



connect. control. monitor. visualize.

director



One system to control them all

Director excels at PA system supervision and control

What is Director and what can it do?

Director is a system management software that is used to interconnect, manage, supervise, monitor visualize and operate various 3rd party systems such as public address or evacuation systems, building automation and security systems, telephony and building IT. Director can be used as workstation and as server.



Director operator workstation

Workstation features a highly flexible graphical user interface for system supervision and control, with emphasis on public address management.

The **interactive edit mode** really sets Director apart from other management systems because it allows quick and easy changes at any time without restarting.

Highlights:

- ✓ Custom multi-page layout with navigation
- ✓ Customizable look and feel
- ✓ Graphical zone selection/visualization
- ✓ Audio streaming and recording
- ✓ PA system health visualization
- ✓ Error and message database
- ✓ Ubiquitous message filtering and categorizing
- ✓ Time-control and scheduling (graphical editor)
- ✓ Advanced logging capabilities
- ✓ Interactive vector graphics (SVG)
- ✓ Interactive 3D components
- ✓ Programmable logic elements
- ✓ User extensions (scripting)
- ✓ Auto-sync between workstations
- ✓ High reliability due to full redundancy
- ✓ Multi-monitor support
- ✓ Text-to-speech (new)

Supported public address systems

- ✓ Variodyn D1
- ✓ Variodyn 3000
- ✓ IED Globalcom 8000
- ✓ IED Globalcom 5400
- ✓ SIEMENS Novigo (new)
- ✓ Cerberus Pace (new)

Supported open protocols

- ✓ SIP (new)
- ✓ OPC (new)
- ✓ EIB/KNX
- ✓ SNMP
- ✓ SMTP (email)
- ✓ GSM (via modem)
- ✓ Telnet
- ✓ SSH/SCP
- ✓ FTP/SFTP
- ✓ HTTP/HTTPS
- ✓ RTP
- ✓ MIDI
- ✓ OSMP
- ✓ HLS (video stream)
- ✓ MJPG (video stream)

Supported 3rd party protocols

- ✓ Daktronics
- ✓ PaProtocol
- ✓ IEDNET
- ✓ T-Systems BBR
- ✓ Philips HUE
- ✓ OSRAM Lightify
- ✓ ItecNet

Supported operating systems

- ✓ Windows 7/8/10
- ✓ Windows Server 2012/2016
- ✓ Linux (only web UI)
- ✓ MacOS (only web UI)
- ✓ IOS (only web UI)
- ✓ Android (only web UI)



Solving problems all round the globe

Director is a versatile middleware in the building management domain



Director server

Running as server Director usually connects different 3rd party systems with each other enabling seamless integration of otherwise incompatible systems.

Director server has made itself a name for high reliability and long term stability.

Server-client architecture vs. peer-to-peer

Which is the best architecture? It depends. Director implements both, standard server-client architecture as well as the highly reliable distributed peer-to-peer network architecture and applies the best choice for the task at hand.

In a Director peer-to-peer networks every instance is fully redundant making the whole installation extremely reliable and fault tolerant.

Highlights:

- ✔ Serving HTML5 pages for tablets and phones
- ✔ Multiple backup servers in hot standby
- ✔ Works well in virtualized environments
- ✔ Integrates with SIP telephone systems
- ✔ Interconnects incompatible PA systems
- ✔ Supports lots of open standard protocols
- ✔ Graphical configuration
- ✔ Change config without service interruption
- ✔ Works well with remote maintenance
- ✔ Adding new interfaces is no big deal (contact us)
- ✔ Provide an open interface towards 3rd parties
- ✔ Can be managed and controlled via OSMP
- ✔ Secure data transfer through encryption



Want to interface your product with Director?

No problem! We designed the OSMP protocol exactly for that purpose and we even provide you with ready-to-use reference implementations in the programming language of your choice.

OSMP - Open System Management Protocol

To make it easier for third parties to integrate with Director, we created a very well designed, easy to implement and most importantly free and open source protocol called OSMP.

OSMP Properties:

- ✔ Open source license
- ✔ Free to use, even for your own products
- ✔ Source code and binaries readily available
- ✔ Easy to integrate
- ✔ Secure (uses SSL encrypted Websocket)
- ✔ Easy to debug (JSON based)
- ✔ Well designed for system management
- ✔ Execute commands
- ✔ Subscribe for events and data streams
- ✔ Extensible with your own commands

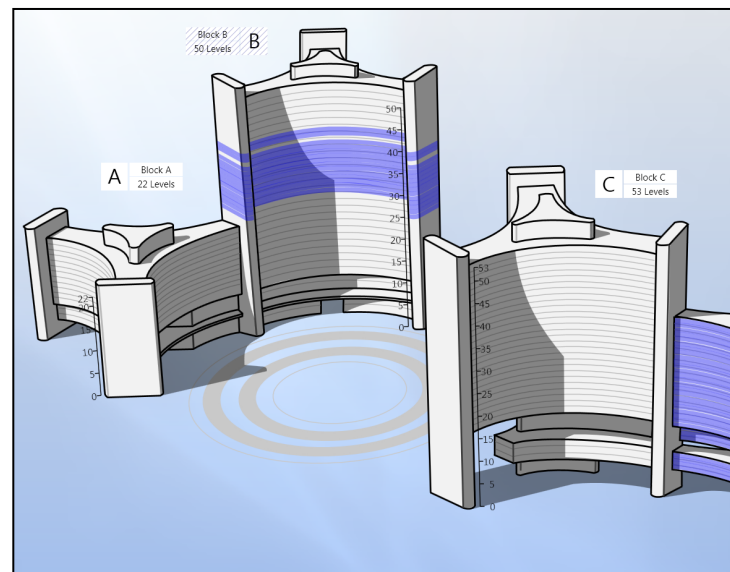


director



References

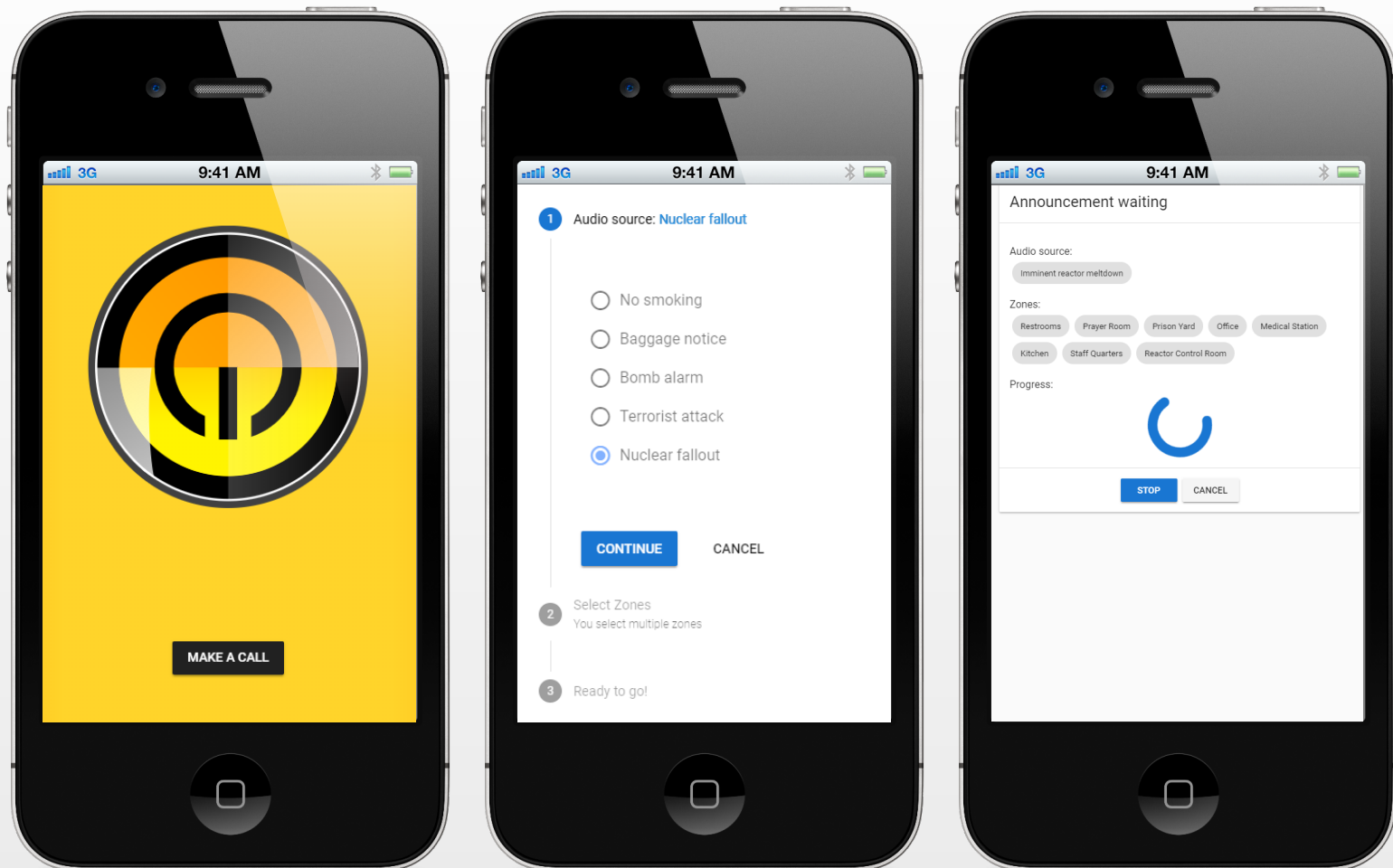
- ✔ Airport Köln-Bonn, Germany
- ✔ K&Ö (shopping center), Graz, Austria
- ✔ KVB (subway), Köln, Germany
- ✔ Reihnbahn (railway), Düsseldorf, Germany
- ✔ KKB (atomic power plant), Brunsbüttel, Germany
- ✔ ZF Sachs (production plant), Germany
- ✔ Fire Station Düsseldorf, Germany
- ✔ MS Panorama (cruise ship), Germany
- ✔ Airport Vienna, Austria
- ✔ Opel (production plant), Eisenach, Germany
- ✔ VAG (public transit), Freiburg, Germany
- ✔ KKK (atomic power plant), Krümel, Germany
- ✔ Tchibo (sales outlet), Germany
- ✔ Muscatatuck (military training center), Indiana, USA
- ✔ Deutsches Theater (theater), Munich, Germany
- ✔ VivaRail (railway), USA
- ✔ Airport Bremen, Germany
- ✔ Grand Casino Baden, Switzerland
- ✔ WDR (TV broadcaster), Köln, Germany
- ✔ Nordsüdbahn, (railway), Köln, Germany
- ✔ JFK Airport, NYC, USA
- ✔ New York Transport (subway), NYC, USA
- ✔ WTC PATH (subway station), NYC, USA
- ✔ Eli Lilly (production plant), USA
- ✔ Marine Atlantic (marine transit), Canada
- ✔ Hotel Sheraton, Tbilisi, Georgia
- ✔ Welle 7 (shopping center), Bern, Switzerland
- ✔ Sunrail (railway), Orlando, Florida, USA
- ✔ Paris Orly Airport, France
- ✔ Copenhagen Airport, Denmark
- ✔ E.ON (offshore wind parks), Germany
- ✔ Congressional Medal of Honor Society, USA
- ✔ Los Angeles Airport, California, USA
- ✔ Viva Next (public transit), Ontario, Canada
- ✔ Zorlu Center (multi-use complex), Istanbul, Turkey
- ✔ Bilkent Hospital, Ankara, Turkey
- ✔ KFA Jülich (atomic research center), Germany



Director GUI for a 50-story building complex

Director Web Call Station

Control your PA system via smartphone or tablet.



One Director server enables an unlimited number of devices to make calls

Director empowers your smartphone or tablet (or any other device with a browser) to be used for management, supervision or control purposes.

Above you see a basic web call station but there are also error notification, system supervision and maintenance web interfaces.

The web interface is configured in Director server, for instance, for the web call station you can select the available audio source, zones, the priority and other settings as well as some presentation settings.

The Director web interfaces, like the web call station, can be secured by password authentication and SSL encryption (HTTPS).

Push notifications

Director server uses push notifications to send updates like the call status or zone feedback which enables the web call station to be fully interactive.



Vienna Airport is the largest airport in Austria with an annual transfer volume of over 23 million passengers.



Vienna Airport

Multiple Director servers and workstations provide vital security relevant services for airport operation.

Vienna Airport is the largest airport in Austria with an annual transfer volume of over 23 million passengers.

Passenger calls and time controlled announcements

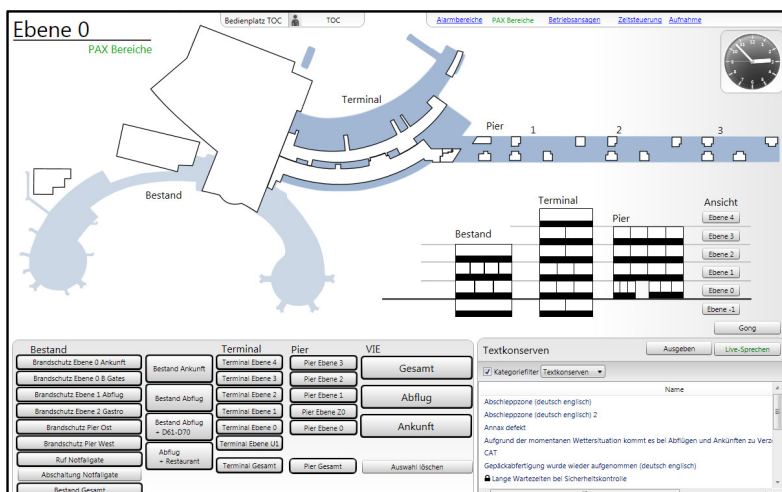
When you take a flight from Vienna, you will have heard Director do its job. Last minute passenger calls are dispatched every couple of minutes and every now and then you'll hear a reminder to not leave your baggage unattended or that smoking is prohibited. All that is handled by director since it was first installed on several workstation terminals back in 2010.

Vienna Airport has grown over the years and is a huge building complex. Director allows operators to precisely target specific areas with only a few mouse clicks. Also, it manages scheduled announcements and conveniently allows them to time their live announcements such that they do not collide with the time controlled pre-configured texts.

Integrating evac announcements with building tech

Director proved to be stable and reliable, so it was soon entrusted with system integration jobs. For

instance the evacuation lights and signs have to be synchronized with the announcements and escalators must stop in case of an emergency.



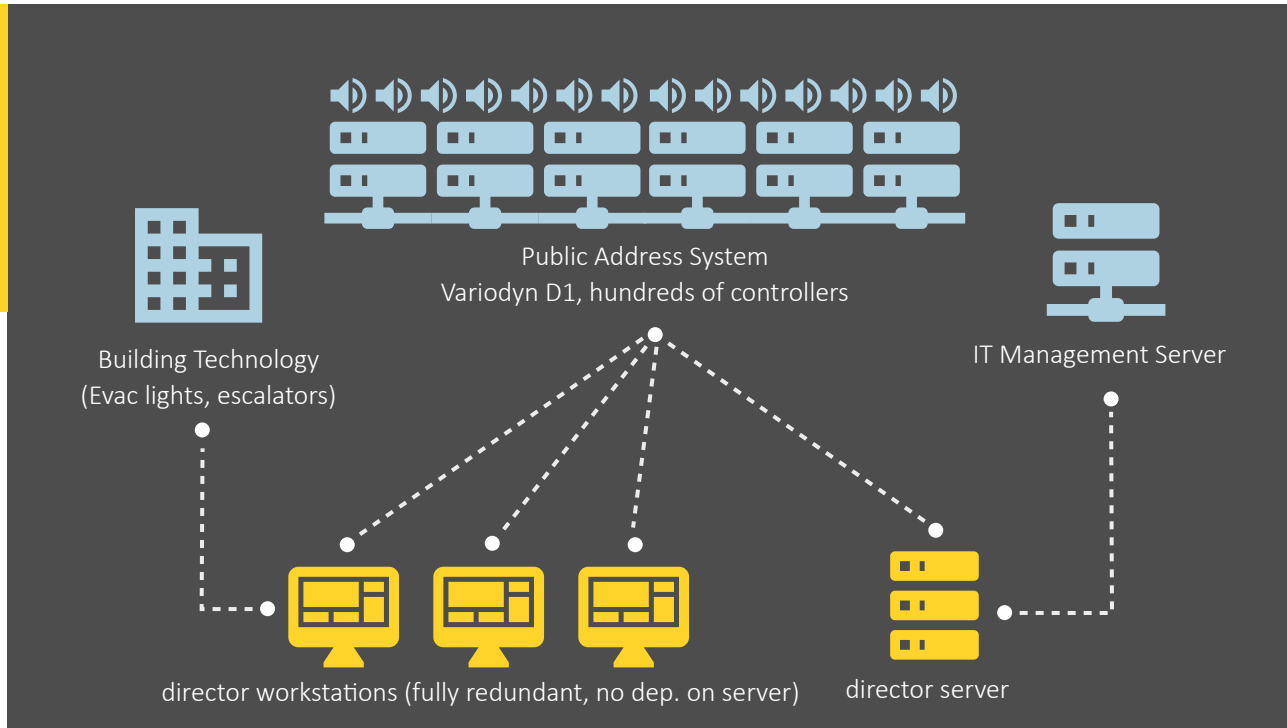
Graphic zone visualization for PA at Vienna Airport

A detailed map of every story of the building gives precise control while a schematic cut-through visualization lets the operator keep an eye on the overall building status. Programmable buttons allow to select complex zone conglomerates, selection of zones is visualized in all different displays

Since both, day-to-day operation and emergency evacuation was to be carried out from the same workstations, a clever zone-logic had to be implemented to automatically control the evacuation signs and the escalators only for alarm messages in the selected areas.

Integration with the IT-management system

Soon after, the IT-department needed the PA-system devices integrated with their IT-management solution. The preferred protocol was SNMP. Even though the PA-system has rudimentary support for SNMP it was just



Vienna Airport: while providing essential PA management services, director also enhances integration of PA with other systems.

Director is indispensable for the tech-department

Vienna Airport is so huge, that there are several hundred PA system controllers installed, resulting in an incredibly high number of individual devices (amplifiers, call stations, speaker lines etc.). All those devices are monitored by director and their messages gathered from the controllers are managed in a centralized event database.

Every day thousands of messages are produced throughout the system. Director sorts through them, categorizing them into groups of non-important, important and critical events. These groups are then further segmented by building blocks.

Critical events are directly forwarded to the tech-staff. Because the error-messages from thousands of devices are neatly categorized and sorted by building block, Director is indispensable for the tech-department at Vienna Airport.

not right. The IT-management system wasn't able to cope with the complexity of the huge PA installation.

Again it fell to a Director server to integrate both parties with each other. We simply provided the IT-management system with a custom SNMP-interface according to their needs. For Director, adapting to other systems is an easy task. Where other system's interfaces are rigid and inflexible, Director's interfaces can be easily shaped to the specific needs of the customer.

Now the IT-management system is able to query only the important events and messages, which Director already categorized and sorted so neatly.

This use-case is typical for Director. Due to its abundance of interfaces to a wide range of technologies, it is often used to interconnect otherwise incompatible systems.

World Trade Center Station

Director manages 200 individual signs and provides connectivity to the announcement control system.

World Trade Center is a terminal station on the PATH subway system. It is located in the World Trade Center complex, within the Financial District neighborhood of Manhattan in New York City. It is served by the Newark–World Trade Center line at all times, as well as by the Hoboken–World Trade Center line on weekdays, and is the eastern terminus of both.

Director is the glue between PA and Digital Signage

Public address systems are quite rigid. They can not easily be extended to interface with any other system technology, especially when there are no open protocols for a specific use-case. Director is quite the opposite. It has been designed to be easily extendable.

At the WTC station the PA-system (IED Globalcom) was to be enabled to synchronously show the message text of any announcement on the appropriate signs.

Custom rendered display messages for all sizes

Thanks to Director acting as a redundant display server all announcements can now not only be heard but also be seen on the 200 Daktronics signs.

This task was quite challenging because there are a handful of different display sizes requiring the text messages from the PA system to be broken down into accordingly sized frames which are then rendered synchronously to the audio announcement.

Since the announcement text is not known a priori the text processing has to be done in realtime.

Hot stand-by

For increased security two redundant Director servers operate at the same time, one in hot stand-by. The servers monitor each other and take over operation seamlessly should the other fail for whatever reasons.



World Trade Center (PATH) Station is an architectural highlight in New York. Standing at Ground Zero it resembles the shape of a white dove.



The breathtaking view from inside the WTC station.
Director proudly is part of all the technology that makes this great architecture function smoothly.

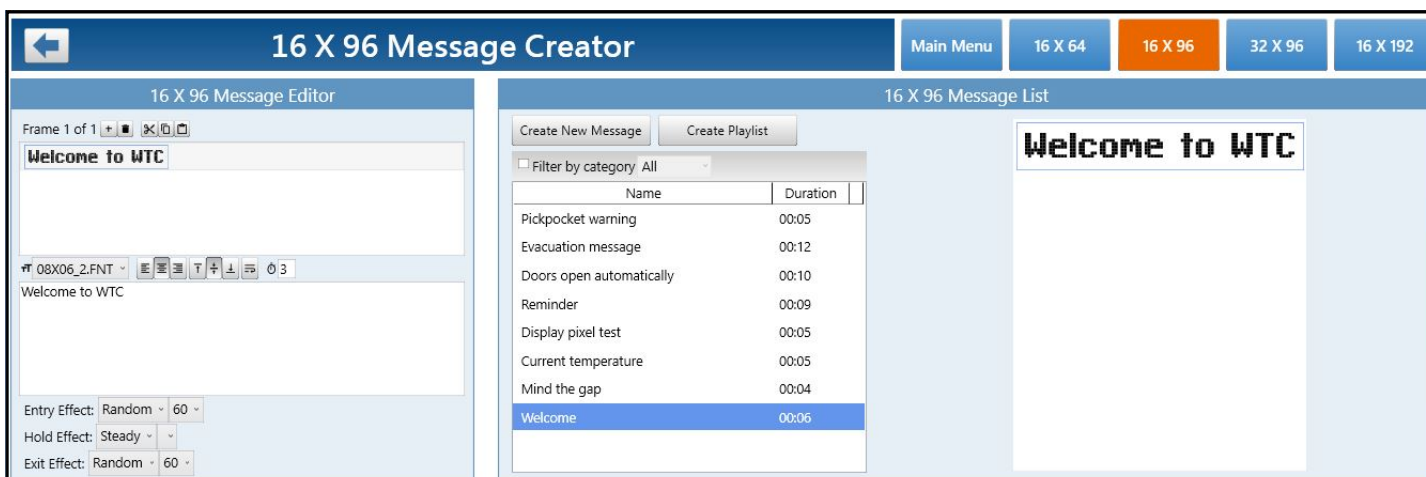
When the stand-by server automatically takes over for the main display server everything continues as if nothing happened. The additional complexity that such a redundancy design naturally brings with it is hidden from the workstations and the announcement system. For them it is as if they were talking to one highly reliably server.

Workstation synchronization

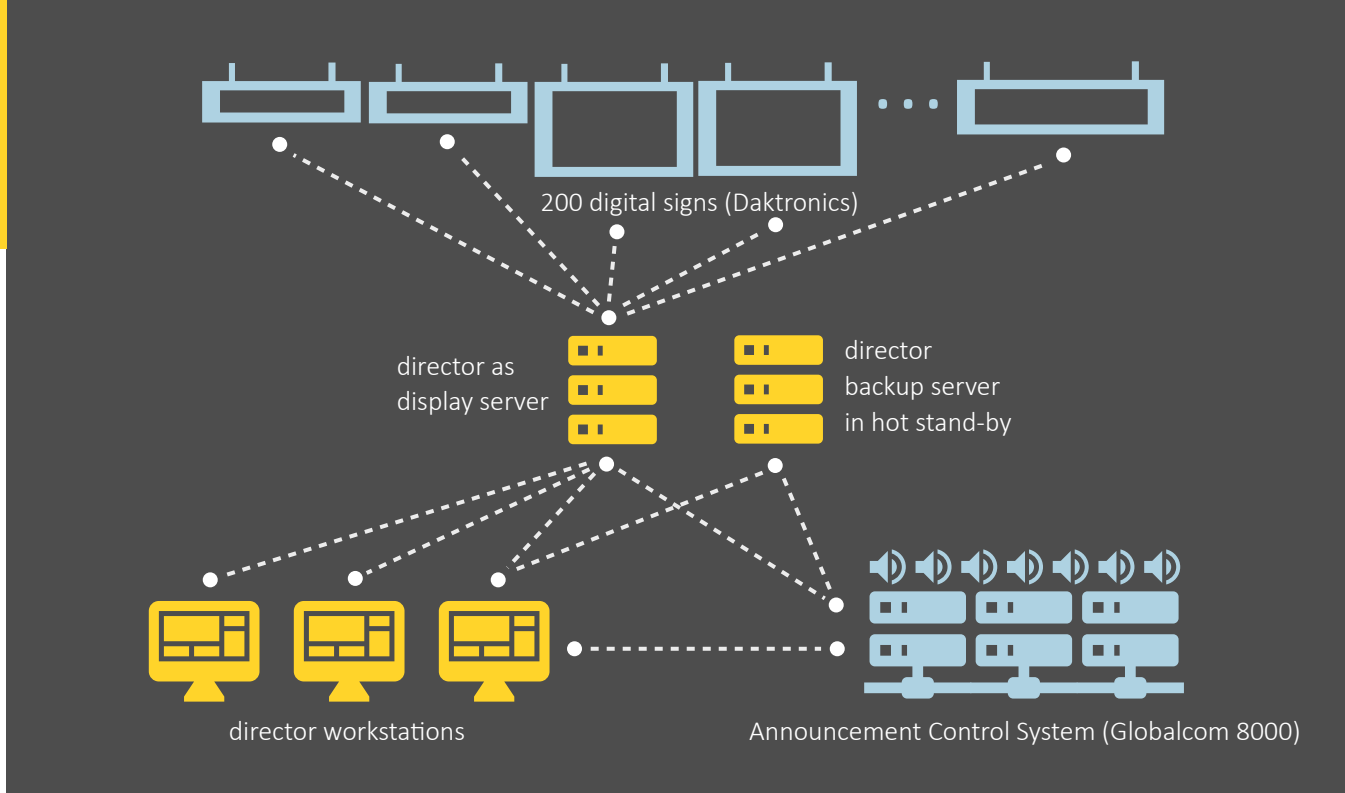
Director workstations always stay in sync. New operator messages are swiftly distributed between them, configuration changes on one workstation automatically take effect on all other workstations. All that is done via the powerful **Director-Link** protocol.

This protocol enables full workstation transparency meaning that no matter which workstation is used the actions take effect on all other workstations. The same goes for feedback from external devices.

Even though the WTC workstations are not directly connected to the signs, it looks and feels to the operators as if they were.



Part of the Director user interface operators use to create new sign messages.



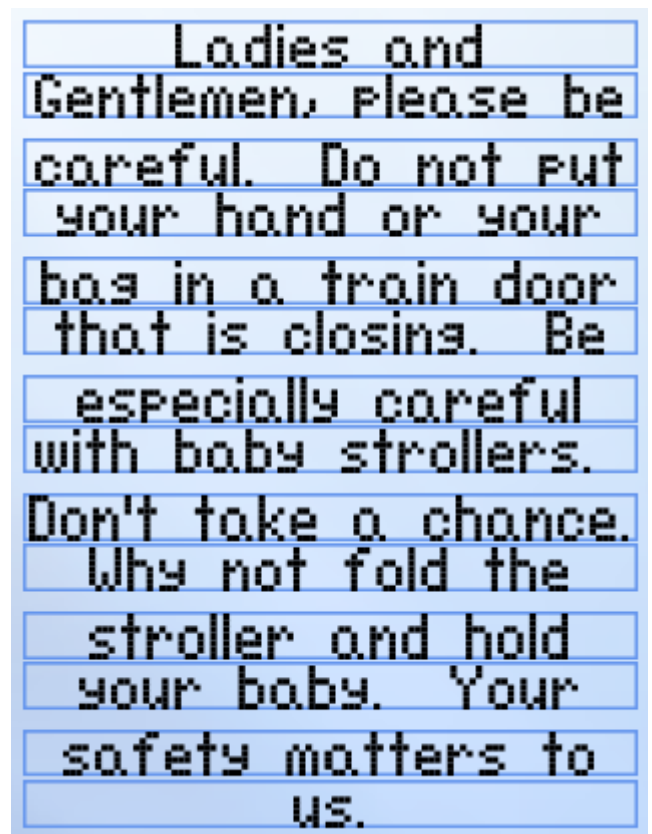
World Trade Center: Director interfaces all the signs with the PA system and the operator work stations. Since the signs allow only one incoming TCP connection at the same time Director also effectively allows multiple entities to control the signs.

Sign message preview rendering is crucial

As an operator you need to know whether the text will fit on the target signs. Director solves this elegantly by rendering the text as if it were displayed on signs with pixel precision. Longer messages can be split into multiple frames.

A sign message editor with interactive preview allows the operator to compose messages with all available fonts, formatting options, text justification and effects.

Sign message lists hold pre-configured messages that are ready to be dispatched. When sending a message to a number of signs Director shows visual feedback of the currently displayed messages for every sign.



Interactive visualization of a long text as it is broken down into frames on a 96x16 pixel sign.

Every frame shows two lines since a 7 pixel font is used. Director uses the actual fonts that the sign firmware uses to render text. This enables pixel-accurate preview of sign messages so the operator can make sure everything is legible before it hits the sign.

Hotel Sheraton Tbilisi

Director serves failure notifications directly onto technician's phones.



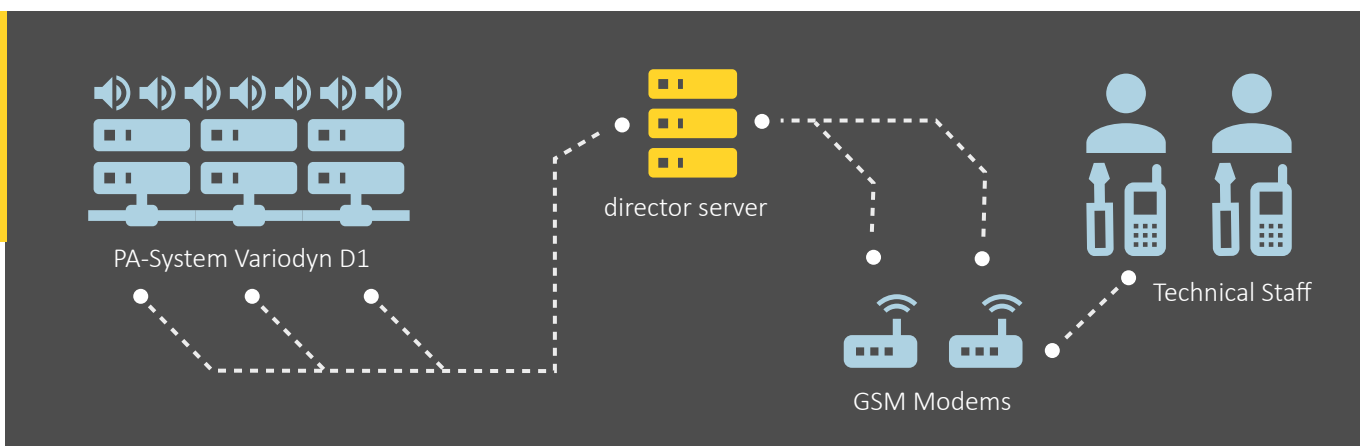
Hotel Sheraton Metheki Palace is a huge hotel complex in Georgia's capital city Tbilisi.

Hotel Sheraton has very high security standards. They wanted to minimize their staff's response time in case of technical problems.

Director was chosen for the task because it has excellent error handling capabilities and filtering rules. Every failure runs through a cascade of filters until it is determined whether or not the tech staff has to be alerted or not and whom to notify.

Weight balancing

The GSM modems applied only have so much message throughput. In an emergency potentially a large number of phones have to be reached within a very short amount of time. To increase SMS throughput multiple GSM modems are used and Director balances out their workload. The phones send receive and read notifications back to the modems which Director evaluates.



Hotel Sheraton: Director processes and filters all device error notifications, categorizes them and sends SMS notifications out to alert the tech staff of any problems.



Bilkent Integrated Healthcare Campus, located just outside Ankara, is a flagship project in Turkey's ambitious hospital development programme.

Bilkent Healthcare Campus

Director interconnects three different systems - building management, public address and VOIP telephony.

At Bilkent Hospital Director acts as a SIP telephony server to relay calls from KAREL's VOIP telephony system directly into the Variodyn D1 public address system.

Furthermore Director exposes its OSMP interface for the SIEMENS Desigo Control Center to be able to access the Variodyn devices as well as to enable Desigo CC to launch evacuation announcements.

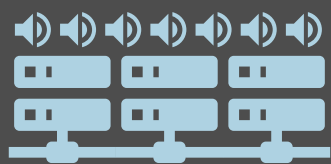
In case of emergency every phone can serve as a call station to evacuate certain building parts. This can be accomplished by dialing a special evac number.

Director picks up the phone

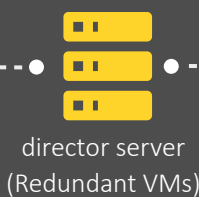
On the other side of the line Director picks up and requests the caller to input a security code in order to proceed. Then Director guides the caller through a voice menu to select the target building part to speak to.

After the beep the caller may speak. Director transcodes the live audio on the fly and streams it into the PA system in realtime.

At the same time operators of the Desigo CC management system can start PA announcements via Director.



PA-System Variodyn D1



director server
(Redundant VMs)



KAREL Telephony System



Staff

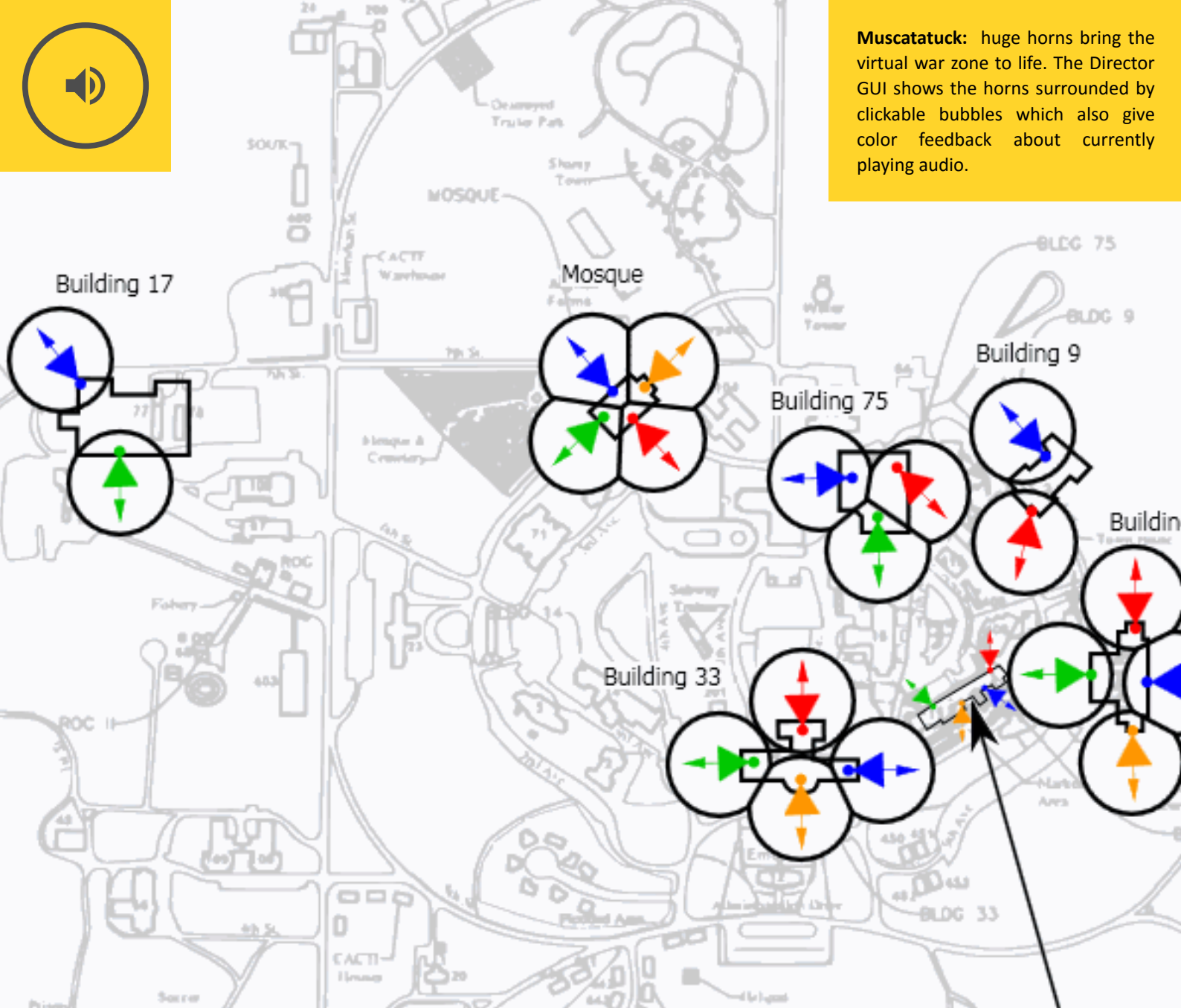


SIEMENS Desigo Control Center

Bilkent Hospital: Director accepts incoming VOIP calls from hospital staff and streams live into the public address system and enables Desigo to launch announcements as well as query device stati.



Muscatatuck: huge horns bring the virtual war zone to life. The Director GUI shows the horns surrounded by clickable bubbles which also give color feedback about currently playing audio.



Muscatatuck Urban Training Center

Director powers a battle field sound simulation system in a 1,000 acre urban training facility located near Butlerville, Indiana, USA.

MUTC is used to train civilian first responders, joint civilian/military response operations, and military urban warfare.

The huge training compound not only looks like a war zone, it really feels like one too. For some exercises cars are set on fire and hundreds or thousands of actors are engaged to simulate a city under crisis or disaster. But the most important is the sound scenario. Salves of gun shots seemingly coming from every direction, explosions, rioting people, air craft

overfly and many other sounds create a fully immersive experience.

Random gunshot simulation

To make this as realistic as possible Director applies clever algorithms that add enough randomness that no patterns can be heard and still give the training operators full control over the scenario and exercise timeline.



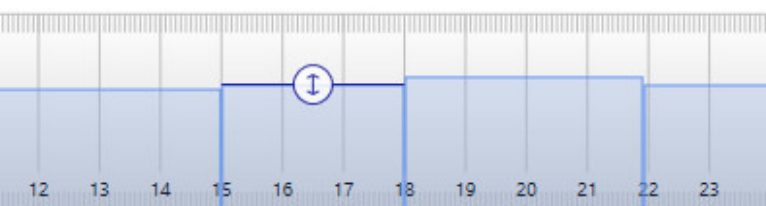
Grand Casino Baden

Director fades music volume over time according to a frequently changing time schedule.

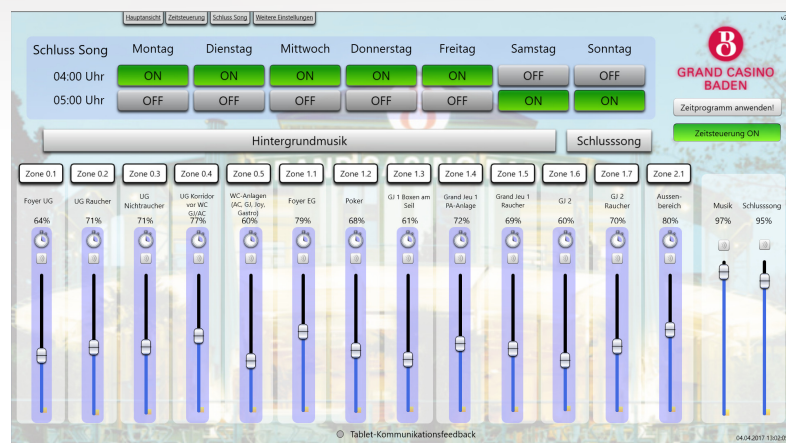
Located in an ancient building in the town of Baden, Switzerland, the Grand Casino Baden entrusts the scheduling of background music programs and the fading of music volume at different day times to Director.

A sophisticated schedule rises and drops the music level throughout the evening and night based on statistics of customer frequency.

Director provides an intuitive graphic time program editor that makes it very easy to change the program without expert help.



The interactive zoomable time program editor allows perfect control over any value function over time, in this case volume.



The main user interface for music and volume control

Music volume fading

Of course it would not do to abruptly change the music volume. That is why director slowly, over the course of minutes, fades up or down on a logarithmic scale. When nobody in the room notices it, Director did its job well. Live events require frequent changes to the schedule. Director makes that easy with its simple graphical user interface.



We are looking forward to answering your questions

Contact us!

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