

# Ensuring your peace of mind with Secure Solutions

Unique product offering for secure devices



## Secure Solutions

- Advanced technology for banking
- Converged offer for mobile transactions
- Optimized solutions for secure IoT



# Advanced Technology for Banking

## ST31 & STPay secure solution for banking



- Best-in-class **ST31** Secure MCU

- **STPay**, an independent and complete banking offer

- Advanced **contactless technology** for secure wearables



# A New Way to Pay

From optimized to multi-application secure wearables



- Easy integration capability
- Multi-application format
- Secure boosted portfolio  
ST31G480 – ST53G – ST54

# Secure Element & NFC Convergence

A comprehensive set of solutions for mobile transactions



- ST33 eSIM / eSE best fit form factor
- ST54 optimized NFC solution
- ST21NFC best-in-class NFC controller



# Secure Devices for IoT

STSAFE™ enabling end-to-end Security



- STSAFE for authentication, secure communication, storage
- Personalization and key provisioning services
- Ecosystem with expansion boards and middleware

# Landing Page

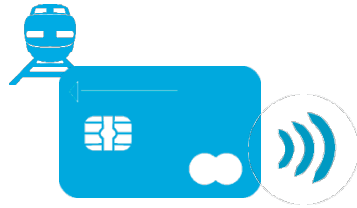


# Banking and ID Solutions

More than 20 years of expertise in the Smart Card industry



Pay TV cards



Banking and transport cards



eID, ePassport



Wearable devices



Contact  
Secure MCUs



Contactless and dual  
Secure MCUs



# A Full Range of Banking Solutions

## Contact, Dual Interface and boostedNFC™



Contact cards



Boosted NFC solution



Dual Interface cards

- Best in class **ST31** Secure MCU
  - 32-bit ARM SC000 CPU
  - Multi-protocol (ISO7816, ISO14443 A/B/F, VHBR)
  - EMVCo and Common Criteria certified
- boostedNFC™ solution **ST53G** for wearable
  - Enhanced NFC user experience
  - Ultra small antenna and best interoperability
  - Minimize footprint and ease integration

- **STPay**: an independent and complete offer



VISA

MasterCard

DISCOVER

AMERICAN EXPRESS

JCB

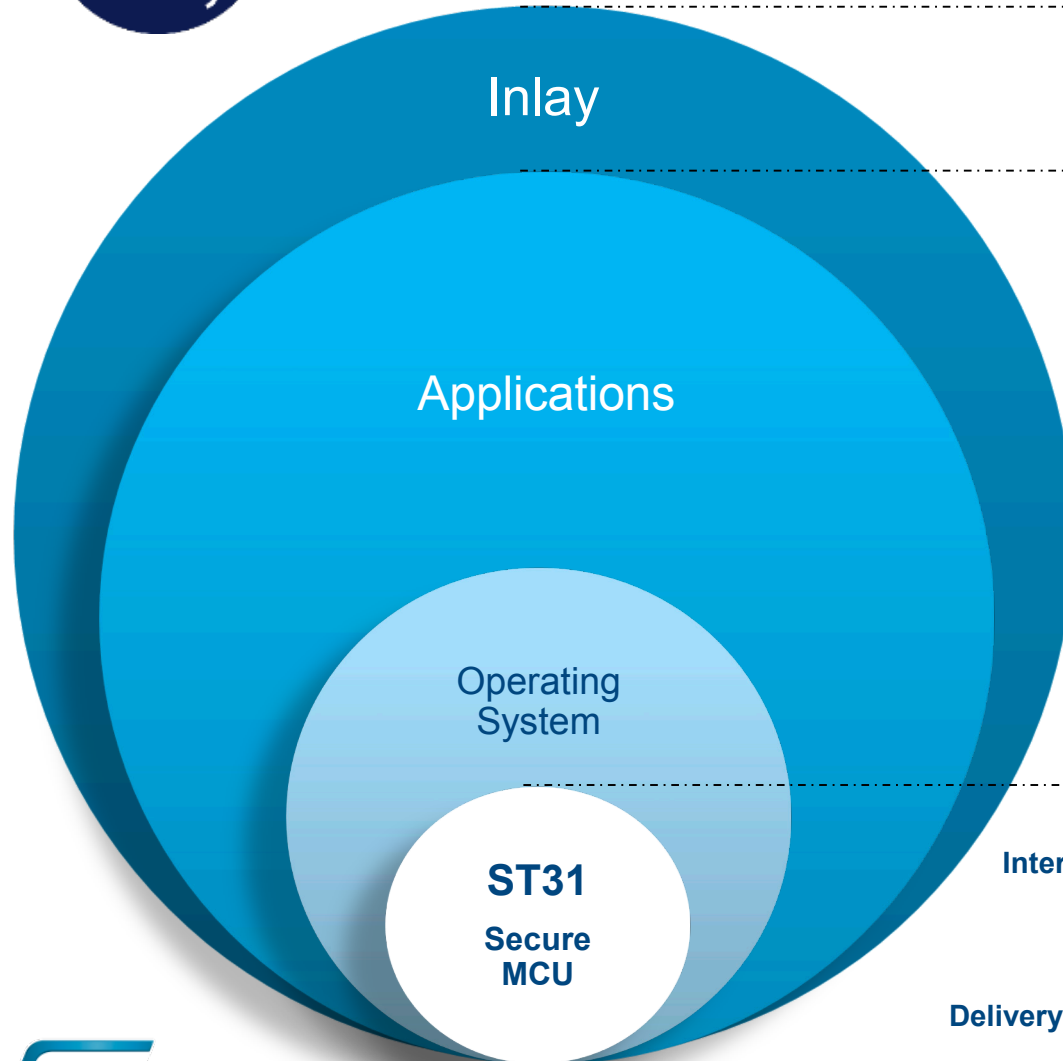
Interac Flash

UnionPay

e

MIR

# STPay Banking Solution



SMARTRAC ((.))

TOPPAN

Partners

Payment Applications



Others Features & Applications



Licensed  
3<sup>rd</sup> Party OS

or



OS : Java, Advantis, Multos

Interfaces



ISO 7816  
T=0, T=1



ISO 14443  
Type A, B, B'

Delivery form



Wafers



Modules (Contact, Dual, Contactless,  
6/8 contacts, Gold / Palladium)



# Wearable Applications

From single to multiple secure applications



Multi-application  
solutions

- Payment
- Transport
- Access control
- Authentication
- eSIM



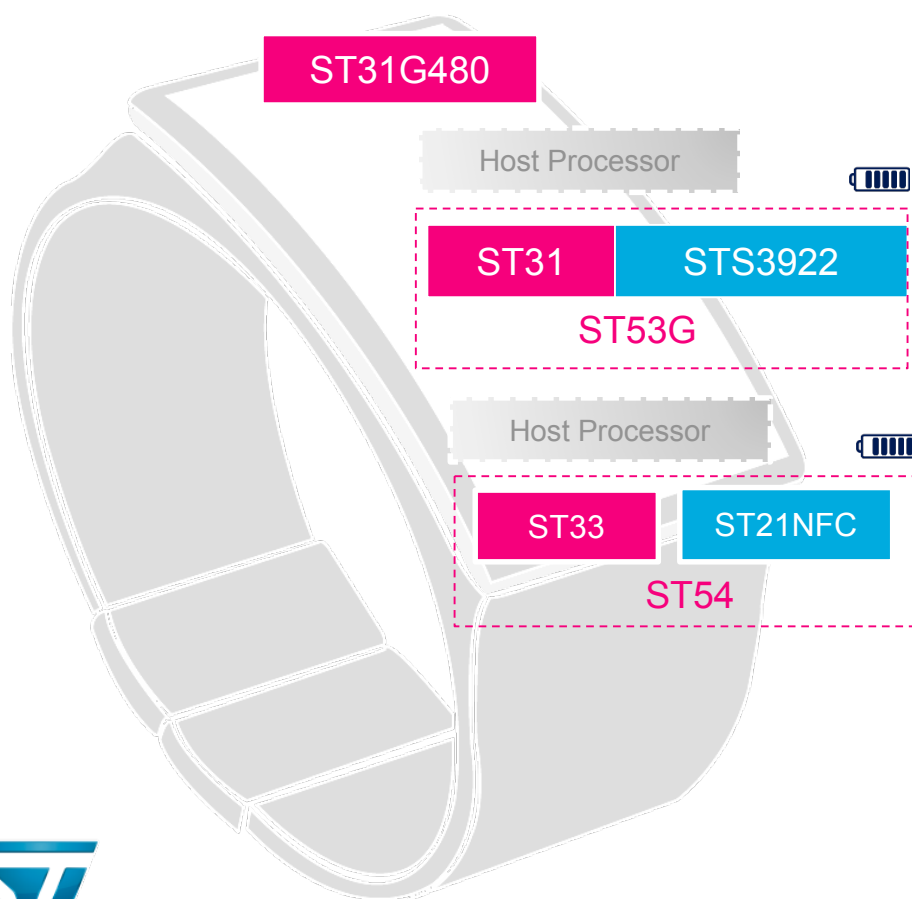
## boostedNFC implements Active Load Modulation technology



- Enables
  - smaller antenna
  - while improving user experience
- Enables new applications such as:
  - NFC in Wearable devices,
  - NFC μSD and SIM,
  - Application where small antenna and reliable performance are required.

# Secure Solutions for Wearables

## From optimized to multi-application secure wearables



### ST31G480 Optimized Passive (eSE)

- Cost optimized
- NFC Card Emulation type A, B, F and MIFARE®
- Class 1 – 6 supported
- Available with or without STPay Payment application
- Ideal for Banking & Transport application

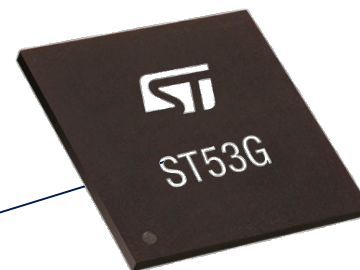
### ST53G Optimized Active (NFC Booster & eSE)

- NFC Card Emulation ISO1443 type A 106Kb/s and MIFARE®
- boostedNFC for small antenna (Class 6 & below)
- Available with or without STPay Payment application
- Adds plug and play payment to any application

### ST54 Advanced Active (NFC Controller & eSE)

- NFC Card Emulation , R/W, P2P ISO14443 type A, B, F
- MIFARE® for Mobile® v2
- boostedNFC for small antenna (typical<100mm<sup>2</sup> and metal cover)
- Support multiple secure applications and eSIM GSMA RSP v2
- Ideal for middle & high end wearables

## Plug & play secure application enabler for wearables

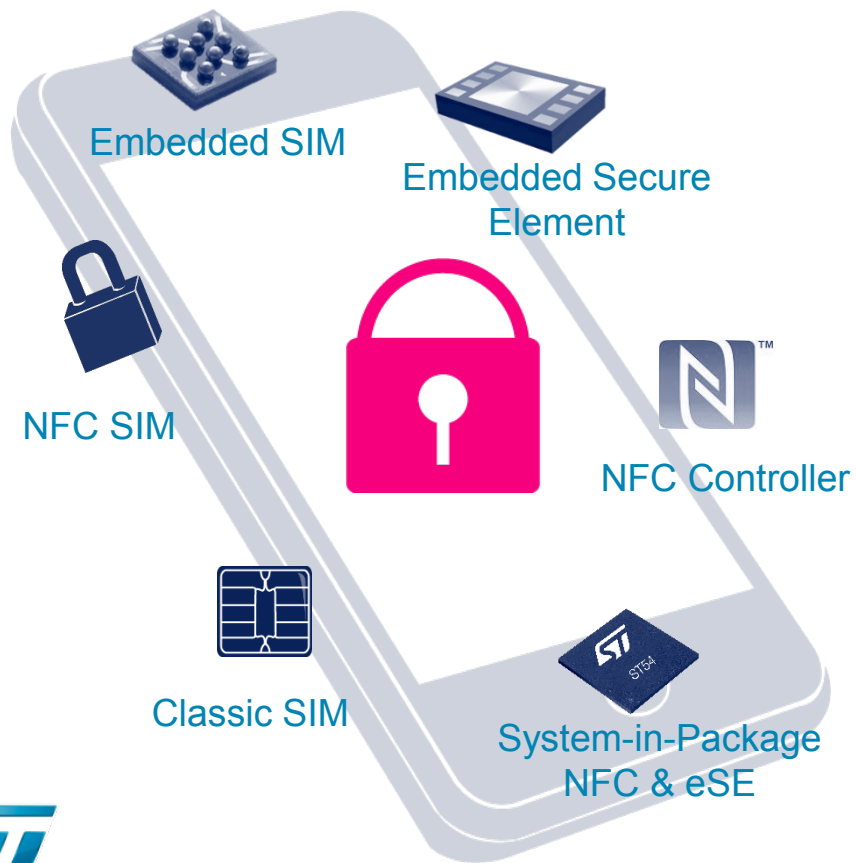


- All-in-one System in Package available from ST
- Top class user experience active card solution ISO 14443, type A 106Kb/s. MIFARE®
- Easy integration with boostedNFC™ for ultra small antenna
- Plug and play payment solution value added to your App. STPay-Boost for maximal OS reuse



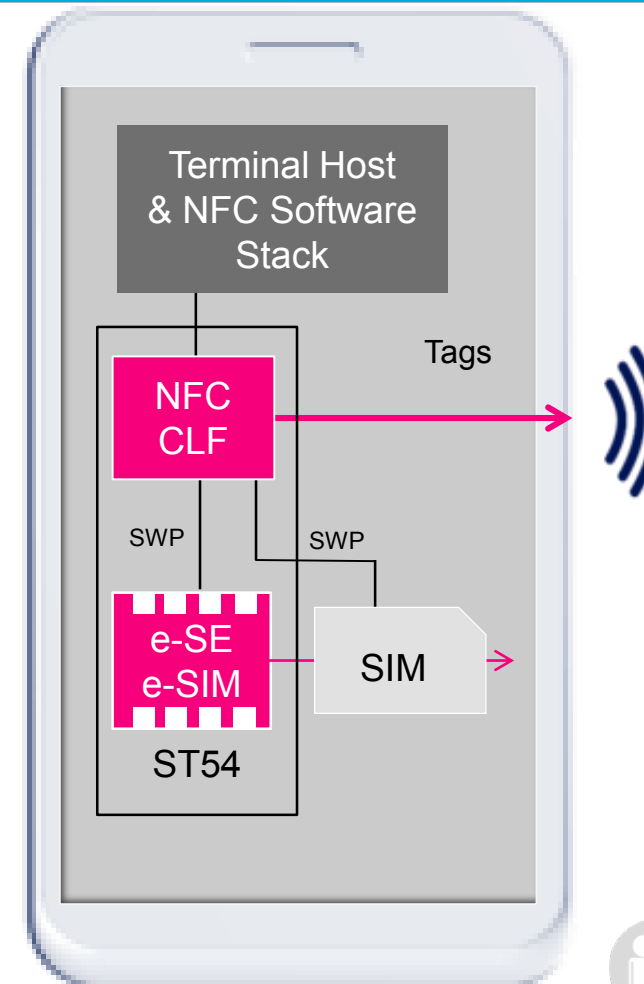
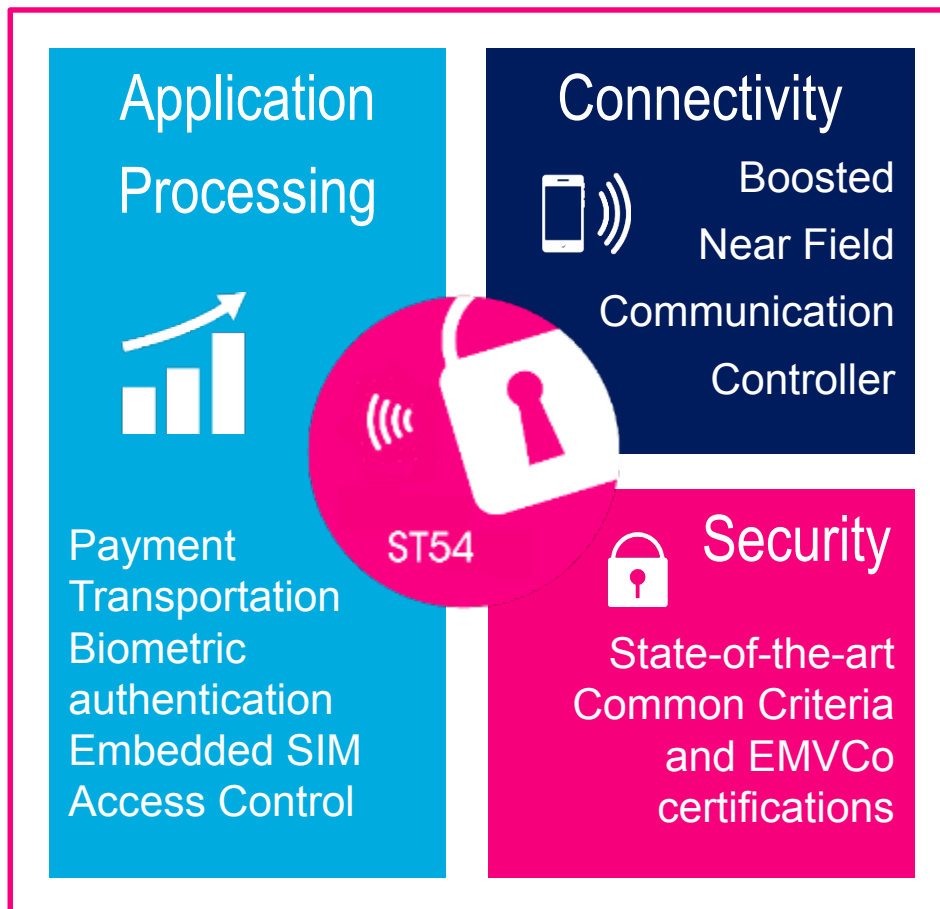
# NFC & Secure Solutions for Mobile

A broad range of secure solutions for mobile devices



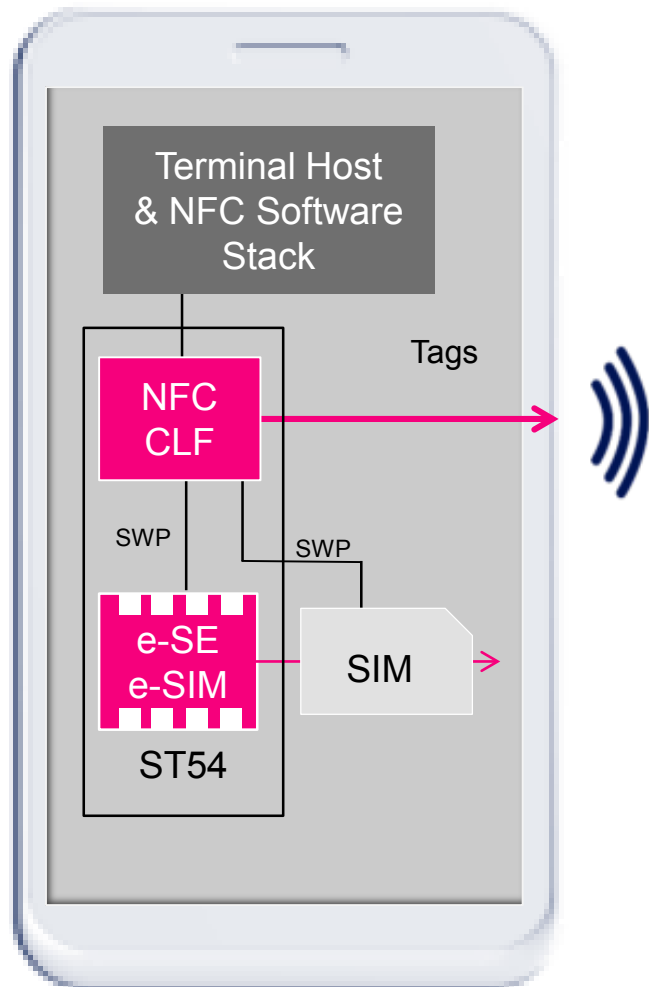
# NFC + Secure Element

State-of-the-art secure solution for mobile transactions



# Secure Solutions for Mobile

A comprehensive set of solutions for mobile transactions



## ST33 eSE and eSIM Best-fit form factor

- 80nm and 40nm Flash technology and Large user Memory
- GP2.2 Operating System
- MIFARE®
- Multi-packages (MFF2, UFDDFN8, WLCSP)

## ST21NFC Best-in-class NFC controller

- Best-in-class RF performance for ultra small antenna
- Best user experience and interoperability
- Reduced Bill of Material

## ST54 Optimized NFC solution

- Combined NFC and eSE/eSIM
- Multi-application and NFC
- MIFARE®
- Complete end to end solution for Payment schemes



## The advantages



### Ultra low power

3 $\mu$ A in Field detection mode vs 90 $\mu$ A at competitors

Achievable thanks to Patented IPs, removing the need of external clock responsible for over consumption



### Cost effective antennas

PCB or Metal cover antenna vs Patented antenna used by competitors

Achievable thanks to high ALM output power, removing the need of costly patented antennas



### Improved user experience

Best performance with all tags including Chinese ID cards not readable by competitors

Achievable thanks to high ALM output power, improving overall reading distance mandatory to pass MNO certifications



### Reduced BoM and Ease of integration

No Xtal<sup>[1]</sup> often required by competitors to ensure maximum interoperability with Readers

Achievable thanks to Patented IPs generating a very accurate internal clock required to synchronize with the field readers

[1] Without an external crystal the system requires to share the reference clock (with the Bluetooth for instance) which leads to coexistence issues requiring additional components (such as buffers and OR logic gates).

# Using ST Products

**TAG Heuer**  
官方旗舰店



**ST21NFCD**  
NFC Controller

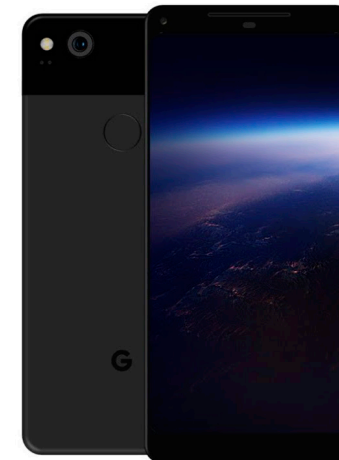
**ST21NFC**  
NFC Controller



**ST33G1M2**  
eSE



**ST33G1M2**  
eSIM



**ST33G1M2**  
eSIM



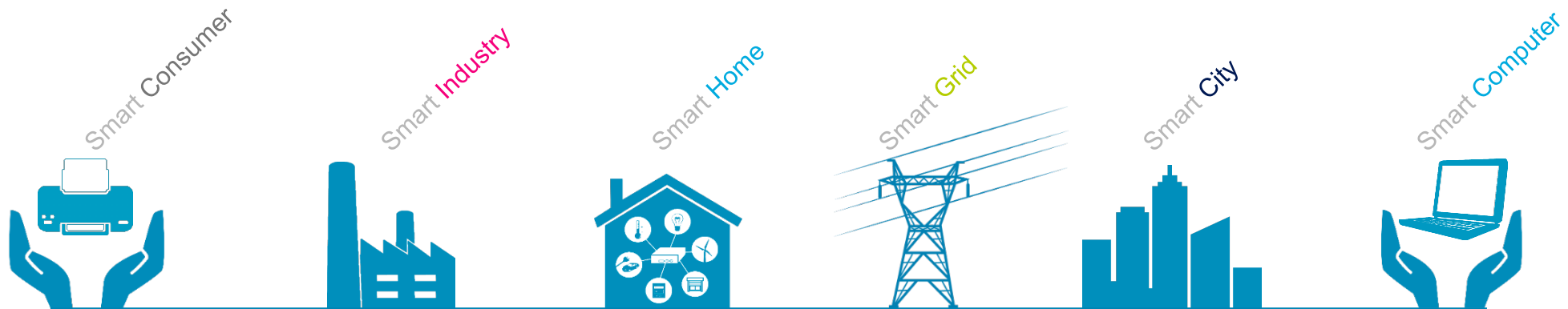
**Pixel 2 & 2XL**

Phone by Google



# Authentication

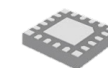
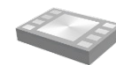
## Markets and Applications



Brand Protection

Internet of Things  
Authentication

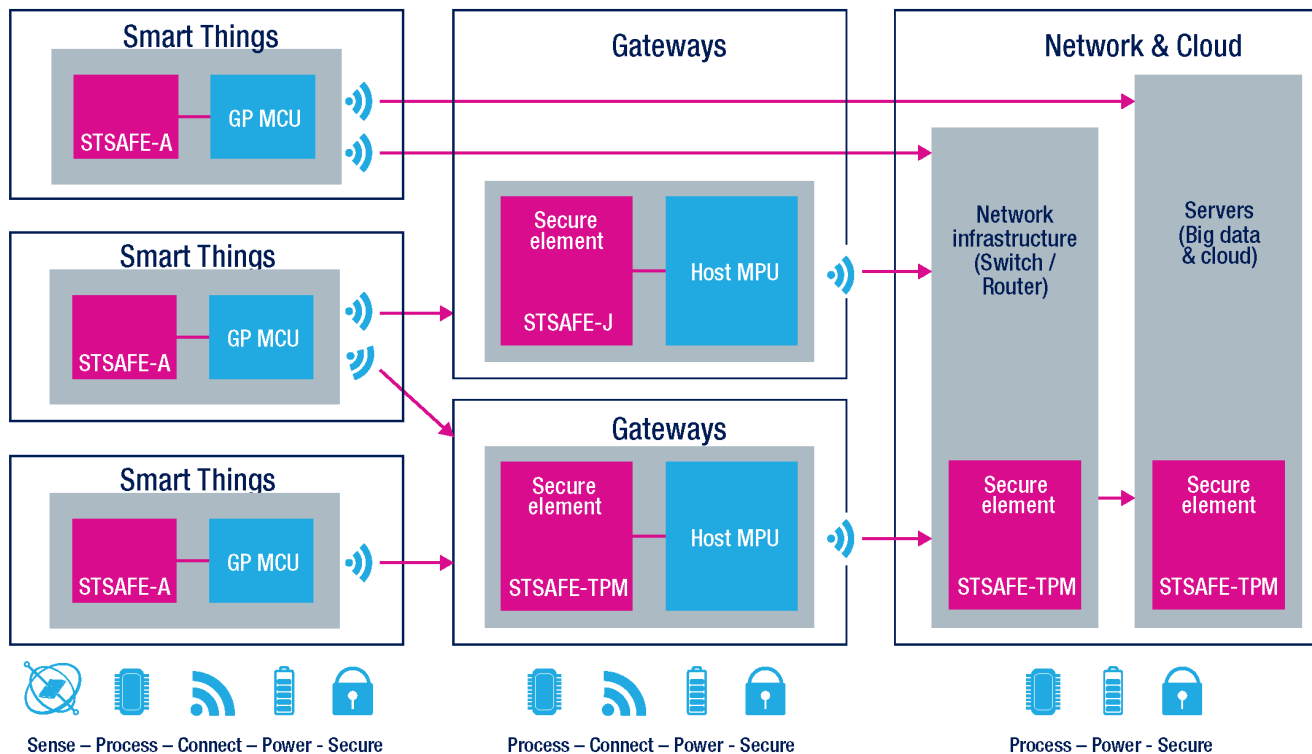
TPM



Authentication Secure solutions

# Secure Solutions

## STSAFE enabling end-to-end Security



- **STSAFE-A Optimized authentication solution**

- Authentication
- Secure connection, Secure data storage
- Secure key provision service
- EAL5+ Common criteria certified chip

- **STSAFE-J Flexible Java Based solution**

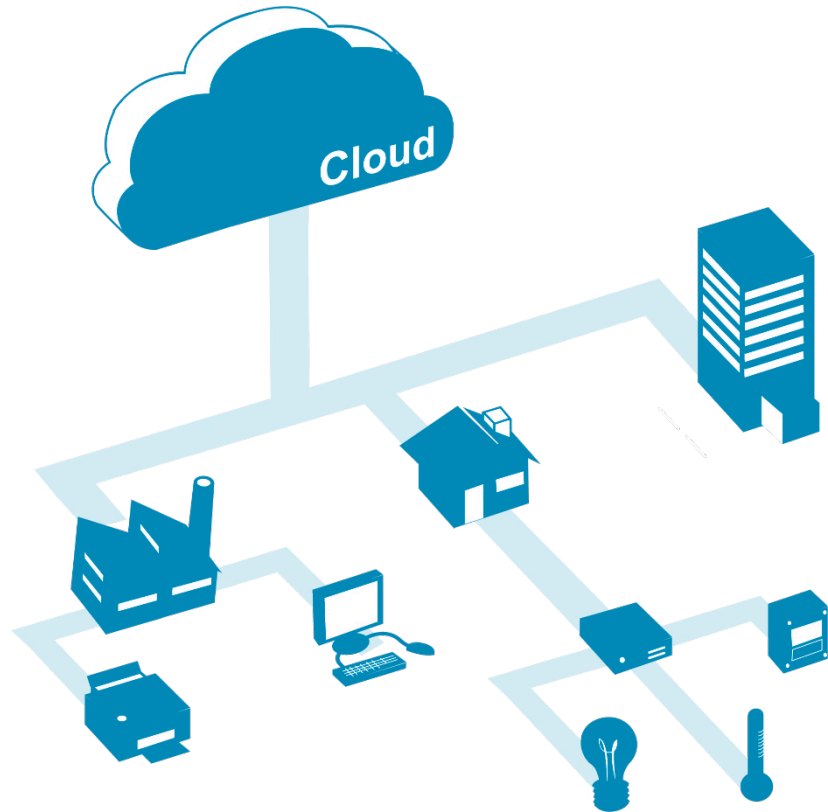
- Trusted network access with Authentication
- Secure Data storage & Secure communication
- Personalization services
- Common criteria & BSI certification

- **STSAFE-TPM Standardized solution**

- Platform integrity , Authentication
- Secure Boot, Secure Firmware upgrade
- Secure data storage & Secure communication
- Solution CC EAL4+ & TCG 1.2&2.0 certified

# STSAFE-A : Solution Overview

## Optimized secure solution for connected devices



EAL5+ Common Criteria certified chip

- Authentication
- Secure connection establishment
- Secure data storage
- Secure key provisioning service
- Seamless integration with GP MCU



# STSAFE-J : Solution Overview

## Flexible Java Card platform for Gateways



Common Criteria and BSI certification

- Flexible Java solution with ST generic or customer specific applets
- Trusted network access with Authentication
- Secure Data storage and Secure communication
- Personalization services
- Ecosystem with expansion boards and middleware

# STSAFE-TPM : Solution Overview

## Trusted Platform Module solution for platform integrity



Common Criteria and TCG 1.2 / 2.0 certification

- Platform integrity
- Trusted network access with Authentication
- Secure Boot
- Secure Firmware Upgrade
- Secure data storage and Secure communication