

INA Artistic Testbed

slide 1 This presentation concerns acousmatic music and is a continuation of the one given on live electronic music by Jerome Barthelemy, from IRCAM.

slide 2 INA has been in musical since the 50s. It produces a specific kind of music which is mainly based on the acousmatic paradigm. It means that all music composers build their own music in a recording studio and put this on a data audio file.

This music is usually performed on radio programs or in concerts by a loudspeaker orchestra. Acousmatic music can also be used for various other purposes like in the mixed media.

The main problems that INA has faced do not concern the preservation of audio files, but that the sound loses its quality in time, as happens for old movies which are visible only in black and white, with no sound, and where it would be preferable to have another, improved version 20 or 30 years later.

slide 3 There are differences between the musical domain dealt with by INA and by IRCAM, and some confusion may derive from the fact that INA uses the IRCAM MustiCASPAR server.

Acousmatic music is made up of recorded sounds and sound transformations; the composers record these onto a tape or, nowadays, onto audio files, and then they produce the final audio file by means of a mixing session in a studio. After, using fixed media, still track or multi tracks, it is possible to give a loudspeaker concert, as often happens in France, and less frequently in other countries.

In the IRCAM context, which is more recent because it concerns live electronic music, sound synthesis and sound transformation, algorithms are produced and only sometimes recorded sounds are used; above all, the intention of IRCAM is to produce real time music that obviously requires musicians, instruments and a score. Before the CASPAR project only the score was preserved because it was the only thing that publishers considered to be music, but in the case of live electronic music this way of considering music is incorrect.

Maybe there are concerts where a live electronic performance is combined with instrumental music, or with music performed by a musician by using electronic instruments as in the live mixing of the audios etc.

So, on the one hand there are performances, while on the other hand, in the INA context, there are concerts which are more similar to a sound projection or to a movie projection.

- slide 4 In the INA context, what is usually archived is the final audio tape, together with a new version of it, and its publication. The rest is used by composers who usually have the original source material at home and the documentation in another place.
- slide 5 The CASPAR project should allow the storage and preservation of the original works but also everything else which revolves around it: their new versions, the description of new technologies equipment, the performing conditions and the related sources, e.g. some master of mixing session which had been archived 20 or 30 years before, in analogue time, and so is not digitally encoded.
- slide 6 From INA's point of view, the aim of preservation is to make it possible to be able to re-perform the work, but this is in fact, not the hardest task to accomplish. INA highlights the need to be able to document even the performance conditions, an idea which is absolutely implicit in France, since concerts have been performed by means of a loudspeaker orchestra for the last 50 years.
- INA started documenting the history of the loudspeaker orchestra in France, then doing the same in England, and it hopes to be able to have enough material to allow people to understand this kind of music in a few years, even if this type of concert disappears; the aim is to make people aware of what its intention was, why it was created and what the purpose of INA was.
- Another really important step is to make adaptations and revisions of the works possible by preserving the digital mixing sessions and the way in which these are realized using the main core software, which is usually a software on the market; it also implies the need to describe and preserve older ways in which the mixing session was made up for each piece.
- Recommendations on this are necessary and also the capacity to manage the rights if you want to produce a new version or a new rendering much later after the compositions were made, even if the composer has, by then, passed away.
- slide 7 In the INA testbeds there are three different levels of data sets: the final work and the declension, which are usually audio files but sometimes with movies too; the final mixing session, which is composed of several files and many different steps; if possible, the sketches and the intermittent steps (if provided by the composer) and all the documentation related to the composition, which is extremely important for authenticity and provenance.
- There are also many kinds of data types (50-60 data types), the most important of which is the core software and mixing file system which is usually a proprietary system.

It is possible to migrate from one system to another in just a few ways, and these are used in the CASPAR project but it should be said that they are not perfect.

slide 8 Behind the scenes of a concert, there is the installation of loudspeakers and there is the piece which the composer has previously created in his studio. The mixing session of the work produces a lot of audio files that are usually reduced to 16 or 8 tracks for a concert; these are the sound files that people listen to at a concert.

At the end of the concert a diagram is produced that shows the position of the loudspeakers and of the concert hall.

It is important to point out that sound projections can be made by using a live or recorded mixing desk but in any case, there is always a response in the concert hall. Technicians and composers say that the effects depend, for instance, on how many people attend the concert and how much noise they produce and that will influence the way in which the music is listened to.

slide 9 An example for the *Distance Liquide* file shows that there are approximately 1000 files; the majority that are used by INA belong to about 10 different types: audio files, files regarding the mixing sessions and so on.

Five pieces have been put on the MustiCASPAR along with their files that are almost the same amount for four of these pieces.

As nobody can manage and control 1000 files, INA has worked with the CNRS team in order to build a human interface to organize and describe the relationship between each category of object.

slide 10 INA has provided a specific terminology for the acousmatic music and for all types of data it uses.

slide 11 This terminology has not been built to be used only by INA, but also by CIANT and ICSRiM.

It includes different categories that can be used to describe all the various kinds of data concerning an object.

Usually each object contains not only one file but a set of files, and this causes some problems to put the object on the server, but by using this terminology it is possible to constrict all the relationships between the different objects into a fixed set of categories.

Each object can also have attributes, e.g. an ID, a name version, etc.; it can have rights on it and Authenticity Protocols.

An ontology can be exported on the RDF system through the repository, and this is the way in which INA has contributed to the MustiCASPAR server made by

IRCAM.

- slide 12** Concerning rights management, in the last version of Cyclops interface, there is a provenance tracking which is extremely important. Dealing with digital objects we need to know who made them and for what purpose they were made; on this interface there are attributes about the attribution, i.e. regarding the composer, performer or commissioner.
INA has discussed some protocols with the Metaware team in order to check the rights description in CASPAR. One of the cases that has been taken into account concerns an eventual change in some kinds of rights, for instance, the introduction of a right related to the interpretation of the work: this new information should be introduced in the system and this is what Metaware has done. Other protocols concerning changes in the duration of a right have also been tested.
- slide 13** In the last version of Cyclops, developed by the CNRS team, the visualization of provenance has been allowed; by checking an object and asking the software to show its provenance, all the related information is displayed, e.g. rights, all the cycles of the provenance, in addition to information regarding the context.
- slide 14** From INA's point of view, three aspects are particularly important in preservation: firstly, to preserve the final work in all its declensions, including the control of rights attribution; the second aspect is the preservation of the mixing session, but the work in this field is not yet complete; the last aspect is the preservation of the description of performance conditions, but more work has to be done on this point too.
- slide 15** INA has developed a testbed on the key scenario of the mixing software. Supposing that a mixing software is no longer available, it is possible to follow three different strategies in order to run the mixing session again. INA has chosen the strategy of using an exchange standard file, which is called OMF.
- slide 16-17** This strategy consists of exporting the files through OMF and running a new mixing session file, with new mixing software, in order to obtain a new rendering. This can then be compared to the original to evaluate if the result is good enough and eventually correct it so that finally all the staff is documented.
- slide 18** This is obviously a human solution; sometimes it is not possible to have automatic replacement of some components from Max/MSP to Pure Data and it has to be done in a studio.

- slide 19 This approach has been tested on a piece by Daniel Teruggi. The process is accomplished through different steps: the work and its components are ingested into the MustiCASPAR server; a notification concerning the availability of the core mixing environment is produced; then the human solution consists of a migration of the file, which is made up in a studio; then the result is checked through an Authenticity Protocol by asking the composers or the people if they agree with it, to evaluate the result and finally the new version is ingested into the repository.
- slide 20 The achievements which have been made by INA are: the setting up of a MustiCASPAR clone server (where there are also some pieces from IRCAM, which can be used to show the different kinds of data that are used by IRCAM and INA); the implementation of a methodology to extract Representation Information, which is not as complex as the one used to extract it from Max/MSP; a CIDOC-CRM based acousmatic terminology and representation. Moreover, INA has almost finished documenting the performance conditions and describing the fully collected pieces of five composers.
- slide 21 INA intends to continue its work, in particular collecting new pieces from Trevor Wishard, an English composer who asked INA to help him to archive all his pieces, recorded both in analogue and digital form; INA has proposed the idea to him of having one of these pieces fully described on the MustiCASPAR server. Another producer, Hugues Dufourt, has asked INA to help him to work on one piece, *Saturne*, for orchestra and synthesizer, which was played with electronic synthesizer and is impossible to play now by anyone. INA has just started to work on this project, a piece made up of not only acousmatic music, deciding to deal with it in two ways: on the one hand, by sampling all the sounds, a job to be realized by a studio team; and on the other hand, it has been proposed to obtain a modelisation of the same work for the MustiCASPAR server. INA is also preparing guidelines for best practices for all acousmatic production studios since, as shown also by IRCAM, there is a lack of description of what people do and of files, even concerning the types of software they used, its version etc. INA also wants to have external secure access to the MustiCASPAR clone server; it is quite difficult and will take years, but it is necessary for demonstrations and to host pieces of the composers from other countries. On the long term, INA has a new research project with IRCAM, GAMELAN; INA also wants to make a bridge between its internal database, Acusmaline, which is supposed to contain 1500 pieces on it, and the MustiCASPAR server, since Acusmaline is only a repository and the aim is that the best pieces are preserved and described on the MustiCASPAR server.

The last intention is to open the MustiCASPAR server to other communities, explaining the problems that concern preservation and that are faced by OAIS and CASPAR, and proposing them to try to put one of their best pieces on it in order to see if they can understand how to use it.

slide 22 The fact that INA is now preserving, or starting to preserve, the mixing session, will allow one to migrate it onto new software, if necessary; to produce new rendering, as is done for the old cinema movies (but not enough old to make a new rendering of them on a new system) which one wants to have in a new version; and also to offer access to INA sources to musicologists. All these aim are pursued in order to allow acousmatic works to be more accessible for future generations.