



Overview

Umajin is a platform with a cloud backend and powerful native capabilities on iOS, Android, Windows, OSX and even on embedded devices.

It provides a platform for digital innovation with modules that have deep vertical functionality. These modules best utilize each layer of the computing stack.

The Location and Mapping module covers a broad set of 2D and 3D geospatial capabilities; from determining a devices location, to showing how to find your way around complex multi story buildings.

This module can then be configured to pull and push data into your other enterprise systems supercharging their location capabilities.



Location in 2D and 3D

Umajin is an expert in location. Umajin native applications can take advantage of many hardware specific features of laptops and smartphones to determine location;

- Umajin RF 3D location – A unique machine learning based service which can determine location in three dimensions using existing Wi-Fi and BLE signals
- GPS – Umajin applications can read GPS on demand
- GPS Data logger - we provide separate low bandwidth, secure, smartphone background dataloggers which can be used for logistics tasks like fleet tracking
- Laptop and smartphones can read barcodes or 2D codes like Aztec or QR which are placed next to locations - this uses the camera and Umajin's high speed image processing library
- NFC tags can be scanned with android phone, or via PC's with an NFC reader attached
- Passive RFID tags can be scanned from a laptop or phone with a serial/BLE reader attached
- BLE beacon thresholding – any device with BLE capability such as a phone or laptop, simply checks for a high strength signal, indicating proximity of less than three feet from the source
- Cloud based BLE gateways from providers such as Kontakt.io which can detect the proximity of portable beacons attached to people or objects which simply check for a proximity signal

CASE STUDY: MidCentral DHB is the major hospital servicing a population base of around 175,000 people. The hospital deployed a mobile application to help patients and visitors navigate their way around the hospital, find their way to appointments, wards, rooms and facilities.

This is a multistory wayfinding challenge that GPS can't solve - the large concrete buildings also blocked access to GPS. To solve this challenge maps stored on the device with wayfinding support were augmented with Bluetooth beacons. As a further benefit these same beacons can now be used for internal scenarios like asset tracking.



“Innovation is challenging for a hospital but MidCentral made a step by creating a Wayfinding App to improve how Patients and Visitors plan and find their way in the hospital. A major advantage for the hospital is less missed appointments.”

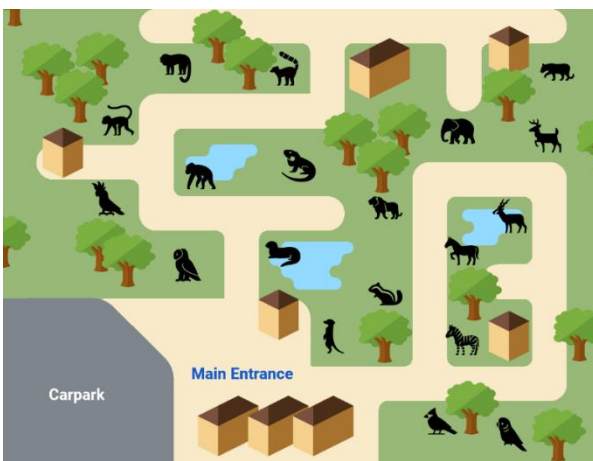
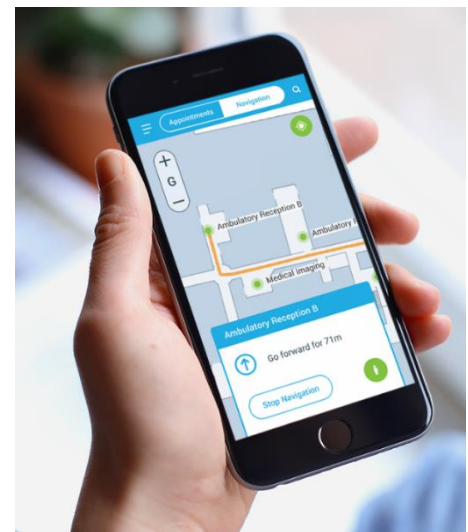
Roeland deVries, Project Manager

Mapping

Umajin supports Google 2D/3D accelerated maps on iOS and Android. Due to Google licensing restrictions traditional web maps are provided on OSX and Windows.

While Google maps are very powerful, cover the entire world and are useful for many common tasks - Umajin provides its own hardware accelerated offline mapping system which is designed specifically for smaller maps of complex spaces like factories or multi story buildings.

This also includes specific solutions around providing walking instructions when corridors and walkways aren't labeled using points of interest.



The Umajin mapping layer also supports what we describe as illustrative maps. These can be stylized and do not need to be geospatially accurate. They can highlight important information such as secure areas in a staff app, splash zones for a theme park or just be decorative.

Examples of stylized maps would include.

- Tube Map in a Subway
- University Campus color coded by major
- Zoo, Theme parks and Botanical gardens
- Hospitals

Points of Interest and Geofencing

Umajin provides a system for managing points of interest in a hierarchy and with meta data stored which can be used by other systems. Points are in 3D so they can have altitude or a building level associated with them. Points can also have geofences assigned and routes between them.

Routes can have costs associated with them which is important for wayfinding as it allows the system to determine the time for traversal when public transport, vehicles, stairs etc are taken into account (not just the length of the route).

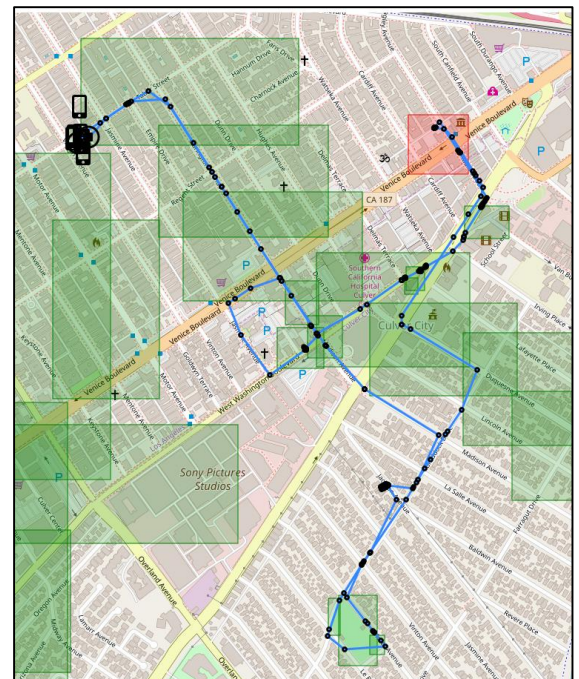
Points of interest, geofences and routes can be used to augment any standard lat/long based GIS map, set of map tiles, Umajin nonlinear and Umajin multilevel/3D maps.

Driving workflow with Location

Umajin's geospatial system can locate devices both outdoors and indoors and then transform this information into POI's (points of interest) – Umajin can then use these POI's to drive business workflows.

Thousands of device locations can be turned into POI's at very high frequency, with updated positional information every 30 seconds.

These POI's can also govern basic internal tracking rules like frequency or accuracy. For example when a device is outside a tracking zone then tracking can be set to cease altogether for privacy reasons. In another example when a device enters a 'safe' zone then tracking frequency could drop to conserve battery and the location pin could lock to the center of the POI to again preserve privacy.



An example business workflow would be to detect when a salesperson is close to a reseller location and display an ETA to the reseller. Then to enter into the logbook when a salesperson reaches and leaves the reseller. While at the location the reseller details and stock levels are automatically displayed on the restocking app the salesperson uses to provision the reseller. If the reseller's location has been mapped internally the correct department for restocking can auto filter the list of products.

This information can then be linked directly to other enterprise systems using this actionable information. For example the restocking request can be pushed to Microsoft Dynamics via the Microsoft Graph API. Additionally the logbook can be pushed into a Salesforce application tracking the activity of the sales team.

Umajin Location and Mapping can power your enterprise workflow



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