The keys to CERN conference rooms - Managing local collaboration facilities in large organisations

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Abstract. For a long time HEP has been ahead of the curve in its usage of remote collaboration tools, like videoconference and webcast, while the local CERN collaboration facilities were somewhat behind the expected quality standards for various reasons. This time is now over with the creation by the CERN IT department in 2012 of an integrated conference room service which provides guidance and installation services for new rooms (either equipped for video-conference or not), as well as maintenance and local support. Managing now nearly half of the 246 meeting rooms available on the CERN sites, this service has been built to cope with the management of all CERN rooms with limited human resources. This has been made possible by the intensive use of professional software to manage and monitor all the room equipment, maintenance and activity. This paper will focus on presenting these packages, either off-the-shelf commercial products (asset and maintenance management tool, remote audio-visual equipment monitoring systems, local automation devices, new generation touch screen interfaces for interacting with the room) when available or locally developed integration and operational layers (generic audio-visual control and monitoring framework) and how they help overcoming the challenges presented by such a service. The aim is to minimise local human interventions while preserving the highest service quality and placing the end user back to the centre of this collaboration platform.

1. Introduction

The creation of the CERN conference room service is the outcome of a natural and smooth evolution: Historically, each meeting room at CERN is "owned" by a department or collaboration, which entirely takes care of the room, hence there is a great heterogeneity in the equipment installed and level of support given to the users. The CERN IT department had been providing recommendations and support for video-conference equipment in CERN meeting rooms since the late 90s. As this type of equipment needs a very tight integration with the local technical environment (PC, projector, screen etc.), the service took over the management of the whole equipment set for these videoconference rooms from 2005. The number of such rooms grew up in such a way that it made sense to consider applying the management methods put in place for videoconference rooms to all the CERN meeting facilities. This was done in 2012.

Today, the CERN conference room service manages 120 of the 246 CERN meeting rooms. For each of these rooms, it provides consultancy for refurbishing the room and selecting the best standardized audio-visual equipment, coordination for the room installation, corrective and preventive maintenance of the equipment, and user support in the room. The service starts managing a new room

only when its owner accepts to modify it to the standards defined by the service. This is the only way a reliable and efficient service can be provided with limited resources.

This central service was built from the beginning with the idea of extending the support from 70 to 250 rooms with a very limited increase in the manpower involved. All the processes put in place for this service, and which are described in this document, were designed, selected, and added with this fundamental requirement in mind. Also all these processes are applied indifferently to all rooms, regardless of their sizes.

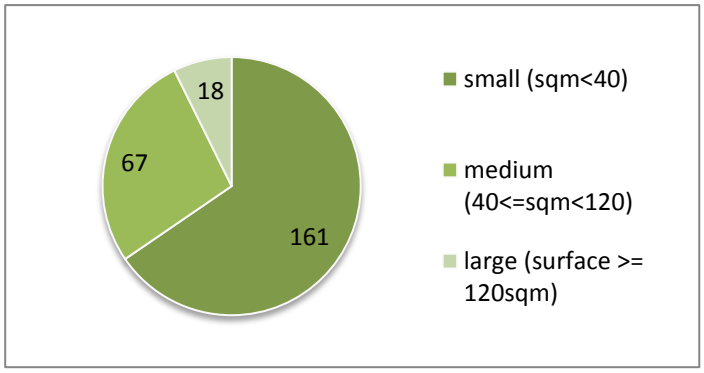

Figure 1: Number of meeting rooms at CERN, by size

2. Equipment standardisation

Using the same equipment in all rooms is a key strategy for the central conference room service because it allows users to face the same environment in whichever meeting room they use which results in a better efficiency when using the equipment they are accustomed to, and less stress for the meeting organiser. Similarly, this diminishes the need to train the support team every time a new room is installed. For the service manager a clear advantage is the possibility to negotiate better deals with equipment suppliers when buying in high volumes, and it also facilitates the integration of the equipment in the global management framework, as the work done for the integration of one type of equipment is simply re-used when a new occurrence of the same equipment is installed.

Standardisation naturally started in videoconference rooms by homogenising the type of h.323 codecs used, for the greater benefit of providing the same graphical user interface in every room. Then followed the other technical equipment like projectors, screens, and PCs. Similar colors are also recommended for the wall painting and carpeting in soft tones which are supposed to also fit well with video transmission. We also recommend furniture (tables and chairs) because this is also part of the overall meeting experience, although the final choice is up to the customer in this case.

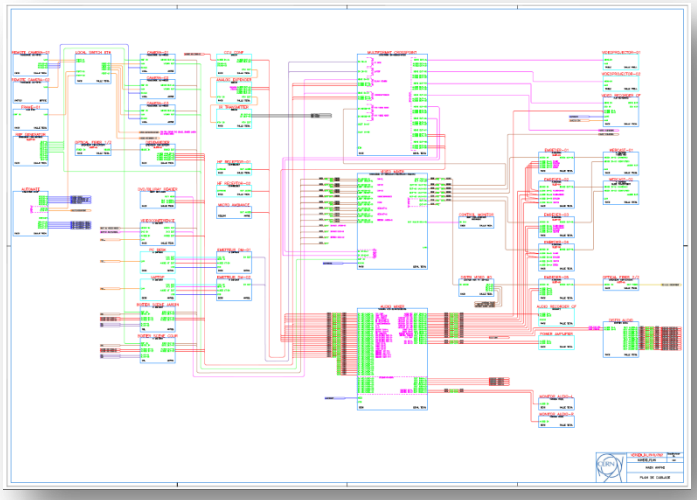

Figure 2: Template cabling plan for large venues

In order to be more efficient when being asked to equip a new meeting room, three room templates were established according to the room size, which are advanced starting points allowing to give a fast and standard technical and financial proposal to the customer. These templates also include cabling plans drawn with Autocad which serve as basis to establish the final plan of the room.

3. Equipment management

Managing such a high number of rooms is also obviously about maintaining a large number and variety of equipment and one of the first challenges when taking over an established base of meeting rooms is to understand exactly which equipment you are supposed to maintain. For this we performed an extensive inventory of all the technical equipment installed in the rooms. The equipment

information was then initially stored in Excel files and Sharepoint lists which quickly proved inefficient and too limited to answer appropriately some of the asset management challenges we faced, namely:

- Extensive inventory
- Tracking of equipment location and movement
- Storage of equipment related documents (user guides, orders, warranties etc.)
- Tracking and planning of investment (per room or per customer)
- Managing stocks of spare equipment and parts
- Organising and tracking preventive and corrective maintenance actions
- Easily integrating with other service tools

Other services and projects at CERN (general facilities management, cooling and ventilation, even parts of the LHC) have similar needs (although very often at larger scales!) and it was obvious to consider using the same supporting tool, namely the Infor EAM [1] (enterprise asset management) software. After a short period of tests and configuration, the software was used in production in the service in April 2012. It is used to keep track of the equipment and functional positions in the meeting rooms, to log all maintenance activity on any of these assets or positions, and to manage the stocks of spare parts. Barcode stickers are added to all the inventoried equipment, allowing the support team which is equipped with a barcode reader coupled in Bluetooth with a tablet, to optimise the maintenance intervention time, and ensure the proper information is logged to the correct item. The database currently contains 1038 positions, 881 assets and 142 parts.

The service also needed a reporting tool, both for users, customers and managers. This dashboard [2] was built as a drupal module using direct queries to the Oracle InforEAM backend database, python scripts and the Google Charts framework. It is publicly accessible and displays the list of supported rooms with their status and additional information, statistics about rooms, about the installed equipment (models, manufacturers, age etc.), service activity (number of open tickets) and Key Performance Indicators.

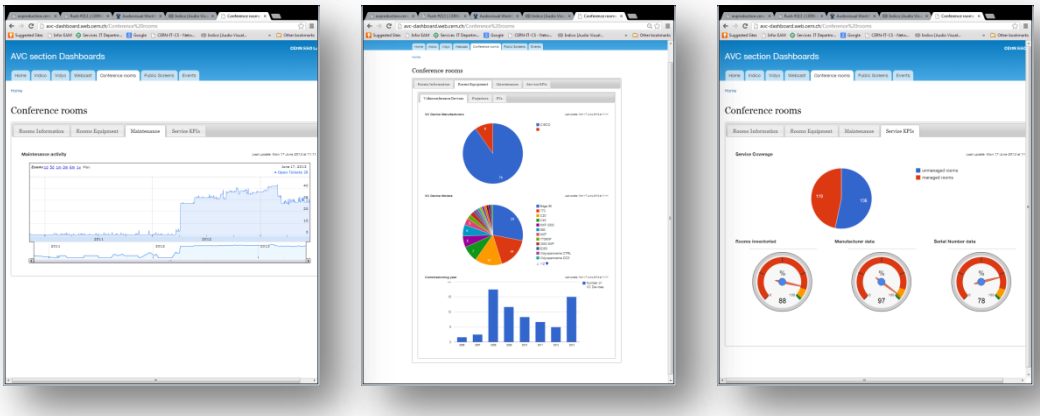

Figure 3: The conference room service dashboard

4. Equipment monitoring

Being able to monitor the equipment remotely greatly enhances the efficiency of the service as it allows reacting quickly in case of detected problem or reached threshold (for example a projector lamp will be changed as soon as it reaches the announced maximum number of hours), diagnosing user difficulties, and making statistics of usage. Of course the sine qua none condition for making this possible is to select equipment with a network interface. Then there should be a software which allows this remote monitoring, or an API which allows you to create this software. The CERN conference room service currently monitors two types of equipment: its projectors and its room videoconference devices, and has plans to extend this coverage.

4.1. Monitoring the videoconference devices

Videoconference devices are by nature networked equipment, and the standardisation that was put in place by installing in CERN rooms only Tandberg/Cisco devices allowed to use a specific monitoring software called the TMS (Cisco Telepresence Management Suite [3]). Not only does this software allow to constantly check the status of all devices and warn the support team in case of failure but it can be used to push configurations (like phone book entries) centrally to all devices for example, and do some detailed reporting. Its drawback is that it can manage only Cisco devices, which is problematic in case of change of supplier.

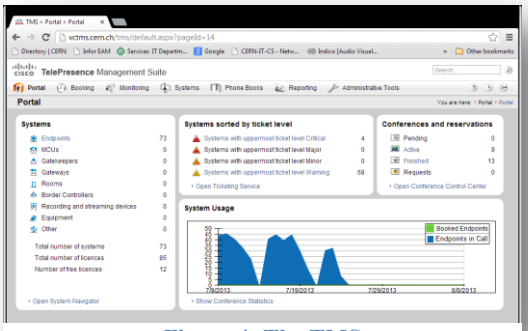

Figure 4: The TMS

4.2. Monitoring the video projectors

With the development of new modes of image transmission based on IP networks, projectors are more and more delivered with a network interface, either wired or wireless. And standardisation once again helps finding the appropriate monitoring software: all the CERN meeting room projectors are from EPSON and EPSON has its own monitoring suite for projectors, the EPSON EasyMP Monitor. It allows to register projectors which status is then constantly monitored, in case of failure (dust filter, lamp failure etc.) a mail is sent to the support team. Its drawbacks are that it works only with EPSON projectors and the data is not preserved and difficult to extract in an automated way.

4.3. Extending the monitoring

It is important that other types of equipment are also monitored and that a greater flexibility is introduced in the way the monitoring data is logged and exploited, so we are currently investigating new technical solutions, one of which seems particularly promising: the Extron GlobalViewer Enterprise (GVE) [4]. It delivers the expected flexibility and even allows the monitoring of non-IP enabled devices by the use of local RS232 gateways. Ideally this monitoring system should also be tightly coupled with the maintenance system in order to generate automatically maintenance tickets when an issue is detected.

New complex use cases also require smarter equipment management. For example, "on air" signs are currently being deployed in CERN largest venues, and these should be switched on only when a webcast or a videoconference is ongoing. For this we need to get the status of the videoconference device in the room and of the webcast encoder then trigger the lighting up of the signs. This is done via an in-house developed software called RAVEM (Room Audio Visual Equipment Manager)

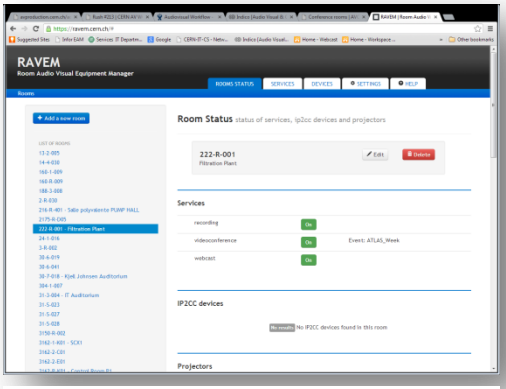

Figure 5: RAVEM, Room AV Equipment Manager

5. Rooms remote operation

An important factor when it comes to supporting users in a large number of rooms by a limited team is the ability to perform this support remotely. This is made easy in videoconference rooms where the support can be connected via video and start debugging instantaneously in case of problem. In other rooms the user contact can be simply established via phone. In both cases, it is always good that the supporter is able to operate the local room equipment remotely and this is usually made possible on

networked devices which embed a small web server allowing this remote control. This solution is limited because not all devices are networked and every device has its own control interface and security mechanism which makes control sometimes hard and time-consuming. An alternative is to use the control interfaces embedded in the monitoring frameworks (TMS and EasyMP monitor), but this once again gives one interface per type of device. The Extron GVE may help by providing a consistent central interface for all the supported devices. In the meantime, we have developed our own simplified room control app (optimised for tablets), and which makes the work of supporters easy.

Figure 6: Room control app

6. User interfaces

Simplifying the equipment interface in the room is also a primary objective for the service, in order to reduce the need for support intervention and provide a smooth experience to users. The recent introduction of table-top control devices (Extron MLC series) in meeting rooms, and of Crestron automation devices and control tablets in larger venues goes in this direction. They allow the control of the entire environment (sound level, projector/screen sources, lights and blinds for the larger ones) from one unique interface, avoiding the multiplication of remotes on the room table. Users also have one unique phone number to contact in case of problem and interventions are performed fast and efficiently.

Interactive information screens have also been developed to be installed at the entrance of meeting rooms. These touch-enabled displays give information about the events taking place in the room and can also provide personalised services when interfaced with an RFID card reader, like for example being able to book the room right at its door, or call/book a support service (audiovisual, cleaning, catering service…).

Knowing at all times what is going on in all rooms is also an important aspect for the success of the support service. This is made easy at CERN by the fact that Indico [5] is the de-facto standard tool to organise events and most of the meetings are created in this platform. Indico is also used as the booking system for most of CERN physical meeting rooms and for the other collaboration services offered by IT (webcast, recording, videoconference). This centricity enormously facilitates the work of event organisers but also of the support team.

7. Conclusion

Modern and carefully selected tools allowed the CERN conference room service to be quickly efficient and its managers to foresee its evolution and growth with confidence. Keeping the final user of these rooms at the centre of all new developments is a fundamental aspect of its success.

References

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