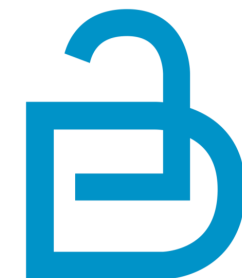


DIRBS

An Open Source CEIR to Combat Counterfeit & Stolen ICT Devices

Third ITU-T Study Group 11 Regional Workshop for Africa on "Counterfeit ICT Devices, Conformance and Interoperability Testing Challenges in Africa"
Tunis, Tunisia 30 September 2019

Mohammad Raheel Kamal



DIRBS

FINAL ACTS
OF THE PLENIPOTENTIARY CONFERENCE
(Busan, 2014)

Decisions and Resolutions

Resolution 188 (Dubai, 2018):
Combating counterfeit
telecommunication/information and
communication technology devices

Resolution 189 (Dubai, 2018): Assisting
Member States to combat and deter mobile
device theft

- Telecommunication/ICT devices that do not comply with a country's applicable national conformity processes and regulatory requirements or other applicable legal requirements should be considered unauthorized for sale and/or activation on telecommunication networks of that country
- Tampering with unique device identifiers diminishes the effectiveness of solutions adopted by countries

Key Regulations Required to Combat Fraudulent ICT Devices

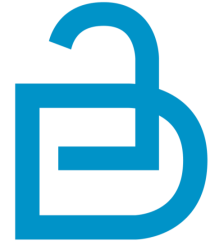
- Prohibit devices for sale or activation on the networks:
 - That do not comply with national regulatory requirements
 - That are not registered in the national device database
 - That do not have a unique and valid device identifier issued by an authorized entity
 - That are not IMEI tamper-proof
 - That are reported stolen
- Government's right to collect device related data from the networks
- Stakeholders obligation to ensure compliance to government's regulations

DIRBS Addresses All Fraudulent ICT Devices



DIRBS

DIRBS - The Open Source Freely Downloadable CEIR



DIRBS

Device Identification, Registration, and Blocking System (DIRBS) addresses counterfeit, illegal & stolen devices and is freely downloadable open-source software platform.

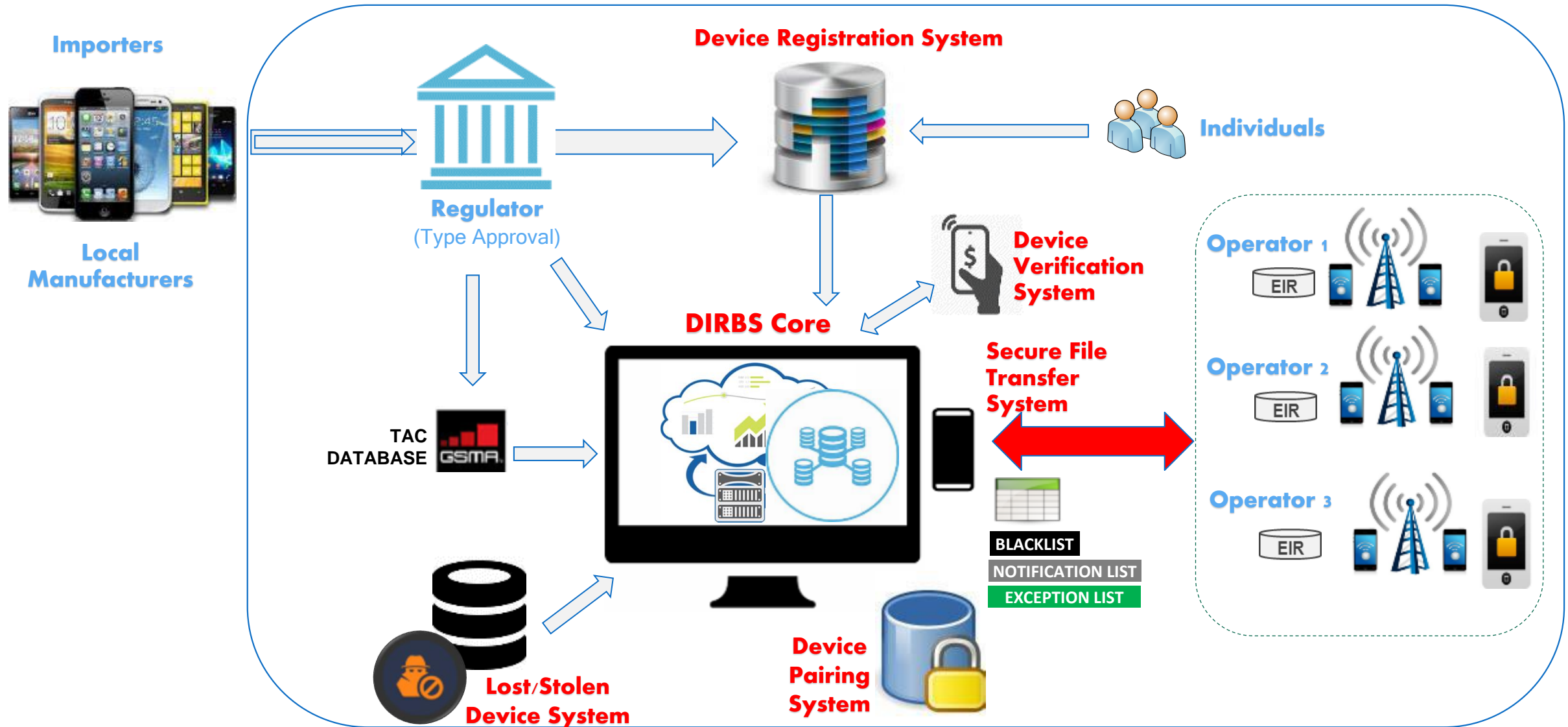


<https://github.com/dirbs>

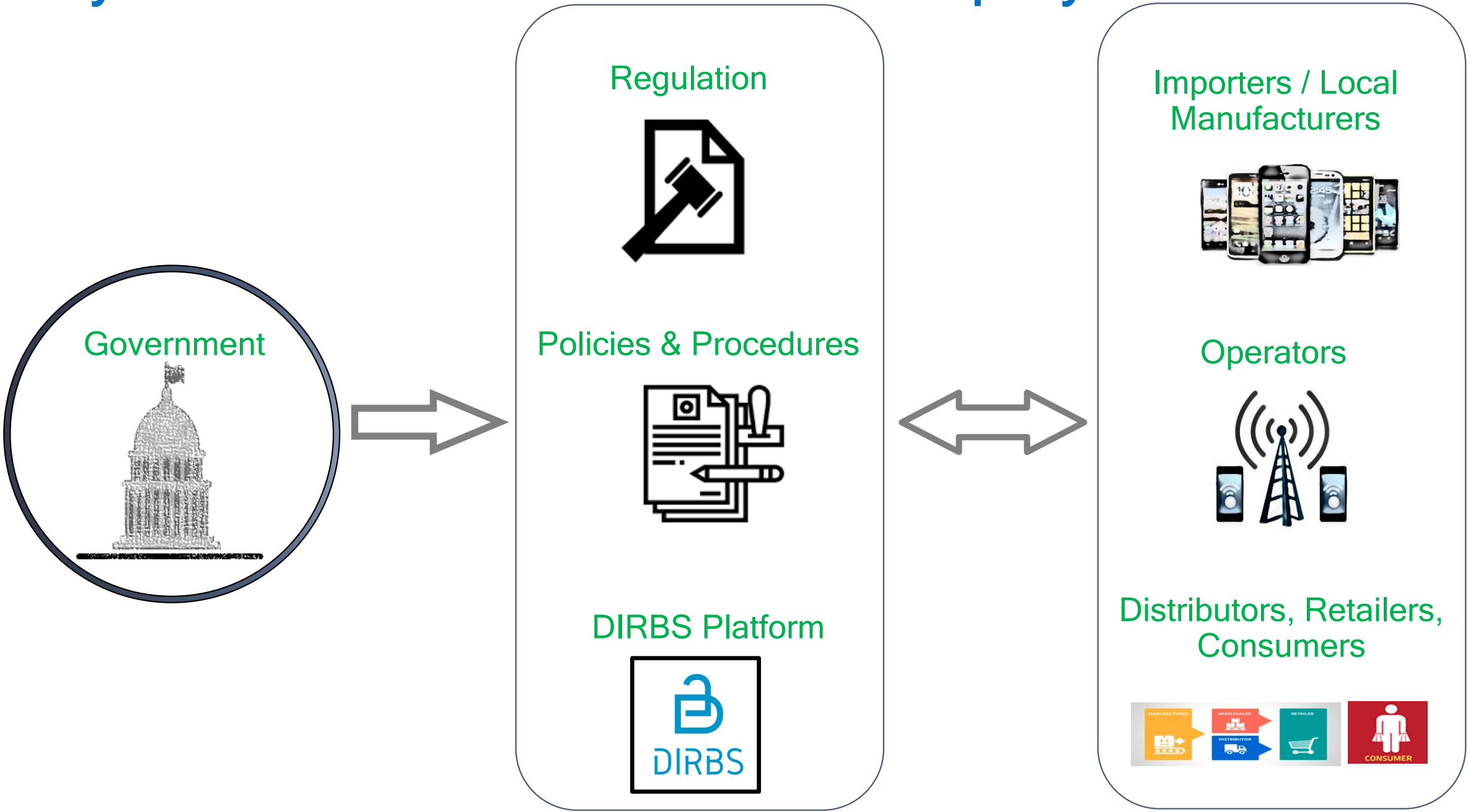
DIRBS - The Open Source Freely Downloadable CEIR



DIRBS



Key Stakeholders in a DIRBS Deployment



DIRBS Dashboard

DIRBS View

Total IMEIs
2,683,996
Monthly Average
113,990 | ↑ 1.06%

Total Valid IMEIs
909,220
Monthly Average
35,707 | ↓ 0.31%

Total Invalid IMEIs
1,774,776
Monthly Average
78,284 | ↑ 1.68%

Total Paired IMEIs
1,232,515
Monthly Average
12,338 | ↑ 2.51%

Total Stolen Devices
1,662,772
Monthly Average
16,622 | ↓ 1.28%

Total Registered IMEIs
1,409,746
Monthly Average
14,144 | ↓ 1.88%

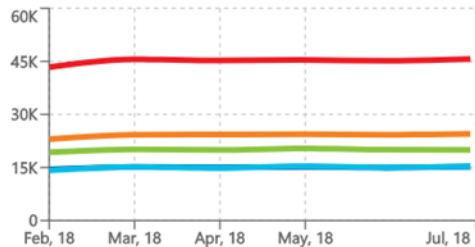
Operator Wise IMEIs

2.87M

- Operator1 1,164,811
- Operator2 565,767
- Operator3 445,953
- Operator4 303,102
- Operator5 302,492



Operator Wise Trend

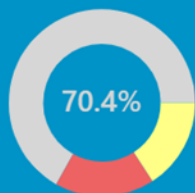


Total IMEIs

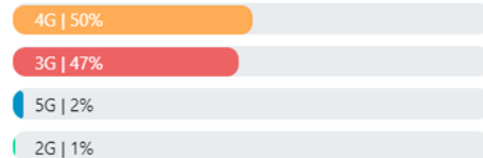
1.85M

May 20.6K | Jul 20.5K | Jun 20.7K

Approved Devices | 97.2K



Registered Device Technology



Pairing Types

- Primary 293,971
- Secondary 938,544



Operator's Active Pairs

- Operator1 294.5K
- Operator2 293.6K
- Operator3 292.4K
- Operator5 291.1K



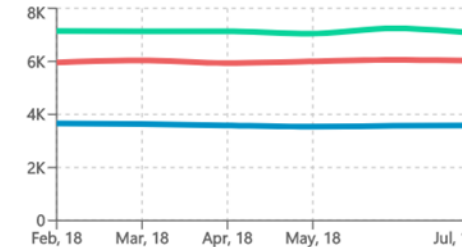
Lost/Stolen Device Status

1.66M



- Pending
- Recovered
- Blocked

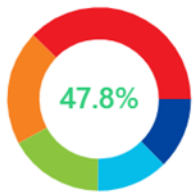
Lost/Stolen Device Trend



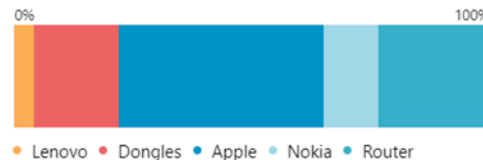
Operator Wise Blocking

1.37M

- Operator1 519,208
- Operator2 278,368
- Operator3 230,718
- Operator4 173,638
- Operator5 172,845

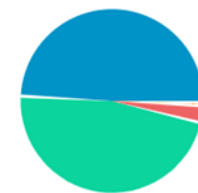


Top Registered Brands

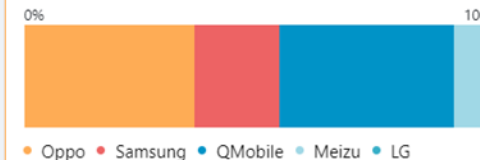


Pairs Classification

- Permanent 1,231,950
- Active 1,171,636
- Deleted 60,879
- Temporary 565



Most Stolen Brands

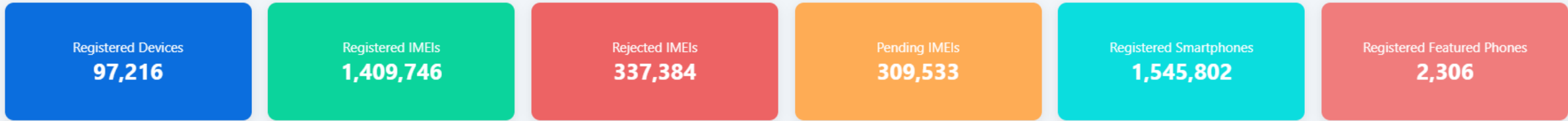


DRS (Device Registration Subsystem)

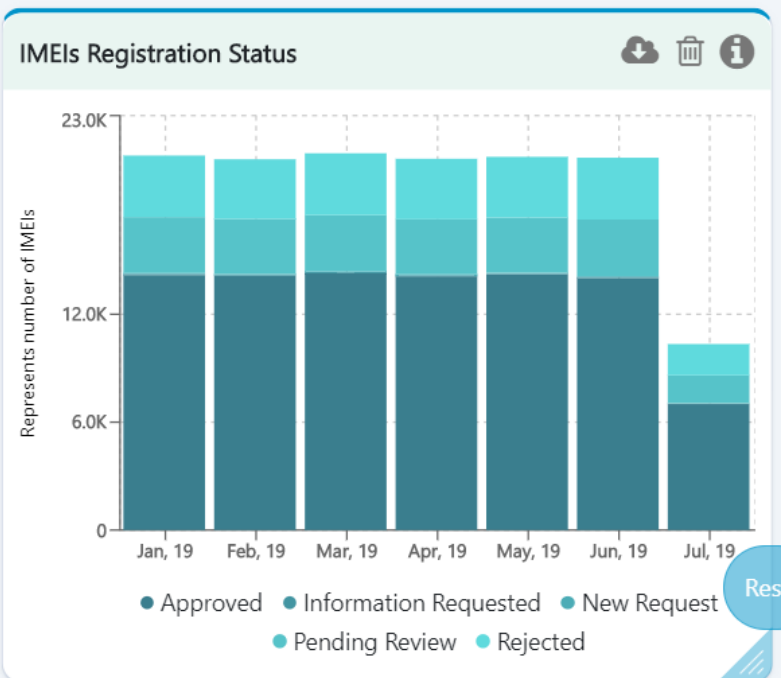
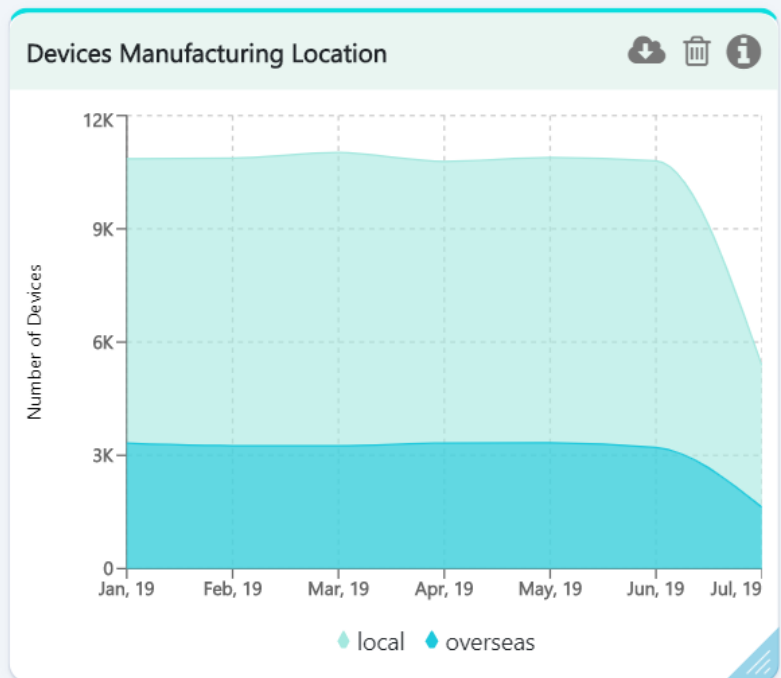
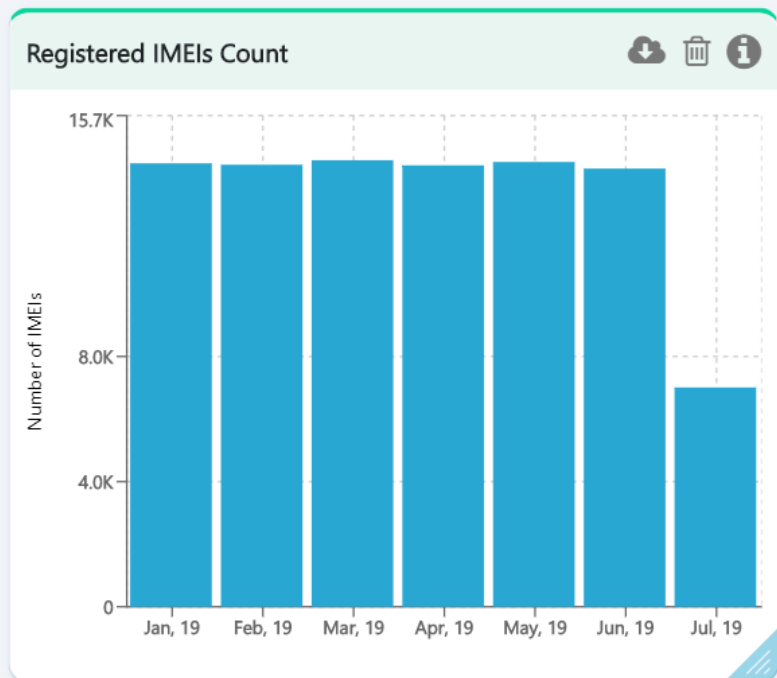
(1/2)

DIRBS View

Dashboard / DRS



Applied Filters: Granularity: monthly Date Range : 2019-01-01 - 2019-09-25 Trend Quantity : 5



Reset

DRS (Device Registration Subsystem)

(2/2)

DIRBS View

Applied Filters:

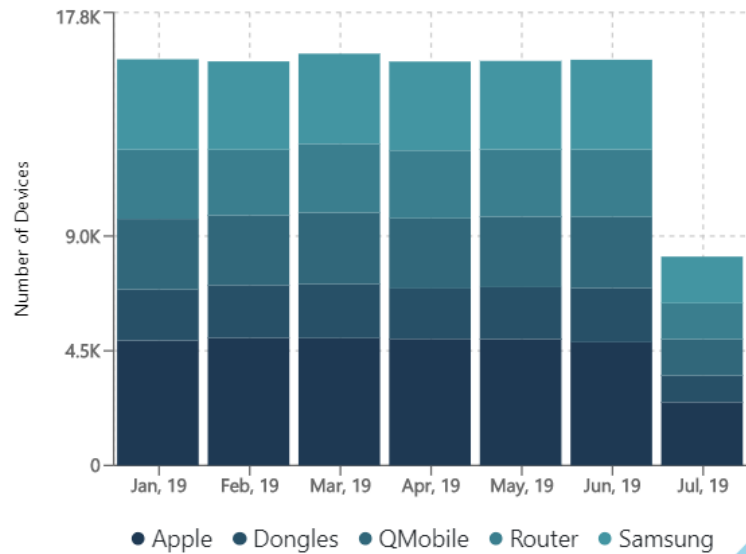
Granularity: **monthly**

Date Range : 2019-01-01 - 2019-09-25

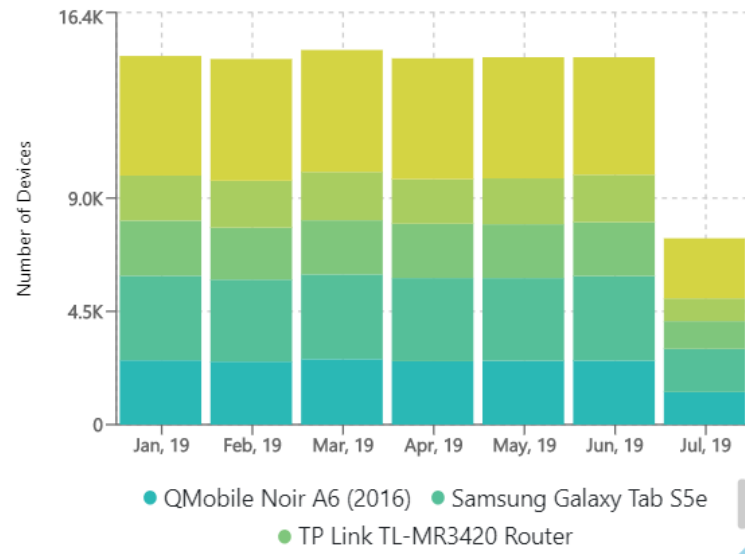
Trend Quantity : 5



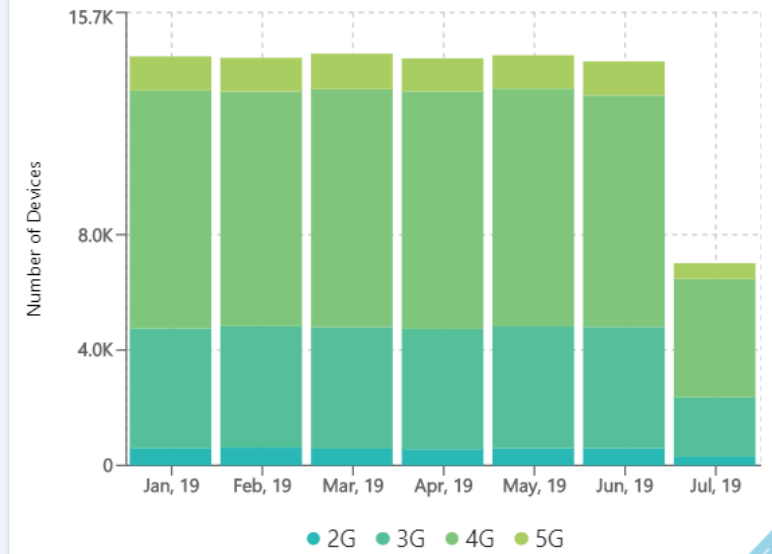
Top Registered Brands



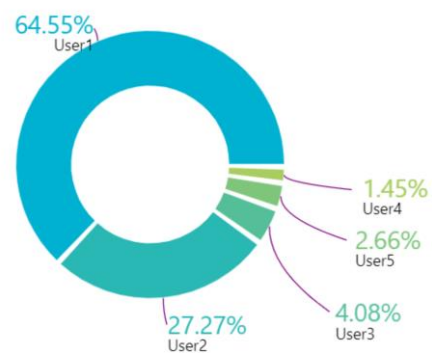
Top Registered Models



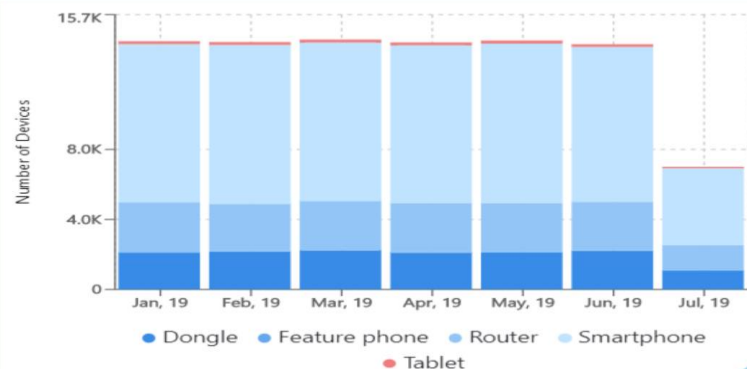
Device Technologies



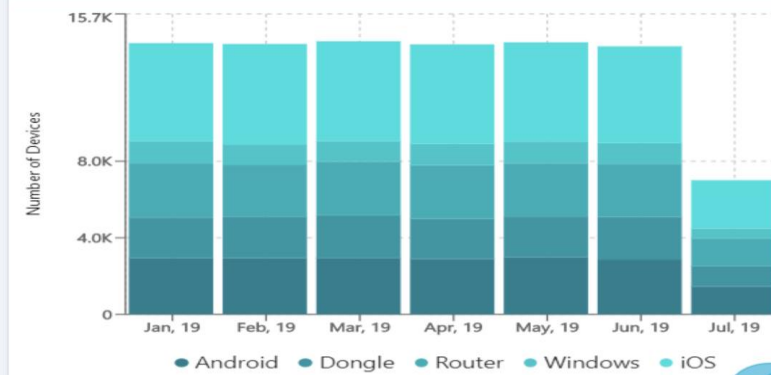
Device Top Importers



Types of Registered Devices



Devices Operating System



LSDS (Lost / Stolen Device Subsystem)

DIRBS View

Dashboard / LSDS

Reported Devices
1,662,772

Stolen Devices
1,410,984

Lost Devices
248,429

Recovered Devices
596,681

Pending Devices
712,169

Blocked Devices
350,436

Applied Filters:

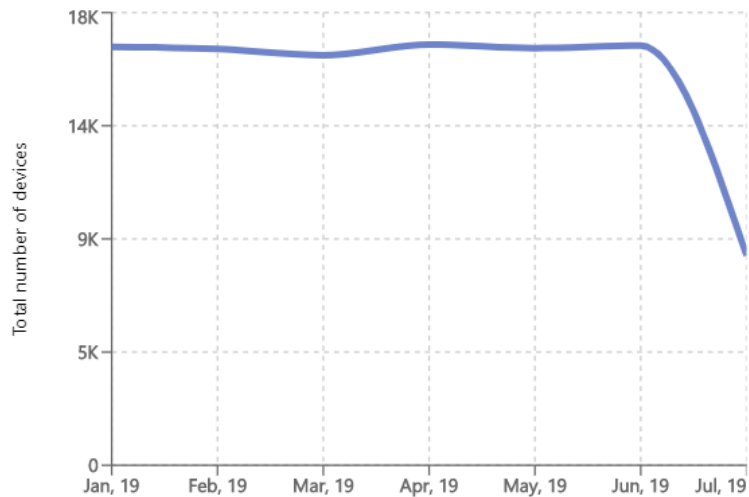
Granularity: **monthly**

Date Range : 2019-01-01 - 2019-09-25

Trend Quantity : 5

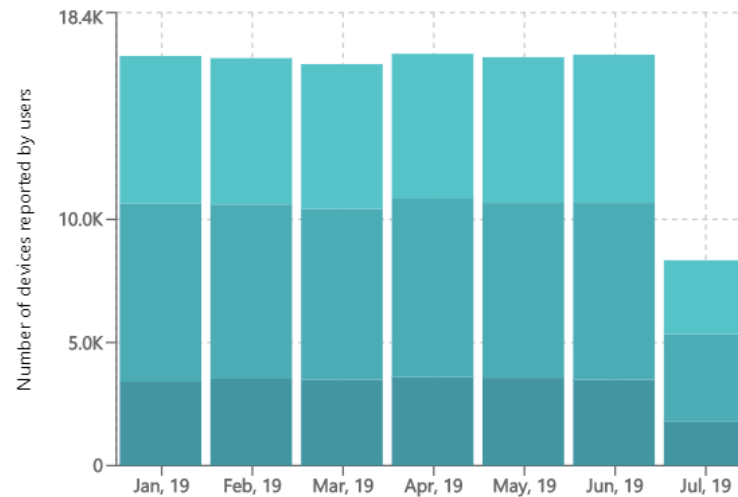


Number of Reported Devices



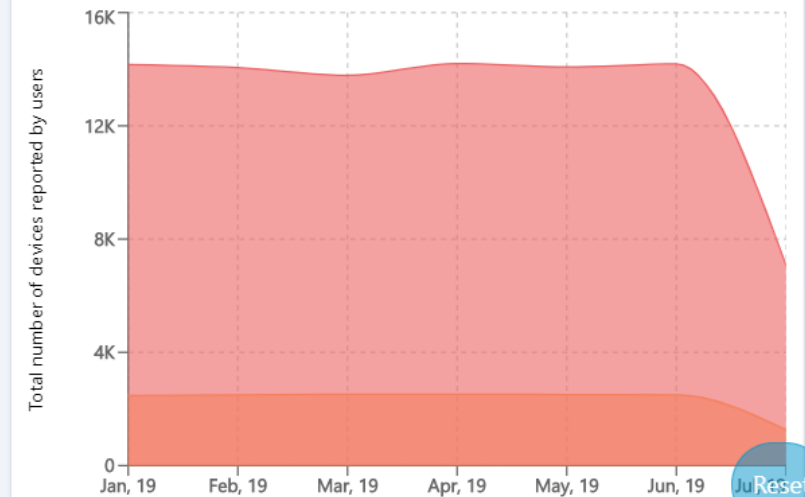
▲ unique_devices

Status of Reported Devices



● Blocked ● Pending ● Recovered

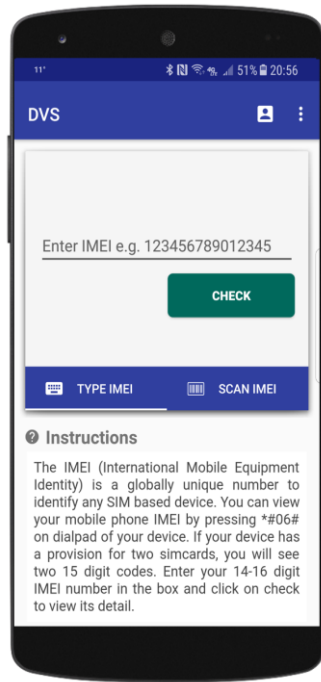
Incident Nature of Reported Devices



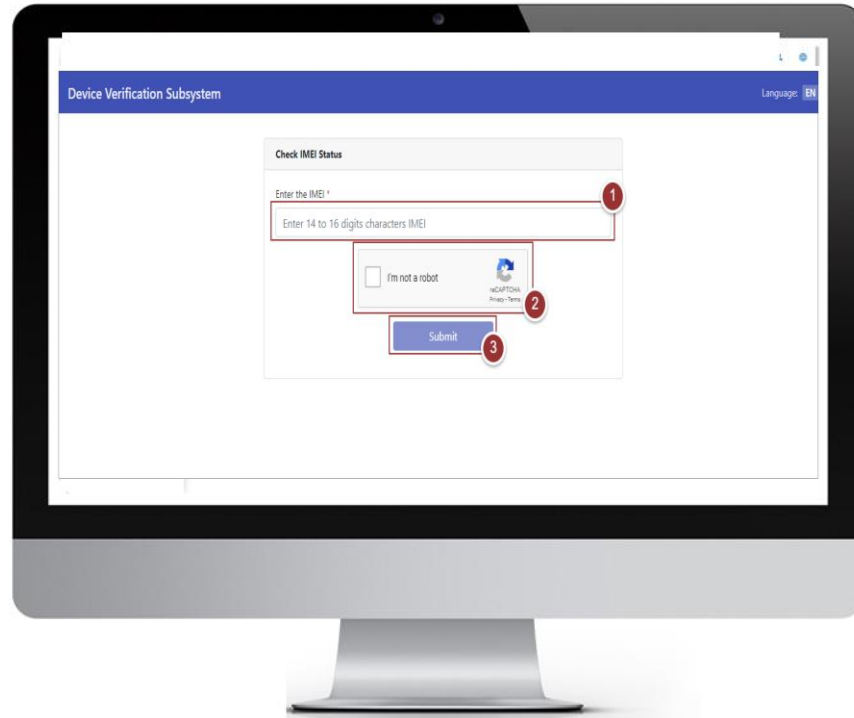
◆ Lost ◆ Stolen

Reset

DVS (Device Verification Subsystem)



Mobile App

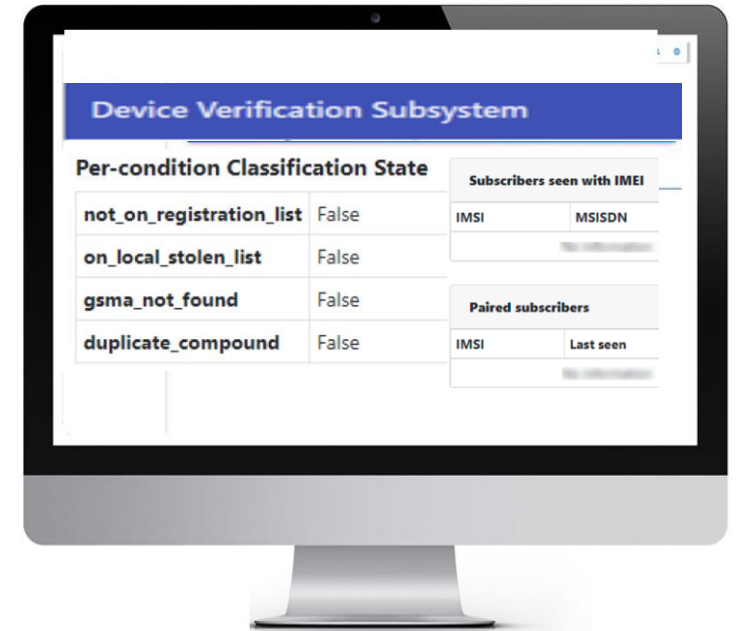
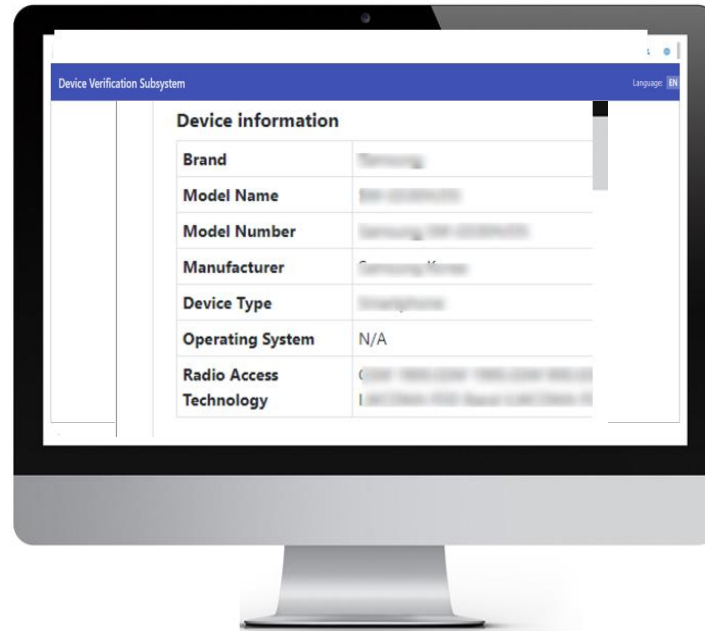
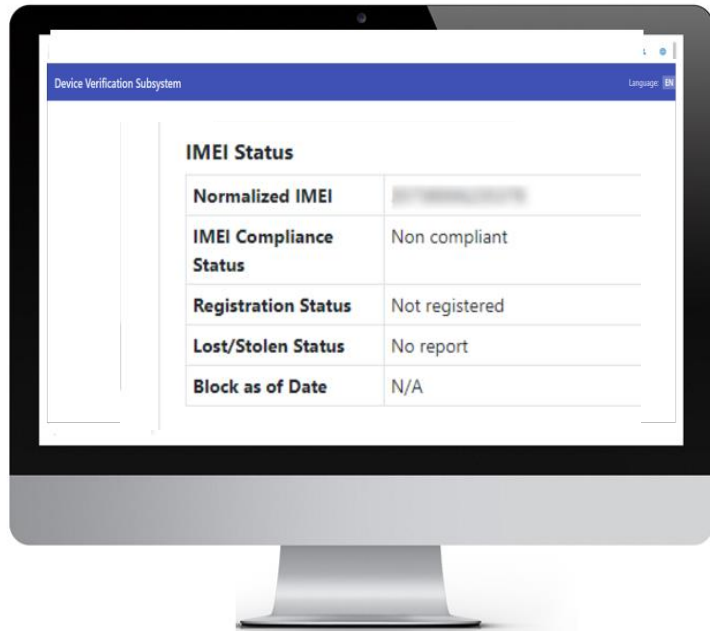


Web



Text / SMS

DVS (Device Verification Subsystem)



DIRBS Open Source CEIR - Freely Downloadable

Qualcomm Technologies, Inc. Shares DIRBS Software Platform to Address Counterfeit and Stolen Devices

Can be used to boost mobile ecosystem security around the globe

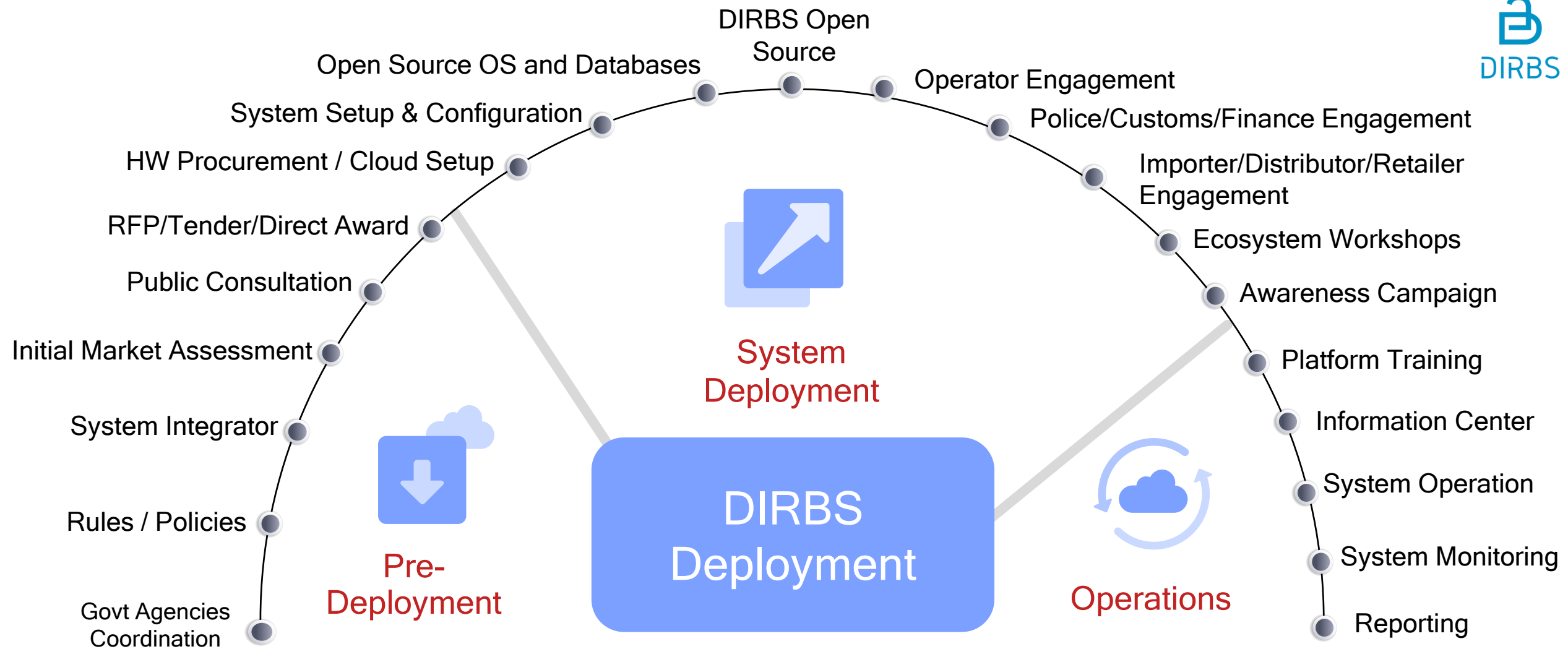
SEP 17, 2018 | SAN DIEGO

Qualcomm products mentioned within this press release are offered by Qualcomm Technologies, Inc. and/or its subsidiaries.



Qualcomm Technologies, Inc., a subsidiary of Qualcomm Incorporated (NASDAQ: QCOM), today announced it has shared its Device Identification, Registration, and Blocking System (DIRBS) platform as freely downloadable open-source software.

Qualcomm Technologies' DIRBS server-based software platform can be used to help identify counterfeit, illegal, and stolen mobile devices in a country. The DIRBS software platform will help regulatory agencies classify devices and generate IMEI-based lists for notification, amnesty, and blocking purposes. DIRBS has been successfully deployed in Pakistan, and deployments are anticipated in several other markets in the coming months.



DIRBS Implementation Framework

Why DIRBS Open Source CEIR



- Most Comprehensive Open source platform providing source code, transparency, collaboration and customization opportunities
- Standalone system alleviating the need for mobile network integration and interoperability that cause unnecessary cost, capacity constraint and resource burden on the operators
- Flexible/Configurable to adapt to local country regulations without the need for much customization
- Does not require strict binding of every single device to a given customer
- Provides tools for users to check device status before purchase
- Provides reporting and oversight for the government to ensure compliance
- DIRBS has the largest commercial deployments in the world!



What help can Qualcomm provide?



- Consultations and assistance in developing Policy and Regulatory Framework
- Technical Framework requirements consulting for system implementation
- Assistance in engagement with all required stakeholders
- DIRBS Platform overview
- System requirements consultation (local on-premise hardware or cloud)
- DIRBS Software Platform through Open Source
- Recommendations for qualification requirements for a system integrator
- Support ecosystem awareness campaign with examples and collateral/content

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Senior Director

Qualcomm Technology Licensing

mkamal@qualcomm.com



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