Module 5 – RFID Ecosystem and Provider Roles

Main Objectives:

1. Know what components and/or services are typically provided in a RFID deployment
2. Know who typically provides which components
3. Know what components and/or services are typically provided in a RFID deployment
4. Know who is responsible for regulatory compliance
5. Know how the components fit together to form an overall system

1. Know what components and/or services are typically provided in a RFID deployment

Although a RFID system is made up of many components and services, it is rare to find all of them provided by a single organization so it is important to know who provides each of them within a deployment. The components & services typically provided are:

- Readers
- Antennas
- Antenna hubs and multiplexors
- Cables
- Tags
- Middleware (to exchange tag data between the reader and the system that will process the data)
- Consultancy (RFID hardware selection, process design, tag selection)
- Integration Services (integrating RFID based solutions into existing systems and process environments)

2. Know who typically provides which components

There are three major types of vendors:

- Hardware Vendors – provide readers, antennas, cables, tags, I/O devices, printers, power supplies, portals, brackets, etc.
- Software Vendors – provide middleware, application software or back-end system
- System Integrators – design the system, pick out the hardware and software, install the system, integrate the system into existing systems and environment, troubleshoot the system (sometimes these roles are divided between consultants, that provide only the hardware/software selection and integrators that integrate the components into existing systems and processes but often this is done by one and the same company).

Hardware vendors

Reader (Printer/Encoder) Vendors

- Manufacturers – usually do not sell directly, but work through a reseller networks, have only specific brand.
- Resellers – buy from manufacturers in higher quantities, sell to customers, often VAR (Value Added Reseller – which provides configuration, customization, etc.), often sell multiple brands.

Tag Vendors

- Inlay Manufacturers – manufacture only inlays (tag antenna and chip on a substrate that is to be embedded into a label or other types of tag format) – dry inlay without adhesive or wet inlay with adhesive (often instead of label). Usually do not sell directly unless very high quantities.
- Converters – buy inlays from manufacturers and integrate them into labels or other types of tags (metal mount, encapsulated, hangtags, button tags, etc.). RFID Printer companies often sell RFID labels and ribbons as supplies for their products.
- Resellers – buy inlays from manufacturers or labels and tags from converters and resell to end users or integrators. Often carry multiple brands.

Peripheral/general vendors

Typically provide the rest of the parts needed to install the system, such as:

- Reader and Antenna Mounting
  - Portals
  - Mounting Hardware such as brackets and conduits
  - Environmental enclosures (NEMA enclosures, i.e. NEMA-4 Rated)
- Electric Eyes
- Motion Sensors
- Screws, washers, ties

Software Vendors

- Middleware
- Application software
- Data Base Management Systems
- Interface to Existing Applications

System Integrators - Technical

- Ensure Human Health & Safety
- Project Coordination - Technical
  - Plans
  - Schedules
  - Milestones
- Business Requirements Management

        - Process Flows
        - Data Management
        - Procedure Development
    - Develop Technology Requirements
        - Tags
        - Readers
        - Peripherals
    - Facilities Management
    - Vendor Management
        - Coordination
        - Communication
    - Manage Implementation
        - RFID Technology
        - Facilities
        - Testing
        - User Acceptance

Consultants
Have specific areas of expertise:

- Business
    - Requirements Definition
    - Process & Procedures
- Technical
    - RFID Technologies
    - Equipment
- Facilities
- Training

3. Know who is responsible for regulatory compliance of:

- Equipment components – the manufacturer and ultimately the user
- Installed RFID system – the installer but ultimately the user

4. Know how the components fit together to form an overall system

Tags and readers must match:

- Frequency - to be interoperable
- Protocol - to be interoperable
- Active/passive operation - to be interoperable

Readers and antennas must match:

- Frequency – to be interoperable
- Impedance – to avoid damage to components

Antennas and cables must match:

- Connectors – to connect

A reader is the main component that affects:

- Safety compliance
- Regulation compliance
- Air Protocol – ISO 18000-6 A, B or C (Gen2), EPC Global, etc.
- Transmitted power – per settings – usually maximum is the maximum allowed by regulations

An antenna affects:

- Gain – defined by antenna design
- The higher the gain the narrower the beam, the lower the gain the wider and shorter the beam

A cable affects:

- A cable impedance affects the cable loss and the final transmitted power out of the antenna
- The thicker the cable, the higher rating it has and the lower impedance, but is less flexible and more expensive

Study List

For comprehensive explanation, please review:
What is RFID
Interrogation Zones