

DEVELOPMENT PROFESSIONAL STANDARD OF RIS OPERATORS & STUDY COURSE FOR TRAINING OF RIS OPERATORS IN UKRAINE

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WHAT THE REASONS LED US DEVELOP THIS STANDARD



IT IS:

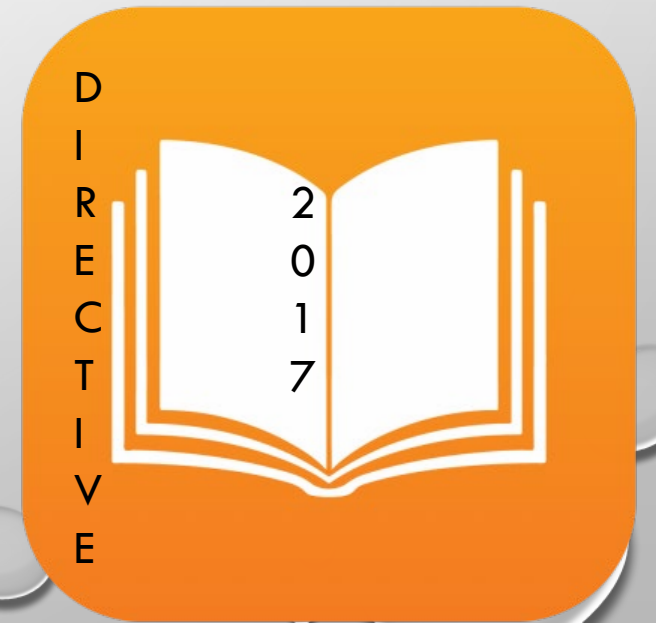
1. OPERATOR SOLVED MULTIFUNCTIONAL TASKS;
2. VERY RAPID PROGRESS TOWARDS AUTONOMOUS SHIPPING DEVELOPMENT;
3. THERE IS NO UNIFIED STANDARD OF COMPETENCE FOR RIS OPERATOR.

IN DIFFERENT COUNTRIES IS DIFFERENT VOCATIONAL/PROFESSIONAL REQUIREMENTS;

4. DIFFERENT REQUIREMENTS FOR HIRING SPECIALISTS IN THE POSITION OF RIS OPERATOR;
5. HIGH RESPONSIBILITIES/COMMITMENTS FOR SAFETY OF SHIPPING.



DUE TO FACT THAT IN NEAR FUTURE WE EXPECT THE RIS OPERATOR TO
PERFORM THE FUNCTIONS OF **remote handling vessels**, SO THE
DEVELOPMENT OF THE STANDARD IS **based** ON THE STANDARD OF
PROFESSIONAL COMPETENCE FOR **boat master** ACCORDING TO
DIRECTIVE 2017



1. NAVIGATION

1.1 THE RIS OPERATOR SHALL BE ABLE TO **assist** (NOW AND REMOTE HANDLING VESSELS IN NEAREST FUTURE) OF THE CRAFT DURING THE VOYAGE IN REAL SITUATIONS ON INLAND WATERWAYS.
THE RIS OPERATOR SHALL BE ABLE TO DO IT ON ALL TYPES OF WATERWAYS AND ALL TYPES OF PORTS AND TERMINALS.



There is to hard
discussion about
remote handling
vessels

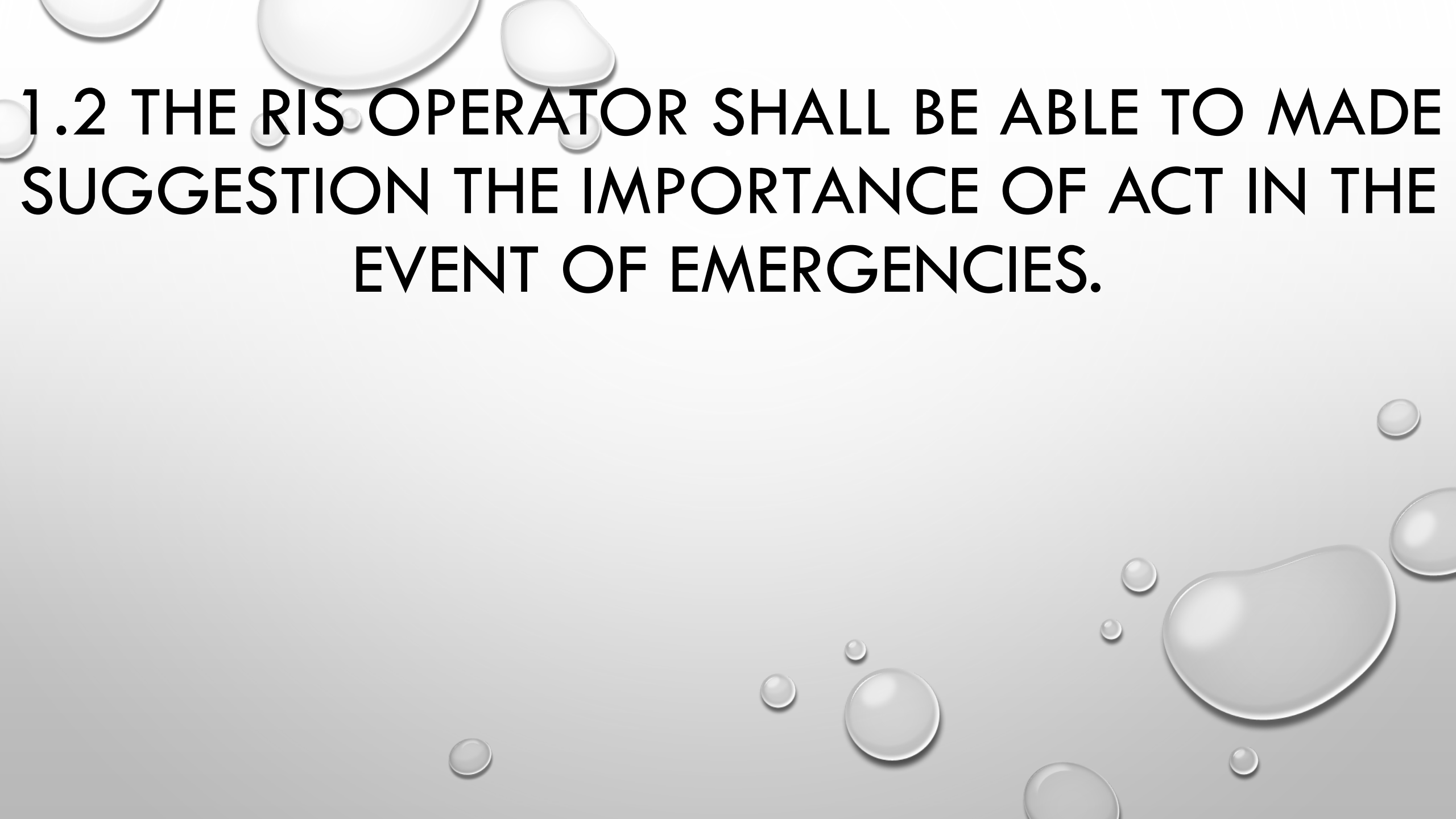


Our opinion:
We have to be
ready to take into
account for
toward of
progress



Because as we see
above, safety
navigation
challenges exist
and now too



The background of the slide is a light gray gradient. It is decorated with numerous realistic water droplets of various sizes. Some droplets are at the top left, some are scattered along the bottom edge, and a few are on the right side. The droplets have highlights and shadows, giving them a three-dimensional appearance.

**1.2 THE RIS OPERATOR SHALL BE ABLE TO MADE
SUGGESTION THE IMPORTANCE OF ACT IN THE
EVENT OF EMERGENCIES.**



SC Kanev



SC Svetlovodsk



SC Dneprodzerzhinsk



SC Zaporozhye

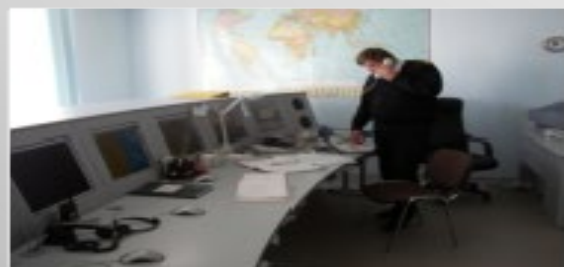


SC Vyshhorod



SC Nova Kakhovka

Sub-centers of the UkrRIS



VTS Vylkove



VTS Izmail



VTS Reni

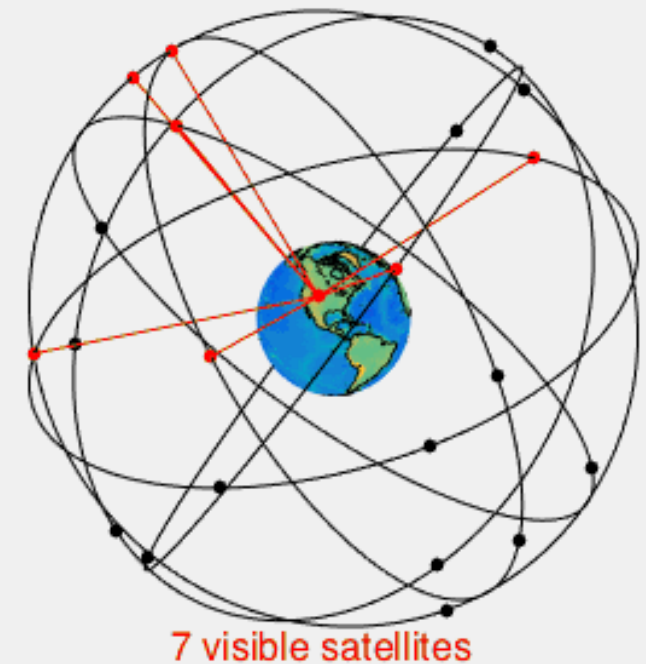
1.3 THE RIS OPERATOR SHALL BE ABLE TO TAKE ASSIST IN CASE FIRE-FIGHTING IN THE CRAFT.



1.4 THE RIS OPERATOR SHALL BE ABLE TO PERFORM DUTIES TAKING INTO ACCOUNT THE IMPORTANCE OF PROTECTING THE ENVIRONMENT.



1.5 THE RIS OPERATOR SHALL BE ABLE TO USE THE ACTUAL INFORMATION AND COMMUNICATION SYSTEMS



1.6 THE RIS OPERATOR SHALL BE ABLE TO TAKE ASSIST OF THE CRAFT NAVIGATION.



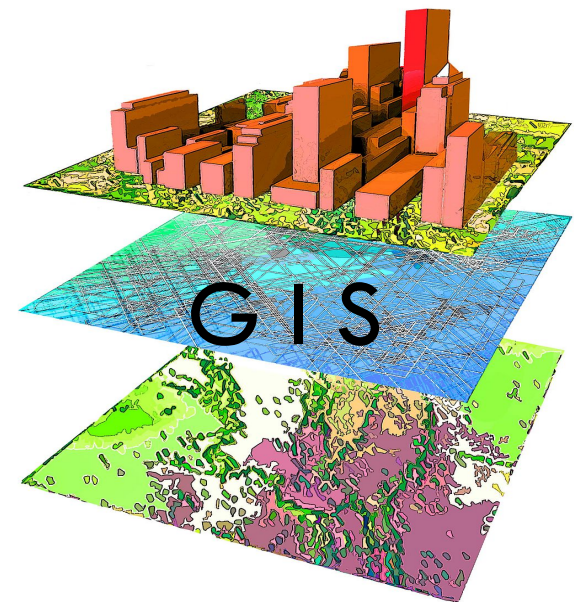
1.7 THE RIS OPERATOR SHALL BE ABLE TO RECOGNIZE
AND TAKE ASSIST OF THE VARIOUS TYPE OF CRAFTS
AND THEIR BEHAVIOR ON SAILING TIME



2. GEO INFORMATION SYSTEM AND TECHNOLOGIES

2.1 GIS DEFINITION, GENERAL AIMS, TASKS AND SOLUTIONS

THE RIS OPERATOR SHALL BE ABLE TO USE AND RECOGNIZE
OF THE VARIOUS TYPE OF GIS AND THEIR TECHNOLOGIES.



2.2 MAIN MODELS OF 3-D DIMENSION DATE

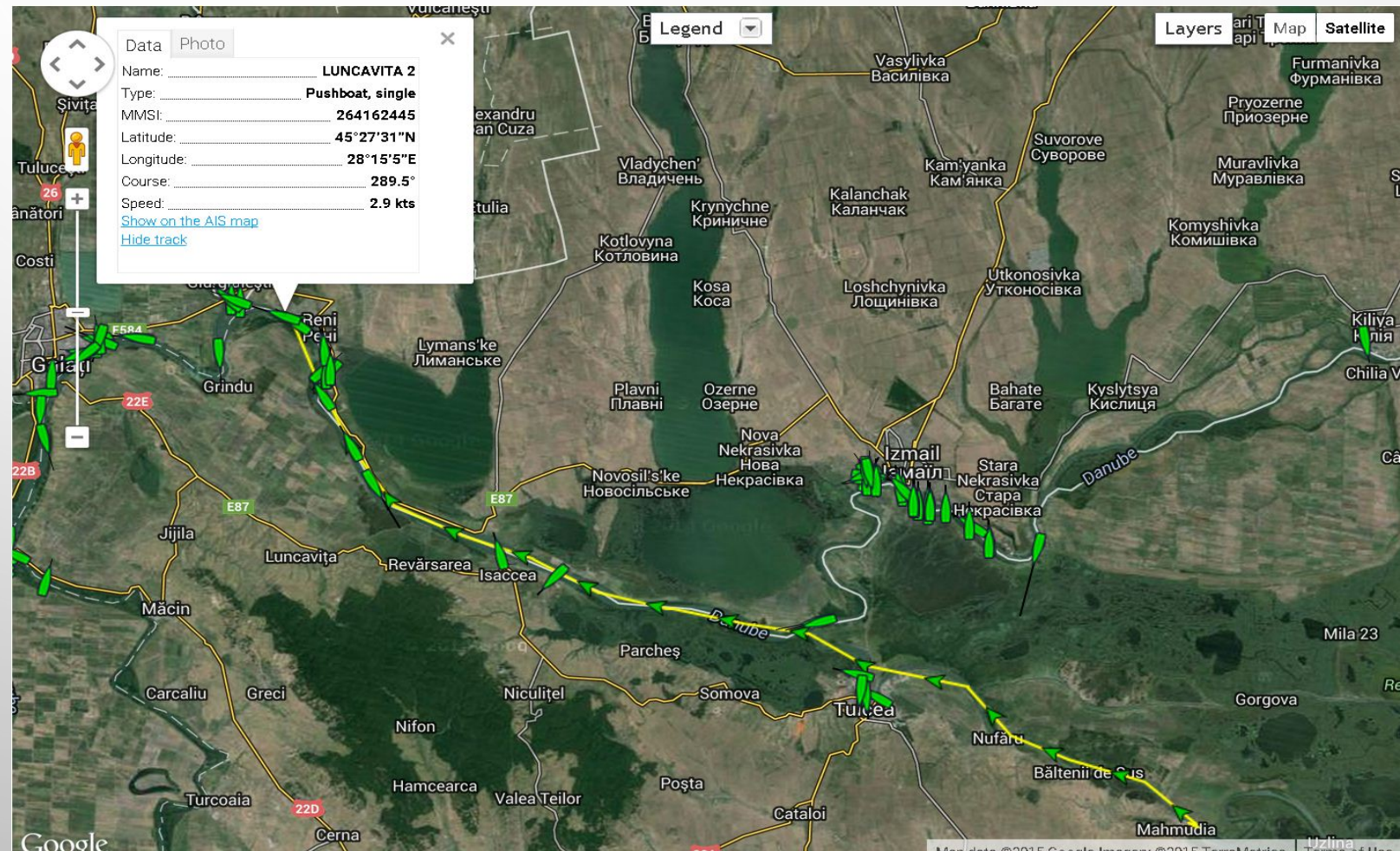
THE RIS OPERATOR SHALL BE ABLE TO USE AND RECOGNIZE
OF THE VARIOUS TYPE OF THE GIS 3-D MODELS



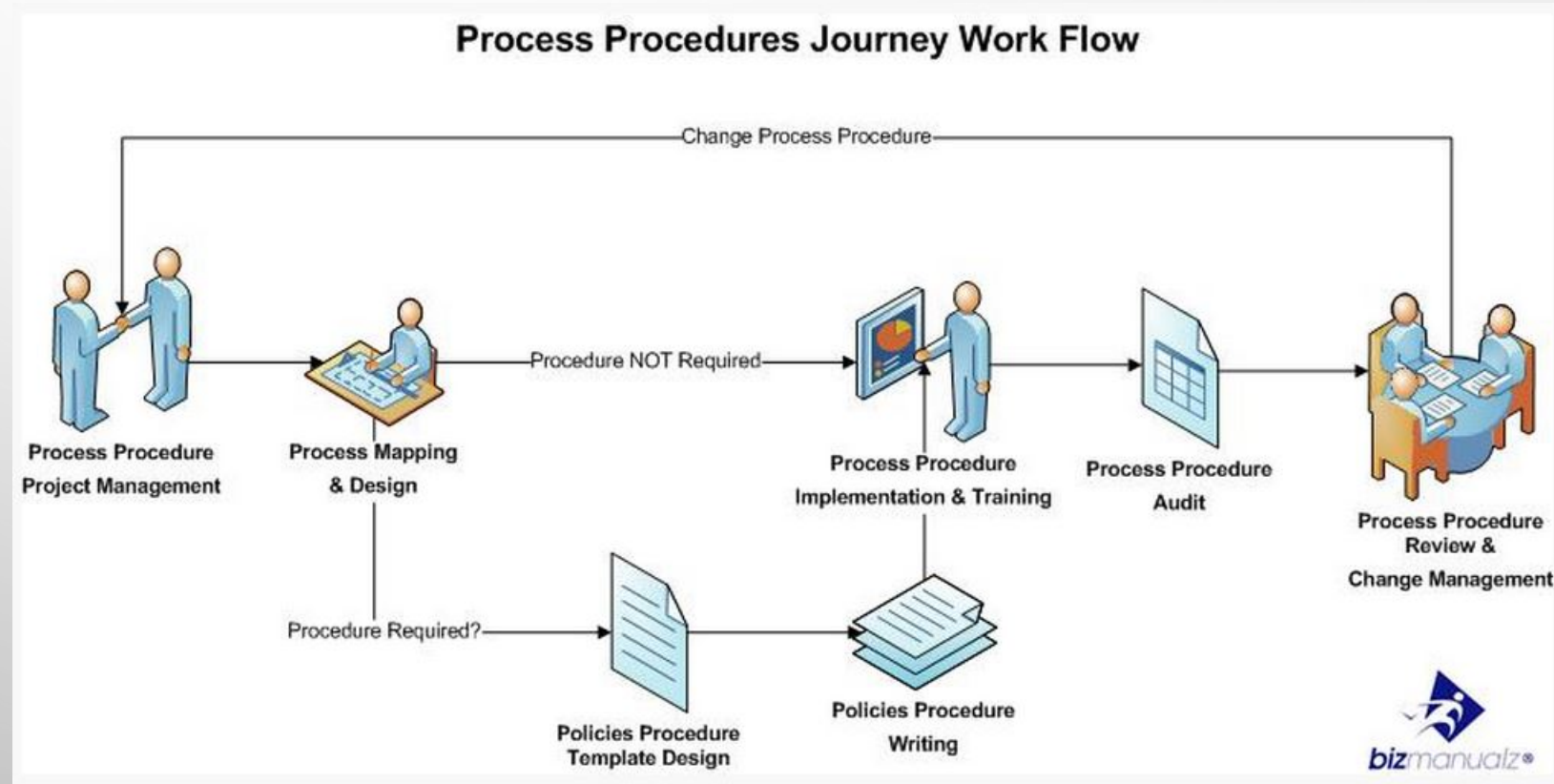
3. RIS OPERATIONAL/TECHNICAL SERVICE

3.1 THE RIS OPERATOR SHALL BE ABLE TO PERFORM

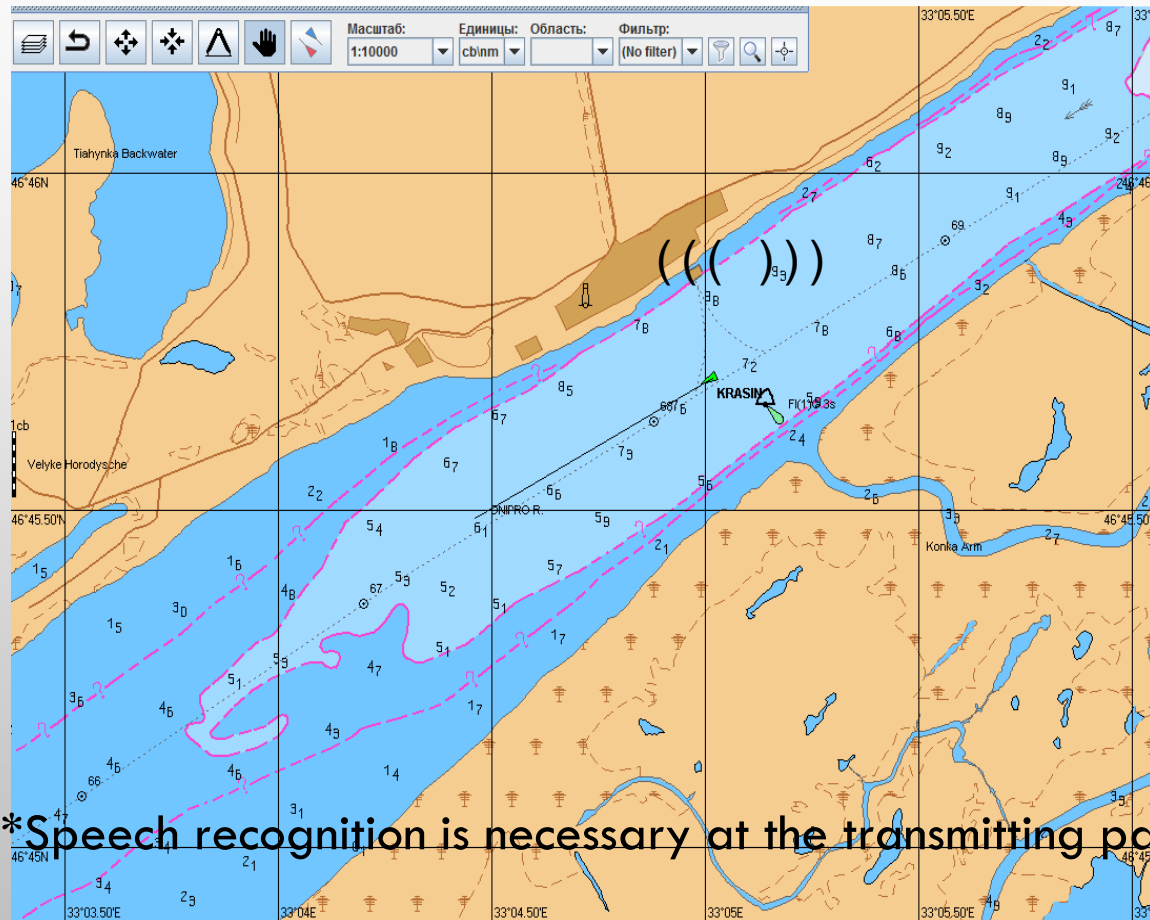
- OPERATIONAL WORK TO APPLY TRAFFIC REGULATIONS AND
- CONTROL TECHNICAL EQUIPMENT TO ENSURE ASSIST SUSTAINABLE NAVIGATIONS.



3.2. The RIS operator shall be able to follow up different instructions, technical documents and manuals .



3.3 THE RIS OPERATOR SHALL BE ABLE TO COMMUNICATE GENERALLY AND PROFESSIONALLY, WHICH INCLUDES THE ABILITY TO USE STANDARDIZED COMMUNICATION PHRASES IN SITUATIONS WITH COMMUNICATION PROBLEMS.



*Speech recognition is necessary at the transmitting part

3.4 THE RIS OPERATOR SHALL BE ABLE TO BE SOCIABLE.



BELOW WE ARE CONSIDER FOR EXAMPLE 3-E MORE IMPORTANT TASKS FOR SAFETY NAVIGATION ON IWW IN OUR STUDY/TRAINING COURSE:

1. MANEUVERING AND DIVERGENCE OF VESSELS/OBSTACLES IN NARROW PLACES; NAVIGATION IN SHALLOW WATER;
2. CRITICAL HYDRO-METEOROLOGICAL CONDITIONS IN NAVIGATION;
3. DYNAMIC CHARTS.

- 
- 
- TRAINING COURSE FOR RIS OPERATORS:
- 1. MAGISTER LEVEL; №1
 - 2. VOCATIONAL LEVEL; №2
 - 3. PERIODIC RETRAINING. №3

BELOW YOU CAN SEE
TABLE 1 CONTENT FOR TRAINING COURSE №1



No	Course Title	ECTS	Class hours	Others
1	RIS Familiarizations	2	24	
2	RIS Standards	4	32	
3	Navigations	6	48	
4	Seamanship	3	24	
5	ICT	4	32	
6	Safety	3	24	
7	Handling vessels in narrow water	3	24	NEW
8	Critical Hydrometeo Conditions in IWW Navigation	3	24	NEW
9	Autonomous shipping	3	24	Ongoing course
10	Transport logistic	4	32	
11	GIS Technology	2	16	
12	Data Management	3	24	
13	Dynamic charts	4	32	Trial Time
14	Legal Aspects	3	24	Under
TOTAL		47	404	Discussion

No	NAVIGATION	48 h
1	Charts: ENC, SENC, IENC, ECDIS, Inland ECDIS, Chart projections	8
2	Chart datum, AtoN, Publication	8
3	Navigation Equipment's: Compass, Radar, GPS/DGPS, Echo sounder, AIS/IAIS, ARPA, Errors	6
4	CEVNI	6
5	Vessel`s Maneuvering	6
6	Coordinate Systems, Positioning, Pilotage	6
7	Hydrology & Meteorology	4
8	Working with Documents	4

No	RIS FAMILIARIZATION	24 h
1	RIS HISTORY	2
2	STRUCTURE & ARCHITECTURE OF RIS	3
3	RIS TASKS	3
4	RIS PROJECTS, CURRENT RESAULT	3
5	RIS CENTERS OPERATIONAL WORK	3
6	RIS OPERATOR`S TASKS, COMMITMENT, RESPONSIBILITIES	2
7	RIS EQUIPMENT & SOFTWARE	4
8	RIS GIDELINES & MANUALES	4

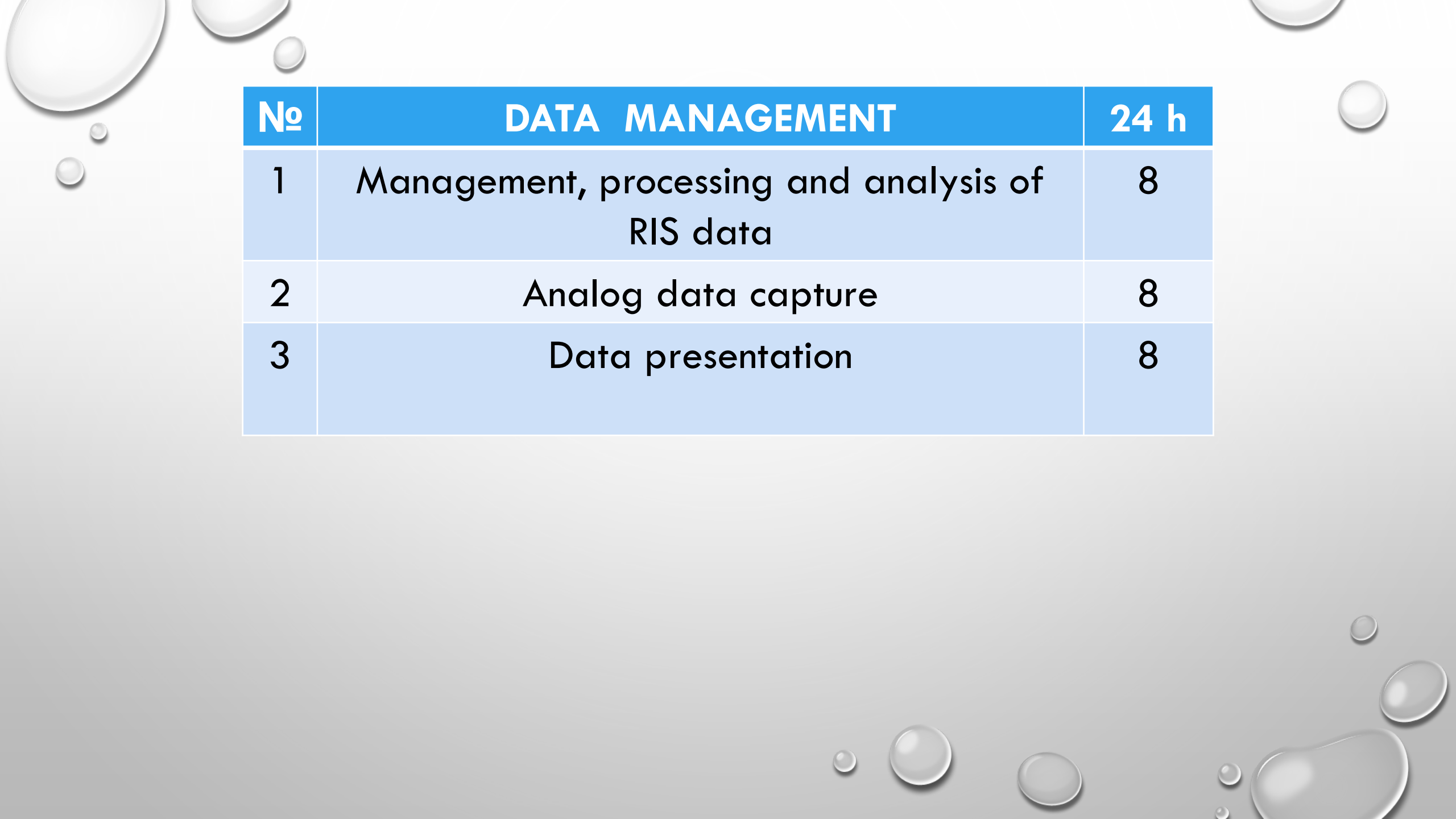
№	RIS STANDARDS	32 h
1	Standard INLAND ECDIS	5
2	T & T Standard (INLAND AIS)	5
3	ERI Standard	5
4	NtS Standard	5
5	Standard of Competence of RIS Operator, Boat Master etc.	4
6	Standard of GIS	4
7	Standard of RIS Communication, DATABASE STRUCTURE	4

No	ICT INFORMATION & COMMUNICATION TECHNOLOGY	32 h
1	COMPUTER HARDWARE	6
2	SOFTWARE DEVELOPMENT PROCEDURE	7
3	INTERNET & ITRANET COMMUNICATION	6
4	Architecture OPERATING SYSTEMS and FUNCTION	6
5	Database Structure	7



No	Seamanship	24 h
1	Ship Construction	8
2	Ship Stability	8
3	Electricity Supply	8

No	SAFETY	24 h
1	WARNINGS	3
2	VHF, SSB, Wireless Telephone	3
3	Satellite Communication	3
4	Inland AIS, AIS, VTS	3
5	Safety Management System	4
6	ISM Code	4
7	SOLAS 78/95	4



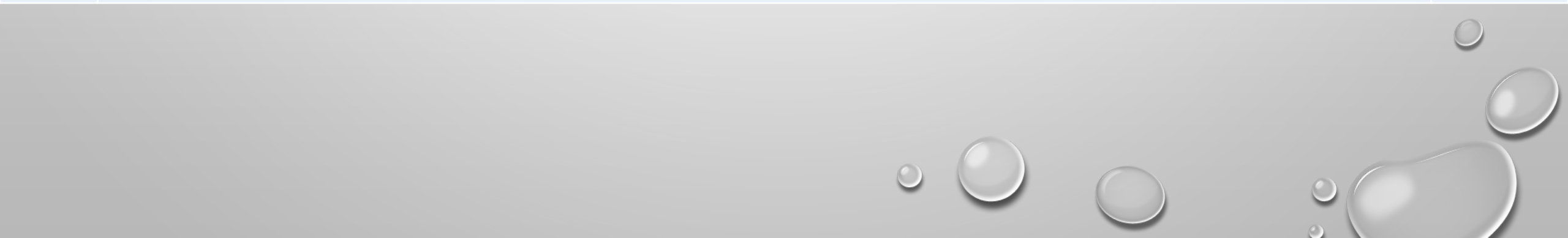
No	DATA MANAGEMENT	24 h
1	Management, processing and analysis of RIS data	8
2	Analog data capture	8
3	Data presentation	8

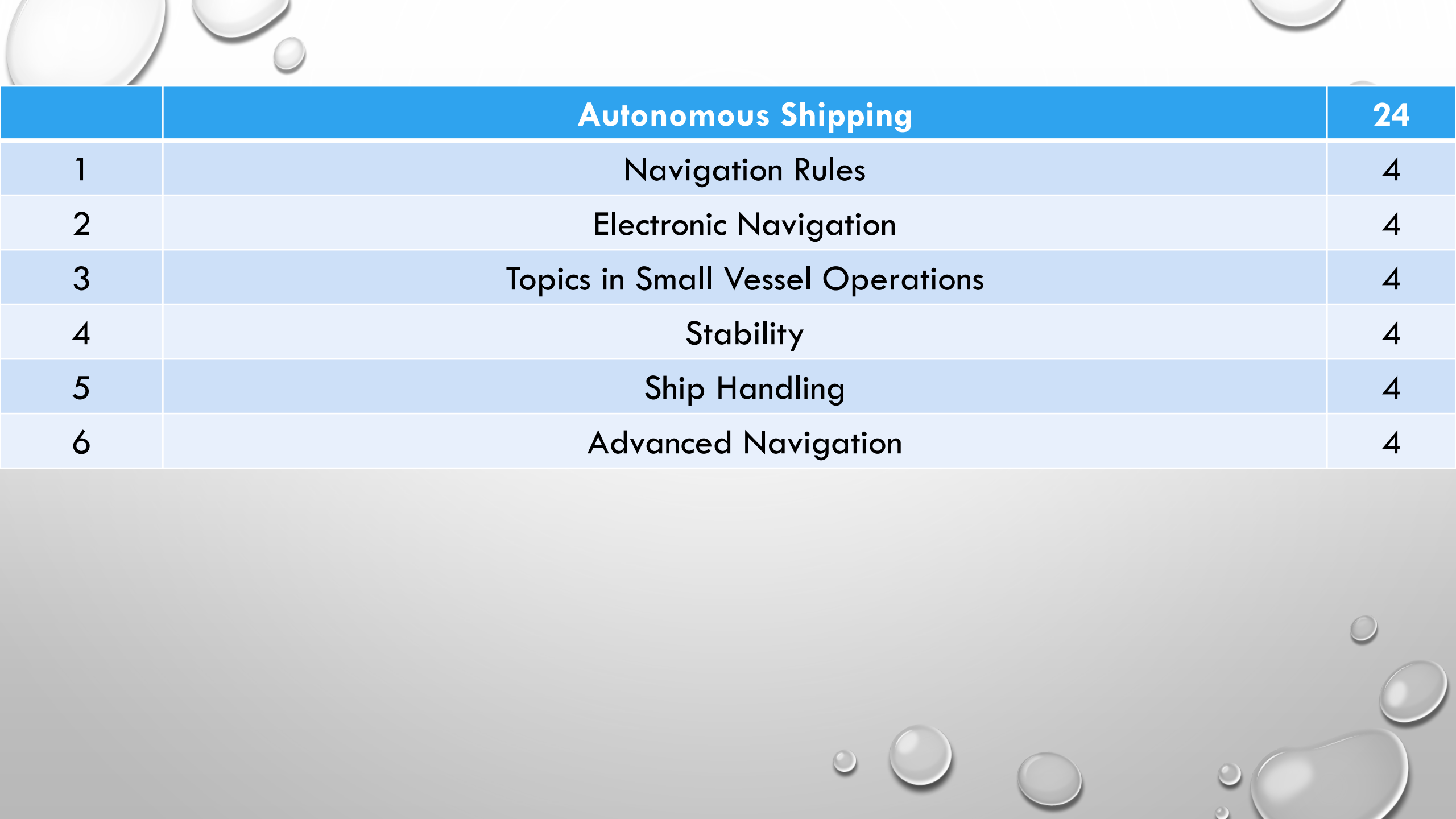


	Legal Aspects	24 h
1	Product Liability	8
2	Law of the sea & IWW	8
3	Case studies	8

	TRANSPORT LOGISTICS	32 h
1	International Logistics	7
2	Supply Chain Planning	6
3	Logistics Management	7
4	Logistic Systems	6
5	Management Accounting	6
6	Transportation Systems Design	6

	GIS Technologies	16h
1	Geocomputing	2
2	Advanced Quantitative Methods	1
3	Graphic Design in Cartography	2
4	Spatial Data Bases	2
5	Interactive in Cartography and Visualization	1
6	Spatial WEB and Mobile Programming	2
7	GIS Applications	2
8	GIS & Spatial Analysis	1
9	Capstone in GIS Development	1
10	Practicum in GIS Development	2





	Autonomous Shipping	24
1	Navigation Rules	4
2	Electronic Navigation	4
3	Topics in Small Vessel Operations	4
4	Stability	4
5	Ship Handling	4
6	Advanced Navigation	4

	Critical Hydrometeo Conditions in IWW Navigation	24 h
1	General	6
2	Ice Phenomena	6
3	Flood	6
4	Shallow Water	6

TASK 2

1. General

In case of critical hydro-meteorological conditions of navigation (ice phenomena, flood, shallow water and strong wind) under which navigation is hampered, the boat masters shall strictly observe special temporary requirements of the competent authorities of the countries introduced on the sections of their responsibility according to article 1.22 of the Basic rules of navigation on the Danube (BRND). Special temporary requirements of the competent authorities are timely and sufficiently notified to the crews of the vessels and shipping companies by means of RIS in a form of "Notices to skippers".

2. Ice phenomena

In case of ice phenomena that do not allow vessels to continue their journey, the boatmasters, apart from a strict compliance with the temporary requirements of the competent authorities and Special River Administrations, shall take all measures necessitated by the circumstances to prevent imminent danger, in particular:

- when passing close to big ice floes and ice fields, do not approach them; in case of an inevitable collision with the ice, to receive a blow upon the stem, avoiding bilge and side blows;
- to avoid entering into the ice field, as the vessel (convoy) may lose manoeuvrability and be jammed therein;
- if the vessel has yet entered a dangerous zone, to leave the jamming zone as far as possible, without putting a rudder and nozzles hard over to avoid their blocking;
- following the collision with the ice, to carry out immediate and thorough inspection of the watertight of the vessel's hull and to perform regular control in future;
- boatmasters of the vessels shall maintain continuous communication with the vessels operating in the ice zones on the given section as well as with the administrations in order to communicate their position and the ice state as well as to receive information on the conditions and restrictions of navigation;

- if the vessels pass a natural canal or a canal made in the ice by the icebreaker, to undertake this passage only inside of this canal with a safe speed avoiding contacts with the ice edge and detachment of the ice floes from the edge of the ice cover; anchoring, overtaking or meeting in these canals are prohibited.
- to undertake manoeuvres and meetings with the vessels only on the straight sections of the river with the sufficient width of the ice canal and only after agreement on the meeting conditions via radiocommunication;
- when passing a lock, to avoid wedging of a hull by the slough ice and the ice accumulated on the walls of the lock chamber;
- if, according to "Notice to skippers", the conditions of the open brash ice, up to 10 cm and over in thickness, are expected, then only the vessels with the reinforced framing and plating are recommended to navigate in these conditions (the vessels are reinforced to navigate in the open brash ice only upon the demand of the owner of the vessel);
- all vessels getting trapped in the middle of the ice field, in case of a threat to remain blocked or to block the way to other more solid vessels, are obliged to accept the aid from the competent authorities or Special River Administrations and to prepare in advance appropriate towing means for the most resistant places (anchor hawse pipes, beams, *etc.*).

3. Flood

When navigating in flood conditions, the boatmasters shall take all measures necessitated by the circumstances to prevent danger, in particular:

- to comply strictly with the articles of "Local rules of navigation on the Danube (Special provisions)" concerning restrictions of navigation or its prohibition in case of high water levels as well as exceeding of the highest navigation level (HNL);
- to comply strictly with the notices to skippers regarding the passage regime with a limited speed on the specific section;
- to pass under the bridges only in case of sufficient clearance and conditions defined by "Local rules of navigation on the Danube (Special provisions)" and "Notices to skippers";
- to undertake manoeuvres and meeting with the vessels at night only after preliminary agreement on the meeting conditions via radiocommunication;

If "Notice to skippers" does not require the concrete passage speed on the concrete section, then it shall be such as not to cause intense wave disturbance, damaging a shoreline and floating equipment moored on the shore.

4. Shallow water

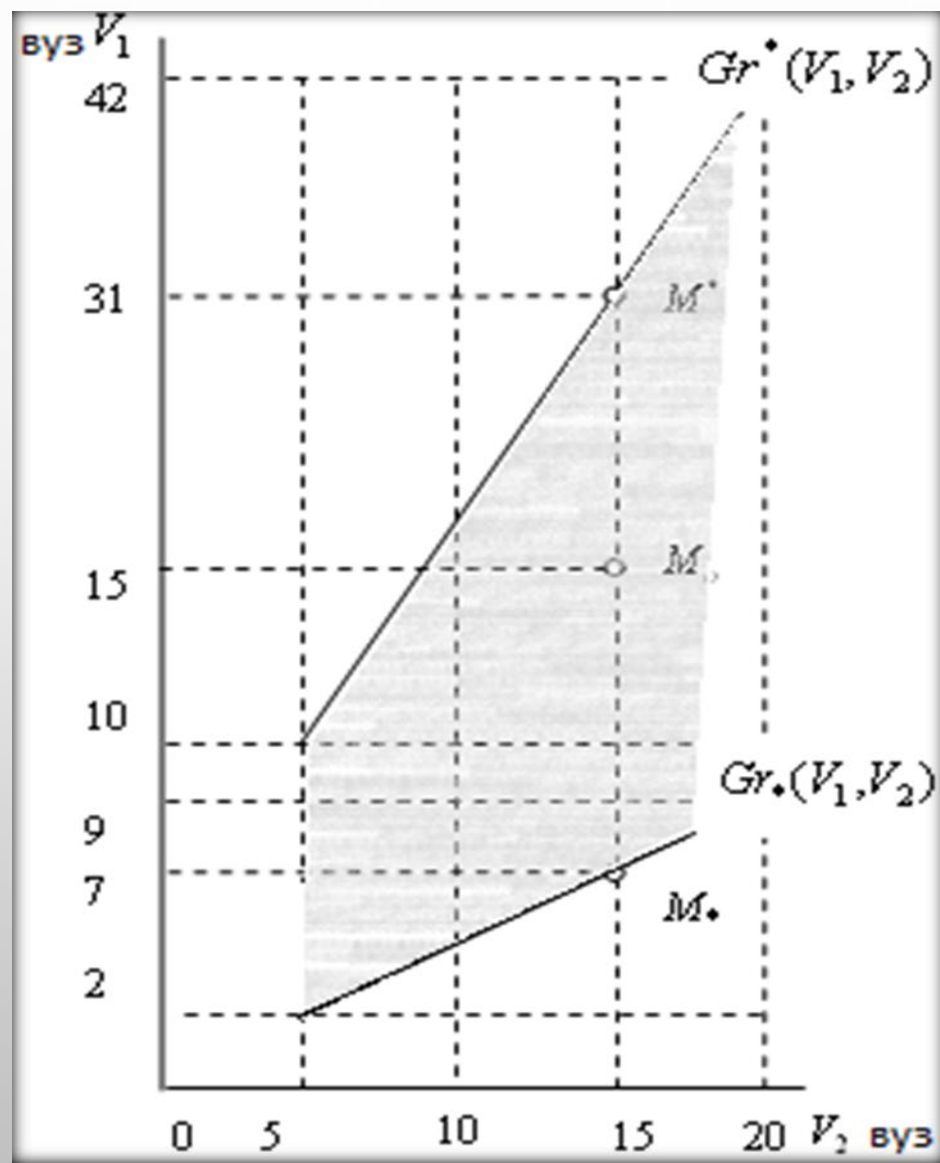
When navigating in shallow water conditions, the boatmasters shall take all measures necessitated by the circumstances to prevent danger, in particular:

- when approaching a shallow water section or ford, to reduce in advance and gradually speed of the vessel to the value which provides a stable steering;
- to undertake meeting and overtaking only when there is enough fairway width for such manoeuvres, while reducing in advance speed to the value that provides stable steering;
- to avoid drastic speed increase in order to exclude critical stern draft, caused by the vessel's trim by the stern (significant stern draft), as well as drastic speed reduction in order to avoid the trim by the bow (significant bow draft) due to the influence of the incoming stern wave. The value of the trim by the bow and by the stern depends on the length of the vessel;
- to ensure strictly the recommended minimum safety clearance (minimum underkeel clearance); at a fairway depth from 2,5 m to 3,0 m, this clearance is minimum 20 cm for rocky ground and 15 cm for sandy and gravel ground. At a lower depth, clearance shall be minimum 15 cm for rocky ground and 10 cm for sandy and gravel ground.

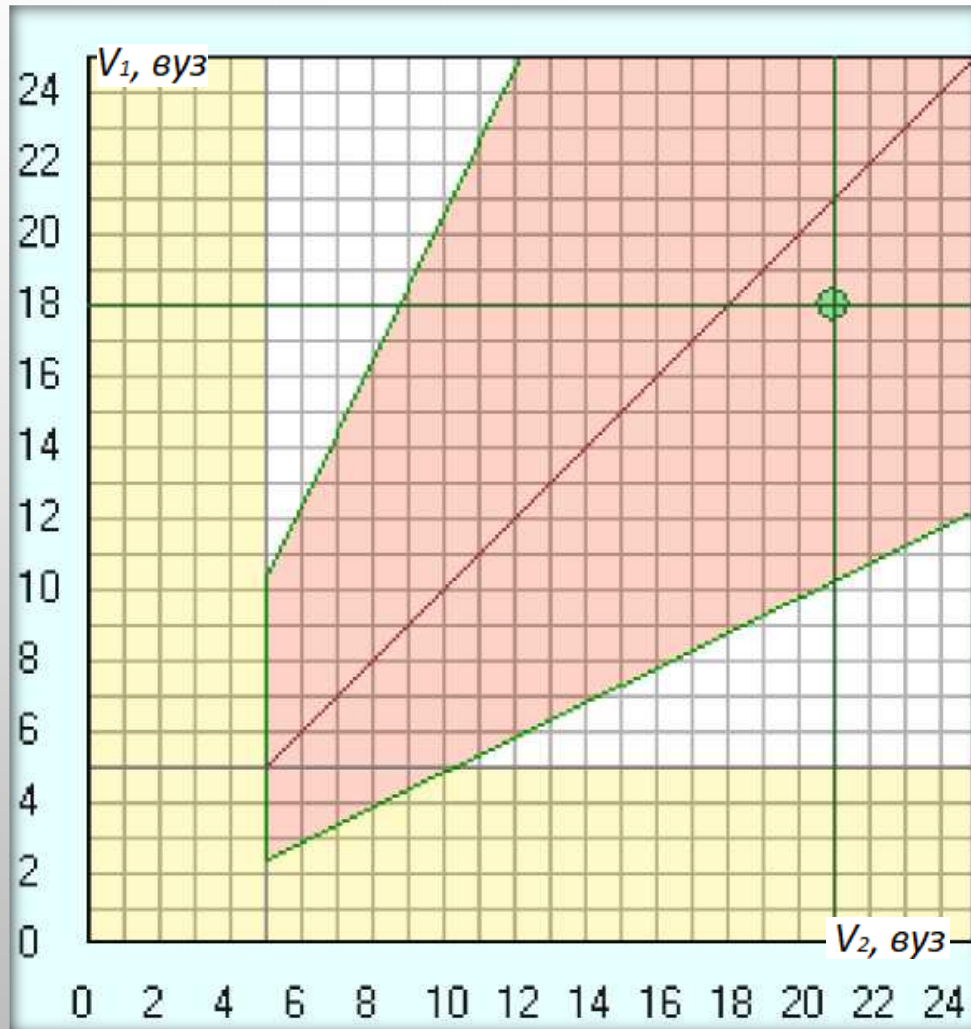
	Handling vessels in narrow water	24 h
1	Divergence of vessels by speed variation	4
2	Divergence of vessels by course variation	4
3	Determination of boundaries dangerous speeds	6
4	Determination of boundaries dangerous courses	6
5	Vessels maneuver optimization	4

TASK 1

SECTOR OF DANGEROUS SPEEDS OF VESSELS



determination of the coefficients of functions of the boundaries of the area of dangerous vessels speeds

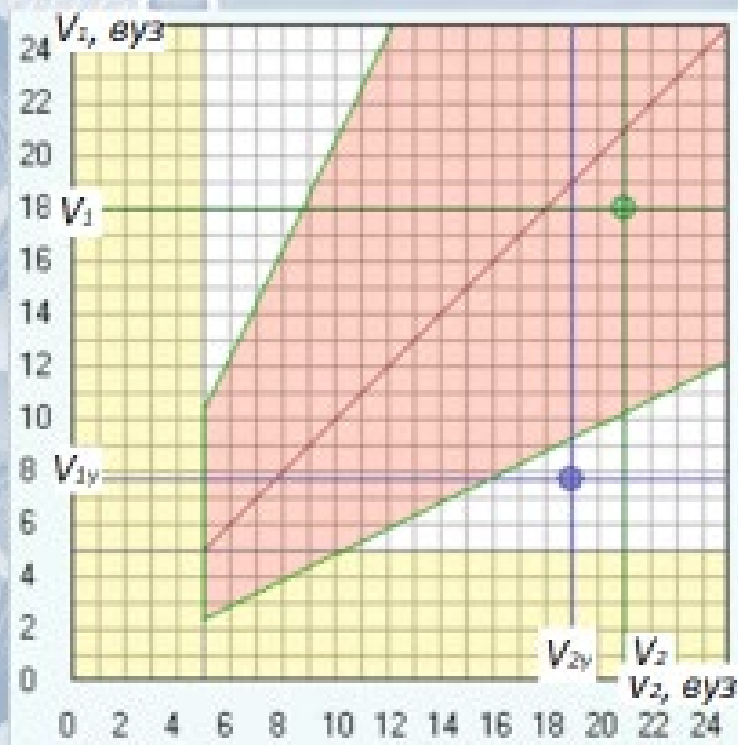


$$\infty > k^* > 0, \infty > k_* > 0 \text{ и } k^* > k_*$$

$$k^* = \frac{\sin(K_2 - \gamma^*)}{\sin(K_1 - \gamma^*)}$$

$$k_* = \frac{\sin(K_2 - \gamma_*)}{\sin(K_1 - \gamma_*)}$$

selection of a pair of safe vessels speeds



V_{1y}

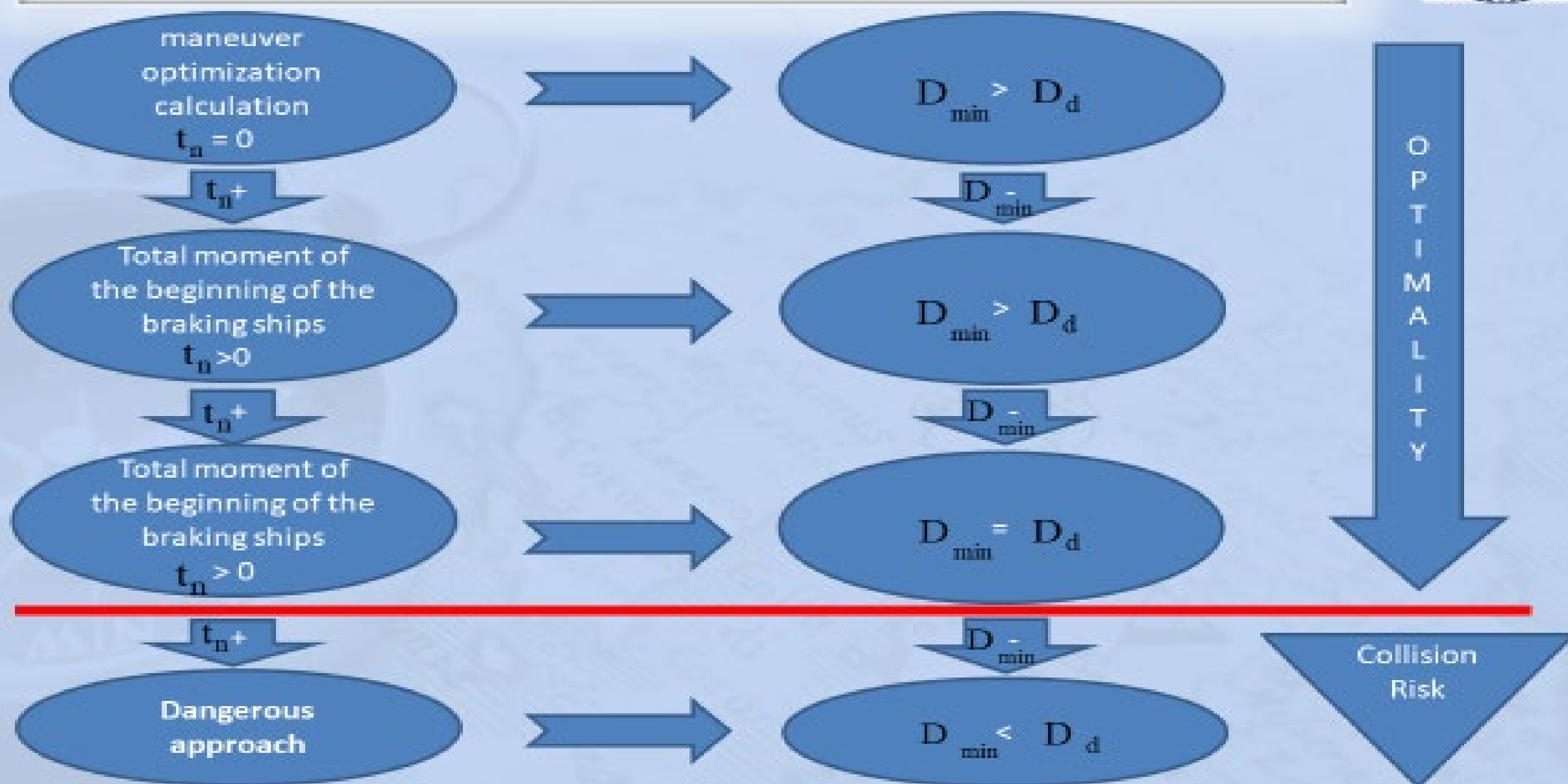
S_1



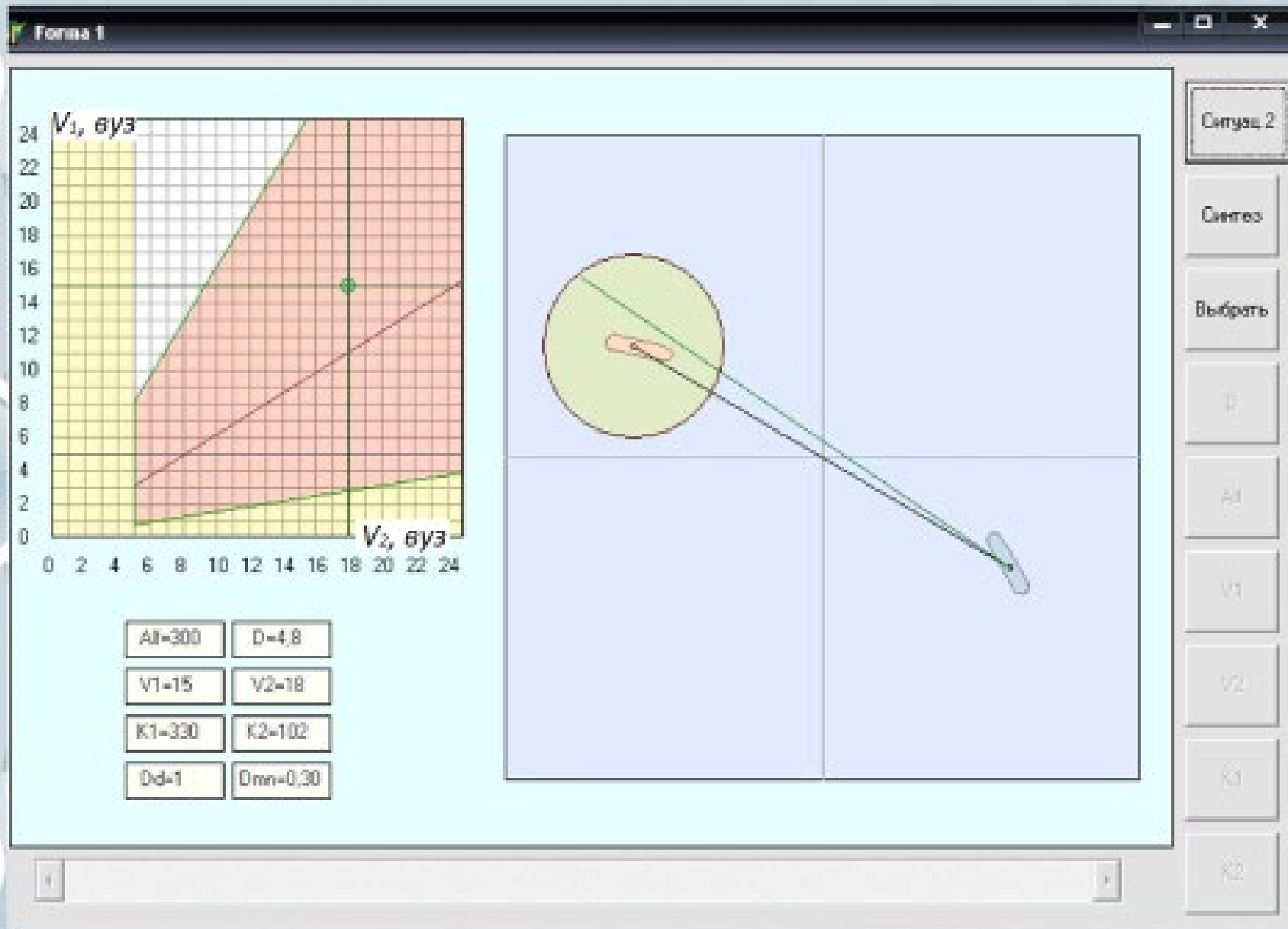
V_{2y}

S_2

Ships maneuver optimization calculation



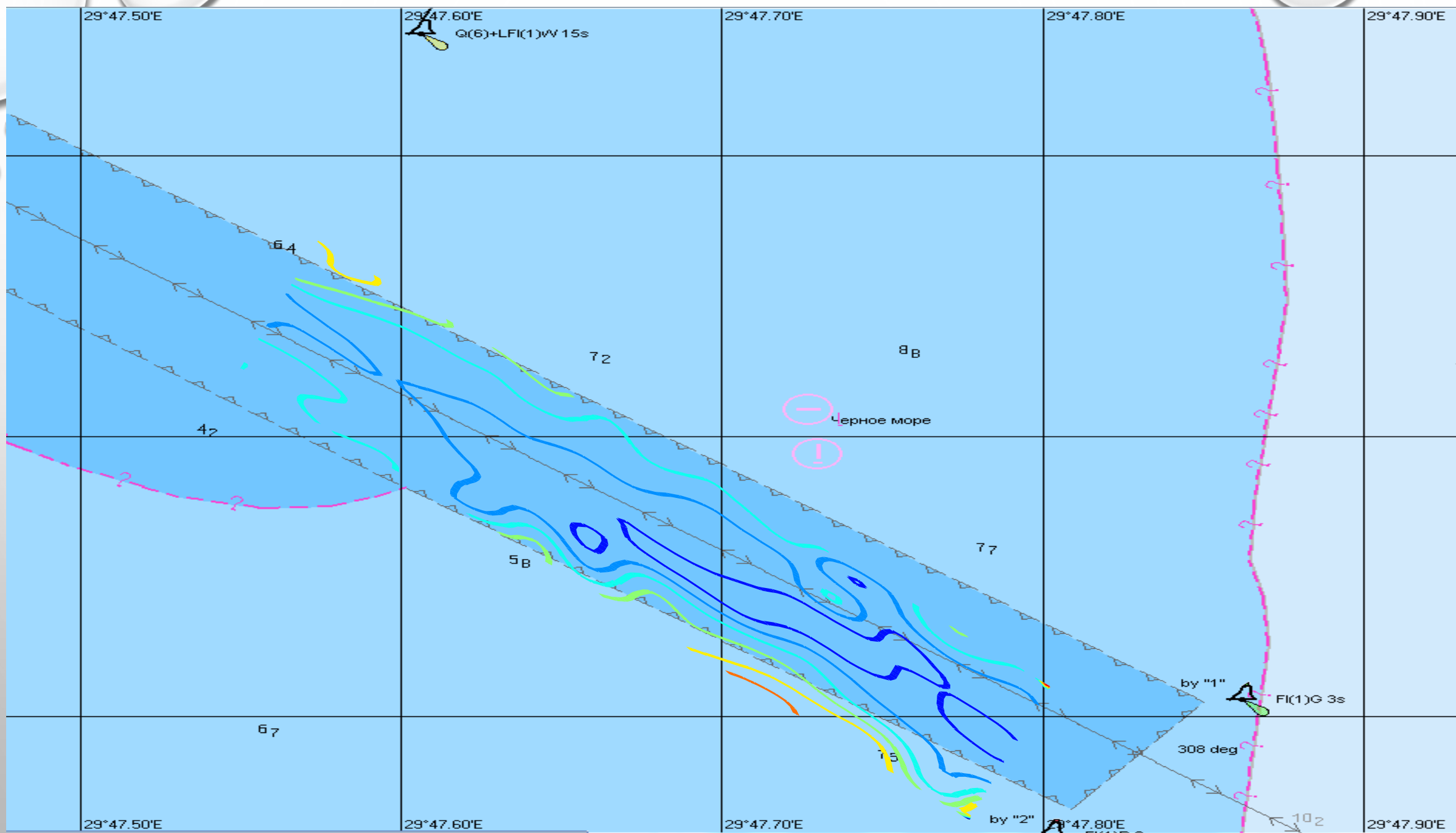
Dangerous situation

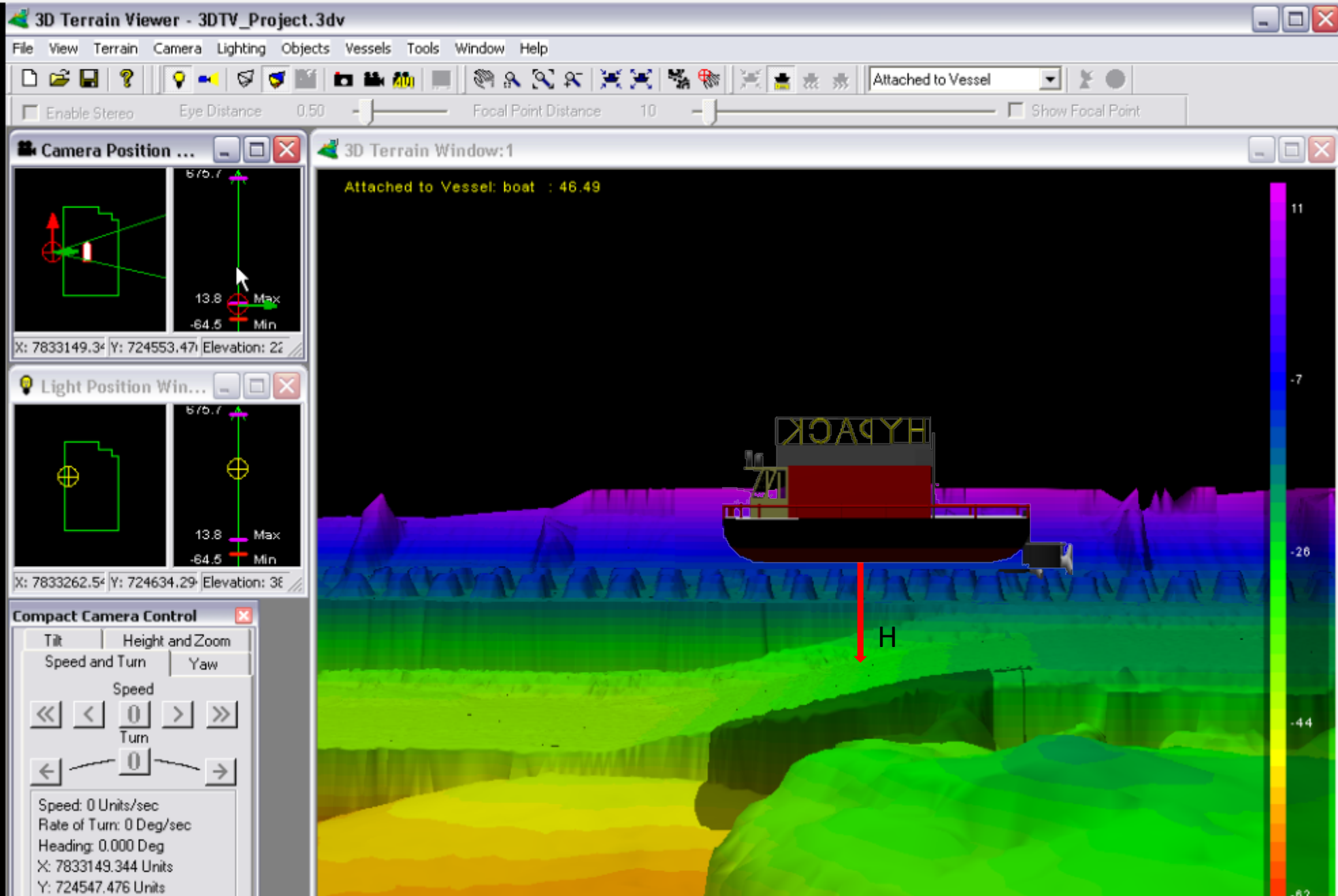


TASK 3

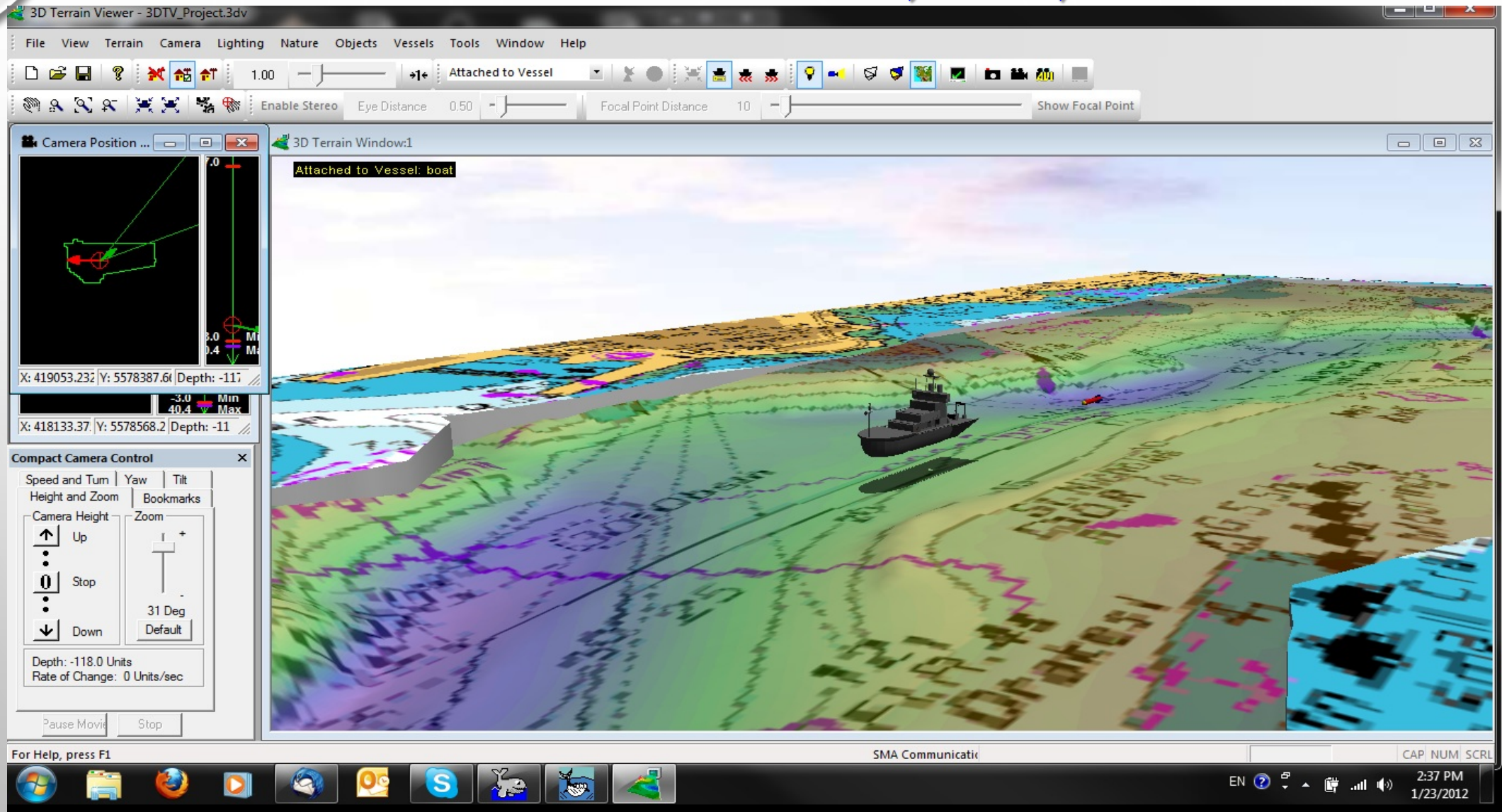
DYNAMIC CHARTS

		32h
1	Chart Modelling: <ul style="list-style-type: none">- Modelling Water Level Dynamic;- Modelling River Bottom Dynamic;<ul style="list-style-type: none">- Scale Factor	8
2	Measurement Data: <ul style="list-style-type: none">- Water Level Gauges;- Hydro-Meteo data	8
3	Dynamic Chart Forecast depend of time voyage	8
4	tbd	4
5	tbd	4





3D TERRAIN VIEWER (3DTV)



Used to create fly-throughs over a TIN MODEL and to capture BMPs and AVIs as the camera flies through the area and for real time situational awareness.

THE AIM IS TO COMBINE THE COMPULSORY THEORETICAL COURSES WITH ON-THE-JOB PRACTICE WITH PARTNERS IN THE INDUSTRY TO ENSURE MAXIMUM COMPETENCE. ALL COURSES ARE LECTURED IN ENGLISH, AND COURSES CAN BE TAKEN UP OVER SEVERAL YEARS TO FACILITATE PART-TIME WORK. FURTHERMORE, A SELECTION COMMITTEE HAS BEEN INSTALLED TO ASSESS EXEMPTIONS, IN ORDER TO ENABLE ACTIVE RIS OPERATORS TO STUDY ONLY THE MODULES THAT ARE RELEVANT FOR THEM. THESE PROCEDURES ALLOW FOR A QUALITATIVE AND PROFESSIONAL, YET ACCESSIBLE PROGRAM.

THE 1-YEAR PROGRAM CONSISTS OF 4 THEORETICAL MODULES OF 3 WEEKS EACH, FITTED IN A TWO SEMESTER SYSTEM. BETWEEN THE THEORETICAL MODULES, THE FIELDWORK IS PLANNED. AT THE END OF EACH SEMESTER, A TWO WEEK STUDY PERIOD FOLLOWED BY AN EXAMINATION PERIOD, IS INCLUDED.

ENTRY REQUIREMENTS

THE ENTRY REQUIREMENTS ARE THREEFOLD:

- A BACHELOR DEGREE OR EQUIVALENT FROM A EUROPEAN UNIVERSITY OR COLLEGE, OR FROM AN OVERSEAS INSTITUTION RECOGNISED AND LEGALISED BY ITS GOVERNMENT.
- AN ATTEST OF « MATHEMATICS & PHYSICS » THROUGH A RECOGNISED HIGHER EDUCATION DIPLOMA SUPPLEMENT. DIPLOMA SUPPLEMENT SHOULD MENTION THE ITEMS OF IHO/IMO STANDARDS.
- PROFICIENCY IN THE ENGLISH LANGUAGE, PROVEN BY A FIRST DEGREE EU ENGLISH LANGUAGE PROGRAMME, TOEFL, IETS, GMAT OR ALTERNATIVE PROOF.

THE APPLICATION PORTFOLIO WITH THE REQUIRED CERTIFICATES AND AN INTERVIEW BY EXPERTS IN THE SELECTION COMMITTEE ASSESS THE INFORMATION PROVIDED. EXEMPTIONS ARE GRANTED BASED ON THE APPLICATION PORTFOLIO AND THE INTERVIEW.

CONCLUSION

1. IN THIS PRESENTATION WE WOULD LIKE TO POINT OUT ON RIS OPERATOR QUALIFICATIONS WITH ONE STANDARD IN ALL THE COUNTRIES;
2. THAT STANDARD HAVE TO BE RELATED WITH DIRECTIVE 2017 ;
3. THIS WE PRESENTED JUST ONE TASK, ANOTHER TWO TASKS STILL UNDER DEVELOPMENT;
4. WE TRIED TO MOVE FORWARD ACCORDING THE PROSPECTIVE OF AUTONOMOUS SHIPPING DEVELOPMENT;
5. IN OUR POINT OF VIEW WE MUST TAKE INTO ACCOUNT FOR IENC DYNAMIC IN REAL TIME DURING THE VESSEL VOYAGE IN VIEWER;
6. WE SHOULD TO BE ONE STEP AHEAD FOR COMPETITIVE ONE;
7. WE SHOULD TO CONTINUE DISCUSSION FOR DEVELOPMENT SAME PROFESSIONAL REQUIREMENT FOR SPECIALISTS INVOLVED IN RIS PROCESS.

The image features a light gray gradient background. In the top-left and bottom-right corners, there are several realistic-looking water droplets of various sizes, rendered with soft shadows and highlights to give them a three-dimensional appearance. The text "Thank you for your Attention" is centered in the middle of the frame.

Thank you for your Attention