

### STAFF EXCHANGE

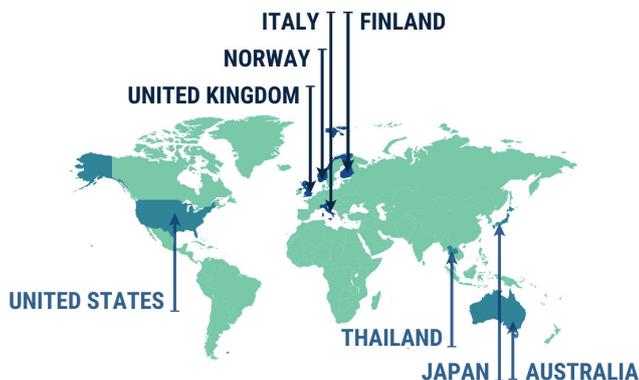
ROVER educates highly skilled researchers in wireless applications and secure architectures for healthcare through **international staff exchanges** within its network of European and third country partners.

### GOAL

The overarching goal of the project is to advance knowledge in the area of **intelligent wireless networks for medical ICT applications by creating new algorithms and non-invasive validated system prototypes for in-on-, on-on- and on-off-body communications**. ROVER combines both theoretic and experimental research methods addressing the impact of the vicinity of human body on radio signals' propagation, wireless communications for medical applications, safety and localization, as well as legislation and standardization.

### APPROACH

The groundbreaking nature of ROVER resides in the use of safe low-power radio and molecular signals at a very low cost. The project exploits and validates **methods for healthcare applications utilizing radio and molecular signals** specifically for non-ionizing diagnostics, microwave imaging, e.g., for cancer detection and recovery from bone fractures, and for intelligent body area network applications. In parallel, the project concentrates on **secure processing, storage and transfer of data through future technological architectures**, including blockchain.



Global outreach of the ROVER project consortium



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### ARCHITECTURE

ROVER creates an **end-to-end architecture, which implements radio and molecular communications for wireless diagnostics, monitoring and therapeutics augmented by secure data transfer at all levels of medical involvement**. The architecture is based on a "distributed care" topology where the non-intrusive, accurate, safe and non-ionizing diagnostics automate and classify patients' diagnostics and caregivers' monitoring processes thus easing pressure on hospitals and encouraging enhanced recovery through home and local recovery placements.

### RESULTS

ROVER results include **reports on user scenarios and framework; technical specifications; prototype development and testing definitions; state of the art technologies; definitions of the architecture and the system requirements for ROVER scenarios**. The consortium designs **at least two demonstrable platforms that perform 3-D for wireless endoscopy and UWB diagnostic imaging (such as breast and brain bone)**, both against gold standards. Furthermore, the ROVER technology and architecture solutions will be published as a white paper.

### CONSORTIUM

**Beneficiary universities:** University of Oulu (UOULU, Finland), University of Florence (UNIFI, Italy), London South Bank University (LSBU, UK) and Oslo University Hospital (OUS, Norway).

**Beneficiary SMEs:** JSB Solutions (JSB, Italy), Elaros (ELA, UK) and UBT Tech (UBT SRL, Italy).

**Third country partners:** Yokohama National University (YNU, Japan), University of Technology Sydney (UTS, Australia), Asian Institute of Technology (AIT, Thailand), Worcester Polytechnic Institute (WPI, USA), University of Nebraska (UN, USA), and Oulu University Research Institute in Japan – CWC Nippon K.K. (CWCN, Japan).

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