

Business Meets Research: ICT & Space : Location-based services - societal benefits and opportunities

Indoor localisation: perspective for Luxembourg

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Objectives

- Explain who is itrust consulting
- **Provide findings of a LuxLaunch study on indoor localisation**
- Report on other EU initiatives
- Find stakeholders and make LBS happen in Luxembourg.

Research in the strategy of itrust consulting

Strategy:

from pure consulting to mix between security design, support, and consulting.

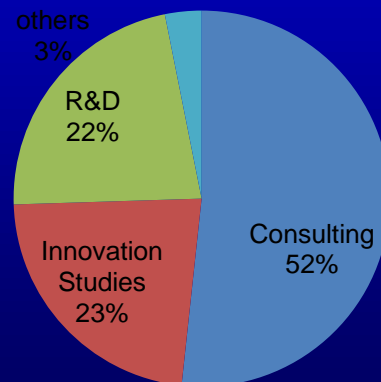
Past experience:

Essential support to sustainable growth in 2009:
6 employee with permanent contracts

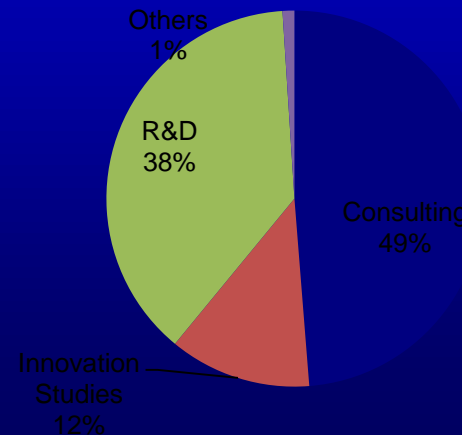
Tactic:

Maintain high rate of R&D in the next 3 years

Turnover 2009: 391k€



Turnover 2010: 429k€



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LuxLaunch study

Other EU init.

Discussion

> Services

Consultancy

- Security policies
- Information risk analysis



Risk Analysis:

- Value model
- Safeguard evaluation
- Risk map
- Risk status
- Deficiencies report

Audit

- Hacking, intrusion test, computer forensics
- Proces certification
- Malware analysis
- ISO 27001, ISO 27799, ISO 15408...



Innovation

- LuxLAUNCH

R&D – Technical and security design

- ESA: Secure Galileo localisation
- Celtic, ITEA2, FP-7: MICIE, LiveLine
- Risk Management Tool TRICK-Light, Information sharing tools, Incident manager



Multisourcing

- Security officer assistance

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Overview

- LuxLaunch Study financed by **Ministry of Research**
- **Partners:**



- **Period: Oct 2009 - Nov 2011**
- **Work Plan:**

Perspectives for location based applications using pseudolites

Task 0
Project management

Task 1
Identifying user needs and requirements

Task 2
Evaluation of techniques on pseudolites

Task 3
Evaluation for a test bed in Luxembourg

Task 4
Pilot project

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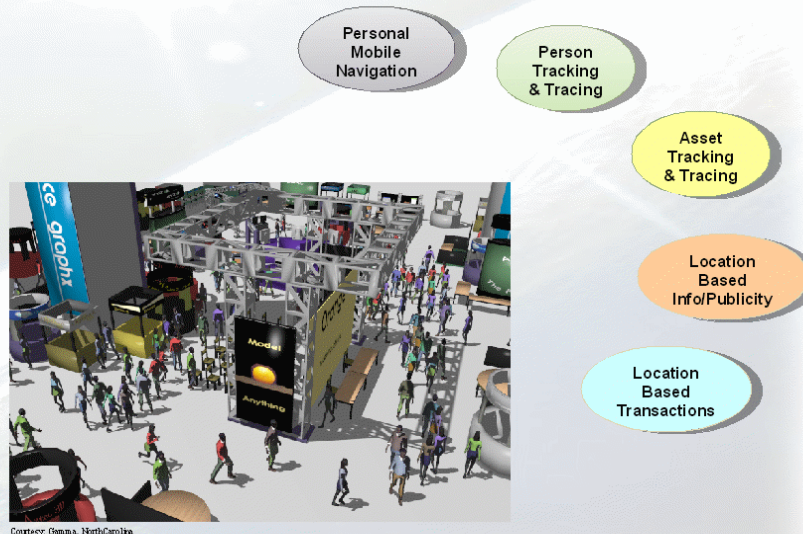
Results:

- Different expectations and requirements,
- 5 areas of interest
- Major obstacles to regulation !

State-of-the-art:

- France (e.g. Insiteo, Silicom, Polestar, EADS Astrium, Thales, Institut Telecom SudParis,
- Germany (e.g. Ifen, TelematicsPro, EADS Astrium, Fraunhofer Institut);
- Finland (e.g. SpaceSystems Finland, Finnish Geodetic Institute);
- Australia (e.g. Locata, UNSW)
- **Survey on technologies: Pseudolite, Wi-Fi, Femtocells, RFID.**

Indoor navigation: overview of applications



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Depending on business opportunities:

- **Tunnels.** Pseudolites may be exploited in car navigation, emergency operations, tracking of dangerous goods
- **Administration de cadastres**
- **Shopping malls.** Pseudolites may be exploited in personal mobile navigation, people tracking, location-based publicity
- **Logistic centres.** Pseudolites (but also RFIDs) have the potential to simplify and optimise logistic operations
- **HotCity** (Wi-Fi based). Adding position capabilities may enable a set of additional services like local guides, location-based advertisements, people tracking
- **Cybercultus.** This is a multimedia content provider for museums and cultural places. Could guide tourists across Luxembourg
- **Luxexpo.** May offer indoor navigation during exhibitions (+ publicity)

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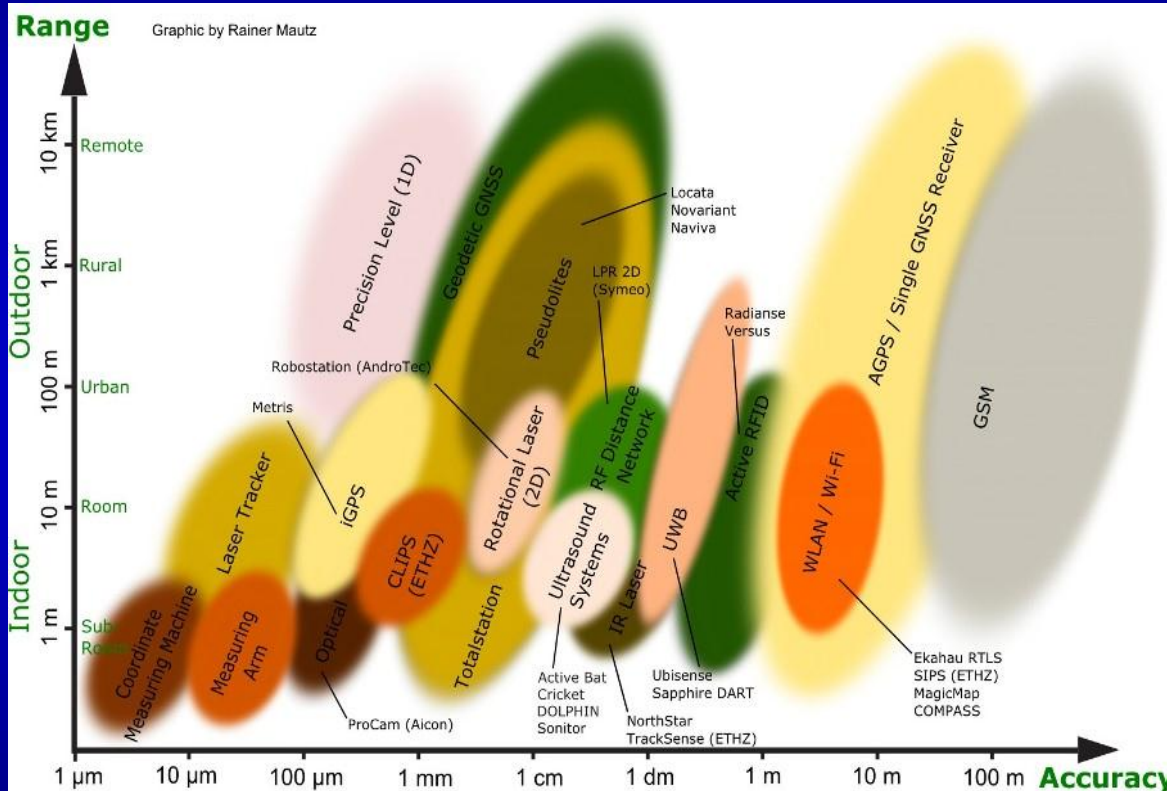
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02/06/2011

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Comparison of different localisation technologies



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Business opportunities:

First Conclusion of the background of test bed objectives

- Test beds are normally designed for a single operation
- GATE Berchtesgaden is for Galileo Receiver Development (Chips)
- SEA GATE developed to test reliable and precise navigation in harbour environments

Currently, no existing test bed for Indoor navigation with Pseudolites

Long-term orientation and financial background of the test bed

- Mostly initiated with public funding
- After the initial phase, administration through a private operator

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Concept for a Test Environment in Luxembourg:

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Luxembourg ubiquitous LBS

built in phases

with interdisciplinary actors

Trial services for all visitors and citizens

Testbed for Technology providers

Field lab for researchers

1. Life demo site

2. Testbed

3. R&D Environment

4. Long-term field operation

5. Full service incubator

Infrastruct. (pseudolite in parkings, museums,...)

User devices (Telco, Retail, TomTom)

Content & ASP (Hotcity, ONT,...)

Integration and operation (Hitec, itrust,)

R&D Support (SnT, FNR, Luxinnovation)

SWOT:

Strengths:

- National program to attract international ICT companies;
- High ICT development index;
- Proactive innovation;
- LBS technical competencies;
- Existing laboratories;
- Low taxation for companies;
- Direct access to national regulators;
- Availability of financial capital.

Opportunities:

- Booming LBS market;
- Many existing outdoor LBS apps must be adapted for indoor use;
- Not too many players yet, compared to other technology topics.

Weaknesses:

- No space agency (in contrary to France or UK);
- Low critical mass of the local research community in this R&D topic;
- Lack of some core competencies in Luxembourg.

Threats:

- Competition from France, UK and Germany for indoor test platforms.

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Stakeholders:

- Partners +



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SnT Vision:

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LuxLaunch Study

- T1 - User requirements
- T2 - Technologies
- T3 - Testbed evaluation
- T4 - Pilot initiation

Public R&D
ESA, FP7

SnT - Test Bed
Application Areas

SnT - Research
Program

SnT - Partnership
Program

GIE
Lux LBS
. SA



Pseudolite meeting, European Commission, Brussels –

November 24, 2010:

itrust participated

Preparation of FP-7 proposal

Status of regulatory work

(in FM44 and SE40 of EEC)

FP7-GALILEO-2011-GSA-1:

- **PRINCEPS**: PProvider of INdoor localisation using CErTified Pseudolites
 - Proposal by itrust consulting, rejected.
- **i-GOing**: i-Galileo indoor navigation,
 - Proposal by insiteo, with CAMBRIDGE SILICON RADIO, Fraunhofer IIS, Silicom, DLC, and ITRUST CONSULTING; NOT rejected!
 - Support from G4S for demonstration in Luxembourg.
 - Objective: to make Galileo based systems the best overall solution to address the challenges of positioning and navigation within large indoor infrastructures



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**Thank you for your
attention**

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