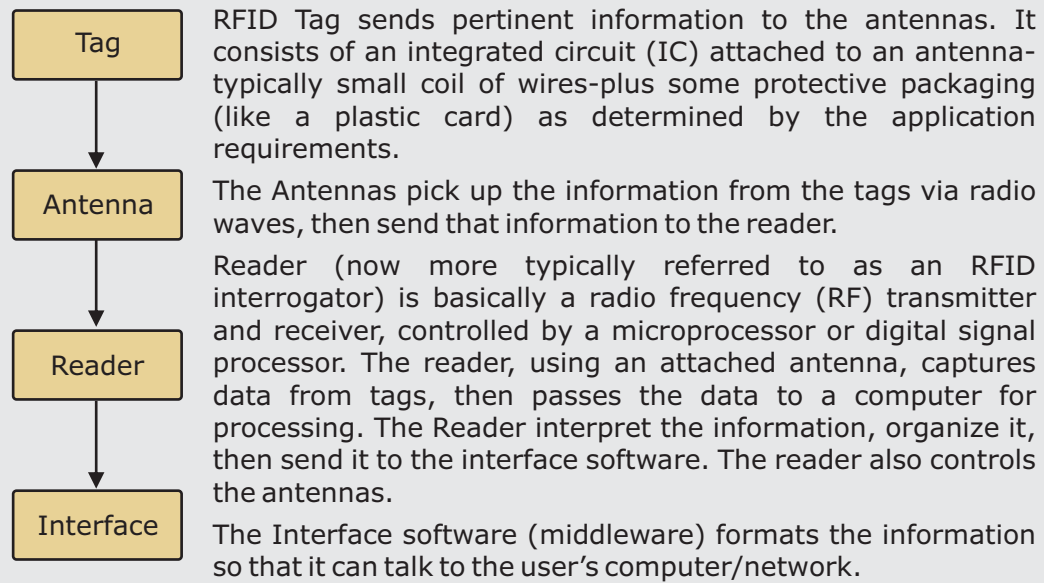


## Introduction

**Radio-Frequency Identification (RFID):** is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader.

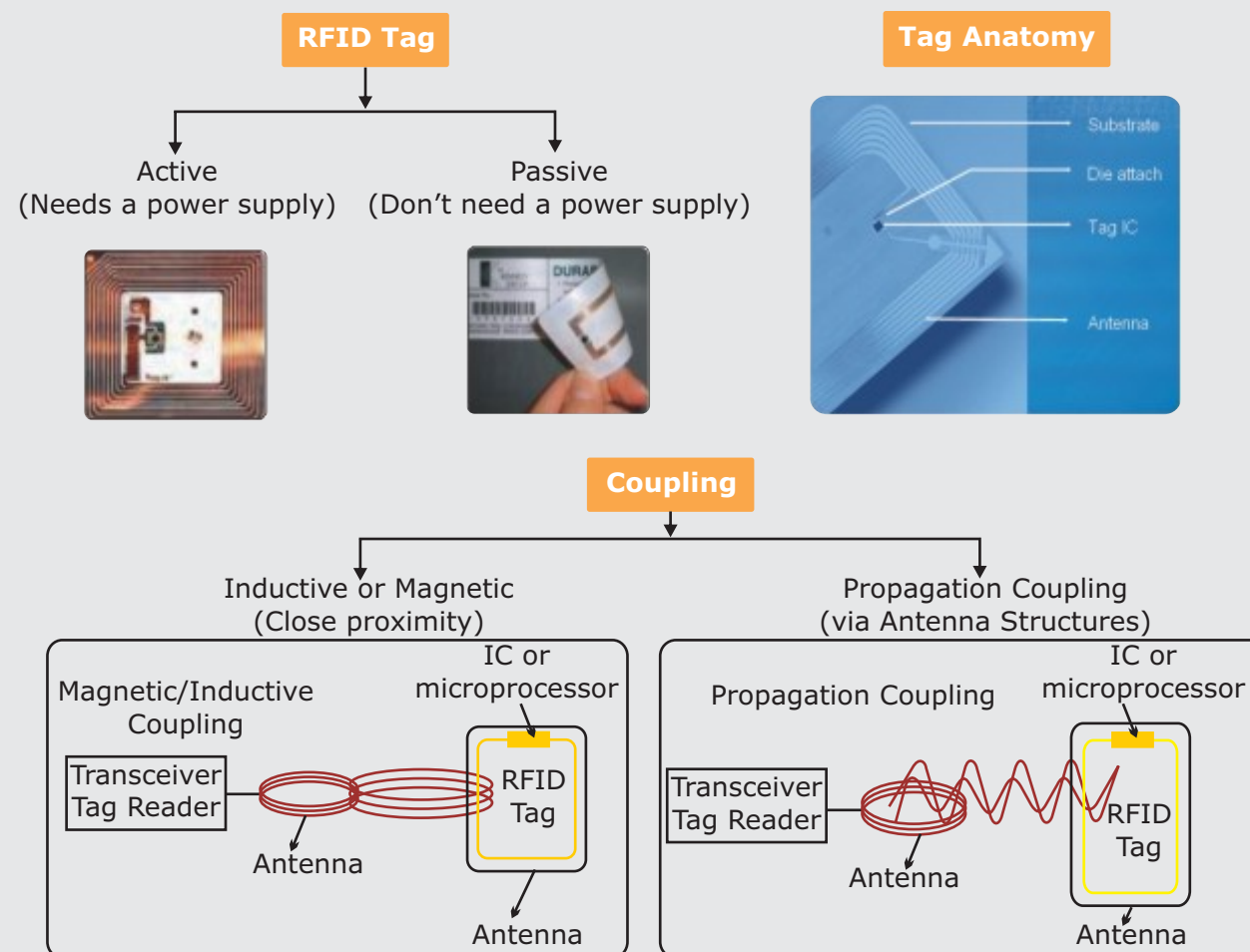
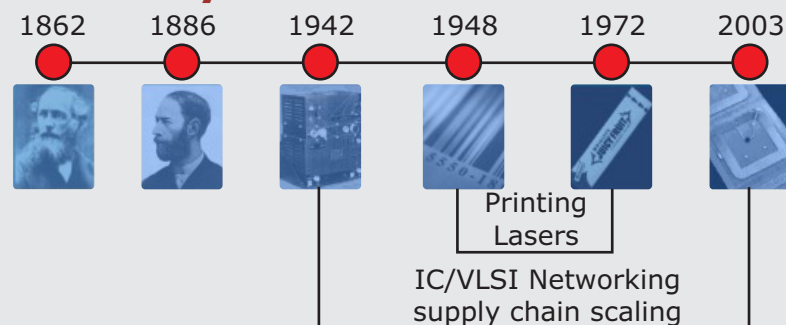
There are generally two types of RFID tags: active RFID tags, which contain a battery, and passive RFID tags, which contain a battery, and passive RFID tags. Which have no battery, Today, RFID is used in enterprise supply chain management or improve the efficiency of inventory tracking and management.

## RFID System Components



**Dr. Jerry Landt:** is god father of Radio Frequency Identification (RFID) technology. He is one of the five scientists from Los Alamos National Laboratories that developed this technology for the federal Government. As Trans Core's chief scientist, Landt is responsible for leading the technical developments of radio frequency identification systems. In 1984, Landt was one of the five co-founders of Amtech Corporation and served as vice president of research and development. He served on the Amtech board of directors from May 1989 to August 1998. Landt has authored more than 60 technical papers and been awarded twelve U.S. Patents. Before joining Amtech, Landt worked for nine years at the Los Alamos National laboratory in New Mexico. Landt earned a Ph. D. in electrical engineering from Stanford University, a master of science degree and a bachelor of science degree in electrical engineering from the South Dakota School for Mines and Technology.

## A Brief History of RFID



## Different types of Tags



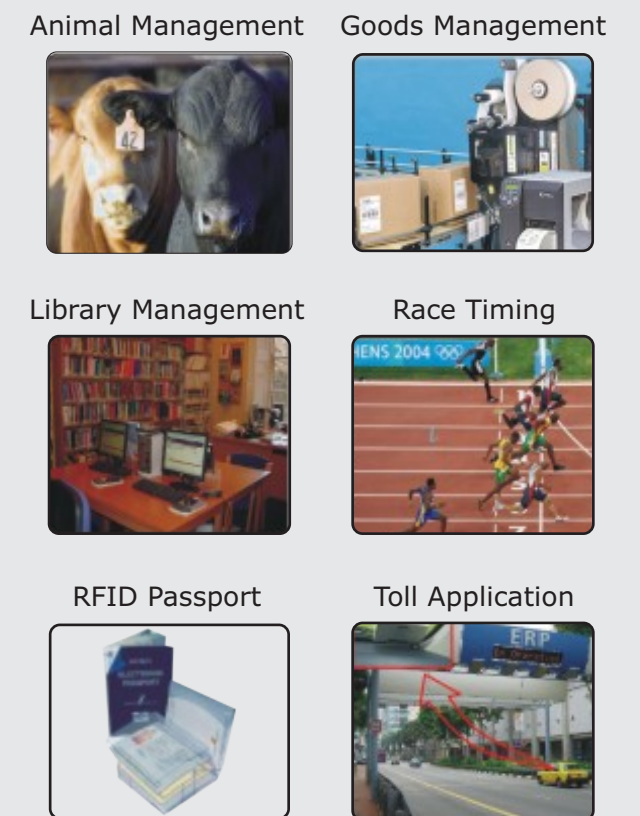
## Different types of Readers



## Frequency Bands & Applications

Frequency Band	Characteristics	Typical Applications
Low 100-500KHz	Short read range, Inexpensive, low reading speed	Access control, animal identification, inventory control, car immobilizer
Intermediate 10-15MHz	Medium read range, potentially Inexpensive, medium reading speed	Access control, smart cards
High 850-950 Mhz, 2.4-5.8 GHz	Long read range, High reading speed, Line of sight required, Expensive	Car monitoring, toll collection systems.

## Applications



## Advantages of RFID over Barcode technology

- ! No line of sight requirement
- ! The tag can stand a harsh environment
- ! Long read range
- ! Portable database
- ! Multiple tag read/erite
- ! Tracking people, items, and equipment

## Technical Problems with RFID

- ! RFID standards: No global standards present.
- ! RFID system can be easily disrupted
- ! RFID Reader/Tag Collision
- ! Security, privacy and ethics problems with RFID

## The Future of RFID

- ! RFID tags on frozen foods instruct the microwave how to cook them
- ! Shoppers walk through an antenna bay are automatically checked out
- ! Milk notifies the refrigerator when it's expiration data has hit.
- ! RFID Tags on cloths instruct the washing machine on how to wash them.
- ! RFID Tags on drug bottles are now being used as anti-counterfeiting devices
- ! Prescription bottles that remind you if you forget to take a pill
- ! RFID Tags could replace the postage stamp.



10006  
PC Based Motorised  
Antenna Trainer



10020  
Antenna Trainer



10020M  
Motorised Antenna Trainer



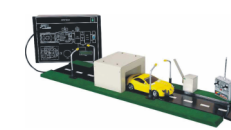
10203  
Satellite Communication  
Trainer



10204  
Radar Trainer



10212  
GPS Trainer



10917  
RFID Trainer



52072A  
Arduino Development  
Board