



MARITIME



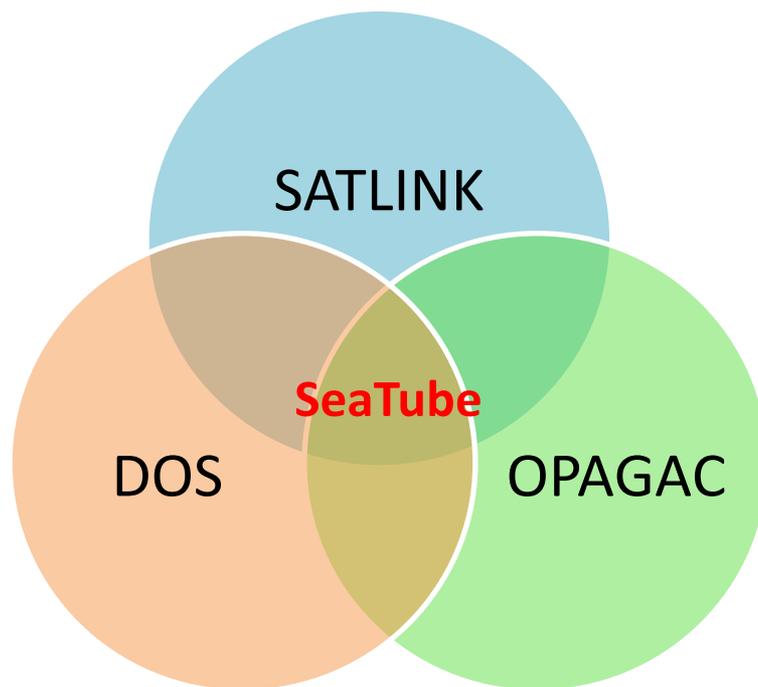
***R&D for long-term Sustainable Tuna Fishery
Electronic observer system, Satlink SeaTube***

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SeaTube, Electronic Observer System

Project Developers

- The SeaTube system was developed in conjunction with the Spanish Tuna fleet and it is designed to record the fishing activity and to complement the current observer programs



SeaTube, Electronic Observer System

Main aims

- To provide the Fishing Administrations, ship owners, research centers, etc...independent, verified, real and accurate information about the fishing activity, no matter what the vessel size or the fishing zone is.
- To complement the current Observer Programs providing an alternative to collect the information where having a human observer is not possible.



SeaTube, Electronic Observer System

Main features

VALID, TRUE AND ENCRYPTED INFORMATION

The SeaTube gets the GPS information directly from the Inmarsat VMS unit, storing the video with a water mark, the name of the vessel and includes the date and time which cannot be deleted or manipulated.

STORAGE AND CAPACITY

Satlink SeaTube is able to provide storage of fishing trip information from 5 to 7 months under normal conditions and allows for the extraction of the information in a secure and easy manner.

REAL-TIME INFORMATION WITH ALARM OPERATION

SPECIES AND SIZE COMPOSITION

Thanks to Satlink's SeaTube high resolution cameras it is possible to analyze and estimate the size and species caught

DISCARDS OF TUNAS & BYCATCH

The cameras are strategically installed on board enabling checks of discards and bycatch during the fishing activity

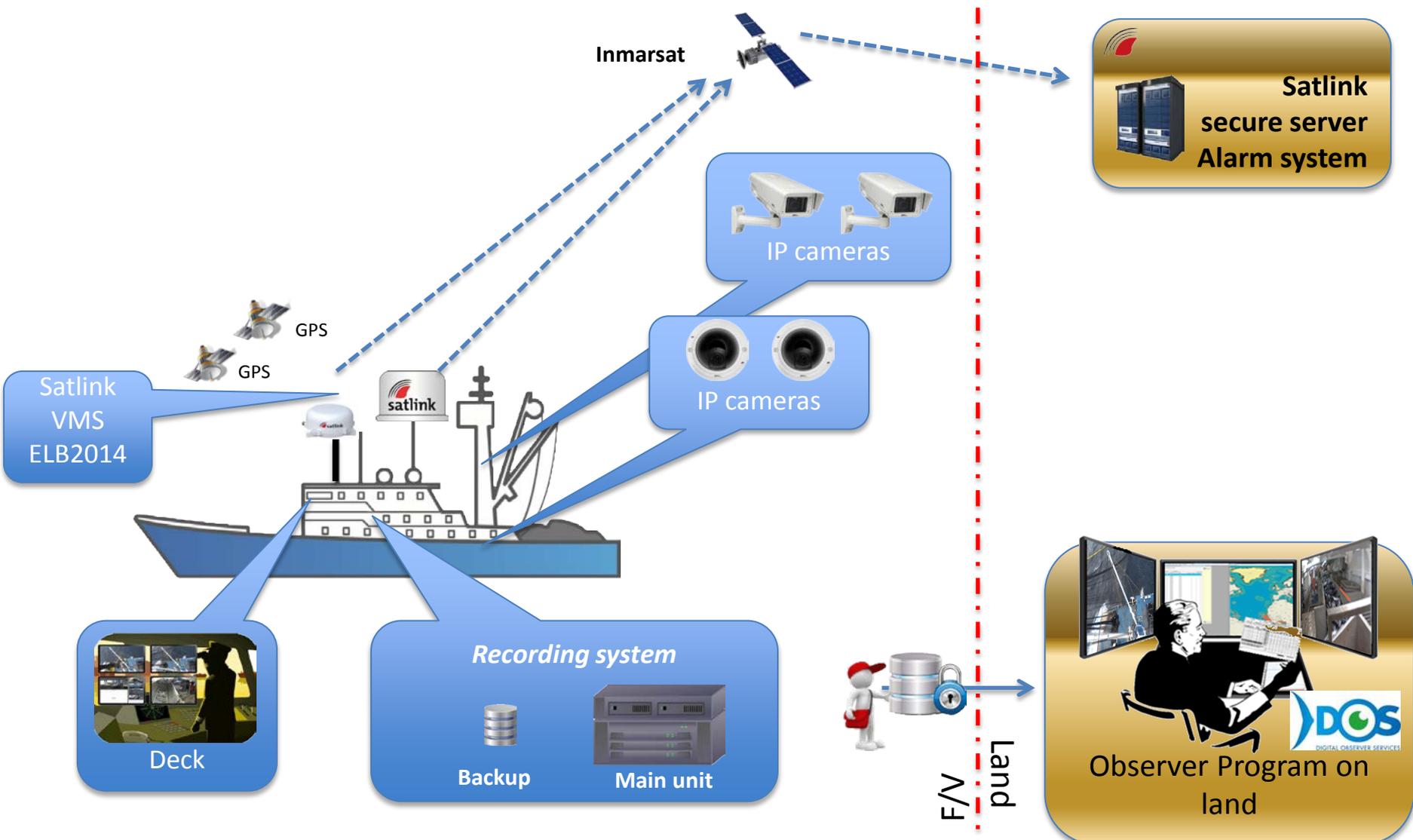
SET TYPE AND FAD DATA

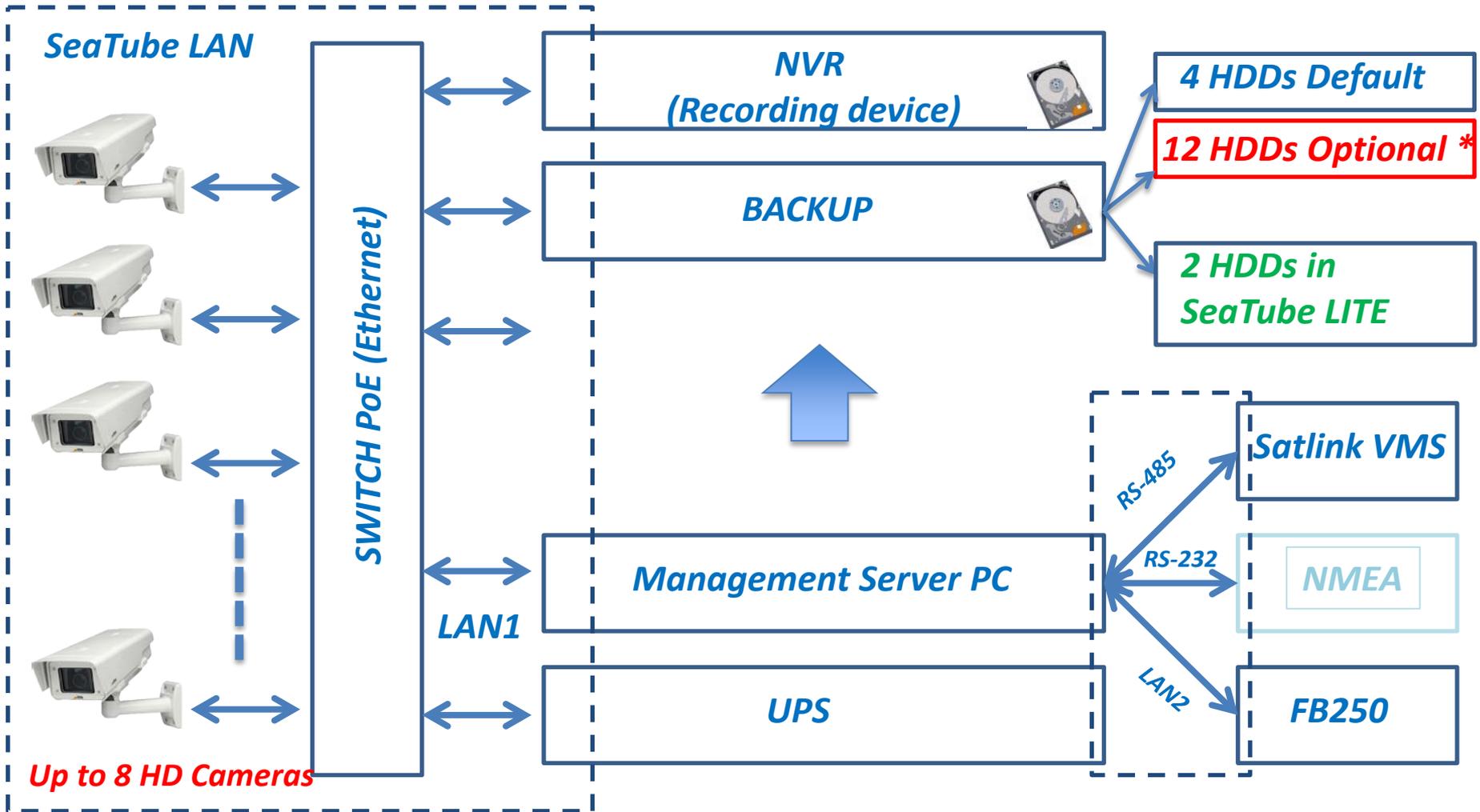
The view (angle) is wide enough to provide sight of any approaching system like FADs, WS, etc.



SeaTube, Electronic Observer System

Operating diagram





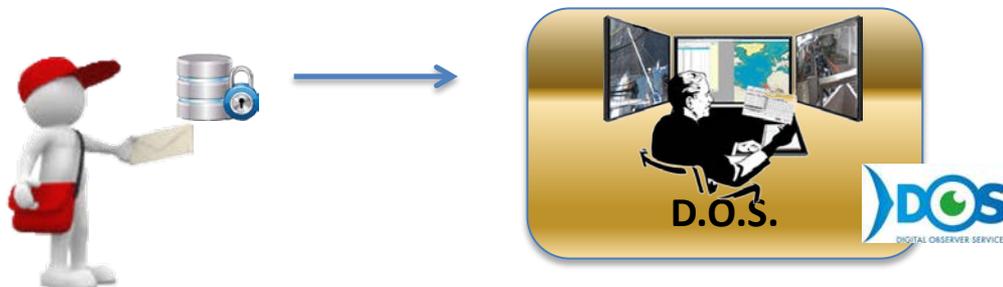
Up to 3 HD cameras in SeaTube LITE

Vessel LAN

SeaTube, Electronic Observer System

HDD removing process

- The HDDs are located in the BACKUP unit.
- These HDD units can be removed following a replacement protocol defined by D.O.S.



- The videos are encrypted and only authorized personal using the right tools can watch them.
- All videos are classified by date with 10 minutes segments recorded.
- D.O.S personnel with the Satlink View Manager systems can check and analyze the videos

SeaTube, Electronic Observer System

Digital Observer Services (D.O.S.)



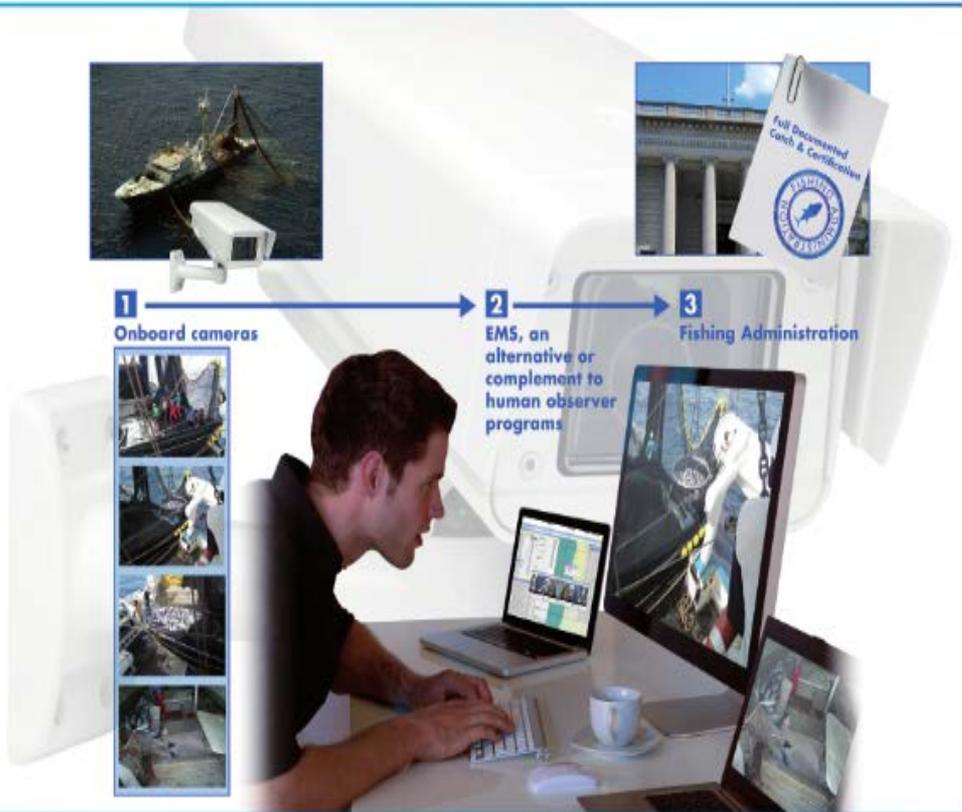
DIGITAL OBSERVER SERVICES

Consulting, monitoring, analysis and certification of fishing activities

DOS is an independent provider of Electronic Monitoring (EM), formed by a professional team with deep experience in on field fishing activities as human observers. With a tailored software tool they analyze the video information collected by Satlink's EM SeaTube.

Some services of the D.O.S. portfolio:

- Advise about how to install the cameras onboard and the best location of the cameras.
- Check remotely the correct function of the system and advise about any trouble in the function and maintenance of the cameras.
- Using the filters of the system and analyzing by vessel speed, data, time, course, EEZ and the fishing activity, they then issue an independent observer report.
- Safeguard the information and videos of the vessel for a period of 2 years.



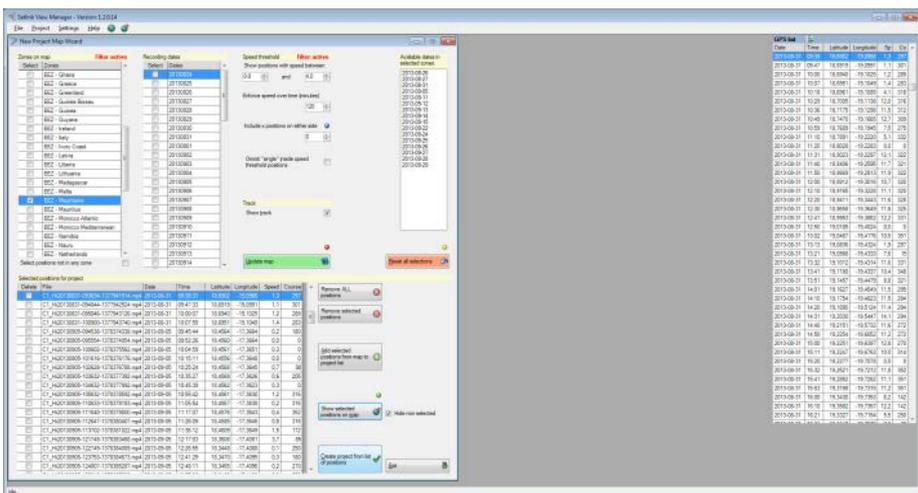
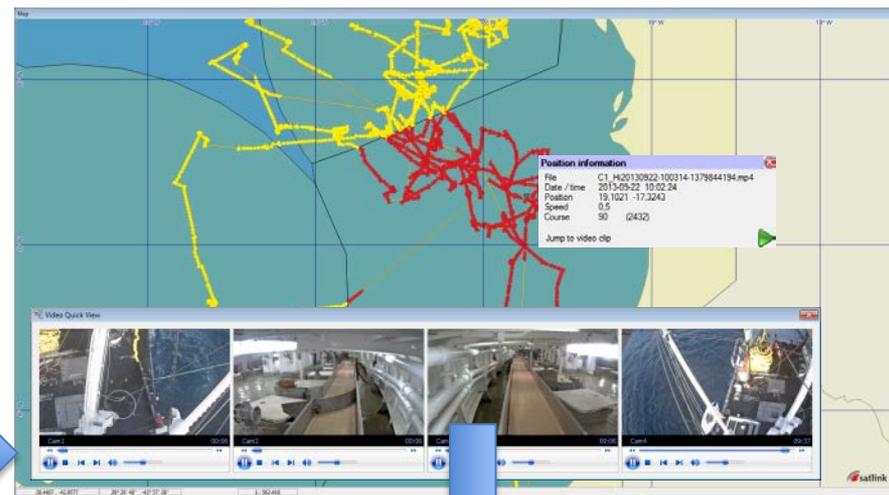
Seatube – View Manager

- “View Manager” is a set of tools integrated into a single solution
 - Global maritime charts with all the Exclusive Economic Zones (EEZ) integrated
 - Video player showing all cameras simultaneously which can turn off a picture, zoom, create notes, etc.
 - Note Editor, marks information of the vessel and species caught
 - Publish the report of the inspector attaching all notes and pictures taken during the review
- The inspector can divide the vessel trip into different projects.
- GPS data extracted from metatags inside the video(s) is used to show the vessels position, course and speed at the time of the video
- Video is selected directly from marine chart, data selection or file

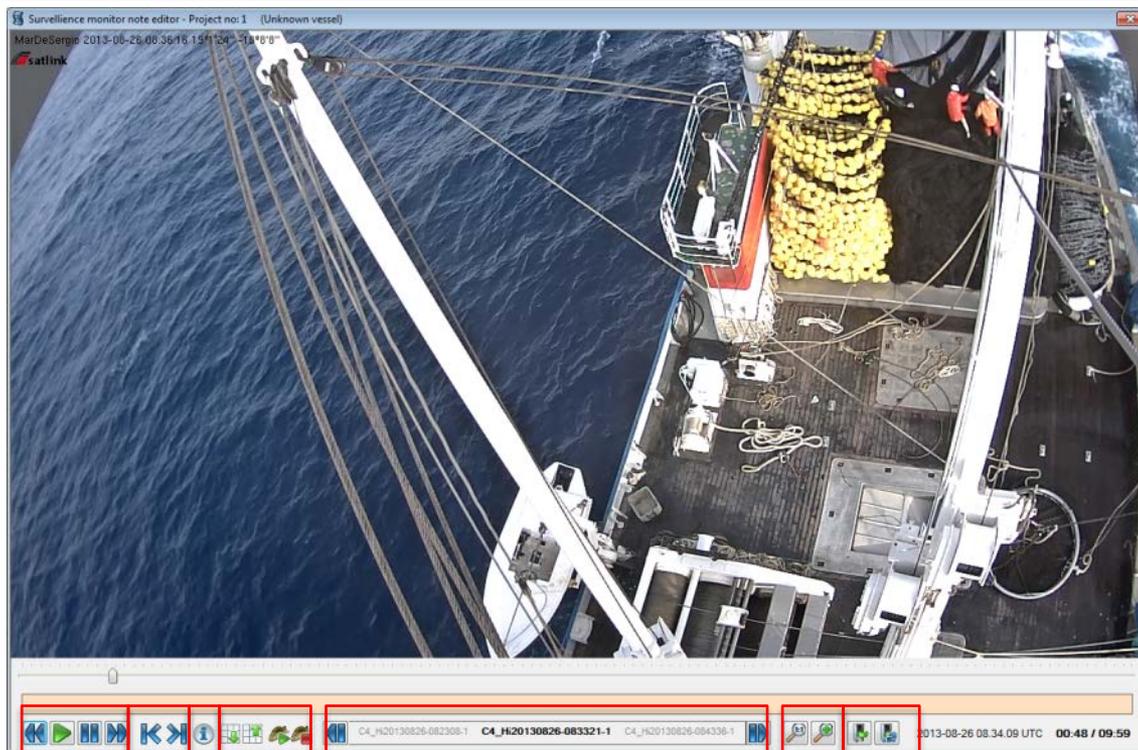


SeaTube, Electronic Observer System Satlink View Manager

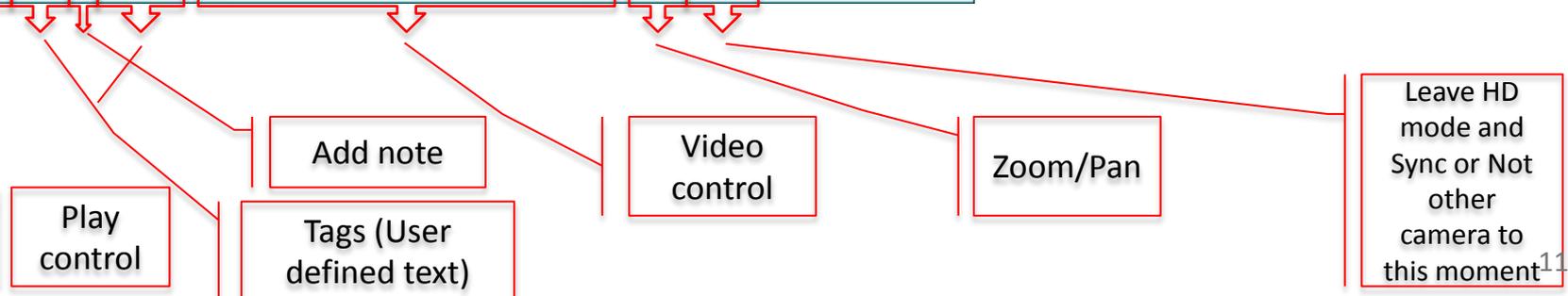
- The software is composed of some filter options to facilitate the analysis and create the report:
 - Date
 - Speed
 - Navigation area
 - GPS position



SeaTube, Electronic Observer System Satlink View Manager



- Edit mode allows for full control of the video, adding notes, adding gear tags, user defined activities and generate reports...



SeaTube, Electronic Observer System

Observer report

- Report format currently shows
 - Name of vessel
 - Vessel details
 - Date and Time
 - Lat and Long for notes and tags
 - Activity by adding tags with user defined text
 - Activity by using written text or by including optional photo
 - Speed and course with position
 - Inspection title
 - Owner name
 - Watermark from image extracted
 - Reference to actual video file

Satlink View Manager Report

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Inspection report

JHE // Y // TST // DOMO // 18SEP

Project no: 62 Vessel: xxx External marking: xxx CFR no: 2013-11-27 20:08:11
 xxx IRCS: xxx
 Project date interval: 2013-09-18 - 2013-09-18
 Date/time filter: All dates/times
 Zone filter: All zones
 Speed filter: All speeds
 Image filter: Showing date/time watermark and showing mini image

Report

| Date (file) | UTC time (file) | Lat (dec) | Long (dec) | Speed | Course | File |
|---|-----------------|-----------|------------|-------|--------|---|
| 2013-09-18 | 09:40:14 | 20,2094 | -18,6959 | 0,3 | 0 | Y:\C3_HI\20130918AM\C3_HI20130918-093653-1379497013.mp4 |
| <Vesselname> 2013-09-18 09:42:48 20°12'34" -18°41'45" (Camera watermark) | | | | | | Normal Camera showing sorting of skipjack tuna |
| 2013-09-18 | 09:40:59 | 20,2094 | -18,6959 | 0 | 270 | Y:\C1_HI\20130918AM\C1_HI20130918-093828-1379497108.mp4 |
| <Vesselname> 2013-09-18 09:44:25 20°12'34" -18°41'45" (Camera watermark) | | | | | | Mast Camera showing unloading of fish |
| 2013-09-18 | 09:42:44 | | | | | Y:\C2_HI\20130918AM\C2_HI20130918-094207-1379497013.mp4 |
| (Camera watermark) | | | | | | Dome Camera showing sorting of skipjack tuna |
| 2013-09-18 | 09:43:55 | 20,2094 | -18,6959 | 0 | 270 | Y:\C4_HI\20130918AM\C4_HI20130918-093913-1379497153.mp4 |
| <Vesselname> 2013-09-18 09:46:31 20°12'35" -18°41'47" (Camera watermark) | | | | | | Other mast mounted Camera showing unloading on deck of tuna |

