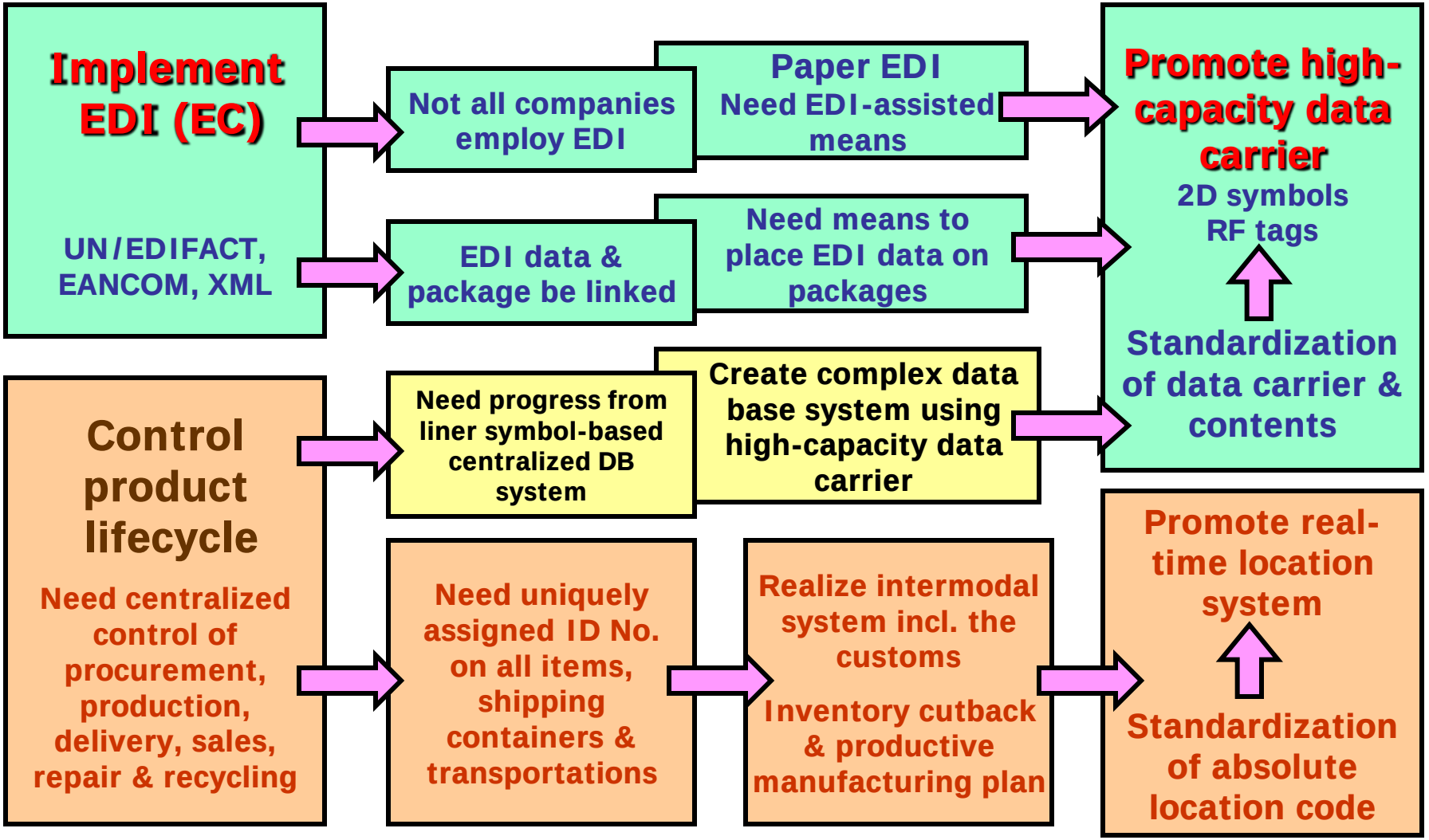
Global Logistics Platform using Data Carrier

Akira Shibata

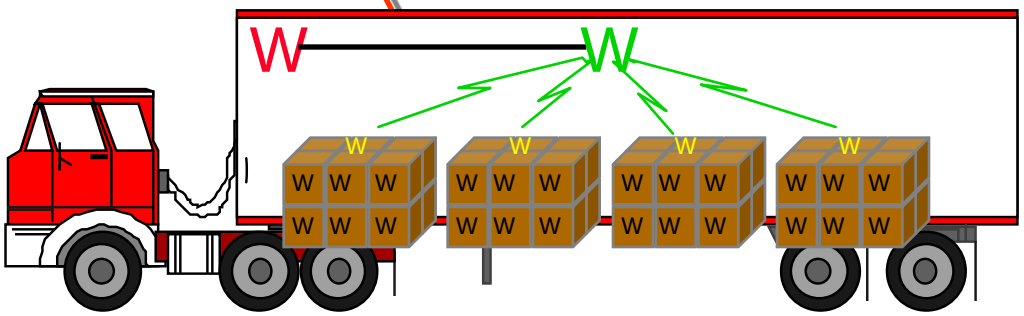
Fundamental Thoughts of SCM Advancement

SCM: Supply Chain Management



Goal : Real Time Cargo Tracking System

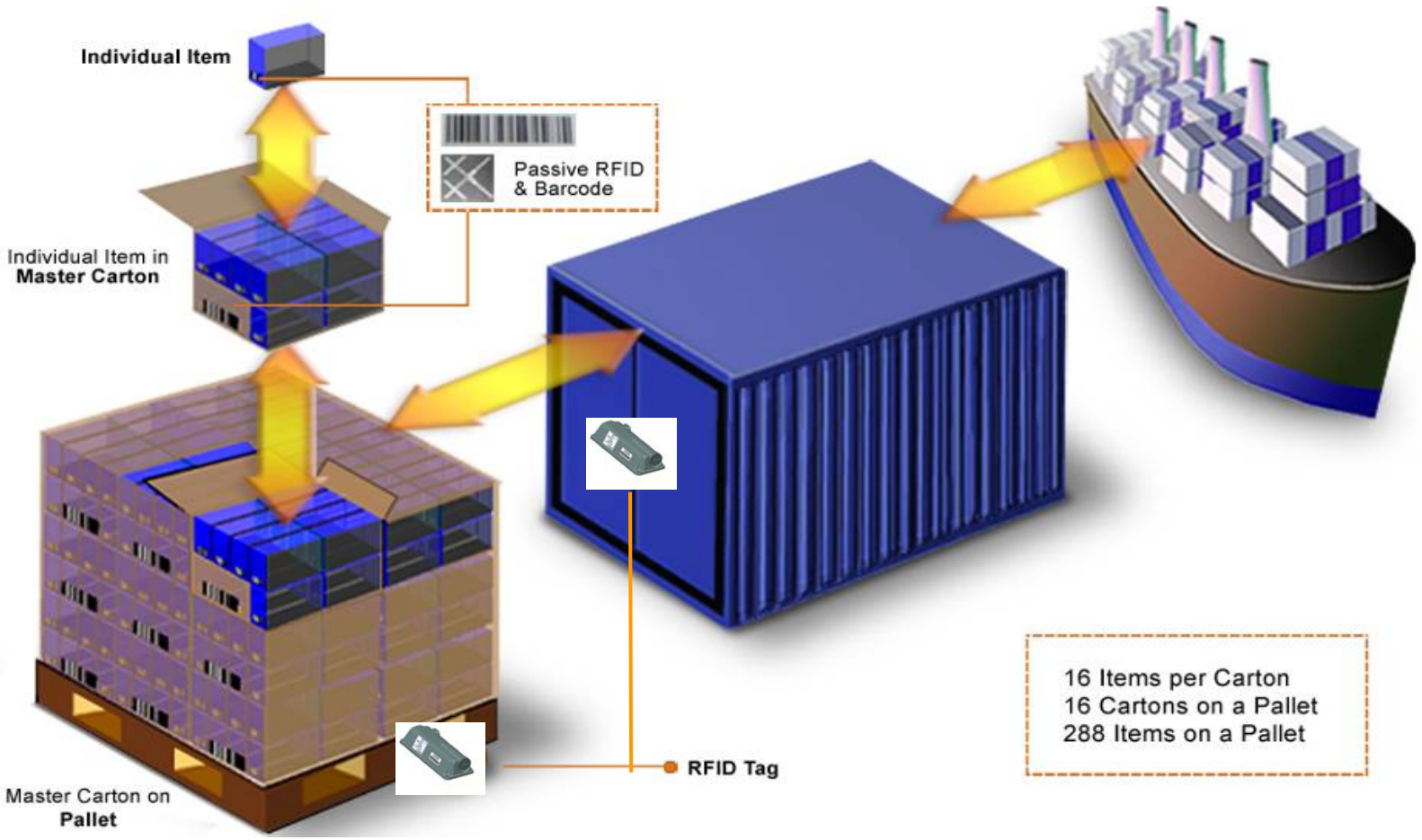
Anywhere in the world! All freight cargos!



Lads, Dads & Granddads

Real Time Locating Systems

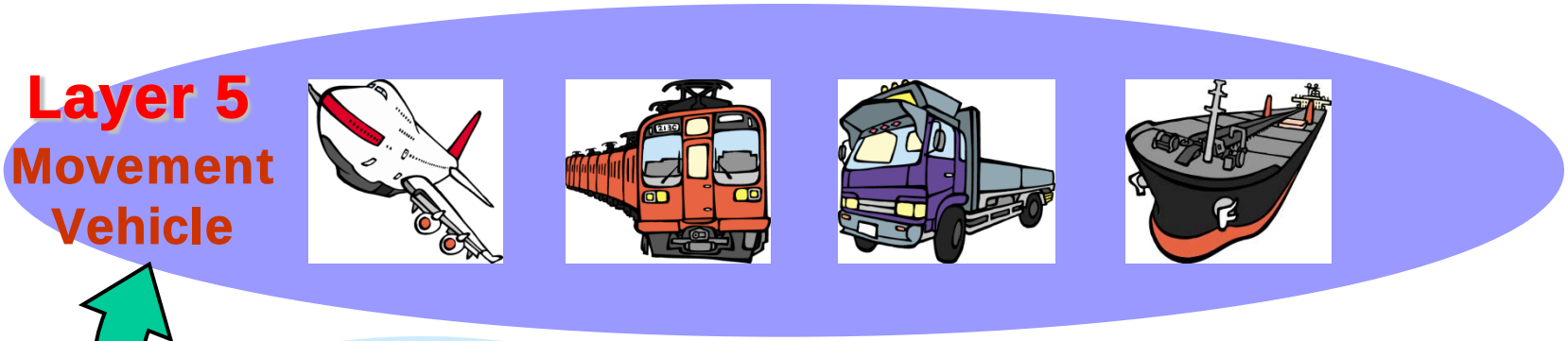
Goal : Visualization of Supply Chain

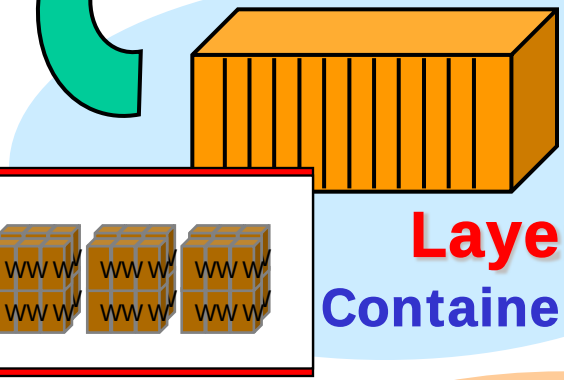


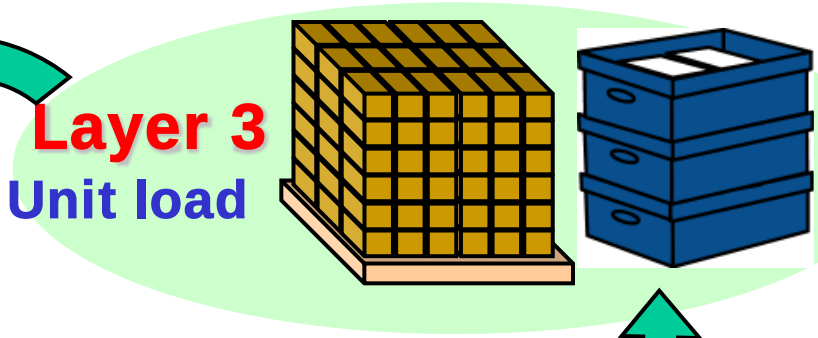
Visualization of entire SCM is important to improve the efficiency of SCM.

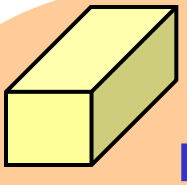
Data Carriers (ex.RFID) plays a critical role.

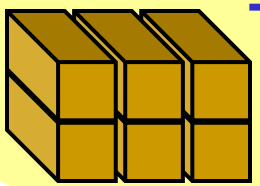
Layers of Supply Chain



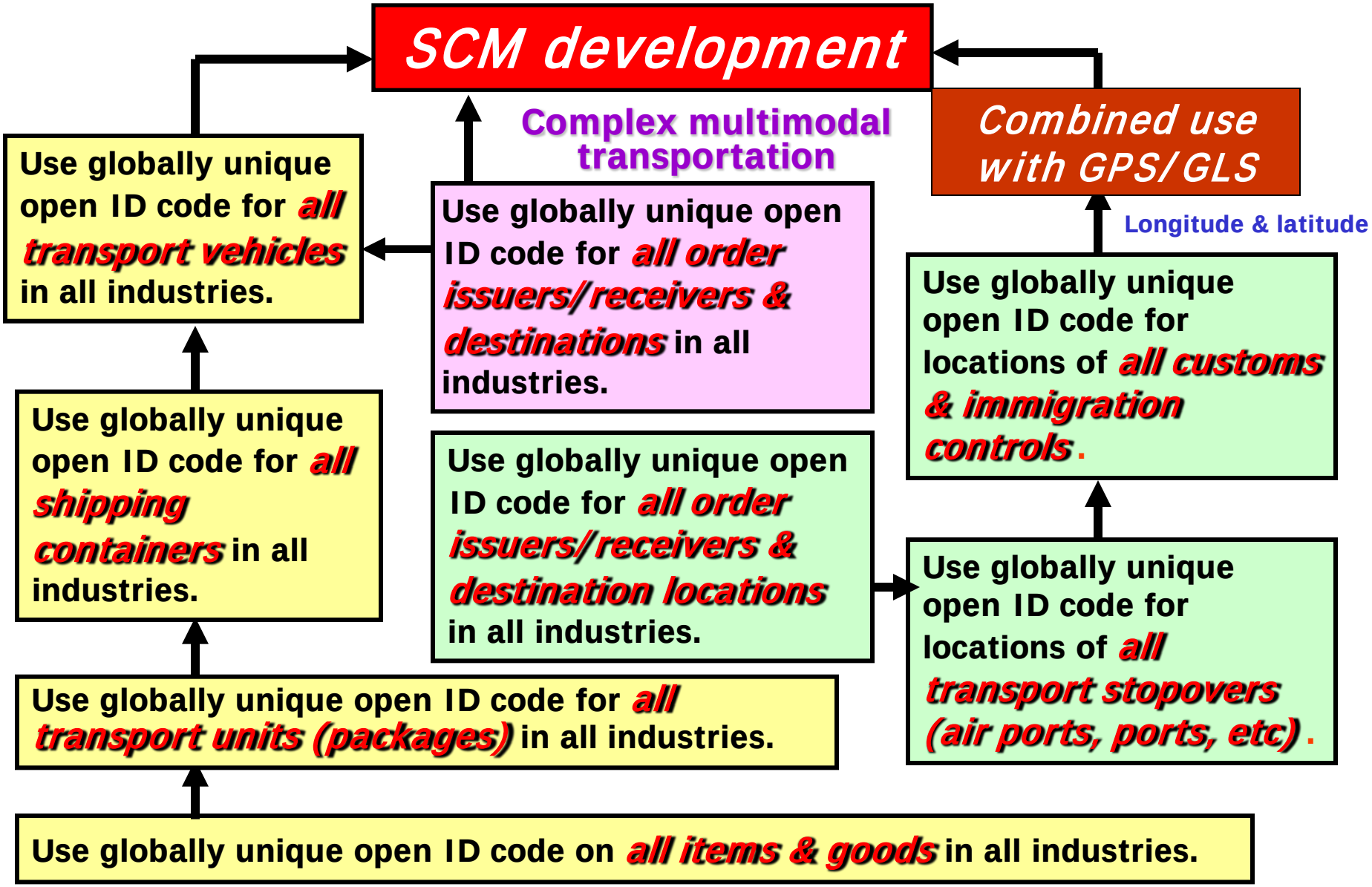






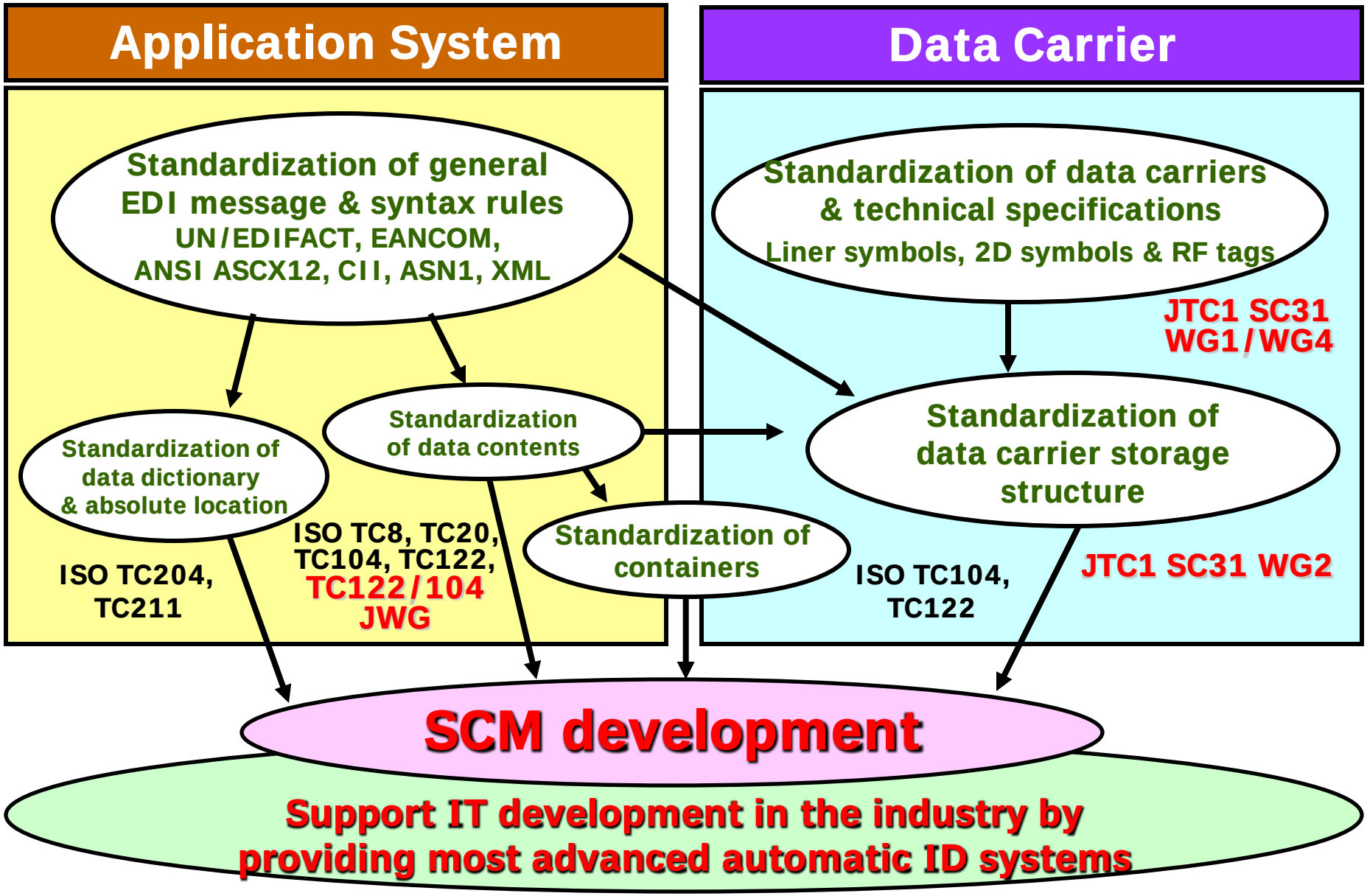


Principal of Item Identification in SCM



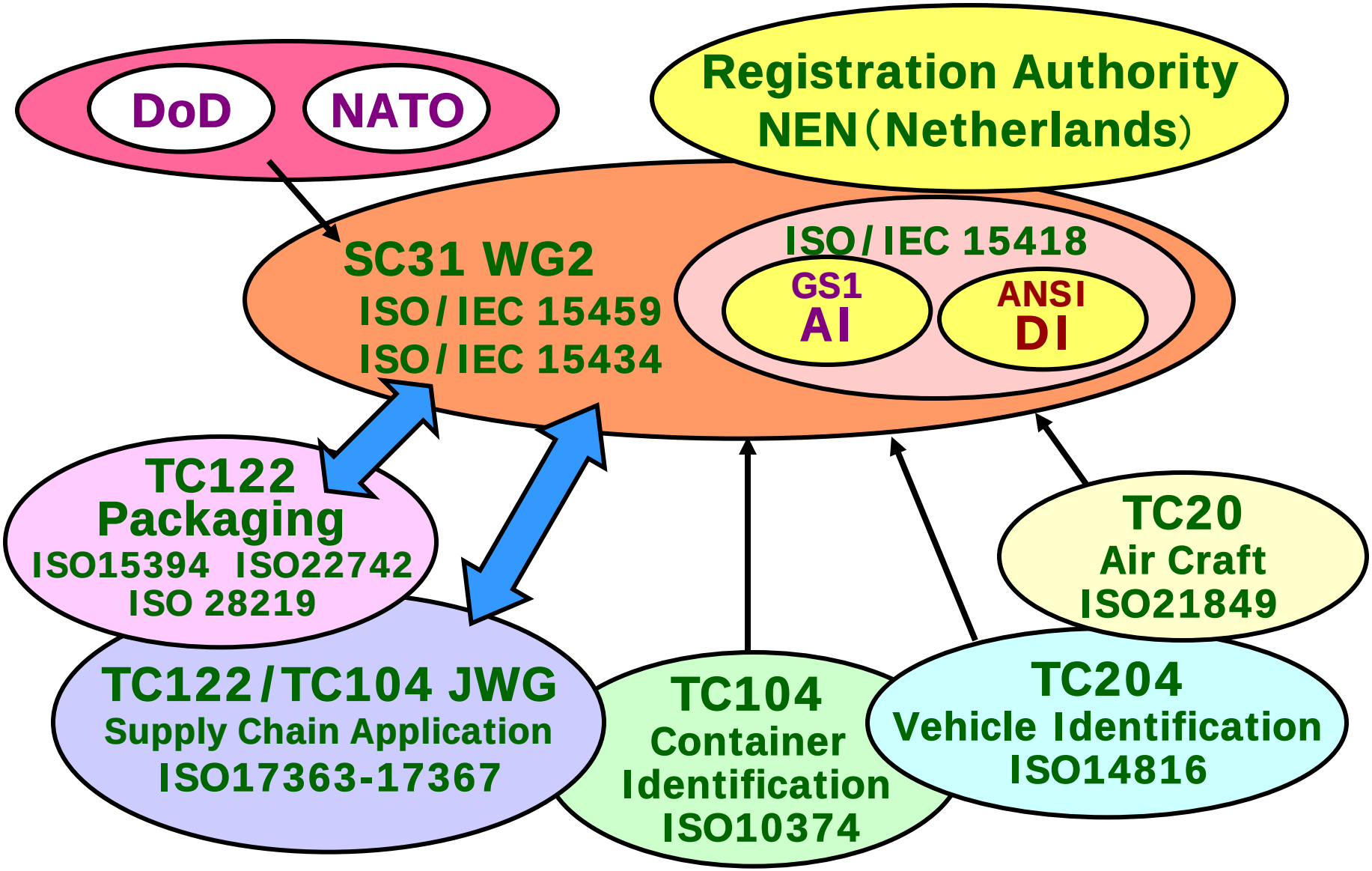
 2008-03-30

Standardization for Supply Chain



 2008-03-30

UID Related Authority



Data Identifier

GS1 Specifications Application Identifier Standard

ID	Content
00	Serial Shipping Container Code (SSCC)
01	Global Trade Item Number (GTIN)
11	Production Date
21	Serial Number
241	Customer Part Number
30	Variable Count

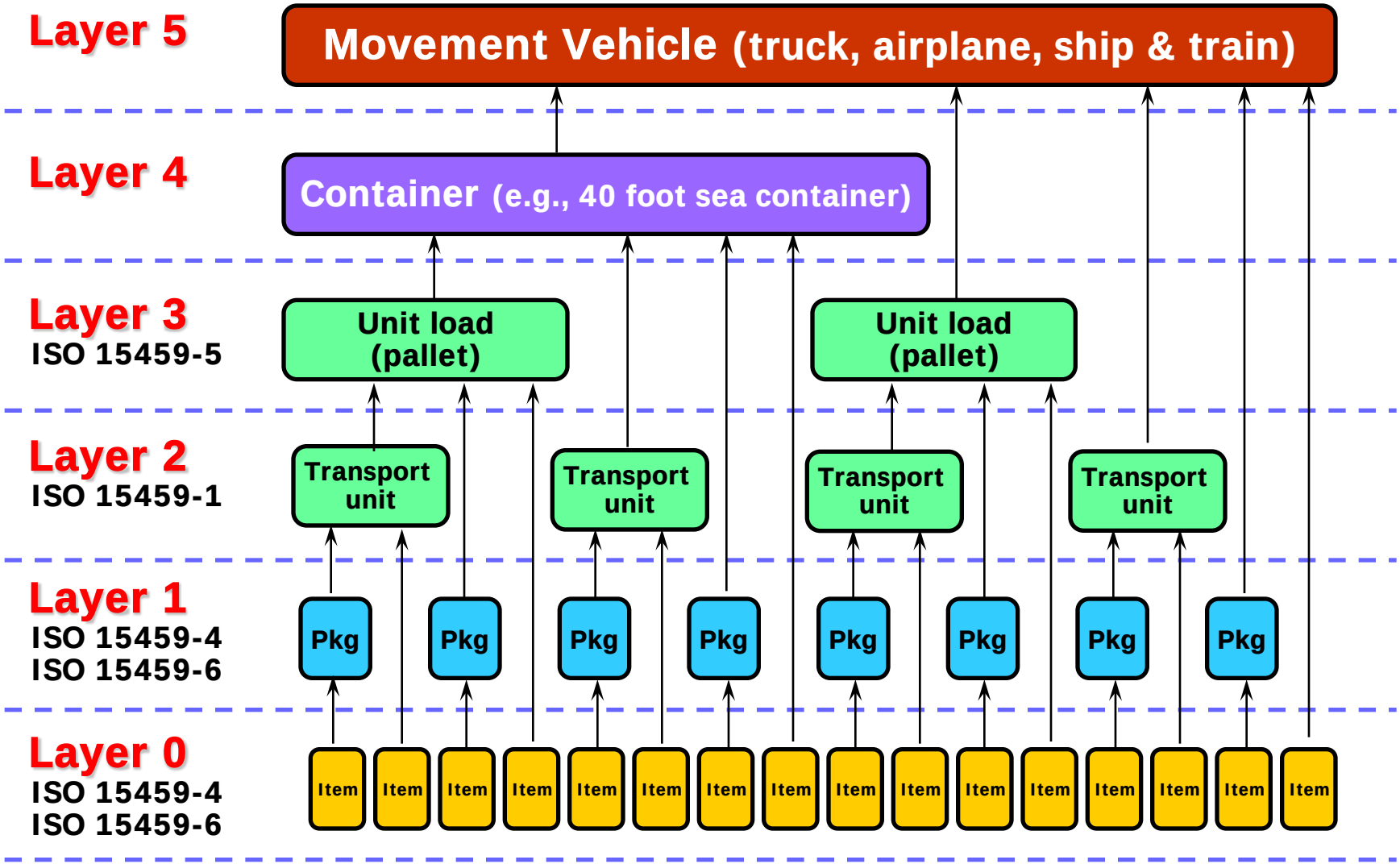
ASC MH10.8.2 Data Identifier Standard

ID	Content
B	Container Type
D	Date Code
I	Vehicle Identification Number (VIN)
J	Unique License Plate
L	Storage Location
P	Item Identification Code
Q	Quantity, Number of Pieces
S、T	Traceability (Serial) Number
V	Supplier Code

ISO/IEC 15418

Layers and Standards of Supply Chain

Item Identification



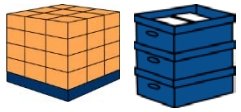
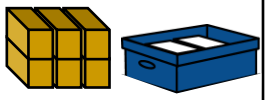
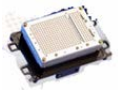
Basic Item Identification

ISO/IEC 15459

Unique Identifiers

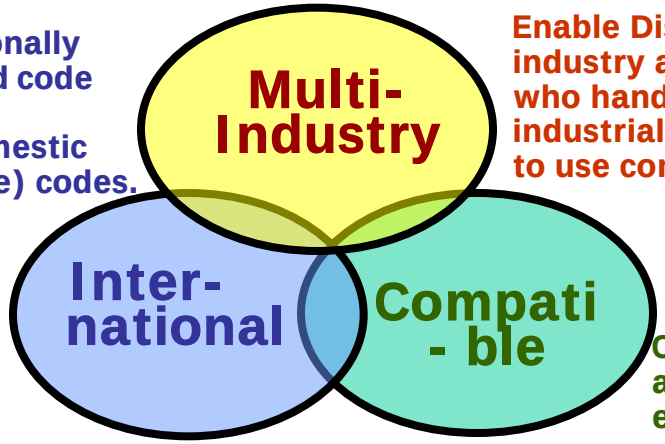
Layer	No.	Title
2	Part:1	Transport unit
-	Part:2	Registration procedure
-	Part:3	Common rules
0,1	Part:4	Unique items
3	Part:5	Returnable transport items
0,1	Part:6	Product groupings

Basic Item Identification

Layer	International Standards
 Unit Load	ISO/IEC 15459-5
 Transport Units	ISO/IEC 15459-1
 Packaging	ISO/IEC 15459-4 15459-6
 Parts	ISO/IEC 15459-4 15459-6

Fundamental Thoughts

Use internationally acknowledged code structure, and avoid domestic closed (unique) codes.



Enable Distribution/Logistics industry and/or consumers, who handle goods from other industrial sectors, to be able to use common system.

Code structure which allow utilization of existing codes.

Standards on Codes for Item Identification

Issuing agency code + Company code + Item code + Serial no.

Issuing agency code	Company code	Item code	Serial no.
EAN, CII, Duns etc.	X Corp. Ltd., Brand Y etc. e.g.) Honda, Lexus, DENSO, IBM...	Managed by each Company e.g.) Odyssey, AS400....	Managed by each Company e.g.) VIN No., Lot No.....

Data length of each code will not be fixed, but common identifier conforming to ISO15418 will be inserted if needed.

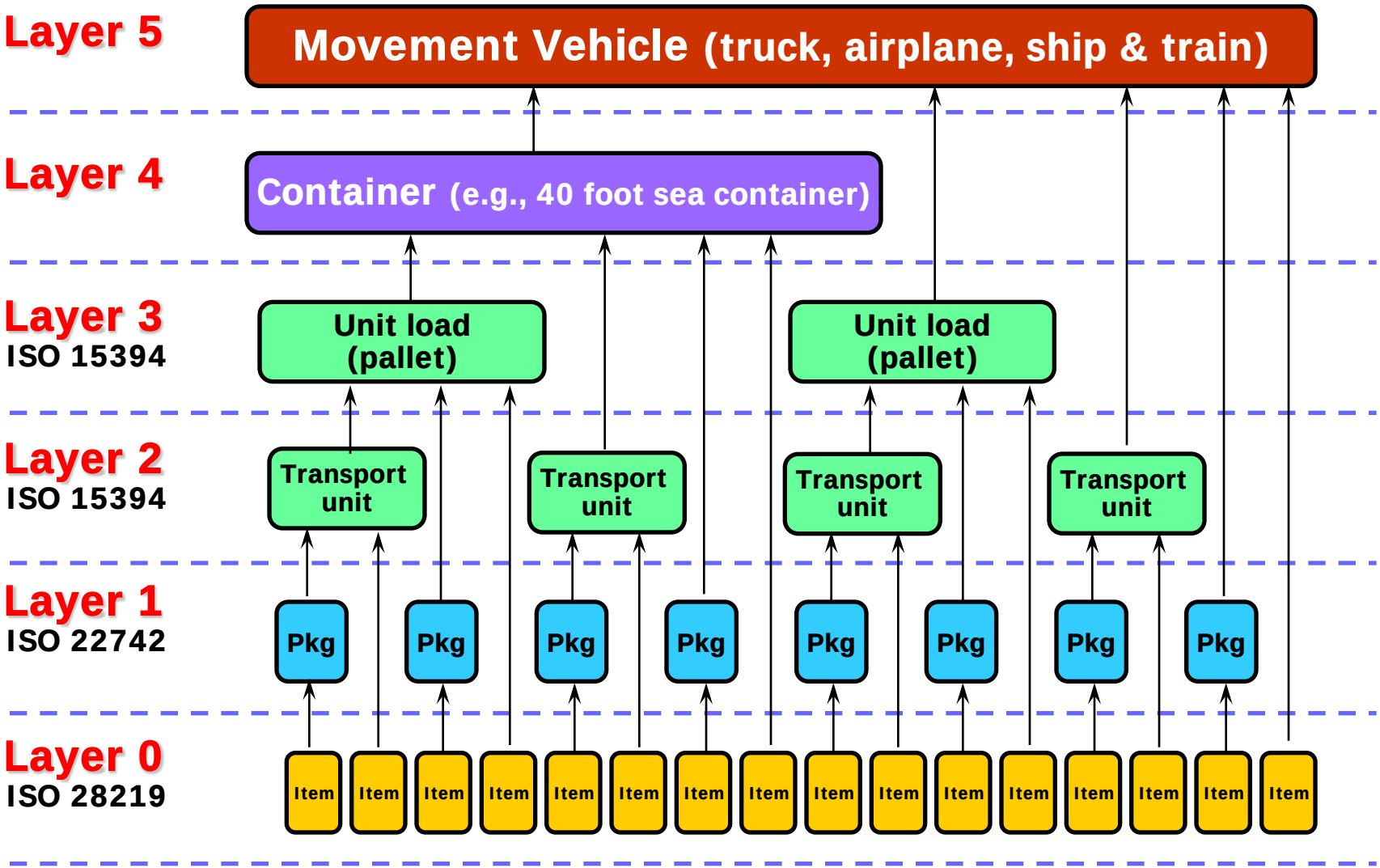
Issuing Agency Code

ISO/IEC 15459-2

IAC	Content
0 ～ 9	GS1 Global Standard 1
LA	JIPDEC/CII Japan Information Processing Development Center/ Center for the Information of Industry
LE	EDIFICE Electronic Data Interchange for Companies with Interest in Computing and Electronics
LF	FIATA International Federation of Freight Forwarders
OD	ODETTE Organization for Data Exchange and Tele Transmission In Europe
UN	Dun & Bradstreet

Layers and Standards of Supply Chain

1D/2Dsymboles



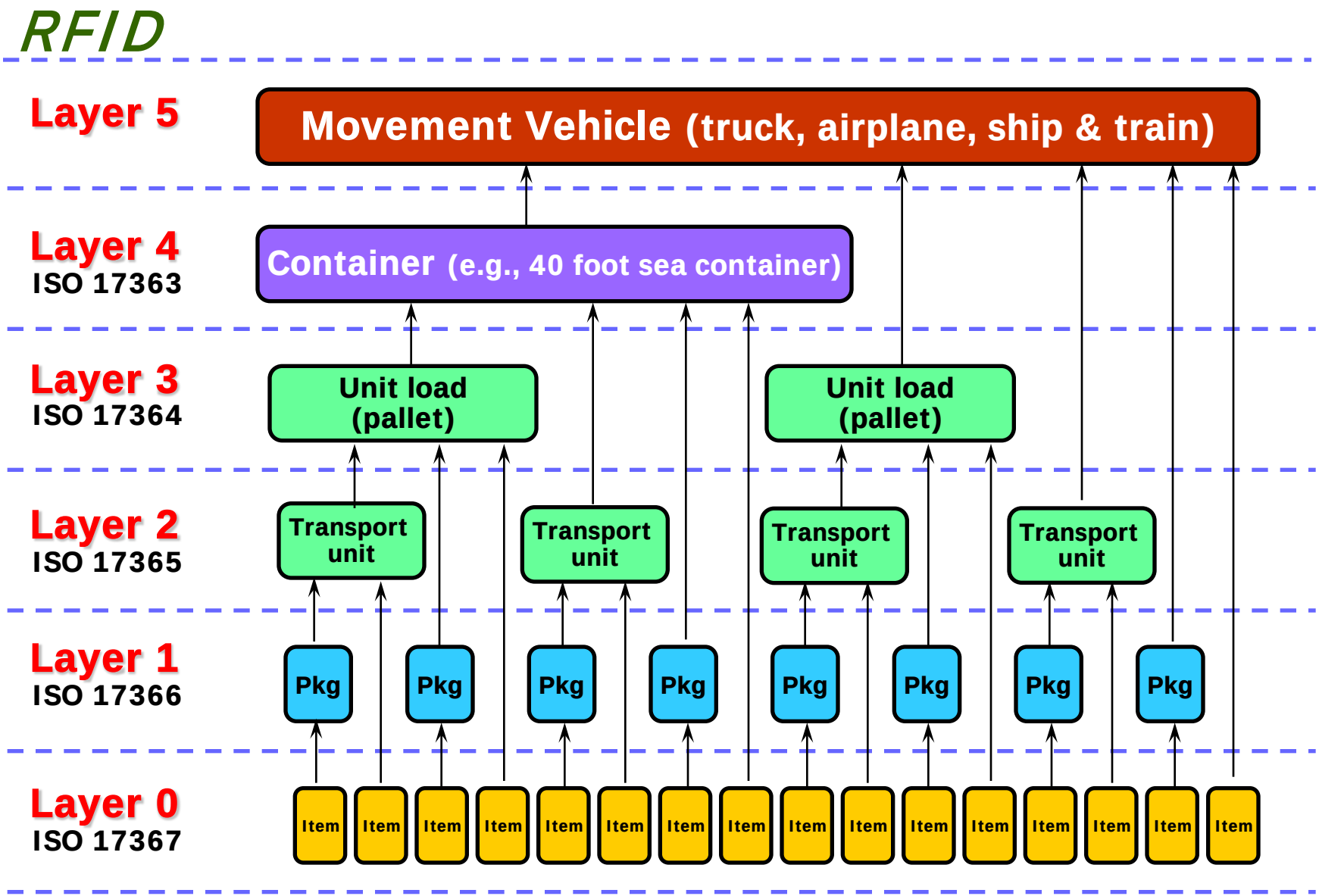
Unique Identifier

ISO15394, ISO22742, ISO28219

Supply chain applications

Layer	No.	Title
4	10374	Freight containers
2,3	15394	Unit Load
2,3	15394	Transport units
1	22742	Product packaging
0	28219	Item

Layers and Standards of Supply Chain



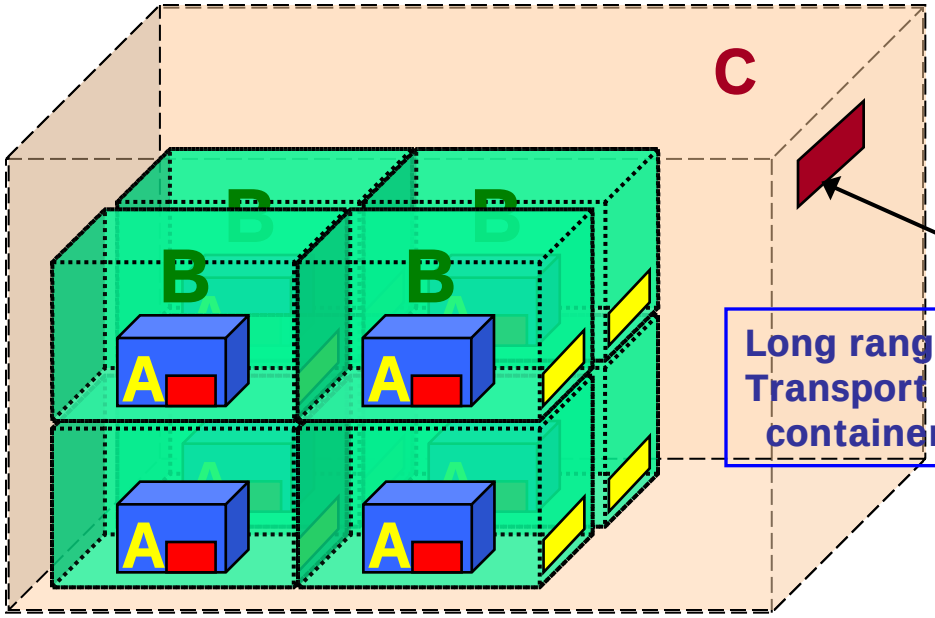
Unique Identifier

ISO17363-ISO17367

Supply chain applications of RFID -

Layer	No.	Title
4	17363	Freight containers
3	17364	Returnable transport items
2	17365	Transport units
1	17366	Product packaging
0	17367	Product tagging

Which RF tag are read?



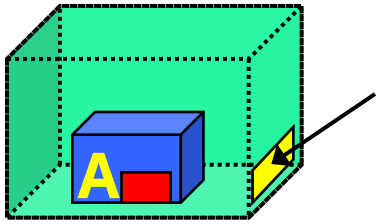
RF Tag C

Long range
Transport unit number,
container qty., destination, etc.

Unit load tag

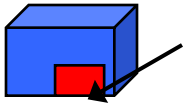
Transport units tag

Item tag



RF Tag B

Medium to long range
Item number, manufacturer,
seller, etc.



RF Tag A

Short to medium range
Item number, manufacturer, etc

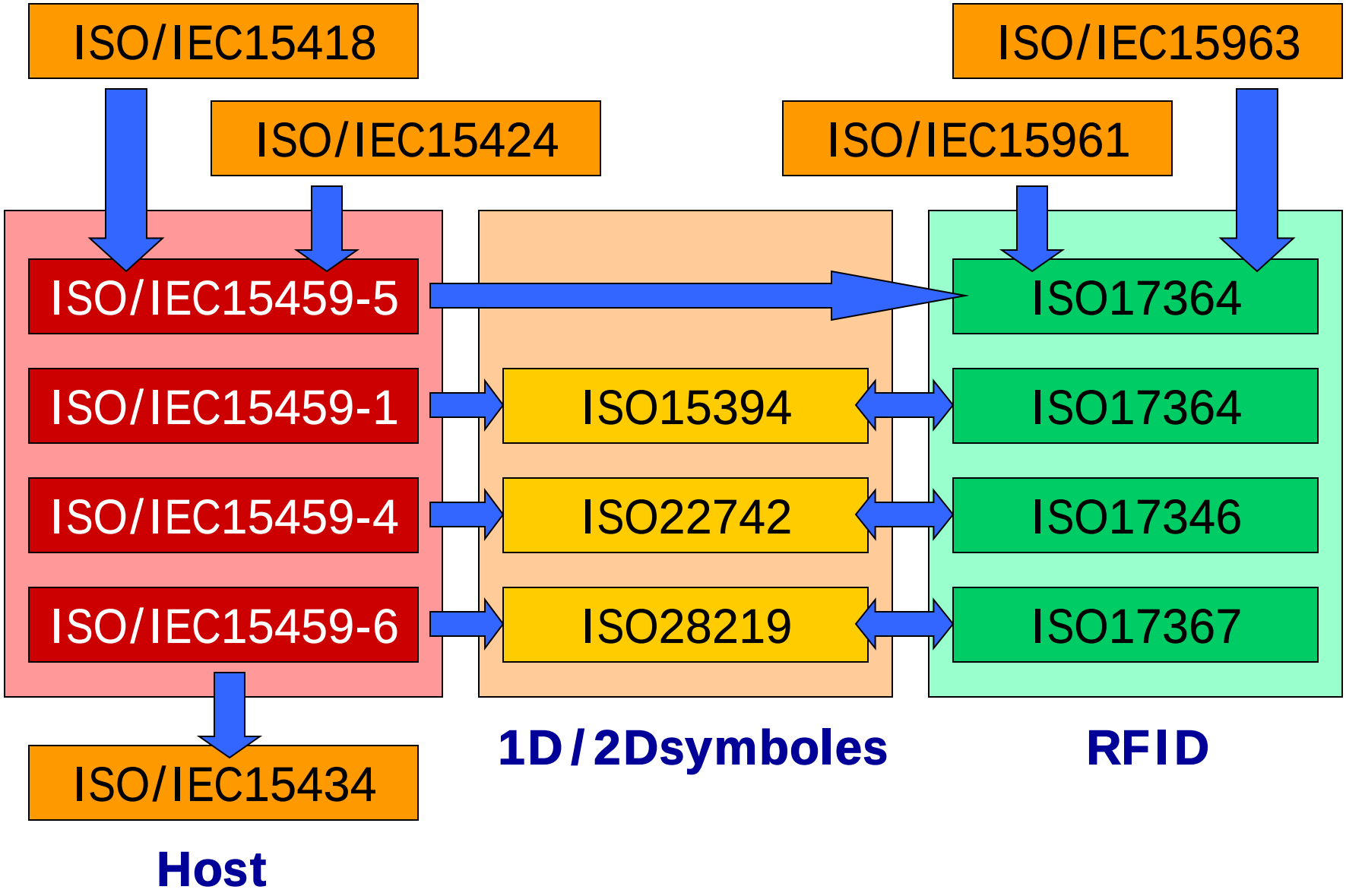
- Each tag has different features and information stored depending on the layer.
- High flexibility to accommodate a wide range of applications is required for the RFID tag system.

Item Identification in SCM

Layer \ media	Applicable International Standards		
	RFID	1D / 2D Symbol	Content
Unit Load	ISO17364	N/A	———
Transport Units	ISO17365	ISO15394	License Plate ・Shipping Labels ・GTL Global Transport Label
Packaging	ISO17366	ISO22742	・Packaging Labels
Parts	ISO17367	ISO28219	・Labels ・Direct Marking

RFID must be co-usable with AIDC technologies already in use.

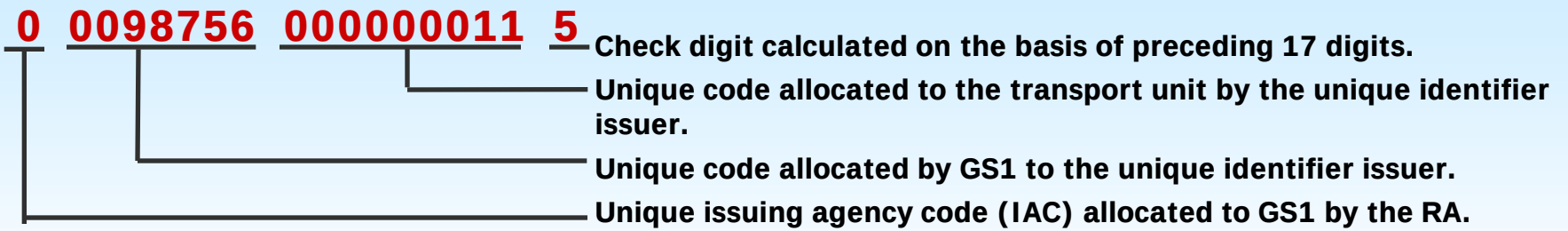
Structure of unique ID



Unique identifier for transport units

●GS1 unique identifier for transport units.

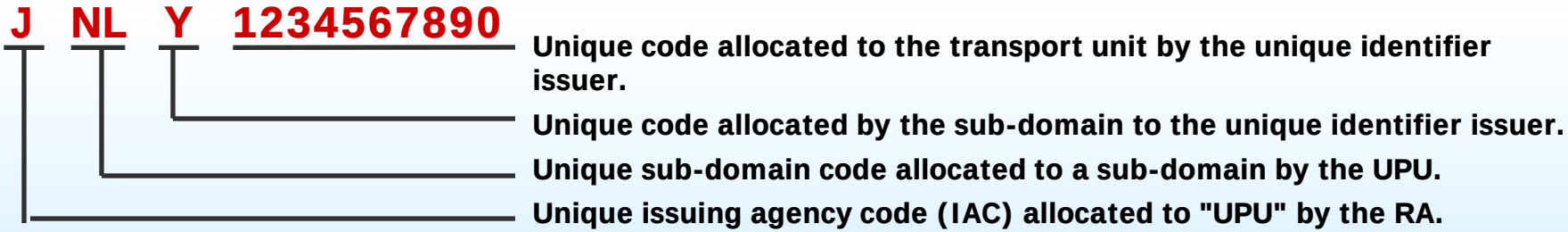
The example below shows a GS1 unique identifier (SSCC) for transport units.



]C1	00	00098756000000115
Symbology Identifier	GS1 Application Identifier	Unique Identifier

●ASC MH10 unique identifier for transport units.

The example below shows an ASC MH10 unique identifier (Data Identifier "J") for transport units.



]C0	J	JNLY1234567890
Symbology Identifier	ASC MH10 Data Identifier	Unique Identifier

One of the ASC MH 10 Data Identifiers from ANS MH10.8.2 Category 10, in the general range J to 6J, which starts with an Issuing Agency Code.

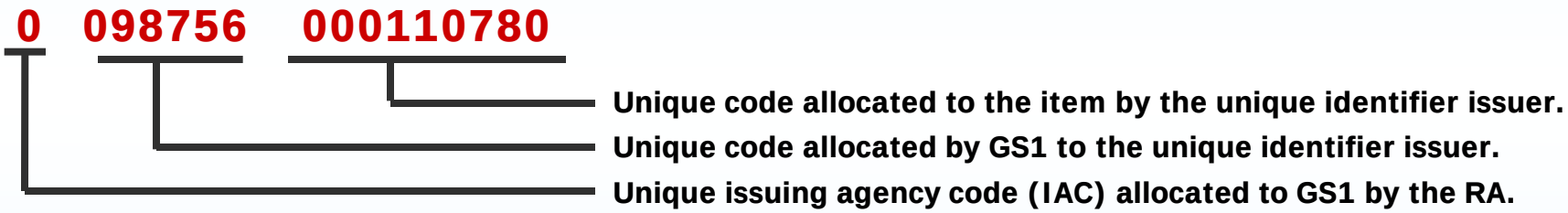
Unique identifier for item identification

●GS1 unique identifier for supply chain management.

The rules of GS1, to whom the Issuing Agency Codes "0" till "9" have been allocated by the Registration Authority, are that the unique identifier consists of no more than 30 alphanumeric characters, the first pant of which is always numeric. The first numeric string of characters is allocated by GS1 to the issuer (Global Company Prefix) and the following characters are assigned by issuer under the rules of GS1.

Unique identifier issued under the rules of GS1. In this example the Application Identifier is "8004", the Issuing Agency GS1 has provided the unique identifier issuer with "0098756", that starts with the Issuing Agency Code "0", and "000110780" has been assigned by the issuer.

The example below shows a GS1 unique identifier (Application Identifier 8004).



]C1	8004	0098756000110780
Symbology Identifier	GS1 Application Identifier	Unique Identifier

One of the GS1 Application Identifiers 8003, 8004 or the combination AI 01 21.

If this class identification method is used each Issuing Agency, or unique identifier issuer if authorized by it's Issuing Agency, shall select the appropriate GS1 Application Identifier to identify the sub-class representing the class of the unique identifier.

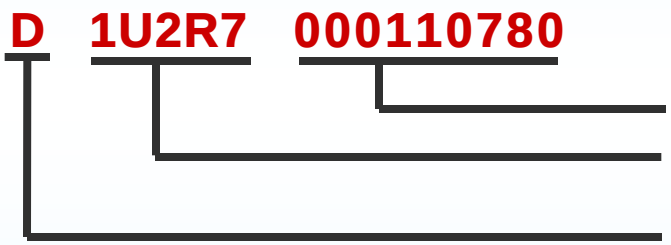
Unique identifier for item identification

●ASC MH10 unique identifier for item identification.

NATO ALLIED COMMITTEE 135, to whom the Issuing Agency Code "D" has been allocated by the Registration Authority, have issued rules for the creating unique identifiers. The characters following the Issuing Agency Code "D" are allocated by NATO ALLIED COMMITTEE 135 to commercial or government entities and are referred to as a CAGE/NCAGE codes, The unique identifier issuer then assigns the remaining characters.

Typical Unique Item Identification issued under the rules of "military organization NATO ALLIED COMMITTEE 135" : In this example the Data Identifier is "25S", the IAC is "D", the CIN (CAGE/NCAGE) is "1U2R7", and the serial number is "000110780" .

The example below shows an NATO ALLIED COMMITTEE 135 item identifier (Data Identifier 25S).



Unique code allocated to the article by the unique identifier issuer.

Unique code [CAGE/NCAGE] allocated by AC135 to the unique identifier issuer.

Unique issuing agency code (IAC) allocated to AC135.

]C0	25S	D1U2R7000110780
Symbology Identifier	ASC MH10 Data Identifier	Unique Identifier

One of the ASC MH10 Data Identifiers, as defined in ISO/IEC 15418 (ANS MH10.8.2), 25S or 25T.

If this class identification method is used each Issuing Agency, or unique identifier issuer if authorized by it's Issuing Agency, shall select the appropriate ASC MH10 Data Identifier to identify the sub-class representing the class of the unique identifier.

Thank you for your attention!

Akira Shibata