

Real-Time Location System (RTLS)

- Uses small electronics with tags attached to people or items
- Uses readers to communicate with tags
- Uses location sensing system to accurately locate tags and readers

An RTLS

- Is composed of tags, readers, and location sensing systems
- Determines the accurate locations of either the tags or the readers in real-time
- Utilizes this location information in some way via an information or application system

Real-Time Location System (RTLS) (cont.)

- Required accuracy is defined by the application.
- Possible accuracy is limited by technology capabilities.

RTLS determines an object's location in real-time automatically.

RTLS: Primary Uses

- **Object positioning:** may be any object, for robotics applications or automated navigation within buildings
- **Vehicle location:** within a yard or on the road
- **Mobile item track and trace:** indoor/outdoor supply chain management
- **Personal:** finding yourself with a mobile phone

RTLS: Technologies

Primarily based on wireless/noncontact communication systems.

- May use visual markers or line of sight technologies (e.g., bar codes or infrared)
- May use non-line-of-sight technologies (e.g., radio or acoustic)
- May use long-range communication technologies

RTLS: Parts

- **Tags:** mobile devices enabled by location
- **Readers:** fixed location devices communicate with tags or perform one-way communications
 - Can be receiving (location sensor)
 - Can be sending (location beacon)
- **Location sensing system:** hardware and software determines location given the communication between tags and readers its own system
- **Information/application system:** utilizes location information

RTLS: Common Uses

- Tags attached to people or assets to continuously monitor location
- Tags attached to company laptops to monitor security
- Tags attached to students to monitor attendance or locate in an emergency
- Tags required for access to specific locations

Tags

- Provide an identity (e.g., unique or nonunique)
- Provide sensors (e.g., temperature or humidity)
- Provide memory storage (e.g., local cache)
- Provide screens (e.g., LEDs).

Tags and readers can have a wide range of functions.