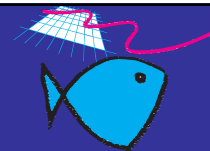


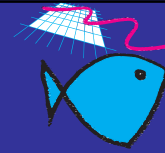
A few preliminaries

- This is a diverse group and we have a lot of ground to cover
 - Between countries that are well advanced in VMS and those that have less experience, my principal target is the latter
 - If you're in the former group, I ask you to put your experience at the disposal of the others
 - If you have questions as we go along, please ask them as they arise.



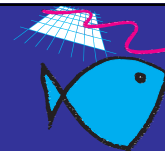
Administrative basis for operational VMS in GFCM

Recommendation minimum standards for VMS in GFCM area
2009



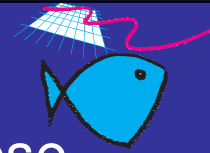
GFMC VMS requirements

- Ability to collect and transmit data to FMC or equivalent authority of flag state
- Pre-determined intervals for data transmission, minimum 2 hours
- Transmit unique vessel identifier with required data sets



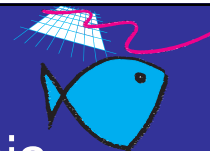
VMS data requirements

- Position expressed in latitude and longitude
 - Minimum accuracy 500m
 - Confidence level 99%
- Date and time of vessel fixing
- Speed and course of vessel



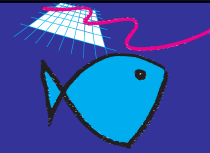
The good news is that these are all standard requirements

- No new equipment development
- No custom software requirements
- No special communications or operational requirements

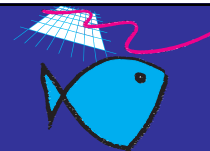


What is our objective in this workshop?

- To review all of the requirements to put such systems in countries without VMS
- To agree a plan of implementation, that implies meeting all technical and resource requirements
- To achieve this by the recommendation deadline of December 2012

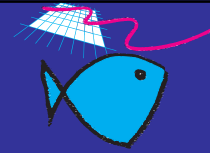


As we have the benefit of years of experience and development, this objective is eminently achievable



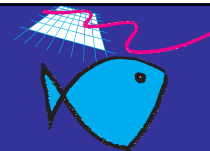
Fishing vessel monitoring system (VMS)

What is it, why and how?



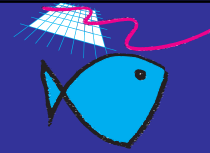
Key topics for this presentation

- Description and definition of VMS
- How VMS works
- What VMS data tells us
- A look into the future for VMS



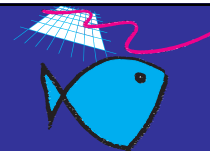
What is VMS?

- The use of satellite communications and navigation to follow the movements of fishing vessels
- A tool to improve the efficiency of monitoring, control and surveillance (MCS)
- A tool to improve the efficiency of marine resource management.



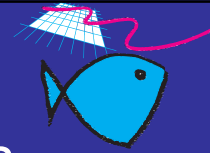
VMS, the requirements

- Shipboard equipment
- Communications infrastructure for transmission of data
- The ability to receive, store, display and process data, i.e. fisheries monitoring centre (FMC)



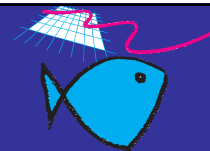
On-board equipment

- Transmitter or transmitter-receiver for maritime applications
- Integrated navigation system typically “GPS”, global positioning system
- Either a component of the vessel’s communications system, or a completely independent unit.



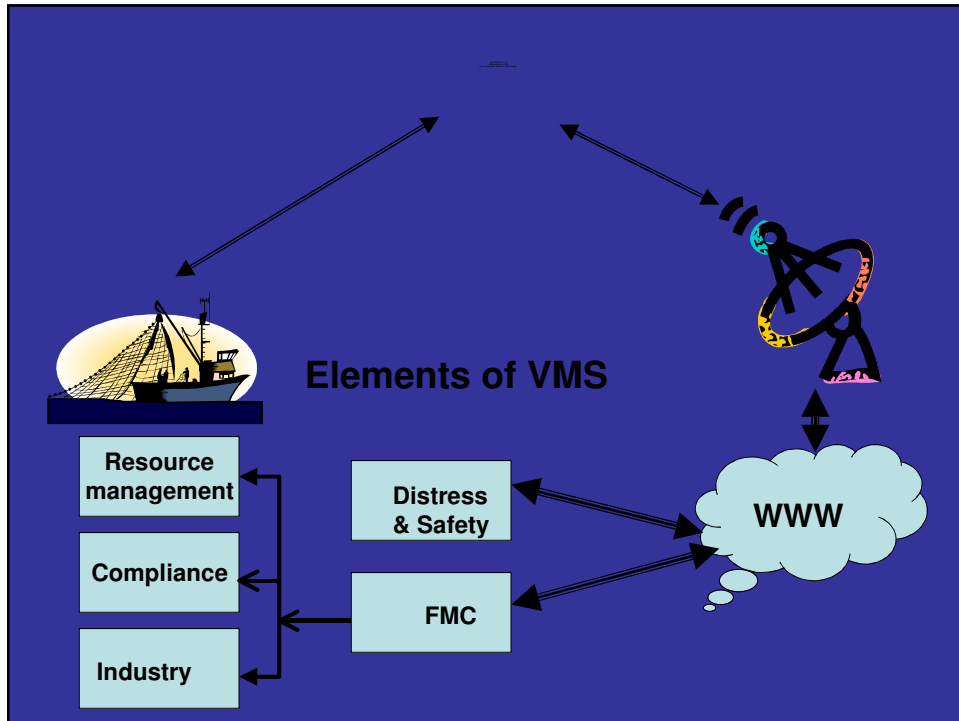
Means of communications

- Two key elements:
 - From ship to shore
 - Terrestrial network to fisheries monitoring centre (FMC)
- Until now, only satellite systems have been used for communications from vessels toward the shore, but others are possible
- Transmission to the FMC can be accomplished by virtually any available means (e.g. Internet, ADSL), telephone (fixed or portable) or satellite link.



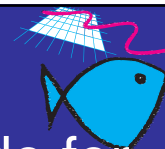
FMC: data storage and processing

- Equipment is typically standard PC-based
- Communications module provides interface with means of transmission
Database provides means of storing and processing data
- Graphic-geographic software provides visual interface for operators



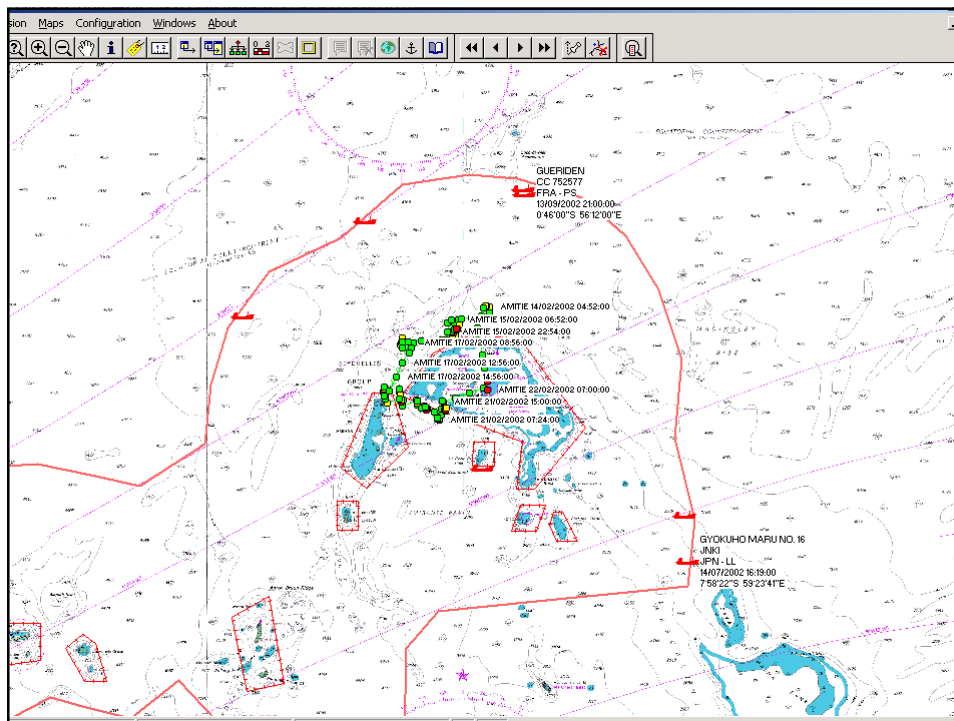
Operational scenario

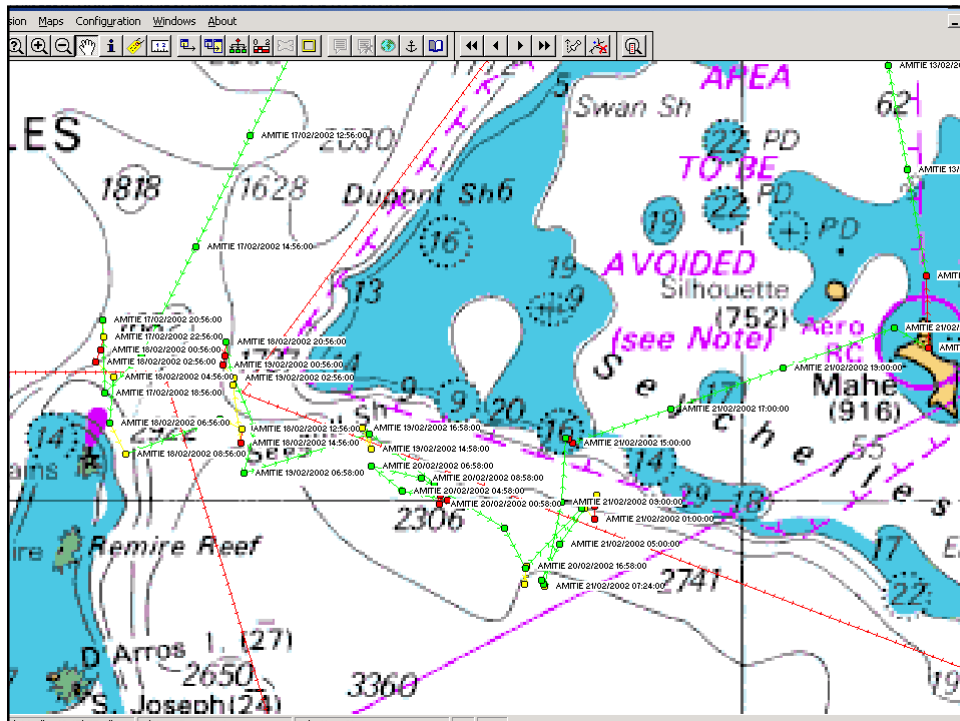
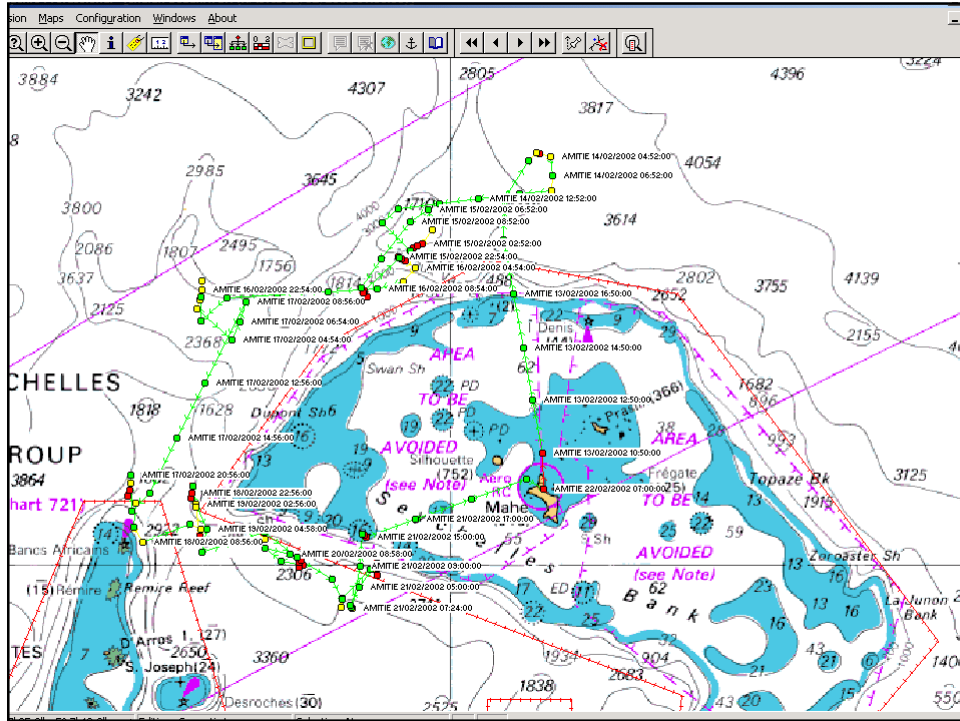
- Shipboard equipment creates data packets at predetermined intervals
 - position of vessel expressed in latitude and longitude
 - Speed and course are optional
- Data is transmitted to the FMC
- FMC makes data available to authorities for their proper use as well as for and required distribution

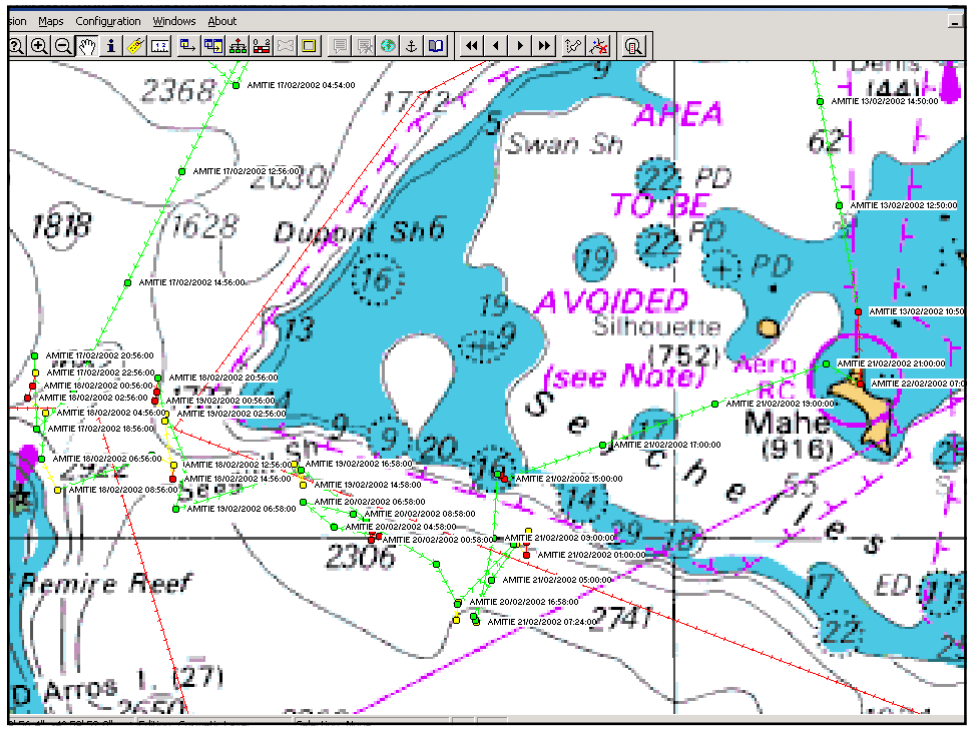
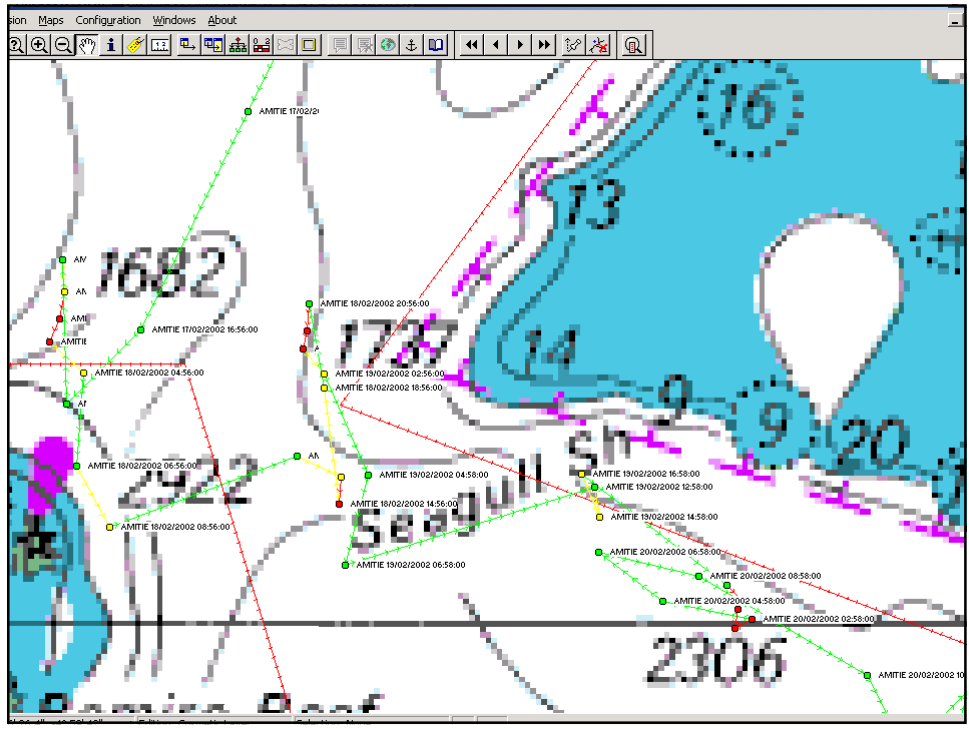


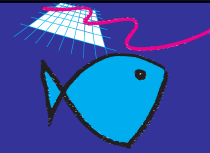
Just what does this data do for us?

- As a minimum, a historical view of the movements of all vessels
- Depending upon our technical choices, a perspective, in quasi-real-time, on the behaviour of vessels
- The ability to deduce certain details on the fishing activity, as well as the commercial activities of vessels



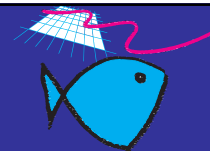






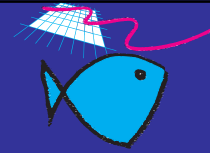
A word about security

- This data is legitimately subject to commercial confidentiality
- Respect of this confidentiality is fundamental
- Failing this, the VMS effort could be compromised or even fail
- We'll look at this subject in more detail later in the workshop



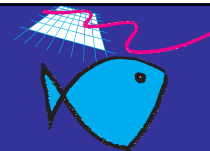
VMS data analysis -- 1

- Most common case: latitude, longitude with precise time of creation
 - Estimation of fishing effort, measured in days at sea
 - Determine ports of landing
 - Control of passage through sensitive fishing zones



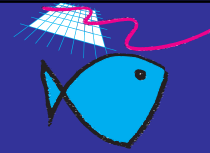
VMS data analysis -- 2

- With addition of speed and course
 - Detection of probability of fishing activity based upon vessel speed
 - Detection of fishing activity, with near certainty, based upon “fishing fingerprint”
 - Planning of follow-up activities



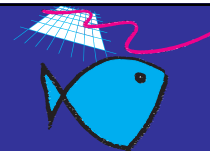
VMS data, practicalities -1

- Fishing control and conformity
 - Control of effort
 - Control of forbidden and protected zones
 - Control of unauthorized landing
 - Control of unauthorized trans-shipment



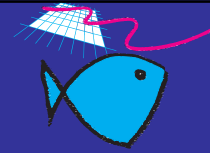
VMS data, practicalities -2

- Fishing control and conformity -- 2
 - Improvement in the efficiency of patrol vessels and aircraft
 - Realization of a dissuasive force against illegal fishing
 - Support of legal actions
 - A powerful tool against illegal fishing



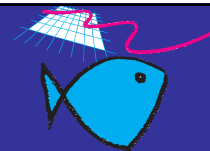
VMS data, practicalities -3

- Management of marine resources
 - Calculation of fishing effort
 - In an entire zone (FAO, ICES)
 - In local zones
 - In specific fisheries
 - Detection of evolution of fishing zones



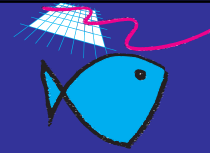
VMS data, practicalities -4

- Analysis of relationship between reported catch and general data gathered by research
 - Determination of fisheries and zones at risk
 - Analysis of seasonal tendencies
 - Preventive measures in attributing quotas and limits of fishing effort



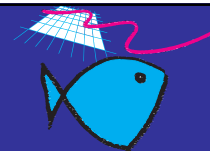
VMS data, practicalities -5

- In support of industry
 - An opportunity to share data and to treat management of resources as a shared responsibility between authorities and industry
 - Distribution of data in real-time to support operations
 - Key dissuasion of illegal fishing
 - Notable improvement of security at sea



A look toward the future -- 1

- Further development of means of communication
- Cost of equipment and communications services destined to continue to fall
- Broad range of potential suppliers for both equipment and services



A look toward the future --2

- Electronic logbook
 - The weak link in the goal of maximising the quality of control and management of resources
 - Establishment of an international format for presentation and transmission of data is essential
- Satellites capable of sea surface imagery will provide an opportunity to verify and supplement VMS data
 - Tool that could be determinant against illegal fishing