English

oratis

Intercom Solution

DELEC
MADE BY EXPERTS

First For:
Reliable Intercom
From simple to sophisticated

The *oratis* is a first-class intercom system. It is based on current FPGA technology and offers unique flexibility and future-proofing combined with DELEC's renowned high reliability.

oratis can be used to create compact intercom systems featuring as few as eight ports to larger installations with more than 4,000 ports accessible simultaneously. The system employs the principle of distributed intelligence. This guarantees fast response times even on large systems, while ensuring confidence and security. ***oratis*** acts as a fully summing digital audio matrix.

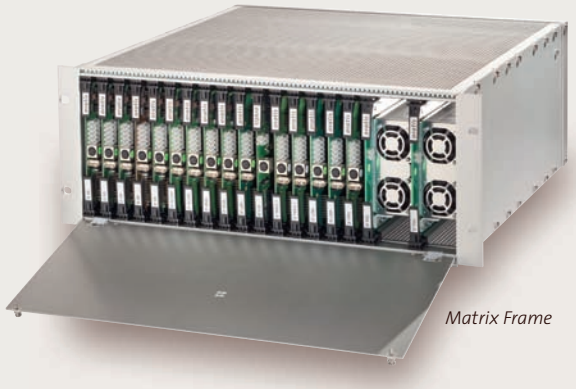
The benefits:

- Leading technology, safe investment
- Space-saving I/O with the highest density
- Open, scalable configuration
- Perfect audio quality 48 kHz / 24 bit
- Innovative subscriber panel design
- Convenient set-up
- Excellent reliability with flexible redundancy
- No single point of failure
- Networked via Ethernet cabling

Adaptable and Scalable

***oratis* intercom systems include at least three basic components: one or more matrix frames, various matrix cards, and the subscriber panels connected to them.**
The quantity and configuration of components are freely definable, enabling the *oratis* to adapt to a multitude of applications.

To increase the number of matrix points, just add more matrix cards. ***oratis*** scales up from small systems to campus or even region wide installations with centralised intercom routers and comprehensive logical functions.
Each matrix card acts as a self-contained, independent audio router. Thanks to the unique concept of distributed intelligence, the ***oratis*** avoids any single point of failure – maximum reliability and security are built into the foundations of the system!



Matrix Frame

Matrix Card

Subscriber Panel

Keeping Your Connections in View: User-friendly Subscriber panels

oratis **subscriber panels are offered in two versions which both indicate the call destinations with up to 18 characters of full text in every major language. The subscriber panels equipped with extra-large LCD buttons offer superior convenience and are also furnished with a rotary encoder per button for fast access to crosspoint volume adjustment. However, the compact subscriber units with one large display and smaller keys can provide higher packing density. Both display versions guarantee optimum legibility in all lighting conditions and from any viewing angle.**

oratis users can choose between desktop units and 19" rack subscriber panels with an expandable number of keys. The standard subscriber panel includes an internal audio matrix for routing signals to connected headphones, speakers and other destinations. The lite version with reduced audio connectivity is an interesting alternative for less complex solutions. Naturally, all ***oratis*** subscriber panels offer multicoloured indications to show the call status of each key. Special Danner modules for building into desks are also available.

All* subscriber panels offer:

- *Configurable key layers*
- *Eight function keys per subscriber panel*
- *Auto-reply function*
- *Individual display and volume adjustment for each crosspoint*
- *Integrated dynamics unit with compressor, limiter, and noise gate inserted in the microphone path*
- *Removable microphone*
- *Up to two stereo headsets connections (lite: one connection)*
- *Up to two microphone ports with phantom power (lite: one mic port)*
- *External speaker port (lite: not available)*
- *GPI (two inputs, two outputs)*
- *Stereo AUX input and output, AES3 AUX input and output (lite: not available)*

*Features of the lite versions in brackets

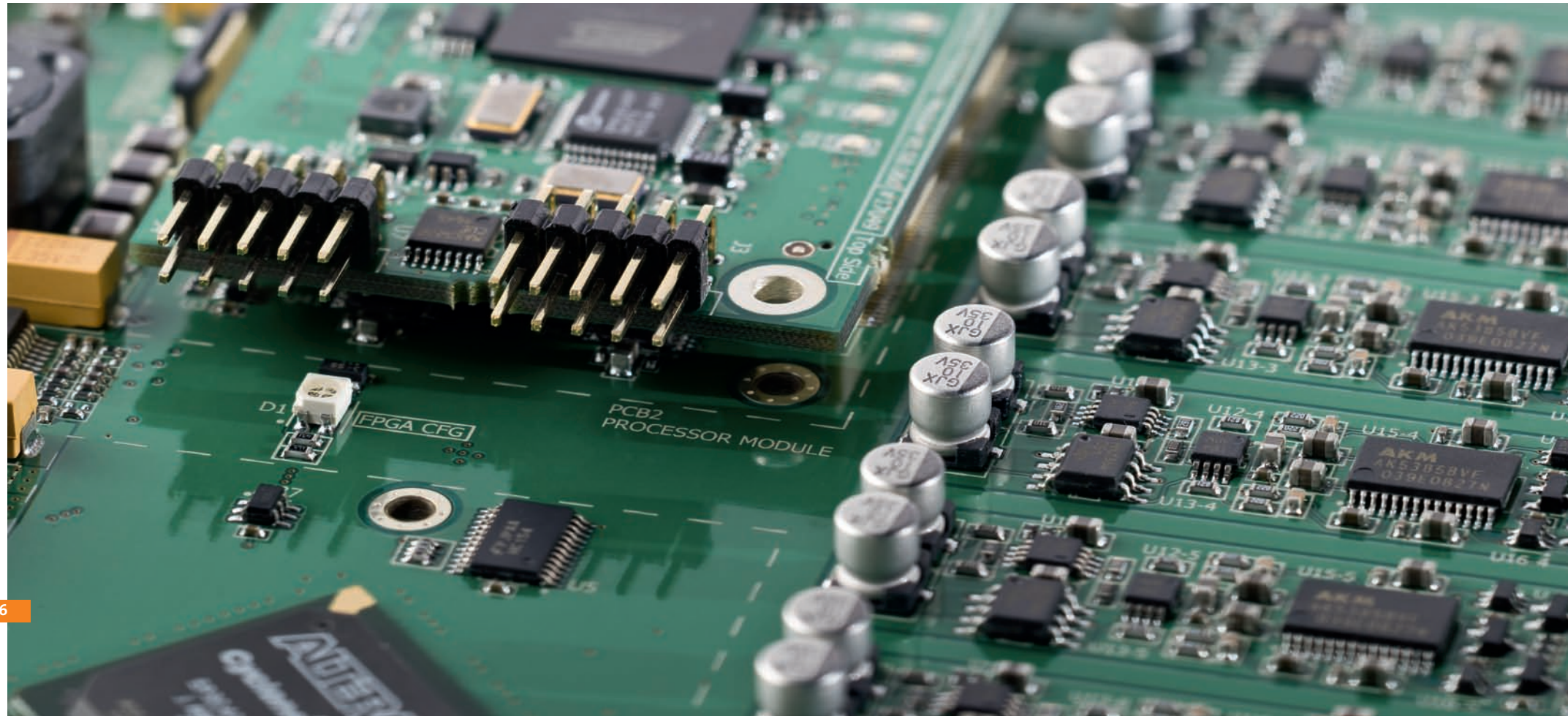
Type	Size	Subscriber Buttons	Headset Interface	Auxiliary Analogue	Auxiliary AES3	Matrix Interface	GPI
Talk 16	19"/1RU	16	2	2 Ch In 2 Ch Out	2 Ch In 2 Ch Out	AES3, Analogue + RS232	3 In / 4 Out
Talk 16L	19"/1RU	16	1	-	-	AES3	3 In / 4 Out
Key 16	19"/1RU	16	-	-	-	-	-
Desk 16	Desktop Subscriber Panel	16	2	2 Ch In 2 Ch Out	2 Ch In 2 Ch Out	AES3, Analogue + RS232	3 In / 4 Out
Desk 16L	Desktop Subscriber Panel	16	1	-	-	AES3	3 In / 4 Out
Talk 12X	19"/1RU	12	2	2 Ch In 1 Ch Out	2 Ch In 2 Ch Out	AES3, Analogue + RS232	3 In / 4 Out
Talk 12LX	19"/1RU	12	1	-	-	AES3	3 In / 4 Out
Table 16X	19“/1RU	16	-	-	-	-	-
Danner 4X	190 mm x 40 mm	4	-	-	-	RS232	-
Danner 12X	190 mm x 80 mm	12	-	-	-	RS232	-
Danner 6	190 mm x 40 mm	6	-	-	-	RS232	-
Danner 18	190 mm x 80 mm	18	-	-	-	RS232	-
Danner AM	190 mm x 40 mm	-	1	2 Ch In 1 Ch Out	-	Analogue + RS232	2 In / 2 Out

The Big Selection:
Matrix cards for every application

An extensive range of matrix cards is available for configuring an *oratis* intercom system. While providing largely identical functionality, they differ mainly in their port configuration. Whether CAT-5, or coax cabling, or optical cable, balanced analogue, digital, or with Dante and AVB designed for Audio over IP – your application rules your selection.

Signal routing on all ***oratis*** matrix cards is processed by state-of-the-art FPGA processors. In contrast to hardwired signal paths, all processing stages and signal routes are implemented in software. Thus, ***oratis*** systems offer unprecedented flexibility and future-proofing.

All input and output signals can either be routed transparently on the matrix cards or routed via optional DSP modules. Functions available include gain control, filters, dynamics and delays.



Name	Number of Ports	Interface	Format	Other
IF 8A	8	CAT-5 Cable / RJ45	Analogue Audio Connection	Subscriber Panel and 4-wire Board, one bidirectional Audio Channel per Port
IF 8DIG	8	CAT-5 Cable / RJ45	AES3	Subscriber Panel and 4-wire Board, two bidirectional Audio Channels per Port
IF 8COAX	8	Coax 75Ω Cable / BNC	AES3	Subscriber Panel Board, two bidirectional Audio Channels per Port
IF MADI1	64	LC SFP-Module*	MADI Interface	64 bidirectional Audio Channels, freely scalable, optional rendundant connection
IF Link		LC SFP-Module*		Redundant Fibre Optic Board
IF Dante	64	CAT-5 Cable / RJ45	Audio over IP	64 bidirectional Audio Channels, compatible with Dante standard, AVB Ready
DSP 1	depends on the application	Plug on module		SHARC DSP

All matrix cards feature:

- *Audio routing using a flexible and extensible FPGA configuration*
- *Audio in broadcast quality: 48 kHz sample rate, 24 bit word length (with internal 32 bit processing)*
- *Transparent routing of digital signals*
- *Optional DSPs for I/O-signal processing*

* Fibre Optic Connector can be customized

Audio DSP: Attached if needed

Some applications need extra audio processing such as EQ and dynamics processors. In ***oratis***, these are implemented as optional plug-in DSP modules mounted directly on the corresponding matrix card.

oratis' DSPs are always accessed through an insert path on the card. This clever architecture opens up new applications since it does not occupy additional time slots on the bus system.

In addition to intercom or commentary broadcast applications, ***oratis*** is also qualified for use as the stage management system in theatres. In this application optional DSP on the MADI output cards can carry out equalisation or other audio processing for speaker lines and paging areas.

Networking Without Frontiers: The Audio Matrix

One important feature of *oratis* matrix frames is their high input/output density with more than 30 subscriber panel ports per rack unit; making *oratis* a system of choice in the OB truck. Apart from audio and subscriber panel cards, matrix frames can also be equipped with GPI cards used for external control.

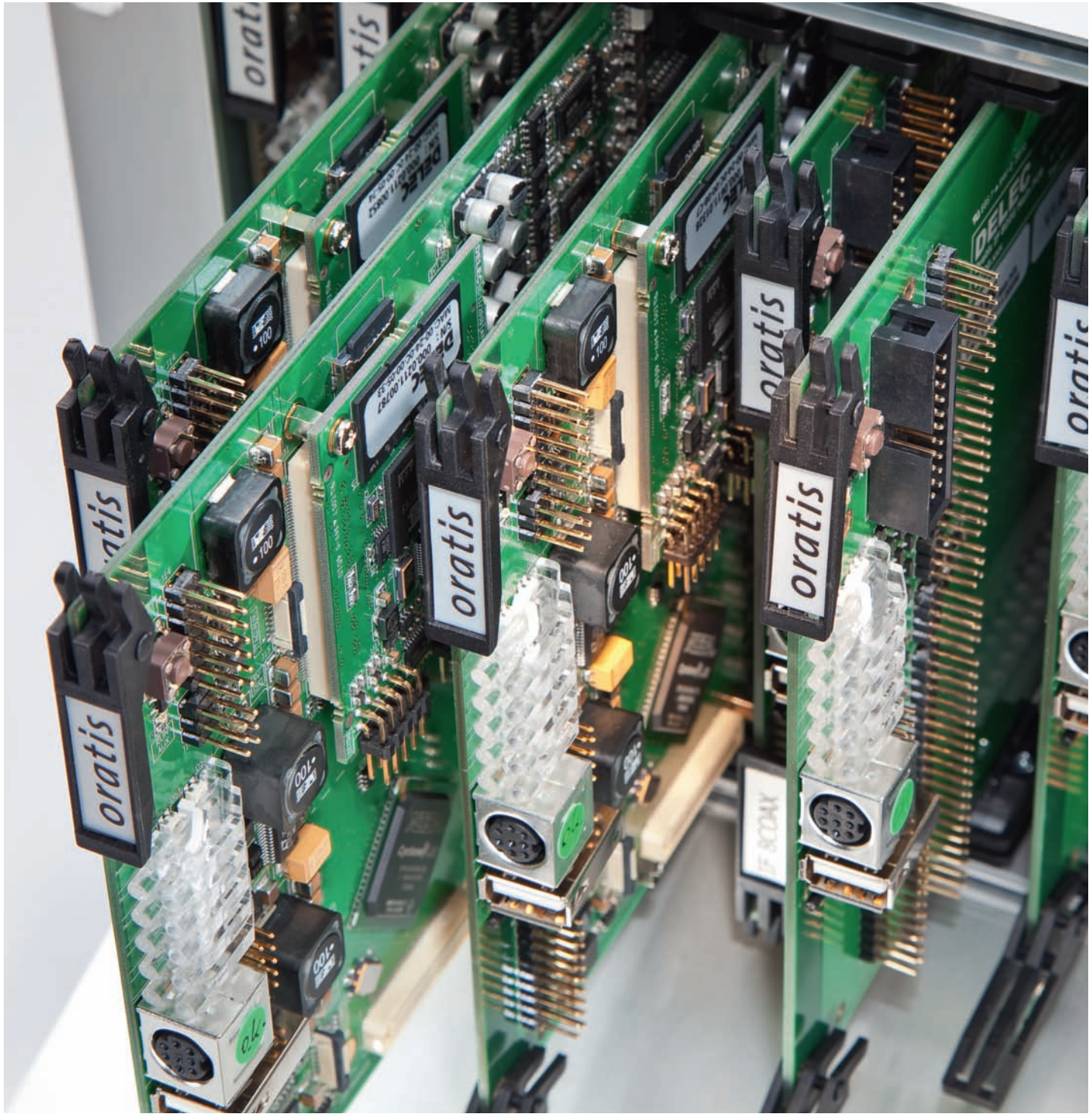
Combining multiple matrix frames results in systems featuring up to 4,096 ports, which can all be active simultaneously. Networking of the matrix frames, including clock distribution, is done with fibre-optic cabling using the Gigabit Ethernet layer-2 protocol. This protocol permits direct connections between matrix frames, whilst also allowing for the connection of remote frames using managed Gigabit Ethernet switches.

The ***oratis*** is a fully summing matrix. Each matrix frame is capable of routing up to 256 summed channels to each output. This makes for virtually unlimited eavesdrop sums or large conferences.

All matrix frames feature:

- *Fully summing audio matrix*
- *Expansion by networking multiple matrix frames*
- *32 bit TDM bus for up to 256 signals*
- *Fully redundant clock distribution*
- *Hot-swappable matrix cards, matrix frames, and power-supplies*
- *Studio-standard audio quality 24 bit, 48 kHz*
- *External Wordclock input*

Name	Rack Units	max. Number of Slots	max. Number of Ports	Other
MF4	4	15	▪ max. 256 Ports ▪ 120 Ports for Subscriber panels	▪ Matrix Frame ▪ Digital Signal Processing ▪ 48kHz sampling rate ▪ redundant Power Supply ▪ redundant Clock Distribution
R4000	1	8 Segments	▪ 1,024 Ports ▪ max. 4,096 Ports by Cascade of four R4000	▪ Router ▪ 128 Ports non- blocking per Segment ▪ Digital Signal Processing ▪ 48kHz sampling rate ▪ redundant Power Supply ▪ redundant Clock Distribution



Safety first:
oratis is always ready for action

Each ***oratis*** matrix frame incorporates redundant power-supply units and optical interfaces for system networking. For safety reasons, clock distribution is also duplicated. The TDM buses on the matrix frames employ a passive design which offers optimum confidence and security. And, thanks to distributed intelligence, the design concept avoids any single point of failure.

All ***oratis*** components are hot-swappable. Be it a matrix card or a full matrix frame – each module can be replaced or can even be added during operation. This allows for system extensions and full reconfiguration without the need for a reboot. Even very large ***oratis*** systems such as campus-wide installations remain flexible, versatile, and maintainable. ***oratis*** intercom solutions never let you down!

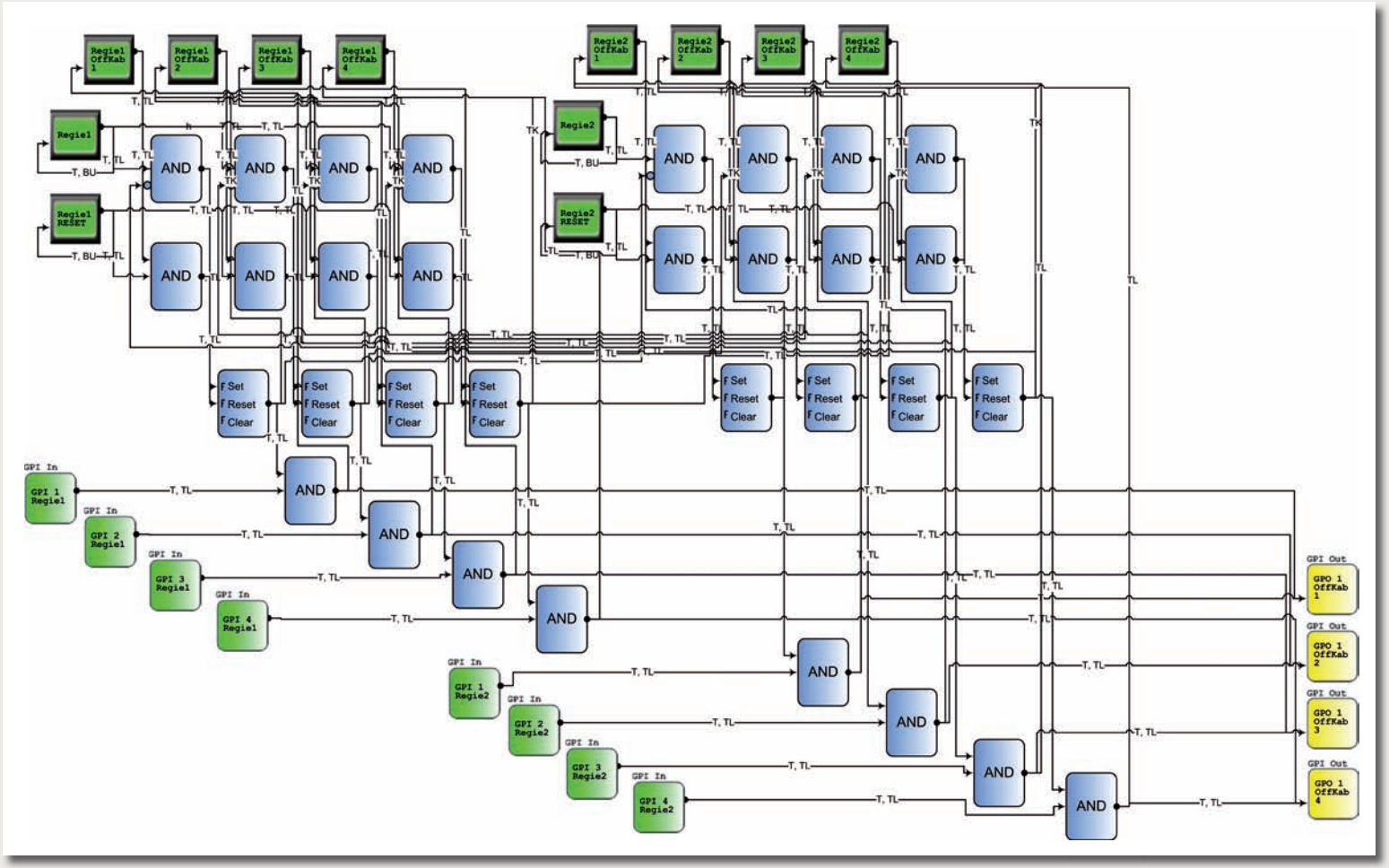
Simply logical:
Decentralised GPIO Module

The GPIO32 interface complements the oratis intercom system by adding GPIO contacts. The compact device in half 19“ rack format can be installed at a distance from the matrix frame, attached only by an Ethernet cable. This enables the GPIOs to be installed locally where they are needed for control signal inputs and outputs.

GPIO32 provides 16 real relay outputs and 16 opto-electronic inputs. They can be used flexibly, for example for switching internal crosspoints through external keys. Alternatively, GPIO32 interfaces are used as operands within the ***oratis‘s*** own logical functions. This feature opens up ***oratis*** for use as a signal light interface. For this application, GPIO32 provides an auxiliary power supply at 24 V and 5 V which is sufficient for powering LED light signals.
Any port in a ***oratis*** system can be configured to support a GPIO32 interface in addition to the connected subscriber panel or 4-wire connection.
A 19“/1RU rackmountkit for one or two GPIO32 is also available (see picture).

Typical Applications:

- Integration of mobile radio handsets
- In theatre: for example combined with internal logic controls for switching signal lights
- In broadcast: for example for red-light control or for remote control of stopwatches



Example for a complex logic function

switch-key

logic function

GPI Input, e.g. faderstart

output function,

e.g. GPI Signal or x-point switching

For Really Big Players: Central Routing Unit for *oratis* star topology networks

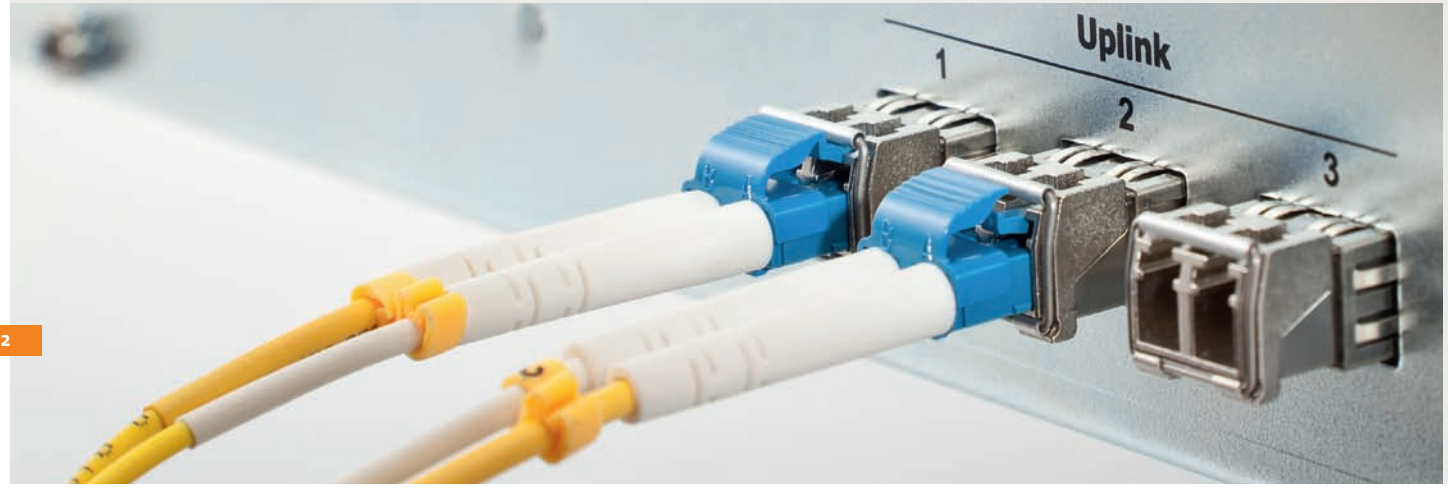
The network node, *oratis* R4000, connects individual production islands *oratis* matrix frames to a star-shaped network. In large broadcast or theatre installations it enables comprehensive integration of all communication signals. A single R4000 provides a routing capacity of 1,024 ports. Cascaded with up to four R4000s, even the most complex system designs with up to 4,096 ports can be realized.

Within a production area the intercom system acts as an island in which all local sources and destinations can be targeted. When networked with the R4000 router, this sub-segment can offer its production signals to other production areas and can communicate with ports outside of its production island.

The networking between R4000 and the ***oratis*** matrix frames is carried out though dedicated Gigabit Ethernet lines, or through a reserved bandwidth on a leased line. Thus, the ***oratis*** communication system partners perfectly with a modern high-speed network.

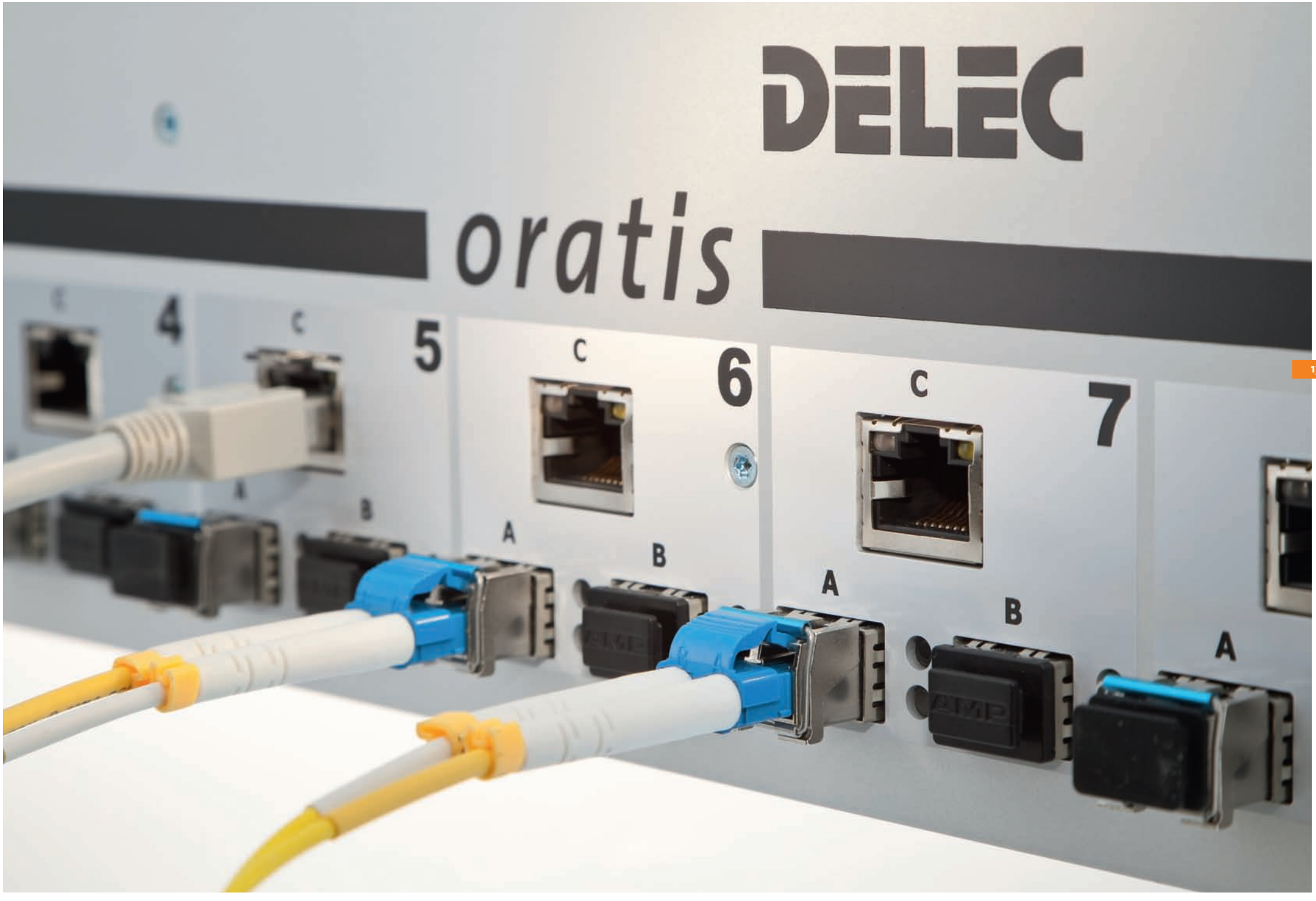
More R4000 benefits:

- *Routing capacity for 1,024 ports*
- *Networking via standard Gigabit Ethernet lines*
- *Free choice of cabling thanks to modular SFP interfaces*
- *Spans great distances*
- *Audio processing on FPGAs (Field Programmable Gate Arrays)*
- *Cascadable up to 4,069 ports*



Ten times faster

Several R4000 routers can be linked with the aid of an extremely fast 10 Gigabit Ethernet interface. This offers a ten-fold data throughput compared with a standard Gigabit Ethernet line as used for connecting subscriber panels to ***oratis*** matrix frames.
Each router offers three of these fast interfaces, which enables expansion into a network of up to four routers with up to 4,096 channels.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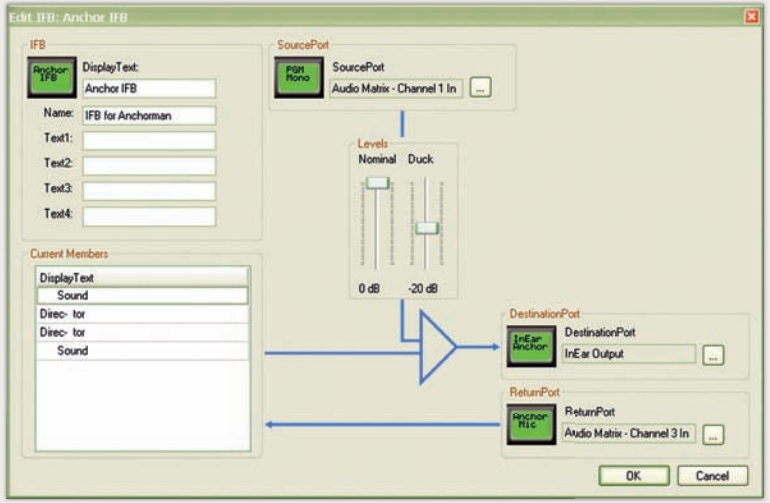
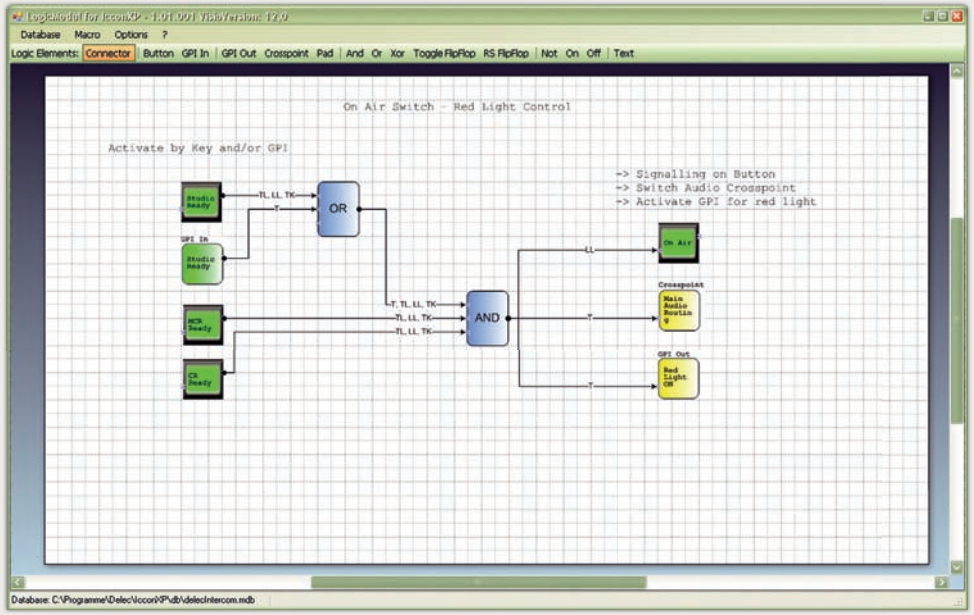
Optimum Control With IcconXP

The convenient IcconXP control program configures the numerous functions of an *oratis* intercom system quickly and easily. IcconXP runs on a standard PC and can be used either online over a LAN connection to the *oratis* or offline for advanced programming and configuration.

IcconXP offers simple drag 'n' drop functionality for most configuration tasks. From subscriber panel assignments to group definitions to complex logic programming, all settings are displayed in clear graphical dialogues. Changes can be uploaded to a live ***oratis*** system without any interruption to operation. Once set up, the ***oratis*** runs independently – a control computer is not required for on-going operation.

A dedicated interface is available for connecting the ***oratis*** to third-party proprietary control systems used, for example, in master control rooms. In this scenario, all important ***oratis*** functions including labelling the keys on the subscriber panels, can be externally controlled.





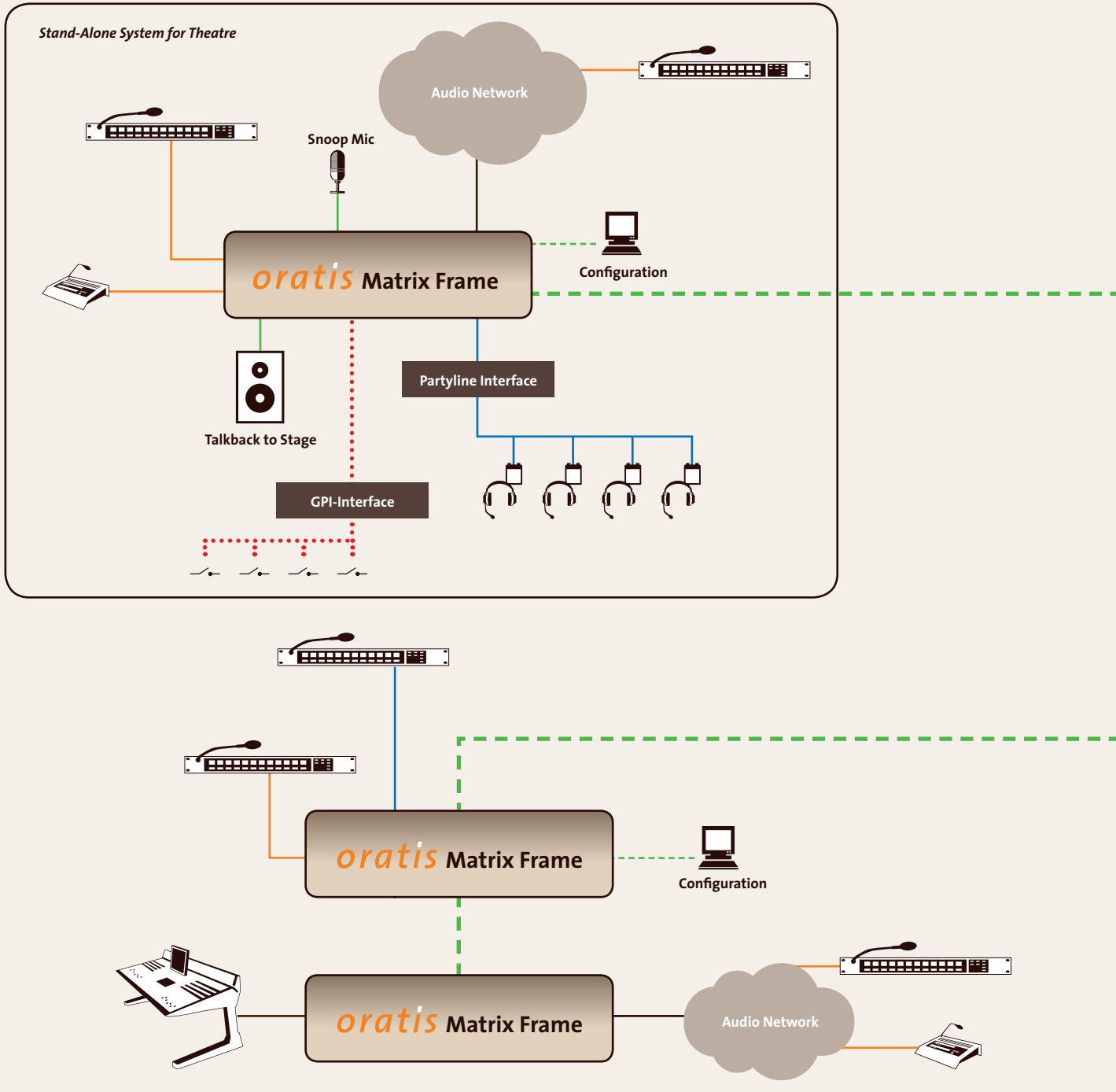
More benefits of IcconXP:

- *Groups and Conferences*
- *Configuration of Interrupted Foldback (IFB)*
- *Input-signal monitoring*
- *Static crosspoint routing*
- *Adjustment of I/O-port and crosspoint levels*
- *Noise-gate adjustment*

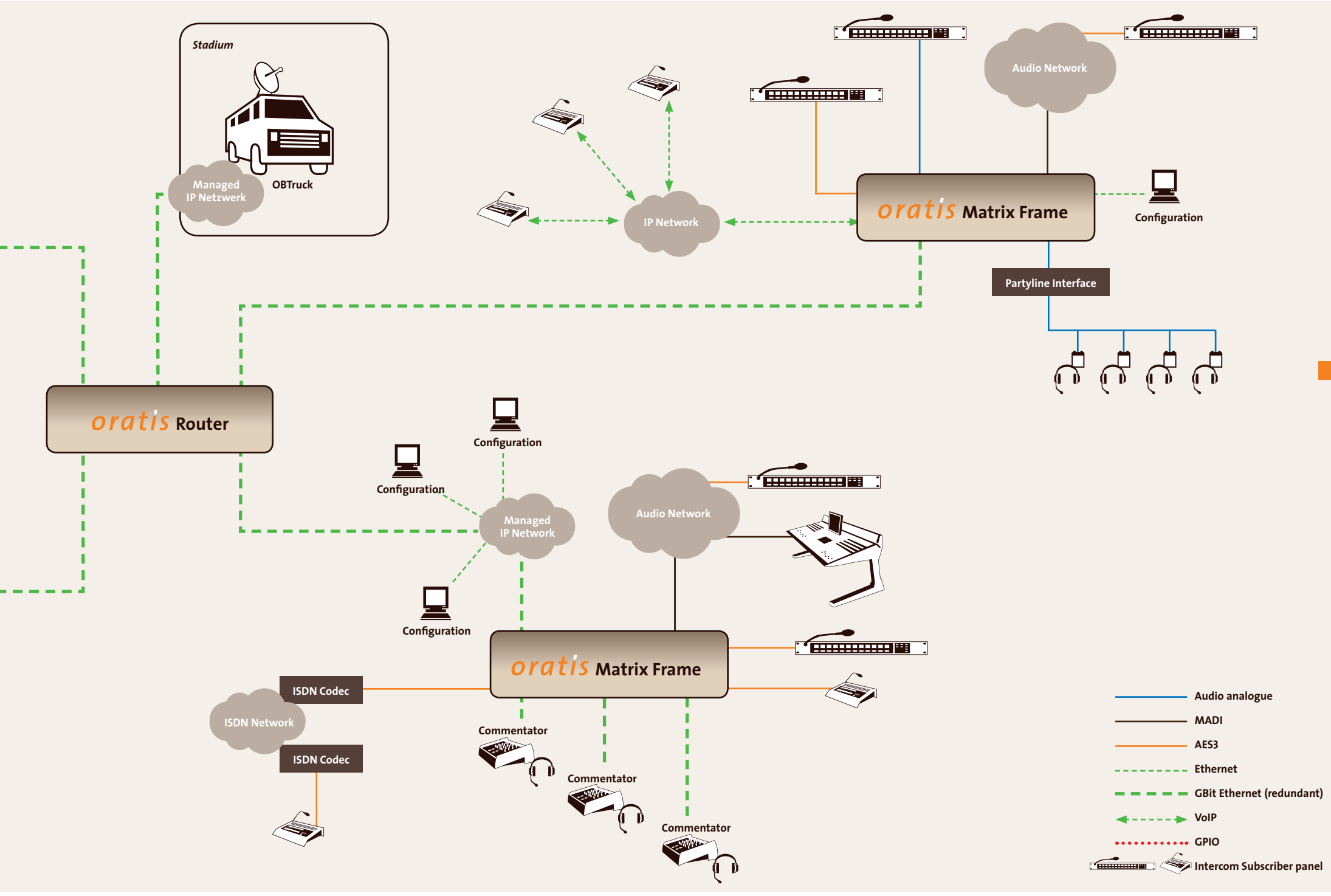
From Small to Large A Scalable Solution

oratis **systems are adaptable systems. Small units based on a single Matrix Frame can fulfil the entire communications requirements in a theatre application (see diagram, top left). Much larger system installations, capable of serving the communication needs of an entire broadcast facility campus, are built using multiple networked Matrix Frames.**

In OB applications, ***oratis*** scores with its ability to leverage an existing managed Gigabit Ethernet network. In many pre-networked sports arenas extra cabling and system set-up time are reduced to a bare minimum even for the largest international events. Short patch cables from the OB truck to the stadium patchbay and from the stadium network to the subscriber panels are all that is required. Even with a very large system, administration, configuration and servicing remain simple since the configuration PCs can be connected anywhere on the network.



Example of an Intercom Network

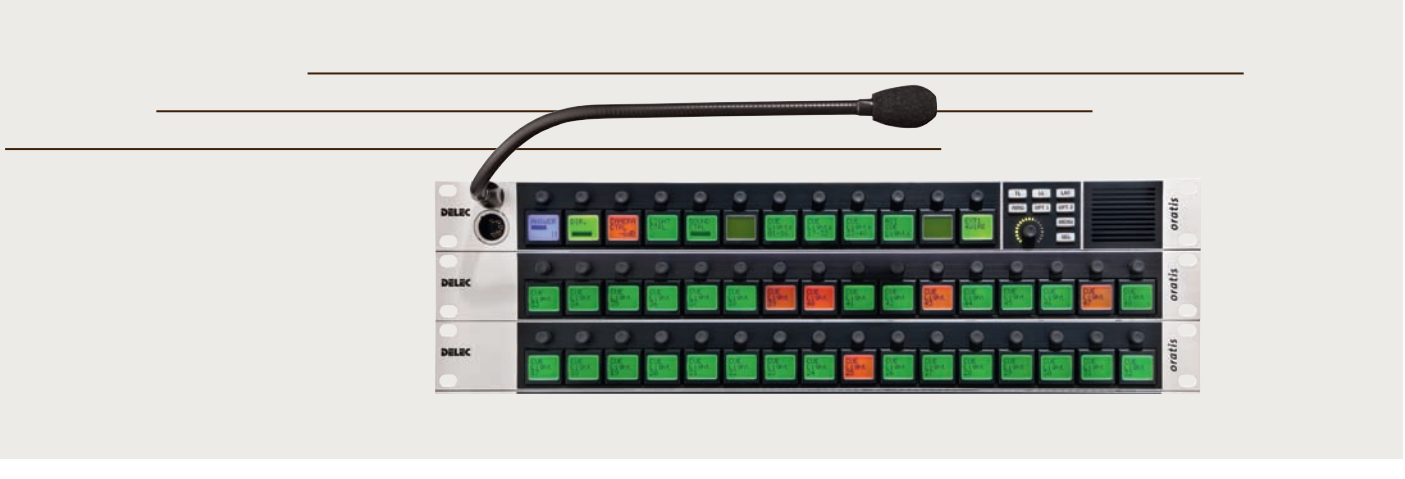

Stadium
Managed IP Netzwerk
OBTruck
IP Network
Audio Network
oratis Matrix Frame
Configuration
Partyline Interface
oratis Router
Configuration
Configuration
Managed IP Network
Audio Network
Configuration
oratis Matrix Frame
ISDN Codec
ISDN Network
ISDN Codec
Commentator
Commentator
Commentator
Audio analogue
MADI
AES3
Ethernet
GBit Ethernet (redundant)
VoIP
GPIO
Intercom Subscriber panel

Value-Added Platform:
oratis addresses many tasks in broadcast applications ...

***oratis* is more than just an intercom system: it is a universal communication platform. The high quality 48 kHz, 24 bit audio (32 bit internal) enables *oratis* to be used for distributing broadcast signals. This includes not only transparent routing but even production and processing of such signals.**

For transparent routing of studio signals, digital audio cards with AES3 or MADI interfaces are available. Alternatively, the signals can be fed directly to an ***oratis*** subscriber panel over an AES3 port, for example for a local external source. The open system architecture and optimum audio quality qualify ***oratis*** as a networked and distributed audio-routing system which helps to minimise cabling costs significantly.

The ***oratis*** family includes innovative network-enabled commentator terminals. These are connected to the ***oratis*** matrix frames via LAN, providing access to the entire ***oratis*** network. Even the largest international events with many connected broadcasters participating, can be provided with reliable, independent and consistent commentator systems for seamless operation.



... and in the Theatre.

High audio quality and open system architecture are principle virtues of *oratis* not only in broadcast, but also in theatres and other venues.

As for example in the prominent Bolshoi Theatre in Moscow, which will soon deploy a large ***oratis*** installation. A total network consisting of one R4000 router and 15 ***oratis*** matrix frames will undertake not only all announcement and intercom functions but also the entire audio signal routing. For precise loudspeaker equalization, the ***oratis*** audio cards can be equipped with optional DSP modules which replace the external equalizers otherwise required. Another application of ***oratis*** networks is stage management. Whether a small system with few paging areas or a complex stage management desk – thanks to the intuitive user interface, the backlit keys and displays, ***oratis*** components also convince in this market segment. Complex stage management systems are designed in co-operation with SALZBRENNER STAGETEC as system contractor and their flexible media control system. Combined with ***oratis*** components, they build future-proof solutions for custom stage management installations.

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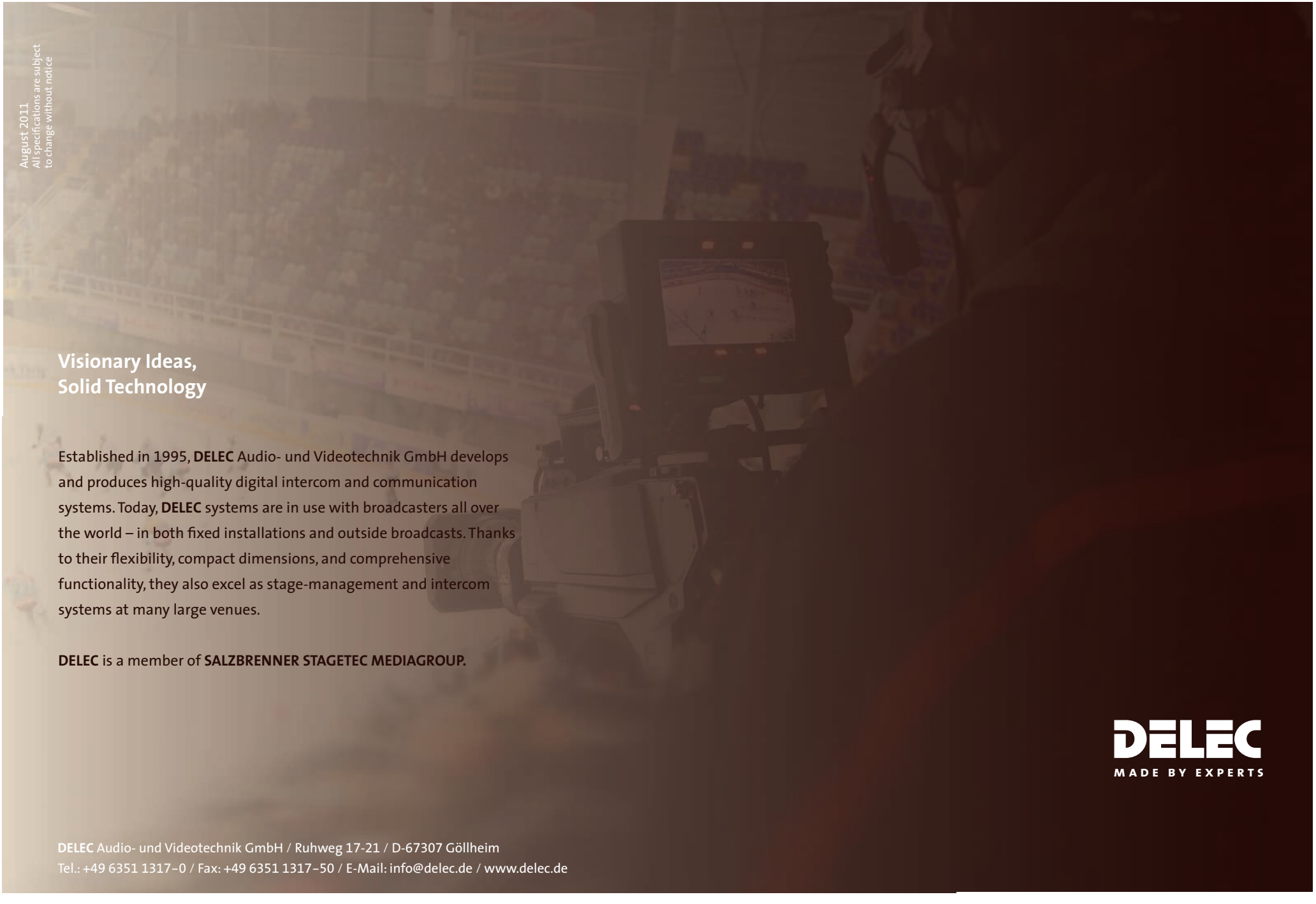
All specifications are subject to change without notice



Visionary Ideas, Solid Technology

Established in 1995, **DELEC** Audio- und Videotechnik GmbH develops and produces high-quality digital intercom and communication systems. Today, **DELEC** systems are in use with broadcasters all over the world – in both fixed installations and outside broadcasts. Thanks to their flexibility, compact dimensions, and comprehensive functionality, they also excel as stage-management and intercom systems at many large venues.

DELEC is a member of **SALZBRENNER STAGETEC MEDIAGROUP.**

DELEC
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