

**EXTRACT:
INTERNATIONAL PUBLIC TENDER
2015LI-000001-SUTEL**

1. Introduction:

The Superintendencia de Telecomunicaciones (hereinafter referred to as SUTEL), the Costa Rican telecommunications regulator, published the invitation to bid for the public international tender named 2015LI-000001-SUTEL *"Acquisition of Central Equipment Identity Registry (CEIR) services"* (Contratación de la Entidad de Referencia de Terminales Móviles (ERTM))

This document is an extract of the most relevant requirements established in the bidding rules of the tender 2015LI-000001-SUTEL with the sole and only purpose to give a general description of the project and to invite any interested companies in the bidding process of this public international tender.

SUTEL hereby declares that this document is not and in any manner will constitute the bidding rules of this Project, nor it will modify them. All legal and technical matters of this tender are governed by the provisions stated in the document identified as 2015LI-000001-SUTEL *"Acquisition of Central Equipment Identity Registry (CEIR) services"* drafted in Spanish. In case there is a difference between the terms used in this document in English and the terms stated in the tender in Spanish, the Spanish version shall prevail.

2. Summary of the most relevant technical requirements of 2015LI-000001-SUTEL

2.1. Object of the tender

In the bidding rules, and in this document, which the interested parties may use as reference, are established the requirements for bidding to become the Costa Rican Central Equipment Identity Registry Entity (hereinafter referred to as CEIRE). The CEIRE shall implement the Centralized Equipment Identity Registry (hereinafter referred to as CEIR), which will be responsible to create a centralized data base or a group of data bases, of the International Mobile Equipment Identity (hereinafter referred to as IMEI), that allows the following:

- 2.1.1. The creation of an IMEI "Black List" data base that allows the real time exchange between the CEIR and the mobile network carriers (defined term for this document which includes the MNO and MVNO) that identify which equipment cannot be connected to the networks.
- 2.1.2. The creation of an IMEI "White List" data base that allows the real time exchange between the CEIR and the mobile network carriers that identify which user equipment (hereinafter referred to as UE) can be safely connect to the networks.

- 2.1.3. Provide SUTEL the necessary tools to identify and block the UE with altered, duplicated or cloned IMEIs through the analysis of data such as MSISDN, IMSI and IMEI provided by the mobile network carriers.
- 2.1.4. Empower SUTEL with the necessary means to discourage the burglary, theft and misplacement of the UE. The CEIR must be integrated with the GSMA data base, currently used in Costa Rica for this purpose.

2.2. Specific Objectives

With the purpose to accomplish the hereinabove mentioned, the following specific objectives must be met:

- 2.2.1. The selected bidder must install the necessary infrastructure of the CEIR, which can be located in Costa Rica or a remote location.
- 2.2.2. The selected bidder, must provide the service for a 5 year time period (60 months). At the sole criteria of SUTEL, the engagement may be renewed for a maximum of 5 years.
- 2.2.3. The selected bidder will be the CEIRE at the service of SUTEL in Costa Rica and will be responsible of the operation of the service, maintenance, support, update and management of the centralized data bases. Furthermore, the selected bidder must guarantee the complete interconnection of the CEIR with the mobile network carriers' platforms. The selected bidder must have a trial test site.
- 2.2.4. The selected bidder must comply with SUTEL's test plan. This plan includes at least tests of each mobile network carrier with the CEIR and joint testing that certifies the interaction between all the mobile network carriers and the CEIR.

2.3. Delivery of the CEIR

- 2.3.1. The time frame hereinafter referred may not be extended and any petition in this regard automatically disqualifies the bidder. The selected bidder shall have a maximum period of 180 calendar days to deliver the products requested in the bidding rules. In the aforementioned time period, all the products listed in the bidding rules must be delivered to SUTEL to its complete satisfaction, including but not limited to any requests of adjustment, amendment, modification or correction that SUTEL demands. The complete CEIR, including the interconnection and integration with the mobile network carriers must be displayed and delivered within the 180 calendar day time period, which includes the performance and interaction with SUTEL's platform tests and the complete functionality with the mobile network carries systems.

2.4. Budgetary resource, method of payment and taxes.

The payment will be executed as follows:

- 2.4.1.** During the 5 years of the contract, a quarterly payment that will be determined according to the price offered by the selected bidder associated with the development of the Project, which includes the capital and operational costs (CAPEX and OPEX), divided among the 60 months (20 quarters) of the Project. The selected bidder must detail each item (CAPEX and OPEX) separately. The hereinabove mentioned according to the following formula:

$$\text{Fixed Quarterly Fee} = \frac{(\text{CAPEX} + \text{OPEX})}{20}$$

- 2.4.2.** All the hardware, software, communication system and other devices required for the proper performance of the CEIR, shall be acquired as a managed service, for a period that may not exceed 5 years. The selected bidder will be responsible of the provisioning the managed service for the implementation, operation, maintenance, support, update and management of the CEIR in Costa Rica, which includes the upgrades and updates that must be done as a consequence of the regulatory policies ruled by SUTEL.
- 2.4.3.** The initial term of the managed service hereinabove described will be of 5 years, starting when SUTEL definitely accepts the system at its entire satisfaction. The term may be extended for another equal period prior to SUTEL's evaluation of the upgrades, replacement and renewal of the equipment and infrastructures, keeping the fixed quarterly fee.

2.5. General description of the CEIR

- 2.5.1.** In general, to accomplish the object of this tender, SUTEL requires to acquire the managed services of a CEIR, that implements, generates, manages, keeps and integrates a centralized data base for the IMEIs "Black List", "Grey List", and "White List". These data bases must be updated in real time with the information of the lost and stolen IMEIs reported by the mobile network carries and must be able to detect the invalid IMEIs. As described in the following figure:

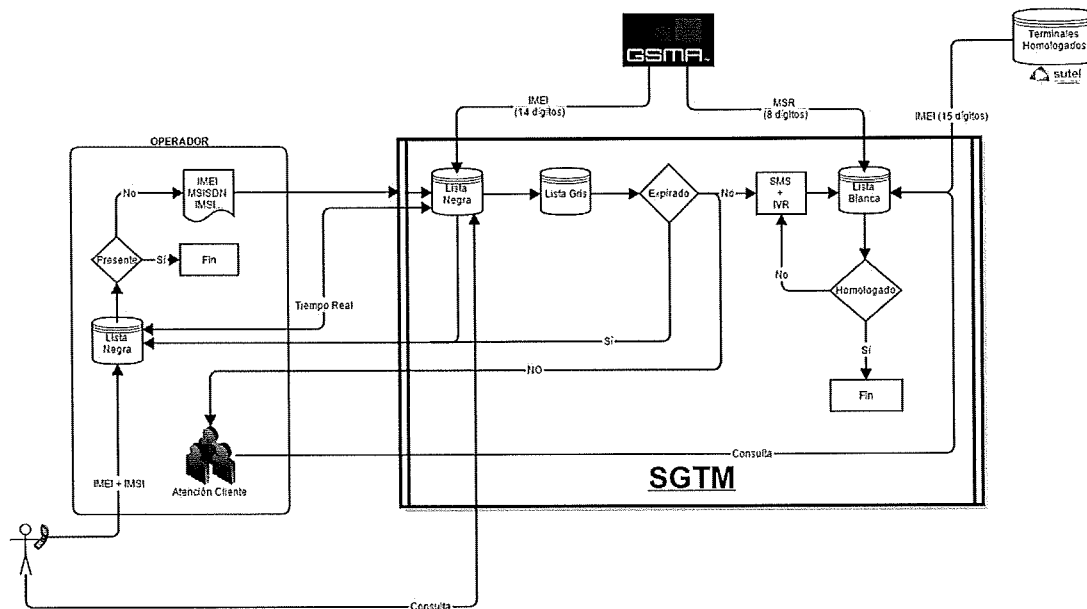


Figure 1: General description of the CEIR

To accomplish the hereinabove mentioned, SUTEL aims to acquire such managed service for a 5 years period. The system must be a key in hand solution, meaning that the selected bidder is the sole responsible to design the technical capacity of the equipment (hardware, software, interface, and communication system with the mobile network carriers) required to implement the CEIR; as well as the structure of the data bases needed. The selected bidder will be the sole responsible of the operation, maintenance, support, update and management of the CEIR.

Additionally, the selected bidder will be responsible to provide the interfaces required for the interconnection of the SMSC platforms of the mobile network carriers that allow the notification through an SMS and an Automatic Voice Notification System (hereinafter referred to as AVNS) to the users. Furthermore, the selected bidder will be responsible to develop a WEB module that allows the users to check the current status of their UE through the IMEI code.

All the information gather through the CEIR, as well as the data bases created are SUTEL's sole property. The selected bidder is not entitled to any right over such data bases nor the information obtained through the computing of the information saved in the CEIR.

2.6. Specific description of the CEIR

2.6.1. Main specifications of the system:

2.6.1.1. The CEIRE must include a centralized data base that allows to register the UE that can be connected to the mobile carrier networks (White List), the UE in an irregular condition (Grey List) and the UE that cannot be connected to the networks (Black List).

2.6.1.2. The CIERE must design and develop a module that provides a solution to identify the equipment with an altered (improper and/or fraudulent) IMEI (the TAC has not been allocated by GSMA and/or the verification of the Luhn code fails), falsified UE, including but not limited to clones. It must also allow the storage and analysis of the MSISDN, IMSI and IMEI data of the UE. The CEIR must guarantee, that in the event that the system identifies an IMEI with one or more of the aforementioned conditions, the system will notify the user of that condition through a SMS and an automatic voice call.

2.6.1.3. The CEIRE must be responsible to verify the integrity of the IMEIs connected to the networks of the mobile carriers, through a data base named "White List" of IMEIs. This data base must register the information of the UE that can be connected to the networks. This data base will be made of the valid TAC mobile summary report (hereinafter referred to as MSR) registry generated by the GSMA and the IMEIs of the UE certified by SUTEL.

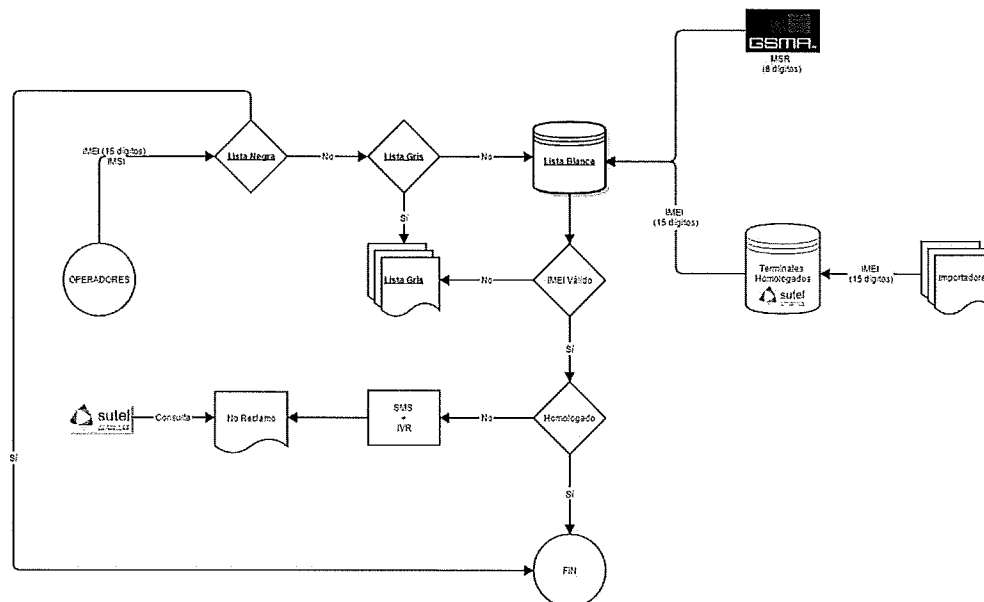


Figure 2: Diagram of the "White List" workflow.

2.6.1.4. The CEIRE using the "White List" information will verify the IMEIs connected to the network of each mobile. It must verify the integrity of the IMEI and check if it is the IMEI of a SUTEL certified UE. In case the CEIR detects an IMEI whose TAC is not allocated by the GSMA, this IMEI will be listed in the "Grey List". The CEIR must compare the IMEIs with valid TAC codes and with the SUTEL's certified UE data base.

2.6.1.5. In the scenario that the CEIR identifies SUTEL's non certified UE, it must notify the user via SMS and through the AVNS platform (the frequency and content of the SMS and the automatic voice will be configured by SUTEL).

2.6.1.6. The CEIRE must be able to receive from the mobile network carriers 14 or 15 digit IMEI codes. In case the IMEI is 14 digit long, the ERTM must calculate the 15th digit using the Luhn code.

2.6.1.7. The CEIRE must create a “Grey List” with all those IMEIs in an irregular condition. When an IMEI enters the aforementioned list, it will stay there for 15 days (term that can be modified by SUTEL). The CEIR must inform the user through a SMS and an automatic voice call through the AVNS. Once this term elapses, the ERTM must allow the following actions:

- Transfer the IMEI registered in the “Grey List” to the “Black List”, or deactivate it in case it is a duplicated IMEI
- Link the number of the IMEI registered in the “Grey List” to a phone number provided by the mobile carrier. This will be the only phone number that will allow to establish calls from that specific UE IMEI for a time frame established by SUTEL.
- Keep the IMEI register in the “Grey List” for a time frame determined by SUTEL before transferring it to the “Black List”.

2.6.1.8. The selected bidder must provide a platform to the mobile network carrier that allows it through an IMEI search, to find the brand and model linked to such number in the GSMA data base.

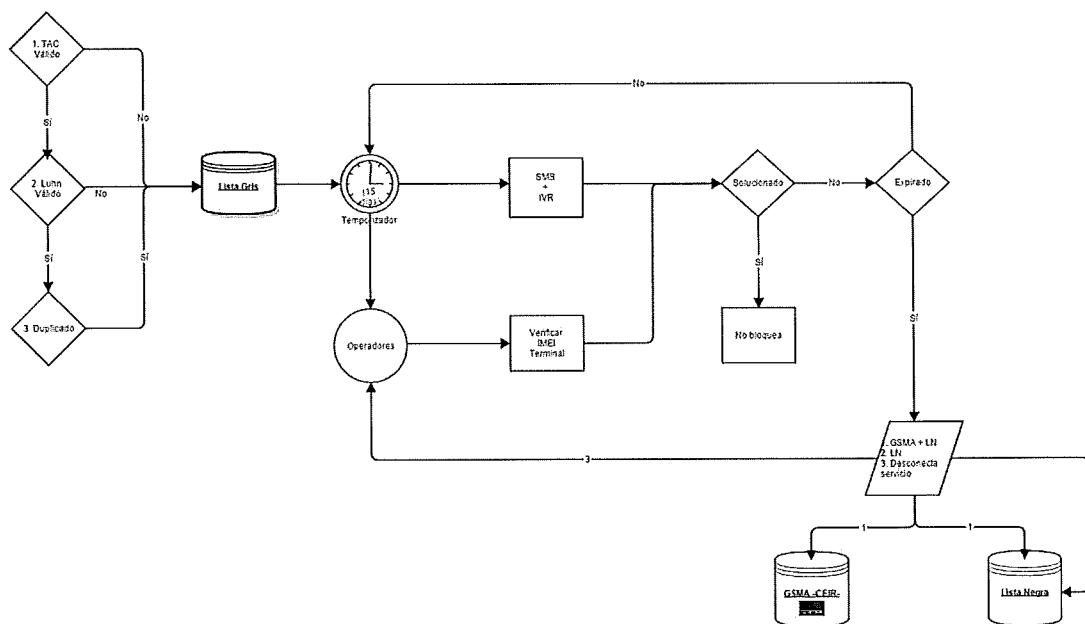


Figure 3: Diagram of the “Grey List” workflow

2.6.1.9. The CEIR must consider – in the aforementioned order- at least one of the following three conditions to register an IMEI in the “Grey List”:

- Invalid TAC:** it's when the IMEI has not been allocated by the GSMA.

- b. **Invalid Luhn code**: this condition, which is not supervised by the GSMA, tells that the IMEI has been altered.
- c. **Duplicated**: when the IMEI has a valid TAC and Luhn code, however this IMEI is being used simultaneously by two or more UE.

2.6.1.10. The selected bidder must design a website that allows the users to verify if their UE IMEI is in a "Grey List". At the same time, the CEIR must inform the mobile network carriers that the IMEI is registered in the "Grey List". Additionally, the CEIR will inform the user 48 and 24 hours (term that can be modified by SUTEL) prior to disconnect the service.

2.6.1.11. In case the problem isn't solved, the CEIR must take the following actions:

- a. **Invalid TAC**: the IMEI is notified to the mobile network carriers to block the equipment nationwide and to the GSMA to block it internationally.
- b. **Invalid Luhn code**: since the 15th digit of the IMEI code is not relevant for the GSMA, this cannot be registered in such organization. However, UE IMEI must be blocked nationwide.
- c. **Duplicated**: since it is a valid IMEI code, the user shall be responsible to prove that his UE brand and model matches the TAC code. In absence of such action from the user, the UE IMEI will be blocked nationwide.

2.6.1.12. The CEIRE must create a "Black List" with the UE IMEIs that cannot be connected to any mobile carrier network. This data base must include the IMEI codes reported by the mobile network carriers as stolen, lost or registered at the GSMA.

The exchange of the data bases of the CEIR with the mobile network carriers must be done in real time. The exchange with the GSMA must be done every 8 hours (time frame that can be configured by SUTEL). In all cases, the CEIR must register the time and date a new IMEI is listed. It must also have a registry of the acknowledgments from the mobile network carriers that a new IMEI is included in the "Black List". Additionally, it must offer a website that enables the users to verify if their UE has been reported as stolen or lost.

The design of the CEIR must allow SUTEL to enter and/or remove from the system one or more IMEI codes – through a list in CSV format.

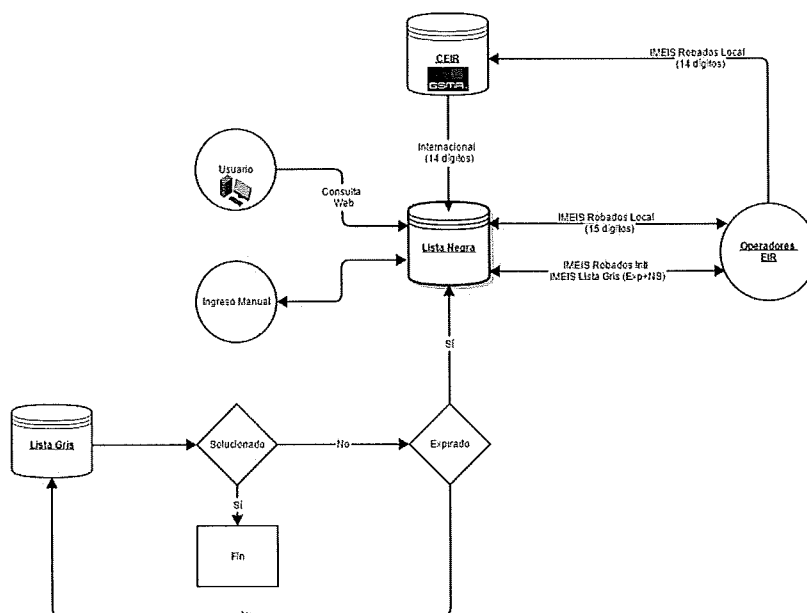


Figure 3: Diagram of the “Black List” workflow

2.6.1.13. The “Black List” data base will integrate the input of each mobile network carrier and consolidate the IMEIs and send it to all the mobile network carriers connected to the CEIR in real time.

2.6.1.14. The CEIR must allow the registry and dissemination of the IMEIs listed in the “International Black List” of the GSMA in a manner that the reported UE cannot be activated in other countries. The update of aforementioned list will be done every 8 hours, or as configured by SUTEL.

2.6.1.15. The CEIR’s website must allow the parties designated by SUTEL to manually enter the IMEI’s into the “Black List” safely and free of charge.

2.6.1.16. The CEIR must guarantee that the “Black List” allows in real time to remove from such list the IMEIs that have been recovered by the users. The user must notify the mobile network carrier that the equipment has been recovered and request its activation.

2.7. Automatic voice notice system (AVNS):

The users must be notified from the CEIR platform, using an additional method to the SMS, through an AVNS that generates calls to the users (the wording will be established by SUTEL) and must comply with the following guidelines:

2.7.1. The voice message sent to the user must be recorded in high quality and in Spanish, using Costa Rican pronunciation. This recording must be done in a professional studio.

- 2.7.2. With the purpose to analyze the effectiveness of the generated calls, the CEIR must store for a minimum of 3 years the CDR's (Call Detail Record).
- 2.7.3. The platform to make the calls must use the SIP standard for VoIP.
- 2.7.4. The selected bidder must implement a Text to Speech module as part of the AVNS in Spanish with Costa Rican pronunciation or at least Latin-American pronunciation.
- 2.7.5. The selected bidder must use codecs equal or superior to the G.729, G.711 type (*A-law* o *μ-law*).
- 2.7.6. The call must be originated in the CEIR platform and received at the UE with no cost to them. The cost of the calls must be assumed by the selected bidder.
- 2.7.7. The bidder must take into consideration in its design the hardware and software of the platform and the needed technical capacity that allows a total of 10 simultaneous calls to the users, which SUTEL may request to be extended to its double.

2.8. Maintenance and support of the CEIR

- 2.8.1. It is the selected bidder sole responsibility to provide the necessary support and maintenance to the system and platforms of the CEIR.
- 2.8.2. The selected bidder must provide the necessary support and maintenance to the CEIR data bases, install the upgrades, patches, updates and to backup them, among others.
- 2.8.3. The bidder must guarantee that the CEIR has the necessary staff and infrastructure to operate a HelpDesk, which must include, but not be limited to the following functions:
 - 2.8.3.1. Duly trained staff for the research and analysis of the CEIR logs, in a way that is possible to determine and correct the problems in the operation of the platform, response to the request and questions of the network carriers and the users.
 - 2.8.3.2. A HelpDesk for the network carriers connected to the CEIR and SUTEL for the attention and Troubleshooting as well as the answer to any technical questions.
 - 2.8.3.3. The HelpDesk must provide phone assistance and an online attention system that register the breakdowns 24/7 (24 hours, 7 days a week) the 365 days of the year. It must have the CDR's of all the phone calls, emails and web requests received.

2.9. Guidelines for the WEB design:

- 2.9.1.** The website must have a graphic interface that follows the look and feel of SUTEL's website and its visual identity manual. The graphic design should follow the guidelines and design lines of the corporate identity of SUTEL. SUTEL will provide the CSS files for the design of the website.
- 2.9.2.** The website should be compatible with the most popular Internet browsers such as: Mozilla Firefox, Google Chrome, Microsoft Internet Explorer, Safari, and their most recent versions.
- 2.9.3.** The website should be accessed from any Smartphone, Tablet, or personal computer, responsive web design (RWD) in order to ease the visualization process from the user.
- 2.9.4.** The website must be accessible with SSL certificates. For this propose SUTEL will provide the wildcard for .sutel domain. The website must have reCAPTCHA security mechanisms for the IMEI search.
- 2.9.5.** The website shall be developed in a standard programming language. The selected bidder, once the term of this tender has elapsed, must hand over to SUTEL all the data bases product of this tender in SQL format.
- 2.9.6.** The website must have an application that allows SUTEL to easily modify the information that is shown to the visitor of the website, allowing at least the modification of the fonts, forms, sizes, logos, colors, location and type of the elements.
- 2.9.7.** The website must be hosted by the selected bidder, who must be sure that has enough bandwidth that guarantees the user a visualization speed of less than 3 seconds for one hundred concurrent users