

Advancing Healthcare with Next-Gen RAIN RFID



[Sabesan Sithamparanathan](#)

*****@***pervasid.com

RAIN Radio Frequency ID (Passive UHF RFID) technology has transformed various industries over the past two decades, yet the limitations of fixed readers in both accuracy and range have constrained deployment, leaving many organisations reliant on the more accurate but resource draining manual handheld readers or very expensive RFID active tags systems.

With increasing numbers of patients, shrinking budgets and growing treatment complexity, delivering healthcare has never been so challenging. Real-time visibility of the location of assets and inventory can considerably improve efficiency in hospital environments and ensure the required equipment or material is available in the right place at the right time.

Sabesan Sithamparanathan, Founder and CEO, [PervasID](#), shares three ways in which the near 100% detection accuracy and extended range of the next generation of fixed RAIN RFID readers can transform the healthcare sector.

1. Asset Tracking

Managing medical equipment and assets across an NHS Trust can be hugely complex and very expensive, especially for those items that require routine – and audited – maintenance. Furthermore, with staff needing continuous access to devices normally stored within the medical equipment library, accurate real time inventory records are key to minimise the impact on critical clinical time, as well as the overall utilisation and cost of these expensive assets.

Wide-area RAIN RFID tag readers are ideal for tracking medical equipment in hospital environments. And provide real-time visibility of the location of medical devices. This reduces time spent by staff searching for equipment and is essential for delivering healthcare, particularly when the equipment needed is critical. It also reduces the need for capital investment as availability and utilisation levels of existing devices are increased. With asset records updated automatically, there is no need for time-consuming manual scanning.

Traditional passive RFID gateway solutions often carry the risk of tags not being read while passing through a doorway. Utilising wide-area readers provide a significant improvement in accuracy, as they use a number of antennas to scan an area, such as a medical equipment library, engineering workshop, theatre or ward, from different angles to detect which equipment is in the area 100% of the time.

2. Inventory Management

RAIN RFID has already transformed inventory management in retail and it can do the same for healthcare. It supports medical inventory management solutions by providing accurate visibility of supply levels in real time to avoid stock-outs, reduce waste and minimise overstocking. Delivering consistently high read rates even where medical supplies are densely packed, systems can monitor stock tagged with passive RFID labels across multiple locations to enable rapid replenishment and efficient cost control.

It replaces manual methods for inventory management that are labour-intensive and prone to human error. In such a critical industry where administering and tracking the right medication is essential, the benefits of RFID in this area are invaluable. Data obtained through tracking also provides an audit trail for cost and operational analysis and planning.

3. Medical Record Tracking

Patient records are constantly on the move, with patients transferring between various wards or even hospitals. In a large hospital, locating the right record at the right time for the right patient can lead to delays in patient treatment and wasted time for clinical staff. Saving time is a simple as tagging patient records with passive RFID tags and having RAIN RFID fixed readers constantly reading the tags in the various document libraries, as well as at key check points around the hospital. This reduces time searching for patient files and in turn leads to a better patient experience. The ability for clinicians to locate health records quickly is invaluable, especially in urgent situations.

Essential Accuracy

The use of RFID tags in healthcare might appear an obvious solution but the limitations of fixed RFID reader technology, particularly in a 'tag dense environment has deterred adoption for many.

Traditional fixed readers have been unable to deliver the detection accuracy required to justify investment. In any area with a high number of RFID tags such as medical equipment storage, there are simply too many dead spots due to signal reflections: the more tags, the lower the accuracy. At best in these environments, detection capacity can reach 85-90%.

There is a compelling business case for healthcare providers: The ability to track medical equipment with far more accuracy and in almost real-time, eradicates the time wasted by staff attempting to locate essential assets. There is no need to invest in extra inventory to mitigate for asset management inefficiency, releasing much-needed funds; and essential maintenance activity can be achieved with far more control and efficiency. And with a government push towards all medical equipment manufacturers adding RFID tags to equipment at source, the ability to achieve near 100% accuracy using passive (battery-less), rather than the more expensive active (battery-powered) tags, along with the very latest RAIN RFID fixed reader technology, is incredibly compelling.

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