AIDC platform

Asset Trail™ - Active Tracking
AGENDA

- Company Brief Introduction
- Asset Trail – Active Tracking solution
- Asset Trail Product Brief
- Asset Trail Solution samples
- Summary
A joint venture agreement between Krimmley group and JAYED Group resulted in spinning off DEPCO systems from Krimmley group in 2005.

- Krimmley Group is a 42 year old Saudi company specialized in Telecommunication & infrastructure projects.
- 800 employees distributed around the Kingdom.
- Second Governmental classifications in Telecommunications project. (2 out of 5).

- JAYED Group is a 35 year old Lebanese company specialized in Consultation & Governmental projects for the Middle East.
- Agencies & representations from numerous multinational IT & Telecommunication vendors.
- Supplied & Deployed a TETRA systems and various IT systems, (GIS, AVL, VoIP, etc.) for the Lebanese government.
RFID is our core business

Dedicate team of engineers for our RFID product.

RFID industry certified engineers.

Partners with several RFID manufacturers (tags & readers)

Partners with several RFID engine providers.

Level I,II & III local support.

Turnkey customized solutions

For more details:

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Company Brief Introduction

Asset Trail – Active Tracking solution

Asset Trail Product Brief

Asset Trail Solution samples

Summary
Active RFID hardware used by Asset Trail:

- M200 Wired Active reader
- M200 PoE Active reader
- R200 Active reader
- M220 Mobile Active reader
Active RFID hardware options used by Asset Trail:

<table>
<thead>
<tr>
<th>Feature</th>
<th>M200</th>
<th>R200</th>
<th>M220</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity</td>
<td>LAN</td>
<td>WIFI</td>
<td>PoE</td>
</tr>
<tr>
<td>Frequency</td>
<td>433 Mhz</td>
<td></td>
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<tr>
<td>Range (max)</td>
<td>300 meters</td>
<td>10 meters</td>
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<tr>
<td>Protocol</td>
<td>TCP/IP</td>
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<tr>
<td>Tag reads</td>
<td>140 tags/s</td>
<td>140 tags/s</td>
<td>100 tags/s</td>
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<tr>
<td>Real time</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>S. Groups*</td>
<td>8 max.</td>
<td>8 max.</td>
<td>8 max.</td>
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<tr>
<td>Gain setting</td>
<td>Variable</td>
<td>Variable</td>
<td>Variable</td>
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</tbody>
</table>

* Sensor Group or S. Group is the different types of tags managed simultaneously by the same reader.
Active RFID hardware used by Asset Trail:

- **RFID Active tag types:**
  - **Standard tags:**
    - Asset Tag
    - Wrist Tag
    - Badge Tag
    - Sensor Tag
    - Rugged Tag
    - Rack tag
    - Thin Tag
  
  - **Sensor tags:**
    - Temp/Hum tag
    - Door tag
    - Dry contact tag

- **RTLS tags: (within meters)**
  - Wrist Tag w/ IR
  - Asset Tag w/ IR
  - Rugged tag w/ IR
  - Aurora Tag control

- **Integrated Sensors options:**
  - Motion detector
  - Tamper protection
  - Panic button
RFID high level Infrastructure:

- LAN / WIFI
- General user
- Admin user
- 10 m. radius
- 45 m. radius
- ID & / or Location
- Asset Trail server
- RFID Software
- Policies
Asset Trail™ Line diagram:

Main Offices - HQ

Asset Trail Centralized server

WAN network

Distributed locations

Asset Trail or Asset Trail-Lite
RFID server
RFID Hardware & Sensors
RFID handheld
Fixed readers

Site A

Site B

Site C

Site D

Site N+1
Active RFID tracking outdoors:

- M200 readers are distributed across a large open area mounted on 3 mt poles. Each reader operates like a Cell tracking and monitoring all tags under its coverage in real time. Area can vary from a few meters to 300 meters depending on localization granularity required.
Active RFID tracking indoors:

- People or assets are tracking by tagging them with the appropriate RFID active tag.
- A distributed infrastructure of readers & RTLS locators will determine the location of all tagged assets or people.
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What is Asset Trail?

- Asset Trail is an AIDC application which runs on an AIDC engine.

Why Middleware?

- Any serious end to end RFID solution requires a comprehensive middleware able to handle all types of sensors types.

What is AIDC?

- **Automatic IDentification and Control** is the technology which allows the collection of information from the field through a wide array of sensors.
- TW is a leading AIDC engine in the market for more than 10 years, it allows the collection, organization and manipulation of raw data from many sensors deployed within an organization to allow it to intelligently control and monitor its assets.
- Sensors types:
  - Barcode 1D & 2D scanners, Motion detectors, Industrial weight scales,
  - Infra-red sensors, Any Programmable Logic Devices (PLC;s),
  - RFID readers, (Active, semi-passive, passive)
RFID Middle-Ware vs. ERP/RFID native Apps:
(Why use middleware & not count on ERP/Application for added value functionality?)

<table>
<thead>
<tr>
<th>ERP RFID module (native Sol.)</th>
<th>RFID Middle-Ware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point solution – World revolves around ERP (exact solution)</td>
<td>Critical node for transforming data into useful information for many different subscribers in a complex environment</td>
</tr>
<tr>
<td>Process flows are defined with target ERP/Solution in mind. (Sequence, timing, format, database, etc.)</td>
<td>Process flows are defined with material handler and business operations in mind regardless of application or subscribing systems to the information. (SOA)</td>
</tr>
<tr>
<td>Modify processes (i.e. source code) impact maintenance and support of entire product set. Rework native solution.</td>
<td>Processes and workflows are expected to be changed. Different facilities may need very different processes in order to achieve the same result with the same ERP system.</td>
</tr>
<tr>
<td>Process changes are normally difficult and time consuming. Creates latent demand of possibly break through ideas.</td>
<td>Process changes are developed, implemented and deployed in days. Encourages creative “out of box” thinking in operations personnel. IT is viewed as key player in business vs. barrier to change.</td>
</tr>
</tbody>
</table>
AIDC engine:
- is the platform which enables Asset Trail to communicate to multiple field devices and ERP applications
Asset Trail™ System modules:

- Asset Trail™
- Asset Trail™ DBMS
- ERP Application
- End user DBMS
- Front End Interface Management (FEIM)
- Business Intelligence
- AIDC Core ENGINE
- Back End Interface Management (BEIM)
- Physical Layer (AIDC Network)

Rich functionality

Front end customization

Back end customization, business intelligence & system features

Limited functionality

Server, RFID readers, tags, sensors etc.
Asset Trail

- Asset Trail - 3D RF Modeling, Design & Planning

RF propagation study

3D Modeling of building layout
Asset Trail application Features:

- **Standard services:**
  - Reading tags
  - Assign tags
  - Printing tags
  - Locating tags
  - Tag & event logging
  - Basic reports

- **Advanced services:**
  - ERP integration
  - Business Intelligence
  - Geofencing
  - Sensor integration
  - Statistical reports
  - Log search tool
  - Event search tool

- **Value added services:**
  - Inventory auditing
  - Shipment Consolidation
  - Real time view of assets
  - Customized reports

- **Security features:**
  - SMS alarm notification
  - Email alarm
  - Email report summary
  - Audio/Visual alarm
  - PLCs activation (door lock, etc.)
Open architecture design allows for three main advantage with Asset Trail:

1. **600+ simplistic modules** allows for the customization of Asset Trail to fit many vertical markets

2. **Front end flexibility**: enabled Web-services and ODBC synchronization allows the integration to any ERP application. Modules in asset trail already have been developed to our and NCR customers to synchronize to Oracle, SQL, SAP, JDE and many other proprietary systems.

3. **Back end flexibility**: a unified AIDC engine which allows the integration of many hardware suppliers of different sensors to allows the collection from the edge of your organization.
Business Intelligence

Processes customized allows for any organizational policies and regulations to be an integral part of asset trail monitoring and controlling the behavior of its assets within the edge of the enterprise.
- Reading Tags

- This feature allows for reading tags in real time or in near real time

Read All Items - قراءة جميع البطاقات

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<th>Item Description</th>
<th>Current Area</th>
<th>Assigned Area</th>
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</table>
Tag & Event Logging

This feature stores all the observed behavior with all tags in the field and keep them in a historical table for future reference.
- Shipment consolidation

- This feature allows for the consolidation in between the ERP application Purchase Order or Work Orders and on the actual transition of materials or goods through warehouse gates or building main doors.
Email alerts and reports can be configured to notify the appropriate manager of the issues. The same configuration can be used to send SMS alerts via the GSM operator.
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Asset Trail- IS

- Asset Trail- Intelligent Store- Dashboard view (32’ screen view)
Asset Trail- IS

- Asset Trail- Intelligent Store- Real time store Inventory

Print out

Screen view
Asset Trail- AT

- Asset Trail - Asset Tracking - Main Screen
Asset Trail- AT

- Asset Trail- Asset Tracking- Main Screen
Asset Trail- AT

Asset Trail- Asset Tracking- SMS alert configuration

![Image of SMS alert configuration interface]
Asset Trail- AT

- Asset Trail- Asset Tracking- Real time reading of tags

![Image of Asset Trail interface]

### Read All Assets

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### READ ALL ASSETS

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Current Page No: 1  Total Page No: 5  Zoom Factor: 100%
Company Brief Introduction

Asset Trail – Active Tracking solution

Asset Trail Product Brief

Asset Trail Solution samples

Summary
Solution Tag Features:
- All tags are equipped with a unique ID (up to one trillion combinations)
- 10 second beacon tags, 2.5 second beacon tags, 0.5 second beacon tags with variable mode selection based on tag type & integrated sensors.
- All tags are equipped with standard flat battery with tested operations from 2 to 7 years depending on sensor usage.

Solution Tag sensors
- Wrist/ankle tags:
  - Secure lockable wrist or ankle tags
  - IR sensor for RTLS location pinpointing
- Asset Tags:
  - IR sensor for RTLS location pinpointing
  - Motion sensor for movement detection
  - Tamper sensor for Tag protection
- Security tag:
  - Motion sensor for movement detection
  - Panic button for immediate alarm trigger.
- Badge tag:
  - Employee badge tag for localization
Solution Benefits:

- Mobile real time tracking of variable assets and people.
- Localization of assets/people in confined indoor and outdoor locations.
- Multitude of value added services including but not limited to Geofencing, SMS alerts, email reports, business intelligence, etc.
- Multitude of sensor features integrated directly into each tag.
- Highly scalable solution and modular in design (OSA)
- Asset Trail middleware allows for usage of multiple RFID hardware, sensors and PLC devices.
- Asset Trail allows the integration of passive & active RFID system under one unified system.
- Intelligence at the readers allows tag traffic to be drastically reduced from the LAN network.
- Integration to ERP system available directly through web-services or ODBC.
- Centralized & modular architecture allowing expansion according to requirements and ability to monitor remote sites as required via LAN or dial-up.
THANK YOU

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