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# ALICE – Assistance for **Better Mobility and Improved Cognition of Elderly Blind** and Visually Impaired

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# **Project outline**

- **7** partners (academic, SMEs, visually impaired persons associations) from 4 countries (ES, FR, SI, UK)
- Duration: June 2012 November 2014
- Final product: device consisting of smartphone with additional sensors, wirelessly connected with local processing unit

# Challenges

- Limited computational resources: light portable devices
- Real time responsiveness
- Reliability and no false positives

## Context

- VI persons face problems with overall contextual understanding of space semantics and interaction with surrounding objects
- VI persons have serious difficulties with planning, orientation, communication and navigational skills
- GPS accuracy reaches precision of down to 50m in urban environments
- WHO reports that there are 285 million registered visually impaired people (39M blind, 246M with low vision)
- The degree of visual impairment is increasing with an ageing population

# **Objectives**

Provide navigational assistive device for elderly blind with capabilities: obstacle cognitive positioning, detection/alerting, landmark/object recognition

www.alice-project.eu

Find out more at

ALICE

- Adequate, non-overwhelming communication with the user (alerts, indications)
- Offer VI users a cognitive description based on a fusion of perceptions gathered from multiple sensors

### **First achievements**

#### **Pilot device and data collection**

- Sensor performance benchmarking
- Pilot device configuration and setting
- Test videos collected from urban areas (Ljubljana, Paris)







#### **Navigation assistance**







#### **Obstacle/moving object detection**





























#### **Future work**

#### **User interface prototype**



- Learning and recognizing user-defined landmarks and objects of interest
- Obstacle classification according to degree of risk to the user and generation of adequate alerts
- Improve navigation and recognition at key points of trip (start and finish)
- Navigation and obstacle recognition modules integrated into a single application

This project is supported by:



REPUBLIKA SLOVENIJA MINISTRSTVO ZA IZOBRAŽEVANJE, ZNANOST IN ŠPORT

MINISTERIO DE INDUSTRIA, ENERGÍA Y TURISMO

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