Improving the timing and quality of CEIR/EIR in multivendor environment

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The problem

When implementing the CEIR type of projects at a national scale, it is often necessary to integrate various systems of multiple vendors. The cycle of approvals for each interface with each of the vendors can take a significant amount of time and labor costs. **Let's briefly list what integrations you may need**.

1: Integration between CEIR and each EIR

- The implementation of a common IMEI registry in the country will not be effective if the lists formed in the central database are not used in the operators' networks.
- A mechanism is required to transfer lists or information for each individual IMEI from CEIR to EIR. You may also need to transfer data from the EIR to the CEIR.
- The SG11 working group is currently developing an addendum to the recommendations that describes such interfaces.

[2022-2024] : [SG11] : [Q15/11]

[Declared patent(s)] - [Associated work]

Work item:	Q.Sup.CEIR-EIR-int
Subject/title:	Common approaches and interfaces for data exchange between CEIR and EIR
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Supporting members:	Svyazcom LLC; Brazil; C-DOT India
Summary:	As quoted on the ITU-T Q.5050 series, CEIR can be used to combat counterfeit ICT devices, to combat the use of stolen ICT devices and for other purposes. However, implementing a CEIR is a complex project that involves and impacts multiple stakeholders, and may require different processes in each country. Therefore, to assist ITU members on implementation, this supplement aims to identify current industry approach on the data exchange between CEIR and EIR and propose common approaches and interfaces on this topic.
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	[SG11-TD1680/GEN (2021-12) (A.13 TD) 🔒]
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	See guidelines for creating & submitting ITU-T A.5 justifications

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2: EIRs shall interact with the operator's switching equipment

To manage real-time registration of mobile devices This task is solved by the **3GPP/3GPP2** standards, which describe the interfaces and commands for requesting IMEI checks.
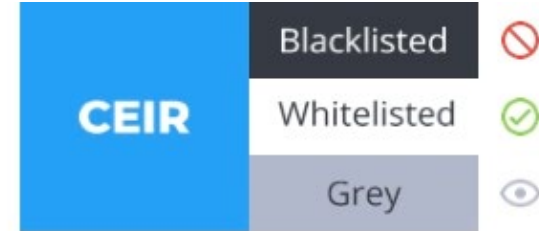
2: EIRs must interact with the operator's switching equipment

If the operator's EIR does not meet all the requirements for a unified CEIR/EIR system, **5 steps** can be used to improve the project time.

1. A CEIR supplier is requested to provide both CEIR and EIR elements. An EIR shall be in line with the requirements of the project.

2. The EIR is installed on the operator's network,

3. CheckIMEI requests are redirected to it (instead of the existing EIR in the network)

4. The new EIR proxies to the operator's legacy EIR all requests that it considers allowed.

5. In this way, the legacy EIR functionality is unaffected–only the network's IMEI registration control function is transferred to the new EIR.

3: Notifications from EIR and CEIR

- Consumer information is noted in **Q.5050 "Framework for solutions to combat counterfeit ICT devices"** as an essential factor in the fight against counterfeit ICT devices.

- The standardized SMPP protocol, which is supported by many solutions in the ICT industry, is well-suited for sending notifications.
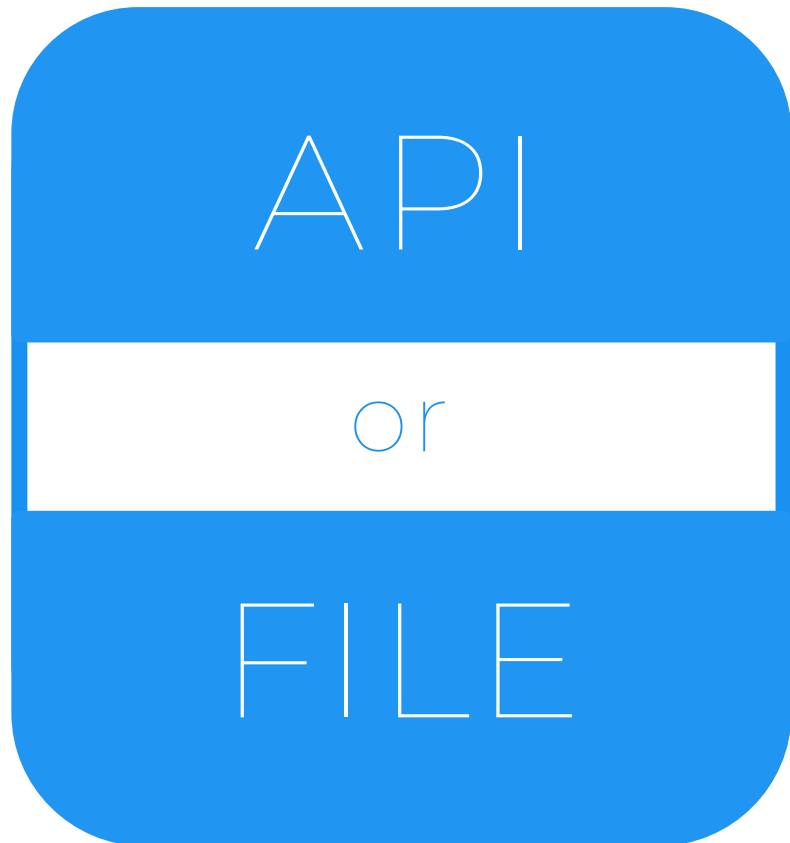
ITU-T Q.5050

Framework for solutions to combat counterfeit ICT devices

✅ Active, Most Current

4: The CEIR shall communicate with GSMA on the list of TAC Codes and blocked IMEIs

API

or

FILE

- GSMA provides two options for obtaining a list of TAC codes. The CEIR might need to support the implementation of these options:

  - API

  - Transferring a List to a File.

- It is also possible, but not necessary, to receive a worldwide blacklist from the GSMA. To obtain the blacklist and make entries to it, the file format described in the **GSMA SG.18** standard is used.

5: Integration of CEIR with payment systems and other financial organizations

Payment systems usually have their own well-documented API, as they are interested in effectively connecting with numerous customers.

API are well documented

APIs differ from one payment system to another

6: Integration with citizen's digital portal

■ A public portal where you can check IMEI or register is not implemented on CEIR resources, for example, it is a separate website of the communications service's regulator.

■ Ability to register IMEI from the personal account of the system of public interactive services.

■ Ability to check IMEI and register IMEI from the importer's personal account in the customs IT system.
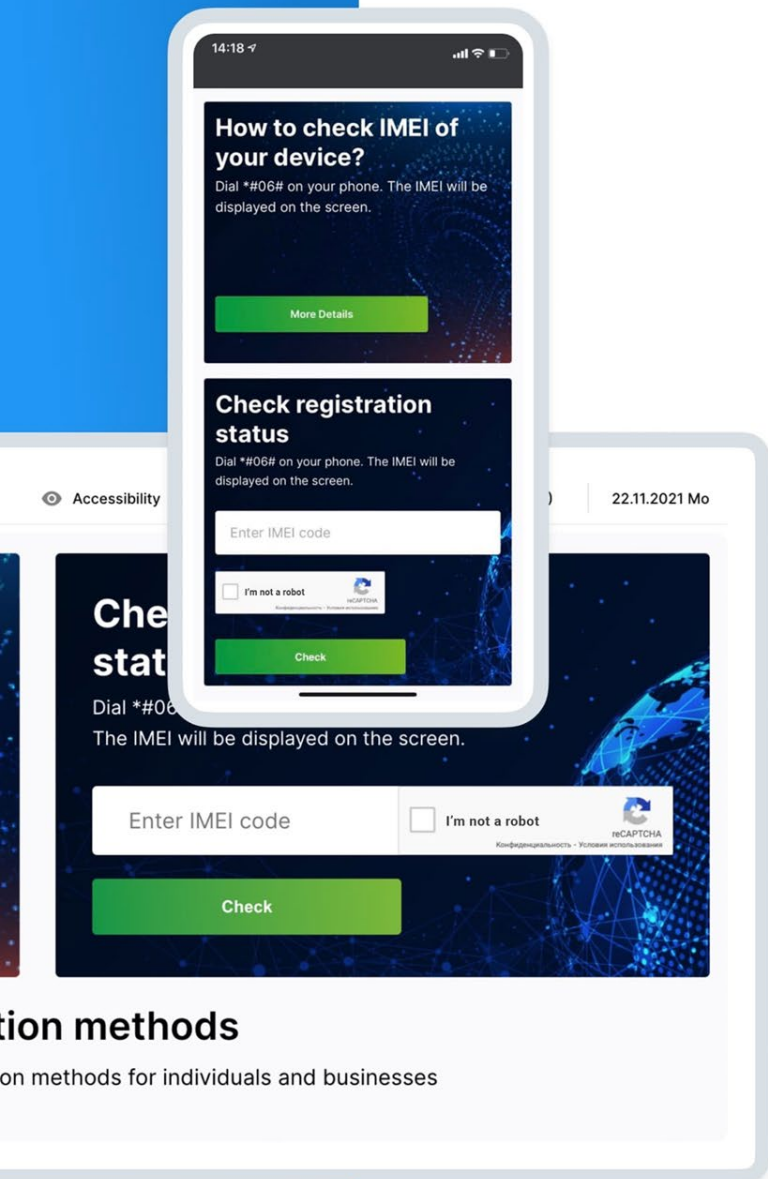
6: Scenarios implemented by CEIR

Thus, it is better if CEIR provides an API to a digital portal to perform its core functions

1

Processing CheckIMEI requests

2

Processing an application for whitelisting the IMEI of a particular device

3

Processing of the application for the list of devices into IMEI permission list

7: Interaction with numerous government IT systems

These integrations are unpredictable and are often the most difficult part of the project, as these organizations usually do not deal with new integrations as often and only sometimes have a team to develop IT solutions.

Government financial agencies (tax office, ministry of finances)

Telecom regulator

Law enforcement authorities

Local manufacturers

Importers

Vendors, white retail

Payment systems

MNOs

GSMA associations and 3rd parties

Customer

Summary of best practices

1. Form the main requirements for EIR systems within the framework of the project.

2. Interview all operators to find out if they have an EIR that satisfies the requirements of the project.

3. Plan integration with 1-2 payment gateways at the start of the project. You can expand this functionality later during the regular operation of the project.

4. Choose a CEIR vendor that supports the interfaces offered by the GSMA.

5. Choose a CEIR vendor that has an API for external clients to implement specific scenarios of its work. Determine whether the public web portal for IMEI checking/registration will be implemented by the CEIR provider or another vendor.

6. Define a list of governmental/departmental systems/databases with which CEIR will have to interact. Identify their capabilities.

Summary: standards recommendations

1. Integration between CEIR and each EIR:

    - Q.Sup.CEIR-EIR-int

2. Integration of EIR with switching equipment:

    - 3GPP TS 22.016, 29.002, 29.272, 29.511

3. Notifications from EIR and CEIR:

    - SMPP 3.4, 5.0

4. GSMA Integration:

    - GSMA Get Handset Details API,

    - GSMA SG.18.

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Sources for the project cost recovery

Source	Description
New customs payments	The share of legally imported mobile devices has increased from **0.3%** to **98.5%**
Device registration fee (adding IMEI to the CEIR whitelist)	Approximate calculations: ▪ There are **35 million** mobile subscribers (25-30 million devices) in the country. ▪ About **5 million** new devices are imported annually. ▪ One device may have 2 SIM slots (1.45 on average). ▪ Assume you charge **$2** for an IMEI registration, then the registration income will equal: 2 * 1.45 * 5 million = **$14.5 million** annually
Additional payments	For instance, for the certification of imported devices
Extra savings if purchasing CEIR and all EIRs from a single supplier	