Aptomar

- Established in 2005
- Owned by Statoil, Investinor, Proventure Seed, Verdane Capitol
- Have developed and control all IPR and product value chain related to the SECurus system, the TCMS and its add-ons.
Since 2008 we have delivered more than 100 oil spill management systems worldwide, amongst others to:
Tactical information, independent of location, in real time
Tactical information, independent of location, in real time
Aptomar TCMS

Tactical collaboration and management
- Remote operations
- Creating the Common Operating Picture
TCMS

Tactical Collaboration and Management System

- Tactical collaboration between sea, land and air
- Establish the **Common Operating Picture** (COP)
- Understand the situation, prioritize action, and see the result
TCMS

Distributed Situational Awareness

- Connect several TCMS operations rooms together
- Create a Common Operating Picture within your organization, and other organizations
- Easily establish TCMS operations rooms in existing infrastructure
TCMS Sensor Fusion

Multiple sensor sources
Multiple viewing locations

Available Data Sources
- SECurus
- FLIR Cameras
- Video/IR Cameras
- ROV
- Aircraft/UAV
- Aerostats
- Satellites
- AIS
- GIS Data

Available viewing locations
- Mobile Devices
- Web viewer
- Additional Ops Rooms

Modernization of an existing marine supervision dispatch centre  Project 93
New operative centre building with nearby functionalities for a oil storage plant  Project 94

Furniture and control room design for 24 - 7 environments

CGM AB
Tel: +46 33 22 95 00

Operation and collaboration

CGM is more than just a developer and manufacturer of high ergonomically operator desks for 24- 7 environments.
GIS data integration

- User specific GIS data can be imported to create personalized operational charts
- Mark sub sea infrastructure, or expected vessel routes and call in points
- Different layers can be added and each can be displayed or hidden independently
Satellite image integration

- Satellite images can be geo referenced and displayed in the chart area
- Identify the identity of AIS transmitting vessels
- Discover the position of non AIS transmitting vessels
- Identify the vessel that caused a detected illegal discharge
- Obtain high level overview of incident
SECurus in the air

- Aptomar provides the user interface and networking capability to add aerial mounted sensors to the TCMS network.

- Aircraft can share images and data with network and receive shared information from other sources.

- Used by the Norwegian Coastal Administration for pollution detection.
TCMS Sensor Fusion

Multiple sensor sources
Multiple viewing locations

Available Data Sources
- SECurus
- ROV
- FLIR Cameras
- Video/IR Cameras
- Radars
- Aerostats
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Available viewing locations
- Mobile Devices
- Web viewer
- Additional Ops Rooms

Furniture and control room design for 24–7 environments. CGM AB
Tel: +46 33 22 95 00
Operation and collaboration

CGM is more than just a developer and manufacturer of high ergonomically operator desks for 24–7 environments.
SECurus

Stabilised surveillance, documentation and decision support tool
Sensors, Tools and the Common Operating Picture

Actively cooled IR Cameras offer significant range advantages over non cooled passive IR cameras

- High magnification daylight DV camera
  - Long range identification
- Long range Xenon searchlight
  - Stable illumination
- High sensitivity actively cooled Infrared
  - Long range vision day or night

**SECurus**

Pointing unit

- 3 axis Stabilised camera platform
  - Stable video and still images
- High magnification daylight DV camera
  - Long range identification
- Long range Xenon searchlight
  - Stable illumination
- High sensitivity actively cooled Infrared
  - Long range vision day or night

_Actively cooled IR Cameras offer significant range advantages over non cooled passive IR cameras_
SECurus

Workstation

- 23” Maritime Touch Screen Display and Joy Stick
  - No Key board or track ball required
- Quick and Intuitive user experience
  - Easily operated by existing bridge crew
- Commercial Off The Shelf components
  - Cost effective installation and maintenance

Only one day training is required to enable bridge crew to utilise system in daily operations
Sensors, Tools and the Common Operating Picture

SECurus

Long range operations

- Stable videos and images independent of weather conditions
- Long range camera capabilities
- Person in water at 3km
- See vessels at 15-20km
Finding the combatable oil is the key to well managed and efficient operations. 90% of the oil volume is located on 10% of the visible slick. Finding this combatable oil can not be done with visual observations or radar OSD.

With the SECurus, and its cooled infrared sensor, the 10% area which contain 90% of the oil volume is easily detected, and size, position, volume and drift is estimated.
Sensors, Tools and the Common Operating Picture

Visual confirmation of oil
Rainbow/Blue shine

But where is the combatable oil?

Radar OSD Target confirmed and area drawn in the map
Sensors, Tools and the Common Operating Picture

Radar OSD Target detected

Wind shadow of Stril Mariner
The combatable patches of oil; marked, and tracked

Drift is SW, with the combatable patches drifting in front

Radar OSD detection 1

Radar OSD detection 2
Combatable oil is found, estimation of area and relative thickness is done. Accuracy of 76-82% can be reached.

- The combatable patches of oil; marked, and tracked.

- Radar detected area

- Shape of combatable oil and the weathering window is used to choose between:
  - Mechanical recovery
  - Chemical dispersants
  - In-Situ burning
Paravan dispersant system, single vessel operation
Large sheen visible with the human eye and with the radar OSD. Within that sheen only portions are combatable and was left behind after the first round of applying dispersants.
Fire Fighting
Towing
Monitoring tow lines
Ice Navigation
Alternative Sensor Options
Match Price and Specification

- Ship’s GPS
- Ship’s Heading Gyro
- Ship’s MRU

Available EO sensors

Required sensors

SECurus User Interface

Note: SECurus is required for Geogreferencing functionality
Integrated Field Monitoring
Services, systems, sensors

Improving safety, creating value and reducing cost
Integrated Field Monitoring
One system covering offshore surveillance and response

ICE management
- Ice detection and monitoring
- Ice towing and deflection
- Ice map / ice charts
- Ice forecast
- Safe navigation

Oil spill preparedness
- Clean to Operate
- Oil spill detection
- Oil spill combating

Traffic and vessel management
- Vessel on collision course
- Logistics and vessel optimization
- Surveillance and security
- Anti-piracy

MetOcean
- Weather
- Wind, currents, waves
- Safe approach and navigation

Search and Rescue
- Search and retrieval of people and assets
Sensors, Tools and the Common Operating Picture

Aptomar Field Monitoring

Layered functionality

- Delivered as a turn key service.

- The service includes; 24/7 personnel, sensors, reporting, training and exercises.

- Turn key services reduces CAPEX and OPEX cost, letting E&P companies focus and invest in core business.

- Aptomar manages the personnel, competence and equipment, enhancing cost efficient and safe operations on behalf of the customer.

- Scalable and adaptable to provide monitoring and detection throughout full lifetime of E&P Field.
Sensor Fusion

Multiple sensor sources
Utilise existing sensors
One Common Operating Picture

Available Data Input

Available viewing locations

Mobile Devices
Web viewer
Additional Ops Rooms

ROVs
Aircraft/UAVs
Satellites
GIS Data
AIS
Mobile Devices
Web viewer
Additional Ops Rooms

Current Profilers
Weather sensors
3rd Party Cameras
SECurus
Aerostats
Radars

Aptomar
The service and 24/7 monitoring is managed by the Aptomar Marine Control Centre (MCC). The MCC manages the agreed services, communication plans, offshore and onshore procedures, training and exercises. Direct communication with OIM, on-site ERRV and PSVs. Will support 2nd line response if requested and agreed with Operator.
Operational Setup

Customer Portal – All online

All sensors, work processes, training, monitoring and reporting is managed by Aptomar
Interface to Operator is defined through the communication plan, describing who to contact, at which events
Operator can access live data, regular, and weekly reports, including written processes and manuals through the customised Customer Portal.

Weekly system status reports

Regular Clear To Operate reports

Live data from operation, during normal and ER operations
Support Slides
TCMS Architecture
Sensors, Tools and the Common Operating Picture

TCMS Architecture

[Diagram showing the TCMS Architecture with Customer Location 1, 2, and 3, along with Vessel 1 and Vessel 2, each containing TCMS Work Station, SECurus PU, SECurus Work Station, NAT Firewall, and Oil Detection Radar.]