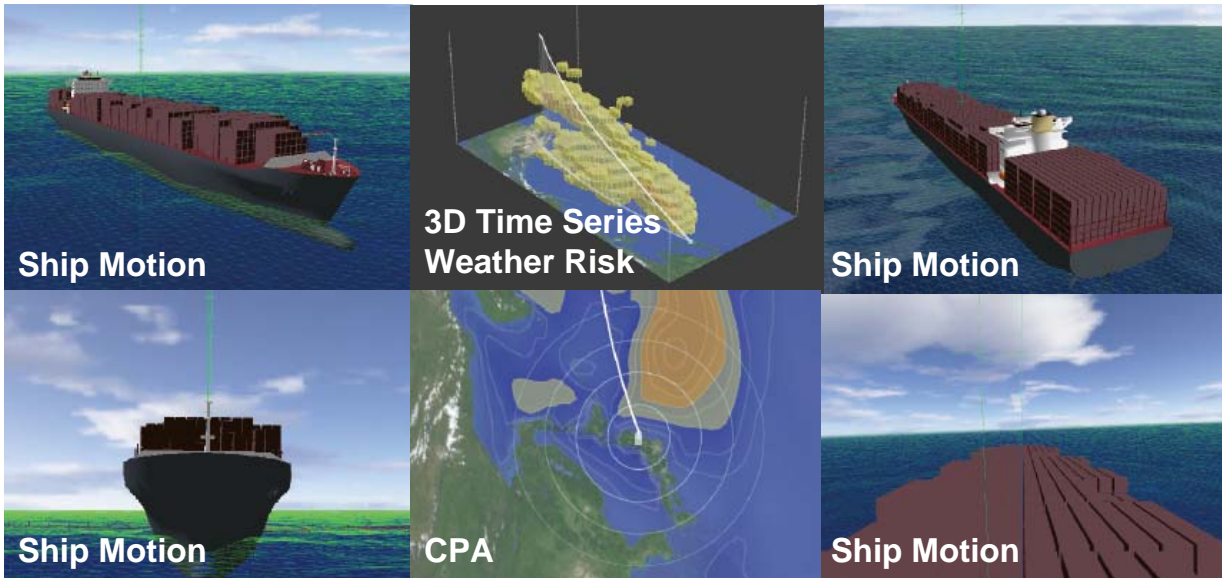
- Data gathering from ships for real-time monitoring.
- A visualized representation of Optimum Ship Routeing (OSR) from Weathernews. - For ship Master's quick and informed sailing decisions.
- The latest information on weather and navigation risks via real time communication. ²³

Functions of VMS



<p>Data gathering for Real-time Monitoring Vessel → WNI</p>	<ul style="list-style-type: none"> - Quick Report System for Vessel Status - Master's Intended Voyage (Route, RPM,...) - Marine Station (Ship Motion & Camera View)
<p>Providing Sufficient Sea & Weather Information for Master's Voyage Planning WNI → Vessel</p>	<ul style="list-style-type: none"> - Wind - Wave - Surface Pressure - Tropical Storm - Port Forecast of Destination - DASH (DAngerous, Severe and Heavy) Area - Sea Storm Information - Parametric Rolling Risk Area (Speed adjustable) - Ocean Current by HYCOM - Port Tide - Major Strait and Channel Tidal Stream - Sea Ice, Iceberg - Visibility (Fog)
<p>Real-time Communication and Evaluation of OSR Vessel</p>	<ul style="list-style-type: none"> - OSR Voyage Planning Sheet - Route and RPM Evaluating Function
<p>Risk Index for Safety / Cost / Schedule / Punctuality Management WNI → Vessel</p>	<ul style="list-style-type: none"> - Alert for Safety / Scheduling / Cost

New Functions of Voyage Management System



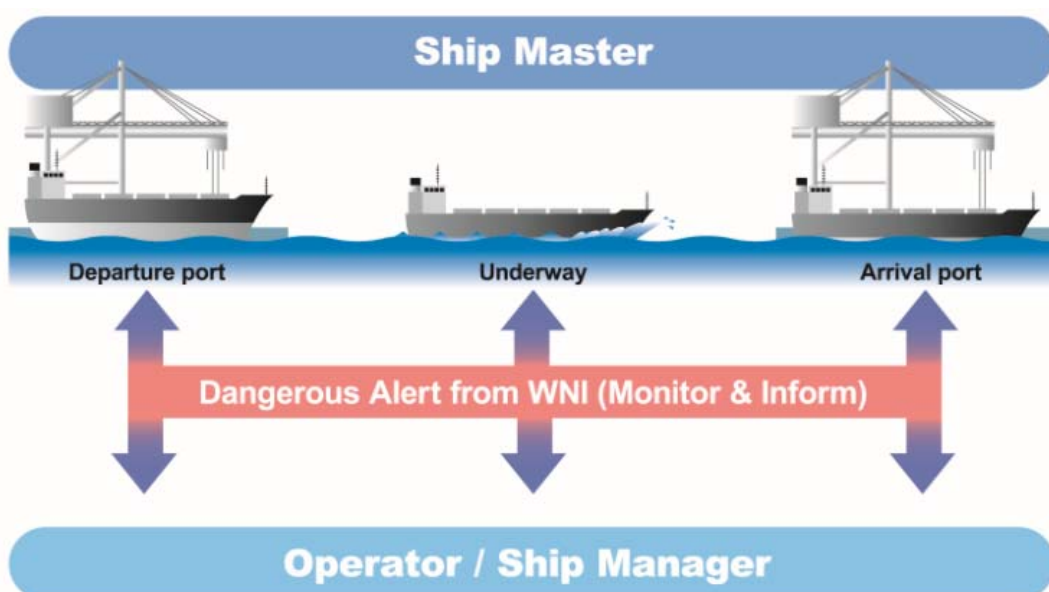
- Closest Point of Approach (CPA)
- 3D Animation for Ship Motion
- Application Online Update
- Map Engine (GC Chart, Electric Chart)

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Safety Status Monitoring

Through Safety Status Monitoring service, Weathernews monitors the weather and status of vessels 24x7, whether they are underway, in port, anchoring or drifting based on Vessel Status Monitoring by Quick Report System(QRS). If a vessel is expected to encounter a risk to safety, the Master and Operator are alerted by our Risk Communicator.



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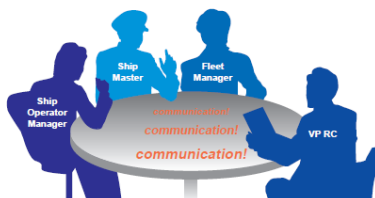
24 X 7 Monitoring

This Safety Status Monitoring for all vessels in all status alerts for Masters and Operators categorized as Dangerous, Severe and Heavy status (DASH Index).



Risk Communication

Weathernews also provides real-time risk communication for Safety Management of entire fleet by e-mail, phone and video conference.



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CCSW Customer Communication Shareware

FMS.Safety

Fleet Management System for Safety

Weathernews

Vessel Status Monitoring

Sea & Weather Information

Alert

Real-time Monitoring



FMS.Safety

Setting Hazard Area by Customer

Customer's Counter Planning

Real-time Communication

Ship Operator

- Vessel Status Monitoring with no drop offs through Weathernews Quick Report System.
- Monitor safety risk level based on the DASH Index, for vessels both in port and underway.
- Hazard areas based on customer defined thresholds show vessels at risk.

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Functions of FMS.Safety



Vessel Status Monitoring (Underway & In-port) for Real-time Monitoring	<ul style="list-style-type: none"> - Quick Report System - PPS - Missing Information Alert
Sea & Weather Information	<ul style="list-style-type: none"> - Wind - Wave - Surface Pressure - Tropical Storm - Port Forecast of Destination - DASH (DANGEROUS, SEVERE AND HEAVY) AREA - Sea Storm Information - Parametric Rolling Risk Area - Ocean Current by HYCOM - Port Tide - Major Strait and Channel Tidal Stream - Sea Ice, Iceberg - Visibility (Fog) - Weather Condition - Sea Surface Temperature - Air Temperature
Real-time Communication by Alert of Port / Coastal / Ocean for Safety	<ul style="list-style-type: none"> - Port Alert - Coastal Alert - Ocean Alert

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Performance Status Monitoring

Performance Status Monitoring (PSM) helps your trading, chartering and ship operation make accurate voyage planning before voyage, evaluate vessel performance during/post voyage. These information will be utilized to make more informed decisions to increase profitability, efficiency and your customer's satisfaction.

$$\begin{array}{ccccc}
 \text{A} & - & \text{B} & = & \text{C} \\
 \text{(sales)} & & \text{(cost)} & & \text{(profit)}
 \end{array}$$

Plan Do See

- | | |
|--------------|-------------------|
| - Planning | ~ before the fact |
| - Monitoring | ~ during the fact |
| - Evaluating | ~ after The Fact |

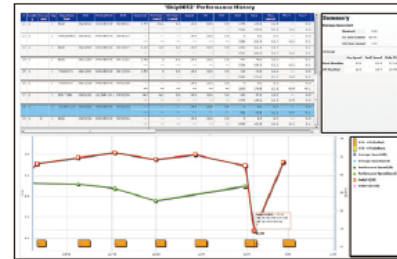
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Practical Voyage Planning

Practical Voyage Planning assists Operators to estimate realistic en route time and FOC of each trade. This planning service allows to select a distance from our database and analyzed demonstrated speed as well as speed reduction volume due to winds/waves/currents of each month on selected routes.

En route Profitability Monitoring

This monitoring service continuously analyzes vessel's performance (speed and FOC) and compares the latest ETA with initial planned arrival time. Total FOC estimation updated everyday is also compared with planned consumption.



Fleet Asset Management

Fleet Asset Management archives and depicts fleet performance data (speed and FOC) to assist maintenance timing, objectively analyzing entire fleet performance and optimizing Charter Party conditions.

Vessel	From/ To	ATA LY	Navigation Index				Safety Index "DASH"			Business Index						
			Route Selection	Total Distance nm	Total Time h	Ave. RPM rpm	Ave. Speed kn	Dangerous day	Severe day	Heavy day	FOC Total mt	per day mt/day	per nm mt/nm	Total Savings mt	per day mt/day	per nm mt/nm
After Arrival																
Vessel A	Balboa/ Busan	01/28 0800	Shortest Route	7954	425	82	18.7	4	6	5	3453	195	0.434	538	30	0.101
			Master's Intended Route	8342	425	86	19.6	2	3	4	3414	193	0.409	500	28	0.076
			Actual	8755	425	85	20.6	0	3	4	2915	165	0.333	-	-	-
			Best Mid. Lat	8439	425	87	19.9	4	4	5	4123	233	0.489	1208	66	0.156
			Best Southern	8633	425	89	20.3	0	3	4	3153	178	0.365	238	13	0.032



FMS. Performance

Fleet Management System for Performance

Weathernews

Practical Voyage Planning

En-route Profitability Monitoring

Fleet Asset Management



FMS. Performance

Voyage Data
Business Data
Ship Data
WNI Weather data

RTA
Ordered SP / FOC
Charter party warranty
Target CO₂

QRS
Analysis

Ship Operator

-Practical Voyage Planning for realistic ETA / FOC estimates based on actually voyages and demonstrated speed.

-Support for en route Profitability Monitoring with ETA / Consumption updates.

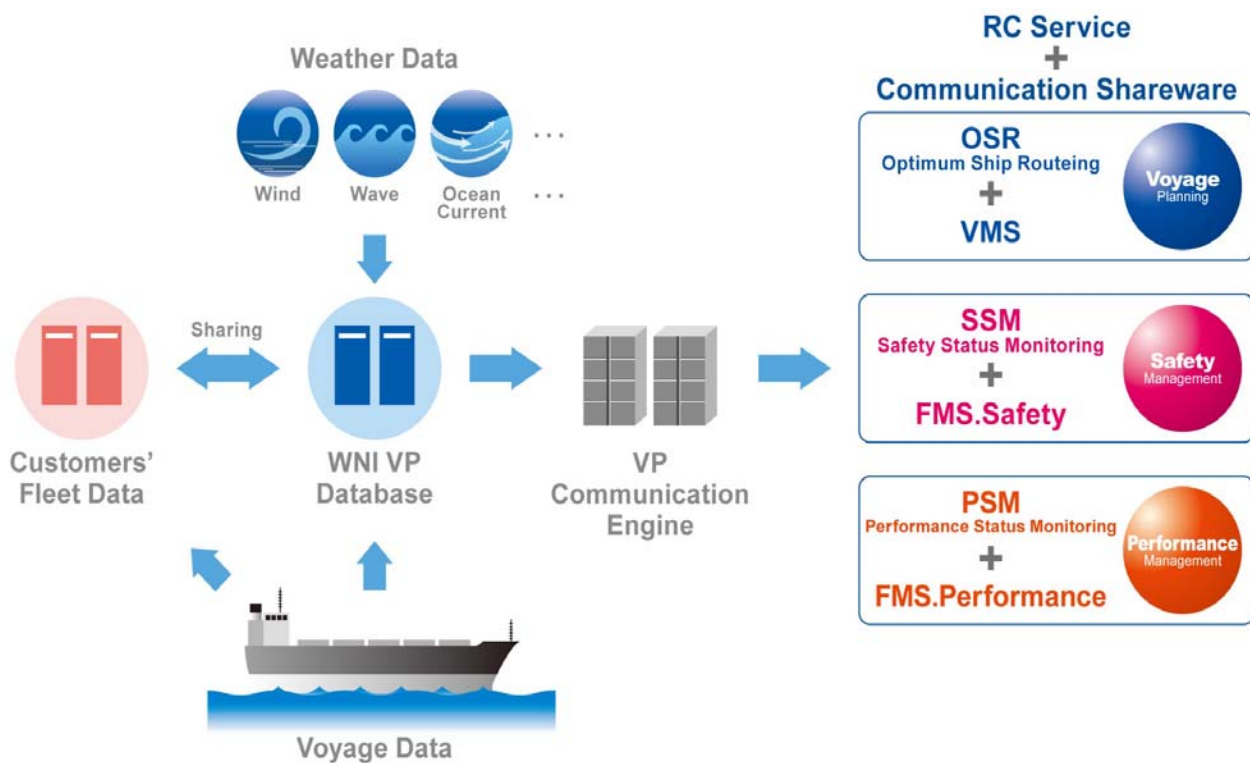
-Archived voyage evaluation data of all voyages for detailed chronological analysis for Asset Management.

Functions of FMS.Performance

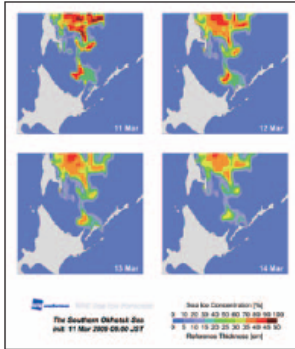


Practical Voyage Planning	<ul style="list-style-type: none"> - RTA Estimate - Reasonable Distance Estimate - Target FOC Estimate
En route Profitability Monitoring	<ul style="list-style-type: none"> - ETA monitoring - CP based Speed and Consumption Monitoring - Instructed Reduced Speed Monitoring - Reported Weather Verification - RPM and FOC Monitoring
Fleet Asset Management	<ul style="list-style-type: none"> - Performance Database - Performance Trend Evaluation - Performance Ranking - Time Chartered IN / OUT vessels Evaluation - Evaluation for Time Lost and Consumption

WNI Voyage Planning Data Base



WNI Data Base for Voyage Planning

Voyage Data	Weather	Hazard	Customers' Business Data
Master's Report (QRS) <ul style="list-style-type: none"> - Vessel - Time - Position - Speed - Course - RPM - Bunker - Port - Vessel status 	-Pressure -Wind -Wave -Ocean current -Tide -Visibility -Weather condition -Sea surface temperature -Air temperature	Geography Bathymetry Regulation <ul style="list-style-type: none"> -Seasonal load -War exercise -Environmental protection area -SECA -Fishery area -Pirate -Tsunami ICE <ul style="list-style-type: none"> -Ice pack -Iceberg -Icing Tropical Storm	Vessel specification Contact details Fleet Schedule Customer's policy for <ul style="list-style-type: none"> - Safety - Schedule - Cost Charter party
Position Polling (PPS) <ul style="list-style-type: none"> - Vessel - Time - Position - Speed - Course 			

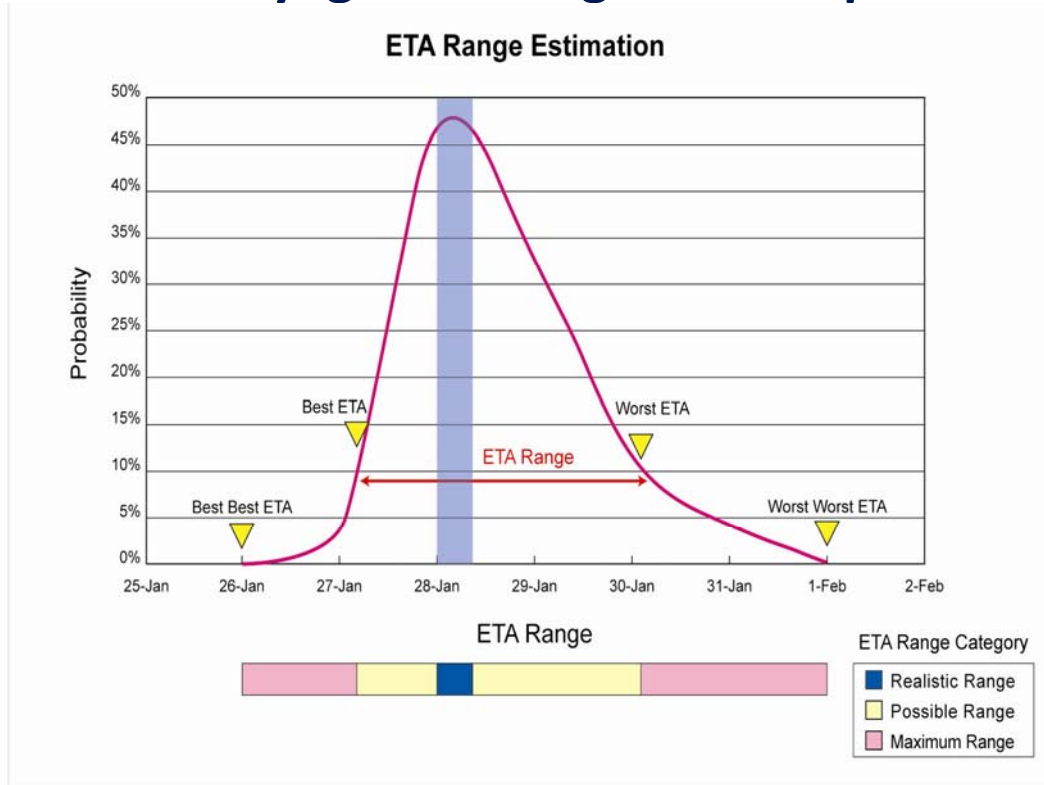
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WNI Voyage Planning Data Set

Vessel	From/ To	ETD / ATD LT	RTA LT	Navigation Index			Schedule Index		Cost Index			RC Alert			WNI previous 24hours forecast error for Master's report	
				Route Selection	Distance	RPM or %MCO	Arrival Time (ETA) Local Time	HSFO Consumption Total/Target mt	DO Consumption ETA mt	CO ₂ Emission (Estimated) mt	Safety	Schedule (RTA)	Cost (FOC)			
					Total nm	Ave. rpm								Rep. rpm		
Vessel A	Balboa/ Busan	2009/1/10 15:00:00 (ETD)	N/A	Shortest Route	8200	Max 89 Min 80	-		3913 / 3050	0	0					
				Master's Intended Route	8600	Max 89 Min 80	-		4104 / 3050	0	0					
				Best Northern	8500	Max 89 Min 80	-		3432 / 3050	0	0					
				Best Mid. Lat	8700	Max 89 Min 80	-		4471 / 3050	0	0					
				Best Southern	8900	Max 89 Min 80	-		3267 / 3050	0	0					
Vessel C	Seattle/ Tokyo	2009/2/28 22:00:00 (ATD)	2009 03 12 0400	Shortest Route	8000	Max 95 RTA 88 Min 82	-		2313	15	7251	-	-	-		
				Master's Intended Route	9600	Max 95 RTA 88 Min 82	-		2721	15	8521	-	-	-		
				Best Northern	8800	Max 95 RTA 88 Min 82	-		2118	15	6643	-	-	-		
				Current Route (Recommended)	9200	Max 95 RTA 88 Min 82	90		2229	15	7004					
				Previous Route	9000	Max 95 RTA 88 Min 82	90		2335	15	7333					
				Best Southern	9600	Max 95 RTA 88 Min 82	-		2563	15	8028	-	-	-		

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Voyage Planning Data Output



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