RADIO FREQUENCY IDENTIFICATION

RFID Institute.SA
Africa's Independent Advisory Centre
JOHANNESBURG · DURBAN · CAPE TOWN

2012

About the RFID Institute

❑ The RFID Institute is a vendor neutral body with years of experience in RFID system evaluation, design, development and deployment.

❑ We consistently seek to facilitate 100% effective RFID system deployments in South Africa and abroad that utilise best fit technologies, vendors and integrators.

❑ We are internationally accredited and associated with CompTIA & EPC Global.

❑ Some of our corporate clients are listed below…

About the RFID Institute

What the RFID Institute can do for you

Membership and Alliance Partner Programs

Access to Africa's only RFID Centre and Test Laboratory. Benefits include:

- Expert technical advice
- Updates on industry regulations and standards
- Access to exclusive research and surveys
- Case studies and pilot test reports

- Industry research
- White Papers
- Endorsement as an approved vendor
- Qualification and assessment of leads and product use
- Independent application assessments

Professional Services

Our expert team offers full professional services from surveying a site to implementation and any component in between. Benefits include:

- Analysis of requirements
- Site survey
- System design
- Vendor qualification
- Project implementation

Education

At our academy we provide specialised education to all organisations intending to implement or simply learn more about RFID. Programs include:

- RFID Basics Course
- RFID Implementation
  (including RFID+ Certification preparation)

Introduction

RFID Institute.SA
Africa's Independent Advisory Centre
JOHANNESBURG • DURBAN • CAPE TOWN

- ❑ RFID is **<u>not</u>** a homogeneous technology.

- ❑ Different variants have different capabilities.

- ❑ Tags can cost between R1 & R1,000.

- ❑ Readers can cost between R2,000 & R50,000.

- ❑ Many things require consideration...

- ▪ Available Technologies – what is the most appropriate technology for the clients specific needs;

- ▪ Environmental Considerations – does the physical environment present special challenges or requirements (eg. impact on medical telemetry);

- ▪ Business User Requirements – do all of the organisational stakeholders understand the capabilities of RFID and have all possible applications and user requirements been considered;

- ▪ Integration Constraints – can the selected technology integrate with legacy or planned ERP's and other systems (eg. SAP / HIS / e-HR);

- ▪ Organisational Impact – what will the organisational impact of the planned system be, taking into account processes, people and facilities;

- ▪ Standards and Interoperability – does the selected technology comply with international & domestic standards and is it suitably interoperable with other standards compliant technologies;

- ▪ Deployment and Maintenance Costs – is the selected technology competitively priced and reasonably maintainable with suitable longevity, and

- ▪ Financial and Non-financial Benefits – are the anticipated benefits properly quantified and do they mitigate the associated costs and risks

How does it work……

• RFID is a system involving electronic tags containing identification numbers or other data that is encoded on to an
Integrated Circuit (IC).

• A device called a Reader sends an electromagnetic signal to the Tag. Upon receiving the readers signal, the tag transmits code to the reader.

• By monitoring Tag ID's, the RFID System can track the presence and location of a tagged object as it moves through the organisation.
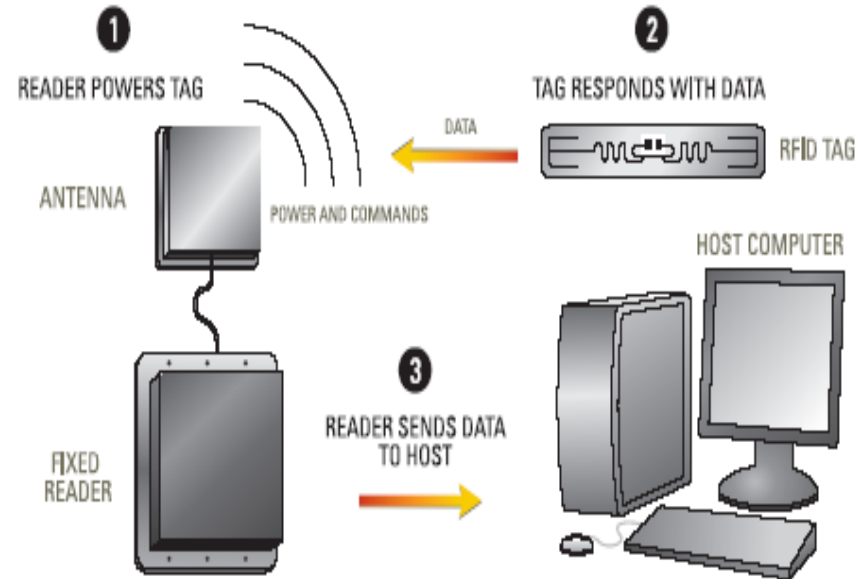
Why RFID .....

RFID	BARCODES
Storage capacity between 128 bytes and 8 kilobytes	Storage capacity of100 bytes
No line of sight or contact required	Require visual contact between scanner and barcode
Enhanced data security (authentication and encrypted data transfer)	No guarantee of security to data. Any scanner can read any barcode
Can operate in harsh, dirty and humid environments	Cannot be read when dirty or heavily scratched
Several tags can be read simualtaneously	Scanner can read only one barcode at a time
Read / write functionality (reprogramable)	Cannot reprogram the contents of a barcode

BARCODES

A barcode is a strip of bars and gaps that represent numbers. Barcodes typically encode a serial or stock keeping unit (SKU) number and identify a class, or type of product rather than identifying a single unit.

Uses of RFID

- ### Security and Authentication

  RFID stores data within identity badges, key chains and other items that provide access control for a secure area, thereby allowing only authenticated entry.

- ### Track and Trace

  Tracking the location of a particular object helps you monitor its movements. You can track critical items, pallets of products, personnel, and other items within the daily work process.

- ### Real Time Locating (RTLS)

  By placing readers at strategic designated zones, tags are automatically read and the location reported real time.

- ### Environment Sensing and Monitoring

  You can integrate RFID technology with devices that sense and monitor various environmental conditions.

General Benefits of RFID

- **Serialisation**

  Each item has a unique ID, therefore each item can be individually tracked.

- **Reduced Human Intervention**

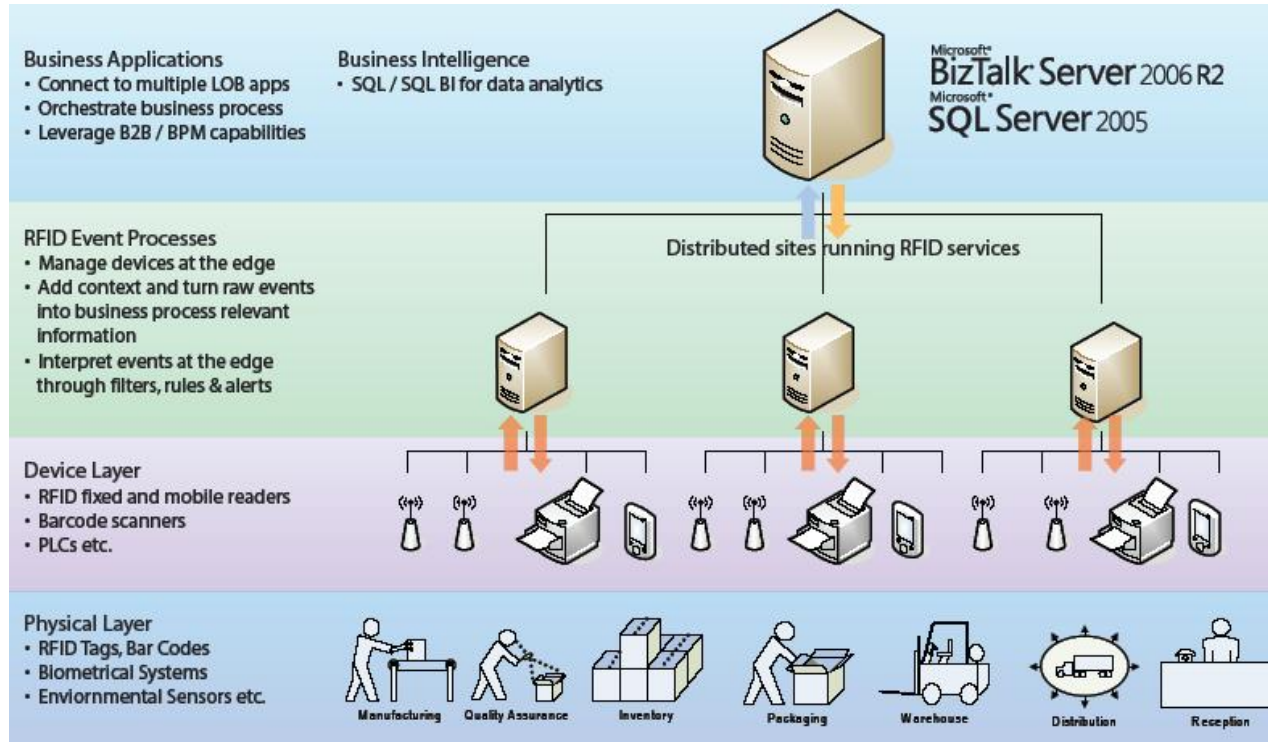 No human intervention is required. This reduces the error cost and labor involvement.

- **Better Time Management**

  As this is scanned automatically, many items are scanned simultaneously, thus more items are accurately scanned in less time.

- **Real Time information flow**

  The scanned information is updated "real – time" across the supply chain
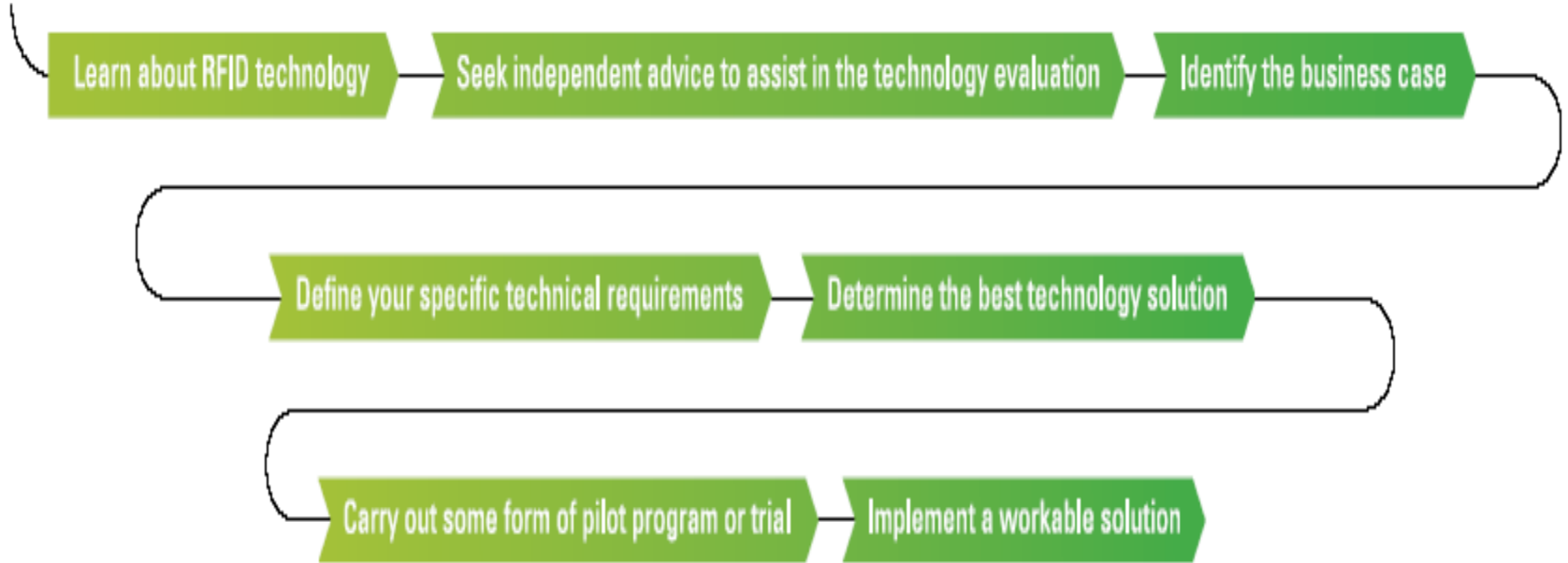
Typical System Architecture

RFID Applications

❑ All industry is affected worldwide in terms of the impact of RFID enabled applications.

❑ The real-time visibility of people, materials, equipment, machinery and processes are facilitating the following…

- Asset Management
- People / Asset Tracking & Locating
- Condition Monitoring
- Personnel Safety
- Time, Access & Security
- Track and Trace
- Logistics
- Operational Efficiency & Productivity
- Warehouse Management
- Environmental Monitoring
- Supply Chain Management
- Document Tracking
- Real Time Locating
- Automatic Identification

"YOU CAN'T MANAGE WHAT YOU CAN'T MEASURE"

Phased Approach

Learn about RFID technology

Seek independent advice to assist in the technology evaluation

Identify the business case

Define your specific technical requirements

Determine the best technology solution

Carry out some form of pilot program or trial

Implement a workable solution

Services

RFID Institute		RFID Project	
Analysis	**Feasibility**	**Design**	**Pilot Project**
Investigates the potential for RFID. Looks across the whole organisation. Generates a catalogue of potential applications.	Assesses the selected applications at operational level. Refines the business case. Generates high level pilot costing.	Develops a comprehensive design for the piloting of the selected RFID technology across all affected business and support functions.	Implements the RFID pilot as per the design.
•High level analysis of organisation •Interview Stakeholders •Identify all potential applications •Identify other RFID projects in play •Prioritise needs •Build order of magnitude business case •Present findings and recommendations •Agree RFID application/s for feasibility analysis	•Identify all stakeholders •Conduct high level site survey •Select appropriate technology for testing •Generate site specific benefits case •Generate site specific costing model •Propose RFID pilot design based on order of magnitude cost benefit	•Engage all stakeholders and initiate change management strategy design and partial implementation •Map, modify and validate all affected work processes •Identify all appropriate resources and facilities and align with affected systems •Contextualise RFID within the existing information systems •Develop evaluation methodology and establish base •Complete comprehensive site survey •Test and validate technology	•Expedite change management strategy •Appoint vendors •Install technology •Install systems •Install facilities •Appoint and train resources •Initiate information management •Initiate evaluation methodology •Run all systems •Refine systems •Measure and control •Evaluate impact •Report with
4 WEEKS	4 WEEKS	6 WEEKS	12 WEEKS

PHASE

OBJECTIVE

DELIVERABLES

Typical Project Approach
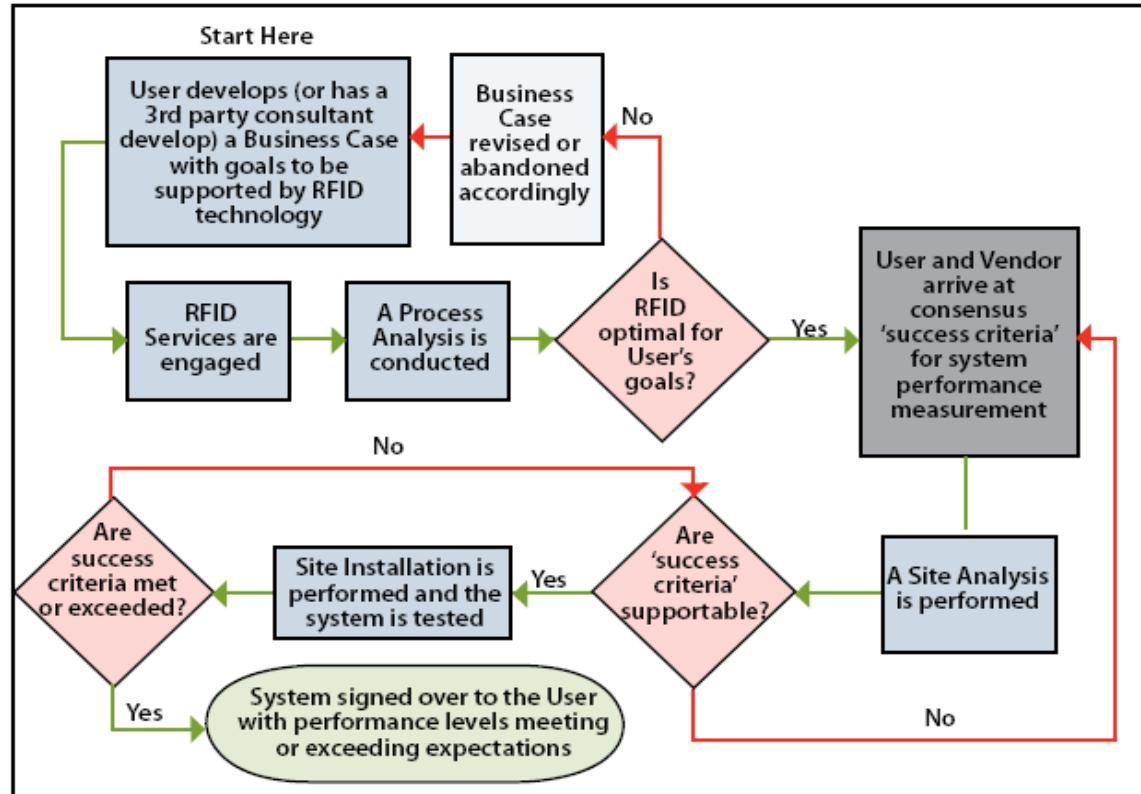
Analysis (Pre – Feasibility)

An RFID Pre-Feasibility Analysis is initiated in order to establish the following:

- The applications for RFID technology within your organisation

- The most suitable RFID technology for the identified applications

- The most suitable deployment model for enabling the identified applications

- The potential benefits of deploying RFID technology to enable the identified applications

- The costs associated with deploying RFID technology to enable said applications

- The most appropriate next steps

Phased Approach (Services)

RFID Institute.SA
Africa's Independent Advisory Centre
JOHANNESBURG · DURBAN · CAPE TOWN

FEASIBILITY

- ❑ Understand the technology
- ❑ Identify all priority applications
- ❑ Assign appropriate technologies
- ❑ Establish deployment costs and benefits

DESIGN

- ❑ Select applications for deployment
- ❑ Design system and prepare RFI
- ❑ Qualify vendors and distribute RFI

DEPLOYMENT

- ❑ Select and assign vendors
- ❑ Manage Deployment

Design & Deployment Elements

RFID Institute.SA
Africa's Independent Advisory Centre
JOHANNESBURG · DURBAN · CAPE TOWN

RFID System Design	RFID System Deployment
3 to 6 Weeks	3 to 6 Months

Project Communications – Steercom; Integration; Project Management

Change Management Strategy Design & Deployment

Process Engineering	Analyze & Design	Draft Procedures	Develop Training Material	Conduct Training				
Technology & Comms	Functional Specification	Technology Testing	Technology Specification	Vendor Qualification	Procurement	Middleware & Software	Install Hardware	Test, Integrate & Commission
Application Development	Detailed User Requirements	Application Analysis & Specification	Application Selection Criteria	Application Procurement	Programme Application	Application Testing	Train & Install	Review & Optimise
Organisation & Facilities	Organisation Design	Facilities Design	Recruitment & Selection	New Way of Working Installation	Supervisor Mentoring	Design Compliance Audits	Conduct Compliance Audits	
Information Management & Evaluation	Information Requirements Design	Management Cycle Design	Management Reporting System Design	Information System Integration	MC and MRS Testing	MC & MRS Installation	Effectiveness Review	MC & MRS Optimisation
Benefits Case Tracking	Benefits Case Tracking Design	Benefits Case Evaluation	Base Data Source Verification	Benefits Case Tracking	Benefits Case Evaluation	Benefits Case Refinement		

Recommendation

It is the recommendation of the RFID Institute that the services of the Institute be employed to design an RFID System which takes into full account the End User current and future RFID application requirements, which integrates fully with the End User ERP and other systems and which applies those technologies most appropriate to the End User.