European Framework for Safe, Efficient and Environmentally-friendly Ship Operations

FP 6 Integrated Project

2007 - 2010

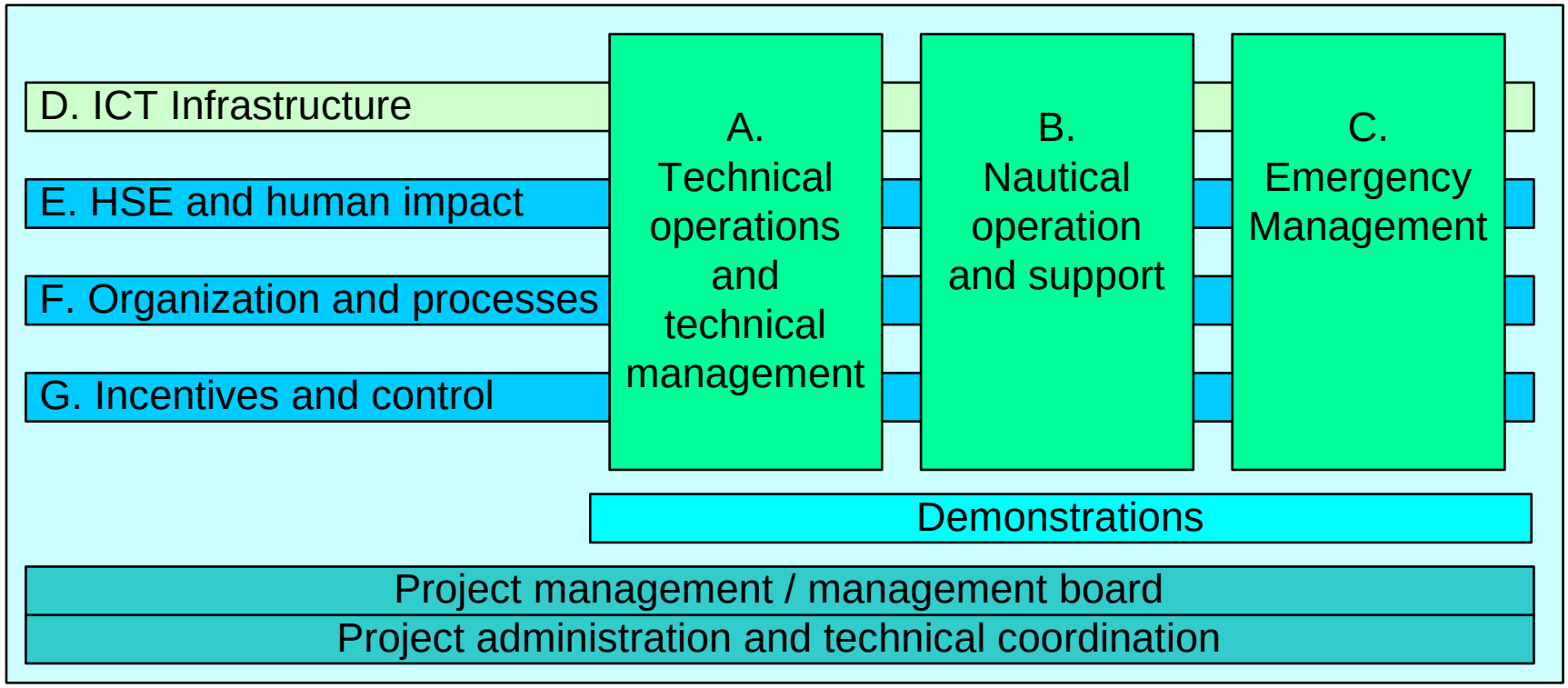
coordinated by ECSA

VISION:

- CREATE THE MECHANISM TO BRING TOGETHER IN REAL TIME THE EXPERTISE OF ALL ACTORS
- TO BETTER MANAGE ALL QUESTIONS CONFRONTING A SHIP OPERATOR, INCLUDING MANAGEMENT, THE SHIP, ITS EQUIPMENT AND NAVIGATION
- IN DAY-TO-DAY OPERATION AS WELL AS IN EMERGENCIES AND EXCEPTIONAL SITUATIONS

SHIPPING	NSA, Carnival, Superfast, Consar, V-Ships, Containerships, KVNR, Danaos, NSB, Teekay, CSS agency, ASME, ECSA, Minoan, Portline, Perseveranza
EQUIPMENT/SUPPLIERS	EMEC, Autronica, Rolls Royce, Lyngsøe, Wärtsilä, Lodic, Kongsberg, SAM
CLASSIFICATION SOCIETIES	GL, Rina, BV
PORTS TERMINALS AND DEPOTS	Port of Valencia,TBS, SDS
SHIPYARDS	CESA, Meyer Werft, STX France, SSA
SOFTWARE SUPPLIERS & CONSULTANCIES	TEMIS, Reg4Ships, MJC^2,Sirehna, Isdefe
RESEARCH INSTITUTES	BMT, Marintek,
UNIVERSITIES	SSRC, NTNU, Cardiff, NTUA, WEGEMT, IST

Architecture



WP A. Technical operations and technical management:

SPA1 - Technical operation strategy & logistics

Service-oriented business models

SPA2 - Monitoring & prognosis for technical operations

Technical Condition Indexes for key performance indicators

SPA3 – Monitoring systems for RT assessment of hulls

Tools to assess ship condition

WP B. Nautical operation and support

SPB1 – Energy efficient operation

Monitoring system of ship and fleet efficiency

SPB2 – Holistic decision support

Methodology for the creation of ship DSSs

SPB3 – Nautical operation & bridge decision support

Innovative concepts for bridge design

SPB4 – Alarm filtering

Development of quiet bridge concept

SPB5 – Support for rule compliance

Integrated regulatory compliance decision support system.

SPB6 – Cargo handing & planning

Real-time transport schedulling

WP C. Emergency management

SPC1 - Cooperative decision support ship/shore

Innovative use of onboard and wireless ICT

SPC2 – Prognosis & guidance for emergency operation

Rational approach in quantifying severity of emergency scenarios

WP D. Support actions

SPD1 – ICT Infrastructure

Efficient ship internal and ship-shore information exchange

SPD2 – Health & Safety: Organisation & Processes

Re-organisation of ship operations and tasks

SPD3 – Incentives & Controls

Liaison with ISO and IMO

SELECTED EXAMPLES OF SUB-PROJECTS

SPB5 – Support for rule compliance

SPC2 – Prognosis & guidance for emergency operation

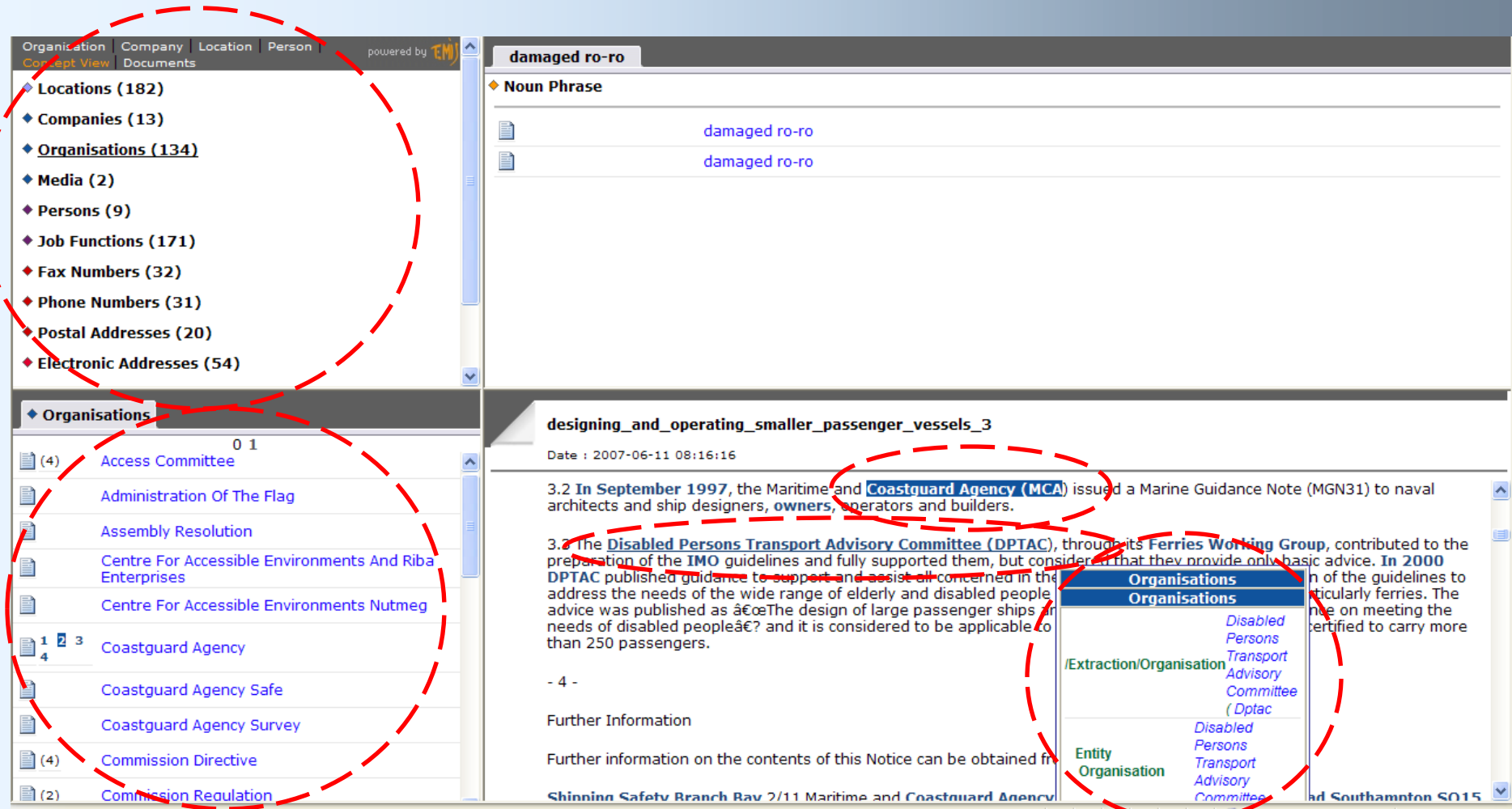
SPD2 – Health & Safety: Organisation & Processes

B5

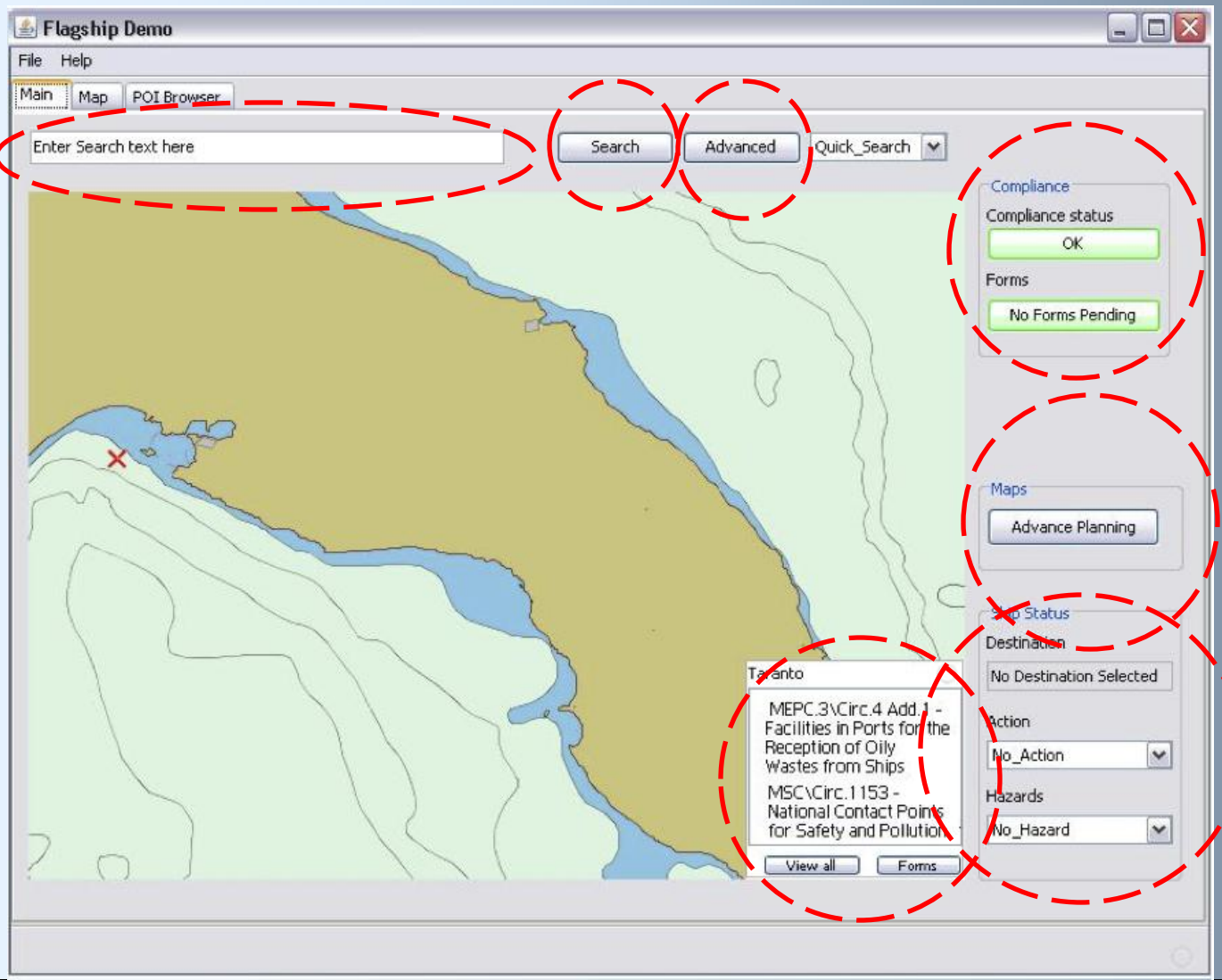
The B5 System provides:

- An Electronic regulations database
- A regulations search system.
- Regulation suggestion.
- Automated compliance checking.
- ship compliance advisor for local and international rules and legislation.

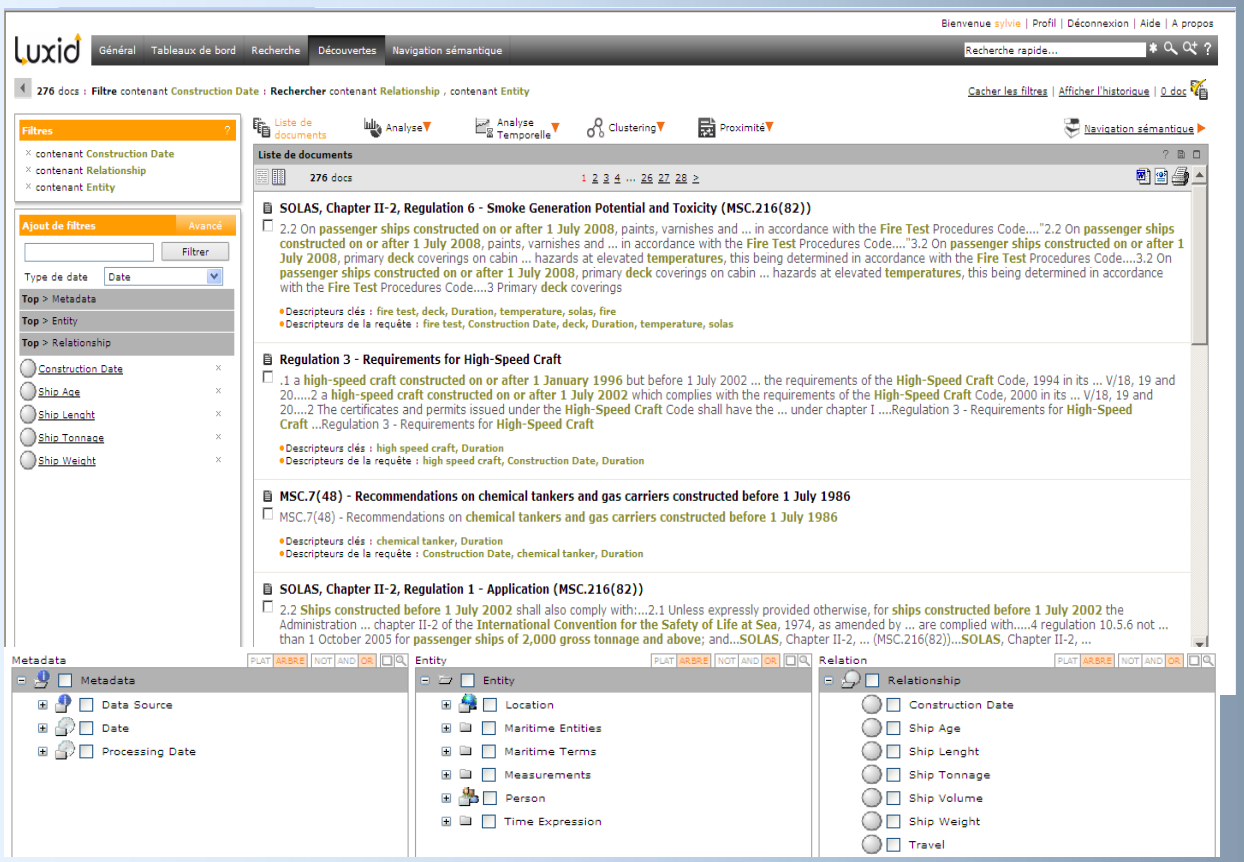
Digital Regulation Extraction



Lagship


Flagship Demo
File
Help
Main
Map
POI Browser
Enter Search text here
Search
Advanced
Quick_Search
Compliance
Compliance status
OK
Forms
No Forms Pending
Maps
Advance Planning
Ship Status
Destination
No Destination Selected
Action
No_Action
Hazards
No_Hazard
Taranto
MEPC.3\Circ.4 Add.1 - Facilities in Ports for the Reception of Oily Wastes from Ships
MSC\Circ.1153 - National Contact Points for Safety and Pollution
View all
Forms

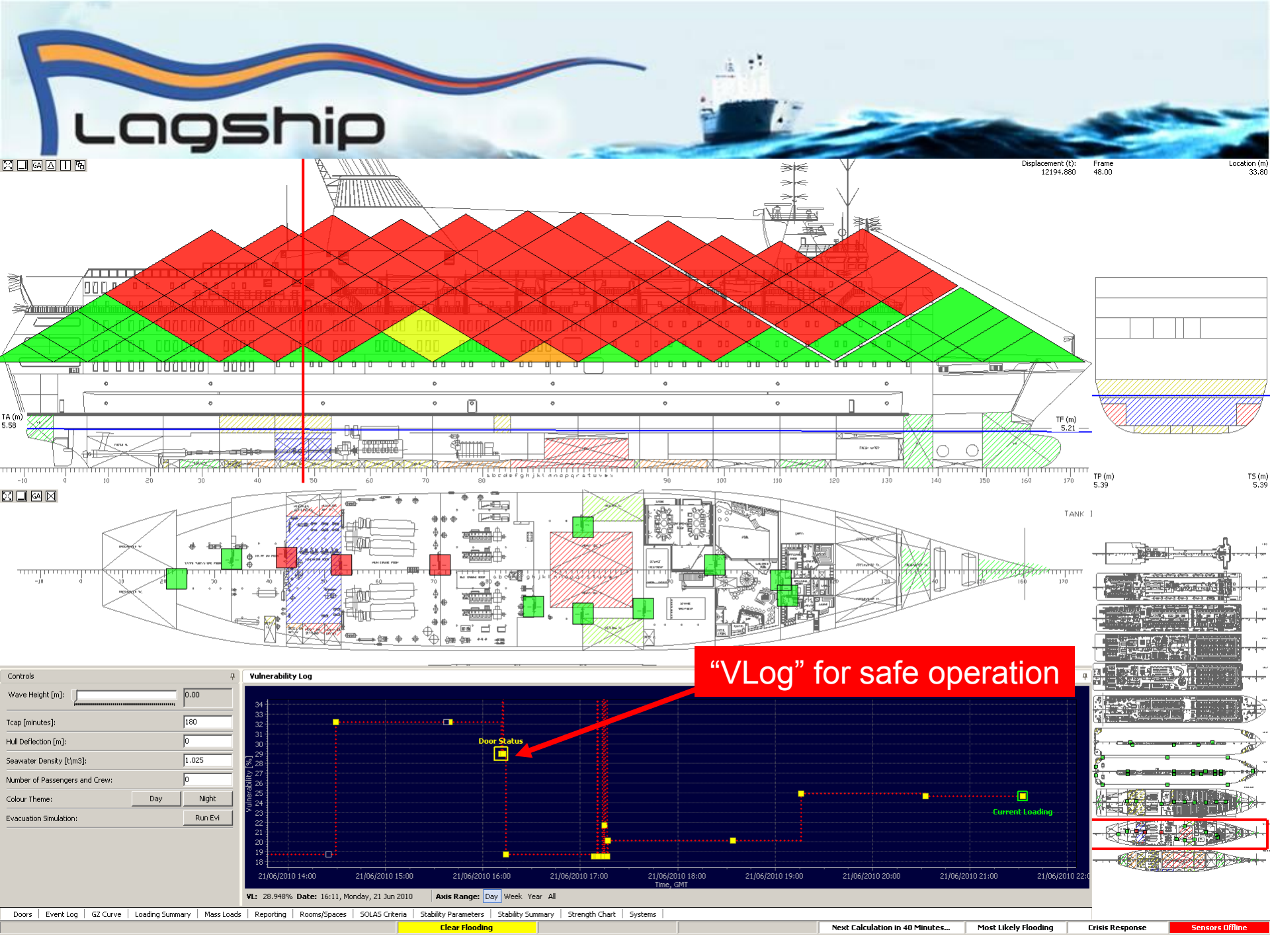
Advanced Query Results



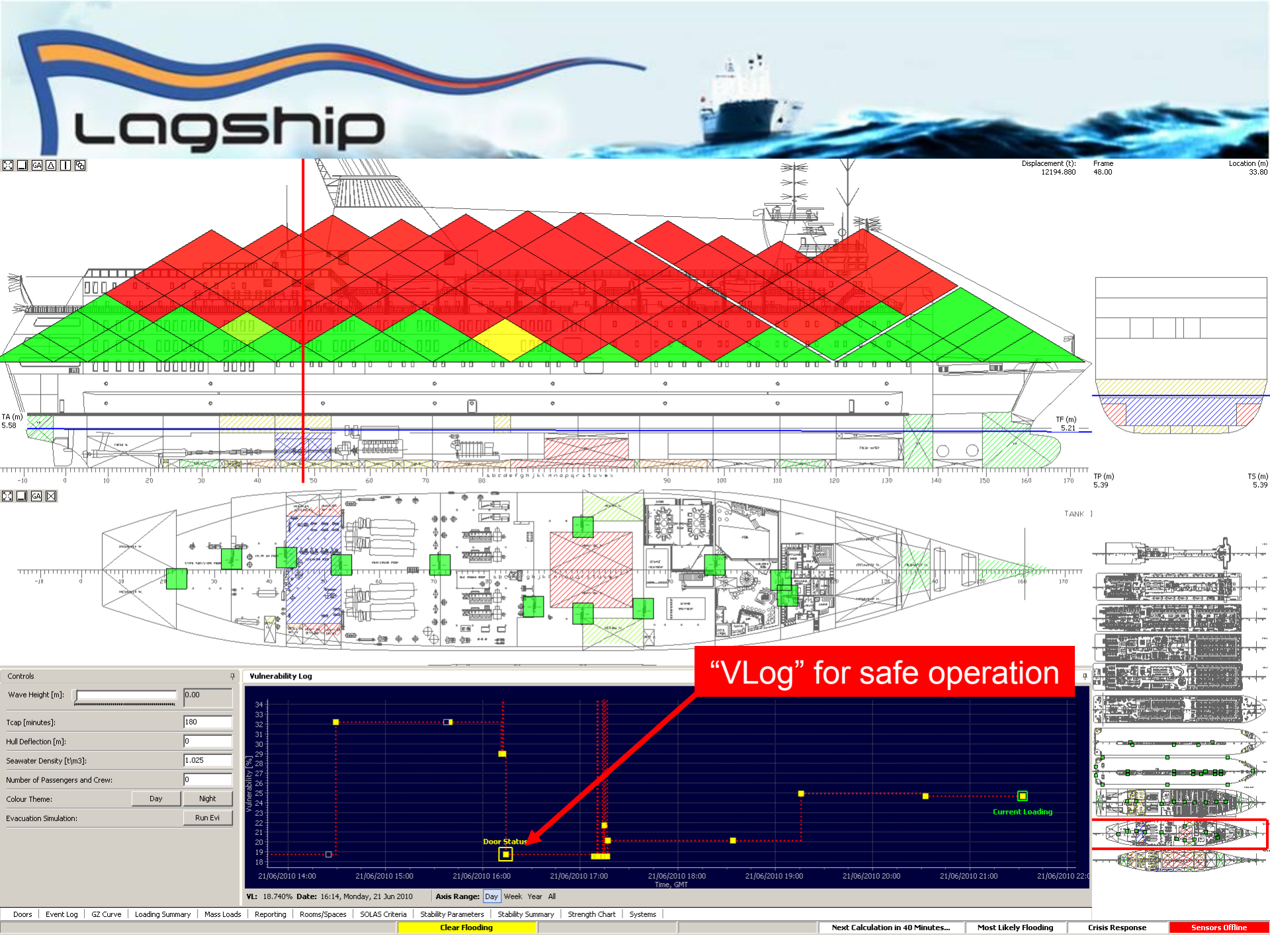
SP C2

Prognosis and guidance modules for emergency operation

- New paradigm for safe operation (VLog)
- New functionality for rapid damage assessment
- New critical decision advisory

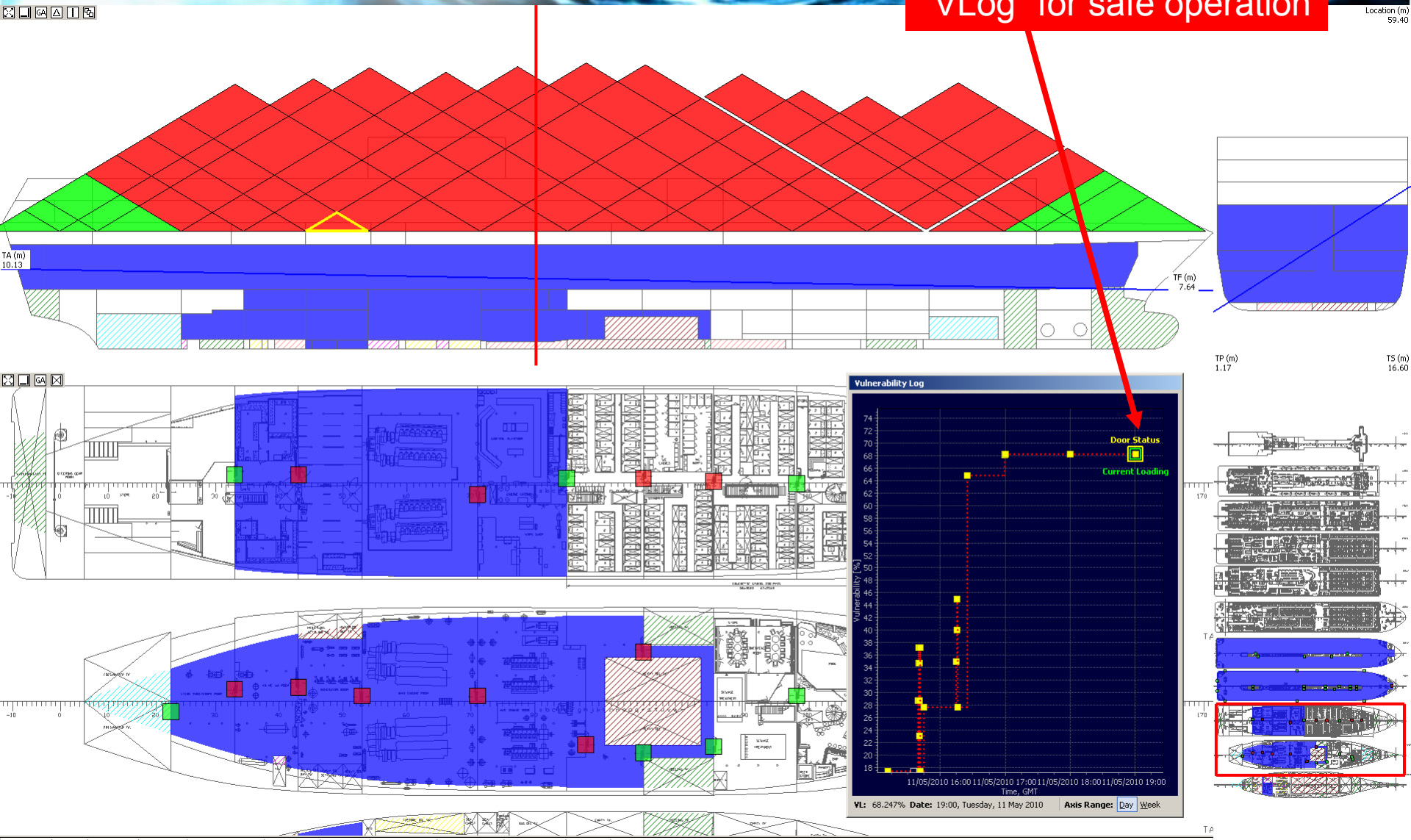


"VLog" for safe operation


Lagship
Displacement (t):
12194.880
Frame
48.00
Location (m)
33.80
TA (m)
5.58
TF (m)
5.21
TP (m)
5.39
TS (m)
5.39
TANK
"VLog" for safe operation
Controls
Wave Height [m]:
0.00
Tcap [minutes]:
180
Hull Deflection [m]:
0
Seawater Density [t\m3]:
1.025
Number of Passengers and Crew:
0
Colour Theme:
Day
Night
Evacuation Simulation:
Run Evi
Vulnerability Log
Vulnerability [%]
Door Status
Current Loading
21/06/2010 14:00
21/06/2010 15:00
21/06/2010 16:00
21/06/2010 17:00
21/06/2010 18:00
21/06/2010 19:00
21/06/2010 20:00
21/06/2010 21:00
Time, GMT
VL: 18.740% Date: 16:14, Monday, 21 Jun 2010
Axis Range: Day Week Year All
Doors
Event Log
GZ Curve
Loading Summary
Mass Loads
Reporting
Rooms/Spaces
SOLAS Criteria
Stability Parameters
Stability Summary
Strength Chart
Systems
Clear Flooding
Next Calculation in 40 Minutes...
Most Likely Flooding
Crisis Response
Sensors Offline

Lagship

“VLog” for safe operation



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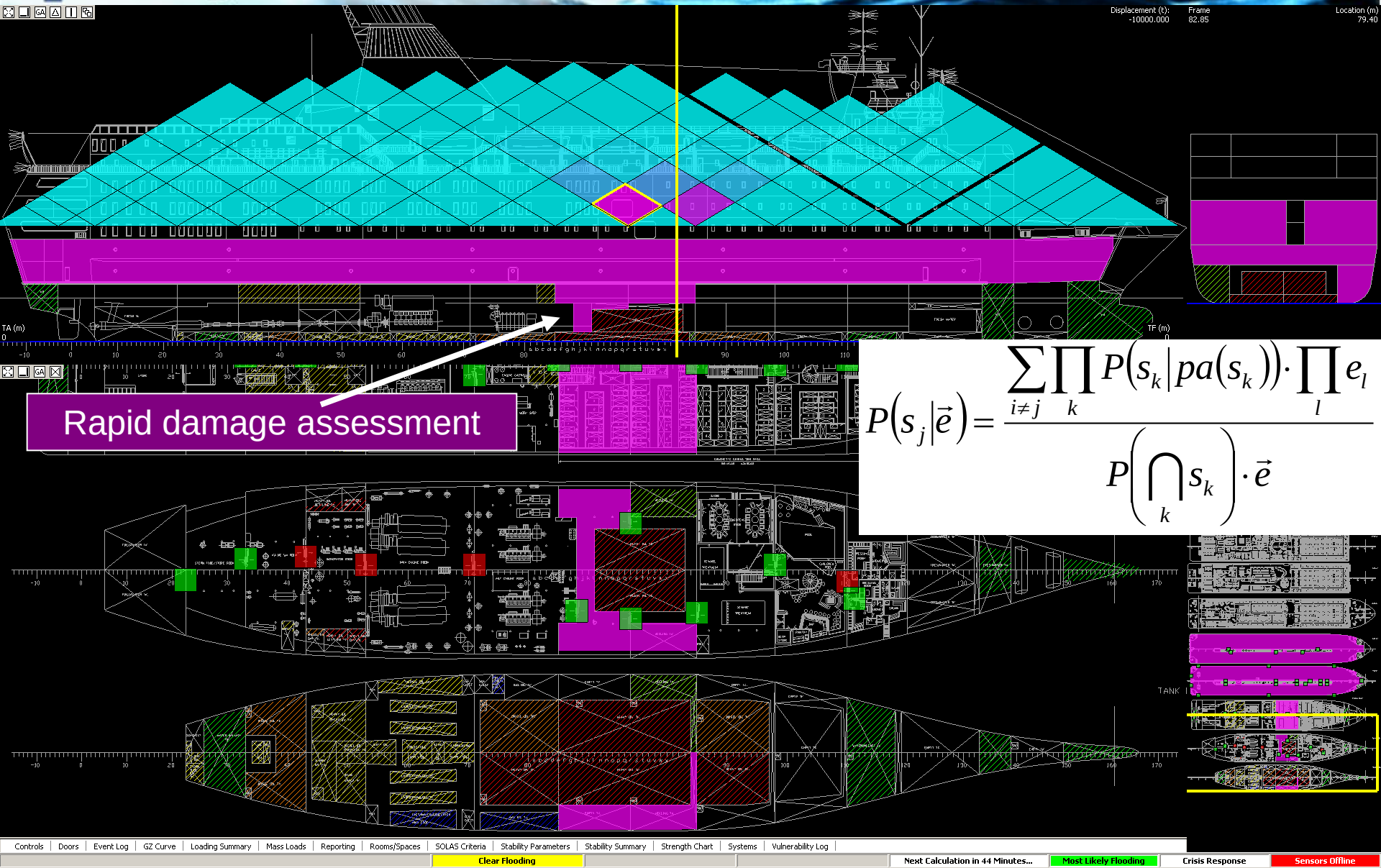
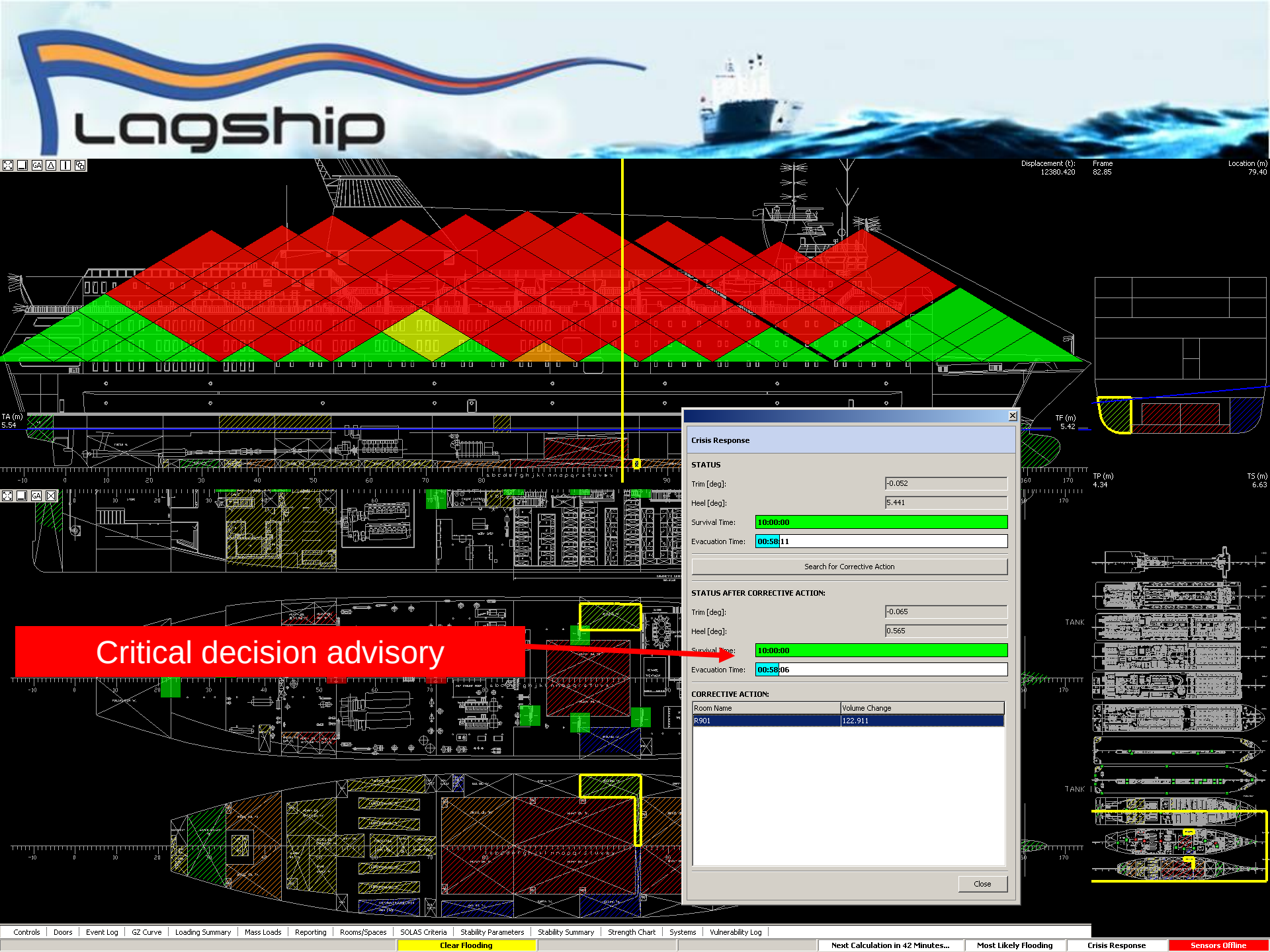


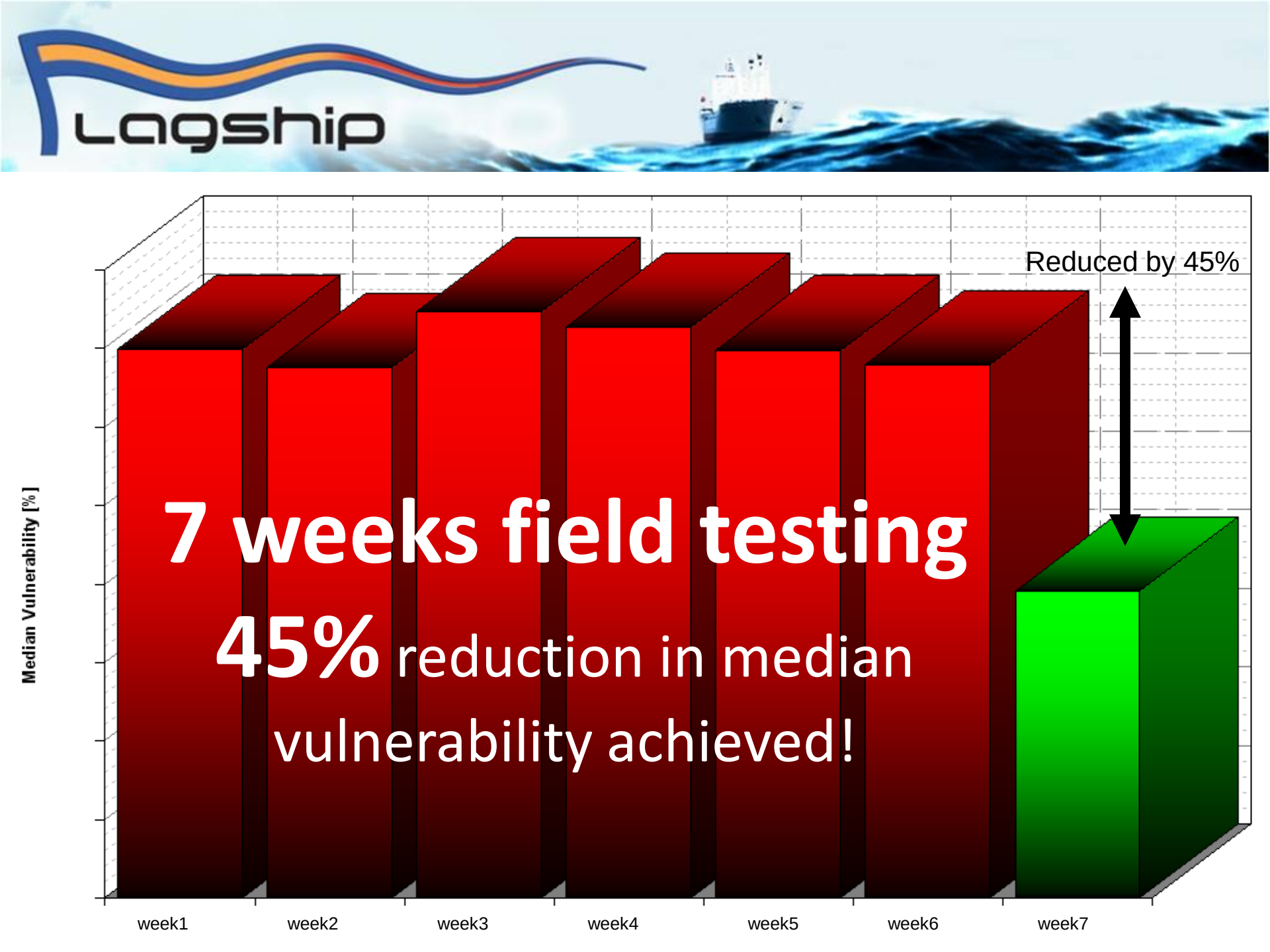
Rapid damage assessment

$$P(s_j|\vec{e}) = \frac{\sum_{i \neq j} \prod_k P(s_k|pa(s_k)) \cdot \prod_l e_l}{P\left(\bigcap_k s_k\right) \cdot \vec{e}}$$

Controls | Doors | Event Log | GZ Curve | Loading Summary | Mass Loads | Reporting | Rooms/Spaces | SOLAS Criteria | Stability Parameters | Stability Summary | Strength Chart | Systems | Vulnerability Log

Clear Flooding | Next Calculation in 44 Minutes... | Most Likely Flooding | Crisis Response | Sensors Offline


Lagship
Displacement (t):
12360.420
Frame
82.85
Location (m)
79.40
TA (m)
5.54
TF (m)
5.42
TP (m)
4.34
TS (m)
6.63
Crisis Response
STATUS
Trim [deg]:
-0.052
Heel [deg]:
5.441
Survival Time:
10:00:00
Evacuation Time:
00:58:11
Search for Corrective Action
STATUS AFTER CORRECTIVE ACTION:
Trim [deg]:
-0.065
Heel [deg]:
0.565
Survival Time:
10:00:00
Evacuation Time:
00:58:06
CORRECTIVE ACTION:
Room Name
Volume Change
R901
122.911
Close
Critical decision advisory
TANK
TANK
Controls
Doors
Event Log
GZ Curve
Loading Summary
Mass Loads
Reporting
Rooms/Spaces
SOLAS Criteria
Stability Parameters
Stability Summary
Strength Chart
Systems
Vulnerability Log
Clear Flooding
Next Calculation in 42 Minutes...
Most Likely Flooding
Crisis Response
Sensors Offline



7 weeks field testing

45% reduction in median vulnerability achieved!

D2

Re-organisation of ship operations

From survey's made:

- **New technology and ICT is fully accepted by crews**
- **Do require adaptation and training**
- **Increase in Standardization**

➢ **Evaluate the ship-shore cooperation**

➢ **Be pragmatic in investigating and proposing adjusted working procedures**

- **NOW COMING TO SP DEMONSTRATION AND TRAINING AS APPROPRIATE**

  CONSIDERING:

  - **INVOLVEMENT OTHER FLAGSHIP PARTNERS FOR CROSS KNOWLEDGE AND EXPERIENCES**
  - **INVOLVEMENT THIRD PARTIES LIKE SHIPOWNERS**
  - **LOCATIONS**
  - **DISSEMINATION MEANS INCL. PRINT AND VIDEO**
  - **DISSEMINATION IS KEY**
  - **IPR**

WHAT LIES AHEAD?

- TECHNOLOGY IS GREAT WHEN WE KNOW HOW TO USE IT
- HOW TO USE WHAT LEARNED
- BE PRAGMATIC
- HOW TO BUILD ON FLAGSHIP RESULTS
- AVOID UNNECESSARY OVERLAPS IN NEW PROJECTS

BUILD ON RESULTS (I)

➢ In e-Maritime

- Focus on nautical aspects (IMO domain)
- Focus on operational and commercial aspects (DG TREN/MOVE domain)

BUILD ON RESULTS (II)

- **CHALLENGES IN INTEGRATED BRIDGE DSS**

  TAKING ACCOUNT OF CONTEXT - E.G., MANEUVERING VS LIST VS FIRE. MAY INCLUDE ALARM MANAGEMENT AS WELL AS EMERGENCY MANAGEMENT

- **IMPROVED INTEGRATION OF COOPERATION SHIP AND SHORE,**

  INCLUDES IMPROVED AND NEW WORK PROCESSES

BUILD ON RESULTS (III)

- **RESEARCH ON IMPROVED BUSINESS PROCESSES IN THE MARITIME SECTOR**

  E.G. BASED ON PERFORMANCE MEASUREMENTS AND PERFORMANCE INDICATORS

- **CLASSIFICATION SYSTEMS FOR RULE MAKING**

  BETTER CLASSIFICATION OF RULES MAKING IT MUCH EASIER TO KNOW WHEN RULES ARE APPLICABLE


Thank you...
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