Marintel LLC

New Developments in Port Digitalization, Surveillance and Traffic Management
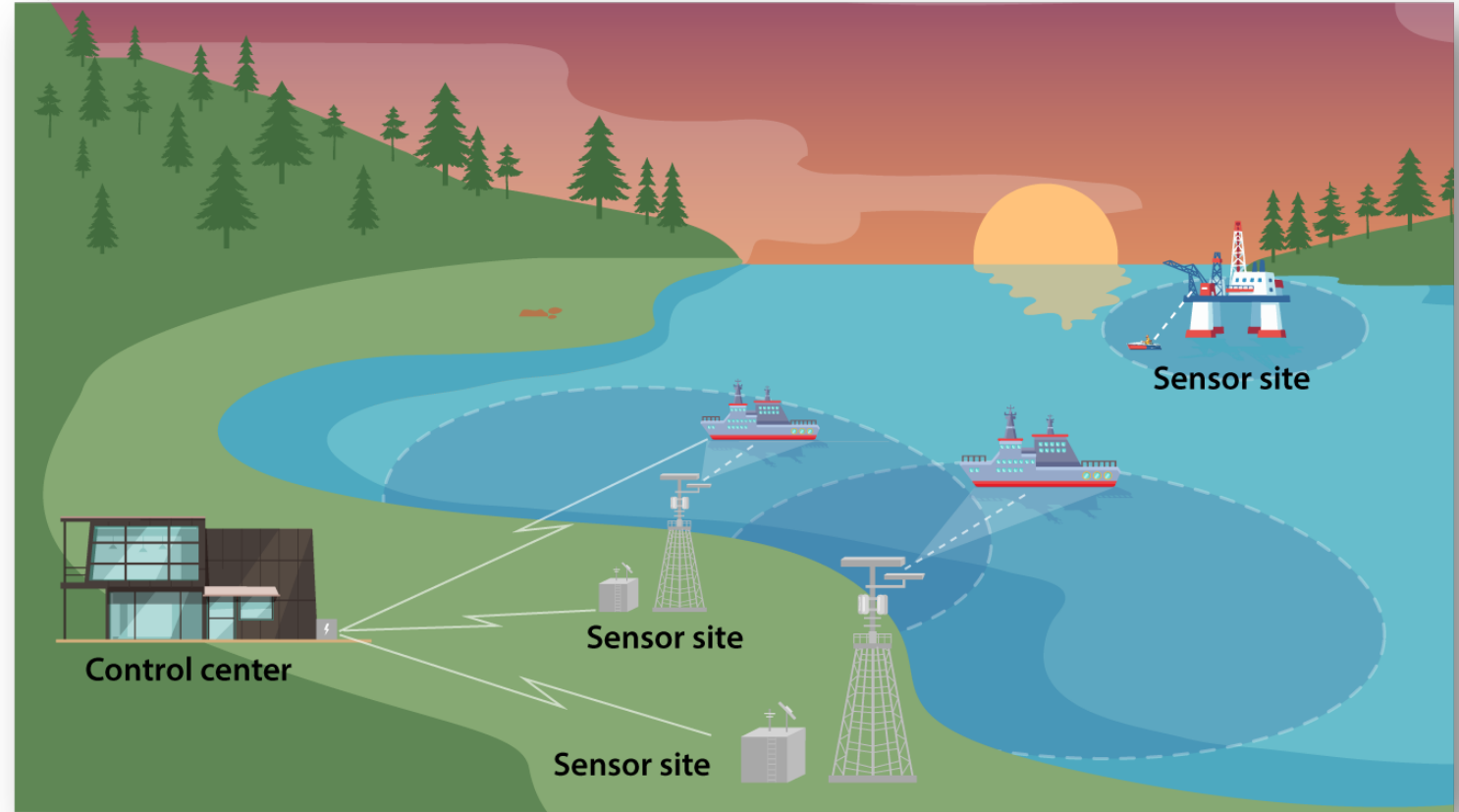
22nd of July 2021

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Maritime Systems Integrator

Marintel LLC is a worldwide leader in marine navigation and communication engineering and system integration, providing comprehensive port, onshore and offshore maritime surveillance systems.

Each project is personalized to the special needs of the customer. Our team includes system architects, software developers, and software engineers who are capable of identifying the appropriate software and hardware and smoothly incorporating it for the entire solution as well as with external systems.

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VTMS Purpose

- Traffic management, organization and information service for ports, harbors, offshore installations, coastal infrastructure objects

- Incident prevention and investigation

- Aid in and prevention of illegal activities, piracy and waterside terrorism
- Voice and digital radio communication, ship-to-shore
- Search and rescue / search and intersection
- Prevention and investigation of ecological incidents
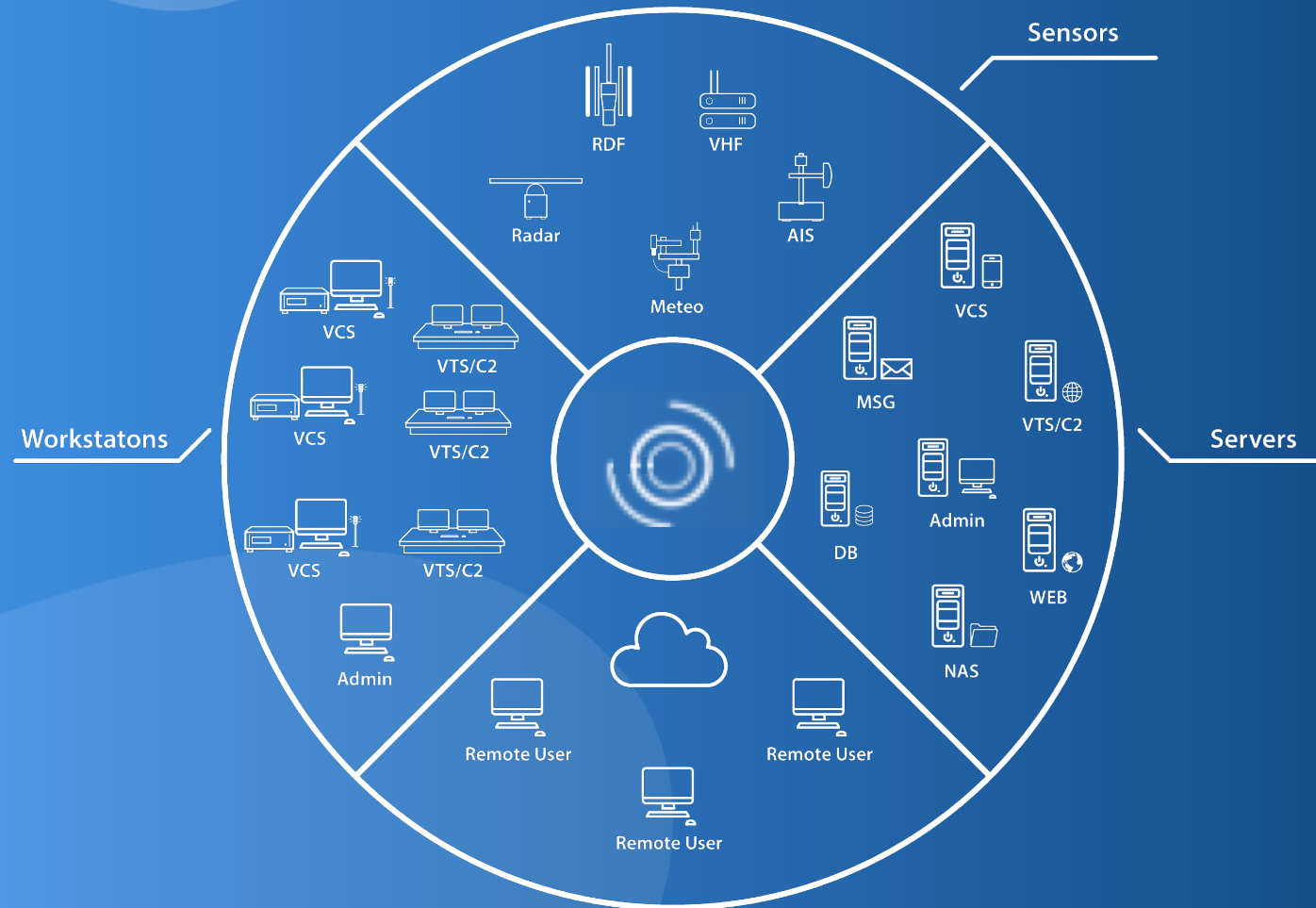- Detection irresponsible or illegal maritime activities

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VTMS Data Users

- Government military and security organizations – National Security, Navy, Coast Guard, Marine Police, Fishery Management Authorities, Ports Security, Coastal Critical Infrastructure Objects Security, Offshore Facilities Security

- International Organizations and Fleet Management/Owners/Agent Companies interested in safety and security of the foreign fleet in the coastal waters of a country

- Customs
- Search and Rescue Centers

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General principle

VTMS software interacts with sensors, stores and retrieves data in the database, displays the status of vessel movements in real-time on marine navigation charts for VTMS personnel, alerts in the event of possible collisions, movements across reporting lines and protected areas, breach of safety, etc.

Standards

United Nations (UN): UN Law of the Sea

International Maritime Organisation (IMO): IMO SOLAS

International Association of Lighthouse Authorities (IALA):

National Competent Authorities
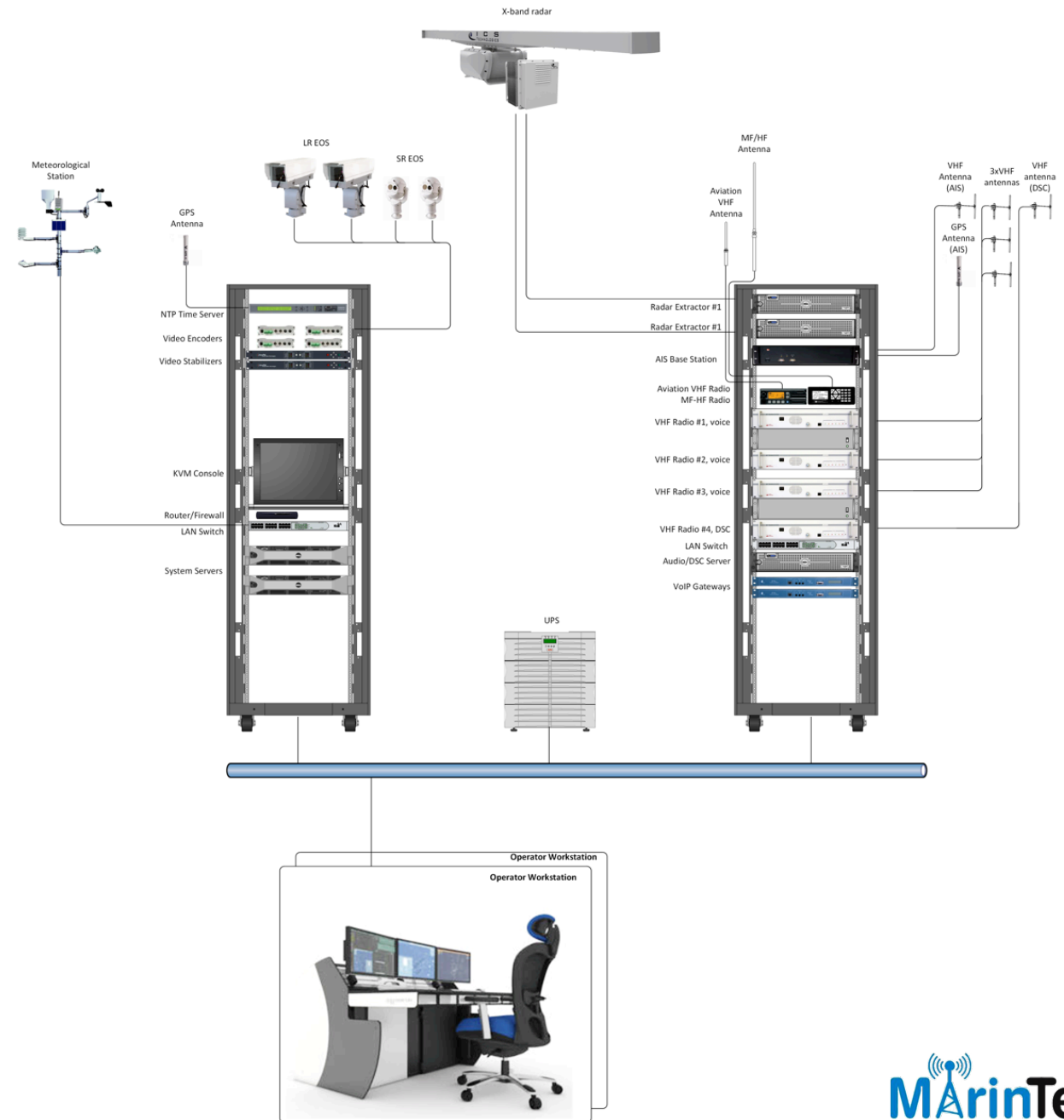
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Control Center

- Servers and Data Storage
- Access to data from / operation of :
  - Radar
  - CCTV
  - Voice Communication
  - GMDSS (DSC/NAVTEX etc.)
  - Meteorological sensors
- Operator workstations
- Administration and monitoring

Sensors

- Radar(s)
- AIS Base Station
- Radio communication
- CCTV
- Meteorological sensors
- Local Operator workstations
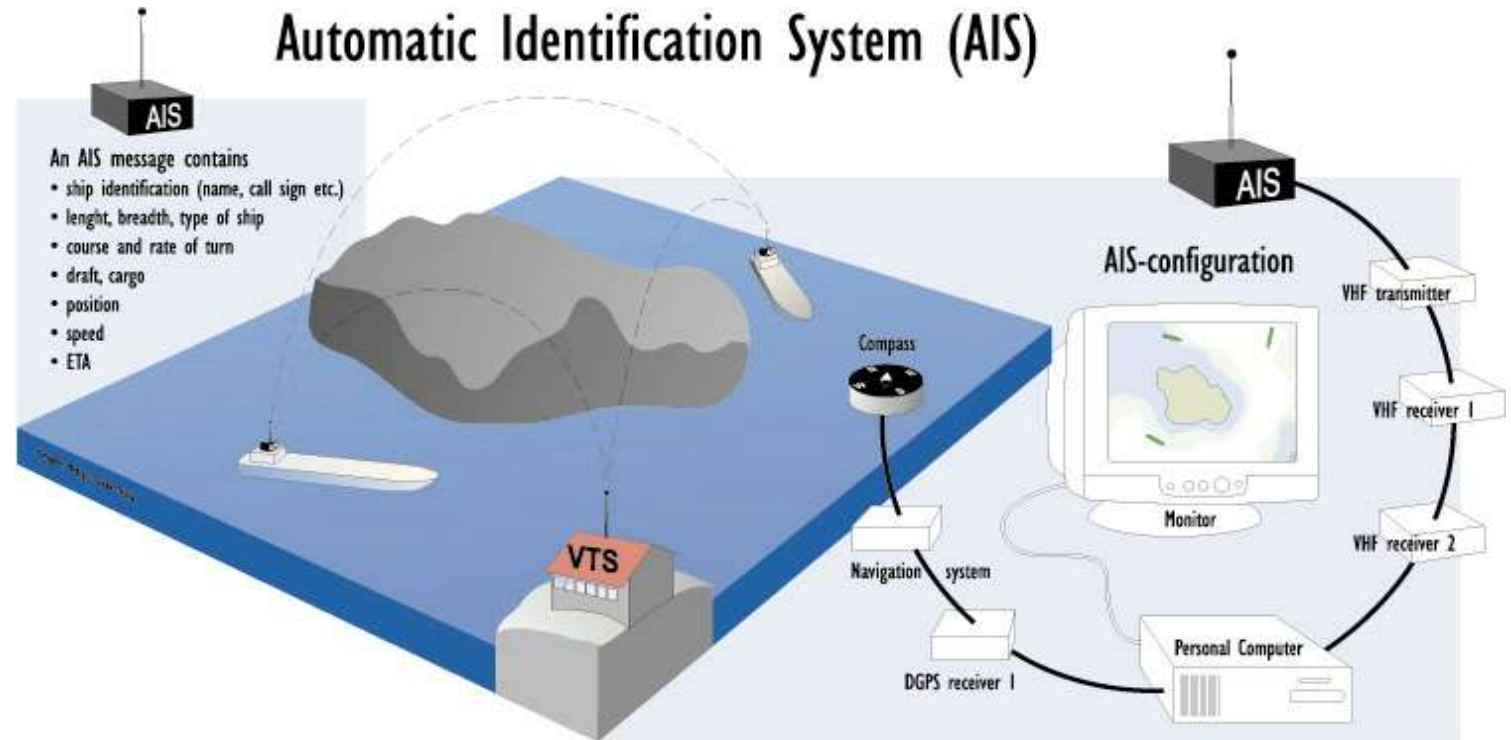- Provision of data to the Control Center

Radars

- Use of standard marine radars or special coastal radars.

- Support for the most maritime radar products.

- Our radar extractor exceeds IALA 1111 (V-128) criteria.

Radar is the primary sensor of a VTS. The system utilizes graphic information and radar target tracking information for presentation on the operator's console.

Automatic Identification System

- Automatic Identification System (AIS) is used on ships, aircrafts, offshore platforms and coastal stations:
- AIS is an electronic tracking system that monitors ships in the area.
- AIS is a VHF radio maritime band transmission transponder system.
- Each ship displays other ships and coastal stations nearby, given your vessel is equipped with AIS transponder.

Automatic Identification System (AIS)

An AIS message contains
- ship identification (name, call sign etc.)
- lenght, breadth, type of ship
- course and rate of turn
- draft, cargo
- position
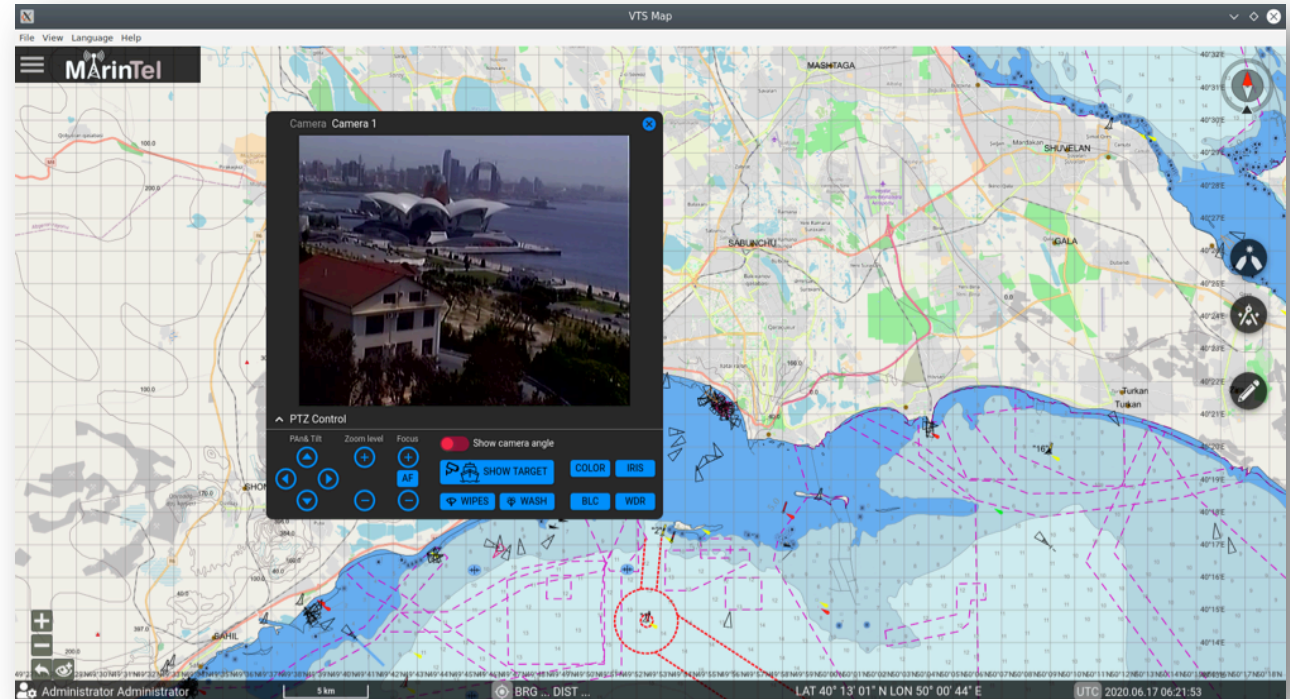- speed
- ETA

AIS-configuration

- AIS is mandatory for SOLAS ships of > 300 GRT now
- Warship AIS (WAIS) is used to exchange encrypted messages using proprietary channels for users such as Navy, Coast Guard, Air Forces etc.

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EOS/CCTV

Electro-Optical Systems/CCTV:

- Fully remotely controlled, camera automatically follows a ship's track
- or points to selected map point

- Remote control of pan, tilt, zoom,
- focus, wiper, washer

- Digital image recording / playback

- Night vision/thermal imaging

Control Center

The Control Center provides an overview of maritime traffic in offshore, coastal or port applications.

In general, it offers the following for multiple operators/supervisors/managers:
- Displaying vessel traffic information as an overlay on the electronic chart set
- Producing and handling various types of alerts and warnings for different zones, check lines, reference points, etc.
- Navigation assistance measuring and tools such as CPA/TCPA, ERBL etc.
- Displaying CCTV and monitor weather and conduct voice communications.
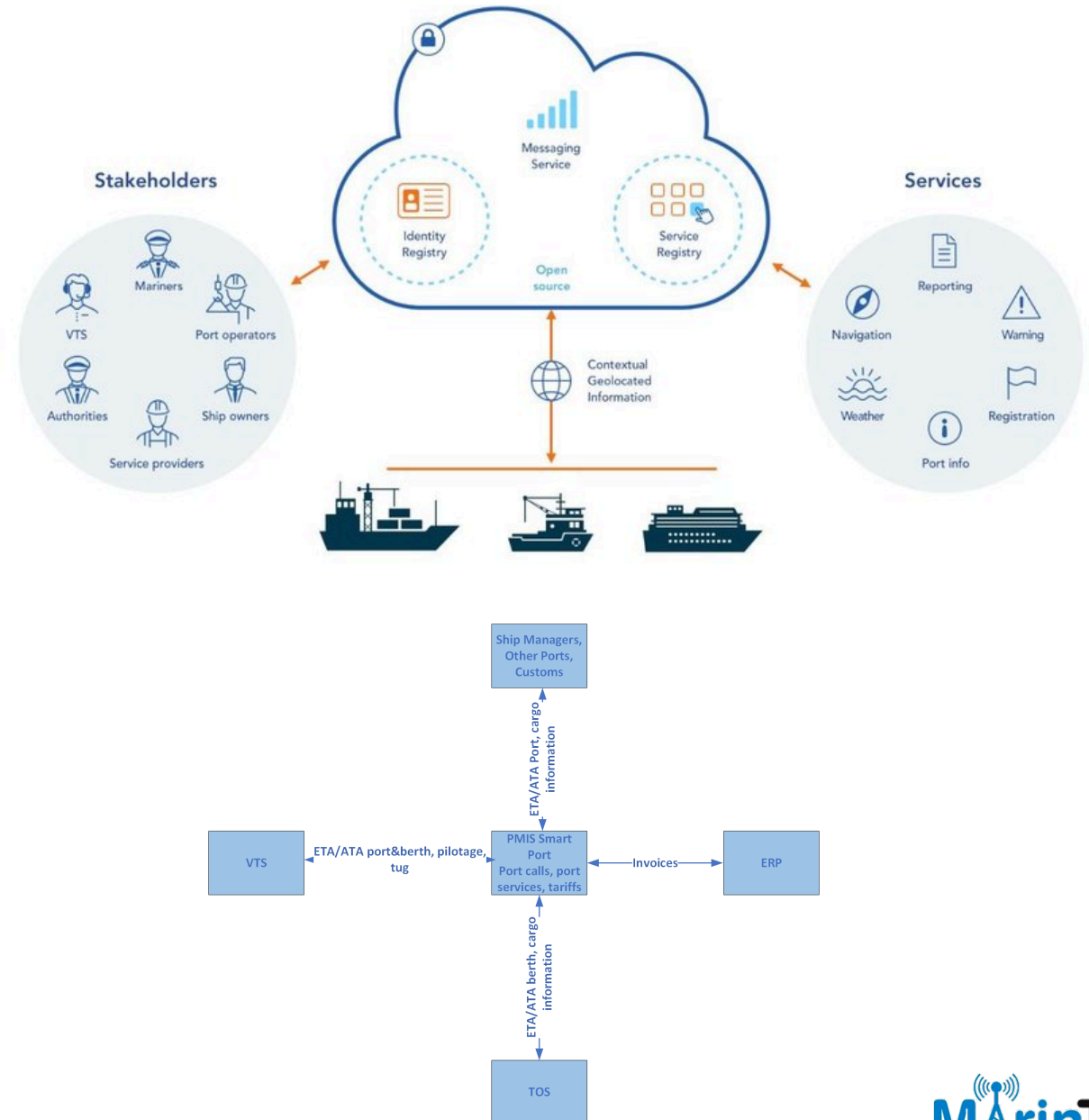- Playback recorded data
- Database information support

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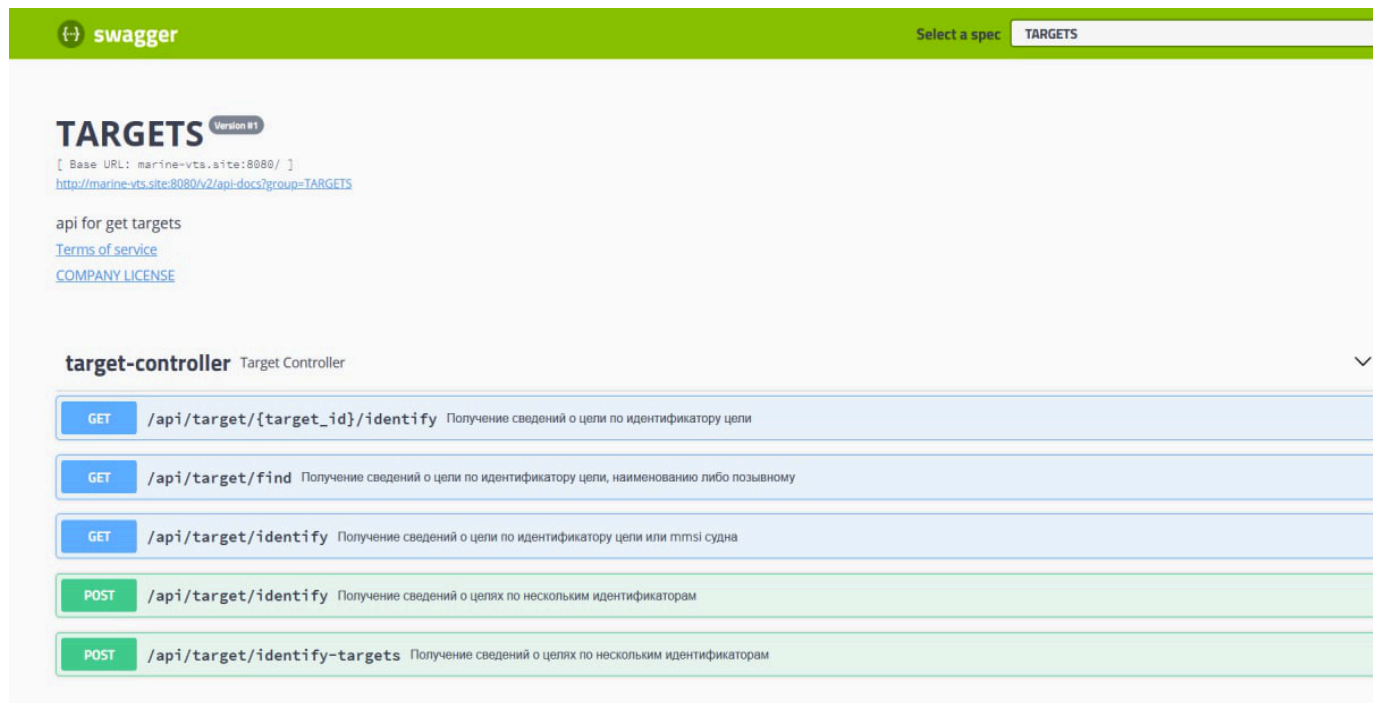# Operator Workstation Example

VTMS Integration

Modern VTMS should become:

- An integrated component of the port IT system, directly communicating with PMIS in real-time and therefore interacting with other port systems such as TOS, ERP, PCS (Single Window), and so on.
- VTMS should engage with vessels to provide as much assistance as feasible for remote pilotage utilizing RTZ protocol routes exchange.
- e-Navigation ready: interaction with the Maritime Connectivity Platform, S10x chart data support, and so forth.

Interfaces

Our solutions provide a universal configurable interface with other systems for real-time target and navigational events data exchange, databases synchronization, messages exchange etc.
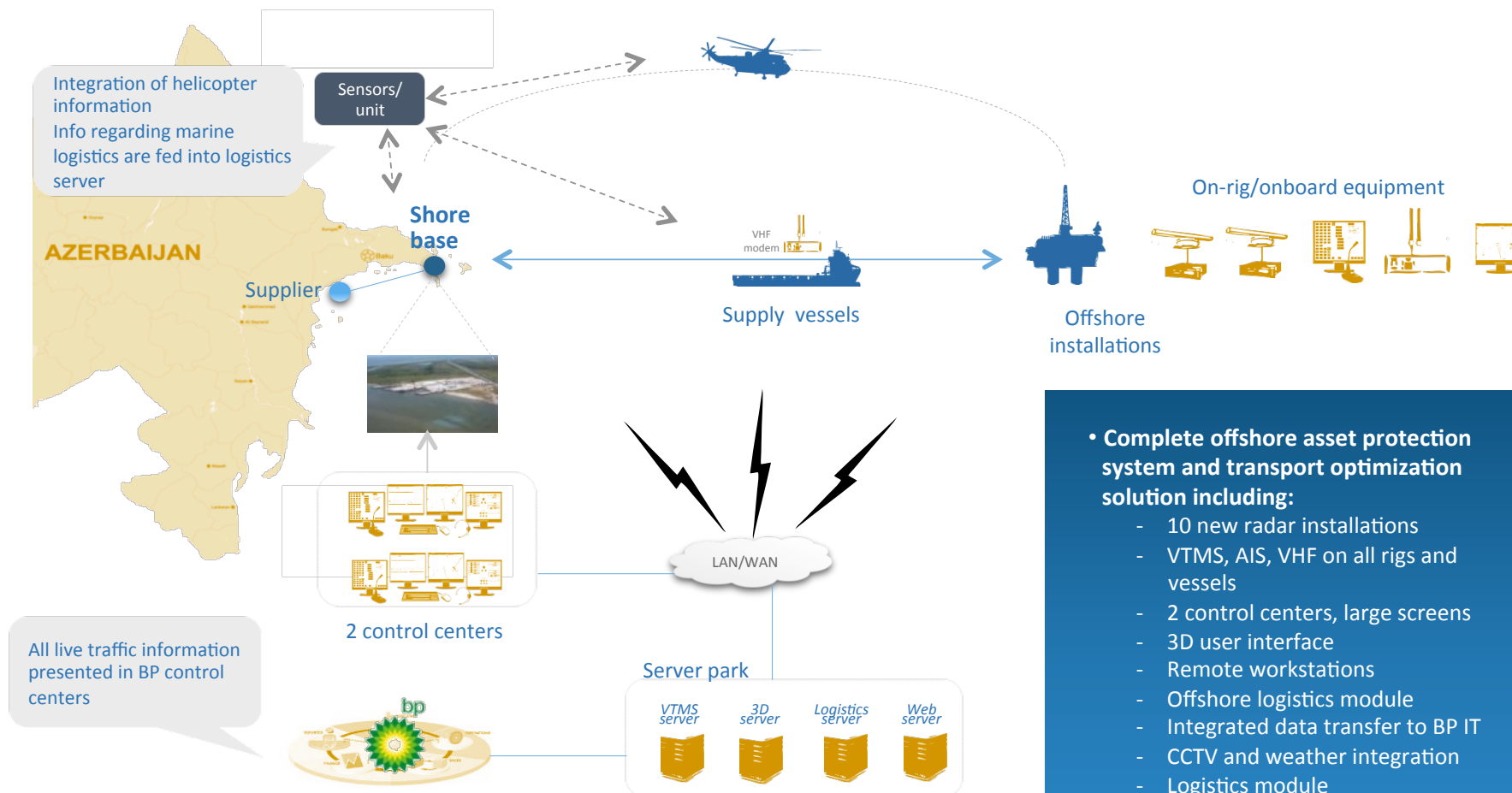
Reference – British Petroleum MAPS project

Marintel successfully delivered several projects, including a sophisticated Marine Asset Protection and Surveillance System (MAPS) for BP Caspian Sea (Azerbaijan) exploration. The project was ongoing in 2013-2016, protecting BP assets from collisions and other threats. The system includes ten offshore and shore-based solid-state radar facilities, covers all BP assets in the Caspian Sea, provides reliable VHF communication solution with the central control room at BP's Khazar center in Baku. Brief system description presented below.

Integration of helicopter information
Info regarding marine logistics are fed into logistics server

Sensors/unit

On-rig/onboard equipment

AZERBAIJAN

Shore base

Supplier

VHF modem

Supply vessels

Offshore installations

2 control centers

LAN/WAN

Server park

VTMS server   3D server   Logistics server   Web server

All live traffic information presented in BP control centers

- **Complete offshore asset protection system and transport optimization solution including:**
  - 10 new radar installations
  - VTMS, AIS, VHF on all rigs and vessels
  - 2 control centers, large screens
  - 3D user interface
  - Remote workstations
  - Offshore logistics module
  - Integrated data transfer to BP IT
  - CCTV and weather integration
  - Logistics module

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Other References

2016 -2018 Kazakhstan
VTMS project / Port surveillance at Kazakhstan, port of Kuryk for Kazakhstan Railways

2016 - 2019 Azerbaijan
Navigation and Radio equipment installation for Azeri Coast Guard vessels

2020 Georgia
Port surveillance for BP Georgia Supsa Oil Terminal

2015 -2016 Azerbaijan
Supply installation and commissioning of VTMIS for Beira Port in Mozambique

2018 -2020 Azerbaijan
Supply installation and commissioning of Radio, Navigation and comms 3 newbuild crew boats for Baku Shipyard

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To understood requirements for the project (new or existing system upgrade) it is vital to know such factors as certification and standards, ports/offshore objects situation, requirements to the radars and other equipment, availability of the infrastructure (equipment shelters, grid power, transmission channels etc.), control center, voice communication and other information.

We are happy to provide the best solution, tailored to the customer needs.