# TrackSeal Integrated System

## Why RFID?

RFID, GPS, sensor, and other RFID technologies promise to revolutionize enterprise asset management systems (EAMSs) by efficiently providing real-time, physical asset tracking, locationing and monitoring. With the right technology, asset location and status tracking can be automated in real-time through a fixed infrastructure or can become a less labor-intensive and more accurate manual process using mobile readers. Regardless of the means, accurate asset location and status information provide many significant business benefits:

➢ Constant and effort free identification, location and tracking information
➢ Visibility into the inventory and movement of assets and products
➢ Increased security and reduced loss (of assets and their critical information) through security alerts and audit trailing
➢ Improved inventory management, cost accounting and customer service by reducing stock-out
➢ More efficient and accurate shipping, receiving, and return processing
➢ Better understanding of asset flow and improved utilization
➢ Improved maintenance and equipment calibration
➢ Process improvement and workflow management
➢ Faster and less expensive audits to satisfy regulatory reporting, certification, and compliance requirements
➢ Revenue enhancement and cost avoidance

TrackSeal's iTrack™ integrated system serves as a perfect platform for integrating various RFID technologies to EAMSs in order to take advantage of real-time visibility and monitoring.

TrackSeal's RFID middleware, which provides this capability, offers advanced functionalities such as:

➢ Concurrent support for multiple technologies consisting of RFID, BLE Beacon, WiFi tags, GPS, sensor and barcode
➢ Advanced rules and algorithms for determining asset location
➢ Multiple communication mechanisms for enterprise system integration
➢ Integration to various type of hardware such as Access Control, turnstile, relay boards, traffic barrier etc.
➢ Built-in workflow for synchronizing, reconciling, and handling discrepancies between EAMS data and real-time asset location and information
➢ Repository for complete item location and status change history
➢ Integrated alerting, reporting and analytics
➢ Support for mobile field operations through mobile readers

# iTrack, TrackSeal's integrated application software

Software is the Platform for managing RFID data and routing it between tag readers or other auto identification devices and enterprise systems.

Software being the key component of RFID solution, reliability, stability, scalability and open interface to third party systems are key requirements for the system to deliver what customer expects. TrackSeal software delivers all this and more, at very competitive price.

TrackSeal software is not just the middleware, but an end-to-end solution to meet all customer requirements.



TrackSeal delivers –

- Complete solution to manage entire process from tagging items to monitoring them and then reporting to customers based on complex filters configured by the customers
- Provide required data to existing enterprise systems such as ERP, CRM, WMS, Business partner systems such as Access Control System, Alarm monitoring system, BMS etc.



System resource utilization Dashboard

# iTrack Software feature summary –

1. Web and Desktop based, with option of -
   a. On premise hosted
   b. Cloud hosted
   c. Client/Server
2. Unlimited users
   a. Every user has their own settings such as Colors, location asset access, alarm subscription, feature access etc.
3. Lifetime license – No monthly or annual fee to pay
4. Uses SQL 2008 R2/2012/2014/2016 Database
5. Supports Windows 10/Windows Server 2012/2014/2016
6. Support for unlimited tags/Assets/People
   a. User pays only for what they need.
   b. iTrack license is sold based on number of tags/assets/people require
7. Supports for unlimited readers (Fixed/handheld) spread across multiple continents
   a. Client only pays for license to connect number of readers they need
   b. Support for many reader brands such as Zebra (Motorola), Impinj, Alien, Thing Magic and many more
   c. Windows and Android based handheld smart readers
8. Concurrent support for **Barcode/Passive/Active/BLE/Wi-Fi/GPS** tags, all in single application
9. Parent-Child asset admin support
10. A unique and economical way to track asset location using 'Location Tags'.
11. Supports multi-site configuration
    a. Users are given access to location based assets/readers/people (e.g.) if a user is given access to Sydney based assets, then assets in Melbourne/Brisbane are not visible to this user
12. Supports multi-tenant configuration
    a. Users are given access to company/customer-based assets/readers/people (e.g.) your clients can manage assets assigned to them.
13. Support for interface to third party hardware such as –
    a. Relay board
    b. Access control system
    c. Alarm system
    d. Turnstile
    e. Custom controllers
14. Support for integration to enterprise systems such as –
    a. SAP
    b. Microsoft Dynamics
    c. Oracle Micros
    d. Custom applications
15. Emailing/SMS
    a. Alarms, Exception reports, auto-generated reports can be sent to subscribers via email and/or SMS.
16. Alarm management
    a. Built-in alarm creation, processing and reporting
17. Event/Action programming
    a. Event can be – When a tag is seen from a door within certain times
    b. Action can be – Send an email, trigger a relay etc.
    c. No limit on action/event configuration
    d. Get notified for configured exceptions (e.g.) a person seen entering a specified door or an item moves from its location
    e. Most Actions are in real time (not after delay of seconds)
18. Workflow programming
    a. Workflow can consist of –
       i. Take an action-1 (e.g.) start document processing
       ii. If action fails, take action-2 (e.g.) send email
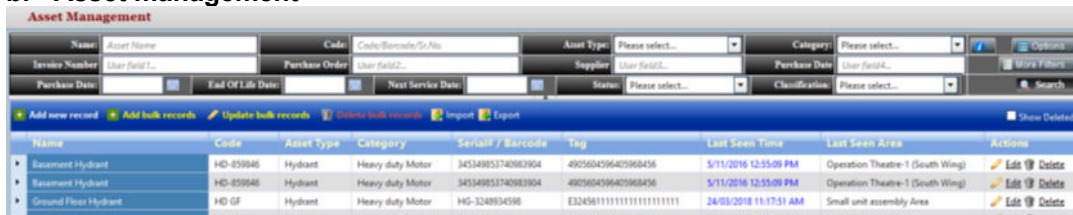
# iTrack Software feature summary –

          iii.    If action succeeds, take action-3 (e.g.) inform the current user to send the document to user-2 and send an email to user-2 to collect documents from user-1

          iv.    More actions and actions in response to result of previous action

19. SSRS (SQL server reporting services) reports
    a. Many built-in reports
    b. Additional reports can be added by end-users
    c. If required, existing reports can be customized to suit the users
    d. Auto generated reports can be emailed to subscribers
20. Import/Export from/To client systems using –
    a. CSV/Excel/XML/JSON files
    b. Direct database connection
    c. Web Services
21. Support for Zebra/Sato label printers
    a. Label designed by end user
    b. Labels can be printed from handheld scanner too
22. Scheduled import/export/report generation and task executions

23. UI features –
    a. **General**
        i. Sorting/filtering available on all pages
        ii. Grouping of items wherever relevant
        iii. Global Search - Access any part of system from single search source
        iv. Frequently used reports/menu items grouped at one place for easy access
        v. Context menu allows accessing of many features from single place

    b. **Asset management –**



        i. Admin
            1. More than 35 fields to enter asset details. Ten customizable fields
            2. Add one at a time
            3. Add/Update/delete in bulk
            4. Import from third party system
            5. Export to third party system
            6. Attach asset photo
            7. Attach documents
            8. Partition asset visibility based on asset location, Company name and/or owning department
            9. Audit history of key parameters
        ii. Locate
            1. On floor plan
            2. On the web client page/Mobile reader
            3. In the report(s)
            4. On Dashboard
        iii. Movements.
            1. Track asset movement behavior
            2. Track real time movements on floor plan
            3. Check GPS co-ordinates of asset when scanned with our handheld scanner (e.g.) where are the order items getting delivered or are being picked from
            4. Get alerted if a fixed asset moves
            5. Get alerted if an asset hasn't moved for a configured period of time
            6. Get alerted if an asset hasn't been seen for a time period
        iv. Financial –

1. Many reports showing registration, movements, utilization, receiving/dispatching, expiring, servicing etc.
2. Asset depreciation based on fixed or configurable depreciation rate
3. Asset disposal
4. Annual Stock taking
5. Daily Stock taking
6. Inventory

 v. Other features

1. Support for *Parent-Child* asset management (e.g.) box and items inside the box, assembly as whole and it's parts
2. *Serviceable assets* – get alerted when service is due. Get service history report
3. *Asset Expiry* – get alerted when items are about to expire
4. *Low Stock* – get notified when an item stock is below pre-configured value
5. *Alarms* – get notified when an unassigned item is leaving the premises
6. *Dashboard* – shows asset movements throughout entire organization
7. *Label Printing*

**c. People Management**

 i. More than 15 fields to use
 ii. Add from web client or from mobile reader
 iii. Import from third party system
 iv. Manage worker incidents
 v. Track people movements
 vi. Time and attendance report
 vii. Assign assets to people
 viii. Assign reader access with times to track and restrict access to secured areas

**d. Visitor Management**

 i. Track visitor arrival
 ii. Track movements
 iii. Restrict access to only area of visit
 iv. Let the host manage meeting times
 v. Track bad visitors

**e. Order/shipment Management**

 i. Track what's being dispatched, what's returned and what's still with the assignee.
 ii. Track what's available to assign
 iii. Get alarmed on late returns or no-returns
 iv. Reports on asset utilization (and hence asset idle time)
 v. Reports on who is 'bad client'
 vi. Notify users (by emails) when new order is received (e.g.) an item being received for repair
 vii. Notify users when order is ready for dispatch
 viii. Notify users when order is delayed for dispatch
 ix. Print labels for order items
 x. Print customized order delivery docket
 xi. Capture and assign images/documents to an order
 xii. Assign items to orders –
  1. One at a time (Web client + handheld scanner)
  2. In bulk - using handheld scanner
 xiii. Order types –
  1. Intra company orders/shipments (One office to another office)
  2. Job orders
  3. Customer orders
  4. Customer asset assignment and return
  5. Incoming Purchase order

f.  **Task Scheduler**
    i.   Schedule different types of tasks at user defined times to take actions such as – Import data, export data, run reports etc.
    ii.  Add user defined tasks using user defined assemblies to do user defined actions

g.  **System Users/Operators**
    i.   Add active directory users
    ii.  Add external users
    iii. Assign permissions and roles to limit what a user can do
    iv.  Assign reports that can be seen by a user
    v.   Subscribe to type of alarms a user will get an email about
    vi.  Assign location of which the assets are visible to the user

h.  **Document Templates**
    i.   Create your own document templates used for order delivery docket, inspection report etc.

i.  **Floor plan Editor**
    i.   Create unlimited floor plans.
    ii.  Assign a floor plan to an area
    iii. Import images and place readers and devices
    iv.  Zoom/Pan/Tilt for a better view of asset/people location

j.  **Reports**
    i.   More than 120 built-in reports
    ii.  Add your own reports
    iii. Customize existing reports to suit your taste
    iv.  Access import information from within report
    v.   Export report data to Excel/Word/PDF

k.  Interactive Dashboards

*Note: Please note that all features listed above are not supplied as part of standard software offering. Many features are added at an additional cost.*

# TrackSeal Applications

### INDUSTRIES

- ➤ Retail
- ➤ Distribution and Warehousing
- ➤ Manufacturing
- ➤ Government
- ➤ Energy: Utilities, Oil and Gas
- ➤ Healthcare
- ➤ Education
- ➤ Law firms
- ➤ Brewery
- ➤ Farming
- ➤ Mining
- ➤ Prisons
- ➤ Law enforcement agencies
- ➤ Foreign Services
- ➤ Laundry
- ➤ Rental Services
- ➤ Assembly/Repair shop
- ➤ Sport fields
- ➤ Customized Solutions

### HORIZONTAL APPLICATIONS

- Asset Management
- IT Asset Management
- Returnable Transport Items (RTIs)
- Track and Trace: Cold Chain/Food Safety
- Weapon tracking
- Prisoner inmates monitoring
- Process Management
- Confidential Mail Tracking
- Document Tracking and workflow management
- Linen tracking and process management
- Library management
- Order Management
- People Tracking
- Student Movement Tracking
- Farm equipment tracking
- Farm process management
- Secure Check-in/Check-out
- Time and attendance

*Please note that TrackSeal specializes in delivering customized solutions for almost any requirement*

# Some of the key feature of Application software -

Application should be designed to uncover the operational benefits of RFID (e.g.) reducing out-of-stock situations, decreasing labor requirements in the receiving process etc.

Processes the incoming RFID data and intelligently *integrate* it into customer's business applications.

## 1.    Not all of the incoming RFID data is valuable

Duplicate reads and excess information are filtered out so as not to bog down the network and end up with confusing information inside the applications. The rate of tag reads, duration to treat tags as duplicate etc. is all configurable, giving full control to the user.

## 2.    Support for interfacing to many RFID readers

The cost and various features provided by different readers make our software support many reader brand interfaces and hence providing customers to select the brand of readers they need. Some of the supported readers are –

- Zebra
- Alien
- Impinj
- ThingMagic
- MarkTrace
- Invengo
- eTel
- TrackSeal

More reader interface can be added as and when deemed necessary.

## 3.    Different RFID information needs to be passed off to different applications and data stores.

- For example, reads at the loading dock may need to be passed off only to the plant's local warehouse management application
- Demand stream information coming from a retailer may need to be sent all the way up to the supplier's enterprise demand forecasting solution
- Different flight baggage need to route to different belts
- Active tags passing through exit doors need to activate alarms
- Etc.

## 4.    Reader and device management:

Software allows users to configure, deploy, and issue commands directly to readers through a common interface

For instance, users should be able to tell a reader when to "turn off" if needed or trigger a relay.

## 5.    Data management:

- After software captures EPC data from readers, it must be able to intelligently filter and route the data to the appropriate destinations.  Our system provides low-level as well as complex algorithm to filter and do data exchange with many applications
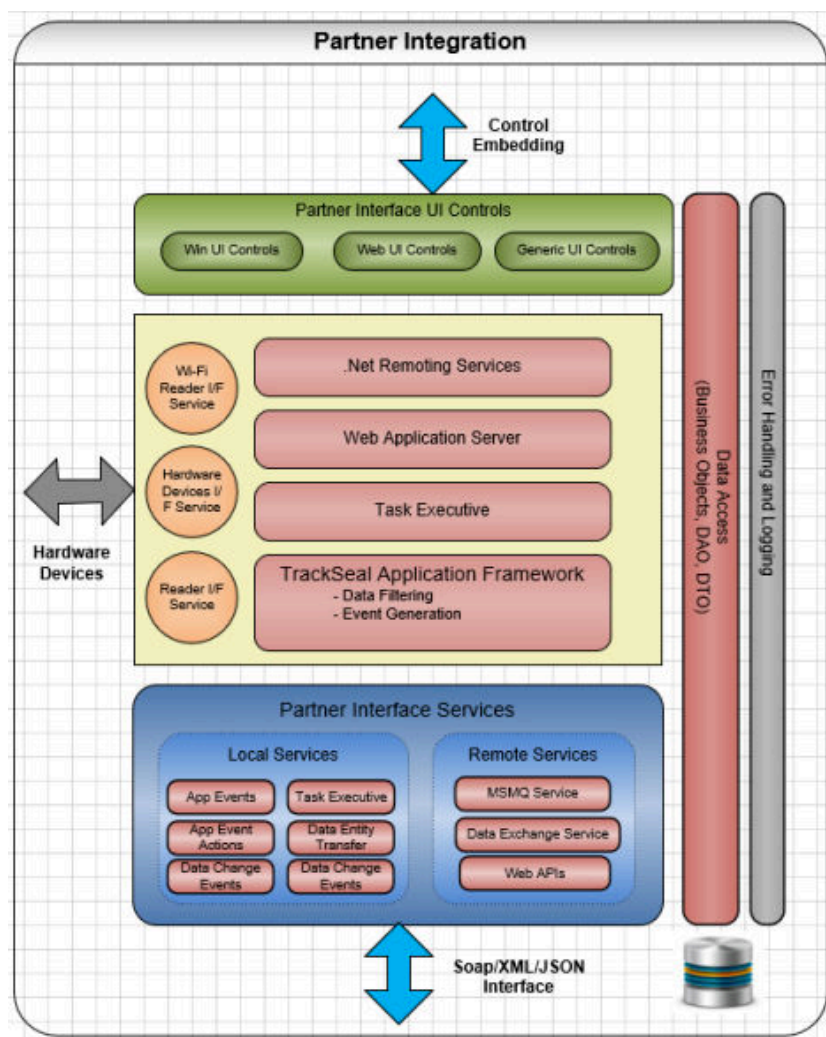- Reporting tools are provided for generating simple and complex reports

## 6.    Application integration:

- Our software solution provides the messaging, routing, and connectivity features required to reliably integrate RFID data into existing SCM, ERP, WMS, or CRM systems, through run time configurable –
    - Soap services, WCF Services, REST and simple web services
    - Direct database data exchange
    - XML/CSV/Excel File transfers
    - MSMQ
    - .Net Remoting Services
- Application programming interfaces (APIs) and adapters for integrating UI controls and services with third-party and partner applications

## 7.    Partner integration:

Some of the most promising benefits of RFID come from sharing RFID data with partners to improve collaborative processes. In order to achieve this, we provide -

- Soap/XML/JSON/MSMQ/Remoting services to do data exchange in real time
- Direct Database connectivity to partner database
- UI Controls to be integrated in partner application to cut down the development time to almost zero.
- Data filtering/event generation to which partner application can subscribe

## 8.    Process management and application development:

We not just do data exchange with enterprise systems, but orchestrate RFID-related end-to-end processes. Instead of just routing RFID data to business applications, we can interface and exchange filtered and processed data (based on customer configured filter criteria) with multiple applications and/or enterprises.

### Example Inventory Replenishment Scenario:

- Supposing that your system understands that you have a certain amount of one item coming through the door and the receiving process in the back of the store is tied to the point-of-sale data
- You can accurately know when the inventory level becomes critically low and send a machine-generated message to the distribution center to order more product
- No human involvement needed
- Key process management and composite application development features include workflow, role management, process automation, and UI (user- interface) development tools.
- Specific tools help you create solutions that fit in with your existing applications Benefit of machine-to-machine communication in a custom environment

## 9.    Packaged RFID content:

RFID middleware platforms that include packaged routing logic, product data schemas, and integration with typical RFID-related applications and processes like shipping, receiving, and asset tracking are major assets

No one wants to start from a blank sheet of paper, and this content can give you a head start on your RFID projects.

## 10.    Architecture scalability and administration:

RFID adoption produces a lot of data, and RFID middleware is the first line of defense for reliably processing that data
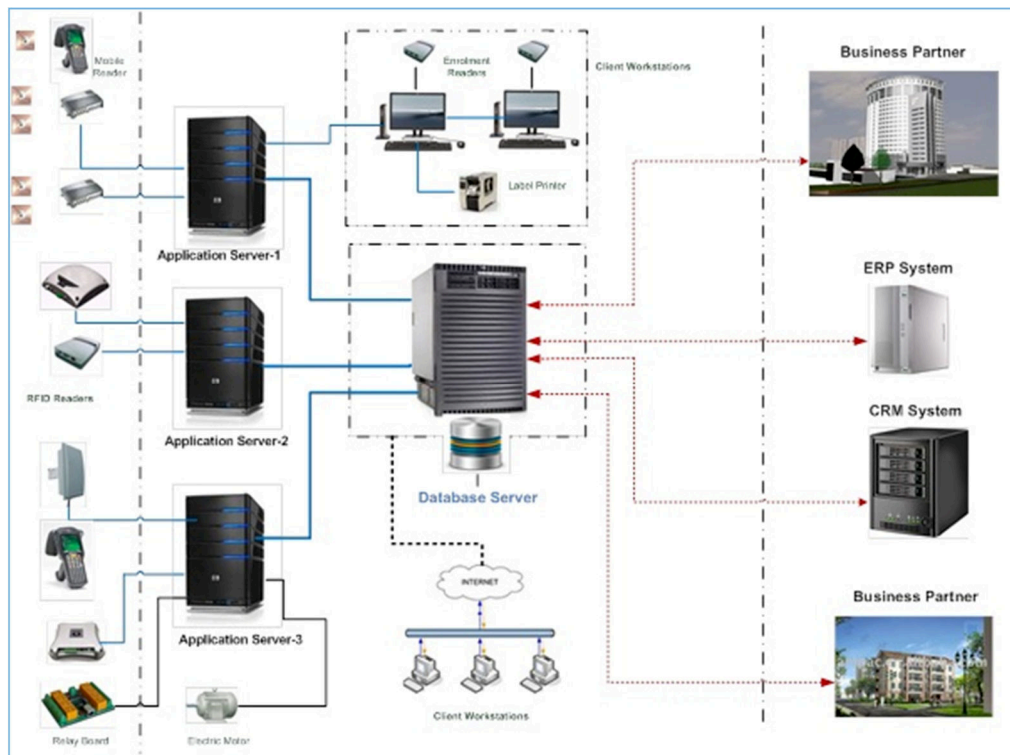
This means that RFID middleware platforms must include features for dynamically balancing processing loads across multiple servers and automatically rerouting data (e.g., when a server fails)

Features need to span all tiers of the architecture even the devices that are located near or on the actual readers.

TrackSeal software supports below architecture –

- Single Server (or desktop PC) machine running Web Application, Web services, Windows Services and SQL Server
- Web Server or a separate server machine running Client/Server application
- SQL Server running on either of the application servers or running on a separate machine
- Reporting server running on any of the above servers or on a separate server to free up the application servers from running database intensive report generation task
- Unlimited number of RFID readers
- Barcode scanners
- Handheld RFID readers

## System Hardware Block Diagram