



White paper

Ti-Rate – billing and real-time rating solution.

Version 1.0

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You need modern BSS solutions to adopt to new reality

Telecommunication market is under big transformation to fit customer requirements in fast digitalisation world.

Telco companies are under increasing pressure from customers regarding quality of services. Most of the demand comes from requirements to quality of data services. Traditional connectivity services, which were historically monopolised by telco companies, become increasingly commoditised. At the same time, over-the-top players like Google and Amazon expanding proposal for mid- and small-size businesses worldwide, which increases risk losing revenue and market share for telecom providers.

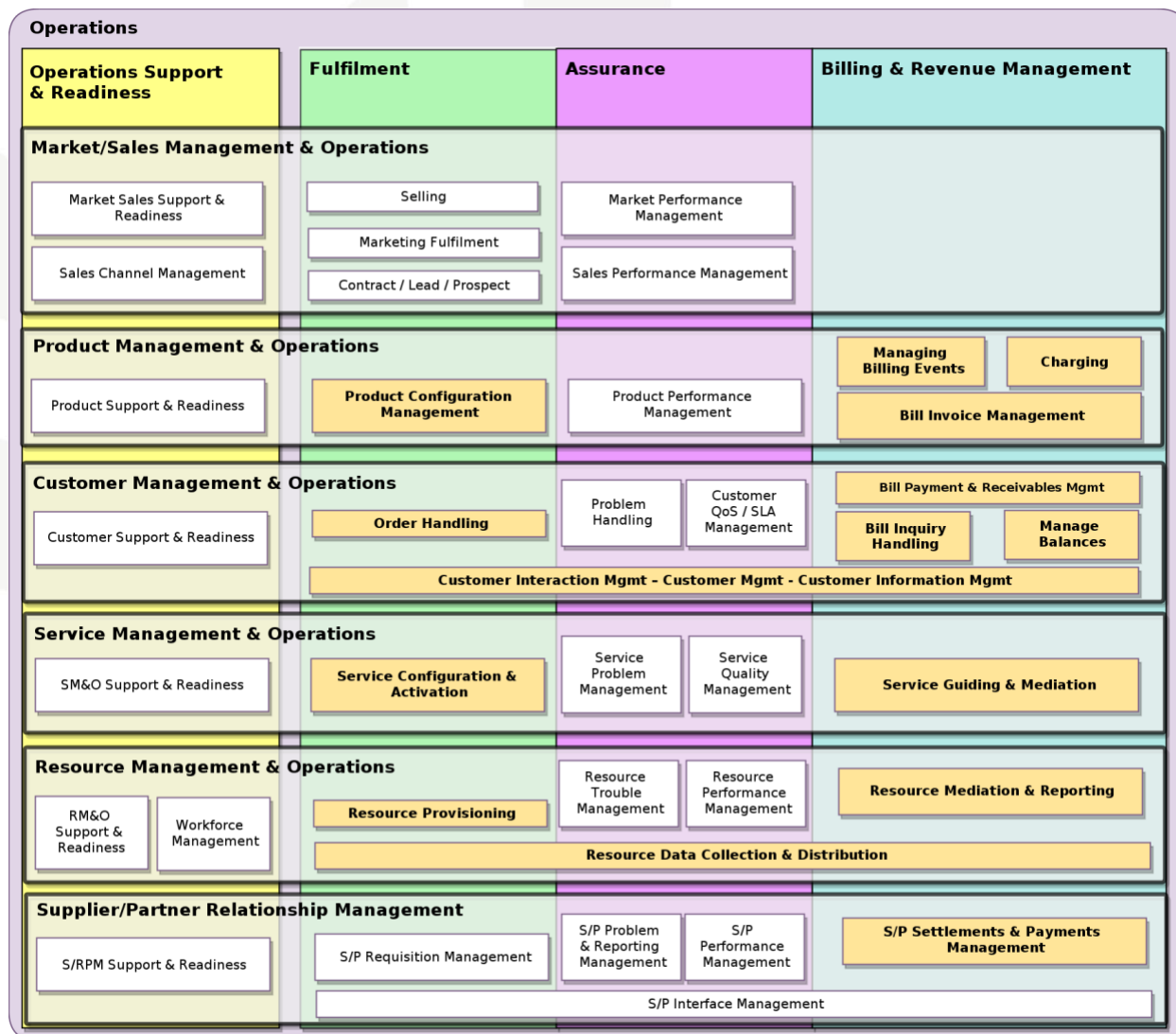
Those facts require more efforts from telecom industry to deliver customised digital services for each customer. As a result, telco companies will be required to rethink their product portfolio to fulfil new requirements. In addition, telco need to rethink current customers landscape to become focused on key market segments based on new reality. And this is not the one-time action. This is a new world: continuous transformation to adapt proposal new requirements of customers.

To be ready for this marathon, telecom needs absolutely new BSS solutions, ready to continuous adaptation. Those solutions should be flexible enough to make the process of transformation as fast and cost-efficient as possible. In **Ti-Rate billing and real-time rating solution** we are focused on:

- **Account management** with support of customer segmentation and flexible life cycles automation for different type of subscribers;
- **Product management** with short time-to-market for new products and focus on personalised services;
- **Invoicing** with possibility to use differentiate different invoice/documents templates , based on needs of different groups of customers;
- **Real-time rating (online charging)** with advanced setup to provide customers with pay-as-you-go approach.

Ti-Rate solution on eTOM map

Based on implementation experience, system functionality fits the following functional areas of eTOM map.



Billing should not be hard and complicated

People used to think that telecom billing is something hard and complicated. With Ti-Rate it is changed:

- Ti-Rate has multiple preconfigured business flows and models
- Billing processes are built, not coded, with Flow Building Framework which makes them readable, understandable and self-explainable
- Complicated billing processes are designed to look easy and are hidden from most of the users, though still reachable if needed

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

High Concurrent Load handling, Scalability and high availability

Modern Billing systems for medium and large business are required to work under heavy load with maximum availability. Ti-Rate was designed to fulfil this criteria.

- **Nodes in clusters** – organisation of processes for parallel processing out of the box solution for horizontal scalability just by adding nodes into cluster
- **Symmetric multiprocessing (SMP)** – built-in feature for vertical scaling with adding the number of CPUs on one node
- **Fault recovery** – each node in the cluster also automatically tracks availability of other nodes in order to become aware of non-responsive nodes; the advantages of asynchronous message passing in systems running on a node is extended to systems running in cluster, as replies can be received alongside with errors and timeouts
- **Monitoring** – "let it crash" approach, OTP will restart monitored processes that die; the monitors and error reporting allow you to build complex supervision hierarchies with built-in fault recovery
- **Code upgrade in runtime** – no need to take the system down in order to apply some fixes, update, upgrade or add new features; new application version is deployed to environment and then you can switch from Old version to New version in Runtime without processes termination, keeping all states and variables; this provides 99.999% uptime including upgrades and maintenance.

Ti-Rate is fast and reliable billing system.

Easy System and Product Catalog configuration

Product Catalog is usually easy when people talk about it but becomes hard trying to configure it. Product time-to-market (from initial idea to ready-to-sell product) in telco companies takes from weeks to months. Ti-Rate is going to change this and make both talks and configuration easy.

All system and business configuration, including Product Catalog, is managed by Flow Building Framework initially designed for IoT. That is why billing and rating processes are built, not coded, which makes them readable, understandable and easy to modify:

- browser-based flow editor that makes it easy to wire together flows using the wide range of nodes in palette;
- flows are built graphically with drag-n-drop;
- flows are deployed in runtime with a single-click.

With Ti-Rate configuring billing system you can focus on business needs instead of IT-related limitations.

DevOps-like support

Telecom billing systems used to require big number of IT professional to support it. With Ti-Rate this can be changed.

Configuration and business processes definition is done with Node-RED (no coding), infrastructure is maintained by the Cloud. Running, maintaining and operating Ti-Rate is actively supported by the system itself:

- system monitoring is on board;
- system self-recovery is a part of architecture;
- hardware resizing goes smooth – application is scaling horizontally and vertically by itself on fly;
- software maintenance time can be drastically decreased – by applying changes on fly;
- mid-level IT workers are sufficient for business support – business and system configuration is done with Flow Building Framework, that has intuitive drag-n-drop interface and does not require deep technical expertise.

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

Multi-tenant support - Cloud ready

Modern IT systems tend to work in the Cloud and support multiple business clients on a single running system. Ti-Rate covers this tendency with multi-tenant support.

Multi-tenancy support allows to run several businesses on the same billing system. No need to start separate instances of all applications in order to achieve the goal. All businesses are fully allocated, independent and isolated. Together with the Cloud readiness, multi-tenancy gives a possibility to BaaS (**Billing-as-a-Service**) – sell billing services to SMEs, or give a possibility to big players to re-sell their services (e.g. MNO to MVNO).

Multi-tenant approach ensures separation on

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- Data level (databases)
- Access and Authorisation control
- Business Product Catalog
- Custom tenant specific business processes and configuration

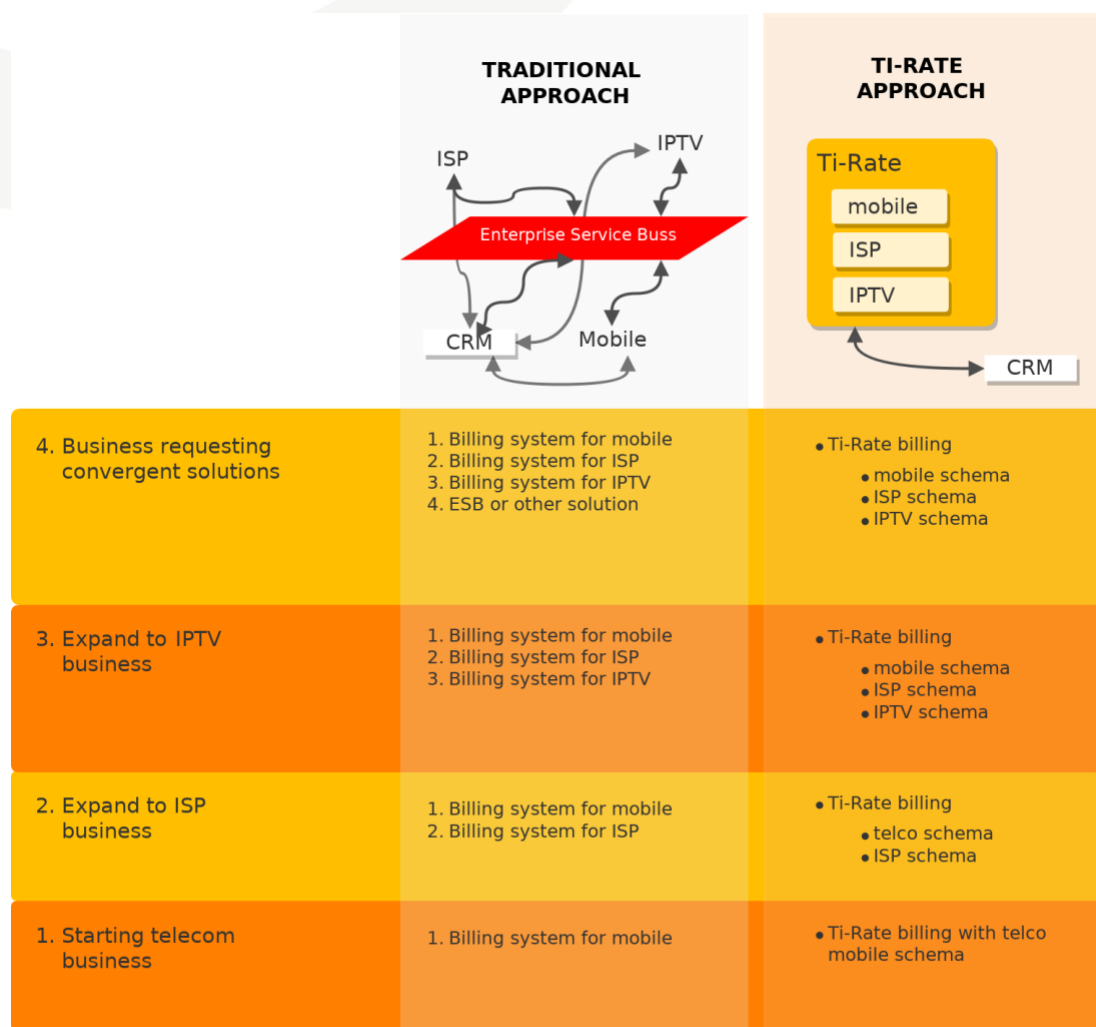
while using system-wide interfaces, APIs and business processes.

Be ready for cloud with Ti-Rate.

Pluggable business schemas

Extending business needs usually leads to purchase of new systems and start of long-running integration projects. Ti-Rate will change this approach.

Ti-Rate supports **pluggable business schemas** that allow to extend business needs on the same billing system. No extra billing systems and cross integrations required.



		Traditional approach	Ti-Rate approach
1	develop Telecom business	have a specialised Billing system that this business works on	Ti-Rate billing system using Telco schema
2	expand to ISP business	adding specialised Billing system and related infrastructure to cover ISP business	keep working with Ti-Rate billing system and plug on ISP schema
3	expand to IP TV business	adding specialised Billing system and related infrastructure to cover IP TV business needs	still keep working with the same Ti-Rate billing system and plug on additionally IP TV schema
4	decided to provide convergent services	implementing Enterprise Business Bass or other solutions	merge Ti-Rate pluggable schemas
5	Result	<ol style="list-style-type: none"> 1. Set of billing systems with duplication of data (accounts, balances, etc...) > wasted company resources (DB, servers, support teams). 2. Complicated processes of communication with other BSS solutions (like CRM or Product Catalog) > high cost of support and development 	<ol style="list-style-type: none"> 1. Single solution with centralised support > saved money on infrastructure and people 2. Processes of communication with other BSS solutions (like CRM or Product Catalog) evolved. Less point of integrations > low cost of support and development

Pluggable schema contains full package of flows, processes and configuration:

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

Ti-Rate pluggable schemas help to extend business needs cheaper and faster.

Architecture

Ti-Rate was designed as flexible solution for fast integration in-to existing infrastructure.

