

Networking Session:

Indoor localization: Solutions, their accuracy and deployment

Contact:

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About this session...



- EVARILOS: Evaluation of RF-based Indoor Localization Solutions for the Future Internet; ICT-2011.1.6, FIRE experimentation
 - Goals
 - Available results
 - The EVARILOS open challenge
- Expressions of interest to interact...
- Discussion
 - What is the feeling: What is really needed in the space of indoor localization? (application oriented participants)
 - Are there perspectives for a break-through?
 - Experience from in –door localization deployment:

Are we missing something?

Facts



- STREP, 7th Framework, call8, ICT-2011.1.6, FIRE experimentation, Contract 317978, Nov. 1st, 2012 – Dec. 31st, 2014

- Partners:

Technische Universität Berlin (TUB, coordinator)

ADVANTIC Sistemas y Servicios S.L. (ADV),

iMinds (formerly IBBT),

SICS Swedish ICT AB,

Televic Healthcare (THC)



advanticsys

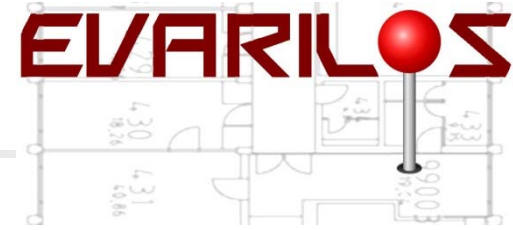
iMinds

Swedish
Institute of
Computer
Science | SICS

televic
healthcare

- **Contact:** Prof. Dr.-Ing. Adam Wolisz (awo@ieee.org)

Motivation



- Numerous applications require in-door localization
- Usage of the RF-based approaches seems to be most simple from the deployment point of view
- Hundreds of papers, describing individual variants/modification thereof....
- **But:**
 - the accuracy is usually assessed in a single set- up
 - comparisons are rare...
 - the impact of interference on accuracy is not known...

Benchmarking of Localization Solutions

- Developing a methodology for performance evaluation of in-door RF-based localization solutions
 - Reference Scenarios
 - Benchmarks

Main Results:

=> EVARILOS benchmarking handbook - **initial version ready**
(aligned with the emerging ISO/IEC standard: Test and evaluation of localization and tracking systems!)

=> EVARILOS benchmarking suite (under development!)

- Experiments, Experiments... **How do we do them ?**
- ***Improvements of the EVARILOS Benchmarking methodology...***
 - Establishing a “repository of benchmarking results”

Interference-free Localization



- Implement a selected set of RF-based in-door localization approaches – and testing them subject to the benchmarking methodology.
 - Working both with coordinates and spaces...
 - Classification of the “structure types”?
 - First comparisons... impact of interference?

Main Results:

⇒ **Facilitating informed choice of appropriate localization solution**

⇒ **Starting an open repository of banchmarking results.**

Interference-robust Localization



- Develop & analyze approaches to make localization robust against interference
 - Multimodal localization
 - Environmental awareness
 - Exploiting interference

Main Results:

- ⇒ **Guidelines for choosing the appropriate localization solution depending on the interference environment**
- ⇒ **New results!!**

Validation



- Validation in selected “office type” scenarios using IST CREW Testbeds
- Validation of the results in two operational environments
 - Healthcare in a hospital setting
 - Underground mining safety



■ Open Challenge – In-door Localization Competition

- test and compare the performance of your RF-based solutions following a standardized evaluation methodology;
 - test the sensitivity of your approach to radio interference under controlled conditions;
 - disseminate information about your localization solution as part of the competition workshop, website and the published proceedings;
 - contribute towards the establishment of a public repository of experimental traces from indoor localization solutions;
 - comment on your experience in using the EVARILLOS benchmarking platform, a system for automatic evaluation of indoor localization solutions.
- Note the announcement flyers (take one!) and the info under => <http://www.evarilos.eu/open-challenge>

Some interesting details...

EVARILOS



- The challenge be structured in two sub-categories of competing systems:
 - Algorithms implemented on top of the EVARILOS experimental facilities (TU Berlin and iMinds);
 - ➔ ALL CAN BE DONE REMOTELY !!!
 - Complete solutions with deployment of additional /proprietary hardware at one of the testing sites
- The Schedule...(preliminary)
 - Abstract Paper Submission Deadline: April 1, 2014
 - Notification of Acceptance: April 25, 2014
 - Interfacing with the EVARILOS Benchmarking Platform: April/May,
 - 2014 Evaluation Experiments: May/June/July, 2014
 - Final Results and Tele-Workshop: July 15, 2014
 - Camera Ready Paper Deadline: July 25, 2014

Summary:



- Develop a benchmarking methodology enabling objective experimental validation of and fair comparison between state-of-the-art indoor localization solutions
- Improve the interference robustness of state-of-the-art localization solutions
- Validation of the benchmarking methodology and interference-robust localization solutions in two real-life application scenarios:
 - Healthcare in a hospital setting
 - Underground mining safety
- Starting the Repository of Benchmarking results
- Contributions to international standardization.