



## Fish4Knowledge Deliverable D7.3

### Project Fact Sheet

Principal Author: UEDIN  
Contributors: All partners  
Dissemination: PU

**Abstract:** This document summarises some facts about the Fish4Knowledge Project.

Deliverable due: Month 1

## Supporting humans in knowledge gathering and question answering w.r.t. marine and environmental monitoring through analysis of multiple video streams

- **Project acronym:** Fish4Knowledge
- **Project dates:** October 1, 2010 through September 30, 2013
- **Consortium Coordinator:** Prof. Robert Fisher
- **EC project number:** Fish4Knowledge is funded by the European Union Seventh Framework Programme [FP7/2007-2013] under grant agreement 257024, addressing Objective ICT-2009.4.3: Intelligent Information Management, Challenge 4: Digital Libraries and Content.
- **EC Budget:** €1915K
- **EC Project Officer:** Dr. Stefano Bertolo
- **Website:** <http://www.Fish4Knowledge.eu>

- **Project abstract:** The study of marine ecosystems is vital for understanding environmental effects, such as climate change and the effects of pollution, but is extremely difficult because of the inaccessibility of data. Undersea video data is usable but is tedious to analyse (for both raw video analysis and abstraction over massive sets of observations), and is mainly done by hand or with hand-crafted computational tools. Fish4Knowledge will allow a major increase in the ability to analyse this data: 1) Video analysis will automatically extract information about the observed marine animals which is recorded in an observation database. 2) Interfaces will be designed to allow researchers to formulate and answer higher level questions over that database.

The project will investigate: information abstraction and storage methods for reducing the massive amount of video data (from 10E+15 pixels to 10E+12 units of information), machine and human vocabularies for describing fish, flexible process architectures to process the data and scientific queries and effective specialised user query interfaces. A combination of computer vision, database storage, workflow and human computer interaction methods will be used to achieve this.

The project will use live video feeds from 10 underwater cameras as a testbed for investigating more generally applicable methods for capture, storage, analysis and querying of multiple video streams. We will collate a public database from 2 years containing video summaries of the observed fish and associated descriptors. Expert web-based interfaces will be developed for use by the marine researchers themselves, allowing unprecedented access to live and previously stored videos, or previously extracted information. The marine researcher interface will also allow easy formulation of new queries. Extensive user community evaluations will be carried out to provide information on the accuracy, ease and speed of retrieval of information.

- **Main scientific question:** How to capture, store and analyse long-term video stream data in such a manner that it is useful for answering queries by humans, in this case questions by marine biologists about tropical reef fish in Taiwan.

- **Partners:**

- Centrum Wiskunde & Informatica (Netherlands)
- National Applied Research Laboratories (Taiwan)
- Univ. of Edinburgh (United Kingdom)
- Universit di Catania (Italy)

- **Principal Investigators:**

- Jessica Yun-Heh Chen-Burger, Univ. of Edinburgh (United Kingdom)
- Robert Fisher (coordinator), Univ. of Edinburgh (United Kingdom)
- Daniela Giordano, Universit di Catania (Italy)
- Lynda Hardman, Centrum Wiskunde & Informatica (Netherlands)
- Fang-Pang Lin, National Applied Research Laboratories (Taiwan)

- **Young Researchers:**

- Emmanuelle Beauxis-Aussalet, Centrum Wiskunde & Informatica (Netherlands)
- Bas Boom, Univ. of Edinburgh (UK)
- Karen Chang, National Applied Research Laboratories (Taiwan)
- Yi-Hsuan Chen, National Applied Research Laboratories (Taiwan)
- Jia-Shin Cheng, National Applied Research Laboratories (Taiwan)
- Jiyin He, Centrum Wiskunde & Informatica (Netherlands)
- Xuan Huang, Univ. of Edinburgh (UK)
- Sun-In Lin, National Applied Research Laboratories (Taiwan)
- Shi-Wei Lo, National Applied Research Laboratories (Taiwan)
- Gaya Nadarajan, Univ. of Edinburgh (UK)
- Jacco van Ossenbruggen, Centrum Wiskunde & Informatica (Netherlands)
- Simone Palazzo, Universit di Catania (Italy)
- Roberto Di Salvo, Universit di Catania (Italy)
- Yi-Haur Shiau, National Applied Research Laboratories (Taiwan)
- Concetto Spampinato, Universit di Catania (Italy)
- Kuo-Tai Tseng, National Applied Research Laboratories (Taiwan)

- **Scientific Advisory Board:**

- Prof. Kwang-Tsao Shao (Biodiversity Research Center, Academia Sinica)
- Prof. Steffen Staab (Univ. Koblenz)
- Prof. Konstantinos Stergiou (Aristotle Univ. Thessaloniki)
- Prof. Monique Thonnat (INRIA)