Trackwell Maritime - EMS2014 Porto

Callenges and case studies

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Trackwell – About us

- Trackwell Ltd is an Icelandic company established in 1996.
- Trackwell MRM (Mobile Resource Management) provides companies with tools to manage their resources: employees, vehicles, vessels and other mobile assets including functionality like time-, task-, and fleet management.

Trackwell Maritime VMS(Vessel Monitoring System) is used by fisheries authorities, coastguards and navies for surveillance, fisheries control, search and rescue and resource management. **Trackwell Maritime ERS** (Electronic Reporting System) is a catch information system for fishing vessels and fishing companies, fish markets and authorities.

Trackwell Tímon is a time and task registration system, including clock in/ clock out, project / task registration, attendance / absense registration and many more features.

Trackwell Fleet offers the most relevant functionality of general fleet management activities such as tracking, messaging, dispatching, etc

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Trackwell - Company Background

Proven track record of providing solutions for mission-critical projects

Air traffic control

- Radar Data Processing and Presentation System
- Monitoring all aircraft in the worlds second largest oceanic air sector
- The early years, working for the Icelandic Civil Aviation Administration

Search & Rescue

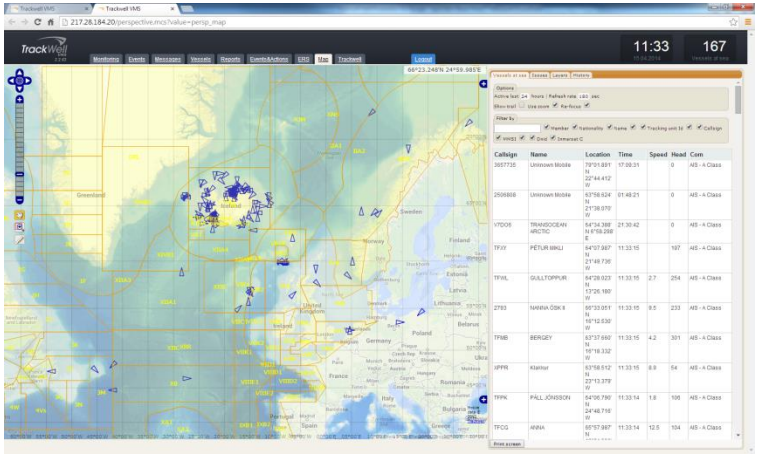
- Safety monitoring of vessels
- Project started in 1997 for the Icelandic Live Saving Association
- Monitoring the whole Icelandic fleet with respect to Safety at Sea
- Now integrated into the Vessel Monitoring System

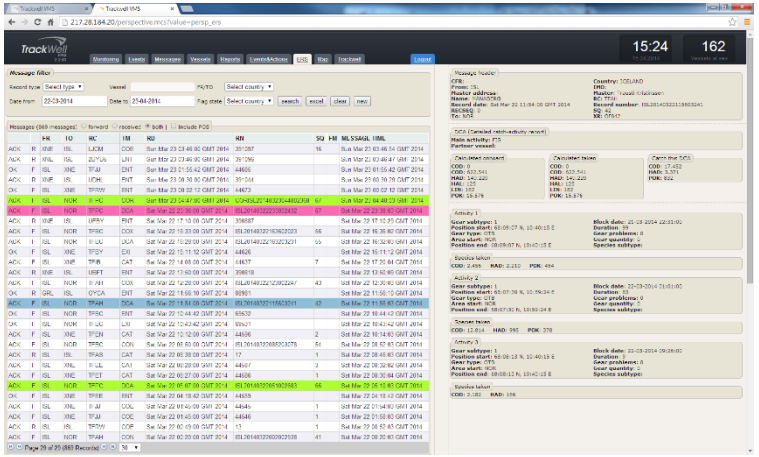
Fisheries Control

- Enforcing local and international fisheries regulations
- VMS implemented for Iceland in 1997 and NEAFC 1999. Still going strong!
- VMS/ERS implemented for Iceland, NEAFC, NAFO, Faroe Islands, Lithuania, SEAFO, Albania, UK, Greece
- Continuous development

What does the VMS do ?

- Tracking of all local vessels
  - AIS, Inmarsat-C, Iridium, GPRS, ACARS, etc.
  - VMS and SaS
- Tracking of foreign vessels within the EEZ
- Presentation of location information in a map application
- History trail analysis and replay
- Geo fence monitoring
- Forwarding positions to other countries and organizations,
  - based on EEZ geo fence
- Full blown vessel registry
  - vessel details
  - tracking parameters
  - vessel contact information





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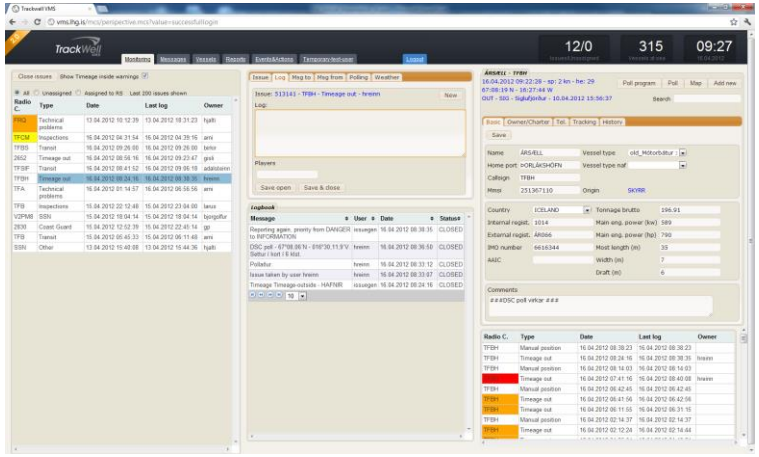
What does the VMS do ? cont...

- Extensive monitoring of reception of messages according to schedule
- Monitoring of events, generated by;
  - vessel units (tampering?)
  - the system (problems, missing reps)
  - the users (user defined issues)
- User log associated with issues
  - showing how it was resolved and by whom
- All received and sent data is stored in a database
- All user interface applications available in web
  - where access control and security policy allow.



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Technical challenges

- Only cooperating vessels report to VMS!
  - Cooperating vessels that stop reporting are detected and alert generated (tampering?)
  - Detection of non-cooperating vessels possible with radar/satellite pictures or by surveillance (patrol vessel or aircraft)
- VMS data is compared to radar/satellite pictures to avoid unnecessary surveillance (compare known VMS dots to un-identified)
- Technically it is possible to connect radar signal directly to the VMS
- Automatic comparison of VMS and satellite pictures (IMPAST and other research projects)

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Business type challenges

- VMS and ERS are most of the time tendered
  - Requirements are often un-realistic
    - “We want all the features”
  - Budget is often limited
    - “We have very little money”
  - Poorly defined interfaces to external systems
  - Existing vessel data to be migrated badly documented and organized
  - Local map data (harbors, landing places, etc.) often difficult to obtain
  - Requirements unclear

- Our suggestion – Cloud based system
  - Ready to go with standard features
  - Further customization follows, based on actual needs

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Some projects

- Implementation of VMS for Greece
  - Hosted solution (Amazon cloud)
  - Fully web based
  - Tracks over 500 vessels (no practical limits)
    - Inmarsat C
    - BlueTraker – hybrid Iridium+GPRS
  - All standard functionality provided
  - Fully implemented in three weeks!
  - Ready as a service for standard VMS usage

- Tracking of rowboat over the Atlantic
  - Locally generated power
  - Single box unit with power and emergency button

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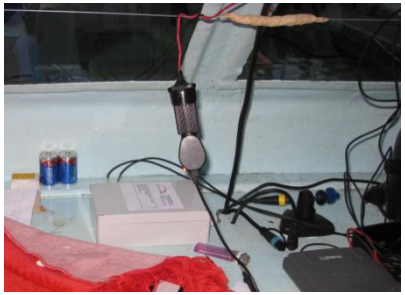
Cost effective tracking of coastal vessels in Maldives

- World Bank funded
- Objective to demonstrate a way to cost effectively track tuna vessels, assess the catch per unit effort (CPUE)
- Low cost GSM/GPRS units used, installed by local service company
- Pre-paid SIM cards purchased form local phone company
- Position data was collected for several months
- Vessel owners were supposed to report catch to authorities during the project, none did !



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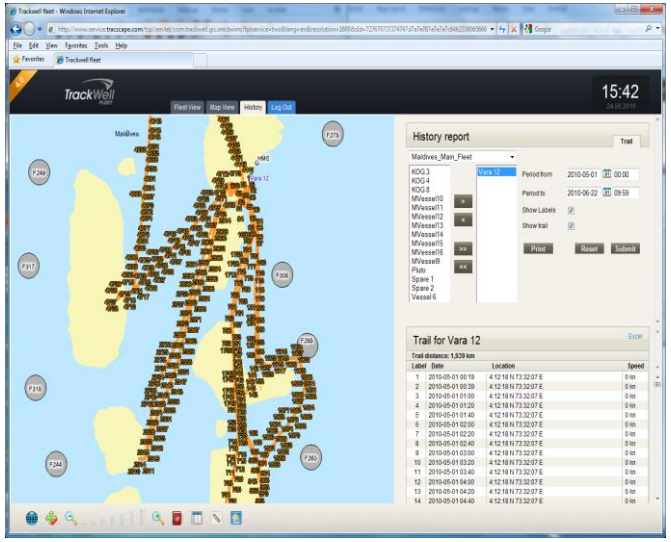
Case study Maldives – Lessons learned

- Main obstacles - actual dedication and interest of local authorities?
- The collection of tracking data the way it was done in this project seems to work well
- The on-board units performed mostly as expected although some problems were accounted
  - unstable power in some vessels, fixed with voltage regulators
- Map data (harbors, landing places, etc.) may be difficult to obtain (No useful Google maps of the area were available at the time)
- Vector maps with necessary information are hard to find in a suitable form. This is likely to be a problem in many parts of the world.
- Access to local experts on the local fishing methods is vital



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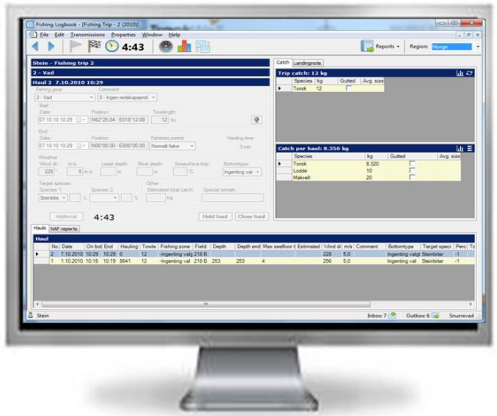
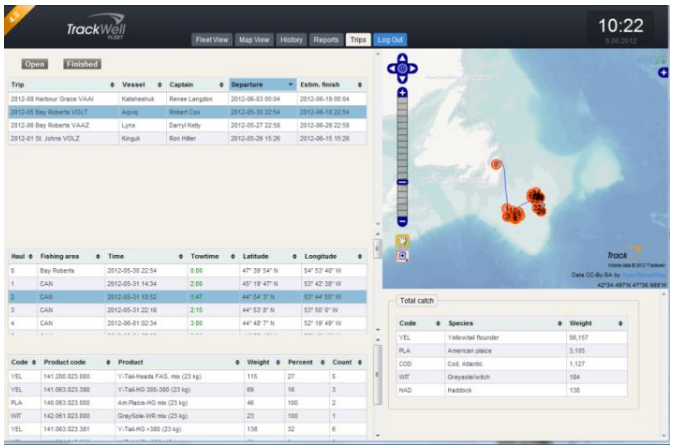
ERS (eLogbook), catch and activity reporting

- eLogbook allowed since 2003, mandatory to all fishing vessels since 2009
- Catch reports received by the DoF and the Marine Research Institude
- Connects to a variety of sensors (GPS, deep, temperature (surface and trawl), wind speed.
- Catch and activity exchanged with other countries, based on EEZ
- Collects information on by-catch, such as mammals and birds
- Data compared to landing data by DoF





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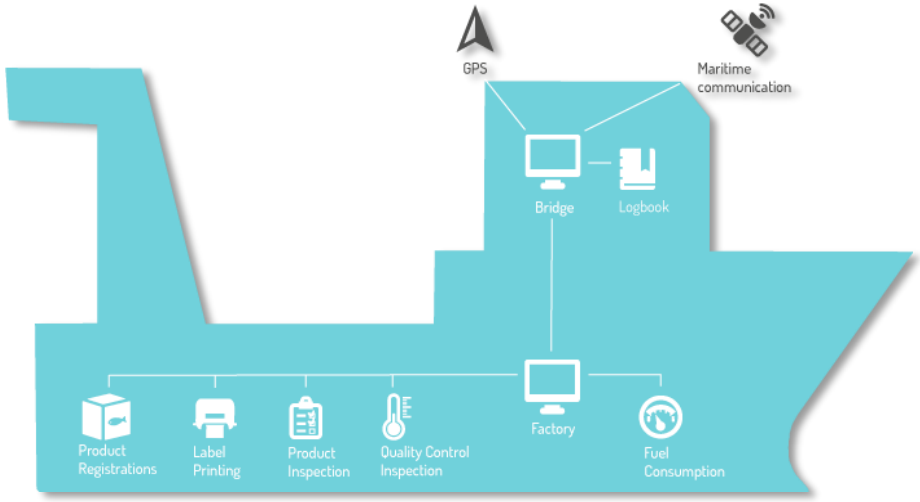
Extension to the eLogbook - Product Manager

- Aimed for Fishing companies
- The Product Manager keeps track of onboard production
- Catch data is entered as products, calculated into catch taken, linked to fishing grounds
- Single entry of data co-used for mandatory reporting and to inform fishing company managers
- Minimizes the effort and improves efficiency
- Provides aid to traceability and sustainability (fish caught from managed stocks, etc.)



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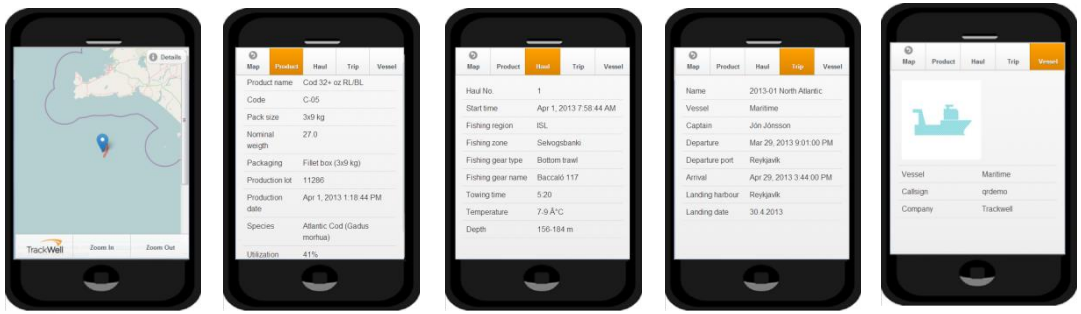
Traceability from fishing ground

- The Product Manager can be connected to onboard labelling systems where traceability info are added to the label
- This includes containers for fresh fish or boxes of fish frozen at sea
- Scan the code on the label with you smart phone to see full details of the product, or click on the label



http://www.service.tracscape.com/Dispatching/qr-map.htm?q=Yz1xcmRlbW8mZD0yMDEzLTA0LTAxJmg9MSZwPUMtMDU%3D

Case study - Traceability for fish restaurant customers

- Fresh cod from three longliners sold directly to fish restaurants in the UK
- Traceability info are retrived from the Trackwell system and shipped with the product
- A QR code is printed at the restaurant and attached to the menu
- The customers can scan the menu and get more deatils about the daily catch

VMS and ERS are only two pieces in the MCS puzzle

- A traditional Vessel Monitoring System
  - Tracks local and foreign vessels
  - Extensive monitoring (geofence, events,..)
  - Exchanges position messages with other countries and organizations
- eLogbook (or Electronic Reporting System)
  - On board program to log catches and activities of the vessel
  - Central server to receive the data and monitor the reported catch with respect to license, quota, etc.
  - Comparison made to landed catch
  - (Optional) Extension for the fishing companies to benefit from the logging as well
- Surveillance (air, sea, satellite, radar)
- Law and regulations
- Enforcement
- Etc.

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