Location Services in Healthcare –
Designing the network to support critical services

Wireless technology has become indispensable for providing critical functions within today's healthcare environments – from enabling connectivity for medical and IoT devices, to providing electronic patient record (EPR) access on tablets. Add to that the need for patient and guest internet access, and supporting roaming connectivity for video and phone calls, and wireless networks have cemented their status as essential infrastructure in healthcare settings.

Leveraging investments in wireless networks can significantly enhance patient experience, clinical efficiency, staff morale, and cost savings, with the deployment of location services increasingly becoming one of the most effective ways to maximise the value of your investment in your infrastructure.

How location services can transform the healthcare environment

Implementing location services in healthcare environments offers numerous benefits, in a variety of settings:

Acute Hospitals

- **Electronic Bed and Capacity Management Systems (EBCMS)** – Utilising wireless networks to capture real-time availability and status of beds within a Trust or across an ICS improves patient flow, reduces waiting times, streamlines discharge processes, supports resource allocation, ensures compliance with directives, and reduces costs.

- **Workflow Optimisation** – Real-time visibility of the movements of patients, staff, and medical equipment optimises healthcare workflows, identifies bottlenecks, streamlines processes, and allocates resources efficiently, leading to improved patient flow, reduced wait times, and enhanced operational efficiency.

- **Asset and Inventory Management** – Real-time asset tracking reduces time spent searching for equipment, minimizes inventory loss, improves asset utilization, assists with preventive maintenance, enhances patient care, and reduces downtime.

- **Patient Experience and Engagement** – Indoor navigation systems reduce anxiety, enhance satisfaction, and personalised mobile applications improve engagement and promote self-care.

- **Infection Control** – Monitoring movement helps identify infection sources, implement contact tracing, and contain the spread of infectious diseases.

Mental Health and Community

- **Temperature Monitoring** – Network-connected sensors automate temperature collection, ensuring compliance and auditing, and sending alerts for temperature deviations - crucial for maintaining medication and vaccine efficacy.

- **Patient and Staff Safety** – Real-time tracking and monitoring enhance safety, locating patients, healthcare providers, and equipment in emergencies, while ensuring compliance with safety protocols, and preventing incidents such as elopement or unauthorised access.

Which location technology?
RTLS, RFID, BLE

RTLS (Real-Time Location Services), RFID (Radio Frequency Identification) and BLE (Bluetooth Low Energy) are all distinct technologies used for location tracking and asset management but differ in capabilities:

- **RTLS** provides real-time tracking and monitoring of assets and people within a defined area, providing continuous and dynamic location updates.

- **RFID** focuses on individual items as they pass RFID readers, providing identification and presence detection, though does not offer real-time tracking.

- **BLE** offers power-efficient room-level accuracy, making it an appealing option where lower power consumption is required.

The choice between these technologies depends on the specific requirements of the application, the need for real-time tracking, power consumption, and the level of granularity desired. It is also possible to blend these technologies to deliver a solution for all requirements.

Correct design is crucial

It's typical to find access points installed in corridors, as highlighted in the top image; this means when location services technologies are adopted, the performance is unlikely to meet expectation. Designing an RTLS capable network can be complex, requiring an understanding of RF environments, conducting RF surveys, and calibration for accurate and reliable location tracking.

Further considerations, such as the adoption of Wi-Fi 6E, can further ensure a seamless and efficient user experience, and optimise the system performance. There is much to consider when implementing location services within a wireless network, but engaging a trusted partner who takes the time to understand your objectives will ensure your success. ITGL is experienced in designing and implementing wireless networks to support a wide range of applications in healthcare environments – get in touch with us to find out more about what utilising location services can do for your organisation.
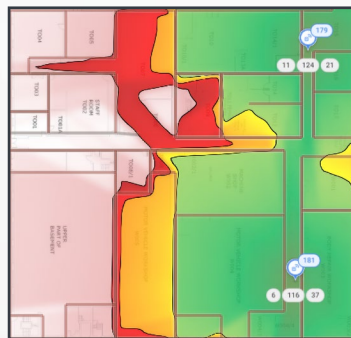
Visual representation of wireless network coverage in a location with typical corridor-based access points.
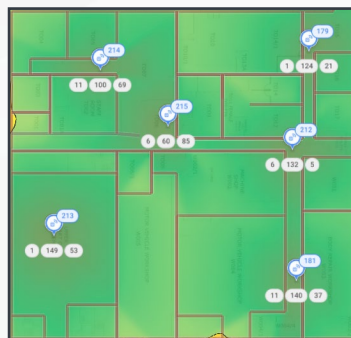
Wireless network coverage for the same location after a thorough RF survey, redesign and implementation.

Want to find out more?

To learn more about how location services can make an impact in your organisation, or to book a meeting with one of our Healthcare sector experts, get in touch at pubsec@itgl.com.

t: 0333 666 5777   **e:** pubsec@itgl.com   **w:** itgl.com

ITGL | PARTNERS IN POSITIVITY
part of conscia