

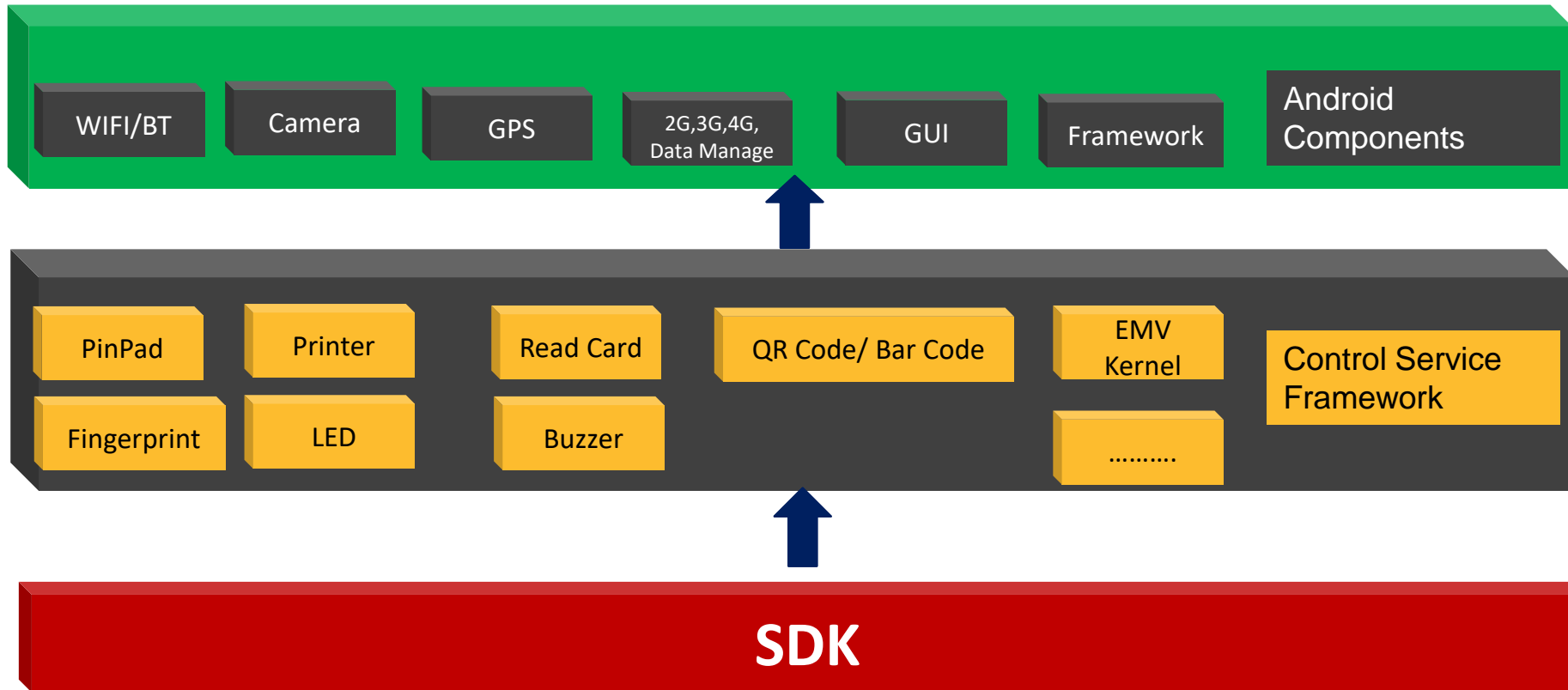


# Feitian SDK Overview

# Feitian SDK Introduction

*What is Feitian SDK?*

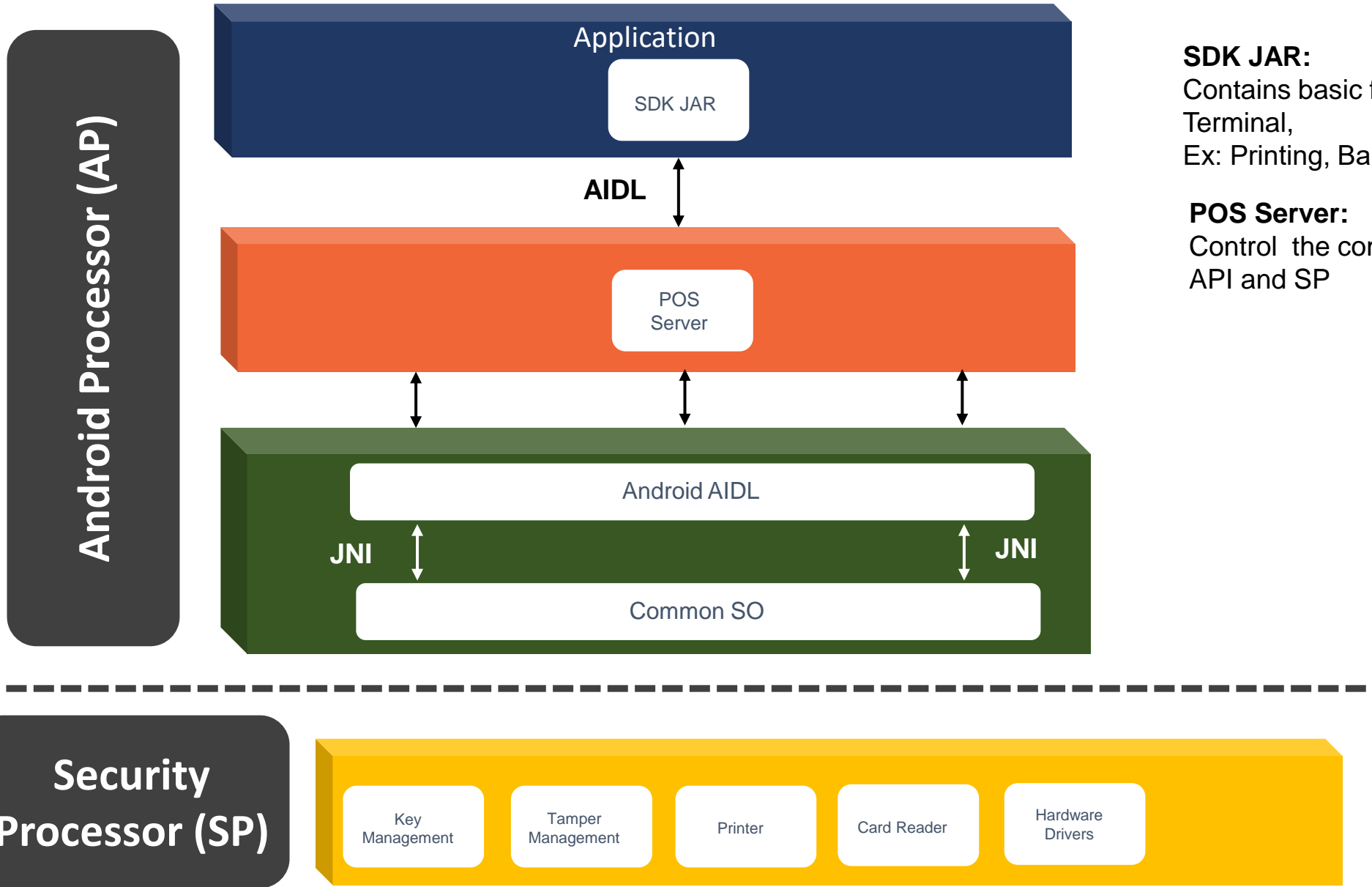
*The SDK is a service which allows applications to use terminal features using our API.*



At the same time, we offer a set of demos to help you finish the integration Quick-and-Fast.



# Feitian SDK Architecture



## SDK JAR:

Contains basic function Interfaces of Terminal,  
Ex: Printing, Bar Code Scanning .....

## POS Server:

Control the communication between SDK API and SP



# Why is SDK required?

1. Feitian SDK offers the following:

- Receipt Printing.
- Fingerprint Management.
- BarCode & QR Code Features.
- SmartCard Management.
- EMV based transactions.
- Etc...

2. Customization and optimization on demand for specific development requirement.



# System Customization

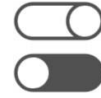
- Customized according to requirements for Settings



WLAN



Apps



Buttons



Bluetooth



Language &  
input



Data Usage



Date & time



Battery



Storage



Sound &  
notification



Security



More

# Payment Ability



Visa Contactless »

01



MasterCard Contactless »

02



Discover Contactless »

03



American Express Contactless »

04



05



07

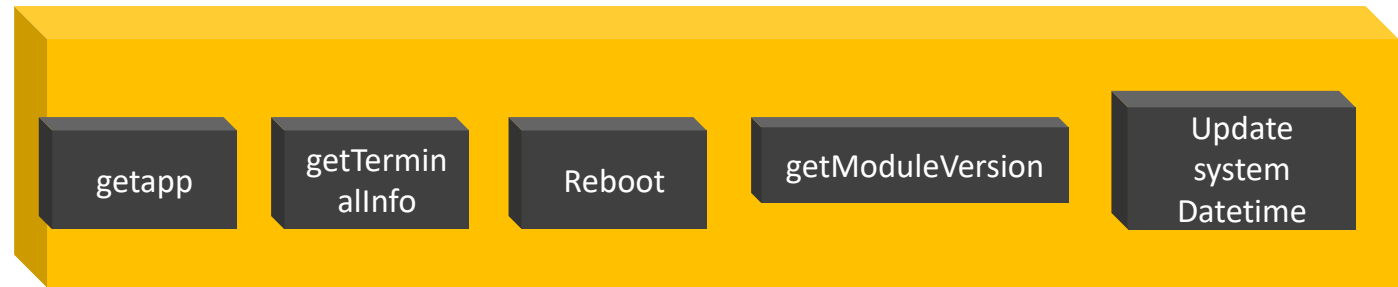
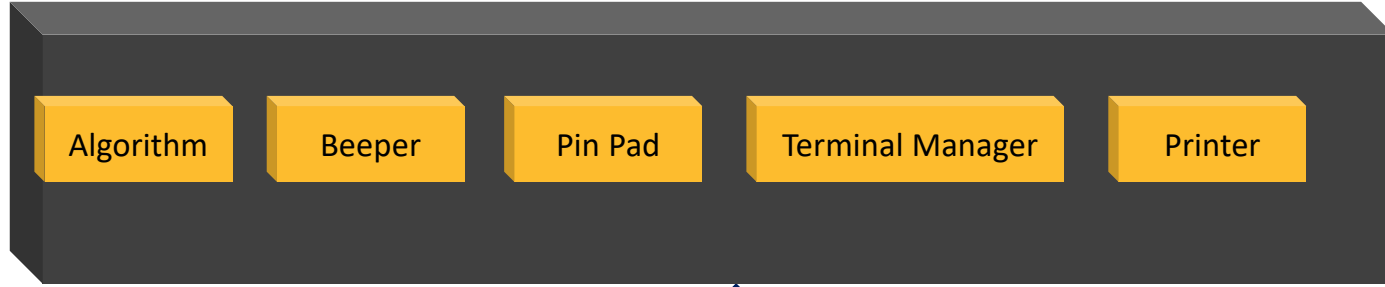


06



08

# SDK Overview

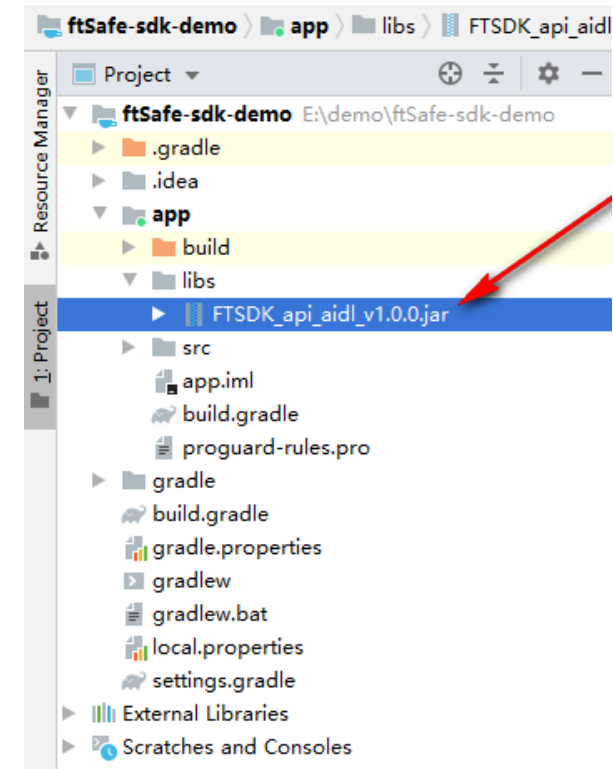


# SDK Installation

1. We Could use Android Studio to do the Integration to SDK

2. You can download Android Studio from the official website, on the official site you can also refer to Installation process

3. For SDK development , you only need to import our SDK jar file in the Android Application Project







# SDK Functions

## Printing

Feitian SDK Provides Printing Functions:  
Support Multi-Language  
QR Code / Bar Code Printing  
Printing Picture



## Fingerprint

Feitian SDK Provides Fingerprint(FP) Functions:  
Capturing  
Comparison  
Verification



## Barcode & QRCODE

Feitian SDK Provides Scanning Functions:  
Bar Code  
QR Code



## SmartCard

M0-mifare ultralight  
M1-mifare classic  
M2-mifare plus  
M3-mifare desfire



# Printer Rules

## Add printing content:

- addBarCode()
- addBmpPath()
- addMixText()
- addText()
- addBmpImage()
- addImage()
- addQrCode()

## Add printing operation:

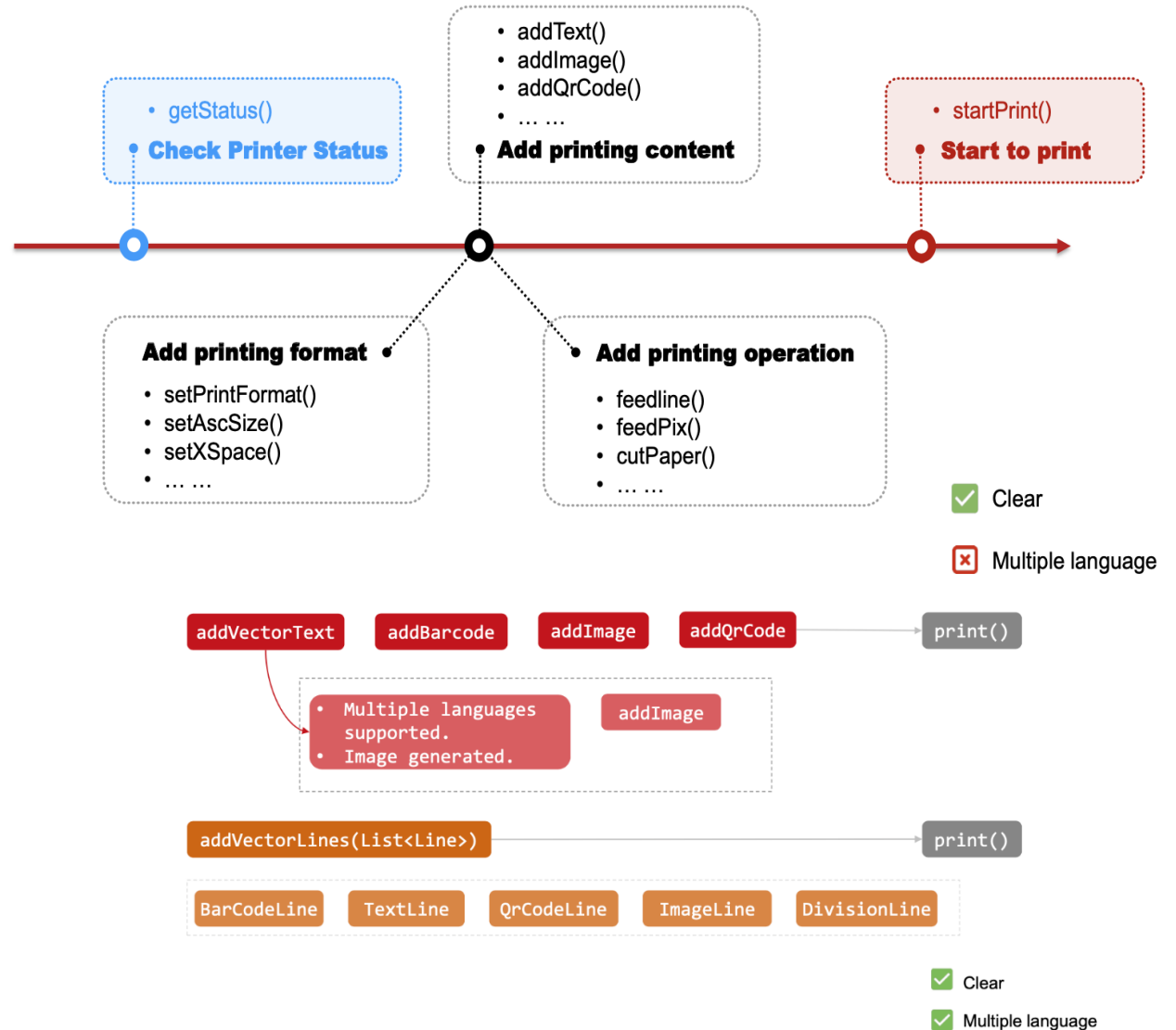
- autoCutPaper()
- feedLine()
- cutPaper()
- feedPix()

## Add printing format:

- setAscScale()
- setHzScale()
- setPrintFormat()
- setXSpace()
- setAscSize()
- setHzSize()
- setPrnGray()
- setYSpace()

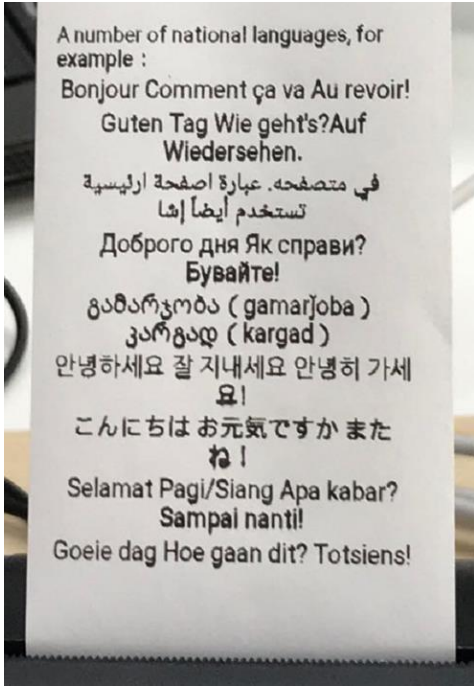
## Printer operation:

- getStatus()
- startPrint()

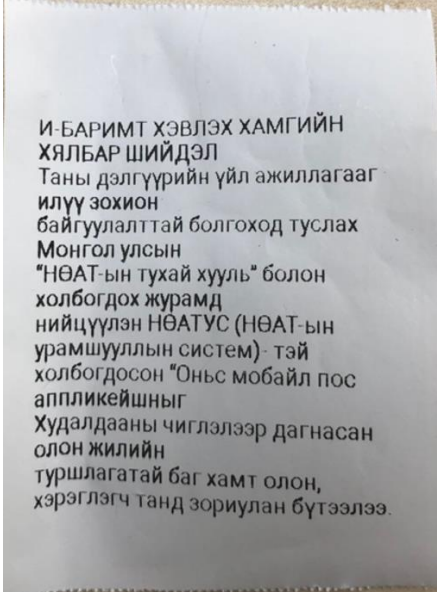


# Printing Multi Languages

SDK supports multilanguage printing



И-БАРИМТ ХЭВЛЭХ ХАМГИЙН ХЯЛБАР ШИЙДЭЛ  
Таны дэлгүүрийн үйл ажиллагааг илүү зохион байгуулалттай болгоход туслах Монгол улсын “НӨАТ-ын тухай хууль” болон холбогдох журамд нийцүүлэн НӨАТУС (НӨАТ-ын урамшууллын систем)- тэй холбогдсон “Онсы мобайл пос аппликейшныг Худалдааны чиглэлээр дагнасан олон жилийн туршлагатай баг хамт олон, хэрэглэгч танд зориулан бүтээлээ.



# Printing base on BMP

SDK supports multi-format of printing .png, .jpeg, .bmp, (SDK also support other file formats if customer wants)



**AOeCa CaEaeae**  
**DECLINED, EXCEEDING WITHDRAWAL AMOUNT LIMIT DECLINED, EXCEEDING WITHDRAWAL AMOUNT LIMIT**  
?Nea Caaaa lCal, ENelE  
KING KHALIED ROAD,  
18/12/2019 18:07:43  
RAJB 800150400566 1122334412345678  
5411 000075 0.5.1 100000000024

مدى  
mada  
شراء  
PURCHASE  
455708\*\*\*\*\*4183 12/20  
مبلغ الشراء  
ريال ٤٥٣٦٩,٠٠  
**PURCHASE AMOUNT**  
**SAR 45369.00**

مقبولة  
**APPROVED**  
تم التحقق من الرقم السري للعميل  
**DECLINED, EXCEEDING WITHDRAWAL AMOUNT LIMIT**  
رمز الموافقة 004183  
18/12/2019 18:07:43  
شكراً لاستخدامكم مدى  
**THANK YOU FOR USING mada**  
يرجى الاحتفاظ بالأصل  
**PLEASE RETAIN YOUR RECEIPT**  
\*\* نسخة التاجر \*\*  
**\*\* RETAILER COPY \*\***  
10 0000248000

**SULAIMAN ALSAID CENTER FOR HOUSE**  
7Nea Caaaa lCal, ENelE  
KING KHALIED ROAD,  
01/09/2019 12:56:09  
AJB 800150400566 1122334412345678  
399 000072 0.3.9 695562481277

مدى  
nada  
شراء  
PURCHASE  
55036\*\*\*\*\*7601 12/20  
مبلغ الشراء  
ريال ٨٦,٠٠  
**PURCHASE AMOUNT**  
**SAR 86.00**

مرفوضة (ب)  
**OFFLINE DECLINED**  
aNaOc  
**DECLINED**  
01/09/2019 12:56:09  
شكراً لاستخدامكم مدى  
**THANK YOU FOR USING mada**  
يرجى الاحتفاظ بالأصل  
**PLEASE RETAIN YOUR RECEIPT**  
\*\* نسخة التاجر \*\*  
**\*\* RETAILER COPY \*\***  
HPPED 188 A000002282010 0000248000  
800 420000 00 4FAGA32EC703ED5F  
مرحباً  
GET 10% OFF ALL PURCHASES AT RIYADH  
HYPERMARKET. OFFER VALID TILL END OF DEC  
2019



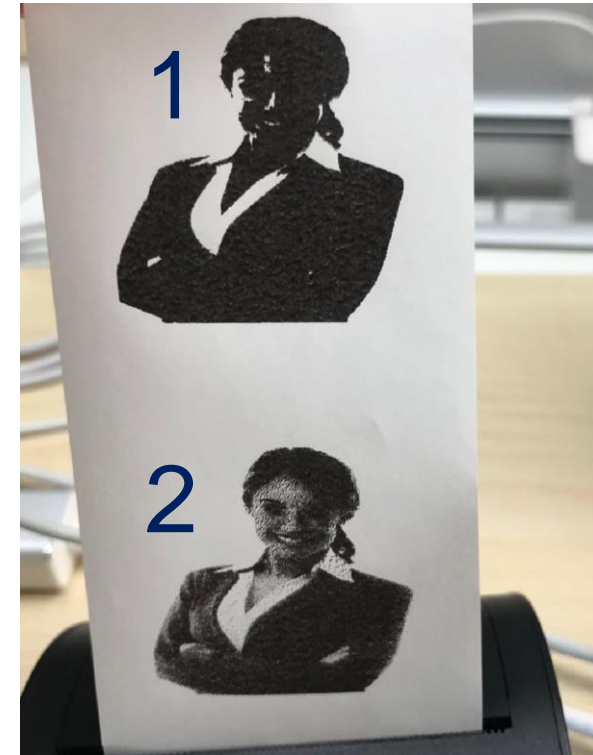


# Printing base on Picture

SDK supports picture printing

SDK can also be optimized to print more clear images.

1. Image optimization.
2. Image after optimization.

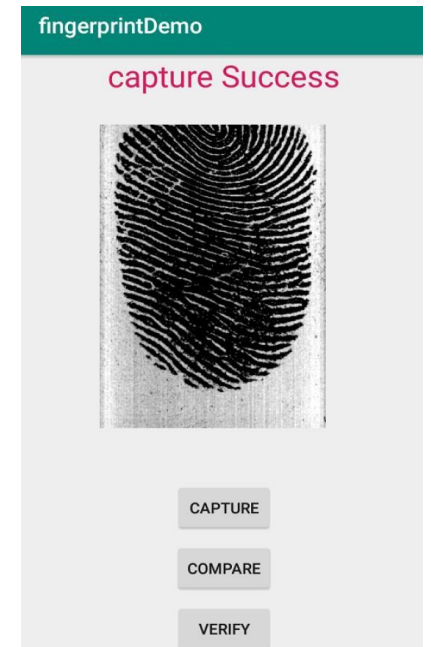
























# Fingerprint Support

Feitian SDK provides the following functions for fingerprint(FP) Functions:

- Photo capture of the FP the SDK then outputs the FP in BMP/WSQ/ISO format.
- Comparison between two fingerprints.
- Verification in case the user requires to double-check a fingerprint in the database.



# LED Rules for Contactless Transaction

Transaction Step	Led Light Status	Description
Wait for user to tap card	 on  off  off  off	
Process transaction data	 on  on  off  off	
Communicate with host	 on  on  twinkle  off	
Transaction success	 on  on  on  off	Turn off all after 750ms
Transaction failed	 off  off  off  on	Turn off all after 750ms



# Beeper Support

---

## StartBeep(int)

- Success/Normal: 500ms
- Error/Fail: 1000ms
- Key Press: 200ms
- Interval: 200ms each time

---

## StopBeep()

---





# Install/Uninstall App



Install / Uninstall app silently in background without user interaction



Supported files:

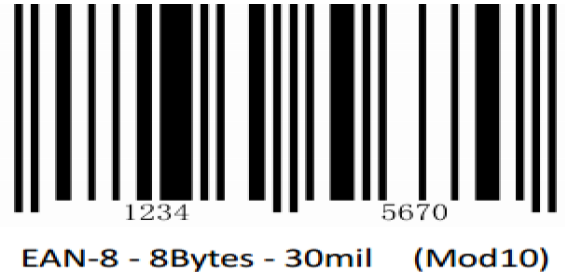
- .apk
- .pkg
- .uns

# Barcode Support

Feitian SDK supports all types of Barcode

**Barcode:**

- Code39
- Code128
- Codabar
- ISBN
- EAN13
- EAN8
- UPCA
- UPCE
- Interleaved 2 of 5
- GS1 Databar
- MSI
- M25
- Code11



# QR Code Support

Feitian SDK supports all types of QR Codes

QRCode

QRCODE

PDF417

data matrix

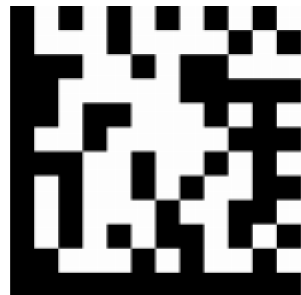
Aztec code



QR Code - 6Bytes - 80mil (H)



PDF417 - 6Bytes - 20mil



Data Matrix - 6Bytes - 100mil



# Magnetic Stripe Card Reader Support

disable Track (int)

enable Track (int)

set Track Type (int)

retain control

set LRC Check enable

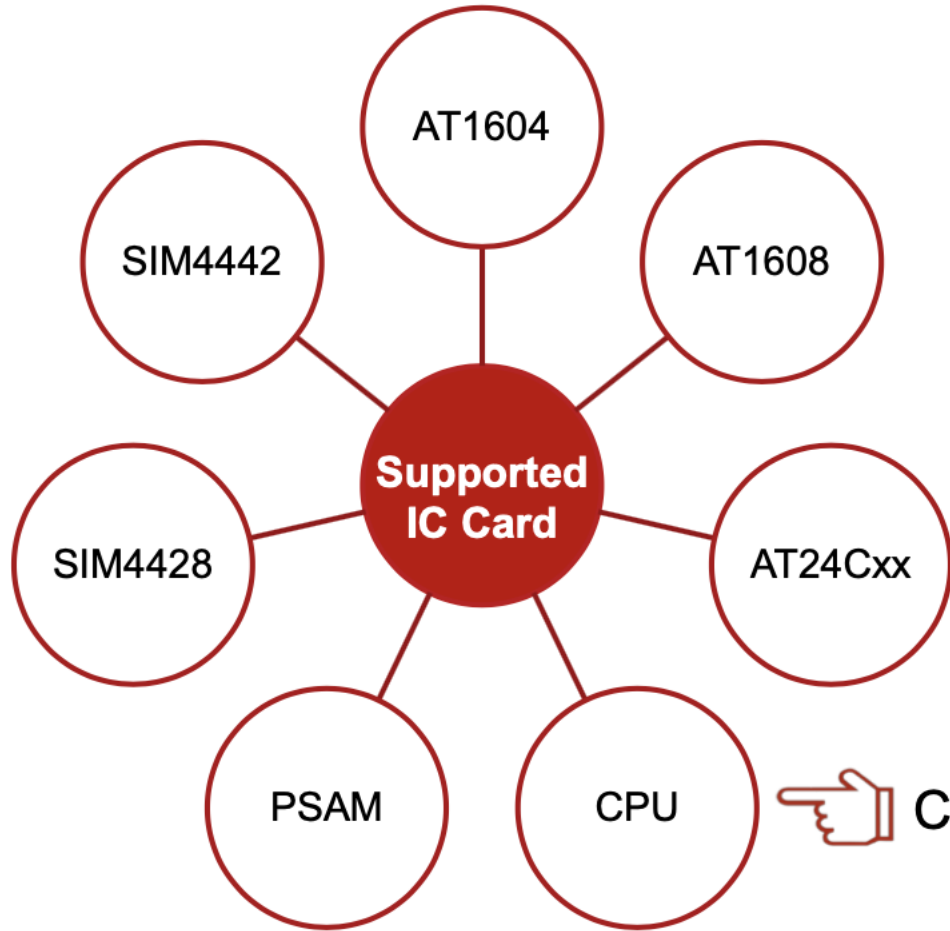
Search card  
(int, on swipe Listener)

Stop search

On swipe listener:

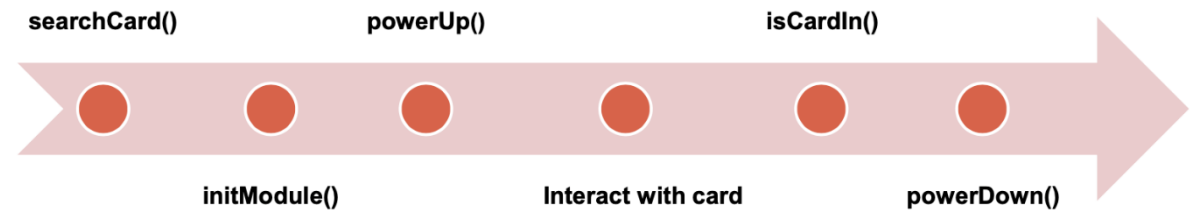
- onSuccess (Bundle Track)
- onError (int error)
- On Timeout ()

# IC Card Reader- Contact



 Contact transaction

Generic flow to process a contact transaction:

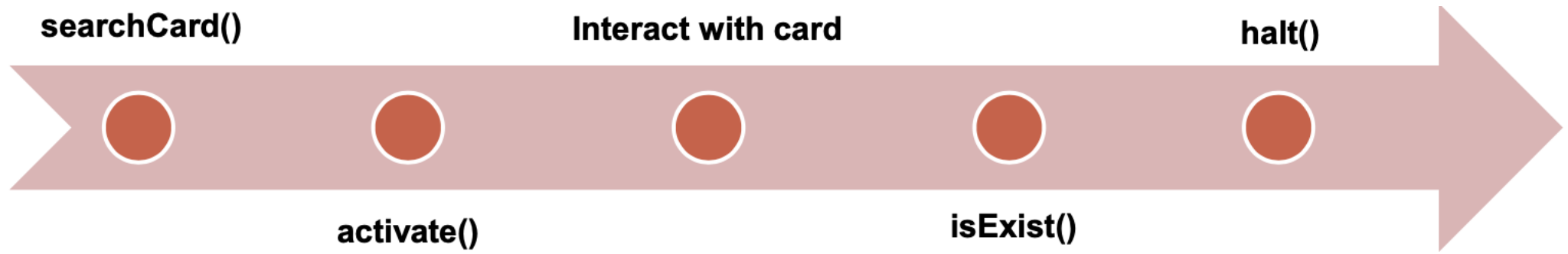
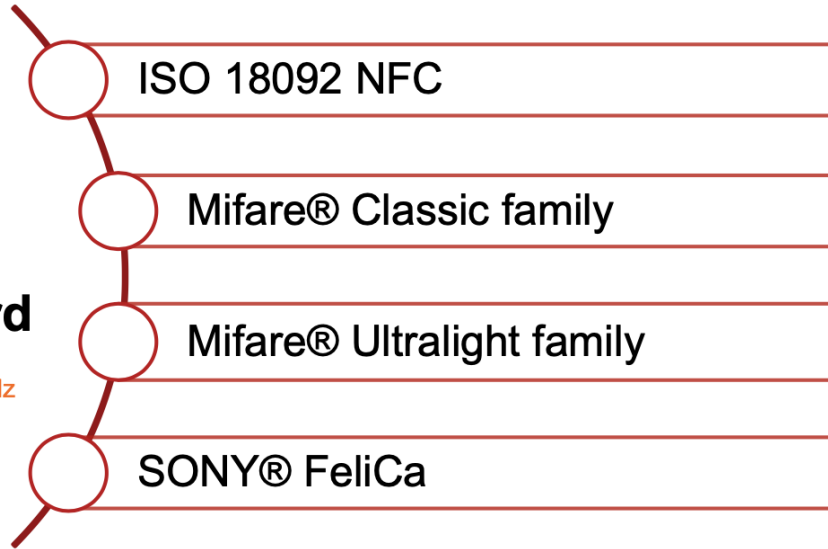


# IC Card Reader - Contactless

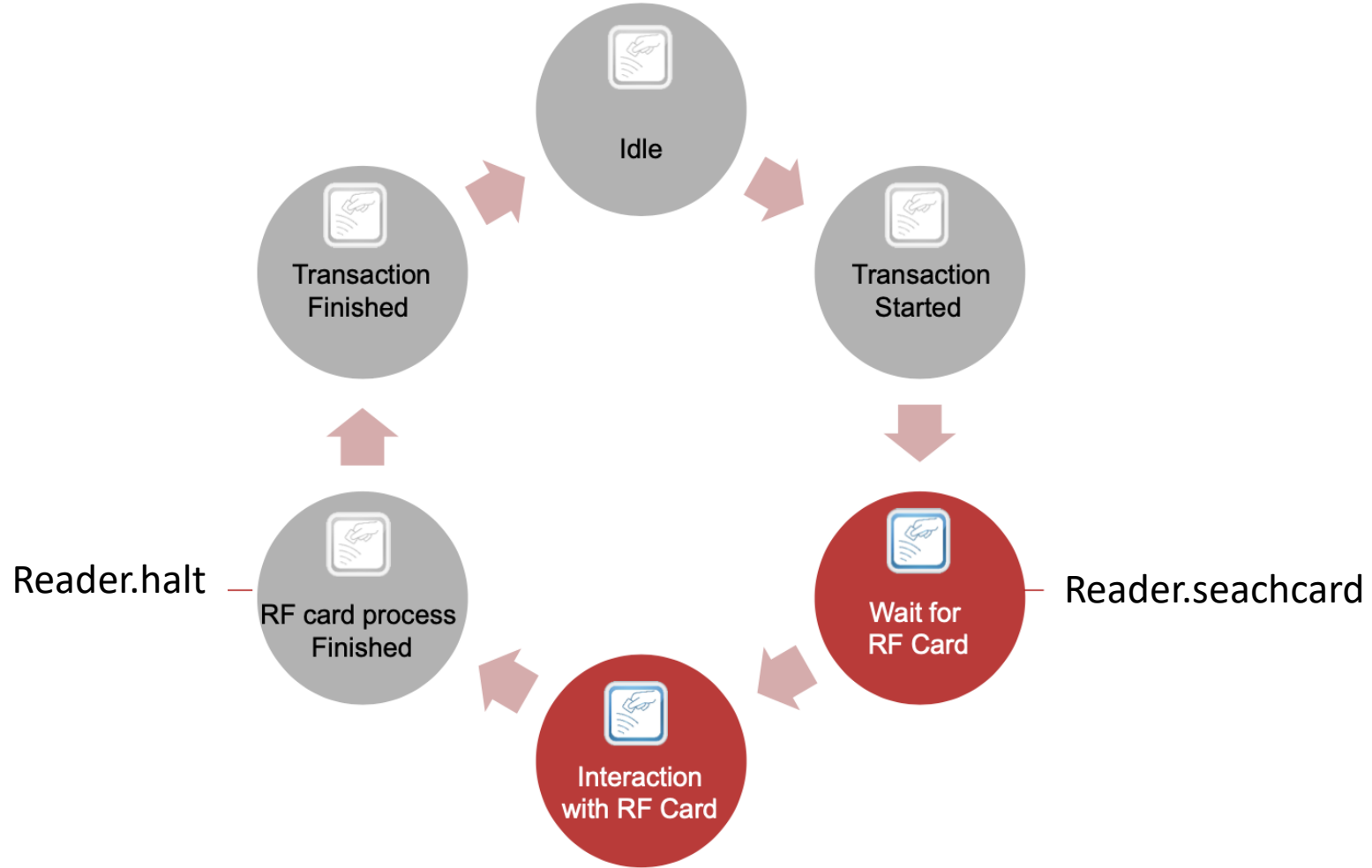


## Supported Card

ISO 14443 Type A, B  
Working Frequency: 13.56MHz



# RF Carrier



# Supported Cards

- Contactless IC Card
- Contact ICard Magnetic
- Stripe Card
- M0:Mifare Ultralight
- M1:Mifare Classic
- M2:Mifare Plus
- M3:Mifare Desire
- Felica
- PSAM Card
- SLE4442/4428
- AT24CX/ AT88SC102







# Security

```
VOID PAINT();
```

```
PUBLIC INTERFACE IGUIFACTORY  
PUBLIC IBUTTON CREATERETURN
```

```
PUBLIC CLASS WINFACTORY  
@OVERRIDE  
PUBLIC IBUTTON CREATERETURN  
RETURN NEW WINBUTTON
```

```
PUBLIC CLASS OSXFACTORY  
@OVERRIDE  
PUBLIC IBUTTON CREATERETURN  
RETURN NEW BUTTON
```

```
PUBLIC CLASS WINDOW  
@OVERRIDE  
PUBLIC IBUTTON CREATERETURN  
SYSTEM
```

```
ELSE  
THROW NEW
```

```
FINAL IBUTTON BU  
BUTTON PAINTU
```

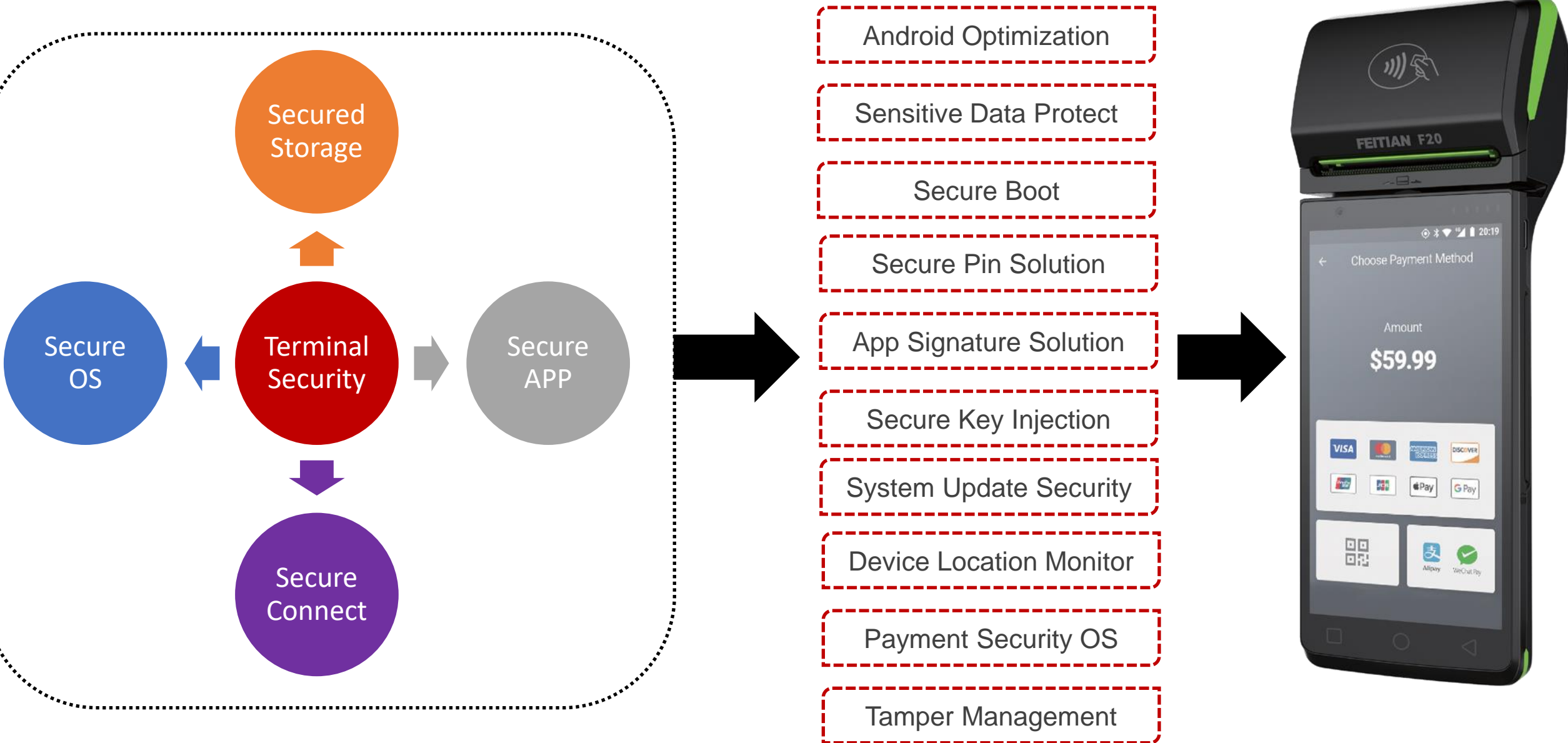
```
THIS IS JUST FOR THE  
WITH ABSTRACT FACTORY  
@RETURN
```

```
PUBLIC STATIC STRING  
FINAL STRING[] APPE
```

```
APPEARANCEARRAY  
APPEARANCEARRAY  
APPEARANCEARRAY  
FINAL JAVA.UTIL.RAND
```

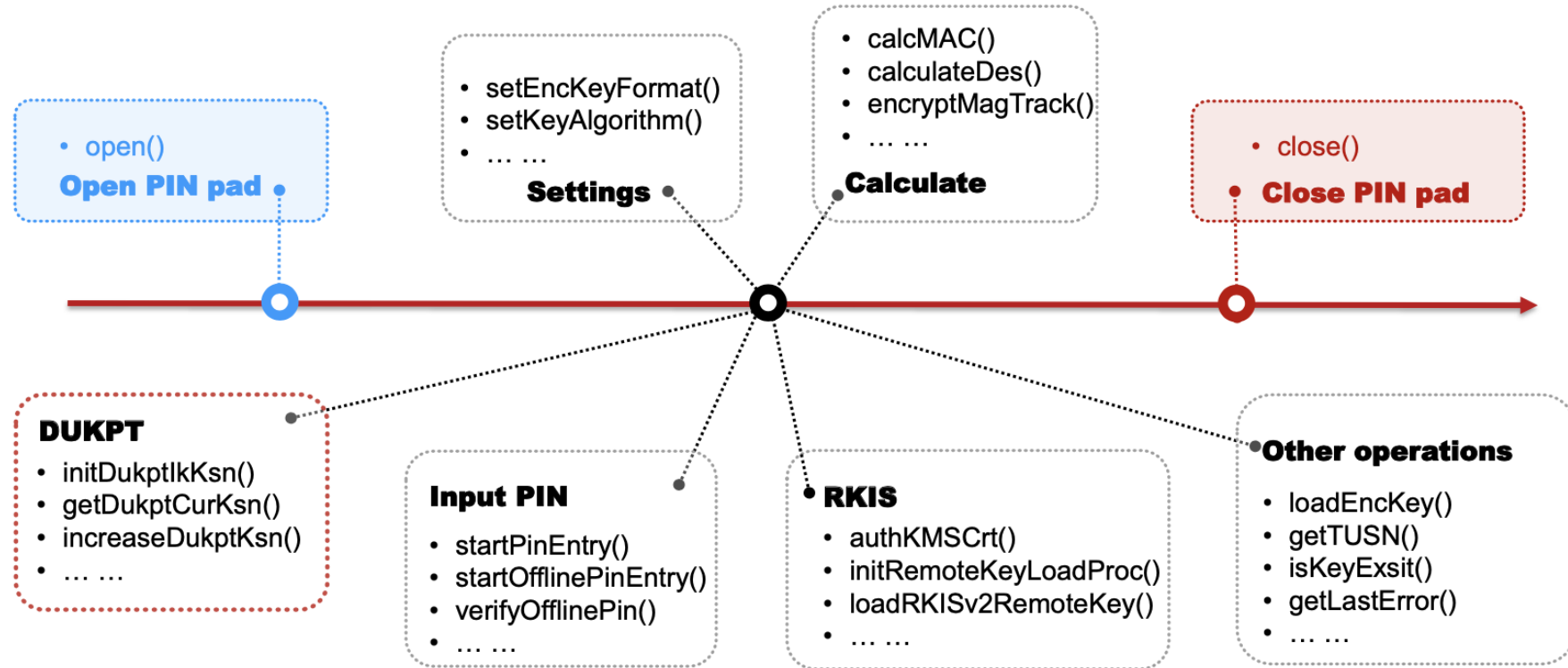
```
FINAL INT RANDOMNUM  
RETURN APPEARANCE
```

# Terminal Security



# Secured Pin Pad

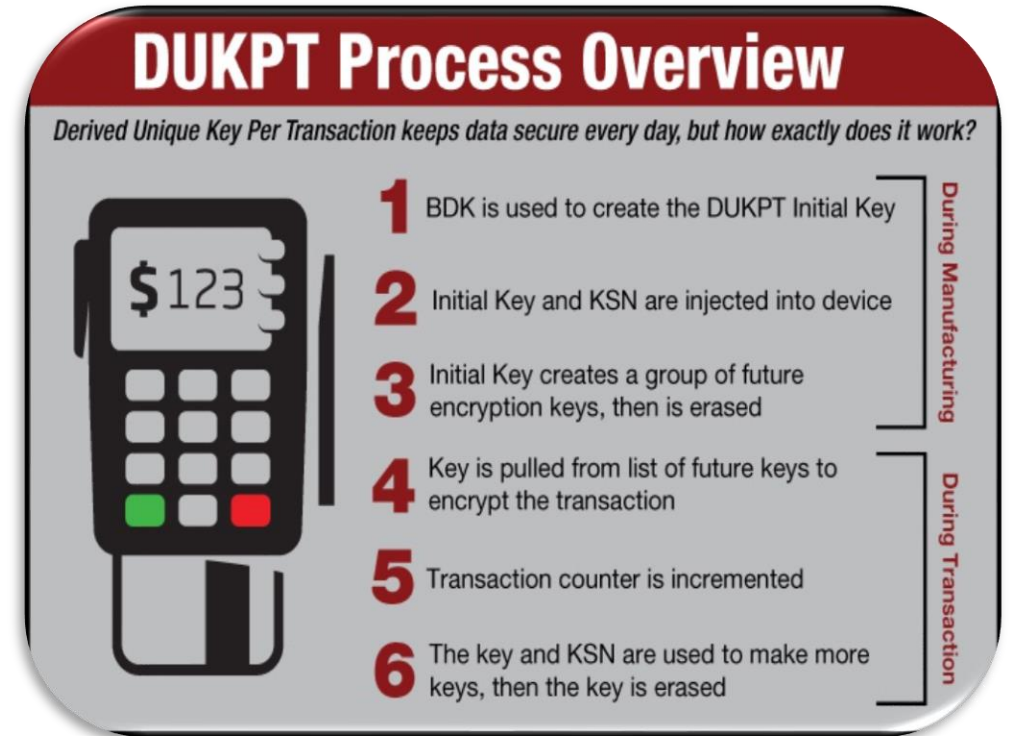
- Supports Randomized Pin pad.
- Feitian PIN Entry Security Protection Solution is fully approved by PCI 5.x/6.x.
- PIN block supports ISO-9564 Format 0/1/3/4.
- Supports key hierarchy: MK/SK,DUKPT





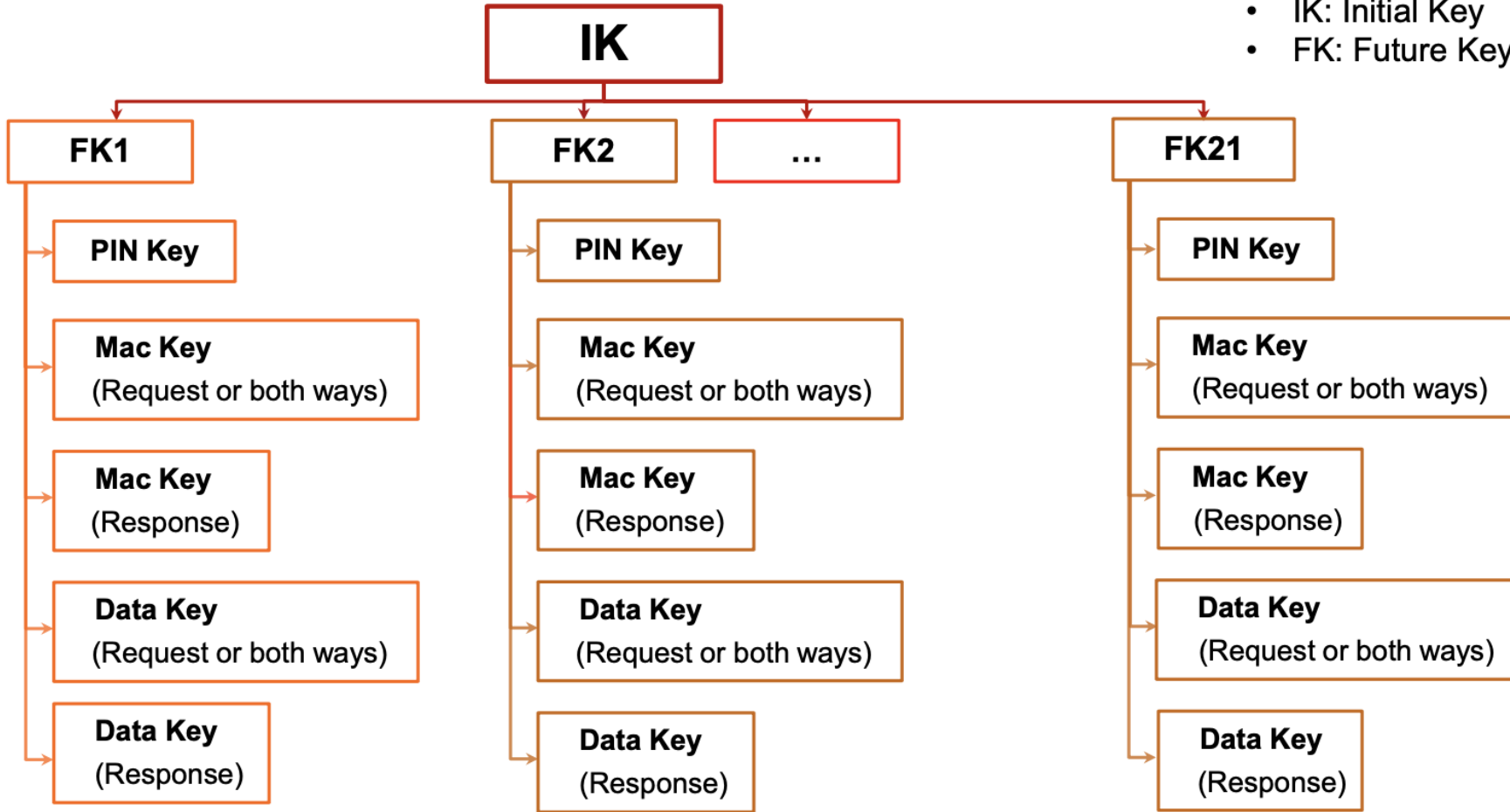
# DUKPT

- Each POS device is injected with an encryption key and an initial key serial number.
- HSM contains a counter, which is incremented each time a new PIN encryption key is generated, the resulting PIN key is then transferred to the POS device. Thanks to this, each POS receives a unique key.
- This removes the burden of encryption from the POS and moves it to the HSM of the acquirer, thus increasing device performance.



# Pin Pad DUKPT

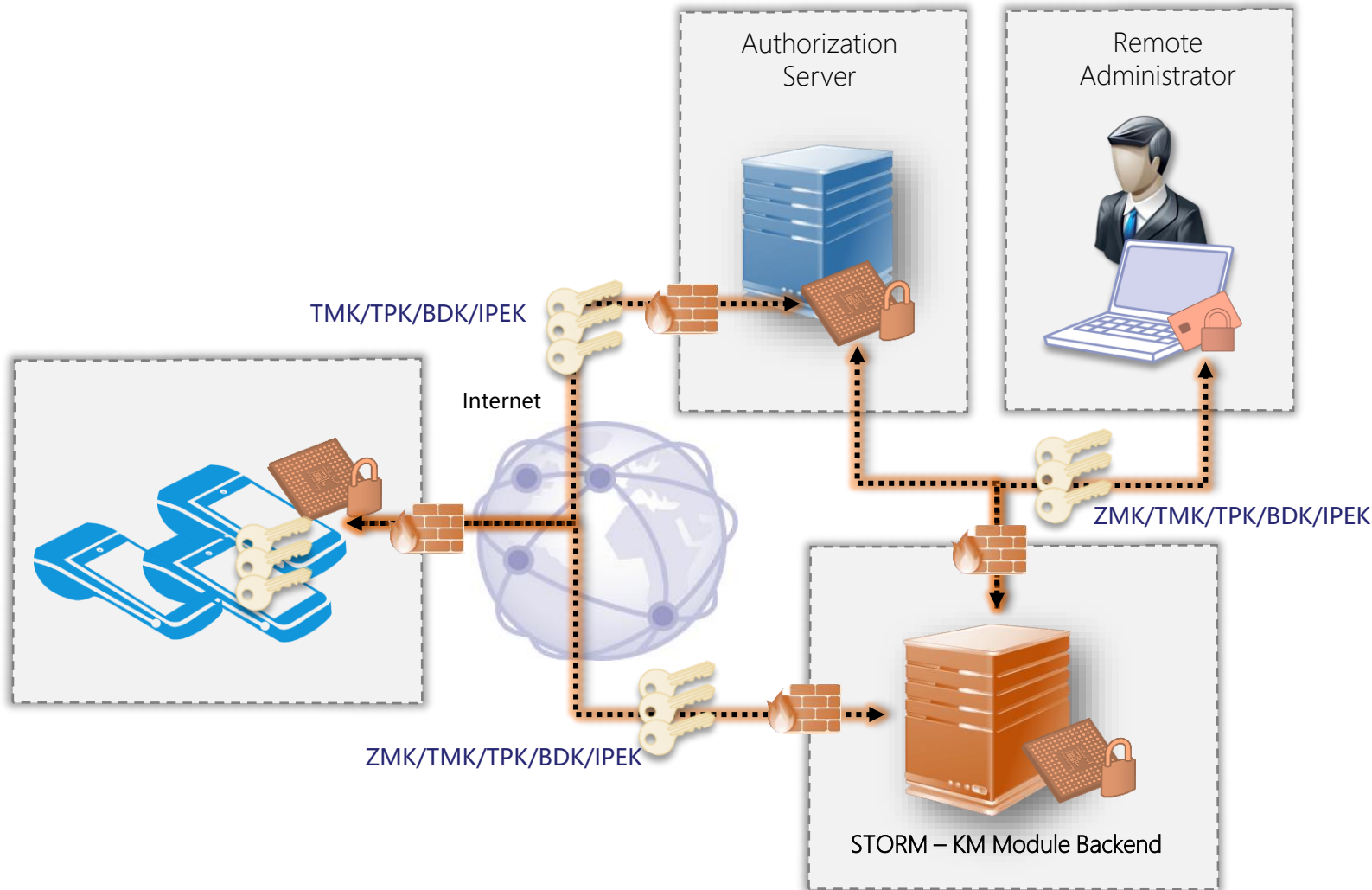
- IK: Initial Key
- FK: Future Key



## Data Encryption Key

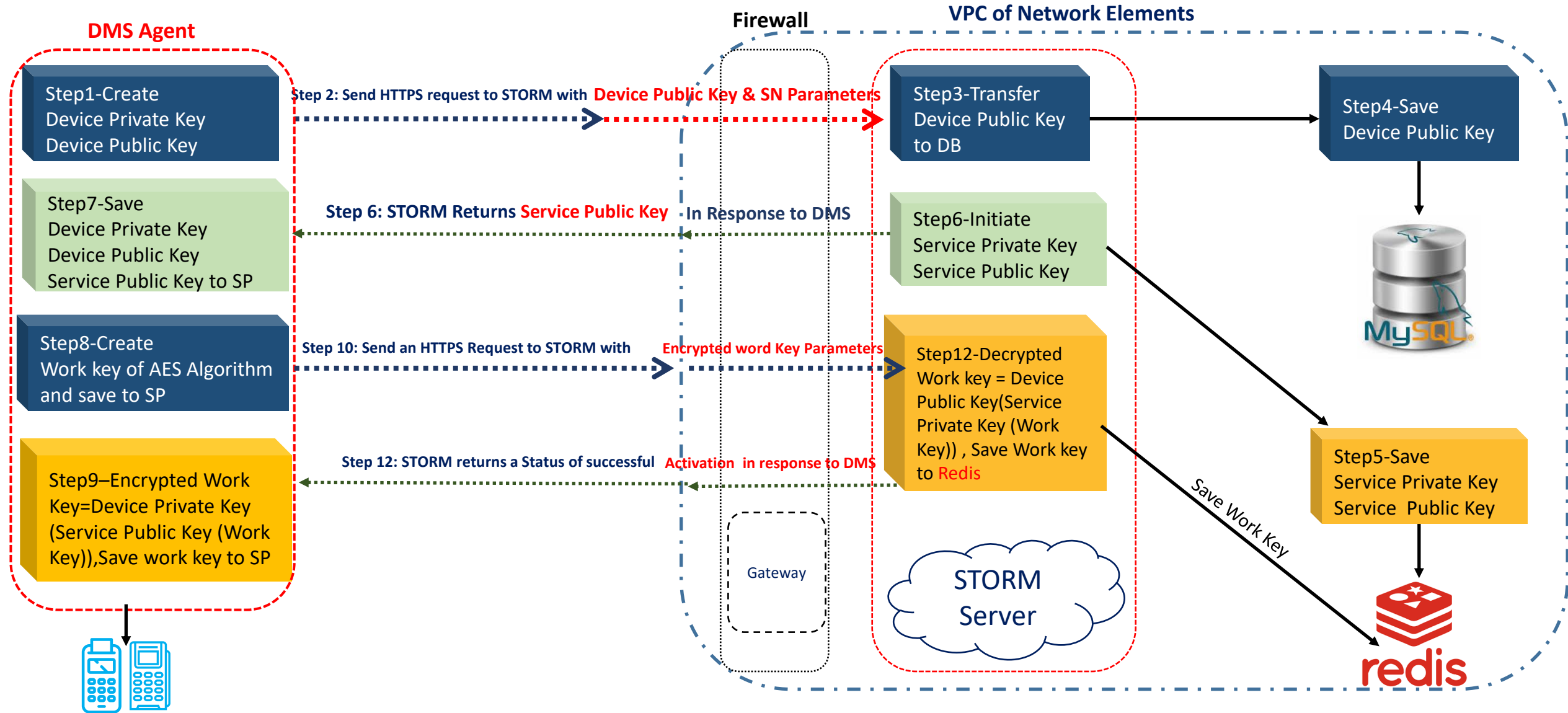
- ! Encryption only
- ! Decryption not available
- ! For DUKPT: *calculateDes()* ..... ✗  
*encryptMagTrack()* ..... ✓

# Key Injection

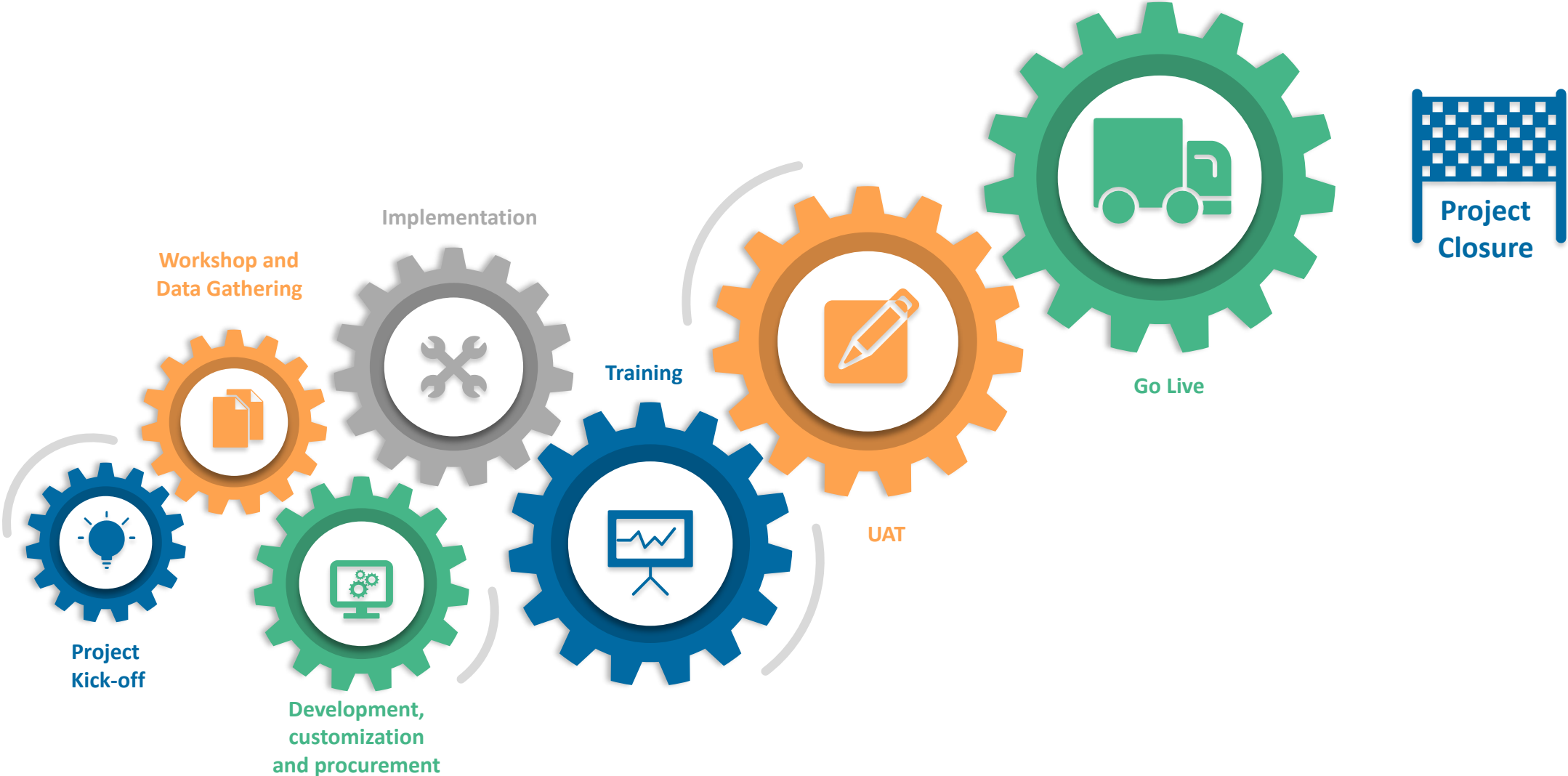


- **End-to-end protection & control** of critical data from STORM to POS device
- **Secure monitoring & metering of injection** success, quantity, location and time for controlling legitimacy, delivery timing & capacity schedule.
- **High-performance onsite cryptography with HSM**
- **Online delivery mode** (e.g., via mutually authenticated TLS connection) and additional container encryption

# Communication Key Exchange Process

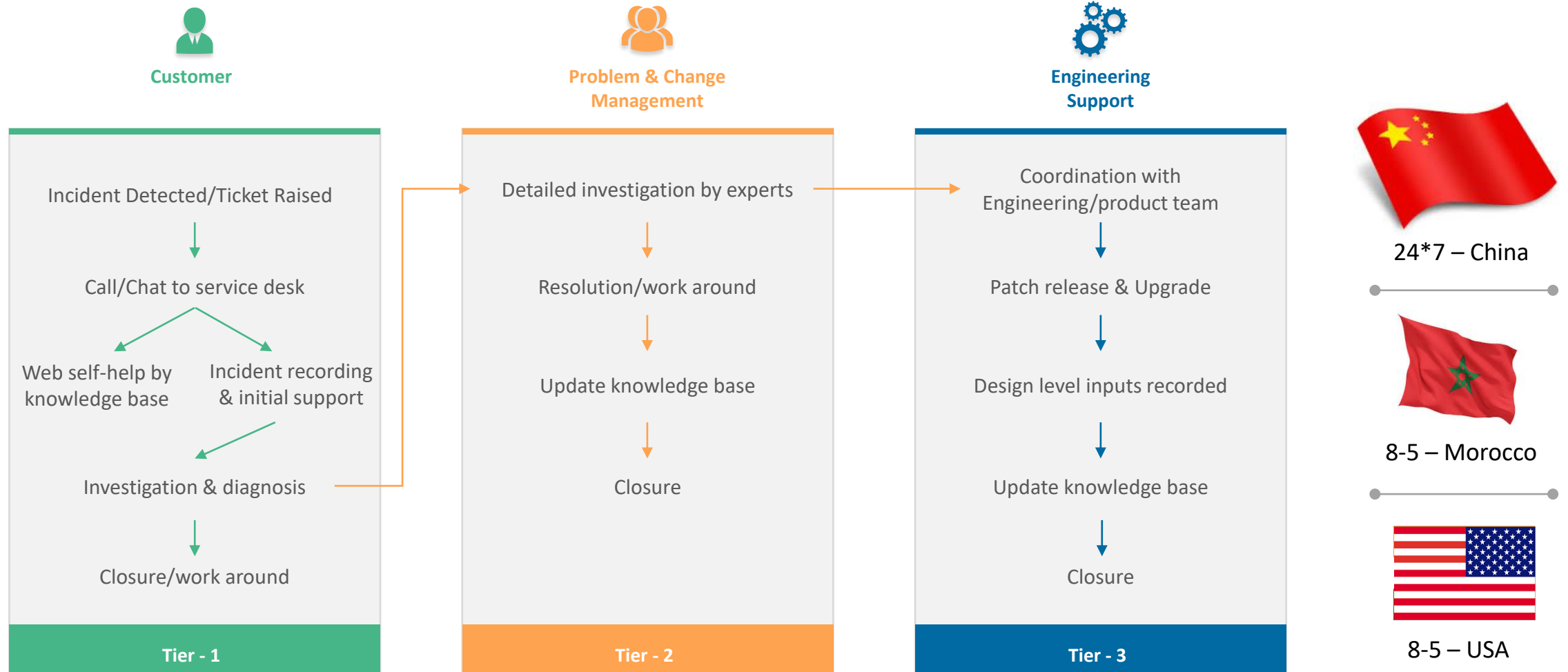


# Project Implementation Methodology





# Global Support



# Thank You!

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