

July 2015

The Smarter Way to Build the Internet of Everything

*Using Printed Electronics to
Create a Truly Connected World*

Mobile World Congress Shanghai
Internet of Things Summit

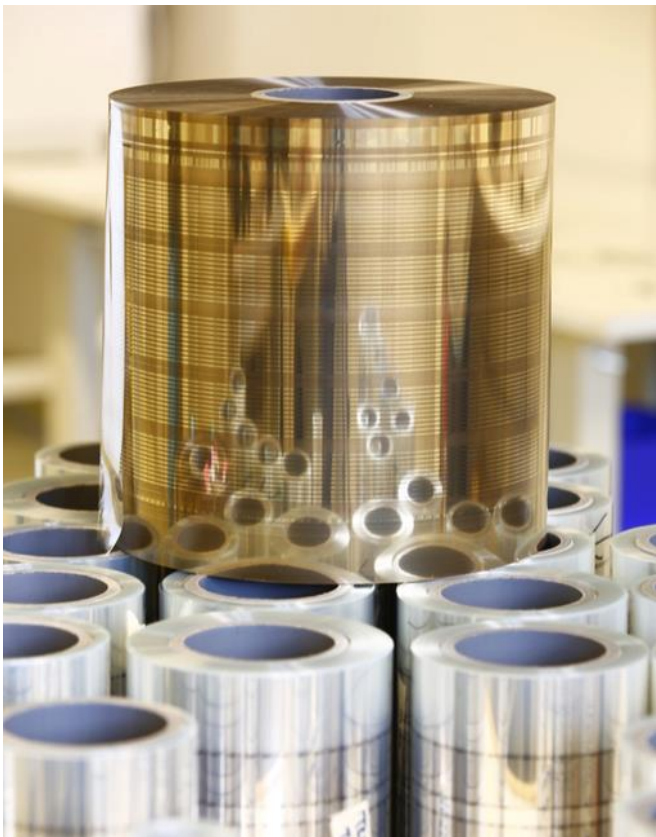
THINFILM 



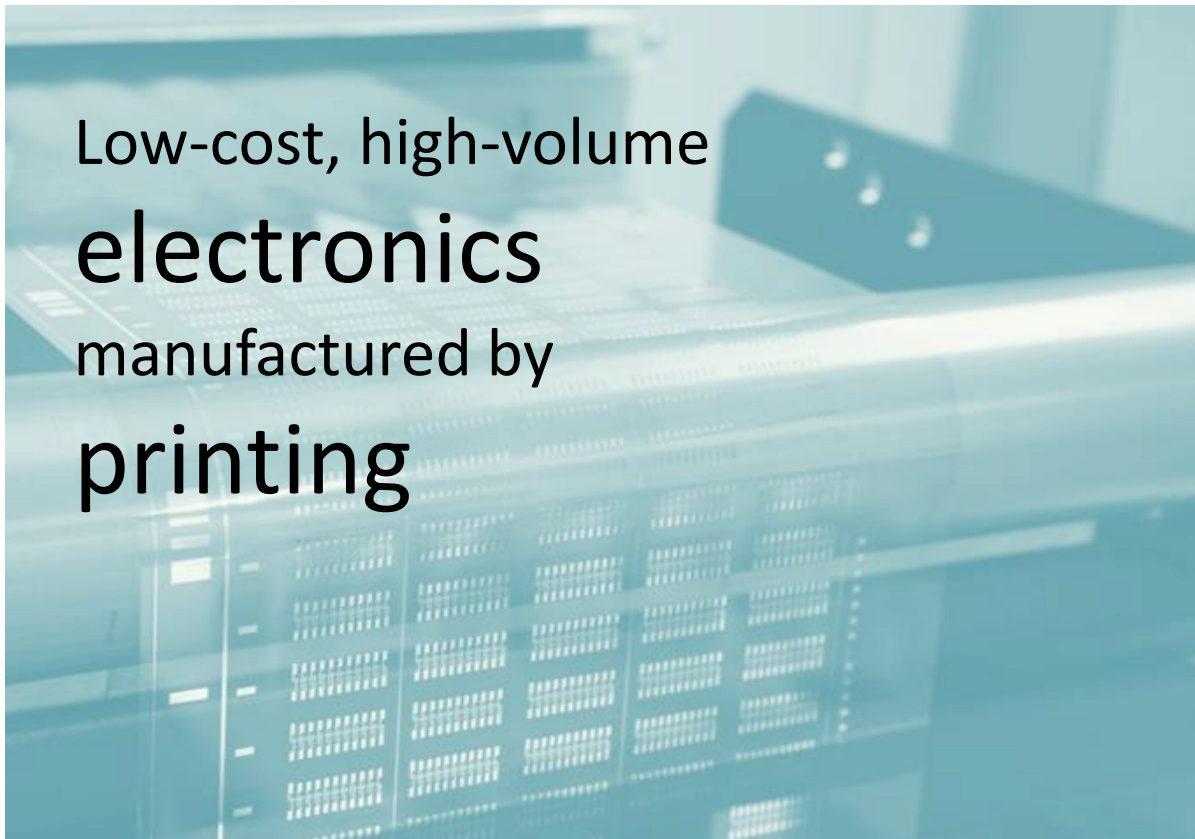
Kai Leppänen

Chief Commercial Officer

Thin Film Electronics ASA



Low-cost, high-volume
electronics
manufactured by
printing



Partnering to Build the Future

THINFILM



Leading electronics manufacturing and global supply chain company



Global business services, digital printing, and document mgmt company



Developer/supplier of innovative solutions for the retail market



World's largest spirits manufacturer



Solutions provider for temperature monitoring of sensitive medical goods



Largest professional packaging and label converter in Greater China



Technology company pioneering ultrathin, flexible batteries



Leading inkjet applications and printed electronics company



Solutions provider for temperature monitoring of food perishables



Global leader in flexible packaging; 200B packages/year



World Customs Organization
Organisation Mondiale des Douanes

International organization overseeing customs regulations governing trade between countries



Cloud-based IoT Smart Products Platform Company



Technology consultant and pioneer in printed electronics



Global technology company specializing in transparency and accountability solutions

NFC ECOSYSTEM SUPPORT



Thinfilm Business Overview

THINFILM

PRODUCTS IN MARKET

Thinfilm Memory™

- Smart consumables, brand protection
- Scale-up with Xerox Corporation
1.3B unit plant



Electronic Article Surveillance (EAS)

- Global rollout with leading fast-fashion retailer
- 13M units on order
- 100M potential aggregated demand by year-end



2015 PRODUCT INTRODUCTIONS

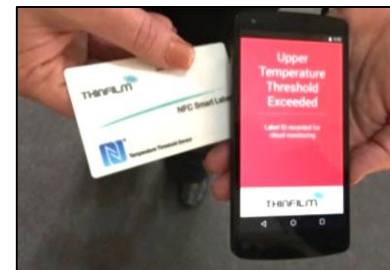
NFC OpenSense™ - Feb 2015 launch, Q3 Ramp

- Target markets include spirits, tobacco, cosmetics
- Partnered with largest global spirits manufacturer
- Multiple 50-100M+ unit brand opportunities



Smart Sensor Labels

- \$1.4B temperature monitoring market
- Partnered with leaders in pharma, food



The “Internet of Everything” Opportunity

THINFILM

Internet of Things
(2014)

46 million wearables
534 million Bluetooth accessories
2.7 billion computing devices
8.0 billion RFID chips
21 billion microcontrollers



IoT market constrained by cost, scalability

Capital-intensive nature of silicon manufacturing

High cost of assembly – 70% of system

Global Semiconductor Capacity Limit

Thinfilm Existing Markets

Internet of Everything
(2015)

80 billion apparel items
5-10+ trillion consumables



Printing: scalability @ cost-points unmatched by any other technology

Opens large new markets to intelligence, connectivity



Redefining the Internet of Things



Five Months from Concept to Product Launch

- Two-state ID separates “*buying*” from “*consuming*”
 - Different pre- and post-sale interactions w/consumer
 - Capture unique product ID, time, location, profile info
 - Engage consumer from shelf to home
- Factory-sealed ID provides anti-counterfeit protection
- 100M+ unit brands, multiple markets
 - Field trials in discussion with category leaders
 - Spirits/baijiu, tobacco, cosmetics, milk powder

Diageo / Thinfilm Video

Diageo Smart Bottle Debut
@ Mobile World Congress,
March 2015

Johnnie Walker® Blue Label
24M units annually



“Sealed”



“Open”



Forbes



Los Angeles Times

Daily Mail

110 unique articles; 41 international; 4,000+ tweets

Critical Properties for High-Volume Brands

Priority 1: Delivering to *Market of 1*

Zero connection with consumer from retail to home

- High-volume marketing driven by data
- Personalization and IoT top two concerns of marketers

Priority 2: Counterfeit Defense

Package reuse #1 issue in packaged goods

- 30% of global alcohol consumption counterfeit
- 12% of global cigarette market
- \$75B worth of counterfeit medicines

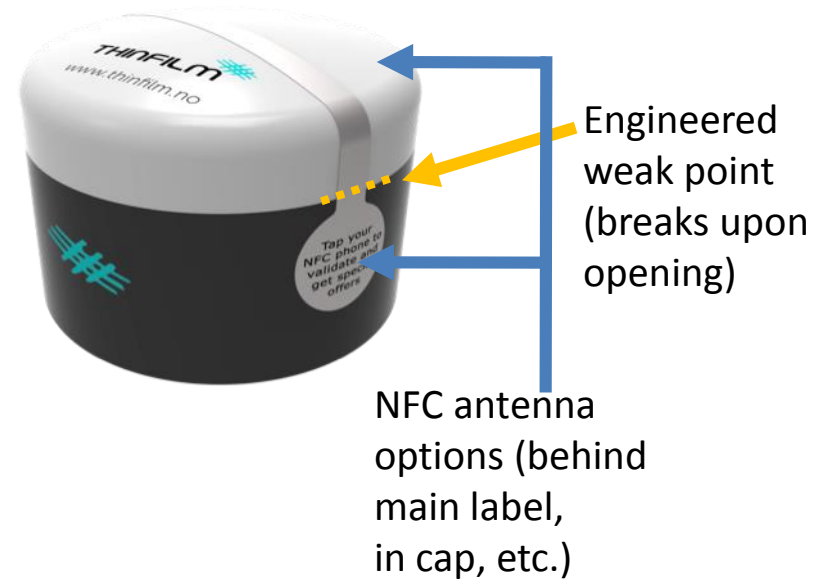
NFC OpenSense™ addresses both.



Thinfilm will “radically change the landscape for Internet connected things.”

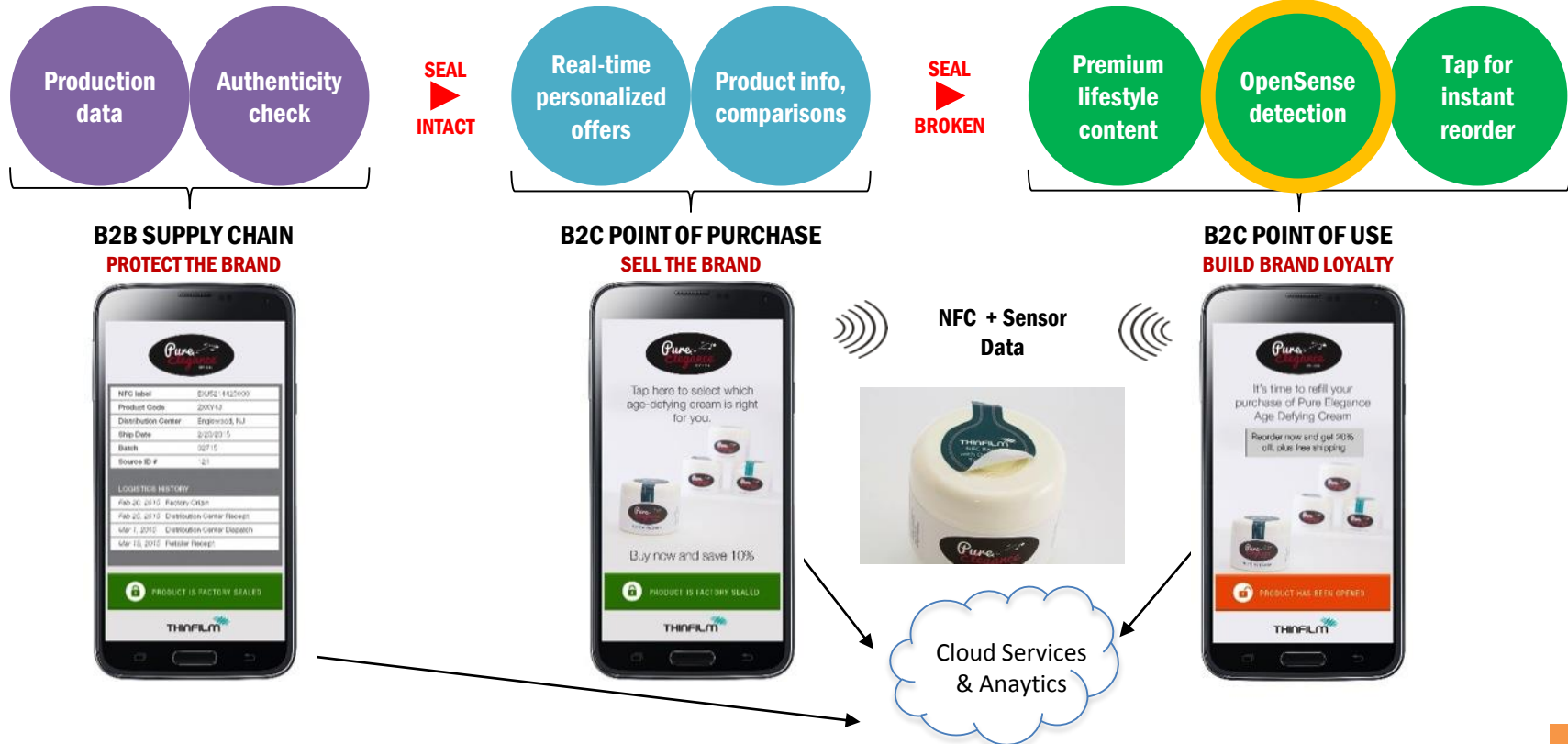
Forbes: “*The Smart Labels That Will Power The Internet Of Things,*” March 2015

- More effective than current methods
- Existing methods destroy antenna when container is opened. NFC function impossible to use after opening, eliminating future interactivity
- Thinfilm method allows for continued use of NFC tag after opening. NFC tag will change its data transmission based on sealed/opened state of OpenSense detector
- Patent pending technology



Consumer Engagement & Supply-Chain Tracking

THINFILM



Case for Anti-Counterfeiting Technology

China Imports

Wine

- Largest market for French exports
- 75% of Chinese buyers prefer wine protected with anti-counterfeit technology
- 44% say “not knowing wine is authentic” is a strong barrier to purchase



Baijiu (popular Chinese spirit made from grain)

- 25-50% counterfeit, often in refilled containers

Spirits

- Refill of authentic bottles is #1 issue for spirit brands

Milk Powder/Formula

- Severe scares from bulked-up and tampered products

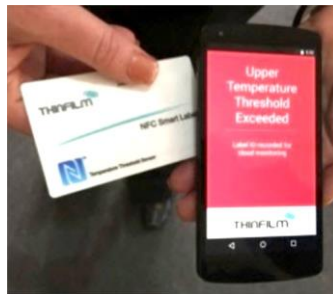


NFC OpenSense™ is the only consumer-verifiable technology to definitively indicate a container has been opened and may contain fake product.

Low-Cost, Ubiquitous Sensing and Communication for the Internet of Things

NFC Sensor Labels

- \$1.4B temperature-monitoring market
- < ½ the price of other electronic indicators
- 2x the performance of chemical alternatives
- Deliveries for field trials in progress
- Additional opportunities in consumer, logistics, industrial, and healthcare



Roadmap

NFCx / UHF

- Extending read distance
- Joint work with major wireless player
- Exclusive license to earth-friendly printed battery, 4x cheaper than thin-film Li
- Can extend sensor platform to wearables

Thank you.

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