location.io
empower your location services

a location services enabling platform by rx networks

Absolute height

The absolute height location.io service provides the absolute height of a device using compensated barometric pressure, enabling floor-level accuracy for smartphones and IoT devices equipped with barometric pressure sensors.

Overview

Whether for emergency or consumer applications, the determination of a mobile device's vertical position presents unique challenges, especially while indoors. Given the environment, even when a GNSS receiver attains a fix, a mobile device cannot reliably use the reported altitude. Beacon-based techniques, such as those derived from Wi-Fi or Bluetooth, rarely provide altitude information since they typically rely on GNSS-based crowd sourcing as the way to build the beacon locations database.

The **location.io** absolute height service is equipped to provide a precise indoor vertical location. This solution is targeted at chipset vendors, device OEMs, mobile operators and application developers seeking to integrate reliable floor level detection, whether for general Location-Based Services or compliance with anticipated E-911 regulations.

location.io consists of a lightweight client library and a network service which combines the device's pressure data with accurate geo-referenced barometric data, crowd-sourced pressure data, and existing location services to determine the device's altitude.

More and more sensor chips in recent smartphones include barometric sensors, opening up a new ability to estimate altitude. However, each sensor has unique and variable characteristics, which impair floor-level accuracy in the absence of a calibration and compensation service. The **location.io** absolute height service performs chipset calibration to compensate for the difference between sensors to provide a consistent altitude.

Features and Benefits

Floor-Level Accuracy: the floor-level is determined by correlating 2D positions with current geo-referenced barometric data to deliver a reliable vertical position estimate within 2.5-3 meters. To accomplish this level of accuracy **location.io** uses adaptive algorithms to combine global barometric reference pressure sources with finer grained crowd-sourced measurements and effective device sensor calibration.

2.5 to 3 meters vertical accuracy means the ability to display the correct map or dispatch responders to the right floor.

Empower your location services

We are a mobile positioning technology company. We don't do hardware, GPS or sensor chips; we don't do mobile apps and we don't do maps either. *Yet, we empower all those who do*! We develop ingenious hybrid positioning solutions that unify GNSS, Wi-Fi, cellular and sensor signals for an unmatched mobile location user experience.

Indoor. Outdoor. In 3D.

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location.io *"absolute height" was previously marketed as Zed.*

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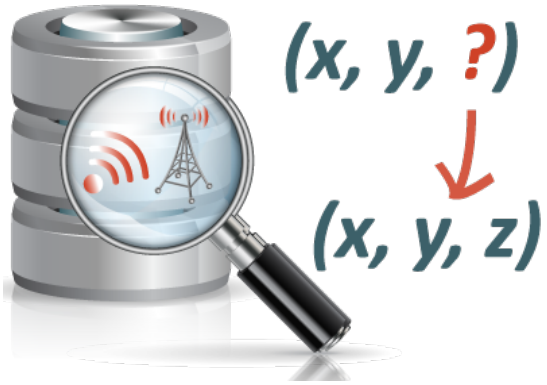
Improves Wi-Fi Based Indoor Solutions: A significant limitation of Wi-Fi based indoor positioning technologies is the lack of a reliable altitude field in the reference database of beacon locations. These databases are inherently 2D as detected beacons are usually crowd-sourced and geo-tagged with GNSS positions that are typically not on the same level. For example, an indoor Wi-Fi Access Point located on the fifth floor of a building may be detected at street level and recorded as such. The addition of absolute height to any Wi-Fi based positioning system not only yields useful floor-level accuracy, but also helps refine the database of Wi-Fi Access Points locations.



Platform Independent: Mobile devices sport a multiplicity of sensors, from gyros to accelerometers, and more recently, barometric pressure sensors. In order to take advantage of **location.io**, a device only requires a barometric pressure sensor, a network connection and either a location or a list of cell towers or Wi-Fi Access Points. The **location.io** servers take care of the rest!

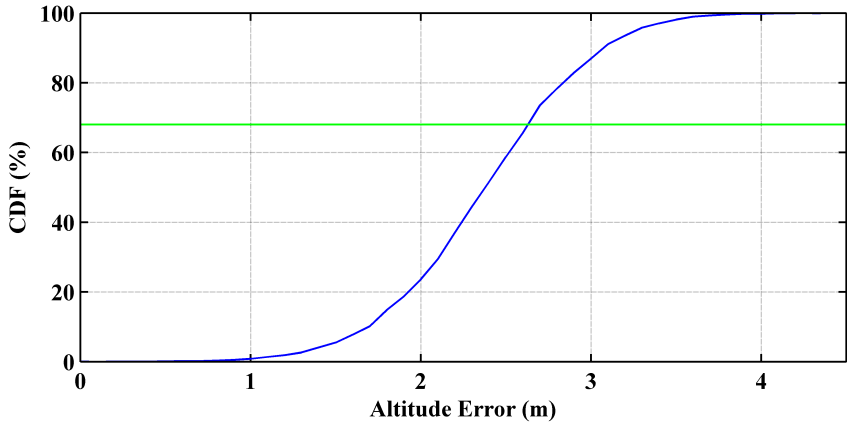
Easy to Integrate: **location.io** is easy to integrate into any device or application. It includes a simple client library which automatically calibrates the onboard barometric pressure sensor. Altitude results are returned in a WGS84 reference for quick and easy use with existing mapping solutions. Designed from the ground up using a unified API, **location.io** can seamlessly bring floor-level accuracy to other Rx Networks positioning solutions or any third-party product.

Versatile: The **location.io** service interface is simple enough to be easily integrated as part of any location or indoor mapping solution. This makes **location.io** ideal for a wide variety of location applications such as providing E-911 emergency responders with accurate floor information to save valuable time. **location.io** also makes consumer and asset tracking software more valuable by enabling it to quickly find friends, restaurants or shops, even in the largest of multi-floor complexes such as malls or factories.

Part of an Extensible Framework: The **location.io** services are designed to seamlessly combine our other location solutions to meet today's indoor mobile positioning requirements. In addition to absolute height, **location.io** provides Wi-Fi & cell ID positioning, real-time & predicted GNSS ephemeris, and an ultra-sensitive GNSS receiver service – all of which can enable effective indoor positioning. **location.io** is developed with the same scalability and high-availability design philosophy used across all our solutions.

Reliability: Customer satisfaction and the success of emergency responders depend on the reliability and accuracy of location responses. Rx Networks' extensive experience with on-demand, high-reliability network solutions, ensures **location.io** is able to provide a consistent and always-available solution.

location.io also leverages a small client, enabling pressure data crowd sourcing to account for local weather anomalies and provide reliable accuracy even in challenging environments.



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