

Evolving IoT Needs of Brands: Bringing Edge Intelligence through Advances in NFC Technology

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NXP | Secure connections for a smarter world



WORLDWIDE #1 POSITIONS in



Identification Industry
Automotive Industry
Broad-based MCUs
RF Power Transistors
Communications Processors

\$9.3 Bn
in revenue 2017

~31,000 employees

33
countries

11,000+
engineers

9,000+
patent families

Active in **120+**
standardization bodies

Secure, Connected Vehicle



End-to-End Security & Privacy



Smart, Connected Solutions

Personal/ Consumer



Industrial/ Infrastructure



Intelligent NFC & IoT to provide value for brands

Sourcing:

Materials & ingredients, provenance, transparency data

Replenishment / Recycle:

Refill reminder, reorder, recycle tips, replenishment data

Consumption:

After-sales services, loyalty program, real-time usage data, behavioral insights

Manufacture:

Origin, factory, production line / batch

Distribution:

Authorized channel, quality control assurance

Retail:

Product authenticity, colors / sizes in stock, store locations

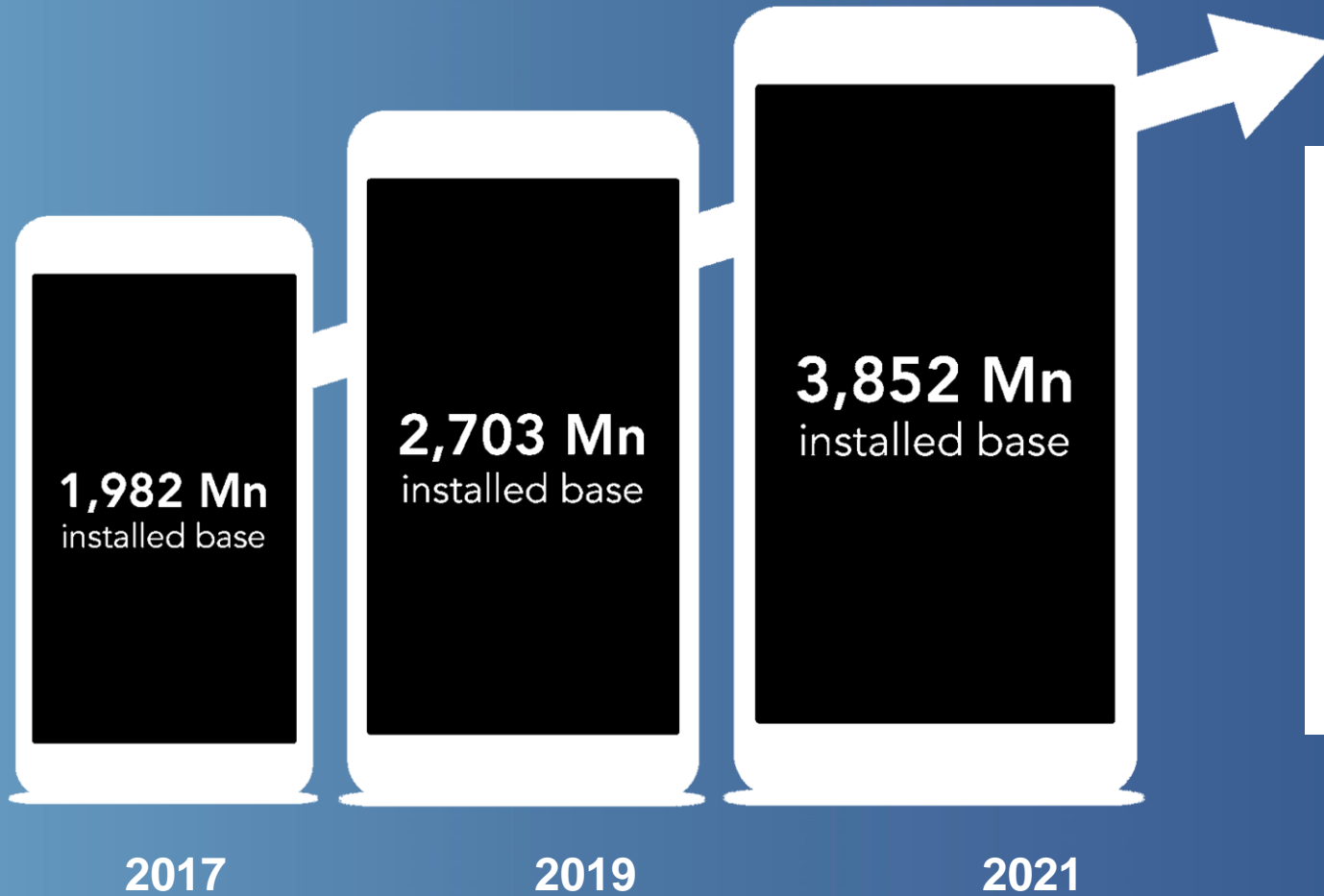
Purchase:

Shopper engagement, change/title of ownership, demand insights, warranty



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NFC phone connectivity



iPhones Xs, Xs max & Xr with iOS12 to support background NFC tag read without app

Sep 2018



Strategy Analytics, ABI, NXP

NFC advances bring intelligence to the IoT edge

Deploy data security and processing capabilities out to the IoT tag edge

- **ID & Authentication Layer**
UID and security, e.g. digital signature, crypto core
- **Feature Layer**
On-product data e.g. data storage for offline operation, interaction counter, change of state...



Advance security & hyper-personalization

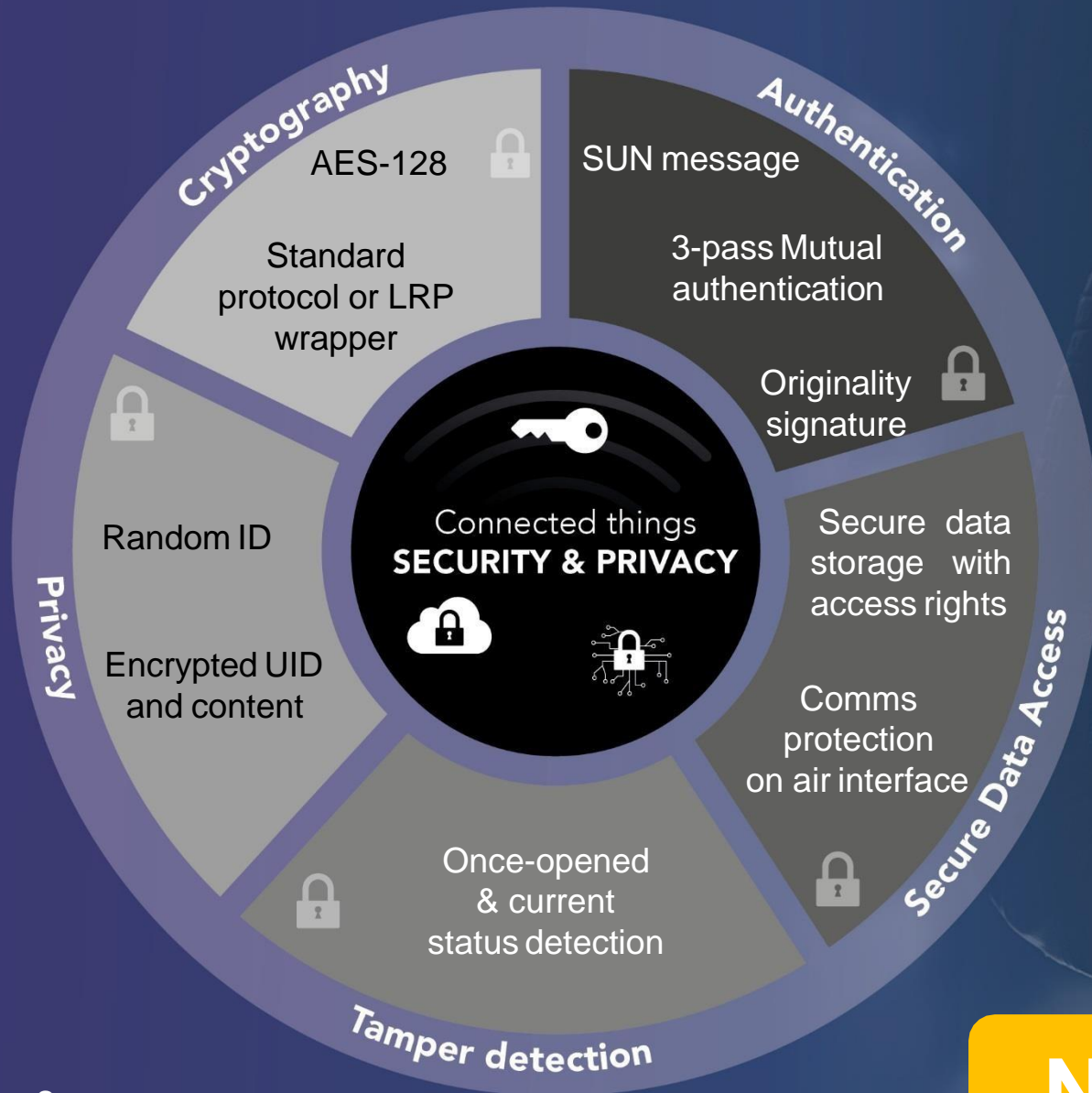
NTAG 424 DNA – powerful mix of security, privacy & trust for NFC in today's IoT

A new chip generation with **AES-128 cryptography** and **new SUN** feature, on attack resistant chips

- ⇒ Highest level of **tag and message security**
- ⇒ **Sensitive data storage**, protected by granular access rights
- ⇒ Strong data **privacy protection**
- ⇒ **Intuitive UX**



NTAG 424 DNA & DNA TagTamper



NFC Forum Type 4 Tag,
ISO14443-A compliant

CC EAL targeted

Comms speed up to 848
kbit/s

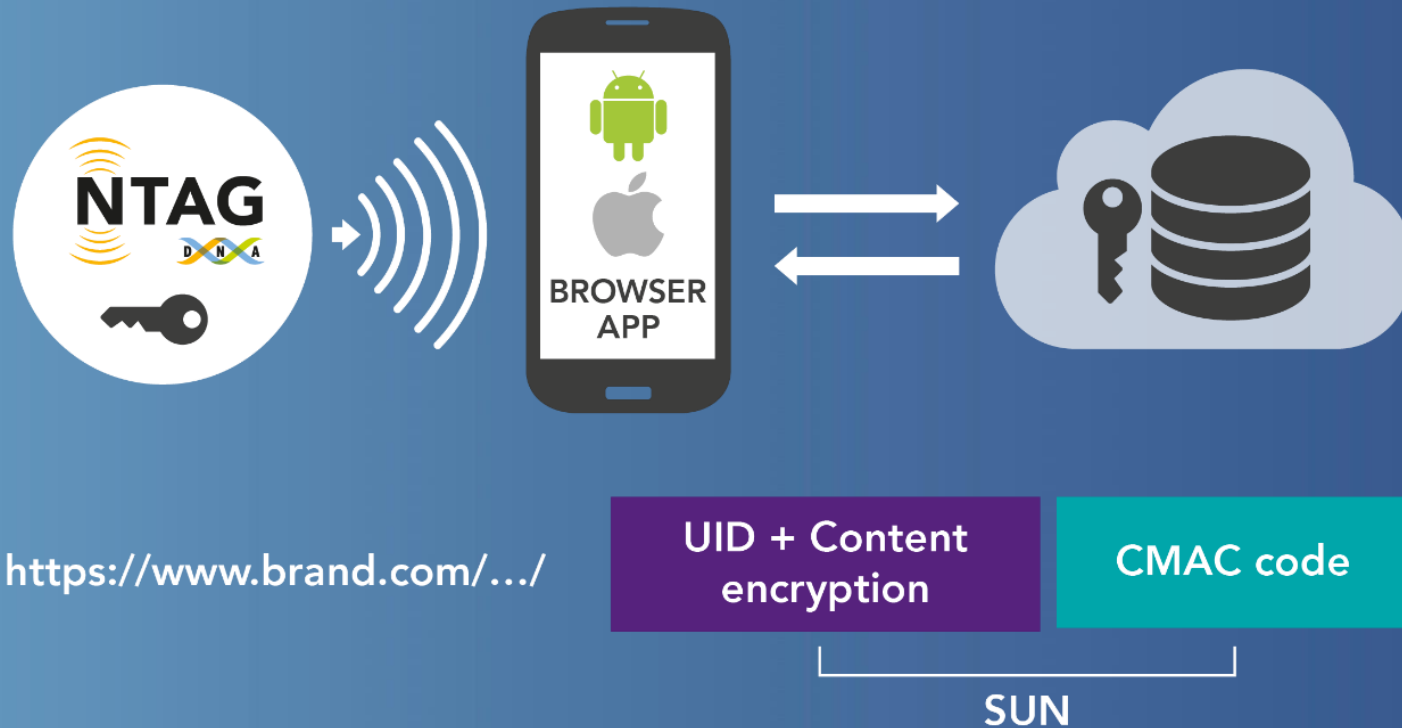
Benchmark performance



COMMON CRITERIA
CERTIFICATION
TARGETED

SUN tap-unique message authentication

- Tag creates **secure unique NFC message** (SUN) upon each tap
- Accessible with all standard NFC phones incl. iOS
- Enables **authentic, confidential and integrity protected** data exchange with a server



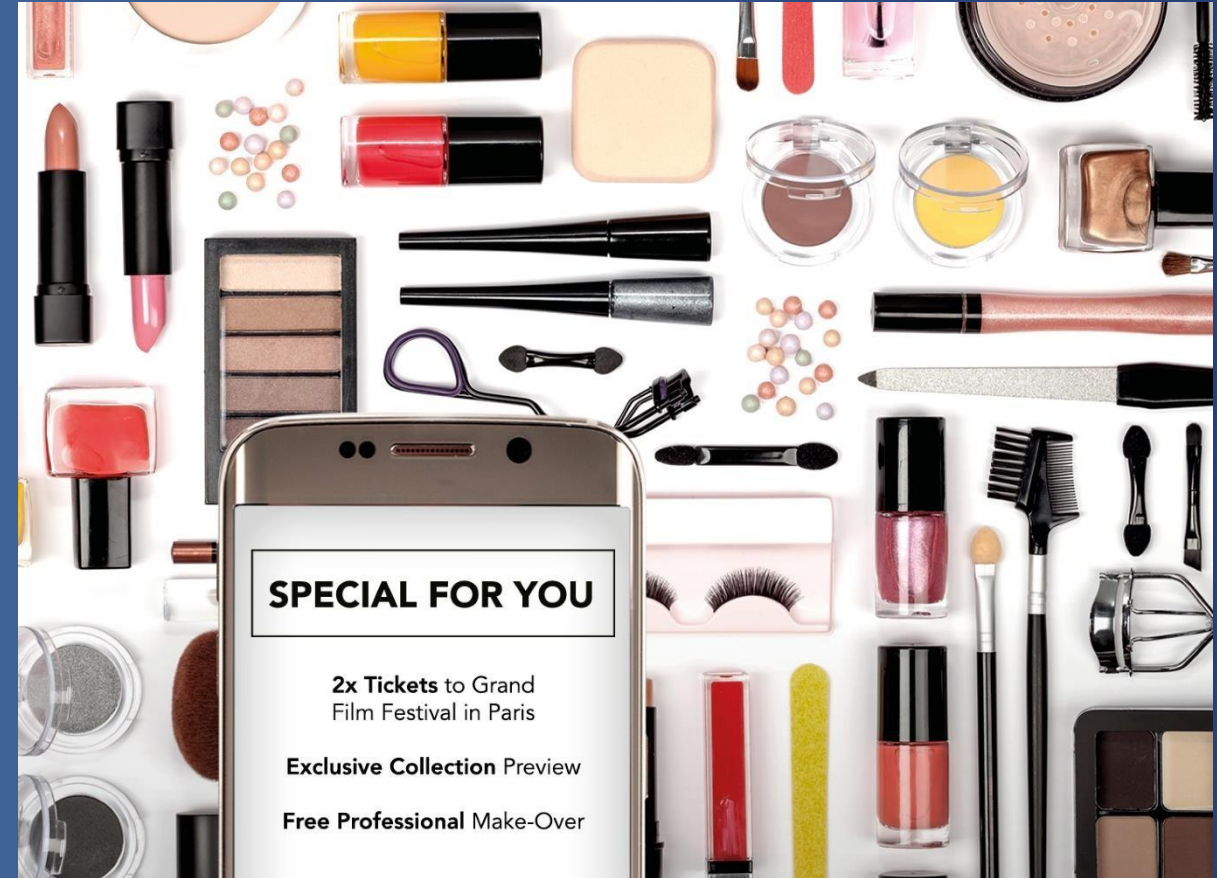
Combat counterfeiting

- Securely verify a product's authenticity, anytime, anywhere
 - Using **NFC crypto-security** and **proof-of-tag-presence**
- Identify sales outside authorized markets – with tags assigned to a location or distributor



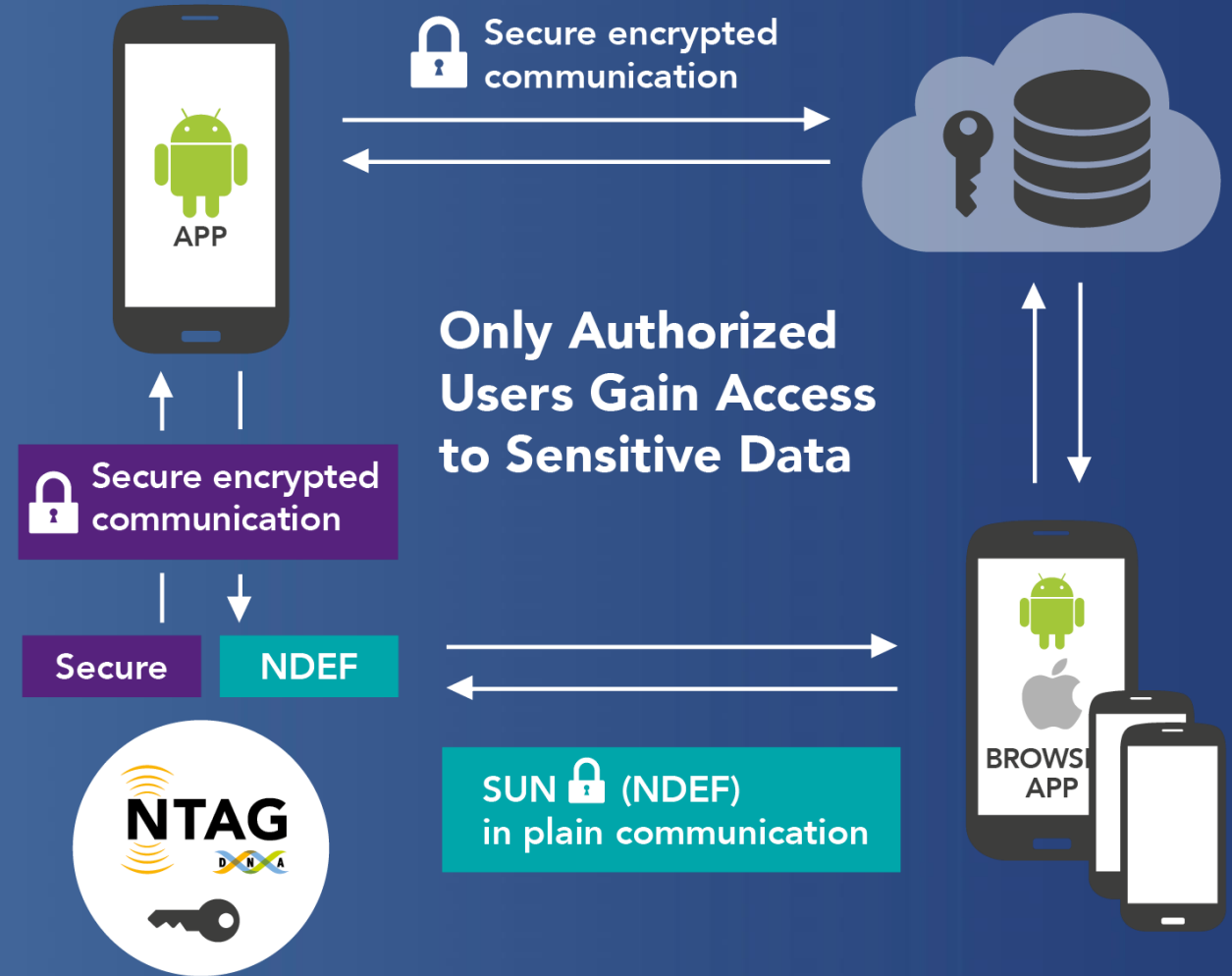
Deliver secured unique experiences

- Reward customers for their product purchase and ownership
 - Unique content, exclusive VIP experiences, buying privileges
- Implement secure promotional campaigns
 - Vouchers, coupons
- Using NFC solution with **secured one-time URLs, proof-of-tag-presence**



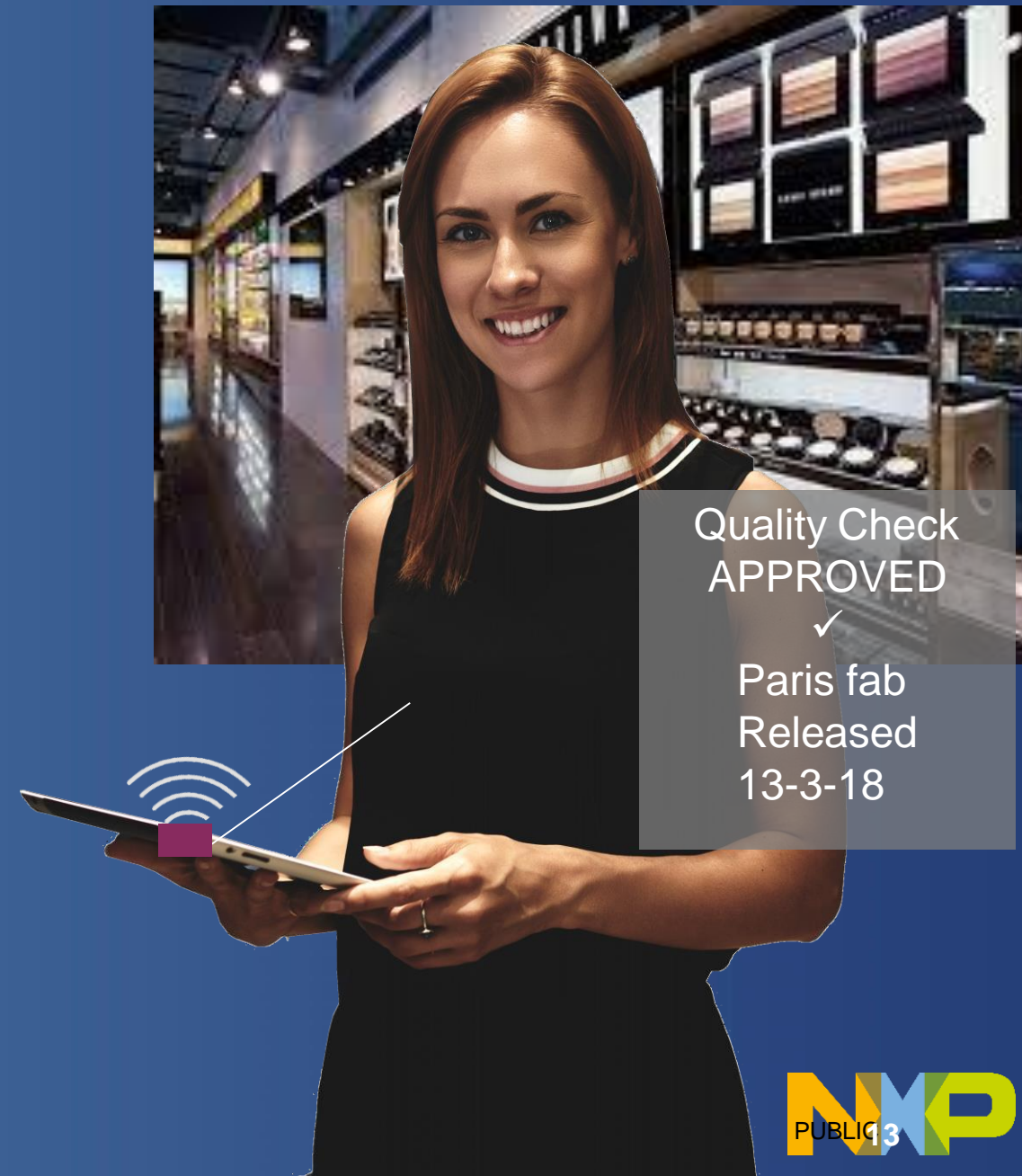
SUN vs sensitive data storage

- SUN is readable by **all** NFC phones
- **Authorized users** get access rights to secure data file. A valid Mutual Authentication is required to access this data. Data remains encrypted over the air interface



Gain control of supply chain

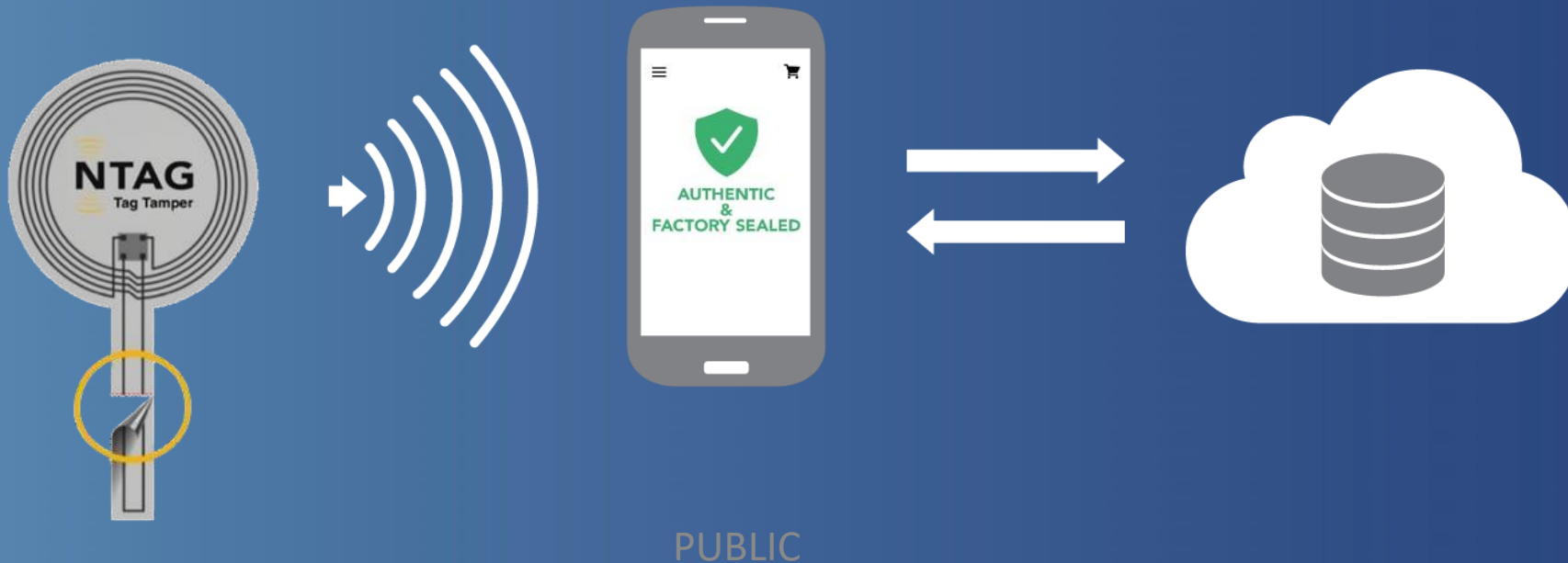
- Safeguard sensitive data
- Let **authorized users access protected tag memory** – even offline
- E.g. read production data, log payment to trigger customer action



Enable status-awareness

Tamper-evident NFC tags

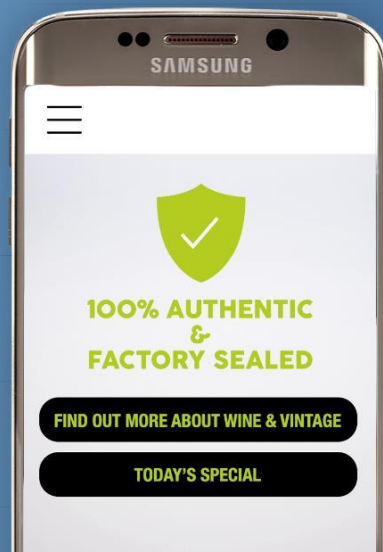
- Confirm tamper loop is intact, with a standard NFC phone readout
- Using **brand- & tag-unique opening detection message**, protected against manipulation
- Brand unique **originality signature** to assure tag origin



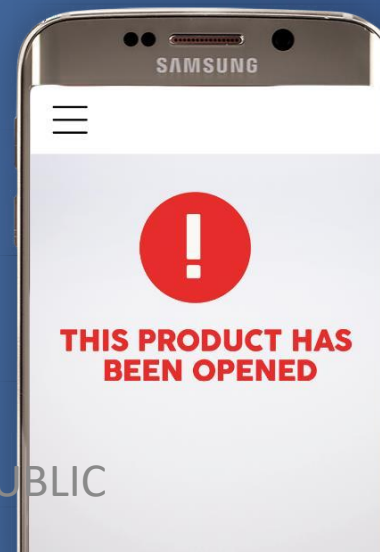
... for integrity protection & advanced interactions

- Detect unauthorized product opening prior to sale
- Trigger status-based messages pre/post-retail
 - Pre-sale: product infos, provenance, vouchers ...
 - Post-sale: loyalty rewards, social platforms, e-commerce ...

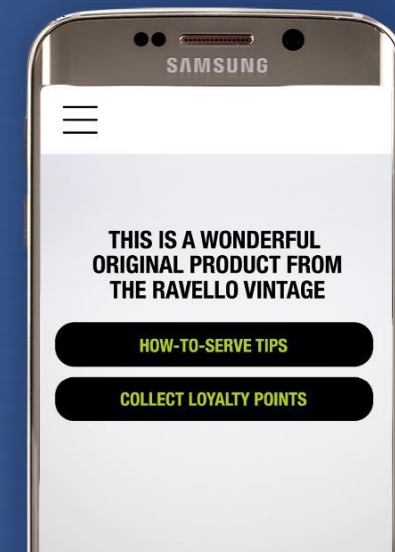
Pre-Sale:



Opening detection:



Post-Sale:



Enable local processing

Automated NFC system solution

- **Verification of genuine consumables, with the help of the device**
 - ▶ No counterfeits
- **Automated transfer of settings**
Built-in reader communicates with consumable for right configuration
 - ▶ Ease-of-use and best performance



Identify, authenticate & configure consumables



Correct model identification

UID & data storage

can identify correct model and automate configurations

Built-in usage counter

NFC counter

tracks usage - unit can alert about timely replacement

Genuine replacements

Signature, cryptography

authenticate item for best performance – no counterfeits

Mobile web access

Link to **authorized e-retailers** for easy re-orders

Working offline

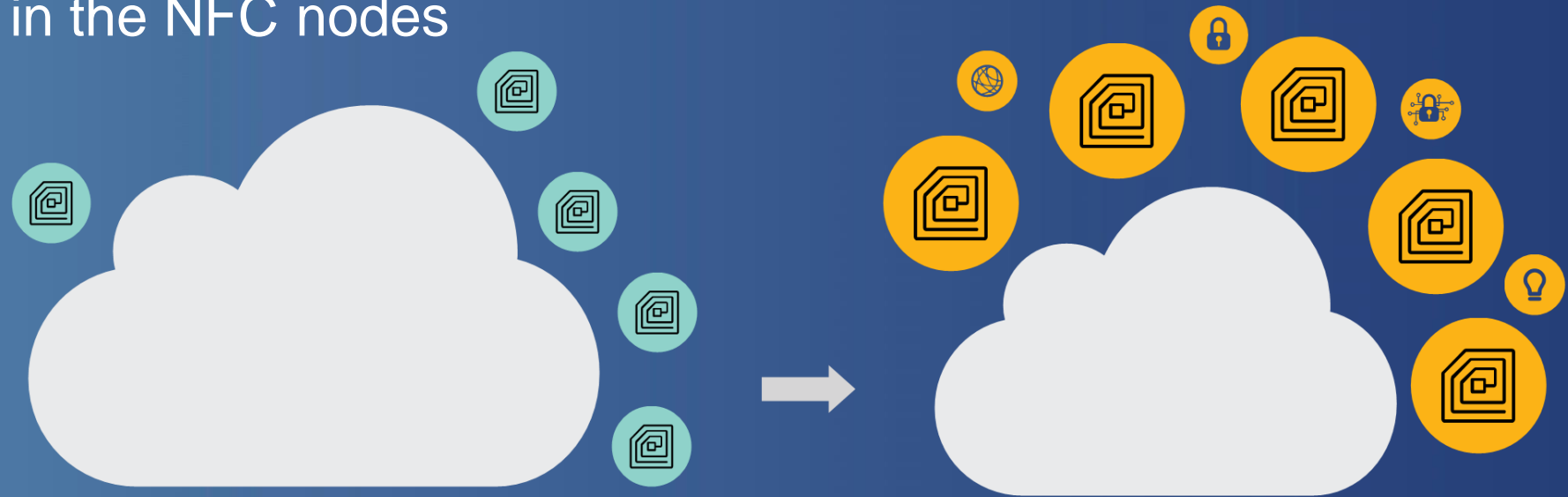
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In summary ...

- IoT connected products deliver value to customers and brands
- Add more intelligence in the NFC nodes

- Data storage
- Security
- Change of state
- Interactivity



- To fully protect and enhance your brand experiences !

THANK YOU

