

E-Navigation Underway 2013

Sergey Cherepanov
Deputy Managing Director
Transas Technologies Ltd.



e-Navigation Development in Russia, industry View

1. Major navigation activities

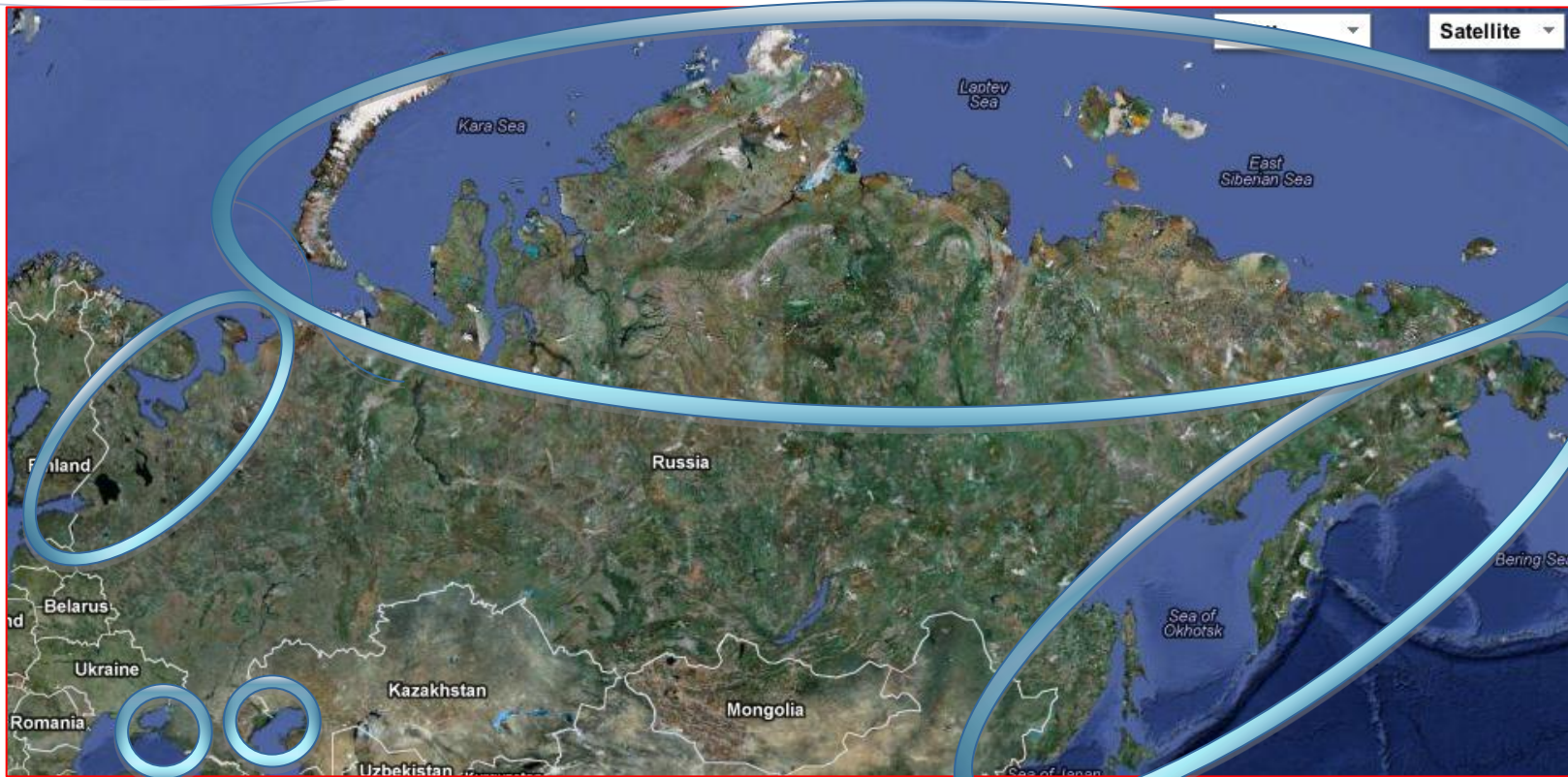
- ④ Major government funded developments going in Russian might be classified rather as navigation than e-Navigation yet, these are:
 - ④ Regular VTS upgrades and VTS areas expansion;
 - ④ Extension of AIS Network coverage;
 - ④ Integration of separate AIS networks into national network;
 - ④ Implementation of AIS networks along largest rivers;
 - ④ Implementation of large RIS implementation program;
 - ④ Shore GMDSS systems regular upgrade;
 - ④ Running of national LRIT data centre and vessel monitoring centre;
- ④ Unfortunately there is no official entity assigned to manage or coordinate development of national e-Navigation concept;
- ④ At the same time some related to navigation developments are happening. These are: number of GLONASS satellites increases, preparation for satellite AIS launching is going on, weather and ice services are improving.

2. e-Navigation research

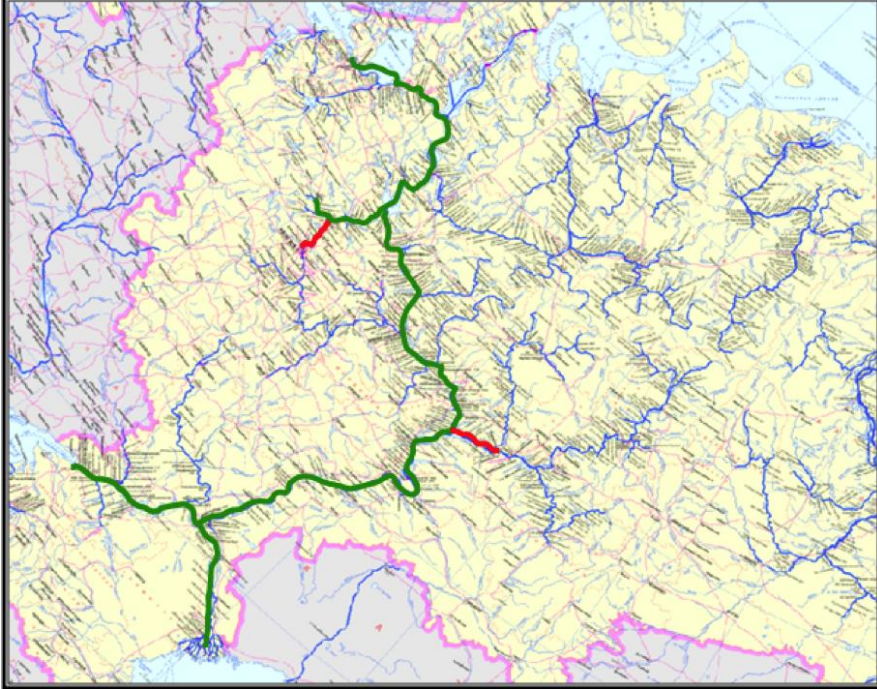
As for e-Navigation:

- 🌀 2009 year Russian government launched research work “Approach” aimed at the development of a national program for implementing e-Navigation principles in Russia;
- 🌀 Till now that was only work directly addressed to e-Navigation in Russia;
- 🌀 Transas was one of two companies who did this e-Navigation research for national authorities;
- 🌀 Despite this research was done two years ago I think some of considerations might be still valid and interesting for e-Navigation society.

3. Sea areas specific



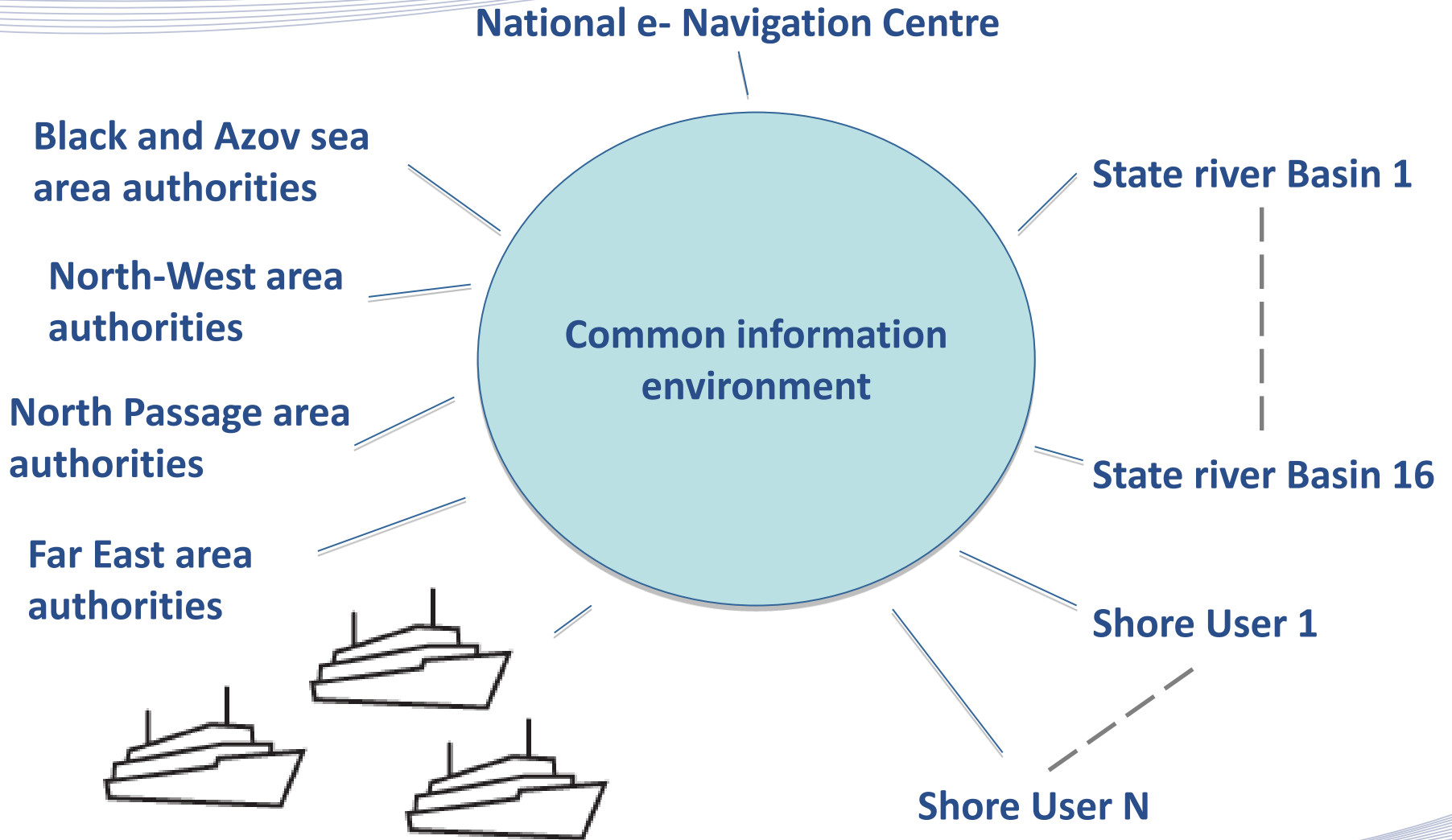
4. River waterways



Baltic-Caspian-Blacksea waterway

- There are many inland waterways capable of letting sea ships pass up to about thousand kilometers upstream, so many of rivers are used by both, sea and river ships
- Russia even has specific See-River ship class and many ships of such type are operating;
- All river waterways are managed and maintained by 16 state basins departments;
- At what degree river waterways are part of e-Navigation ???

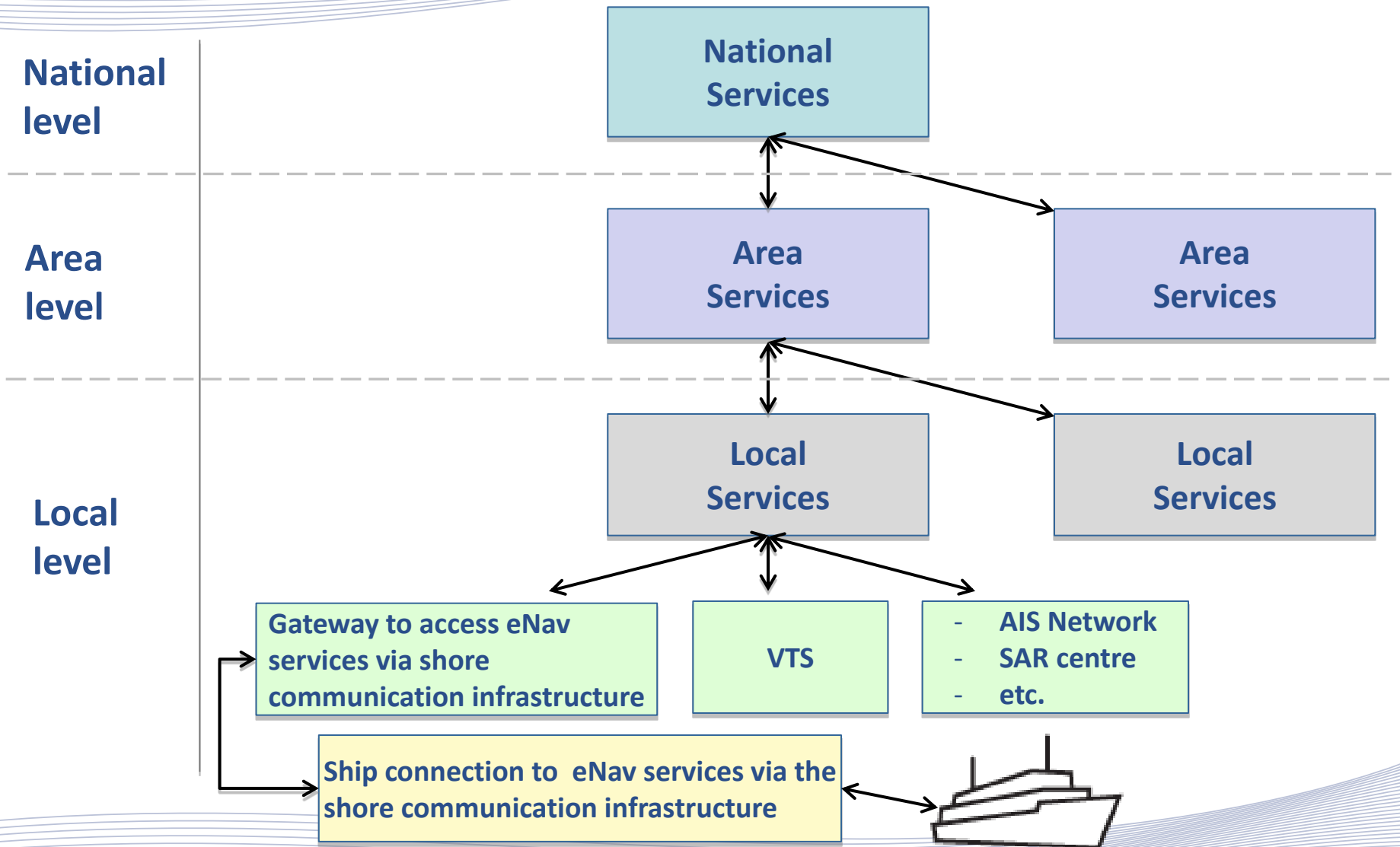
5. e- Navigation stakeholders of Russia



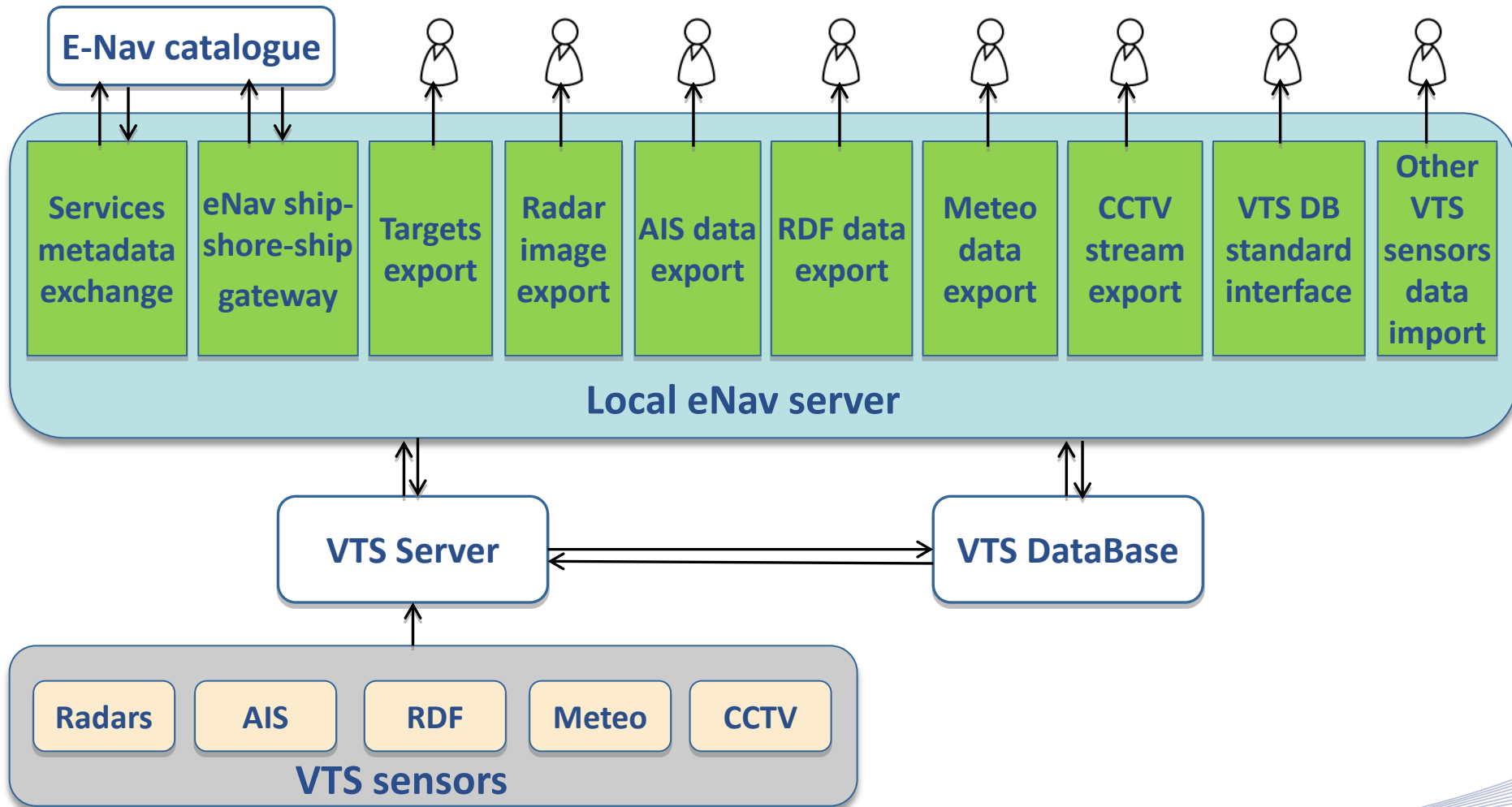
6. Russian e-Navigation Shore Architecture



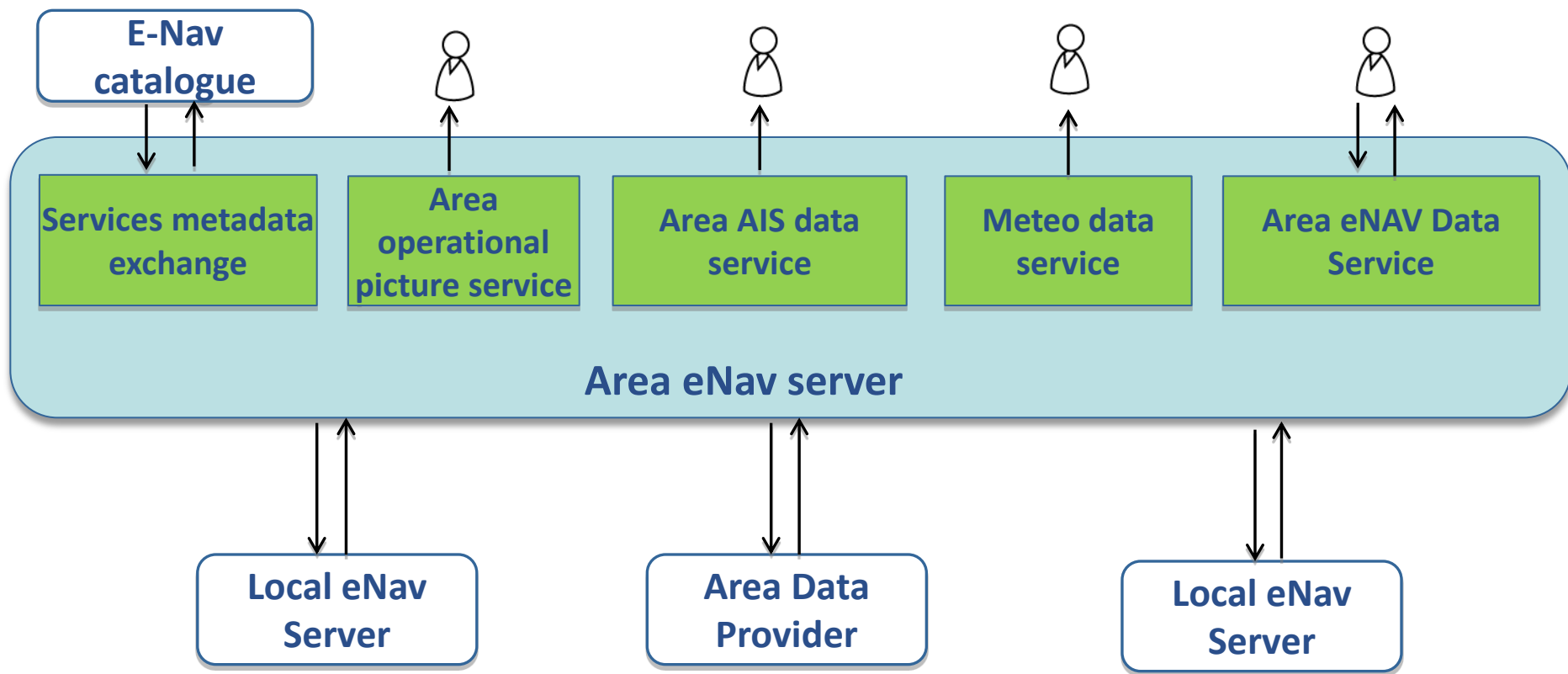
7. e-Nav Shore Services Layout



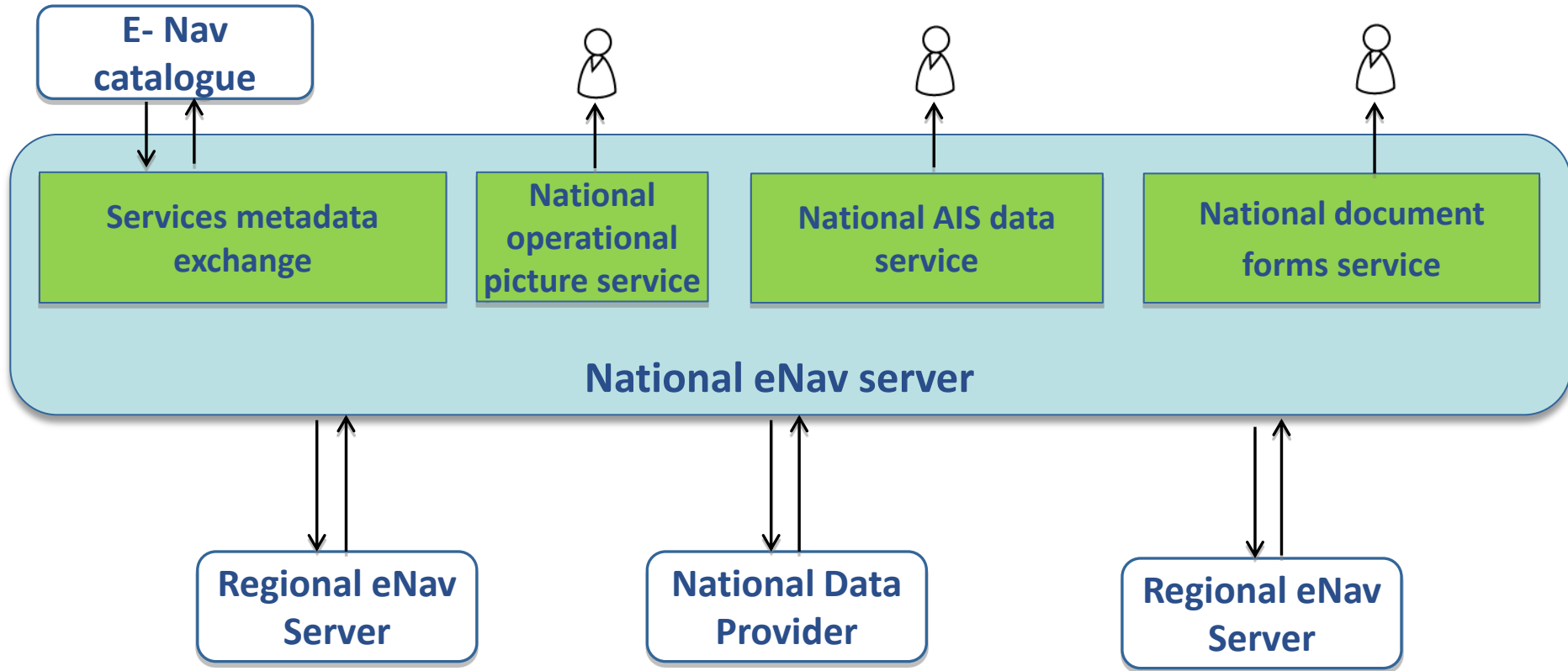
8. Local e-Nav Level and VTS integration into e-Navigation



9. Area e-NAV service level



10. National e-Nav service level



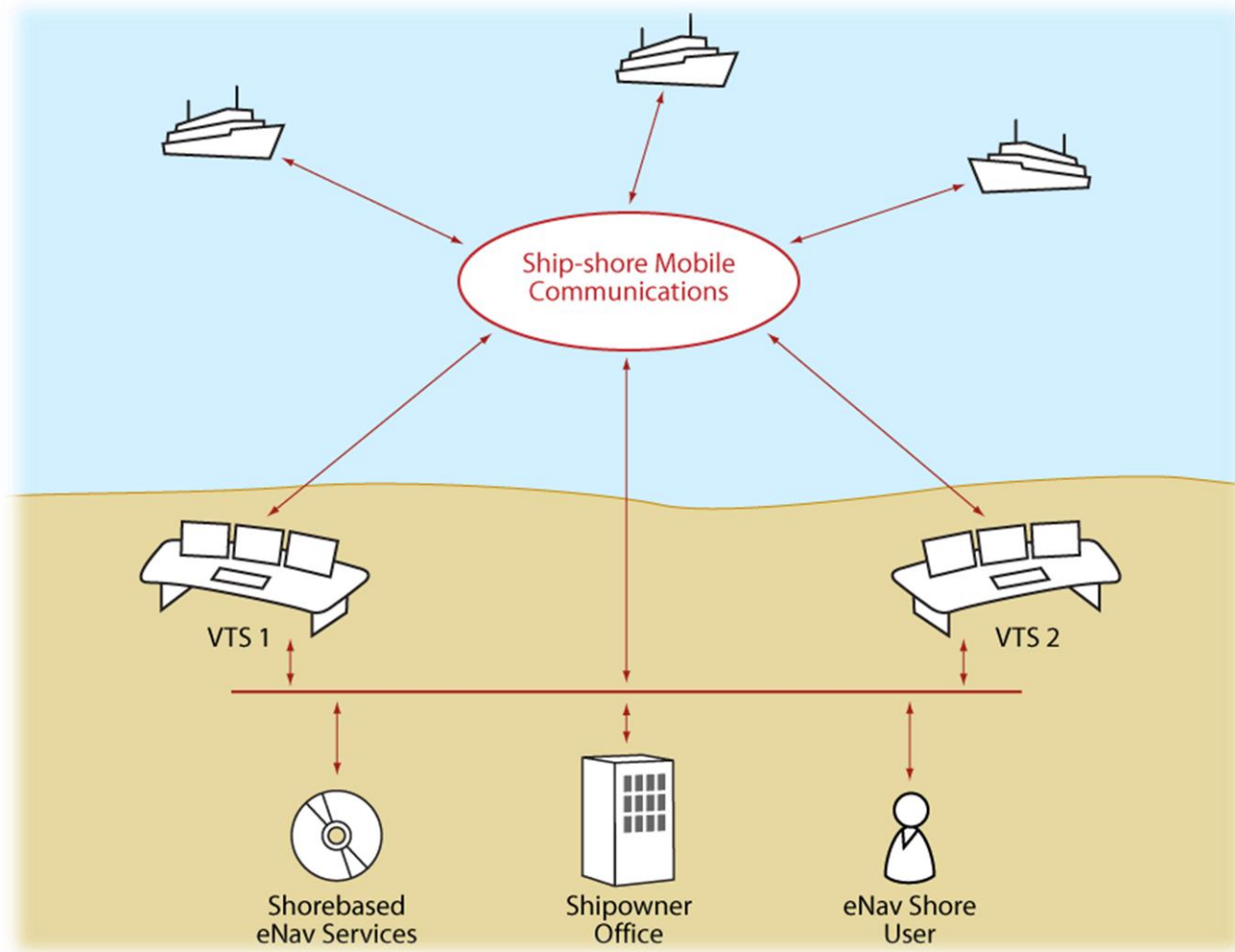
11. E-Nav catalogue

- ⦿ In world of official services each service to be verified and registered. It should be searchable, as information on this service might be requested by any stakeholder according to his particular needs. That is why E-Navigation services catalogue to be part of national e-Navigation environment.
- ⦿ E-NAV service catalogue is sort of registry, which has to provide:
 - ⦿ services specification registry;
 - ⦿ and services instances registry, while each instance is operating in particular area and is provided by particular provider;
 - ⦿ verification of service instances before putting them into the service registry;
 - ⦿ search of services in respond to a stakeholder request, containing needed functionality and related geographical area.
- ⦿ E-Navigation service catalogue itself supposed to be service of national or even international level;
- ⦿ e-Navigation service service instances to be registered by initiative of a service provider.

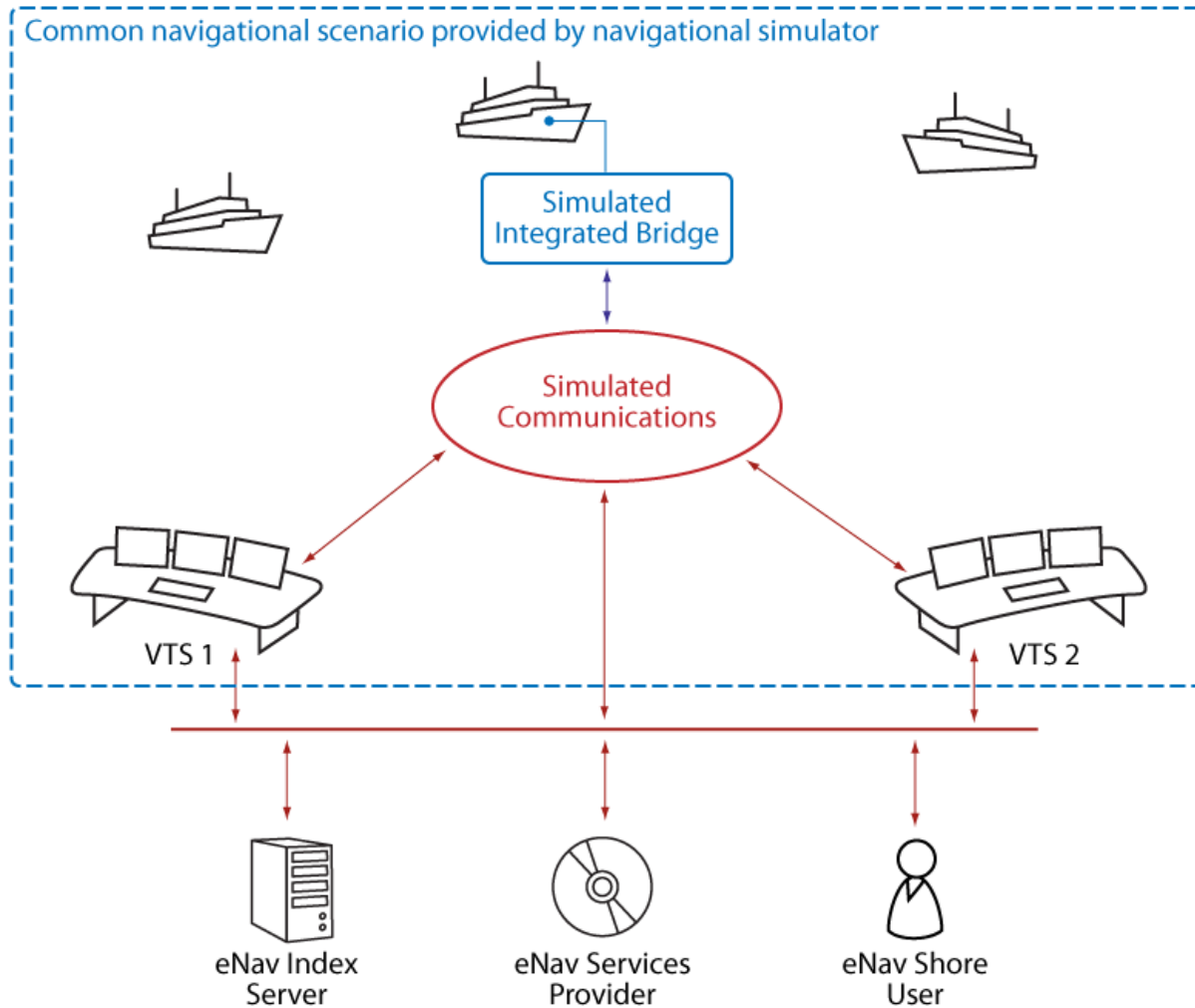
12. E-Navigation Mockup

- To demonstrate some practical examples on how to use services to extract a new added value from information, which is actually available onboard and ashore today, e-Navigation mockup was created and tested.
- Basing on available Transas onboard, shore and simulation products 14 scenarios including activity of ships and various shore services were modelled, among them:
 - Ship automatically requests and receives chart collection to suit the selected route;
 - VTS assigns port approach route to the ship;
 - Ship's master retrieves valid Port Forms, related to next port of call, fills in a few fields to be managed manually and sends forms to the relevant shore organization in electronic form;
 - Ship generates a Noon Report, the ship master updates necessary fields and sends the report to the shipowner office electronically.

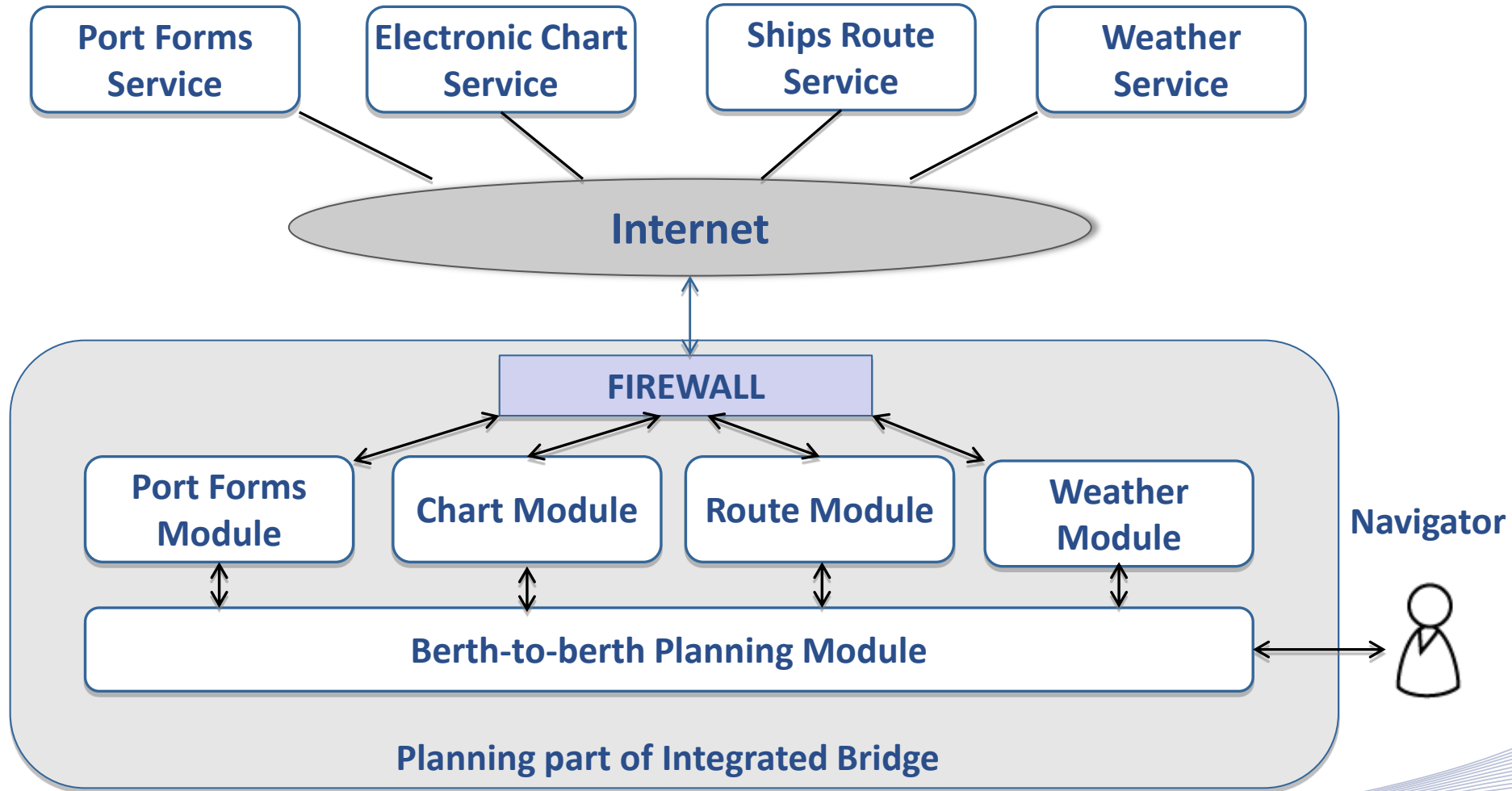
13 Actual e-Nav Interactions



14. e-Nav Mockup Interactions



15. Mockup's services layout



16. Ship side Automatic Chart Selection by Route

The screenshot displays the TRANSAS Navi-Planner 4000 software interface. The main window shows a map of the Baltic Sea region with a route plotted in blue. The interface includes a top menu bar with 'Install', 'Order', 'View', and 'ENC'. Below the menu bar are several toolbars: 'Route' (with icons for Select All, Deselect All, by Cursor, Deselect, by Route), 'Chart Selection' (with icons for Load list, Save as), 'Request for data' (with icons for Updates, License, Catalogue, Full License), and 'Old Orders' (with an Install icon).

The map shows various chart numbers such as FI2960FM, SUOMI, HELSINKI, and others. The bottom of the interface features a 'Show items by' section with radio buttons for 'name' and 'description', and a 'Find chart' input field. Below this is a list of installed charts, and a table showing the current catalog of charts.

| Charts | Scale | Status |
|----------|-------|----------|
| EE203001 | | Licensed |
| EE203022 | | Licensed |
| EE203053 | | Licensed |
| EE203056 | | Licensed |
| EE203067 | | Licensed |
| EE3A0403 | | Licensed |
| EE3A0404 | | Licensed |
| EE3A0705 | | Licensed |
| EE3A0906 | | Licensed |
| EE3A1107 | | Licensed |
| EE3A1108 | | Licensed |
| EE3A1312 | | Licensed |
| EE3A1513 | | Licensed |
| EE3A1616 | | Licensed |
| EE3E1913 | | Licensed |
| EE4B0503 | | Licensed |

17. Ordering and Receiving Non-Installed Charts

The screenshot displays the TRANSAS Navi-Planner 4.0 software interface. The main window shows a map of Norway with various chart areas labeled, such as SE2B19SW, SE2B19S, SE2B19L, SE2B19R, SE2B19S1C, and SE2B19S1D. A 'Request' dialog box is open in the foreground, titled 'Request' and 'Order for License...'. The dialog contains the following text:

Reply:
Email:
Please enter the e-mail reply address. This is the e-mail address which Transas chart server will be sending processed requests to.

Send the order
 Save to Disk
 Send request

At the bottom of the dialog are buttons for '<< Back', 'Finish', and 'Cancel'. The 'Finish' button is highlighted with a red box.

The background interface includes a menu bar with 'Install', 'Order', 'View', and 'ENC'. Below the menu bar are several toolbars: 'Chart Selection' (with icons for Select All, Deselect All, by Cursor, Deselect, by Route), 'Selection by list' (with icons for Load list, Save as), 'Request for data' (with icons for Updates, License, Catalogue, Full License), and 'Old Orders' (with an icon for Install). The left sidebar contains icons for Route, Charts, Add Info, Tide/Current, Weather, and Installed Charts. The bottom of the interface shows a list of installed charts and a table of available charts.

| Charts | Scale | Status |
|----------|-------|----------|
| EE203001 | | Licensed |
| EE3A0403 | | Licensed |
| EE3E0201 | | Licensed |
| EE4B0101 | | Licensed |
| EE4B0302 | | Licensed |
| EE4B0503 | | Licensed |
| FI29GOFE | | Licensed |
| FI4EUJY | | Licensed |

18. Checking Charts for the Last Update

Navi-Planner Report

Print Export Close

Chart Collection Status Report

Selected charts

Correction service

| Service | Expires |
|--------------------------------|---------|
| TX-97 Professional Maintenance | 1/2011 |
| SENC chart correction | 10/2011 |

Information on SENC installed in product

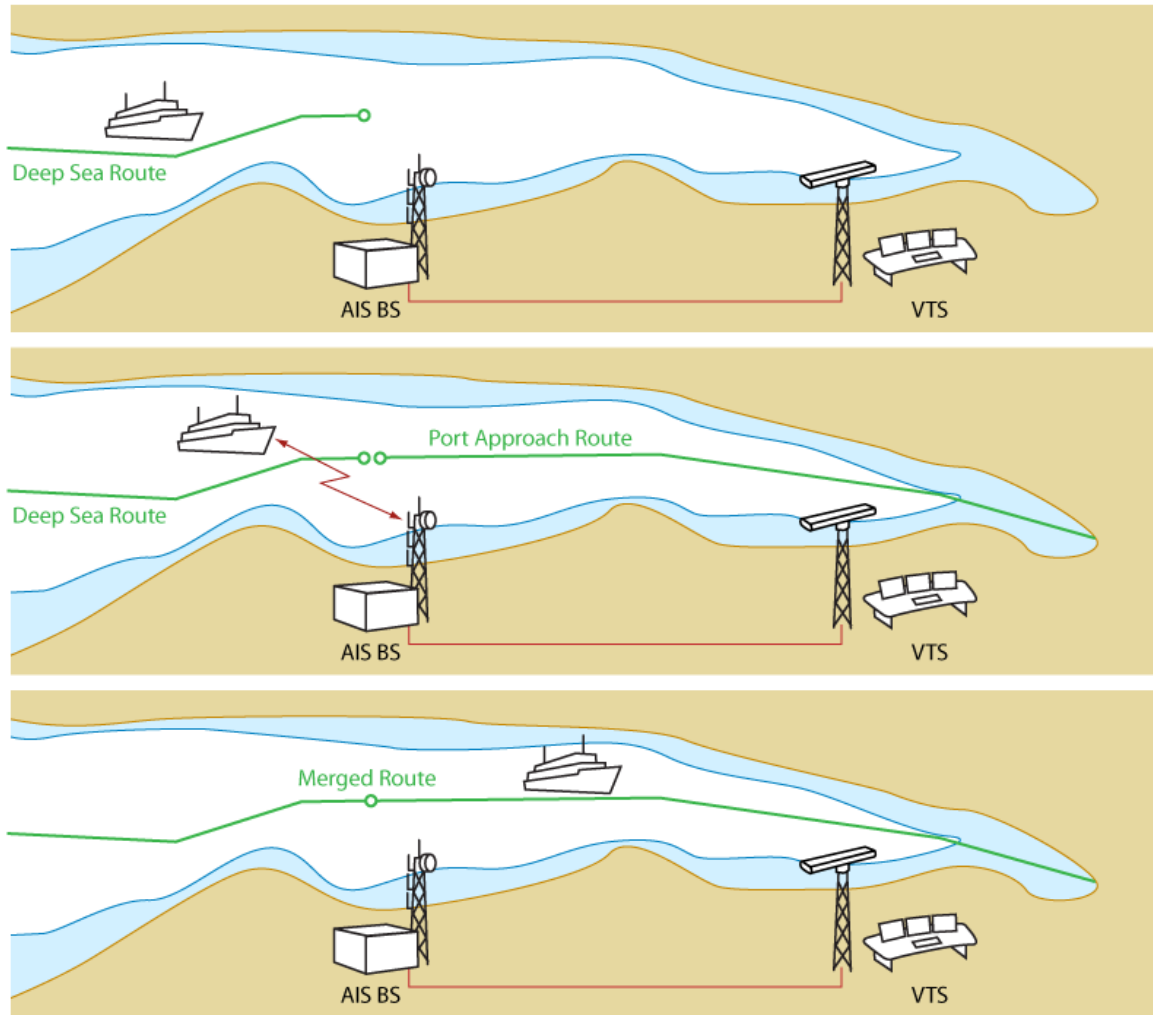
General Chart collection Info

total - 7753 charts
selected - 62 charts

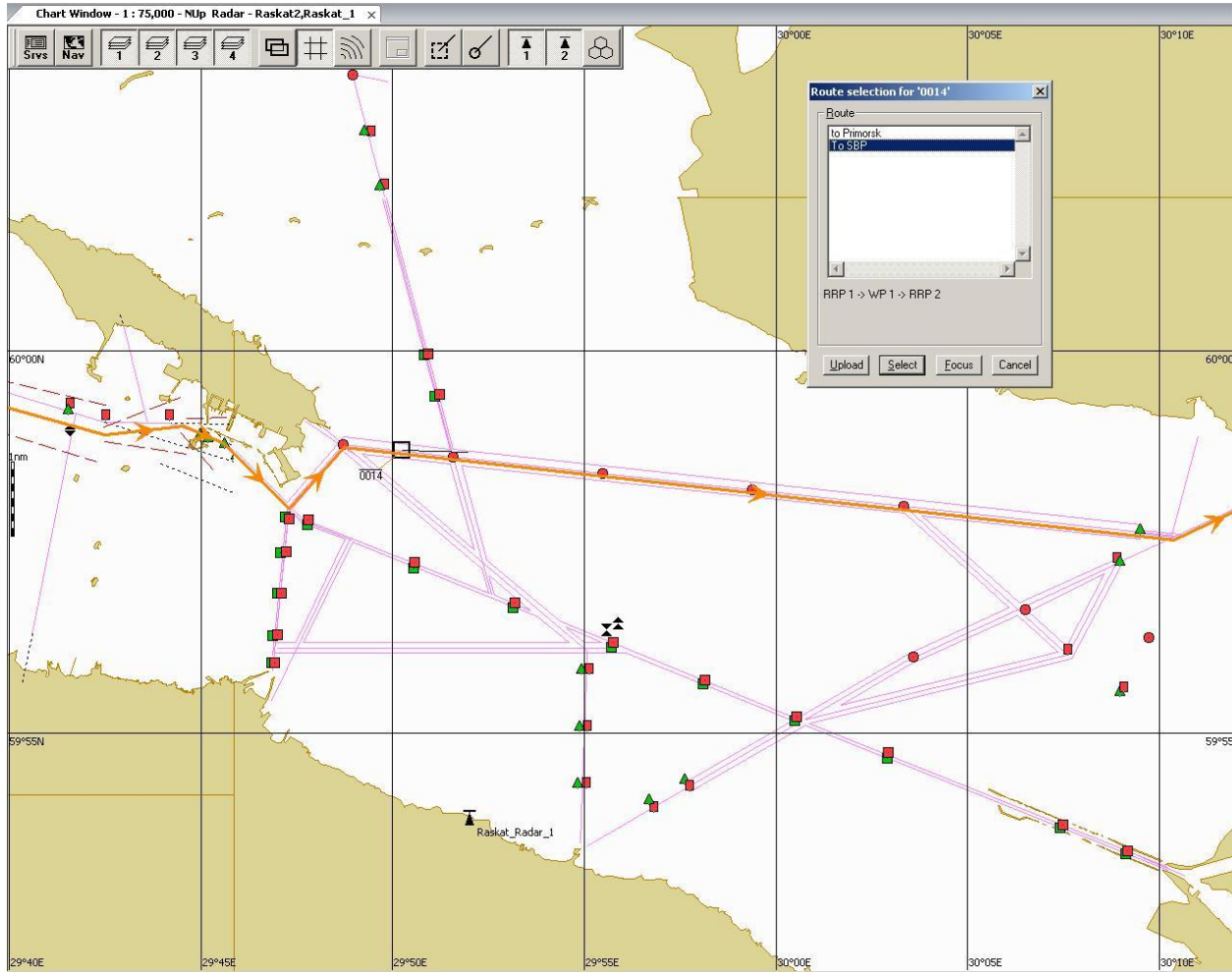
| Name | Status | Producer | Nav. purpose (Scale) | Edition No Issue Date | Update No Date | Updated to (date) |
|----------|------------|--|----------------------|-----------------------|----------------|---|
| DE110000 | Up to date | DE Bundesamt für Seeschifffahrt und Hydrographie | Overview 1:1500000 | 1 30-11-2007 | 5 20-11-2009 | TADS Online Collection Week 37 WF49, 2010 |
| EE203001 | Up to date | EE Estonian Maritime Administration | General 1:180000 | 1 08-03-2007 | 14 01-07-2010 | TADS Online Collection Week 37 WF49, 2010 |
| EE203022 | Up to date | EE Estonian Maritime Administration | General 1:180000 | 6 07-03-2007 | 32 01-07-2010 | TADS Online Collection Week 37 WF49, 2010 |
| EE203053 | Up to date | EE Estonian Maritime Administration | General 1:180000 | 2 28-03-2005 | 41 07-07-2010 | TADS Online Collection Week 37 WF49, 2010 |
| EE203056 | Up to date | EE Estonian Maritime Administration | General 1:180000 | 2 07-11-2006 | 32 17-08-2010 | TADS Online Collection Week 37 WF49, 2010 |
| EE203067 | Up to date | EE Estonian Maritime Administration | General 1:180000 | 1 15-02-2005 | 8 17-08-2010 | TADS Online Collection Week 37 WF49, 2010 |
| EE3A0403 | Up to date | EE Estonian Maritime Administration | Coastal 1:90000 | 3 03-07-2006 | 12 21-07-2010 | TADS Online Collection Week 37 WF49, 2010 |
| EE3A0404 | Up to date | EE Estonian Maritime Administration | Coastal 1:90000 | 1 22-06-2005 | 17 12-05-2010 | TADS Online Collection Week 37 WF49, 2010 |
| EE3A0705 | Up to date | EE Estonian Maritime Administration | Coastal 1:90000 | 5 27-04-2009 | 19 01-07-2010 | TADS Online Collection Week 37 WF49, 2010 |

Orders History 15395B 1 : 50,000 31-7-2010 TX-97 Licensed

19. VTS assigns port entry route to arriving ship



20. Port entry route to be assigned, VTS view



21. Deep sea route, ship view

The screenshot displays the TRANSAS Navi-Planner 4000 software interface. The main window shows a map of the Baltic Sea with a blue dashed line representing a planned route. The route starts from the west and ends at Sankt-Peterburg. A scale bar indicates 10nm, and the map scale is 1:600,000. The interface includes a top toolbar with various navigation and editing tools, a left sidebar with menu options like Route, Charts, and Weather, and a right sidebar with zoom and information controls. The top status bar shows 'Loaded routes: *onboard VTS Route_startup' and 'Loaded schedules:'. The 'Route Editor' tab is active, showing options for Focus, Waypoints, Ref. points, Shift, Link, and Reverse. The 'Advanced Cursors' section displays values for 90.0, 0.10 NM, 270.0, and 99.9 NM. The 'Waypoints Options' section includes checkboxes for Names, Arrival circles, XTD, Turns, Ref. points, and PortForms. A 'Turn On' button is also visible.

22. Port entry route is received

The screenshot displays the TRANSAS Navi-Planner 4000 software interface. The main window shows a nautical chart with a planned route in orange and yellow. A specific port entry route is highlighted in red and blue, with a red circle around a waypoint. The interface includes a top toolbar with various navigation and editing tools, a left sidebar with menu options like 'Route', 'Charts', and 'Weather', and a right sidebar with zoom and information controls. The bottom left corner shows a scale of 1:100,000.

Loaded routes: onboard **VTS Route_startup** Loaded schedules:

Route Editor Weather Routing Check route VP Calculation Checklist Tools Import & Export

Edit Advanced Cursors Waypoints Options PortForms

Focus Waypoints Ref. points Shift Link Reverse

90.0 0.10 NM
270.0 99.9 NM

Names Turns
Arrival circles Ref. points
XTD Turn On

10nm

1:100,000

23. Two routes merged into one, ship view

The screenshot displays the TRANSAS Navi-Planner 4000 software interface. At the top, the title bar reads "TRANSAS Navi-Planner 4000". Below the title bar, the "Loaded routes" section shows "onboard VTS Route_startup" and "Loaded schedules". The main menu includes "Route Editor", "Weather Routing", "Check route", "VP Calculation", "Checklist Tools", and "Import & Export".

The interface is divided into several functional areas:

- Edit:** Contains icons for Focus, Waypoints, Ref. points, Shift, Link, and Reverse.
- Advanced Cursors:** Features a grid of directional arrows and numerical values: 90.0, 0.10 NM, 270.0, and 99.9 NM.
- Waypoints Options:** Includes checkboxes for Names, Turns, Arrival circles, Ref. points, and XTD, along with a "Turn On" button.
- PortForms:** A button labeled "Turn On".

The central display is a nautical chart with a scale of 1:100,000. It shows a route with 11 numbered waypoints (1-11) connected by a blue line. A pink shaded area highlights a specific section of the route. The chart includes various navigational symbols, depth contours, and labels such as "Uelinatala Shoal".

On the left side, a vertical toolbar contains icons for Route, Charts, Add Info, Tide/Current, Weather, General Info, Waypoints, Schedule, Weather, Charts, Checklist, and WPT Info. On the right side, a vertical toolbar includes icons for Home, Zoom In, Zoom Out, Scale (1:1), and Information (i).

24. Progress since 2010

- Some of recommendations on technical and administrative measures necessary to move country toward e-Navigation were well accepted and were progressing toward real projects, namely:
 - Start of e-Navigation testbed in Finish Gulf is included into governmental program for 2014 year;
 - National Satellite AIS apparatus are planned to be launched one in 2013 year and next in 2014 year
- Technical development was continuing by industry, e.g. many of scenarios demonstrated by research work mockup two years ago were matured and achieved status of regular products features, namely:
 - Automatic electronic chart delivery service;
 - Electronic chart service “Pay as you sail”;
 - Automatic regular reporting from ship to shipping company office;
 - Automatic route exchange and fuel saving related data exchange between ship and shipping company office.



Thank you!

Sergey.Cherepanov@transas.com