



Real Time Charging System

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Abstract

With focus on simplicity and innovation, the Sicap's charging products evolve to address current and future requirements for real-time convergent charging. The modular architecture, flexibility and powerful configuration tools enable operators to differentiate from competition and to cost-effectively charge ALL subscribers for ALL services.

The need for simplicity, flexibility and cost reduction

In mature or emerging markets, Communication Service Providers (CSPs) constantly seek to differentiate by offering new and innovative services to their subscribers. Throughout time, it was not technology, but the means to charge for new services that most challenged the operators. Take for example SMS for prepaid or data services, where the technology was available far before the billing systems were ready to charge for it.

And in time, due to this pressure of offering new services, the operators' charging infrastructure grew and became more and more complex, with highly customized prepaid and post-paid charging systems, with systems doing billing for data services only, with charging gateways and enhanced mediation platforms. On top of that, operators now want to offer most - if not all - services in real-time to all their subscribers.

For this reason, in today's complex environments operators work in adding new pricing models and innovative offerings usually implies a cross-functional project and change requests to the billing vendors. Furthermore, there are many cases when there is no business case due to the high costs involved.

A simplified architecture is addressed by convergence. One charging system for all subscribers and all services. It has strong drivers such as reduced operational costs, unified customer view and service offering, reduced time to market for new services, enhanced real-time capabilities for all subscribers. It has also constraints related on one side to technology and products available on the market and on the other side related to the costs involved, high risk of a complete replacement and uncertain business case combined with the return on investment on the existing legacy systems.

Sicap's Real Time Charging

Sicap's core competency is real-time charging. With modular component modules, Sicap's Real-time Charging Core provides the operators complete flexibility in defining innovative service offerings with *close to zero development costs with extensive configuration capabilities*.

Although as a general concept real-time charging reduces fraud exposure and enhances the customer experience, it has costs attached which are not always balanced with the benefits the operator gets. From that perspective, Sicap supports combined real-time/off-line charging, enabling the operator to minimize the network and infrastructure operational costs while maximizing its profits.

As the pillar of the Sicap's charging solutions, the Real Time Charging Core is part of the Sicap's complete prepaid billing system offering (PPB). It has enabled Tier-1 operators to differentiate from competition by launching innovative services; it has proven horizontally scalable and easy to enhance its features; it has proven to be a reliable high availability system.

The system evolves. Keeping a focus on simplicity and flexibility, the account management is further enhanced to manage post-paid accounts and 3rd party providers' accounts to become a consolidated account management fulfilling convergence requirements. While the heart of the system, the Rating Engine with its simple to use interface continues to support most complex requirements for pricing and settlements.

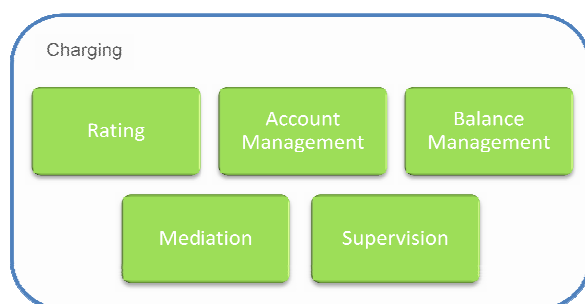
A closer look

The core

Sicap's Real Time Charging consists of independent component modules with clear functionalities. We believe that de-coupled modules greatly reduce the complexity and costs attached to functionality enhancements. Furthermore, this broadens the operator's area of services it can support and increases the scalability of the system.

This is the reason we choose to have an account management system independent of rating. Complex pricing models specific to each operator only require rating configuration while the account management functionalities are usually common to all operators and require no product adaptation.

When it comes to rating, we believe the operators must have complete flexibility in configuring their services' charging. That is why the rating engine comes with a powerful configuration tool that can support virtually any business requirements. We build on that and avoid having multiple individual features available out of the box that may fulfil all current requirements but limit the operators' future possibilities. In addition, Sicap's Loyalty Manager product can provide real-time loyalty promotions, even further increasing customer satisfaction and contributing to an overall low churn rate for the operator.



Account and Balance Management

Sicap's Account and Balance Management components provide a unified customer view on all subscribers and accounts. They manage in real-time customer information, subscriptions, subscriber life cycles and various balances.

The prepaid/post-paid frontier exists since the beginning of times. Operators have initially created it by having two business models addressing the same market in different ways. But soon realized subscribers in the end have the same needs and require the same services. Sicap sees prepaid and post-paid only as a payment method, enabling operators to focus on providing innovative services and let the subscribers choose how they will pay for using them. To enable that, subscribers can choose for example to have credit in advance, balance transfers or purchase card validity.

Subscriptions with balances (bolt-on or buckets) are a common marketing tool to stimulate usage and increase operator's revenues. Customers are attracted to bundles for the price reduction they are getting and for the increased control over their communication cost. Operators today require complete and unlimited flexibility in defining such services, including amongst others multiple

balances for one service and shared balances between different accounts, monetary (in currency) or non-monetary (minutes, SMSs) balances. Furthermore, customers may subscribe to multiple service offerings that in the end lead to more balances. It is then Sicap's Rating that has the capability to handle charging and choose the correct combination of balances to be used for each call.

Real-time charging imposes high availability and high performance levels. The time required to deliver a communication service should not be influenced by the process of charging it in real-time, in a sense that the extra time required to charge for the service should not be noticeable to the end-users. Sicap's Account and Balance Management components have been optimized over time and provide high throughput with low response time charging interfaces to assure carrier grade availability.

With prepaid/post-paid convergence in mind, all communication services that can be charged with the Sicap's products can be offered one time or as recurring services – e.g. subscriptions renewed at regular time intervals. The flexible service renewal mechanism allows the operator to provide the same services to prepaid or post-paid accounts, with the possibility to charge the subscriber online from its monetary balances or post-paid on its invoice.

Control over costs is what many subscribers need in order to use various services such as premium content or data services while roaming. Multiple balances, spending limits, wallets are just some of the features that address this need, having in the end a more confident subscriber more likely to use services that increase the ARPU for the operator.

Rating Engine

Over time the gap between prepaid and post-paid offerings has been constantly reducing. If in the beginning prepaid subscribers were seen as low ARPU compared to the post-paid subscribers and operators were only offering basic prepaid services, the situation has changed. New services targeting clear prepaid subscribers segments are constantly being launched by operators. Furthermore, operators today are aiming to offer the same services to prepaid and post-paid subscribers, this being in fact one of the drivers for convergent charging platforms.

Traditionally, prepaid vendors and their charging solutions were focused on the high performance requirements that had to be met. In contrast, post-paid vendors had no performance pressure and could offer more complex services to a more segmented subscriber base.

Although initially used in prepaid charging, the Sicap's rating engine fully supports any convergence requirement an operator may have. It has evolved together with more and more demanding requirements for prepaid charging, supporting today, in a flexible and configuration-only manner, complex charging models and different subscriber types.

Operators are able to charge each subscriber according to various services they have subscribed to. The rate applied depends on the balances – monetary or non monetary – each subscriber has. Real-time specific rating functionality such as charging for quanta in advance or providing information on how much a subscriber can talk based on his low balance have also been enabled.

On top of that, Sicap's Rating Engine provides all this functionality as a stand-alone, independent module with a powerful configuration tool that enable the operator's marketing and technical departments to in-source the process of introducing new services without any core product/plugin development. In the end, this translates into reduced cost and time to market for innovative services to gain competitive advantage.

Rating and loyalty. In competitive markets operators require advanced loyalty programs to reduce high churn rates they are facing. As loyalty is not core functionality in existing prepaid and post-paid systems – or it exists but with limited features - operators need to implement an independent loyalty system that enables them to reward and stimulate customers' usage.

Sicap provides operators with its Loyalty manager, a powerful system that supports virtually any promotion or reward scheme. Integrated in the real-time charging process, it can award benefits and provide loyalty advice immediately after or even before subscribers make calls - such as for example 10% tariff reduction for silver subscribers during summer months. Compared to off-line processing, real-time loyalty advice broadens the available types of loyalty schemes an operator can provide, contributing to an increased customer experience and loyalty.

Network integration.

If for traditional post-paid systems the network integration for charging was the CDR files transfer, real-time charging requires a real-time interface with the network, usually using the CAMEL or Diameter protocols.

In a typical real-time charging architecture, a Service Control Point (SCP) manages the integration between charging components and the network elements. Sicap provides operators with its own SCP, the Sicap Open Call Platform. Furthermore, with its modular architecture, Sicap can and has proven experience in integrating with any SCP, which meets the requirements for independent vendors for network and billing that some operators have.

In addition, Sicap's portfolio includes a USSD Gateway and a platform for voice value added services deployed at various operators around the globe. These can be easily integrated with the charging products, providing the operators enhanced functionalities and innovative services. It also proves Sicap's expertise in dealing with complex requirements related to integrating components in the real-time network.

Sicap's Prepaid Billing System (PPB)

The Sicap's PPB product is a complete prepaid billing platform offering deployed for Tier-1 operators. With Sicap's Real Time Charging Core as its pillar offering horizontal scalability to support any number of subscribers, it comprises further stand-alone business support component modules to provide the required functionalities for a complete prepaid billing system:

- Provisioning Module
- Customer Care
- Loyalty Manager
- Replenishment Manager
- Reloads Management

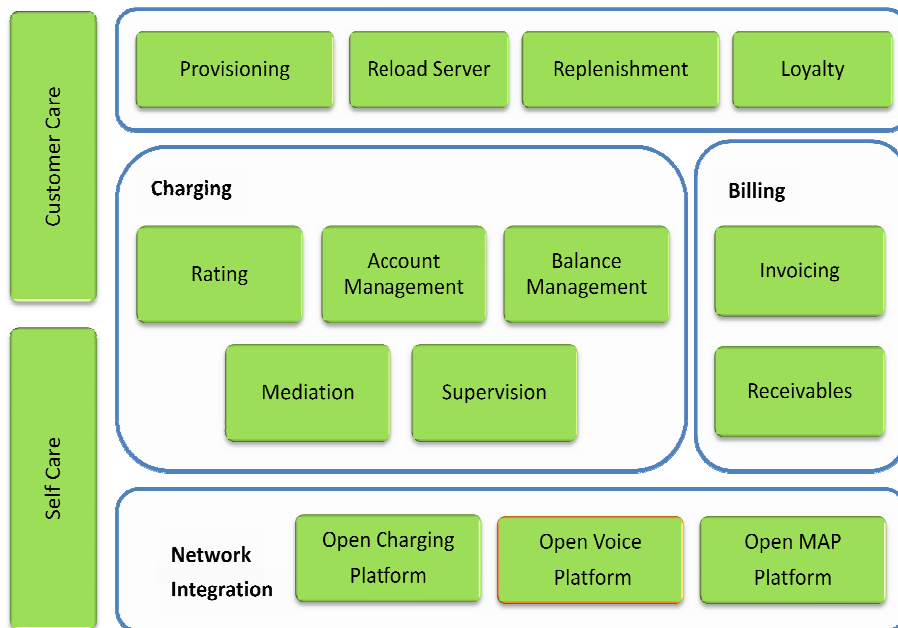
Towards convergence

Convergence is increasingly important for operators worldwide. We see the convergence advantages and we enhance our modules and overall products with a focus on flexibility and making them independent of charging models, services and types of accounts/payment methods.

Our vision with the Charging System is to be able to put a price on every type of transaction the subscribers make and to manage their balances, whether post-paid or prepaid, monetary or non-

monetary, service specific or loyalty points. *One unified system for charging across the whole enterprise.*

A Real-Time Charging System based on best-of-breed components



The Sicap Advantage

Strategic partner. Sicap is a Swisscom subsidiary and being part of Swisscom, it has access to the latest services and technologies which it can further propose and enhance for its customers. Being part of a tier 1 operator, Sicap is able to develop its systems with a strong focus on addressing the challenges an operator may have.

Communication and Charging. Sicap is the only company with products addressing both the communication and charging domains, such capability increasing the value add for an operator.

Innovation. Sicap innovates. We strive for simple and efficient solutions, achieving the best quality in everything that we do. The open modular architecture according to 3GPP standards, combined with powerful configuration tools enable full support for today's complex charging models and paves the way for new advanced services and technologies.

Charging expertise. Sicap is one of the pioneers that have invented prepaid technology. With Tier-1 prepaid system installations and a powerful and scalable real time charging core, Sicap has the required charging experience for any billing system implementation.

Network Integration. Sicap has extensive experience on both charging and network components. It provides its own Service Control Point (SCP), USSD gateways and Open Voice Platforms for complex value added voice services.

Standalone modules. Most of the Sicap charging components can be deployed stand-alone, providing flexibility for the operator in choosing a multi-vendor solution that would best suit its needs (Sicap has proven experience integrating its charging components with 3rd party SCPs and other billing systems)

Operational efficiency. With independent Rating and Account Management systems for any subscriber type and for any type of service (voice, data, content), the operations and maintenance costs are considerably reduced. The architecture design minimizes the changes in core software for the introduction of new services and technologies, contributing to an overall low total cost of ownership.

Reliability and Scalability. Sicap has experience in handling large volumes of transactions and large subscriber base volumes with carrier grade availability. The system is horizontally scalable, supporting virtually any number of subscribers.

November 2009; Octavian Dobrin, Solution Architect, Sicap AG.