

## QUICK SEARCH FIRST COLUMN KEY

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## RFID Definitions, Acronyms and Abbreviations

	Term	Description	Additional Information	Comments
R	6LoWPAN	Specification for high-level communication protocols using radios based on the IEEE 802.15.4 standard for wireless sensor networks. Supports IPv6 address.		
R	Active tag	RFID tag with an internal battery or other on tag power source. The tag uses the onboard power source to power the transmitter to send back information to the reader.	RFID device having the ability of producing its own radio signal not derived from an external radio signal. To generate a radio signal active tags must employ some source of power. Traditionally this has been accomplished by integrated batteries, although designs exist for such devices that employ solar power or harvest ambient energy from the surrounding environment.	An RFID device which use a battery to transmit a signal to a reader or can gather energy from other sources and which transmits its identity and possibly other data at intervals and at a preset frequency. It will be read by any receiver of the same frequency within the active tags transmission range. Active tags can have read ranges of up to 100 meters or more. Some active tags can communicate with other compatible active tags. Some active tags incorporate sensors. Ref.: See BAP tags. Ref.: Passive tags.
R	Active tag	An RFID tag that uses a transmitter to return information as opposed to reflecting a signal back from the reader as a passive tags do. Most active tags are battery powered, though they may gather energy from other		

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	Term	Description	Additional Information	Comments
		sources. Typical, active tags can be read from up to 100 meters.		
R	Agile Reader	An RFID reader that reads tags operating at different frequencies or using different methods of communication between RFID tag and reader.		
R	AIDC	Automatic identification and data capture. Technology associated with the creation and acquisition of machine readable data.	The primary technologies are bar codes and Radio Frequency Identification (RFID). It also includes SmartMedia, Biometrics, sensor networks and other automatic identification technologies.	Further technologies to be added. Seek further input.
R	AIDC	Automatic identification and data capture. A broad term that covers methods of identifying objects, capturing information about them and entering it directly into computer systems without human involvement. Technologies normally considered part of auto-ID include bar codes, biometrics, RFID and voice recognition.		
R	AIM	Automatic Identification Manufacturers. Association for Automatic Identification and Mobility. Global trade association that provides products and services	An international organization whose mission is to grow a worldwide market for Automatic Identification and Data Capture (AIDC) products and services through concerted action to set international standards, increase global awareness of AIDC solutions, and identify and educate	<a href="http://www.aimglobal.org/">http://www.aimglobal.org/</a> Further clarification from AIM.

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	Term	Description	Additional Information	Comments
		related to data collection, automatic identification, and information management systems.	current and potential new users on effective application of the technology.	
I	AIM	Association des Industrie de Marque (European Brands Association)	AIM represents the branded goods industries in Europe on key issues which affect the ability of brand manufacturers to design, distribute and market their brands. AIM's membership groups 1800 companies of all sizes through corporate members and national associations in 22 countries.	<a href="http://www.aim.be/index.htm">http://www.aim.be/index.htm</a>
R	Air Interface Protocol (AIP)	Rules that govern how RFID tags and RFID readers communicate.		
R	ANSI	The American National Standards Institute. A non-government organization responsible for the coordination of voluntary national (United States) standards.		
O	ANSI Variant	The American National Standards Institute. A non-government organization responsible for the coordination of voluntary national (United States) standards. Object type derived from a basic (general) object type. Variants are intended to exist at the same time and require simultaneous management, while versions		Ref.: Version. Ref.: Variant.

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		follow each other sequentially in time. Versions can exist at the same time, depending on how older versions are phased out.		
R	Antenna	The antenna is the physical element of an RFID tag or RFID reader system, used to emit an electromagnetic field signal and/or receive radio energy from an electromagnetic field.	There exists a wide variety of antenna each adapted to the technology, associated range of devices and in many cases the type of general or specific application requirements. Passive RFID tag antennas also referred to as inlays or inlets.	The conductive element to send and receive tag data. Passive low-frequency tags (135 kHz) and high-frequency tags (13.56 MHz) use a coiled antenna that couples with the coiled antenna of the reader to form a magnetic field. Readers have antennas that are used to emit radio waves. The RF energy from the reader antenna is “harvested” by the tag antenna and used to power the tag microchip to reflect its signal back to the reader. Ref.: Dipole Ref.: Dual dipole Ref.: Linear-polarized antenna Ref.: Slotted antenna
R	Antenna gain	The power ratio at the input of a loss-free reference antenna to that supplied to the input of the given antenna to produce, in a given direction, the same field strength at the same distance. Expressed in decibels. The higher the gain the more energy output. Higher gain antennas		

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		can read RFID tags from farther away.		
R	Anti-collision	Preventing interfering of radio waves from different compatible tag devices. Anti-collision algorithms are also used to read more than one tag in the same time. Anti-collision procedures are used in communication networks sharing one medium to avoid transmission interferences. In RFID-scenarios they are used to enable data transmission without mutual interference from several transponders to a single reader.	The anti-collision procedures (e.g. Binary Tree, Slotted ALOHA) to be used are defined in the air-interface definitions of the corresponding RFID standards.	
R	Anti-collision	A general term used to cover methods of preventing radio waves from one device from interfering with radio waves from another. Anti-collision algorithms are also used to read more than one tag in the same reader's field.		
R	API	Application Programming Interface. The complete communication link between a Reader and a Tag, including the physical layer, collision arbitration algorithm, command		

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		and response structure, and data-coding methodology.		
R	Applicator	A label-printing device to print and apply pressure-sensitive labels to RFID tags. Pressure sensitive labels consist of a substrate and an adhesive. Used for shipping, content, graphic images or complying with standards such as UPC or GS1.		
I	ASCII	American Standard Code for Information Interchange. The code is used in the transmission of data. It consists of eight data-bits used to code each alphanumeric character and other symbols.		
I	ASCII	American Standard Code for Information Interchange. The code is used in the transmission of data. It consists of eight data-bits used to code each alphanumeric character and other symbols.		
I	Asset tracking	The most common RFID tag application. RFID asset tagging increases asset utilization, identifies the last known asset user, reduces lost items and automates maintenance routines.		

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I	ATEX	The EU ATEX (ATmosphere EXplosible) directives provide the technical requirements to be applied to equipment intended for use in potentially explosive atmospheres.		
R	Authentication	In RFID, identify verification or authentication is used in two ways. In non-contact smart cards or other payment systems the RFID reader must ensure the transponder is a valid device and is not being used with the intent to commit fraud.		
R	Auto-ID Labs	Academic entity headquartered at Massachusetts Institute of Technology (MIT) chartered to research and develop EPC technologies and applications originally, along with five other research universities around the world: the University of Cambridge in the United Kingdom; the University of Adelaide in Australia; Keio University in Tokyo, Japan; Fudan University in Shanghai, China; and the University of St. Gallen in Switzerland.	See <a href="http://www.autoidlabs.org">www.autoidlabs.org</a> for additional information including updates to the labs and their progress.	
R	Auto-ID Center and Labs	A non-profit collaboration between private enterprise and		

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		researchers for the development of a global tracking network using RFID tags carrying Electronic Product Codes (EPCs). The center closed in Sep. 2003. The center's research continues at Auto-ID Labs in universities around the world, and is headquartered at the Massachusetts Institute of Technology.		
R	Automatic Identification	Term which encompasses various technologies that identify objects and/or people. Identification of objects and/or people by means of identification devices and electronic information processing.	Refer to AIDC for list of technologies.	Often to reduce the need for human intervention or to introduce additional process control.
R	Automatic identification	Methods to collect data and enter into computer systems without human involvement. Technologies normally considered part of auto-ID include bar codes, biometrics, RFID and voice recognition.		
R	Backscatter	A method of communication between UHF passive tags (ones that do not use batteries to broadcast a signal) and readers. RFID tags using		



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		backscatter technology reflect back to the reader radio waves from a reader, usually at the same carrier frequency. The reflected signal is modulated to transmit data.		
R	Backscatter	A method of communication between passive (or semi-passive) RFID tags and the readers. The tag reflects back a signal from the reader, usually modulated and at the same carrier frequency.		
R	Bar code	A patterned series of vertical bars of varying widths used by a computerized scanner. Bar codes may be linear, stacked linear or 2-dimensional. They have multiple applications including identification and data carrying. Data carrying can include the bar codes can incorporate configuration instructions for the bar code scanning device or the system the scanner is connected to.	A standard method of identifying the manufacturer and product category of a particular item in some industry sector applications. The bar code was adopted in the 1970s because the bars were easier for machines to read than optical characters. Unlike RFID tags, direct line of sight is required to read bar codes.	
R	Base station	An RFID tag reader that is connected to a host system.		
R	Battery-assisted tag	These RFID tags incorporate batteries and use the battery power to run the tag circuitry		Ref.: BAP

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		and sometimes an onboard sensor. They communicate with the tag reader using the same backscatter technique as passive tags though they have a longer read range because all of the energy gathered from the reader is reflected back to it. Also known as “semi-passive RFID tags.”		
R	Beacon	Active or semi-active RFID tags programmed to broadcast a signal at set intervals.		
R	Binary value	A mark on the substrate surface indicates the binary of one. The absence of a mark or a smooth surface surrounding a cell center point, indicates the binary value of zero.		
R	Biometrics	Techniques designed to recognize and authenticate the identity of people based upon one or more intrinsic physical or behavioral traits (e.g., fingerprints and retinal patterns). Because biometric traits cannot be lost or forgotten like passwords and are impossible to copy or distribute they make very effective identifiers if they can be read		

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		accurately.		
R	Bistatic	A bistatic RFID interrogator or reader uses a one antenna to transmit energy to the RFID tag and a different antenna to receive reflected energy back from the tag.		
R	Bit	Binary Digit. The basic unit of information in a binary numbering system. 1's and 0's are used in a binary system.		
R	Card operating system	Software in a smart card that manages the basic functions of the card, such as terminal communication, security management and data management.		
S	Character	A letter, digit or other member of the ASCII character set.		
S	Character Set	That ASCII character available for encoding in a particular automated identification technology.		
S	Character set	That character available for encoding in a particular automated identification technology.		
S	Character	Data character. A letter, digit or other member of the ASCII character set.		
S	Checksum	Code added to a data block on		

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		an RFID chip that is checked before and after data transmission from tag to reader to evaluate whether data has been corrupted or lost.		
R	Circular-polarized antenna	A UHF reader antenna that produces radio waves in a circular pattern. As the waves move in a circular pattern, they have a better chance of being received, though circular polarized antennas have a shorter read range than linear-polarized antennas. Used in situations where the orientation of the tag to the reader cannot be controlled.		
I	Closed-loop systems	RFID tracking systems where the tracked item never leaves the company's control and the system does not have to use open standards.		
R	Commissioning	The process of writing a serial number to a tag and associating that number with the tagged product in a database.		
R	Compatibility	RFID systems are compatible if they employ the same protocols, frequencies and voltage levels and are able to operate together within the		

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		same overall application.		
R	Compliance label	A label that indicates conformance to industry standards for data content and format. Compliance labelling standards ensure a similar labelling approach that clearly defines the label format, usage, and the information to include on the label.		There are no RFID compliance labelling standards yet but some consider bar-code labels with embedded UHF EPC tags as compliance labels.
R	Concentrator	A device that communicates with several RFID readers for the purpose of gathering data, which it then filters and passes on the information to a host computer.		
R	Conducted power	The RF power supplied by an RFID system to the antenna. It is measured at the cable to antenna connection. In the U.S., Federal Communication Commission regulations limit maximum conducted power to 1 watt.		
R	Contactless smart card	<i>Definition sought from ETSI Technical Body Smart Card Platform.</i> A credit card or other card incorporating an RFID chip to transmit information to a reader without having to be swiped.	Similar in many ways to RFID, contactless smart cards offer proximity reading and writing with enhanced security, which reduces the speed of encoding and reading tag held data over the air interface	

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R	Data carrier	A medium for storing machine-readable data, such as bar codes and RFID tags. May also refer to the carrier frequency for data transmission.		
R	Data field	RFID chip memory assigned to a particular data type. Data fields may be protected or written over. For example, a data field might contain information about where an item should be sent, and when the destination changes the new information is written to the field. A protected data field could be used to store an Electronic Product Code, which doesn't change during the life of the product it's associated with.		
R	Data retention	RFID tags can retain data for over 10 years depending on temperature, humidity and other factors.		
R	Data transfer rate	Number of characters that can be transferred from RFID tag to reader over a specified time. Baud rate defines how quickly readers can read information on a RFID tag, and is different from read rate, which refers to		

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		how many tags can be read over a specified time.		
R	DataMatrix	Two-dimensional matrix barcode consisting of black and white "cells" or modules	One of many 2 dimensional bar code symbologies, this one adopted by GS1	<a href="http://www.gs1.org">http://www.gs1.org</a>
I	DaWinci	Personnel on board (POB) application used by all operators on the Norwegian sector. The DaWinci system is a future oriented and comprehensive POB system, facilitating resource sharing and cost reduction with respect to personnel movements. The system has high focus on safety and security, and integrates offshore contingency planning, as well as handling of emergency situations. Furthermore, DaWinci ensures follow-up governmental and company specific requirements regarding work periods, training requirements, etc		
R	De-tune	All RFID tags are detuned when they are placed on objects or packaging. The degree of detuning depends upon the thing the RFID tag is applied to and which frequency tag is used. UHF tags detune		When a UHF antenna is placed close to metal or metallic material, the antenna can be detuned to better receive RFID waves of a certain length from a reader so that the RFID tag can be read, but results in poor performance. OMNI-ID tags do not

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		significantly and over a greater frequency range than HF and LF tags.		need to be de-tuned.
R	Dipole	Antenna specific to UHF consisting of two straight electrical conductors or “poles”. The antenna is typically ½ wavelength from end to end. In an RFID transponder the antenna is connected to a microchip.		Ref.: Dual dipole
S	Discovery Service	A service that allows a search for information.		For EPC specific discovery services Ref.: EPC Discovery Service
S	Domain	Distinguished part of an abstract or physical space where something exists.		Meaning of “distinguished” to be elaborated upon.
S	Domain identification number	String of characters representing the value of the identifier assigned to a domain.		
I	DPM	Direct Part Marking		
R	Dual dipole	An antenna that contains has two dipoles. The goal of the dual dipole design is to reduce the tag’s orientation sensitivity. (See Diploe)		
R	Dual interface smart card	A card containing a microchip that can be read either when in contact with a reader or read remotely using radio waves.		
R	Dumb reader	A tag reader with limited		



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		computing power that converts radio waves from a tag into a binary number, passing it to a host computer with little or no filtering.		
R	Duty cycle	Length of time a tag reader is set to emit energy. European Union regulations permit tag readers to be on no more than 10 percent of the time.		
S	ECC	Error Checking and Correction. Mathematical techniques used to identify symbol damage and reconstruct the original information, based upon the remaining data in a damaged or poorly printed code.		
R	EEPROM	Electrically Erasable Programmable Read-Only Memory. A method of storing data on microchips where bytes can be individually erased and reprogrammed. More expensive than factory programmed RFID tags where the number is written into the chip silicon during manufacture, but offers more flexibility because the end user can write an ID number to the tag at the time the tag is going to be used.		

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R	EIRP	Equivalent Isotropically Radiated Power is a reference power figure in relation to an isotropic transmitter.	EIRP is used e.g. in United States RF-regulations to express the maximum power allowed for RFID applications (currently 4W EIRP for UHF RFID) in reference to an isotropic transmitter.	
R	EIRP	Effective Isotropic Radiated Power. A measurement of RFID tag reader antenna output which is used in the United States and elsewhere, usually expressed in watts.		
R	Electronic seal	A method of sealing a digital document in a manner similar to that used for electronic signatures. Electronic seals enable computers to authenticate that document or electronic messages have not been altered, providing a level of security in digital communications.		
I	Electroplating	The process of using electrical current to coat an electrically conductive object with a thin layer of metal. The primary application of electroplating deposits a layer of a metal with a desired property onto a surface lacking such a trait. Electroplating can also be used to build up the thickness of undersized parts.		

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R	EMC	Electromagnetic compatibility.		
R	EMI	Electromagnetic interference. Interference caused when radio waves emitted by a device which degrades the performance of another device. For example, signals for devices operating in the same frequency band as RFID tags may reduce the ability to read those tags.		ElectroMagnetic Interference. This occurs when the radio waves of one device alter the waves of another device. Cells phones and wireless computers may produce radio waves that interfere with RFID tags.
R	Encryption	Altering data so that it cannot be read by those for whom it is not intended. In RFID systems encryption is used to protect stored information or to prevent the interception of communications between RFID tag and reader.		
I	EPC	Electronic Product Code. An identification scheme for the universal identification physical objects via RFID tags and other means. An EPC construct consists of an EPC Manager Number, an object class identification, and a serial number used to uniquely identify the instance of the object.	GS1 EPCglobal is leading the development of industry-driven standards for the Electronic Product Code™ (EPC) to support the use of Radio Frequency Identification (RFID) EPCglobal is a subscriber-driven organisation comprised of industry leaders and organisations focused on creating global standards for the EPCglobal Network™. Their goal is increased visibility and efficiency throughout the supply chain and higher quality information flow between companies and their key trading partners.	<a href="http://www.gs1.org/">http://www.gs1.org/</a> <a href="http://www.epcglobalinc.org/home/">http://www.epcglobalinc.org/home/</a>

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I	EPC Discovery Service	A component of the EPCglobal Architecture Framework consisting of a suite of services that enable users to find data held by individual companies related to a specific Electronic Product Code.	GS1 (EPCglobal) Discovery Service Standard which is a component of the EPCglobal Architecture Framework consisting of a suite of services that enable users to find data held by individual companies related to a specific Electronic Product Code. Object NamingService is one component of Discovery Services.  <a href="http://www.epcglobalinc.org/standards/discovery">http://www.epcglobalinc.org/standards/discovery</a>	<a href="http://www.gs1.org/">http://www.gs1.org/</a> <a href="http://www.epcglobalinc.org/home/">http://www.epcglobalinc.org/home/</a>
R	EPC Gen 2	EPCglobal Class-1 Generation-2 UHF RFID Protocol for Communications at 860 MHz – 960 MHz . Class 1 refers to the classification of the functionality of the tag. Class 1 means that this is a passive tag with programmable memory. Gen 2 means Generation 2. Gen 2 EPCglobal Air Interface Standards has been ratified as an approved ISO 18006 Part C Standard.	<a href="http://www.epcglobalinc.org/standards/uhfc1g2">http://www.epcglobalinc.org/standards/uhfc1g2</a>	<a href="http://www.gs1.org/">http://www.gs1.org/</a> <a href="http://www.epcglobalinc.org/home/">http://www.epcglobalinc.org/home/</a>
S	EPCIS	Electronic Product Code Information Service. Part of the EPC Network. A standard for the exchange of physical visibility data based on the electronic product code. The EPCIS standard defines a schema for physical visibility data, and interfaces for the	<a href="http://www.epcglobalinc.org/standards/epcis">http://www.epcglobalinc.org/standards/epcis</a>	<a href="http://www.gs1.org/">http://www.gs1.org/</a> <a href="http://www.epcglobalinc.org/home/">http://www.epcglobalinc.org/home/</a>

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		capture and query of this data.		
R	EPROM	Electronic Programmable Read Only Memory	Non-volatile memory in an RFID tag that can be erased by exposure to intense ultraviolet light and then reprogrammed.	
S	ERP	Enterprise Resource Planning.		
R	ERP	Effective Radiated Power is a reference power figure in relation to a (UHF) dipole transmitter.	ERP is used e.g. in European RF-regulations, to express the maximum power allowed for RFID applications (currently 2W ERP for UHF RFID / equivalent to 3.28 W ERP) in reference to a dipole transmitter.	The product of antenna input power and antenna power gain, expressed in kilowatts. A measurement of the output of RFID tag reader antennas used in Europe, usually expressed in watts.
R	Error correcting code	Code stored on an RFID tag to enable the reader to determine the value of lost or scrambled data.		
R	Error correcting mode	A mode of data transmission between RFID tag and tag reader so that errors or missing data is automatically corrected.		
R	Error correcting protocol	A set of rules used by tag readers to interpret data from the RFID tag correctly.		
O	ETSI	European Telecommunications Standards Institute. An independent, non-profit organization that defines telecommunications standards for Europe. Responsible for standardization of broadcasting and related areas, such as intelligent transportation,	A European Standards Organization (ESO) producing globally applicable standards for ICT, including fixed....	

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		medical electronics and RFID.		
I	Event data	Information related to a significant business transaction or event, such as products leaving a manufacturing facility or equipment leaving a construction site.		
R	Excite	Tag readers “excite” a passive tag when the reader transmits RF energy to activate the tag and cause it to transmit data back to the reader.		
R	Factory programming	Some read-only RFID tags must have their identification number written into the microchip at the time of manufacture. This is known as factory programming. That data cannot be over-written or modified.		
R	False read	When a tag reader reports the presence of an RFID tag that does not exist. Also called a phantom transaction or false read.		
R	Far Field	Technically far field describes a range beyond a certain distance from an emitter, where inductive coupling (HF/LF) is no longer possible. In publications far field is a term	The far field (UHF) signal decays as the square of the distance from the antenna, while the near field (HF/LF) signal decays as the cube of distance from the antenna. So passive RFID systems that rely on far field communications have a longer read range than those that use near field communications.	Refer to Backscatter

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		to differentiate: 1. A read range beyond a certain distance to the emitter 2. Coupling mechanisms (e.g. backscatter) 3. Antennas that are optimized for the far field coupling mechanism 4. Applications related to far field.		
R	Far-field communication	RFID tags farther than one full wavelength away from the tag reader are said to be “far field”, within one full wavelength away is “near field.” Far field signals decay as the square of the distance from the antenna, while the near field signals decay as the cube of distance. Passive RFID tags that use far field communications (UHF and microwave systems) have a longer range than tags using near field communications (low- and high-frequency systems).		
R	Field programming	RFID tags with non-volatile EEPROM memory can be programmed after they are shipped from the factory so that users can write data to the tag		

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		once it is placed.		
R	Fixed reader	An RFID interrogator mounted to a permanent or non-mobile structure enabling users to read RFID tag numbers attached to movable items.		
R	Folded dipole	A (UHF tag) dipole antenna in which the two poles are connected to each other, as well as to the microchip. (See Dipole)		
R	Form factor	The transponder packaging type; thermal transfer labels, plastic cards, key fobs, etc.		
R	Forward channel	Energy path from the tag reader to the RFID tag.		
R	Free air	Reading an RFID tag that is not attached to anything.		
I	FTTH	Fibre to the home, term for any broadband network architecture that uses optical fibre to replace all or part of the usual metal local loop used for last mile telecommunications to the home		
I	GDS	Global Data Synchronization. The process of matching a manufacturer's master files with retailer's product information. GDS is a prerequisite to deploying RFID		



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		in open supply chains to ensure that RFID serial numbers refer to the correct database product information.		
I	GIS software	Geographical Information System software. For recording, analyzing and managing geospatial data (data referenced to a fixed location). With GIS software users can run queries, analyze spatial information, and create maps.		
I	GLN	Global Location Number. A numbering system developed by EAN International and the Uniform Code Council as a way to identify legal entities, trading parties and locations to support electronic commerce. GLNs can identify functional entities (e.g., a purchasing department), physical entities (e.g., a particular warehouse) and legal entities or trading partners (e.g. buyers or sellers).		
O	Global commerce initiative	Founded by manufacturers, retailers and trade industry associations to improve international supply chains for consumer goods through collaborative development and		

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	Term	Description	Additional Information	Comments
		EAN International/Uniform Code Council standards and best practices, including use of EPC.		
R	GPS	Global Positioning System, a global navigation satellite system (GNSS) that allow GPS receivers to determine their current location, the time, and their velocity		
R	GS1 EPCglobal	GS1 EPCglobal is leading the development of industry-driven standards for the Electronic Product Code™ (EPC) to support the use of Radio Frequency Identification (RFID) EPCglobal is a subscriber-driven organisation comprised of industry leaders and organisations focused on creating global standards for the EPCglobal Network™. Their goal is increased visibility and efficiency throughout the supply chain and higher quality information flow between companies and their key trading partners.		<a href="http://www.gs1.org">http://www.gs1.org</a> <a href="http://www.epcglobalinc.org">http://www.epcglobalinc.org</a>
I	GTIN	GS1 Global trade item number, (see also SGTIN). The GS1		<a href="http://www.gs1.org">http://www.gs1.org</a> (see also SGTIN)

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	Term	Description	Additional Information	Comments
		Identification Key used to identify trade items. The key comprises a GS1 Company Prefix followed by an Item Reference Number and a Check Digit.		
R	Harvesting	The way passive RFID tags gather energy from RFID reader antennas.		
R	HF	High frequency, (frequency range 3MHz – 30MHz).	With respect to RFID the use of Radio Spectrum which operates at a frequency centred around 13.56MHz.	High Frequency. This is generally considered to be from 3 MHz to 30 MHz. HF RFID tags typically operate at 13.56 MHz. Typical, can be read from less than 1 meter away and transmit data faster than low frequency tags but consumes more power.
S	Hub	Repeater for wireless or cable bounded data traffic.		
R	Human-Readable Identification	The letters, digits or other characters associated with specific symbol characters that are incorporated into linear bar code or two-dimensional symbols.		
R	Human-Readable Identification	Characters, such as letters and numbers that can be read by people, as opposed to symbol characters within bar codes or electronic data within tags, which are read by machines.	Reference to Character and Character Sets	

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	Term	Description	Additional Information	Comments
R	Hybrid card	A smart card that has both a no-contact IC and a contact IC, so that a hybrid card acts as two separate cards.		
R	Hype cycle	A hype cycle is a graphic representation of the maturity, adoption and business application of specific technologies (Gartner)	Make reference to RFID	
I	I/O port	Input/Output port. Connections on an RFID reader for external devices. An output device could be a panel that opens when a tag is read. An input device could be a photoelectric eye to turn on the reader when an object breaks the beam.		
I	ICT	Information and communication technologies, an umbrella term that covers all advanced technologies in manipulating and communicating information.		
S	ID	Identification: A natural or added feature that can identify an entity to a requisite level	Define forms of ID	
S	ID	Identification number (unique). String of characters representing the value of the identifier		

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	Term	Description	Additional Information	Comments
R	Identification number	A string of characters assisting or for the purpose of identification.		
R	Identification scheme	Definition and description of the structure of identifiers.		
R	Identification system	Set of formal rules for objects to be identified in a given domain.		
R	Identification	Act of associating identification numbers to an object		
R	Identifier	Attribute associated with an object to unambiguously identify it in a specified domain.		
S	Identity	Established relation between attribute(s) and an object or anything physical or virtual.		
R	IEC	International electro-technical commission. An international standards organization dealing with electrical, electronic and related technologies.		
R	Induction loop	A coil-wire transceiver used when doing RFID reads in the presence of metal.		
R	Inductive coupling	The transfer of energy from one circuit to another through mutual inductance. In RFID systems using inductive coupling, the tag reader antenna		

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	Term	Description	Additional Information	Comments
		and the RFID tag antenna each have a coil which together forms a magnetic field so that the tag draws energy from the field to change the electrical load on the tag antenna. The change is picked up by the tag reader and read as a unique serial number.		
R	Inlay	Inlays can be considered “unfinished” RFID labels, as they are a chip attached to an antenna and mounted on a substrate. Usually sold to label converters who turn them into smart labels. Also known as inlets.		
R	Intelligent reader	A reader that can filter data, execute commands and perform functions similar to a personal computer.		
R	Intentional radiator	A device that produces a RF signal for the purpose of data communications. Examples are cordless phones and door openers.		
R	Interference	Radio interference....		Interference causing a reduction in performance up to the point where the device cannot be heard. Can be considered as applicable in the sense of RFID creating interference and

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	Term	Description	Additional Information	Comments
				also in the sense of RFID performance being impacted by other devices. In an RFID system it is the tags which are most susceptible to interference. Also referred to as “noise”.
R	Internet of Things	Internet of Things. A dynamic global network infrastructure with self configuring capabilities based on standard and interoperable communication protocols where physical and virtual “things” have identities, physical attributes, and virtual personalities and use intelligent interfaces, and are seamlessly integrated into the information network. “Things” are expected to become active participants in business, information and social processes where they are enabled to interact and communicate among themselves and with the environment by exchanging data and information “sensed” about the environment, while reacting autonomously to the “real/physical world” events and influencing it by running		Ref.: IoT Ref.: CASAGRAS Project definition. Ref.: CASAGRAS2 Project.

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	Term	Description	Additional Information	Comments
		<p>processes that trigger actions and create services with or without direct human intervention. Interfaces in the form of services facilitate interactions with these “smart things” over the Internet, query and change their state and any information associated with them, taking into account security and privacy issues.</p>		
R	Interoperability	<p>The ability for RFID tags and readers from different vendors to communicate. Interoperability testing assesses the ability different systems to exchange information and use the data that has been exchanged.</p>		
R	Interposer	<p>A device connecting an RFID microchip to an antenna to create an RFID transponder.</p>		
R	Interrogation zone	<p>Area in which a tag reader can provide enough energy to power up a passive tag and receive back information. Also known as the read field or reader field. RFID tags located outside the interrogation zone do not receive enough energy from the reader to produce a</p>		



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	Term	Description	Additional Information	Comments
		signal.		
R	Interrogator	See Reader.		
I	IoS	Internet of Services. A software based component that is delivered via different networks and Internet. The Internet of Services based on RFID applications has to address the privacy issues. IoS is not just about technology, but also about usage, community building, deployment, business models, public policy, security and privacy.		
R	IoT	Internet of Things.		Ref.: Internet of Things
R	ISA100	Specification for high-level communication protocols using radios based on the IEEE 802.15.4 standard for industrial applications.		
R	ISM frequency bands	Industrial, scientific, and medical frequency bands.	ISM Industrial, scientific and medical (ISM) radio bands were originally reserved internationally for the use of RF electromagnetic fields for industrial, scientific and medical purposes other than communications. In general, communications equipment must accept any interference generated by ISM equipment. It is now widely in use for RFID applications.	
O	ISO	International Standards Organization. Worldwide federation of national standards		

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	Term	Description	Additional Information	Comments
		bodies promoting the development of standardization, whose work results in the publication of international standards.		
R	ISO 10536	International standard for proximity cards.		
R	ISO 14443	International standards for proximity smart cards.		
R	ISO 15693	International standard for vicinity smart cards.		
R	ISO 18000	International standards for the air interface protocol used in RFID systems for tagging goods in a supply chain.		
R	ISO 7816	International standards covering smart cards physical and electrical characteristics and communication protocols.		
R	ISO/IEC 24730	Standard that defines two air interface protocols and a single application program interface (API) for real-time locating systems (RTLS) for asset management. It is intended to allow for compatibility and encourages interoperability of products for the growing RTLS market.		
R	Isotropic	Isotropic antennas radiate energy equally in all directions.		

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	Term	Description	Additional Information	Comments
S	Issuing organization/issuing agency	Organization being entrusted by a registration authority to assign identification numbers in a given domain.		Ref.: ISO/IEC 15459
R	Item-level	The tagging of individual products, as opposed to case-level and pallet-level tagging.		
R	KU-tag	An RFID tag that reads objects containing metal or liquid. At just 1.5 millimetres in thickness it as one of the thinnest RFID tags designed to operate under such conditions.		
R	Label applicator	A device for applying labels. Some label applicators can print bar codes and encode RFID transponders in labels before application.		
R	LF	Low frequency, (frequency range 30kHz – 300kHz). Low frequency RFID tags typical operate at a frequency centred around 125 kHz or 135kHz.	Low frequency tags are less subject to interference and exist in Half Duplex and Full Duplex forms. LF RFID systems are most commonly deployed internationally in animal tagging applications.	
R	License plate	A simple RFID tag that contains a serial number associated with database information as a way to simplify the tag and reduce cost.		
S	License tag number	The information contained with the symbol character set to		

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	Term	Description	Additional Information	Comments
		uniquely identify the component. As a minimum the information shall contain the manufacturers CAGE code followed by an asterisk (ASCII separator) and trace code (lot, member or serial number).		
R	Linear Bar Code	A patterned series of vertical bars of varying widths decoded by a computerised scanner.		
R	Linear-polarized antenna	An antenna designed to focus radio energy from the reader in one orientation or polarity, thereby increasing the read distance and providing increased penetration through dense materials. In order to be read accurately, RFID tags designed to be used with a linear polarized antenna must be aligned with the reader antenna.		
R	LLRP standard	Low Level Reader Protocol. A standard to foster RFID reader interoperability and create a foundation for technology providers to offer capabilities that meet industry-specific requirements.		
I	Lot number/batch number	String of characters representing the value of the		

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	Term	Description	Additional Information	Comments
		identifier assigned to a group of specimens considered as one object to identify the specimens that are manufactured together under assumed identical conditions and in a limited time interval.		
R	Low-level reader protocol standard	A standard to promote RFID reader interoperability and improve capabilities to meet industry-specific requirements.		Ref.: LLRP
I	MAC	“Medical Alert Chip”, invented by the project team, standardised throughout Europe. The MAC only stores key medical information like allergies and heavy medicine use, to support the delivery of care in case of incidents.		
I	Manufacturer	Producer or fabricator of component or the supplier in a transaction if the supplier is the warrantor of the component.		
R	MEMS	Micro-Electro-Mechanical Systems. Systems made up of components between 1 to 100 micrometers in size (0.001 to 0.1 mm). An RFID MEMS tag with micromechanical components is designed to withstand wide temperature		

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	Term	Description	Additional Information	Comments
		ranges as well as gamma radiation and may be used on medical devices.		
I	MES	Manufacturing Execution System. A system that allows companies to control critical production activities and improve traceability, productivity and quality.		
R	MF	Medium frequency, (frequency range 300kHz – 3MHz).		
R	Microwave	Microwave frequencies are generally considered to be from 300MHz to 300GHz. RFID tags that operate at 5.8 GHz (or above 415 MHz) have very high transfer rates and typically can be read up to 10 meters but are costly and use a lot of power and are expensive.		
I	Middleware	RFID software that resides on a server between readers and enterprise applications and used to filter data or manage readers across a network.		
R	Mobile reader	An RFID interrogator that is easily transported, allowing employees to read RFID tags attached to items in a warehouse or other setting along the supply chain.		

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	Term	Description	Additional Information	Comments
R	Monostatic	An RFID reader that uses the same antenna to transmit RF energy to and receive RF energy from an RFID tag.		
R	Multimode	RFID transponders that can be programmed to operate and comply with multiple standards.		
R	Multiple access schemes	Techniques to increase the amount of data that can be wirelessly transmitted within the same frequency spectrum. RFID readers may use Time Division Multiple Access (TDMA) so that they read tags at different times to avoid interference.		
R	Multiplexer	A technique that allows a reader to have more than one antenna and reduces the number of readers needed to cover a given area while preventing the antennas from interfering with each other.		
R	MWF	Micro Wave Frequency.		Not defined in the corresponding internationalen „Radio Regulations“, Genf 1985, part of the UHF band
R	MWF	Microwave tags: A term that is some time used to refer to RFID tags that operate at 5.8 GHz.		

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	Term	Description	Additional Information	Comments
		They have very high transfer rates and can be read from as far as 30 feet away, but they use a lot of power and are expensive.		
R	Near Field	Near Field is close range reading of RFID tags, up to say 1 metre. In near field communication the tag communicates with the reader by electromagnetic inductance.		
R	Near Field Communications	Frequently referred to as NFC. Radio communication between an RFID reader and a tag that relies on inductive coupling between the reader and tag, rather than on electromagnetic wave radiation (see "far field communication").	The near field signal decays as the cube of distance from the antenna, while the far field signal decays as the square of the distance from the antenna. So RFID systems that rely on near-field communication have a shorter read range than those that use far field communication; typically limited to a range approximately equal to one wavelength.	Near Field Communication is a short-range high frequency wireless communication technology which enables the exchange of data between devices over about a 10 centimetres distance. The technology is a simple extension of the ISO/IEC 14443 proximity-card standard (proximity card, RFID) that combines the interface of a smartcard and a reader into a single device. An NFC device can communicate with both existing ISO/IEC 14443 smartcards and readers, as well as with other NFC devices, and is thereby compatible with existing contactless infrastructure already in use for public transportation and payment. NFC is primarily aimed at usage in mobile phones.



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	Term	Description	Additional Information	Comments
R	NFC	Near-Field Communication.		Ref.: Near Field Communications
R	Near Field UHF	Ultra High Frequency devices adapted to varying degrees to exploit the magnetic field component generated by UHF fields. Despite exploiting the magnetic field it offers no interoperability with RFID devices only exploiting the magnetic field, being either High Frequency (HF) or, Low Frequency (LF).		Not to be confused with Near Field Communications, or NFC as it commonly referred to.
R	Noise	Random or ambient electromagnetic energy found in the operating environment of RFID equipment. Other RF devices such as robots, electric motors and other machines may cause noise.		
R	Nominal range	The read range at which at which an RFID tag can reliably be read.		
R	Null spot	An area in the RFID tag reader field that does not receive radio waves. This is a common issue with UHF systems.		
R	Object	a physical or non-physical “thing”, i.e. anything that might exist, exists or did exist and is considered as an entity treated in a process of development,		Do we need to refer to ‘Smart Objects’?

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	Term	Description	Additional Information	Comments
		implementation, usage and disposal.		
R	Object identification number	String of characters representing the value of the identifier assigned to an object (synonyms used: product number, item number, part number, article number, product identifying number, traceability number (serial or batch)).		
R	Object	A physical or non-physical “thing”, i.e. anything that might exist, exists or did exist and is considered as an entity treated in a process of development, implementation, usage and disposal		
R	One-time programmable tag	Also known as a field programmable tag, it is RFID tag memory that can be programmed once and is then write-protected. After the memory is written to it is considered read only memory.		
S	ONS	Object Name Service. A directory based on the worldwide Internet Domain Name System (DNS). ONS provides a means to look up pointers to information resources for an Electronic		

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	Term	Description	Additional Information	Comments
		<p>Product Code (EPC), where those pointers are registered by the company or entity responsible for creating (commissioning) the EPC. Typically ONS only refers to information resources operated by the commissioning company, and not resources operated by other supply chain participants who may have information about a given EPC (see Discovery Services). ONS does not contain actual data about the EPC; it only contains the network address where data resides, for example, a Uniform Resource Locator (URL) that refers to an EPC Information Services (EPCIS) service operated by the company that commissioned the EPC.</p>		
S	Ontologies	<p>Ontologies in the Semantic Web define the concepts and relationships used to describe and represent an area of knowledge and are used to classify the terms used in a particular application, characterize possible relationships, and define</p>		

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	Term	Description	Additional Information	Comments
		possible constraints on using those relationships.		
I	Operator	The oil and gas company (either proprietor or lessee) which runs the business, i.e. actually operating the well or engage subcontractors.		How about telecom operators? Why Oil & Gas?
R	Operator	The business entity which uses the technology.		
I	Organization	Company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration.		
I	Organization identification number	String of characters representing the value of the identifier assigned to an organization.		
R	Orientation	Position of a reader antenna in reference to a tag antenna. In UHF systems reader antennas can be linear- or circular-polarized. When using a linear polarized antenna the tag and reader must be in alignment to achieve the maximal reading distance.		
I	Part Identification Data	Markings used to relate parts to their design, manufacturing,		

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	Term	Description	Additional Information	Comments
		test, and operational histories.		
	Part identification data	Markings used to relate parts to their design, manufacturing, test, and operational histories.		
R	Passive tag	An RFID tag without its own power source and transmitter. When radio waves from the reader reach the chip's antenna, the energy is converted into electricity that can power up the microchip in the tag. The tag is able to send back information stored on the chip.		
R	Passive tag	RFID tag without an internal battery. The energy is gathered from the radio field emitted by the RFID reader system. The tag reflecting back the signal (modulated) from the reader.		
R	Passive tag	A Tag whose microchip is powered by the RF field created by the Reader.		
R	Passive Tag	An RFID transponder device, which will react to bombardment by the appropriate frequency radio waves from a transceiver, at which time the RF signal will generate enough power to transmit its identity and possibly other data back to the		Mentions the concept of appropriate frequency and the difference between a transceiver and a transponder.

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	Term	Description	Additional Information	Comments
		reader (transceiver		
R	Passive tag	RFID tag without an internal battery or power source. The energy is gathered from the reader, these radio waves are converted by the tag antenna into current. The tag reflecting back the signal (modulated) from the reader.		
R	Patch antenna	A square reader antenna made from metal or foil.		
R	PDT	Personal Data Terminal (usually includes an identification device such as a bar codes reader)		
R	Phantom read	When a reader reports the presence of a tag that doesn't exist. Also called a false read or phantom transaction.		
R	Phase Jitter Modulation (PJM)	An air interface protocol offering the fastest passive RFID tag reading and writing by providing simultaneously numerous channels of communication based on phase separation	A modulation method whereby a data stream is modulated onto the carrier of the interrogator by varying the phase of the interrogator carrier by a small amount (typically in the range of +/- 1 to +/- 6 degrees).	Is a new modulation method specifically designed to meet the unique requirements of passive RFID tags. It has been adopted by the high frequency RFID Air Interface Standard ISO/IEC 18000-3 MODE 2 for high speed bulk conveyor fed item level identification because of its demonstrably higher data rates. The MODE 2 PJM data rate is 423,75 kbit/s; sixteen times faster than the alternative MODE 1 system ISO/IEC

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	Term	Description	Additional Information	Comments
				18000-3 MODE 1 and the legacy HF system ISO 15693.
R	PIFA	Planar Inverted F Antenna.		
R	Portal	An RFID interrogator gateway, typically consisting of one reader and multiple antennas, used in RFID applications. Forklifts or other methods are used to transport tagged items through a portal reader to collect RFID tag data.		
I	POS	Point of Sale. A location within a store or facility where an object is sold and may be marked or otherwise indicated as being allowed to legitimately leave the store or facility.		
R	Power level	The amount of RF energy emitted from an RFID tag reader. The higher the power output the longer the read range. Many countries regulate power levels to avoid interference with other devices.		
O	PPP	Public Private Partnership: collaboration between public and private sector organisations with a mutual objective		
R	Printer	An RFID printer, or printer/encoder, prints a label with an embedded RFID		

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	Term	Description	Additional Information	Comments
		transponder and encodes item information in the chip within the transponder.		
R	Programming a tag	The act of writing data to an RFID tag. When a serial number is first written to a tag it is called “commissioning”.		
R	Quiet tag	RFID tags that are only readable with reader output at full power, or which can be read only at very close range.		
S	RDF	The Resource Description Framework is a standard model for data interchange on the Web. RDF has features that facilitate data merging even if the underlying schemas differ, and it specifically supports the evolution of schemas over time without requiring all the data consumers to be changed.		
R	Read range	The distance from which tag readers can accurately and reliably communicate with RFID tags. Active tags have longer read ranges than passive tags because they have their own power source for signal transmission. In passive tags the read range is controlled by frequency, reader output power,		



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	Term	Description	Additional Information	Comments
		antenna design, and the method used to power up the tag. Low-frequency tags use inductive coupling which requires the tag to be close to the reader.		
R	Read rate	A specification describing how many tags can be read within a given period or the number of times a single tag can be read within a given period. Alternatively, the maximum rate that data can be read from a tag expressed in bits or bytes per second.		
R	Read	The process of retrieving RFID tag data by broadcasting radio waves at the tag and converting the waves the tag returns to the tag reader into data.		
R	Reader	Also called interrogator. A device that communicates with the RFID tag via radio waves.		
R	Reader	A device used to communicate with RFID tags via radio waves, it has one or more antennas that emit radio waves and receive a signal back from the tag. Tag readers are also sometimes called interrogators.	Readers encode commands to send to tags, and decode responses from the tags. Readers communicate with tags by modulating the encoded commands on to waveforms to send to tags and by demodulating the replies from waveforms that the reader receives back from the tags. Readers send the decoded tag responses to software systems, typically for subsequent business analysis. Readers and interrogators are the same thing.	The connection point to the information system where this is required by the application. RFID readers tend to be either simple with low functionality which are associated with low level reader (to IT system) protocols or, those that carefully manage the tag communication, easier to interface

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	Term	Description	Additional Information	Comments
				and offering greater functionality. The later normally limit the volume of duplicate data sent to the IT system with consequentially lower demands of It system middleware.
R	Reader field	The volume an RFID tag reader system can read tags within. Tags outside the field do not receive sufficient power emitted by the tag reader system to generate a sufficiently powerful tag response for the reader system to decode and, therefore the tags cannot be read.		Read fields tend to be larger than write fields.
R	Reader module	Reader electronics (digital signal processor and circuit board) can be placed in a dedicated device or an RFID label printer, for example.		
R	Reader talks first	A passive UHF reader initially communicates with RFID tags in its read field by sending energy to the tags. The tags do not transmit until the reader requests them to do so. The reader finds tags with specific serial numbers by asking all tags with a serial number that starts with either 1 or 0 to respond. If more than one responds, the reader might ask		

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	Term	Description	Additional Information	Comments
		for all tags with a serial number that starts with 01 to respond, and then 010. Also known as “walking” a binary tree, “tree walking”, or “singulation”.		
R	Read-only	RFID tag memory that cannot be altered unless the microchip is reprogrammed.		
R	Read-write	RFID tags that can store new data, often used on reusable containers and other storage assets. When the contents of the container are changed, new information is written to the tag.		
R	Real time locating system	A system of finding the position of objects/things, using RFID tags or other wireless technologies e.g. WiFi, Zigbee, etc.. The tags signal, which is received by three or more reader system antennas. The arrival of each signal from each antenna is received and passed on to a software system that uses triangulation to calculate the location of the object.	Different methods such as time of arrival (TOA), time difference of arrival (TDOA), angle of arrival (AOA) and received signal strength (RSS) are used. Sometimes cell of origin methods (COO) are also included even though they are not considered RTLS by some.	A method of locating objects or people, using the signal from a tag. Active RFID tags provide the greatest range and are more commonly used than passive RFID tags in RTLS applications.
S	Registration authority	Organization responsible to receive and acknowledge applications from organizations wishing to become an issuing		

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	Term	Description	Additional Information	Comments
		organization in a given domain.		
R	Reverse channel	The path energy travels from the RFID tag to the interrogator, or reader. It is also sometimes called the back channel.		
R	RFID	Radio Frequency Identification.	RFID Radio-frequency identification, use of an object (“tag”) applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves	
R	RFID tag	See tag.		
R	RFID	Radio Frequency Identification (Devices). A technique for identifying unique items using radio waves. Typically a tag reader communicates with an RFID tag, which contains digital information. There are also “chipless” forms of RFID tags that use material to reflect back radio waves beamed at them.		
I	ROI	Return on Investment.	Return On Investment is the ratio of money gained or lost on an investment relative to the amount of money invested.	
R	RSSI	Received signal strength indication is a measurement of the power present in the received radio signal, (IEEE 802.11 protocol).		
R	RTLS	Real Time Locating System.		Ref.: Real time location system.

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	Term	Description	Additional Information	Comments
S	Rules	Rules in the Semantic Web refer to elements of logic programming and rule based systems bound to the data. Rules offer a way to express e.g. constraints on relationships defined by RDF or may be used to discover new implicit relationships.		
R	SAW	A technology for automatic identification using low power microwave radio frequency signals that are converted to ultrasonic acoustic signals by a piezoelectric crystalline material in the transponder. Variations in the reflected signal can be used to identify an object.		
R	Scanner	An electronic device, such as an RFID tag reader, that sends and receives radio waves. When combined with a digital signal processor that turns the waves into data, the scanner is called a reader or interrogator.		
S	Semantic Web	It is a Web of data that provides a common framework that allows data to be shared and reused across application, enterprise, and community		

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	Term	Description	Additional Information	Comments
		boundaries. It is a collaborative effort led by W3C with participation from a large number of research and industrial partners.		
R	Semi-active tag	Sometimes used for semi-passive tag,		Ref.: Semi passive tag.
R	Semi passive tag	RFID tag with an internal battery. The battery is used to run the microchip circuitry and not a transmitter. Some semi-passive tags sleep until they are woken up by a signal from the reader. These tags are sometimes called semi-active tag or battery assisted tags. The names are used rather interchangeably to describe this type of tag.	Similar to active tags, but the battery is used to run the microchip's circuitry but not to broadcast a signal to the reader. Some semi passive tags sleep until they are woken up by a signal from the reader, which conserves battery life. These tags are sometimes called battery assisted tags. A tag which contains a power source but will only transmit when "woken" by bombardment by an appropriate RF signal.	
S	Serial number	String of characters representing the value of the identifier assigned to an individual specimen of objects or an object type.	A code, numeric or alphanumeric, assigned to an individual instance of an entity for its lifetime.	
S	SGTIN	GS1 Serialized Global Trade Item Number, (see also GTIN).		
R	Shielding	The use of a Faraday cage, Mylar sheet or metal barrier to prevent radio frequency noise from interfering with tag readers or to prevent readers		

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	Term	Description	Additional Information	Comments
		from interfering with other devices.		
R	Signal attenuation	The drop in RF energy from an RFID tag or tag reader as a function of distance is proportional to the inverse square of the distance. Attenuation can be increased by external factors as well such as the presence of liquids or metal.		
R	Singulation	A passive UHF reader initially communicates with RFID tags in its read field by sending energy to the tags. The tags do not transmit until the reader requests them to do so. The reader finds tags with specific serial numbers by asking all tags with a serial number that starts with either 1 or 0 to respond. If more than one responds, the reader might ask for all tags with a serial number that starts with 01 to respond, and then 010. Also known as “walking” a binary tree, “tree walking”, or “reader talks first”.		
R	Skimming	Reading an RFID tag covertly.		
R	Slap and ship	The act of putting an RFID label on a case or pallet just		

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	Term	Description	Additional Information	Comments
		before it is shipped from a supplier to a retailer.		
R	Slotted antenna	An antenna designed as a slot cut into an electrical conductor connected to the transponder. Slotted antennas have the same orientation sensitivity as dipole antennas.		
R	Smart card	Any payment card that contains an embedded microchip. A contact less smart card uses RFID technology to send and receive data.		
R	Smart label	A bar code label that contains an RFID transponder is considered “smart” because it can store information and communicate with a reader.		
R	Smart reader	A reader that can filter data, execute commands and perform functions similar to a personal computer.		
O	STORK	Large scale pilot in the ICT-PSP (ICT Policy Support Programme), under the CIP (Competitiveness and Innovation Programme), and co-funded by EU.	STORK aims at implementing an EU wide interoperable system for recognition of eID and authentication that will enable businesses, citizens and government employees to use their national electronic identities in any Member State. It also pilots trans-border eGovernment identity services and learns from practice on how to roll out such services, and to experience what benefits and challenges an EU wide interoperability system for	



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	Term	Description	Additional Information	Comments
			recognition of eID will bring.	
S	Structure	The order of data elements in a message.		
R	Substrate	The material (paper, plastic, metal, etc.) upon which a RFID tag is placed.		
I	Supplier	The trading partner in a transaction that provides the component (e.g., manufacturer, distributor, reseller, etc.).		
O	SWOT	Strength, Weaknesses, Opportunities and Threats, as dimensions that are considered for analysis of competitiveness.		
R	Synchronization	Controlling the timing of tag readers that are close together so they don't interfere with one another during the read process.		
O	TAB	Tape Automatic Bonding.		Can also be a "tabulate" character in a data string Add a description or this entry may be deleted
R	Tag	Also called a transponder. Identification device capable of transmitting/reflecting data. Some tags also receive and store data. The tag could be active, passive or semi-passive.		
R	Tag	Identification label capable of transmitting/ reflecting data. Some tags also receive and store data. The tag could be		

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	Term	Description	Additional Information	Comments
		active, passive or semi-passive. Also called transponder.		
R	Tag	A microchip attached to an antenna that sends data to an RFID reader.		
R	Tag	General term for any RF device which contains information, and can be interrogated, by an appropriate reader.	A microchip attached to an antenna capable of reflecting/ transmitting data. Some tags also receive and store data. They are packaged so that it can be attached to or into an object, animal or person, programmed with a unique serial number. Some tags are also managing additional information. A RFID tag receives signals from a tag reader and sends signals back to the reader and can be active, passive or semi-passive. RFID tags are also sometimes called transponders.	Ref.: Transponder for passive tags.
R	Tag talks first	(TTF) How tag readers in a passive UHF system identify tags in their field. When RFID tags enter the reader's field they immediately announce their presence by reflecting back a signal, which is useful in an environment where items are moving quickly.		
R	Tamper-evident tag	An RFID tag that signals a reader when a container has been opened without authorization.		
S	Traceability	Ability to trace (identify and measure) the stages that lead to a particular point in a process.	Traceability can include ability to relate historical documentation to parts using part identification numbers.	Can also refer to a definable relationship between an object and its constituent parts.

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	Term	Description	Additional Information	Comments
S	Track and trace	The process of gathering information about the movement and location of items.		
R	Transceiver	A device that both transmits and receives radio waves.		
R	Transponder	A combination of a transmitter and a receiver, (TRANSmitter/resPONDER).	A radio transmitter-receiver that is activated by a received signal. RFID tags are sometimes referred to as transponders because they can be activated when they receive a predetermined signal. RFID transponders come in many forms, including smart labels, simple tags, and smart cards.	Ref.: Tag
O	UCC	Uniform Code Council. The nonprofit organization that oversees the Universal Product Code (UPC), the North American bar code standard. Since 2004 renamed as GS1.		
R	UHF	Ultra high frequency. The frequency band from 300 MHz to 3 GHz. RFID tags typically operates between 840 MHz to 960 MHz.		
S	Unique identifier	The unique serial number that identifies a transponder.		
S	UPC	Universal Product Code. The 12 digit data format encoded in UCC bar codes.		
S	Variant	Object type derived from a basic (general) object type. Variants are intended to exist at		Don't have a suggestion, but the current one seems too complex

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	Term	Description	Additional Information	Comments
		the same time and require simultaneous management, while versions follow each other sequentially in time. Versions can exist at the same time, depending on how older versions are phased out.		
S	Version	Identified state of an object to indicate changes in its life cycle, related to a given object identification number for the type of object.		Don't have a suggestion, but the current one seems too complex
S	Version number	String of characters representing the value of the identifier assigned to a version.		
	Version	Identified state of an object to indicate changes in its life cycle, related to a given object identification number for the type of object		
R	VHF	Very high frequency, (frequency range 30MHz – 300MHz).		
S	W3C	The World Wide Web Consortium develops interoperable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential and is a forum for information, commerce, communication, and		

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		collective understanding.		
R	Wi-Fi	Wireless network according to IEEE 802.11.xx standard.		
R	WirelessHart	Specification for high-level communication protocols using radios based on the IEEE 802.15.4 standard for industrial applications.		
I	WMS	Warehouse Management System. A methodology to control the movement and storage of materials within a warehouse and process the associated transactions, including shipping, receiving, put away and picking. WMSs may use bar-code scanners, mobile computers, wireless LANs and RFID.		
I	Work-in-process tracking	The use of RFID to track manufacturing changes reduces manual data collection and ensures that the right processes are preformed at the proper time on the correct product.		
R	WORM	Write Once, Read Many. An RFID tag that can be written to once and thereafter can only be read.		
R	Write range	The maximum distance from the interrogator antenna over		

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	Term	Description	Additional Information	Comments
		which data can be written to an RFID tag.		
R	Write rate	The rate at which information is written to a tag and then verified as being correct.		
I	X12 EDI	The American National Standards Institute electronic data interchange standard developed for inter industry electronic exchange of business transaction data.		
S	XML	eXtensible Markup Language. A widely used standard from the World Wide Web Consortium (W3C) that facilitates the interchange of data between computer applications. XML is similar to the language used for Web pages, the Hypertext Markup Language (HTML), in that both use markup codes (tags). XML allows the developers create customized (XML) tags that offer greater flexibility in organizing and presenting information than is possible with HTML.		
R	ZigBee	Specification for high-level communication protocols using low-power digital radios based		

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	Term	Description	Additional Information	Comments
		on the IEEE 802.15.4 standard for wireless personal area networks (WPANs). Used in RF applications requiring low data rate, long battery life and secure networking.		
I	Zone number	Defines the presence of hazardous atmospheres, (Ref. ATEX).		