

RFID FOR LICENSED PRODUCERS of Medical Marijuana

A comprehensive, parameter-driven Enterprise RFID platform for :

- ✓ **Compliance with Health Canada, Privacy and Provincial regulations**
- ✓ **Life Cycle Traceability - Seed to Ship**
- ✓ **Real-Time Operational Visibility**
- ✓ **Automated Business Rule and compliance Violation Alerts**
- ✓ **Automated Chain of Custody – who had it, where and when**
- ✓ **Product Diversion Prevention**
- ✓ **Document and File Tracking**
- ✓ **RFID Intelligent Inventory Freezers**
- ✓ **Real-Time Inventory and Accountability**
- ✓ **Secure Access Control –Biometric, RFID and Video Surveillance Integration**
- ✓ **Secure World-Class Hosted or On-Site IT Infrastructure**



ALL SOLVED WITH RFID



For ongoing compliance with government regulations, Licensed Producers in Canada must have systems and facilities enabling auditable life cycle traceability of each plant, associated record-keeping documents of all activities and inventory, very secure 7 x 24 access control and video surveillance for authorized employees and visitors, strong measures to protect against potential product diversion and demonstrate continued compliance with all regulatory requirements. FSN provides the latest industry-leading turn-key RFID-enabled tracking systems as well as no cost Best-Practices consultation, system design and technology selection. These systems include mobile data collection and reporting tools to facilitate operational visibility and life-cycle traceability into nursery and indoor or outdoor plant management on a hosted and managed IT-Lite web-accessible platform or on-site IT infrastructure.

RFID vs. Barcode.....Why RFID?



Barcode

A bar code only contains the "UPC" (a product SKU)



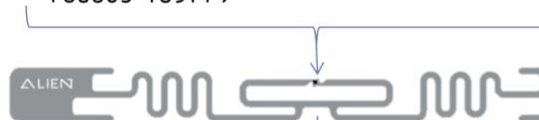
Define the product (a product SKU)
(but not the instance of that product)

RFID Tag

An RFID tag contains the UPC **plus** a unique serial number



+ Item specific serial number
123456789....789012



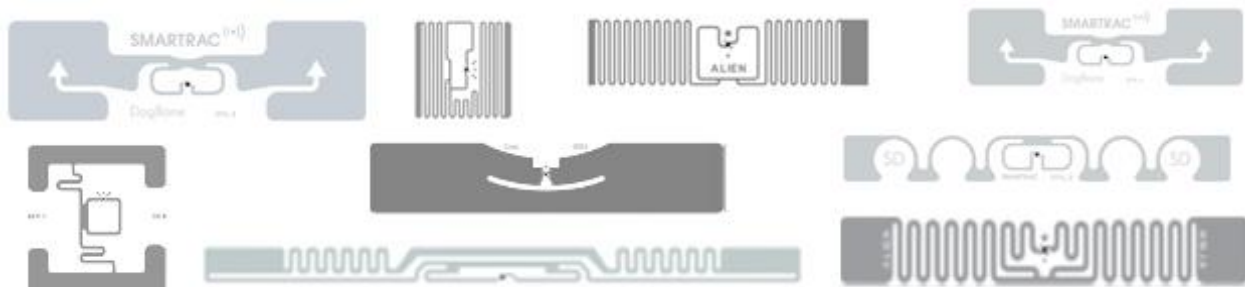
Defines BOTH the product and the
specific instance of that product

Figure 1 – RFID Tags are Replacing Bar Codes – They Contain Item Specific Information. As a general Best Practice, FSN does recommend RFID tags also have a visual barcode ID printed on each label for redundancy.

| | |
|---|--|
| Inexpensive to buy but can be expensive to use | Higher cost to buy but provides operational visibility |
| One Time Use | Can be retrieved, re-used and re-programmed |
| Line of Sight required | No line of sight required except thru metal and liquids |
| Must know where tag is | Can search for lost tags or read thru folders, boxes |
| Scanner must be close range and aligned | Any tag orientation is OK with Circular Polarized Reader |
| Short read range | Read range for Passive UHF can be up to 10 meters |
| No memory | User Memory on board with Password |
| 2D barcode(QR code) has capacity for more data than 1D | Some tags have memory sufficient for User Manuals and photos |
| Manual scan one at a time | Can scan hundreds of tags per second |
| Unreadable if scratched or partially covered in dirt or plant foliage. 2D can still be read with some minor damage. | No effect. |
| Barcode readability is compromised by the bleaching effect of UV. Read range is also less in sunlight | RFID not affected by UV nor sunlight, label material may be unless UV resistant materials used |
| Scanner requires careful aiming which is progressively more difficult with longer read ranges. Can be frustrating to use. | No aiming problems with RFID due to width of RF beam |
| Time to Inventory | RFID 15 to 20 times faster, with 95% less time (Source: RFID Journal) |
| No automated Chain of Custody | Automated Chain of Custody |

System Components:

A broad selection of RFID Integrated Circuit Inlays to match read range, environment and form factor requirements for the specific use case. These Inlays are converted in Canada into 'Peel and Stick' labels specifically for FSN for the nursery and agriculture industry.



UHF RFID Tags and Labels: FSN has a broad portfolio of tags and labels, all having a factory-locked unique ID number. Our UHF RFID Plant Loop Labels are specially designed for the indoor or outdoor nursery industry with extra durable, waterproof, UV resistant label materials for a minimum 3 year service life, made in Canada.

Other available RFID tags and labels are specialized for:

- Seed Bank packets,
- Seedling or Cutting propagation flats,
- T-Type for each cell in the propagation flats,
- ruggedized Plant Loop Label-UV resistant
- Plastic Drying Trays and Bulk Bins,
- Metal Mobile Dolly Carts,
- Finished Product packets
- Document and File Labels
- Personnel RFID Badges



Personnel RFID Badge



Encapsulated
On-Metal Tag



X, Y, Z Location Grid:

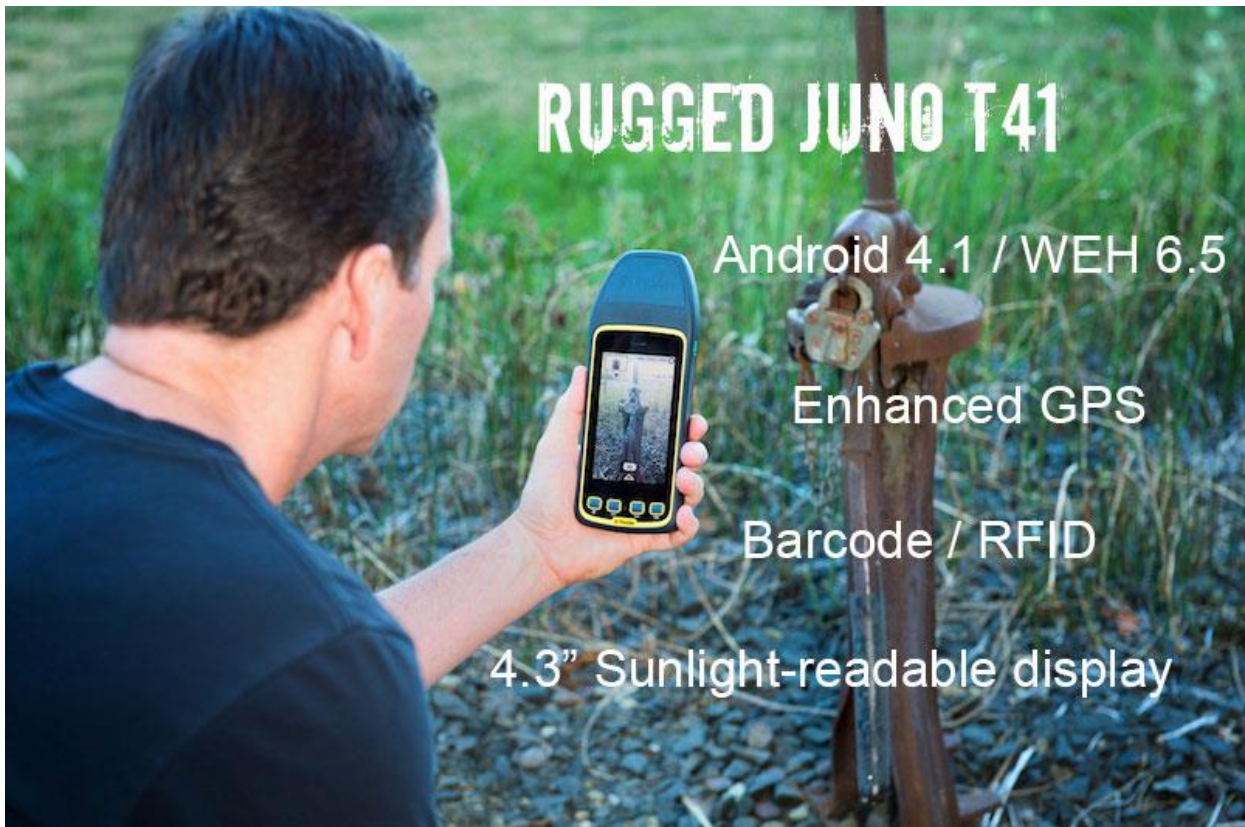
A Location Grid and visual mapping is an important feature of the system created for the facility with the use of 1D or preferably 2D(QR Code) Barcode Labels. These are pre-printed and serialized on retro-reflective material by our Service Bureau and affixed to columns, shelves, file cabinets ceiling or floor to create the location grid. A simple two scan process of



the item label followed by the location label automatically updates the database on the item's new location. Its previous location is shown by our software as now vacant. Barcode is preferable for this application since they never move, are low cost and the mobile handheld reader/scanner has no chance of picking up any unintended or neighborhood barcodes.

RFID Readers:

- Fixed Readers
- Desktop Readers:
- Mobile Handheld Readers
- RFID-Enabled Intelligent Freezers and Store Rooms



The JUNOT41 XGR truly empowers the mobile worker with a single rugged device. The Passive UHF Reader is integrated with a consistent read-range over 3.5 meters in unobstructed space, IP rating of IP65(or Optional IP68) and built to MIL-STD-810G standards to survive hostile conditions in greenhouses and the field: it can withstand driving rain and liquid immersion, corrosive environments, dust, shock, drops, vibration, prolonged UV exposure and extreme temperatures and altitudes.

Application Software and Database: **Agrisoft** 'Seed to Sale'

Agrisoft™ Seed-to-Sale™ is a comprehensive, multi-application, multi-module life-cycle asset tracking software and database management platform specifically designed for the Medical Marijuana market and delivered in a hosted and managed 'IT-Lite' service model (choice of hosting in Canada or USA) or traditional on-site installation, developed by our partner, Agrisoft Development Group with management offices in Kansas City, Missouri. Our system servers reside in highly secured data centers, providing redundant power, environmental, secure redundant network connectivity and state-of-the-art firewall systems employing advanced network intrusion prevention technologies. As of March 2015, there are over 50 installations in service. It is considered the most comprehensive and cost-effective biometric and RFID cannabis-tracking and management tool in the industry.



Agrisoft Seed-to-Sale™ Software is the first to combine a variety of modules that manage all aspects of cannabis production and sale. Features include radio-frequency identification (RFID) tags with bar codes to track each plant from seedling to harvest; bio-identification access points and security cameras throughout growing facilities; an inventory module with point-of-sale and patient-history archives; a processing management tool for marijuana-infused products (MIPs); stringent traceability safeguards; and a tax-accounting module. In addition, an application interface allows state agencies to deploy a separate Agrisoft software suite that lets states easily verify production and sales at dispensaries, to ensure accountability and tax collection, where required by law.



Agrisoft Seed to Sale™ interfaces with all USA state-mandated reporting systems, including those in Colorado and Washington and includes functionality for full compliance with Health Canada's MMPR.



Available software modules include:

• CORE

The core software provides everything you need to operate and automate your medical or retail cannabis cultivation, manufacturing and sales business. Secure your data with biometric system logins for staff. Streamline, track, and verify key operations with integrated scales, barcodes, and system audit trails. Report on the efficiency of strains and conditions to analyze cultivation. Manage inventory from the back safe to the retail shelf, and handle transactions with patients and customers with a simple, touchscreen point-of-sale system.



Propagation- Order cloning operations, individually identify plants. Records cloning outcomes including sale, destruction or movement to vegetation.

Cultivation - Track plants in batches through vegetation and flowering stages, recording ingredients and cultivation operations.

Harvest - Create cutting orders and assign staff to harvest operations. Record dates and plant dispositions from drying shelves through bulk cure containers.

Packaging - Manage, analyze, and report on packaging operations from trim to pre-rolled and pre-measured finished product, including labeling and product/location coding.

Inventory - Track and account inventory whether in measured packages or in bulk for deli-style, at-register weighing. Know which batch packages or bulk stock belong to, to ensure pulling older stock first.

Retail - Check patient authorization or retail customer identification and age compliance. Record invoice for each retail transaction, using a touchscreen interface and the latest PoS hardware to automate and streamline common retail tasks. Report on daily sales and closings, and warn about out-of-compliance conditions in sale amounts, time of sale, and other venue-specific regulations.

Tax - Configure custom tax line items for every venue affecting your company and its locations, for either percentage or flat-rate taxes. Sales taxes, excise taxes on wholesale transactions, or special industry-specific taxes can be created, named, and calculated on every appropriate transaction. Report on amounts and destinations of taxes collected.

Comply - Ensure compliance with the regulations of state, county, and city. Check patient authorizations, configure custom hours of sale or special patient or inventory limits. Receive warnings or automatically halt out-of-compliance operations.

Secure - Authorize staff with configurable, granular permissions to match their operational roles. Verify identity with biometric software logins and physical access controls.

• CORE1 –RFID Module

Track individual plants through the grow cycle with Radio Frequency Identification in addition to the standard barcoding. Whether to meet a regulatory mandate or implemented optionally, RFID dramatically increases the speed of reconciliations and audits by removing the requirement to scan each plant individually. With increasing hardware integration levels, RFID can be used to track item proximity and directly track shelf or location ingress and egress as tagged items pass embedded stationary RFID readers.



• CORE2-adds Physical Security (Locks, cameras, biometric ID authentication)

Review the security footage from a given PoS transaction, Secure Access violation, RFID tag read alert based on a business rule violation or work order. Lock and unlock restricted areas with authorized fingerprints or PalmSecure ID. Track staff through entry and exit of secured area, and chart breadcrumb trails to analyze operations and ergonomics.



• MIPS – Manufacturing Infused Products

- Extraction
- Ingredient
- Recipe automation
- Integrated precision scaling
- Automate concentration adjustments in recipes to yield consistent products
- Labeling
- Inventory and storage, including product aging and 'Best Before Date'
- Procurement automation



• Extended Cultivation Management

Take your cultivation efficiency to the next level with detailed agricultural management of environment and lighting, plant conditions and maintenance schedules, detailed cultivation task breakdowns, and reporting by detailed cross-sections, for example efficiency of electrical consumption versus harvest yields.



• 280E Tax Module

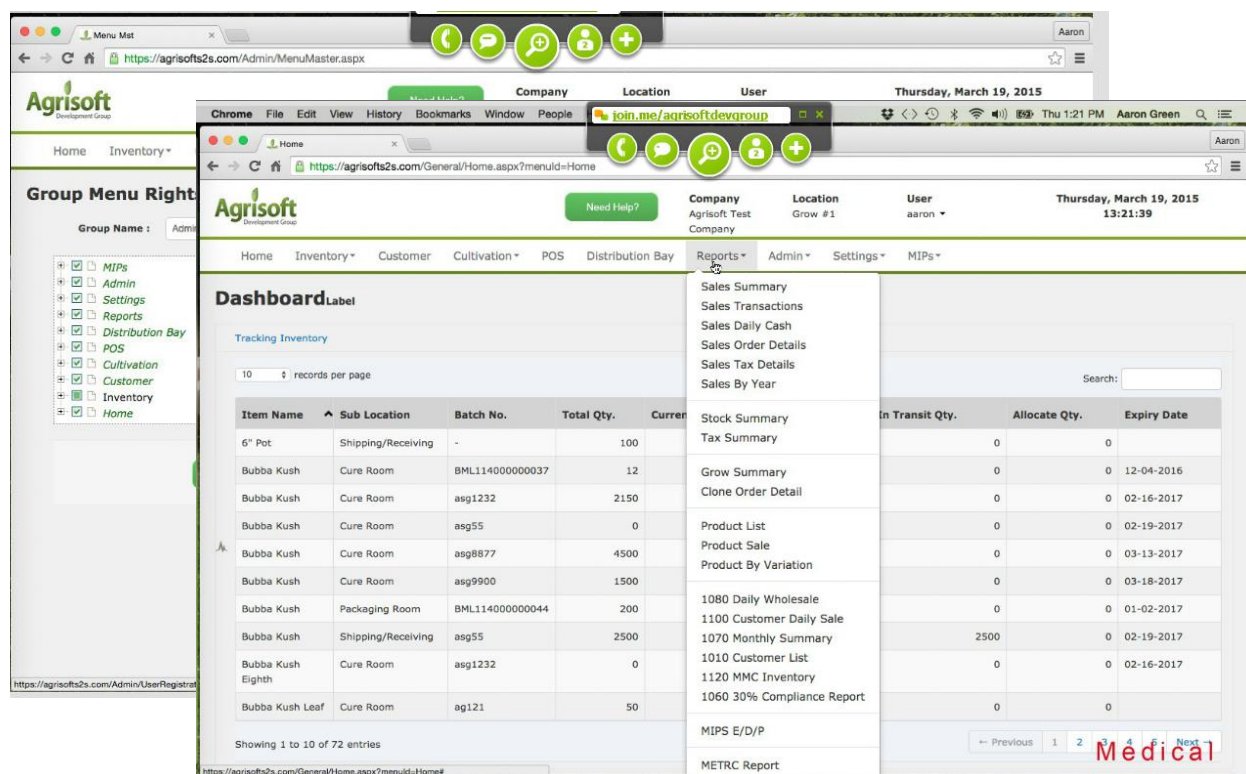
The 280E Tax module automatically imports inventory and cost data from your Agrisoft core system to enable you to use a simple, TurboTax-inspired web interface to your decisions about reporting income and expense based on IRS 280E's rules for deductions associated with your cannabis business. Modifications can be made for Canadian or other country tax rules.

advise

+Quickbooks Interface

Interface transaction records and other financial data with the most popular small-business financial management tool.





Sample Screenshots-Agrisoft for Medical Marijuana Dashboard with pull-down menus

Key Features including those on the 2015 development roadmap for the Medical Marijuana application include the following:

- **REAL-TIME INVENTORY (BY LOCATION, ZONE, ROOM, BUILDING, MULTI-SITE)**
- **'SEARCH' FUNCTION** Use Search on the handheld reader to locate a misplaced plant or document. As you move closer to the intended tag(s), an audible tone beeps progressively faster(like a Geiger Counter).
- **LINK OR GROUP BATCH TAGGING** Use *Link Tag* when a group of individually tagged plants will be receiving the same task or event. This will aid in not having to scan and input data for every plant if all plants linked are receiving the same task, ie boom spraying all plants in a block or row.

When the *Link Tag* is scanned the information is "broadcast" over all the plants within the Group. The *Link Tag* can represent a ROW, BLOCK, FIELD, FARM or SPECIES and SUB SPECIES. Any plant can belong to one or more chains or *Link Tags* but due to its unique ID identifier it would not be double counted.

- **Agrisoft Seed-to-Sale™** has a tag cloning function. Since all tasks and events that have been recorded to this point have been performed to all seedlings and/or cuttings in

the flat as a batch, the plants are still considered to be clones of each other and the information in the database is structured around the single QR or RFID tag affixed to each propagation flat. When the seedlings are taken out of the flats for final pot planting, they now are unique and an individual QR or RFID 'cloned' tag is affixed to each plant.

- **Tag Cloning:** Scan the original flat tag to show the quantity of the existing tag, enter the quantity and size for the new tag and scan. The new tag now has all the plant treatment and birth certificate data attached to it that the seedling flat tag had on it. It is now independent of the first tag and carries forward as a unique tree identity in the database.
- This process can be completed to any number of plants in the batch and will allow you to manage the remaining plants in the batch in the normal manner.
- **SEEDLING/PLANT/DOCUMENT MAPPING**

Using **Agrisoft Seed-to-Sale™** asset management system you can track and map the location of every individual asset (based on site map or floorplan provided by client or Google Maps if outdoors is involved).

- **CHAIN OF CUSTODY** RFID Readers along with **Agrisoft Seed-to-Sale™** create an association between the asset and the person carrying it. Answers the question, Who had the item, where and when? Automatic Alerts can be configured if the person involved does not have the credentialed authorization. Conditional violation alerts can also be configured based on location, time of day, day of week.
- **MISFILED LOCATION** Handheld Reader along with **Agrisoft Seed-to-Sale™** initiates an alert if a RFID-tagged plant, tray, document or document folder or archive box is placed in an unassigned or incorrect location.
- **PARENT-CHILD, CREATION OF CONTAINERS** Identifying Seedlings in a propagation flat or documents in a folder and folders in an archive box have a Parent-Child relationship. Click on the tag of a Container and **Agrisoft Seed-to-Sale™** will identify the individual contents and also alert if any items are missing.
- **AUTOMATED DOCUMENT RETENTION POLICY MANAGEMENT** When documents are initially tagged, they are categorized and a Retention Period is defined. Subsequently when that date approaches, an alert is automatically initiated to schedule a review of that document for destruction or disposal.
- **SECURE ACCESS CONTROL** Fixed RFID Readers at key control points and doorways will read the RFID Personnel Badges worn by employees. Each tag read reports on Tag ID, Time and Date Stamp and Location. Various credentials can be associated with each Personnel ID Badge. This then allows automated alerts to be initiated upon any violation of those conditional business rules. The Personnel ID Badges can also be integrated with door locks for authorized entry.

- **DIRECTION OF TRAVEL** RFID Reader Antennas are positioned inside and outside doorways. The time differential of the tag reads is used by to determine direction of travel(enter or exit). This can also be used in propagation, flowering and inventory storage rooms to automatically debit or credit inventory if the item is entering or exiting.
- **FORM CUSTOMIZATION**

All **Agrisoft** Development Group **Seed-to-Sale™** forms can be customized to fit your unique business processes.

- Custom fields can be added to any form.
- Fields can be renamed to suit the terminology used in your company.
- Forms can be customized for particular processes to minimize data entry.
- Validation rules can optionally be enforced during data entry to increase data quality.
- Forms can be secured so only appropriate personnel can access a given form.

Agrisoft Development Group **Seed-to-Sale™** can *optionally* include a powerful new capability, work order creation, work order tracking and form generation for the pro-active maintenance management for plants as well as other tagged assets. Maintenance tasks include their definition, the asset types on which they should apply, the group of employees that are qualified to perform the work order, the triggering event for each maintenance task: date, periodical, manual or external event, earliest date, latest date for execution, typical time, required tools, parts to be changed, the method for confirming the execution of the work order, attached documents about the maintenance task, drawings or other multimedia that the employee can download, etc.



All RFID Readers profiled are compatible and have feature interworking with our **Agrisoft** Development Group **Seed-to-Sale™** software

Hosted or On-Site Deployment Options:

Two **Agrisoft** Development Group **Seed-to-Sale™** Service Deployment models are available:

1. **On-Premises-** FSN or the client can provide the IT hardware infrastructure. Smaller operations may be able to 'Virtualize' the Server and Database.
2. **Hosted and Managed-'IT-Lite'.** Choose Canada or USA application and database hosting location. We provision and maintain the IT Network Infrastructure, Application Software and Database, including database backup routines in our secure data centers.

Intelligent RFID Freezers



Intelligent Freezer RFID Technology allows only secure, credentialed access via RFID Personnel Badge and automatically updates access records and inventory additions and removals 7 x 24.

The Impinj UHF RFID Reader integrated with the freezer authorizes access and automatically takes a new inventory count of cabinet or freezer contents when the door is closed and assigns the product inventory difference to the authorized staff member who opened the cabinet door. This functionality would also track if items are subsequently returned to the cabinet as well as at the restocking. Software can also be configured to initiate alerts for minimum stock levels and stockouts. RFID Temperature Sensor Tag also an available option. Network connectivity via POE.



Intelligent RFID stock rooms and vault systems also available.

Control inventory management costs

- Increase product visibility and reduce shrinkage
- Eliminate inefficient manual reconciliation processes

Improve Regulatory Compliance

- Secure Access
- Automated Access and Chain of Custody Reporting
- Product movement reporting

Manage product storage dates

- FIFO
- Ensure Product Integrity
- Alerts for product aging
- Temperature Datalogging with alerts

Maximize Revenue

- Automated alerts for minimum inventory levels
- Prevent Stockouts



Over 1,000 of these RFID-enabled cabinets, freezers and refrigerators have been deployed around the world. High density, vertical storage in a variety of sizes provides effective use of floorspace. A Hosted and Managed business model provides the complete Service with No up-front capital for the freezer or cabinet units.

Biometric Secure Access Control



PalmSecureID

It's the fastest, simplest, most hygienic and efficient system available to verify your identity

PALMSECURE ID is FSN's industry-leading hardware and software integration based on Fujitsu's unique Palm Vein Scanning technology. Like Fingerprints and Iris eye patterns, each vein pattern in the palm of the hand is unique to each individual including those born as twins. The right palm is different from the left. It is hygienic, contactless, more accurate and less invasive than fingerprinting and iris scanning with authentication response speeds from its encrypted template repository in less than 2 seconds. It is easy to use in a small cube-sensor form factor which is normally encapsulated with hand guide and LED verification of a palm read and match. PalmSecure™ technology has been deployed worldwide in a wide range of vertical markets, including security, financial/banking, healthcare, commercial enterprises and educational facilities. Licensed Producers will appreciate the efficacy of this system for compliance with Health Canada MMPR, for access by authorized personnel past control points, between different rooms and high security areas such as the storage vault.

PalmSecure can be integrated into an existing medical records system to guarantee patient identity. A PalmSecure system can greatly accelerate patient registration efficiency and convenience and eliminate frustrating multiple re-registration procedures for subsequent visits.

Technology Validation:

- ❖ Over 190 Hospitals in the US are now using the PalmSecureID technology for patient registration.
- ❖ Financial institutions in both Japan and Brazil are now using PalmSecureID for ATM authorizations
- ❖ Over 50 USA School Districts are now using PalmSecure for automating lunch lines..



Hygienic, No Contact



The vein pattern in your palm is totally unique to you.
No one else in the world can match it.

IP Video Surveillance-RFID Integration

The USA and Health Canada regulations require 7 x 24 video surveillance and a minimum of 2 weeks storage. PTZ Surveillance cameras and recorders can be integrated (option) with the proposed RFID system software which can be automatically focused and activated for the area of any tag movement or conditional alert of a business rule violation (eg. RFID tagged item moved to a restricted area or without the custody of an authorized employee or by time of day, etc.). Using this approach makes video surveillance an event-based system and eliminates all the video footage when nothing is happening. This saves a significant amount of bandwidth and storage as well as the labour hours to review such video footage. RFID also further enhances video security with its ability to read tags in low light conditions, read tags through packaging and purses and identify violations of business rules and chain of custody which IP video surveillance could not do.

FSN is an Authorized System Integrator for Avigilon, the leading Canadian manufacturer of IP Video Cameras, Network Recorders, Storage and Video Software and also AXIS and Vivotek. Once further site detail is available, please request a quotation, if interested.

FURTHER LEVERAGING THIS RFID SYSTEM INVESTMENT-Discussion

Multi-Application, Multi-Site Enterprise RFID Platform

This system represents an RFID Enterprise Platform upon which can be added many other identification, tracking and sensor applications, including other additional buildings and sites, access controls to restricted areas, tracking and inventory management of mobile tools and equipment, pallet and returnable container tracking, personnel location, and utility vehicles, even tires. Associations can be made between such tagged assets and the employee ID badge and associated credentials which would answer the question - Who had this last, when, where and are they authorized to do so?

Mobile Cart-Mounted RFID Reader

A Portable RFID Reader on a 'Dolly Cart which could be walked down the nursery aisles would add an incremental layer of efficiency in terms of time to scan nursery inventory vs. a handheld but this could be a Phase 2 addition if desired. Such a cart could use a 4W EIRP Fixed Reader with longer read range than the 1W EIRP permitted with a mobile handheld, reading tags both plant and location on its route and automatically updating the database. A WIFI Mobile 'Hotspot' could be installed on such a vehicle as well.

WIFI Mobile Hot Spot

Secure connectivity at the edge

Recognizing that cellular network connectivity for mobile devices may sometimes be marginal or not available in nursery and production areas, or a desire to reduce cellular data plan usage and costs exists, one possible solution is the WIFI Hot Spot. This is a device (Access Point) which is installed on site providing extended network connectivity which can move with the work crew or be installed in the nursery area on a fixed basis. Please request a quote if interested. Also ideal for wireless connectivity with high availability applications such as video surveillance cameras.



FALKEN Secure Networks(FSN)—Your partner for RFID automation

If you choose to pursue RFID implementation in your organization, here is the FALKEN Secure Networks commitment to you:

- FSN will provide solution architects to work with you to define system requirements for your particular installation. Multiple locations can be networked together for a central and real-time view and centralized management.
- FSN will do a RFID site survey to validate radio frequencies, tag types, system design and performance
- FSN will provide all necessary hardware and software to make the system work for you
- FSN will integrate the system with your existing enterprise management software
- FSN will provide documentation for the system, including operating procedures
- FSN will train your people
- FSN will provide warranty and continued system support

Interested in getting a detailed proposal?



FALKEN Secure Networks Inc

647-930-7373 (CANADA)

sales@falkensecurenetworks.com



