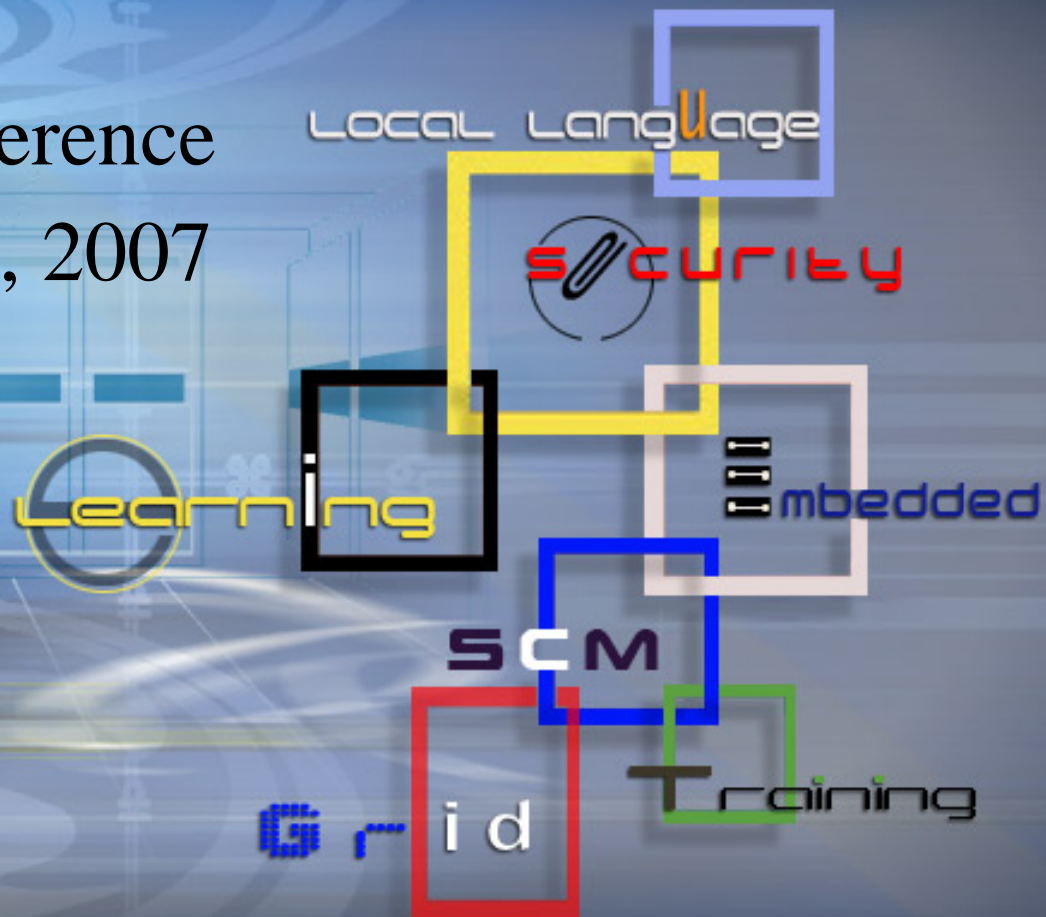


# PRESENTATION

6<sup>th</sup> AFIT Conference  
October 22-23, 2007  
Tokyo, Japan



H Y D E R A B A D

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A Scientific Society of Ministry of Communications & Information Technology,  
Government of India

# India

## Geography & People

- The Indian peninsula is separated from mainland Asia by the Himalayas. The Country is surrounded by the Bay of Bengal in the east, the Arabian Sea in the west, and the Indian Ocean to the south
- Coastline of 7,516.6 km encompassing the mainland, Lakshadweep Islands, and the Andaman & Nicobar Islands
- The mainland comprises of four regions, namely the great mountain zone, plains of the Ganga and the Indus, the desert region, and the southern peninsula
- India's population, as on 1 March 2001 stood at 1,028 million (532.1 million males and 496.4 million females)
- According to the provisional results of the 2001 census, the literacy rate in the Country stands at 64.84 per cent, 75.26% for males and 53.67% for females.
- There are 22 National Languages have been recognized by the Constitution of India, of which Hindi is the Official Union Language. Besides these, there are 844 different dialects that are practiced in various parts of the Country.

# India

## Economy

- India is today one of the six fastest growing economies of the world. The country is ranked fourth in terms of Purchasing Power Parity (PPP) in 2001
- The second quarter (July-September) of the financial year 2005-06 registers a growth rate of 8 percent
- As of September 2005, the GDP per capita of the Country stood at US\$ 543
- GDP Composition by Sector -Services 56%, Agriculture 22%, and Industry 22% (As of September 2005)
- Industry -Steel, garments, petroleum, cement, machinery, locomotive, food processing, pharmaceutical products, mining, etc.

- Established in March 1988, as a Scientific Society of the Department of Information Technology, as primarily an **R & D** institution involved in the **Design, Development** and **Deployment** of **advanced Information Technology (IT)** based solutions



- C-DAC has developed and supplied a range of **high performance parallel computers**, known as the **PARAM** series of **Supercomputers**

- Over the years, C-DAC has diversified its activities to address requirements in various areas, like **Financial and Capital market simulation and modeling, Network and Internet Software, Health-care, Real Time Systems, e-Governance, Data Warehousing, Digital library, Artificial Intelligence and Natural language processing**

प्रगत संगणन विकास केन्द्र  
CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING

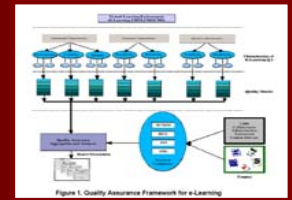


# Initiatives @ C-DAC Hyderabad

## Available Solutions/Products



## Ongoing Projects



Proficiency in Multilingual Technologies is C-DAC's forte as can be seen in our products

Ubiquitous Computing is the new area of R&D that CDAC has initiated. Wireless Sensor Networks forms the basis of this R&D complemented by other technologies

# AFIT Survey Results

## General Category

### IT Infrastructure

- Fixed telephone ownership rate: **3.97%** of the total population, which amounts to about 39734219 Subscribers as on August 2007. The Telecom Regulatory Authority of India (TRAI) governs the telecommunications department.
- Cellular phone ownership rate: **20.128%** which is about 201 Million Subscribers as on August 2007. TRAI governs this statistics too.
- No of PCs owned: **6341451** Sales for the fiscal year 2006-2007. There is no authoritative body to oversee this information. Manufacturers Association for Information Technology (MAIT) works with various departments of the Ministry to maintain this information.
- Internet Dissemination Rate: TRAI maintains the internet coverage for India. In their report for the year 2005-2006, the dissemination of internet was understood to be **69.35 lakh**.

# AFIT Survey Results

## General Category

### Human Resource

IT Human Resource: **2367000** Human Resources in IT/ITES. This information is maintained by the Department of Information Technology and is bound to increase in the coming months

Logistics Service Human Resource: **Insufficient**. With rapidly changing times ahead, the logistics sector is going to face acute shortage of skilled manpower. This is specific to the part of logistics that deals with transportation and freight

### EDI Dissemination Rate

B2B in the form of e-Commerce amounts to **Rs 40000 Crore** according to Shri. Kiran Karnik, President of NASCOM India



# AFIT Survey Results

## Logistics Related

### Legal Systems

- Laws and Regulations related to Logistics: Multiple bodies are responsible for the governing of logistics in India. The transportation regulations for logistics are governed by **Ministry of Shipping , Road Transport and Highways**. Procurement of Raw Materials is handled by the Export Import Act of India, 1998. The authoritative body which implemented the **EXIM Policy** is the **Ministry of Commerce & Industry**
- Laws and Regulations related to Bonded Warehousing: The **EXIM Policy** also covers regulations towards Bonded Warehousing
- Ratification of FAL Treaty or Extended SOLAS Treaty: **Ratified**. The Shipping Cooperation of India which is a Government of India undertaking has introduced a Safety Management System by setting up an International Safety Management (ISM) Cell which has developed, structured and documented procedures in compliance with the International Management Code for Safe Operation of Ships and for Pollution Prevention (ISM Code) in accordance with the resolution A.788(9) of the International Maritime Organisation (IMO) and SOLAS, Chapter IX

# AFIT Survey Results

## Logistics Related

### Government Promotion Policies

- Introducing policy measures to represent to the railways to endow a favored preferential treatment to cement on par with coal and petroleum products
- Promoting cement specific inland waterways and encouraging development of inland ports and handling facilities dedicated to cement
- Identifying major/minor ports that would be able to support the requirements of cement exports from major clusters
- Removing the restrictions on constructing port based cement handling facilities

### Logistics Cost/GDP Ratio

- Logistics costs in India are estimated to be around **13%** of the **GDP**, which comes to around US\$94 billion in 2005-06. However, India's spending on logistics industry is much higher than the developed economies like the US (9.5%) and Japan (10.5%)

### Current Situation and Issues on Logistics

- Cost Reduction, Road Transport is not very well organized, Frequent Stoppage of vehicles, Overloading, Taxation, Infrastructural Bottlenecks, Human Resource Management

### Expectations toward applying RFID for logistic management

- Cost Reduction, Lead Time Reduction, Efficient control of inbound traffic, Automated Management of Logistics

# AFIT Survey Results

## RFID Related

### Radio Law

- The Radio frequency band allocated to India for RFID is 865 – 867 Mhz. This band has been freed solely for RFID since March 2005. The power has been set to 4W.

### Governing Body

- Wireless Planning & Coordination Wing, Ministry of Communications and Information Technology, Department of Telecommunications.

# Supply Chain Management @ CDAC for SME sector

## ● Phase-I (Completed)

- Developed an affordable SCM System (e-Savya) with the functionalities of Inventory Management, Sales, Procurements, Shipping & Receiving and Manufacturing
- Field Trials/  $\beta$  -testing at two SMEs
- Presently working on customization to different domains like textiles (jointly with BITRA) and Tea Industry
- Two awareness programs to bring awareness among SME's on the importance of effective Supply Chain Management

## ● Phase-II (Proposed)

- New proposal with enhanced SCM features and customization is submitted to DIT
- RFID included in proposal to enhance the Supply Chain.
- Collaboration with SISI to propagate e-Savya

# Small and Medium Scale Enterprises (SMEs)

- SMEs play a catalytic role in the development of most economies
- This claim may be justified by the increasing number and rising proportion in the overall product manufacturing, exports, manpower employment, technical innovations and promotion of entrepreneurial skills
- The table laid below reflects the contributions of SMEs in some developed economies

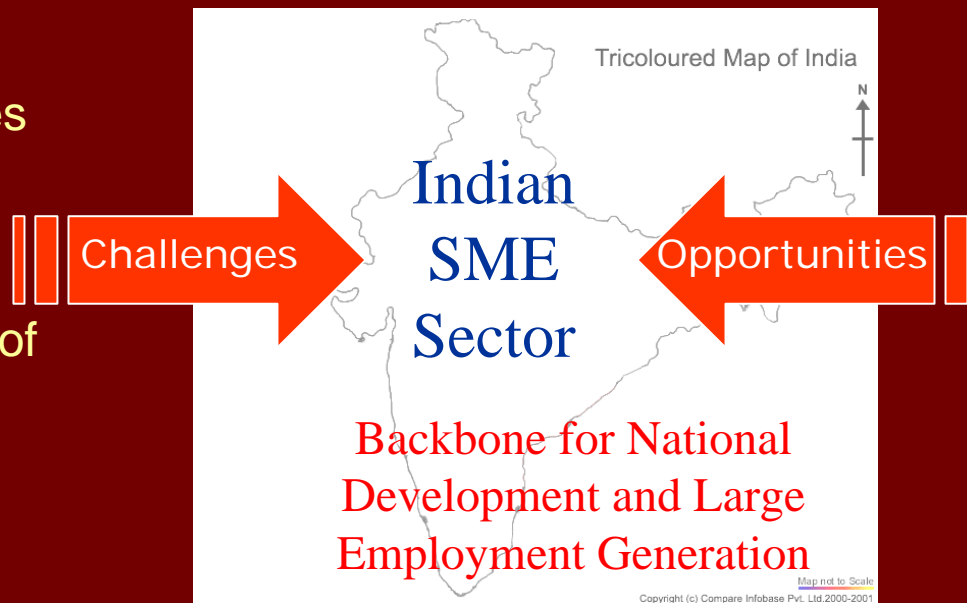
| <b>Country</b> | <b>Employment</b> | <b>Manufacturing Sector Output</b> |
|----------------|-------------------|------------------------------------|
| USA            | 67%               | 61%                                |
| Japan          | 80%               | 72%                                |
| France         | 53%               | 80%                                |
| Korea          | 74%               | 61%                                |

# Indian SME Sector

- In India, the SME sector follows agriculture as the second largest man power employer and the output from the SSI sector constitutes 40% of the share of the value added in the manufacturing sector and 1/3<sup>rd</sup> of the National Exports
- India defines the SME as an enterprise which ranges the investment between 10 and 100 million Rs.
- The Tenth Five Year Plan (2002-2007) has set a target of 8% growth per annum in GDP in order to bring down the poverty ratio to 11%
- In order to meet these requirements, heavy reliance is placed on the SME sector, and the need warrants for an efficient chain of events in the SME

# The Indian SME Sector: *Challenges and Opportunities*

Financial  
Constraints/risks  
Research &  
Development  
Government Policies  
Corruption,  
Harassment  
Lack of awareness of  
Global trade laws  
Management  
Globalization of  
Markets  
Big companies using  
advanced tools  
SMEs not able to  
afford



Advances in IT  
Skilled Manpower  
Manufacturing &  
Business Process  
Outsourcing  
Large Customer  
Base

Enhance the Competitiveness of the Indian SME sector through effective Supply Chain Management

## e-SAVYA –*The Solution*

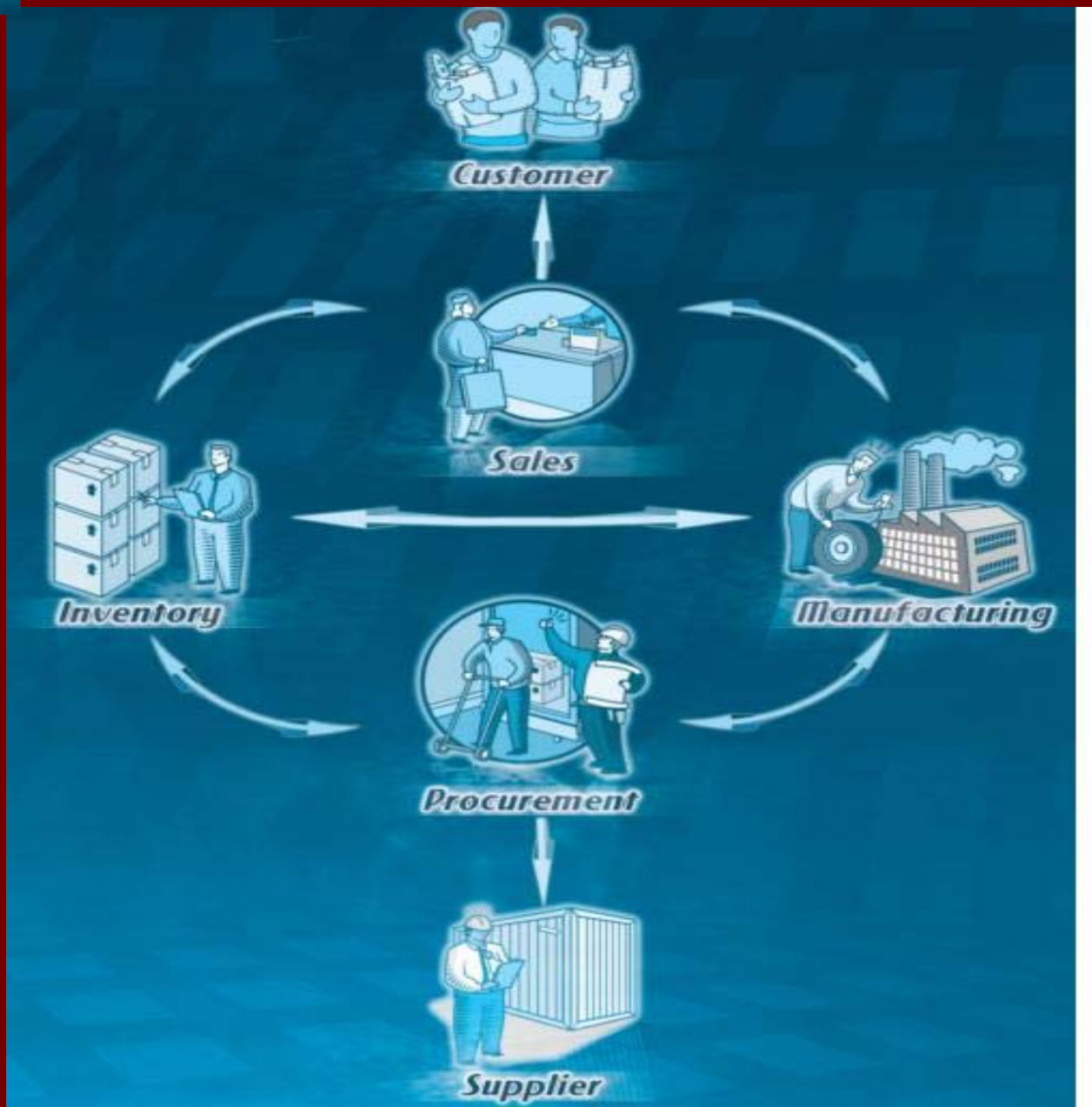
- ✓ Better Inventory management resulting in overall reduction in inventory throughout the chain
- ✓ Improved Supplier Customer integration
- ✓ Better aggregate planning across the chain
- ✓ More informed decisions because of wider access to information



# Modules in e-SAVYA

- Inventory Management
- Procurement
- Sales
- Manufacturing
- Shipping & Receiving
- Authentication Framework
- Work Flow Management System

# System Interaction



# Limitations and Future Enhancements

- Manual Entry at each module
- Manual Tracking of shipments
- Inventory has to maintain a stock of supplies, which render the system blocked

**RFID Technology may prove a great boon in enhancing the Supply Chain**

# RFID Applications in India

## Department of Information Technology (DIT)

### Projects

- A project has been initiated at CDAC Noida and IIT Kanpur for joint development of one pilot application using RFID technology
- As a part of this project, preliminary work on setting up of a state of the art RFID lab in the country will be progressed with an objective to make this lab as the 8 th Auto ID Lab in the world

### Future Collaborations

- A common area has been identified for collaborative Research with the European Union (EU). RFID is one such mentioned area
- India and Japan have constituted an ICT Forum comprising of top companies, academia and government officials from both India and Japan. Areas of cooperation identified are Broadband Connectivity, Mobile Communication, E-Governance, Information Security, R&D and Ubiquitous Computing and Ubiquitous Network Technology

# RFID Applications in India

## Department of Road Transport and Highways

### Project

- The Minister of Road Transport and Highways, Government of India, T.R. Baalu launched a pilot project for radio frequency identification (RFID)-based vehicle tracking project [3] on the Delhi-Jaipur highway of India
- Under the project, 68 buses of Rajasthan State Road Transport Corporation (RSRTC) plying on the highway have been fitted with RFID tags and readers have been placed to track the vehicle movement along the highway, whereby their movement is being tracked, monitored and managed

## Centre for Railway Information Systems (CRIS)

### Project

- The Centre for Railway Information Systems (CRIS) of Indian Railways plans to use Radio Frequency Identification (RFID) technology to improve the wagon management system of the Railways. CRIS proposes to have a RFID tag or chip embedded in all the wagons and provide sheds with hand-held devices that would read these chips and thus register the data

# RFID Applications in India

## Wipro's RFID solutions for Manufacturing

### Project

- Wipro's Manufacturing Solutions' Center of Excellence (CoE) has a dedicated team of consultants who help customers define, analyze, design and implement RFID solutions. Amongst others, their RFID solutions include a Wireless Yard Management System for a large automobile manufacturer and a Real-Time WIP Tracking System for an electronic component product manufacturer
- Wipro Technologies, the global IT services division of Wipro, announced the launch of its RFID-enabled (radio frequency identification) concept store at its campus. The store demonstrates automation of retail transactions through the implementation of RFID technologies

## Infosys and RFID

### Project

- Infosys Technologies (NASDAQ: INFY) today announced that it has successfully implemented SAP® solutions for RFID for CHEP's Global Track and Trace System. CHEP, the global leader in pallet and container pooling services, expects to use this system to provide real-time visibility to its customers for their products as well as for tracking assets on which these products are shipped

# RFID Applications in India

## Apparel Tracking Using RFID -Pantaloon

- Pantaloon Retail (India) has piloted an RFID project at one its warehouses in Tarapur using 1,000 RFID tags. The company is starting from where it matters the most by implementing the technology at the warehouse

## RFID in the Pharmaceutical Industry

- (Ranbaxy), a wholly owned subsidiary of Ranbaxy Laboratories Limited, India's largest pharmaceutical company, has chosen Acsis to implement a radio frequency identification (RFID) tracking system to meet Wal-Mart's RFID mandate for its Class 2 pharmaceutical suppliers

## Animal Tracking

- The Kopordem farm at Valpoi in Sattari Taluk in North Goa has become the first farm in India to use RFID microchips that can be injected into the animal's body. While 50 cows from the farm have been injected with the RFID capsule under a pilot project for the state government's Animal Husbandry Department, the device will be implanted into 500 more cows at different state government farms soon

## Ticketing

- More recently, [NXP Semiconductors](#), [Smartag](#) and Gemini Traze have collaborated to implement a "hands-free" RFID ticketing solution for a sporting event

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- <http://www.expresscomputeronline.com/20050829/management01.shtml>
- [www.acsisinc.com/pdf/prpdf/060204.pdf](http://www.acsisinc.com/pdf/prpdf/060204.pdf)



**THANK  
YOU**

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# Existing Standards for Applications

- Animal Identification
  - ISO 11784: ‘Radio-frequency identification of animals — Code structure’
  - ISO 11785: ‘Radio-frequency identification of animals — Technical concept’
  - ISO 14223: ‘Radio-frequency identification of animals — Advanced transponders’
- Contact less smart cards
  - ISO 10536: Close coupling supporting ranges of 0–1 cm
  - ISO 14443: Proximity coupling ranging between 0–10 cm
  - ISO 15693: Vicinity coupling for higher ranges 0–1m
- ISO 69873 – Data Carriers for Tools and Clamping Devices
- ISO 10374 – Container Identification
- ISO 15961: ‘RFID for Item Management: Host Interrogator; Tag functional commands
- and other syntax features’
- ISO 15962: ‘RFID for Item Management: Data Syntax’

# Existing Standards for Applications

- ISO 15963: ‘Unique Identification of RF tag and Registration Authority to manage the uniqueness’
  - Part 1: Numbering System
  - Part 2: Procedural Standard
  - Part 3: Use of the unique identification of RF tag in the integrated circuit.
- ISO 18000: ‘RFID for Item Management: Air Interface’
  - Part 1: Generic Parameter for Air Interface Communication for Globally Accepted Frequencies
    - Part 2: Parameters for Air Interface Communication below 135 kHz
    - Part 3: Parameters for Air Interface Communication at 13.56MHz
    - Part 4: Parameters for Air Interface Communication at 2.45 GHz
    - Part 5: Parameters for Air Interface Communication at 5.8 GHz
    - Part 6: Parameters for Air Interface Communication — UHF Frequency Band
- ISO 18001: ‘Information technology — RFID for Item Management — Application