

# Mass Calling Solutions



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## Executive Summary

Call-In and Televoting TV and radio shows create thousands of lucky winners, millions of enthusiastic viewers and listeners and happy broadcasters alike. Attractive shows generate significant revenue streams for telcos, media companies and service providers through premium rate calls from their audiences or their connection fees.

The technical success of these shows relies on advanced call handling capabilities and data processing functionality needed to deal with the high volume of incoming calls and to process these calls in real time. The CreaLog Call-In and Televote Platform caters for both aspects, offering an easy to manage all-in-one solution combining state-of-the-art hardware and software components.

This white paper describes key elements of successful Call-In shows and Televoting campaigns and provides insights into the broad range of features the CreaLog Call-In and Televote Platform delivers and technical details of how it supports TV shows of this kind with standard show elements along with the service creation environment.

# Call-In Shows and Televoting Shows

Directors, editors, and producers (often referred to as showrunner) are interested in creating shows with high audience retention levels and in motivating viewer (and listener) to call-in in high numbers during the show.

For televoting shows, this motivation arises chiefly from the viewers' or listeners' urge to take part in a vote on candidates, placing a music request, answer opinion polls, or give a rating of the ongoing show. Prizes may be offered to help encourage calls but other than in Call-In Shows, they don't play a leading role.



# Call-In Shows

A typical Call-In Show is characterized by two major constituents, the first of which is its dramaturgy governed by the rules of the game and the other the underlying technical elements working to make the show take its course. Viewers wishing to participate are subjected to the rules of the contest as presented to them and in consequence, to the underlying mechanisms implemented in the hard- and software to make the show proceed in the desired manner.

The dramaturgy of Call-In Shows includes recurrent game elements with viewers admitted to take part trying to solve riddles or answer questions to win a prize. These characteristic game elements are complemented by elements of drama intended to further arrest the attention of the viewers and encourage them to call-in to participate.



## Game Show Design

Elements of game dramaturgy can include the following:

- The Game Show starts with easy to answer questions with increasingly difficult answers following as the game proceeds while prize values rise accordingly. The final question is very difficult to match the final prize.
- Participants are presented with unclear and/or ambiguous questions with only few of the many possible answers being correct. This leads to many contestants giving false answers and failing, so prompting additional viewers to try their luck.
- Answers to posed questions are not particularly difficult but the same game is repeated many times so it may take hours until someone is actually put through into the show. This is also intended to create a constant stream of call-in attempts.

## Elements of Drama

Elements of drama designed to grip the viewer's attention and encourage call-in attempts include the following:

- Large prizes are advertised and further increased as the competition advances, leading to a jackpot effect intended to tempt potential participants.
- Viewers are led to believe they alone know the right answer to a question by a large and growing number of contestants giving the wrong answer and failing.
- Acoustical effects (sirens) and increasingly urgent announcements creating the impression of ever rising time pressure.
- Announcements made by the show presenter delivering stimulating statements addressing the value perception of the audience.
- Audiovisual effects such as bright colors, flickering lights, ticking clocks, and double entendre talk addressing viewers' subconscious emotions.

## Call-In Show Elements

In addition to the dramaturgy and elements of drama, show-runners may use standard show elements to keep retention time and Call-In motivation on high levels. Standard show elements include:

- Answering Machine
- Line Game
- Hot Button

The element “Answering Machine” involves storing callers’ details and then calling one of them back as a result of a draw. Details of this kind are recorded and stored in the CreaLog system’s database. With the “Line Game” element, callers need to hit one of a certain number of active lines at the right moment. After “catching” one of the right lines, a caller is given the opportunity to leave his or her contact details as a voice mail. This information is recorded and stored in the CreaLog Televoting database, too. As the game nears its end, a caller is drawn from the database using a random algorithm within the CreaLog IVR system as part of the CreaLog Televoting Platform. This caller is called back and then directly routed into the show to try his or her luck at giving the winning answer to the question. In contrast, the “Hot Button” element works by putting callers directly through to the presenter while the show is on air. The Hot Button mode is activated at any time, either within a given time window or without a time limit (as a so-called Open Hot Button) during the show. Variations of this type of elements are:

- Get-the-line Hot Button – The active line must be hit exactly at the moment of activation.
- Money Line – One caller is selected ad hoc. This candidate then has the opportunity to “catch” one of the lines and receive a predefined amount of money given for the line in addition to the guaranteed prize.
- Traffic Light Game – Randomly selected callers are put into a waiting queue – indicated by green lights – one by one. Once all waiting positions are occupied (indicated by a red light) a caller is drawn at random among those waiting. This successful caller is put through into the show and is given the opportunity to supply the winning answer.

Call-in Shows are designed to making use of these elements. And in conjunction with the innovative CreaLog Televoting Platform various show concepts can be realized keeping the audience locked-in and involved.

## The Game from the Participants’ Perspective

Typically, most viewers consume a Call-In Game Show passively in front of their TV or radio. To participate in the show, contestants have to call a premium rate number or other numbers over a landline or a mobile device. In some shows it is possible to send an SMS to a premium rate short code number. Most participants will hear an announcement on the phone containing these elements:

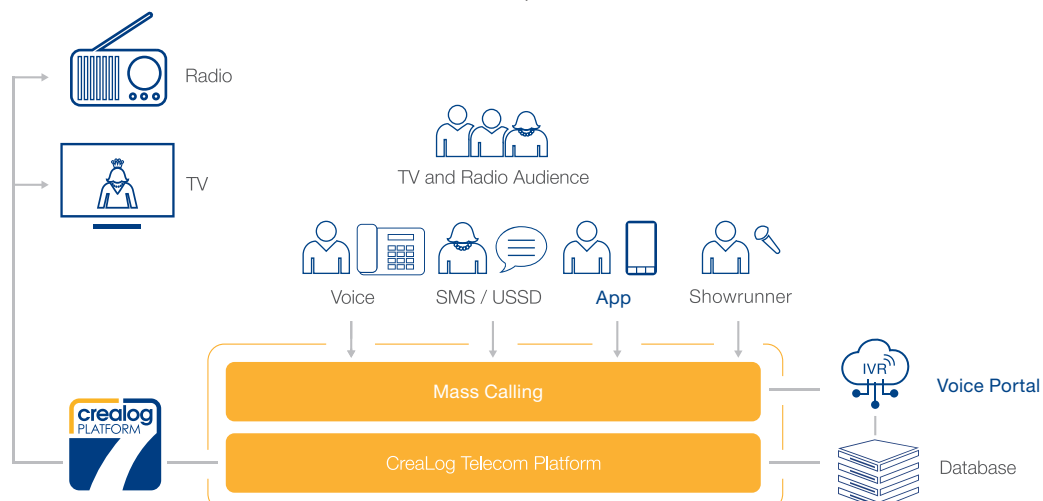
- A regretful notification of the fact that he or she has not won
- An invitation to call again

The CreaLog IVR selects these announcements at random from a pool of differently worded messages. Callers will hear different announcements as they repeat their call-in attempts. The intention of this is to encourage him or her to keep on trying. Occasionally, a caller will hear a message stating that he or she has hit an active line and the number of this line. In parallel, an SMS message could be sent to his mobile telephone prompting him or her to call again. All game rules and procedures, participation opportunities, and terms and conditions have to be made known to the audience, by posting them on the TV Show Web site, for example.

## Call Steering for Call-In Shows

It is of crucial importance that the showrunner has complete control over selecting callers for participation and the routing of incoming calls at all times while the show is on the air. As detailed below, the web user interface of the CreaLog Televoting Platform enables the showrunner to make changes at any time during the show in real time.

Moreover, information displayed on the screen TV – e. g., the number of free call-in lines – may not be consistent with the actual technical conditions. For certain reasons a showrunner might choose to close all lines and start playing by announcement instead of routing calls to a call center agent or to a wait queue, for instance.



# Televoting Shows

Televoting or Televote is the term used to refer to the telephone voting procedure where interactive media providers like TV, radio, web and print agencies are providing the audience with a range of different telephone numbers to vote on candidates, place music requests, answer opinion polls, or give a rating of the ongoing show.



Televote for musical contests

Voting takes place by viewers calling one of the offered numbers and the outcome of the poll is based on by the number of calls to each line. Music contests such as the Eurovision Song Contest, as well as others including World Idol, American Idol, and X-Factor use this method all over the world. Moreover, reality television wide spread contests such as Big Brother have implemented televoting to choose a winner or to eliminate contestants from the show.

The CreaLog Call-In and Televote Platform is able to accommodate very high volumes of televoting callers that popular entertainment formats reaching millions of viewers will produce. Examples are talent shows that are broadcasted in many countries around the world, with "Deutschland sucht den Superstar", "X-Factor", "Wetten dass ...," and other German shows making use of the CreaLog Platform. In many cases, a prize draw is held among the callers to encourage viewers to take part.

The primary objective of the call handling is to count the num-

ber of calls for the different contestants. Greeting and thank you messages for the callers can be recorded by the respective contestants and chosen for playback depending on the vote and changed from time to time.

For a prize draw, all calling party numbers are stored on the CreaLog Call-In and Televote Platform. In a second phase, a number is selected by the selection algorithm on the CreaLog Call-In and Televote Platform and put through to a call center to collect the caller's details for shipping or paying out the prize.

## The Televoting and Prize Awarding Procedure

1. Contestant dials Premium Rate number
2. First, a call is selected by the selection algorithm, potential winners are recorded and later the winner is called by the CreaLog Televote and Call-In Platform
3. The result of the televote is presented to all spectators

# The Technical Solution

The CreaLog Telecom Platform can handle call volume peaks of over 3000 CAPS, which a show of this kind may easily generate during prime time.

Building a call handling platform for Call-In events on TV, on radio and in print will generate low traffic, that will usually not effect the network of a provider excessively. On the other hand, major televoting shows such as the Eurovision Song Contest, World Idol, American Idol, and similar events generate much higher peak traffic, and, incidentally, much higher revenues as well. With an average of several million viewers of such a show the call-in numbers typically reach several hundreds of thousands per minute during minute-long peak times. Call volumes in this range reach the CreaLog Call-In and Televote Platforms in the German Vodafone and Swiss Swisscom networks today, for example. The CreaLog Call-In and Televote Platform is an off-the-shelf product which is already in operation for several mobile and fixed line operators including Vodafone and Swisscom. It features a distributed architecture, enabling it to offer geographic redundancy to reach highest availability rates of 99.999 % and more.

## Architecture Overview

The CreaLog Call-In and Televote Platform is implemented as a layered architecture with independent, scalable access, application / integration, and data layers. This allows for embedding it into existing telco network architectures and building redundancies in a straightforward way. The platform's architecture is modular and fully scalable as a whole. The solution comprises the following layers:

- Access Layer
- Application & Integration Layer
- Data Layer

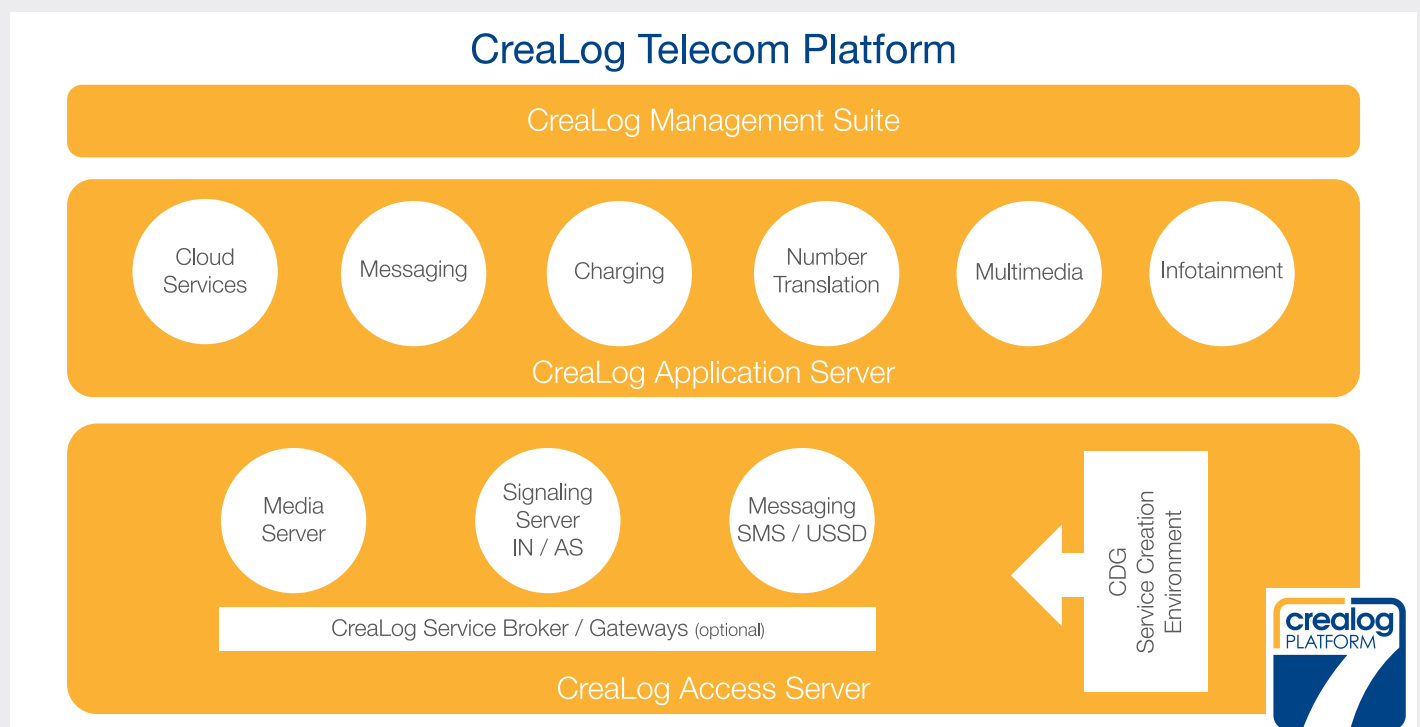
## Access Layer

The access layer nodes combine TDM, SS7, and VoIP interface technologies on each server. This ensures connectivity for all network types and simplifies integration with traditional TDM networks as well as to NGN and IMS networks. And this makes the access to Televote and Call-In applications for all kinds of mobile and landline phones very easy.

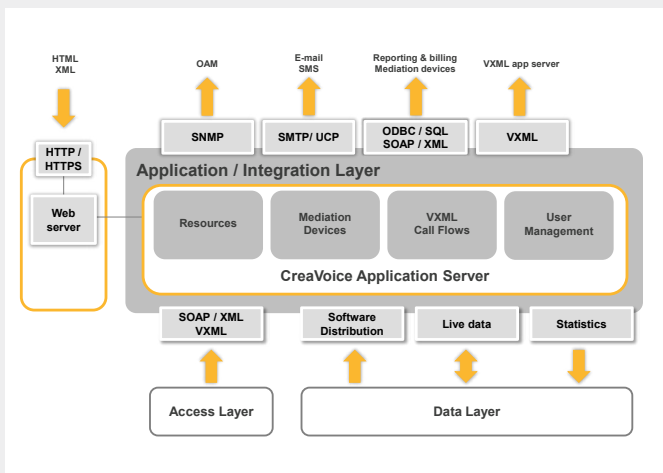
Often TV contests allow participation via premium rate SMS messages in parallel to calling in. These messages can be integrated into the CreaLog platform's call management flow. CreaLog offers its own SMSC or integration interfaces to the operators' Short Message Service Centers (SMSC). Typically, interfaces using standard protocols such as SMPP, UCP and HTTP or, alternatively, proprietary formats are used.

The CreaLog Telecom Platform handles all participation media including voice calls, SMS, web and e-mail within the same work flow framework. The CreaLog SMS Media Servers are seamlessly integrated into the CreaLog architecture. Many CreaLog customers use the same workflow for voice and SMS messages. This workflow is created using CreaLog Dialog Graphics and can be managed by the CreaLog Management Suite.

The session control assigns each voice call or SMS message to the appropriate work flow. These workflow descriptions are generated with the CreaLog Service Creation environment and are managed through the CreaLog Distribution Manager.



## Application & Integration Layer



The CreaLog Application Server manages all resources needed in a workflow as well as the platform as a whole in a comprehensive way. The application's resources such as configuration files, announcements, text-to-speech, and automatic speech recognition as well as reporting and statistics are managed for the platform and for each individual contact.

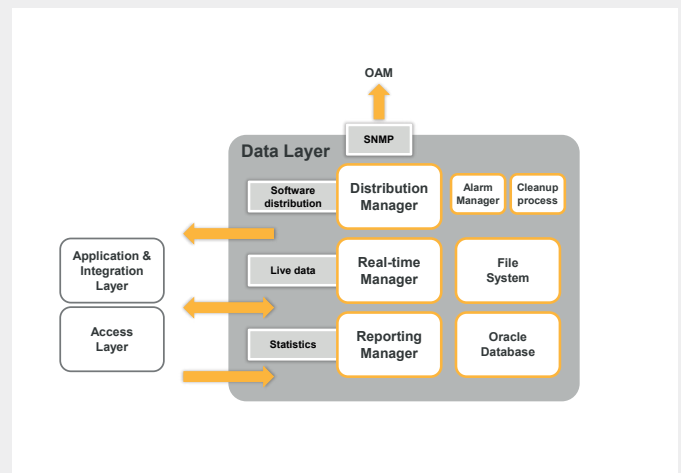
The application management interface serves to manage the distributed Televote and Call-In Platform with a Web front-end and via web services (XML). Due to the fact that many dialogs need input from other system or deliver output to legacy reporting or graphical systems the application server also acts as a mediation device and offers integration to other systems using standardized interfaces including:

- XML/SOAP/RESTful web services
- ODBC/SQL
- HTTP/HTTPS
- FTP/SFTP
- DIAMETER
- Others

The multi tenant CreaLog Call-In and Televote user management permissions system for clients, administrators, group administrators allows setting up companies as clients. Each client can have multiple users. Using roles with individual permissions, rights can be easily administered and assigned to administrators. Every user receives his own login and password, granting him access to only those parts of the web interface for which he has proper authorization. In addition, the screen design of the CreaLog Televote and Call-In interface can be fully customized to the customer's corporate design for each of the different tenants.

The user management allows very flexible handling of users, user groups, profiles and rights. Practically any requirement regarding customer relationships, organizational structures and workflow organizations can be implemented.

## Data Layer



The data layer's functions reliably store and manage all data that is processed in the system. This layer comprises different components:

- Database
- File storage
- Distribution Manager
- Real-time Manager
- Reporting Manager

The database is an Oracle database installation that stores all Call Detail Records (CDRs), statistical records, configuration information, mail data with references to local voice recordings and callers' contact details.

The file storage mainly holds application data, which are distributed to the distributed sites. This includes application data such as call flows, announcements, and configuration data. All of the CreaLog Call-In and Televote Platform access and application servers are connected to the Distribution Manager. This unit actively synchronizes outdated and/or missing data on the connected clients on the server systems.

The Distribution Manager ensures that each server is as autonomous as possible. An access server can run a voting event without connectivity to the central site, for instance. The application can decide locally how an outage should be handled (e.g., reject calls, play outage announcements, play standard announcement but don't count votes ...).

The Real-time Manager manages centralized resources such as voting counters. The access and application servers offer a rich feature set for influencing these counters, to implement simple counting, select the next number of winners, draw a winner every so many seconds, hot-buttons, and more. The Real-time Manager is the core element for Televoting and Call-In applications. It is fully tested for highest load and fault tolerance levels. The central Real-time Manager also handles the administration of multiple callers. They can access the platform through different media servers using a range of technologies (telephony, SMS, web or apps) and across geographical locations. In addition, the Real-time Manager controls further call management requirements such as black listing, vote number limits per event, and much more.



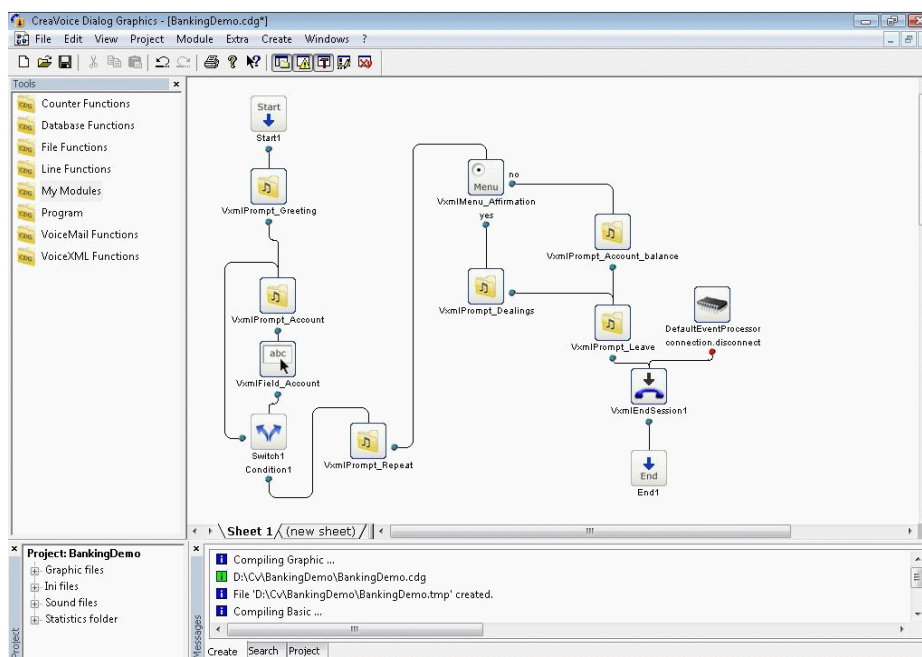
HTML5 reports

The Reporting Manager and its client are responsible for transferring statistical data, CDRs and billing records from the access and application servers to the central database in a fail-safe way. If a connection fails, the data is stored locally and automatically uploaded once the connection is restored. A cleanup process continuously monitors the database and automatically erases outdated record set. An Alarm Manager collects the SNMP traps of all system processes and forwards corresponding e-mail, SMS reports or web services.

## Service Provisioning

### Workflow Creation Environment

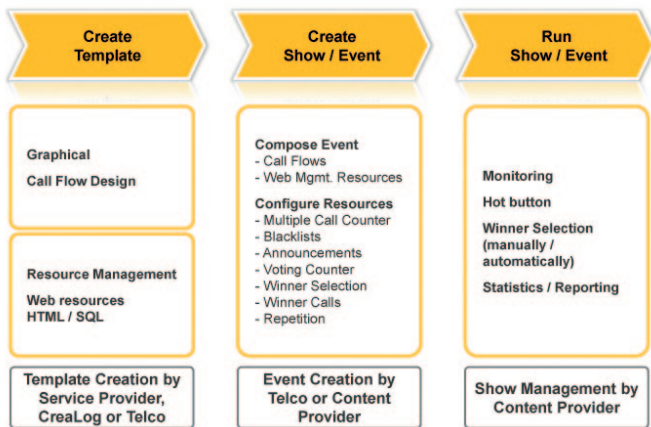
The CreaLog CDG Service Creation Environment makes it possible to put professional dialogs online rapidly even without extensive programming expertise. The flexible development environment allows applications to be modified quickly based on caller behavior and system usage and hence to respond to customer requirements and company priorities without delay. Furthermore, all workflows created for Televote and Call-In Shows can easily be transferred to other channels such as SMS, resulting in substantial savings in terms of time and resources.



CreaLog SCE workspace

## Service Creation Process

For the most part, Telco programmers take on the task of creating services for Televote and Call-In Shows as a service for their entertainment media customers. As described above, shows are generally based on similar elements and methods. These only differ from each other in minor degrees. Therefore, building blocks and templates are pre-designed for typical show elements, procedures, and reports.



Service creation and production process

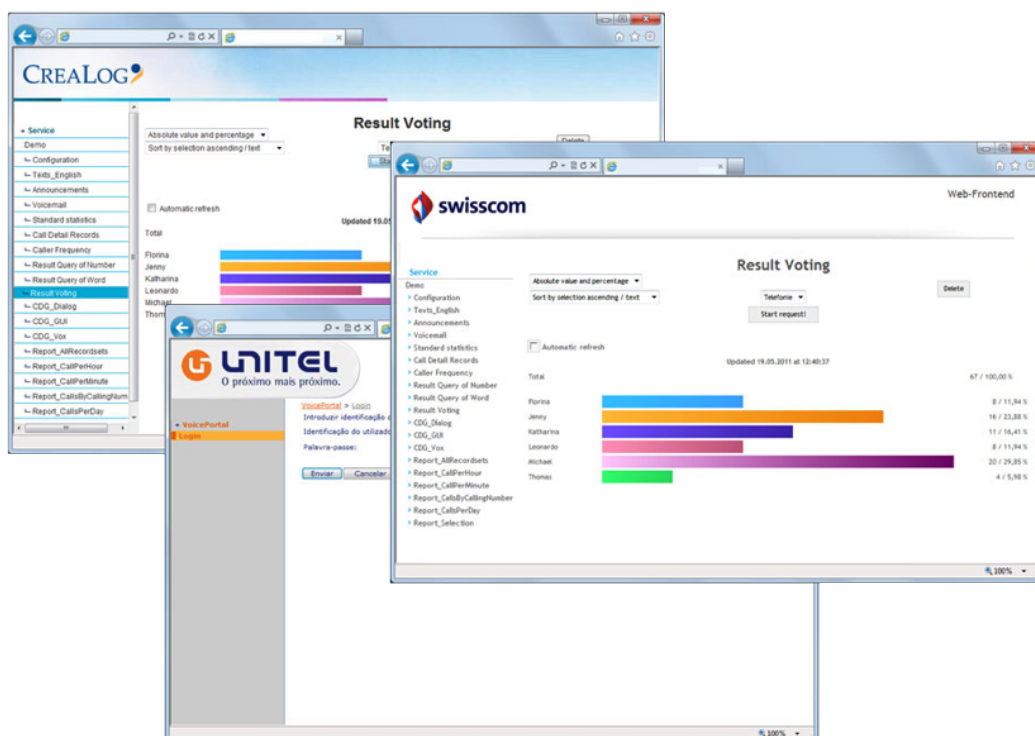
When a new show is prepared, its call and SMS process flow can be designed effectively and rapidly. This leaves only the specific resource elements to be integrated into the call flow and configured appropriately. The CreaLog Web front end supports multi tenancy and can be branded. It also supports localization for different languages and time zones. New languages can easily be added to the localization database.

The CreaLog Mass Calling Platform provides TV, radio and print companies with a comprehensive show control in the form of a secure Web user interface. All provisioning and configuration management for the CreaLog Televote Call-In Platform can be handled using this interface. This means that the showrunner is in full control of the participant communications and can change all settings related to caller selection, automated announcements, Hot Button etc. in real time while the show is on air or is being recorded. All results can be tracked in real time and can be printed for prompt cards or else be superimposed on a TV screen using a graphic interface.

## Reporting and Statistics

In most countries, legal provisions call for detailed data logging of Call-In and televoting shows by TV stations and media companies. Today, the CreaLog Televote Call-In Platform is in use in countries with very strict regulatory provisions. This means that many regulatory provisions concerning the execution of such shows are already implemented in the platform. Examples include:

- Quote call rates before, in the course, and following a call
- White-list and blacklist individual caller numbers
- Limit calls per caller and number of calls or other criteria with the help of CLI (Call Line Identification)
- Log, encrypt, and truncate CLI numbers
- Set selection mechanisms



The CreaLog Mass Calling Platform browser interface

# Mass Calling Application Features

## Application features

- Call flows for Call-In and Televote contest formats
  - Line games, “Hot Button”, answering machine and variants
  - Voting for candidates, music requests, opinion polls, or show ratings
- Voice and SMS caller limitation with MSISDN, CLIP and CLIR
- Blacklist and whitelist
- Flash routing for inbound caller for “Hot Button”
- Callback for “Lucky Loser “
- Winner drawing
- Individual call routing
- Multi level gaming
- Language assignment

## Contestant interfaces

- Seamless integration of voice, SMS, web and e-mail interaction
- Automatic speech recognition (ASR) multi language (50+)
- Text-to-speech (TTS) multi language (40+)
- SMS response and answers with digits, characters or individual content

## Multi-client capability

- Web-based administration for multi tenancy
- Different views and reports for Telco / reseller / TV station
- Web-based call center integration
- User and rights management with optional single-sign-on

## Reporting, analysis and integration

- Consolidated reporting for voice, SMS and web interaction
- Flexible definition of call data records
- Geographic reporting with CLI number, when available
- Real-time monitoring for HTML or XML requests
- Real-time synchronization and real time counter
- Access to voice mails with HTML or XML requests
- Mass-download of voice mails and CDR data for offline transcription and for CRM
- Automated database fallback and recovery

## Service creation

- Consistent service creation for voice, SMS and web interaction
- Template creation for different show formats
- Graphical, Object-oriented call flow designer for all media
- Integration of databases, multimedia and announcements
- Graphical VXML call flow designer
- Algorithm modules for winner draw
- Web interface creation for administration and reporting

## Capacity

- Call attempts per second: 3,000+
- SMS per second: 3,000+
- Telephony ports (TDM / VoIP): 20,000+
- Certification for CAPS Class 1,680 by the independent certification organization TÜV

## Voice interface

- Announcements, music, tones, live stream
- Full-duplex universal port capabilities
- Recording and playback
- Mass-calling-capable storage for voice mails
- Multi streaming and audio mixing
- DTMF detection and generation

## SMS interface

- Text recognition and interpretation
- Regular expressions

## Web interaction interface

- HTML and HTML5 (mobile clients) interface

## Availability and redundancy

- System availability > 99,999%
- MRFP autonomous running capability
- Hot swappable MRFP nodes
- Redundant power supplies and cooling fans
- N+1 redundancy on media cards / servers
- Clustered database servers
- Ethernet port redundancy
- In-service update and change for software applications

## TV interfaces

- Interface to TV graphic engines / character generators

## Telco network integration

- Telephony protocols: SS7 ISUP, ISDN, CAS, SIP, MSCML
- SS7 protocols: INAP, Camel, MAP, MTP1-3, SIGTRAN
- Codecs: G.711, G.722, G.722.2, G.723.1, G.729a/b and others
- SMS: CreaLog SMSC, UCP, SMPP, HTTP interface, SNMP
- Billing: Online/ offline, Diameter/ Radius, proprietary formats
- Distributed and layered architecture for NGN and IMS networks (3GPP)

## Operations

- Multi-tenant, web-based management, configuration and provisioning
- Rights managements with users, groups and profiles
- Monitoring and alerting via SNMP (MIBs and traps)

## Add ons

- Short Message Service Center (SMSC)
- IN architecture components: Service Control Point (SCF), Assisting IP (SRF), IN Manager
- Next Generation Intelligent Network Management Suite (NGIN)



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