

Indoor Navigation

Flexible Framework for Location Based Services



The domain of indoor navigation is increasingly interesting for real world applications and becoming tangible beyond the research prototypes.

Providing location based services, either indoors or outdoors in a seamless fashion and incorporating different position technologies requires a flexible and easy to use solution.

Introduction

Determining the exact position outdoors has lately become a simple task with the growing success of satellite navigation and the wide spread of affordable consumer devices with continuously improving precision.

Inside of buildings this approach cannot apply, as the signals from satellites are blocked by walls and ceilings. An alternative method of determining the position, particularly in reference to the building's architecture, is required.

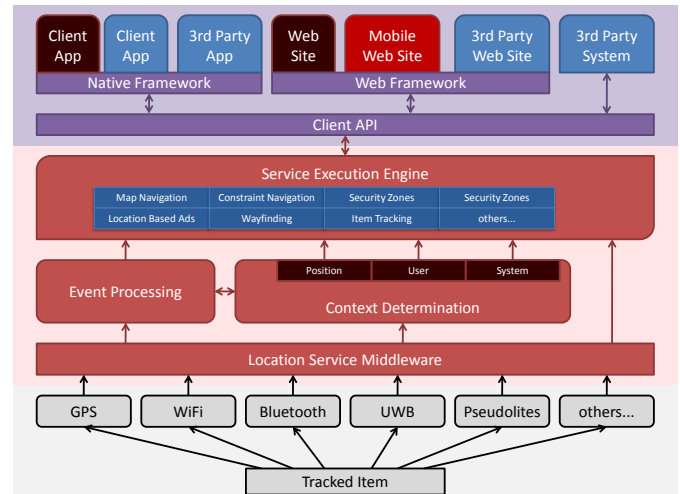
Various technologies with different levels of cost, precision, granularity and maturity exist. The choice of a suitable technology depends on the specifics of the use-case.

Our goal is to provide a solution, which can utilize and integrate multiple of the existing position determination systems by abstracting the services from the underlying technology. This also reduces the risk of technologies becoming obsolete in the future.

Technology

Using a unified interface for position information, the development of location based services can be simplified. The system infers the most important information that is important beyond the pure position data, e.g. the context of the user in the environment. Criteria for the inside of buildings heavily differ from the outdoor context. Indoors the current floor, room and similar factors are important.

This information can be determined by the system using the position data from different technologies, which by themselves have different characteristics. In the end a position with a specific certainty and precision can be obtained.



Seamless Navigation Framework Architecture

The position and context information is provided to services, which can then process data, provide the user or system with additional information or carry out specific tasks.

A series of services will be part of the core framework, but the main intention of the system is to provide an execution environment for customized 3rd party services, which are tailored to the specific use-cases.

On the opposing side of the system is the end user that is interested in using the location based services. This is usually done from a mobile device, which also supports different technologies, e.g. GPS, Wifi, Bluetooth.

We will provide two types of frameworks for client applications, native and web based. Reusable components for determining the position, showing the map and interacting with specific events will be provided. Both frameworks can be used for the integration into new and existing client applications.