



GS1 Healthcare Provider Advisory Council (HPAC) Webinar Hong Kong Hospital Authority: Transforming the Healthcare Supply Chain

**GS1 Global Office
13 November 2014**





HPAC Case Study Webinars

- **This is the NINETH Webinar:**
Hong Kong Hospital Authority:
“Transforming the Healthcare Supply Chain ”
- **It will be recorded!**
- Webinars will take place monthly





HPAC Case Study Webinars

YEAR	DATE	SPEAKER	ORGANISATION	Country	WEBINAR TITLE
2015	12th February	Valentino Bulaon	HealthShare NSW	Australia	
	12th March	Justin Bitter	Bernhoven Hospital	Netherlands	Medical Device Traceability in OR
	9th April	Doris Nessim	GS1 Canada	Canada	Introducing GS1 Canada's Pharmaceutical Preparation and Administration Implementation Guideline

Details here: http://www.gs1.org/healthcare/hpac_webinars



Transforming the Healthcare Supply Chain process on pharmaceutical products in public hospitals in Hong Kong

Ms S C Chiang,
BPharm, MRPS, MHA, FACHSM, FHKCHSE, FCPP
Senior Pharmacist
Chief Pharmacist's Office
Hospital Authority, Hong Kong
scchiang@ha.org.hk



Provide answers to some questions on the SCM project

- **Why do we need to transform the Healthcare Supply Chain process on pharmaceutical products ?**
- **What were the problems in the process ?**
- **How did we go about making the transformation ?**
- **What challenges did we encounter ?**
- **What was the outcome ?**



Health Care System in Hong Kong

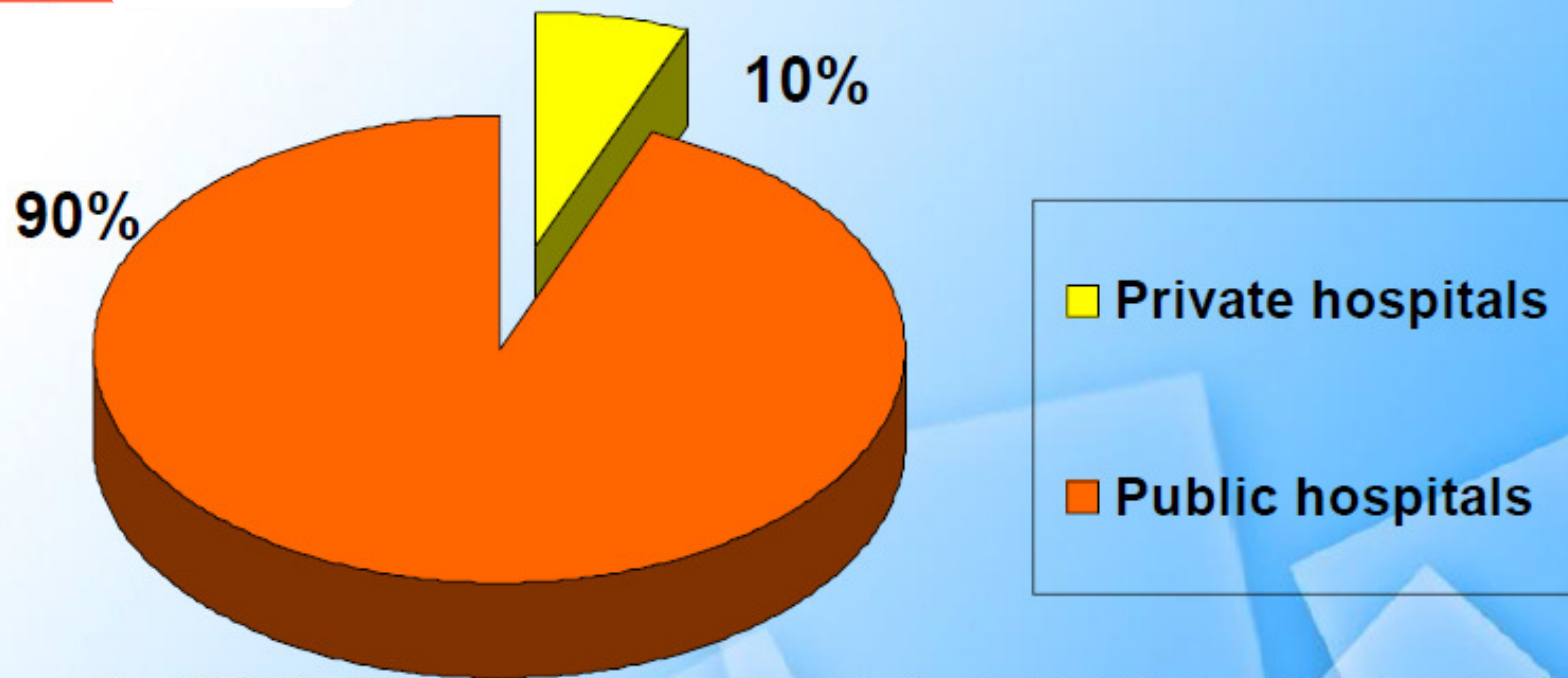
Dual-track Healthcare System



- Public sector -the cornerstone of the healthcare system
- Private sector – Personalised services for those willing and may afford higher fees

Hospital Authority – Provider of Secondary and Tertiary Medical Services

Public and Private Shares of Hospital Bed-days



Sources: Hospital Authority Statistical Reports and private hospital statistics from Department of Health

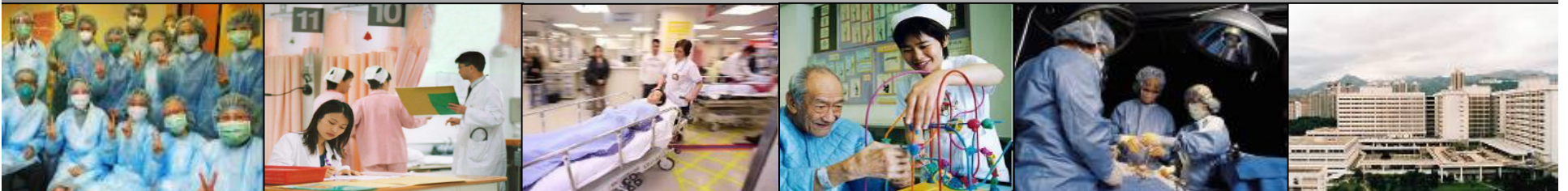
Hospital Authority Hong Kong (HAHK)



醫院管理局

HOSPITAL
AUTHORITY

- A statutory body established on 1 December 1990
- Manages all public hospitals spread over 7 clusters in HK
= 41 public hospitals (total 27,900 hospital beds)
with 47 specialist & 74 general clinics
- Total 63,000 staff
with 5,475 Doctors & 20,522 Nurses & 5,834 Allied Health
- 2013/14 Government Funding: ~ USD 5.69B (HKD44.4B)



Two Levels of Operational Control for Pharmaceutical Services

- **At Head Office level :**
 - Chief Pharmacist's Office
 - Central steering functions
 - set policy & directions
 - establish professional standards
 - develop and implement & support systems
 - monitor progress on all pharmaceutical issues
- **At Hospital Cluster level :**
 - Hospital Pharmacies Cluster Chiefs
 - Control & perform decentralised operations at local pharmacies including purchasing, clinical activities

Magnitude of our daily business transactions in all HA pharmacies in 2013

Transaction types	Units
No. of Dispensed <u>Items</u>	215,000
No. of Dispensed <u>Prescriptions</u>	66,000
No. of <u>Patients</u> Served	58,000
No. of <u>Suppliers</u> dealt with	60
No. of <u>Purchase Orders</u> made	845
Dollar value of <u>Stock items</u> received in HK\$	36M
No. of <u>stock items</u> involved in stock receipts	1,600
No. of <u>Pharmacy Stores</u> for Stock Receipt/ issue	80
No. of <u>Stock Movements</u> in these stores	2,400



Ever wonder what is the backend of in our pharmacy stores serving the hospitals, Specialist and General out-patients clinics ?

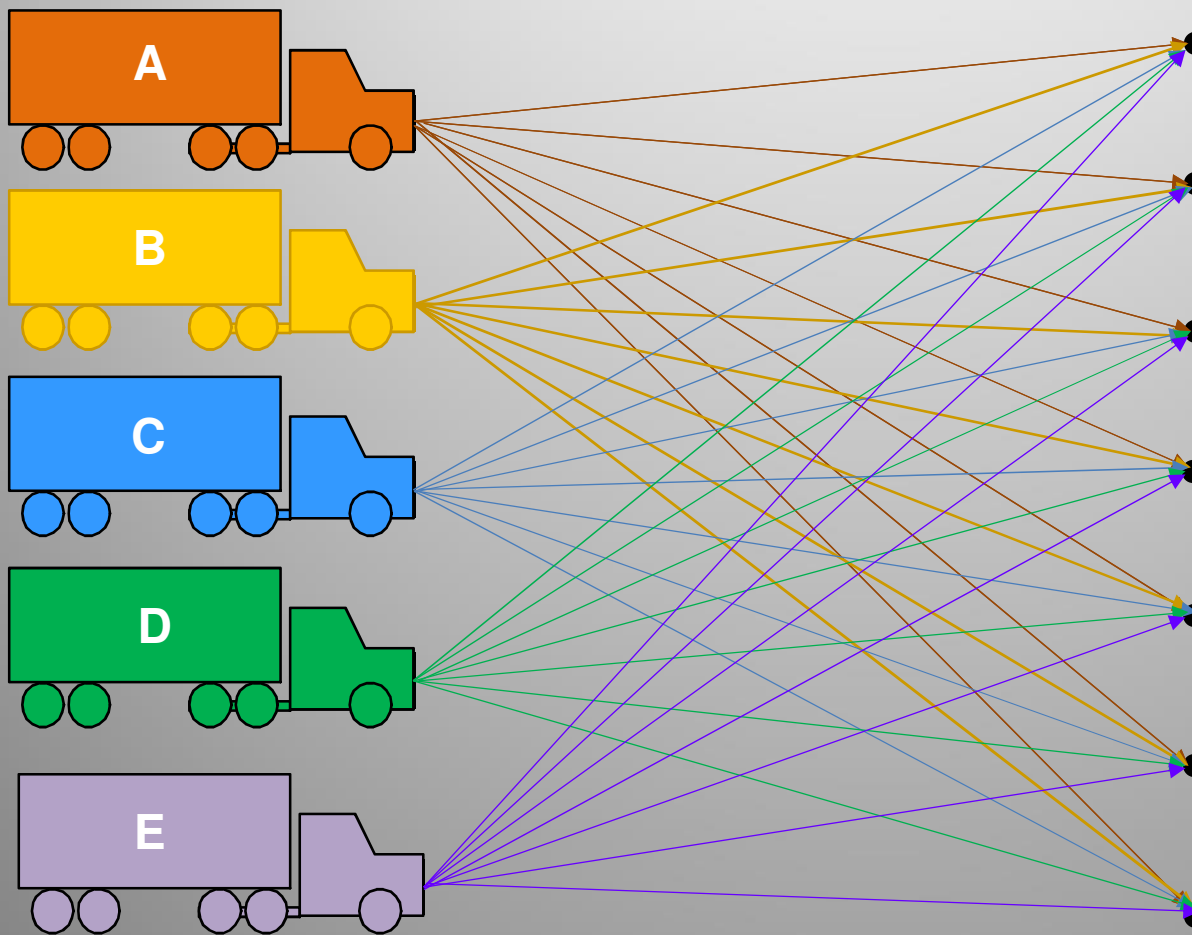
- Where do our drugs come from ?
- How to control and monitor the movement of drugs
- What are the logistics in stock receipts ?
- What are involved in the processes ?
- How to track and trace the Supply Chain ?



The ordering and delivery processes in our HA pharmacies

External :
From Suppliers (>200)

Internal :
At Pharmacy stores (>100) in 7 clusters

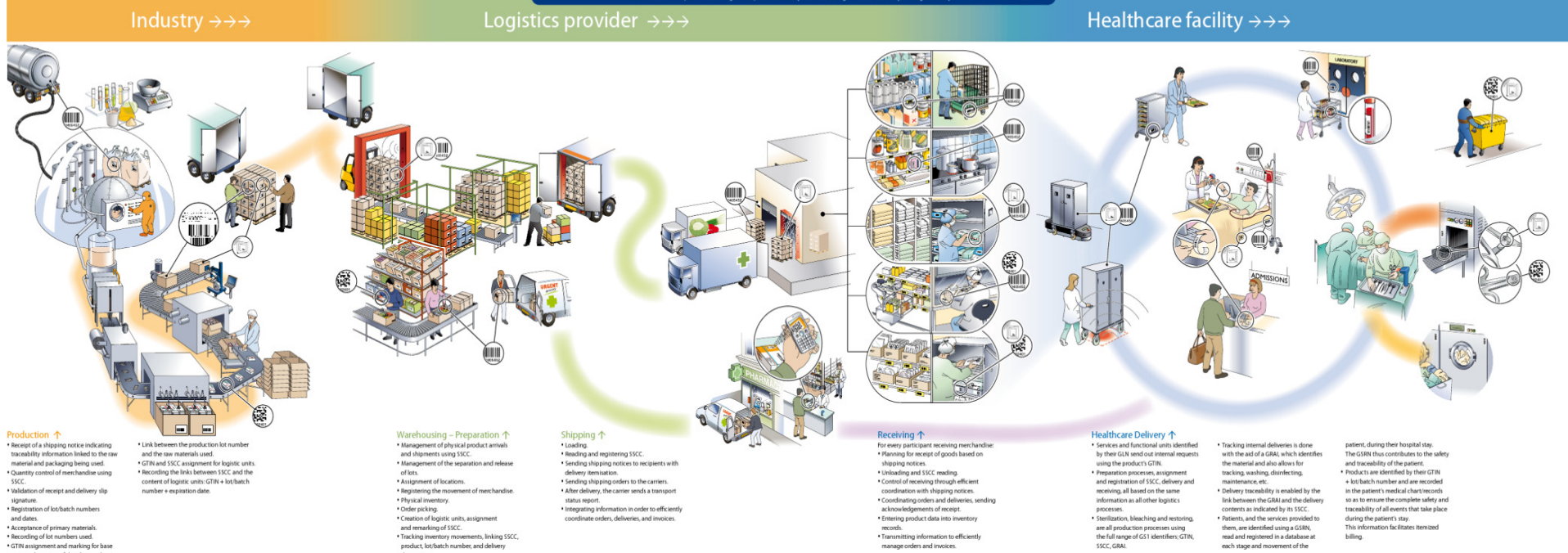


The importance and significance of Quality, Safety and Efficiency in drug distribution/medication use



Description of the Major Supply Chain Processes

Each of these processes might be performed by different organisations or by a single entity



The Journey on Supply Chain Modernisation Project began when HA announced in March 2009

– The Key Initiatives in HA for pharmacy

6. Enhance the HA's Pharmaceutical IT systems to improve controls by moving progressively towards :

- introducing bar coding
- automatically check what is received against what was ordered
- automatically track and trace drugs to the point of issue and
- prevent dispensing of expired items



Thur, 26 March 2009

Key initiatives to enhance HA's pharmaceutical products procurement system

To ensure drug quality and safeguard patient safety, the HA announced today the following key initiatives to enhance our pharmaceutical products procurement system:

1. Require manufacturers to introduce microbiology testing as a prerequisite to procurement for high risk drug items and for provision of batch release reports on delivery of drug products.
2. Enhance the HA's sample testing to include a wider range of drugs and microbiology testing based on risk levels.
3. Require suppliers to provide additional standard information for drug delivery documentation to enable more effective physical checking of goods received.
4. Work with the Department of Health to improve ease of access to key additional registration details, including pack sizes to strengthen regulatory compliance.
5. Consider introducing multi-source for high volume/risk drugs.
6. Enhance the HA's Pharmaceutical IT systems to improve controls by moving progressively towards :
 - Introducing bar coding;
 - Automatically check what is received against what was ordered;
 - Automatically track and trace drugs to the point of issue; and
 - Prevent dispensing of expired items.
7. Establish a Drug Quality Assurance Office to enhance quality monitoring and implementation of improvement initiatives.



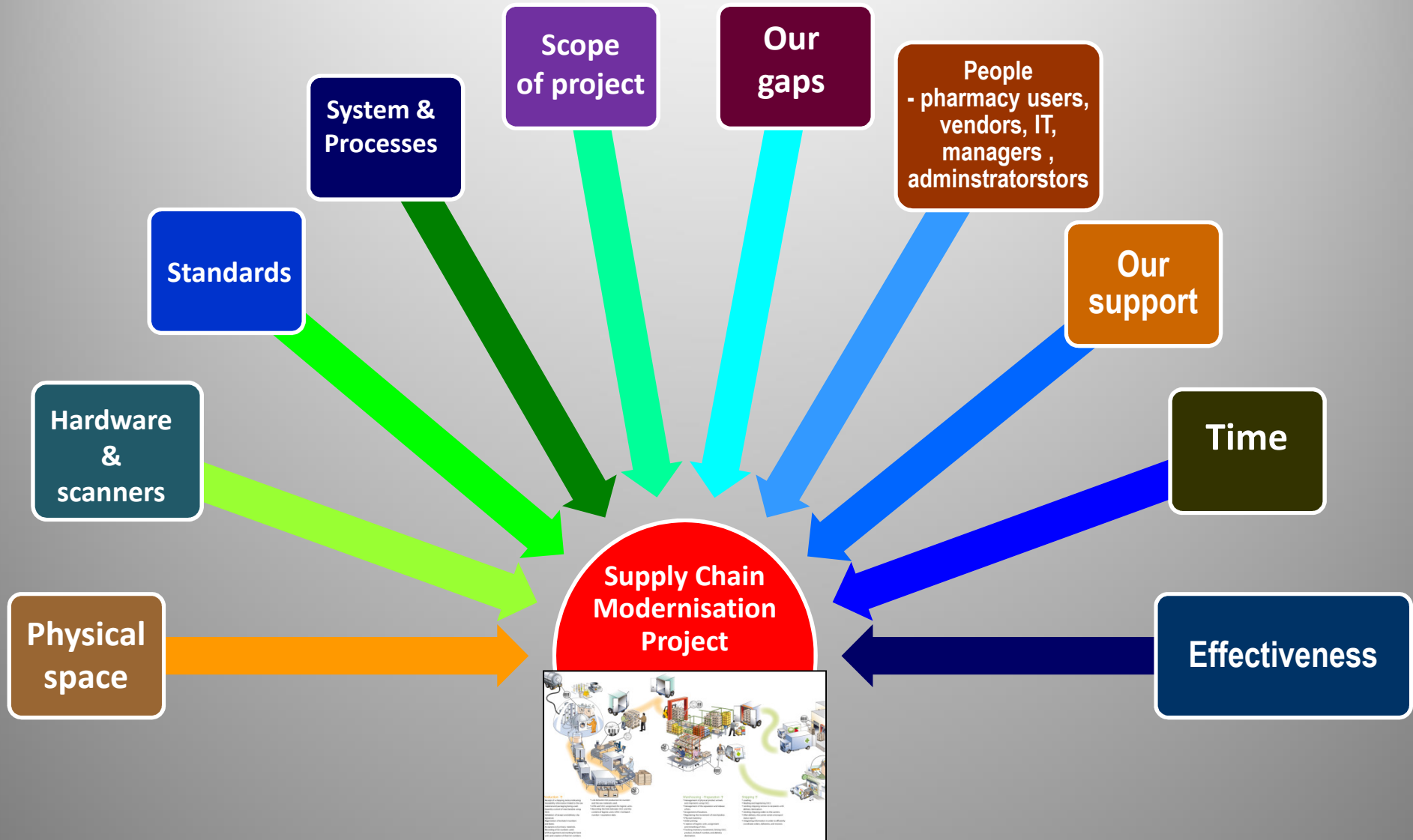
Please send your suggestions via fax: 2808 0242 or e-mail: ehaslink@ha.org.hk

Turning threats into opportunity

How did we do this ?



What are the Challenges in SCM Project: overcoming the unknowns !



Leadership & Project Governance

- **Central level**

- User Resource Group (URG)
 - Chaired by Cluster Service Director at Headoffice level
 - members from project team & clusters representatives
 - define project plan & monitor progress
 - allocate resources, prioritise issues & make decision on direction
 - deal with concerns from system vendor and users

- **Cluster level**

- 7 Cluster Implementation Project Resource Groups (CIPRG)
 - each Chaired by Cluster Chief Executives
 - members from hospital administrators, finance and pharmacy
 - meet quarterly to report & monitor progress of implementation

Understand the need to transform/ modernise the Supply Chain process on Pharmaceutical Products

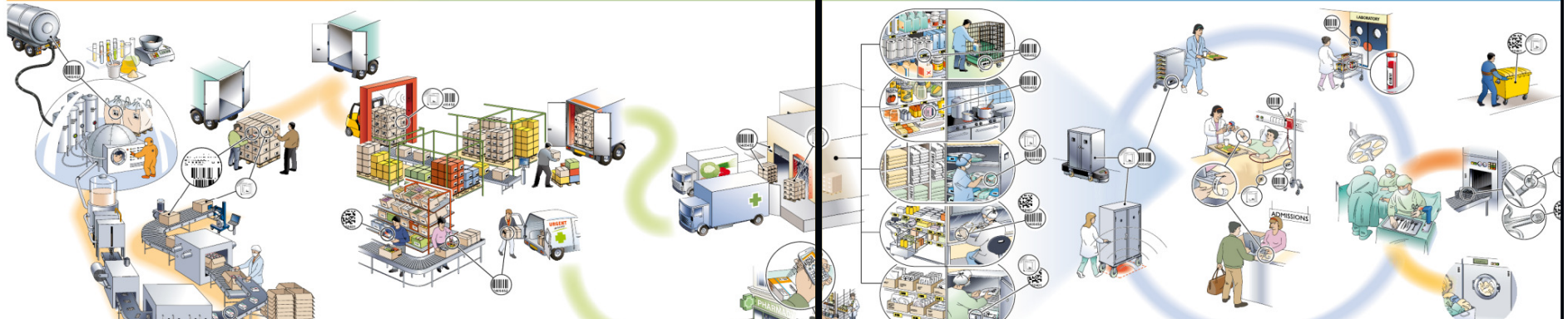
Description of the Major Supply Chain Processes

Each of these processes might be performed by different organisations or by a single entity

Industry →→→

Logistics provider →→→

Healthcare facility →→→



From manufacturers

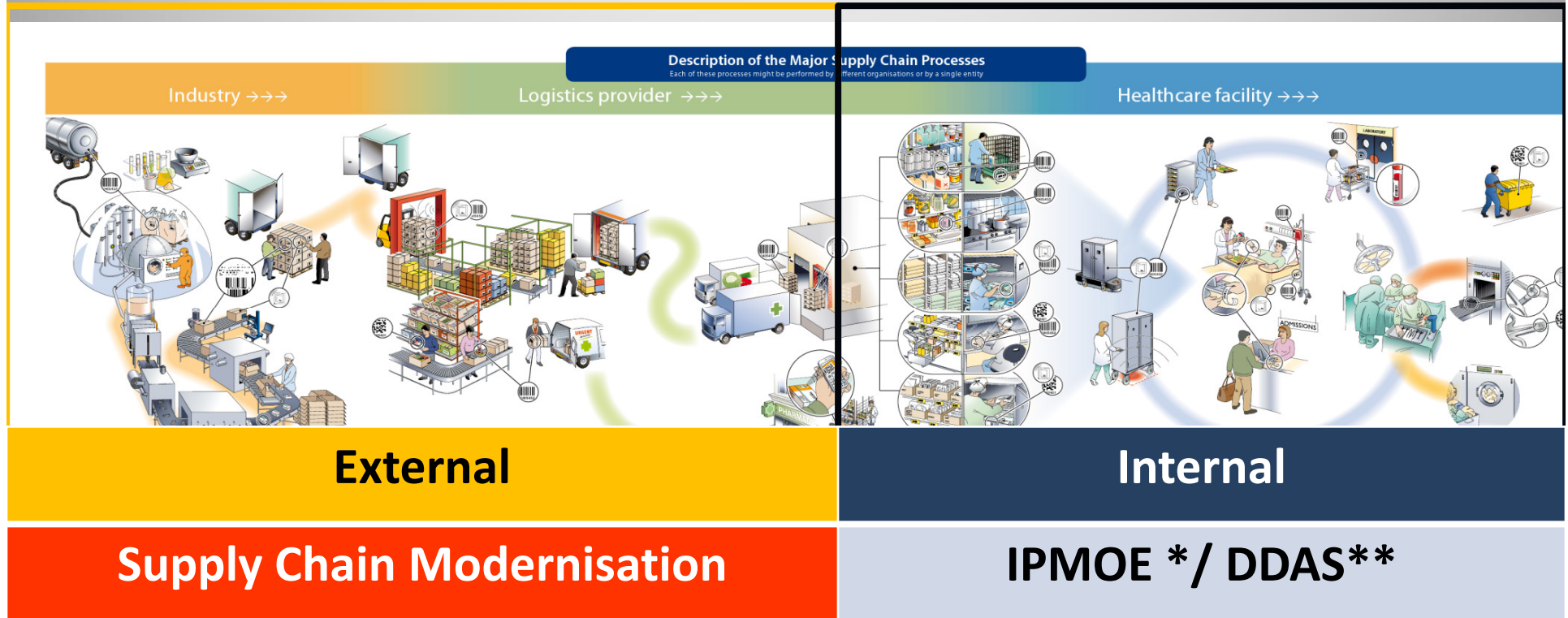
→ into pharmacy stores

→ into Dispensing area

**out from pharmacy stores
→**

**→ to point of care
(patients)**

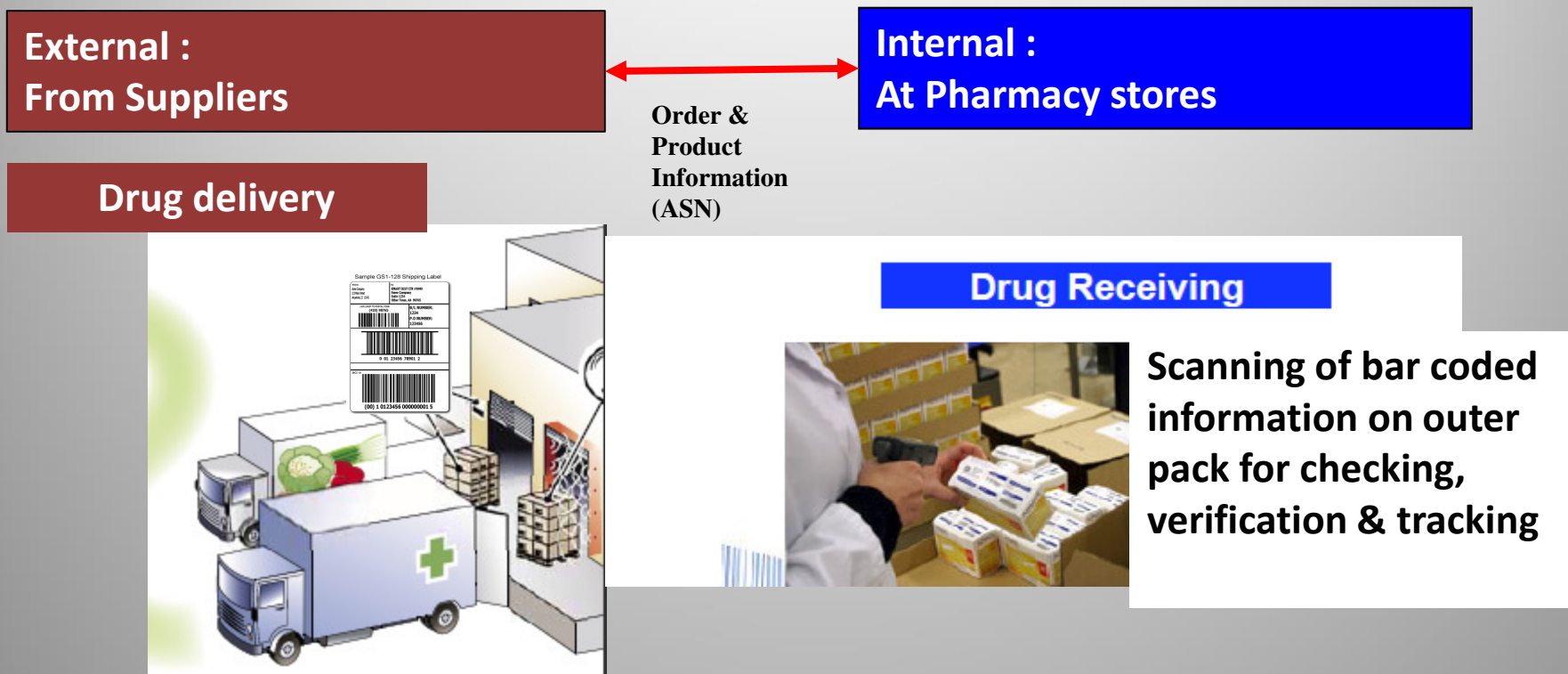
Identify the scope to be covered in the Supply Chain Modernisation project on Pharmaceutical Products



*IPMOE = In-patient Medication Order Entry

**DDAS= Drug Distribution and Administration System

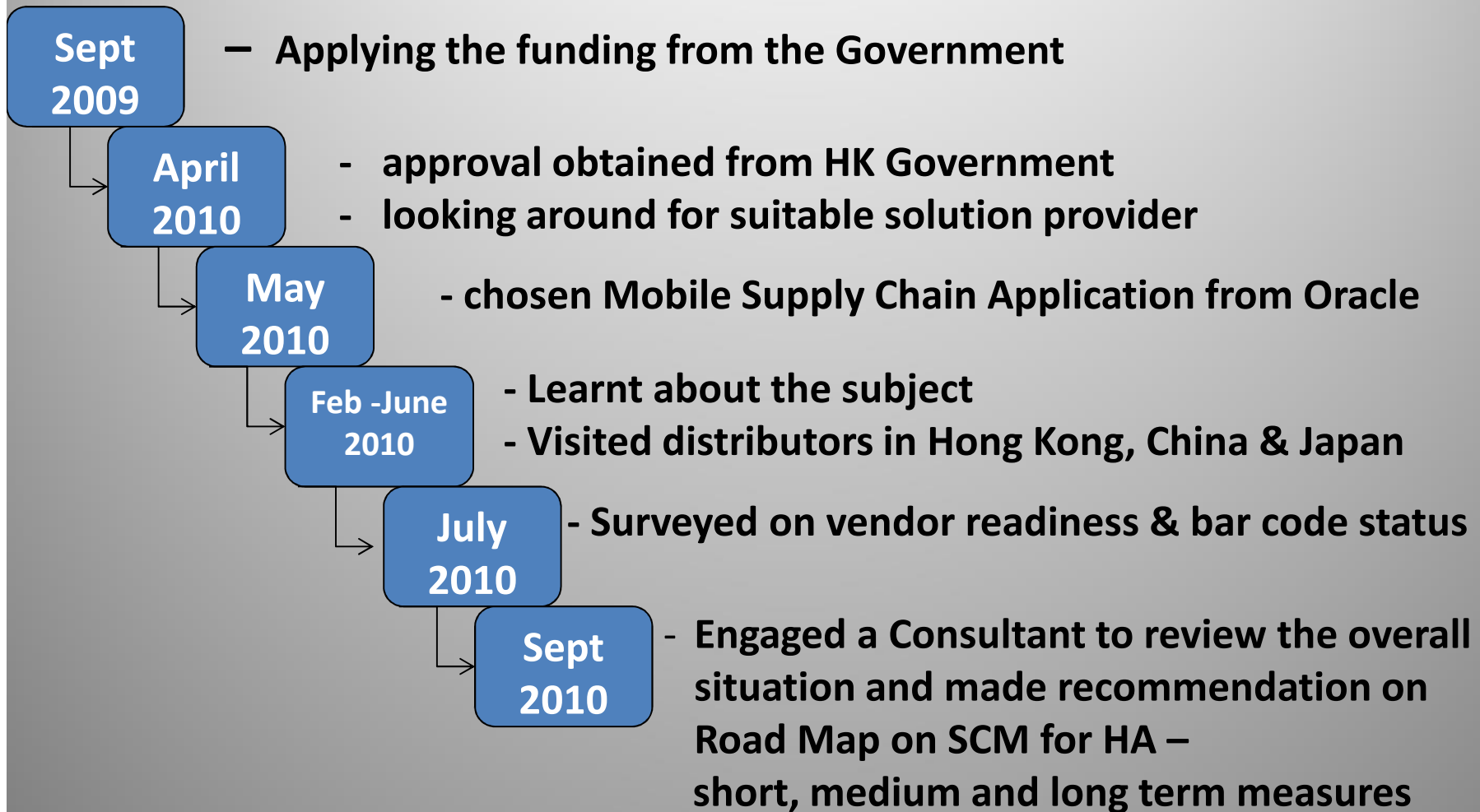
Defining what we want to do in SCM ?



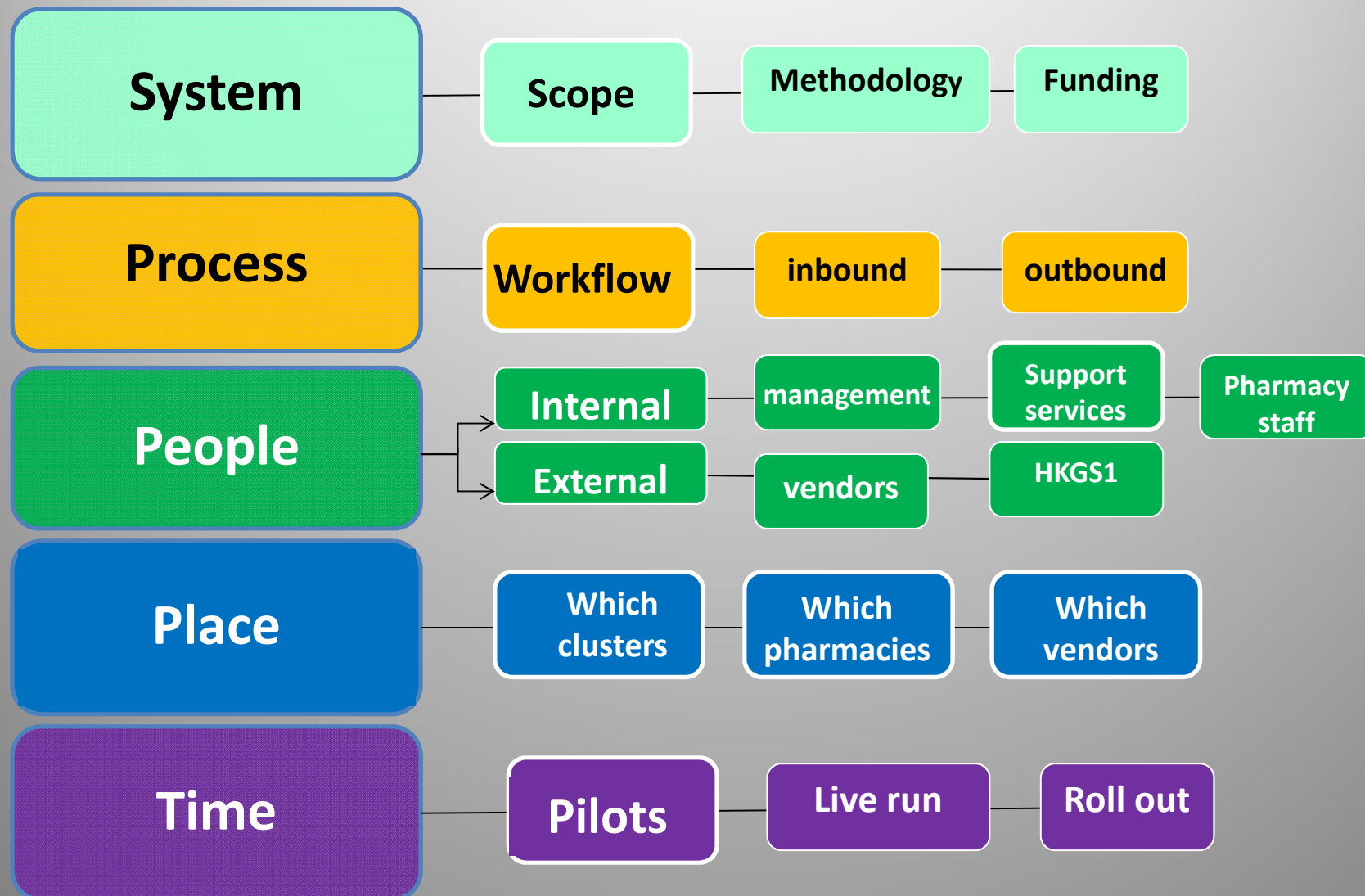
Enable track and trace of product movement from suppliers to pharmacy stores through MSCA with provision of :

- Advance Shipping Notice (ASN) from suppliers to pharmacy ERP to verify PO
- Bar coded information on individual product and outer delivery pack from suppliers to verify required information, manufacturer, lot no., expiry dates etc

Finding out the means and how's to do the project

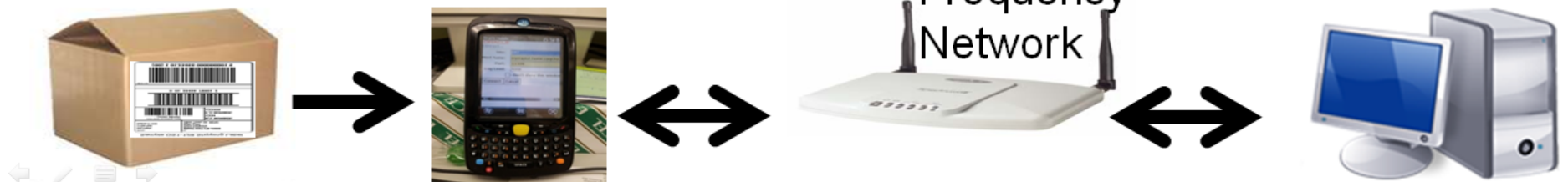


Supply Chain Modernisation on pharmaceutical products – areas of concerns



The IT system : Using MSCA in ERP (Oracle) (Mobile Supply Chain Application)

- Making use of mobile devices to support the Supply Chain Process from Goods receipt to Goods issue as much as possible
- Use wireless connection, scanners, bar codes, data transmission
- Minimize manual data entry
- Improve accuracy & efficiency of data capture
- Not RFID but bar codes



Understand the Industry Standards provided by GS1



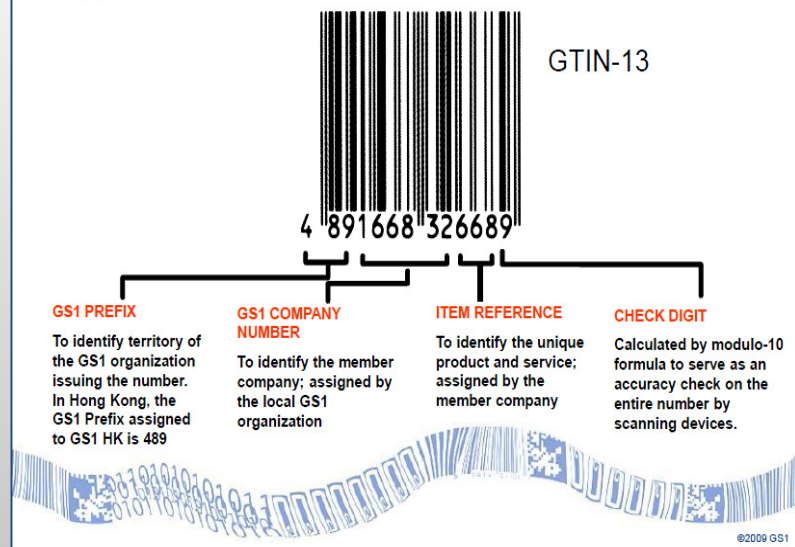
GS1 Identifiers in Healthcare

GS1 Key	Represented Information
GTIN (Global Trade Item Number)	Identification of Healthcare Product
GLN (Global Location Number)	Identification of Location & Legal Entity
GSRN (Global Service Relation Number)	Identification of Patient & Care Giver
Application Identifier	Represented Information
AI(01)	Global Trade Item Number
AI(10)	Batch Number
AI(17)	Expiration Date
AI(21)	Serial Number

* GS1 keys & Application Identifiers are recognised by ISO.

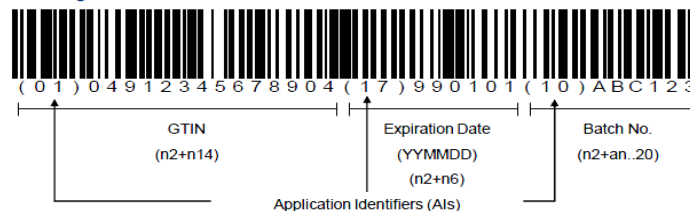


Data Structure of a GTIN



Batch Level Identification & Expiration Control

- For batch control or expiry date control, which are common to healthcare items, people may prefer encoding batch number and expiration date in barcode.
- GS1 System provides data structure standard for them as well:
 - Batch number – Alphanumeric data format with variable length up to 20 characters
 - Expiration date – Numeric data format (YYMMDD) with fixed length of 6 digits



Expiration date & batch no. must be used with GTIN and application identifier (AI) in a barcode.

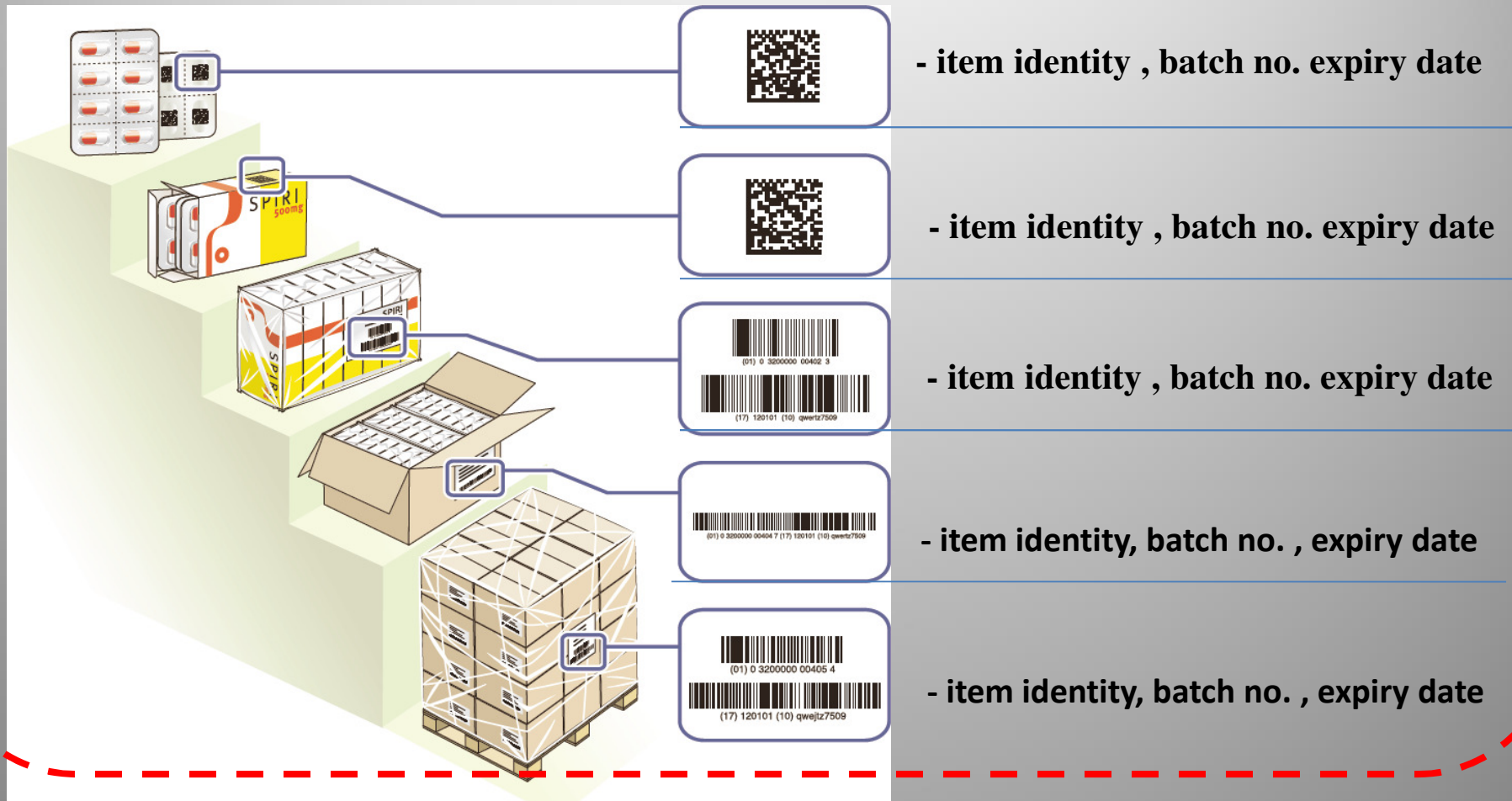
©2009 GS1

What is required on the product to enable track and trace

there should be bar coded information on
GTIN, Batch, Expiry Date and QTY
at the primary packing



Is it feasible to have Bar-code track-and-trace all the way ?



Target areas for direct-from-supplier bar-coding

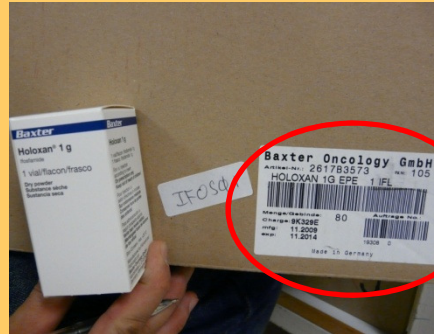
Legislation in Hong Kong on pharmaceutical products

- Pharmaceutical Product registration requirement by HKSAR
 - no legislative requirement on bar code on drug package
- Pharmaceutical industry not mandated to have the bar code printed
- Generally, the sales and marketing people are not concerned with this need



Examples of problems encountered on bar codes

Difficulties to identify the correct bar code to scan



Some bar codes are not in black and white



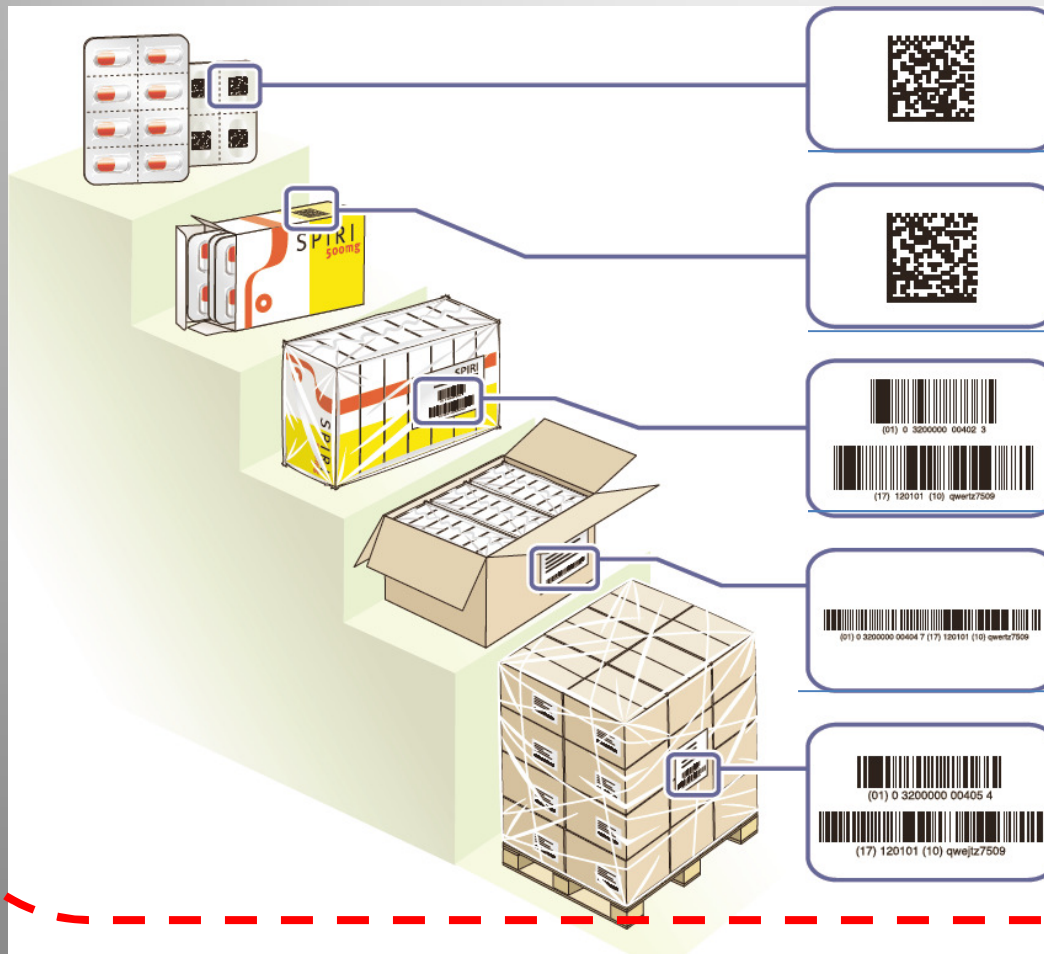
Not a GTIN bar code, only a supplier Item bar code



AI (241) which is a customer Part Number and cannot be used as an item identifier



Is it feasible to have Bar-code track-and-trace all the way ?



**stop at the
logistic
units!**

- item identity, batch no. , expiry date

- item identity, batch no. , expiry date

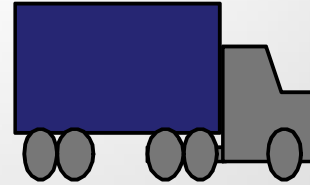
Target areas for direct-from-supplier bar-coding

The process flow in Mobile Supply Chain Application

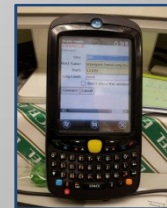
**External :
From Suppliers**

**Advanced Shipping
Notice (ASN)**

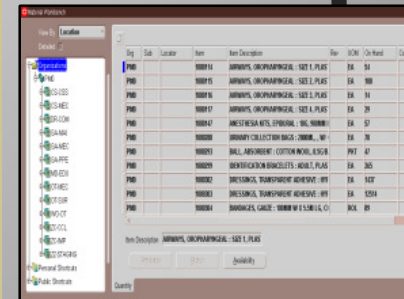
Internal : At Pharmacy stores



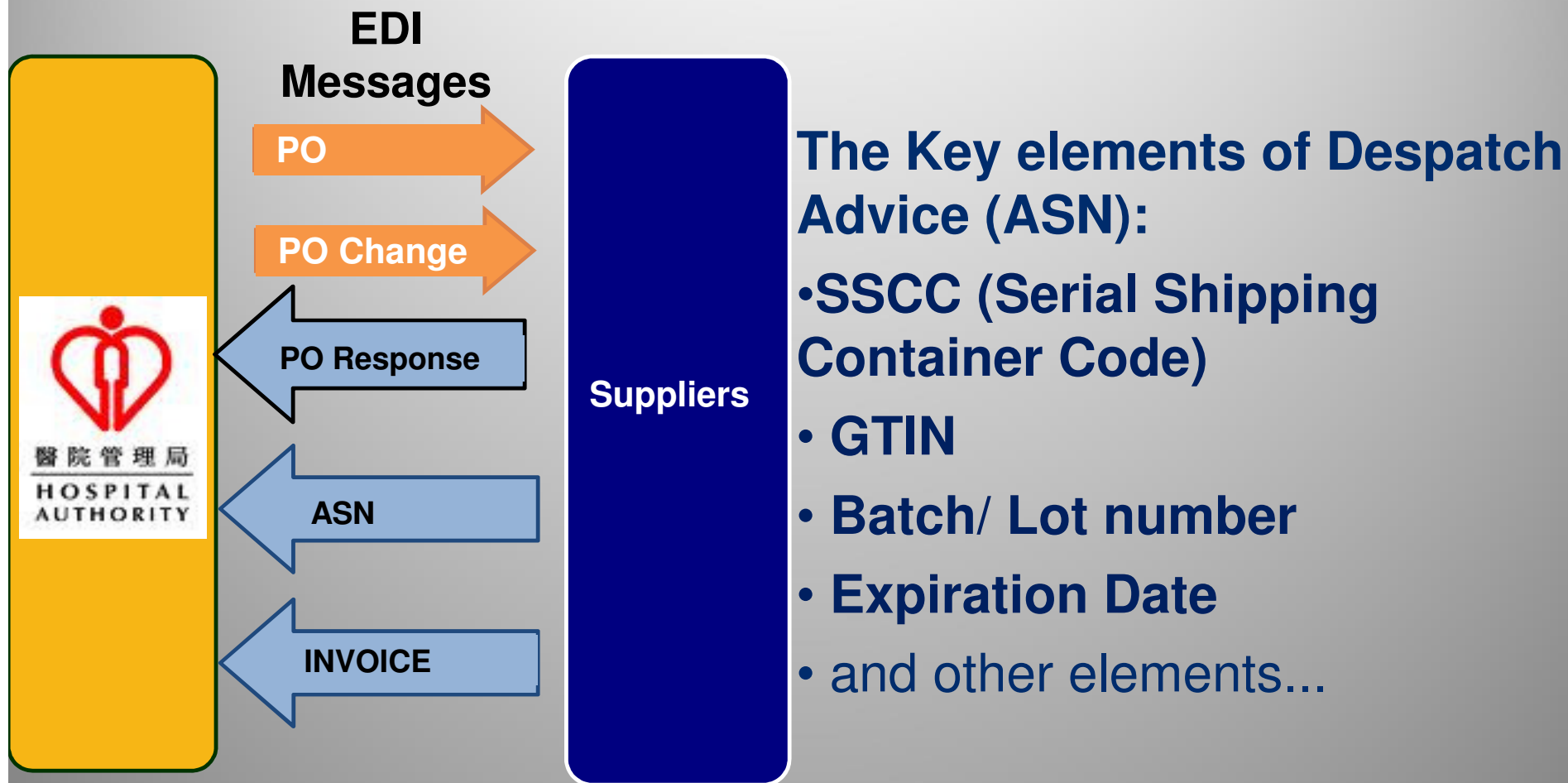
**Entire shipment with bar
coded SSCC on each
logistic unit**



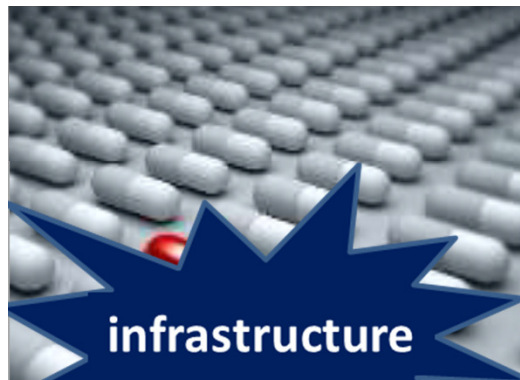
Before goods arrive	<ol style="list-style-type: none"> 1. Prior validation of manufacturer, country of origin, quantity, etc. 2. Online provision of lot no, expiry date
When goods arrive	<ol style="list-style-type: none"> 3. Scan outer pack bar code label to verify Purchase Order (PO) 4. PO details displayed in scanner for inspection 5. Confirm receipt & instant update into system
Stock into stores	<ol style="list-style-type: none"> 6. Pack-unpack containers to separate items 7. Scan GTIN with lot no. expiry date and confirm qty 8. Stock to pre-defined location in stores
Drug distribution	<ol style="list-style-type: none"> 9. Enable lot-control with track-and-trace functionality



The electronic information exchange in MSCA process



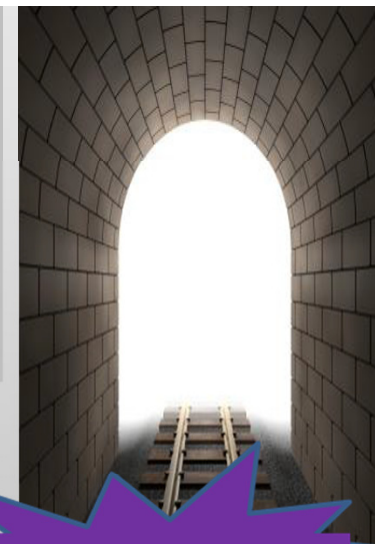
*The Despatch Advice (ASN) should be sent 24 hours before the Physical Goods Delivery.



infrastructure

Preparing for the

Challenge
leadership



technology

System

Scope

Methodology

Funding

Process

Workflow

outbound

inbound

People

Internal

management

Support
services

Pharmacy
staff

External

vendors

HKGS1

Place

Which
clusters

Which
pharmacies

Which
vendors

Time

Pilots

Live run

Roll out

resources

Defining our action with stakeholders

External

HKGS1:

- Technical guidelines
- industry standards on ASN, SSCC, GTIN, GLN

Pharmaceutical vendors:

- System interface to HA
- GTIN on smallest order unit
- bar code readiness to include GTIN, Qty, BN, Expiry date
- Bar coded Labels for shipper case & logistic units
- Testing and preparation

Internal

Hospital side :

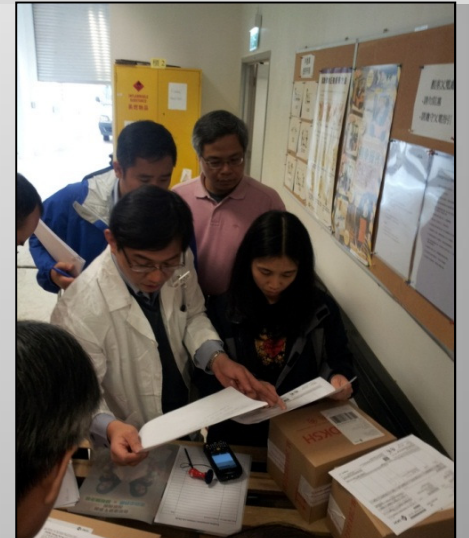
- Management buy in
- Support services
- Pharmacies

Engagement & support :

- implementing MSCA
- renovating stores & facilities
- adding manpower
- supporting user training

Vendor Engagement started in 2010

- No less than 6 mega vendor briefings, 25+ meetings, training workshops, testing, emails, etc...
 - Clarifications on project objectives, process, technical requirement, time frame.....
 - Frequently Ask Questions
- Mock ups on bar code labels,
- EDI messages testing
- End to End testing with mock up products
- On site testing at pilot sites
- With HKGS1 assistance and support



Importance of GTIN in SCM

- GTIN is a compulsory requirement for EDI PO
- It is inevitably that some items would not carry a valid GTIN because
 - Free Goods, Sample Goods, Donated Goods, Clinical Trial Goods and duplicate item code created for special program...)
 - Due to System limitation, one GTIN cannot be assigned to multiple item codes
 - GTIN may not be available when new items are introduced into HA

GTIN Allocation

different GTIN

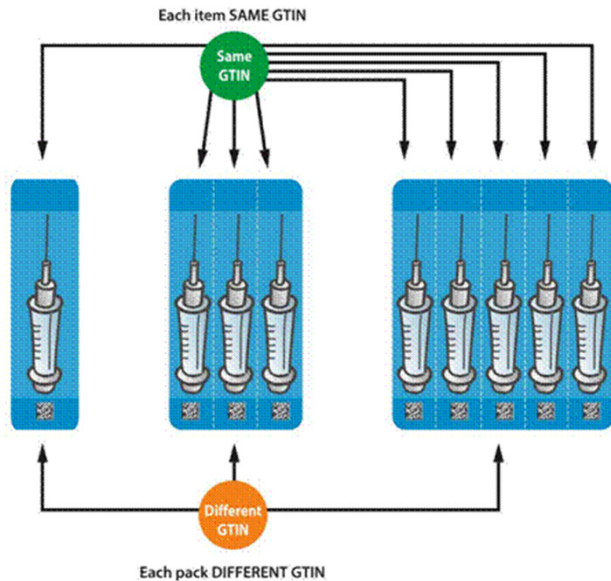
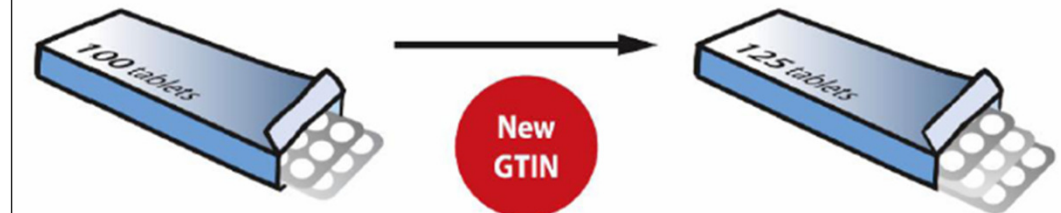
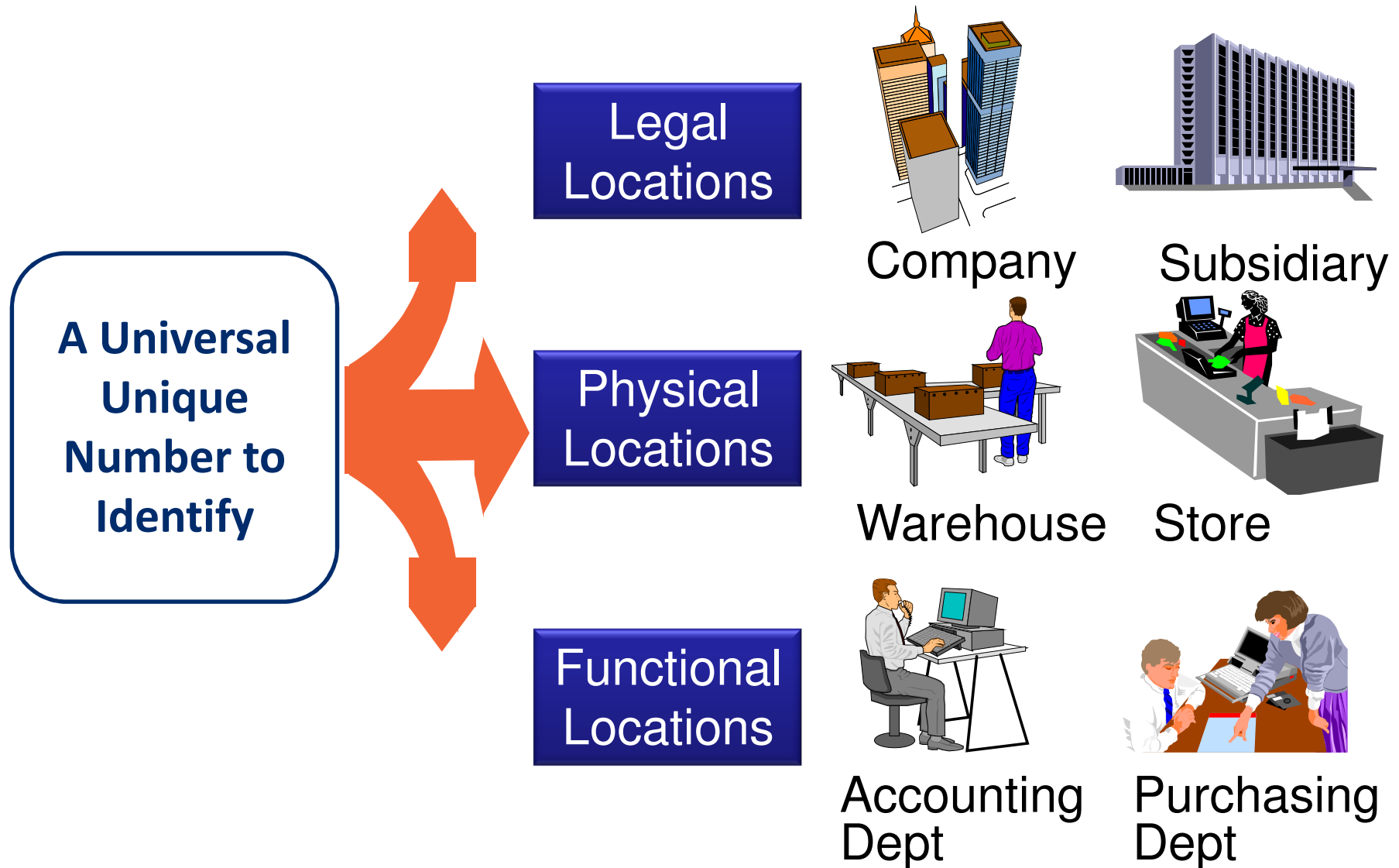


Figure 5-5 Declared Change in Net Content - New GTIN



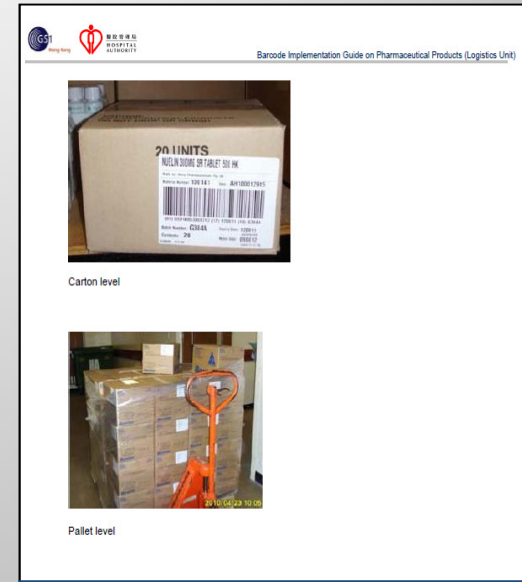
Locations - Types of GLN



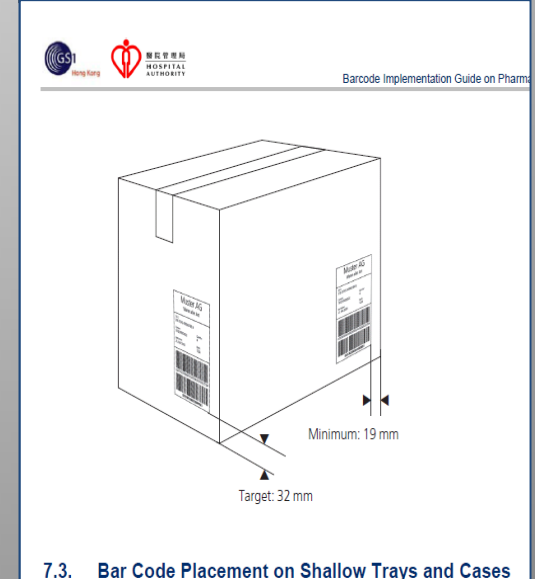
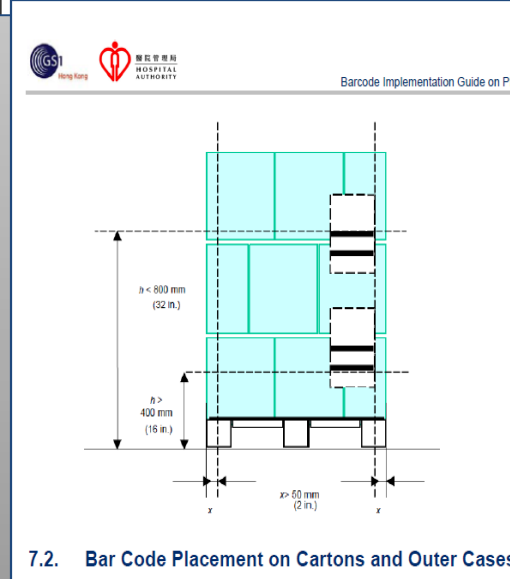
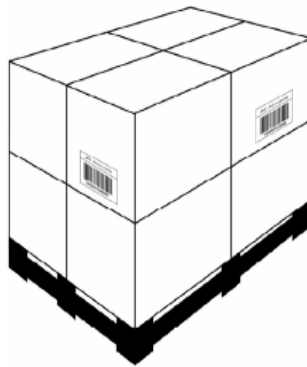
Standards provided by GS1



Table of Contents	
Introduction.....	4
About Barcode Implementation program of Hospital Authority.....	4
Scope of Work.....	4
1. Step 1: Get a GS1 Company Prefix.....	4
1.1. Pharmaceutical product supplier.....	4
1.2. Hospital Pharmacy.....	5
2. Step 2: Assign SSCC Numbers to Logistics Unit.....	5
2.1. SSCC Number Structure.....	7
2.2. Check Digit Calculation.....	8
2.3. SSCC Allocation Rules.....	8
2.3.1. Life of SSCC.....	8
2.3.2. Standard package.....	9
2.3.3. Mix package.....	10
3. Step 3: Select a Bar Code Printing Method.....	10
3.1. Printing Bar Codes on Logistic Unit.....	10
4. Step 4: Select a Bar Code Symbol.....	10
4.1. Use GS1-128 Bar Code Symbol for Logistics Unit.....	11
5. Step 5: Design a Bar Code (Technical Specifications).....	12
5.1. GS1-128 Symbolology.....	12
5.2. Format the Bar Code Text.....	14
5.2.1. Bar Code Text.....	14
5.3. Pick a Bar Code Color.....	14



The symbol including, its Quiet Zones, should be at edge to avoid damage.





Case Label Requirement

The Data String for Bar Code

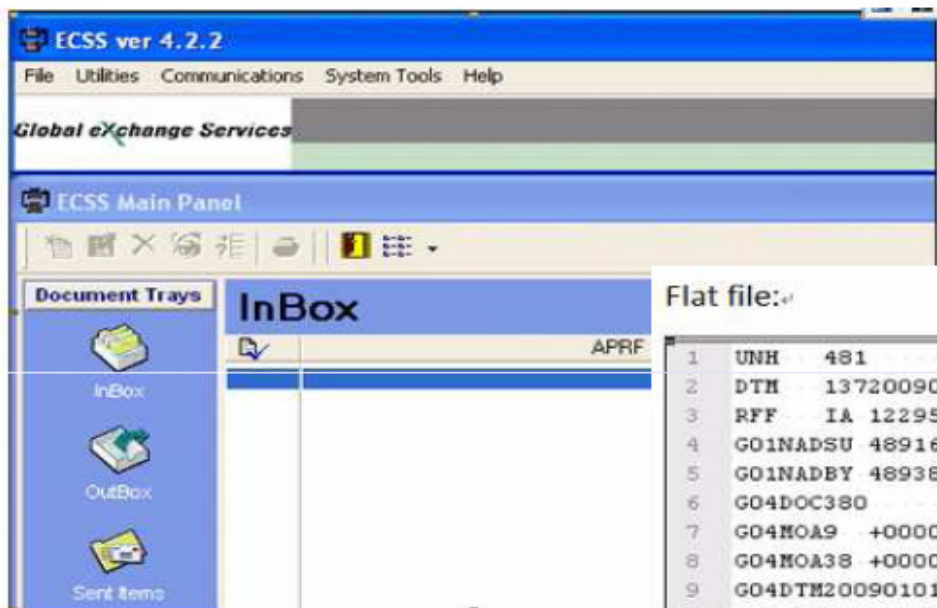
Application Identifier	Meanings	Example	Remark
(02)	The data follows (02) is the GTIN of <u>ordering base unit</u>	(02)04891668000022	Must be 14 digit no.
(17)	The data follows (17) is the expiration date	(17)110106	YYMMDD Format
(37)	The data follows (37) is the count of trade item	(37) 12345678	Up to 8 digit no.
(10)	The data follows (10) is batch/Lot no.	(10) ABCDEFGH	Up to 20 alphanumeric
= (02)04891668000022(17)110106(37)12345678(10)ABCDEFGH			

for vendors with no in house IT system ability



Cat A – EDI Gateway (EDI PO, PO Response, PO Change, ASN, Invoice)

Programming and Integration is needed
ERP Capable Suppliers



Flat file:

```
1 UNH 481 RA00002
2 DTH 13720090808 102
3 RFF IA 12295
4 GO1NADSU 4891668900032 VENDOR ABC
5 GO1NADBY 4893899000000 MANNINGS
6 GO4DOC380 INV0000
7 GO4MOA9 +0000000000180000.00
8 GO4MOA38 +000000000001000.00
9 GO4DTM20090101 102
10 GO4RFFZZZ20090102
11 GO4RFFON PO00000
12 GO4DOC380 INV0001
13 GO4MOA9 +0000000000010000.00
14 GO4MOA38 +0000000000011000.00
15 GO4DTM20090201 102
16 GO4RFFZZZ20090111
17 GO4RFFON PO00001
18 GO6AJT4
19 GO6MOA+0000000000001000.00
20 G08DLI1 +000001
21 G08MOA146+00000000000000011.00
22 G08PIA48900000000011 EN
```


Tendering of Hardware & printers & labels

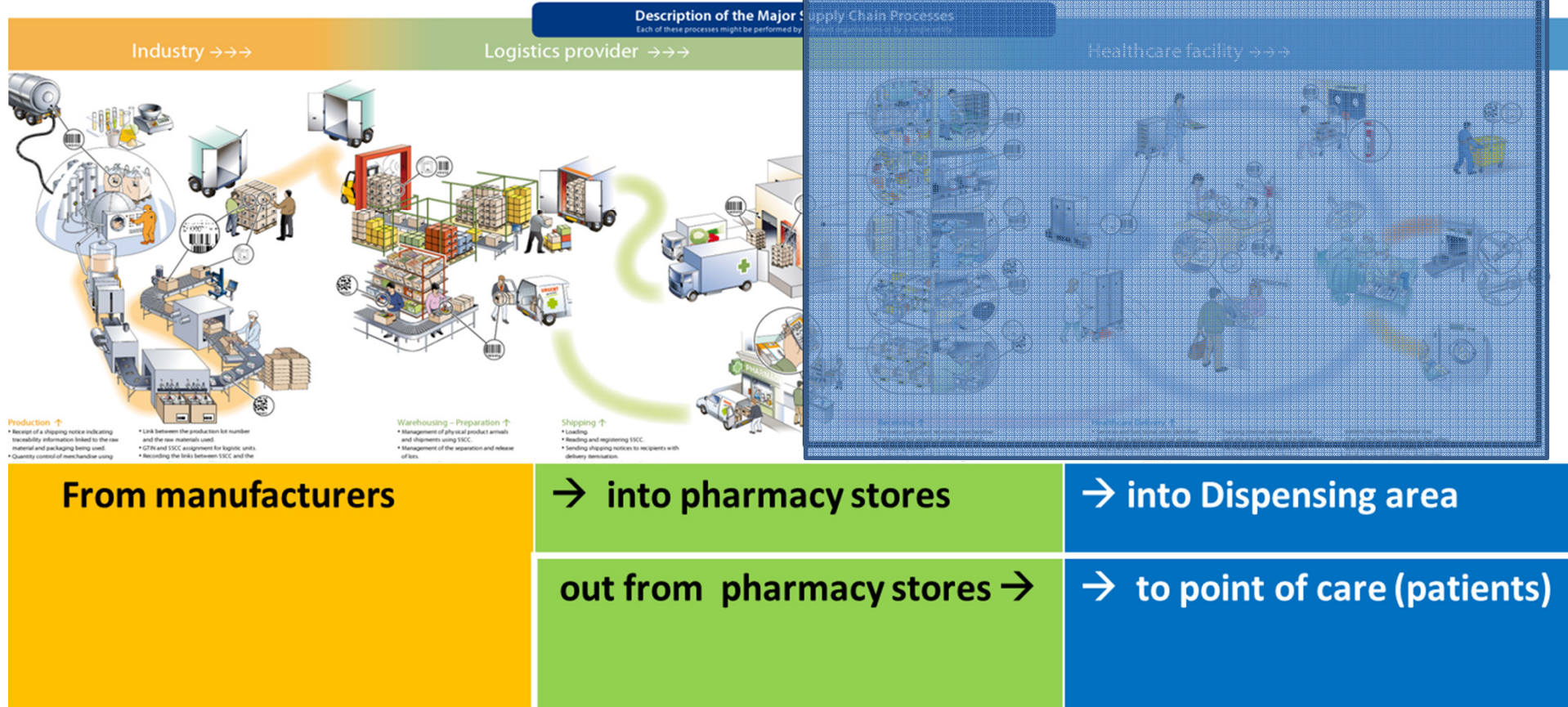


Hospitals side – engagement with local management & pharmacy

- ERP System
 - Early engagement
 - Data preparation
 - Data cleansing
 - Data conversion
- MSCA / SCM
 - Hospitals Stores Facilities
- Manpower
- Training

How did we do it ?

Defining the scope of the Supply Chain Modernisation Project



How did we do it ?

Defining time frame for SCM implementation

by phase & batch approach :

Phase I

- **Track from distributors into the main stores**
- **Applicable to all pharmacy stores in all hospitals**
- **Involve 2 batches of vendors on all their products**

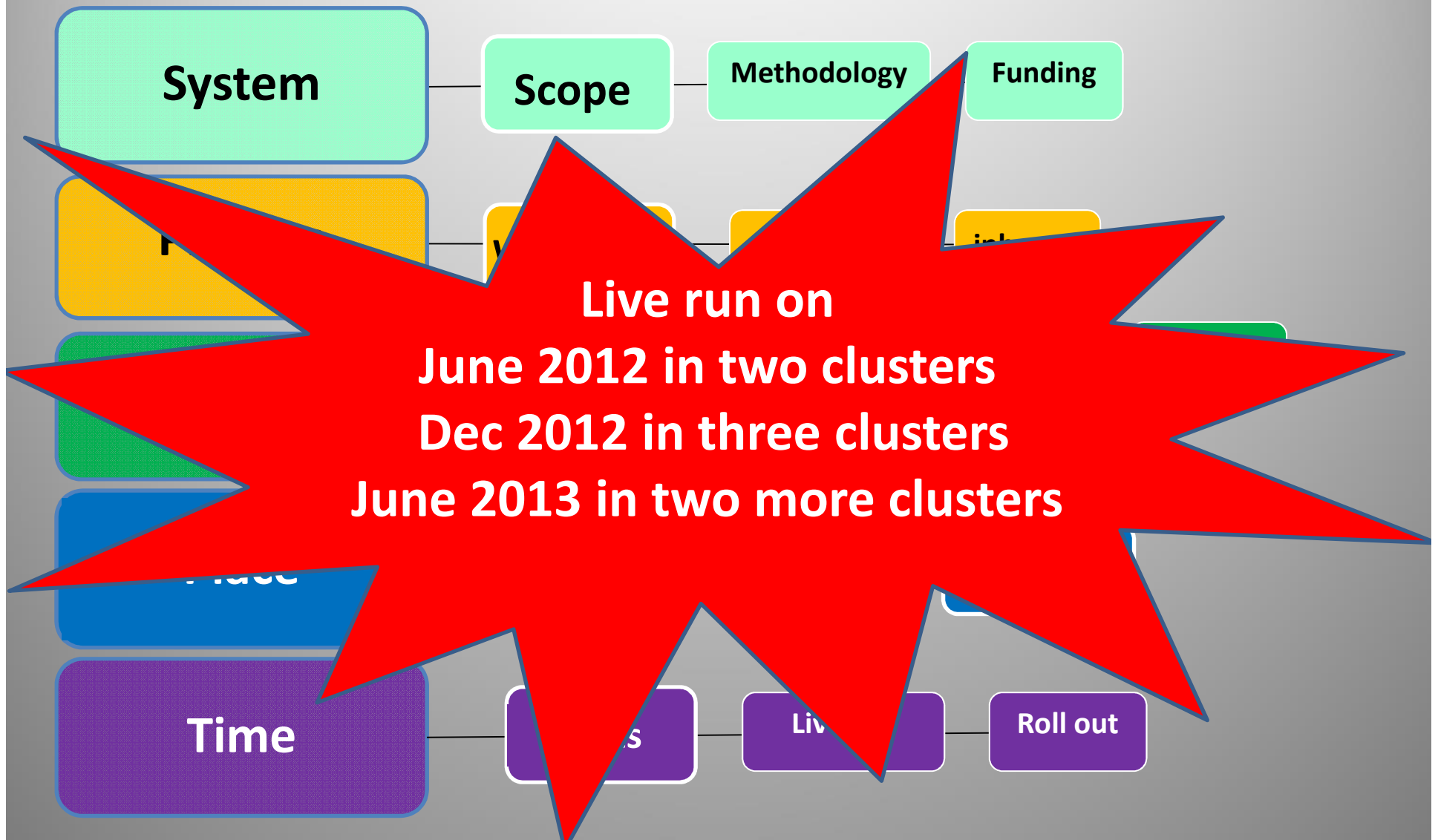
Phase II

- **Track from pharmacy stores to the dispensing stores**
- **Pilot in two hospitals PWH and QEH on Dangerous Drugs**

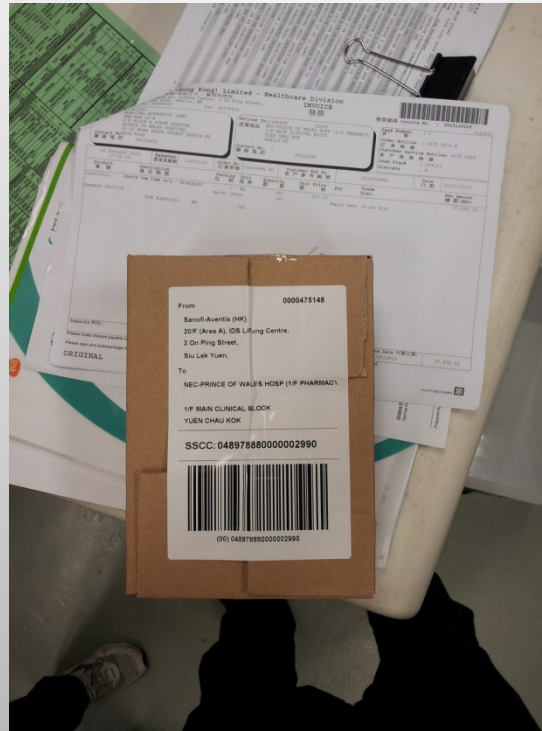
SCM Project implementation: by batch & phase approach

Batch I vendors (live run in June 2013)	Batch II vendors (live run in April 2014)
<ul style="list-style-type: none"> ➤ 13+1 vendors ➤ = about 70% of order lines ➤ About 38% of item sources 	<ul style="list-style-type: none"> ➤ + 13 vendors ➤ = about 16% more order lines ➤ About 13 % item sources
BAXTER HEALTHCARD LTD	EUROPHARM LABORATOIRES CO. LTD.
DKSH H.K. LTD	HK MEDICAL SUPPLIES LTD
FERRING PHARMACEUTICALS LTD	JOHNSON & JOHNSON (HK) LTD
FRESENIUS MEDICAL CARE HK LTD	MEDIPHARMA LTD
GAMBRO HK LTD	MEKIM LTD
HIND WING CO LTD	PRIMAL CHEMICAL CO LTD
JACOBSON MEDICAL HK LTD	STAR MEDICAL SUPPLIES LTD
JEAN-MARIE PHARMACAL CO LTD	SYNCO (HK) LTD
KERRFLEX SUPPLY CHAIN SOLUTIONS LTD	THE INTERNATIONAL MEDICAL CO. LTD.
LF ASIA (HONG KONG) LIMITED- HEALTHCARE DIVIS	TRENTON-BOMA LIMITED
LF ASIA (HONG KONG) LIMITED- UNIVERSAL DIVISIO	UNITED ITALIAN CORPORATION (HK) LTD.
LUEN CHEONG HONG LTD	VICKMANS LAB LTD
U S SUMMIT CO LTD	Y C WOO & CO LTD
ZHEJIANG PHARMA LTD	

SMART Achievement



The Change - Goods Receipts from batch I vendors using ASN & SSCC



The Gains – a much improved goods receipts process assisted by technology



The Gains - much better & improved storage facilities



Problems encountered

Requirement for Expiry Date Format

e.g.	Expiry Date on Product	Expiry date format in ASN message CCYYMMDD	Barcode Format on Shipper Case YYMMDD	Expiry date printed on Shipper Case label	Expiry date printed on DN/Invoice
A	28-Dec-2013	20131228	131228	28 DEC 2013	28 DEC 2013
B	Dec-28-2013	20131228	131228	28 DEC 2013	28 DEC 2013
C	28-12-2013	20131228	131228	28 DEC 2013	28 DEC 2013
D	12-28-2013	20131228	131228	28 DEC 2013	28 DEC 2013
E	Dec-2013	20131200	131200	DEC 2013	DEC 2013
F	122013	20131200	131200	DEC 2013	DEC 2013
G	201312	20131200	131200	DEC 2013	DEC 2013
H	12/13	20131200	131200	DEC 2013	DEC 2013

Mismatch Expiry date information on ASN and products

- Expiry date printed on products did not match ASN message -> When no date is specified, HA takes 1st day of month as the 'used by' date.

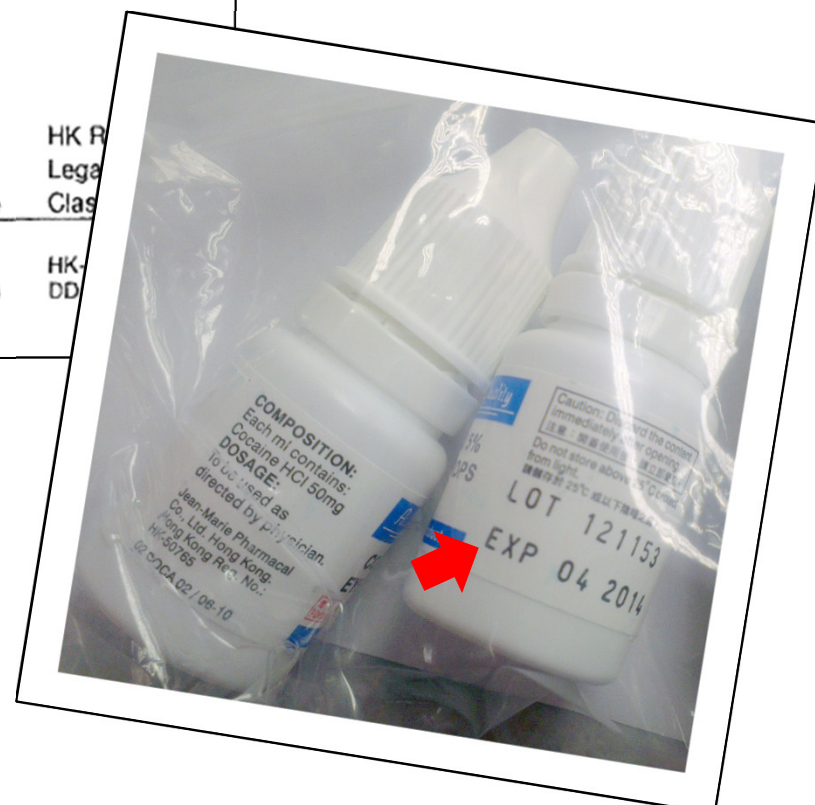


Item Description	Bonus	Deliver Qty	O/S PO Qty	PO Qty	Purchasing UOM	Lot No Exp. Date	HK R Legal Class
COCAINE HCL EYE/NOSE DROPS 10ML JEAN MARIE/HK		3	3	3	BOTTLE	121153 30-APR-14	HK- DD

SHEUNG WAN

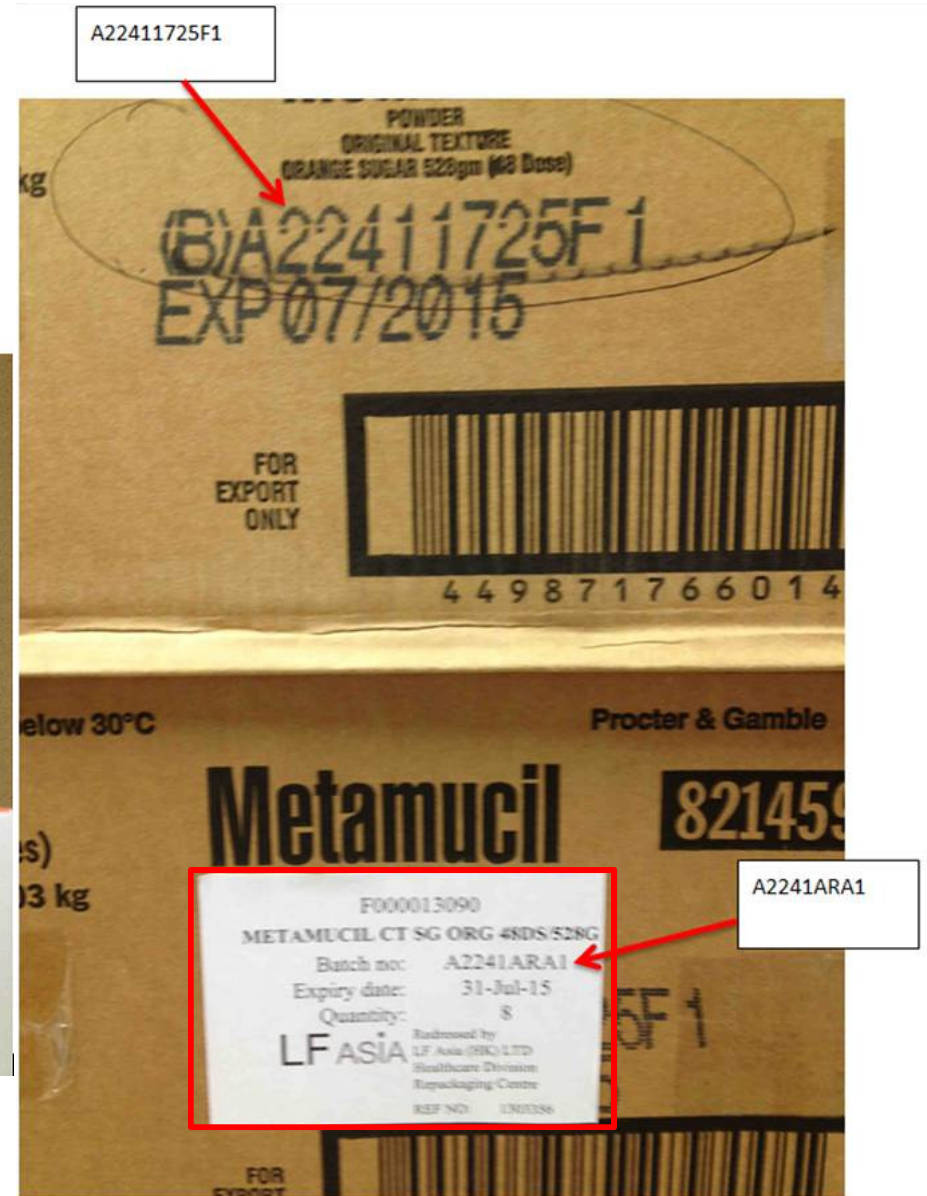
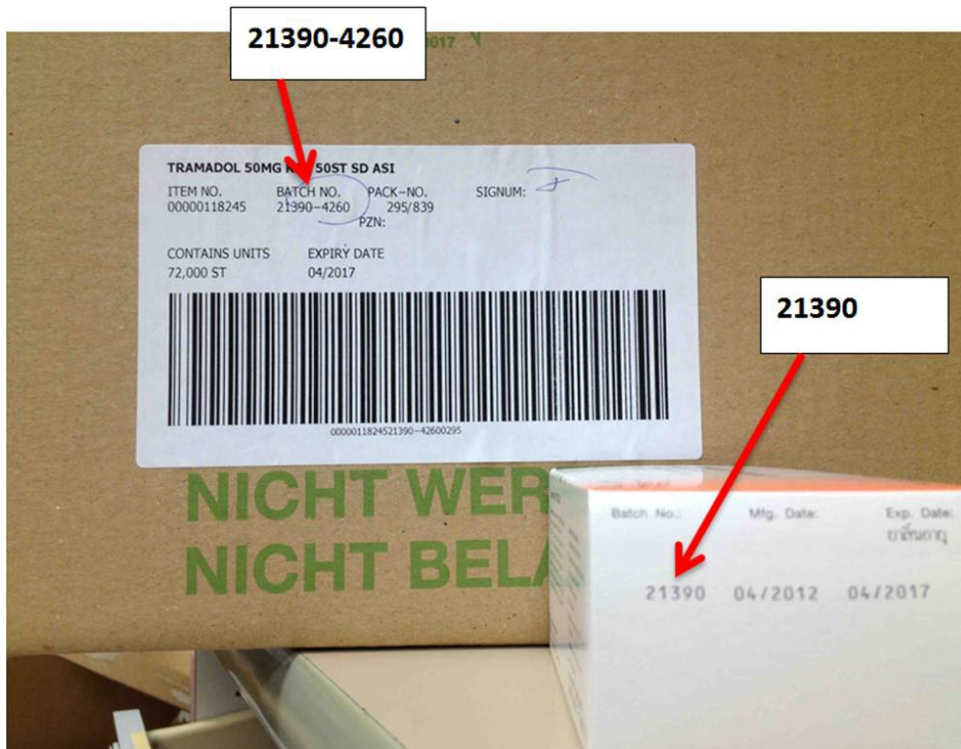
Remarks: 2210000579

編號 ART. NO.	摘要 DESCRIPTION	數量 QUANTITY
260023	COCAINE HCL 5% EYE/NOSE DROPS*** @ 10ML(L) Jean-Marie / Hong Kong / HK-50765 121153 / 04-2014 / DD	3.00 支



Batch Number Issues

users reported that the lot information printed on product packing did not match with the lot number printed on product



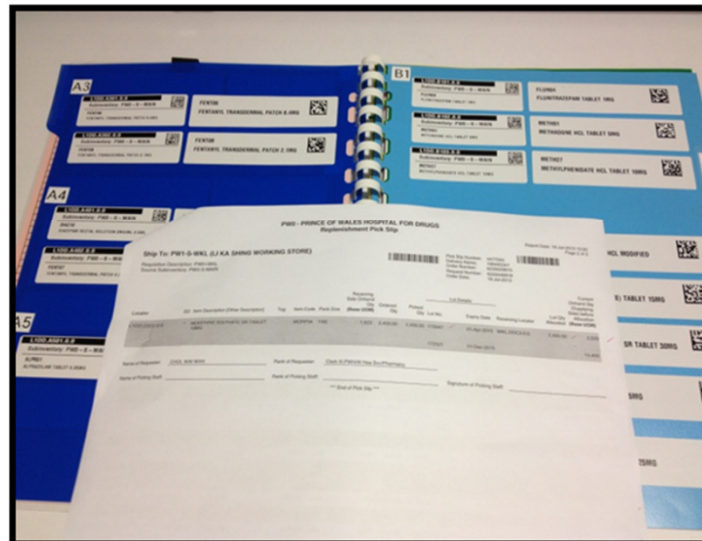
Some pharmacy stores are still temporary stores



Not all store rooms are properly setup



X

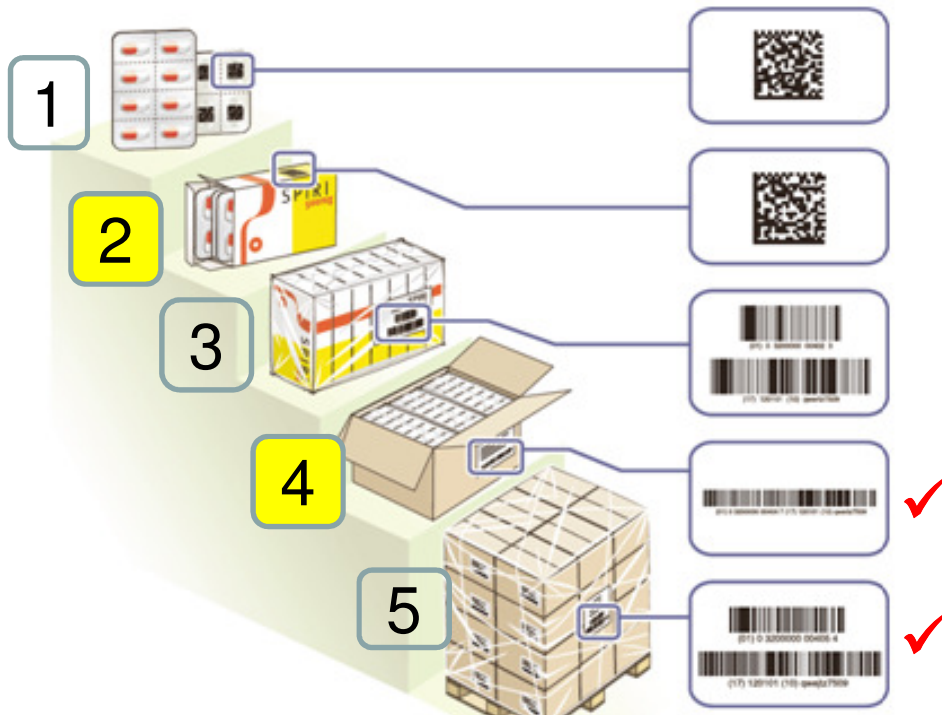


?

Vendor & Product readiness

For SCM EDI vendors :

- Bar codes are required on outer cartons , pellets with GTIN, Batch No, Expiry date
- These information are lost when the goods are removed from cartons and pellets



Way Forward

Patient & Medication Safety



Visibility



Traceability

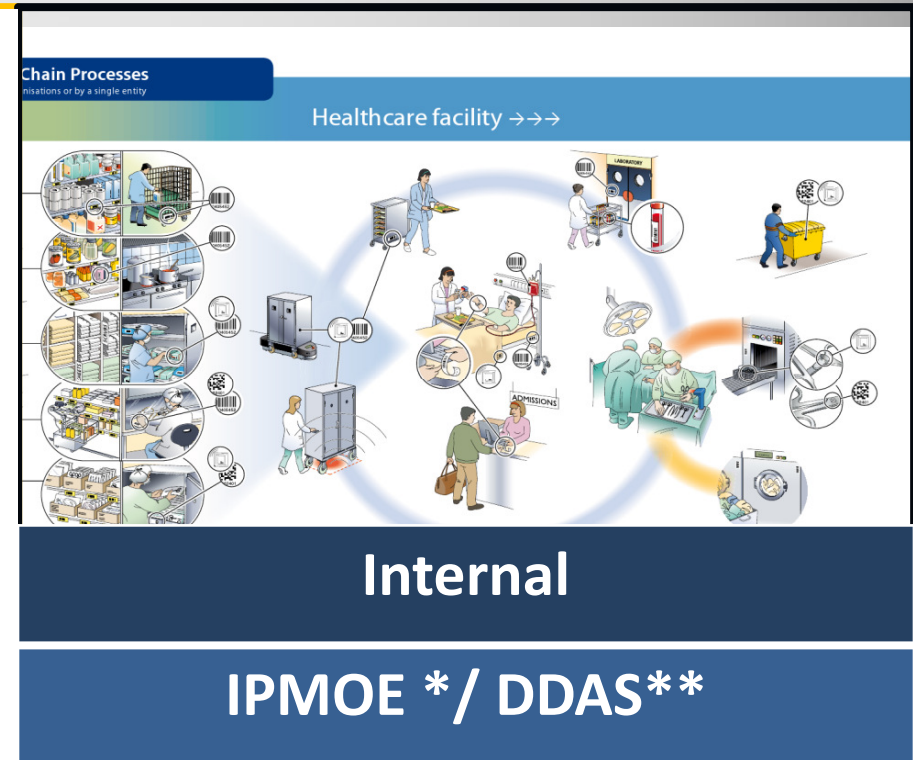


**where we want to go
via the SCM Project**



Way Forward

The Supply Chain Modernisation on Pharmaceutical Products



*IPMOE = In-patient Medication Order Entry

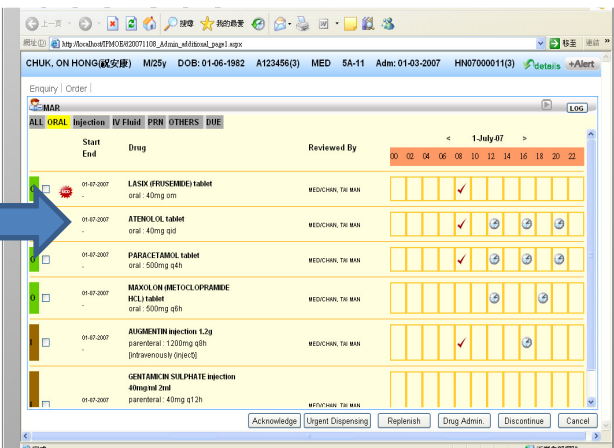
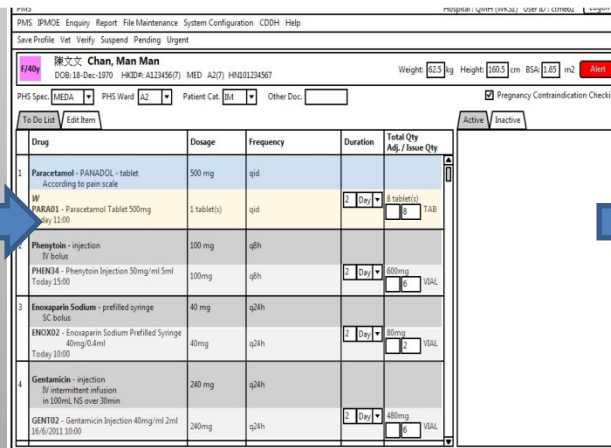
**DDAS= Drug Distribution and Administration System

E */ DDAS**



pharmacy

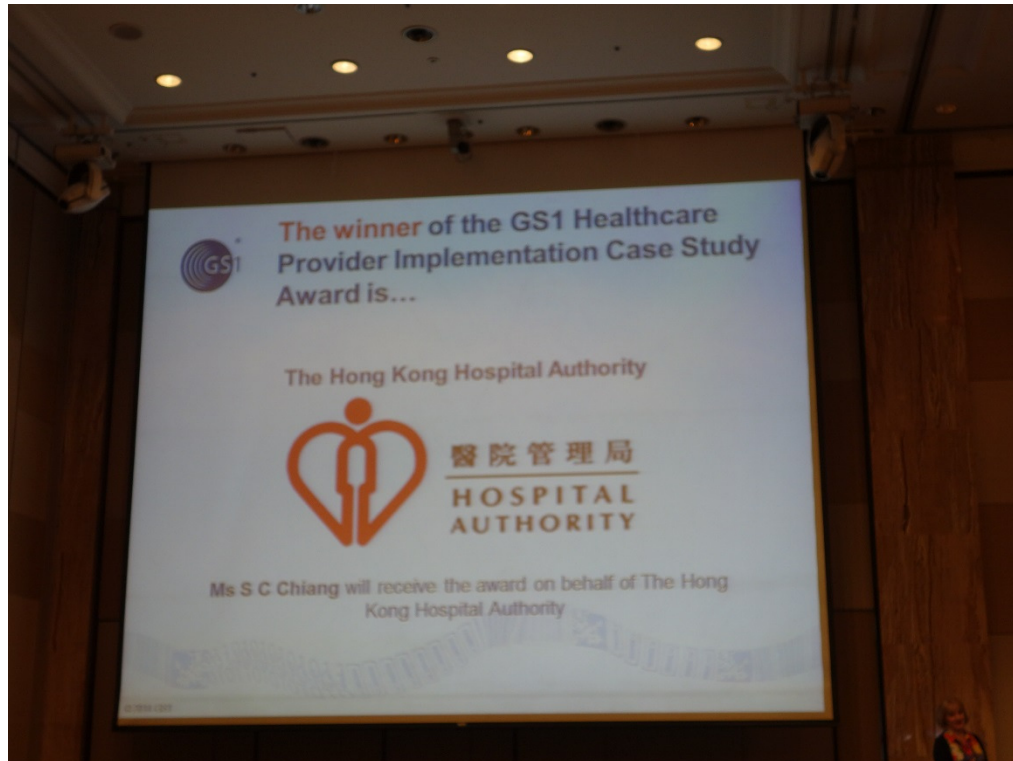
Nurses



- **Electronic prescribing by clinicians**
- **Vetting & dispensing with workflow reengineering at Pharmacies**
- **Drug administration by nurses using BCMA**



HPAC Award – April 2014



25th Global GS1 Healthcare conference
Seoul, South Korea





Join HPAC?

- **Find out more:** <http://www.gs1.org/healthcare/hpac>
- **Community Room:** <http://community.gs1.org/apps/org/workgroup/gs1hpac/>
- **Publications:**
 - Educational C-Suite Slide Deck
<http://community.gs1.org/apps/org/workgroup/gs1hpac/download.php/52286/latest>
 - Position Statement on Barcode Issues:
http://www.gs1.org/docs/healthcare/20121017_FINAL_HPAC_Position_Paper_Bar_Code_Issues.pdf
 - :Position Statement on Interoperability of IT Systems
http://www.gs1.org/docs/healthcare/20121017_Final_HPAC_Position_Paper_IT_Interoperability.pdf
- **Healthcare Provider Awards...** <http://www.gs1.org/healthcare/hpac>



Contact Details

Janice Kite

E janice.kite@gs1.org

W www.gs1.org/healthcare

