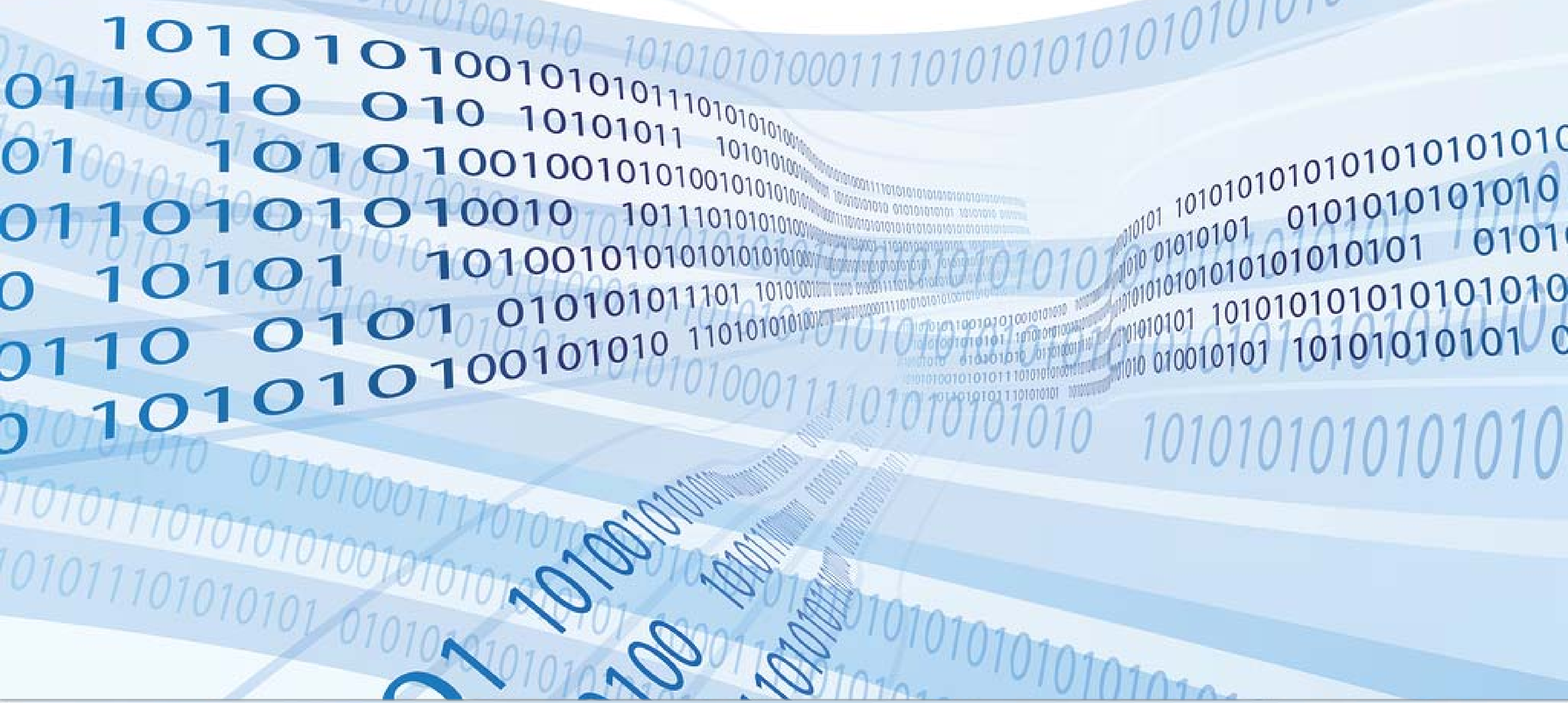
ANSI-HSSP

Global Supply Chain Security Standardization

Craig K. Harmon



SYSTEMS

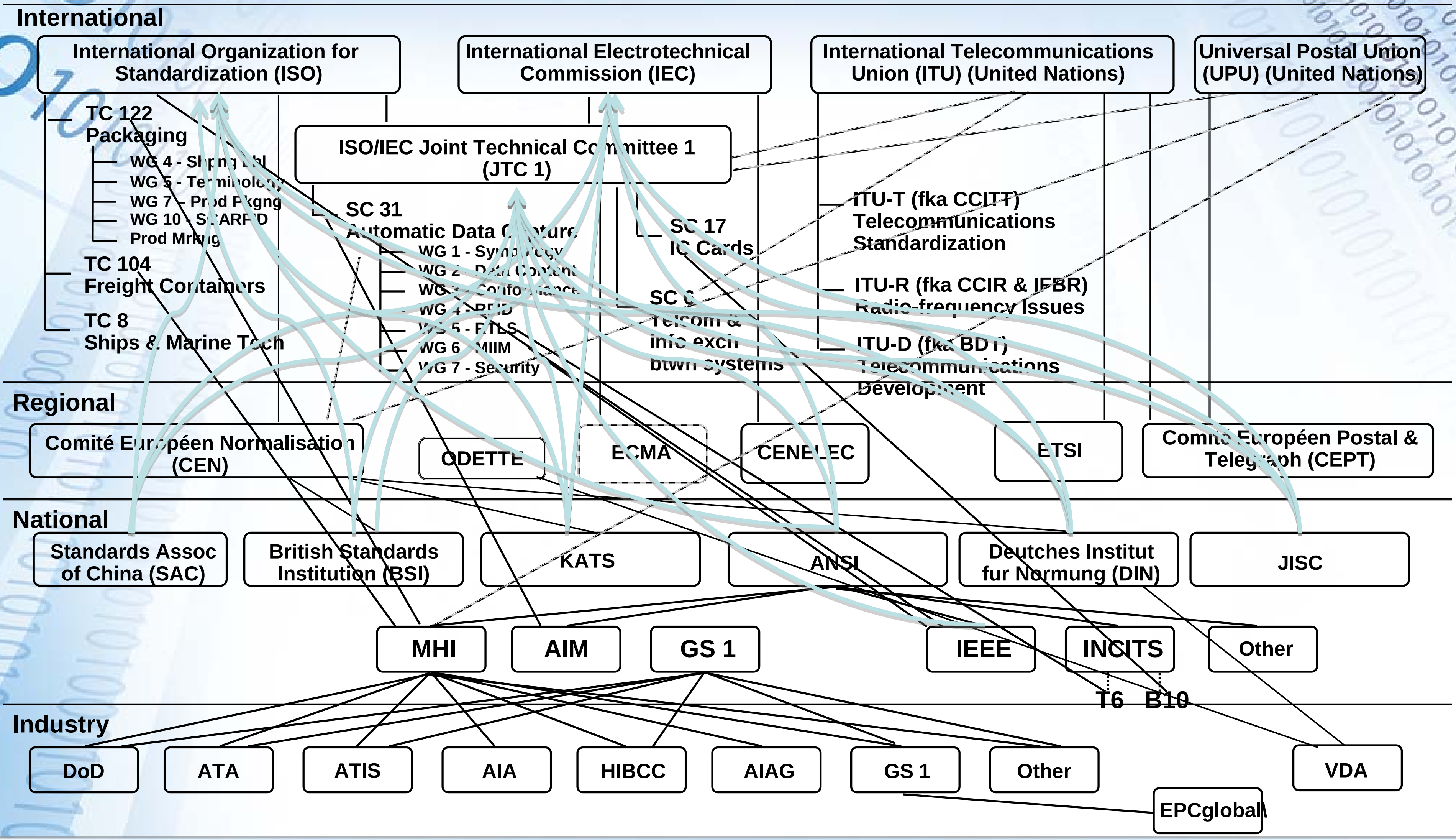
Craig K. Harmon • President & CEO Q.E.D. Systems

- Founder, ISO/IEC JTC 1/SC 31, *Automatic Identification and Data Capture Techniques*
- Founder, RFID Experts Group (REG)
- Chair, JTC 1/SC 31/WG 6 - *Mobile Item Identification and Management* (Convergence of Mobile Telephony, Mobile Computing, Sensors, and AIDC)
- Chair, ASC MH 10 and U.S. TAG to ISO TC 122 (Packaging)
- Chair, ISO TC 122/WG 10 - *Supply Chain Applications of RFID*
- Chair, ISO TC 122/WG 4 (Shipping Labels) & ISO TC 122/WG 7 (Product Packaging)
- Chair, U.S. TAG to ISO/IEC JTC 1/SC 31/WG 4 (RFID)
- Senior Project Editor ISO/IEC JTC 1/SC 31/WG 4 (ISO/IEC 18000 series)
- JTC 1/SC 31 & TC 104 Liaison Officer to the International Telecommunications Union (ITU-R & ITU-T)
- JTC 1/SC 31 Liaison Officer to TC 104, TC 122, ISO TC 204, TC 247, JTC 1/WG 7, and ETSI
- Joint Automotive Industry Forum (JAIF) JAMA/JAPIA/AIAG/ODETTE) – Returnable Transport Items
- AIAG Bar Code, Applications, 2D, Tire, Returnables, & RFID Committees
- Member, EPCglobal HAG (UHFGen2), FMCG BAG, HLS BAG, SAG, TLS, TDS, AIWG, SBAC, HAT
- ISO TC 104 & 122 (Freight Containers / Packaging) Liaison Officer to JTC 1/SC 31
- Project editor, ISO/IEC 18000-7
- Past Chair, ISO TC 122/104 Joint Working Group – Supply chain applications of RFID
- Advisor and Member of USPS Strategic Technology Council
- Chairman & Project Editor, ANS MH10.8.2 (Data Application Identifiers)
- Original Project Editor, NATO STANAG 2233 (RFID for NATO Asset Tracking)
- Vocabulary Rapporteur to ISO/IEC JTC 1/SC 31, ISO/IEC 19762 - Harmonized vocabulary
- CompTIA RFID Subject Matter Expert and RFID Certified Professional (CRCP) - RFID+
- Recipient of the 2004 Richard Dilling Award

This presentation posted at: http://www.autoid.org/Presentations

International Standards Activities

There will be a short quiz at the end



International

International Organization for Standardization (ISO)

International Electrotechnical Commission (IEC)

International Telecommunications Union (ITU) (United Nations)

Universal Postal Union (UPU) (United Nations)

TC 122 Packaging
- WG 4 - Shpng Lbl
- WG 5 - Terminology
- WG 7 – Prod Pkgng
- WG 10 - SCARFID
- Prod Mrkng

TC 104 Freight Containers

TC 8 Ships & Marine Tech

ISO/IEC Joint Technical Committee 1 (JTC 1)

SC 31 Automatic Data Capture
- WG 1 - Symbology
- WG 2 - Data Content
- WG 3 - Conformance
- WG 4 - RFID
- WG 5 - RTLS
- WG 6 - MIIM
- WG 7 - Security

SC 17 IC Cards

SC 6 Telcom & info exch btwn systems

ITU-T (fka CCITT) Telecommunications Standardization

ITU-R (fka CCIR & IFBR) Radio-frequency Issues

ITU-D (fka BDT) Telecommunications Development

Regional

Comité Européen Normalisation (CEN)

ODETTE

ECMA

CENELEC

ETSI

Comité Européen Postal & Telegraph (CEPT)

National

Standards Assoc of China (SAC)

British Standards Institution (BSI)

KATS

ANSI

Deutches Institut fur Normung (DIN)

JISC

MHI

AIM

GS 1

IEEE

INCITS

Other

T6

B10

Industry

DoD

ATA

ATIS

AIA

HIBCC

AIAG

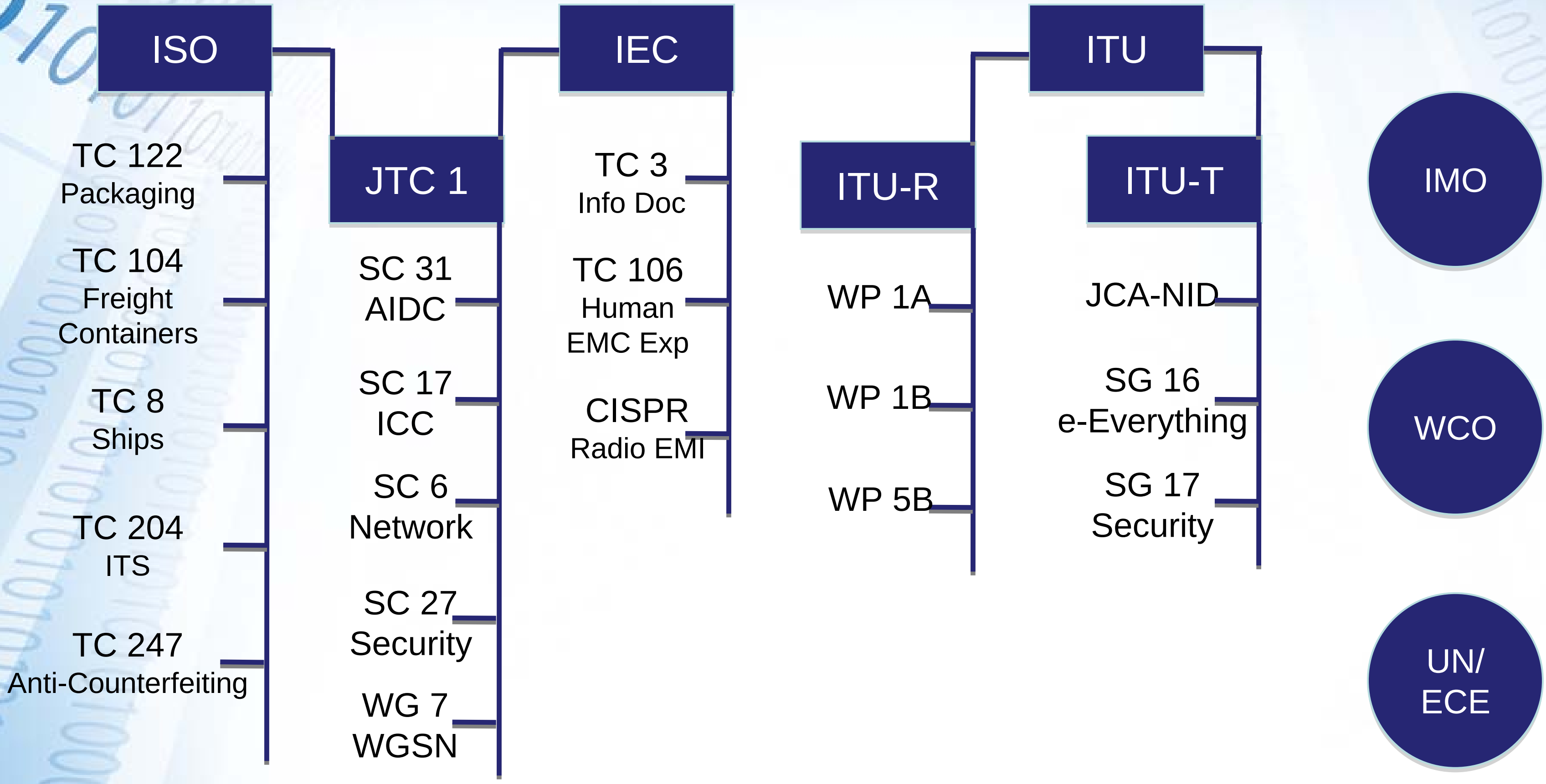
GS 1

Other

VDA

EPCglobal

International Activity that Affects You



ISO

TC 122
Packaging

TC 104
Freight
Containers

TC 8
Ships

TC 204
ITS

TC 247
Anti-Counterfeiting

JTC 1

SC 31
AIDC

SC 17
ICC

SC 6
Network

SC 27
Security

WG 7
WGSN

IEC

TC 3
Info Doc

TC 106
Human
EMC Exp

CISPR
Radio EMI

ITU

ITU-R

WP 1A

WP 1B

WP 5B

ITU-T

JCA-NID

SG 16
e-Everything

SG 17
Security

IMO

WCO

UN/
ECE

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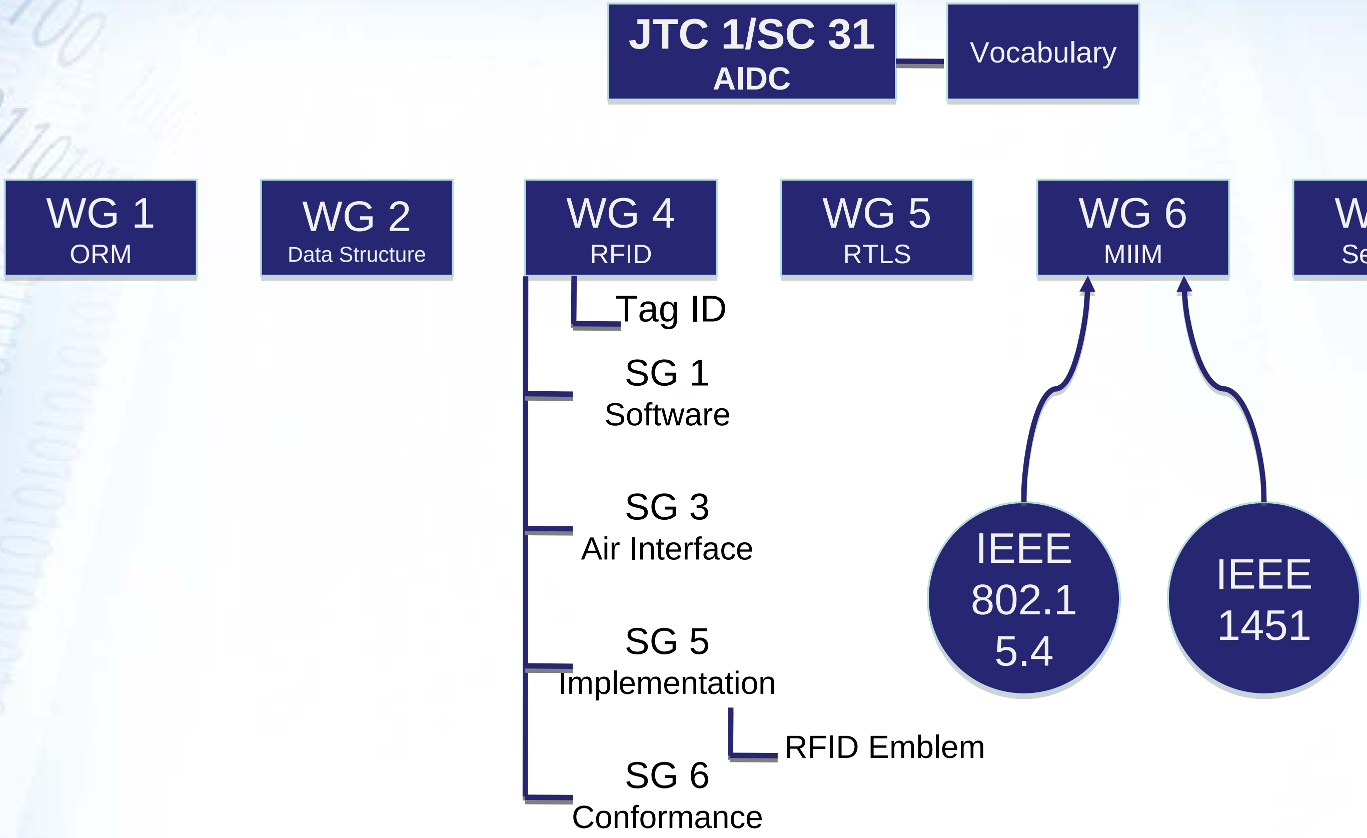
JTC 1/SC 31 – Structure



JTC 1/SC 31
AIDC

Vocabulary

WG 1
ORM

WG 2
Data Structure

WG 4
RFID

WG 5
RTLS

WG 6
MIIM

WG 7
Security

Tag ID

SG 1
Software

SG 3
Air Interface

SG 5
Implementation

RFID Emblem

SG 6
Conformance

IEEE
802.1
5.4

IEEE
1451

Types of Standards

- **Technology**
  - Symbology, RFID, I.C. Card, Sensor
- **Data Content**
  - Semantics (DIs or AIs), Syntax, Unique Item Identification, Unique Device Identification
- **Conformance**
  - Print Quality, Test Specifications, Conformance to Air Interface
- **Network**
  - Object-to-object communications, Sensor Networks
- **Application Standards**
  - Freight container, Returnable Transport Item, Shipping Label, Product Package, Product Mark/Tag, Intrusion sensor, Access to web services

Wireless Communications
Standards and Regulations

Regulations

- International regulations – ITU-R
- Regional regulations – ETSI
- National regulations – MIC, SRCC, METI, FCC

Standards - International

- ISO TC 122 – Supply chain applications of RFID
- JTC 1/SC 31/WG 4 – RFID
- JTC 1/SC 31/WG 5 – RTLS
- JTC 1/SC 31/WG 6 – MIIM/Sensors
- JTC 1/SC 6 – Networking
- ITU-T SG 16
- IETF

SC 31/WG 6

Mobile Item Identification & Management

SC 31/WG 6 Scope

Standardization of automatic identification and data collection techniques that are anticipated to be connected to wired or wireless networks, including sensor specifications, combining RFID with mobile telephony, and combining optically readable media with mobile telephony.

•Convenor: Craig K. Harmon, United States

•Secretary: Se Won Oh, Korea

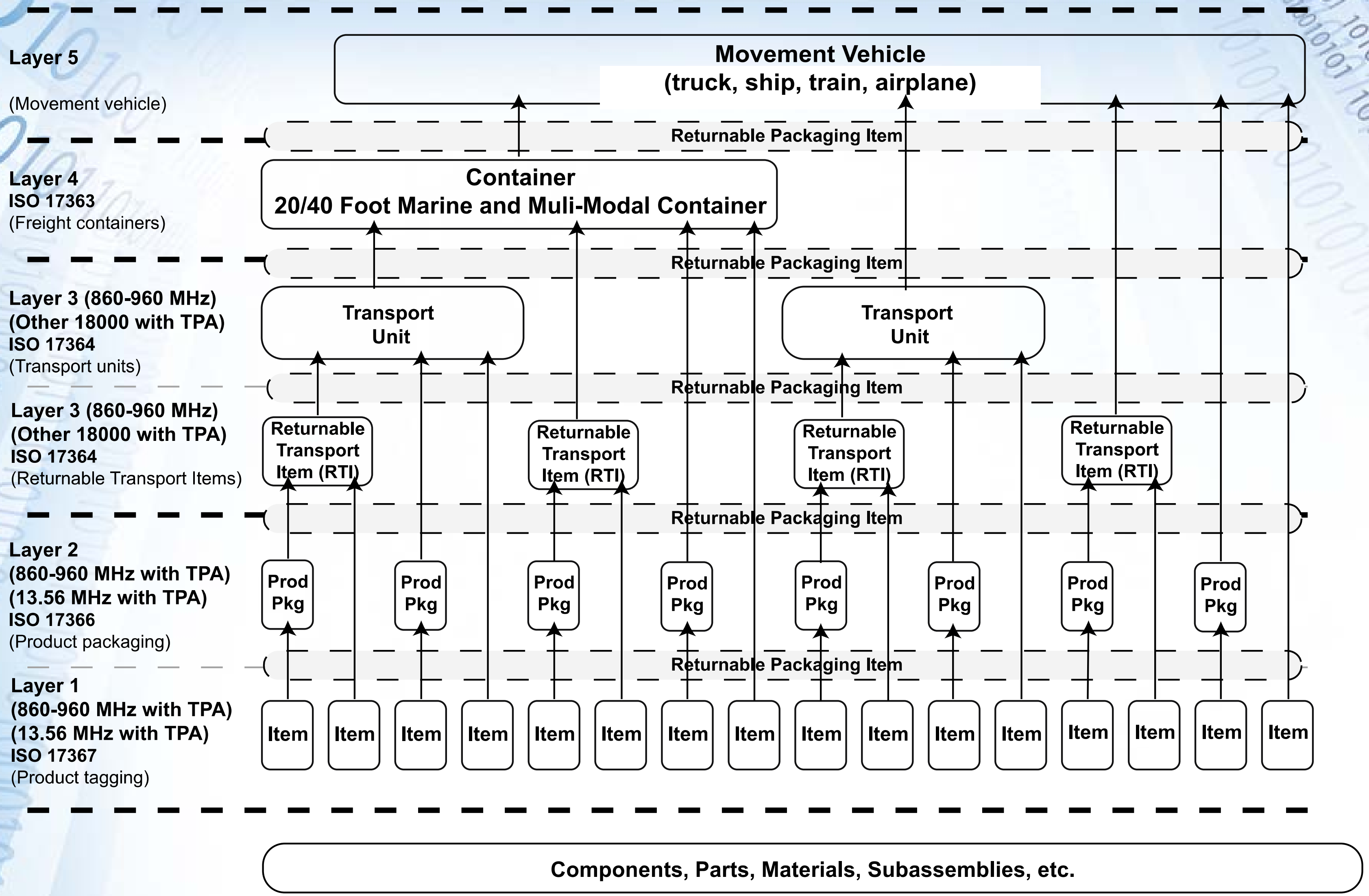
IEEE Standards to ISO/IEC/IEEE Standards

- IEEE Standards to SC 31/WG 6 under PSDO
  - ISO/IEC/IEEE 21450 [IEEE 1451.0], *Information technology — Smart Transducer Interface for Sensors and Actuators — Common Functions, Communication Protocols, and Transducer Electronic Data Sheet (TEDS) Formats*
  - ISO/IEC/IEEE 21451-1 [IEEE 1451.1], *Information technology — Smart Transducer Interface for Sensors and Actuators — Network Capable Application Processor (NCAP) Information Model*
  - ISO/IEC/IEEE 21451-2 [IEEE 1451.2], *Information technology — Smart Transducer Interface for Sensors and Actuators — Transducer to Microprocessor Communication Protocols and Transducer Electronic Data Sheet (TEDS) Formats*
  - ISO/IEC/IEEE 21451-4 [IEEE 1451.4], *Information technology — Smart Transducer Interface for Sensors and Actuators — Mixed-Mode Communication Protocols and Transducer Electronic Data Sheet (TEDS) Formats*
  - ISO/IEC/IEEE 21451-5 [IEEE 1451.5], *Information technology — Smart Transducer Interface for Sensors and Actuators – Wireless Communication Protocols and Transducer Electronic Data Sheet (TEDS) Formats* ***(in process)***
  - ISO/IEC/IEEE 8802-15-4 [IEEE 802.15.4-2006], *Information technology — Local and metropolitan area networks— Specific requirements, Part 15.4: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for Low-Rate Wireless, Personal Area Networks (WPANs)*
  - ISO/IEC/IEEE 21451-7, *Information technology — Standard for a Smart Transducer Interface for Sensors and Actuators - Transducers to Radio Frequency Identification (RFID) Systems Communication Protocols and Transducer Electronic Data Sheet Formats* ***(in process)***

ISO TC 122

Packaging

Supply chair layers with returnable packaging Radio-frequency Identification (RFID)



ISO TC 122 – Packaging – WG 10, SCARFID

- ISO 17363, *Supply chain applications of RFID – Freight containers*
  - *Published 2007; 2nd Ed NP/CD 122n517 — 2010-08-14 to 2010-11-14*
- ISO 17364, Supply chain applications of RFID – Returnable transport items
  - *Published 2009-11-15; NP 2nd Ed Approved 2010-01-22 - 122n510,*
    CD 2nd Ed 122n518 – 2010-08-30 to 2010-10-30 (Passed – No negative votes)
- ISO 17365, *Supply chain applications of RFID – Transport units*
  - *Published 2009-11-15; NP 2nd Ed Approved 2010-01-22 - 122n511,*
    CD 2nd Ed 122n519 – 2010-08-30 to 2010-10-30 (Passed – No negative votes)
- ISO 17366, *Supply chain applications of RFID – Product packaging*
  - *Published 2009-11-15; NP 2nd Ed Approved 2010-01-22 - 122n512,*
    CD 2nd Ed 122n520 – 2010-08-30 to 2010-10-30 (Passed – No negative votes)
- ISO 17367, *Supply chain applications of RFID – Product tagging*
  - *Published 2009-11-15; NP 2nd Ed Approved 2010-01-22 - 122n513,*
    CD 2nd Ed 122n521 – 2010-08-30 to 2010-10-30 (Passed – No negative votes)

Securing supply chain conveyances

- 90% of non-bulk cargo worldwide moves by containers stacked on transport ships. [1]
- In 2008, about 13 percent of world freight exports from more than 200 countries ($2.1 trillion out of $16 trillion) were bound for the United States. Of this amount, 55 percent was oceanborne cargo, 20 percent was air cargo, and about 25 percent was carried by land modes of transportation [2]
- In 2007 there were over 25 million container entries into the U.S., over 11 million oceanborne and 14 million by truck or rail. [3]
- From 2004 through 2009 DHS S&T spent approximately $60 million and made varying levels of progress in the research and development of its four container security technology projects.

Securing freight containers is not the only supply chain security issue, but it is a major issue that has not yet been adequately addressed.

GAO Report — Supply chain security

Project name	Key project requirements
Advanced Container Security Device (ACSD)	— Detect container door opening, door closing, and door removal. — Detect a 3-inch diameter hole in the container on any six sides. — Detect human presence within the container. — Provide a 95 percent probability of intrusion detection. — Provide a combined probability of false alarm and critical failure of 0.2 percent. — Possess a power source to operate for one trip (1,680 hours). — Cost less than $175 per container trip.
Container Security Device (CSD)	— Detect container door opening, door closing, and door removal. — Monitor the status of any seals or locks. — Provide a 95 percent probability of intrusion detection. — Provide a combined probability of false alarm and critical failure of 0.2 percent. — Possess a power source to operate for one trip (1,680 hours).
Hybrid Composite Container	**Composite container** —Meet or exceed ISO requirements. **Sensor grid** —Detect a 3-inch diameter hole in any six sides of a container. —Provide a 95 percent probability of intrusion detection. —Provide a combined probability of false alarm and critical failure of 0.2 percent. —Possess a power source to operate for one trip (1,680 hours).
Marine Asset Tag Tracking System (MATTS)	— Communicate a container intrusion alarm within 5 minutes of the alarm occurring. — Provide operational availability at least 95 percent of the time. — Possess a power source to operate for 30,000 hours. — Cost less than $175 per container trip.

GAO 10-887 — Table 4 (edited): Container Security Technology Projects

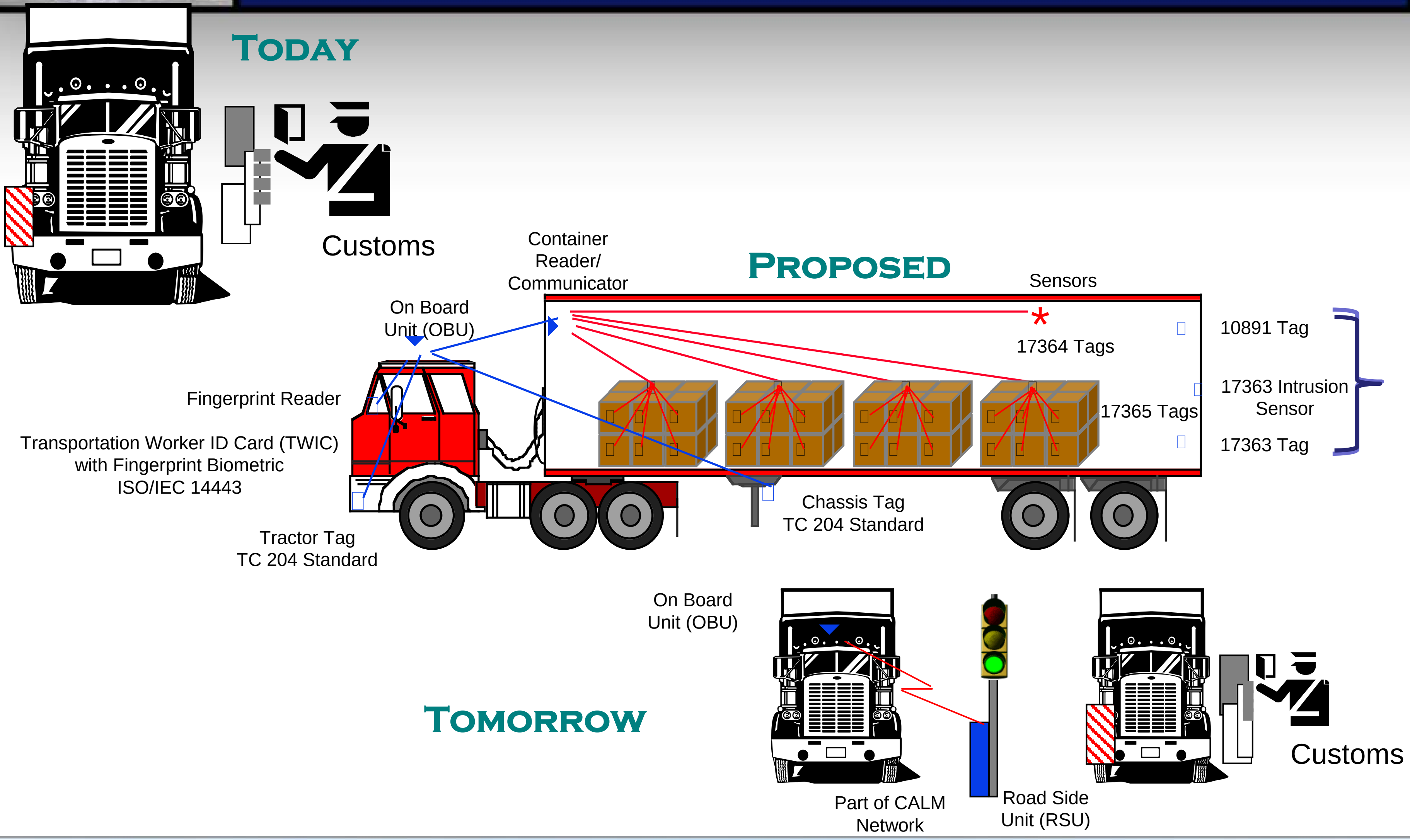
CBP’s Core Cargo Security Programs

Program and date	Description
Obtaining advanced information to identify high-risk containers	
Automated Targeting System (ATS), 1999	CBP uses ATS—a mathematical model that uses weighted rules to assign a risk score to arriving cargo shipments based on shipping information—to help identify and prevent potential terrorists and terrorist weapons from entering the United States. ATS is used by CBP to review documentation, including cargo manifest information submitted by the vessel carriers on all U.S.-bound shipments, and entry data (more detailed information about the cargo) submitted by brokers, to develop risk scores that help identify containers for additional examination.
24-hour Rule, 2002	CBP generally requires vessel carriers to electronically transmit cargo manifests to CBP’s Automated Manifest System 24 hours before U.S.-bound cargo is loaded onto a vessel at a foreign port. The information is used by ATS in its calculation of risk scores. The cargo manifest information is submitted by vessel carriers for all arriving cargo shipments.
Importer Security Filing and Additional Carrier Requirements (also known as 10+2), 2009	CBP requires importers and vessel carriers to provide data elements for improved identification of containers that may pose a risk for terrorism. The importer is responsible for supplying CBP with 10 shipping data elements, such as country of origin, 24 hours prior to loading, while the vessel carrier is required to provide 2 data elements, container status messages and stow plans, not required by the 24-hour Rule.
Domestic scanning technology deployments	
Non-intrusive inspection (NII) equipment, 2001	CBP uses NII equipment to actively scan both randomly selected containers and those identified by ATS as high-risk. NII uses X-rays or gamma rays to scan a container and create images of the container’s contents without opening it. According to CBP, as of August 2010, it had deployed 92 NII systems to U.S. seaports to scan containers. In fiscal year 2009, 4.6 percent of containers arriving at U.S. seaports were scanned.
Radiation Portal Monitors, 2007	CBP program to passively scan 100 percent of containers arriving in the United States with radiation detection equipment prior to leaving a domestic port. According to CBP, as of August 2010, it had deployed 453 radiation portal monitors at U.S. seaports, through which approximately 99 percent of all containers arriving by sea passed.
Partnerships with foreign governments	
Container Security Initiative (CSI), 2002	CBP places staff at participating foreign ports to work with host country customs officials to target and examine high-risk container cargo for weapons of mass destruction before they are shipped to the United States. CBP officials identify the containers that may pose a risk for terrorism and request that their foreign counterparts examine the contents of the containers.
Secure Freight Initiative (SFI), 2006	CBP and Department of Energy program at selected ports to actively and passively scan 100 percent of U.S.-bound container cargo for nuclear and radiological materials overseas using integrated examination systems that couple NII and radiation detection equipment.
Partnership with trade industry	
Customs-Trade Partnership Against Terrorism (C-TPAT), 2001	CBP develops voluntary partnerships with members of the international trade community comprised of importers; manufacturers; customs brokers; forwarders; air, sea, and land carriers; and contract logistics providers. Private companies agree to improve the security of their supply chains in return for various benefits, such as a reduced examination of their cargo.

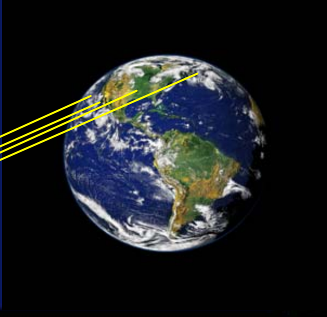
GAO Report – Supply chain security

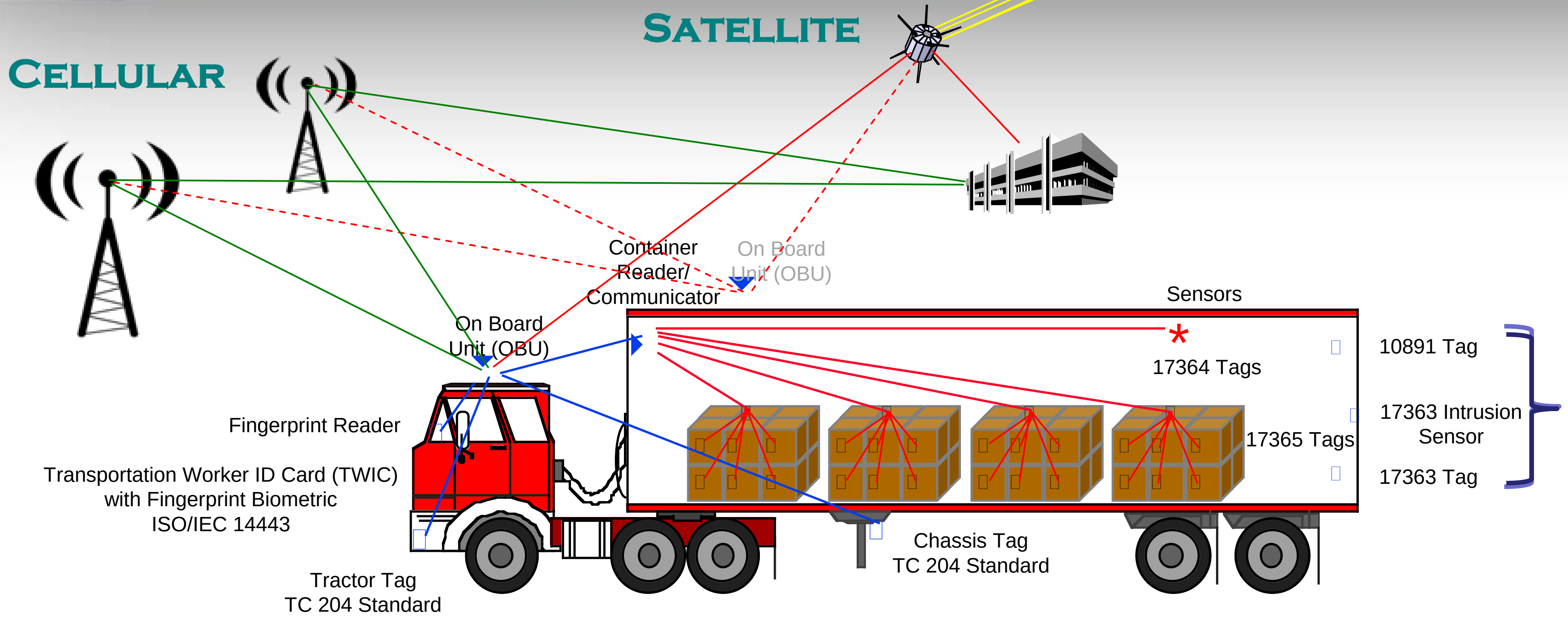
- http://www.gtri.gatech.edu/media/726
- Two possible approaches to pursue to implement container security technology p28
  - Mandatory
    - "... if DHS determines that the universal use of container technologies would provide a worthwhile security benefit, DHS would likely pursue a rulemaking approach to mandate the use of the technologies on all U.S.-bound containers."
  - Voluntary
    - "If DHS determines that the technologies would be primarily beneficial in a more limited portion of the supply chain, though, it would work with the trade industry to encourage voluntary use of the technologies"
    - "If CBP adopts a voluntary approach, it may also have challenges getting support from C-TPAT members"

Border Crossing & ISO TC 204's 26683



Border Crossing & ISO TC 204's 26683




Satellite
Cellular
Container Reader/ Communicator
On Board Unit (OBU)
On Board Unit (OBU)
Sensors
17364 Tags
10891 Tag
17363 Intrusion Sensor
17363 Tag
17365 Tags
Fingerprint Reader
Transportation Worker ID Card (TWIC) with Fingerprint Biometric ISO/IEC 14443
Chassis Tag TC 204 Standard
Tractor Tag TC 204 Standard

Standards

- The standards of ISO 17363, ISO 17364, ISO 17365, ISO 17366, ISO 17367, and ISO 10891 are based on the standards of ISO TC 122 and ISO/IEC JTC 1/SC 31
  - Technology standards (e.g. ISO/IEC 18000-6, 18000-3, 18000-7, and 8802-15-4 for RF)
  - Data standards (e.g. ISO/IEC 15434, 15418, 15459, 15963)
  - Conformance standards (e.g. ISO/IEC 18047-6, 18047-3, and 18047-7 for wireless communications)
- Sensor standards are the cooperative work of ISO/IEC JTC 1/SC 31 and IEEE 1451
  - Technology standards (e.g. ISO/IEC/IEEE 21450, ISO/IEC/IEEE 21451-1, ISO/IEC/IEEE 21451-2, ISO/IEC/IEEE 21451-5, ISO/IEC/IEEE 21451-7 and ISO/IEC/IEEE 8802-15-4 for wireless)

Standards Needed

- ISO TC 204 CALM to also include ISO/IEC/IEEE 8802-15-4 air interface
- IEEE 1451.5 to embrace ISO/IEC/IEEE 8802-15-4 air interface instead of IEEE 802.15.4-2003 [in process, IEEE PAR submitted]
- IEEE 1451.5 to be PSDO Fast-Tracked to ISO/IEC/IEEE 21451-5 [awaiting approval in 1451.5]
- ISO 17363, 2nd Edition, to be approved [currently in CD ballot]
- ISO 17364, 2nd Edition, to be approved [passed CD ballot]
- ISO 17365, 2nd Edition, to be approved [passed CD ballot]
- ISO 17366, 2nd Edition, to be approved [passed CD ballot]
- ISO 17367, 2nd Edition, to be approved [passed CD ballot]
- ISO 26683 to be approved [currently in NP ballot]
- Customs authorities to embrace particularly 17363, 8802-15-4, and 21451-5 along with appropriate data elements semantics, and syntax.

???

(AT THE END)

THANK YOU!!!

Craig K. Harmon, President & CEO
Q.E.D. Systems
3963 Highlands Lane, SE
Cedar Rapids, IA 52403-2140 USA
(V): +1 319/364-0212
(M): +1 319/533-8092
(E): craig.harmon@qed.org
(U): http://www.autoid.org