



BABYLUX



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## Reducing the risk of brain lesions

BabyLux - An Optical Neuro-Monitor of Cerebral Oxygen Metabolism and Blood Flow for Neonatology - is a project that aims to provide an **innovative** and **reliable** tool to monitor and assess brain blood flow and oxygenation in extremely preterm neonates.

Provide a **precise, non-invasive** and **robust** integrated system is the key to enable neonatologists to prevent neurological damages due to lack of oxygenation in the brain, frequently accompanying premature births.

The main goal is to diminish the risk of brain lesions **in extremely preterm babies** from 25% to 20%, eventually reducing the number of children with disabilities by more than 1,000 per year in Europe alone.



## An innovative technique



BabyLux takes up complete R&D works and **extends already tested prototypes to the level of demonstrator**, bridging the gap between research products and commercialization. The project aims to provide a non-invasive, portable and highly reliable tool, easy to operate by busy clinical staff. The device can be brought to the bedside, measurements can be done in a few minutes and repeatedly, if the condition is critical.

The system uses **photonic technologies**, such as diffuse correlation spectroscopy, DCS, and time resolved near-infrared spectroscopy (TRS). This innovative combination provides an accurate state-of-the-art and robustness in TRS, and introduces, for the first time, DCS in a combined instrument.

After an initial laboratory demonstration, a **trial period** in real-life settings will follow, at both Mangiagalli Clinic, Ospedale Policlinico in Milan (Italy) and at Rigshospitalet in Copenhagen (Denmark). Functioning and benefits will be evaluated by professional end-users during validation tests, carried out in conditions fitting in the clinical workflow, protocols and procedures.

According to the Global Action Report published by The World Health Organization in 2012, preterm births are 15 million every year and rising. About 1.1 million babies die from preterm birth complications. 5-18% is the range of preterm birth rates across 184 countries of the world. More than 80% of preterm births

occur between 32-37 weeks of gestation and most of these babies can survive with essential newborn care. More than 75% of deaths of preterm births can be prevented without intensive care. The extremely preterm infants (born at less than 28 weeks of gestation) represent 0.5% of all births which when translated into numbers is equivalent to more than 25,000 cases per year in Europe. These children have a higher risk of death, approximately 20%.

They usually remain in intensive care for several weeks and then in the hospital for 2-3 months before going home. Furthermore, one in four grows up with cognitive and physical handicaps, mainly due to injury from lack of blood flow and oxygen delivery in the brain.

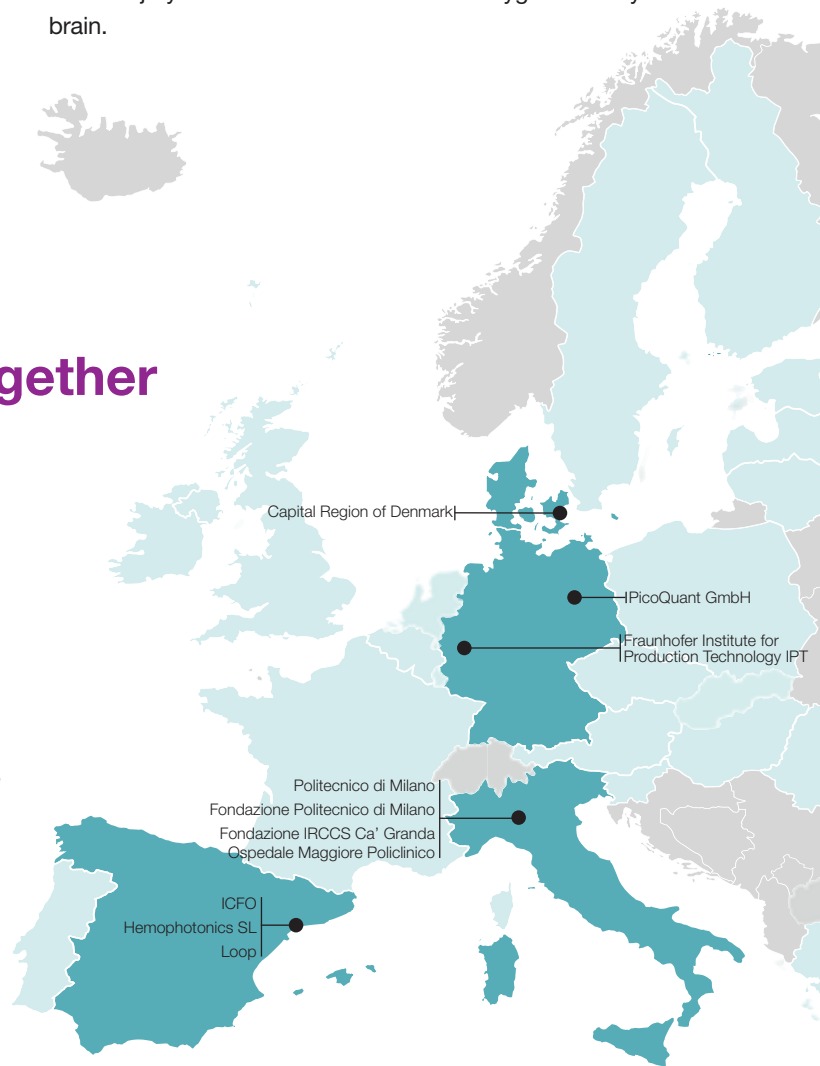


## A challenge we can face together

Partially funded by the European Commission under the ICT Policy Support Programme (ICT PSP), as part of the Competitiveness and Innovation Framework Program, BabyLux is a quite demanding challenge, an important initiative lead at an international level in **4 different countries**: Italy, Spain, Germany and Denmark.

**9 scientific and technical partners** are involved: Politecnico di Milano, Fondazione Politecnico di Milano, ICFO-Institute of Photonic Sciences, Fraunhofer Institute for Production Technology IPT, Hemophotonics SL, PicoQuant GmbH, Loop, Capital Region of Denmark and Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico.

The project will last **3 years**, from January 2014 to December 2016.



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### Partners

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