

Protect Your Product: Counterfeit Prevention through Product Authentication

标准
Normen
規格
Standards
標準
立正
Стандарты

SEMICON West 2007

Workshop

Wednesday, July 18, 2007



Agenda

- Introduction
- Demonstration of covert technologies
- Security Codes on labels
- Security Codes in RFID
- Authentication Service Providers
- Roundtable discussion

Meet your speakers

- David A. Brown
 - Engineer turned sleuth
 - MSEE 1978, Purdue
 - 10 years in microprocessor failure analysis
 - 9 years intellectual property transfer deals
 - 10 years product fraud investigations
- Elliott Grant
 - PhD Manufacturing Engineering 1997, Cambridge
 - CEO YottaMark, Inc.
 - Formerly McKinsey & Co.

Meet your speakers

- Dan Schwarz
 - BA Mathematics & Computer Science, St. John's University
 - Director, New Product Development
 - 15 years professional IT
- Jason D. Warschauer
 - BS Electrical Engineering, Iowa State University
 - Field Applications Support, Texas Instruments RFID Systems
 - 5 Years RFID Engineering

Meet your speakers

- Gene Panger
 - BA Economics, 1983, St. Olaf College
 - Director, Management Board Advisor
 - 20 years international trade

Elephant in the living room



Current strategy

- In general
 - Many layers of security technologies
 - Most technologies are covert
 - Most technologies based on trade secrets
 - Each product uses unique set of layering
- The usual strategy is based on secrecy
 - Once too many secrets are discovered, new combinations of layering are swapped in
- The result
 - Lots of confusion
 - Lots of opportunity to compromise protocols
 - Lots of re-training costs

Are strategies working?

- Counterfeiting will reach \$1.2T in 2009*
 - All industries, worldwide.
 - (Not just electronics)
 - Up 40% from today

- That's not what I call success
 - Current strategies are not working very well

* Faking out the Fakers, BusinessWeek June 4, 2007

Barriers to talking

- We don't trust each other
- We don't want to help our competitors
- We don't want to help the bad guys
- My boss/company won't let me talk
- Telling you makes my program less effective
- My problem is unique: You can't help me
- It's against the law to disclose certain data

- Most barriers are opinion-based & self-imposed
 - I'm no exception, there are things I won't tell you

Detection overhead is too high

- Covert technologies are nice but:
 - By definition, very few know how to use one
 - Access to technology must be controlled
 - Detection equipment is usually needed
 - Effectiveness is limited by detection capacity
- Let's look at an example:

Covert technology example:

- Lets design a layered security label
 1. ~~Security paper stock~~ (oops, too expensive)
 2. OVD, such as a hologram
 3. Taggant 1, UV ink watermark
 4. Taggant 2, DNA bases
 5. Microtext



Mimic attack:

- Within days, counterfeiters will create this:
 1. OVD
 - Quickly mimicked with similar color & similar design
 2. Taggent 1, UV ink watermark
 - Noticed and copied
 3. Taggent 2, DNA bases
 - Ignored
 4. Microtext
 - Noticed and mimicked



Covert technology example:

- Lets design a layered security label
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Demo using covert technologies

- Attack occurs in distribution network
 - Fake batch of components slipped in
- Mfg unknowingly buys fake components
 - Fake security label fools all inspectors
- Mfg builds TV using bad components
- Result:
 - TV works poorly if at all

So, what went wrong?

-
-
-
-
-
-
-

Examples of success

- Public Authentication Tools
 - Make sure you get what you paid for
- Product Activation
 - Some software products now use this
- These techniques interact with end users

Demonstration

SemiTrace

HOME SOLUTION OVERVIEW CONTACT US

Protect Your Brand. Protect Revenues.
Cost-effective, real-time authentication that protects your brand and reduces your risks.

SemiTrace™ is an important new service that delivers cost-effective unit-level authentication and traceability for the electronics and semiconductor industries. SemiTrace is the most effective way to prevent losses from counterfeiting, diversion and warranty fraud. Using secure, unit-level encrypted codes and the Internet, anyone anywhere in the supply chain can check a code at any time.

“Despite IT products’ sophisticated design and complex manufacturing, counterfeiting is a growing problem. As many as one in ten IT products sold may actually be counterfeit, according to interviews conducted with electronics industry executives.”
KPMG

BENEFITS TO MANUFACTURERS, DISTRIBUTORS AND CONSUMERS

- ◆ Protect revenue and prevent losses from counterfeiting, diversion and fraud
- ◆ Reduce expensive system failures caused by using fake or re-marked parts
- ◆ Detect overruns and use of substandard parts
- ◆ Prevent warranty fraud
- ◆ Improve visibility into the entire supply chain
- ◆ Cost-effective, low-impact implementation

Sign Up Now!
JULY 16-20 • EXHIBITS JULY 17-19
MOSCONE CENTER, SAN FRANCISCO
next is **now**
SEMICON West2007

Try It Now!
Enter your code or click on the sample code below.

1820 8008 5883
4411 8547 8485
www.semitrace.com

TRACE

News and Events
July 18, 2007 – YottaMark participates in SIA/SEMI workshop at Semicon West 2007
October 4-5, 2007 – YottaMark’s Elliott Grant to speak at Product Authentication and Brand Security Conference in Washington DC
October 15-17, 2007 – YottaMark presents SemiTrace at PackExpo in Las Vegas

- **Code Authentication** via website
- Verifying other **security layers**
- **‘Edge-ware’** operates across the enterprise’ boundaries

Layering security with codes



Ambient illumination



UV illumination

Real-time intelligence

Survey Summary - Microsoft Internet Explorer

Address: http://www.surveymonkey.com/DisplaySummary.asp?SID=3712062&mod=...

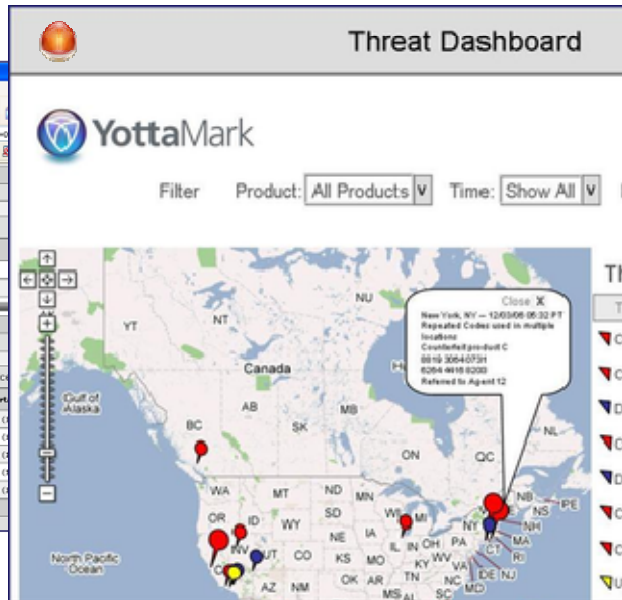
5. Which additional services interest you?

Coffee and teas	<input type="checkbox"/>
Snacks	<input type="checkbox"/>
Individual bottles of water	<input type="checkbox"/>

6. Please rank by important factors to you in selecting a service

	very important	import
Company reputation	56% (29)	32% (16)
Variety of products offered	12% (6)	23% (11)
Price of products	80% (40)	31% (15)
Convenience of delivery options	65% (33)	31% (15)
Local, independent company	46% (24)	32% (16)

Statistics



Threat Mapping

Verify Code at verify.YottaMark.com - Microsoft Internet Explorer

Address: http://verify.yottamark.com/Default.aspx?Code=8&submit.x=15&sl...

YottaMark

Home Page : Reports : Valid Code Verification

- Home Page
- Production
 - Generate Codes
 - Verify Codes
 - Shipment
 - Notice
 - Scrapped Item
 - Packing Label
- Reports
 - Batch Report
 - Valid Code Verification
 - Invalid Code Verification
 - Code Report
 - Batch Summary Report
- Configuration
 - Manufacturing Sites
 - Production Lines
 - Products
- Administration
 - Customers
 - Licenses
 - Keys
 - Users
 - Create User
 - Reset Password

Verification Report

Date of Verification	Code	Item
12/11/2006 10:05:22 PM	443831384660047497865789	00060-000002-1000002 e
12/11/2006 4:27:26 PM	509082105099201043597143	00060-000002-1000001 e
12/11/2006 4:27:26 PM	509082105099201043597143	00060-000002-1000001 e
12/11/2006 4:25:26 PM	509082105099201043597143	00060-000002-1000001 e
12/11/2006 4:25:25 PM	509082105099201043597143	00060-000002-1000001 e
10/17/2006 1:29:56 PM	634937733503278110142320	00060-000002-000001 e
10/17/2006 1:27:29 PM	634937733503278110142320	00060-000002-000001 e
10/17/2006 1:25:02 PM	634937733503278110142320	00060-000002-000001 e
10/16/2006 10:08:58 PM	522708398926265700417689	00060-000001-000001 e
10/16/2006 10:05:05 PM	522708398926265700417689	00060-000001-000001 e

Audit Tools

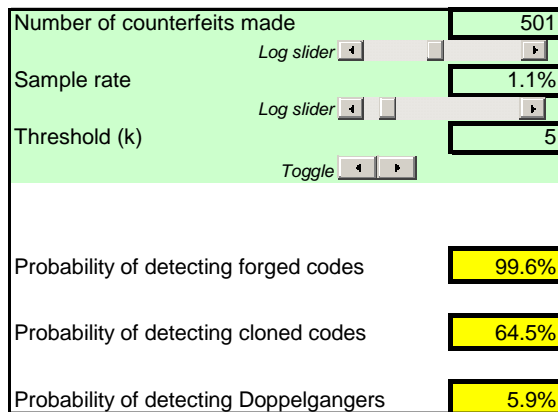
Automated Alerts



Why it works

PROBABILITY OF FRAUD DETECTION

CONFIDENTIAL

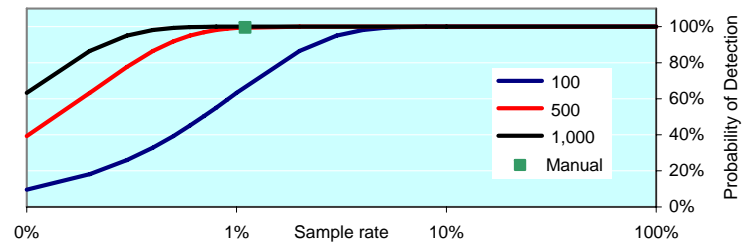
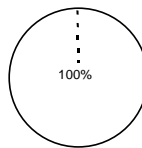


NOTES

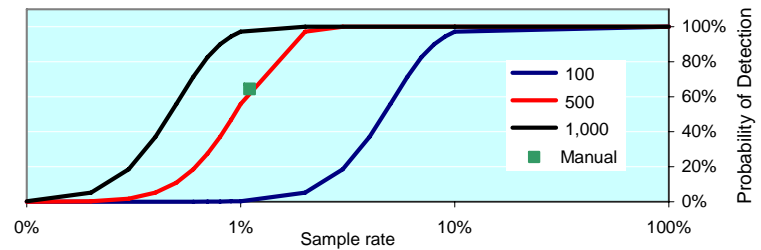
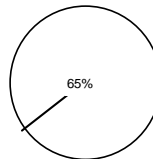
- each line on the chart represents a number of counterfeits put in the supply chain
- the dials and the green dot on the chart represent data entered manually above
- threshold (k) is the number of identical codes seen before an alert is triggered



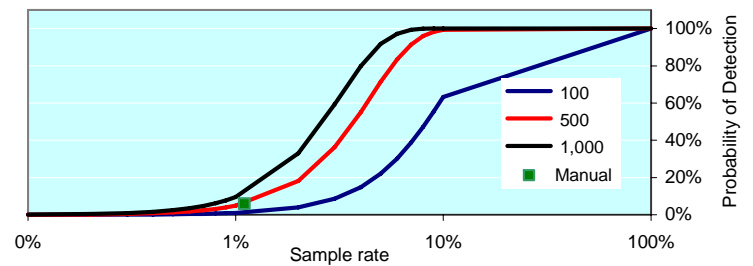
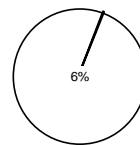
Prob. Detecting Fake Codes



Prob. Detecting Cloned Codes

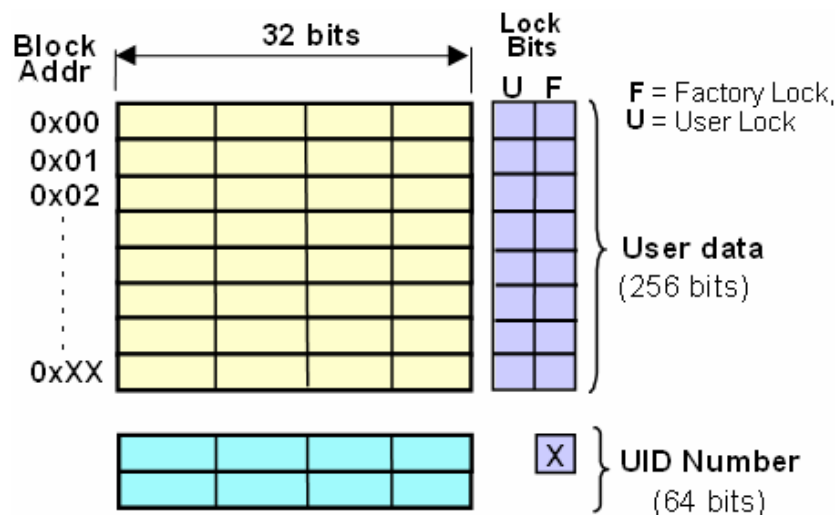


Prob. Detecting Doppelganger Codes



RFID authentication

- Serialized Data Carrier
 - Unique Identifier provides product serialization
 - Writable/Lockable Memory Space provides:
 - Traceability throughout supply chain
 - Authentication via Digital Signature



RFID authentication

- Network
 - Network Database manages Serial Numbers.
- No Network
 - Digital Signature Provides proof of origin
 - Signatures can be Metered



RFID closes the loop

- RFID Combined With:
 - Unique Serialization
 - Tamper Evident Packaging
 - Authentication
 - Network
 - No-Network - Digital Signature
- Addresses:
 - Over Production
 - Short Shipments
 - Shrinkage
 - Diversion
 - Counterfeiting

~~Black Market~~

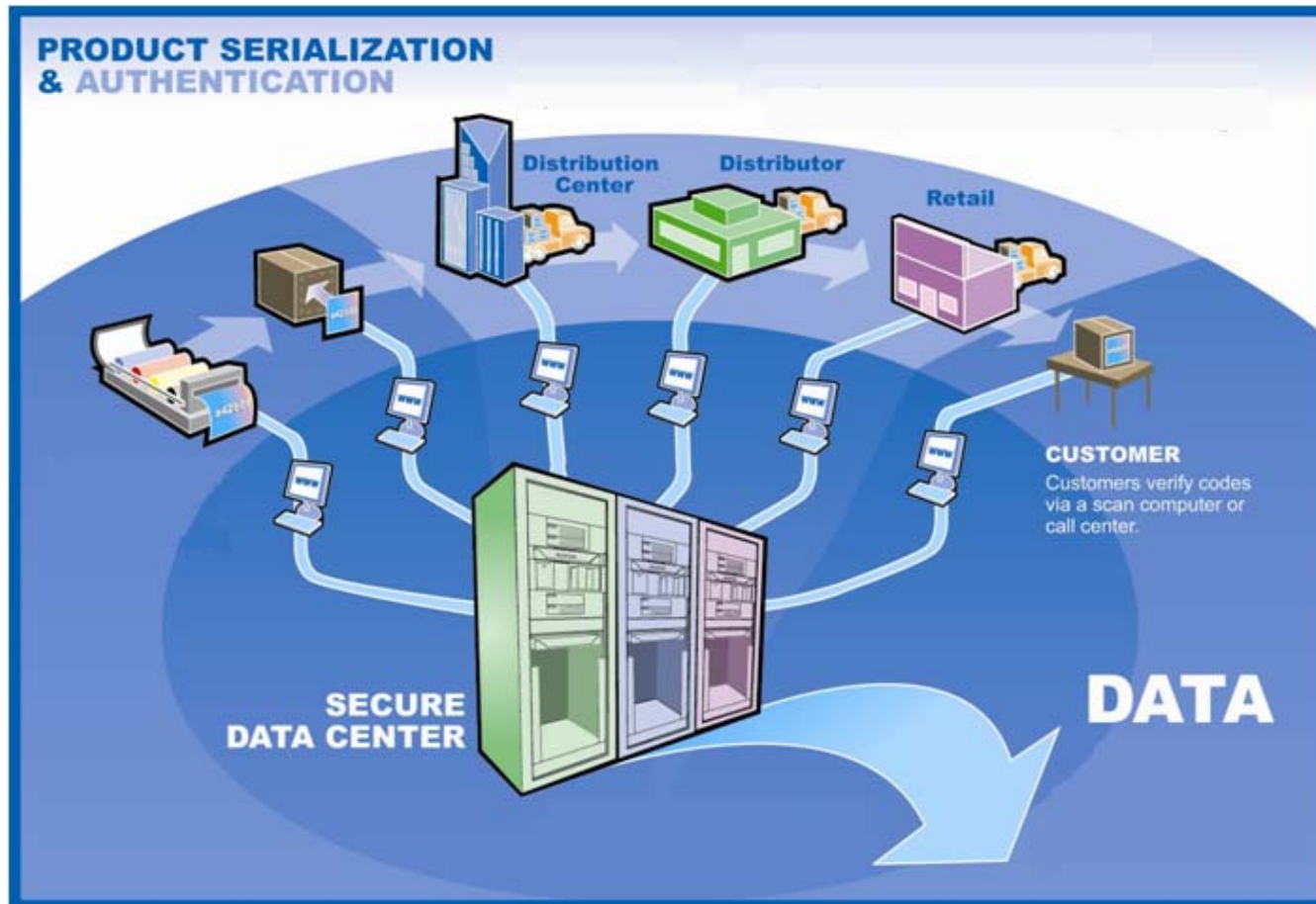
~~Gray Market~~

~~Knock Offs~~

What is an authentication service provider?

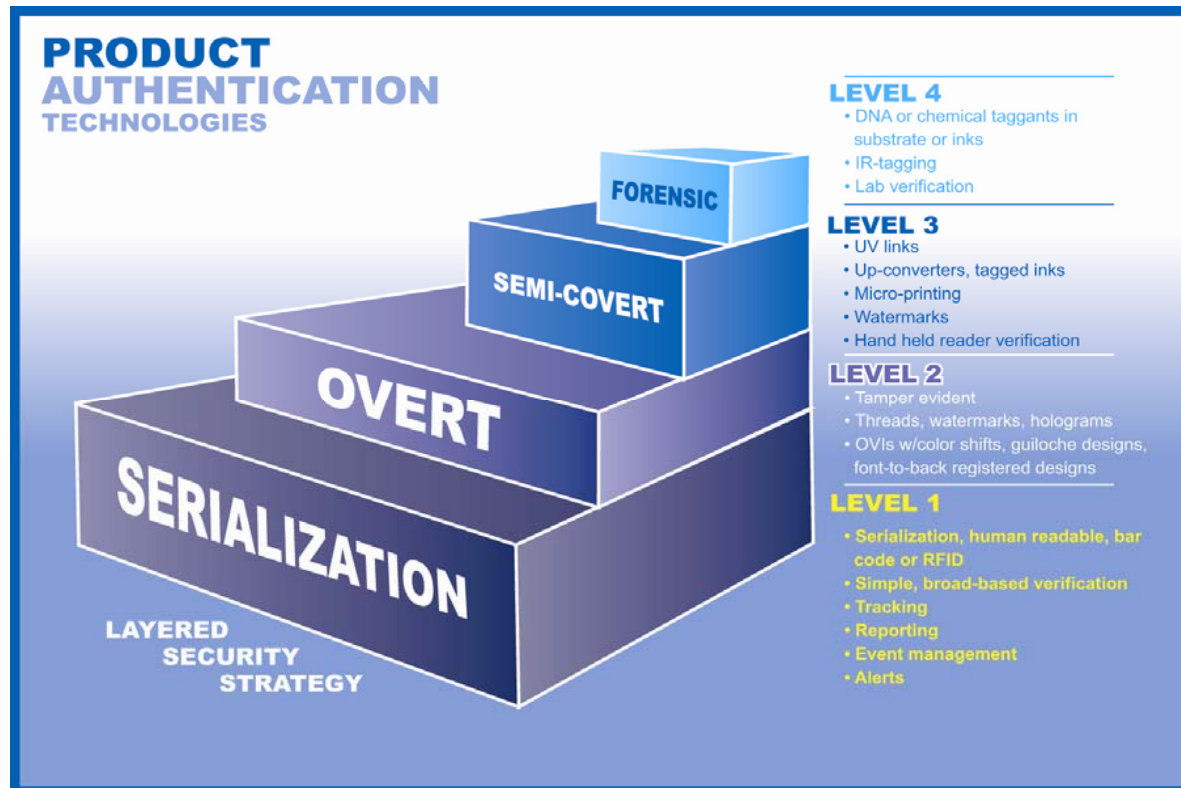
- Provides a method for uniquely identifying brand owner's products (serialization)
- Provides a platform for authenticating brand owner's products
- Provides analysis & reporting

Sample ASP lifecycle



How do ASPs help to protect products?

Adds a layer of security



How do ASPs help to protect products?

- Protect against warranty fraud
- Protect supply from the introduction of fraudulent goods
- Enable targeted product recalls
- Diversion detection
- Gain insight

Industries using authentication

- Aerospace
- Apparel & Sporting Goods
- Automotive
- Agricultural/Chemical
- Consumer Packaged Goods
- Electronics
- Health & Life Sciences

Applications

- Anti-Fraud
 - Counterfeit Detection
 - Consumer Product Authentication
 - Return and Warranty Verification
 - Gray Market Detection
- Product Tracking
- Recall Tracking
- Anti-Diversion

SIA-SEMI anti-counterfeit working group

Code based Security

- Service generates and authenticates codes
- Codes are unique to each unit (i.e., component, tray, reel, tape, box, etc.)
- Security methods not based on codes are not covered by this standard (e.g. holograms, inks, taggents)

Minimum Code Requirements

- Code length determined by requirements
- Numeric or alphanumeric human-readable codes
- Non-repeating
- Non-predictable
- Cancelable
- Consumable

Provider Security

- ASP must gain and maintain secure supplier status as evidenced by third-party certification (e.g. NASPO)

Code schema

- 3 character prefix identifies ASP
- Colon delimiter
- Variable length numeric or alpha-numeric security code
- Person-readable
- 2D Datamatrix (ECC200) contains entire message - other symbologies or code carriers are optional
- Standard URL and instructions

TEMPLATE



AAA: NNNN NNNN NNNN
NNNN NNNN NNNN
Check at verify.sia.org



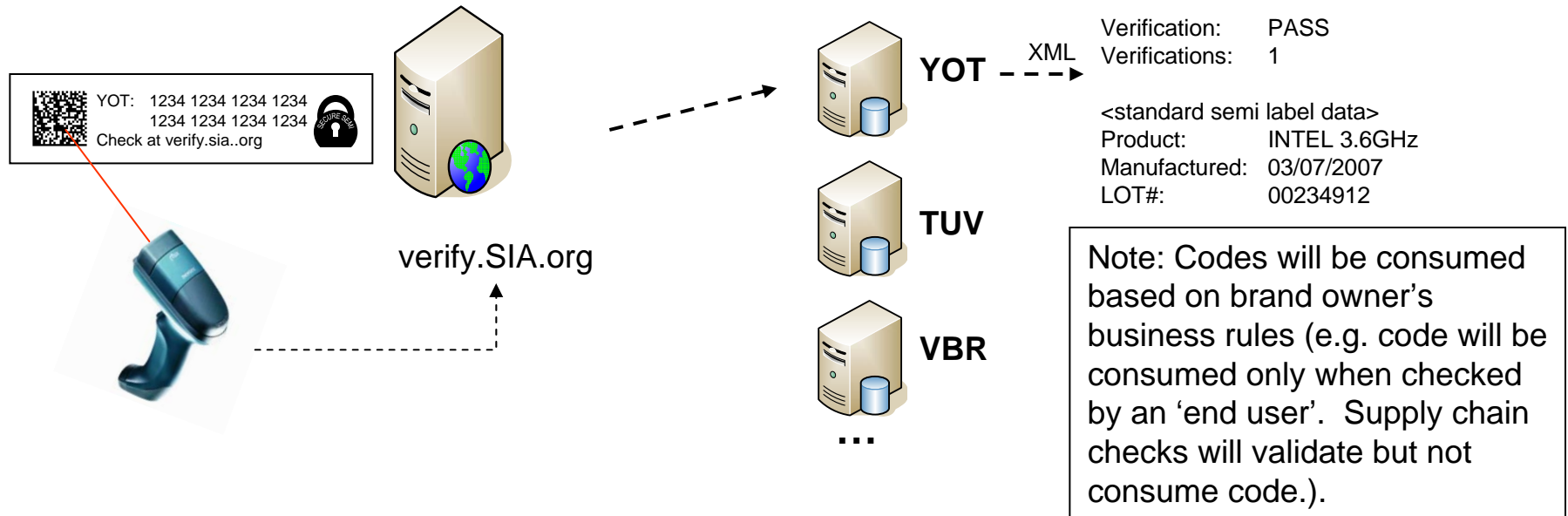
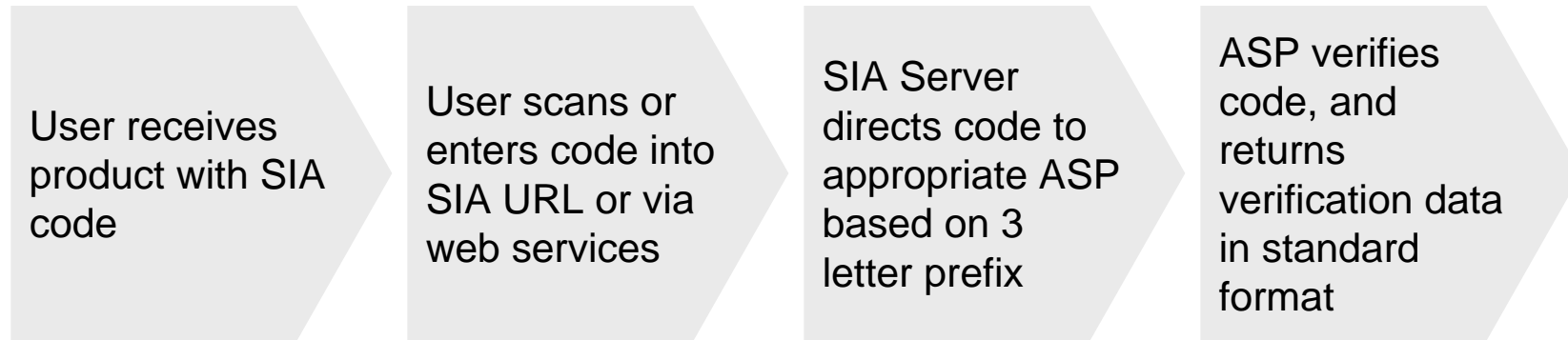
EXAMPLE



ZZZ: 1234 1234 1234 1234
1234 1234 1234 1234
Check at verify.sia.org



Process flow



Market model

- Market forces determine ASP choices
 - Method used to secure codes (i.e., encryption, public/private key, symmetric key, random number generation, etc.)
 - Features beyond standard data structure (i.e. automated alerts, cell phone authentication, supply analytics, service, etc)

Next steps

- Stakeholders
 - International
 - Multiple domains
- Consensus building
- Standards development

Elephant in the living room



Contact us!

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