Secure Tracking and Tracing using GS1 and SAP OER

Leverage GS1 EPCIS in Healthcare
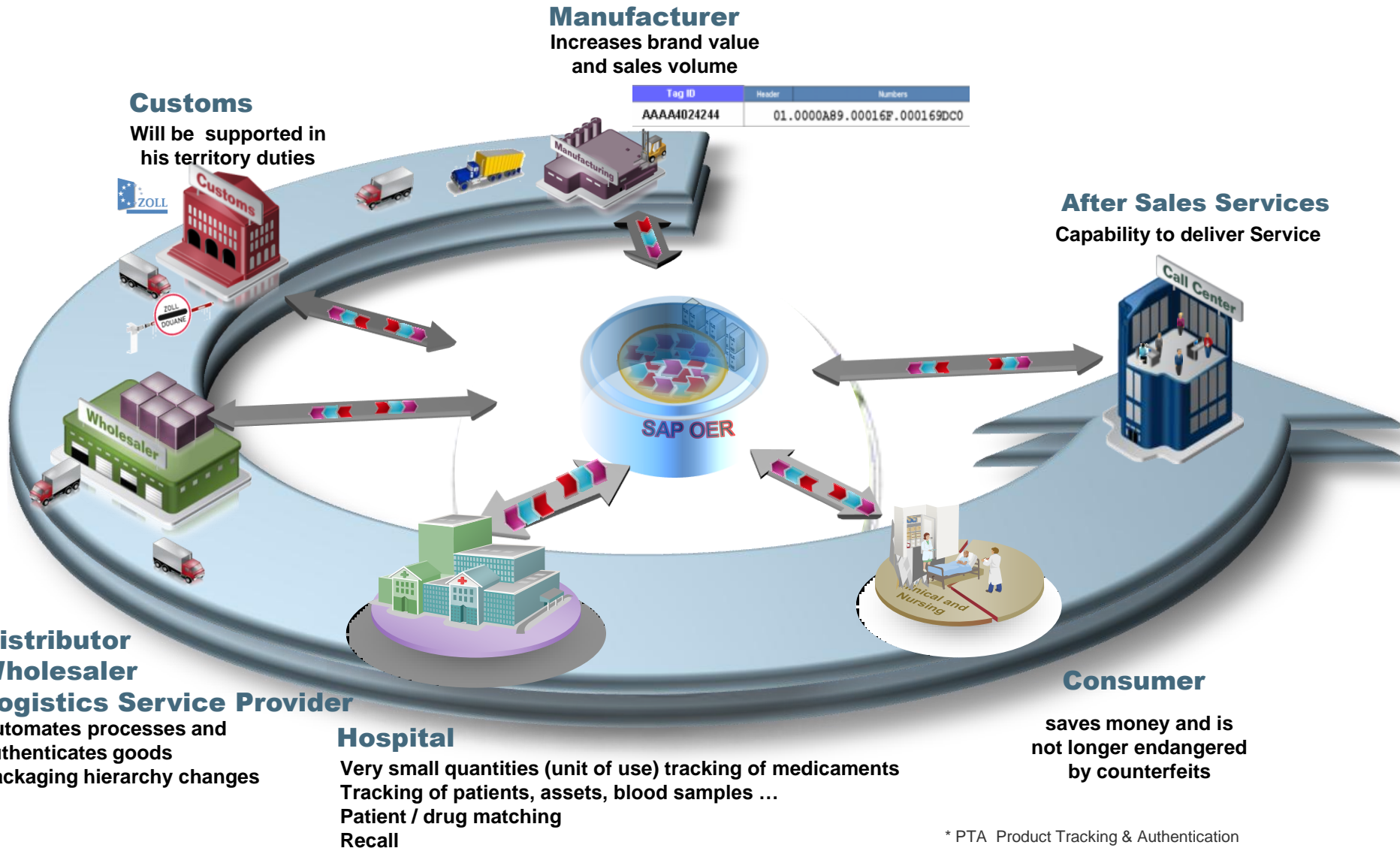
Nino Novinec

nino.novinec@sap.com

SAP

Project Scope

- Show benefits of GS1 Healthcare Traceability Standard
  - Increase patient safety by reducing medication errors (patient/drug matching)
  - Product traceability in a complex, global supply chain, global supply chain logistics efficiency
  - Product safety and support withdrawal or recall
  - Legal compliance with national, regional or global regulation
  - Brand protection, product authentication and reduction in risk of counterfeit or fraud

- Show benefits of SAP Object Event Repository, GS1 EPCIS certified solution
  - Smooth Integration of SAP Industry Solution Healthcare or non-SAP systems
  - Integration with diverse tracking equipment
    - Panasonic CF-H1 tablet PC built around Intel MCA platform (Mobile Clinical Assistant)
    - BlackBerry, iPhone or other cell phones with mini web browser

- Unique features of SAP Objects Event Repository beyond standard of GS1 EPCIS Object Event Repository

- Feedback to EPCIS Healthcare Standardization Workgroup

- Reporting related to GS1 Healthcare Traceability Standard

Serialization in Healthcare Supply Chain

Secure Tracking and Tracing with GS1 EPCIS and SAP Object Event Repository

SAP

Manufacturer
Increases brand value and sales volume

Tag ID	Header	Numbers
AAAA4024244	01.0000A89.00016F.000169DC0	

Customs
Will be supported in his territory duties

ZOLL

After Sales Services
Capability to deliver Service

Call Center

SAP OER

Distributor
Wholesaler
Logistics Service Provider
Automates processes and authenticates goods
Packaging hierarchy changes

Hospital
Very small quantities (unit of use) tracking of medicaments
Tracking of patients, assets, blood samples …
Patient / drug matching
Recall

Consumer
saves money and is not longer endangered by counterfeits

* PTA Product Tracking & Authentication
** OER Object Event Repository

Manufacturer

Supplier Process Steps

1	2	3	4	5	6	7
Number range maintenance	**Serialization during packing**	**Aggregation**		**Pack / Undo Pack**	**Assign Delivery**	Data upload to national OER

- **Central number range distribution in SAP OER**
- **Send to central All**
- **Creation of serialized objects, also randomized**
- **Distribute serialized objects to local systems or logistics service providers**
- **Distribute number ranges for production orders (optionally)**

Number Range Administration - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Back | Search | Favorites

Address http://uscie7q.wdf.sap.corp:50019/sap/bc/webdynpro/ain/ui_nr_administration?sap-language=EN

Number Range Administration

Object Type

Object Type: GTIN

Object Data
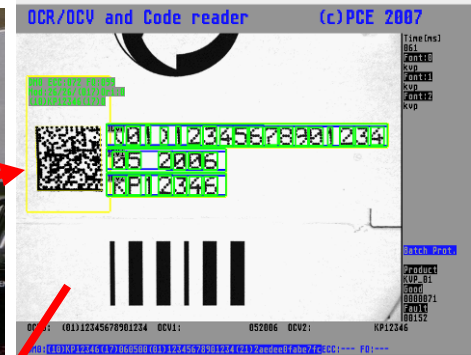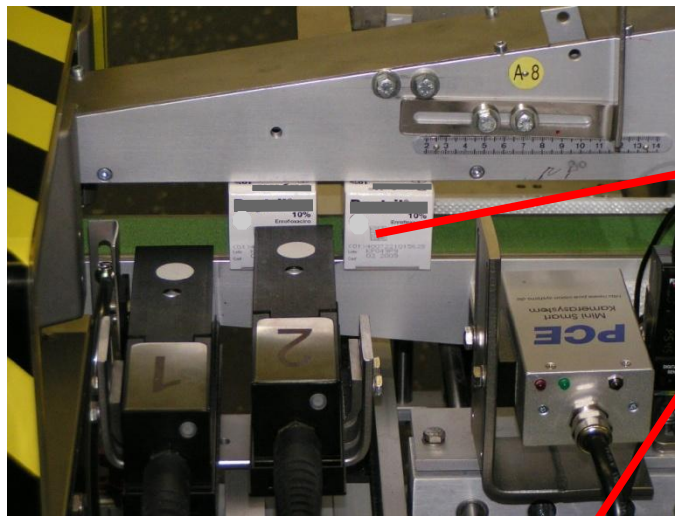
Global Trade Identification Number (GTIN): ◇ [   ] To [   ]

Status: [   ]
Uploaded: [   ]

Execute Selection

View [Standard View] | Print Version   Export | Select All | Allocate Number Range   Block Number Ranges | Filter Settings

Global Trade Item Number ⇕	Sequence Number ⇕	Serial Number From ⇕	Serial Number To ⇕	Current Number ⇕	Status ⇕	Uploaded ⇕
00037000123453	1	1	100	68	Active	Not uploaded
00037000123453	2	101	200	200	Blocked	Not uploaded
00037000123453	3	201	300	301	Inactive	Not uploaded
00037000123453	4	301	400	400	Blocked	Not uploaded
00037000442202	1	1	1000	314	Active	Not uploaded
00037000442202	2	1	2	2	Blocked	Not uploaded
00037000442202	3	3	5	2	Inactive	Not uploaded
00037000442202	4	2000	3000	3000	Inactive	Not uploaded
00037000505372	1	101	999	221	Active	Not uploaded
00037000505471	1	101	999	2	Active	Not uploaded

Row 1 of 591

Supplier Process Steps

1	2	3	4	5	6	7
Number range maintenance	**Serialization during packing**	**Aggregation**		**Pack / Undo Pack**	**Assign Delivery**	**Data upload to government / efpia**

- **Receive serialized objects observations, with attributes like GTIN serial number Lot, exp.date …**

- **Standard interface to OER**

- **Flexible encoding: EAN 128 HIBC …**

- **Data security**

- **Error handling**

Supplier Process Steps

1 Number range maintenance	2 Serialization during packing	3 4 **Aggregation**	5 Pack / Undo Pack	6 Assign Delivery	7 Data upload to government / efpia

- Hierarchy uploaded into AII &OER (Pack bundle - Karton - Palette - extendible, ex. Blister)

- Steps 2-4 can be done in one step during packing

Object Hierarchy

- (01)0-0037000-75829-7(21)94
  - (01)0-0037000-75822-8(21)10201
  - (01)0-0037000-75822-8(21)10202
  - (01)0-0037000-75822-8(21)10203
  - (01)0-0037000-75822-8(21)10204
  - (01)0-0037000-75822-8(21)10205
  - (01)0-0037000-75822-8(21)10206
  - (01)0-0037000-75822-8(21)10207
  - (01)0-0037000-75822-8(21)10208

144 Datamatrix codes successfully decoded.

Supplier Process Steps

1 Number range maintenance

2 Serialization during packing

3 **4** Aggregation

5 Pack / Undo Pack

6 Assign Delivery

7 Data upload to government / efpia
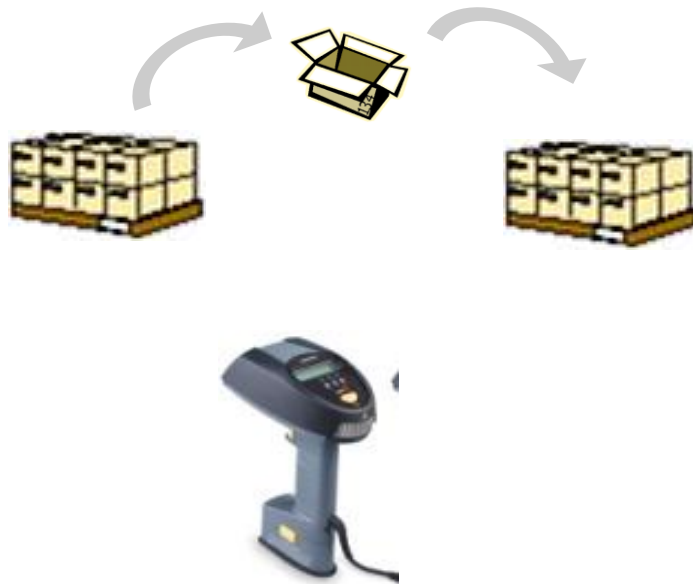
- Receive actual packing structures
- All open to third party systems
- Repackaging with mobile devices

SAP — Supply Chain Event Management

| F3 Back |
| 1. Manage Tag > |
| 2. Move > |
| 3. Load > |
| 4. Unload > |
| 5. Unpack > |
| 6. Unpack ChildObjs> |
| 7. Pack > |
| 8. Count > |
| 9. Manage Doc > |
| F8 LOff   Select |

Management

F3 Back

Type	Outbound Delivery
Doc.	0880000032
ID	
ID Count	0

F5 Add ID	F6 IDList
F7 Docs	F8 CmpDoc
F9 DocTyp	

Supplier Process Steps

| 1 Number range maintenance | 2 Serialization during packing | 3 | 4 Aggregation | 5 Pack / Undo Pack | 6 Assign Delivery | 7 Data upload to government / efpia |

Delivery

- **Assign delivery (standard SAP process)**

- **Optional automatic HU creation in SAP SD ist standard-functionality**

View [Standard View] ▼ | Print Version | Export | View Actual Document Objects | View Expected Document Objects

Doc ID	Document Type	
880000041	Outbound Delivery	
880000042	Outbound Delivery	
880000043	Outbound Delivery	
880000044	Outbound Delivery	
880000045	Outbound Delivery	

Row 22 of 26 Column 1 of 0

Document Items | Document Status

Document Items

View [Standard View] ▼ | Print Version | Export | View Actual Document Item Objects | View Expected Document Ite

External Item ID	Action Type	Product ID	Product Description	Expected Quantity	Actual Quantity	
000010	ALBO - Load ▼	ANTI_HEADACHE	Anti Headache Solution	1,000	1,000	

Supplier Process Steps

SAP

1	Number range maintenance	2	Serialization during packing	3	4	Aggregation	5	Pack / Undo Pack	6	Assign Delivery	7	Data upload to government / efpia

SAP Event Management ▭

Tracking Scenario:	Delivery - Product Tracking and Authent. Visib. ▼
	Delivery - Product Tracking and Authent. Visib.
Outbound Delivery Num	Serialized ID - Product Tracking and Authent. Visib.
Reference Purchase Order Number:	
Ship-From Location:	
Ship-To Location:	
Ship-To Party:	
Product:	
Batch:	
Goods Issue Date:	📅 To 📅 ➡
Requested Goods Receipt Date:	📅 To 📅 ➡
Shipping Status:	<No Entry Selected> ▼
☐ Return More Than 200 Hits	
Apply	

SAP Supply Chain Event Management

EPC PTA Information

Serial No.:	(01)0-0037000-75822-8(21)10197
GTIN:	00037000758228
Product:	ANTI_HEADACHE
Batch:	XZT-456
Exp. Date:	11.12.2010
Status:	Not Authenticated

Miles Stone Overview

Description	Date	
Production	14.08.2008	08:20:52
Shipping	14.08.2008	09:08:28

- **Report for data extraction**
- **Optional Integration in MOH or efpia Database**
- **Role based access to data upload**
- **Web GUI is Standard-Functionality**

Event Messages

View [Standard View] ▼ | Print Version | Export

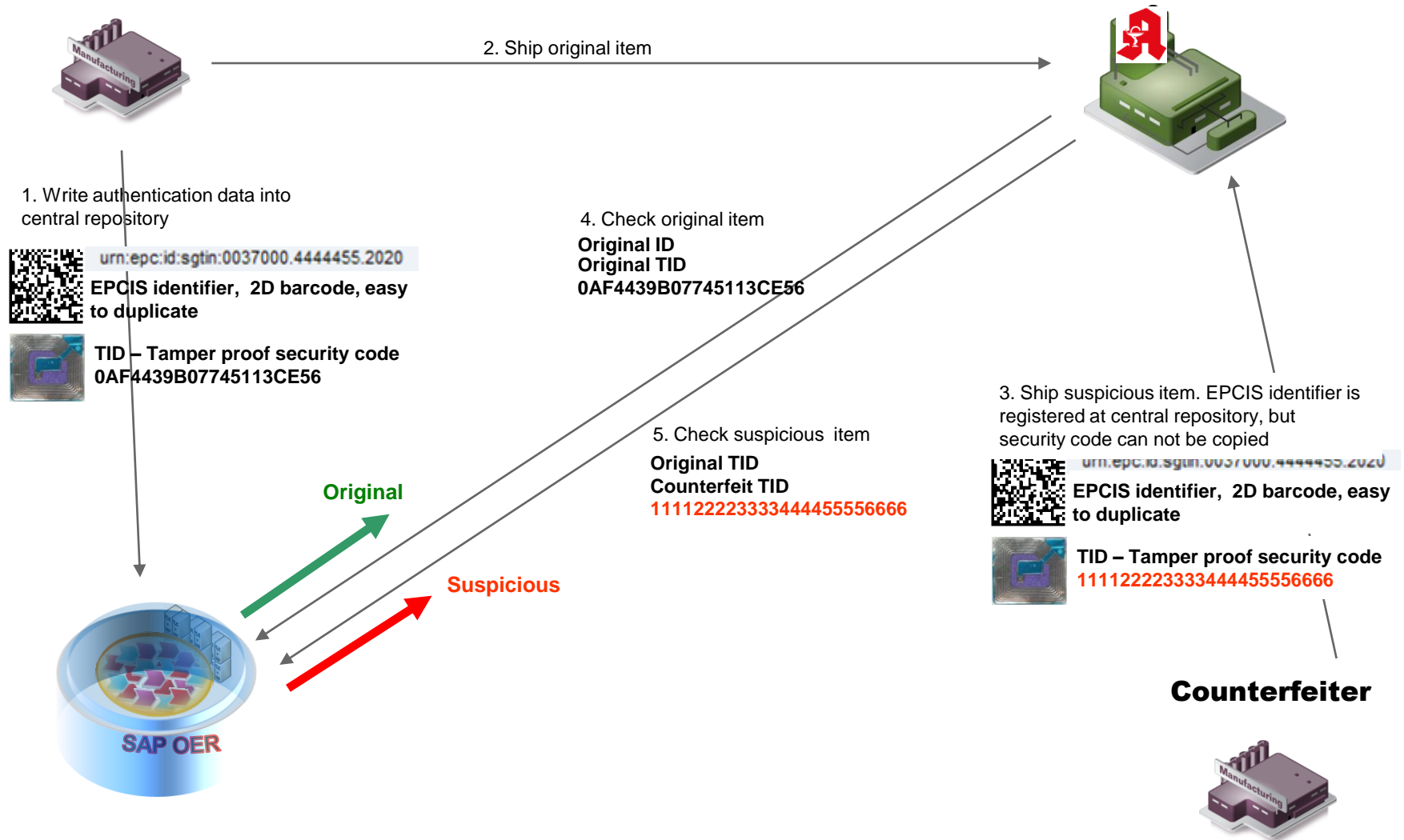|	Business Step	Actual Date/Time	Disposition	Business Location
	Production	25.08.2008 20:23:43 UTC+2	Active	urn:epcglobal:fmcg:loc:1700000000001.Single Item Camera
	Packing	25.08.2008 20:31:16 UTC+2	Active	urn:epcglobal:fmcg:loc:1700000000002.Packing Case Camera

Row 1 of 2

Authentication

Authentication using GS1 EPCIS and SAP Object Event Repository

Manufacturer

2. Ship original item

1. Write authentication data into central repository

urn:epc:id:sgtin:0037000.4444455.2020

EPCIS identifier, 2D barcode, easy to duplicate

TID – Tamper proof security code 0AF4439B07745113CE56

4. Check original item
Original ID
Original TID
0AF4439B07745113CE56

5. Check suspicious item
Original TID
Counterfeit TID
1111222233334444555 56666

Original

Suspicious

SAP OER

3. Ship suspicious item. EPCIS identifier is registered at central repository, but security code can not be copied

urn.epc.id.sgtin.0037000.4444455.2020

EPCIS identifier, 2D barcode, easy to duplicate

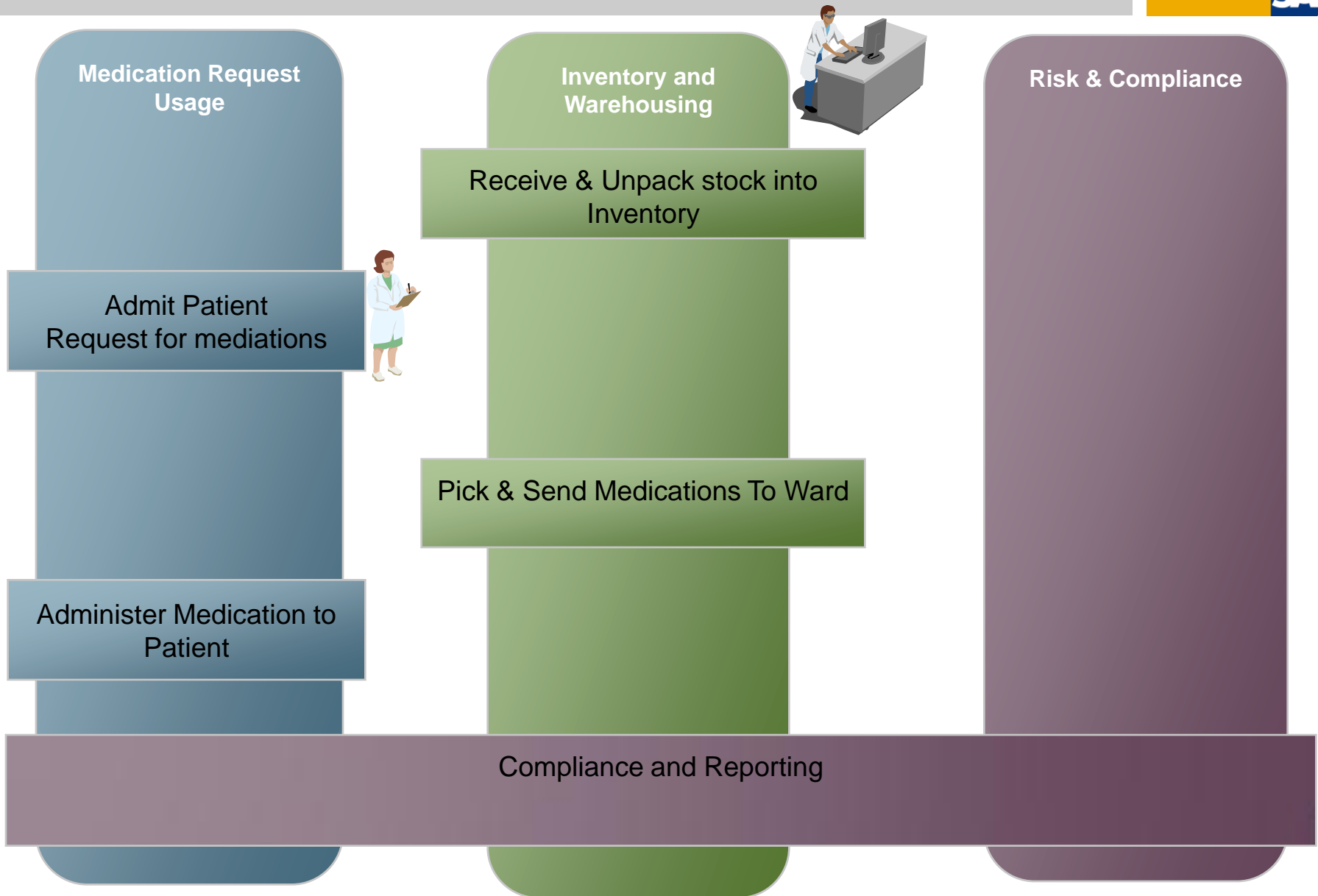**TID – Tamper proof security code 1111222233334444555 56666**

Counterfeiter
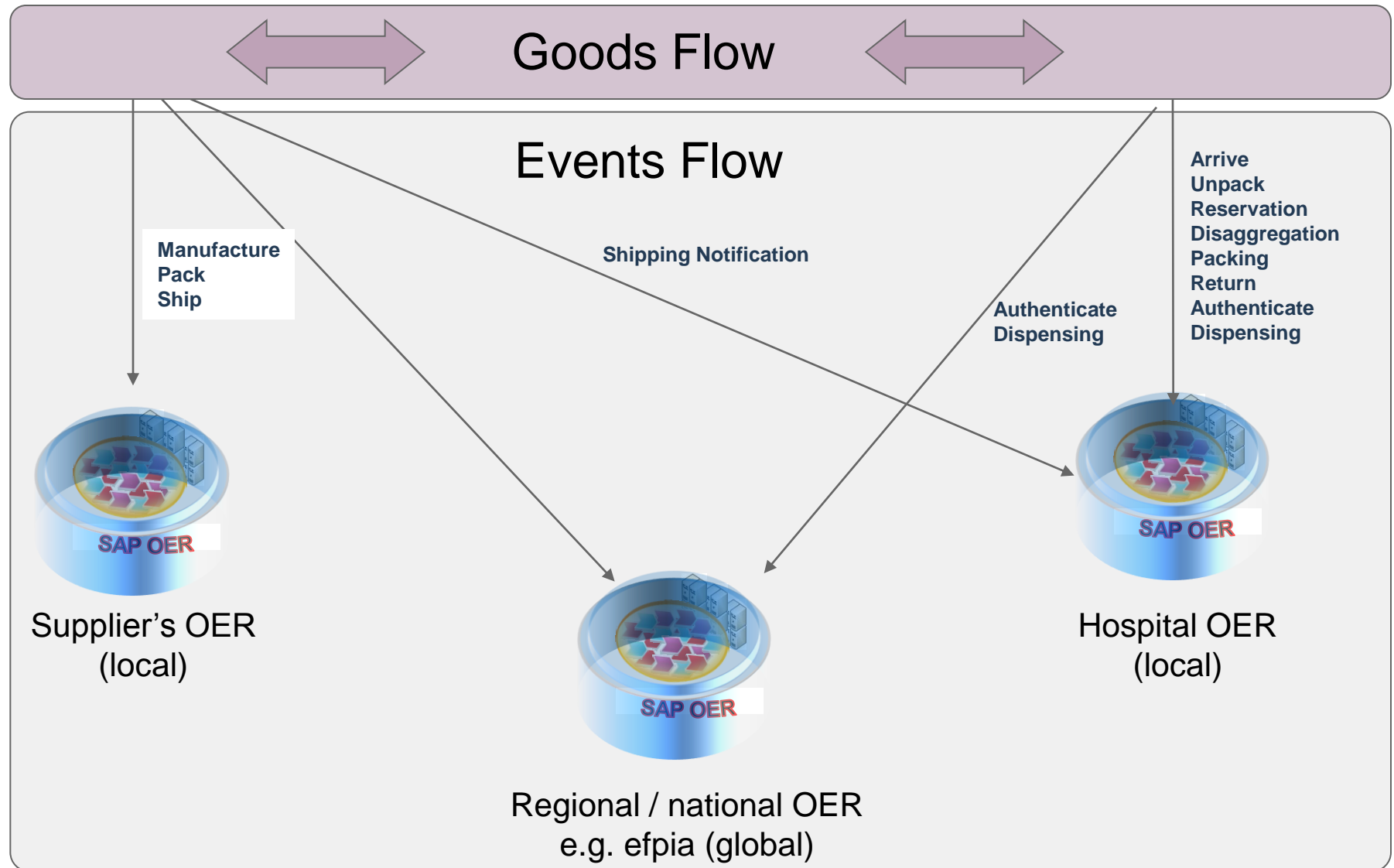
* PTA Product Tracking & Authentication
** OER Object Event Repository

Serialization at Hospital

Manufacturer to Patient - Process Flow

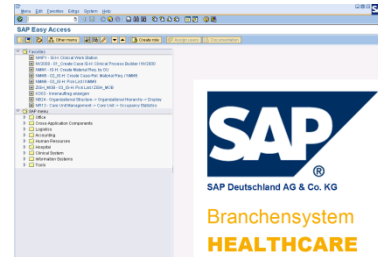**Medication Request Usage**

Inventory and Warehousing

Risk & Compliance

Receive & Unpack stock into Inventory

Admit Patient Request for mediations

Pick & Send Medications To Ward

Administer Medication to Patient

Compliance and Reporting

Local and Global Object Event Repositories

Goods Flow

Events Flow

Manufacture
Pack
Ship

Shipping Notification

Arrive
Unpack
Reservation
Disaggregation
Packing
Return
Authenticate
Dispensing

Authenticate
Dispensing

SAP OER

Supplier's OER
(local)

SAP OER

Regional / national OER
e.g. efpia (global)

SAP OER

Hospital OER
(local)

Prototype Landscape and Connectivity Technical View

SAP or non-SAP systems

Cell Phones

Citrix Pool 505

SAP OER 7.0

| SAP Auto-ID 7.03 Enterprise

AI7

ciai7 / 87 | SAP ECC / IS-H 6.0 SP12

HCN

hcn / 66 |

SAP PI 7.11

P7A

SAP Corporate Firewall

SAP Value Prototyping Firewall
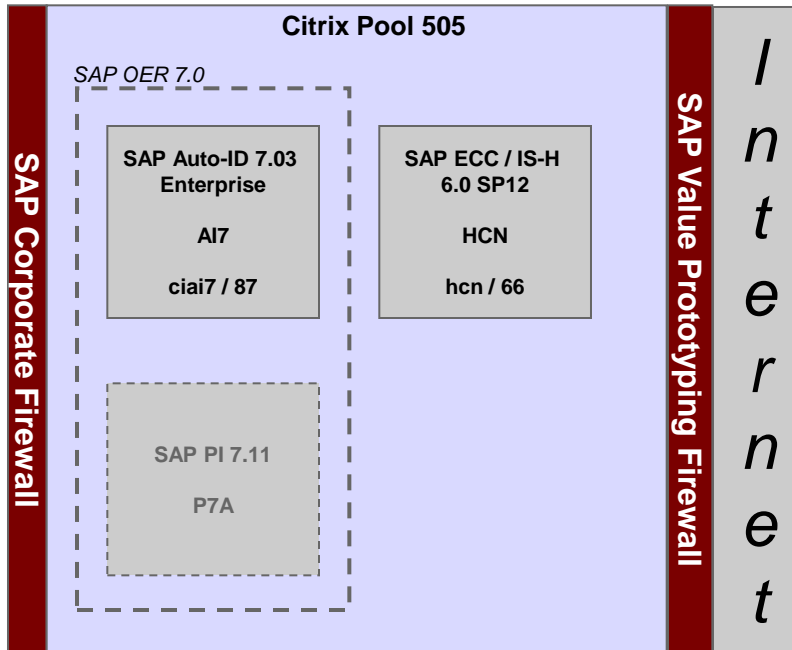
Internet

Citrix Client

Electronic Healthcare Records

Tracking devices and systems

■ Public URLs

  ■ OER AI7 https://coeportal12.saphosting.de

  ■ ECC IS-H https://coeportal41.saphosting.de