

**WHITE PAPER**

**Version 1.5**

# **Ti-Rate – billing and real-time rating solution**

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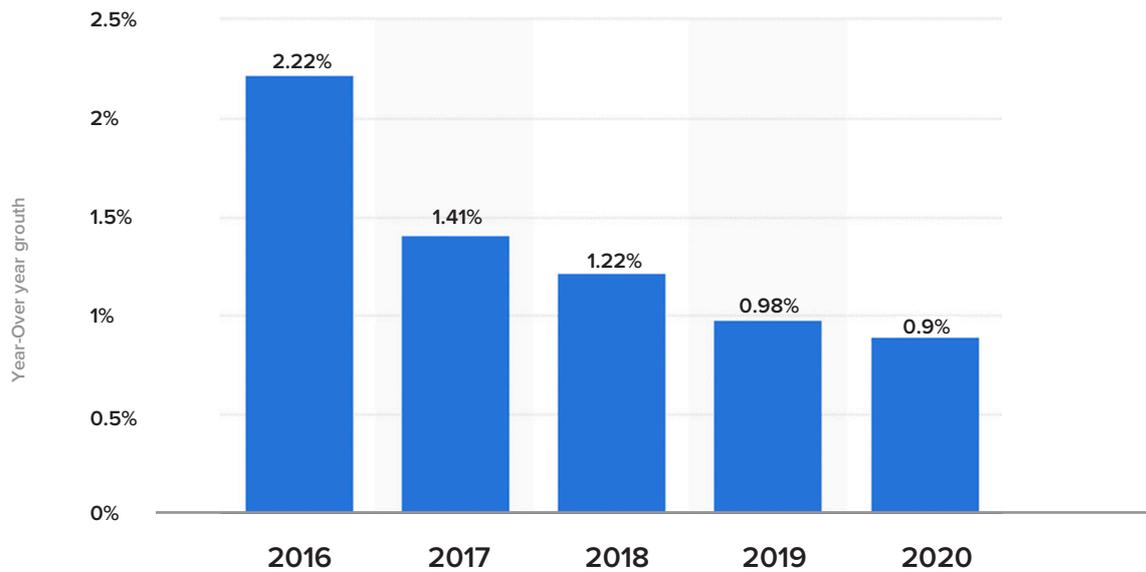
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## ADOPTING TO THE NEW REALITY

The telecommunications industry is experiencing a slowdown of revenue growth in all major markets and is looking for ways to confront the commoditisation of its traditional services. The industry is currently undergoing probably the biggest and the most disruptive transformation since the emergence of the Internet and the switch from circuit-based voice services to packet-based data services. It is moving swiftly towards building very large and very accessible distributed computing infrastructures, with data as the raw material powering the industries.

### FORECAST GROWTH WORLDWIDE TELECOM SERVICES SPENDING (from 2014 to 2020)



Source: <https://www.statista.com>

Telco companies are under increasing pressure from customers to deliver not just a set of standard services with fixed properties, but rather flexible services more suitable to specific customer requirements, for example, a range of network service levels at different prices. Another source of pressure is OTT competitors offering novel products and new innovations on top of traditional telecom services at an affordable price. Telcos have not yet learned how to monetise the delivery of high quality OTT services and how to efficiently manage their networks so that cooperation with OTT service providers brings in new revenue streams instead of being seen as a threat to the business.

These factors have compelled the telecom industry to undergo major structural changes to deliver customized digital services to individual customers. Telco companies need to re-define their product portfolios to meet new requirements. In addition, Telcos will need to rethink the current customer landscape to include new customer segments, arising, for example, from the IoT ecosystem. This structural change is not going to be a one-off exercise, it requires acceptance of the new reality of continuous change to products and offerings to meet their customers' changing needs.

To be ready for this marathon, Telco companies need to evolve their BSS solutions to make them ready for continuous adaptation. Those solutions should be flexible enough to make the process of transformation as fast and as cost-efficient as possible. **The Ti-Rate billing and real-time rating solution** seeks to meet this challenge by focusing on:

- ◇ **Account management.** Account management must support customer segmentation and flexible life cycle automation for all types of subscribers;
- ◇ **Product management.** In the new environment a short time-to-market for new products and support of personalized services is essential;
- ◇ **Invoicing.** Different account types and service levels require the option to use different invoice/document templates;
- ◇ **Real-time rating (online charging)** Customers need the pay-as-you-go service and an advanced setup that reduces the need for operator interventions;
- ◇ **Infrastructure.** A cloud-ready solution with straightforward deployment and cost-efficient support;

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## BILLING CAN BE EASY

People used to think that telecom billing is difficult and complicated. Ti-Rate will make it much easier:

- ◇ Ti-Rate has multiple preconfigured business flows and models
- ◇ Processes are built, not coded with a Flow Building Framework visual editor which makes them human-readable. The modification of existing processes and the development of new models becomes much simpler.

**Ti-Rate makes  
billing easy,  
as it should be**

### High Concurrent Load Handling, Scalability and High Availability

Ti-Rate was designed to work under a heavy load with maximum availability to fulfil the processing requirements of telecom service providers:

- ◇ **Clustered Nodes**– parallel processing out of the box. The solution for horizontal scalability is to simply add nodes to the cluster;
- ◇ **Symmetric multiprocessing (SMP)** – a built-in hardware feature providing vertical scalability by adding the number of CPUs to one node;
- ◇ **Fault recovery** – each node in the cluster automatically tracks the availability of other nodes;

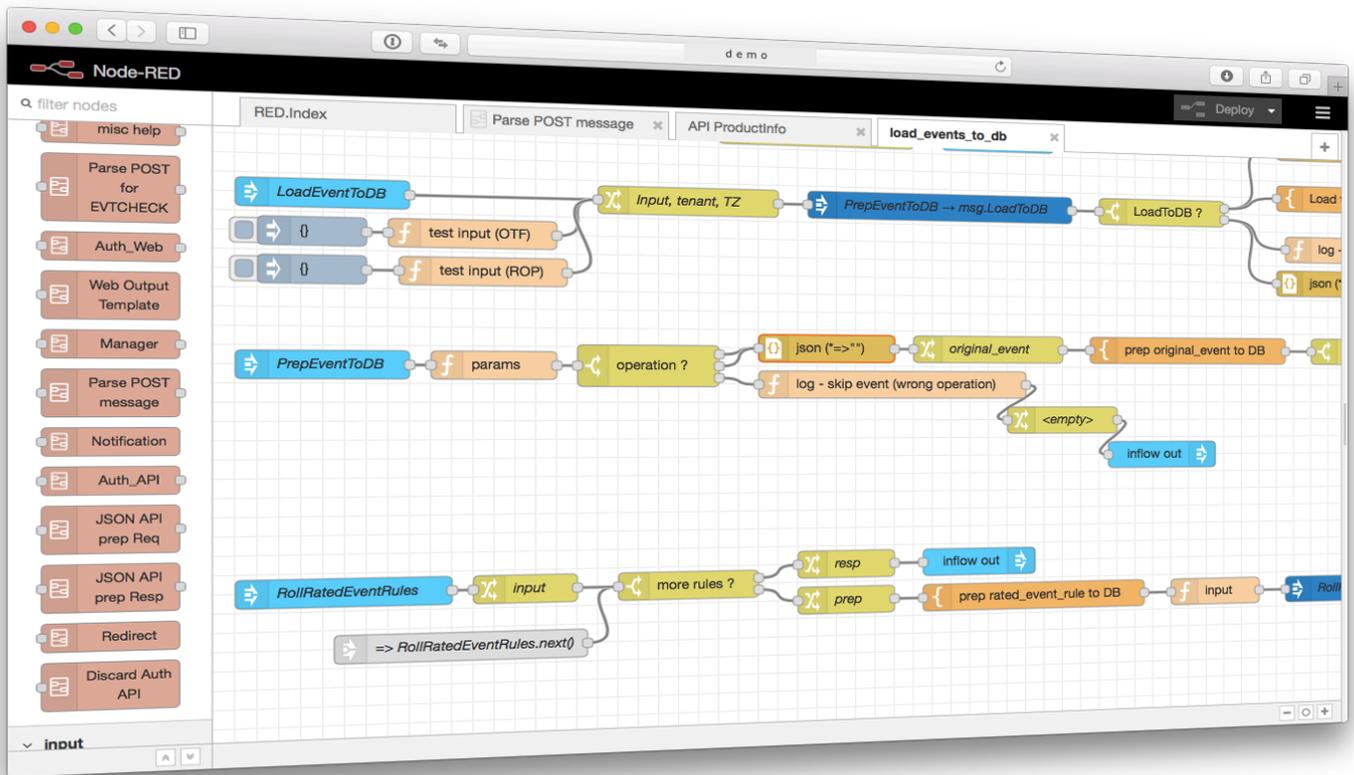


Figure 1 | Business Flow Configuration User Interface

- ◇ **Monitoring** – A monitoring and error reporting sub-system allows you to build complex supervision hierarchies with built-in fault recovery;
- ◇ **Code upgrade in runtime** – there is no need to take the system down in order to apply some fixes, updates, upgrades or to add new features. The upgraded application version is deployed to the node environment. When it is appropriate you can switch from the old version to the new version without terminating processes. The current states and variables are preserved. This allows you to resume where you left off, and provides 99.999% availability, including upgrades and maintenance;

**Ti-Rate is a fast and reliable billing system**

## Easy System and Product Catalog configuration

The configuration of product offerings in the product catalogue may be simple, but bringing them to the market can be far more complicated. That is why product deployment in Telco companies can take weeks or months. To address this, Ti-Rate has introduced a new model of system and product catalogue configuration.

All system and business configurations, including the Product Catalogue, are managed by the visual Flow Building Framework. Billing and rating processes are built, not coded, making them readable, understandable and easy to modify:

- ◇ Operations staff use a visual browser-based editing system that makes it easy to connect flows from the wide range of available node types;
- ◇ Flows are built graphically with drag-n-drop;
- ◇ Flows are deployed in runtime with a single click.

**With Ti-Rate you  
can focus on  
business needs  
rather than IT  
constraints**

## Low cost of support

Telecom billing systems used to require a large number of IT professionals to support them. TiRate was developed to reduce support costs. Definition of configuration and business processes is done with Node-RED (flow-based visual programming for an Internet of Things framework):

- ◇ System monitoring is on board;
- ◇ System self-recovery is a part of the basic architecture
- ◇ Hardware resizing is simple –adding nodes and improving processing power can be done without downtime. No loss of service or fork-lift upgrades;

- ◇ Software maintenance time can be drastically reduced, again by applying changes without loss of service or downtime;
- ◇ Reduced requirements for support staff – business and system configuration is carried out with the Flow Building Framework. It provides an intuitive drag-n-drop interface that does not require deep technical expertise.

**Running Ti-Rate does not require a big IT team. It can be supported by a small DevOps team**

## Multitenancy support - Cloud ready

Modern IT systems tend to work in the Cloud and support multiple business clients on a single platform. Ti-Rate meets this requirement with multi-tenant support.

Multi-tenancy support allows several businesses to use the same billing system with no need to install multiple instances of an application for each client. All instances are fully independent and are invisible to other instances. Together with the Cloud readiness, multitenancy supports “Billing on behalf” for emerging M2M ecosystems and BaaS (**Billing-as-a-Service**) – selling billing services to SMEs, or B2B resellers (e.g. MNO to MVNO).

The multi-tenant approach, while using common interfaces, APIs, and global business processes across the system, ensures separation of:

- ◇ Data (databases);
- ◇ Access and Authorisation control;
- ◇ Business Product Catalogue;
- ◇ Customised instance specific business processes and configurations.

**Ti-Rate is a  
Cloud-ready  
solution**

### Pluggable business schemas

With Pluggable business schemas, Ti-Rate reduces the costs of introducing new platforms and the associated integration costs. This approach allows for different billing models and cycles for a variety of services within a single billing system. No additional billing systems and no cross integration are required.

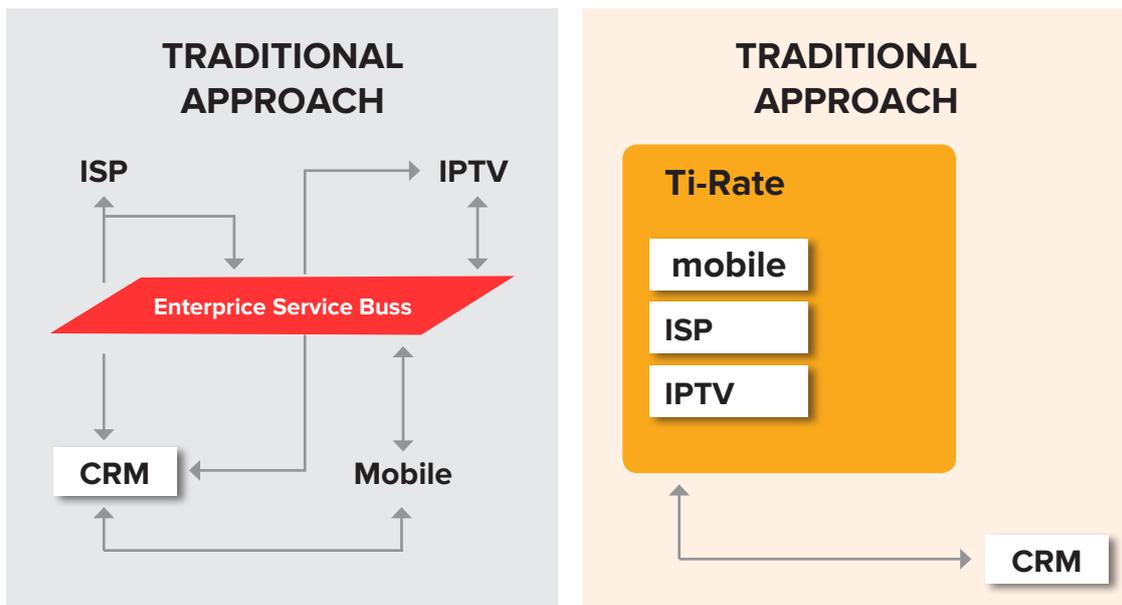


Figure 2 | Ti-Rate Approach

A pluggable schema contains the full package of flows, processes, and configurations:

**Ti-Rate pluggable schemas help to meet the requirements of business units cheaper and faster**

- ◇ Data Model
- ◇ Business processes
- ◇ System and business configuration
- ◇ Access and Authorisation
- ◇ Interfaces and APIs

# GLOBBERRY AND TI-RATE PRODUCTS INTEROPERABILITY ARCHITECTURE

Ti-Rate Online Charging system is a pre-integrated complementary offering to the Globberry Policy Management Suite product bundle.

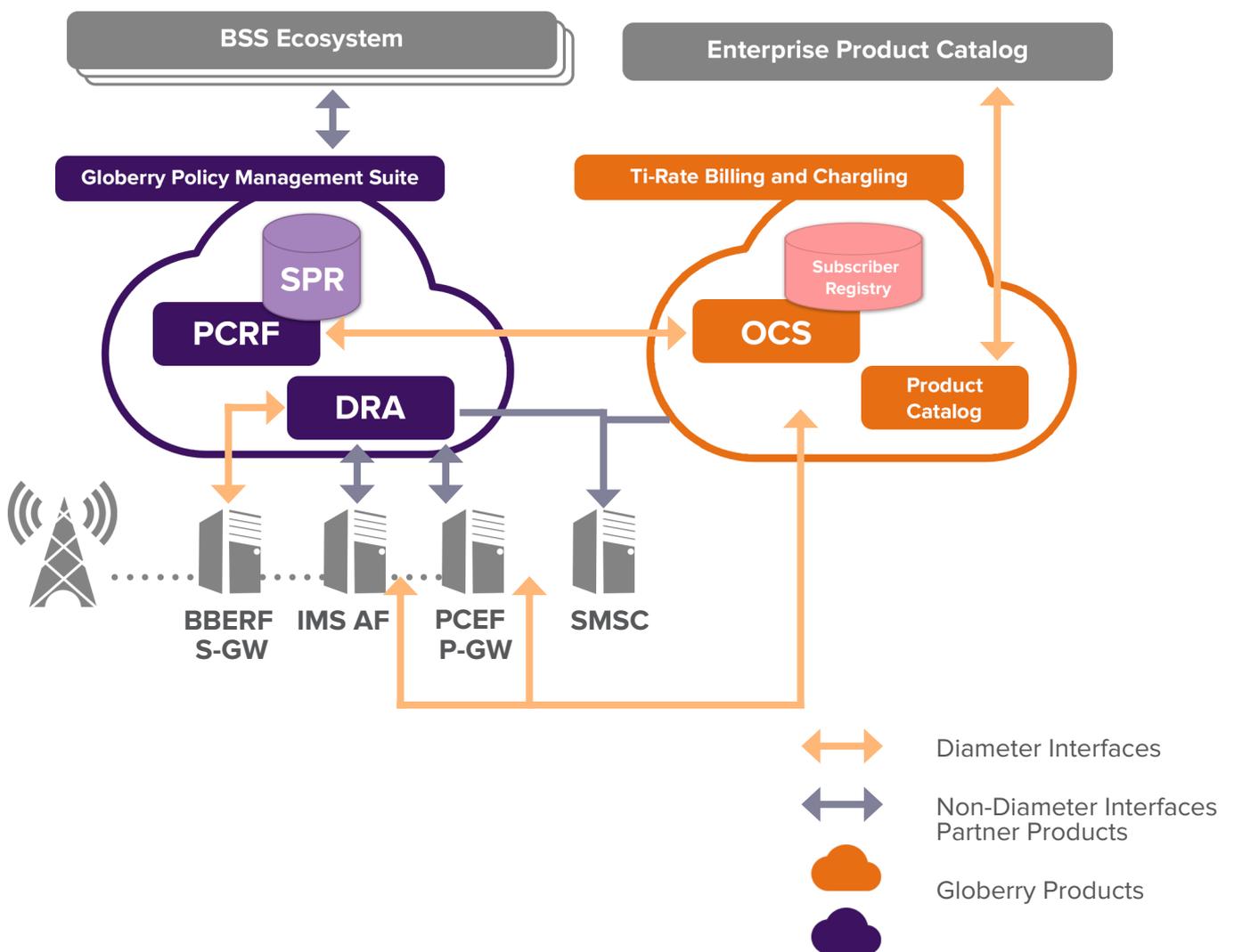


Figure 3 | Globberry-Ti-Rate Architecture