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PROJECT CATCH, A SPACE BASED SOLUTION TO COMBAT ILLEGAL, UNREPORTED AND
UNREGULATED FISHING. PART I: VESSEL MONITORING SYSTEM.

Abstract

Space Assets can and ought to play a more active role in the era of "Earth Management". There is a clear need to develop tools to manage Earth resources in a global framework.

Illegal, Unreported, and Unregulated (IUU) fishing is placing increasing pressure on the health and size of fishing stocks around the world. Earth Observation resources can provide fishery management organisations cost effective monitoring of large swaths of uninhabited ocean. Project Catch is a conceptual fisheries management project based upon Catch-VMS and Catch-GIS.Catch-VMS is a vessel monitoring system with increased fidelity over existing models. Catch-GIS is a Geographical Information System that combines Catch-VMS information with existing Earth Observation data and various other sources to identify IUU fishers. Project Catch was a result of a team of 19 students at the International Space University, delivered in 2010.

In this paper, the space-based system architecture of Project-Catch is presented and analysed. The rational for the creation of the system as well as the engineering trade-off studies in its creation are discussed. The Catch VMS proposal was envisaged in order to counter two very specific problems: 1) The expansion of IUU fishing in high latitude regions, where coverage is an issue for many satellite systems and 2) to cover remote oceanic regions that are not possible to be covered by coastal observational means.

Catch-VMS utilises a ship-borne transponder and hosted-payload receivers on a GNSS constellation in order to monitor the position and activity of compliant fishing vessels. Coverage is global and continuous with multiple satellites in view providing positional verification ability through multilateration techniques.

The second part of the paper describes briefly the Cath-GIS part of the system and investigates the magnitude of the cost of such a system. A preliminary economic analysis on the application of such a system in the case of the Blue Fin tuna in the Mediterranean Sea is presented as an example. Catch-GIS is presented in more details in a different paper (IAC-11,B5,2,x9474)