



## Case Study

### Real-Time Forensic Tracking & Tracing System Dutch Forensic Institute (NFI)



#### The Challenge:

The technology and government compliance challenge at the Netherlands Forensic Institute (NFI) was to establish and guarantee the Chain of Custody of crime scene evidence by tracking & tracing materials during the process of investigation at NFI. Driven by the Schiedam Park murder case report, key government compliance standards were enacted requiring all pieces of criminal evidence material (SVOs) to be traceable and identifiable.

These materials are collected at the crime scene, transported in sealed envelopes to NFI for crime scene evidence processing and analysis. During the various analysis processes, the materials are processed and moved through the building on trolleys or trays carried manually by employees. This system tracks and traces where and when each individual item has been located since arriving at the institute and warns when items are moved illegally.

#### The Track and Trace Process at NFI:

At the crime scene evidence material is collected, packed, and sent to NFI for forensic analysis. All materials are tagged using a smart label, either at the crime scene, or when arriving at NFI. A smart label is a printable label with a barcode, readable text, and a built-in RFID tag. The tag contains data which uniquely identifies the item, linking it to a case. It is therefore of the utmost importance that label numbering is organized centrally. Number ranges are distributed to the local police organizations, which can print or order their smart labels accordingly. NFI Employees are also identified by their RFID badges. For privacy reasons, the RFID badge contains only employee's functional information. Their functional information is used when determining access to investigation areas.

Items (up to 200) are moved through the building either by trolley, or by manually carrying them on a tray. In the building, 50 doors are equipped with an RFID reader and antennas to track all movement of items and personnel. This information is stored in a central system so the whereabouts of all items can be shown on-line. It is also possible to prove that two items were never present in the same room together, thus excluding the possibility of cross contamination.

Audible and visible alarms are present at the doors to inform employees when all tags have been read, and whether certain items may or may not enter the investigation area. All events are monitored, and any deviation to the process flow instantly triggers an alarm. For example: Should evidence material illegally leave the building, an audible alarm will be generated and sounded immediately.



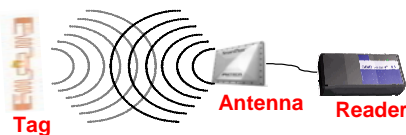
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**Key Solution Benefits:**

- Automates real-time track and trace data collection.
- Expedites evidence processing for law enforcement agencies.
- Supports government evidence compliance standards
- Safeguards and monitors crime scene evidence during entire forensic analysis process.
- Eliminates evidence from being compromised through Illegal movement or cross contamination.
- Expands visibility and monitoring capabilities across multiple NFI research labs.

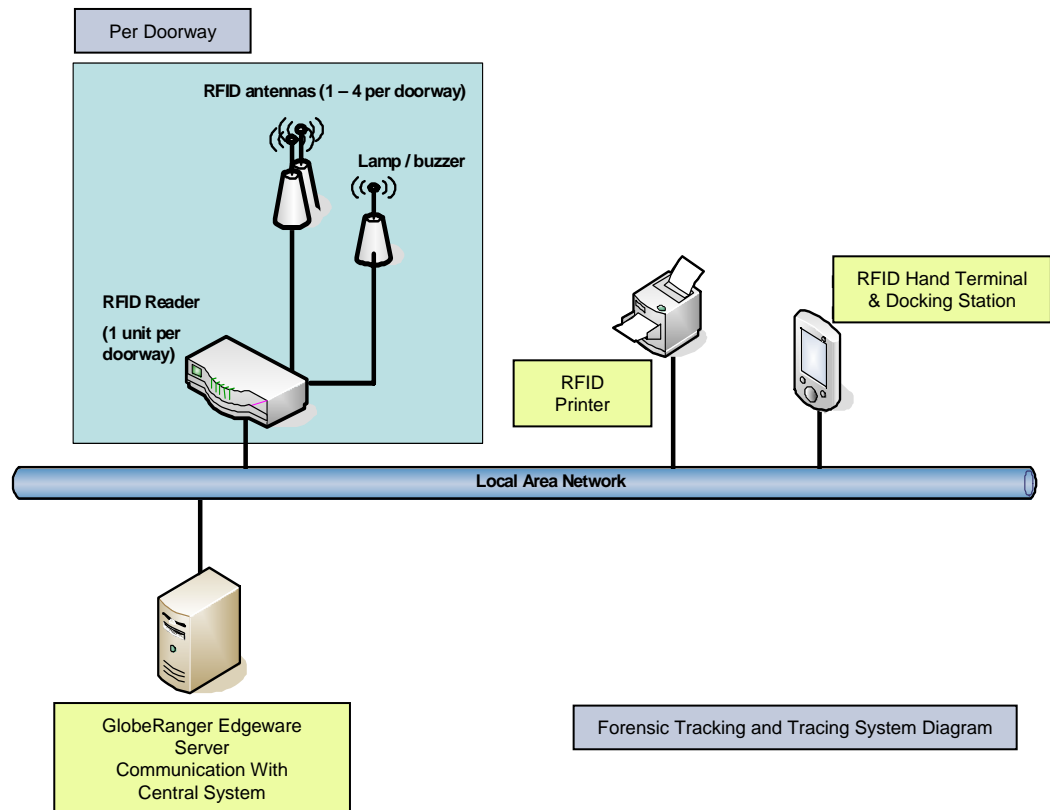


- Each year approximately 100,000 criminal evidence items are tagged and sent to NFI.
- 800,000 separate events are generated, processed and store within NFI's central information system.



- Basic RFID Edge Devices deployed to support the Track and Trace Solution at NFI

**The NFI RFID System:**



**Technology:**

The NFI system is based on the UHF Gen 2 Technology, which is the world wide standard for RFID based supply chain visibility and integrity.

At each doorway, up to four RFID antennas are installed and connected to an RFID reader.

At some locations mobile handheld readers are used to find and locate missing items. Smart labels can be (re) generated by an RFID label printer.

Readers are connected to a GlobeRanger iMotion™ Edgware™ Server, which filters and interprets the reader data, providing the central system with evidence movement events. The Edgware™ also controls the lamps and buzzers and shields the hardware characteristics for the central system.

The system is flexible, easily adaptable and expandable. It is built on proven building blocks and provides a user friendly environment to configure customer solutions without the cost of customer development. This lowers the TCO by reducing cost and complexity.

