Grant agreement for: Coordination and support action*

Annex I - "Description of Work"

Project acronym: MIReS

Project full title: " Roadmap for Music Information ReSearch "

Grant agreement no: 287711

Version date: 2011-09-13

Table of Contents

Part A

Workplan Tables

A1:
Project summary

Project Number [1]	287711	Project Acronym [2]	MIReS

One form per project

General information			
Project title [3]	Roadmap for Music Information ReSearch		
Starting date [4]	01/10/2011		
Duration in months [5]	18		
Call (part) identifier [6]	FP7-ICT-2011-7		
Activity code(s) most relevant to your topic [7]	:		
Free keywords [8]	coordination, action, roadmap, music, media, search, systems, network, dissemination, stakeholder, community, user-centric, multimodal, real-time, dynamic, interaction, personalisation, multicultural		

Abstract [9]

The field of Music Information Retrieval (MIR) has centered primarily on the analysis of sound signal for the purpose of more efficient search and faster access to digital collections of recorded music. The advent of web-mediated social networks has created a dynamic global market for digital music, collateral services and new user behaviours with significant challenges and opportunities for exploitation. For Europe to leverage its position as a world leader in music creativity, production and mobile distribution, a programme of digital music search technology RTD is needed to ensure coherent targeted support for innovation and underpin competitive strategies for maintaining European excellence.

MIR field has contributed to the success of EU music companies such as Last.fm, Shazam, and BMAT who have started to revolutionise the way music is produced, stored and marketed. Although these services have generated a growing audience reaching over 100 million users in Dec. 2010, the EU music revolution is still in the making. By expanding its context and addressing challenges such as multimodal information, multiculturalism and multidisciplinarity, MIR has the potential for a major impact on the future economy, the arts and education, not merely through applications of technical components, but also by evolving to address questions of fundamental human understanding, with a view to building a digital economy founded on "uncopiable intangibles": personalisation, interpretation, embodiment, findability and community. Within this wider context we propose to refer to the field of MIR as Music Information ReSearch (MIReS) and thus widen its scope, ensuring its focus is centered on quality of experience with greater relevance to human networks and communities.

The Roadmap for MIReS will provide a meta-analysis of the MIR discipline, address emergent contexts and major challenges, formulate research evaluation standards for the discipline, contribute to the establishment of music production and digital library management standards, engage a variety of stakeholders from different disciplines of academia and industry and deliver innovative platforms for co-creative workshops focusing on horizon-scanning and technology foresight. The roadmap will also include a framework for the establishment of a MIR excellence network, involving the field drivers and stakeholders (music researchers, industry representatives, strategists and policy makers).

The MIReS action is therefore expected to impact on (i) policy making and research planning (alignment to other ongoing initiatives such as CHORUS+ or the Media Search Cluster); (ii) technological innovation addressing standards in the field, state-of-the-art description and future challenges definition; (iii) new social behaviours, creativity, economy and education; and (iv) long-term transfer of innovation to industry ensuring future academic excellence and EU competitiveness in the world music market.

A2:
List of Beneficiaries

Project Number [1]	287711	Project Acronym [2]	MIReS

List of Beneficiaries

No	Name	Short name	Country	Project entry month[10]	Project exit month
1	UNIVERSITAT POMPEU FABRA	UPF-MTG	Spain	1	18
2	STROMATOLITE LTD	STRO	United Kingdom	1	18
3	OESTERREICHISCHE STUDIENGESELLSCHAFT FUER KYBERNETIK	OSGK-OFAI	Austria	1	18
4	INSTITUT DE RECHERCHE ET DE COORDINATION ACOUSTIQUE MUSIQUE - IRCAM	IRCAM	France	1	18
5	INESC PORTO - INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES DO PORTO	INESC PORTO	Portugal	1	18
6	QUEEN MARY AND WESTFIELD COLLEGE, UNIVERSITY OF LONDON	QMUL	United Kingdom	1	18
7	BMAT LICENSING SL	BMAT	Spain	1	18

A3:
Budget Breakdown

Project Number [1]	287711	Project Acronym [2]	MIReS

One Form per Project

Participant number in this project [11]	Participant short name	Ind. costs[13]	Estimated eligible costs (whole duration of the project)				Requested EU contribution
			Coordination / Support (A)	Management (B)	Other (C)	Total A+B+C	
1	UPF-MTG	T	74,169.00	42,500.00	0.00	116,669.00	104,030.00
2	STRO	F	71,856.00	30,531.00	0.00	102,387.00	91,295.00
3	OSGK-OFAI	T	87,972.00	9,264.00	0.00	97,236.00	86,701.00
4	IRCAM	A	77,067.00	0.00	0.00	77,067.00	68,713.00
5	INESC PORTO	A	80,773.00	8,977.00	0.00	89,750.00	80,021.00
6	QMUL	T	90,462.00	0.00	0.00	90,462.00	80,661.00
7	BMAT	T	69,061.00	0.00	0.00	69,061.00	61,579.00
Total			551,360.00	91,272.00	0.00	642,632.00	573,000.00

Note that the budget mentioned in this table is the total budget requested by the Beneficiary and associated Third Parties.

*** The following funding schemes are distinguished**

Collaborative Project (if a distinction is made in the call please state which type of Collaborative project is referred to: (i) Small of medium-scale focused research project, (ii) Large-scale integrating project, (iii) Project targeted to special groups such as SMEs and other smaller actors), Network of Excellence, Coordination Action, Support Action.

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project, and it cannot be changed. The project number **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

2. Project acronym

Use the project acronym as indicated in the submitted proposal. It cannot be changed, unless agreed during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry info force of the Grant Agreement (NB : entry into force = signature by the Commission). Please note that if a fixed starting date is used, you will be required to provide a detailed justification on a separate note.

5. Duration

Insert the duration of the project in full months.

6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

7. Activity code

Select the activity code from the drop-down menu.

8. Free keywords

Use the free keywords from your original proposal; changes and additions are possible.

9. Abstract

10. The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

11. The number allocated by the Consortium to the participant for this project.

12. Include the funding % for RTD/Innovation – either 50% or 75%

13. Indirect cost model

A: Actual Costs
S: Actual Costs Simplified Method
T: Transitional Flat rate
F :Flat Rate

Workplan Tables

Project number

287711

Project title

MIReS—Roadmap for Music Information ReSearch

Call (part) identifier

FP7-ICT-2011-7

Funding scheme

Coordination and support action

WT1
List of work packages

Project Number [1]	287711	Project Acronym [2]	MIReS

LIST OF WORK PACKAGES (WP)

WP Number [53]	WP Title	Type of activity [54]	Lead beneficiary number [55]	Person-months [56]	Start month [57]	End month [58]
WP 1	Project Management	MGT	1	10.00	1	18
WP 2	Meta-Analysis of the MIR Discipline	COORD	5	15.50	1	18
WP 3	Roadmap Document for Music Information ReSearch	COORD	3	15.50	1	16
WP 4	Dissemination: Wiki, Publications, Conferences and Workshops	COORD	6	8.50	1	18
WP 5	Community Co-creativity and New Knowledge Generation (Hubs and Spokes)	COORD	1	12.50	1	13
WP 6	Framework for an MIReS Network of Excellence: Research-to-Industry	COORD	2	6.50	1	18
			Total	68.50		

WT2:
List of Deliverables

Project Number [1]	287711	Project Acronym [2]	MIReS

List of Deliverables - to be submitted for review to EC

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D1.1	Intermediary report	1	2	5.00	R	PP	9
D1.2	Final public report	1	2	5.00	R	PU	18
D2.1	Documentation hub	2	5	1.50	O	CO	6
D2.2	Written report	2	5	10.00	R	PP	9
D2.3	Final version of the web-based documentation hub	2	5	4.00	O	PP	18
D3.1	Specification of the roadmapping process	3	3	1.00	R	CO	6
D3.2	Intermediate version of the roadmap	3	3	1.00	R	CO	9
D3.3	MIR Research Roadmap	3	3	13.50	R	PU	16
D4.1	Web site and wiki active	4	6	1.00	O	PU	1
D4.2	Intermediate version of MIReS scientific collection	4	6	3.50	R	PP	9
D4.3	Final version of MIReS scientific collection	4	6	4.00	R	PU	18
D5.1	Intermediary summary of all events organised	5	1	7.50	R	PU	9
D5.2	Final summary of all events organised	5	1	4.00	R	PU	12
D5.3	Final Summary of the contributions	5	1	1.00	R	PP	13
D6.1	Proposal document for the establishment	6	2	3.00	R	RE	15

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
	of a virtual research-to-industry network						
D6.2	Digital framework for a research-to-industry network	6	2	3.00	O	PU	18
			Total	68.00			

WT3:
Work package description

Project Number [1]	287711	Project Acronym [2]	MIReS

One form per Work Package

Work package number [53]	WP1	Type of activity [54]	MGT
Work package title	Project Management		
Start month	1		
End month	18		
Lead beneficiary number [55]	1		

Objectives

The objective of this work package is to set up and implement efficient coordination and management of the overall project.

Specific key objectives are:

- Efficient communication with EC, including timely and complete reporting on project status and compliance with programme procedures;
- Ensuring efficient internal communication and providing timely information to project partners;
- Planning and overall coordination of all WPs;
- Ensuring effective coordination and collaboration between project partners;
- Ensuring effective coordination and collaboration between thematic area leaders;
- Constant monitoring of the project progress in accordance with the project objectives;
- Ensuring that the overall goals of the project are met within the time and budget constraints;
- Guaranteeing coherence in project development and in the achievement of the expected results;
- Ensuring that any planned alterations are approved by the Management Board;
- Ensuring effective coordination between the project and external organizations;
- Representing the interests of all partners at major events;
- Disseminating project news and information;
- Organizing effective project meetings and reviews;
- Organizing regular administrative meetings as appropriate;
- Coordinating the preparation and distribution of all reports;
- Maintaining accurate records of cost and work reports by partners;
- Arbitrating of conflict resolution procedures if required.

Description of work and role of partners

The goal of Work Package 1 is to ensure overall coordination and management of the project. A suitable structure is in place in order to guarantee fulfilment of the project objectives. It covers high-level issues and daily management, as well as the integration of regular daily activities.

Work Package 1 will be executed mainly by the Administrative Coordinator (UPF-MTG) in conjunction with the Scientific Coordinator (STRO) and supervised by the Steering Committee. The WP1 Coordinators will be responsible for ensuring that correct procedures are carried out and all deadlines and obligations met. Consensus on project steering will be sought by preparing clear instructions on actions to be performed.

The Administrative Coordinator is responsible for ensuring that quality deliverables are submitted on budget, and that milestones are reached according to the set timelines in close cooperation with the coordinators of Work Packages 2-6. The Administrative Coordinator is tasked with carefully analysing potential risks, remaining aware of their palliative solutions, and driving the process of implementing corrective actions when required via the project's predefined decision mechanisms. The Administrative Coordinator is required to ensure optimal communication mechanisms in order to guarantee relevant information is available in a timely fashion to stakeholders, and to report regularly to the European Commission.

In order to design, implement, facilitate and monitor the execution of the actions described in the work plan, the WP1 partners will be in charge of the preparation of project meetings, where project goals, plans, procedures and relevant information on progress will be discussed.

Task 1.1: Administrative Management

Administration and Reporting to the Commission: monitoring progress of the project in its various administrative aspects (finance, reporting to the Commission, notification and monitoring of deadlines, initiating management meetings, etc.); holding management meetings, monitoring the scientific and technical progress and time schedules of the project; ensuring submission of deliverables, management of the consortium and mediating in the event of conflicts and disputes.

Partners involved: UPF-MTG overall coordination

Task 1.2: Scientific Management

Developing Guidelines for Quality Assurance in Research carried out in the project, monitoring the quality of scientific output, detecting risks and taking corrective action as necessary.

Partners involved: STRO overall coordination and execution of tasks described above, with UPF-MTG, OSGK-OFAI and INESC PORTO

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	UPF-MTG	5.00
2	STRO	3.00
3	OSGK-OFAI	1.00
5	INESC PORTO	1.00
	Total	10.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D1.1	Intermediary report	2	5.00	R	PP	9
D1.2	Final public report	2	5.00	R	PU	18
		Total	10.00			

Description of deliverables

D1.1) Intermediary report: Public report describing the intermediary achievement of the project. This report will be generated by STRO, with contribution by UPF-MTG, OSGK-OFAI and INESC PORTO [month 9]

D1.2) Final public report: The Final Public Report, including major conclusions and recommendations for future work. This report will be generate by STRO, with contribution by UPF-MTG, OSGK-OFAI and INESC PORTO [month 18]

WT3:
Work package description

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments

WT3:
Work package description

Project Number [1]	287711	Project Acronym [2]	MIReS

One form per Work Package

Work package number [53]	WP2	Type of activity [54]	COORD
Work package title	Meta-Analysis of the MIR Discipline		
Start month	1		
End month	18		
Lead beneficiary number [55]	5		

Objectives

The primary objective of this WP is to provide an in-depth, critical overview of past and current research trends in MIR. More particularly, a critical reflection will be conducted, as a collaborative effort, on the evolution of the field and on achievements and pitfalls from its beginning to today, both in terms of research findings but also employed methodologies, societal impacts and exchanges -inward and outward- with neighboring fields of science.
This meta-analysis of the field will be conducted in coordination with WP3 (MIR Roadmap) and will aim at providing insights on how the field should evolve towards sustainability.
A second objective of this WP is to make this meta-analysis of MIR widely diffused, and suitable for different readerships, from specialized MIR researchers to beginners and students, and to different users of MIR technologies.
The involvement of the MIR community at large and relevant thinkers of the field in particular, will be instrumental towards this objective.

Description of work and role of partners

In this WP, the consortium will write an initial review on MIR research trends, with special focus on benchmarking activities. This review will serve as “bootstrap” for further edition by the consortium, together with the involvement of the MIR community at large.

Task 2.1: Organise the edition process of a web-based, collaborative, state-of-the-art documentation of MIR research

In this WP, we will produce a structured collection of documents that will encompass a complete overview of MIR. This documentation will have to be exhaustive, to keep updated with the rapid evolution of the field, and to have a significant impact on the MIR community (i.e. serve effectively as reference hub for MIR documentation). For this to be possible, we will set up a web-based repository on the MIReS web site (see WP4), very much inspired by the structure of existing repositories such as Wikipedia, including different formats for documentations, which will include concise articles, lecture slides, discussion forums, thematic news feeds, links to relevant online literature and multimedia material, etc. By the end of the project, and partly during its course, this repository will be editable by the community itself.

The role of the consortium will be to (1) define the main structure and document formats of this repository (in particular, QMUL will contribute here as a continuation of web presence efforts in WP4), (2) include initial contributions (see Task 2.2), (3) reach out to the MIR community and in particular key researchers beyond the consortium for their involvement (in particular, QMUL and UPF-MTG will contribute here as continuation of work in WPs 4 and 5), (4) define a clear set of rules and responsibilities for editing/monitoring/reviewing/mediation permissions by members of the community, and (5) ensure that any information released is available on open networks and covered by Creative Commons licenses. This will be achieved as a collaborative process including all partners of the consortium.

Partners involved: INESC PORTO overall coordination and execution of tasks described above, all partners report and contribute.

Task 2.2: Review of MIR research trends

The initial contributions to the web-based repository will be produced by the consortium itself, it will provide the required input to WP3, and will serve as "bootstrap" for further revisions by the community at large.
The writing process will encompass reviewing the following three aspects, and writing responsibilities will be distributed among consortium partners:
MIR research topics: audio content analysis, context data analysis, user profiling, musical representations, research tools, etc. (IRCAM and OSGK-OFAI expertise on those topics will be of particular relevance)
MIR applications: search, recommendation, digital libraries, rights management, music visualisation, music promotion, music networking, music education/training, interactive arts, etc. (IRCAM and BMAT expertise will be instrumental here)
MIR challenges: multiculturalism, semantic gap, support to creativity, multimodality, multidisciplinarity, etc. (here UPF-MTG expertise will be instrumental)

Involvement of key MIR researchers/experts in this task will be facilitated by the organization of meetings with members of the consortium, for instance during events organized in WPs 4 and 5, but also possibly as short-term individual actions.

Task 2.3: Assess benchmarking efforts in MIR

This task is conceived as a series of efforts to aid the writing of MIReS standards in Work Package 3, Task 3.2, and documentation part B1.1.2.1. Advances in particular fields of sciences are often determined by how well scientists can evaluate their progress. For this reason, we will dedicate particular attention to a critical assessment of evaluation efforts in MIR, including MIREX (http://www.music-ir.org/mirex/), MUSICLEF (http://www.promise-noe.eu/web/guest), and Audio Description Contest (http://ismir2004.ismir.net/ISMIR_Contest.html).
We will also monitor other evaluation and benchmarking efforts from other, more established fields of science, such as Information Retrieval, Natural Language Processing, etc.: TREC (http://trec.nist.gov/), CLEF (http://www.clef-campaign.org/), and TRECVID (http://trecvid.nist.gov/).

Partners involved: INESC PORTO overall coordination and execution of tasks described above, all partners report and contribute

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	UPF-MTG	2.00
2	STRO	1.00
3	OSGK-OFAI	3.00
4	IRCAM	3.00
5	INESC PORTO	3.50
6	QMUL	2.00
7	BMAT	1.00
	Total	15.50

List of deliverables

Deliverable Number [61]	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature [62]	Dissemination level [63]	Delivery date [64]
D2.1	Documentation hub	5	1.50	O	CO	6
D2.2	Written report	5	10.00	R	PP	9

WT3:
Work package description

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D2.3	Final version of the web-based documentation hub	5	4.00	O	PP	18
		Total	15.50			

Description of deliverables

D2.1) Documentation hub: Database for the web-based documentation hub [month 6]

D2.2) Written report: Written report on initial review of MIR research trends, MIR benchmarking, and definition of editing structure of the web-based documentation hub, to be used by WP3 [month 9]

D2.3) Final version of the web-based documentation hub: Final version of the web-based documentation hub [month 18]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS2	Presentation of the report on the meta-analysis of MIR research trends	5	9	

WT3:
Work package description

Project Number [1]	287711	Project Acronym [2]	MIReS

One form per Work Package

Work package number [53]	WP3	Type of activity [54]	COORD
Work package title	Roadmap Document for Music Information ReSearch		
Start month	1		
End month	16		
Lead beneficiary number [55]	3		

Objectives

The goal of this WP is to use the results of the meta-analysis of the MIR field (WP2) and the inputs from multi-disciplinary external stakeholders (WP5) as a basis for developing a strategic roadmap for the further orientation of MIR research and the organisation of the field.
Specifically, this can be broken down into the following concrete objectives:
to evaluate and consolidate inputs from WP2 and feedback collected in WP5
to organise a focused discussion process on the future organisation and focus of the MIR field
to compile a strategic roadmap, in a collaborative effort
to widely publicise the roadmap and the central insights both within and without the MIR field

Description of work and role of partners

The goals as outlined above will be pursued in terms of three tasks.

Task 3.1: Organise discussion process and develop plan for roadmap writing

Compiling the roadmap will be a collaborative process, with all consortium partners involved. It will be vital to organise this process in a focused and efficient manner. A structured plan will be developed for organising the inter-consortium discussion process, the identification and documentation of relevant information sources (beyond WPs 2 and 5), and the gathering and collating of information relevant to the roadmap. Expertise and specific resources of the individual consortium partners will be identified and specific roles and topic categories will be assigned to them. In a focused joint working meeting around month 6 of the project (see MS1), a concrete plan for producing the roadmap will be agreed on, which will further be refined in the process.

Expertise and specific resources of the individual consortium partners will be identified and specific roles and topic categories will be assigned to them. In a focused joint working meeting around month 6 of the project (see MS1), a concrete plan for producing the roadmap will be agreed on, which will further be refined in the process. In order to obtain further inputs from the research community and beyond, the roadmapping effort will be presented at relevant scientific and commercial events.

Activities for gathering of information will include face to face meetings and interviews with both researchers and experts identified in WP5. For instance, one of the collaborations foreseen is between OSGK-OFAI and Thomas Lidy from the Institute of Software Technology and Interactive Systems in Vienna, author of the report from the 'Think-Tank on the Future of Music Search, Access and Consumption', held at MIDEM in Cannes, January 24, 2011.

Partners involved: OSKG-OFAI overall coordination and execution of tasks described above, all partners report and contribute.

Task 3.2: Monitor information resources and public discussion on topics of strategic importance

The results of the meta-analysis of the MIReS field (WP2) will be the primary basis for the analysis and report laid out in the roadmap. This internal view of the field will be completed with external perspectives as collected by WP5. Accordingly, a process will be set up for regularly polling WPs 2 and 5 for inputs and analyses. The inputs will be collected in structured form and will serve as input to continuously inform the roadmap writing process (Task 3.3).

Accordingly, a process will be set up for regularly polling WPs 2 and 5 for inputs and analyses which will include on site meetings of all parties involved where necessary. The inputs will be collected in structured form and will serve as input to continuously inform the roadmap writing process (Task 3.3)

Partners involved: OSGK-OFAI overall coordination; all partners report and contribute.

Task 3.3: MIReS Roadmap

The writing of the roadmap will be a distributed process, using the specific strengths and experience of the individual partners, and organised by the WP leader. The roadmap will be published in the form of a printed book, but will also be made available in electronic form. To maximise the utility of the document and its contents to others, both within the MIR field and outside, and to facility wide dissemination, an open licensing scheme (e.g., based on the Creative Commons model) will be chosen. The web resources developed in WP4 will be used as channels to publicise the roadmap and its central findings in electronic form.

Shorter survey versions of the final roadmap document will be published at conferences as well as scientific journals in order to further promote our results. A simplified version accessible to the more general public will be provided for appropriate media.

Partners involved: OSGK-OFAI overall coordination; all partners contribute analyses and corresponding texts.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	UPF-MTG	2.00
2	STRO	1.00
3	OSGK-OFAI	4.50
4	IRCAM	3.00
5	INESC PORTO	2.00
6	QMUL	2.00
7	BMAT	1.00
	Total	15.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D3.1	Specification of the roadmapping process	3	1.00	R	CO	6
D3.2	Intermediate version of the roadmap	3	1.00	R	CO	9
D3.3	MIR Research Roadmap	3	13.50	R	PU	16
		Total	15.50			

Description of deliverables

D3.1) Specification of the roadmapping process: Early stage guidelines for the report as output from the strategic meeting to define the roadmapping process [month 6]

D3.2) Intermediate version of the roadmap: Brief report on the progress of the roadmapping process [month 9]

D3.3) MIR Research Roadmap: A full report defining the MIR Research Roadmap [month 16]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS1	Presentation of the report from the strategic meeting on the roadmapping process	3	6	
MS3	Presentation of first draft of roadmap structure	3	9	

WT3:
Work package description

Project Number [1]	287711	Project Acronym [2]	MIReS

One form per Work Package

Work package number [53]	WP4	Type of activity [54]	COORD
Work package title	Dissemination: Wiki, Publications, Conferences and Workshops		
Start month	1		
End month	18		
Lead beneficiary number [55]	6		

Objectives

The goal of this work package is to maximise the impact of the project by engagement with external stakeholders via high-profile events and publications, and by a strong and up-to-date web presence. The three specific objectives are:
1. The dissemination of the outputs of MIReS to the widest possible range of external stakeholders;
2. The feedback of relevant information from external stakeholders into the project;
3. The establishment of strategy and appropriate dissemination paths and tools to expedite technology transfer to industry.

Description of work and role of partners

Dissemination of MIR knowledge in general and of the project's activities in particular can be achieved via contributions to recognised and specialized forums, scientific contributions towards the recognition or establishment of MIR in other fields of science, or activities that foster recognition of MIR by the general public. To ensure maximum impact, dissemination activities will commence from the beginning of the project with the establishment of the project web site and wiki, and will continue throughout the project via targeted presence at conferences, workshops and trade shows, as well as publications in academic, professional and general literature, web-based discussion forums and social networks. Our aim is to interact with the widest possible user base including: scientific researchers in MIR and complementary disciplines (see below); industry (e.g. media, entertainment, mobile communications, audio engineering); culture (e.g. composers, performers, promoters); government (policy makers and funding bodies); and the general public (e.g. schools, music lovers). Via this interaction, we aim to promote a general understanding of the state-of-the-art in MIR, encourage the use of MIR tools, engage stakeholders in discussion regarding the future of MIR (see WP2,3,5), and align future MIR research with the needs of the industry (see WP6).

The expected results of this WP are:
- High visibility of the project throughout its duration and beyond;
- Online availability of full project documentation;
- Feedback and insights for the Roadmap, drawn from interaction with external research and industrial stakeholders;
- A broadening of the scope of MIR research, following on from point (3) above; Networking and community building between partners and external stakeholders

Task 4.1 Web Presence

The project web site will be live from the beginning of the project and will act as both the communications hub of the project and the outward facing public dissemination channel for all project activities. Thorough documentation, the use of standard cooperative development tools and active user-group interaction are considered key factors for the effective dissemination of the project. Therefore complete documentation of all project outputs in various formats will be freely available online, including proceedings and reports from the activities outlined in other WPs. In addition, user groups, mailing lists and other forms of interaction will be created and actively maintained in order to promote external contributions. Internally, the wiki shall function as the platform for development of the Roadmap (WP3).

In line with its obligations regarding dissemination of results and achievements, the Co-ordinator (UPF-MTG) insures that all public documents (including, but not restricted to, the following material: video material covering experiments, trials; animations of "real-time" simulation results; presentations, animated/voice-over or not; promotional material (leaflets, posters, etc.); press releases etc.) generated by the project will be available for download in the project official website during and until all the final administrative procedures are completed and the project is closed. In addition, all project related dissemination activities undertaken by MIReS partners, individually or jointly, will explicitly acknowledge the project and the European Commission's FP7.

Partners involved: QMUL overall coordination; all partners contribute content

Task 4.2 Outreach Events and Publications

MIReS will not seek to establish a new conference or workshop in competition with existing meetings, but rather will take advantage of existing conferences, networks and professional bodies, such as the European initiatives SMC, DAFx and CMMR, and international conferences hosted periodically in Europe such as ISMIR, ICMC and ICASSP. We will also target events which currently have little or no MIR presence, including conferences in fields such as neuroscience (NIPS), music psychology (ICMPC), musicology (IMS), artificial intelligence (IJCAI, ECAI, AAAI), machine learning (ICML), digital libraries (ECDL), web science (ICWS), information retrieval (SIGIR, ECIR), speech (Interspeech), video & multimedia (ACMMM, ICME, ICMR), digital arts (ARTECH), and audio engineering (AES) conferences; trade shows such as MIDEM, SanFranMusicTech, Sonar, Popkomm, and Music 4.5; and Commission showcases such as ICT2012 in Brussels. Through involvement in MPEG meetings, we will influence industry standards to facilitate the incorporation of MIR technologies in next generation systems. Each partner will target one new "outreach" conference/event from those listed, to be agreed upon at the project kickoff meeting. It is not expected all partners attend all events. In addition, we will aim at disseminating the activities of the project in national media (press, radio, TV, etc.) and general literature such as the "Audio!" magazine for teenagers (www.audio4fn.org).

The core events (in conjunction with which QMUL will organise project events and meetings) are:
1) ISMIR (hosted in 2012 by INESC PORTO);
2) SMC (Denmark, 2012);
3) CMMR (hosted in 2012 by QMUL).
For dissemination to related research communities, MIReS project will also take advantage of existing regular activity of partners at the following conferences: ICASSP, AES (QMUL); IJCAI, ECAI (OSGK-OFAI); ICMC (UPF-MTG). The consortium will also contribute to the EU Concertation Meetings through sessions and active participation in the Media Search Cluster. Dissemination will be achieved through special sessions organised for the EU Networked Electronic Media annual event (see WP5, Task 5.3). The consortium will disseminate through specialized music social networks covering more industrial social networks such as Last.fm, in conjunction with the MIReS External Advisor Mark Levy, Research Engineer and MIR expert at Last.fm (see B2.1.6) as well as more academic social networks such as The Freesound Project (http://www.freesound.org) lead by consortium coordinator UPF-MTG.

Our methodology will be to propose workshops and special sessions/tracks at conferences, in order to promote the state-of-the-art in MIR (to non-MIR audiences) and the progress of the Roadmap (to MIR-related audiences). For the latter we will particularly favour formats which encourage discussion and debate (panel sessions, round tables, etc.) such as ISMIR's Future of MIR session (see WP5). We will also work on editing special issues of recognized scholarly journals and magazines in the above fields of science related to MIR research. On the one hand, we aim to attract specialists from other fields who perhaps have never considered the application of their techniques to MIR, and at the same time broaden the application of MIR techniques to similar problems in other domains.

On the other hand specialised MIR workshops will address the key thematic areas of MIR and feed directly into the Roadmap (WP3), and thus are one of the core project activities. The proceedings of these workshops will be made available on the project web site and constitute a deliverable of the project (D4.2). Finally, industrially focussed instructional/demonstrative workshops will be organised with relevant industry enterprises to promote rapid technology transfer.

Partners involved: QMUL overall coordination; all partners involved in dissemination activities

Task 4.3 Coordination with other initiatives existing in the field

MIReS will coordinate with other initiatives existing in the field such as the collaborative Future Internet Portal (http://www.future-internet.eu/home.html), CHORUS+ project and Sounds of Europe project (where UPF-MTG is partner) granted by the EC Culture Programme 2007-2013.

The MIReS project will actively participate in the activities organised at programme level relating to the Networked Media and Search Systems area with the objective of providing input towards common activities and receiving feedback (e.g. from clusters and coordination groups), offering advice and guidance and receiving information relating to ICT programme implementation, standards, policy and regulatory activities, national or international initiatives, etc. The MIReS partners will also commit themselves to support the organisation of an annual conference of the Networked and Electronic Media constituency if requested by the EC, by providing papers, participating in technical programme committee, chairing sessions, etc.

Partners involved: QMUL overall coordination; all partners involved in dissemination activities

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	UPF-MTG	1.00
2	STRO	0.50
3	OSGK-OFAI	1.00
4	IRCAM	1.00
5	INESC PORTO	1.00
6	QMUL	3.50
7	BMAT	0.50
	Total	8.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D4.1	Web site and wiki active	6	1.00	O	PU	1
D4.2	Intermediate version of MIReS scientific collection	6	3.50	R	PP	9
D4.3	Final version of MIReS scientific collection	6	4.00	R	PU	18
		Total	8.50			

Description of deliverables

D4.1) Web site and wiki active: [month 1]

D4.2) Intermediate version of MIReS scientific collection: Intermediary version of collected proceedings of workshops, special sessions, tutorials and scientific publications produced [month 9]

D4.3) Final version of MIReS scientific collection: Final version of collected proceedings of workshops, special sessions, tutorials and scientific publications produced [month 18]

WT3:
Work package description

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments

WT3:
Work package description

Project Number [1]	287711	Project Acronym [2]	MIReS

One form per Work Package

Work package number [53]	WP5	Type of activity [54]	COORD
Work package title	Community Co-creativity and New Knowledge Generation (Hubs and Spokes)		
Start month	1		
End month	13		
Lead beneficiary number [55]	1		

Objectives

While WP4 focuses on dissemination of existing knowledge, WP5 has been conceived specifically in view of generating new knowledge which would aid the roadmapping process, through a series of events specifically design to achieve MIReS results. The main objective of this WP is to gather information from experts in various fields that can be relevant for writing the MIR Roadmap. We will accomplish this by organizing events with different types of communities, in different formats and addressing different topics related to the Roadmap. The main aim of the events will be to promote interdisciplinary discussions around MIR among people coming from very different backgrounds and interests.

Another important goal of this WP will be to promote networking between the different communities related to MIR and the promotion within them of the key concepts of the Roadmap. These activities will allow the MIReS roadmap to evaluate and consider what these communities are expecting from MIR research and development now and – more importantly – what will be the worth of MIR in the future in terms of relevant values (scientific, technological, economic, artistic, etc.) and enable to consequently identify future directions for MIR research topics.

Regarding the types of events, we will specially target academic and industrial events and take advantage of the most relevant conferences / event formats currently existing, thus covering the core research topics of the MIR field and the applications from different points of view: academic, industrial and artistic.

Description of work and role of partners

The tasks included in this WP are designed to build better and tighter bridges between the MIR academic, industrial and artistic communities on one hand, and other relevant complementary communities on the other hand, such as e.g. hackers/freelancers, artists, students.

The foreseen conferences in WP5 will include both special sessions in already consolidated conferences and new and disruptive event formats that will be proposed where several MIR research topics and questions will be identified and shared between the participants who will not only write a position statement, but also imagine future MIR research directions.

Expected outcomes of this WP are:
- High quality contributions to the key thematic areas of the MIR roadmap;
- Awareness and understanding of identified communities' key actors with respect to MIR research topics and
- Networking and community building between MIReS partners and external stakeholders in the field.

Task 5.1: Academic events

Academic conferences will be an important public assessment point for the MIReS Coordination Action. Gathering of information will be organized in a way to promote brainstorming on specific topics with the aim to include it in the roadmap. Several academic conferences relevant to the MIR research area have been indentified:

Special sessions at ISMIR:

ISMIR (http://www.ismir.net/) is the main gathering of researchers in the field of MIR. A special event will be proposed as part of the next two ISMIR conferences with the aim to have discussions about some of the specific issues in the MIReS Roadmap and the Future of MIR.
For ISMIR 2011 we will propose to focus on "non-western music and MIR" and we are planning to invite people like: George Tzanetakis (Univ. of Victoria), Parag Chordia (Georgia Tech), and David Huron (Ohio State). ISMIR 2012 could be focused on "Music ontologies and profiling of music communities" and we are planning to invite people like: Peter Mikas (Yahoo Research), Yves Raimond (BBC) and Frederick Giasson (Structured Dynamics). If these events cannot be organized in the context of ISMIR we will find other relevant conferences to propose them to.

In addition to the above-mentioned academic conferences, an Academic Forum on MIR and Multiculturalism will be organized at UPF in the spring-summer of 2012 where international scientists coming from diverse academic fields, including Computer Science, Musicology, Social Sciences, Music Cognition, and Human Computer Interaction will be invited. There will be a special emphasis on multiculturalism and it will be organized in collaboration with the project CompMusic (Xavier Serra's ERC Advanced Grant project which starts in July 2011). Some of the people to be invited include Baris Bozkurt, Preeti Rao, and Hema Murthy.

The MIReS Academic External Advisors Prof. Geraint Wiggins, Prof. Atta Badii and Prof. William Gaver will be valuable contributors to the events listed in Task 5.1.

Partners involved: UPF-MTG coordinates with contribution from OSGK-OFAI, QMUL and INESC PORTO.

Task 5.2: Events involving industry representatives, outside experts and future users

Since the field of Music Information ReSearch is expected to have a considerable impact on the multimedia market economy and related fields (entertainment, mobile services, gaming, virtual/augmented reality, etc.) several workshops involving key EU industry representatives have been envisaged with the goal of i) exploring future MIR applications and possible barriers from the industry point of view and ii) catering for quick technology transfer turnarounds.

Music Hack Day.
A Music Hack Day (http://musichackday.org/) will be organized in Barcelona as a satellite event of the popular Sonar Festival (http://sonar.es) in June 2012. A Music Hack Day is a non-conventional event where the most relevant international music companies provide the community of software developers free access to the most innovative market tools in order to conceptualise, create and present their applications. It is an event of a great interest to industry and a perfect venue to explore the future potential of industry deployment of innovative music search and discovery technologies. The Music Hack Day in 2012 will emphasize a stronger collaboration with the events of Sonar, thus promoting topics related with the international electronic music scene. These events will be organised by BMAT and UPF-MTG, with input from MIReS Industry Advisors like Mark Levy from Last.fm, James Sopper from Slicethepie.com and Rowena Goldman from the BBC.

Trend-spotting industry MIR event.
The aim of this event is horizon-scanning and insight into worldwide industry trends related to music search and discovery, for inclusion into roadmap foresight planning. The trend-spotting industry MIR event will be organised by STRO and BMAT in conjunction with Brand-M.biz (http://www.brand-m.biz/ and http://brand-e.biz/bands.html) and will involve representatives from major EU and international music companies, and broadcasting and telecoms companies with a vested interest in the future of music media search. The partners will involve MIReS Industry Advisors Mark Levy from Last.fm and James Sopper from Slicethepie.com and MIReS Media and Broadcasting Industry Advisor Rowena Goldman. Brand-e.biz regularly rely on a series of industry sponsors for their events.

EU Associate Countries Digital Music and Hack Day Event.
An event is proposed in conjunction with participants from the following EU Associate countries: Croatia, Bosnia, Serbia, Montenegro, Macedonia, Turkey and Albania. The aim of this event is to gather information from emerging markets for applications of music search and discovery and contribute to the roadmapping foresight. This event will be organised in Croatia by STRO and BMAT in conjunction with the multimedia agency Kreativni (http://www.kreativni.hr/) and will be open not only to academics but to hackers and music audiences representing the public at large. Sponsorship from a large regional media and telecoms company will be sought to contribute to the funding of the event.

Partners involved: Coordination by STRO with BMAT and UPF-MTG

Task 5.3: Events involving artists and musicians

Creative insight into the discipline will be sought through ‘art meets science’ events, gathering input from artists working with interactive technologies and music performers from different cultural backgrounds. These events will encourage exchange of ideas with artists and musicians, and expand the Music Information ReSearch stakeholders network.

- EU Music Search and Discovery Creative Workshop.
A workshop around creativity will be proposed as part of the Networked Electronic Media constituency in 2012 (venue to be determined) organised under the aegis of the European Commission (DG Information Society and Media). This workshop will address topics such as Media-related applications, Content creation, Content search and Media presentation and will involve participation from creative digital natives, young innovators and cross-disciplinary artists. The workshop will be run by STRO in conjunction with MIReS Advisor Rowena Goldman, BBC Creative Partnerships Executive and Consultant to NEM 2011.

- MIR and Creation Workshop.
This workshop to be hosted at IRCAM will focus on the applications of MIR for artistic creation and professional production.

- MIR Multicultural workshop.
This workshop will focus on multicultural Music Information ReSearch as an inside event at IRCAM or as a workshop linked to an external conference. The goal of this workshop is to gather artists from both western and non-western culture in order to share their respective vision of the MIR field.

Partners involved: Coordination by UPF-MTG, with IRCAM, INESC PORTO and STRO.

Task 5.4: Reports and proceedings, and presentation to the EU Media Search Cluster

All contributions gathered from different communities involved in conferences, workshops, roundtables and other events will be collected into a summary which will directly influence the MIReS roadmap.

In addition, proceedings from the above conferences and reports from the outlined activities will also constitute deliverables for this WP (see below), and will be presented at the Concertation meetings of the EU Media Search Cluster scheduled in 2012.

Partners involved: Coordination by UPF-MTG with contribution by all partners.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	UPF-MTG	4.50
2	STRO	1.50
3	OSGK-OFAI	0.50
4	IRCAM	0.50
5	INESC PORTO	2.00
6	QMUL	0.50
7	BMAT	3.00
	Total	12.50

WT3:
Work package description

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D5.1	Intermediary summary of all events organised	1	7.50	R	PU	9
D5.2	Final summary of all events organised	1	4.00	R	PU	12
D5.3	Final Summary of the contributions	1	1.00	R	PP	13
		Total	12.50			

Description of deliverables

D5.1) Intermediary summary of all events organised: Intermediary summary of all events organised [month 9]

D5.2) Final summary of all events organised: Final summary of all events organised [month 12]

D5.3) Final Summary of the contributions: Summary of the contributions to the MIR roadmap generated from the events [month 13]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS4	Presentation of first summary of all events organised	1	12	

WT3:
Work package description

Project Number [1]	287711	Project Acronym [2]	MIReS

One form per Work Package

Work package number [53]	WP6	Type of activity [54]	COORD
Work package title	Framework for an MIReS Network of Excellence: Research-to-Industry		
Start month	1		
End month	18		
Lead beneficiary number [55]	2		

Objectives

Specific goals to be achieved:
to lay the foundations for solid communication between RTD MIR centres and music industry representatives, strategists and policy makers
to ensure a long-term transfer of MIR RTD innovation to industry
to continue to inform policy makers beyond the lifetime of the proposal

Description of work and role of partners

The consortium will prepare a proposal and build a framework for the establishment of a virtual network of MIR excellence connecting music researchers and theorists with industry representatives, strategists and policy makers, ensuring efficient communication and transfer of innovation to industry in the long-term, and thus continuing to inform policies beyond the lifetime of the proposal to ensure future academic excellence and EU competitiveness in the world music market.

Task 6.1: Network building
The consortium will seek to make preparatory steps for establishing a network connecting music researchers and theorists with industry representatives, strategists and policy makers, initially drawing upon dissemination events from WP4 and community co-creativity events from WP5, and working actively towards expansion by forging links throughout the music technology stakeholders community.
Partners involved: Joint coordination by STRO and BMAT, with contributions by UPF-MTG, OSKG-OFAI, IRCAM, INESC PORTO and QMUL

Task 6.2: Specification of a framework for a MIReS Network of Excellence
The specification of a framework for knowledge sharing, cooperation and co-creation between EU academic research units, industry stakeholders and policy makers in view of continuing to inform policies beyond the lifetime of the proposal. This will be presented in the form of a proposal which will reflect the knowledge gained in Task 6.1 and list all potential and existing stakeholders. The proposal will involve technical and practical considerations for a digital framework which would link all stakeholders, and the setting of principles and incentives for knowledge sharing.
Partners involved: Joint coordination by STRO and BMAT.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	UPF-MTG	0.50
2	STRO	2.00
3	OSGK-OFAI	0.50
4	IRCAM	0.50
5	INESC PORTO	0.50

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
6	QMUL	0.50
7	BMAT	2.00
	Total	6.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D6.1	Proposal document for the establishment of a virtual research-to-industry network	2	3.00	R	RE	15
D6.2	Digital framework for a research-to-industry network	2	3.00	O	PU	18
		Total	6.00			

Description of deliverables

D6.1) Proposal document for the establishment of a virtual research-to-industry network: Proposal document for the establishment of a virtual research-to-industry network [month 15]

D6.2) Digital framework for a research-to-industry network: Digital framework for a research-to-industry network [month 18]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS5	Presentation of proposal for research-to-industry network	2	15	

WT4:
List of Milestones

Project Number [1]	287711	Project Acronym [2]	MIReS

List and Schedule of Milestones

Milestone number [59]	Milestone name	WP number [53]	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS1	Presentation of the report from the strategic meeting on the roadmapping process	WP3	3	6	
MS2	Presentation of the report on the meta-analysis of MIR research trends	WP2	5	9	
MS3	Presentation of first draft of roadmap structure	WP3	3	9	
MS4	Presentation of first summary of all events organised	WP5	1	12	
MS5	Presentation of proposal for research-to-industry network	WP6	2	15	

WT5:
Tentative schedule of Project Reviews

Project Number [1]	287711	Project Acronym [2]	MIReS

Tentative schedule of Project Reviews

Review number [65]	Tentative timing	Planned venue of review	Comments, if any
RV 1	9	Brussels	Project review following completion of events
RV 2	18	Brussels	Final review

WT6:
Project Effort by Beneficiary and Work Package

Project Number [1]	287711	Project Acronym [2]	MIReS

Indicative efforts (man-months) per Beneficiary per Work Package

Beneficiary number and short-name	WP 1	WP 2	WP 3	WP 4	WP 5	WP 6	Total per Beneficiary
1 - UPF-MTG	5.00	2.00	2.00	1.00	4.50	0.50	15.00
2 - STRO	3.00	1.00	1.00	0.50	1.50	2.00	9.00
3 - OSGK-OFAI	1.00	3.00	4.50	1.00	0.50	0.50	10.50
4 - IRCAM	0.00	3.00	3.00	1.00	0.50	0.50	8.00
5 - INESC PORTO	1.00	3.50	2.00	1.00	2.00	0.50	10.00
6 - QMUL	0.00	2.00	2.00	3.50	0.50	0.50	8.50
7 - BMAT	0.00	1.00	1.00	0.50	3.00	2.00	7.50
Total	10.00	15.50	15.50	8.50	12.50	6.50	68.50

WT7:
Project Effort by Activity type per Beneficiary

Project Number [1]	287711	Project Acronym [2]	MIReS

Indicative efforts per Activity Type per Beneficiary

Activity type	Part. 1 UPF-MTG	Part. 2 STRO	Part. 3 OSGK-OF	Part. 4 IRCAM	Part. 5 INESC P	Part. 6 QMUL	Part. 7 BMAT	Total
3. Consortium Management activities								
WP 1	5.00	3.00	1.00	0.00	1.00	0.00	0.00	10.00
Total Management	5.00	3.00	1.00	0.00	1.00	0.00	0.00	10.00
Work Packages for Coordination activities								
WP 2	2.00	1.00	3.00	3.00	3.50	2.00	1.00	15.50
WP 3	2.00	1.00	4.50	3.00	2.00	2.00	1.00	15.50
WP 4	1.00	0.50	1.00	1.00	1.00	3.50	0.50	8.50
WP 5	4.50	1.50	0.50	0.50	2.00	0.50	3.00	12.50
WP 6	0.50	2.00	0.50	0.50	0.50	0.50	2.00	6.50
Total Coordination	10.00	6.00	9.50	8.00	9.00	8.50	7.50	58.50
4. Other activities								
Total other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	15.00	9.00	10.50	8.00	10.00	8.50	7.50	68.50

WT8:
Project Effort and costs

Project Number [1]	287711	Project Acronym [2]	MIReS

Project efforts and costs

Beneficiary number	Beneficiary short name	Estimated eligible costs (whole duration of the project)						Requested EU contribution (€)
		Effort (PM)	Personnel costs (€)	Subcontracting (€)	Other Direct costs (€)	Indirect costs OR lump sum, flat-rate or scale-of-unit (€)	Total costs	
1	UPF-MTG	15.00	75,000.00	0.00	22,225.00	19,444.00	116,669.00	104,030.00
2	STRO	9.00	45,000.00	0.00	40,323.00	17,064.00	102,387.00	91,295.00
3	OSGK-OFAI	10.50	60,900.00	0.00	20,130.00	16,206.00	97,236.00	86,701.00
4	IRCAM	8.00	44,000.00	0.00	20,218.00	12,849.00	77,067.00	68,713.00
5	INESC PORT	10.00	50,000.00	0.00	24,787.00	14,963.00	89,750.00	80,021.00
6	QMUL	8.50	53,805.00	0.00	21,580.00	15,077.00	90,462.00	80,661.00
7	BMAT	7.50	37,500.00	0.00	20,051.00	11,510.00	69,061.00	61,579.00
Total		68.50	366,205.00	0.00	169,314.00	107,113.00	642,632.00	573,000.00

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

2. Project acronym

Use the project acronym as given in the submitted proposal. It cannot be changed unless agreed so during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

53. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

54. Type of activity

For all FP7 projects each work package must relate to one (and only one) of the following possible types of activity (only if applicable for the chosen funding scheme – must correspond to the GPF Form Ax.v):

• **RTD/INNO =** Research and technological development including scientific coordination - applicable for Collaborative Projects and Networks of Excellence

• **DEM =** Demonstration - applicable for collaborative projects and Research for the Benefit of Specific Groups

• **MGT =** Management of the consortium - applicable for all funding schemes

• **OTHER =** Other specific activities, applicable for all funding schemes

• **COORD =** Coordination activities – applicable only for CAs

• **SUPP =** Support activities – applicable only for SAs

55. Lead beneficiary number

Number of the beneficiary leading the work in this work package.

56. Person-months per work package

The total number of person-months allocated to each work package.

57. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

58. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

59. Milestone number

Milestone number:MS1, MS2, …, MSn

60. Delivery date for Milestone

Month in which the milestone will be achieved. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

61. Deliverable number

Deliverable numbers in order of delivery dates: D1 – Dn

62. Nature

Please indicate the nature of the deliverable using one of the following codes

R = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

63. Dissemination level

Please indicate the dissemination level using one of the following codes:

• **PU =** Public

• **PP =** Restricted to other programme participants (including the Commission Services)

• **RE =** Restricted to a group specified by the consortium (including the Commission Services)

• **CO =** Confidential, only for members of the consortium (including the Commission Services)

• **Restreint UE =** Classified with the classification level "Restreint UE" according to Commission Decision 2001/844 and amendments

• **Confidentiel UE =** Classified with the mention of the classification level "Confidentiel UE" according to Commission Decision 2001/844 and amendments

• **Secret UE =** Classified with the mention of the classification level "Secret UE" according to Commission Decision 2001/844 and amendments

64. Delivery date for Deliverable

Month in which the deliverables will be available. Month 1 marking the start date of the project, and all delivery dates being relative to this start date

65. Review number

Review number: RV1, RV2, ..., RVn

66. Tentative timing of reviews

Month after which the review will take place. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

67. Person-months per Deliverable

The total number of person-month allocated to each deliverable.

B1. Concept and objectives, contribution to the coordination of high quality research, quality and effectiveness of the coordination mechanism and associated work plan

B1.1 Concept and project objectives

Having matured over a period of 10 years, the field of Music Information Retrieval (MIR) has centered primarily on the analysis of sound for the purpose of more efficient search and faster access to digital collections of recorded music. The advent of web-mediated social networks has led to the evolution of music networks and numerous music-related communities. This has created a dynamic global market for digital music and collateral products and services with significant challenges and huge opportunities for exploitation. For Europe to leverage its position as a world leader in music creativity, production and mobile distribution, a programme of digital music search technology RTD is needed in order to ensure coherent targeted support for innovation and underpin competitive strategies for maintaining European excellence.

As a core music search RTD area, MIR has recently permeated into the music industry and is gaining increasing momentum with notably successful exploitations of MIR search results which have started to revolutionise the way music is produced, stored and marketed. Examples of this include the success of EU music companies such as Last.fm, Shazam, BMAT and Slicethepie, who mostly rely on algorithms developed by EU academic music research centres. These services have generated a growing audience reported to have increased from 75 million in May 2010 to over 100 million by December 2010 [Shazam, 2010]. The EU music revolution however is still in the making: the full potential of the field has yet to be explored or exploited. Ready adoption of MIR by EU music industry is still trailing behind the rapidly evolving US commercial MIR initiatives, most of which are taking advantage of EU MIR RTD results. A dedicated EU agenda is required in order to strengthen the research-to-industry networks and ensure a highly efficient and timely technology transfer from EU MIR research centres to the EU music industry.

By expanding its context and addressing challenges such as multimodal information, multiculturalism and multidisciplinarity, MIR has the potential for a major impact on the future economy, the arts and education, not merely through applications of technical components, but also by means of evolving to address questions of fundamental human understanding, with a view to building a digital economy founded on "uncopiable intangibles" [Herrera et al, 2009]: personalisation; interpretation; embodiment; findability; community.

In the context of human networks and communities, music, as opposed to sound, is an intangible cultural construct [Wiggins, 2009b], and exists only by means of being interpreted or described. In order to provide music communities with a Quality-of-Experience (QoE), MIR needs to evolve a research strategy which incorporates other fields of study such as cognitive science, AI and cultural studies in an environment of co-creativity, and foster rich user experiences enabling a multiplicity of interpretations and the emergence of new user behaviours.

The CSA roadmap for the future of MIR would include the specification of a framework for cooperation and co-creation across academic communities and a virtual centre of excellence for music-related and MIR-relevant studies. Within this wider context we propose to refer to the field of MIR as *Music Information ReSearch* and thus widen its scope, ensuring its focus is centered on music as a cultural construct and on the quality of user experience, with greater relevance to human networks and communities.

The Roadmap for Music Information ReSearch aims to:

- leverage European leadership in music creativity, production and mobile distribution;
- build a digital economy founded on 'uncopiable intangibles': personalisation, interpretation, embodiment, findability, community;
- ensure coherent targeted support for innovation to underpin a competitive strategy for the European music industry and the future of music search;
- widen and deepen MIR - seen as Music Information ReSearch - based on music as a cultural construct with greater relevance to human networks and communities;
- provide support for multimodality, multiculturalism, multidisciplinarity, cognitive science and AI;
- enhance co-creativity in music search and discovery, and foster rich user Quality of Experience (QoE) enabling a multiplicity of interpretations and the emergence of new user behaviours.

With reference to Work Package Tables in Part A, the roadmap for MIReS proposes to deliver the following objectives:

a) Provide a meta-analysis of the discipline

Work Package 2 aims at providing a meta-analysis of the discipline by drawing from existing topics such as audio content analysis, context data analysis, user profiling, musical representations and research tools, as described in further detail in Section B1.1.1. The objective is to provide an in-depth, critical overview of past and current research trends in MIR as well as a critical reflection on the evolution of the field and on achievements and pitfalls from its beginning to today, both in terms of research findings but also employed methodologies, societal impacts and exchanges -inward and outward- with neighboring fields of science. A written report on the meta-analysis of MIR research trends, MIR benchmarking, and definition of editing structure of a web-based documentation hub is to be delivered in Month 9 and marked by Milestone MS2, to be used as reference in writing the Roadmap for the Future of Music ReSearch in Work Package 3.

b) Examine applications of MIR

With reference to Work Package 2, the objective is to examine applications of MIR in relation to search, recommendation, digital libraries, rights/copyright, sound/music production, pro-

motion, networking, education/training, robotics/AI and interactive and sonic arts. This objective is marked by Milestone MS2, following the report on the meta-analysis of MIR research trends. Detailed descriptions can be found in Section B1.1.1.

c) Address emergent contexts

The Roadmap for the Future of Music ReSearch aims to address emergent contexts such as real-time MIR, web mining, open networks, 3-d and physical environments within the context of Work Package 3, marked by Milestone MS3: the first draft of roadmap structure and basic contents, and described in further detail in Sections B1.1.2.3, B1.1.2.6 and B1.1.2.9.

d) Address major challenges

This objective aims to address major MIR challenges such as multiculturalism, the semantic gap, support to creativity, multimodal information, MIR sustainability, multi-, inter- and cross-disciplinarity. It is addressed by Work Package 3 and marked by Milestone MS3. Further details can be found in Sections B1.1.2.2, B1.1.2.4, B1.1.2.5, and B1.1.2.7.

e) Formulate research evaluation standards

This objective aims at formulating research evaluation standards for MIR as part of Work Package 3, and is marked by Milestone MS3. Further details can be found in Section B1.1.2.1.

f) Contribute to industry standards

The Roadmap aims to provide a vital contribution to the establishment of new music production and digital library management standards, as part of Work Package 3, marked by Milestone MS3. Further details can be found in Section B1.1.2.8.

g) Deliver innovative platforms

The objective is to deliver innovative platforms for co-creative MIR workshops and networks focusing on horizon-scanning and technology foresight informed by industrial representatives, service innovation visionaries and market strategy thinkers, as well as the next generations of students and digital natives. This objective is key to Work Package 5, and is reflected in the first summary of all information gathered from organised events in Month 12, Milestone MS4.

h) Involve a variety of stakeholders

The aim is to involve a variety of stakeholders from different disciplines in innovative forums such as the Academic Forum on MIR and Multiculturalism in Task 5.1 of Work Package 5. This objective is reflected in the first summary of all information gathered from organised events in Month 12, Milestone MS4.

i) Engage companies and researchers from outside the EU

The consortium aims to use established conferences such as ISMIR as platforms from which to launch discussion events on the future of music and engage companies and researchers

from outside the EU and the MIR community so as to build an international forum that can inform EU policy makers. This objective is reflected in the Special ISMIR Sessions described in Task 5.1 of Work Package 5, and reflected in the first summary of all information gathered from organised events in Month 12, Milestone MS4.

j) Engage the music industry in debates and events

The objective is to engage the music industry in debates through dedicated events organised in conjunction with trend-spotting specialists like brand-m (http://www.brand-m.biz/) and involve industry representatives in groundbreaking RTD catalyst events like the Music Hack Day (http://musichackday.org/), as reflected in Task 5.2 of Work Package 5, and reflected in the first summary of all information gathered from organised events in Month 12, Milestone MS4.

k) Ensure dissemination in industry and establish long-term stakeholder relationships

The consortium aims to ensure future visions are presented at influential music industry conferences like MIDEM, NAMM and Music 4.5; and establish long-term stakeholder relationships through dedicated research-to-industry networks. This objective is planned in conjunction with Outreach Events described in Task 4.2 of the Work Package 4 devoted to dissemination, and will be reflected in the Proposal for a Research-to-Industry Network marked by Milestone MS5.

l) Build a framework for a virtual network of MIR excellence

As a final objective, the consortium will prepare a proposal and build a framework for the establishment of a virtual network of MIR excellence connecting music researchers and theorists with industry representatives, strategists and policy makers, ensuring efficient communication and transfer of innovation to industry in the long-term, and thus continuing to inform policies beyond the lifetime of the proposal to ensure future academic excellence and EU competitiveness in the world music market. Work Package 6 is devoted to this objective and it will be defined by the Proposal for a Research-to-Industry Network, Milestone MS5.

B1.1.1 Meta-analysis themes

Most of the current research in MIR search systems tends to be quantitative-analytical and essentially reductionist, cutting up a phenomenon into individual parts and dimensions, and studying these more or less in isolation. For example in music perception modelling we develop isolated computational models of rhythm parsing, melody identification and harmony extraction, with rather severe limitations. This approach neglects, and fails to take advantage of, the interactions between different musical dimensions (e.g., the relationships between timbre, rhythm, melody, harmony, harmonic rhythm and perceived segment structure). It is likely that a "quantum leap" in computational music perception will only be possible if our research manages to transcend this approach and move towards multi-dimensional models that at least begin to address the complex interplay of the many facets of music.

"Making sense of" music is much more than decoding and parsing an incoming stream of sound waves into higher-level objects such as onsets, notes, melodies and harmonies. Music is embedded in a rich web of cultural, historical, commercial and social contexts that influence how it is interpreted and categorised. That is, many qualities or categorisations attributed to a piece of music by listeners cannot solely be explained by the content of the audio signal itself. It is thus clear that high-quality automatic music description and understanding can only be achieved by also taking into account information sources that are external to the music. Current research in MIR is taking first cautious steps in that direction by trying to use the Internet as a source of "social" information about music ("community metadata"). Much more thorough research into studying and modelling these contextual aspects is to be expected.

The Meta-analysis of MIR will provide a critical assessment of the discipline through the examination of thematic areas relevant to music search and discovery, and lay the foundations for redirecting the discipline in line with the roadmap objectives. Most thematic areas to be examined relate to methods of extracting both low-level and high-level music descriptors for the purpose of faster and more efficient music media searches of both music audio and music video files, and in the context of multimedia systems with greatly enhanced user experiences and faster, automatized results in real time (relating to EU Objective ICT-2011.1.5 RTD target outcomes "c"). Themes listed under 1.1.1.8 (Collaborative instruments), 1.1.1.10 (Web Mining and context-aware systems), 1.1.1.11 (Multimodal Information), 1.1.1.12 (Music performance models, visualisation, virtual instruments & orchestras), 1.1.1.17 (Interfaces for MIR), 1.1.1.18 (Interactive and sonic arts) and 1.1.1.19 (Generative 2D and 3D sounscapes) address also mobile, context-aware devices and a mixture of tangible and screen-based, real and virtual interactive worlds (relating to EU Objective ICT-2011.1.5 RTD target outcomes "b").

B1.1.1.1 Audio content analysis (ACA)

A large part of current research in MIR search systems is still devoted to the extraction of parameters using signal processing algorithms, which we refer to as audio content analysis (ACA). While not all information can be extracted using ACA (because of the current limitations of signal processing algorithms and because not all information is inside the audio sig-

nal; for example no social, cultural or context information) ACA is often considered as an objective way to extract MIR parameters.

ACA aims at extracting specific parameters from the audio content: mid-level parameters (such as pitch/multi-pitch, beat/downbeat, chords, key, tempo, singing quality) or high-level parameters (such as structure, genre, mood, user-tags or similarity).

Algorithms then mostly rely on a signal processing part (extraction of features) and a machine learning part (modelling the information).

Today, most ACA algorithms either focus on the mid-level or on the high-level parameters. For the latter, the high-level parameters are usually estimated directly from the audio signal without links to the mid-level. Very few attempts have been made to explain the high-level parameters by a combination of estimated mid-level parameters (such as explaining the rock genre by a specific combination of drum patterns and vocal quality). This makes the estimation of high-level parameters most of the time a black-box.

The first goal of the meta-analysis will be to:

- summarize the different trends used for the signal processing and for the machine-learning part of ACA system; and
- summarize exiting links between high-level and mid-level information in today's algorithms.

Often, elements coming from music-theory or from perception (such as outputs of perceptual experiments) are introduced in the first or the second stage of ACA systems. Also, ACA for MIR applications often uses algorithms inspired from the speech community (MFCC or HMM). However today, MIR, music-theory, perception and speech community are well-separated communities. The same is true for the still-image and video community.

The meta-analysis of the MIR should:

- define how elements from speech, music-theory or perception are currently introduced into ACA for MIR;
- consider the parallels between MIR and speech, still-image and video content analysis.

While the list of parameters to be extracted from an audio signal is still theoretically open, it tends to be restricted by the ability to evaluate the performances of the related algorithms. Often, research in a specific field is only started when test-sets are available (this is the example of chord recognition) which creates a chicken and egg problem. Works performed by the IMIRSEL team, the MIREX annual algorithm evaluation, is a great income to the MIR community but at the same time tends to focus the domain only on a restricted set of parameters. While algorithms, evaluation framework and annotated test-sets exist in most fields today, a precise definition of what is supposed to be estimated is still missing. This lack of clear definitions is one bottle-neck for the future evolution of ACA in MIR (examples of this are precise definitions of music structure or music similarity).

The meta-analysis of MIR should:

- summarize the current set of parameters estimated and summarize the proposed definitions for them;

- propose suggestions for promising MIR parameters which do not currently have test-sets associated.

B1.1.1.2 Musical representations

While nowadays MIR algorithms mostly focus on audio content analysis or on information aggregated by users over social networks or by professionals over dedicated communities (given their large extent and accessibility), historically MIR is linked to music theory and musicology, therefore to symbolic music. Current MIR algorithms tend to forget this component which is under-represented in current contributions to the field. One of the specificities of symbolic music research in MIR is the ability to create abstract models of musical structures, in the form of a second level of modelling based on symbols, themselves based on relevant audio descriptors.

The goal of this part of the meta-analysis will be to:

- summarize works in symbolic music related to MIR estimations (such as symbolic algorithms equivalent to the ACA beat-tracking or structure estimation performed in symbolic music [Meudic, 2004; Lartillot, 2004; Nouno, 2008]);

- summarize work making bridges between music-theory and ACA (such as used by [Mauch and Dixon, 2010; Papadopoulos and Peeters, 2010] in chord recognition).

B1.1.1.3 Identification of source and transmission parameters

While MIR algorithms usually deal with the description of music as a whole emitted object, recent trends focus on the estimation of the generative parameters of the music (estimating the sources of the signals) and on the parameters of the transmission channel.

Estimation of the source parameters often corresponds to the assumption of the use of a specific physical model that has produced the sound. In this case, model inversion [Hélie, 2008] can be used to estimate the model parameters (such as the lip pressure of a trumpet player). Another strategy to perform this relies directly on MIR algorithms. Given a database annotated into source parameters, MIR parameters (such as centroid or MFCC) are used to match a given sound to the database items and get its source parameters from it [d'Haes and Rodet, 2003].

Estimation of the Effects applied to a source signal (such as estimating the distortion or chorus parameters) has also been given attention recently [Stein, 2010]. The goal is here, given MIR observations, to estimate the whole chain of processes applied to a source sound.

With the development of audio rendering techniques, a special focus has also been made on the estimation of the parameters of physical environments (room geometry, reverberation time) [Baskind, 2003]. Spatial audio coding also aims at estimating the location of the sources in the physical environment with the goal of extracting them [Gribonval, 2008], replacing them or changing their location.

B1.1.1.4 MIR applications for audio and music generativity

While MIR algorithms are often associated to indexing applications (hence information search), its use for music creation and generativity has become increasingly more important. The emergence of new applications evidence the potential impact of MIR search for music and audio production: whereas the vocabulary of traditional music relies on well-defined categories of the sound world (pitch, loudness, temporal structures, playing modes), audio descriptors bring complementary dimensions in the description and production of sound material that composers tend to integrate in their formalization process of music.

Examples of these applications are:

- the Catart system (Real-Time†Corpus-Based Concatenative Synthesis) which allows, using MIR descriptions and representations, for real-time music creation. Another example of this is the collaborative FreeSound project allowing access to millions of sounds for creation;

- real-time generative music algorithms using symbol sequences models (LZ and Oracle Factor algorithms) learned from actual performances; the symbol definitions can rely on extended descriptions of polyphonic aggregates including audio descriptors; these techniques (cf the OMax System) bring new applications for computer-assisted improvisation and music generation;

- computer-aided orchestration, relying on databases of audio samples (all possible notes of all instruments) and providing the best combinations (aggregations) of individual sound sources for matching a given target specified by the composer.

MIR algorithms are also very common for real-time music interaction: score-following allows a computer to follow a performance given a score; gesture following (which makes use of MIR algorithms applied to sensor signals) allows a computer to follow a performer using sensors or video. As a proof of this increasing interest, a new standard named GDIF (Gesture Description Interchange Format) is currently under development in order to store MIR information for music creation and generativity.

B1.1.1.5 Support to creativity

MIR research has mainly focused on topics related to accessing information, and less on the creation of new information in real-time, for aiding creative processes. Current research results are however opening up new possibilities related to musical creativity. For example new trends in MIR are showing the potential of audio content processing as a tool to prepare material for the creation of new music. A musician, either a performer or a composer, has to handle large quantities of information, being scores, recordings, or other kinds of music information. The use of MIR technologies specially designed for this type of task can assist the creative process of the musician.

B1.1.1.6 Multiculturalism

Current information technologies do not reflect the world's multi-cultural reality. It could be argued that we are imposing the paradigms of our market-driven western culture and that current IT advances can only facilitate the access of a small part of the world’s information to

a small part of the world's population. Most information technology research is being carried out with a western centered approach by means of data and user models based on the market-driven paradigms of the last few decades. Our current domain-specific computational data models, our machine learning algorithms used in data retrieval tasks, our user interfaces, and our user profiling approaches are all clearly culturally biased. This fact is quite evident in music, since, despite the world's richness in musical cultures, most of the music retrieval tools just work on western commercial music.

B1.1.1.7 Music education and training

Music education has been one of the targets of the developments of new computer technologies for more than 40 years. However the impact has been quite small. Music is still centered around the master-pupil private meeting. Current research studies in gesture and audio analysis have shown the potential that it can have in assisting the music learning process. The huge popularity of music video-games offers an opportunity for skill improvement and talent-building around music. Previous attempts to use digital signal processing technology for assisting musical training were generally dismissed. Recent integration of audio analysis techniques with the world of professional music training appears to be laying the foundations of a new discipline that combines education and entertainment. BMAT, in collaboration with the consortium partner UPF-MTG, has successfully launched the first version of a product that is capable of automatically evaluating singing voice skills without any reference. The product targets the so-called edutainment market and has been used as a virtual judge in several singing contests worldwide.

B1.1.1.8 Collaborative instruments

Music is a social and collaborative communication process. Complex phenomena like music exploration require the use complex interfaces, but interfaces that can be of use to both novel and advanced users. The recent work on table-top interfaces and specially the work on the *Reactable* as a musical interface [Jordà et al., 2007] has given a good starting point for the development of interfaces that can be of use for the exploration of music [Julià and Jordà, 2009; Roy et al., 2004]. Tabletop interfaces favor multi-dimensional and continuous real-time interaction, exploration and multi-user collaboration. They have the potential to maximize bidirectional bandwidth while also contributing to delicate and intimate interaction, and their seamless integration of visual feedback and physical control allows for more natural and direct interaction.

B1.1.1.9 Artificial Intelligence (AI) & Machine Learning

Artificial Intelligence (AI) and machine learning are fundamental technologies underpinning the field of MIR. Given the large amounts of (often low-level - e.g., audio) data to be interpreted, machine learning is the only feasible way of identifying higher-level patterns and concepts in these data and describing the data at a 'semantic' level. While there has been substantial research on automatic characterisation of music in terms of musical concepts or user-centered tags, even more abstract or supposedly 'intangible' concepts are now coming into the focus: in AI, there is a growing interest in topics such as "emotion", "expressivity" and "creativity". Evidently, these are of central interest to the field of MIR. This new research trend in AI should be closely monitored and exploited; at the same time, it may produce new

opportunities for MIR researchers to publicise their work - and the whole field of MIR - in the AI literature and scientific community.

B1.1.1.10 Web Mining and context-aware systems

While research on audio signal processing and music content analysis is progressing at a steady rate, there is now a strong shift in the MIR community towards identifying and exploiting alternative sources of information related to music: the Web at large, social media, user behaviour, usage context (especially in the context of mobile and location-aware devices), etc. Not only can these provide additional information about the context of a musical application; they also enable entirely new kinds of applications and services inconceivable even a few years ago. An analysis of the potential of social media and mobile, context-aware devices will be an important task for the planned roadmapping enterprise. A special focus should be put on the social connectivity potential of these new media and devices, and the possibilities to transform music consumption and production from a single-user experience into a social experience or, even better, a collaborative activity with a new level of quality.

B1.1.1.11 Multimodal Information

An important challenge for the MIR field to leverage its full potential will be to leave the music-only "niche" (which, admittedly, is a large one) and open up to multi-modal media and applications. Music and audio are an important part of videos, movies, games, Web applications, mobile apps and services, etc. MIR researchers should strive to create a number of multi-media applications or prototypes that demonstrate the potential of high-quality MIR research. Our impression is that the multi-media industry still underestimates the importance of (good) music as an integral part of its products. It will be the task of MIR practitioners to convincingly demonstrate that MIR research can produce substantial added value (and a task for the MIR Roadmap to point out ways of doing so).

Also somewhat neglected and under-estimated is the potential of MIR technologies for artistic applications. For example, performances on the *reacTable* tangible musical interface (developed by consortium partner UPF-MTG [Jordà et al, 2005]) by a variety of artists are highly successful and reach an audience of literally millions via portals such as YouTube. To further develop this potential, MIR will have to strengthen its connections into the world of the arts. First steps into this direction can be seen, e.g., in the orientation of recent SMC (Sound and Music Computing) conferences. This will have to be strengthened and institutionalised.

B1.1.1.12 Music performance models, visualisation, virtual instruments & orchestras

Both audio synthesis, modelling and control technologies and our understanding (and models) of parameters involved in musical performance have reached a level of sophistication where it is now becoming realistic to consider fully virtual musicians and orchestras. Especially the latter are or commercial relevance, as many small music theatres, video and film producers, advertising agencies, game designers etc. cannot afford to hire real orchestras for their productions. There are extremely realistic, high-quality instrument sample libraries available; what is missing are technologies for rendering music such that it sounds "human", expressive, lively, realistic. Based on latest research on performance models, performance visualization, and performance control, the field of MIR should now take the next step and develop technologies for intuitive characterization, control, and partial automatisation of ex-

pressive performance rendering. Moreover, there is a potential market for new musical instruments or, more generally, new interfaces for interacting with music contents and musical partners (real or virtual musicians) in real time, possibly even remotely over the Web. Again, this potential will be further explored in the MIR Roadmap.

B1.1.1.13 Research tools and sustainability

One of the main factors limiting the impact of research tools is their dependence on particular computer platforms which rapidly become obsolete. Other factors include a lack of understanding of software engineering principles, poor documentation, and the view that research software is "private" and only has to work for the author (although in most cases the research is publicly funded). In order to increase research productivity, it will be necessary to engage the research community, including funding councils and policy makers, and work with them to transform the norms and expectations so that sustainable, reusable research software becomes part of the research culture in MIR. The roadmap will identify and promote best practice in this area, such as the project Sustainable Software for Audio and Music Research (soundsoftware.ac.uk).

B1.1.1.14 User profiling and context analysis

Future users of digital services will "require services to be contextualized, personalized, `intelligent' and highly differentiated to their specific needs" (British Library, 2020 Vision). This presents a significant challenge for the MIR community to develop a deep understanding of user needs and be able to respond pro-actively to users' patterns of activity. For example, a music search system could infer user intentions from query sequences, such as the level of specificity with which search terms are being employed, which is likely to vary greatly between an expert musicologist and a casual listener. Likewise the context of a search (e.g. ethnomusicological field recordings vs top-10 singles) also implies likely patterns of usage to which a system could tailor its output (see also 1.1.1.10).

B1.1.1.15 Applications for digital libraries

Despite the increase of storage sizes and transfer speeds, digital libraries face new challenges. These include complexities of metadata classification, audio segment search scalability issues, and inconsistent or confusing user interaction and interfaces. In order to address these challenges, applications for digital libraries need to evolve to include state of the art cloud storage and computing, automatic metadata generation, descriptor propagation, audio signal search, duplicate detection and audio fingerprinting.

B1.1.1.16 Rights management

Rights management, intended as the management of the rights attached to a certain music work, is a topic much discussed within the digital music landscape. The emergence of collaborative and user-generated media calls for innovative approaches to technologies and architectures available for tracking, reporting, collecting, managing and distributing rights. MIR technologies play a crucial role in this renewal, offering solutions that scale and handle tasks which would otherwise be inaccessible. As an example, cover detection technologies are required to develop a solution for video repositories such as YouTube in order to clear the rights of user-generated covers by copyrighted compositions.

B1.1.1.17 Interfaces for MIR

Over the past 10 years the MIR community has witnessed a marked evolution in the development of interfaces for music search and discovery: from early innovative approaches to visually mapping sound clusters in *Islands of Music* [Pampalk, 2001]; the launch of interfaces for collaborative projects such as *The Freesound Project* in 2005 (http://www.freesound.org/); the influence of tangible tabletop interfaces for new musical experiences like the *Reactable* [Jordà et al, 2005]; and spatial audio MIR search environments for social networking in real time in *decibel151* [Magas et al, 2009]. New challenges are presented by the changing landscape of networked media systems, including location-based devices, web-mediated social networks, dynamic context-driven user communities and open environments. An assessment of state-of-the-art music search interfaces is required prior to mapping out an agenda for the future of interface design for music search and discovery.

B1.1.1.18 Interactive and sonic arts

MIR offers new opportunities for location-based, immersive discovery experiences within the field of interactive and sonic arts. For example, the Interactional Sound and Music group in the Centre for Digital Music at Queen Mary University of London explores new ways of encountering sound from interactive art to real time data sonification, focusing on collaborative creativity and collectively engaging sound experiences. The advent of open networks and location-tagged devices is contributing to a rapid expansion of this field and we are witnessing an impact on the design of novel tangible and location-based music search and discovery systems (see 1.1.1.17). An overview of recent interactive and sonic arts projects is recommended in order to assess their relevance for the future of music search and discovery.

B1.1.1.19 Generative 2D and 3D soundscapes

Soundscape design is beginning to receive considerable attention in virtual environments and interactive media developments. Current trends (e.g. online communities and games, web and mobile technologies and augmented reality tourism platforms, 2D and 3D virtual cartography and urban design) require new paradigms of soundscape design and interaction. Audio is a crucial element for building immersive virtual environments. In this context, the principal role of audio is the creation of a sound ambience or soundscape. During the last decade, several technologies emerged which can provide more realistic and interactive spatial audio content. Among those, real-time synthesis techniques (e.g. physical models, sound ambience textural synthesis) and spatial audio reproduction systems (e.g. 5.1, Ambisonics) are beginning to evolve within the field of MIR and play an important role in the automatic generation of soundscapes.

B1.1.2 Roadmap for MIReS challenges

With reference to the meta-analysis of the MIR discipline the objective is to provide a Roadmap Document for Music Information ReSearch which will outline outstanding research issues, provide horizon scanning and technology foresight, and assess market futures for related services. The document would focus on addressing MIR challenges in the context of user-centric, both semantic high-level and audio signal low-level music media search, with dynamic modelling of music data and networked music systems (relating to EU Objective ICT-2011.1.5 RTD target outcomes “c”) and encourage consideration of real-time and real-world interactive contexts, devices and open environments (relating to EU Objective ICT-2011.1.5 RTD target outcomes “b”). While the exact list of topics, trends, and challenges to be covered is not yet known (identifying these will be part of the roadmapping process in WPs 2 and 3), the following is a collection of issues that will definitely need to be addressed.

B1.1.2.1 Research evaluation standards for MIR

The field of MIR has seen a decade of growth, deepening, and maturation. Conference series like ISMIR (the International Society for Music Information Retrieval Conference) have established a consistent level of scientific quality, and a well-connected research community. Moreover, the annual Music Information Retrieval Evaluation eXchange (MIREX) attached to the ISMIR conferences, in which state-of-the-art MIR methods are empirically evaluated and compared on real-world test data suites, has contributed much to establishing a certain research evaluation standard - at least as far as the technical evaluation of MIR computer algorithms is concerned. With the envisioned broadening of the field of MIReS, the notion of comprehensive research evaluation standards needs to be reconsidered and possibly further developed along several dimensions: (1) from small to medium-sized to very large data sets representative of the scale of the digital music world; (2) from high-quality audio to musical material as it appears and has to be dealt with in many real-world settings (e.g., live on-stage performances etc.); (3) from pure classification or pattern recognition tasks to more general "music understanding" scenarios, and from off-line to on-line, real-time music understanding and tracking; and possibly (4), from the "simple" evaluation of the performance of specific algorithms, towards a broader evaluation and assessment of the utility, focus, strategic orientation, social relevance etc. of MIReS research in general. An in-depth discussion of these issues will be a central part of the roadmapping effort.

B1.1.2.2 MIR sustainability

The issue of sustainability of MIR research outputs is closely related to the Reproducible Research movement, which maintains that traditional methods of disseminating research outputs, e.g. in the form of printed journal publications, are no longer sufficient for research in computational sciences. Unlike theoretical research, where e.g. a mathematical proof can be contained in a printed paper, computational algorithms are often so complex, and their parameters so many, that a published description is often insufficient for other scientists to reproduce the results. Making software and data available to other researchers (itself a difficult issue due to IP and copyright restrictions) might not be sufficient to solve this problem, as software and hardware dependencies complicate the transfer of executable code, so that

software maintenance, even within an institution, is non-trivial. These issues will need to be overcome to enable a continuing focus on innovation in European MIR research.

B1.1.2.3 Open networks and environments

The EU recognises openness as a factor which will enable the digital economy to become the engine for creating more growth and jobs [EU, 2008]. In the context of open networks, music search and discovery is subject to both new opportunities and challenges. The advent of open networks of electronically tagged objects and devices in open environments presents opportunities for context-driven location-based music media and information searches linked to live events and performances, as well as collaborative co-creative real and virtual 3D music environments and social recommendation networks. The Roadmap will include an agenda for future music search and discovery RTD programmes focusing on open networks and environments, and addressing challenges such as real-time location-based music descriptors, electronically tagged music objects and networked tangible music interfaces.

B1.1.2.4 Cross-, inter-, and multi-disciplinarity

The subject of "music", although a common term in everyday life, takes in fact a different meaning when examined by researchers from traditional disciplines such as Mathematics, Physics, Computer Science, Signal Processing, Psychology, or Neuroscience, etc. Indeed, practitioners from different disciplines choose music as their main object of research, and follow different methodologies, assumptions, perspectives, and in general, different ways of doing research. Although the fact that different disciplines are active should be seen as a potential advantage for MIR, the risk exists of fragmentation of the field, and it is not always evident for researchers to appreciate different perspectives on their object of study, and to be willing to accept collaborating in new challenges for which they may not completely comprehend the methodologies and tools. The Roadmap will make a review of past efforts in cross-disciplinary studies of MIR, examine case studies of RTD results from inter- and multi-disciplinary research projects and recommend good practices for making cross-, inter- and multi-disciplinarity an effective strategy for future improvements in the field.

B1.1.2.5 Multiculturalism and support to creativity

There is a clear trend in MIR towards a multicultural approach. Tzanetakis et al. [2007] introduced the concept of computational ethnomusicology to refer to the use of computer tools to assist in ethnomusicological research. In their paper, they provided some ideas and specific examples of this type of multidisciplinary research and since then we have seen an increasing number of research articles related to this topic. For instance, according to Cornelis et al. [2010], the percentage of papers on this area at the annual ISMIR conference has increased from 4.8% in 2002 to 8.1% in 2008. Most of these articles study how the analysis of different musical facets such as timbre/instrumentation, rhythm, tonality, or melody can be used for non-western music. There are also some general studies on the link between music and geography [Gómez and Herrera, 2008; Gómez et al, 2009].

Despite the huge cultural trend towards a musical monoculture there are a few surviving robust music cultures with a classical tradition, in China, India, Turkey, Indonesia, or in the Arab world, that form a counterpoint to western domination. A few of these musics have excellent musicological and cultural studies available, they also maintain performance practice

traditions and they exist within real social contexts; thus some of these traditions can be used as a basis on which to build non-western information models and thus as a way to open up the western-centered information paradigms. If we are able to describe and formalize the music of these cultures we should be able to open up the western-centered information models in a way to better capture the richness of our world's music. By means of machine learning, we can develop more flexible analysis techniques that adapt themselves to the diversity of music styles and user preferences within these cultures. We can design music retrieval systems that take into account their non-western tuning systems, singing techniques (including ornamentation), and instruments. We can model their musical context, be it ceremonial, spiritual, or representative, in a semantic network and by means of dynamical systems. We can also create digital instruments, interfaces, search engines, and tutoring systems that can help keep this precious musical heritage alive. The challenge is huge, but if we succeed, the impact will be great in both Computer Science research and Cultural Production studies.

B1.1.2.6 Interfaces for multiple interpretations and new user behaviours

With the evolution of open networks and social clusters and the need for personalisation, interpretation, embodiment, findability and community, interfaces for music search and discovery need to cater for a multiplicity of new contexts and interpretations. Recent research in Human-Computer Interaction encourages methods derived from open-ended practices, products and spaces where multiple, potentially competing interpretations can fruitfully coexist [Sengers and Gaver, 2006]: defining basic level functionalities but leaving medium and high level open to interpretation; providing a space for interpretation around a defined topic; blocking preconceived notions and encouraging reinterpretations; allowing the gradual unfolding of interpretations; opening the system's structure for reinterpretation and allowing for ambiguities. Research in HCI for 3D domestic environments has shown how computational technology can meaningfully serve curiosity and exploration, and encourage “ludic” explorations of objects, spaces and content [Gaver et al, 2007]. In order to cater for the needs of dynamic communities and evolving networks, as well as context-driven, location-based and spatially-tracked objects and devices, the design of interfaces for MIR needs to evolve a mixture of real and virtual, 2D and 3D music search and discovery environments which encourage multiple interpretations and new user behaviours.

B1.1.2.7 Semantic gap and multimodal information

There is still a wide gap between what can currently be recognized and extracted from music audio signals and the kinds of high-level, semantically meaningful concepts that human listeners associate with music. Current attempts at narrowing this “semantic gap” via, for example, machine learning, are only producing very small incremental progress. One of the fundamental reasons for this lack of major progress seems to be the more or less strict bottom-up approach currently being taken, in which features are extracted from audio signals and ever higher-level features or labels are then computed by analysing and aggregating these features. This inadequacy is increasingly being recognised and the coming years are likely to see an growing trend towards the integration of high-level expectation (e.g., [Huron, 2006]) and (musical) knowledge in music perception models. This, in turn, constitutes a fruitful opportunity for musicologists, psychologists and others to enter this field and contribute their valuable knowledge.

B1.1.2.8 Establishment of music production and digital library management standards

a) Sustainability of music creation

Contemporary music creation relies for a great part on music production tools (such as computer music software). These obviously rely on specific computer technologies which evolve over time. The preservation of contemporary music (the ability to recreate a piece of music) therefore necessitates the preservation of the production tools. Following the works started in the CASPAR, ASTREE or GAMELAN projects, the project will take care of sustainability of the future developments to be made in the domain. To this end, the project will pursue the examination of applications based on existing standards (such as OAIS, Cidoc-CRM, or W3C standards as RDF, OWL or ISO standard as MPEG-7) in the domain of long-term preservation, as well as in the domain of interoperability. This will allow identifying on one hand the improvements to be made to current practices in order to ensure better long-term preservation and interoperability, and on the other hand the needed improvements to the standards in order to cope with specific needs of the Computer Music and Music Information Retrieval community.

b) MIR integration and interoperability in digital libraries

Since the mid '90s, libraries have progressively moved to digital and/or online accessibility. As an example, Ircam mediatheque library allows the consultation of music items through bibliographical, disco-graphical, audio and video items accessible online. Today, content aggregation of library catalogues (such as the one proposed by the Musique Contemporaine site: www.musiquecontemporaine.fr) facilitates the access to individual music libraries. This necessitates the use of shared protocol (such as OAI-PMH) and shared description standard. The results of MIR research are also progressively being introduced into online libraries. An audio summary algorithm has for example been used to generate the audio-snippets of the Ircam mediatheque catalogue. Ircam AMP Team has also developed many new concepts and interfaces to improve listening (Ecoute augmentée, Ecoute commentée) using technologies such as score alignment. In the recent Live TV broadcast of the Cité de la Musique, such a commented-listening is proposed for the large audience: synchronizing video concerts with libretto, scores and comments. Because of this increasing trend, the roadmap on MIR should include an overview of recent trends and sharing formats used in the library domain.

B1.1.2.9 Future industry applications

The approach to define future music search and discovery applications emerging from MIR will be based on the exploration of 3 main themes and their overlapping areas: 1) software and hardware tools for search and discovery; their impact on ways in which music can be created or managed; 2) content: music works including songs, sound effects and voice recordings; and 3) community: the people creating or operating the tools, the users listening to the content. As an example, an overlapping area would be content & community where we will explore collaborative composition and crowd-sourced repositories such as *FreeSound*, a project by the consortium partner UPF-MTG.

B1.2 Contribution to the co-ordination of high quality research

The roadmap itself (the central deliverable of WP 3) is expected to contribute to a focusing and concentration of research efforts in the field of MIR. By offering visions for the next decade, identifying corresponding research challenges, and proposing evaluation standards for the field, the roadmap is expected to become a standard reference work for large parts of the MIR research community, much like the *Roadmap for Sound and Music Computing* (http://smcnetwork.org/roadmap) - a result of the EU FP6 FET - Open Coordination Action *Sound to Sense, Sense to Sound* (S2S2) - did for the SMC community. We are aware of cases where research groups have taken the S2S2 Roadmap as a basis and starting point for (re-)defining their research focus.

We expect a number of current EU-funded projects to benefit from the initiatives of the MIReS Coordination Action including any media search projects which include a music component (see Section 3.1). Upon advice and guidance by the EU Commission it would be possible to organise a MIReS-related EU Concertation Meeting in view of creating an EU Music Search Cluster. Projects which would benefit from such an event include Sounds of Europe and SIEMPRE projects with our partner UPF-MTG and PROMISE run by our colleagues at the University of Padua, as well as the currently active Coordination Actions such as NEXTMEDIA (http://www.gatv.ssr.upm.es/nextmedia/index.php) and CHORUS+ (http://www.ist-chorus.org/).

The community would also benefit from the extensive networking achieved both through dissemination efforts described in Work Package 4 and through dedicated events, forums and workshops proposed in Work Package 5, which would include international researchers, policy advisors, industry representatives, media theorists, students and digital natives, service innovation visionaries, market strategy thinkers and representatives from other relevant fields of study such as cognitive science, musicology and social science.

B1.3 Quality and effectiveness of the coordination mechanisms and associated work packages

B1.3.1 Overall strategy of the work plan

The work plan has been divided into distinct Work Packages, each addressing an essential component area of the Coordination Action. Detailed description of each Work Package is provided in Part A.

- Work Package 1 outlines a plan for effective management of the Coordination Action and the related reporting strategy. More about the overall project management strategy can be found in section B2.1.

- Work Package 2 focuses on the Meta-Analysis of the MIR Discipline, and is divided into distinct thematic areas (see section B1.1.1), each one handled by a consortium partner. Work Package 2 has direct influence over the content used in Dissemination (WP4) and in laying the foundations of the writing of the Roadmap for Music Information ReSearch (WP3).

- Work Package 3 focuses on creating the Roadmap for Music Information ReSearch covering outstanding research issues, horizon scanning & technology foresight and market futures for related services (see section B1.1.2). It is built upon the report generated by WP2 in Month 9 and on the knowledge gathered and generated during the events organised by Community Co-creativity and New Knowledge Generation: Hubs and Spokes (WP5).

- Work Package 4 is dedicated to the wide dissemination of knowledge about MIReS, gathered both from the meta-analysis of the disciplne (WP2) and from the Roadmap findings (WP3) and involves wiki, publications, conferences, workshops, international researchers and external stakeholders.

- Work Package 5 is devoted to Community Co-creativity and New Knowledge Generation: Hubs and Spokes, and involves members from academic disciplines, international researchers, different age groups, multicultural communities, events with EU Associate countries, and a variety of industry stakeholders. While Work Package 4 focuses on dissemination of existing knowledge, Work Package 5 has been conceived specifically in view of generating new knowledge which would aid the roadmapping process, through a series of specially organised events.

- Work Package 6 provides the framework for a network of MIReS excellence from research-to-industry in view of ensuring efficient communication and transfer of innovation to industry in the long-term and continuing to inform policies beyond the lifetime of the proposal.

Extensive experience of cooperation between consortium partners will considerably reduce kick-off arbitration and avoid delays at startup. A considerable track record of successful results through past collaboration increases the likelihood of more effective work integration among all consortium partners.

Work packages and sub-themes have been allocated to partners with the appropriate levels of experience, thus reducing any weak spots and ensuring maximum value to the delivered content. The risk of dealing with a large number of thematic areas has been considered and

themes have been allocated to consortium experts who have a track record of research in these areas ensuring maximum efficiency.

The Coordination Action relies on sufficient engagement by stakeholders in order to disseminate knowledge and influence future policies and music search RTD programmes. Insufficient involvement from stakeholders presents a risk. Advance planning and securing of participants is required by the consortium organisers of collaborative events. Engagement can be sought from the partners' extensive MIR research network and amongst members of EU research networks, such as the established SMC Network (http://smcnetwork.org/) and the currently-running Coordination Action network CHORUS+ (http://www.ist-chorus.org/), and national networks such as the Digital Music Research Network (http://www.elec.qmul.ac.uk/dmrn/).

The MIReS initiatives require contribution from carefully selected external experts and visionaries. Availability of appropriate levels of expertise for MIReS events may present a risk. The consortium will build lists of potential participants who can be drawn upon, and seek to secure involvement of selected experts well in advance, with contingency lists in case of cancellations and changes.

There is a risk of additional expenses required for particular events. Event expenses have been carefully considered and the Work Packages 4 and 5 have been configured by maximally utilising existing conferences funded from alternative budgets. In some cases the consortium has secured additional funding for particular events (e.g. see Section 1.3.3, Task 5.1) or proposed to fund workshops within externally-sponsored events (e.g. see Section 1.3.3 Task 5.2) to reduce overall costs and ensure maximum value. Alternative budgets are available as contingency.

B1.3.2 Timing of different WPs and their components

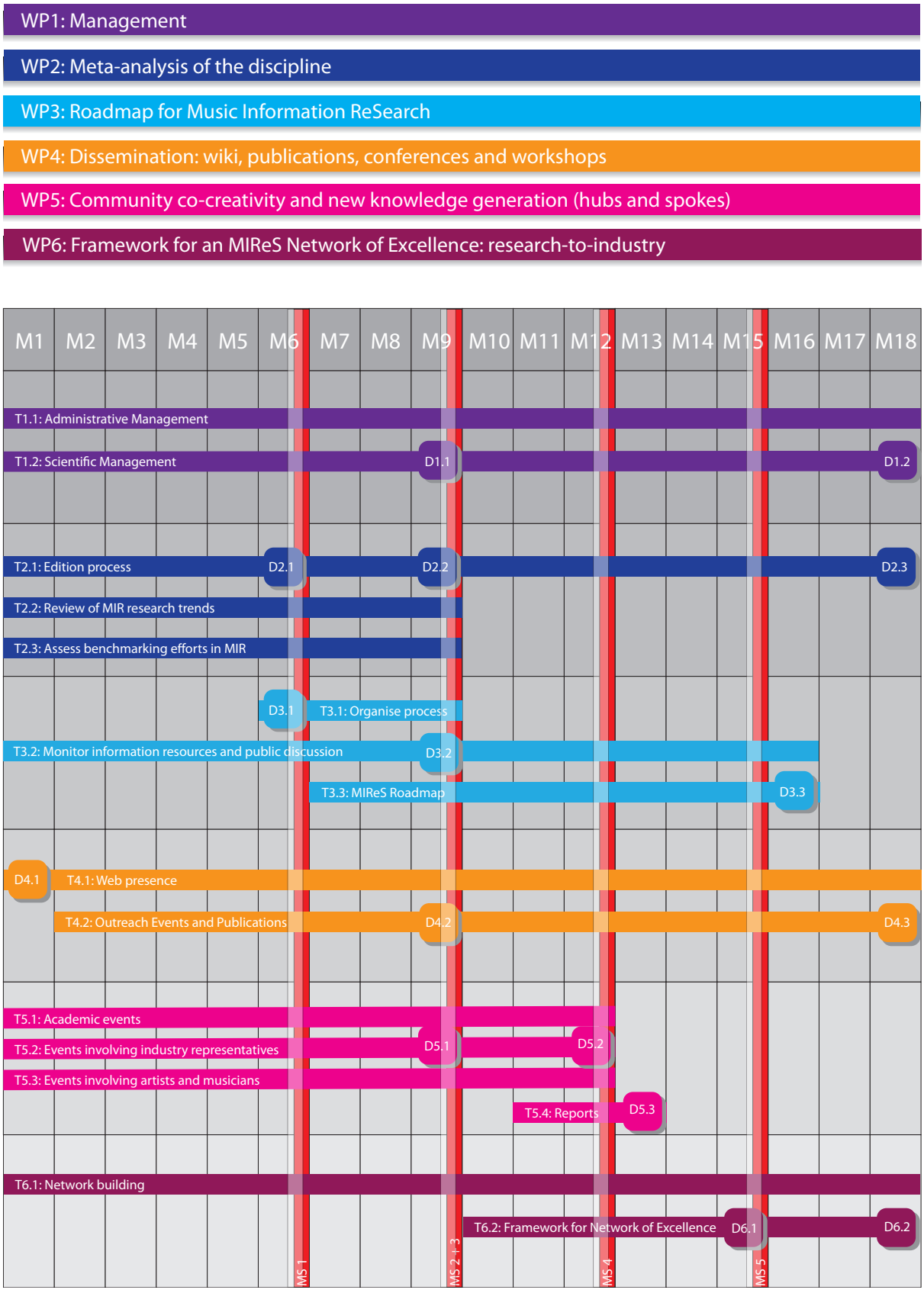


Figure 1: Timing of Work Packages

Section B2: Implementation

B2.1 Management structure and procedures

The management structure and the corresponding functions are outlined in Fig.3.

B2.1.1 Project Management and Coordination

Project Management and Coordination will be provided by UPF-MTG in conjunction with the Scientific Coordinator (STRO). UPF-MTG will carry out the financial and administrative coordination and STRO will concentrate its efforts in the scientific side with the responsibilities shared as follows:

STRO	UPF-MTG
Leadership of the management work-package (WP1) and of the whole project	Administrative interfacing with the European Community Project Officer
Organisation of the necessary Steering Committee meetings and provision of agendas and minutes	Monitoring of all administrative procedures (cost statements, progress reports, deliverables submission);
Ensuring efficient internal communication and effective coordination between the project and external organizations	Financial Administration
Coordination and management of review meetings	
Representing the interests of all partners at major events	
Disseminating project news and information	
Coordinating the preparation and distribution of all reports	

As members of the Steering Committee, UPF-MTG and STRO will function as chief liaisons with the EC Officers and Reviewers.

B2.1.2 Steering Committee

The Steering Committee will take the following action steering and implementation decisions:

- Monitoring of project progress. Detailed procedures will be agreed at the first meeting of the Steering Committee;
- Preparation of any contractual changes; where necessary, revisions to the project plan in reaction to unforeseen problems (any such change requires 2/3 majority unless otherwise stated);
- Conflict resolution.

- Decisions about handling and management of the common funds.
- Decide upon IPR issues

Extraordinary Steering Committee meetings can be invoked by any of the consortium members. Each Steering Committee partner will have one vote during decisional polls. Decisions of the board are reached by a single majority unless otherwise stated. In case of parity, the Project Coordinators have the casting vote.

B2.1.3 Work Package Coordinators

Responsibilities of the Work Package Coordinators are:

- Monitoring the creation of the deliverables and progress reports of their Work Package;
- Timely submission of deliverables in line with the delivery production schedule;
- Implementation of the objectives defined at Management Meetings;
- Assignment of tasks to Thematic Leaders;
- Evaluation of the work by Thematic Leaders.

In order to ensure cross-fertilisation of expert visions, and particularly account for views from industry stakeholders, each Work Package Coordinator has been paired up with a Lead Advisor (see B2.1.4).

B2.1.4 Work Package Lead Advisors (LAs)

Each Work Package Lead Advisor has been paired up with a Work Package Coordinator in order to strengthen coordination of the related Work Package, and ensure alternative views are incorporated and synergies identified. Ensuring these working relationships are established is vital for the following reasons:

- In Work Packages 2 and 3, the vast experience and expertise of IRCAM will complement INESC PORTO and OSKG-OFAI respectively, to ensure thorough coverage of all required topic areas and reflection of multiple approaches to the analysis and redirection of MIR academic research.
- In Work Package 4, OSKG-OFAI will ensure transfer of knew knowledge generated from the Roadmap writing to be disseminated by QMUL.
- In Work Packages 5 and 6, BMAT will ensure the Work Package Coordinators incorporate the latest industry views and directions into their industry-related events and networking agendas.

The Work Package Lead Advisors act as primary advisors to the Work Package Coordinators, though in particular circumstances (lack of coordinator's availability, for instance), Work Package Coordination can be handed over to the Work Package Lead Advisor.

B2.1.5 Thematic Area Leaders (TALs)

Complete coordination of all MIReS thematic areas will be achieved progressively through the action and reporting by Thematic Area Leaders (TALs) on catalyzing thematic groups as defined in the Work Plan. In Work Packages WP2, WP3, WP4 and WP5, Thematic Area Leaders have been carefully selected to be in charge of a thematic area according to their area of expertise. Individual areas of expertise related to thematic areas are described under Section B2.2: Individual Participants.

Thematic Area Leaders will be the core content providers and will be responsible for:

- Liaising with Work Package Coordinators re timelines and deliverables
- Delivery of content within their thematic areas

B2.1.6 External Advisors

External Advisors are individual experts independent of the project partners tasked with providing advice and information on subject areas which are outside the consortium's field of expertise and thus complement the co-creation and knowledge generation processes (see Section B2.3.1). External Advisors will be involved in the Roadmapping effort as consultants to specific thematic areas in Work Package 3, as well as contribute to special events in Work Package 5 and the creation of a research-to-industry network in Work Package 6. As it is detailed in section B2.4.2, the involvement of these independent contributors will be on a one-off basis (i.e. non recurrent).

a) From related academic fields:

- **Prof. Geraint Wiggins**, expert in Music Perception and Cognition, is Leader of the Intelligent Sound and Music Systems at Goldsmiths, University of London. Prof. Wiggins has been principal investigator on 14 nationally funded research projects and is able to advise on many areas of musical behaviour, ranging from "problem-solving" approaches to the simulation of musical skills, to simulations of the motivation behind the compositional process, performance behaviour, systems for music education and particularly the study of musical creativity through computational modelling. His interests focus on the cognitive science and psychology end of AI, and he is able to provide a valuable perspective on Music Information ReSearch from the point of view of the Digital Humanities. Prof. Wiggins will be consulted particularly on the topics addressing musical creativity in Work Packages 2 and 3, and engaged in debates in the ISMIR and Multiculturalism events in Task 5.1, WP5.

- **Prof. Atta Badii**, expert in Multimodal Media Indexing and Retrieval and Director of Intelligent Media Systems & Services at the University of Reading. Prof. Badii has has a multidisciplinary academic and industrial research experience in the fields of Distributed Intelligent and Multimodal Interactive Systems, Pattern Recognition, Security & Trust Architectures, Semantic Workflow and Knowledge Integration. He has contributed to 25 collaborative projects to date, exploring challenges such as multimodal media indexing and retrieval including semantic-collateral indexing and queries support, semantic video interpretation, pattern discovery and multi-view data mining. Prof. Badii is a valuable advisor to the MIReS

challenge addressing mutimodal information within the context of music search systems, and will be consulted as part of the roadmapping process in Work Package 3 as well as invited to contribute to academic events listed in Task 5.1, Work Package 5.

- **Prof. William Gaver**, one of the pioneers of Human Computer Interaction, heads the Interaction Research Studio at Goldsmiths, University of London and is member of the Steering Group, of the *Designing for the 21st Century* initiative by the Arts and Humanities Research Council. Prof. Gaver is known for his early work in developing auditory icons for Apple Computer and Xerox EuroPARC, helping to develop EuroPARC's mediaspace (an early audio and video communications network) and developing several experimental systems for supporting social activities over distances. In recent years Prof. Gaver has pursued practice-based research on new roles for interactive technology through a series of methods for engaging with users, which stress the value of multiple, unresolved narratives in understanding the meanings of technology. Prof. Gaver is a valuable advisor to the MIReS consortium on future interfaces for music search and discovery systems, and will be consulted on the topics of user interfaces, interactive and sonic arts in relation to Work Package 3, and invited to participate in the Academic Forum on MIR and Multiculturalism listed Task 5.1, Work Package 5.

b) From related industry SMEs:

- **Dr Mark Levy**, Research Engineer and MIR expert at Last.fm, London, holds degrees in music and musicology from Cambridge University and King's College, London, and in computer science from Birkbeck, University of London. He has published journal papers on automatic segmentation of musical audio, and on music search using a joint model of audio content and social tags. At Last.fm he has developed novel services to recommend artists drawn purely from the very long tail, to recommend similar users based on their musical taste, to generate personalised online radio streams based on users' social networks, and to correct poor music catalogue and event metadata. His experience in combining MIR and social tagging and recommendation systems will be an extremely valuable addition to the MIReS Roadmap, and as industry representative he will be invited to contribute to the events listed under Work Package 5, particularly the Music Hack Day and Trendspotting Industry Events.

- **James Sopper**, Technical Director and Strategic Project Manager, Slicethepie, UK, graduated in Aeronautics from Imperial College, London. in the past 3 years James has been in charge of the team developing music semantic technologies at Slicethepie and directed development of SoundOutSearch (www.soundoutsearch.com) and SoundOut (www.SoundOut.com) in collaboration with Universal and Sony. James is currently involved in developing an online music platform for search and discovery, which combines music semantic technologies and audio signal processing, as part of the Collaboration in Digital Industries funded by the UK Technology Strategy Board. James is able to provide valuable insights into the future of B2B music search applications, as part of Work Package 3 and will be invited to contribute to Industry events listed under Task 5.2, Work Package 5.

c) From media and broadcasting:

- **Rowena Goldman** is Strategic Partnerships Executive in BBC Research & Development, working collaboratively across academia and industry. Her background is in broadcast programme production and interactive media innovation. She won a technology innovation BAFTA for interactive radio drama 'The Dark House'. Her partnerships focus is primarily on the creative industries/arts and humanities research and their relevance to technology opportunities within BBC R&D. Rowena is a valuable advisor to the MIReS consortium on the future role of music search and discovery systems in the context of interactive media and broadcasting. Rowena will advise on the establishment of a research-to-industry network (WP6), and be invited to contribute to the Trendspotting Industry Event listed under task 5.2, Work Package 5. As one of the organisers of NEM 2011, Rowena will provide valuable guidance on the organising of the NEM 2012 workshop listed under Task 5.3, WP5.

Figure 3: MIReS management scheme

B2.1.7 Management procedures

Project Management activities will be based on to the following procedures, which will be agreed among project Partners and detailed in the Project Plan, according to ISO-9001:2000 directives. Every WP leader will be responsible for:

- Detailed project planning;
- Project monitoring and control process;
- Project deliverables reviews and validation;
- Risk and problem management;
- Change Control;
- Communication management.

The consortium will rely on regular exchange of communication and updates via digital wiki systems. A project logo will be defined and used on all official project documents. Deliverables will be submitted to the project officer by the project coordinator using formats and numbering agreed upon at the kick-off meeting.

B2.1.8 Project monitoring and control

Project monitoring and control processes allow for planning, tracing and monitoring of work progress and other events that impact the project. Main occasions for project control will be:

- Project Progress Meetings, scheduled both regularly and for special purposes. Output from meetings will be Work Progress and Risk/Problem Management Reports.
- Steering Committee meetings will be normally planned in relation to project milestones or on request of either the Project Manager or project partners.

B2.1.9 Risk management

Risk management aims to minimise factors that can be detrimental to project objectives. Risk management will be performed at all project levels and will adopt a uniform and systematic approach across project teams to:

- Identify and evaluate risks;
- Define and plan proactive and efficient actions for risk reduction;
- Start, perform and control planned mitigation activities;
- Document progress of risk management activities, and evaluate their results with continuity in order to bring needed corrections.

Duty of risk management will be shared by the Work Package Leaders and the Project Coordinators, according to their responsibility level. They will trace identified risk in the Risk Management report, describing risk probability, seriousness in terms of impact and costs, mitigation strategy, risk monitoring activities and plan of mitigation activities. A specific procedure will be defined for risk escalation from Thematic Area Leaders up to the Steering Committee level.

B2.2 Beneficiaries

B2.2.1 Universitat Pompeu Fabra - Music Technology Group (Administrative and Financial Coordinator)

The Music Technology Group (MTG) of the Universitat Pompeu Fabra (UPF) in Barcelona, part of its Department of Information and Communication Technologies, is actively pursuing research in sound and music computing technologies, with a strong focus in audio signal processing, sound and music description, musical advanced interaction and sound and music communities. The UPF-MTG staff is composed by more than 40 researchers (3 associate professors, 12 postdocs and 21 PhD students) coming from different and complementary disciplines. Some quantitative metrics representative of the UPF-MTG's research excellence are its publications, being yearly published 2 books, 11 journal articles, 47 conference papers and 2,3 PhD thesis.

The UPF-MTG funds its activity through several competitive public calls and R&D projects with companies. The UPF-MTG has been involved in several public projects; some examples are SIEMPRE (Social Interaction and Entrainment using Music PeRformance Experimentation), SAME (Sound And Music For Everyone Everyday Everywhere Everyway), PHAROS (audiovisual search across online spaces), SALERO (intelligent content for media production), etc. In terms of private R&D projects with companies, the UPF-MTG usually collaborate with its spin-offs (BMAT and Reactable), as well as with other companies such as Yamaha Research Center, Google Research, Pinnacle Systems, Steinberg, Microsoft, etc.

Contribution to the project: the UPF-MTG will be actively involved in the following tasks foreseen in the MIReS project:

- **Administrative and financial coordination**: UPF-MTG has extensive experience in implementation and management of research projects, specifically in the context of ICT, funded under national and European schemes, and a dedicated service for the efficient management of European projects, staffed by professional research managers with extensive previous experience of EC project co-ordination. This service has the necessary skills (management, administration, linguistic, financial) required to manage large projects on a daily basis and to ensure the proper reporting and communication with the Commission.
- **Meta-analysis of the discipline**: UPF-MTG will act as Thematic Area Leader contributing with its expertise related to several topics, such as support to creativity, multiculturalism, field recording, music education and collaborative music interaction. The UPF-MTG has relevant previous experience in these fields, since it's about to start the CompMusic project (ERC AdG with a strong **multiculturalism** dimension), has carried out projects and other initiatives around **field recording** (such as Sounds of Europe project, Freesound repository or other initiatives like Sons de Barcelona or Sounds of Stanford), coordinates several **academic programs** (including both postgraduate and undergraduate programs) and has promoted successful **collaborative music-making initiatives** (like Reactable table-top instrument).
- UPF-MTG's main goal in the MIReS project is to coordinate and intensify interactions to be placed in the events foreseen in WP5: **community co-creativity and new knowledge generation**. UPF-MTG has previous experience in organizing this kind of events, including both more academic conferences (ISMIR 2004, SMC 2010) and more industrial events

(MHD 2010 and MHD 2011). In addition to this, within the scope of the CompMusic project, several multicultural events are foreseen which can strengthen the activities included in this WP.

Xavier Serra is Associate Professor of the Department of Information and Communication Technologies and Director of the Music Technology Group at the Universitat Pompeu Fabra in Barcelona. After a multidisciplinary academic education he obtained a PhD in Computer Music from Stanford University in 1989 with a dissertation on the spectral processing of musical sounds that is considered a key reference in the field. His research interests cover the understanding, modelling and generation of musical signals by computational means, with a balance between basic and applied research and approaches from both scientific/ technological and humanistic/artistic disciplines.

Dr. Serra is very active in promoting initiatives in the field of Sound and Music Computing at the local and international levels, being editor and reviewer of a number of journals, conferences and research programs of the European Commission, and also giving lectures on current and future challenges of the field. He has been the principal investigator of more than 20 major research projects funded by public and private institutions, the author of 31 patents and of more than 75 research publications. His research excellence has recently been recognized by the European Commission with and ERC Advanced Grant to study World Music from a computational point of view.

Sergi Jordà (Madrid, 1961) holds a B.S. in Fundamental Physics and a Ph.D. in Computer Science and Digital Communication. He is a researcher in the Music Technology Group of Universitat Pompeu Fabra in Barcelona, and a lecturer in the same university, where he teaches computer music, HCI, and interactive media arts. He has written many articles, books, given workshops and lectured though Europe, Asia and America, always trying to bridge HCI, music performance and interactive media arts. He has received several international awards, including the prestigious Ars Electronica's Golden Nica in 2008. He is currently best known as one of the inventors of the Reactable, a tabletop musical instrument that accomplished mass popularity after being integrated in Icelandic artist Bjork's last world tour, and he is one of the founding partners of the spin-off company Reactable Systems.

B2.2.2 Stromatolite Design Lab (Scientific Coordinator)

Stromatolite is an award-winning London-based design research and innovation lab with clients which include Apple, Nike, Nokia and the Financial Times. Over the past 10 years Stromatolite has focused on RTD development of innovative digital interfaces and product futures for over 30 commercial clients, as well as the development of teaching methodologies for innovation at the Design Products at the Royal College of Art in London, Design Critical Practice at Goldsmiths University of London and the University of the Arts, London. Stromatolite co-founder Peter Russell-Clarke is now part of the award-winning Apple Industrial Design Team in Cupertino, US, and co-author of the Apple iPhone. Stromatolite co-founder Michela Magas has specialized in innovative navigation systems for media and music companies and more recently in catalyising innovation from EU MIR research centres for applications in the music industry. As innovation catalyst Stromatolite was recently awarded

the UK Technology Strategy Board Fast-Track Competition for Collaboration in Digital Industries.

Contribution to the project: STRO is tasked with the Scientific Coordination of the project, reflected in the Management Work Package (WP1), as well as contribution to areas which involve expertise in art, design, user interaction, navigation systems, and transfer of innovation to industry. This is reflected particularly in the contribution to Sections B1.1.1.17: Interfaces for MIR and B1.1.1.18: Interactive and Sonic Arts which form part of the Work Package 2; Sections 1.1.2.6: Interfaces for Multiple Interpretations and New User Behaviours and 1.1.2.9: Future Industry Applications in Work Package 3; and Tasks 5.2 and 5.3 of Work Package 5. A key contribution is the establishment of a framework for a research-to-industry network in Work Package 6.

Michela Magas MaRCA, graduated from the Royal College of Art in London with a MA in Communication Design, specializing in innovation in media. During the 1990s she developed concepts for the newspaper in the digital age and spent 6 years redesigning the Financial Times newspaper and launching numerous publications for the Pearson Group in the context of digitization and rapid global expansion. She proceeded to create concepts for the Nike Futures Group and develop novel online navigation systems for a series of global companies, including the precursor to the Apple Coverflow. Following innovative music browsing concepts for Apple iTunes and Peter Gabriel's music companies, she was invited by the University of London to join the £2m UK EPSRC-funded OMRAS2 project, where she developed mHashup, a novel audio-visual interface to large music collections for discovering musical relationships among tracks, using MIR technologies. mHashup has been presented worldwide, including the Science Museum and the British Library in London, the SIGGRAPH conference in Los Angeles, and the AES conference in New York. mHashup is the only non-commercial application that has featured on the BBC Click music engines special, with Shazam, Midomi and Pandora. For her Songlines music search project uniting cultures through sound, she was recently awarded the NEM ‘art meets science’ prize by the EU Commission at the 2010 NEM Summit in Barcelona. She is currently developing a new system for searching for music to be launched as commercial product in June 2012, funded by Peter Gabriel.

B2.2.3 Austrian Society for Cybernetic Studies: Austrian Research Institute for Artificial Intelligence (OSKG-OFAI)

The Austrian Research Institute for Artificial Intelligence (OFAI) is a private, non-profit research institution run by the "Österreichische Studiengesellschaft für Kybernetik" (Austrian Society for Cybernetic Studies). It is devoted to basic and applied research in all areas of Artificial Intelligence. It currently employs some 30 full-time researchers. In the present project it will be represented by its *Intelligent Music Processing and Machine Learning (IMPML) Group*, which has extensive expertise in the areas of machine learning, pattern recognition, intelligent music and signal processing, Music Information Retrieval (MIR), music performance research, and intelligent audio-visual interfaces. The group has been involved in a number of EC projects (see below). Through its leader, Prof. Gerhard Widmer, the research group cooperates tightly with the Department of Computational Perception of the University

of Linz, which providing access to additional expertise on computer perception and pattern recognition.

OFAI was one of the partners in the project S2S2 (Sound to Sense, Sense to Sound; FP6-003773), which produced a Strategic Roadmap for Sound and Music Computing for the European Commission (and Gerhard Widmer one of the co-editors of the roadmap). Additional experience in running research projects comes from many EU and national projects such as: METAL (A Meta-learning Assistant for Providing User Support in Machine Learning and Data Mining; EU ESPRIT 26.357), SOL-EU-NET (Data Mining and Decision Support for Business Competitiveness: A European Virtual Enterprise; EU IST-1999-11495), 3DSearch (3D Ontology-based Web Search Application; EU IST-2000-29583), MOSART (Music Orchestration Systems in Algorithmic Research and Technology; EU HPRN-CT-2000-00115), BioMinT (Biological Text Mining; EU QLRT-2001-02770), and SIMAC (Semantic Interaction with Music Audio Contents; FP6-507142).

Contribution to the project: The main tasks of OSKG-OFAI in the project are leading the efforts in WP3 and contributing substantially to WP2. Researchers at OSKG-OFAI will therefore be responsible to help with the meta-analysis of the MIR discipline (WP2) as well as coordinating all efforts towards the final strategic roadmap for the further orientation of MIR research (WP3). Given the long history and high scientific standing of OSKG-OFAI's "Intelligent Music Processing and Machine Learning (IMPML) Group" within the field of MIR, we are confident that OSKG-OFAI is the appropriate partner for these tasks.

Gerhard Widmer (http://www.cp.jku.at/people/widmer) is full professor and head of the Department of Computational Perception at the Johannes Kepler University Linz, Austria, and the head of OFAI's Intelligent Music Processing and Machine Learning Group. He holds M.Sc. and Ph.D. degrees in computer science from the University of Technology Vienna, and a M.Sc. from the University of Wisconsin/Madison, USA. He has been active both in 'mainstream' AI and machine learning research and in the application of AI techniques to musical and multimedia problems for many years. This is reflected in the diversity of both his publications and his scientific services (e.g., he is on the editorial boards of major publishers and journals both in the AI / machine learning area (AAAI Press, Machine Learning) and in music (Journal of New Music Research). Dr. Widmer has coordinated OFAI's contributions to numerous national and European research projects, as well as directed applied research projects with commercial partners (e.g., the development of the audio-based music recommendation functionality in the new digital music player BeoSound5 by Bang & Olufsen (B&O)). He has been awarded several research prizes, including the highest scientific award in the country of Austria, the "Wittgenstein Prize" (2009), for his research on Artificial Intelligence and Intelligent Music Processing and Music Performance Analysis. In 2006, he was elected a Fellow of the European Coordinating Committee for Artificial Intelligence (ECCAI), for his contributions to European AI Research.

Arthur Flexer (http://www.ofai.at/~arthur.flexer) is a senior researcher at the OFAI with about fifteen years of experience in basic and applied research on machine learning, signal processing and musical applications. He holds M.Sc. and Ph.D. degrees in psychology with an emphasis on Artificial Intelligence from the University of Vienna. He has been working in research since 1993 at the OFAI, the University of California San Diego (USA), the Okinawa Institute of Science and Technology (Japan) and as an Assistant Professor at the Center for Brain Research, Medical University Vienna. He is author and co-author of more than 50

peer-reviewed articles. He has experience in leading research projects and is currently managing two nationally funded MIR-related projects.

B2.2.4 IRCAM: Institut de recherche et coordination acoustique/ musique

Ircam (Institut de recherche et coordination acoustique/ musique) is a non-profit organization associated to Centre Pompidou in Paris, France, and is dedicated to the relationships between science, technology and contemporary music production. Ircam conducts multidisciplinary research in the field of Sciences and Technologies of Music and Sound (STMS) and hosts a joint research unit with CNRS and University Paris 6 (Université Pierre et Marie Curie) entitled STMS (Science and Technology of Music and Sound). Involved scientific fields include acoustics, digital audio signal processing, computer science (real-time systems, man-machine interfaces, languages, databases), auditory and music perception and cognition, musicology. The Ircam R&D department gathers 70 researchers, engineers and PhD students and is the largest public lab worldwide dedicated to STMS. The Ircam R&D teams develop and support 6 software environments for professional music production and composition.

Ircam has been a pioneer in the field of audio indexing and music information retrieval. It started in the 90s through collaborations with France Telecom (CTI /CRE) and French national projects : the Online Studio project (96-98, programme 'Autoroutes de l'information') which implemented an online database server including 30,000 audio instrument samples with similarity search features based on psychoacoustic studies on timbre spaces. This work on audio samples was continued in the framework of the national RIAM ECRINS project, the EC FP5 IST CUIDAD and CUIDADO (Content-based User Interfaces and Descriptors for Digital Audio Databases available Online, 2001-2003) in which Ircam was the lead contractor. CUIDADO, also featuring content-based management of musical recordings, has been the first large scale European project dedicated to Music Information Retrieval and systematically addressed the issue of automatic extraction of music descriptors from audio signals ; it featured a music description data model and online server based on MPEG-7. Since CUIDAD and CUIDADO, Ircam has been a major contributor to the MPEG-7 audio standard. Ircam has been also in charge of the MPEG-7 standardization in the framework of the FP5 EC MUSICNETWORK project. The results of CUIDADO, which focused on the server side, have then been applied in the FP6 IST NAVSHP SemanticHIFI project (STREP http://shf.ircam.fr/), which aimed, in collaboration with major European actors such as Sony France/ Europe and Fraunhofer IDMT, to design a new generation of Hi-fi systems featuring innovative functionalities and interfaces for the content-based manipulation of musical recordings. All these projects have been coordinated by IRCAM. IRCAM also currently leads the music indexing activities in the Oseo Quaero project. Quaero is a €200M project between France and Germany targeting multimedia indexing (still-image, video, audio, music, speech, NLP) including partners from the academic side (CNRS, INRIA, Telecom ParisTech, RWTH, Karlsruhe University, DGA) and from the industrial side (Technicolor, Orange, Exalead, Yacast, Jouve). Ircam also plays a leading role in the international Music information retrieval community (http://www.ismir.net/), Ircam hosts the community music-ir@ircam.fr mailing list and has hosted the first European edition of the ISMIR Conference in 2002. Ircam also has played a leading role in France in recent MIR-related projects with the ANR Ecoute, Sample Orchestrator 1, Sample Orchestrator 2 projects.

Contribution to the project: Considering the multi-disciplinary involvement of various IRCAM R&D teams in many WP2 research topics fields (audio, symbolic, spatial, standards, library, real-time, creation), IRCAM involvement will be very high in Task 2.2 (see parts B1.1.1.1, B1.1.1.2, B1.1.1.3 and B1.1.1.4, written specifically with IRCAM subjects of interest and competence in mind). Considering IRCAM's considerable involvement in MIREX (in a number of addressed categories every year) and in the design of the Quaero-Eval benchmarking framework, its involvement in Task 2.3 will also be high. IRCAM will moderate content in WP3 and coordinate links with WP2 in Task 3.2. IRCAM will contribute in relation to WP5 given its experience on user communities (Ircam Forum, software development for artists and professionals), and with industry. IRCAM will contribute on the standards aspects (see B1.1.2.8 for details). in Task 3.3, IRCAM may host the wiki repository, the mailing-list, and will contribute as the book Editor (as main or co-Editor), and use its public dissemination channels (organization of public events – artistic, conferences, etc.) for disseminating the project results.

Dr. Eng. Geoffroy Peeters received his M.Sc. in electrical engineering from the Université-Catholique of Louvain-la-Neuve in 1995 and his Ph.D. in computer science from the Université Paris VI, France in 2001. During his Ph.D. he developed new signal processing algorithms for speech and audio processing. Since 1999, he works at IRCAM (Institute of Research and Coordination in Acoustic and Music) in Paris, France. His current research interests are in signal processing and pattern matching applied to audio and music indexing. He has developed new algorithms for timbre description, sound classification, audio identification, rhythm description, music structure discovery, audio summary, music genre/ mood recognition. Dr. Peeters owns several patents in these fields. He is co-author of the ISO MPEG-7 audio standard. He has coordinated indexing research activities for the Cuidad, Cuidado, Semantic HIFI European projects. He is now leading the music indexing research activities of the Quaero project.

B2.2.5 INESC Porto: Instituto de Engenharia de Sistemas e Computadores do Porto

The Institute for Systems and Computer Engineering of Porto (INESC Porto, http://www.inescporto.pt) is a private non-profit distributing association whose partners are INESC, the University of Porto, its School of Engineering and School of Sciences, and the Polytechnic Institute of Porto. INESC Porto has the statute of a Public Utility Institution and was appointed by the Portuguese Government as an Associated Laboratory, following an international evaluation that awarded a classification level of "Excellent".

INESC Porto acts as an interface between the academic world and the Information Technology and Electronics sector, carrying out scientific research and development as well as technology transfer and advanced professional training, under research contract with industry and services and in the framework of research projects funded by National Agencies and EC R&D programmes.

The activities of INESC Porto in this project will be carried out by the Telecommunications and Multimedia Unit, which has a large experience in research projects both at national and

international level, as well as in development contracts and technology transfer. Over the past 15 years the Unit has actively participated in about 30 projects in the framework of EC Programmes (ESPRIT, EUREKA, RACE, ACTS and IST). Examples of those are projects in the area of digital television and multimedia content chains, such as ATLANTIC, G-FORS, METAVISION, CONTESSA, ASSET, NUGGETS and, more recently, ENTHRONE, VISNET I, VISNET II and MOSAICA, as well as projects in the area of communications networks and services, such as ARROWS, DAIDALOS and Ambient Networks. As a result of research and development activities combined with advanced training and post-graduate programmes, a number of spin-off companies were launched during the past five years.

Contribution to the project: The main tasks of INESC Porto in MIReS are threefold: First, coordinating the setup of a framework for iterative meta-analysis of the MIR discipline, and supervision of the initial review of MIR research trends (WP2). Second, participate in the elaboration of the MIR research roadmap (WP3). Third, participate in the organisation of events (academic and artistic) for the promotion of interdisciplinary discussions on MIR (WP5).

Fabien Gouyon (Ph.D. Computer Science, UPF Barcelona; M.Sc. IRCAM Paris; M.Sc. Signal Processing, ENSEEIHT Toulouse; B.Sc. Theoretical Physics, UPS Toulouse) is Invited Assistant Professor at the Faculty of Engineering of the University of Porto, in Portugal, and senior research scientist at the Telecommunications and Multimedia Unit of INESC Porto where he leads (together with Prof. Carlos Guedes) the Sound and Music Computing research group (http://smc.inescporto.pt/) of the Telecommunications and Multimedia Unit. His main research and teaching activities are in Music Information Retrieval and Music Pattern Recognition. He has published over 50 papers in peer-reviewed international conferences and journals, published a book on computational rhythm description, gave the first tutorial on the topic at the International Conference on Music Information Retrieval in 2006 and participated to the writing of the European Roadmap for Sound and Music Computing, published in 2007. He was General Chair and Scientific Programme co-chair of the Sound and Music Computing Conference 2009 (http://smc2009.smcnetwork.org/) and is General Chair of 2012 Conference of the International Society for Music Information Retrieval. More information is available on http://www.inescporto.pt/~fgouyon.

Carlos Guedes (PhD in Composition, NYU, 2005) is currently Associate Professor at the Faculty of Engineering at the University of Porto where he teaches in the Master in Multimedia and Doctoral Program in Digital Media from the UT Austin | Portugal partnership. He has a multifaceted activity in composition that ranges from traditional instrumental music to works employing digital interactive systems in theater and dance performance, and his work was presented in Europe and in the United States in places such as De Waag, ARCO, SIGGRAPH 2008, and Shanghai eArts Festival. As a researcher, he co-founded with Fabien Gouyon the Sound and Music Computing Group at INESC Porto, where he currently leads research projects in real-time automatic music generation. Carlos Guedes was the music program co-chair (together with Pedro Rebelo, SARC) of the Sound and Music Computing Conference 2009.

B2.2.6 Centre for Digital Music, Queen Mary University of London (QMUL)

The Centre for Digital Music (C4DM) at Queen Mary University of London (QMUL) is a world-leading multidisciplinary research group in the field of Music & Audio Technology. C4DM has around 50 full-time members, including academic staff, research staff and research students, working on topics including music information retrieval, music signal processing, music knowledge representation, machine listening, audio engineering, human machine interaction and digital performance. Research funding since 2001 totals over £14m, mainly from EPSRC (14 projects) and EU (6 projects), as well as from Royal Society, Leverhulme Trust, JISC, Nuffield Foundation, and industry. EU funded projects include DIGIBIC (2010-2013), SMALL (2009-2012), EASAIER (2006-2008), SIMAC (2004-2006) and SAVANT (2002-2004). Since 2001, the members of the C4DM have published over 200 conference papers, journal articles and book chapters. Our research has also featured widely in the media, including in New Scientist, The Economist, The Guardian, Scientific American, Financial Times and BBC World Business News. Conferences we have hosted include: International Conferences on Digital Audio Effects (DAFx-03), Music Information Retrieval (ISMIR-05), Auditory Display (ICAD 2006) and Independent Component Analysis (ICA-2007), the British Computer Society conference on Human-Computer Interaction (HCI 2006: Engage), the Audio Engineering Society conference on New Directions in High Resolution Audio (AES-31, 2007), and the 89th MPEG Meeting (2009).

Contribution to the project: QMUL will lead WP4 (Dissemination), coordinating the web presence, outreach events, workshops, publication strategy, technology transfer and garnering of input from external stakeholders. QMUL has extensive experience with these types of interactions, for example: web presence - apart from our standard university pages, we have 2 outreach-based sites (c4dmpresents.org and audio4fn.org); outreach events - QMUL has a strong track record of outreach at science festivals and fairs (see the list of "happenings" at c4dmpresents.org); workshops/conferences - QMUL hosts the annual Digital Music Research Network (DMRN) workshop, and has hosted or co-organised many conferences such as the International Conferences on Digital Audio Effects (DAFx-03), Music Information Retrieval (ISMIR-05), Auditory Display (ICAD 2006) and Independent Component Analysis (ICA-2007), the British Computer Society conference on Human-Computer Interaction (HCI 2006: Engage), the Audio Engineering Society conference on New Directions in High Resolution Audio (AES-31, 2007), the Dagstuhl Seminar on Multimodal Music Processing (2011) and the forthcoming CMMR 2012 conference; publication - we have published several hundred papers on MIR topics, and are active on editorial boards of journals and programme committees of conferences; technology transfer - via Queen Mary Innovation Limited, commercially valuable research work is licensed or sold to interested parties; garnering input - QMUL organised a successful workshop for this purpose for invited researchers from the UK, Europe and USA in December 2008, as part of the OMRAS-2 project, and also worked closely with Musicologists whose valuable input helped to shape Sonic Visualiser's current functionality. QMUL has one of the largest and most productive MIR groups in the world (consisting of around 50 full-time members), so is well-placed to also make significant contributions to WP2 (Meta-analysis of the Discipline) and WP3 (Research Roadmap for MIR).

Dr. Simon Dixon is a lecturer at QMUL and head of the Music Informatics group. He has a PhD in Computer Science and LMusA in Classical Guitar. His research focusses on music informatics, including high-level music signal analysis and the representation of musical

knowledge. He is principle investigator on Musicology for the Masses (2010-12, RCUK) and Linked Music Metadata (2010-11, JISC), and co-investigator on Sustainable Software for Digital Music and Audio Research (EPSRC, 2010-14), AudioMiner (WWTF Austria, 2010-12) and OMRAS-2 (EPSRC, 2007-10). He is author of the beat tracking software BeatRoot (ranked first in the MIREX 2006 evaluation) and the audio alignment software MATCH (Best Poster Award, ISMIR 2005), and co-author of the top-ranked Audio Chord Detection and Music Structure Segmentation systems (MIREX 2009). He was Programme Chair for ISMIR 2007, and General Co-chair of the 2011 Dagstuhl Seminar on Multimodal Music Processing, and has published over 70 refereed papers.

Dr. Anssi Klapuri received his PhD degree in Information Technology from Tampere University of Technology (TUT) in 2004. He was a senior researcher and research manager at TUT, before joining QMUL as lecturer in 2009. His research interests include audio signal processing, auditory modelling, and machine learning. He has worked as a principal investigator in industrial research projects worth over €1.5M since 2001. He received the IEEE Signal Processing Society 2005 Young Author Best Paper Award. He has co-edited one book and authored 14 journal papers and 6 book chapters, and a number of conference papers.

Professor Mark Sandler is Head of the School of Electronic Engineering and Computer Science at QMUL and founder of the Centre for Digital Music. He became Professor of Signal Processing at QMUL in 2001, following 19 years at King's College, where he was also Professor of Signal Processing. He has been Principal Investigator on many UK projects and was the lead investigator for QMUL on the EU-FP6 SIMAC project. He was General Chair of DAFx,2003 and General Co-chair of ISMIR,2005 conferences. He is Chair of the Audio Engineering Society Technical Committee on Semantic Audio Analysis and is a Fellow of IEE and AES. He has published well over 300 papers in conferences and journals.

Other relevant staff include **Prof Mark Plumbley**, Director of C4DM; **Dr Panos Kudumakis**, Research Manager; **Dr Josh Reiss**, Leader of Audio Engineering Group; and **Dr Nick Bryan-Kinns**, Leader of Interaction Group.

B2.2.7 BMAT, Barcelona Music and Audio Technologies

BMAT (Barcelona Music and Audio Technologies) is a technological company specialized in digital music products and services. BMAT is a spin-off company of the Music Technology Group (MTG) of the Universitat Pompeu Fabra (UPF) and an output of the IST Project SIMAC. BMAT is one of the few companies worldwide able to offer a number of solutions around audio and music, including audio analysis and description software, music recommendation, and audio identification, among others.

BMAT aims at being a key player in digital music technologies. Its mission is to analyze all the music in the world to describe it, organize it, and track it, enabling new ways of interaction and management.

As of today BMAT is a team of 20 engineers, PhD's, musicians and business people headquartered in Barcelona with representatives in Japan, Mexico, Russia, UK and Portugal. BMAT solutions service our partners across Europe, Africa, Asia, Latin-America and US ,

among which you can find companies such as Yamaha, Intel, Nielsen, Telefónica, The Orchard Jamendo, SESAC, Grooveshark or EMI Music Publishing.

Contribution to the project: BMAT's contribution to the project is in the areas related to the transfer of technology to industry in particular Sections B1.1.1.14, B1.1.1.15 and B1.1.1.16 of the Meta-Analysis of the Discipline (WP2), and Section B1.1.2.9 related to Work Package 3. BMAT will provide a key contribution to Tasks 5.2 of Work Package 5 and to the establishment of a framework for a research-to-industry network in Work Package 6.

Dr. Alex Loscos received the B.S. and M.S. degrees in Signal Processing Engineering in 1997. In 1998 he joined the Music Technology Group (MTG) for nine years, during which he published in most relevant proceedings and journals, co-published a couple of books and featured as author in more than 15 patents. After a few years as a researcher, lecturer, developer and manager he co-founded Barcelona Music & Audio Technologies (BMAT) in 2006, the spin-off company of the MTG. In 2007 he became Ph.D. in Computer Science and right after started as the Chief Strategy Officer at BMAT. A year and a half later he took over the position of BMAT's Chief Executive Officer. He is also a music passionate, an accomplished composer, and former member of international distribution bands. In 2004 he co-founded Safari Music, a record label through which he released his own music.

Salvador Gurrera holds an MBA and he is a senior engineer in electronics and telecommunications technician. After some years as a product engineer at HP he joined the Music Technology Group (MTG) to become the Head of administration, finance and technology transfer of the lab. He was responsible for managing a multi-million budget and for the negotiations and agreements with companies and governments. Salvador co-founded Barcelona Music and Audio Technologies (BMAT) and he is currently the Chief Finance and Operations Officer.

Dr. Oscar Celma holds a PhD in Computer Science and Communication by Pompeu Fabra University, and Computer Engineering from the Polytechnic University of Catalonia (UPC). Oscar has been a Researcher and Project Manager in the Music Technology Group (MTG) from 2000 till 2008. Since 2009, Oscar is BMAT's Chief Innovation Officer. In his past work at MTG, Oscar has worked in various European projects (e.g. PHAROS, Simac, Salero, and Variazioni). Oscar is a Professor of the Department of Technology, Pompeu Fabra University (UPF), and has been teaching different subjects in the areas of Database and Information Retrieval. Since 2006, Oscar is an invited expert of the W3C Incubator Group-Multimedia Semantics. In 2006, he won the 2nd prize of the Semantic Web Challenge, for the 'Foafing the Music' system. Dr. Celma has presented, together with Paul Lamere, a Tutorial on Music Recommendation, at the International Conference on Music Information Retrieval (ISMIR-2007) and at the ACM Multimedia (ACM MM-2008).

In addition to solid leadership, BMAT has a group of industry experts who act as advisors for the company. **Scott Cohen**, Co-founder of The Orchard; **Ventura Barba**, prior director of Yahoo! Music Europe, COO of Sonar, and Co-founder of Tenzing Media; **Juan Roure**, Professor of Entrepreneurship at the IESE Business School; and **Xavier Serra**, Professor of Music Technology and founder of MTG at University of Pompeu Fabra.

B2.3 Consortium as a whole

The consortium as a whole comprises 5 EU centres of MIR RTD excellence (UPF-MTG, OSKG-OFAI, IRCAM, INESC PORTO and QMUL) unsurpassed in their achievement in terms of their collective numbers of academic publications on the subject of MIR or their input in establishing MIR as a discipline.

BMAT, Barcelona Music and Audio Technologies, represents a unique industry point of view as a pioneering organisation that has successfully focused on deploying the use of MIR technologies in commerce.

Stromatolite Design Lab (STRO) is the only known design laboratory which has specialised in catalysing MIR RTD innovation through to industry by means of generating dynamic audio-visual user-oriented interfaces for MIR.

Members of the consortium have an extensive track record of joint cooperation on large-scale projects. For example, IRCAM and UPF-MTG have collaborated on the EU-funded CIUDADO and SemanticHIFI projects. UPF-MTG, QMUL and OSKG-OFAI have collaborated on the EU-funded SIMAC project. OSKG-OFAI, INESC PORTO and UPF-MTG have collaborated on the EU-funded S2S^2 *Roadmap for Sound and Music Computing* (http://smcnetwork.org/roadmap). Over the past 5 years BMAT has partnered with UPF-MTG on a series of RTD projects. STRO and QMUL have collaborated over a period of 3 years on the UK EPSRC-funded OMRAS2 (Online Music Recognition and Searching) project.

Strong synergies exist between partners in the area of audio signal processing, audio content analysis and sound similarity searches, while individual partners offer specific expertise within the field of Music Information ReSearch:

- OSKG-OFAI: web mining, AI, multimodal information, performance visualisation, virtual orchestras
- UPF-MTG: support to creativity, multiculturalism, music education, collaborative instruments
- IRCAM: musical representations, 3d and physical environments, generative MIR
- INESC PORTO: real-time automatic music generation, multidisciplinary approaches to MIR
- QMUL: context data analysis, semantic web, research tools, sustainability, user profiling
- BMAT: digital libraries, rights management and music training
- STRO: dynamic audio-visual user-oriented interfaces for MIR

The consortium offers extensive organisational and networking capabilities, both within academic circles (UPF-MTG, OSKG-OFAI, IRCAM, INESC PORTO and QMUL) and within the music industry (BMAT, STRO) with an extended network spanning international researchers, industry stakeholders, service innovation visionaries, market strategy thinkers, next generations of students and digital natives. In order to secure such an extended network, the participation of all five academic research centres of MIR excellence as well as the two industry partners (BMAT, STRO) has been necessary.

B2.3.1 Third parties

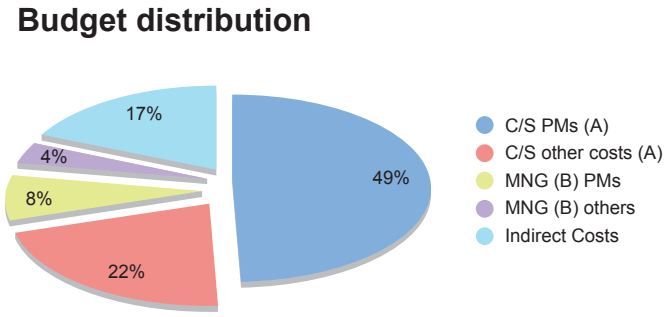
INESC PORTO shall allocate to this project human resources made available to it by Universidade do Porto and Instituto Politécnico do Porto, on the basis of a prior agreement, under which these institutions make available to INESC PORTO a certain number of members of its staff, so that they may participate in the research and development activities carried out by the latter and to be used at its management discretion. For all contractual purposes, INESC PORTO assumes full responsibility for the involvement of these researchers in this project, since they are members of its research team.

Events budgets in Work Package 5 include expenses for speakers and expert speakers' fees, as well as event organisers and premises hire fees. While most of the MIReS External Advisors' expenses of travel to conferences are covered by their respective projects and organisations, when invited to contribute to specially-organised MIReS events expenses will be covered by MIReS travel and subsistence budgets.

B2.4 Resources to be committed

Major costs for the project are: manpower for coordination and support activities, associated expenses, management of the project (including reporting and project meetings), and dissemination activities (public workshops and conferences).

The total budget for the project is distributed among such major costs as follows: 1) Coordination person-months: 49%; 2) Coordination other (venues, travel and subsistence): 22%; 3) Management person-months: 8%; 4) Other costs associated with management activities (project meetings, reviews, etc.): 4% and indirect costs directly associated with the project execution: 17%.



Subcontracting will not be necessary since the MIReS consortium has the needed expertise and available resources to carry out all the needed tasks and partners have been working for a long time in research fields directly related to project challenges and objectives.

Audit certificates are not required because the requested EC contribution is below the minimum threshold.

B2.4.1 Personnel

The multi-disciplinary nature of the field of Music Information ReSearch and specifically of the Coordination Actions to be carried out as part of the MIReS project requires significant expertise from consortium partners, including Computer Engineering, Statistics, Sound and Music Computing, Human-Computer Interaction and Cognition.

Consortium partners meet the required levels of expertise very adequately, by including major EU academic research centres which specialise in various aspects of MIR research and industry representatives whose work involves a high percentage of related research activities. Partners' employees specialising in humanities and arts are also allocated to this project. The variety of expertise will contribute to more effective brainstorming, richer contributions, more effective discussions and feedback from research-to-industry networks, for inclusion into the roadmap.

The consortium has planned to use 68,5PM for the whole duration of the Project. This will be distributed among activities as follows: 1) Coordination: 50PM; 2) Dissemination: 8.5PM; and 3) Management: 10PM.

B2.4.2 Other costs

The majority of costs included in this category will be designated to external advisors consultancy, travel and associated subsistence for project management, coordination, dissemination and networking activities expected in WP4&5. No equipment or fungible costs are expected.

Travel costs and other expenses for independent contributors (external advisors and other experts joining MIReS events) meet the following criteria: i) will be determined according to the usual accounting and management principles and practices of UPF-MTG and will be used for the sole purpose of achieving the objectives of the project and its expected results, in a manner consistent with the principles of economy, efficiency and effectiveness and ii) will be on a non-recurrency basis (**up to 4 times** a year/expert).

The MIReS project will cover the expenses of the project internal meetings and of the consortium partners directly involved in the planning and organisation of the workshops foreseen in WP4&5. The MIReS partners who will hold any of these workshops in WP5 already have at their disposal most of the needed infrastructure (e.g., auditoria), so this will not present additional cost.

Dissemination events in WP4 are planned to maximally utilise existing conferences, for which travel budgets are secured from research funding sources and are therefore expected to be supplemented by external resources (see Section B1.3.3.4, Work Package 4 for details of proposed existing conferences). Each MIReS partner will attend 1 conference / year, to be agreed upon at the project kick-off.

In order to extract maximum value from the Coordination Action, some specially organised events will be co-funded with alternative funding budgets (e.g. The Multicultural Forum; see Section B1.3.3.4, Work Package 5) and organised in conjunction with outside sponsors (Industry-related events; see Section B1.3.3.4, Work Package 5).

B2.4.3 Economies of scale

The leading research centres engaged in the MIReS Coordination Action have existing resources arising from ongoing funded research which require activities such as organising workshops and clustering with other projects as part of their dissemination. The consortium is therefore fortunate in being able to achieve significant economies of scale through the synergy that can be brought to bear in respect of the activities to be organised by MIReS and thereby being in the position of maximising value in order to support the MIReS objectives (see Section 3.1.2).

B2.4.4 Budget sharing between partners

The budget distribution among the participating partners is well balanced, since it has been the result of a common consensus, relative to each partner's involvement and listed tasks.

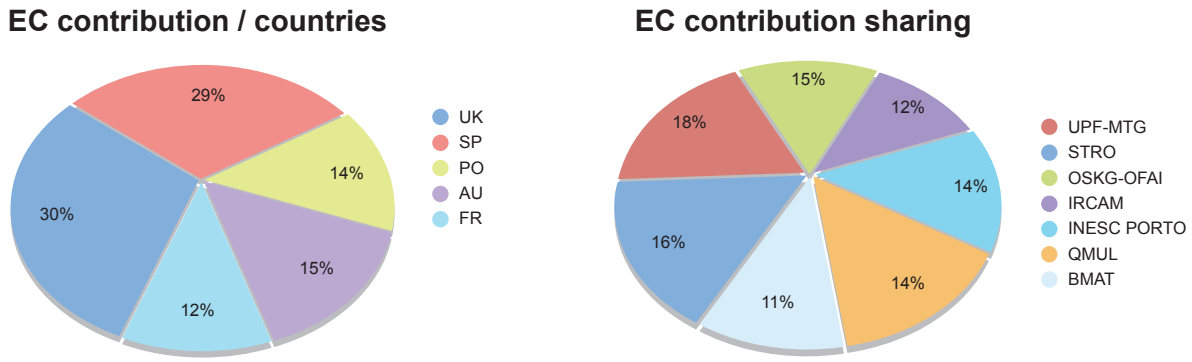


Figure 4: EC contribution sharing between partners and countries

B2.4.5 Individual partners' budgets

UPF-MTG: The UPF-MTG management budget will fund personnel costs for management and coordination. The research portion of the budget will fund personnel costs for contributions to Work Packages 2-6, and primarily for organising events in Work Package 5. Expenses are envisaged in conjunction with the organisation of events, as well as for travel and subsistence related to MIReS meetings.

STRO: The main person in charge for STRO will be Michela Magas, who will act as Scientific Coordinator as described in Work Package 1, and as contributor to the Work Packages 2-6 as allocated in the WP budgets. The main budget will be devoted to personnel costs, with allocated expenses envisaged for the planned meetings and events.

OSKG-OFAI: The main person at OSKG-OFAI performing work for this project will be Dr Arthur Flexer (senior postdoctoral researcher). Prof Gerhard Widmer will provide additional input as an in-kind contribution to the project. The rest of OSKG-OFAI's costs are for travel for attendance of conferences as well as planned meetings and events.

IRCAM: The main person in charge for IRCAM will be Dr Geoffroy Peeters, who will act as main contributor to the various WPs. Other researchers from several teams IRCAM will be involved and contribute to the roadmap from the viewpoint of their respective research and application fields. The main budget will be devoted to personnel costs, with allocated expenses for project meetings, events and dissemination to scientific conferences.

INESC PORTO: Primary costs in the INESC PORTO budget are personnel expenses related to Work Package 2 and to a lesser extent to other WPs. Expenses are also expected for Management costs in WP1. (See section B2.3.1 regarding personnel expenses and Third

Parties making available resources.) Other costs will also be expected for contributions to the organisation of events in Work Package 5.

QMUL: The bulk QMUL's work for this project will be performed by a Postdoctoral research assistant (0.4 FTE) supervised by Dr Simon Dixon (0.1 FTE), with additional contributions by Prof Plumbley and Sandler as an in-kind contribution to the project. Apart from personnel costs, the only major expense envisaged is for travel and subsistence for the planned conferences, meetings and events.

BMAT: The main person in charge at BMAT will be Dr Alex Loscos with contributions by Salvador Gurrera and Dr Oscar Celma. The budget will fund personnel hours for contribution to Work Packages 2, 3 and 6, and organisational and travel expenses for contribution to Industry Events in Work Package 5.

Section 3: Impact

3.1 Expected impacts listed in the work programme

The MIReS Coordination Action addresses common outstanding challenges across EU academic research centres which focus on RTD for new ways of searching and discovering music, and latent potential within EU music industry which requires direction and support for future applications of novel technologies and maintenance of world market competitiveness. The MIReS Roadmap is expected to address a comprehensive set of challenges which carry global themes relevant to the Future internet and the European Digital Economy policy makers whose agendas include securing European competitiveness in digital state-of-the-art technologies (evaluation standards, sustainability, open platforms, multidisciplinarity, multiculturalism, new user behaviours, multimodal information, industry standards and future industry applications: see challenges covered in Section B1.1.2). An assessment of EU market futures for technology-related services, horizon scanning and technology foresight will contribute to the overall impact of the coordination action.

Expected impact can be stratified as follows:

- Impact on technological innovation
- Impact on social behaviours, creativity, economy and education
- Informing policy and research planning

3.1.1 Impact on technological innovation

The MIReS initiative is expected to contribute to the planning of music search and discovery RTD programmes making use of smart environments and adaptive systems for the benefit of the Future Internet and EU Digital Economy. Technological impact is expected both through a critical analysis of the methods currently in use by the MIR discipline (as described in Work Package 2 and through thematic analysis in Section B1.1.1), and through recommendations and technological foresight presented in the MIR Roadmap (see Work Package 3 and challenges listed under Section B1.1.2).

A vital contribution to the future of technological innovation will be the establishment of **MIReS RTD Evaluation Standards** which will be disseminated throughout the wider MIReS community and associated networks. A notable contribution to the establishment of **Digital Music Production Standards** as well as **Digital Library Management Standards** is proposed as part of the roadmapping process, in response to widely recognised challenges currently faced by the research community and music industry, and is likely to alleviate current complicated procedures related to the storing and classification of large digital music libraries, and speed up resulting processes by degrees of magnitude.

Through a programme of dissemination, workshops and events, the MIReS Coordination Action proposes to establish long-term stakeholder relationships between different groups of music technology stakeholders, involving leading international researchers, partners from previous and currently funded EU projects, industrial representatives, international music

marketing players, service innovation visionaries, market strategy thinkers, and next generations of students and digital natives (see WP5).

The specification of a MIReS framework for knowledge sharing, cooperation and co-creation across academic communities is expected to have a direct impact upon future academic collaborations involving MIR RTD projects, influencing other academic disciplines, such as cognitive science, AI, cultural and music studies. By connecting music researchers and theorists with industry representatives, strategists and policy makers, MIReS would ensure efficient communication and transfer of innovation to industry in the long-term.

3.1.1 Impact on social behaviours, creativity, economy and education

The objectives of the MIReS Coordination Action are set to respond to societal changes such as the rapidly evolving networked communities, as well as influence future digital media user behaviours. RTD programmes influenced by the MIReS initiative are expected to benefit from innovative systems offering a greater selection of searchable features, enhanced navigation capabilities, faster feedback loops with natural interaction responding to a multiplicity of interpretations and user behaviours, linked to open and cloud networks, tagged objects and location-responsive devices.

Detailed consideration and direction of the future of music search and discovery actively disseminated and promoted by the MIReS Coordination Action is expected to have a considerable socio-economic impact within the context of web-mediated social networks and music-related communities. The dynamic global market for digital music and collateral products and services, driven by the increasing demand for Quality-of-Experience music discovery search technologies by a reported audience of over 100 million (see Section B1.1), is expected to benefit from the integration of approaches to the MIR field enabled through the MIReS coordination initiative, particularly through those activities focusing on multidisciplinary and multicultural approaches as seen in Work Packages 3 and 5. In relation to the global music communities, the MIReS Coordination Action is expected to contribute to the leveraging of EU's position as a world leader in music creativity, production and mobile distribution, by underpinning competitive strategies and ensuring coherent targeted support for efficient transfers of knowledge and innovation to industry.

Through active dissemination of knowledge to industry stakeholders, and the establishment of a research-to-industry network, major music labels and technology players acting as digital media/service platforms aggregators, as well as a large number of EU music technology SMEs (e.g. Last.fm, Shazam, BMAT, Slicethepie, Songkick, Buzzdeck, Decibel, Musixmatch, Tribe of Noise, AWAL, AudioFuel, mFlow, MusicMetric, We7, MusicGlue, Musinaut, Gigaboxx, Celas, Leap Music, Music Tank, Mixcloud, Hidden Rebellion, Puffafish, GigLocator, Ingenious Media, GigJunkie etc.) will be able to reference the MIReS Coordination Action documents in order to inform their business agendas and in-house technology programmes. The approaches set out by the MIReS Coordination Action are therefore expected to influence the quality of innovation and creative output of industry projects related to music search and discovery, and enable more comprehensive exploitation of this field. A higher volume of industry-led projects is expected, with a resulting increase of employment in music

technology and collateral music-related occupations (music production, storage, distribution, marketing, promotion and networking) and the creation of new value chains.

Social impact is expected not merely through technical applications, but also by informing user attitudes through a redefinition of the role of information in music and amplification of available information sources. This is likely to contribute to a much improved quality of user experience, reflecting the MIReS Coordination Action core agenda by incorporating ideas of personalisation, interpretation, embodiment, findability and community. Dissemination through music social networks such as Last.fm (>40 million registered users) and Freesound.org (>2 million users) will contribute to the building of social awareness (see WP4, Task 4.2).

Greater creativity stimulated through proposed future music search and discovery technologies with enhanced feedback loops and immersive experiences is likely to impact on music industry professionals, musicians, creatives and general music prosumers in equal measure, with enhanced opportunities for education and professional training. More efficient systems are likely to contribute to a reduction of unnecessary technology-related environmental footprint.

3.1.3 Informing policy and research planning

Redirecting the practice of MIR RTD is expected to inform research prioritization of both existing and key future EU RTD and coordination initiatives.

The MIReS Coordination Action is expected to impact upon the music component of all EU Networked Media Clusters (see Fig. 5), particularly those involving Search and Immersive or User-Centric Media as well as Future Media Networks, and inform agendas of existing Coordination Actions such as the audio/visual CHORUS+ Coordination Action, by redirecting and redefining the field of music information research.

Upon consultation and under guidance from the EU Commission, the consortium will be in the position to advise on possibilities of a MIReS-related Concertation Meeting in Brussels in view of creating an EU Music Technologies Cluster and in this way utilising the results of the MIReS coordination and networking for long-term effect.

The Roadmap for Music Information ReSearch is expected to have a notable influence on future EU policy makers. To ensure an efficient exchange of knowledge and maximum impact on future EU policies, the MIReS Consortium proposes to consult established EU advisors such as Neelie Kroes, whose policies impact on future media interest groups, digital natives and music stakeholders, and Vali Lalioti, business consultant on the best ways of catalysing results of research and enable them for applications in industry. The MIReS programme will assemble information from international stakeholders and show how perspectives from international initiatives impact on EU policy makers and the future of EU music research.

By connecting music researchers and theorists with industry representatives, strategists and policy makers via the establishment of the framework for a long-term research-to-industry network, the Roadmap for Music Information ReSearch will continue to inform policies beyond the lifetime of the proposal and ensure future academic excellence and EU competitiveness in the world music market.

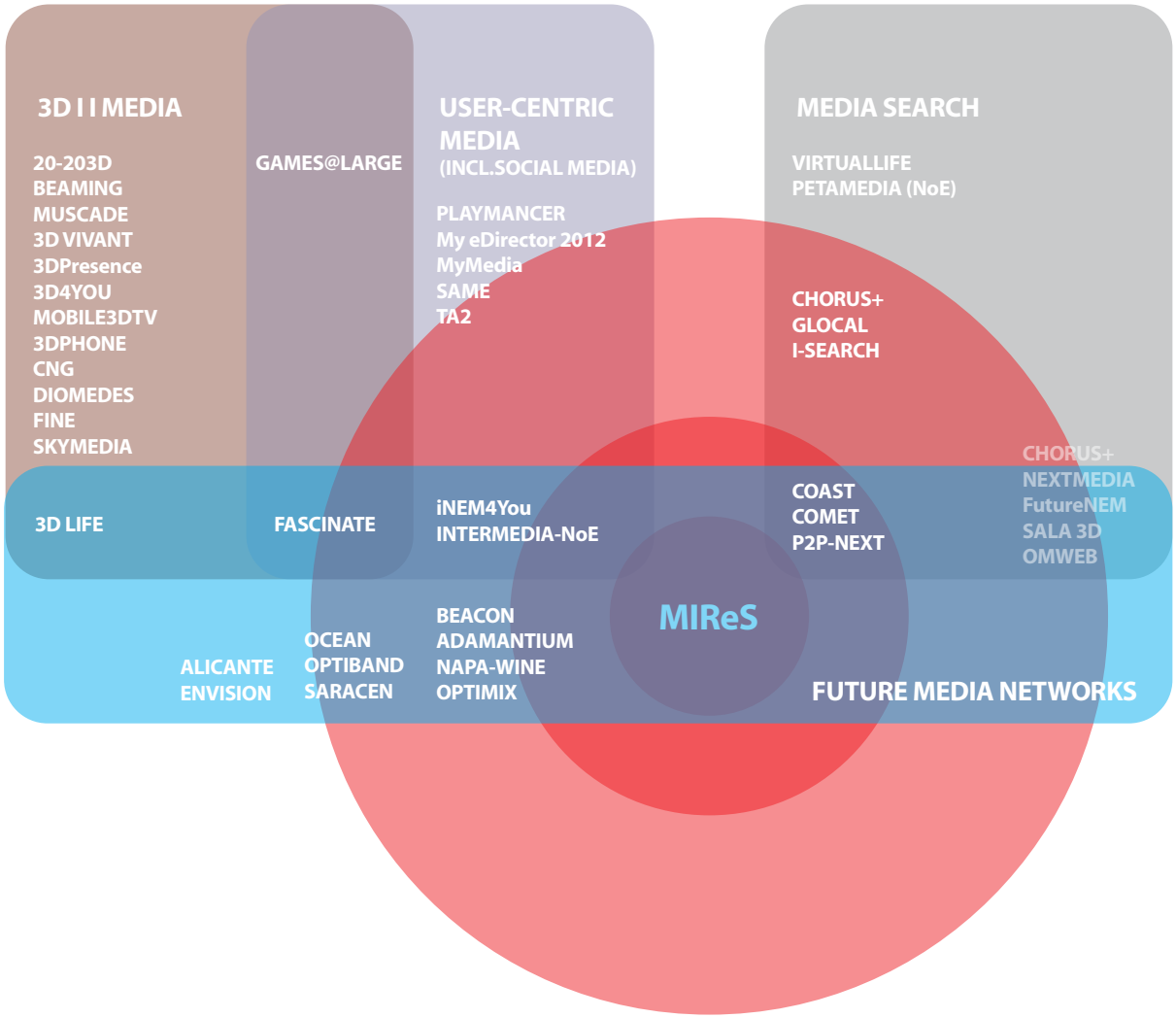


Figure 5: Impact of MIReS on EU Networked Media Clusters

3.2 Encouraging excellence, exploiting results and disseminating knowledge

The MIReS Coordination Action is devoted to opening paths for future RTD and to widening the context of EU music research by establishing long-term relationships with relevant fields of music study, industry representatives, stakeholders and policy makers.

3.2.1 Encouraging excellence

The spreading of excellence is planned through innovative events and workshops organised through Work Package 5: **Community co-creativity, sharing and generating new knowledge (hubs and spokes)** which will include multi-disciplinary and international researchers, policy advisors, industry representatives, media theorists, students and digital natives, service innovation visionaries, market strategy thinkers, representatives from other relevant fields of study such as cognitive science, musicology and social science, independent hackers, prosumers and music audiences.

The Academic Forum on MIR and Multiculturalism has been devised to encourage spread of excellence among academics from different fields, such as Cognitive Science, Engineering, Artificial Intelligence, Musicology, Social Sciences, Neuroscience, Music Performance, and Music Composition.

The established MIR conference **ISMIR** will be used to spread MIR excellence among international MIR experts, while **Young Researchers Days** at the University of Porto will be utilised to spread excellence among students and young researchers from sectors related to music information research.

Music Hack Day, a **Trend-Spotting Industry MIR Event** and an **EU Associate Countries Digital Music and Hack Day Event** are all focused on spreading excellence through involvement from industry representatives, media theorists, market strategy thinkers, digital natives, independent hackers, prosumers and music audiences.

An **EU Music Search and Discovery Creative Workshop** proposed as part of the 2012 Networked Electronic Media constituency (venue to be determined) will encourage excellence among creative digital natives, young innovators and cross-disciplinary artists. An **MIR Multicultural Workshop** focusing on the synergy between MIR and various cultures will spread MIR excellence among musicians and artists from a variety of different cultures.

3.2.2 Exploiting results

Knowledge gathered and new knowledge generated during the sessions, brainstorming sessions and events organised by the MIReS Coordiation Action will result in a number of reports, all of which will be publicly available as reference and foundation for future research agendas and exploitation. These reports will include:

- **Written report on the Meta-Analysis of the Discipline**: MIR research trends, MIR benchmarking (see Deliverable 2.2)
- **MIR Research Roadmap document** (see Deliverable 3.3)
- **Collected proceedings of workshops, special sessions, tutorials and scientific publications** produced by the project (see Deliverable 4.2)
- **Summary of all the events organized** within the Community Co-creativity, Sharing and Generating new Knowledge (Hubs and Spokes, see Deliverable 5.1)
- **Summary of the contributions to the MIR Roadmap** generated from the above events (see Deliverable 5.2)
- **Proposal document for the establishment of a virtual Research-to-Industry Network** (see Deliverable 6.1)

Results from the report on the **Meta-Analysis of the Discipline** (WP2) will be exploited within the MIReS Coordination Action in order to redefine and redirect the MIR discipline, and construct the MIReS Roadmap.

3.2.3 Disseminating knowledge

An extensive strategy for dissemination of MIR knowledge is described in detail in Work Package 4: **Dissemination: Wiki, Publications, Conferences and Workshops** which will target a variety of international researchers and external stakeholders.

The Coordination Action proposes to have a dedicated open website portal for the dissemination of knowledge. Supportive licensing of knowledge and documentation will be strongly promoted within the Coordination Action. Rapid publishing under free licences, e.g. Creative Commons, and maximum utilisation of open data repositories will be encouraged. MIReS will produce dissemination materials targeted at general audiences promoting the action itself and its objectives, and will diffuse it through European networks.

Dissemination will be actualised through existing conferences, networks and professional bodies, such as the European initiatives **SMC, DAFx** and **CMMR**, and international conferences hosted periodically in Europe such as **ISMIR, ICMC** and **ICASSP**. Dissemination will also target conferences on disciplines relevant to MIReS, such as neuroscience (**NIPS**), music psychology (**ICMPC**), musicology (**IMS**), artificial intelligence (**IJCAI, ECAI, AAAI**), machine learning (**ICML**), digital libraries (**ECDL**), web science (**ICWS**), information retrieval (**SIGIR, ECIR**), speech (**Interspeech**), video & multimedia (**ACMMM, ICME, ICMR**), digital arts (**ARTECH**), audio engineering (**AES**); and EU Commission showcases such as **ICT2012** in Brussels.

Project activities will be disseminated in national media (press, radio, TV, etc.) and general literature such as the "**Audio!**" magazine for teenagers (www.audio4fn.org). Several contact points with the industry are proposed in which dissemination of research and companies feedback will take place in order to align the future of MIR technologies with the needs of the industry, including **MIDEM** in Cannes (http://www.midem.com/), **Popkomm** in Berlin

(http://www1.messe-berlin.de/vip8_1/website/Internet/Internet/www.popkomm/deutsch/index.html), **SanFranMusicTech** in San Francisco (http://sfmusictech.com/), **Sonar** in Barcelona (http://2011.sonar.es/en/) and **Music 4.5** in London (http://www.music4point5.com/).

Dissemination of knowledge about MIR will continue beyond the lifetime of the project through the established **MIReS Web Portal** and the framework for a **Virtual Network of MIR Excellence** connecting music researchers and theorists with industry representatives, strategists and policy makers.

Section 4: Ethical Issues

The Ethical Issues approach of the MIReS consortium complies with the Charter of Fundamental Rights of the European Union and the guidelines from the European Group on Ethics in Science and New Technologies (EGE)

MIReS does not involve:

- Research activity aimed at human cloning for reproductive purposes;
- Research activity intended to modify the genetic heritage of human beings which could make such changes heritable;
- Research activity intended to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer;
- Research involving the use of human embryos or embryonic stem cells;
- Clinical trials;
- Use of animals;

The Coordination Action will be undertaken at conferences and events, and academic research centres in the country members of the EU and EU Associate Countries. None of the ethical committees or regulatory organisations of these countries will need to be approached. Where activities will be undertaken as part of international conferences at centres outside the EU or EU Associate Countries, they will be governed by the ethical guidelines imposed by the said conferences.

Where data is collected from events, brainstorming sessions and conferences, this will be done with prior consent from the participants. The consortium will avoid unnecessary collection and use of personal data.

ETHICAL ISSUES TABLE

	YES	PAGE
Informed Consent		
Does the proposal involve children?		
Does the proposal involve patients or persons not able to give consent?		
Does the proposal involve adult healthy volunteers?		

Does the proposal involve Human Genetic Material?		
• Does the proposal involve Human biological samples?		
• Does the proposal involve Human data collection?		
Research on Human embryo/foetus		
Does the proposal involve Human Embryos?		
Does the proposal involve Human Foetal Tissue / Cells?		
Does the proposal involve Human Embryonic Stem Cells?		
Privacy		
Does the proposal involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)		
Does the proposal involve tracking the location or observation of people?		
Research on Animals		
Does the proposal involve research on animals?		
Are those animals transgenic small laboratory animals?		
Are those animals transgenic farm animals?		
Are those animals cloned farm animals?		
Are those animals non-human primates?		
Research Involving Developing Countries		
Use of local resources (genetic, animal, plant etc)		
Impact on local community		
Dual Use		
Research having direct military application		
Research having the potential for terrorist abuse		
ICT Implants		
• Does the proposal involve clinical trials of ICT implants?		
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	YES	

References

- Baskind, A. (2003). *Modèles et méthodes de description spatiale de scènes sonores*. Applications aux enregistrements binauraux. PHD Thesis, Paris, France, University Paris 6.

- Cornelis, O., Lesaffre, M., Moelants, D., Leman, M. 2010. *Access to ethnic music: advances and perspectives in content-based music information retrieval*. Signal Processing, 90, pp. 1008-1031.

- EU Press Release (2008). See http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/08/473

- d'Haes, W. and X. Rodet (2003). *A New Estimation Technique for Determining the Control Parameters of a physical model of a trumpet*. 6th International Conference on Digital Audio Effects (DAFx03),, London, UK.

- Gaver, W., Bowers, J., Boucher, A., Law, A., and Pennington, S. (2007). *Electronic furniture for the Curious Home: Assessing ludic designs in the field*. International Journal of Human-Computer Interaction, 22(1-2): 119-152.

- Gómez, E., Herrera, P. 2008. *Comparative Analysis of Music Recordings from Western and Non-Western traditions by Automatic Tonal Feature Extraction*. Empirical Musicology Review 3(3), pp. 140-156.

- Gómez, E., Haro, M., Herrera, P. 2009. *Music and geography: content description of musical audio from different parts of the world*. Proceedings of the ISMIR 2009.

- Gribonval, R., H. Rauhut, et al. (2008). *Atoms of all channels, unite! Average case analysis of multi-channel sparse recovery using greedy algorithms*. The Journal of Fourier Analysis and Applications, Springer-Verlag 14(5): 655-687.

- Hélie, T., B. D'Andréa-Novel, et al. (2008). *Inverse problem: recovering the full-state of a simplified model of a trumpet-like instrument from the radiated pressure*. Acoustics'08, Paris, France.

- Herrera, P., J. Serrà, C. Laurier, E. Guaus, E. Gómez, X. Serra, *The Discipline formerly known as MIR. 10th International Conference on Music Information Retrieval*. Kobe, Japan, 2009

- Huron, D. 2006. *Sweet Anticipation: Music and the Psychology of Expectation*. MIT Press / Bradford Books, Cambridge, MA, 2006.

- Jordà , S., Kaltenbrunner, M., Geiger, G. & Bencina, R. (2005c). *The reacTable**. Proceedings of the International Computer Music Conference (ICM05).

- Jordà, S., Geiger, G., Alonso, M. & Kaltenbrunner, M. (2007). *The reacTable: exploring the synergy between live music performance and tabletop tangible interfaces*. TEI '07: Proceedings of the 1st international conference on Tangible and embedded interaction, 139-146.19

- Julià, C. F. & Jordà, S. (2009). *Songexplorer: a tabletop application for exploring large collections of songs*. Proceedings of the International Society for Music Information Retrieval Conference (ISMIR'09), Kobe, Japan.

- Lartillot, O. (2004). *Un système d'analyse musicale computationnelle suivant une modélisation cognitiviste de l'écoute*. PHD Thesis, Paris, France, University Paris 6.

- Meudic, B. (2004). *Détermination automatique de la pulsation, de la métrique et des motifs musicaux dans des interprétations à tempo variable d'oeuvres polyphoniques*. PHD Thesis, University Paris 6, Paris, France.

- Magas, M, Stewart, R., and Fields, B. (2009). *decibel 151: Collaborative Spatial Audio Interactive Environment*. In ACM SIGGRAPH.

- Mauch, M. and S. Dixon (2010). *Simultaneous Estimation of Chords and Musical Context From Audio*. IEEE Transactions on Audio, Speech, and Language Processing 18(6): 1280 - 1289.

- Nouno, G. (2008). *Suivi de Tempo Appliqué aux Musiques Improvisées*. Paris, France, PHD Thesis, University Paris 6.

- Papadopoulos, H. and G. Peeters (2010). *Joint Estimation of Chords and Downbeats From an Audio Signal*. IEEE Transactions on Audio, Speech, and Language Processing 19(1): 138 - 152.

- Roy, D., Pappu, N., Prabhakar, T.V. 2004. *Parichaykrama – An Exploratory Interface of Indian Classical Music Using Experiential Framework*. CMMR 2004, LNCS 3310, pp. 359-370.

- Sengers, P. and Gaver, B., (2006). *Staying Open to Interpretation: Engaging Multiple Meanings in Design and Evaluation*. Proceedings of the 6th conference on Designing Interactive Systems.

- Pampalk, E. (2001). *Islands of music: Analysis, organization, and visualization of music archives*. MSc thesis, Vienna University of Technology.

- Shazam press release 6 December 2010 (http://www.shazam.com/music/web/newsdetail.html?nid=NEWS20101206124027)

- Stein, M. (2010). *Automatic Detection of Multiple, Cascaded Audio Effects in Guitar Recordings*. Proc. of DAFX, Graz, Austria.

- Tzanetakis, G., A. Kapur, W. A. Schloss, and M. Wright (2007). *Computational ethnomusicology*. Journal of Interdisciplinary Music Studies, vol. 1, no. 2, pp. 1–24.

- Wiggins, G. A. (2009b). *Semantic Gap?? Schemantic Schmap!! Methodological considerations in the scientific study of music*. In Proceedings of 11th IEEE International Symposium on Multimedia, pages 477–482.