Hes·so
Haute Ecole Spécialisée de Suisse occidentale
Fachhochschule Westschweiz
University of Applied Sciences Western Switzerland

Projet FP7 – ULTRASPONDER

Nom du projet	In-vivo ultrasonic transponder system for biomedical applications – ULTRASPONDER
Call	ICT-2007-3.6
Type de projet	Collaborative project
Rôle de la HES-SO	Participant
Chercheur impliqué	Patrick Favre (HEIG-VD)
Participants	Ecole polytechnique fédérale de Lausanne (Switzerland) – coordinateur ; Rikshospitalet hf (Norway) ; Imasonic sas (France) ; Haute Ecole Spécialisée de Suisse occidentale (Switzerland); SCIPROM sarl (Switzerland) ; Medtronic Bakken Research Center b.v. (Netherlands) ; Institut national de la santé et de la recherche médicale (Inserm) (France) ; IMST gmbh (Germany), CSEM Centre suisse d'électronique et de microtechnique sa - recherche et développement (Switzerland).
Budget global	4.33 millions euro / financement UE : 3.15 millions euro
Durée	36 mois, début le 1.9.2008
Résumé	The key objective of ULTRAsponder is to develop a novel telemetry technology for biomedical applications that will enable any kind of deeply implanted device (the transponder) to communicate and be powered wirelessly via acoustic waves with the external system (the control unit). The implanted transponder will include one or more sensors for monitoring a variety of parameters, such as temperature, pressure, or fluid flow. Local digital signal processing will allow the transponder to act smartly and transmit only significant data, reducing its power needs. As part of a network, several transponders will communicate and exchange information with the external control unit. The control unit will be placed on the patient's skin, and it will control, energize and communicate through acoustic waves (ultrasonic) with the implanted transponders. Moreover, it will be used as a data logger, which relays the recorded data from the transponders network, towards the patient's environment via cellular, plain telephone service (POTS) or IP based networks. The key innovations of ULTRAsponder will be the following: 1. development of a novel telemetry technique based on the backscattering principle to ensure efficient data communication through acoustic waves from the implanted transponder to the external control unit, 2. wireless communication through acoustic waves from the control unit to the transponder,

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3. remote powering of the transponder through acoustic waves using a beam-forming technique to increase efficiency and hence to reduce charge time,
4. internal pre-treatment of the sensor measurements thanks to local massive and low power signal processing capabilities,
5. high flexibility and modularity of the transponder to be easily adaptable to any kind of sensor,
6. test of the overall system in real environment for a particular application to measure physiological parameters,
7. contribution to the standardization of body sensor networks using acoustic waves.

Lien http://www.ultrasponder.org