



## WHITE PAPER

### CREALOG MESSAGE BROKER

Secure and Grow SMS  
and MMS Sales Volumes



## PREFACE

**SMS and MMS Messages** travel fast and reliable – even when mobile phone reception is impaired and during active telephone calls or data transfers. This is why SMS and MMS messages are increasingly being used alongside the usual value-added services to transfer important information. Common examples include banking transaction numbers (mTAN), micro payment applications, delay notifications, maintenance data from vending machines, and alarm device signaling. As a rule, SMS messages arriving at mobile phones are read very quickly and enjoy much higher attention by most users than messages from other messaging services. Studies reveal that 90 per cent of all SMS messages sent are opened within three minutes or less.

Based on this, SMS and MMS services continue to offer high revenue potentials for the future and are able to generate new revenue streams. To make this happen, a powerful and flexible link connecting the network operator's messaging infrastructure with its service providers is needed.

The **CreaLog Message Broker** is this bridge connecting the mobile telephone operator's network elements (SMSC and MMSC) with the SMS/MMS service providers. Real time charging for premium SMS messages with prior evaluation of basic parameters including age limits, credit rating, available credit balance, and sender's authentication is a key feature of the Message Broker. The CreaLog Message Broker is a highly scalable **Service Delivery Platform (SDP)** that offers customizing flexibility for existing network architectures and legal frameworks.

CreaLog  
> White Paper  
> CreaLog Message Broker

Fotos:  
CreaLog, Fotolia, Shutterstock, Ingimage

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# CONTENT

<b>1. Preface</b>	page 2
<b>2. Benefits for Network Operators</b>	page 4
<b>3. Benefits for Service Providers</b>	page 4
<b>4. CreaLog Message Broker Details</b>	page 5-10
Architecture	
Statistics	
Administration	
Mobile Originated and Mobile Terminated	
Validation by Rule and Quota	
Real Time Validation	
Customization	
Third Party Interface for Service Provider	
Third Party Interface Architecture	
Third Party Service Providers	
Mobile Originated Premium Services	
Mobile Terminated Premium Services	
Main features, components, and interfaces of the CreaLog Message Broker	
Virtualization Platform and Five Nines Availability	
Significant A2P SMS market growth	
<b>5. Outlook</b>	page 11



## BENEFITS FOR NETWORK OPERATORS

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### The CreaLog Message Broker...

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- secures and controls access to SMS and MMS services
- defines rules for subscriber data usage
- helps support service providers with quota rules
- ensures compliance with individually defined or legal provisions
- allows detailed reporting and real time monitoring
- monitors data transmissions
- supports integration into other operation, administration and maintenance (OAM) solutions
- is based on the current CreaLog Telecom Platform release
- can be integrated rapidly into existing network operator solutions from CreaLog
- offers extremely high overload tolerance and scalability
- enables rapid setup of new service providers and services
- ensures easy provisioning and administration of all service providers and services
- supports flexible charging models
- provides for real time charging



## BENEFITS FOR SERVICE PROVIDERS

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### The CreaLog Message Broker enables service providers to...

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- provide one-off and subscription services
- access anonymized subscriber data using a selectively defined interface
- gain in-depth information from detailed reports and statistics useful for enhancing their services
- eliminate their own access permission provisions (age qualification, credit standing, cost limits) because this is taken care of on the network operator's side

# CREALOG MESSAGE BROKER DETAILS

## Architecture

The CreaLog Message Broker is the essential link connecting network operators and value-added service providers (third party service providers). On one side, it provides interfaces connecting to short message service centers (SMSC) and multimedia messaging service centers (MMSC), to the charging system, and to the network operator's customer data base. On the other side, it provides rule based interfaces for message transfer from and to value-added service providers.

The Messaging Server communicates by a specific third party application programming interface (third party API). This interface can be customized to cater for network operators' existing communication interfaces in a flexible way and is extensible to support additional features.

## Statistics

All messages processed by the Message Broker help create both statistical records as desired and relevant charging data. Based on this, the network operator can generate reports and analyses as needed for internal purposes and for billing service providers.

## Administration

The network operator can make configuration changes rapidly and easily using the CreaLog Management Suite. Newly created services are distributed automatically among the Message Broker's servers.

## Mobile Originated and Mobile Terminated

The CreaLog Message Broker operates bi-directionally.

- It receives and processes all messages sent by mobile subscribers and makes sure they are properly charged and their content forwarded to the service providers (mobile originated)
- It provides for proper delivery of all messages that third party providers may send to their clients/subscribers (mobile terminated)

Each message – regardless of whether it is mobile originated (MO SMS or MO MMS) or mobile terminated (MT SMS or MT MMS) – is first validated according to validation and quota rules as specified in the Message Broker. Depending on the result of this validation, the message is then processed further or rejected.

## Validation by Rule and Quota

Message validation and processing rules are freely definable within the Message Broker. The subscriber information database might be queried to check whether a predefined minimum age required for sending or receiving certain messages has been reached, for instance. Furthermore, parameters such as the mobile telephone subscriber's gender or native language, or value-added service blocks can be checked. The system also checks for per-subscriber denial settings for individual value-added services.

The Message Broker will also check for individual cost or quantity limits such as maximum number of messages per unit of time and service provider, defined by quota rules. Load limits of this kind, which might be provided for in a Service Level Agreement (SLA), can be configured separately for each service provider and for individual services as well.

Added to that, the network operator can define black-lists and white-lists to disallow sending and receiving certain messages for individual mobile subscribers or else to grant them unrestricted access.

## Real Time Validation

The CreaLog Message Broker checks for quotas and rules in real time. Prepaid subscribers undergo a validation of whether their remaining credit covers the respective service charge. If credit is sufficient and there is no limit of any other kind the system proceeds to search the SMS or MMS content for specific key words. The Message Broker is also capable of sending SMS answers, depending on the service in question. Answers can be sent in the mobile subscriber's native language, if desired.

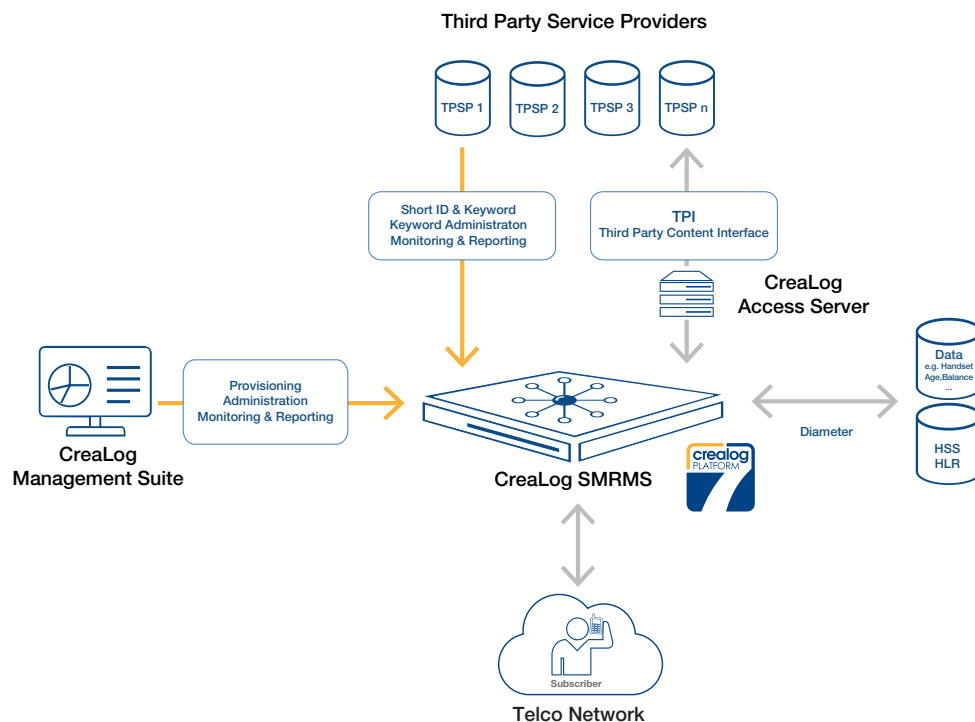
## Customization

The Message Broker can be customized to cater for specific rate and charging models. It can reject insulting, threatening, and inappropriate content and send a suitable automated answer SMS in such cases. The Message Broker forwards subscription service registrations and removal notices in real time. The rules engine responsible for this is fully programmable and makes use of the standard script language, ECMAScript. Rules for this rule engine can be defined by the network operator or the service provider, depending on who is authorized to do so.



# THIRD PARTY INTERFACE FOR SERVICE PROVIDERS

To communicate with the Message Broker, suppliers offering SMS and MMS based services use a third party API offering customization flexibility to accommodate the network operator's needs. This forms the basis for exchanging inbound and outbound messages with the service provider. Moreover, the third party API also enables service providers to access the network operator's infrastructure including subscriber data in an anonymized, legally compliant, and physically secured way.



Thomas Nussbaumer  
Managing Director  
Central Region, Selecta AG

## SMS PAYMENT IS KEY FOR US

«On average, 20 to 25 % of public vending income from from our machines in Switzerland are paid via SMS. SMS payment has come to be a key payment option for us and we are very happy with this development. This is why we have decided to refine the use of this payment method further in 2016 in an effort to make it even easier.»

# MOBILE ORIGINATED PREMIUM SERVICES

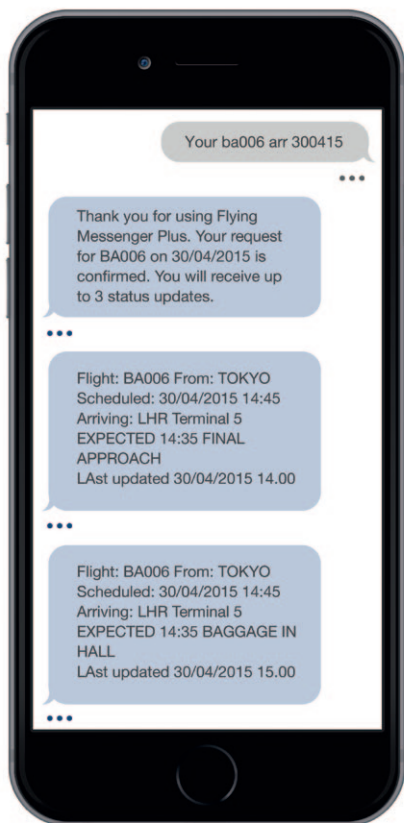
Known examples of premium SMS services include news subscriptions covering sports clubs. Keyword SMS messages make for straightforward, easily comprehensible registration and termination of such services.

Dating agencies operate chat rooms based on premium SMS services, and retrieving weather forecasts, traffic information, time tables, and departure times as well as car owner identification by license plate all offer substantial added value for users and will generate continuous premium SMS revenues for network operators and service providers alike.

Micropayment based on premium SMS will also generate revenue with network operators or carriers. Reliable data transmission and mobile subscriber online charging combine to form an ideal basis for paying parking fees, public transport fares, or goods purchased. As early as 2011, Swiss based vending machine manufacturer Selecta started to prepare their vending machines for cashless SMS payment, for instance. Customers only need to send an SMS message containing the vending machine's serial number to authorize their payments and can then directly select the desired product on the machine's display. Some 20 to 25 per cent of all public vending sales from around 2500 Selecta machines deployed in Switzerland are charged via SMS.



Thanks to its high processing speed and overload proof, the Message Broker is also well suited for rapid and simple setup of SMS voting systems and competitions. Needless to say that event supervisor's and network operator's requirements such as quota rules for individual service providers or exclusion of underage subscribers can be allowed for.



## MOBILE TERMINATED PREMIUM SERVICES

Secure bank transaction number (mTAN) transmission, car sharing booking details as well as bus, train, or plane delay announcements enjoy widespread use.

In this context, evaluating delivery notifications can be used to ensure secure, traceable communications.

SMS based alarm systems can be designed to offer multiple escalation levels when alerting the relevant individuals. Alerting is rapid and includes a confirmation of the message transmission's result.

Location based messaging services can be realized by evaluating the mobile subscriber's location information. Specific advertising targeted at mobile subscribers entering or leaving a defined area (geo-fencing) can be implemented using additional parameters such as the subscriber's gender, age group and/or income group as qualifiers.

Finally, countless Internet-of-Things (IoT) solutions available today and Machine-to-Machine M2M signaling rely on SMS services. Also, failure incident and maintenance information transmission from industrial robots or heating systems by SMS are indispensable in many areas of the industry.



# MAIN FEATURES, COMPONENTS, AND INTERFACES

## OPERATIONS

- Modular, scalable solution
- Completely virtualisable
- Geo-redundancy
- Permanent real time data mirroring to distributed cluster nodes
- Maximum possible data security
- Supports distributed network architectures (SMSC/MMSC)
- Comprehensive statistics capabilities
- Open interfaces allow compilation of statistics
- Generates billing data based on information supplied by messaging servers
- Online/offline charging
- Management suite featuring administration and provisioning GUIs
- Configurable load limiting (SLA management)
- Can be integrated into any network operator environment

## KEY FEATURES

- Buffers and processes long MO messages extending over more than one segment (even across multiple SMSCs)
- Multilingual SMS/MMS services
- Parses SMS texts
- Transcodes third party API to applicable terminal device
- Blacklists and white-lists
- Allows defining custom policies using ECMAScript
- Subscription management
- Customer data retrieval
- Custom service provider APIs
- Reads and writes configuration files (e. g., via Web front-end)
- Supplies all provisioning data and configuration files for connected clients (messaging servers)
- Stores all A2P (Application-to-Person) data in a data base (caches data while data base is unavailable)
- Counters (used for load limiting and quota rules, among others)
- Application server front-end used to provide information on current real time performance and for system configuration
- Management suite assigns newly created services and forwards configuration changes made by network operator (administration GUI)

## INTERFACES

- SMS and MMS connectors (SMPP, UCP, MM7 among others)
- Interface to billing system along with provisioning GUI
- Interface to A2P reporting
- Supports XMPP for links to messaging services
- Supports Diameter, SOAP, http(s), LDAP, SQL, Splunk, etc.

## VIRTUALIZATION PLATFORM AND FIVE NINES AVAILABILITY

CreaLog customizes and integrates the CreaLog Message Broker's modular standard components into the network operator's environment and back-end systems according to the operator's requirements.

The Message Broker runs on any virtualization platform but can also operate as a stand-alone solution complete with its own hardware. The system is deployed with the network operator's redundancy strategy in mind and in accordance with their geo-redundancy requirements. In this way, system availability levels of more than 99,999 % (five nines) are attainable.

## SIGNIFICANT A2P SMS MARKET GROWTH

According to a study Transparency Market Research published in mid-2015, the SMS based application-to-person market will enjoy pronounced growth in the years to come. The international analyst organization expects a compound annual growth rate of around 4.2 % for the years from 2014 to 2020. This means that the A2P SMS market's annual worldwide potential is forecast to grow from \$ 53,07 billion in 2014 to \$ 70,32 billion in 2020.



Source: [www.marketersmedia.com](http://www.marketersmedia.com)

# OUTLOOK

## PAVING THE WAY TO A CENTRALIZED SERVICE DELIVERY PLATFORM

The CreaLog Message Broker is not only a platform highly suited for processing SMS and MMS messages complete with real time service provider charging and provisioning. Based on CreaLog's flexible system platform, it can also be configured for direct SMS/MMS subscriber service administration.

The CreaLog Message Broker is seamlessly integratable into existing CreaLog system environments. This enables network operators to realize complex multi-channel value-added service platforms that not only utilize SMS and MMS technology but voice, video, the Web, email, chat and social media as well.

Such a service delivery platform offers comprehensive cross-channel statistical analysis and service provisioning.

This empowers our solution to support both network operators and service providers in developing innovative top-selling value-added services.



Certified Integrated Management System  
for Quality and Environment

The information in this document does not constitute a binding offer. It is subject to revision at any time.

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