

BRIDGE

Management and Technology

Applications for Operators

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Topup Mediation System (TMS)

TMS provides a frontend which can be used by virtually any computer or computer like device (i.e. smart phones) for recharging prepaid subscriber credits (virtual vouchers).

Topup Mediation System allows third party dealers to handle their whole sale credit amounts without specific involvement of an operator whilst providing effective security measures for an operator's most sensitive areas. It makes an operator's life more effective, easier and saver at the same time.

TMS protects the operator's interests by means of authentication, mediation and reconciliation facilities towards its own network entities.

The introduction of a virtual voucher system helps an operator to reduce logistical requirements (no physical vouchers to be supplied) and eliminates obstacles while adding flexibility and therefore customer satisfaction at the same time.

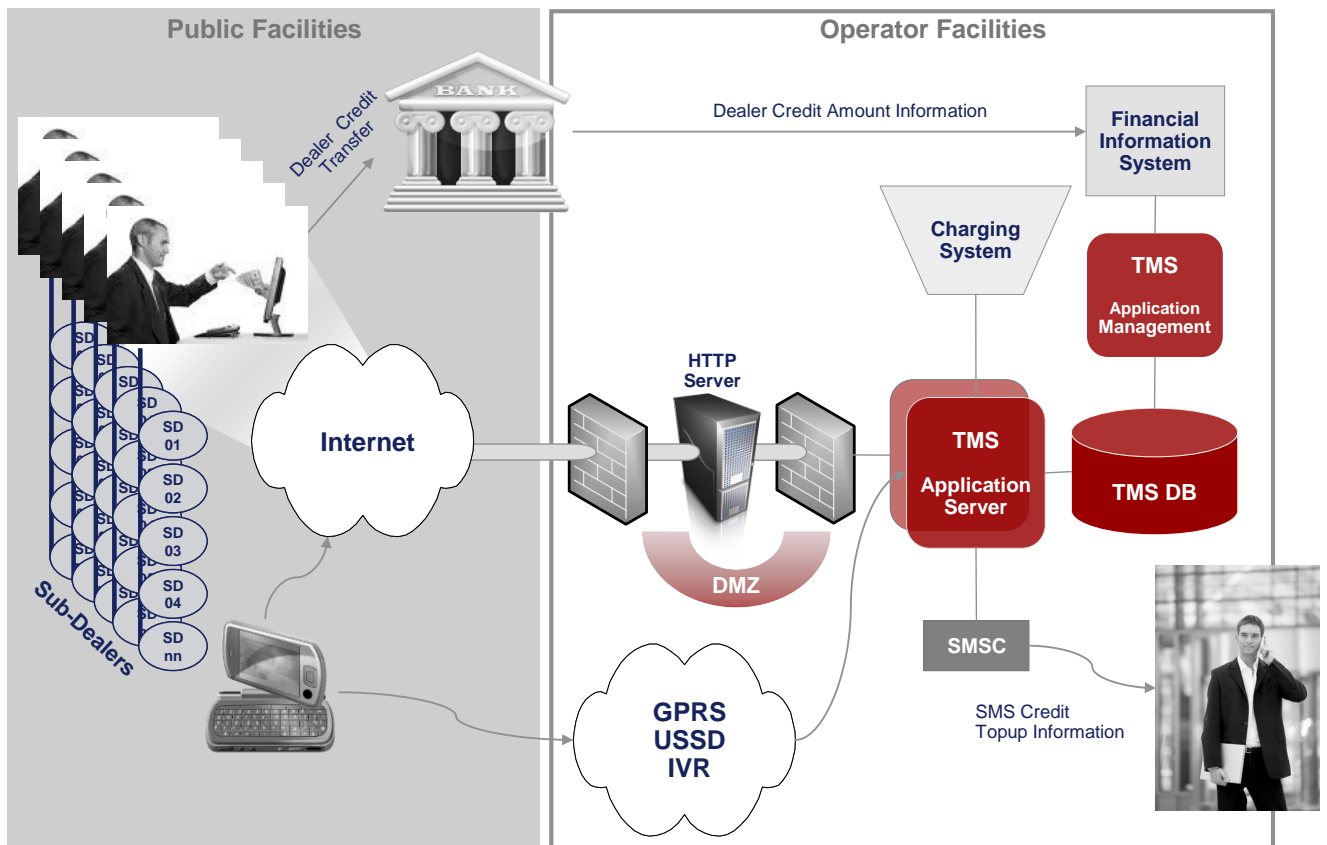
The TMS package includes the TMS database, TMS Application Server, TMS Application Management and optionally the introduction of

a demilitarized zone (DMZ).

Functionalities

TMS offers the following basic functionalities to an operator in order to administrate and monitor whole sale and associated retail dealers (Sub-Dealers) and related credit flows.

- Create Dealers/Sub-Dealers in TMS
- Modify Dealers/Sub-Dealers in TMS
- Suspend Dealers/Sub-Dealers in TMS
- Delete Dealers/Sub-Dealers from TMS
- Definition of credits limits in TMS
- Check credit balance for Dealers
- Credit Load (Manuel or automatically in relation to financial system)
- Recharge / update subscriber accounts



Topup Mediation System (TMS)

- Reconciliation of credit data
- Logging / Notifications
- Reporting

web interface or thru the operator's mobile network (i.e. thru IVR functionality).

After the credit is transferred a SMS notification is created automatically and sent to the desired MSISDN to confirm the transaction.

How does it work?

TMS provides a frontend for prepaid account recharge which can be accessed from anywhere when certain security precautions are followed.

TMS limits and controls access to an operator's charging system. TMS basically acts like a transparent gateway between a dealer's system and an operator's charging system by emulating the charging system towards the "outside" world. TMS can limit, control and report the amount of transactions, number of transactions, max amount per terminal etc.

In order to have access to the system each and every dealer and its sub-dealers need to be applied in the TMS database. For every dealer, a set of data/parameters are kept in the database for control and access:

- Dealer Code
- Dealer Name
- Dealer Contact Information (Address, phone numbers, etc...)
- Maximum/Minimum amount allowed per transaction
- Username/Password
- MSISDN(s) & E-Mail for notifications
- Primary and Secondary Public IP
- Others

After a dealer is created in the TMS database one can make use of the TMS interface once his credit stock in a bank is filled and verified by the operator.

The dealer or the dealer's sub-dealers may than recharge subscriber accounts either thru a

Dealer Features and Control Settings

Besides the main feature to recharge subscriber accounts the dealers will get the following standard set of features to help them keep track and control over their transactions:

- Check current amount of balance at anytime
- Reconciliation per day (Initiated by the dealer , confirmed by the operator)
- Reconciliation per sub-dealer (Limitations may be apply by the operator)
- Suspend Transactions (Emergency/ Tracing)
- Event driven automated messages
 - SMS & Email in low threshold balance
 - SMS & Email notification in case connection failures.
 - SMS & Email in case of automated suspend
 - SMS & Email in case of inconsistent recon.
 - Automated suspend at any limit violation.
 - Automated recon confirmation in case of consistent recon

In order to keep risks (i.e. in case of fraud) for the dealers but also the operator low, certain limitations can be set and are under control of TMS:

- Maximum amount per dealer per transaction (protect all)
- Minimum amount per dealer per transaction
- Maximum amount per dealer per day (protect operator)

Topup Mediation System (TMS)

- Maximum amount per day per sub-dealer (protect dealer)
- Maximum number of transactions per day per dealer
- Maximum number of transactions per day per dealer per sub dealer (Optional)

Implementation and Configuration in your Network

In order to provide maximum security and system stability it is recommended to implement dedicated hardware for the TMS application and DMZ (optional). The actual TMS configuration in a specific network is of course dependent on individual requirements but the basic entities are listed below:

Hardware

- Application Servers (Clustered)
- Database Servers (Clustered)
- Switch(s)
- Web Servers (Clustered) - optional
- Firewall(s) - optional

Software

- Web Server / Apache
- Application Server / BEA WebLogic or Tomcat
- Database Server / Oracle
- Cluster SW

Simple Credit

Simple Credit is an easy method to recharge a subscriber's account for someone i.e. not having money at hand to buy a voucher and/or has no online capabilities to recharge or may have no access to a point of sales at this very moment.

It might come very handy for colleagues being in remote places with no recharge facilities and still need to stay in contact with their company. Those people will for sure appreciate a fast and simple recharge technique just as families that want to stay in touch with their beloved ones which are running out of credit. It can be even very useful for kids which have not the capability to recharge their credit by means of a voucher.

Using the same network provider a prepaid subscriber can receive credits from any other prepaid or postpaid subscriber using Credit Swap.

Simple Credit may also be used for postpaid subscribers who are located in parts of the world where bank accounts are not always reliable (i.e. poor bank liquidity) or in case of postpaid bills cut across predefined limits. In this case a prepaid or another postpaid subscriber could also pay someone's bill by means of Simple Credit.

Simple Credit works on five different technologies

- GSM SMS
- GPRS SMS
- USSD
- IVR
- Web (Company Online Portal)
- Credit Card and Bank Transfers

As of today, millions of transactions are done daily with Bridge's Simple Credit.

How does it work?

Sample: SMS

The subscriber who wants to give credit simply sends an SMS which includes the number he wants to give credit to plus a specific code and the amount he wants to transfer. This SMS message is to be sent to a specific number (i.e. the operator's network destination code) and it is done.

After the transaction both the sender and the recipient get a SMS confirmation and that's it - as simple as it can be.

It may take a few minutes (depending on CDR handling in the network) for the credit to be activated automatically after credit confirmation. If the recipient wants to activate the credit instantly the recipient can do this by making a call or sending a SMS.

The sender pays the normal rate for this Simple Credit SMS.

Example

Someone wants to send 10 [units] to MSISDN 123456789.

We assume the code for Simple Credit is 333.

The subscriber needs to prepare the following SMS message

"333 123456789 10"

and to send this off to a predefined number (i.e. the operator's network destination code)

The sender will then receive the following confirmation:

"10 [units] will shortly be transferred to 123456789; Thank you."

The recipient will then receive the following confirmation:

"You have received a credit of 10 [units] from 123987654. You can use it immediately."

Simple Credit

Other Ways

Simple Credit also works via **USSD, IVR, WEB Portal**, with **Credit Card** and **Bank Transfer**. Of course the procedure in those cases is different than SMS but also straight forward and easy to use.

How to control the Service

As an operator you may simply apply your own rules and parameter settings which support your business plans best. This parameters and rules can be changes easily and provides you with the flexibility in a rapid changing business.

Accessibility and utilization of the service by the operator's development team may be done thru a SOAP Web Services Interface which is an open architecture design.

The standard set of rules and parameters for the service are:

- Minimum credit
- Maximum credit
- Maximum number of transfer credits per subscriber per day
- Monthly maximum amount for postpaid
- Daily maximum total amount
- Extension of service period (may be defined independent for origination and terminating calls) of the credit receiving party depending on credit volume transferred.

Implementation and Configuration in your Network

An SMPP connection needs to be established via the Bridge SMPP toolkit to the operator's SMSC. When an SMS is received Simple Credit performs a basic a set of checks like:

- Message Keyword or Code – depending on Keyword/Code various activities may be triggered

- Is the sender prepaid?
- Does he have sufficient credit?
- Is the sender black listed?
- etc...

Also a so called **INCDR Database** needs to be established, which keeps track with IN activities and interfaces with the Operator's IN systems.

If all checks involving the INCDR Database are positive, money will be transferred, the sender gets a notice, the receiver is informed as well. The financial transaction is completed.

Unified Customer View (UCV)

Unified Customer View is one of two Customer Relation Management (CRM) modules available. It may connect to a variety of network elements.

UCV can be adapted to provide access to legacy customer care tools (often from a variety of suppliers, making work inefficient and often faulty) using existing functionality while the Call Agent only needs to deal with a single user interface.

UCV offers real-time access to prepaid and postpaid subscriber data for processing of customer queries.

It supports Call and Shop Agents to do their work more efficient and more reliable at the same time by means of a unified user interface.

More than 500 predefined reports are available with the UCV package which helps the Agents to have all subscriber information at hand whenever required.

It provides reliable, integrated and secure customer information to Call Centre and Shop Agents.

How does it work?

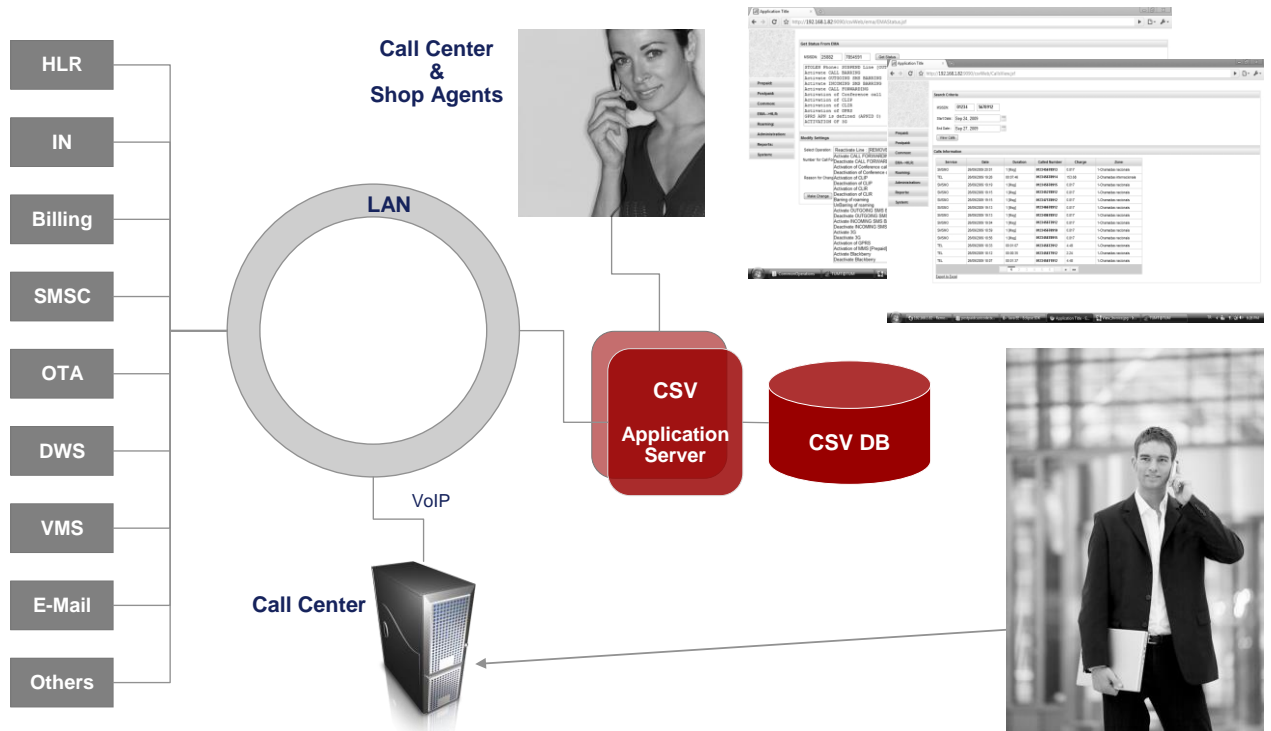
In case a subscriber phones the Call Center, the call is converted into a VoIP call, initiating several processes in the system while being forwarded to a Call Center agent.

The Call Center agent gets a popup window on his screen with the most important customer data (based on MSISDN analysis) already collected and presented on a predefined screen before even taking the incoming call.

From that point in time, the Agent has all customer data at hand and has simple access all data to serve the customer efficient and competent.

Depending on the actual request, UCV collects all necessary data and presents it to the Agent by means of predefined data reports.

The customer may request to provide answers to him either by E-Mail, Fax, SMS or other.



Unified Customer View (UCV)

Implementation and Configuration in your Network

UCV can only work efficient, if all important network entities are accessed linked and accessible by UCV. Those network entities include HLR, SMSC, IN, Billing, VMS, DWS etc.

Bridge can adapt UCV so it is able to interface to all kinds of network entities from a manifold of suppliers, collecting all the data necessary, depending on actual operator requirements.

The following basic system requirements apply for UCV for telco grade configurations:

Hardware

- Application Servers (Clustered)
- Database Servers (Clustered)
- Switch(s)
- Web Servers (Clustered) - optional
- Firewall(s) - optional

Software

- Web Server / Apache
- Application Server / BEA WebLogic or Tomcat
- Database Server / Oracle
- Cluster SW

Statistics & Reports

Statistics & Reporting is a WEB based application which currently includes about 500 predefined reports providing conditioned operation data, covering all aspects of the network which are of interest for commercial, sales as well as technical departments.

Statistics & Reporting allows daily reconciliation of network data and processes daily network performance data.

It provides business related statistics like voucher usage, starter pack sales, prepaid top-ups, recharge activities, interworking reports etc. but also pure network related information like network usage, call statistics and a manifold of KPIs.

So, overall this application supports the operator to get a better understanding of all aspects of its business and the related network which places him into a comfortable position to be able take necessary actions in advance, before things may even start to get out of hand.

How does it work?

Network nodes like SDPs, PSLs, VSs, MSCs, HLRs are to be configured to dump the base data for the statistics and reporting tool according to the operator needs. This data is automatically centralized via file transfer protocol (push or pull) and loaded into the RSDB (Reports and Statistics Database). After then the predefined reports are automatically produced and presented on a web based application. Each report or any part of the report may be secured and authorized separately. Subscriber dumps from SDPs, recharge dumps from VSs, network counters from MSCs and HLRs are the most common data to be populated and reported. Also detailed reports with raw SGSN CDRs are available, like cell utilization (top cells), postpaid / prepaid data usage statistics, access technology dependent utilization, APN utilization and a mixture of some or all of those parameters may be used to present trend graphs or data.

Implementation and Configuration in your Network

Related network nodes need to be configured to dump the requested data. An agent may be installed in order to gather the data, either on the Report Server side to pull the data or on the network nodes itself to push the data. If the data has been made available already for any other purpose or system, the Report Server can be configured to re-use it. The Report Server load-formatters may be configured to reformat the data and populate it. The network counters and data analysis part of the application is ready to be used out of the box, with just simple configuration of the data feed.

Hardware

- Application Servers (Clustered)
- Database Servers (Clustered)
- Switch(s)
- Web Servers (Clustered) - optional
- Firewall(s) – optional

Software

- Web Server / Apache
- Application Server / BEA WebLogic or Tomcat
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Customer Bonus Schemes

Different Bonus Schemes are available to increase customer retention and reduce churn in competition situations which may be applied all together or one by one depending on individual operator needs.

Termination Call Bonus (TCB)

Termination Call Bonus controls bonuses given to subscribers by its network provider based on incoming calls. Bonus is only given if the call is qualified for bonus and only for calls or parts of calls which are chargeable.

The actual bonus someone gets is dependent on call duration – the longer a call, the higher the bonus a subscriber may get.

The operator may define which type of calls qualify for bonus (i.e. chargeable calls originated in the own network, postpaid to prepaid, prepaid to prepaid).

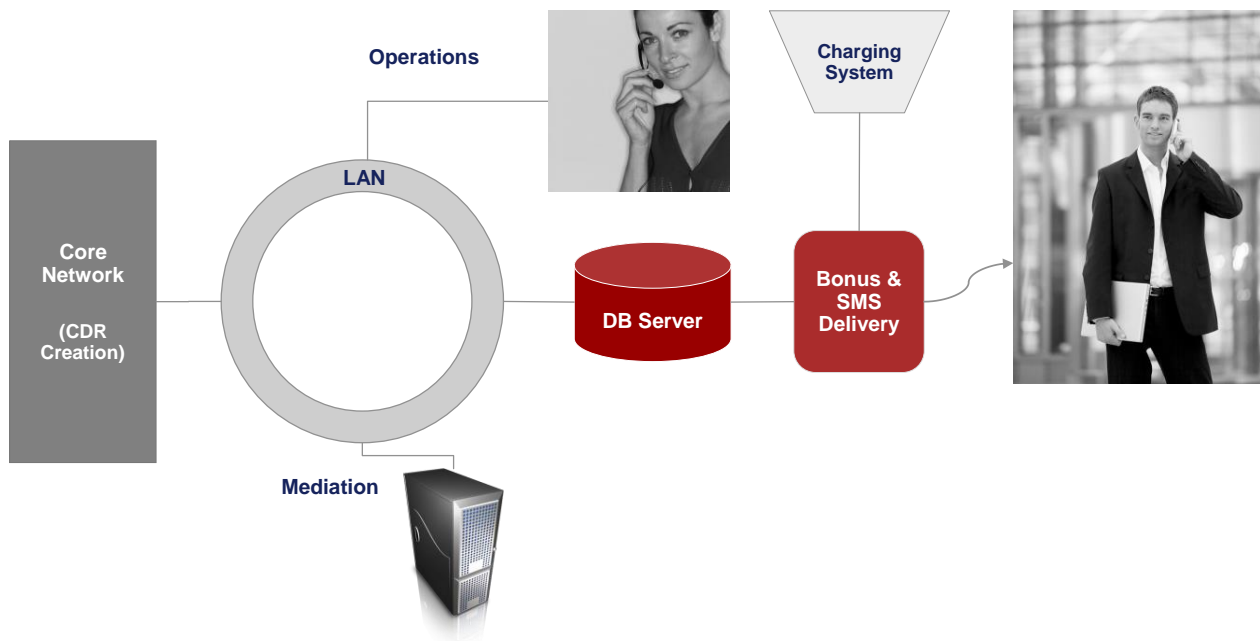
A Database Server to be deployed receives all CDR data (continuously) from the Mediation Device and calculates bonuses of qualified calls and subscribers.

A Bonus & SMS Delivery System increases subscriber credits according to bonuses calculated by the Database Server and informs all relevant subscribers via SMS about bonus and the bonus amount.

This could be configured to run after each qualified call or once in a day, or any other scheduling desired by the operator.

Implementation and Configuration in your Network

TCB is a post-processing application making use of the network's Mediation Device which collects the CDR information from the various core network elements. The mediation device needs to be configured to create and push usage files which include A-Number, B-Number, Duration and any other parameters the operator wants to be used in the bonus scheme.



Customer Bonus Schemes

High Usage Bonus (HUB)

The High Usage Bonus is an application which allocates a special bonus to prepaid customers, spending more than an operator predefined monetary limit within a certain time frame on their mobile phone.

The day after the end of the defined time frame, the subscriber gets informed by SMS that an extra bonus was added to his prepaid credit.

Usually this bonus is a certain percentage of the customer's spending within the operator's settable time frame.

Implementation and Configuration in your Network

High Usage Bonus is a post processing tool like Terminating Call Bonus. The mediation device needs to be configured to push charged CDRs to the HUB Database server. A subscription process (with SMS or USSD utilizing the Bridge SMPP ToolKit or, via Web or portal) then allocates the customers to this bonus scheme.

A daily process runs on the database which checks the usage and calculates the bonus for subscribers according to the usage amount in a predefined time frame. For instance the time frame could be set a month, starting from the day that the subscriber registered with the network and each month at the day of the subscription the customer gets a bonus if the usage reached a certain value.

Then a Bonus & SMS Delivery System increases subscriber credits according to bonuses calculated by the database server and informs all relevant subscribers via SMS about bonus and the bonus amount.

Hardware and Software Requirements Bonus Schemes

The following basic system requirements apply for telco grade configurations:

Hardware

- Application Servers (Clustered)
- Database Servers (Clustered)
- Switch(s)
- Web Servers (Clustered) - optional
- Firewall(s) - optional

Software

- Web Server / Apache
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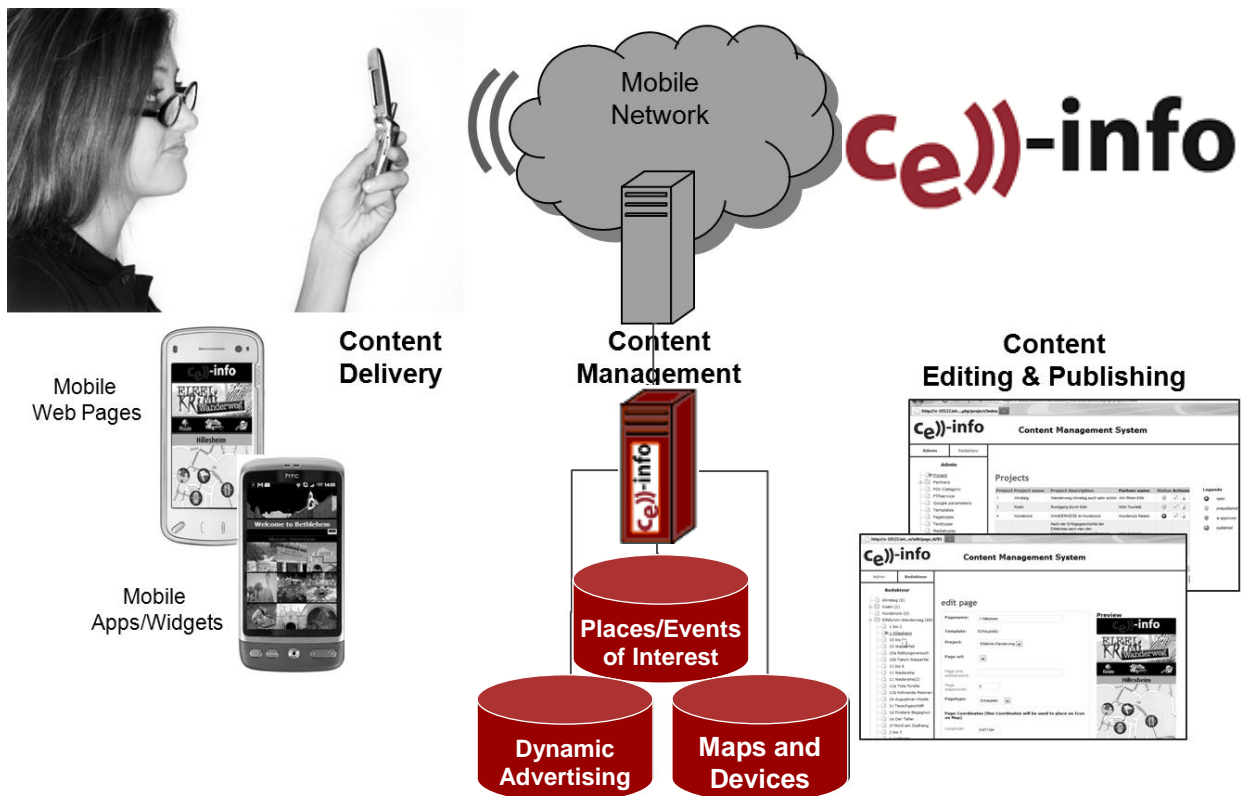
Cell-Info

Cell-info is a multi-media information service platform which brings places of interest to life on your mobile phone.

Cell-info enables mobile users and visitors to find and experience location-specific content. The location is recognized and can be highlighted on a map, or in the phone's camera-viewer, presenting information about upcoming or historic events. cell-info is currently especially popular for guiding around sights and routes of city tours and hiking trails.

- Content adaptation to display size and location, Publication as internet pages, app or widget

By integrating cell-info into their location-based services portfolio and infrastructure, network operator's service providers can provide own-brand content services, as a web page with browser-based access, as a pre-installed widget or downloadable app, with or without geo-location information from the network or user phone.



The cell-info solution offers a unique combination of features:

- Creation of multiple location based service projects, branded and published from a single content management platform
- Integrated advertising and map data
- Mobile device recognition

What do users need to use the service? A mobile phone with a camera and an internet-browser – that's all.

Visitors and residents of a town or area find out about cell-info through signs and advertising on location, such as the scannable QR codes and signs shown on next page.

Cell-Info



Users can then read articles and view images for their current location or for locations nearby, providing information on historic and current top events. By watching a video clip you can travel back through time to re-live famous events which happened right there where you are standing. In-context, informative additional material from sponsors or location-relevant advertisements (events, cinema movie schedule, sports and leisure facilities) is effectively integrated as banner-ads or ad-text.

Cooperation between cell-info's publishers and local tourist partners ensure that all articles, clips and phone-guides entertain tourists and residents alike with the most fascinating infotainment the area has to offer

Company Info

Bridge Services and Support

Bridge provides turnkey solutions for its applications to support your business best by supplying system hardware, full application integration with all legacy business support systems, system launch as well as operations and maintenance support and full blown Service Level Agreements.

About Bridge

Bridge is a well established European telecommunications company with great experience in the telecommunications arena.

Besides applications, Bridge also offers a wide range of services for network operators including network design, network tendering, network implementation, operational support and mobile applications.

Bridge helps you protect your network investment, optimizes network operations and prepares your network for new applications to extend network intelligence and the power of your business.