

# i-RPS and Blockchain as Number Portability Solution

## How i-RPS and Blockchain technology can help CSPs and customers

As Centralized Routing Engine, i-RPS enables a centralized control of any *inter-networks* and *intra-networks routing* providing a single point of access to the overall routing, traffic engineering and the policy management of telephony and multimedia services in all IMS, NGN, PSTN, PLMN networks, thanks to its multi access protocols suite.

Besides to Routing Intelligence and Service Brokering capabilities, i-RPS includes the Integrated Service Control Function that manages network or subscriber based services and implements service logic database functions such as Number Portability (NP) and other advanced services.

Number Portability is a core service in Telco Networks: it allows subscribers to change Communications Service Operator (CSP), keeping their own phone number and catching the best offers provided by other CSPs, and ensures the competition in Telco markets (Fixed and Mobile).

Currently, the NP service implementation is slow and complex: it is based on a centralized database for all the CSP changes with periodical local database updates and it is subjected to the Country's specific approach, with errors and delays during the database alignments. Moreover, the process cannot handle a high rate of requests and is not suitable in scenarios with a large number of operators or complex porting scenarios.

In Italtel proposition the Number Portability service is provided by i-RPS and Blockchain technology.

The simplest way to think of Blockchain is a large distributed ledger that stores records of transactions: it is replicated and largely spread over the network. Every time a transaction occurs, all its details are collected in a new block, broadcasted to all ledger instances for updating.

Once the transaction is validated by the peer-to-peer network, that block is linked to the previous related block, and so on, generating the so-called Blockchain. This chain is cryptographically secured.

If now we consider a transaction as the CSP porting request, we can apply the Blockchain concepts to the Number Portability process.

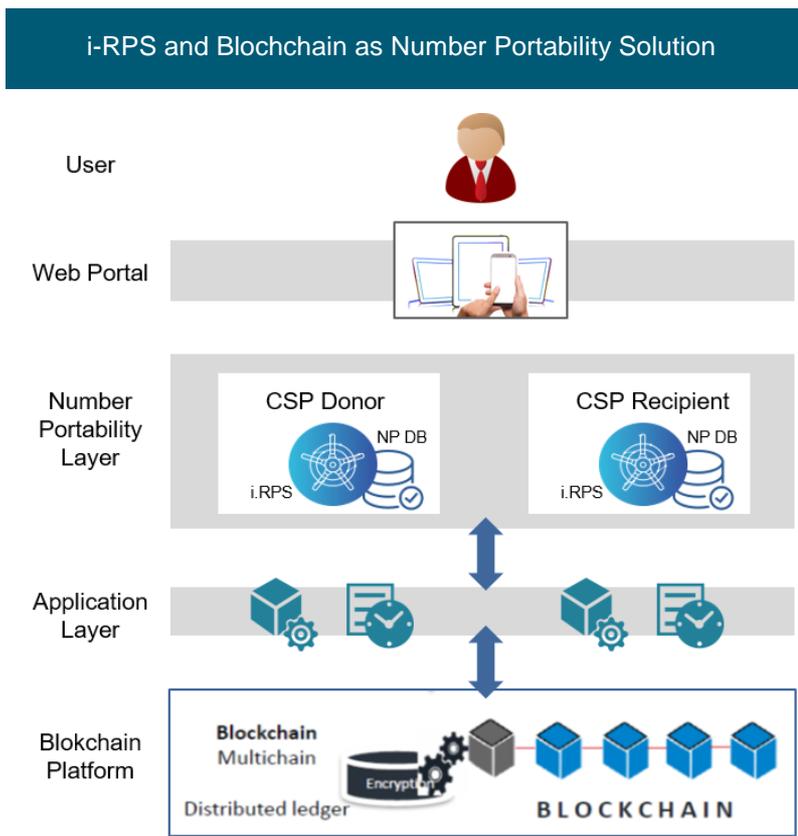
i-RPS is designed to be highly scalable and so perfectly suitable to integrate Blockchain technology in NP process:

- Portability Entries Configuration: up to 1 Billion
- Transactions: up to 500 Millions per day
- Traffic: several thousands of sessions/second
- ROI: fast break-even point for the investment (around one year)



## Solution Description

Our solution integrates the Italtel Centralized Routing Engine in Blockchain technology through a *dedicated interface* that becomes a *distributed ledger* for the Number Portability service. The NP functionality evolves to a Blockchain node and share the NP details in nearly real-time, providing a new customer experience where the user itself can directly require the CSP change and proposing a model that moves from a centralized approach to a distributed one.



Through a web portal or a specific app, the user is authenticated, applies for the porting request and sets the payment method for the service: in the Blockchain-empowered NP process a new block is generated, with all details (subscriber data, phone number, CSP Donor, CSP Recipient, payment method, etc) and broadcasted. Once the porting request is processed, authorized and accepted, all the i-RPS nodes in the Blockchain network update their respective ledger.

## Main Advantages

Blockchain technology provides by design the requirements of security, confidentiality, non-repudiation and immutability of the data entered. These features are highly functional if applied to Number Portability solutions and together with i-RPS they contribute to solve many issues in current solutions and bring many benefits.

First of all the concept of distributed ledger avoids the issues of single point of failure as all the parties involved are automatically in sync and able to have the whole view.

Besides, a NP process based on the Blockchain significantly reduces the local database update operations, without additional loads for the CSPs, and delay times in the process since that the blockchain paradigm acts in a nearly real-time distributed way and records are maintained with simplified operations and processes.

Finally, to provide the best of the service, the Number Portability overall process may be handled as a Smart Contract that allows a greater user autonomy, a higher speed in agreements and automation of any reconciliation process, reducing any cost of litigation between the user and the operator and between operators.

i-RPS Number Portability powered with Blockchain is not limited only to the application of the distributed ledger but aims to propose an end-to-end service including the use of Digital Identity for a complete and ready-to-deploy experience. Italtel can lead the Service Provider in this technology evolution path with i-RPS, a product NFV-ready, now Blockchain-enabled, and with its acknowledged capabilities of system integrator of complex and innovative solutions.



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