CENTRALIZED VS. DECENTRALIZED TECHNOLOGY FOR CONTROL CENTER NETWORKS

Expect this and other fascinating subjects in this issue of eurofunk news

Statewide solutions rely on cloud technology

Customers are turning with increasing frequency to technologies developed for cloud-based applications. The benefits of modern IT architecture are extensive, particularly when operations are hosted in the government's own data centers.

The high availability of the application, the almost unlimited scalability in terms of the number of simultaneous users and accesses, and the complete separation of the location of the users from the location of the data center are just a few of the advantages. Modern microservice architectures allow applications to be divided into manageable functional blocks which can run multiple times simultaneously. This ensures high data throughput and fail-safety. In addition, new versions of the application can be made available immediately, which simplifies development cycles and allows us to respond more quickly to change requirements.

Statewide systems also offer the advantage of centralized access to the same central database, meaning that changes made to master data will take immediate effect in all control centers, and the latest information is available to all workstations. The time-consuming, manual post-processing that comes with changes, or the inefficient synchronization of local databases is no longer necessary. In addition, all authorized users have access to current deployment data and resource status meaning that the usual organizational boundaries within a control center do not represent an obstacle to interdepartmental cooperation and support when this is required.

Despite the trend toward control centers with web-based common systems, the need for technical interface connections between control centers with different IT systems remains. In this context, the UCRI standard, which was developed by the members of the Bundesverband Professioneller Mobilfunk e.V., seems to be a promising approach. eurofunk supports these efforts and we are curious to see how vendor-independent standardization will be accepted by the market.

As always, we hope to capture your interest with our current reports on technology and featured projects.

We hope you enjoy reading!

Dr. Christian KAPPACHER – Managing Director

Contents

Centralization or decentralization for control center networks

When planning a network of several control centers, numerous questions arise: what is the best way for the control centers to work together? How can overload situations be absorbed by the network? How do we achieve optimal reliability and how can operations be maintained if a failure should occur? This article will examine the tactical, technical and organizational aspects of planning a control center network based on two architectural strategies: centralization and decentralization.
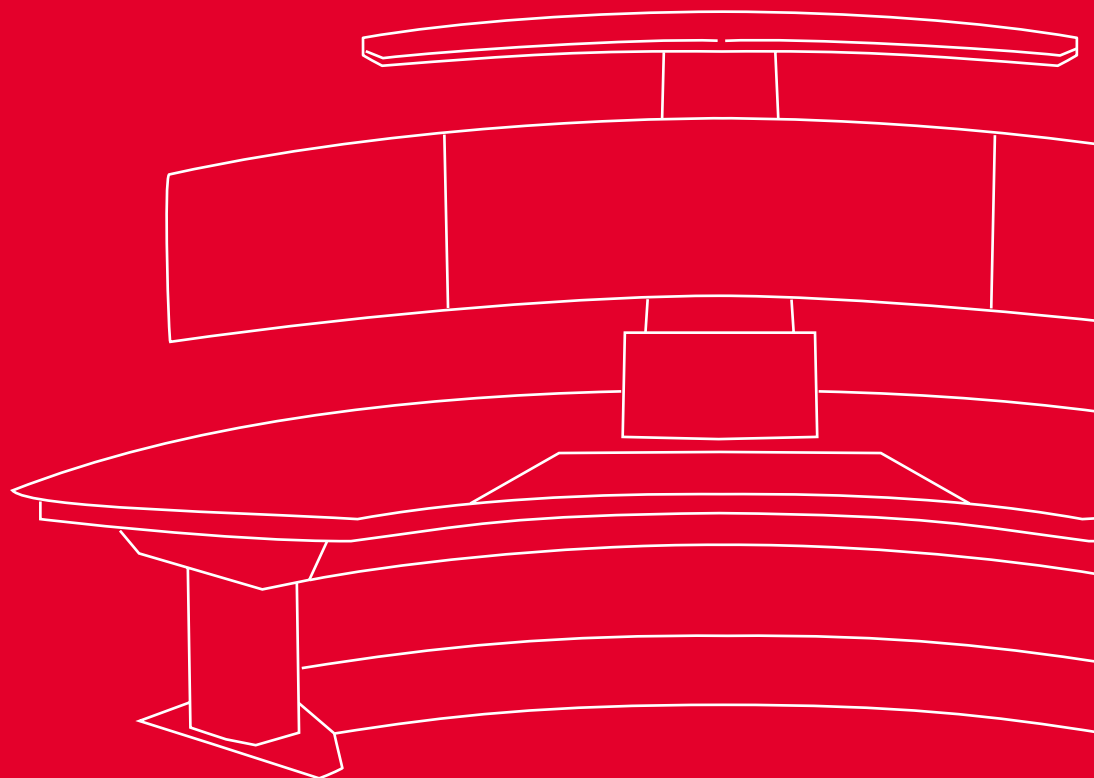
Christoph SEIDL

Option #1

CENTRALIZED SYSTEMS WITH OPTIONAL DECENTRALIZED FALLBACK LEVEL

When following a centralized strategy, a central location is chosen for the complete server infrastructure. The fallback level for the data center is divided among two or more physical locations to maintain data integrity in the event of a partial failure (cluster quorum). The sites are sized so that one site can carry the entire load and are accessed via high-speed WAN connections with sufficient performance, stability and redundancy to support the operations of multiple control centers.

Tactical aspects

Centralized technology can be used to implement functions that add tactical value to day-to-day incident handling by ensuring continuous data synchronization and fast internal communication through instantaneous data updates. During normal operations, for example, the joint handling of incidents in the border area between control centers is carried out seamlessly and without the need for additional data transmission interfaces. This means that for people who find themselves in an emergency situation, alerting among the control centers is completed without delay.

If one control center experiences an overload (e.g., local events with a high call volume), overflow and escalations to other control centers are possible without manual intervention. This means that the manpower of the entire network is available to assist in dealing with the surge.

Centralization also offers advantages in disaster situations that require the control center to be evacuated, such as the discovery of a bomb, a bomb threat, a pandemic or a power failure, or if the control center is destroyed by fire, water, natural disasters or attacks. Substitute operations can be put into effect, and ongoing incidents can be handled from other control centers without loss of data.

By providing additional workstations, centralized technology gives the network added flexibility and efficiency in especially precarious situations. Since a WAN connection to the control center is the only technical requirement, workstations that need to be relocated quickly, such as those in situation centers or schools, can be equipped with standard hardware.

Technical and organizational aspects

Centralized technology makes it possible to implement a geo-redundant, resilient infrastructure capable of disaster-recovery. Because control centers are classified as critical infrastructure and have the potential to be certified according to the BSI IT-Grundschutz Compendium, it is important to take these issues into account.

By expanding the infrastructure at two or more sites, technical measures such as redundant power supplies, industry standard air and fire systems as well as perimeter protection can be implemented at these sites rather than at all locations, resulting in a considerable reduction in the overall cost.

Growing demands for high availability infrastructure and continuous service during software maintenance make cluster systems and application architectures more complex and the provision of qualified operational staff at each site more difficult. By following the strategy of enhanced architecture at two or three sites, operating personnel for IT and application infrastructure can be concentrated at these locations.

The risk of disruption to the WAN connection cannot, however, be completely ruled out. For this reason, mitigating measures for the loss of the WAN connection to one or more sites must be planned in advance. Concepts are possible in which the affected area can be covered by one or more control centers so that everyone continu-

Centralized technology
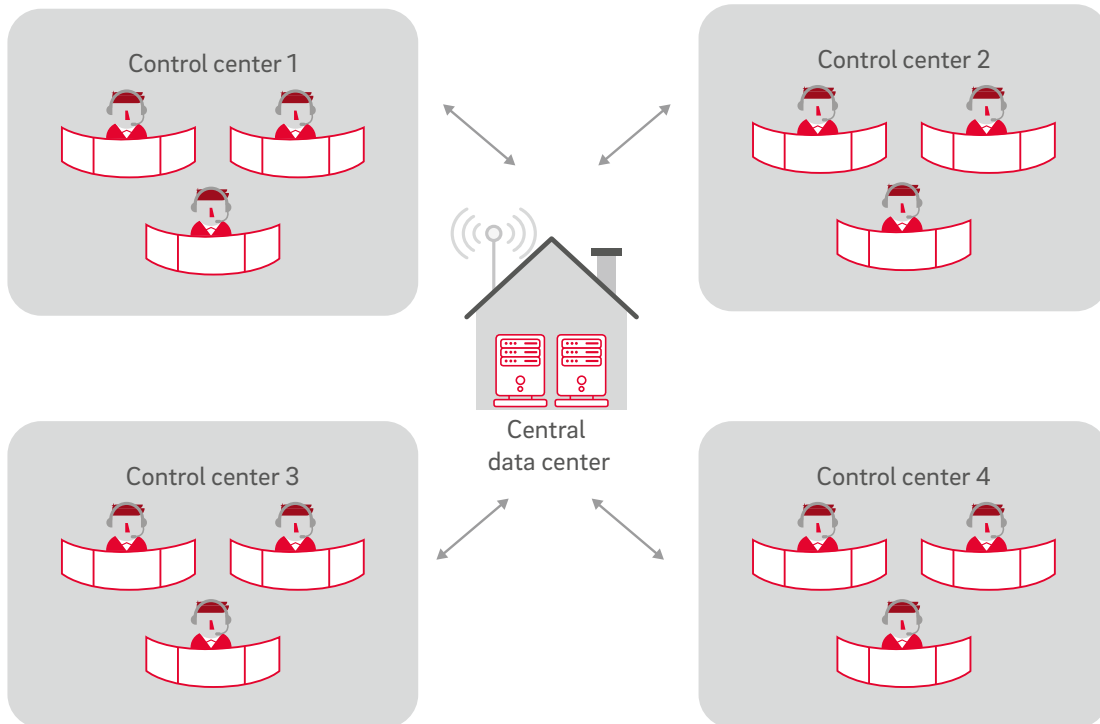
es to work on the same data set and ongoing incidents can be processed without complications or loss of data.

Optional decentralized fallback level for local autonomy

If, despite these extensive measures, there is a need for the control center to be locally autonomous, a decentralized fallback level can be implemented to meet this requirement. This level is replicated asynchronously, unidirectionally and with a time lag of just a few seconds. If required, the processing of ongoing incidents can be activated on the fallback level and switched to the decentralized fallback level via locally connected interfaces such as telephony, hazard detection systems and alarm systems.
The decentrally processed insidents can be transferred back to the productive main system as required.

Option #2

DECENTRALIZED TECHNOLOGY

In the case of purely decentralized technology, the entire server infrastructure required for autonomous operation is installed in

each control center location. As a rule, the technology is distributed across two server rooms, and designed so that one server room can carry the entire load. Workstation access occurs through a local network which reduces dependencies on external WAN connections.
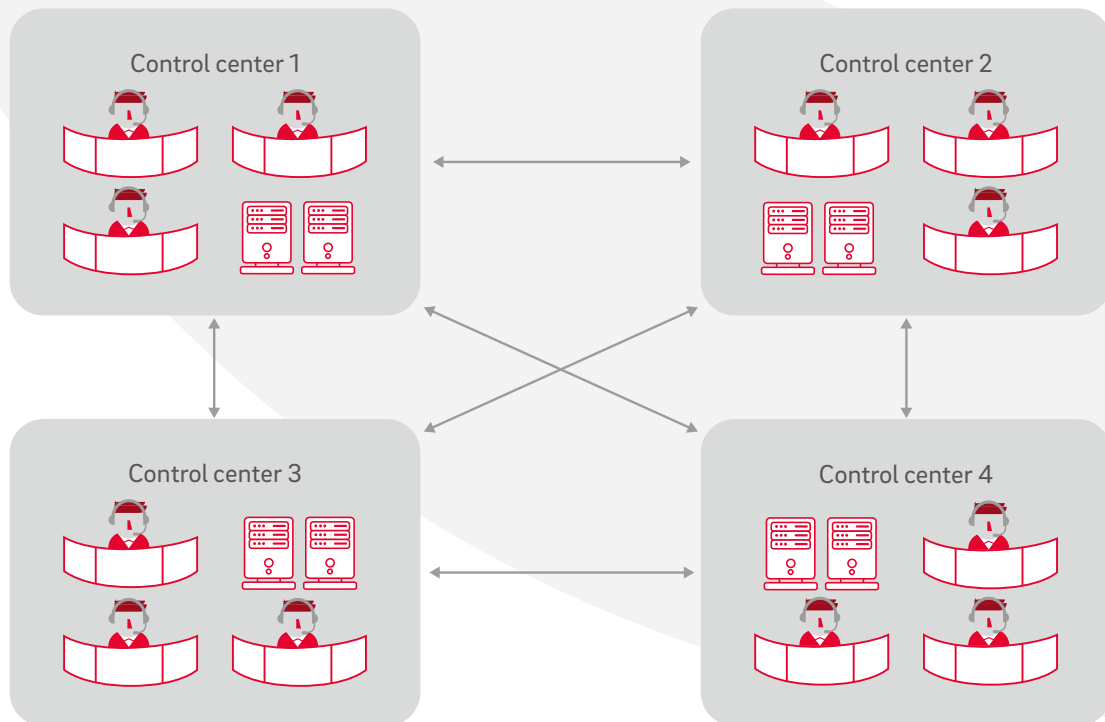
Tactical aspects

Cross-control center collaboration can also be implemented with dedicated decentralized technology. However, the functions are implemented via data exchange interfaces instead of accessing the same database and incidents or other data remain inaccessible until released or transferred from one control center to another.

Cross-control center cooperation is possible in overload situations, although overflow and escalation functions cannot be implemented, or only in a very specific manner, due to the separate databases.

With entirely decentralized technology, the scenarios for evacuating the control center require special advance planning and preparation.
Without permanent synchronization of the data to a constantly operational second site, operation continuity is at risk.

Decentralized technology

Technical and organizational aspects

The main advantage of decentralization is local control center autonomy. Regardless of possible events in the associated organizational structure, the control center is able to operate independently.
Following a centralized strategy with a decentralized emergency system, local autonomy can only be achieved by switching to the decentralized fallback level.

At the same time, the ramifications of complete local autonomy must be considered. Practicalities prevent the implementation of an infrastructure that is geo-redundant, resilient and capable of disaster recovery at every site, as do the associated costs. This brings complications with regards to BSI IT-Grundschutz certification, which requires geo redundancy for the entire network and the technical and organizational processes for evacuating the control center as well as for disaster recovery.

Implementation of cross-control center functions is only possible through the use of supplementary interfaces for data exchange, although technical limits and restrictions, such as the complexity of text input synchronization in real time via a data exchange interface, must be taken into account.

Recommendation from eurofunk

Both options from our solution portfolio have been used in numerous projects.

Based on many years of experience, eurofunk recommends implementing **a central productive system in junction with a decentralized fallback system:**

- Tactical and organizational advantages speak clearly for this strategy which provides added value to the control center, the users, and thus also the population, well over 99% of the time.

- Future system improvements, such as the addition of a new interface, can be carried out in one place with much less effort in centralized systems and are immediately available to all control centers.

- Problems associated with availability, bandwidth, redundancy and costs of the required WAN are negligible.

- If a disaster occurs, the decentralized fallback level ensures operational reliability and the local autonomy of the control center.

eIVR – eurofunk Interactive Voice Response

Harald VIEHAUSER

eurofunk helps with call sequencing and emergency call prioritizing.

"To listen to your voice messages, press 1. To delete messages, press 2." These and similar announcements are familiar to many users. Simple questions are used to determine the reason for a call without the need for action. Why should this structured query option not also be used in control centers?

In exceptional situations, such as natural disasters or mass demonstrations, the control center can expect a steep increase in the number emergency calls. It is these types of situations that can increase the stress level of dispatchers and quickly lead to staffing and technical bottlenecks. A classification of emergency calls according to topic can be helpful in this respect.

eIVR - THE RIGHT SOLUTION FOR AUTOMATIC CALL INQUIRIES

The eIVR extension for IDDS UCiP (Integrated Digital Dispatching System - Unified Communications IP Platform) can perform an automatic call query in the event of an emergency call. In high-load situations, emergency calls are grouped according to their urgency and available resources are used in a targeted manner. This in turn reduces the workload of dispatchers.

How it works

eIVR offers the possibility to conduct partially automated voice dialogs. Depending on the emergency situation, the voice announcement prompts the emergency caller to press an assigned key. By pressing the key, the pressed Digits is transmitted via the dual-tone multi-frequency (DTMF) method, thus enabling interaction between the emergency caller and the system. A digit can only be entered once, as any further keystrokes are prevented by the system. Once a number has been entered, another voice message is played to the emergency caller. Depending on the system configuration, the emergency calls are sorted in descending order of priority in the call list and displayed in different colors based on the change in priority.

In addition to prioritization, calls are signaled to other roles. Thus, for example, they can be moved from the visible area of the call list to the very bottom, the signaling can be terminated on the line button and signaled on a line button of another role.

Configuration options

With versatile configuration options, various scenarios can be prepared and activated as needed. These include freely configurable voice announcements for different use cases, the restriction to certain line routes (e.g. only emergency lines) and the individual assignment of digits to be used for interaction. The system prevents the multiple assignment of a digit to the same line route. In this case, overlapping configurations are automatically set to inactive.

Administrators or duty group leaders can activate or deactivate the function at any time and without system interruptions via the IDDS-UCiP administration system Lite.

If you would like your control center to be prepared for stressful situations, to help your dispatchers with their workload and your emergency services to be alerted in a targeted manner, please press 1 for IVR.

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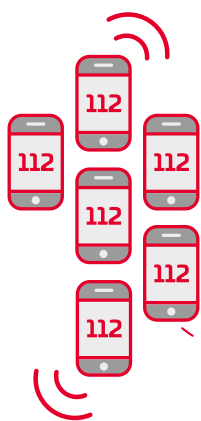
High load situation

A number of emergency calls are handled at the same time.

eIVR

"If you have **water in your** basement please press 1. For **all other emergencies** please press 2."

Priority = configurable

IDDS UCiP

Emergency calls are underlined in color and re-prioritized

Dispatcher

Workload is eased through eIVR

Available Resources

are used in a targeted and more precise manner

Design sprinting to new products

Have you ever had a promising idea that for various reasons – too risky, too challenging, too uncertain – was never implemented?

We in product development have too – many times. Even when considerations like requirements, framework, and cost-benefits are clear, the decision to incorporate new or innovative ideas into the product can be complicated by considerations that are less so: the solution, the risk or simply the unknown.

FOCUS ON THE HIGHEST POTENTIAL AND THE HIGHEST RISK

This is where eurofunk's Design Sprint comes in. A design sprint is an effective way to look into the future, pre-evaluate possible solutions for challenging tasks or long-term goals, and address concerns about potential problems. The focus is on both risks and opportunities.

TEST NEW IDEAS AND SOLVE PROBLEMS IN JUST FIVE DAYS

In a Design Sprint, representatives from areas such as development, UX design, sales, consulting, and management are entrusted to work as a Design Sprint Team to fulfil a specific long-term goal. In doing so, they can draw on their own expertise and that of so-called subject matter experts. The undertaking has a strict time frame and extends over five intensive but unifying, exciting and productive days.

The Design Sprint Team in its creative phase.

Firm decisions are a key factor.

Emanuel EMBERGER

Day 1 - Define, analyze and understand goals

The first day is spent defining long-term goals which result in what we call sprint questions. Sprint questions in turn ensure that, once answered, the solution that is decided on at the end of the process is the solution that also fulfils the long-term goal. In addition, a user-workflow is defined which maps the relevant interaction steps of the user in this context. On day one, Design Sprint Team members try to get as much input as possible from other stakeholders and subject matter experts to answer any open questions. Questions about context are researched in advance through user observation/surveys.

Day 2 - Generating and sketching ideas

Based on their own know-how and the input of their colleagues, the Design Sprint Team spends day 2 generating a number of solutions to answer the questions defined on day 1.

Working in sketch form, each member of the team draws upon his or her particular background or perspective in order to create a solution independently. The result of this process is a large, innovative ideas pool from which the solution design can be derived.

Day 3 - Decision making and script development

The creative output from the previous day is exhibited in a gallery and released for viewing and evaluation. The process involves all team members and the evaluation includes singular aspects of each of the proposed solutions. Once a consensus is achieved and a preferred set of ideas is agreed upon, the proposals are arranged in a so-called storyboard using the workflow as a corridor. This storyboard is the basis for the creation of the prototype and also the framework for the task on day 5 (evaluating).

Day 4 - Creating the prototype and test setup

In order for the proposals to be tested, they must first be put into some kind of tangible form. For this purpose, a click prototype – a cost-effective, efficient method for linking user interface mockups together - is created for a well-defined task on the basis of the storyboard. By clicking on corresponding elements and accessing the next UI-layers and functions, the user can click through the design in a very realistic manner.

Monday	Tuesday	Wednesday	Thursday	Friday
Analysis	Sketch	Decision	Prototype	Testing
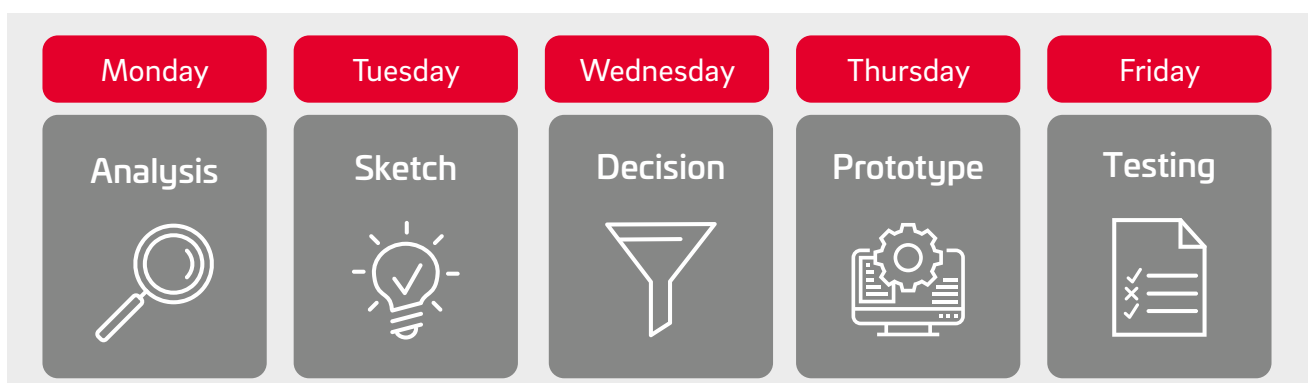
Typical flow of a Design Sprint week.

Design Sprints

Day 5 - Evaluate solution

Day 5 is the high point of the week and the day of truth. This is when, ideally, we invite real users with control center experience to use the prototype to accomplish a given task. A designated test leader accompanies the testers while they complete their task and the work is observed remotely by the Design Sprint Team. It is at this point that the effectiveness of the solution becomes clear: can the task be completed or does the test person have different expectations? Are they having trouble finding information or functions? Are they becoming confused or even frustrated?

OUR FOCUS IS ON THE USERS

The final day brings a high degree of certainty as to whether the design will be effective or not. If the right sprint questions are asked, we can assume that potential risks will also be significantly reduced. Needless to say, it is not possible to answer all questions and minimize all risks. But here too, we have options: either we decide to live with the residual risk or we follow up with another, shortened Design Sprint.

Of course, it is also possible that the chosen solution is less than ideal or may even be considered to have failed. We don't necessarily view this a negative however, because the process has given us valuable insight into things that don't work.
The Design Sprint shows us the good and the bad: it lets us implement innovative ideas and it gives us the opportunity to recognize problems early so that we can avoid adverse consequences such as lost time, wasted money or the dissatisfaction of our customers.
A Design Sprint is significant when it comes to stakeholder commitment and the uniform understanding of all participants. This is a potent combination that invariably leads to a positive conclusion. Properly implemented, a Design Sprint is not just hype, it is - together with agile product development and user research - an essential methodology for innovative product development.

The Design Sprint team records all findings from the evaluation.

Day of truth: The concept is tested using real users.

Photos: Emanuel Emberger

Let eMRS / resQnect infotain you

Christian REPASKI

The last issue of NEWS featured a report on one of eurofunk's newest innovations, the eMRS (eurofunk mobile resource services). This new mobile solution offers control centers with ELDIS 3, eOCS and other incident management systems a comprehensive option for alerting, documentation and collaborative incident handling.

For the best possible support of the emergency services, eurofunk now offers two different eMRS apps:

● **resQnect MOBILE:** Predominantly for use with smartphones

● **resQnect DRIVE:** For use in vehicles on tablets or on integrated infotainment systems.

The moblie solutions are designed for professional use and can be operated together. The versions are almost identical in terms of functionality but differ with regards to the user interface which as been optimized according to the intended environment.

In addition to the mobile use of the resQnect apps for IOS and Android smartphones/tablets, we have seen an increase in the need for integrations or the use of mobile applications in vehicle infotainment systems, some of which are already in place. eurofunk took the step of examining existing possibilities together with reputable emergency vehicle manufacturers. Currently, there is no general or manufacturer-specific standard for operating third-party apps for emergency services directly via the factory-installed infotainment systems. Private sector solutions, such as those implemented for Android Auto or Apple Car Play, are not suitable for emergency organizations due to specified guidelines regarding driver distraction or for reasons of data protection.
In view of this and with our customers in mind, eurofunk has developed a solution

in consultation with automotive electronics specialists which enables infotainment integration for various vehicle models through the use of additional components.
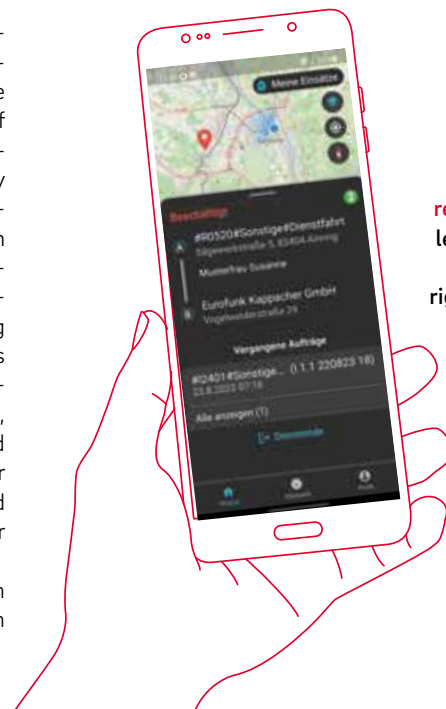

We would be happy to present **resQnect** and the comprehensive possibilities in an interactive demonstration!

resQnect DRIVE integrated in a VW infotainment system

resQnect MOBILE left is for incident information, **right** is for incident documentation
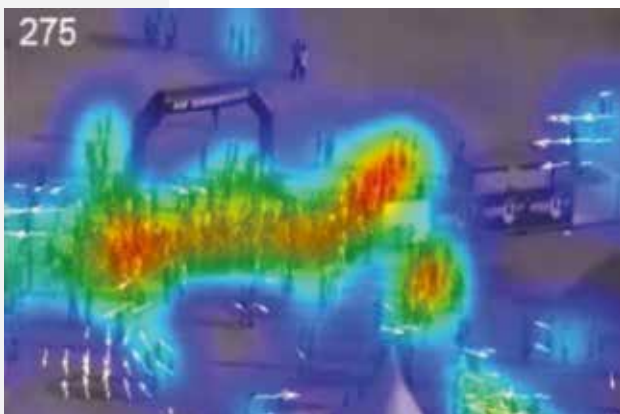
Let the MUSIG play on…

Christian REPASKI

MUSIG is the catchy name of just one of the research projects eurofunk is currently involved in and stands for multisensor-based information generation. Its purpose is the development of crisis management and crisis prevention strategies.

Collective mass population movements and activities in public spaces pose significant challenges to authorities and responders in terms of situational awareness, crisis management and crisis prevention. Events of the recent past such as unauthorized demonstrations, non-compliance with pandemic curfew restrictions, displaced peoples from war zones and terrorist attacks demonstrate clearly how relevant and urgent the need for these strategies is.

The MUSIG project focuses on an automated and AI-supported extraction, analysis and fused visualization of collective movement information from social media data, mobile phone data and image data as well as local cameras.
This information will be provided to control centers or crisis management in near real-time as additional map layers (WMTS, WFS) with filtering capabilities.

Information extraction includes the following:

- **Pure movement analysis:** the determination of numbers, density and speed of movement.

- **Semantic information:** What do people in a group talk about?

- **Mood information (sentiment analysis):** How relaxed, tense, escalating, etc. is the mood in the group?

Accumulated movement information and social media hotspots with relevant semantic content from linked media such as images or videos are to be displayed in the eOCS mission control system. For this purpose and for the connection of relevant external systems, eurofunk will define and develop a service-based interface in the course of this project. In parallel, we will be providing scenario- and role-based access as well as distribution of the available information to both stationary and mobile emergency forces.

The project will run for 24 months and will be implemented by the end of 2023 with the following partners:

- University of Salzburg, Department of Geoinformatics Z_GIS
- Austrian Red Cross
- Johanniter Austria Training and Research Non-profit Ltd.
- Spatial Services GmbH
- JOANNEUM RESEARCH
- Österreichisches Bundesministerium für Inneres
- Disaster Competence Network Austria

Estimation of group density and size from image data.
Source: JOANNEUM RESEARCH Forschungsgesellschaft mbH

Bundesministerium Finanzen

FFG Forschung wirkt.

KIRAS Sicherheitsforschung

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SHO places its trust in eurofunk

Dr. Christian KAPPACHER

In the tender procurement procedure for a modern incident management system, which was also to include state-wide geodata infrastructure (GDI), eurofunk was named best bidder.

In 2015, together with the cooperative control centers in Schleswig-Holstein, eurofunk demonstrated that regional large-scale projects could be implemented with a number of partners to the mutual, long-term benefit of all participating organizations.

Although the police may be organized differently than their municipal emergency service counterparts and the legal requirements may vary in some cases, the advantages far outweigh the drawbacks when it comes to joint operations. Many years of close integration, physical and personal proximity, and strong technical networking allow operations to be coordinated much more effectively than in conventionally isolated control centers, which separate police from non-police tasks.

When the joint digital radio network was set up, key parts of the infrastructure were already designed for shared use. The control centers, with their extensive data on the overall area of deployment, such as available resources and previously compiled alert plans, benefit from the high quality of up-to-date data that is made available to all organizations.

For this reason, the new project also includes an extensive geodata database for the processing and distribution of relevant geodata within a performant infrastructure. Through this, the permanent maintenance and updating of the data is ensured and functions based on this data, such as routing, heat maps, etc., can be made available.

Whereas control centers currently operate on local systems and exchange data via a VPN network, there will be a shift to a shared, highly available and geo-redundant infrastructure. This means that all control centers will be supplied with the latest data on current incidents, available resources and all other data required for their operations.

By consistently using web technologies for the dispatchers' workstations, future incident management systems will be able to operate from almost any location in the state that has access to the secure control center VPN. This makes it possible to respond immediately to special situations or challenges, such as those we have repeatedly experienced in the past during major emergencies and the pandemic.

The first control center in Schleswig-Holstein to use this technology will be the new control center currently under construction in North Harrislee.

North Harrislee control center

Visualization © SCHMIEDER. DAU. ARCHITEKTEN. BDA, Kiel; Source: Achim Hackstein

Consolidating 28 individual systems into a central platform

zEN – centralized post-incident processing

Andreas SCHNEEBAUER

## STARTING POINT AND PROJECT MOTIVATION

Multiple systems, complex organizational structures, time-consuming software rollouts and diverse hardware platforms

In the past, the ELDIS Management Suite (EMS) was used uniformly throughout Bavaria for deployment reporting and staffing purposes and for the recording of state-wide fire department statistics. Until now, each of the 26 integrated control centers (ILS) and the fire department operations center for the district of Munich (FEZ) operated their own EMS systems individually. An additional EMS system – in this case a training system - was installed at the Geretsried State Fire School (SFSG).

To generate statewide fire department statistics at the – figuratively speaking - push of a button despite decentralized technology, excerpts of statistical data from the 26 ILSs and the FEZ were transferred via the EMS system network to a separate EMS system at the SFSG - the so-called central statistics system. In addition, standardized statewide master data, such as key performance indicators, were transmitted back to the local EMS systems. For the transfer of excerpts of in-cident data from the eurofunk Incident Management System ELDIS 3 BY to the EMS Incident Postprocessing System, an interface was implemented in the 26 integrated control centers and the FEZ. Although the Bavarian State Ministry of the Interior, Sport and Integration (StMI) provided a uniform software license for all local EMS systems, responsibility lay with the respective system operators.

In recent years, this decentralized structure became increasingly difficult to manage. Not only did each of the 27 systems have its own administrator, the rollout of new software versions and patches was also complex and time-consuming which led to the problem of having to maintain different versions of the software over longer periods. As the license holder, the StMI therefore decided in 2018, in close consultation with stakeholders to integrate the individual EMS systems into a central platform, which would be hosted technically at the Bavarian datacenter (IT-Dienstleistungszentrum, abbreviated to IT-DLZ) and operated by the licensee. Following detailed planning by the StMI in collaboration with eurofunk, the StMI finally awarded the contract for the implementation of the Centralized Deployment Post-processing (zEN) project to the IT-DLZ and eurofunk in September 2019.
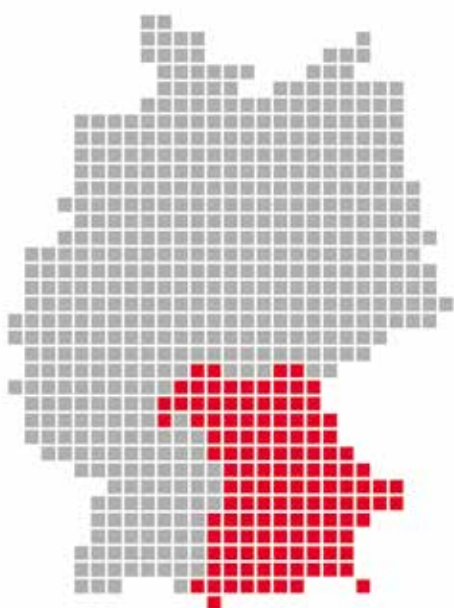
Centralised post-incident processing

THE SOLUTION

System topology, data consolidation, operation in IT-DLZ, new interface concept (ORCA), migration to new eurofunk Management Suite

The project not only required the merging of data from the decentralized systems into a consolidated central data set, the eMS software also had to be able handle the expected increase in data (approx. 20 times that of a previous ILS) in order to guarantee high-performance. By way of example, we have fed the zEN system with over 20,000 active users and about 12,600 different entities and institutions resulting in 2.9 million incident reports, for which over 70 million entries are to be kept in an existing database table.

In addition to the many software adjustments needed for centralization, a comprehensive change request package was also commissioned which included numerous user requests and suggestions stemming from the previous system as well as a new modern front end to meet the requirements of the European Union for barrier-free information technology and DIN SPEC 91379 (support of extensive special characters), as well as the fulfillment of the latest IT security requirements.

To meet requirements for a central productive system and a comprehensive training and test system, a topologically identical training system as well as a test and release system was set up in the IT DLZ system parallel to the productive system.

In addition, the automatic transfer of mission data from the incident management systems of the ILS to the (later central) eMS incident post-processing had to be guaranteed. For this purpose, a central Operation Report Core Application (ORCA) web service was created on the IT DLZ system, to which the ILS and the EPZs transfer their deployment data. This central ORCA service is also capable of forwarding incoming mission data to the production, training and/or test systems on an individual basis within ZEN without requiring any adjustments on the sender side.

PROJECT

Project phases, migration process, challenges, successes

Due to its complexity and scope, the project was divided into three phases. Centralization was carried out in phase one for which an elaborate choreography was required. The eMS system network was deactivated at the End of October 2021 in order to compile the future data of the zEN based on that of the central statistics system. Subsequently, the decentralized systems were taken out of operation in coordination with all users and technical consultants (voluntary system administrators at the district level) in order to be able to merge all decentralized data with the zEN system. The process was completed two weeks later and the zEN was put into operation for a trial run by the specialist consultants. For communication between the StMI and eurofunk with the specialist consultants (117 people) during the trial operation, eurofunk provided a kind of social media communications platform. This was used extensively and successfully by the IT consultants for – among other things – internal communications. After successful completion of both the trial operation and a penetration test by the State Office for Information Security (LSI) , the centralization with as-built functionalities was completed on schedule at the end of November.

In the subsequent project phase II, software change requests for end users were implemented in several installments.
Slated for the end of 2022, the final phase III will bring this demanding project to a close with a webservice for incident report supplementation.

We would like to express our sincere thanks to those involved in the project and hope that all users will enjoy the new zEN! ◢
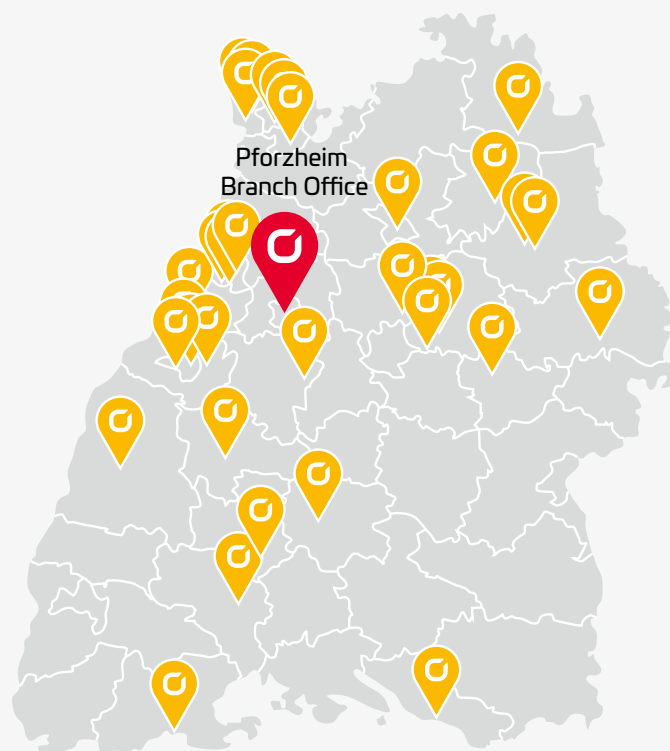
eurofunk in Baden-Württemberg

Peter KLIX

The excellent service that eurofunk provides to its customers in the southwest of Germany is enabled in large part by the Pforzheim branch office and its team of BOS and industrial control station experts.

Direct customer support in Baden-Württemberg is maintained with the help of our close partner Blickle Leitstellen- und Kommunikationstechnik GmbH & Co. KG and its system customers. This special cooperation has allowed us to keep an extensive, long-standing customer relationship that continues to this day, and has helped us to equip, maintain and udpate 20 BOS control centers (24 incl. maintained locations) with eurofunk technology. Among these control centers are some of the largest in the state (based on the number of inhabitants in the service area,) as well as a further eight installations in the areas of industry, the airport, the fire department, the Kassenärzliche Vereinigung KV and the Ministry of the Interior.

In an effort to provide customers with continued good service, eurofunk expanded the Pforzheim branch in 2022 to include additional office space and a bigger support team. As a result of the site expansion, we are in the process of expanding our team as well. eurofunk will remain an efficient and reliable partner for all its Baden-Württemberg customers.

Please feel free to visit us at the redesigned Pforzheim location!

Pforzheim
Branch Office

eurofunk products in use with our customers in Baden-Württemberg

The recently expanded and modernized Pforzheim branch office

eurofunk supplies state-of-the-art emergency call and radio communication technology to Austria's largest professional fire department

Both the communications center for the Vienna Professional Fire Dept. and the Vienna Provincial Warning Center have been operating with eurofunk's emergency call and radio communication technology since the end of 2021.

The Austrian capital is home to some two million people living on an area of about 415 km². With its high building density, the old town, its many historical landmarks as well as high-rise buildings, schools, universities, embassies, industrial plants, public transport (above and below ground) as well as the UN-City and the Danube, the daily challenges for fire fighters in such a highly diverse deployment area are daunting. And the numbers are impressive. Several hundred emergency calls per day lead to over 36,000 incidents per year in which the approximately 1,750 employees of the Vienna Professional Fire Department safeguard and protect the residents of this beautiful city and its approximately seven million visitors.

Fire dept. assistance is coordinated by employees in a rotating shift system, who receive emergency calls at the control center and initiate the appropriate measures. The growing number of emergency calls and the increasing complexity of emergency situations are, among other things, also linked to the special requirements placed on the technical equipment of the communications center.

The decision to equip the control center with the latest communications technology was taken in 2019. In the first stage of the bid process, a group of suppliers was shortlisted according to their assessed ability to meet the requirements. These suppliers were then invited to the next stage, the ITT (Invitation to Tender).

Here the bids were evaluated objectively according to a comprehensive catalog and set in relation to cost. The catalog included the following categories:
functional requirements, user-friendliness, highly available system architecture and infrastructure, interfaces to existing systems, migration concept, operation and service concept, project management and project execution. Based on this standardized cost/performance evaluation, eurofunk emerged as the best bidder.

Stefan HUTTER

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»Ensuring continuous service in the control center was the greatest challenge. In addition to the usual project tasks such as initialization procedures, trainings, milestones and trial operations, the pandemic had to be managed and the operational readiness of the control center had to be guaranteed throughout the entire period. Thanks to good task coordination, tremendous determination and an exceptionally high level of commitment from all project members as well as the members of the Vienna Fire Dept. control center who were involved in the project, our goals were not only met but surpassed.«

DI Wolfgang NIKOLAUS,
BK Project Manager
of the Vienna Professional Fire Dept.

"The project focused primarily on whether the new technology could be implemented without interrupting current operations and on the ability to interface with a large number of existing systems. The onset of the Corona pandemic, which coincided with the start of the project, placed additional unforeseen demands on the project teams. Disrupted supply chains and restricted meeting and access possibilities were compensated for by the exceptionally high commitment of the project team members of all project partners", says DI Wolfgang Nikolaus, BK.

For eurofunk, equipping Austria's largest professional fire department with its state-of-the-art IP-based communication technology is a significant milestone in the company's history. eurofunk would like to express its sincere thanks to the Vienna Professional Fire Department and its project team for their trust and cooperation!

Photos: Stadt Wien I Feuerwehr

DCI – Dispatch Center Interface

Markus KUZELKA

DCI: A network option that allows for the exchange of information between control centers from different regions in emergency, rescue and crisis situations.

The insights gained from practical experience and cross-border civil protection exercises make it clear that there is a need for cooperation both in everyday emergency and rescue situations and, more importantly, in crises and disasters. This mutual support is not only required at emergency service level but also in the control centers responsible for dispatching and alerting.

DCI networking is enabled by adding the dispatch center interface (DCI) to the dispatch systems in question. As a standard part of the ELDIS 3 product portfolio, DCI facilitates cooperation between Schleswig-Holstein and Denmark and is in use in Upper Austria by the Red Cross.

By implementing DCI in Schleswig Holstein, transmission methods could be modernized without the need for integration with external systems. This direct transfer of information makes it possible to react more quickly during operations close to the border and reduces the potential for errors due to language. Currently, Danish control centers use DCI to request resources from Germany which are then dispatched to Denmark. A deployment scenario for the fire services is also currently in the planning stages.

The Upper Austrian Red Cross has had DCI in operation for about three years. Its two main areas of application are HÄND (Upper Austria's urgent care management app) and the LOW CODE Secondary Medical Priority Dispatch System. HÄND transmits medical data and information regarding out-patient care, LOW Code has to do with the bidirectional transmission of mission data for Upper Austrian health consultants. In the process, ELDIS 3 transmits approx. 7,500 DCI missions annually to LOW CODE and 72,000 to HÄND.

In the future, the Red Cross of Upper Austria plans to use DCI to connect to other control centers such as Salzburg, Lower Austria, Bavaria or the German medical-care organization Arbeiter-Samariter-Bund (ASB), as well as to public safety authorities and organizations (police or fire department).

"

»The connection of internal and external partners via DCI has improved control center partnerships by lowering transmission errors, assisting dispatchers and providing complete documentation.«

Markus NEUNDLINGER, MA
Rescue and Disaster Relief Service
Department Rescue Control Center
Upper Austria

DISPATCH CENTER INTERFACE

EUROPÄISCHE UNION
Europäischer Fonds für Regionale Entwicklung

Digital radio alerting

Harald VIEHAUSER

Alerting in the digital age; advantages of digital over analog processes based on practical experience.

Digital radio has long since become the preferred method of communication between control centers and the emergency services with the transition to digital alerting not far behind. Here we will examine the advantages of alerting via digital radio networks - or DF alerting for short – over its analog counterpart.

To take Germany as an example, the high availability TETRA infrastructure and existing network of base stations are used to increase alerting security and range. TETRA pagers, which are used as alerting receivers, have a status display that indicates whether the receiver is logged into the system and ready to receive.

Similar to WhatsApp©, control centers are given visual confirmation on whether the message has been received or read. This is useful in cases where, for example, there is a shortage of emergency personnel and it becomes necessary to trigger a follow-up alert. If we compare this to alerting via analog infrastructures and the time needed for 5-tone sequences to transmit over analog channels, we see a significant increase in transmission rates. Analog alerting also employs voice announcements to transmit deployment information with the resulting drawback that the radio channel is blocked for voice communication during this period. By comparison, DF alerting uses separate voice and data transmission which allows voice channels to remain open, a fact which contributes considerably to the efficiency of DF alerting.

Another significant advantage of DF alerting is that supplementary information, such as the location of an operation, can be transmitted in the alert message. By expanding the alphanumeric text length, messages that exceed the maximum length are automatically linked into several related SDS messages.

The end-to-end encryption of DF alert messages also ensures the safe transmission of data protected information (e.g. personal data). By specifying a so-called severity level, the alert messages can be categorized and displayed to the recipient using priority levels. This means that an alarm with higher prioritization such as a disaster alarm can be given precedence over one with lower priority such as a traffic accident.

Of the German states that have already implemented DF alerting, Hesse and Bavaria stand out as examples of successful integration with eurofunk technology. Fourteen of Bavaria's many control centers are fully equipped to handle DF alerting with approximately 220 000 TETRA pagers in use. Ten more integrated control centers are due to go live in 2023. The excellent cooperation that continues to exist between the VK ILS (the Procedural Coordination of Integrated Control Centers – responsible for the technical implementation) and eurofunk consists of cyclical tests at the State Fire Brigade School in Geretsried among other things. This system is connected to the test system of the BDBOS (Federal Agency for Digital Radio of Security Authorities and Organizations) in Berlin which gives the concerned parties an ideal opportunity to conduct functional testing during the pilot phase.

In order to provide the best possible technical support to the emergency services on site and in the control center, DF alerting is fully integrated as an optional module in eurofunk's operations control and communications technology. The focus is on effectiveness and efficiency in order to save lives in an emergency – in other words, **"creating safety by technology".**

Hardware replacement in the Integrated Control Centers of Bavaria

eurofunk replaces the technical equipment of the Allgäu-Kempten Integrated Control Center in record time and without service interruption. A temporary move to an upgraded interim control center was a key factor in ensuring ongoing operational service.

During the conversion work, the dispatchers were accommodated in a converted training room   Photo: ILS Allgäu

The Allgäu Integrated Control Center is responsible for handling emergency calls in the Allgäu region, for alerting fire departments and rescue services - including mountain and water rescue - for the southwest of Bavaria and for managing the subsequent incidents. Its area of operation covers 3,350 km² with approximately 485,000 inhabitants in the districts of Oberallgäu, Ostallgäu, Lindau and the independent cities of Kempten and Kaufbeuren. The Allgäu tourism region, which includes the Alps and Lake Constance, extends the control center's reach beyond its regional borders to Baden-Württemberg, Switzerland and Austria. Every year, the 40 control center employees handle approximately 230,000 telephone requests for assistance, the associated 100,000 incidents for the rescue services and the additional 4,500 for the fire department. The complexity of the operational area, the increasing number of emergency calls, as well as the increasing danger to life and limb, present the control center staff with major challenges on a daily basis.

In this context, the demands on the technical equipment of the integrated control center as the central element of emergency call handling, alerting and incident co-

ordination, are also high. Equipped by eurofunk for the first time, the system hardware reached the upper limits of its life cycle after many years of uninterrupted operation and was renewed by eurofunk in 2021.

Posing a particular challenge was the need to maintain control center operations while the new hardware was being installed. By relocating six emergency control desks and four emergency call handling workstations to an existing training room, a temporary control center was created in which operations could be maintained while the technical equipment was being replaced. For this purpose, approx. 5 km of interim cables were run from the existing control center to the interim control center and the core infrastructure was relocated to a temporary IT room.
"Thanks to the care given to planning temporary operations, we were able deliver uninterrupted and reliable service throughout the entire conversion phase," reports Andreas Jerkovits, project manager of the Allgäu Integrated Control Center. „ Worth highlighting is the efficient implementation of the control center hardware, which required us to work from the temporary control center for about two months. We were also impressed with the realization

Stefan HUTTER

State-of-the-art media technology and individually configurable eDESKs create a productive working environment.

of the entire project. Despite the restrictions caused by the Corona pandemic, the project was completed in only 9 months from the time of commissioning."

A further integral part of the project was the renewal of the central, high-availability IT infrastructure for the incident management system and the IP-based communications technology in the equipment room. Eurofunk also added state-of-the-art media technology and new, ergonomic, height-adjustable eurofunk eDesks. The number of emergency control stations was increased by two to ten due to increased demands on the control center's operational effectiveness, and ten additional backup work stations were implemented instead of the previous eight.

"Thanks to the exemplary cooperation of the project teams and the professional implementation of the new technology, reliable and effective operation of the Allgäu Integrated Control Center - with all its future challenges – is now assured," says Jerkovits.

We at eurofunk would like to thank the team of the ILS Allgäu for their support and cooperation and wish them all the best in their new control center!

»Thanks to the care given to planning temporary operations, we were able maintain uninterrupted and reliable control center operations throughout the entire conversion phase.«

**Andreas JERKOVITS,
project manager
of the Allgäu Integrated Control Center**

»Innovation, modern technologies with sustainable benefits and the know-how needed to ensure safety are what drive us.«

Solution-oriented partner even in unusual situations

Markus SCHAFFLINGER

The discovery of a bomb near the Integrated Control Center Nordoberpfalz (Weiden) and the subsequent decision to evacuate demanded a perfectly coordinated, immediate response by the control center operator and the system supplier eurofunk.

The discovery of a bomb near the Integrated Control Center Nordoberpfalz (Weiden) and the subsequent decision to evacuate demanded a perfectly coordinated, immediate response by the control center operator and the system supplier eurofunk.

In September 2020, a bomb from World War II was found near the ILS Nordoberpfalz during construction work. To defuse and recover the potentially explosive object, the surrounding buildings, including the ILS, had to be evacuated during the corona pandemic – a situation that, for Bavaria, was completely unique.

Due to the pandemic, existing emergency plans, which foresaw an evacuation to the substitute control center, were revised to allow for the spatial separation of control center personnel. In a joint effort, the ILS Nordoberpfalz, the ILS Munich and eurofunk were able to devise an alternative plan that moved operations of the ILS Nordoberpfalz completely to the emergency control center of the ILS Munich. Personnel would be able to work autonomously for several days in complete separation from the personnel of the ILS Munich.

On short notice, the existing technology of the emergency control center of the ILS Munich was modified to fully replace the control center technology of ILS Nordoberpfalz – all thanks to the close cooperation of the control centers with eurofunk and the support of the telecommunications provider.

Dispatchers of the ILS Nordoberpfalz were able to begin work at the emergency control center in Munich on September 25th and return to their regular place of operation in Weiden on September 28th following the removal of the hazard. The strong organizational commitment of all parties made it possible to handle this unusual situation successfully and to ensure that emergency calls could be processed at all times.

The ILS Nordoberpfalz was located in the radius of the evacuation zone and had to relocate at short notice.

Photo: ILS Nordoberpfalz

PRODUCTS | SOLUTIONS | SERVICE

The Fire Fighting Fun Park in Augsburg

Frank HABERMAIER
Fire Fighting Fun Park

Discover what it's like to be a firefighter and fire safety expert!

Waiting in the demonstration room for the show to begin, spectators suddenly gasp in surprise, their eyes widening in joyful horror as a rolling, fiery blaze spreads out above their heads. Scorching heat causes some to flinch or duck as the flames move eerily across the ceiling. To experience this most elemental of forces in an enclosed room without protective gear is the ultimate thrill and can only be experienced at the Augsburg Fire Fighting Fun Park.

Here your questions will be answered not only in a theoretical manner but also through touch and physical experience. On an area of over 3,000 m², the Fire Fighting Funk Park gives visitors the unique opportunity within Germany to learn about fire protection, fire, smoke, firefighting and how to deal properly with the dangers of fire in everyday life.

How do you make an emergency call? What does a dispatcher do in a control center? At the Fire Fighting Fun Park you can watch as correct measures are taken at an original control center desk. Other significant issues are also addressed, such as the importance of smoke detectors, how they work and why we don't smell smoke while we sleep.

Information on occupational safety, accident prevention and first aid round off the experience.

Fire protection assistants can take advantage of courses with on-site training, and practical support is offered for architects and civil engineers.

Immersing yourself in the world of firefighting is a unique experience for friends and family and we can warmly recommend it to anyone who is curious!
Further information can be found under
www.feuerwehrerlebniswelt.de.

Working like dispatchers at a real eurofunk eDESK.

Photos: Feuerwehrerlebniswelt

The eDESKc - not just a workstation

High-quality materials combined with precise in-house production guarantee design and functionality at the highest level.

Choosing the right desk for a control center work station is no easy task. Ergonomics and functionality play a role, as do the various control center requirements and the need to provide dispatchers with the best possible work environment. Important too is the quality of the materials used and the layout of the work station. We believe eurofunk's new generation of control center desks captures these qualities and more.

Introducing the latest member of the eDESK family, the eDESKc. Providing all the necessary functions for a unique user experience, the eDESKc combines simple, elegant design with choice materials and intuitive operation for a complete mission control system that remains true to the motto "Design Meets Technology". The latest standards and EU directives such as EN527, EN ISO11064-4 or DIN Technical Report 147 also played a significant role in the overall design.

The end result is a harmonious blend of virtual and physical workplaces tailored to the customer's needs. The Clear Desk principle has been implemented throughout and, by eliminating anything superfluous, we have created an environment that allows for increased concentration and workplace satisfaction.

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Our eDESK-
Video on
Youtube:

Martin WINKLER

Through the use of innovative elements such as the Light & Sound Bar, individually mountable connection panels or the eBOX drawer system, the eDESKc offers many opportunities for customer-oriented configuration despite its compact design.

The eDESKc has two cabinets for technical hardware. Each cabinet offers space for 8U (19″ rack system). The cabinet frames are made of aluminum and the cladding consists of high quality 6mm compact panels which are attached to the aluminum frames with hinges.

OCCUPIED   AVAILABLE

The concept of biologically effective – or Human Centric – Lighting is realized by the eurofunk Light & Sound Bar which enables, among other things, dynamic lighting for the individual regulation of both light intensity and color temperature. The loudspeakers are arranged in such a way as to minimize the acoustic

impact on the surrounding environment and the audio signals can be clearly assigned to the control center workstation. The appearance of the Light & Sound bar is nicely finished by a discreet yet clearly visible status display with long-life RGB LEDs controlled via control contact inputs.

eDESK

Key characteristics
of the eDESKc at a glance
- Height adjustment table 650 mm
- PIEZO technology
- Height adjustment monitors 200 mm
- Tilt adjustment touch display, electric, stepless, 35°-65°
- 2 x 8 HE technology container
- 8 individually controllable loudspeakers
- LED luminaire dimmable 2700 K - 6000 K
- Status light RGB

Safety for man and machine was also given top priority in the development of the eDESKc. The electromotive, stepless height adjustment of the control station table, to use just one example, is monitored by hardware-based PIEZO technology. The risk of collision or crushing is thereby reduced to a minimum and provides an added level of protection to safety aspects stipulated

Contact us to see
the eDESK product family
up close!

Innovation and Creativity in Klagenfurt

eurofunk celebrated the opening of its fifth Austrian subsidiary in June of this year with a special networking event. With its innovative, technically well-equipped structure and proximity to customers in southern Austria, these new offices in Klagenfurt make for a very attractive location.

At eurofunk, location expansions are planned well in advance and the new offices, located in the Lakeside Science and Technology Park, were renovated and opened in record time. Ideally suited to companies with a focus on information and communication, the campus is accessible, within easy driving distance of the city and allows for immediate access to the Wörther lake and recreation area.

Close proximity to top-tier educational institutions such as the Alpen-Adria University and the Carinthian University of Applied Sciences create interesting synergies in ongoing research projects.

In the visually and technologically sophisticated Klagenfurt office, developers work together on the eurofunk products eOCS and ELDIS 3. Also hard at work at this location are teams from other areas of the company, such as communications, consulting, or support staff for error handling. Internships are strongly encouraged for creative input and new approaches to future projects and as well as for follow-up hires.

Nina KAINHOFER

eurofunk x Gaming Festival

LEVEL UP is the place to be if you are looking for new ideas and networking opportunities in the tech world. The Salzburg gaming and eSports festival isn't just for gamers - companies see expos like LEVEL UP as a good chance to increase visibility within the digital community.

At the beginning of July 2022, a unique fan club including 6500+ gamers, tech buffs and e-sports afficionados met at the Exhibition Grounds in Salzburg for the first ever Austrian gaming & eSports event. Bringing together gamers, fans and the generally interested, this internationally diverse group spent the weekend betting on outcomes, experiencing new trends, celebrating shared passions and getting a feel for the newcomers in the industry.

Smash Cup, Beat the Pro and LEVEL UP Challenge

As one of LEVEL UP's programming sponsors, eurofunk hosted 58 top level gamers for Smash Cup on opening day. The exciting final between the best three players took place on LEVEL UP's main stage and was commented live from our eDESKc by SchwarzSkills, one of the top casters in European gaming.

Day two showcased eurofunk's „Beat the Pro", a competition where anyone with the skills could go against Sillintor, one of the best gamers in Bavaria. After this came the LEVEL UP Challenge during which participants were asked to complete a simple task at the eDESKc, one of eurofunk's featured workstation desks. We hoped with this to give people an idea of who we are – the workings of a control center, the technologies we deal in and what eurofunk does in general. What we liked about this part of the event was the number of new and interesting contacts we made.

eurofunk at a trade fair for gamers - to what end?

While gaming was one aspect of the fair that interested us, we were also looking to present eurofunk - with its unique products and diverse portfolio - as a young, attractive, modern IT company. With our young and motivated team of eurofunkers, we were able to organize and enjoy two super-exciting and interesting days together.
We would like to take this opportunity to thank our creative colleagues once again for their team spirit and commitment.

Photo: Fabian Stoffers

Christina DAVID

What makes the eSports scene so interesting for eurofunk?

Participation in an event of this kind lets us tap into a new industry and connect with its tech-savvy consumer base. According to Statista, 50% of Germans are gamers. In Austria, the figure is more like two-thirds. So it becomes important for us to be able to interact on an authentic level with this young and internationally well-connected demographic.

Apart from their obvious skills and abilities, e-sport players are resilient, good in a team setting and love technology more than… well, a lot of things. The necessity to acquire, operate, maintain, and update their own technical equipment means that dealing with software and hardware is an everyday occurrence for these "digital natives". They are the developers and programmers of tomorrow with an ability and enthusiasm that is sure to have a positive influence on all technologies.

The internationally acclaimed caster "SchwarzSkills" enjoyed moderating from the eDESK   Photo: Fabian Stoffers

High excitement in the finals for the eSports pros and the spectators.   Photo: eurofunk

Scan here for the official highlight video on Youtube:

Sources:
[1] https://de.statista.com/statistik/daten/studie/315860/
umfrage/anteil-der-computerspieler-in-deutschland/
[2] https://www.ovus.at/news/sieben-von-zehn-oesterreiche-
rinnen-und-oesterreicher-spielen-videospiele/

Congratulations on the winner's check presented by eurofunk.   Photo: Fabian Stoffers
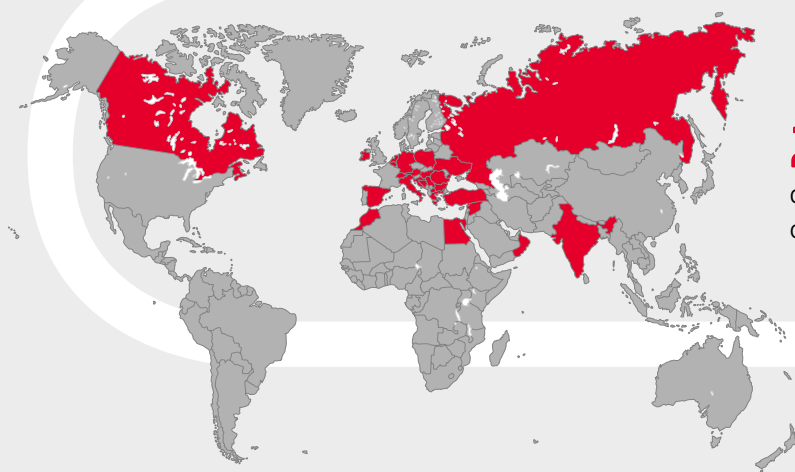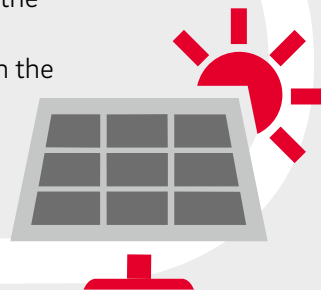
eurofunk facts

15.600
Square metres is the size of eurofunk's headquarters in St. Johann im Pongau

500
kw of electricity is delivered by the photovoltaic system that was installed on the eurofunk roof in the summer of 2022

25
different nationalities enrich the company with cultural diversity

11
eurofunk offices in Austria,
Germany, the Netherlands
and Oman

> 200
specialists in product development
are working on our innovative control
center solutions for you

> 550
employees currently work at eurofunk's
headquarters and branch offices

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eurofunk

creating safety by technology