

MONTREUX
JAZZ
DIGITAL
PROJECT

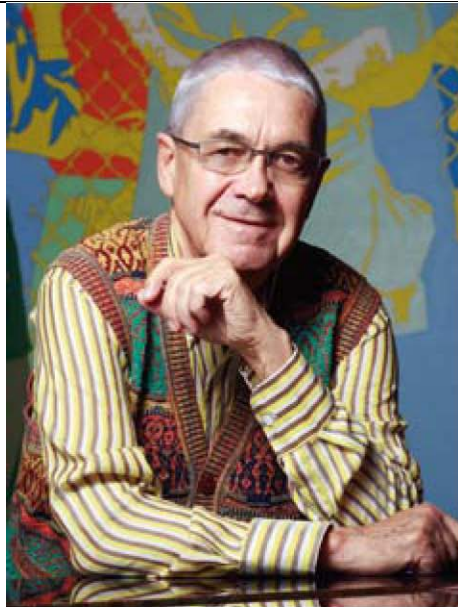


Montreux Jazz Digital Project

From a unique patrimony to an innovation platform

Claude Nobs

BB King – Stravinski 2009



To the memory of Claude Nobs

Introduction

At the heart of the “Montreux Jazz Digital Project” is the safeguard and valorization of over 5,000 hours of audio-visual recordings of the Montreux Jazz Festival. The wealth of material which has accumulated over the 46 years of its existence is candidate for the World Music Heritage of the UNESCO program “Memory of the World” and according to Quincy Jones, “It is the most important testimonial to the history of music, covering Jazz, Blues and Rock.” No less than 4,000 groups and artists have performed at Montreux! The entire original collection will be filed and preserved as part of the future Claude Nobs foundation. The main motivation of the project is the preservation of this unique musical testimony - whose storage medium is subject to the destructive tests of time. In order to ensure access to future generations, an operation to digitize this 5,000 hours back catalogue enables the creation of a digital resource which, by the originality and richness of its content make it a leading educational resource. In parallel, EPFL is developing this invaluable digital resource with cutting-edge research emanating from a wide range of areas such as computing, signal processing, of acoustics, augmented reality, multimedia and security (not an exhaustive list). The newly founded Meta Media Center at EPFL, which is coordinating the “Montreux Jazz Digital Project” aims to facilitate the technology transfer from research to industry via transdisciplinary and collaborative methods. The third component of the project is concerned with the creation of a dedicated public space that will allow visitors to experience a unique, personalized and immersive space to interact with the content of the archives. It will be a place where Art, Technology and Culture combine. This space will open in 2015 and will be located at the heart of campus in the building “Under one roof”.

Some figures to highlight the value of this heritage:

- 5,000 hours of video of which 2,000 are in critical condition
- 5,000 hours of audio recordings
- 4,000 documented concerts (metadata)
- Tens of thousands of photos and newspaper articles...

The major challenges to this project:

- Safeguard and preserve the Montreux Jazz Festival archives
- Provide access to the archives for education and research purposes (stimulation, database reference)
- Make the archives available to the widest possible audience

The Montreux Jazz Festival archives

Top-notch recording technologies

Since its creation in 1967, the Montreux Jazz Festival has recorded concerts that have made its success. The Festival co-produced with the Télévision Suisse Romande its first television programs. At that time, analog 2-inch tapes were used. Then, spotting the latest audio-visual technology at the TV Symposium of Montreux, the Festival has quickly switched from black & white to color (1970), from stereo to multi-tracks (1975), and from standard definition to high definition (HDTV since 1991). The first Ampex D2 recorder No. 0001 was used at Montreux in the early 1990s. Even 3D was experimented with in 2010 in partnership with the Waldensian Nagra Kudelski. The result is a vast catalog of concerts recorded and stored on different formats. All media is preserved in a specially designed building with temperature and humidity control near the chalet of Claude Nobs on the heights of Montreux.



The Montreux Jazz Festival archives at Caux, Switzerland

Gathering the archives, a lengthy “investigation” process

Archiving began in 1988. Claude Nobs and his partner Thierry Amsallem searched collected and compiled all the tapes available at this time. Many items were stored at the TSR, or at foreign television studios (NHK), record labels (Warner Music, Atlantic Records) or scattered in various post-production studios or manufacturers like Sony Japan. All items have since been gathered and stored in the famous "bunker" of Claude Nobs after a long and laborious inventory which lasted several years. However, since its inception, the meticulous task of logging events which occurred during each concert has been documented. This invaluable information contributes to the richness of the archive in order to reconstruct an accurate map of the festival over time.

Formats complexity along years

Throughout the years, many formats have been used, making it more complicated and expensive to digitize the archives. The formats most at risk are not always the oldest, where criticality depends on the availability of players and the use, more or less intensively, of tapes since their recording. Among the most widely used formats, more than 15 different media formats were used for video recordings, and almost the same amount for audio recordings.

No backup, a major risk for the patrimony

Despite the use of the best technologies at the time of recording, the tapes have limited lifespan. Deterioration of magnetic materials and obsolescence of playback machines are inexorable. In addition, there is no backup, which increases the risk of permanently losing these archives.

The three missions of the « Montreux Jazz Digital Project »

In 2007, EPFL and Montreux Sounds sealed the fate of the archives in a unique partnership to save this heritage and digitize it in full. This partnership allows the EPFL to obtain a copy of these records for research and education purposes. Appropriately named the "Montreux Jazz Digital Project", the newly created Meta Media Center has managed this project since 2011. This was absolutely essential as the state of some of these tapes became critical!

Digitalization & indexation

The digitization process must meet several requirements and many choices had to be made to ensure optimal and usable results. Among these criteria, the first is concerned with the quality of the audio and video which has to be of the highest standard, that is to say, very close to the quality of the original, in order to maintain the integrity of the archive. Then comes the indexation: the digital media must be readable and duplicable whilst providing an easy way to identify and find songs with the use of various criteria (concerts, artist, date, etc.). Finally, the physical protection of data and a fast and secure access to content must be ensured.

The difficulty of digitizing audio/video lies in the handling of the original analogue tapes (with over-heating where possible), then the configuring of the multiple parameters to read the media. Although Montreux Sounds has almost all the necessary equipment to complete this task, finding a company capable of processing the large quantity of audio-visual material over the shortest time has quickly become a necessity. More recently, thanks to the development of skills at EPFL, students will digitize over 2000 hours of HD video on campus.

Valorization

The result of the digitization is unfortunately not directly usable on its own. It is often thought that the transfer from old tapes to modern media is enough to save an archive. The outcome depends of course on the goals, but preserving a heritage only makes sense when it can be enhanced and shared with a large audience. It was indeed unthinkable to keep the Montreux Jazz locked in a safe. Looking for a partner to store the archives on a server quickly became a priority. In that perspective, a partnership has been established with Amplidata in early 2011. This startup based in Belgium proposed an innovative solution to address problems of cost, power consumption and performance of mass storage drives. Today, the storage capacity is 1 petabytes but the goal is to double its size to keep on archiving future festivals.

With the prospect of a live archive, ideas for valorization have quickly materialized. Several axes were considered. The first one aims at making the archives available for research and education. A second one focuses on scientific and artistic projects, which sublimates the archives. Finally, with the prospect of the "Montreux Jazz Lab", the archives will be revived through the imagination of our students and researchers, but will especially be made accessible to a wide audience.

Sustainability

It is very important to build archives, which can evolve with technological changes without becoming obsolete in 10 years. Digital tapes have a life span of over 30 years. This amount of time is

much lower for a disk-based storage system and most reading equipment in general. There is unfortunately no storage solution which is eternal.

By creating a custom archiving system using both the format of digital tape and hard drives, EPFL is already a step ahead to implement a better scalable and future proof video storage infrastructure. Over the next five years, EPFL will focus on sustainability issues to carefully assess the following challenges for the best possible preservation of the archive in the long term:

- A/V Formats for modern use;
- Archives metadata;
- Flexible use of the archive and minimization of operational costs;
- Minimization of technology costs and creation of effective processes;
- Storage of new content and increase in the capacity of hard disks;
- Adaptation to changes in archiving technologies.



The digitalization process of the analogue tapes at Vectracom in Paris, France



Methodology of digitalization

In the case of MJF archives, three major steps are considered and affect digitizing operations soundtracks in the format selected by the EPFL, the preservation and provision of content, and finally the archive maintenance over the long term.

Formats requirements

One of the main challenges of the project is related to the speed of the digitizing process that the project requires. Each month, approximately 200 hours of video and 200 hours of audio are digitized and encoded. The monitoring of this process involves advanced expertise in the following areas: audio signal processing, image processing and video compression of digital signals, analysis and video annotation, improved audio and visual content, visualization, interface design, media security...

Two EPFL laboratories were involved early in the project to provide a digitization strategy based on a thorough knowledge of the audiovisual sector. This is the "Multimedia Signal Processing Group" (MMSPG) and "Laboratory of Electromagnetism and Acoustics" (LEMA). The choice of digital data formats is essential and must be done extremely carefully.

- Audio: No compression is tolerated in order to keep high quality.
- Video, primary format: uncompressed, 120Mbit / s SD, 480Mbit / s in HD
- Video, secondary format: slightly compressed, 50Mbit / s, MPEG-2
- Video Format tertiary highly compressed, 10 Mbit / s, WMV

The two video formats (primary and secondary) remain untouched, as well as the audio archive. Two copies on digital tapes are maintained in separate locations.

Steps

The scanning process follows the following main steps:

- Preparation of tape batches in Caux (same media format)
- Scan in Vectracom and EPFL for HD
- Visual and auditory quality control of digital media, input of results in the database
- Storage of secondary formats (video) and primary (audio) system hard disk

Quality control

The quality control of digital archives is an extremely important operation. It is performed at EPFL, in part by students on campus, and in part by qualified personnel trained in the areas of audio or video. Mainly, this control is to determine whether the scan was performed to the required expectations:

- Audio levels: maximum peak and RMS average
- The phase correlation and the audio balance
- The shape of the spectrum,
- The maximum luminance levels (typically in the presence of spots) and minimum (black peeling)
- The color levels and color phase.

This information is also of great value for research. These data "correct" entries by humans serve as a reference for algorithms or automated processes control, but also archives indexing allow more than 40 students have extra work on campus and use professional tools that will be useful later in their careers.



Quality Control at EPFL in Lausanne, Switzerland



1 Peta-byte Amplidata hard-disk storage for the digitalized archives at EPFL in Lausanne, Switzerland

Database and metadata

After the quality control process has taken place, all information regarding defects are entered into a database. This database, developed by the MetaMedia team, aims to unify the various generations of databases created over the years by the Montreux Jazz Festival, including many paper documents! The requirements and the structure of this database have been thoroughly studied with various partners during the design phase, in order to integrate the vast amount of information related to Montreux Jazz Festival concerts and media (artists, songs, musicians, composers, broadcasting rights, during the concert events, technical problems, etc ...). It meets all the requirements of the digitization process, the quality control and the indexing of the various formats parameters (audio, video, etc...). The database will associate each piece of a concert and include information regarding copyright, a long-term project, which began recently in collaboration with the Montreux Jazz Festival.

It is programmed using a language called Scala, developed by an EPFL laboratory and used by social networks like Twitter. This database is at the heart of the future project for the MJF valorization. It will allow users to discover, analyze, understand, or work with 46 years' of Jazz history. It will be enriched on the long-term and will include many other references such as photographs, testimonials, and other archival documents still "to discover". As this data is not related to any specific copyrights, discussions are underway with management at Montreux Jazz Festival to make them accessible to the public.

Valorization and technology projects

Overview

The "Montreux Jazz Digital Project" is an avant-garde project and one of the first attempts to digitize audio-visual archives on a large scale, in high quality, and accessible in real time. As such, it contains a number of scientific and technological challenges, which fosters research and ideas for new product development. As mentioned, the project's mission is the valorization of the archives through technology. The opposite way is also part of the objectives and the MJF, the music world offers many opportunities for innovation.

Among the projects developed with laboratories, should be noted:

- SoundDots: an sound "umbrella" for localized listening
- SoundRelief: active walls to isolate noise surrounding physical spaces
- Genezik: a music recommendation engine to discover music according to personal tastes
- Detection of applause to isolate sequences in a concert
- Automatic detection of defects in digitized videos
- Acoustic simulation of real-time 3D physical space
- Montreux Jazz Heritage Lab: an immersive space for the discovery of archives
- iJazz: a mobile application to interact with the heritage which could be available to the public in the future Montreux Jazz Lab

Many other smaller projects are developed with students as part of their various assignments. This concerns in particular the development of programs for automatic generation of data but also numerous applications in acoustics and sound propagation control, a subject of great interest to architects. To date, 10 laboratories and already more than 40 students use the archives through these projects. Most of these innovations will be exhibited to the public in the building "Under one roof", inviting everyone to discover and test new technologies, to serve a better user experience. In the meantime, these innovations are exposed each year during the summer festival and presented during the workshops which are free and open to all.

Details of Current Projects

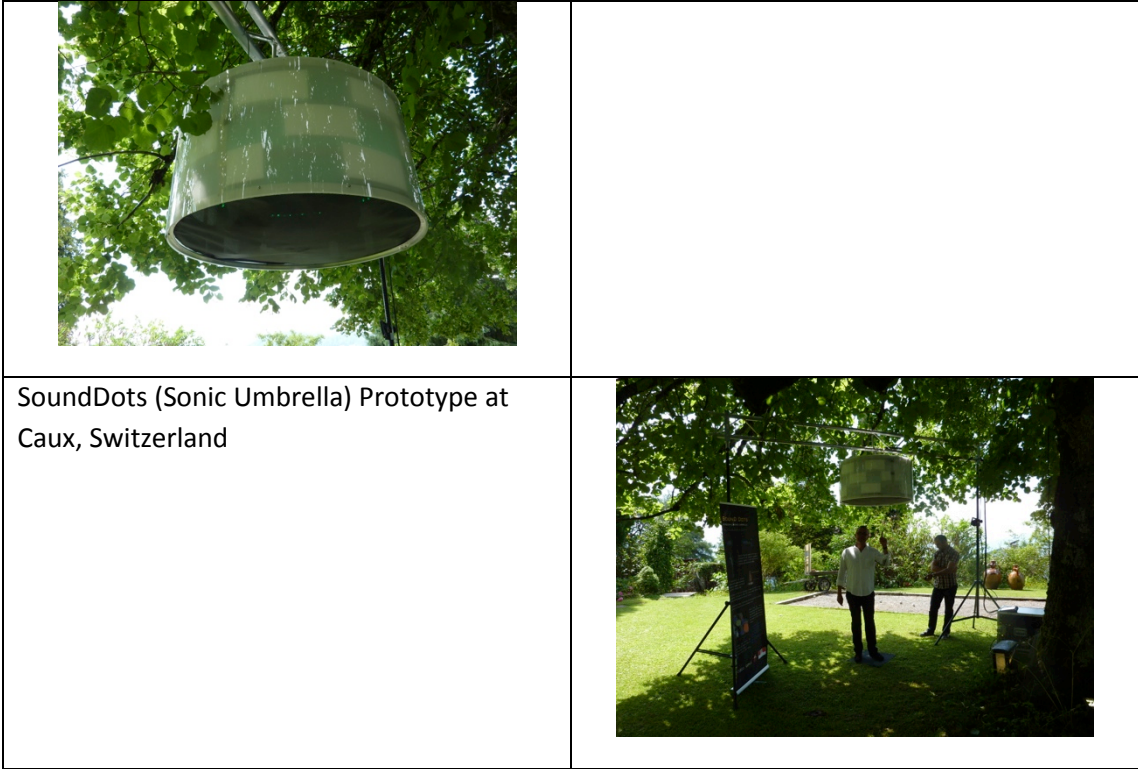
SoundDots

Sound Dots is a new technology of acoustic source for the diffusion of sound in a preferred direction with high-quality musical rendering. When you listen to your music with a Sound Dot, sounds envelop you and you will find intimacy of listening. By its ability to direct the sound, the Sound Dots do not bother your immediate neighbourhood located two or three meters away. Placed high up, a set of Sound Dots can distribute different music on different listening zones. Ideal for concerts and outdoor soundscapes, it is also very useful in conference centres and museums for the

broadcast of information; it is the ideal solution for sound diffusion whilst maintaining the acoustic comfort of its neighbourhood. By its revolutionary design, it can be easily integrated into the architecture of indoor, outdoor and street furniture. Then take the steps, listen to your favourite songs while respecting the others, and discover the Sound Dots!

The prototype that we have developed was originally designed to be placed in a Café to create private listening areas without affecting social interaction. Today, the only solutions available are the use of closed structures or headphones which is not very social! The SoundDot (or sonic umbrella) offers new possibilities to listen to music or create various atmospheres in open spaces, leaks in the 2-3m perimeter space and even invites others to join. It has already been used for “la nuit des musées”, a public event in Lausanne and for “ABC informatique”, a public event at EPFL.

Our competitive advantage is based on a unique loudspeakers arrangement and a fine grain tuning of signal distribution to each of them. Our solution is based on regular loudspeakers (compared to microwaves), which allows for improved sound quality and the ability to scale to any size. The patent for this technology is currently being drafted.



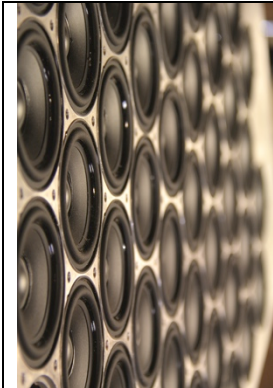
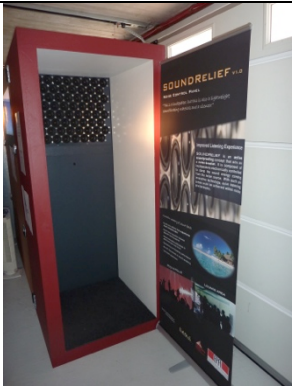

SoundRelief

SoundRelief is an active soundproofing concept that acts as a noise-breaker. It is composed of loudspeakers electronically controlled to damp energy coming from a noise source. With such an innovative technology, quiet zones can be built within noisy environments. SoundRelief is designed for filtering low frequencies, the most difficult noise to block. Combined with well-known passive material, large spectrum attenuation is obtained. The advantage of this technology is its simplicity to build and a very good thickness/efficiency ratio.

Among all possibilities, a first use case was developed to prove that theory and lab simulations could be converted into a demonstrator that anybody could test. This prototype aims at separating 2 areas, a nightclub represented on the left and containing a loudspeaker emitting 100dB (more than the regulation allows), and a lounge area represented on the right where you would not expect to "suffer" from the noise next door, especially low frequencies (the "boom-boom" you hear outside night clubs). Those low frequencies are very difficult to filter using a lightweight wall and are very annoying to the neighbourhood. The wall that we put between the two areas is less than 10 cm thin and is composed of active loudspeakers that act as filters. Combined with traditional passive material for medium/high frequency filtering, our wall is opaque to sound.

The technology is currently at the prototyping level but can be industrialized for specific applications. Our competitive advantage compared to existing "lightweight" solutions, is the simplicity of the solution. Whereas others require microphones to subtract "noise", the loudspeakers we use are at the same time measuring the noise, and absorbing it. This allows for very simple electronics and very robust solutions. This also implies we could use other types of surfaces (other than loudspeakers) to perform the same job, these surfaces being flexible enough to "detect" a vibration (the noise), and emit a "correction". This technology could then be better applied to architecture as we can use various materials to absorb and/or control sound in a given area, room, public space... The technology is patent pending.

The prototype was tested by more than 1000 people already, and all of them, including architects, were very impressed by the performance of the filtering. We also foresee very interesting applications for cars, aircrafts and boats.

	
	<p>SoundRelief (Sound Barrier) Prototype at Caux, Switzerland</p>

Genezik

The next generation social music platform and the missing link between music, artists and users:

“Aspire to music? ... Inspired by Genezik”

Apple, Google, Spotify and many others are changing the music industry every day, but despite many attempts, none of them have yet solved the problem of easily finding a diversity of appealing music. Genezik is the solution, which cracks it. It's an innovative multiplatform player application powered by a breakthrough discovery engine, which captures user “emotions” and adapts to them in real-time. Songs are not just digital files or compressed data, they represent our memories, emotions and instantaneously provide a reflection to our state of mind. Genezik determines the musical “DNA” of a track, much more meaningful information than metadata tags, identifies similar tracks and organizes them into a unique cloud database, which grows and improves every day due to users' contribution. People no longer need to spend time making playlists that quickly become obsolete. The next track is recommended based on the musical similarity map held in Genezik and the song/mood they have selected to start their music experience. Genezik forms a musical journey that fits nicely with their implicit aspiration. This opens endless possibilities to listen, but also to discover new music. By consolidating users' information and listening habits, Genezik constantly learns to refine their “music genome” and connects them together to become a social recommendation platform, a one-stop-shop for music lovers and an “even” platform for all kinds of artists to promote and sell their titles.

Matracam

One of the technologies to emerge from the Signal Processing Lab (LTS2), is Matracam, a multi-camera system able to gather data from different points-of-view. It is composed of 18 high-resolution synchronized cameras. This technology enables the recording of several synchronized channels of video streams, which can be used to test and evaluate the innovative algorithms developed at LTS2. These algorithms provide possibilities of changing the viewpoint or modifying the focus of existing video recordings. They also allow for high-precision slow motion or super-resolution zoom (travelling). All this can be used in collaboration with tracking solutions to follow video objects in high quality resolution (for example the singer or a musician in the case of a concert recording). A prototype has been set-up at the Montreux Jazz Festival for two episodes.

Automatic Video Enhancement for the Montreux Jazz Archive

The (MMC) and the Multimedia Signal Processing Group (MMSPG) at EPFL defined several projects in order to automatically detect the defects on the videos of the Montreux Jazz Festival archive, and then reduce their perception with the use of enhancement algorithms. To this date, the types of errors which have been processed include periodic lines, dropouts and diagonal lines. Other defects such as image jumps, outlier frames, synchronization loss, will be further considered.

Musical Karaoke

In this project a signal processing algorithm is designed to isolate the different instruments of the audio in a concert. In the Montreux Jazz Lab, the opportunity will be proposed to amateur musicians to come on stage and replace, for example, the guitarist in the band playing on video.

Upcoming Projects

Acoustic simulation of the Montreux Jazz concert halls

There are two branches to this project. The first one consists in trying to reproduce binaurally in headphones the acoustics of the Kursaal and Casino halls in Montreux. This is for the playback of old concerts in their original acoustic environments. For the second part of the project, we will try to recreate the acoustics of the Kursaal and Casino halls in the Montreux Jazz Lab at EPFL.

Automatic real-time music level adjustment for entertainment spaces

In entertainment spaces where a lot of people are talking at the same time ('cocktail party' effect), and the acoustic level is often high. When playing music in the background, it is difficult to select the most appropriate audio level for people to keep a comfortable feeling.

Together with the LCAV, the MMC will design a system that analyses the acoustic scene to adaptively decide what the optimal playback level of music will be.

Audio loudness normalisation of the archive

In the Montreux Jazz Festival archives, the audio level of the different recordings can change dramatically from one concert to another. In order to playback the concerts at an even level, an algorithm that normalizes the audio loudness is being implemented according to international standards. Based on metadata, this loudness normalization will be applied on-the-fly during playback (but will not affect the original audio signal).

Automatic detection of audio events

For the purpose of enriching the archive database, it is desirable to index some particular events that occur during the concerts. This includes applause, speech (announcements or musician speaking), audio cuts (no more signal because of recording break), pops and glitches as well as clipping.

Automatic musical solo detection

For the purpose of enriching the archive database, it would be useful to index particular sections of concerts where instrumental solos take place. As an example of solo instruments, let's mention voice, saxophone, bass, guitar and drums.

Automatic logo detection on videos

Logos from TV channels are often seen in the videos of the Montreux Jazz Festival archives. In this project, it is wished to detect the logos and remove them without degeneration of important artefacts.

Automatic thumbnail creation for video tracks

In the frame of this project, and for the purpose of enriching the associated database, it is wished to extract thumbnail pictures from the concerts, at locations corresponding to the beginning of new tracks. The thumbnails should be representative, typically showing faces, musicians and instruments.

Face Detection in the Montreux Jazz Festival Picture Archive

The MetaMedia Center plans to analyze the entire photo collection of the Montreux Jazz Festival and link them to the actual artists and, where applicable, to the related concert. The goal of this

project is to develop an image processing algorithm capable of detecting faces on the pictures, and extract them for storage in a database (together with their associated metadata).

Subsequently, the objective will be to review all the concepts involved in the preceding projects and to study their impacts on different types of media. We could imagine other scenarios and other technologies in relation to virtual museums, exhibitions or the cinema.

EPFL Labs involved

In order to specify the projects and realise their initial implementations, various collaborations have been identified with laboratories within the EPFL:

- Interactions media/users and immersive experience, paradigms of interaction with spectators (N. Henchoz, EPFL-ECAL Lab; Professor P. Dillenbourg, Craft)
- Virtual 3D cameras, physical detection of individuals and groups, detection of scenes, control by gesture (Professor P. Vandergheynst Signal Processing Laboratory 2; Professor P. Fua, computer vision Laboratory; Professor D. Atienza, Embedded Systems Laboratory; Professor y. Lebleblici, Microelectronic Systems Laboratory)
- Detection of ambiance, detection of emotions, musical analysis (Professor P. Vandergheynst, Signal Processing Laboratory 2; Professor JP. Thiran, Signal Processing Laboratory 5)
- 3D micro-directional, adaptive and 3D sound, active absorbent partitions, voice control, adaptive sound, dynamic control of sound, sonic filtering, etc. (Dr h. Lissek, Electromagnetism and Acoustics Laboratory, Professor M. Vetterli, Audio-visual communications Laboratory)

The “Montreux Jazz Lab”, a new kind of physical space for 2015

The objective is to offer the public, as wide and as varied as possible, the opportunity to discover or relive the magic of a concert at the Montreux Jazz Festival by means of a new immersive and personalised experience. An experience made possible with the creation of a new kind of space, itself forming part of a wider project by the EPFL, the construction of themed pavilions in the central square of the EPFL, Place Cosandey, situated between the Rolex Learning Center, the cantonal road that runs along Lake Geneva, and the centre of the campus, the Esplanade. The emergence of this central square is at the heart of a reflective process currently occurring at EPFL which aims to promote dialogue between Science and Society in response, notably, to the desire to promote culture on our campus.



Plans for the Montreux Jazz Lab and Pavilion, Place Cosandey, EPFL



The themed pavilion is dedicated to the presentation of the musical treasury and will be the focal point of the construction project. This convivial space will be equipped with the latest audio-visual and multimedia technology and will combine listening and visual pleasures with those of food and

dining. The 30,000 students and workers at the EPFL-UNIL campus as well as all of 300,000 visitors, both famous and anonymous, that EPFL attracts every year will all benefit from the experience of the Montreux Jazz Lab

A visual game and original trompe-l'œil technology will allow the re-birth of the Montreux Jazz Festival archive to take place while it rises up from the anonymity that has guarded it all these years. The musical pavilion which will rise from the earth in 2014 will offer the opportunity for people to relax, drink a glass of wine and eat while interacting with the archive either individually, perhaps for research purposes, or in a group. The space will also provide facilities for the production and recording of music. It will also function as a "living laboratory" where latest technologies can be tested with the objective that some may later be transferred to the public domain. There will be so many occasions to stimulate the creativity of our students at the frontiers of technology. They will be offered the opportunity to involve themselves in various research projects, described later, during their University career, in a master's project, for example.

A new interactive experience

From the point-of-view of research and innovation, one of the axes of this project is revisiting the interactions between users and the spaces in which the media is experienced. The first navigation tools on the Web were based on the structuring of content available to them (Yahoo), then the indexation of popular content (Google), has been challenged by the exponential growth of the body of information. The viral propagation of personal content (YouTube, Facebook, MySpace) has generated a colossal amount of data with potential loss of meaning to the individual. This renewed need for pertinence requires personalisation as a function of the past, individual habits and tastes, or even an anticipation of those needs. Returning to the individual, a better control of his or her interactions with the media, an intuitive simplified and more intuitive experience is the ultimate challenge. These are precisely the domains which research must consider in order to create effective means of differentiation. The implications include conceiving new types of information about people and new types of algorithms which, in combination, would provide a perfect balance between an offer and a user at a given moment with the use of personalised recommendations

The Montreux Jazz Festival archive and the new building dedicated to Media constitutes an excellent field for experimentation. Because of its intimate relationship with the festival, the domain of music will naturally be the first medium that we will use for our research and experiments.

The aim of this ambitious project is to prepare a first set of tools to allow researchers to project themselves into the future and launch new initiatives. In the next few years, platforms will be introduced progressively to cater for experiments that will grow ever larger and ever closer to real environments. In this first stage, a collection of research tools that are already available, or will soon become available, will be used and evaluated.

Three principal innovation platforms will be implemented to create three different ambiances:

-“The Montreux Jazz Heritage Lab”: a twin-seat, immersive and interactive module built for two people to experience a personalised musical stroll through the Montreux Jazz Festival archives.

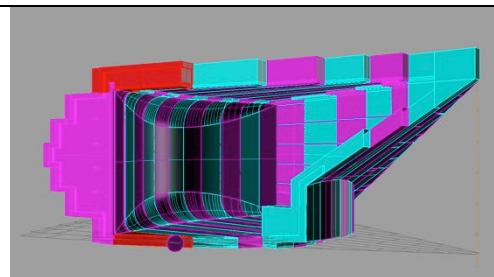
-“Café Experience”: A project which will extend the concept of the “Montreux Jazz Heritage Lab” to groups of people who, whilst together in one place, may have different aspirations but still share the same basic ideas and desires.

-“Backstage Experience”: The creation of a polymorphic space which will allow researchers to set up real events, such as concerts, museums, exhibitions, in order to create large-scale experiences. The first and main theme of this space will be live concerts.

Each of these platforms will give rise to tangible productions, which will attract a wide audience. As well as the technology on offer, the audience will be able to discover new artistic domains in a warm and festive atmosphere.

In order to provide users with an effective recommendation service, the technical infrastructure must also evolve, especially in its ability to guarantee the security and protection of personal data. The Montreux Jazz Digital Project represents a pilot scheme whose solutions will be applicable to any media-based project.

The musical heritage of the Montreux Jazz Festival provides an adequate basis with a manageable degree of complexity, conferring upon it the function of a prototype for large-scale projects in the future. Furthermore, the universe of music provides a broad palette of fields for technical, economic and application-based exploration.



The Montreux Jazz Heritage Lab

