



The Interactive-Music Network

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User requirements and use cases

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Abstract:

This document gives a general overview of user requirements in the domain of music and multimedia technologies. It covers the fields of music notation, multimedia standards, music libraries, optical music recognition, music distribution, protection and accessibility.

Keyword List:

Music, multimedia, infotainment, edutainment, music notation, standards, music libraries, optical music recognition, music distribution, protection, accessibility, music creation, education, music archives, music publishing, digital rights management, asset management.

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1 Executive Summary and Report Scope

According to the Technical Annex, this deliverable contains the use cases and user requirements for the MUSICNETWORK thematic network. Domains covered are the general usage of the MUSICNETWORK and its adoption as a tool for stimulating discussion in the areas of: music notation, multimedia standards, music libraries, music imaging and optical music recognition, protection, distribution and accessibility.

User requirements and use cases have been collected conforming to the architecture of the MUSICNETWORK, which is constituted by 7 working groups, each of them covering one of the specialised domains listed above, conforming to the identification of main domains performed during the early preparation phase of the project proposal. This identification has been obtained by considering past projects in the domain such as HARMONICA and WEDELMUSIC.

Users, in the case of the MUSICNETWORK thematic network, are not intended to be only related to the end users, but also experts or actors in the domain, which can also provide information to the community and get additional information from the network. Use cases have been collected considering this point of view. Results of the work of the MUSICNETWORK experts must be not only available to a large public, including end users, experts in the domain, actors and professionals from the sector, but the MUSICNETWORK must also provide them with a way to interact with these experts and professionals.

Use cases are descriptions of scenarios where the end user interacts with the MUSICNETWORK experts and partners. Interaction, in this case, means not only collect available information from MUSICNETWORK, but also provide information, make suggestions, submit problems, or even submit solutions. These interactions can happen in many different cases:

- fairs and workshops
- newsgroups, forums, internet discussions
- publications in conferences and symposiums
- daily visits of attendees for partners having direct contact with the public (IRCAM, MICA, FNB...)

This report contains a description of tools and facilities which will be proposed to users and partners, as well as members of the MUSICNETWORK itself, to complete the goals and aims of the MUSICNETWORK project.

2 Introduction

The goal of this Work Package is the collection and description of the use cases and user requirements regarding potential users of the MUSICNETWORK that could be interested in: music coding notation, music, music coding for libraries, music representation for libraries, multimedia standards for music coding, distribution of coded music, protection of coded music, music coding for print impaired people (including visually impaired people), coding images of music sheets and migration from images of scores to music notation.

In a first phase, information has been collected by reviewing the results of past projects in the same domain, such as HARMONICA, WEDELMUSIC, RITMO, OCCAMM, MOODS, PLAY, PLAY2, IMEASY, and CANTATE. In a second phase, co-ordinators of each working group have gathered requirements. To this end, registered users of the MUSICNETWORK have been approached, and advice was solicited from known actors and experts in the domain.

Please note that at the same time in which we are working on this document a preliminary version of the www site with a small set of services have been already provided to the community. This has permitted to grow very fast and to be come a reality in Europe with more than 300 registered people and about 150 different companies and institutions. That activity has been anticipated to guarantee a faster start up.

By merging together users' requirements, the following main services have been identified, which will serve as a basis for the implementation of the MUSICNETWORK service:

- Question and answer service

- Upload and download of documents, already provided
- Identification of most significant actors in the market, partial
- Identification of business models
- Identification of typical problems, partial
- Research group presentation and activities
- Internet links of interest, partial
- Survey on state-of-the-art technologies
- Event and fairs announcements, partial
- Test cases database
- Presentation of expert's results, started
- Access to an up-to-date bibliography, started

Generally speaking, the answers to users requirements must be given in the form of:

- General surveys and state-of-the-art reviews
- Pointers to articles, comparison charts...
- Tutorials, documentation,
- When possible, examples and success stories, with details on:
 - o Technologies and tools used
 - o Extracts (if possible)
 - o Analysis of methodology (when available)
 - o Information about availability (where, when...)

These services can be identified as “general use cases”, but must be implemented in a consistent way within the architecture of the MUSICNETWORK, which is composed of seven different working groups, each of them with different goals, different knowledge, and different approaches. Thus, each of these services must be implemented for each of the working groups, and must remain separated.

3 User's requirements and cases

3.1 Identification of users

A list of potential users of the MUSICNETWORK has been collected by reviewing the results of past projects in the same domain, such as HARMONICA, WEDELMUSIC, RITMO, OCCAMM, MOODS and CANTATE.

In a second phase, information has been gathered from all participants in the MUSICNETWORK project. The list is compiled as follows:

Music Notation:

- Composers
- Musicians (performers)
- Music students
- Music teachers
- Copyists
- Musicologists
- Music publishers
- Multimedia producers
- Experts on music notation for print impaired people
- Experts on music notation
- Music sheet distributors
- Recording studios
- Theatre archivists
- Music libraries

Music libraries:

- Music libraries
- Audiovisual/multimedia archives

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- Broadcasting agencies
- Music-related museums
- Librarians
- Catalogue compilers
- Music schools
- Music conservatories
- Music universities
- Orchestras/Ensembles/Musicians
- Music shops
- Software developers
- Service providers
- Musicologists
- Archive/library users

Multimedia standards:

- Music journalists
- Radio producers
- Multimedia producers
- Music teachers
- Musicologists
- Archivist of multimedia library
- Information technology industries, software builders

Distribution:

- Publishers
- Music shops
- Policy and decision makers
- Collecting societies

Protection:

- Digital rights owners
- Digital rights representatives
- Publishers
- Music distributors
- Research groups
- Developers/integrators of technology
- Solution providers
- Consultants

Accessibility:

- Visually impaired people
- Print impaired people
- Visually impaired musicians
- Print impaired musicians
- Music schools
- Schools for the blind and visually impaired
- Music libraries
- Libraries for the blind
- Conservatories
- Transcription centres
- Music publishers
- Music content providers
- Music software developers
- Organisations developing and distributing tools and aids for the visually impaired.

Music imaging:

- Publishers
- Multimedia diffusion

3.2 User's requirements

3.2.1 Music Notation

Music notation is now entering the multimedia age. Music notation is naturally related to other media:

- audio/video recordings of performances;
- documents related to the music piece or to the composer (biography, critical notes, ...);
- images of the author, performance, director etc.

The integration of all these aspects enhances the creative experience of the user and it is useful for music learning. Another important aspect is the interactivity that can only be achieved by using a symbolic description of music notation. Images of the music score (TIFF, GIF, PDF files) cannot be transposed, modified, annotated etc. However interactivity presents some copyright problems, and so digital rights management (DRM) support is needed to give the publisher control of how a piece of music is used.

The most important aim of the Notation Work Group is to stimulate the realisation of a widely adopted format for music notation representation. A format that will deal with the needs of all the actors (publishers, music editor producers, copyists, integrators, etc.) involved in the realisation and the distribution of an "interactive" music piece.

Identified user requirements of the Music Notation Working group are as follows:

- Survey on music analysis tools
- Survey on music learning tools
- Q&A service
- Identification of the most significant actors of the sector
- Identification of the leader Companies
- Survey on music notation of Tools
- Research groups presentations and activities
- Internet links
- Identification of the most significant associations
- Survey of typical problems and solutions
- Survey on state-of-the-art technologies
- Event and fairs announcements
- Bibliography references
- Technical documents (up/download)
- Success stories and lessons to be learned
- Definition of a common shared format for music notation representation
- Build collaboratively a database of music notation test cases
- Review the music learning tools
- Review the current conversion capacities
- Disseminate results on music notation of participants

Possible users are composers, musicians, music teachers and students, copyists, musicologists, music publishers, multimedia producers, experts on music notation for print impaired people, experts on music notation, music sheet distributors, recording studios, theatre archivists, music libraries, ...

3.2.2 Music libraries

Facing social challenges as well as developments in Information Society Technologies, "...libraries are changing fast: but they need to change even faster." (PULMAN Guidelines, 1st ed., June 2002, p.5) Multimedia possibilities for music libraries are just emerging and hard to track, also for librarians and archivists. However, in order to extend the classical functions of libraries into the digital world – to accumulate and to preserve knowledge, to provide access to the society's cultural artefacts, and to foster communication, education and scholarship – it is necessary to keep pace with technological, legal and standardisation developments in the multimedia music area.

MUSICNETWORK is not only open for users coming from a typical music library community, it takes a cross-domain perspective including museums, archives, industrial catalogues and other collections.

MUSICNETWORK users coming from a music library perspective will in many cases also be interested in music notation, multimedia standards, protection/copyright issues, accessibility and music imaging.

Identified user requirements of the Music libraries Working group are as follows:

General / Library Management

- forum/ mailing list for exchange and communication on the topic
- service for uploading/downloading relevant documents
- survey / assessment of legal and licensing developments
- analysis of market developments
- identification and discussion of future business models for music libraries
- survey / assessment of Digital Asset Management systems
- survey / assessment of payment systems

Cataloguing / Metadata

- survey / assessment of cataloguing standards
- survey / assessment of Standards for exchange of information (Z39.50, XML, ...)
- survey / assessment of commercial products, services and companies
- survey of the main research groups, projects, standardisation bodies
- announcements of the main conferences, fairs, workshops etc.
- select bibliography
- development of bibliographic requirements (FRBR)
- identification and discussion of special needs for music libraries and AV archives

Information retrieval

- survey / assessment of Information retrieval standards
- survey / assessment of commercial search and information retrieval solutions
- survey of the main research groups, projects, standardisation bodies
- announcement of the main conferences, fairs, workshops etc.
- select bibliography
- identification and discussion of special needs for music libraries and AV archives
- identification and discussion of the potential of new information retrieval technologies (e.g. ontology-based search) in comparison to classical library information retrieval

Digitisation

- Basic recommendations for compression, processing and formats
- Identification of reliable technologies for protection and digitalisation of audio/AV (e.g. evaluation of reliability and durability of storage formats such as CD-Rom)
- Identification of usages, methodologies, and technologies used for large audio/AV archives
- Adaptations required for small audio archives
- Recommendations for digitisation of sheet music (OMR etc.)

3.2.3 Multimedia standards

Multimedia development is a chance for preservation and diffusion of the cultural heritage. Multimedia and music publishers have in their archives audio files, music scores, documents, and images, and are converting their archives of music scores from paper to images to survive in the market. The next step will be to convert images of music sheets from image to symbolic formats and to bring this content into multimedia applications. This amount of data has strong potential if it can be organised and distributed within multimedia products. The simple exploitation of that material to produce CDs and DVDs with authoring systems is only a small part of its potential, since synchronisations and music score integration with other elements are not exploited with those tools.

The development of new content for edutainment or infotainment is quite difficult due to a number of particular issues, which are:

- first, the lack of music notation (music score) integration in the multimedia delivery chain
- the poor integration of standards in a general framework and an unified model
- the lack of main authoring tools and multimedia standards regarding musical functions (MIDI, audio tracks, synchronisation...)
- the lack of integrated Digital Asset Management databases and tools for their integrated inspection.

In addition, there is a complete lack of tools or applications devoted to certain specialised purpose, such as synchronisation of a musical score with an audio recording.

The aim of the Multimedia Working Group is to identify new solutions, new usages, new applications, as well as surveying the evolution of standards and their integration in a general framework. In addition, the aim of the Multimedia Working Group is to suggest and support the development of new services and applications devoted to Multimedia Music distribution.

Identified user requirements of the Multimedia Standards Working group are as follows:

- Identification of authoring tools and evaluation of their usefulness for music distribution
- Identification of multimedia standards
- Evaluation of integration of multimedia standards and authoring tools in respect to each other
- Identification of omissions in the commercial offer
- Review of specialised applications
- Survey of work from International Standardisation Bodies
- Survey of significant projects and realisations in the multimedia distribution (CDRoms, DVD, Internet...)
- Test cases for comparing tools on multimedia standards
- Survey on conversion tools for multimedia standards
- Analysis on educational capacities of multimedia tools
- Survey on distance learning tools for music teaching
- Q&A service
- Identification of the most significant actors of the sector
- Identification of the leader Companies
- Research groups presentations and activities
- Internet links
- Identification of the most significant associations
- Survey of typical problems and solutions
- Survey on state-of-the-art technologies
- Event and fairs announcements
- Bibliography references
- Technical documents
- Success stories and lessons to be learned

Possible users are multimedia producers, but also musicologists, teachers, music schools, archivist of multimedia library, information technology industries, software builders, etc.

The competence in the field of multimedia must not be overvalued, and no a priori knowledge should be attributed to these users.

Generally speaking, the answers to the users' requirements must be given in the form of:

- General surveys and state-of-the-art reviews
- Pointers to articles, comparison charts...
- Tutorials, documentation,
- When possible, examples and success stories, with details on:
 - o Technologies and tools used
 - o Extracts (if possible)
 - o Analysis of methodology (when available)
 - o Information about availability (where, when...)

3.2.4 Distribution

3.2.4.1 User requirements analysis methodology

Users of distribution are:

- Publishers
- Music shops
- Policy and decision makers
- Collecting societies

The MUSICNETWORK project must provide services and tools (i.e. means by which MUSICNETWORK implements services for the users) to satisfy requests and needs of the above users. To accomplish this, the first step is collect these requests and needs of the above users¹.

To understand user requirements of publishers regarding the MUSICNETWORK project, that is services publishers expect and targets they want to accomplish from the participation in the project, the first step is to analyse their presently unsatisfied needs and their requests concerning the distribution market.

Then, tools suitable to provide this service in the MUSICNETWORK project are defined. Common tools for different Working Groups can be found by analysing these tools with more precision. The result is an exchange of information among the Working Groups of the project.

3.2.4.2 Publishers

In the present time, publishers need a secure way to distribute their music at a lower cost and to a wider number of customers. Moreover, they are interested in increasing the amount of music they can distribute, so to enlarge the set of their potential clients. In this case, for example, it is basic to lower the costs of music distribution, to be able to offer “non-popular” music at reasonable prices.

The first step is to convert traditional archives to electronic archives, i.e. to digitalise music scores, records, documents, images, and so on. Because of the probably huge quantity of music material in their archives, publishers need tools to convert it to a digital format as quick as possible. Moreover, the quality of the digitalised music must not let the publishers regret keeping their analogue archives.

So the first requirements of publishers are:

- Digitalisation of music scores
 - optical recognisers of music notation
 - interchange format for digital scores
 - editor to correct/\modify digital scores
 - efficient compression schemes for score images
- Digitalisation of recorded music
 - Analogue-Digital Converters
 - efficient compression schemes for digital music
- Digitalisation of documents and images

The second step is to organise this digital archive in such a way as to be able to easily perform queries and retrieve the desired files. Information and files can be stored in a database, with utilities to search for the desired music objects.

Potential clients must be able to know what publishers have in their archives: this implies the creation and publication of catalogues. Publishers need to lower the costs of creation and publication of these catalogues, and collecting information automatically (from the database, for example) can be very useful.

Another way to lower catalogue costs is the electronic publication of them: typically, they can be inserted in the publisher web site.

So further requirements of publishers are:

- Storing of huge quantity of digitalised music
- Efficient/standard cataloguing schemes
- Storing of information about digitalised music material
- Retrieving of information about digitalised music material
- Creation and publication of catalogues at lower cost
- Reduction of music promotion costs

¹ This statement could concern all the user requirements.
MUSICNETWORK Project

Then, publishers need to distribute their music in a safer way. A problem with coded music compared to the traditional forms of music is that it can be easily copied. So, publishers require mechanisms to avoid illegal use of their digital music.

As the music material has been digitalised, it is possible to apply watermarking or digital signatures to it, in order to trace back misuses of coded music. This kind of protection is passive, because it does not prevent but only detect copyright breaches.

There is a different computational cost to pay to adopt this kind of protection, so a publisher should know how time consuming this protection mechanisms are.

So, the list of publisher requirements continues as follows:

- Protection of the scores
- Protection of recorded music
- Trace back of possible copyright breach
- Efficient watermarking algorithms
- Knowledge of the computational costs of watermarking algorithms
- Knowledge of the durability of embedded watermarking

The next step for a publisher is to distribute his coded music, avoiding misuses of his music and lowering the cost of this distribution. Moreover, publishers need to make their archived music, largely unknown by the consumers, available as well. This can be done by lowering promotion and distribution costs, for example enforcing e-commerce and sending music via Internet. Even customisable customised or adaptable licenses can contribute to increasing music distribution: in fact, publishers can sell music with restricted permission at a lower price.

To hinder copyright violation of coded music, publishers need an active protection mechanism, i.e. a mechanism to make misuse of digital music content impossible. Typically, mechanisms such this are based upon encryption. Even in this case, the publisher can calculate an acceptable rate between computational cost and protection durability.

Publishers must trust in the reliability of the protection mechanism. The latter has to be able to prevent copyright breaches such as illegal copying of music files and to keep control over distributed music to prevent misuse.

Then the publisher requirements are:

- Active protection of coded music (encryption)
- Efficient encryption algorithms
- Knowledge of the computational costs of encryption algorithms
- Knowledge of the durability of encryption protection
- Reduction of music distribution cost
- Increasing the amount of music publishers can distribute
- Increasing the number of potential clients
- Adapting licenses to fit the specific needs of their clients

From this preliminary survey of publishers' requirements and needs, results are:

- support services
- training and know-how transfer
- technology survey
- decision support
- cost of solutions (money, time, equipment, human resources...)

Use cases can be split into two categories:

- contents (higher level)
- user-tools interaction (lower level)

Services:

1. Support for decisions for the digitalisation of music archives

Target: provide information to the publishers to let them digitalise their music archives, optimising the quality/cost rate.

Output:

- Digitalisation technology analysis

- Major problems analysis
- Possible solutions

Tools:

- Documents about technology survey for the digitalisation available on MUSICNETWORK web site
- Forum for discussion of problems
- Documents about collection of common problems and possible solutions available on MUSICNETWORK web site
- Trial applications and tests
- Open Workshop
- Mailing lists

2. *Support for decisions for the choice of the most suitable business model (this is the main goal of the Distribution Working Group)*

Target: music content sale

Output:

- Analysis of the main business models and trends
- Analysis of the main technologies
- Opinions survey
- Collection of news and history of the main facts

Tools:

- Documents about technologies concerning tools and applications supporting the existing and possible business models available on MUSICNETWORK web site
- Position papers about business models
- Forum for discussion of problems
- Archive of news
- Documents about the most important facts and events regarding music distribution
- Open Workshop
- Mailing lists

3. *Decision support for the choice of hardware and software system to accomplish the business model*

Target: setup of business model

Output:

- Analysis of the main technologies for distribution systems
- Analysis of the Internet connections available for potential clients
- Foreseeing future developments of distribution system technologies
- Foreseeing future availability of Internet connections for most users

Tools:

- Documents about technologies and trends for distribution systems available on the MUSICNETWORK web site
- Documents about Internet connection development available on the MUSICNETWORK web site
- Trial applications and tests
- Forum for discussion of problems
- Open Workshop
- Mailing lists

4. *Protection support for Intellectual Property Rights (IPR)*

Target: avoid copyrights breaches

Output:

- Survey of the different types of protection
- Analysis of the main technologies for protection
- Analysis of the possible consequences of durable protection in the music market
- Opinion survey

Tools:

- Documents about robustness and cost of music content protection available on MUSICNETWORK web site
- Documents about copyrights breaches in the current music market available on the MUSICNETWORK web site
- Trial applications and tests

- Forum for discussion of problems
- Open Workshop
- Mailing lists

5. *Information about legal framework, e-commerce laws and IPR protection, collecting societies approach*

Target: attending to publisher's affairs in the developing e-market

Output:

- Collection of laws about e-commerce laws and IPR protection
- Collection of news and main facts reports about e-commerce laws and IPR protection
- Opinion survey

Tools:

- News archive
- Documents about the most important facts and events about e-commerce laws and IPR protection available on MUSICNETWORK web site
- Forum for discussion of problems
- Open Workshop
- Mailing lists

3.2.4.3 Music shops

Internet commerce will allow music costumers to connect directly to publishers. In this way, music clients will save time and money buying music directly on-line. So, music shops will need to change their role in the music market to keep attracting clients.

With the increase in electronic transactions and distribution, music shops need to offer something more than simply selling music. Moreover, stores will be unable to compete with Internet based commerce which can offer a wider range of prices and products. Hence, music shops should become a kind of "service providers" for music consumers.

Broadband Internet connections are still expensive for many music lovers, so they will need a place where this kind of connection is available to be able to buy and download music on-line. Moreover, they will need tools as CD-burners to take home their music. Music shops could offer these services together with the traditional ways of selling music content.

In this sense, music shop requirements are:

- News about activities of music publishers in electronic commerce
- News about trend and needs of music consumers regarding electronic commerce
- Survey of initiatives of other music shops to attract clients
- Accessibility to broad-band connections
- Know-how about local networks setup and management

It follows that, even for music shops, requirements and needs are:

- support services
- training and know-how transfer
- technology survey
- decision support
- costs of solutions (money, time, equipment, human resources, etc.)

Services

1. *Support for decisions about creation of new services for client*

Target: to attract clients by offering them something more than the mere sale

Output:

- Analysis of new trends in the music market
- Survey of activities of music publishers regarding e-commerce
- Gather experiences of other music shops concerning e-commerce
- Collecting news and history of the main facts

Tools:

- Documents containing music market analysis available on the MUSICNETWORK web site
- News archive

- Documents about the most important facts and events concerning music distribution available on the MUSICNETWORK web site
- Forum for discussion of problems
- Open Workshop
- Mailing lists

2. *Support for decision for the choice of hardware and software system to accomplish new services*

Target: setup of new services

Output:

- Analysis of the main technologies concerning new services
- Foreseeing future developments of technologies concerning new services

Tools:

- Documents about technologies and trends for new services available on the MUSICNETWORK web site
- Documents about Internet connection development available on the MUSICNETWORK web site
- Trial applications and tests
- Forum for discussion of problems
- Open Workshop
- Mailing lists

3. *Information about legal frameworks, e-commerce laws and IPR protection*

Target: attending to music shops affairs in the developing e-market

Output:

- Collection of e-commerce laws and IPR protection
- Collection of news and main facts reports about e-commerce laws and IPR protection
- Opinion survey

Tools:

- News archive
- Documents about the most important facts and events concerning e-commerce laws and IPR protection available on MUSICNETWORK web site
- Forum for discussion of problems
- Open Workshop
- Mailing lists

3.2.4.4 Policy and decision makers

International regulation of the Internet is a challenge for European governments. Companies that want to invest money in e-commerce need a legal framework to support the development and evolution of a coded music market. Moreover, government intervention is necessary in several domains:

- standards for the telecommunication infrastructure
- user-friendly and broad-based access
- predictable legal and regulatory environment
- consumer protection
- rules on content and taxation

Development of Internet business needs to be supported by policy and decision makers in order to establish an environment conducive to risk-taking and investment. Moreover, regulation should:

- build trust and confidence among consumers and owners of intellectual property
- harmonise legislation at EU level to create a single market in e-commerce
- enable the establishment of a consistent regulatory environment at international level

Services the MUSICNETWORK project can offer to this kind of user are:

- technology survey
- decision support

Services

1. Support for decisions about establishing a European legal framework

Target: to support the development and evolution of coded music market

Output:

- State-of-the-art in telecommunication technologies
- State-of-the-art in protection technologies
- Expectations and trends in the coded music market

Tools:

- Documents about state-of-the-art telecommunication technologies available on the MUSICNETWORK web site
- Documents about state-of-the-art protection technologies available on the MUSICNETWORK web site
- Documents containing music market analysis available on the MUSICNETWORK web site
- Forum for discussion of problems
- Open Workshop
- Mailing lists

3.2.4.5 Collecting societies

The role of collecting societies is to perform collective rights licensing instead of an individual one. Because collective licensing bodies are able to license for a given territory, collecting societies are working on establishing the framework to allow international licensing mainly through reciprocal representation agreements. Another aim of collecting societies is promoting and supporting valuable musical projects and initiatives which are of little interest for the market.

Concerning e-commerce, collecting societies need a secure way to collect the royalties whenever a delivery takes place. So, key issues can be:

- secure transactions
- payment commitments
- applicable laws to determine tariffs

Services the MUSICNETWORK project can offer to this kind of user are:

- technology survey
- decision support

Services:

1. Support for decisions about forming agreements to allow international licensing

Target: to collect the royalties in electronic market environment.

Output:

- State-of-the-art in telecommunication technologies
- State-of-the-art in protection technologies
- Expectations and trends in the coded music market

Tools:

- Documents about state-of-the-art of telecommunication technologies
- Documents about state-of-the-art of protection technologies
- Documents containing music market analysis
- Forum for discussion of problems
- Open Workshop
- Mailing lists

3.2.5 Protection

The Internet provides people with fast and ubiquitous access to data. As a direct result the Internet allows the distribution of information. Thus, everybody is able to distribute information that should reach a broad selection of people. Yet further problems and difficulties accompany these advantages and the digital representation of information: Digital data can be copied without quality degradations. Thus, the Internet is per definition the best choice for people looking for a medium for illegal distribution.

Of course these properties are reflected in the current commercial usage of the Internet. Although people or organisations, which can be either private or commercially oriented, are willing to use the Internet for transmitting and exchanging information, a reluctant behaviour is present. The reasons for this are the possibilities of misuse and illegal distribution.

If the Internet should become a basis for unlimited exchange of information, which was indeed its initial purpose, active controlling and limiting the potential for misuse, especially for data which is protected by Intellectual Property Rights (IPRs), is mandatory. The protection level in a distribution architecture is directly related to the amount of information exchanged if its creator wants to prevent uncontrolled distribution.

As stated above potential users of protection techniques are different kinds of organisations or people interested in a controlled distribution through the Internet. For commercially oriented organisations this is straightforward: by limiting access to people who paid for it monetary profit can be increased. But also for non-monetary oriented private persons the controlled access to information can be desirable. For example, to get some statistics of the users and the usage of certain information. Controlled access also includes the control of modification of information. Generally, spreading information in somebody's name is undesired if any modification took place. Thus, potentials users are all people interested in controlled distribution of their data. This includes content creators and content providers.

Because of the broad variety of users, user requirements also vary strongly and consist of the following:

Technical aspects:

- Classification of DRM solutions, individual protection techniques, their properties and requirements including technical documents
- Identification of DRM solutions
- Identification of different protection architectures and techniques
- Evaluation of different protection architectures and techniques including technical documents
- Test cases for assessing the capacities of protection mechanisms such as watermarking, etc
- Identification of research groups and their activities

Commercial aspects:

- Identification of mutual influence and dependencies of protection architectures and techniques and business models
- Commercial value of protection architectures and techniques

Legal aspects:

- Identification of legal issues and a legal framework in which protection techniques have to operate

Standardisation aspects:

- Identification of existing standards for DRM systems and protection technologies, e.g. MPEG-21
- Analysis of integration of multimedia standards and protection technologies
- Analysis of relationships between software solutions and multimedia content protection, registration and certification

Information resources aspects:

- Identification of major sources of information
- Identification of Survey on state-of-the-art technologies
- Providing guidelines and answers (e.g. a FAQ or a Q&A service) for people interested in the protection of digital content
- Providing a bibliography containing relevant publications
- Providing a service for uploading/downloading relevant documents
- Event and fairs announcements

Cooperation aspects:

- Identification of the most significant actors
- Identification of the leading companies
- Identification of the most significant associations

Usage aspects:

- Survey of typical real-life problems and solutions
- Success stories and lessons to be learned

One thing, which might be easily overlooked, are the requirements not given by the people or organisations deploying these techniques but nonetheless needed because of the demands of people or organisations using MUSICNETWORK Project

these protection techniques. The success of protection techniques must be coupled with the acceptance of end users.

End user aspects:

- Evaluation of the usage and limitations of protection techniques from a practical view point
- Potential possibilities of misuse of protection techniques, e.g. privacy issues are important. More sophisticated aspects must also be considered. One can image that protection techniques can entail more restrictions than intended by the content provider/creator.

3.2.6 WG Accessibility

The Accessibility Working Group aims to address key aspects of the provision of music for the print impaired in the digital age. The area of music encoding is moving towards greater unification and co-ordination of effort with the activities and strategies being pursued by the MUSICNETWORK. For print impaired people this offers the exciting challenge of bringing together several disparate activities and building a far stronger future for coding activities in this field. The Accessibility Working Group hopes to provide a review of the current situation; some explanation of different approaches to describing accessible music; dissemination of the key themes and technologies; and information about the main contributors, events and problem areas.

The user requirements for the Accessibility Working Group are identified as follows:

- Survey on state-of-the-art
- Survey of tools to create music in alternative formats
- Market Monitoring and Analysis
- Survey of work by International Standardisation Bodies
- Building of a database of music test cases
- Technology Watch and Contribution to Standards
- Model Definition and Guidelines Production
- Identification of the most significant associations
- Research groups, presentation and activities
- Internet Links
- Event and fairs announcements
- Bibliography references
- Upload and download of technical publications
- Success stories and pioneering activities
- Question and Answer service
- End User Network Support:
 - Accessibility of the information in the Interactive MUSICNETWORK
 - Contribution to the Interactive MUSICNETWORK
 - Easy communication between all actors
 - Easy access for Visually Impaired people to all MUSICNETWORK information

Possible users are:

- print impaired people, including the visually impaired, whether musicians or not; music schools; schools for the blind and visually impaired; music libraries; libraries for the blind; conservatories; transcription centres; music publishers; music content providers; music software developers; organisations developing and distributing tools and aids for the visually impaired.

3.2.7 Music imaging

Most of the music scores and manuscripts exist in a paper-based format in varying conditions. In order to introduce interactive multimedia music capabilities and functionalities, a machine readable format is required, and hence one of the main steps is to create a digital version of these paper-based heritage materials

for further processing (restoration, encoding, recognition etc) in order to allow long term preservation and wider and more effective distribution.

For this digitisation process, user requirements include identification of appropriate tools (software and hardware), surveys and reviews.

After data acquisition, this working group explores imaging related processes. These include digital restoration approaches to manipulate and restore the quality of the data (music restoration) as well as pattern recognition techniques to translate the music image into symbolic representation to enable further interactive multimedia possibilities – Optical Music Recognition. The WG also intends to provide a survey on image encoding, compressing and other issues concerning music documents.

To encourage, support and stimulate the development in this field, the WG intends to maintain an Optical Music Recognition bibliography.

Currently identified User Requirements for this WG include:

- Identification of tools and reviews
 - To review state-of-the-art applications and tools related to music imaging:
 - Software (e.g. OMR software, image processing etc);
 - Hardware (e.g. scanners, book scanners, etc)
- Identification of standards, guidelines and best practices
 - To review methodologies and propose guidelines and best practices in the areas of multimedia music imaging, digitisation and preservation
 - To review imaging technologies and adaptation to music images (compressing with and without data loss, image file formats etc)
- Test cases for assessing the capacities of tools
 - To collect a representative ground truth dataset which contains music sheets with a representative range of font styles, densities, and page layouts and sizes
 - To propose assessment/evaluation criteria and matrices.
- Collect list of related experiences (successes as well as any lessons learned)
- Specification of optical music document restoration
- Specification of Optical Music Recognition
- Identification of integration with other music representations
- Related significant documents, guidelines and other materials
 - To maintain an Optical Music Recognition (OMR) bibliography (We are currently merging and updating OMR bibliography data collected by Martin Roth, Ichiro Fujinaga, David Bainbridge, and Kia Ng)
- Basic question and answer
- Identification of the most significant related projects and activities
 - actors in the sector
 - leader companies
 - tools
 - research groups
 - http links
 - associations
 - problems
 - technologies
 - events and fairs
 - bibliographies
 - documents

3.3 Use cases

3.3.1 Music Notation**3.3.1.1 Survey on music analysis tools**

Description	A general review of music analysis applications, both from the commercial world and from the academic world, for application to the music notation domain. Each application must be explained from a professional point of view, giving articles, reviews, examples of use and tutorials, considering the aspects highlighted and produced by the first workshop of the MUSICNETWORK.
Assumptions	Possible users are not music analysis experts
Actors	Musicians, composers
Variations	None
Issues	Lack of integration of musical notation in available tools, availability of tools for testing purposes

3.3.1.2 Survey on music notation tools for edutainment and infotainment

Description	A general review of music notation tools, both from the commercial world and from the academic world, for application to edutainment and infotainment. Each application must be explained from a professional point of view, giving articles, reviews, examples of use and tutorials, considering the aspects highlighted and produced by the first workshop of the MUSICNETWORK.
Assumptions	None
Actors	Music students and teachers
Variations	None
Issues	Availability of tools for testing purposes

3.3.1.3 Question & answer service

Description	A typical service which returns answers from an expert in music notation, on the basis of users' questions
Assumptions	None
Actors	All
Variations	Type of answer (Forum service, e-mail service, chat service)
Issues	Subjectivity of answers

3.3.1.4 Identification of most significant actors in the sector

Description	Most significant actors in the sector must be identified regarding their contribution in the musical notation
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.1.5 Identification of leader companies

Description	Leader companies in the sector must be identified regarding their contribution to music notation, giving details about: products and upgrades, support (tutorials, examples) and help, commercial offers, job opportunities for people interested in music.
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete data on companies

3.3.1.6 Survey of music notation tools

Description	A general review of music notation applications, both from the commercial world and from the academical world, for application to the music notation domain. Each application must be explained from a professional point of view, giving articles, reviews, examples of use and tutorials, considering the aspects highlighted and produced by the first workshop of MUSICNETWORK.
Assumptions	None
Actors	All
Variations	None
Issues	Tools not available for the survey

3.3.1.7 Research groups presentation and activities

Description	A virtual room completely dedicated to the research world, where the different groups can give a detailed presentation explaining their activities regarding aspects of music notation. These topics are available for both commercial and academic purposes.
Assumptions	None
Actors	Composers, Copyists
Variations	None
Issues	None

3.3.1.8 Internet links

Description	Collecting and grouping of useful and interesting links to web sites about music notation
Assumptions	None
Actors	All
Variations	None
Issues	Dead links, wrong links

3.3.1.9 Identification of the most significant associations

Description	Associations must be identified regarding their contribution to music notation
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete data on associations

3.3.1.10 Survey of typical problems and solutions

Description	Collecting and grouping of significant problems about music notation along with their solutions (where available). Considering the aspects highlighted and produced by the first workshop of MUSICNETWORK.
Assumptions	None
Actors	All
Variations	None
Issues	Incorrect solutions, missing solutions

3.3.1.11 Survey on state-of-the-art technologies

Description	A review of significant technologies for music notation. The following information must be provided: supporting technologies and tools, extracts (if possible), analysis of methodology, information about availability (where, when...)
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete technology, lacks in the commercial offer.

3.3.1.12 Event and fairs announcements

Description	Presentation and announcements for events, fairs, call for papers, ... regarding music notation
Assumptions	None
Actors	All
Variations	None
Issues	Poor information about event contacts

3.3.1.13 Bibliographic references

Description	Collection of publications about music notation
Assumptions	None
Actors	All
Variations	Browsing, searching, downloading as .bib file
Issues	None

3.3.1.14 Upload and download of technical documents

Description	Database of shared documents about music notation
Assumptions	None
Actors	All
Variations	Document formats
Issues	Filtering of content

3.3.1.15 Success stories and lessons to be learned

Description	Collection of stories from actors about music notation
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.1.16 Definition of a common shared format for music notation representation.

Description	All the participants will cooperate to try to define a format for music notation representation. Workshops and messages to the forum/ mailing list will be used to this aim.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.1.17 Collaboratively building a database of music notation test cases.

Description	A database of music notation exceptions will be built with the collaboration of the participants.
Assumptions	None
Actors	Experts, Copyists, Composers, Musicologists, Publishers
Variations	None
Issues	None

3.3.1.18 Review the music learning tools.

Description	Tools for music learning present in the market will be reviewed as well as tools for distance learning.
Assumptions	None
Actors	Music teachers/students
Variations	None
Issues	None

3.3.1.19 Review the current conversion capacities

Description	The current conversion capacities from/to the current formats will be analysed and the results presented to the participants. The “performance” of the conversion will be considered.
Assumptions	None
Actors	Music publishers, Copyists, Experts
Variations	None
Issues	None

3.3.1.20 Disseminate results on music notation of participants

Description	Experts can present their works performed in the field of music notation, through presentations in the workshops and/or specific web pages.
Assumptions	None
Actors	Experts
Variations	None
Issues	None

3.3.2 Music libraries**3.3.2.1 Forum/ mailing list for exchange and communication on the topic**

Description	Music libraries can exchange knowledge, post and discuss questions etc. any relevant topics using the forum/ mailing list.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.2 Service for uploading/downloading relevant documents

Description	Music libraries can post, share and access documents with relevant information through the website.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.3 Survey / assessment of legal and licensing developments

Description	Survey and assessment of legal and licensing developments relevant for music libraries (copyright, e-commerce, constitutional rights etc.).
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.4 Analysis of market developments

Description	Screening and analysis of market developments relevant for music libraries (public, non-profit and commercial developments).
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.5 Identification and discussion of future business models for music libraries

Description	Music library managers especially need an overview of developments and potential in the field of business models for music libraries.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.6 Survey / assessment of Digital Asset Management systems

Description	Digital Asset Management systems are one of the application possibilities of multimedia technologies especially relevant for mediatheques and (digital) music/AV libraries.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.7 Survey / assessment of payment systems

Description	A survey and assessment of payment systems, especially of micro payment systems and clearing services; exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.8 Survey / assessment of cataloguing standards

Description	Supplementing existing working groups etc. on classical cataloguing problems, the MUSICNETWORK can especially address cataloguing problems of multimedia-collections as well as multimedia-related cataloguing solutions and technologies.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.9 Survey / assessment of Standards for exchange of information

Description	Among the different standard layers, there are some especially relevant as « metastandards » for exchanging information among libraries and other collections/catalogue holders (Z39.50, XML, ...); exchange and discussion of best-practice models of actual standard implementations etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.10 Survey / assessment of commercial products, services and companies

Description	Survey and assessment of commercial products, services and companies in the area of Cataloguing / Metadata.; exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.11 Survey of the main research groups, projects, standardisation bodies

Description	Survey of the main research groups, projects, standardisation bodies in the area of Cataloguing / Metadata.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.12 Announcement of the main conferences, fairs, workshops etc.

Description	Announcement of the main conferences, fairs, workshops etc. in the area of Cataloguing / Metadata.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.13 Select bibliography

Description	Select bibliography of important sources in the area of information retrieval, in the area of Cataloguing / Metadata.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.14 Development of bibliographic requirements (FRBR)

Description	Development of Functional Requirements of Bibliographic Records.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.15 Identification and discussion of special needs for music libraries and AV archives

Description	Identification and discussion of special needs for music libraries and AV archives in the area of cataloguing / metadata, from a general exchange of information to the constitution of more specialised sub-groups working on certain topics.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.16 Survey / assessment of Information retrieval standards

Description	Survey / assessment of information retrieval standards relevant for music libraries.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.17 Survey / assessment of commercial search and information retrieval solutions

Description	Survey / assessment of commercial search and information retrieval solutions relevant for music libraries; exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.18 Survey of the main research groups, projects, standardisation bodies

Description	Survey of the main research groups, projects, standardisation bodies in the area of information retrieval.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.19 Announcements of the main conferences, fairs, workshops etc.

Description	Announcements of the main conferences, fairs, workshops etc. in the area of information retrieval.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.20 Select bibliography

Description	Select bibliography of important sources in the area of information retrieval, including not only academic works but also papers based on industrial research.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.21 identification and discussion of special needs for music libraries and AV archives

Description	Identification and discussion of special needs for music libraries and AV archives in the area of information retrieval, from a general exchange of information to the constitution of more specialised sub-groups working on certain topics.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.22 Identification and discussion of the potential of new information retrieval technologies

Description	Identification and discussion of the potential of new information retrieval technologies (e.g. ontology-based search) in comparison to classical library information retrieval; exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.23 Basic recommendations for compression, processing and formats

Description	Basic recommendations for compression, processing and formats for libraries on the edge of digitisation; exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.24 Identification of reliable technologies for protection and digitalisation of audio/AV

Description	Identification of reliable technologies for protection and digitalisation of audio/AV (e.g. evaluation of reliability and durability of storage formats such as CD-Rom); exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.25 Identification of usages, methodologies, technologies used for large audio/AV archives

Description	Identification of usages, methodologies, technologies used for large audio/AV archive formats (digitisation); exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.26 Adaptations required for small audio archives

Description	Identification of usages, methodologies, technologies used for small audio/AV archive formats (digitisation); exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.2.27 Recommendations for digitisation of sheet music

Description	Recommendations for digitisation of sheet music (OMR etc.); exchange and discussion of best-practice models etc.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.3 Multimedia standards**3.3.3.1 Identification of authoring tools and evaluation of their usefulness for music distribution.**

Description	<p>Authoring tools must be identified and evaluated regarding their functionalities in the musical domain:</p> <ul style="list-style-type: none"> - Integration of music functions: MIDI output/input, audio formats, music notation... - Integration in the multimedia chain: input/output formats, distribution delivery, adaptation to supports (CD-Rom, Internet...).
Assumptions	Possible users are no multimedia professionals
Actors	All (musicologists, teachers, multimedia producers...)
Variations	None
Issues	<ul style="list-style-type: none"> - Durability of commercial offers - Lack of integration of musical notation in commercial offers - Availability of tools for testing purposes

3.3.3.2 Identification of multimedia standards for distribution

Description	Multimedia standards for distribution must be identified and evaluated regarding their functionalities in the musical domain: <ul style="list-style-type: none"> - Integration of music functions: MIDI output/input, audio formats, music notation... - Integration with authoring tools
Assumptions	Possible users are no multimedia professionals
Actors	All (musicologists, teachers, multimedia producers...)
Variations	CD-Rom, DVD and Internet have to be addressed, as well as TV and mobiles.
Issues	“De facto” standards are not frequently the same as International standards.

3.3.3.3 Evaluation of integration and interoperability of multimedia standards

Description	Multimedia standards have to be evaluated regarding their interoperability and their integration with each other.
Assumptions	Possible users are no multimedia professionals
Actors	All (musicologists, teachers, multimedia producers...)
Variations	None
Issues	None

3.3.3.4 Review of specialised applications

Description	A general review of music and audio specialised applications, both from the commercial world and from the academic world, for application to the multimedia domain. Each application must be explained from a professional point of view, giving: <ul style="list-style-type: none"> - Articles, reviews , etc - Examples of usage - Tutorials
Assumptions	None
Actors	Multimedia producers, developers, professionals...
Variations	None
Issues	Availability of applications for testing purposes.

3.3.3.5 Identification of lacks in the commercial offer

Description	A general survey and identification of lacks in the commercial offer. Such lacks can be, for example, the lack of integration of musical notation, the lack of tools for synchronising audio and scores... For these lacks, the following information must be available: <ul style="list-style-type: none"> - State-of-the-art of technology and/or research - Estimation of industrial feasibility
Assumptions	Lacks must be identified in the commercial offer only. Academic offers are not to be taken into account.
Actors	Developers, researchers, research institutes...
Variations	None
Issues	Commercial issues (profitability).

3.3.3.6 Survey of work from International Standardisation Bodies

Description	A general survey of the work from International Standardisation Bodies (MPEG, ISO, IETF, W3C...). The following must be explained: <ul style="list-style-type: none"> - General policies of International Standardisation Bodies - Goals and aims of standards - Interoperability and integration
Assumptions	Possible users are no multimedia professionals
Actors	All users
Variations	None
Issues	Confidentiality of work of International Standardisation Bodies.

3.3.3.7 Survey of significant projects and realisations in multimedia distribution

Description	A review of significant projects and realisations in multimedia distribution. The following information must be available: <ul style="list-style-type: none"> - Technologies and tools used - Extracts (if possible) - Analysis of methodology - Information about availability (where, when...)
Assumptions	The realisations and projects listed here must be publicly available.
Actors	Musicologists, teachers, multimedia producers
Variations	Internet realisations, DVD or CD-ROMS.
Issues	Availability of extracts, and knowledge of methodology.

3.3.3.8 Test cases for comparing tools on multimedia standards

Description	Collection of test cases on multimedia standards
Assumptions	None
Actors	All
Variations	None
Issues	Poor documentation on test cases

3.3.3.9 Survey on conversion tools between multimedia standards

Description	A general review of conversion tools, both from the commercial world and from the academic world. Each tool must be explained from a professional point of view, giving articles, reviews, examples of use and tutorials, considering the aspects highlighted and produced by the first workshop of MUSICNETWORK.
Assumptions	None
Actors	All
Variations	None
Issues	Tools not available for the survey, (partial) incompatibility of standards

3.3.3.10 Analysis on educational capacities of multimedia tools

Description	Different educational capacities of multimedia tools must be recognised and evaluated
Assumptions	None
Actors	Music teachers, information technology industries, software builders
Variations	None
Issues	Tools not available for the survey

3.3.3.11 Survey on distance learning tools for music teaching

Description	A general review of distance learning tools, both from the commercial world and from the academic world, for application to edutainment and infotainment. Each application must be explained from a professional point of view, giving articles, reviews, examples of use and tutorials, considering the aspects highlighted and produced by the first workshop of MUSICNETWORK.
Assumptions	None
Actors	Music teachers, information technology industries, software builders
Variations	None
Issues	Tools not available in the survey

3.3.3.12 Question & answer service

Description	A typical service that returns answers from an expert in multimedia standards, on the basis of users' questions.
Assumptions	None
Actors	All
Variations	Type of answer (Forum service, e-mail service, chat service)
Issues	Subjectivity of answers

3.3.3.13 Identification of most significant actors in the sector

Description	Most significant actors in the sector must be identified regarding their contribution to multimedia standards
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.3.14 Identification of leader companies

Description	Leader companies of the sector must be identified regarding their contribution to the multimedia standards, giving details about: products and upgrades, support (tutorials, examples) and help, commercial offers, job opportunities for people interested in music.
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete data about companies

3.3.3.15 Research groups presentation and activities

Description	A virtual room completely dedicated to the research world, where the different groups can give a detailed presentation, explaining their activities on multimedia standards aspects. These topics are available for both commercial and academic purposes.
Assumptions	None
Actors	Music journalists, Multimedia producers, Music teachers, Archivist of multimedia library, Information technology industries, software builders
Variations	None
Issues	None

3.3.3.16 Internet links

Description	Collecting and grouping of useful and interesting links to web sites about multimedia standards
Assumptions	None
Actors	All
Variations	None
Issues	Dead links, wrong links

3.3.3.17 Identification of the most significant associations

Description	Associations must be identified regarding their contribution to multimedia standards
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete data on associations

3.3.3.18 Survey of typical problems and solutions

Description	Collecting and grouping of significant problems about multimedia standards along with their solutions (if available)
Assumptions	None
Actors	All
Variations	None
Issues	Incorrect solutions, missing solutions

3.3.3.19 Survey on state-of-the-art technologies

Description	A review of significant technologies for multimedia standards. The following information must be provided: supporting technologies and tools, extracts (if possible), analysis of methodology, information about availability (where, when...)
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete technology, lack of commercial offers

3.3.3.20 Event and fairs announcements

Description	Presentation and announcements for events, fairs, call for papers, ... regarding multimedia standards
Assumptions	None
Actors	All
Variations	None
Issues	Poor information about event contacts

3.3.3.21 Bibliography references

Description	Collection of publications about multimedia standards
Assumptions	None
Actors	All
Variations	Browsing, searching, downloading as .bib file
Issues	None

3.3.3.22 Upload and download of technical documents

Description	Database of shared documents about multimedia standards
Assumptions	None
Actors	All
Variations	Document formats
Issues	Bad filtering of content

3.3.3.23 Success stories and lessons to be learned

Description	Collection of stories from actors about multimedia standards
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.4 Distribution

3.3.4.1 Support for decisions for the digitalisation of music archives

Description	<p>The publishers' archive contain:</p> <ul style="list-style-type: none"> - music scores - recorded music - documents, images, ... <p>The digitalisation must produce good quality files optimising the quality/cost rate.</p> <p>The following information must be available:</p> <ul style="list-style-type: none"> - available digitalisation technology - problems in digitalising archives - possible solutions
Assumptions	Publishers have devices and tools to digitalise his archive
Actors	Publishers
Variations	Publishers can decide digital formats to best fit the quality/dimension rate
Issues	<ul style="list-style-type: none"> - Optical recognition of music scores - Standardisation of digital formats - Efficiency of compression schemes

3.3.4.2 Support for decisions for the choice of the most suitable business model

Description	<p>To sell music content in the digital market, publishers must choose a business model (B2B, B2C, P2P...). The choice should rely on an analysis of music market trends and business models features.</p> <p>The following information must be available:</p> <ul style="list-style-type: none"> - Analysis of the main business models and trends - Analysis of the main technologies - Opinions survey - Collection of news and history of the main facts
Assumptions	Possible users are no internet technology experts
Actors	Publishers
Variations	Definition of "ad hoc" business models which fit publishers specific needs
Issues	<p>Protection aspects</p> <p>Reliability of market previsions</p>

3.3.4.3 Decision support for the choice of hardware and software system to accomplish the business model

Description	<p>To set up the business model, the publisher needs information about distribution system. In general, there are several possibilities in choosing hardware and software. The publisher should estimate:</p> <ul style="list-style-type: none"> - Suitability of hardware and software for the chosen business model - Cost of hardware and software (purchase, servicing, updating...) - "Life expectation" of hardware and software <p>The following information must be available:</p> <ul style="list-style-type: none"> - Analysis of the main technologies for distribution systems - Analysis of the connection situation for the potential clients - Foreseeing future development of distribution system technologies - Foreseeing future availability of Internet connections for most users
Assumptions	Possible users are no computer technology experts
Actors	Publishers

Variations	None
Issues	Training and acquiring know-how about distribution systems

3.3.4.4 Protection support for Intellectual Property Rights (IPR)

Description	<p>A key issue in digital market is avoiding copyrights breaches. To achieve this publishers can protect music content with different kinds of protection mechanisms.</p> <p>So, publishers need information about these mechanisms, such as durability and costs (possible file size enlargement, time consumption, etc.)</p> <p>The following information must be available:</p> <ul style="list-style-type: none"> - Survey of the different types of protection - Analysis of the main technologies for protection - Analysis of the possible consequences of durable protection for the music market - Opinion survey
Assumptions	Possible users are no protection technology experts
Actors	Publishers
Variations	None
Issues	<p>Publishers' confidence in protection mechanisms</p> <p>Impact of protection on digital market</p> <p>Durability/cost rating</p>

3.3.4.5 Information about legal frameworks, e-commerce laws and IPR protection, collecting societies approach

Description	<p>Publishers must be acquainted with legislative activity that aims to regulate the developing e-market, to best attend to his affairs.</p> <p>The following information must be available:</p> <ul style="list-style-type: none"> - Laws about e-commerce and IPR protection - News and main facts reports about e-commerce laws and IPR protection - Opinions survey
Assumptions	Possible users may not be acquainted of the complete legal framework about e-commerce and IPR protection
Actors	Publishers
Variations	None
Issues	Non-uniformity of laws and regulations in different countries

3.3.4.6 Support for decisions about creation of new services for clients

Description	<p>Developing of an electronic market will let music consumers interact directly with publishers. So, to survive in the market, music shops will need to offer new services to attract clients, and not only perform simple sales.</p> <p>The following information must be available:</p> <ul style="list-style-type: none"> - Analysis of new trends in music market - Survey of activities of music publishers concerning e-commerce - Known experiences of other music shops concerning e-commerce - News and history of the main facts
Assumptions	Possible users are not experts in digital music
Actors	Music shops
Variations	None
Issues	Avoid copyrights breaches

3.3.4.7 Support for decision for the choice of hardware and software system to accomplish new services

Description	For the setup of new services, computer shops must acquire hardware and software systems to suit their needs. But they likely lack knowledge for these decisions: their requirements can be a support in choosing the most suitable system. The following information must be available: <ul style="list-style-type: none"> - Analysis of the main technologies concerning new services - Foreseeing future development of technologies concerning new services
Assumptions	Possible users are not computer experts
Actors	Music shops
Variations	None
Issues	Training and acquiring know-how about distribution systems

3.3.4.8 Information about legal frameworks, e-commerce laws and IPR protection

Description	Music shops must be acquainted with legislative activity that aims to regulate the developing e-market, to best attend to his affairs. The following information must be available: <ul style="list-style-type: none"> - Laws on e-commerce and IPR protection - News and main facts reports about e-commerce laws and IPR protection - Opinions survey
Assumptions	Possible users may not be acquainted of the complete legal framework about e-commerce and IPR protection
Actors	Music shops
Variations	None
Issues	Non-uniformity of laws and regulations in different countries

3.3.4.9 Support for decisions about the establishment of a European legal framework

Description	A European legal framework is needed to support the developing and evolution of the coded music market. The following information must be available: <ul style="list-style-type: none"> - State-of-the-art in telecommunication technologies - State-of-the-art in protection technologies - Expectations and trends on coded music market
Assumptions	Possible users are noexperts in state-of-the-art distribution systems
Actors	Policy and decision makers
Variations	None
Issues	Reliability of predictions about new trends in digital market

3.3.4.10 Support for decisions about forming agreements to allow international licensing

Description	Nowadays, there are no international laws regulating rights for music content. Collecting societies must establish agreements to protect copyrights in international market and collect royalties. The following information must be available: <ul style="list-style-type: none"> - State-of-the-art in telecommunication technologies - State-of-the-art in protection technologies - Expectations and trends of coded music market
Assumptions	Possible users are no experts in state-of-the-art distribution systems
Actors	Collecting societies
Variations	None

Issues	Reliability of previsions about new trends in digital market
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3.3.4.11 Documents available on the MUSICNETWORK web site

Description	Documents available on the MUSICNETWORK web site, collecting information about technologies, digital market, trends, copyrights protection, problems and possible solutions, laws, facts and events. Users can consult these documents to bring themselves up to date about their field of interest. The following information must be available: <ul style="list-style-type: none"> - how to perform searches in these documents - how to access these documents
Assumptions	Possible users are no internet experts
Actors	All
Variations	None
Issues	Possible confidentiality of these documents

3.3.4.12 Forum for discussion of problems

Description	Discussion of problems can be a tool for enlarging the knowledge of problems which may arise in the developing electronic market. This tool can help MUSICNETWORK users to prevent or solve these problems, and save time and money. The following information must be available: <ul style="list-style-type: none"> - how to perform searches in posted messages - how to access a posted message - how to post a new message - how to reply to a posted message
Assumptions	Possible users are no internet experts
Actors	Publisher
Variations	None
Issues	Possible confidentiality of information

3.3.4.13 Trial applications and tests results available on the MUSICNETWORK web site

Description	Users that need to choose among several technological solutions require information about performance. This can be accomplished by trial applications and tests results. The following information must be available: <ul style="list-style-type: none"> - how to perform searches in available results - how to access available results - validity of the results
Assumptions	Possible users are not computer experts
Actors	Publishers, music shops
Variations	None
Issues	None

3.3.4.14 Open Workshop

Description	Open Workshops can define the situation in matters concerning the developing electronic market, and make predictions about trends and expectations in this field. The following information must be available: <ul style="list-style-type: none"> - how to participate in the Workshop - arguments discussed in the Workshop - goals of the Workshop
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.4.15 Mailing lists

Description	Mailing lists bring users up-to-date on all the aspects of digital music matter covered by the MUSICNETWORK project. The following information must be available: <ul style="list-style-type: none"> - how to subscribe to a mailing list - how to post a message to a mailing list - how to remove oneself from a mailing list
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.4.16 News archive

Description	A news archive brings users up to date in the most recent events and facts in digital music market. The following information must be available: <ul style="list-style-type: none"> - how to perform searches in a news archive - how to access to posted message - how to post a new message - how to reply to a posted message
Assumptions	Possible users are no internet experts
Actors	All
Variations	There can be more then one news archive. Users themselves could add news to the archive.
Issues	None

3.3.5 Protection**3.3.5.1 Classification of DRM solutions, individual protection techniques, their properties and requirements including technical documents**

Description	Classifying relevant technology to allow an easy survey and introduction to the field.
Assumptions	The average user has no detailed knowledge of all of the classification criteria.
Actors	All
Variations	None
Issues	None

3.3.5.2 Identification of DRM solutions

Description	Collection of information about DRM
Assumptions	User is no legal expert
Actors	All

Variations	None
Issues	None

3.3.5.3 Identification of different protection architectures and techniques

Description	Collection of information about individual protection technologies.
Assumptions	User is no security expert
Actors	All
Variations	None
Issues	None

3.3.5.4 Evaluation of DRM solutions, different protection architectures and techniques resulting in technical documents

Description	Existing DRM systems are evaluated. The results are technical reports.
Assumptions	Users are interested in technical details.
Actors	Technical oriented users.
Variations	None
Issues	Increasing the available amount of information.

3.3.5.5 Test cases for assessing the capacities of protection mechanisms such as watermarking, etc

Description	Collection of test cases on protection mechanisms
Assumptions	None
Actors	All
Variations	None
Issues	Poor documentation on test cases

3.3.5.6 Identification of research groups and their activities

Description	A virtual room completely dedicated to the research world, where the different groups can give a detailed presentation, explaining their activities concerning music protection aspects. These topics are available for both commercial and research-oriented purposes.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.5.7 Identification of influence and dependencies between protection architectures and techniques and business models

Description	The support of business models by and dependencies with protection architectures are evaluated.
Assumptions	None
Actors	Usage oriented actors
Variations	None
Issues	Almost no information available

3.3.5.8 Evaluating the commercial value of protection architectures and techniques

Description	To find a measure or guidelines to quantify the return of investments by the application of protection architectures.
Assumptions	None
Actors	Usage oriented actors
Variations	None
Issues	No information available

3.3.5.9 Identification of legal issues and a legal framework in which protection techniques have to operate

Description	Legal issues, implications and restrictions for protection techniques and architectures are identified considering international laws.
Assumptions	None
Actors	All
Variations	None
Issues	Increase the amount of available information considering international laws.

3.3.5.10 Identification of existing standards for DRM systems and protection technologies, e.g. MPEG-21

Description	Standards for protection architectures and technologies are identified.
Assumptions	User has a background in protection technologies.
Actors	Technical oriented actors.
Variations	None
Issues	None

3.3.5.11 Analysis of relationships between software solutions and multimedia content protection, registration and certification

Description	Analysis of software solutions with regard to multimedia content protection, registration and certification
Assumptions	None
Actors	Digital Rights owners, music distributors, research groups, publisher
Variations	None
Issues	None

3.3.5.12 Analysis on integration capacities between multimedia standards and protection technologies

Description	Different integration capacities of multimedia standards and protection technologies must be recognised and evaluated
Assumptions	None
Actors	Digital Rights owners, music distributors, researching groups, publisher
Variations	None
Issues	Tools not available in the survey

3.3.5.13 Identification of major sources of information

Description	Collecting and grouping of useful and interesting links to web sites about protection
Assumptions	None
Actors	All
Variations	None
Issues	Collecting and grouping of useful and interesting links to web sites about protection

3.3.5.14 Identification of Survey on state-of-the-art technologies

Description	A review of significant technologies in the music protection. The following information must be provided: supporting technologies and tools, extracts (if possible), analysis of methodology, information about availability (where, when...)
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete technology

3.3.5.15 Providing guidelines and answers (e.g. a FAQ or a Q&A service) for people interested in the protection of digital content

Description	A typical service that returns answers from an expert in protection, on the basis of users' questions.
Assumptions	None
Actors	All
Variations	Type of answer (Forum service, e-mail service, chat service)
Issues	Subjectivity of answers

3.3.5.16 Providing a bibliography containing relevant publications

Description	Collection of publications about protection
Assumptions	None
Actors	All
Variations	Browsing, searching, downloading as .bib file
Issues	None

3.3.5.17 Providing a service for uploading/downloading relevant documents

Description	Users are given the chance for publication and exchange of relevant information.
Assumptions	None
Actors	All
Variations	None
Issues	Relevant information must be exchanged.

3.3.5.18 Event and fairs announcements

Description	Presentation and announcements of events, fairs, call for papers, etc. regarding protection
Assumptions	None
Actors	All
Variations	None
Issues	Poor information about event contacts

3.3.5.19 Identification of the most significant actors

Description	Most significant actors in the sector must be identified regarding their contribution to protection
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.5.20 Identification of the leading companies

Description	Leading companies in the sector must be identified regarding their contribution to music protection, giving details about: products and upgrades, support (tutorials, examples) and help, commercial offers, job opportunities for people interested in music.
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete data on companies

3.3.5.21 Identification of the most significant associations

Description	Associations must be identified regarding their contribution to protection
Assumptions	None
Actors	All
Variations	None
Issues	Obsolete data on associations

3.3.5.22 Survey of typical real-life problems and solutions

Description	Collecting and grouping of significant problems with protection along with their solutions (if available).
Assumptions	None
Actors	All
Variations	None
Issues	Incorrect solutions, missing solutions

3.3.5.23 Success stories and lessons to be learned

Description	Collection of stories about protection from actors
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.6 Accessibility**3.3.6.1 Survey on state of the Art**

Description	Identification of the state-of-the-art in the area of accessibility, taking note of leading technical solutions in this sector.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.6.2 Survey of tools to create music in alternative formats

Description	A general review of tools to create music in alternative formats, both for educational and leisure practices, for application to the domain of music in alternative formats. Each tool must be examined from a professional point of view, giving articles, reviews, examples of use and tutorials.
Assumptions	None
Actors	All
Variations	None
Issues	Tools not available for the survey

3.3.6.3 Market Monitoring and Analysis

Description	Monitoring the market size of tools and activities related to the working group. Monitoring the leading partners evolution in the area of working group. Monitoring the behaviour of music content providers regarding the aspects of the working group.
Assumptions	None
Actors	Music Publishers, Transcription centres, Libraries, Music Schools and Conservatories
Variations	None
Issues	Lack of Information

3.3.6.4 Survey of work by International Standardisation Bodies

Description	<p>A general survey of the work by International Standardisation Bodies (W3C, WBU, WAI) with regards to accessibility examining:</p> <ul style="list-style-type: none"> ▪ General policies of International Standardisation Bodies ▪ Goals and aims of standards ▪ Interoperability and Integration <p>The survey should cover work in the area of:</p> <ul style="list-style-type: none"> ▪ Braille Music ▪ Spoken Music ▪ Enhanced Print Music
Assumptions	Possible users can be professionals or amateurs
Actors	All users
Variations	None
Issues	Integration of the work by International Standardisation Bodies

3.3.6.5 Building of a database of music test cases

Description	Collaborate with all participants in building a database of music test cases.
Assumptions	None
Actors	All Participants
Variations	None
Issues	Unavailability of test cases

3.3.6.6 Technology Watch and Contribution to Standards

Description	<p>The monitoring of the technology used by leading partners of the sector. Assessment of the current technology for the new media and distribution mechanisms. Definition of mechanisms and key aspects for assessing technology. Description of the main functionalities of each category of tools related to the working group area. Survey of solutions and technologies adopted in the working group area. Contribution to evolving standards.</p>
Assumptions	None
Actors	Music Publishers, Transcription Centres, Music Content Providers, Music Software Developers
Variations	None
Issues	Lack of co-operation and Integration

3.3.6.7 Model Definition and Guidelines Production

Description	<p>Description of the detailed user needs which can be related to aspects of the working group. Identification of best-practices to cope with problems identified and highlighted, with the collection of reference data for identifying key problems. Production of reports/guidelines regarding the most important technical solutions for the problems. Strategies and guidelines for achieving best-practices, including practices in the field of education; Strategies and guidelines for improving interoperability and exchanges between systems.</p>
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.6.8 Identification of the most significant associations

Description	Associations must be defined regarding their contributions to the field of accessible music.
Assumptions	None
Actors	All
Variations	None
Issues	Missing or obsolete data on associations.

3.3.6.9 Research groups, presentation and activities

Description	A virtual meeting place for the research world where the different groups can present their activities on aspects of accessible music.
Assumptions	None
Actors	All
Variations	None
Issues	Lack of willingness to share research.

3.3.6.10 Internet Links

Description	Collecting and presenting of useful and interesting links to web sites about access to music for Visually and Print Impaired people
Assumptions	None
Actors	All
Variations	None
Issues	Dead links, web sites inaccessible to Visually and Print Impaired people.

3.3.6.11 Event and fairs announcements

Description	Presentation and announcements for events, fairs, calls for papers, ... regarding accessible music.
Assumptions	None
Actors	All
Variations	None
Issues	Lack of information about events.

3.3.6.12 Bibliography references

Description	Collection of publications about accessible music
Assumptions	None
Actors	All
Variations	Browsing, searching, downloading as .bib file
Issues	Missing data on publications

3.3.6.13 Upload and download of technical documents

Description	Database of shared documents about accessible music.
Assumptions	None
Actors	All
Variations	Document formats
Issues	Poor filtering of content

3.3.6.14 Success stories and pioneering activities

Description	Collection of stories from actors about accessibility of music and pioneering activities in this field.
Assumptions	None
Actors	All
Variations	None

Issues	None
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3.3.6.15 Question and Answer service

Description	An interactive service where users can ask questions on accessibility of music and music in alternative formats of experts in these fields.
Assumptions	None
Actors	All
Variations	Format of this service: e-mail, forum, chat room, etc
Issues	Subjectivity of answers, ambiguity of questions

3.3.6.16 End User Network Support

Description	Encouraging interested parties to join the MUSICNETWORK. Definition of services for the end-user of the MUSICNETWORK. Preparation of general technical material for end-users. Management of the participants of the working groups. Production of a newsletter to be distributed to the mailing list of the working group.
Assumptions	None
Actors	All
Variations	None
Issues	None

Sub Use Cases under End User Network Support:

3.3.6.16.1 Accessibility of the information in the Interactive MUSICNETWORK

Description	Making Information accessible on two levels, one for Partners, one for Participants. Production of best-practice guidelines for MUSICNETWORK partners.
Assumptions	None
Actors	Partners and Participants
Variations	None
Issues	None

3.3.6.16.2 Contribution to the Interactive MUSICNETWORK

Description	All members, partners and participants, should be able to easily share information (internet links, papers, newflashes, etc) submitted to the MUSICNETWORK as well as submitting information themselves.
Assumptions	None
Actors	Partners and Participants
Variations	None
Issues	None

3.3.6.16.3 Easy communication between all actors

Description	All members, partners and participants, should have easy access to discussion groups, deliverables, etc in order to facilitate problem solving, brainstorming, etc
Assumptions	None

Actors	Partners and Participants
Variations	None
Issues	None

3.3.6.16.4 Easy access for Visually Impaired people to all MUSICNETWORK information

Description	All Visually Impaired people interested in the MUSICNETWORK should be able to access all available information, deliverables, forums, websites etc
Assumptions	None
Actors	Visually Impaired people interested in music
Variations	Some users might be not Visually Impaired but are Print Impaired
Issues	Information being offered in inaccessible formats

3.3.7 Music imaging

3.3.7.1 Identification of main related technology and tools for music imaging

Description	Identify related tools for music imaging, including <ul style="list-style-type: none"> • Software (e.g. OMR software, image processing etc); • Hardware (e.g. scanners, book scanners, etc)
Assumptions	Possible users are not multimedia professionals
Actors	All
Variations	None
Issues	Availability of the identified tools with sufficient information

3.3.7.2 Survey of state-of-the-art technology for music imaging

Description	A survey of music imaging related state-of-the-art technology including capacities and functionalities of related tools, image encoding (image formats) and image compressions (lossy and lossless).
Assumptions	Possible users are not multimedia professionals
Actors	All
Variations	None
Issues	Availability of sufficient technical information

3.3.7.3 Simple Question & Answer service

Description	A typical online service which returns answers from an expert in music imaging, on the basis of users' questions
Assumptions	None
Actors	All
Variations	Type of answer (Forum service, e-mail service, chat service)
Issues	Subjectivity of answers

3.3.7.4 Identification of Music Imaging related standards and guideline

Description	Identify standards, guidelines and best practices in the areas of multimedia music imaging, digitisation and preservation, from related fields including digital library and OCR domains.
Assumptions	General users; necessary information can be accessed and is publicly available.
Actors	All
Variations	A wide range of related medias
Issues	<i>De facto</i> standards may not be the same as International standards; Availability of publicly accessible information

3.3.7.5 Survey of typical obstacles for Music Imaging

Description	Survey of typical problems and obstacles for a perfect OMR system
Assumptions	General users
Actors	All
Variations	Type of music document
Issues	None

3.3.7.6 Internet links related to Music Imaging

Description	Collect useful and relevant links to websites about to music imaging
Assumptions	None
Actors	All
Variations	None
Issues	Dead links, wrong links.

3.3.7.7 Music Imaging related event announcements

Description	Announcements and information for conferences, fairs, calls for papers and other events related to music imaging
Assumptions	None
Actors	All
Variations	None
Issues	Insufficient up-to-date information for contacts and up-to-date info for the events

3.3.7.8 Music Imaging bibliography references

Description	Collection of publications related to music imaging, particularly on Optical Music Recognition. Initial database is created by merging and updating OMR bibliography data contributed by Martin Roth, Ichiro Fujinaga, David Bainbridge and Kia Ng
Assumptions	None
Actors	All
Variations	Browsing, searching and downloading the list
Issues	Information validation

3.3.7.9 Optical Music Recognition (OMR) test cases survey

Description	Survey existing music imaging related test cases and assessment criteria
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.7.10 Music Imaging related stories

Description	Collection of related experiences: stories from actors (successes as well as any lessons learned)
Assumptions	None
Actors	All
Variations	None
Issues	Accessible, available and non-confidential information

3.3.7.11 Review of OMR software

Description	Review of commercially available Optical Music Recognition systems using the ground truth dataset collected and assessment criteria and matrices.
Assumptions	None
Actors	Multimedia producers, developers and professionals
Variations	Platform and different types of music notation
Issues	Availability of applications for testing. Availability of appropriate platforms and machines for testing. Availability of appropriate testing data.

3.3.7.12 Identification of digital image standards for distributions and preservation

Description	Review image formats used for distributions and preservation and their features.
Assumptions	Possible users are no multimedia professionals
Actors	All (musicologists, teachers, multimedia producers...)
Variations	Various media types
Issues	<i>De facto</i> standards may not be the same as International standards.

3.3.7.13 Online Music Imaging related document archive and share

Description	Database of shared technical documents on music imaging related issues for access by researchers.
Assumptions	None
Actors	All
Variations	Document formats
Issues	Poor filtering of content

3.3.7.14 Technology watch and research update

Description	Monitor related activities and make available any related information on-line using the forum. Using the on-line forum for research presentation and related activities.
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.7.15 Optical Music Recognition Benchmarking Dataset

Description	Collection of a representative ground truth dataset, which contains music sheets with a representative range of font styles, densities, and page layouts and sizes. Assessment/evaluation criteria and matrices.
Assumptions	None
Actors	Experts, Copyists, Composers, Publishers
Variations	Types of music scores
Issues	Copyright permission

3.3.7.16 Identification of main Music Imaging related actors

Description	To identify significant actors in the sector and their contributions
Assumptions	None
Actors	All
Variations	None
Issues	Availability of publicly accessible up-to-date information

3.3.7.17 Identification of leading Music Imaging related companies

Description	List of leading companies in music imaging sector, with their contributions and details on the products and services.
Assumptions	None
Actors	All
Variations	None
Issues	Requires up-to-date and publicly accessible data on the commercial companies.

3.3.7.18 Identification of main Music Imaging active research groups

Description	List of research groups that are active in the music imaging sector and their contribution to this sector.
Assumptions	None
Actors	All
Variations	None
Issues	Requires up-to-date and publicly accessible data.

3.3.7.19 Identification of main Music Imaging related projects

Description	Collection of main Music Imaging related projects, with background information.
Assumptions	The realisations and projects listed here must be publicly available.
Actors	Musicologists, teachers, multimedia producers
Variations	Various media formats
Issues	Availability of information, extracts, and knowledge of methodology.

3.3.7.20 Identification of Music Imaging related associations and organisations

Description	Collect a list of associations and organisations that contribute to the activities in the music imaging sector.
Assumptions	None
Actors	All
Variations	None
Issues	No up-to-date information on associations and organisations

3.3.7.21 Identification and survey of main obstacles for Music Imaging

Description	Collecting and grouping of significant problems with music imaging and plausible solutions (if available).
Assumptions	None
Actors	All
Variations	None
Issues	No durable solutions, missing solutions

3.3.7.22 Identification of integration with other music representation

Description	Identify and evaluate interoperability of different representations of music images. Issues include graphical representation of image using graphical format such as SVG.
Assumptions	Possible users are not multimedia professionals
Actors	All
Variations	None
Issues	None

3.3.7.23 Identification of optical music document restoration

Description	Collection of information related to optical music document restoration
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.7.24 Identification of Optical Music Recognition

Description	Collection of information related to OMR
Assumptions	None
Actors	All
Variations	None
Issues	None

3.3.7.25 Disseminate related results and information to MUSICNETWORK participants

Description	Experts can present their work concerning music imaging through presentations in the workshops, specific web pages, forums, etc
Assumptions	None
Actors	Experts
Variations	None
Issues	Non-confidential information

