



Setting the Standard for Automation™

ISA100.21

People and Asset Tracking in
Industrial Settings

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Why Industrial Asset Tracking?

ISA100 Spans All Wireless in the Industrial Setting

- The ISA100 Committee will establish standards, recommended practices, technical reports, and related information that will define procedures for implementing wireless systems in the automation and control environment with a focus on the field level (Level 0).
- Guidance is directed towards those responsible for the complete life cycle including the designing, implementing, on-going maintenance, scalability or managing manufacturing and control systems, and shall apply to users, system integrators, practitioners, and control systems manufacturers and vendors.
- The Committee's focus is to improve the confidence, integrity, and availability of components or systems used for manufacturing or control, and provide criteria for procuring and implementing wireless technology in the control system environment.
- Compliance with the Committee's guidance will improve [wireless] manufacturing and control system deployment, and will help identify vulnerabilities and address them, thereby reducing the risk of compromising or causing manufacturing control systems degradation or failure.

Contact ISA:

www.isa.org/isa100

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...driven by the expressed Needs of the End Users...

“I have people and things that I need to keep track of...”



“We’d like to track our components for rapid pharmaceutical manufacturing. Is there some way to help us sort through the technology offerings?”

“I have so many vendors coming in here telling me that their system is the best. Can you help me determine what technology will have the least impact on my DCS instrumentation?”

“I have a DCS located underground, and you KNOW that I have to keep track of my workers down there! Can ISA100 help me out?”



“What sort of supporting infrastructure do I need to install?”



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ISA100.21 Activities

ISA100.21 End Users Survey for Asset Tracking



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ISA100.21 End User Survey



Addressing many technical and programmatic matters
such as: resolution, costs, ROI...

For Questions #9-#12: With the various technologies available today for providing wireless location of assets, there is often a trade off between the cost of the system and its ability to provide specific, granular information on the location of an asset. We have created an approximate breakdown of these categories below (9-12). Please rate each asset type for approximate trade-off of cost versus precision of location information. (Please answer all asset categories that apply to your facility)

9. Personnel Tracking:

\$50 with 100 M Resolution		16	38%
\$150 with 25M Resolution		15	36%
\$300 with 10 M Resolution		6	14%
\$500 with 3 M Resolution		5	12%
Total		42	100%

10. Tools & Equipment:

\$50 with 100 M Resolution		19	31%
\$150 with 25M Resolution		17	28%
\$300 with 10 M Resolution		14	23%
\$500 with 3 M Resolution		11	18%
Total		61	100%

11. Infrastructure & Plant:

\$50 with 100 M Resolution		12	21%
\$150 with 25M Resolution		13	22%
\$300 with 10 M Resolution		17	29%
\$500 with 3 M Resolution		16	28%
Total		58	100%

12. Vehicles and Transportation Containers:

\$50 with 100 M Resolution		16	37%
\$150 with 25M Resolution		6	14%
\$300 with 10 M Resolution		14	33%
\$500 with 3 M Resolution		7	16%
Total		43	100%

..extracted from the Survey results...



ISA100.21 - People and Asset Tracking

ISA100.21 Scope of Responsibility - Itemized

The role of this working group is to develop the definitions and descriptions that set the stage for deployment of wireless devices and wireless networks in industrial automation systems that allow for the tracking of assets/inventory.

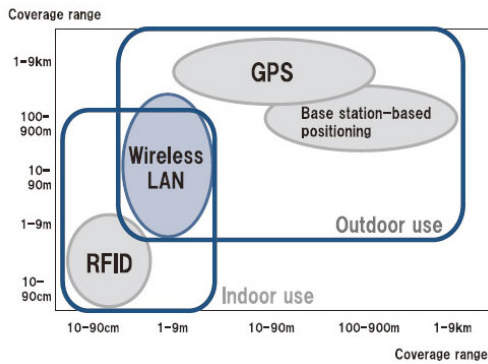
1. Work products include documents and tools of an informative nature including user guides, technical reports, interoperability guidelines, best practices, training tools, etc.

ISA100.21 Goals

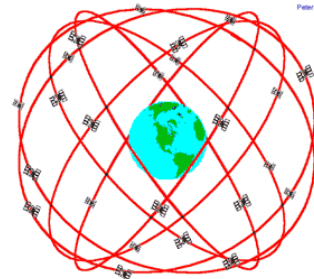
‡ To provide ISA100 with sufficient information and documentation describing the various types of techniques and technologies that are associated with people and asset tracking as it pertains to other Industrial Wireless applications and Work Groups.

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Examine various Tracking Technologies....

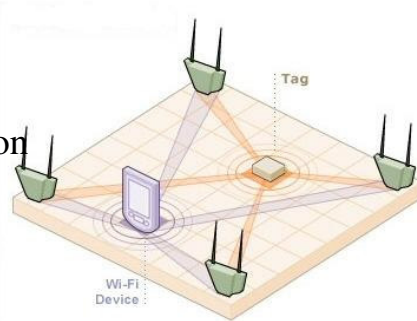


Coverage (not resolution) comparison

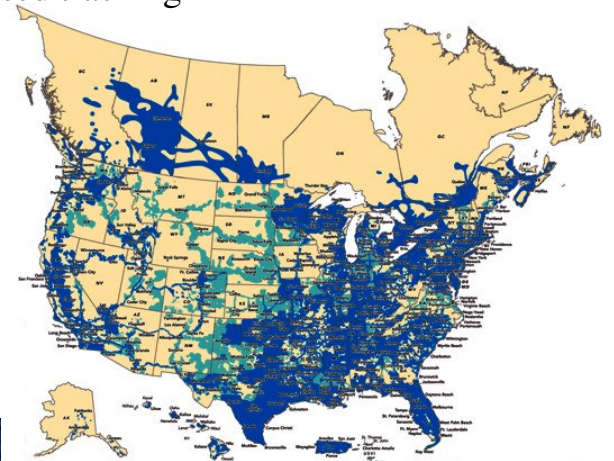


GPS Nominal Constellation
24 Satellites in 6 Orbital Planes
4 Satellites in each Plane
20,200 km Altitudes, 55 Degree Inclination

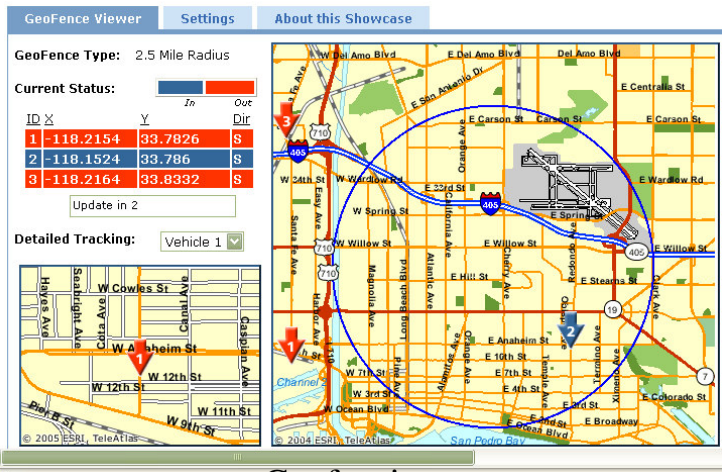
GPS-based tracking



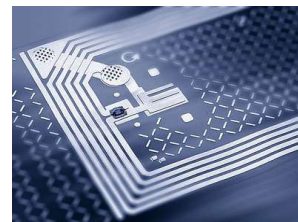
WiFi-Based tracking



Cellular-based tracking



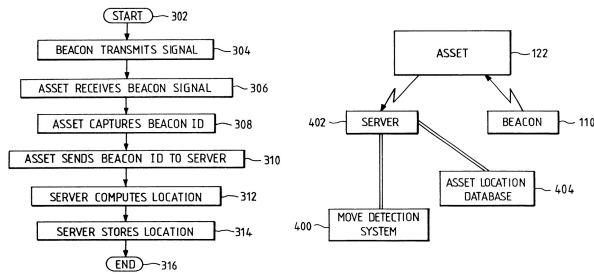
Geofencing



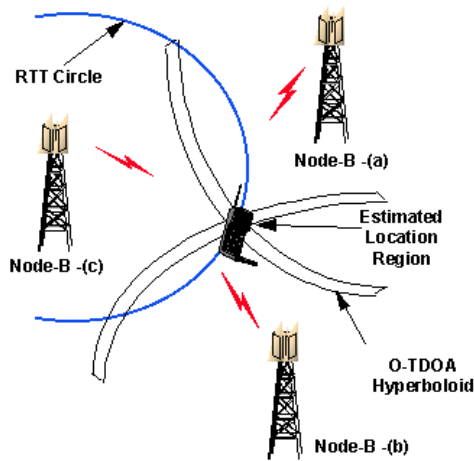
“Classic” RFID

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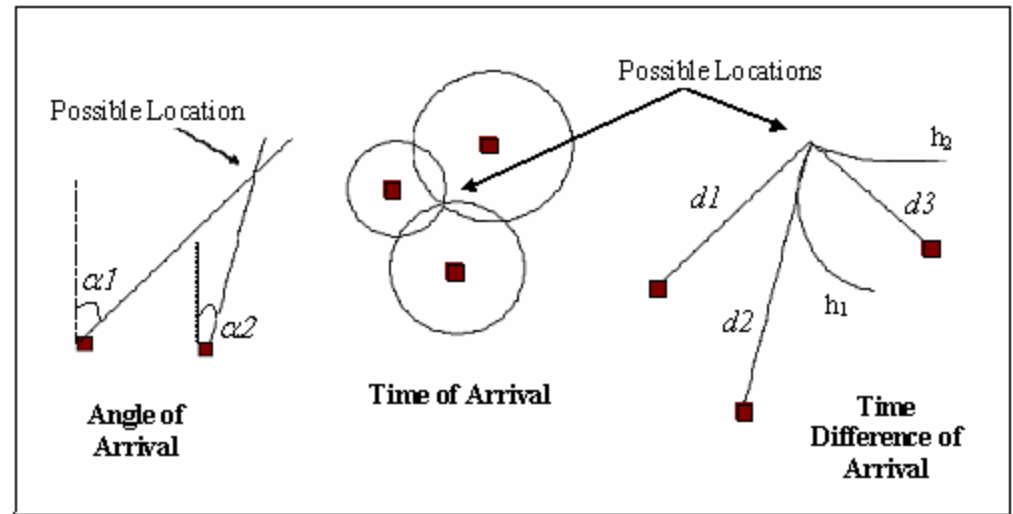
Examine various Mathematics, Principles, Implementations



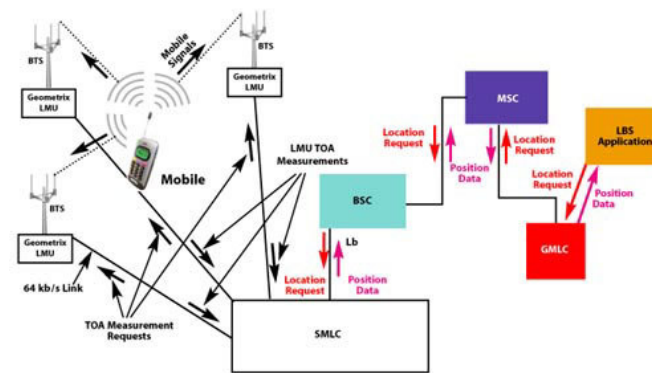
“Classic” RFID, portals, readers, tags, databases



Received Signal Strength Indicator-based location determination

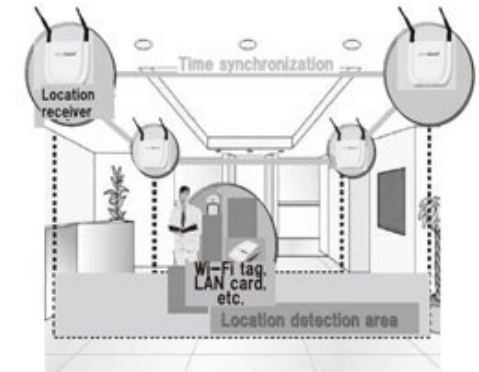


U-TDOA Operation



System response

Communication ranging techniques

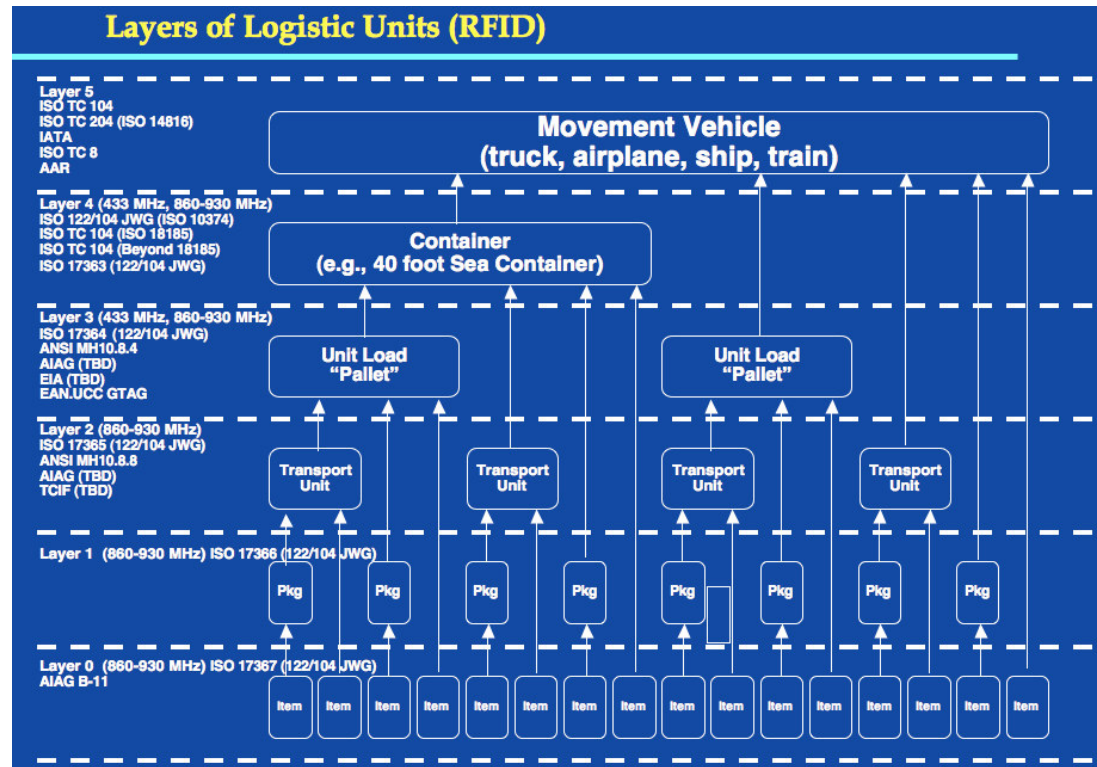


Time synchronization requirements for some Tracking technologies.

ISA100.21 People and Asset Tracking Work Group

What we are NOT doing

ISA100.21 is not defining a “new standard” for Asset Tracking.



Standards just for RFID!

ISA100.21 IS sorting through the various technologies to make recommendations to Users as to which technology(s) will more easily coexist and integrate with other wireless technologies that are, or will be, present in an Industrial Setting.



ISA100.21 People and Asset Tracking Work Group

Current Deliverable

‡ A document describing various methods of Asset Tracking has been delivered to ISA100. A copy of this document is available from ISA100.

‡ The next face-2-face ISA100.21 meeting will take place at the ISA100 General Meeting, Chongqing, China, 1-4APR08.



Setting the Standard for Automation™

ISA100 dot 21: People and Asset Tracking In Industrial Settings

Questions/Comments?
Ask us.

Co-Chairs:

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Dr. Nacer Hedroug, Eli Lilly

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