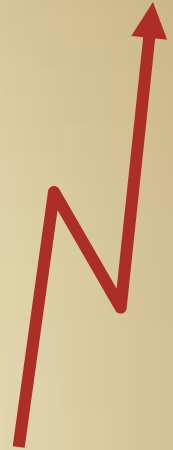# Track & Trace Scenario and Demonstration

By Cryptocodex Ltd

Event No. 1

900 packages of Amlow 5 mg medicine are being manufactured

Product details:

Medicine Code:	72011 Amlow Pills
Dosage:	5 mg
Production Date:	28-02-2012
Expiration Date:	31-12-2016
Manufacturing Plant:	103
Country of Destination:	853 China
Sub-Area Destination:	137 Shanghai
Batch Number:	94522

A serial number is assigned to each package: 853001 to 853900
barcode is attached to each pack,

In which the product data is embedded, **ENCRYPTED**

AMLOW
5

unipharm ltd.

Product Tracking Requirements

- In the past, tracking complete shipments fulfilled the manufacturers' and the authorities requirements.

- Increasing processing capabilities, combined with regulatory requirements, a necessity emerged for tracking each and every package of goods in the distribution chain.

- Databases, now holding vast volumes of data, collapse as they cannot maintain so many records.

- Also, performance of huge databases becomes very slow and impractical for online use.

- Counter-Fight solves these problems (and more) in a very simple manner: One record is kept in the database, holding relevant information for a large number of products.

Two systems are compared:

	The Randomized system	Counter-Fight **encrypted label**
	Database dependent – No Encryption	Serial No. 853001 – 853900 assigned

- A82ZYIU73B   853001
- V3KZJ73VEQ   853002
- PEAOIUHX8R   853003
- 2QVIMK0LL7   …
- W1RGN5B0QB   …
- XUFQ720F1U   853900

Event No. 2

The 900 Amlow Packages are packed in Cartons.
36 Packages are packed in each Carton.
Cartons are assigned numbers: 1 to 25

The EVENTS Log

Site	Carton No. From	To	Package No. From	To
Production Plant	1	25	853001	853900

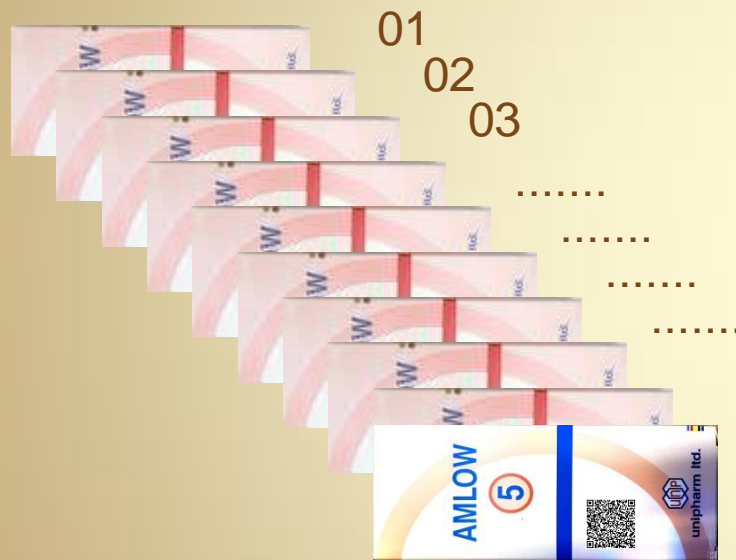A 2D-Barcode is assigned to each carton, containing the carton number and the individual packs serial numbers
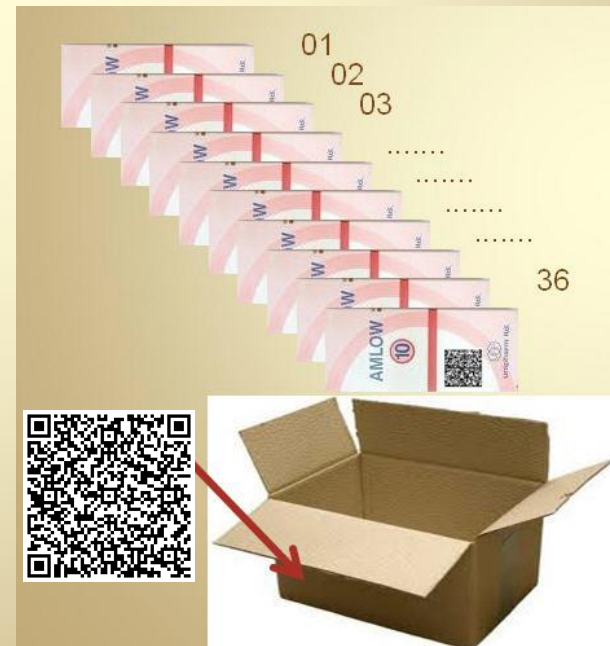
Production line

- **Individual packages encrypted 2D-Barcode**

- **Carton Track&Trace 2D-Barcode**

01   A82ZYIU73B
  02   V3KZJ73VEQ
    03   PEAOIUHX8R
              2QVIMK0LL7
  ....   W1RGN5B0QB
  ....   QGDV6SEE1I
  ....   1T28K392F2
  ....

36

Each package must be individually registered !!!

AMLOW 5 unipharm ltd.

ON-Carton Marking

Counter-Fight	Random marking
One Record	36 Records
853001-853036	Each and Every Package

Distribution Flow

X4 STOLEN

GREEN Truck #4
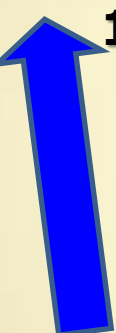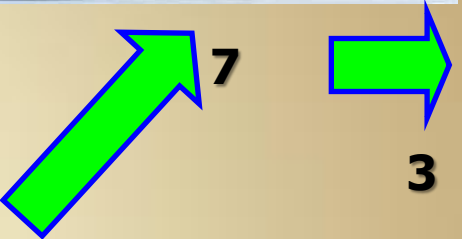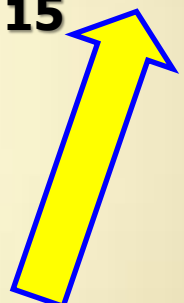
Production line

- Individual packages encrypted 2D-Barcode
- Carton Track&Trace 2D-Barcode

01
02
03

36

Warehouse #2

Warehouse #3

7

3

10

BLUE Truck #2

15

YELLOW Truck #3

RED Truck #1

25
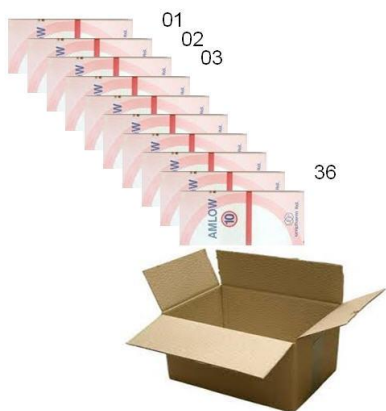
Warehouse #1

Event No. 3

- 25 Cartons are loaded on Red Truck #1
- Truck is driven to Warehouse #1
- 25 Cartons are unloaded from Red Truck #1 and stored in Warehouse #1
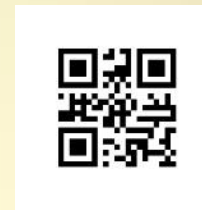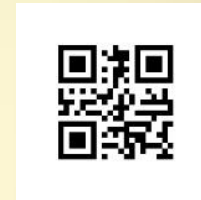
The EVENTS Log

	Carton No.		Package No.	
Site	From	To	From	To
Production Plant	1	25	853001	853900
RED Truck #1	1	25	853001	853900
Warehouse #1	1	25	853001	853900

Event No. 4

- 10 Cartons, numbered 1 to 10, are loaded on Blue Truck #2.
- Truck is driven to Warehouse #2
- 10 Cartons, numbered 1 to 10, are unloaded from Blue Truck #2 and stored in Warehouse #2

The EVENTS Log

Site	Carton No. From	To	Package No. From	To
Production Plant	1	25	853001	853900
RED Truck #1	1	25	853001	853900
BLUE Truck #2	1	10	853001	853360
Warehouse #2	1	10	853001	853360

Event No. 5

- 15 Cartons, numbered 11 to 25, are loaded on Yellow Truck #3.
- Truck is driven to Warehouse #3
- 15 Cartons, numbered 11 to 25, are unloaded from Yellow Truck #3 and stored in Warehouse #3
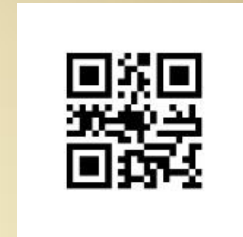
The EVENTS Log

Site	Carton No. From	To	Package No. From	To
Production Plant	1	25	853001	853900
RED Truck #1	1	25	853001	853900
BLUE Truck #2	1	10	853001	853360
Warehouse #2	1	10	853001	853360
YELLOW Truck #3	11	25	853361	853900
Warehouse #3	11	25	853361	853900

Event No. 6

- 7 Cartons, numbered 11 to 17, are loaded on Green Truck #4.
- Truck is driven to Warehouse #4

The EVENTS Log

Site	Carton No. From	Carton No. To	Package No. From	Package No. To
Production Plant	1	25	853001	853900
RED Truck #1	1	25	853001	853900
BLUE Truck #2	1	10	853001	853360
Warehouse #2	1	10	853001	853360
YELLOW Truck #3	11	25	853361	853900
Warehouse #3	11	25	853361	853900
GREEN Truck #4	11	17	853361	853612
Warehouse #3	18	25	853613	853900

after loading Green Truck #4

Event No. 7

- Underway, 4 Cartons, numbered 11 to 14, get **STOLEN** from Green Truck #4
- 3 Cartons, numbered 15 to 17 remain on Green Truck #4

The EVENTS Log

	Carton No.		Package No.	
Site	From	To	From	To
Production Plant	1	25	853001	853900
RED Truck #1	1	25	853001	853900
BLUE Truck #2	1	10	853001	853360
Warehouse #2	1	10	853001	853360
YELLOW Truck #3	11	25	853361	853900
Warehouse #3	11	25	853361	853900
GREEN Truck #4	11	17	853361	853612
Warehouse #3	18	25	853613	853900
after loading Green Truck #4				
BLACK LIST	11	14	853361	853504

STOLEN from GREEN Truck #4

X4

Event No. 8

- 3 Cartons, numbered 15 to 17, are unloaded from Green Truck #3 and stored in Warehouse #4

| Site	Carton No. From	To	Package No. From	To	Random Marking Added	Total	Counter-Fight Added	Total
Production Plant	1	25	853001	853900	900	900	1	1
RED Truck #1	1	25	853001	853900	900	1800	1	2
Warehouse #1	1	25	853001	853900	900	2700	1	3
BLUE Truck #2	1	10	853001	853360	360	3060	1	4
Warehouse #2	1	10	853001	853360	360	3420	1	5
YELLOW Truck #3	11	25	853361	853900	540	3960	1	6
Warehouse #3	11	25	853361	853900	540	4500	1	7
GREEN Truck #4	11	17	853361	853612	252	4752	1	8
Warehouse #3 after loading Green Truck #4	18	25	853613	853900	288	5040	1	9
BLACK LIST STOLEN from GREEN Truck #4	11	14	853361	853504	144	5184	1	10
Warehouse #4	15	17	853577	853612	108	5292	1	11

The EVENTS Log

Scan me

X4 Cartons Stolen
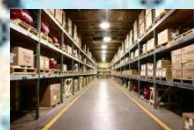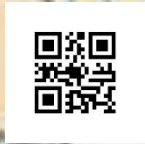
SHIPMENT TRACKING

Quantity on Site

(Packs and Cartons)
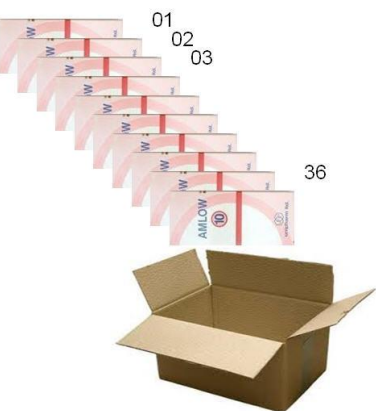
Cartons: 11 – 14
Packs: 853361 - 853504

X4

GREEN Truck #4
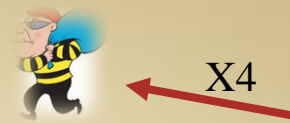

Production line

- Individual packages encrypted 2D-Barcode
- Carton Track&Trace 2D-Barcode

01
02
03

36

Cartons: 1 – 10
Packs: 853001 - 853360

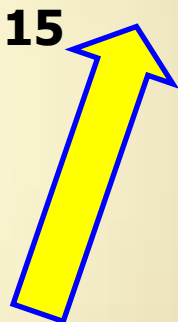Cartons: 18 – 25
Packs: 853613 - 853900

Warehouse #2

Warehouse #3

7

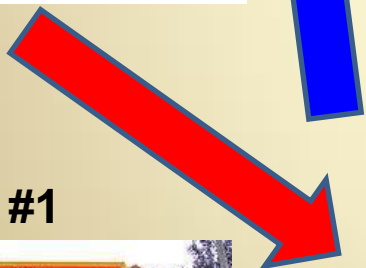Cartons: 11 – 17
Packs: 853361 - 853612

10
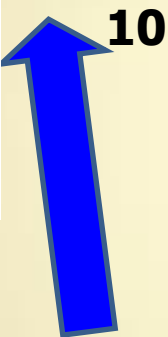
BLUE Truck #2

15

YELLOW Truck #3

Cartons: 11 – 25
Packs: 853361 - 853900

RED Truck #1

25

Warehouse #1

Cartons: 1 – 25
Packs: 853001 – 853900
All packs and cartons dispatched
Stock left: Zero

Self Experience
Read the barcodes, trace location

Pack: 853001   Carton: 01   Warehouse #2

Pack: 853361   Carton: 11

Pack: 853505   Carton: 15   Warehouse #4

Pack: 853613   Carton: 18   Warehouse #3

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