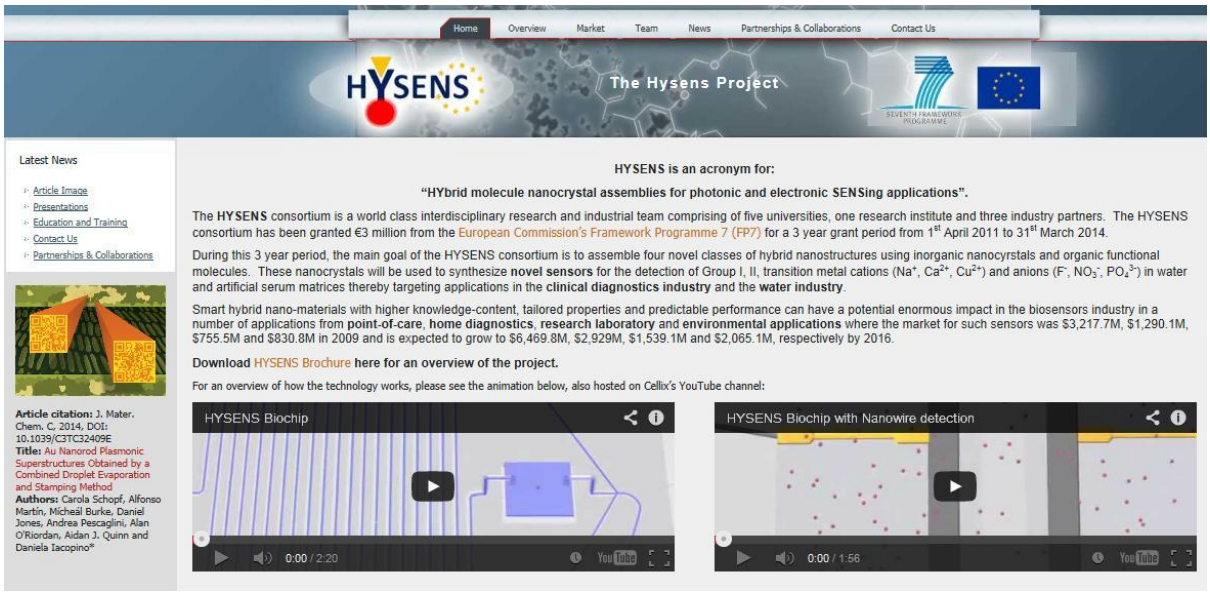
1.1 Address of public website

www.hysens.eu

The HYSENS website was one of the key tools used to disseminate details of the project, it's overall technological aims and to disseminate progress of the project to the wider scientific community. The website includes details of publications, presentations (oral and poster), exhibitions.

Some snapshots of the website are highlighted below:



Work Packages

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The proposed innovation in HYSENS relies on the use of hybrid inorganic-organic component materials leading to the development of sensors with enhanced selectivity and sensitivity. Inorganic nanocrystals and organic functional molecules will be used for the assembly of **four novel classes of hybrid nanostructures**:

1. **Intelligent assembly (1)**: semiconductor nanocrystal - organic functional molecules for demonstration of optical "intelligent chemosensing" (**objective 1**) targeting ng/L concentration detection of Group I and II ions and anions (including Na^+, Ca^{2+}, PO_4^{3-}, F^-). Industrial validation of intelligent assembly 1 into polymer-patterned tag surfaces and microfluidic cells.
2. **PRET hybrid assembly (2)**: metal nanocrystal - organic functional molecules for demonstration of optical sensing based on plasmon resonance energy transfer (PRET) mechanisms (**objective 2**) targeting ng/L concentration detection of transition metal including Hg^{2+} and Cu^{2+}. Industrial validation of PRET assembly 2 into polymer microfluidic cells.
3. **2D hybrid arrays (3)**: metal nanocrystal - organic functional molecules for demonstration of large area sensing (**objective 3**) targeting electrical "intelligent chemosensing" of Group I and II cations and anions (including Na^+, Ca^{2+}, PO_4^{3-}, F^-) with ng/L detection limits.
4. **1D hybrid arrays (4)**: metallic semiconductor nanocrystal - organic functional molecules interfaced on 1D Si FETs arrays for electrical readout based sensing (**objective 4**) targeting electrical "intelligent chemosensing" of Group I and II cations and anions (including Na^+, Ca^{2+}, PO_4^{3-}, F^-) with ng/L detection limits. Industrial validation of 1D hybrid assembly into polymer microfluidic cells.

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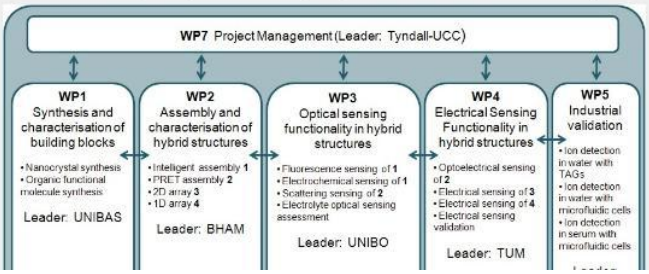


The HYSENS project involves a strong team consisting of 9 partners: 6 from academia and 3 from industry:

Tyndall National Institute, University College Cork (Ireland)

Tyndall National Institute at University College Cork (UCC) is the project co-ordinator of the HYSENS project. The Tyndall National Institute is a premier ICT research institute affiliated to UCC with a critical mass of over 300 researchers with core competencies in micro/nanoelectronics, photonics, Microsystems and computational modeling. The Nanotechnology Group at TNI-UCC focuses on mid- to long-term research in development of nanoscale materials, structures and devices to enable development of future emerging electronics, photonics and biotech technologies.

Expertise leveraged for HYSENS project: Synthesis of nanocrystal materials and optical characterization of nanostructures.

Contacts: Daniela Iacopino and Aidan Quinn

Website: http://www.tyndall.ie/users/danielaiacopino

University of Basel (Switzerland)

Department of Chemistry and Department of Physics

The University of Basel has many years of experience in the design of molecular species with defined electronic or photonic properties. These interests have recently evolved to include novel long-lived LECs and the design and synthesis of new nanoparticulate materials for incorporation into photovoltaic and other systems.

Expertise of Department of Chemistry leveraged for HYSENS project: State-of-the-art synthesis and characterization of inorganic-organic hybrids and components; supramolecular chemistry and molecular electronics.

Expertise of Department of Physics leveraged for HYSENS project: Electrical characterization of nanocrystal assembly, including electrochemical gating; also nanoelectronics and molecular electronics.

Contacts: Prof. Edwin Constable (Dept. of Chemistry); Prof. Christian Schonenberger and Dr. Michel Calame (Dept. of Physics).

Websites:

http://www.chemie.unibas.ch/~constable/

http://www.physik.unibas.ch/dept/pages/de/personnel/schonenberger.htm

News

HYSENS Brochure

Publications

Presentations

Education and Training

Publishable Summary: 1st April 2011 to 30th September 2012

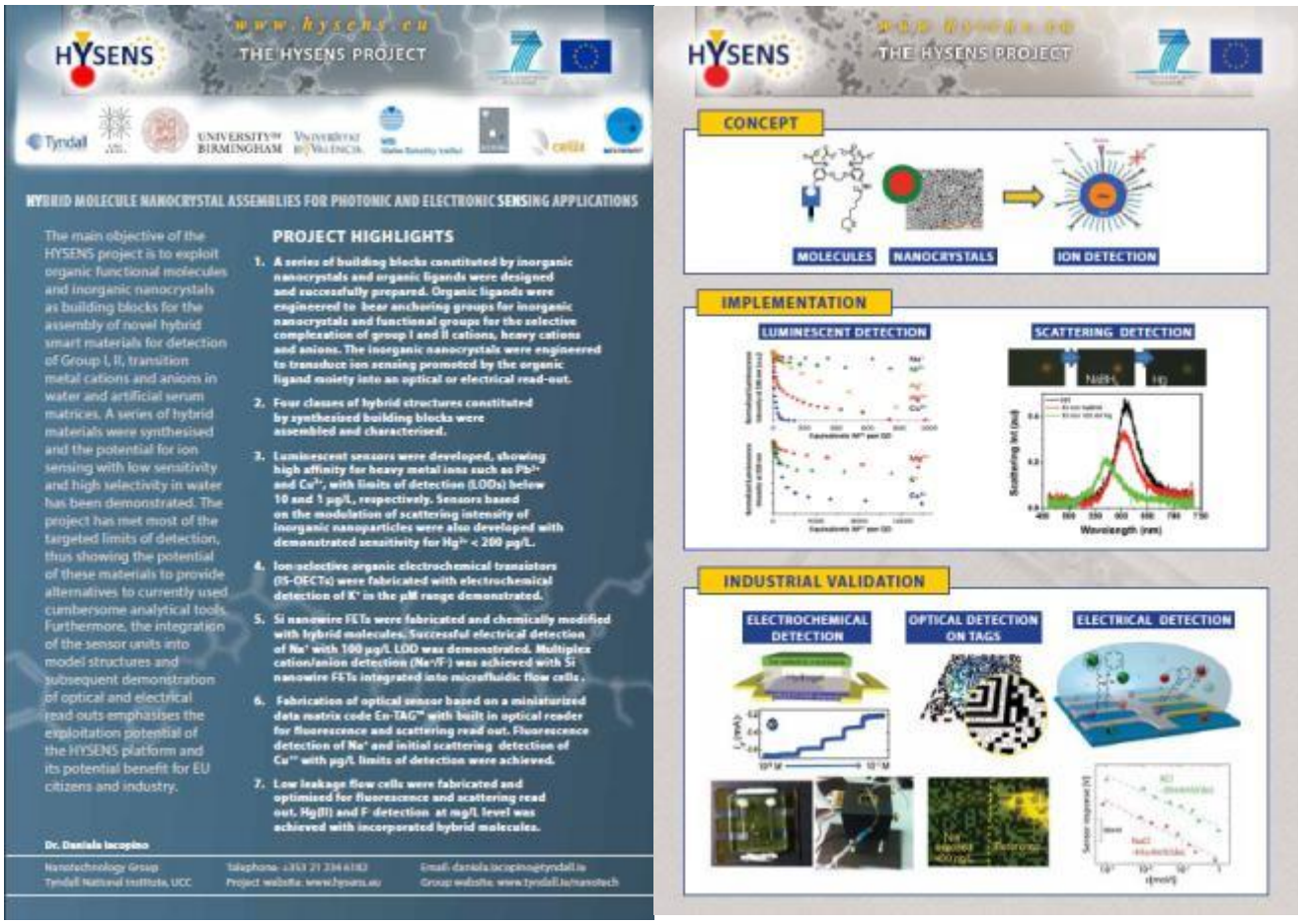
Category: News

The website also includes tools for exploitation including:

- **HYSENS Brochures:** Three brochures were designed during the project. The first brochure was designed as a short overview of the HYSENS project.

Brochure 1: HYSENS Overview

Two further brochures were developed towards the end of the project; one for dissemination to the scientific community publicising results of the HYSENS project and a second one for the general public giving an overview of the importance of the results achieved to the wider community.

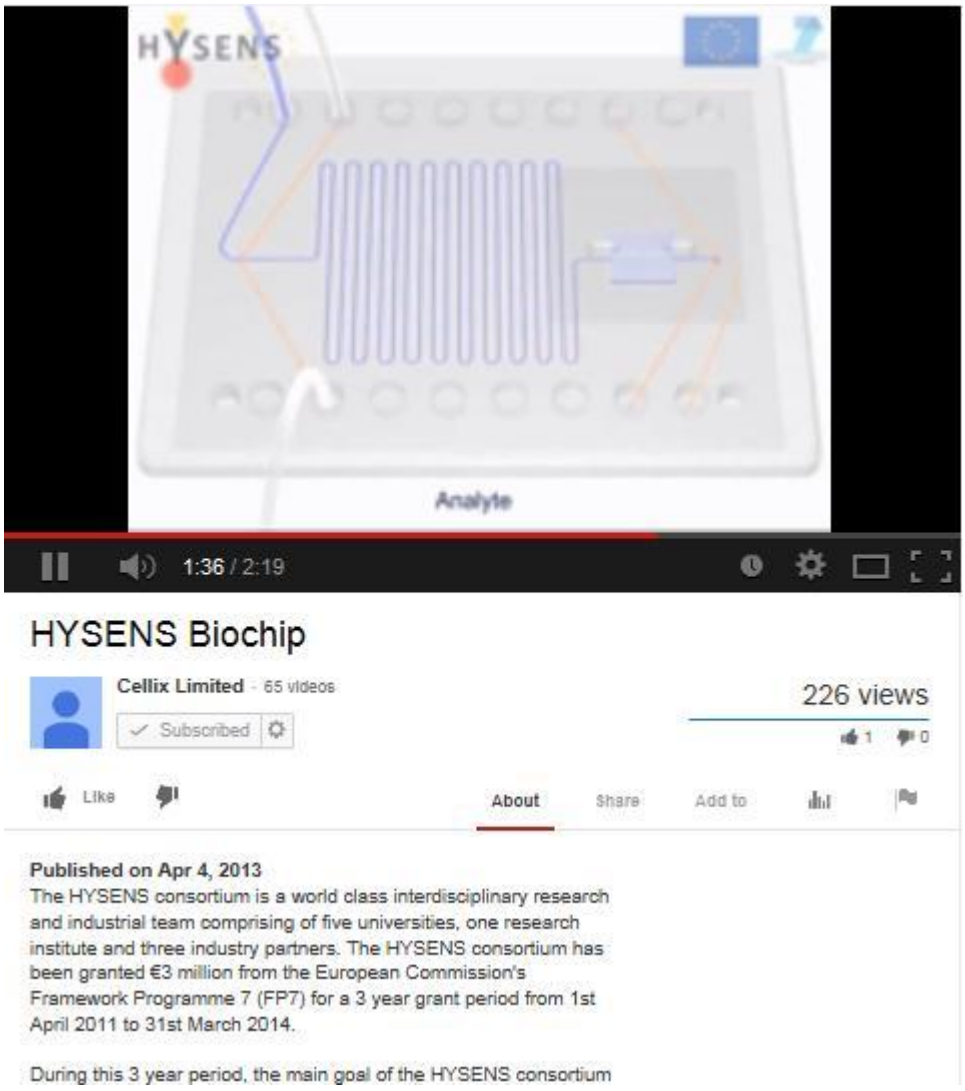


Brochure 2: HYSENS Scientific Results

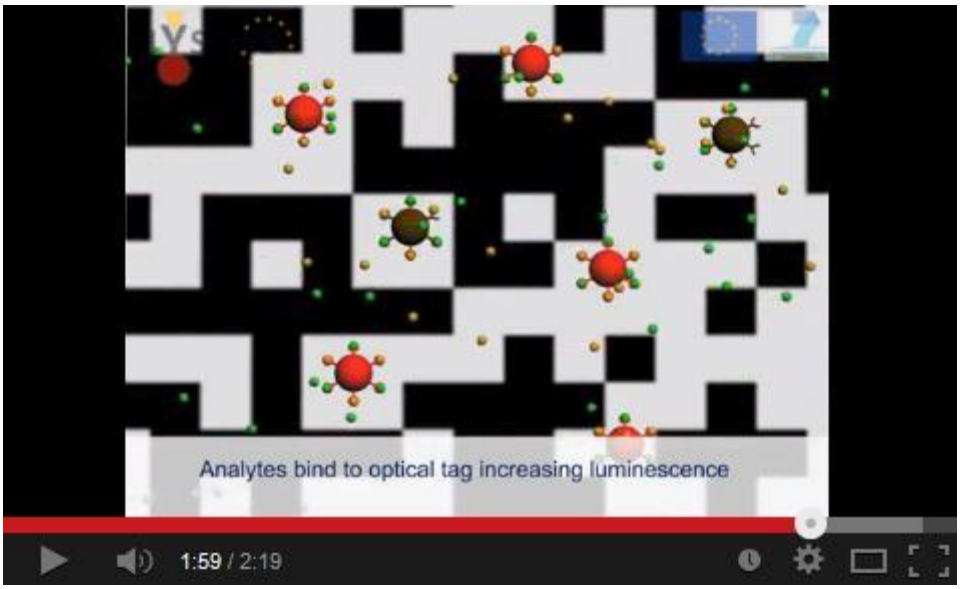
Brochure 3: HYSENS General Flyer for wider public dissemination

All brochures are downloadable as pdfs from the website and can be used by partners to explain the project to potential interested partners (industry, academia, press etc.).

- **HYSENS animation:** This is short animation which briefly explains how an assembly, embedded on-chip, is used as a sensor for the detection of analytes. This is hosted on Cellix's YouTube and linked directly to the HYSENS website homepage. A second animation was produced from July – September 2013 to explain the operation of the nanowire embedded sensor from University of Basel. As with the first animation, this is also hosted on Cellix's YouTube channel and linked directly to the HYSENS website homepage. Both animations have been shown by Cellix at two exhibitions; Lab-on-a-chip World Congress, San Diego, September 2013 and Lab-on-a-chip European Congress, Berlin, March 2014.



Animation explaining HYSENS sensor embedded in microfluidic biochip



Close-up of video animation explaining the embedded sensor on-chip.