Extending nurse call with location based services via beacon technology

Description

Reliable alarming and monitoring of patients is fundamental in today's healthcare system. Televic Healthcare (THC) offers professional communication systems within the care sector for nurse call and recently launched a wireless call and localization system. THC wants to extend this system by developing new devices and applications.

In its next generation nurse call system, THC wants to develop room controllers that offer wireless connectivity and can enable location based services. Using Bluetooth Smart, many solutions exists typically based on beacon technologies such as iBeacon (Apple) or Eddystone (Google). Up until now they are all based on proximity detection using signal strength.

In a first part, the purpose is to add BLE connectivity to existing wireless room controllers and implement such proximity solution. The goal is to detect nurses carrying a mobile phone is a patient room. It should be possible to configure those beacons from the backend or app.

In a second part, you will design a next version of a wireless tag used for asset tracking. By means of an accelerometer, the algorithm can be refined and the power consumption of the tag can be optimized. The job consists of limited hardware design, embedded development to interface the accelerometer. This asset tag should be able to receive proximity beacons.

Optionally, you will study the new Bluetooth 5.1 standard that will implement direction finding. Based on angle of arrival, the accuracy will be significantly improved. The goal is to develop a prototype locator beacon and to asses the level of accuracy compared to the classic approach.

Note: the three parts can be chosen independently, based on competence level and number of students.

If you are interested in this topic, please also register this on the Televic website at:
https://www.televic.com/en/careers/internships-and-students so we can confirm the topic is still available.

Televic Company/Department:

Televic develops, manufactures and installs top end high-tech communication systems for specific niche markets. A financially independent and stable group, Televic is divided into divisions that each focus on their specific market:

- Televic Rail: passenger information systems and on-board control systems for trains

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Televic creates added value for its customers by developing custom-made solutions and by continuously innovating at the cutting edge of technology.

With headquarters in Belgium and offices and plants across Europe, Asia and the US, Televic employs nearly 700 people worldwide.

About Televic Healthcare

Televic Healthcare develops and manufactures high end solutions for nurse call, intercom, access control, patient entertainment and care registration for healthcare environments.

Our state-of-the-art systems are adapted to the ever higher demands of an evolving market, and have been implemented in newly built and refurbished healthcare institutions across the world.

Contact
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Nature of the work					
Level	Specialty	Type of work.	Location	Type of activities	Num of students
Master	Embedded Software	Research: 30% Implem.: 40% Experim.: 30%	Televic	Experimenting, Implementation, Literature study, Programming	1 or 2