

Annex3  
to Doc. WGCEM/1/00



## **COST Action 287**

# **Gesture Controlled Audio Systems**

## **PROGRESS REPORT**

***Period: from March 2003 to June 2006***

This Report is prepared by the Management Committee of the Action and presented to the relevant Technical Committee or directly to the Committee of Senior Officials. The report is a “cumulative” report, i.e. it is updated annually and covers the period beginning from the start date of the Action.

## CONTENTS

### 1 OVERVIEW: ACTION IDENTIFICATION DATA

*(See the table “Action identification data” attached at the end)*

### 2 OBJECTIVES

The **Cost287–ConGAS** Action intends to contribute to the advancement and development of musical gesture data analysis and to capture aspects connected to the control of digital sound and music processing.

The objective can be detailed as follows:

- To establish links with connected fields of research (multi-modal interface research, smart user interfaces, smart sensors/actuators for multimedia presence/interaction), intelligent interfaces for elderly and disabled, including rehabilitation technologies for all, etc.).  
In establishing these links, **Cost287–ConGAS** will try hard to have an impact on social domains other than just the music field (tool research for assistance, ergonomic research in common mass tools and utilities, acoustic ecology, etc.).
- To improve the knowledge in the relationship between sound and gesture, on the the mathematical/scientific side and on practical implementations.
- To improve new gestural processing of sound, carefully studying the typical structure of musical/instrumental gesture (division between control and sound production, audio feedback, and visual cues and sound production).
- To explore distributed interactive multimedia technologies (multi -platform and multi-operating-system integrations using networking protocol and technologies).
- To coordinate most prominent efforts at European level in this field, linking together several research centers that are currently working separately in this field.
- Promote the developments and applications of new technologies. This Action will promote further development of interactive installation and distributed collaborative arts. Besides new applications and opportunities to explore new markets (e.g. interactive installation for museum, public places and new artistic

performances) provided by its development, the **Cost287–ConGAS** action will widen participation of music making and stage performance, and alternative paths to musical creativity and expressivity for many people, including those for whom conventional instruments are not an option due to physical constraints. This Action aims to coordinate the different research realities in European countries to share and cross-fertilize their experience.

### 3 TECHNICAL DESCRIPTION AND IMPLEMENTATION

The work on the **Cost287–ConGAS** will articulate itself along the following steps:

- State-of-the-art investigation and refined specifications of research planning within the Action itself, which involves:
  - Gestural control taxonomy and classification (interaction and performance control description and definition; investigation on prior art techniques and algorithms for gesture-sound integration).
  - Sound control definition and classification.
  - Multimodal interface design classification.
- Establishment of design methods and techniques, which involves:
  - Study and design of a standardized common framework to investigate and describe the existing forms of gesture and sound control;
  - Design and implementation of infrastructure software/hardware tools of the common framework;
  - Implementation of new and also existing algorithms for sound control and gesture-sound interaction in the established framework;
  - Development of a common database for gesture algorithm description and implementation (this database should be freely accessible and the Action may accept external contributions to it).
- Experimentation and Assessment of Design Methods and Tools, that will involve:
  - Development of software/hardware demonstration tools and vehicles for general and specialized public (to be used in conferences, fairs, exhibitions, etc.);

- Development of on-line demonstrators for download and experimentation;
- Production-grade software creation.
- Establishment of Guidelines and Protocols, that will provide a formalized documentation on the results obtained in the previous steps, in connection with - and possibly contributing to - several standardization efforts.
- Dissemination and Diffusion, an ongoing activity during the whole duration of the Action. It will encompass the following activities:
  - Organization of Working Group meetings dedicated to specific aspects and problems in the field;
  - Scientific conference every year devoted to Gestural control in Music, coordinated with other related symposia.
  - Participation to special conference sessions in other international conferences, such as the *International Computer Music Conference* - ICMC (<http://www.icma.org>), the *DAFx* conference (<http://www.dafx.de>), European Symposia such as the Italian *Colloquio di Informatica Musicale* (<http://www.xivcim.org>), the French *Journées d'Informatique Musicale* (<http://www.gmem.org/evenements/jim2002/jim.htm>), etc.

The scientific program of the **Cost287-ConGAS** Action aims at an efficient cooperation of every interested research group. Working Groups have been designed so that each research group may participate according to its own background and interest. The Action will use common servers and repositories and Free Software groupware tools to be able to share any information they wish to.

## 4 PARTICIPATION AND COORDINATION

### 4.1 Management Committee

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**UNITED KINGDOM :**

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University of Leeds  
School of Computing  
School of Music

Dr. Andy Hunt  
University of York  
Department of Electronics



## 4.2 Participating Institutions

1. Ghent University, Belgium
2. ARTeM (Art, Recherche, Technologie e Musique asbl), Belgium
3. McGill University, Canada
4. Aalborg University, Denmark
5. Aalborg University Esbjerg, Denmark
6. Helsinki University of Technology, Finland
7. LMA-CNRS Marseille, France
8. Université de Bretagne-Sud, France
9. University of Kassel, Germany
10. Bielefeld University, Germany
11. Iceland Academy of the Arts, Iceland
12. University of Limerick, Ireland
13. Media Lab Europe, Ireland
14. Queens University, Ireland
15. Media Innovation Unit - Firenze Tecnologia, Italy
16. DIST - University of Genoa, Italy
17. vrije Universiteit Amsterdam, Netherlands
18. Norwegian University of Science and Technology (NTNU), Norway
19. Oslo University, Norway
20. Universidad Católica Portuguesa, Portugal
21. INESC Porto, Portugal
22. Universitat Pompeu Fabra, Spain
23. Royal Institute of Technology, Sweden

24. University of Western Switzerlans, Switzerland
25. University of Leeds, United Kingdom
26. University of York, United Kingdom

### 4.3 Meetings of the Management Committee

- **Inaugural Management Committee Meeting.** Brussels (B), March 10th, 2003
- **First Cost287–ConGAS Management Committee Meeting.** Genova (I), April 18th, 2003
- **Second Cost287–ConGAS Management Committee Meeting.** Bielefeld (D), January 9th, 2004
- **Third Cost287–ConGAS Management Committee Meeting.** Barcelona (E), October 12th, 2004
- **Fourth Cost287–ConGAS Management Committee Meeting.** Vannes (F), May 21st, 2005
- **Fifth Cost287–ConGAS Management Committee Meeting.** Salerno (I), November 23rd, 2005
- **Sixth Cost287–ConGAS Management Committee Meeting.** Leeds (UK), May 10th, 2006

### 4.4 Meetings of the Working Groups

- **WG3 Meeting.** Genova (I), April 18th, 2003
- **WG3 Meeting.** Stockholm (SE), August 6th, 2003
- **WG1 Meeting.** Marseille (F), November 27th-28th, 2003
- **WG2 Meeting.** Leeds(UK), March 30th, 2004
- **WG1 Meeting.** Oslo (N), December 2nd-3rd, 2004
- **WG3 Meeting.** York (UK), March 22nd-23rd, 2005
- **WG2 Meeting.** Leeds (UK), June 1st-2nd, 2005

- **TWG2 Meeting.** Bielefeld (D), June 13th-14th, 2005
- **TWG1 Meeting.** Padova (I), June 16th-17th, 2005
- **TWG1 Meeting.** Salerno (I), November 22nd, 2005

#### 4.5 Short-term scientific missions

- Scientist: Martin Kaltenbrunner  
Organization: Universitat Pompeu Fabra, Barcelona (E)  
Nationality: Spanish  
Date: 19.02.2004 - 05.03.2004  
Host: Media Lab Europe, Dublin (EI)  
Topic: Design of tangible objects for the reacTable
- Scientist: Pashalidou Panagiota-Styliani  
Organization: University of York, York (UK)  
Nationality: Greek  
Date: 31.03.2004 - 18.04.2004  
Host: Neuroinformatics Group, Faculty of Technology, Bielefeld University, (D)  
Topic: Comparison of different audio control systems
- Scientist: Sandra Pauletto  
Organization: Electronics Department, University of York, York (UK)  
Nationality: Italian  
Date: 02.08.2004 - 13.08.2004  
Host: Neuroinformatics Group, Faculty of Technology, Bielefeld University, (D)  
Topic: Interactivity and interfaces in data sonification.
- Scientist: Loïc Kessous  
Organization: CNRS-LMA, Marseille (F)  
Nationality: French  
Date: 25.10.2004 - 03.11.2004  
Host: Hochschule für Gestaltung, Karlsruhe (D)  
Topic: Natural networks for mapping gestures to sound synthesis.
- Scientist: Mark T. Marshall  
Organization: University of Limerick (IE)  
Nationality: Irish  
Date: 01.10.2004 - 31.10.2004  
Host: McGill University (Canada)

Topic: Investigation and Evaluation of Sensors and Interfaces for Musical Expression.

- Scientist: Till Bovermann  
Organization: Bielefeld University (D)  
Nationality: German  
Date: 31.10.2004 - 08.11.2004  
Host: UPF, Barcelona (E)  
Topic: Improving the tDesk's (Bielefeld) design by the human computer interface of the reactTable(UPF).
  
- Scientist: Enrico Costanza  
Organization: MediaLab Europe, Dublin (IE)  
Nationality: Italian  
Date: 28.10.2004 - 05.11.2004  
Host: UPF, Barcelona (E)  
Topic: Tangible Musical Interfaces.
  
- Scientist: Hembing Li  
Organization: IPEM, Belgium (B)  
Nationality: Chinese  
Date: 12-14.01.2005; 23-27.05.2005  
Host: HUT, (FIN)  
Topic: 1) Define a physical model of the Chinese guqin instrument; 2) Make recordings (doctoral dissertation).
  
- Scientist: Bruno Giordano  
Organization: University of Padua, Padua (I)  
Nationality: Italian  
Date: 20-31.05.2005  
Host: KTH, (SE)  
Topic: Studying expression of emotional intentions in walking, and the ability of listeners to recognize them.
  
- Scientist: John Williamson  
Organization: University of Glasgow, (UK)  
Nationality: British  
Date: 10-24.09.2005  
Host: Neuroinformatics Group, Faculty of Technology, Bielefeld University, (D)  
Topic: Developing systems for exploring high-dimensional data sets, incorporating predictive models of likely user interest.

- Scientist: Erwin Schoonderwaldt  
Organization: KTH, (SE)  
Nationality: Swedish  
Date: 09-22.01.2006  
Host: IRCAM, Paris (F)  
Topic: Exchange ideas and share facilities between the Augmented violin project at IRCAM and the Bostran project at KTH.
  
- Scientist: Kjetil Hansen  
Organization: KTH, (SE)  
Nationality: Swedish  
Date: 09-22.01.2006  
Host: Iceland Academy of Arts, Reykjavik (IS)  
Topic: Finding ways to play new musical instruments.
  
- Scientist: Asri Ibrahim  
Organization: University of York (UK)  
Nationality: British  
Date: 26.03-08.04.2006  
Host: Neuroinformatics Group, Faculty of Technology, Bielefeld University, (D)  
Topic: Task Analysis for Sonification Application Usability Evaluations.
  
- Scientist: Matthew Paradis  
Organization: University of York (UK)  
Nationality: British  
Date: 01-15.04.2006  
Host: McGill University, (Canada)  
Topic: Mapping tools - Developing a universal sensor input translation utility.

## 5 RESULTS

The results and activities on the **Cost287–ConGAS** Action will be presented according to individual working groups. The results are described in the text below, quoting references within section Dissemination of results.

### 5.1 WG1 “Capture/Analysis methods and technologies”

**WG1 Coordinator: Prof. Daniel Arfib, LMA-CNRS Marseille(F)**

The Working Group 1 aim is to answer to this issue: “How to analyze a gesture”, which implicitly includes the question “what is a gesture?”. In this frame, it will compile information and valuable resources on hardware and software of sensing technologies. Furthermore WG1 aims to provide the basic foundations concerning gesture oriented to sound production, in order to make a link with WG2 and WG3 to get an overall picture of **Cost287–ConGAS** .

The main activities of WG1 during the first **Cost287–ConGAS** year **2003-2004** were:

1. WG1 Meeting, Genova April 2003. The object of this working group is defined by these three topics, related to Gesture Controlled Audio Systems:
  - Signal and emotion, Esthetics and meaning;
  - Meanings of gesture;
  - Learning gesture.
2. WG1 Meeting, Marseille October 2003:
  - Presentations of the work of the delegates in this domain.
  - Creation of a local web site with a report of the talks (<http://cost287.free.fr>).
  - Intervention of WG1 inside the global **Cost287–ConGAS** project is defined (definition of themes, bibliography, seminars etc.).
3. Bielefeld, January 2004.

During the MC meeting, coordination of the different WG1 activities and results is discussed with the proposition of a “Transversal Working Group” (TWG) (see Sec. 5.4 on page 21).
4. Leeds, March 2004.

Participation of different members of WG1 inside the WG2.

In **2004/2005**, WG1 activities have concerned the expansion of materials concerning WG1's themes, some of them being present on the WG1 web site <sup>1</sup>. A WG1 seminar has taken place in Oslo, with a number of excellent presentations seminar in Oslo. The big advance for this year is the preparation of the congas Book volume1, with a definition of a table of contents with the definition of chapter leaders, and some recommendations concerning publishing and methodology that can help the future Transversal working group on the book. WG1 delegates have participated to the cross pollination with other WGs and MC and have presented the **Cost287–ConGAS** action at different conferences.

The main activities of WG1 during the second **Cost287–ConGAS** year 2004-2005, in addition to the MC and WG1 meeting participation, were:

1. Presentation of WG1 activities, within **Cost287–ConGAS** MC Barcelona, October 2004;
2. WG1 Book session, Oslo December 2nd, 2004;
3. WG1 Seminar *Basic issues of gesture and musical sound*, Oslo December 3rd, 2004, with presentations by WG1 members. The detailed program and abstracts' speeches are online. <sup>2</sup>
4. WG1 Dissemination: **Cost287–ConGAS** presentation at SMC'04 Sound and Music Computing, IRCAM, Paris (F), October 20-22, 2004.

The main concern of WG1 in **2005-2006** has been twofold:

1. Help the presentation of **Cost287–ConGAS** by the presentation of good papers at the conferences where **Cost287–ConGAS** had a session related to the question "*What is a gesture*". This includes the reviewing process of such conferences or attached publications.
2. Help the process of the book construction by
  - refining the table of contents so that the chapters themselves have a complementarity
  - defining with WG2 and WG3 the limits of each book, so that the entire series has a congruence"

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<sup>1</sup><http://cost287.free.fr>

<sup>2</sup> <http://www.hf.uio.no/imv/forskning/forskningsprosjekter/musicalgestures/events/congas-seminar/index.html>

The WG1 planning for 2006-2007 is to host a seminar in Oslo, where scientific subjects associated with **Cost287–ConGAS** can be debated, to participate to the **Cost287–ConGAS** events, including performance/demos, and end up with a book ready for publication.

## 5.2 WG2 “Input Technology”

**WG2 Coordinator: Dr. Kia C Ng, University of Leeds (UK)**

The activity of WG2 focuses on collecting and compiling resources for the development and implementation of low-level hardware devices, perform benchmarks and measurements on both experimental and commercially available devices, etc. WG2 also aims to survey sensing technologies using Computer Vision and pattern recognition techniques such as motion tracking and face tracking with live video, as well as multi sensory fusions.

The Symposium on Gesture Interfaces for Multimedia Systems<sup>3</sup> was first hosted by the University of Leeds in 2004. The event was co-organized with partners of **Cost287–ConGAS** and published a proceedings (ISBN 1 902956 37 4) with 14 papers.

WG2 activities during the year **2003-2004**:

1. **Cost287–ConGAS Symposium on Gesture Interfaces for Multimedia Systems.**, Leeds, March 29th, 2004.

Attended by over 30 delegates from all over the world.

Symposium Chairs: Kia Ng, Antonio Camurri, Nicola Bernardini.

Good interaction with the wider Artificial Intelligence domain.

This event has been organized within the “AISB 2004 Convention: Motion, Emotion and Cognition” (AISB: Artificial Intelligence and Simulation of Behavior), 29 March 2004 to 1 April 2004.

For further information: <http://www.leeds.ac.uk/aisb/gims>

GIMS photos: <http://icsrim.leeds.ac.uk/congas/photos-aisb-gims-2004/>

WG2 meeting photos: <http://icsrim.leeds.ac.uk/congas/photos-congas-wg2-2004/>

2. **Cost287–ConGAS WG2 meeting**, Leeds, 30 March 2004
3. A mini-symposium on sound and interaction between KTH, York and Leeds (for details, please see WG3 report sec. 5.3 on page 19).

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<sup>3</sup><http://www.leeds.ac.uk/aisb/gims>



In **2004/2005**, the **Cost287–ConGAS** Working Group 2 has continued to enhance the resources on the main topics of this WG on interaction technologies with the WG2 website (<http://icsrim.leeds.ac.uk/congas/>) to provide relevant bibliographies, information and links. On going activities include the forthcoming **Cost287–ConGAS** Book, particularly on the volume 2 which is to focus on the sensing and interaction technologies.

In addition to the participation to MC meeting and the organization of internal meeting, WG2 activities during 2004-2005 were:

1. Dissemination, Relevant Events and Meetings:

- September 13th-15th, WEDELMUSIC 2004, Univ. Pompeu Fabra, Barcelona
- October 26th, 2004, Leeds Music Technology Conference, Leeds, UK
- October, 14th-15th, 2004, British Council Conference on Advances in Motor Research in Hemiparetic Cerebral Palsy Organized by the School of Sport and Exercise Sciences and ICSRiM
- October 10th-14th, 2004, ISMIR 2004: 5th International Conference on Music Information Retrieval, Audiovisual Institute, Univ. Pompeu Fabra, Barcelona
- October 29th-30th, 2004, Invited visit and meeting on WG2, McGill University, Canada
- November 1st-6th, 2004, International Computer Music Conference, Miami, USA
- December 2nd, 2004, **Cost287–ConGAS** WG1 Seminar and Meeting, University of Oslo
- March 18th, 2005, Music via Motion Workshop, National Science Week, ICSRiM - University of Leeds, UK
- April 12th-15th, 2005, AISB 2005, University of Hertfordshire, UK

2. Upcoming Dissemination, Events and Meetings:

- May 26th-28th, 2005, International Conference on New Interfaces for Musical Expression (NIME), University of British Columbia, Vancouver, Canada
- June 20th - July 1st, 2005, Art Trail Soundworks 2005, Cork City, Ireland
- July 4th-5th, 2005, 5th MUSICNETWORK Open Workshop, Vienna, Austria
- July 25th-29th, 2005, EVA International Conference, London, UK
- November 30th - Decemeber 2nd, 2005, AXMEDIS 2005, Florence, Italy

### 3. Results and Publications:

- **Cost287–ConGAS** WG2 Website: <http://icsrim.leeds.ac.uk/congas>

In **2005-2006** the WG2 continues the activities as in the previous year. It maintains the WG2 website with related publications and sensor relative links, actively working on the ConGAS book project, and enlarging the disseminations and publicity activities.

The activities of this WP contribute naturally towards the **Cost287–ConGAS**Book 2 which is previously entitled *Gestural Control of Music – Technologies of Gesture and Sound*. Full chapter contributions are expected by the end of September 2006 with the estimated delivery date for final typescript by Spring of 2007.

For disseminations, the WG2 chair has participated presentations and publications in several related international events (for complete information see references [50, 45, 53, 56, 55, 60, 38, 52, 51] in the bibliography provided on Sec. 6.1.2 on page 23)

Invited presentations/participations involving ConGAS WG2 chair include:

- Allegro con Bit, 14 March 2006, Rome, Italy
- JISC Conference 14 March 2006, Birmingham, UK
- White Rose University Consortium/National e-Science Centre Introduction to e-Infrastructure Workshop, 28 March 2006, Leeds, UK
- UK National Science Week, Music via Motion (MvM) Workshop, 29 March 2006, Leeds, UK
- AHRC ICT Methods Network Music Expert Seminar, 3 March 2006, Royal Holloway, University of London, UK

Events organised include:

- 1st I-MAESTRO Workshop, Paris, France (June 2006), co-located with NIME06
- 2nd COST287-ConGAS International Symposium on Gesture Interface for Multimedia Systems (GIMS 2006), 9-10 May 2006, Leeds, UK <sup>4</sup>.  
In addition to scientific and technical paper sessions on the first day, GIMS 2006 has been organized in association with FUSELEEDS 2006 (an international music festival organized by the Leeds City Council) with a public Demo Session on the second day with over 700 visitors at the West Yorkshire Playhouse.

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<sup>4</sup><http://www.icsrim.org.uk/gims>

### 5.3 WG3 “Integrated Applications”

#### WG3 Coordinator: Dr. Andy Hunt, University of York (UK)

The activity of the Working Group 3 focuses on the integration of the work carried out in WG1 and WG2 producing concrete applications of low-level and sensing technologies, bringing together developments from arts and sciences in order to promote multidisciplinary integrations. In **2003-2004** the work within WG3 has covered:

1. Participation at the **Interactive Sonification Workshop** Bielefeld University, January 2004. The Workshop brought together researchers from all over the world, but especially Europe, to look at the combination of interaction and sound. At least two future international events are being planned for the next year to follow-on from this workshop results.  
The results of the workshop will be published online in the next months
2. Participation to IEEE Multimedia Special Issue on Interactive Sonification, April 2005. Guest editors Thomas Hermann and Andrew Hunt.
3. A mini-symposium on sound and interaction between KTH, University of York and University of Leeds leading to the following plans for research:
  - To share ideas on interaction, analysis and synthesis of emotion, and sonification; lots of potential for collaboration are individuated.
  - To develop a mind-map about the possible structure of a **Cost287–ConGAS** book.
  - To plan some research visits.
4. Stella Pashalidou’s STSM
5. Workshop day in Leeds (hosted by Kia Ng, UK delegate, and WG2 chairman)  
See sec. 6.2 on page 30.

**2004-2005:** Working Group 3 has been forging collaborations between researchers who are involved in developing applications where human gesture controls sound. The birth of the biennial Interactive Sonification workshop is one example of the outcome in this area. A Special Issue of IEEE Multimedia is just being published, led by WG3 members. Strong links are being made with the ICAD community on Auditory Display. Researchers from Stockholm, York and Bielefeld (all WG3 members) are collaborating on a variety of projects, including looking into EU funding for the use of interactive sound to improve land-mine detection. WG3 is also gathering information

about research in the EU which allows humans to interact with sound, and aims to publish this in Volume 3 of the forthcoming **Cost287–ConGAS** book.

In addition to the participation to MC meeting and the organization of internal meeting, WG3 activities during 2004-2005 were:

1. Meeting and Events organized:

- March 21st 2005, PD Educational Workshop: PD is a Free Software graphical programming environment for real-time MIDI and audio manipulation, and it is both excellent (flexible, Free Software, etc.) and “complicated” (few defaults, blank screen, diffuse tutorials mostly written by developers). The group joined in with their own experiences and thoughts about PD and how it relates to **Cost287–ConGAS**, i.e. how PD can be used in the context of gestural control of audio systems <sup>5</sup>.
- May 18th-20th, 2005, MC meeting and International Gesture Workshop, Vannes (France):  
Till Bovermann was on a STSM in Barcelona with Martin Kaltenbrunner, investigating the possibilities for interacting with intelligent tables. As a result, a OSC protocol for data exchange via Open Sound Control was established called TUIO. Results have been compiled into a poster for the Gesture Workshop GW 2005 that was presented in Vannes.
- July 2005 ICAD Workshop: Thomas Hermann, Andy Hunt and Bill Martens are running a half-day workshop on auditory data mining in Limerick. ICAD’s focus is on interaction this year and so it is indeed very relevant to **Cost287–ConGAS**<sup>6</sup>.

The main activity of WG3 during **2005/2006** has been the planning, preparation and writing of ConGAS Book 3: *Applications of Gestural Audio systems* (see full report in TWG1-Book).

Members have continued to promote ConGAS at major international conferences.

Two STSMs supported:

1. Asri Ibrahim (University of York) to Bielefeld;

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<sup>5</sup>[http://www-users.york.ac.uk/adh2/PD\\_WG3.html](http://www-users.york.ac.uk/adh2/PD_WG3.html)

<sup>6</sup>See details on <http://www.idc.ul.ie/icad2005/>

2. John Williamson (Glasgow University, Interactive Systems Group) to Bielefeld, planning to investigate the dynamics of interaction in gestural audio interactions, in the context of interactive sonification.

Several papers in particular have been submitted to ICAD - the International Conference of Auditory Display.

The second Workshop on Interactive Sonification is planned to take place in York on Feb 3rd 2007.

## 5.4 Transversal Working Groups

The 2nd MC Meeting in Bielefeld raised the following issues (among others):

- a) The current Working Group Layout defines some broad thematic areas which tend to be interesting for most delegates;
- b) As a result, all delegates participate to more than one Working Group (some of them taking part to all three);
- c) While this situation tends to provide very positive scientific exchanges and is indeed capable of fulfilling the scientific scope of the action, it does not fare too well in reaching useful practical goals (such as promoting dissemination, writing a book, maintaining the website etc.);

Therefore, the MC decided to establish some *Transversal* Working Groups (TWGs). TWGs are supposed to be small (i.e. 3-5 people) of highly committed individuals spanning all regular WGs and fulfilling specific objectives. TWGs may be featuring the contribution of specialists outside the Management Committee. The MC decided to promote the creation of two TWGs as follows:

No.	TWG	Task Description
TWG1	Book	The Book TWG is devoted to the design and the organization of a book dedicated specifically to <b>Cost287–ConGAS</b> objectives; while this book will probably be issued as a final report of the action, its conception and design will start very early on through this TWG

TWG2	Website	The <b>Cost287–ConGAS</b> website needs active maintenance and constant update; while it has already been set up and filled in with usual information, it needs to be kept a lively source of information with constant work: this TWG will be responsible for this work;
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The MC decided to take some time to determine the detailed structure of TWGs (Chairs, Members, Overall Agenda, Scheduling, etc.). Hence, TWGs were fully established at the MC Meeting in Barcelona (October 2004).

The TWG1-Book is composed by:

- Marc Leman (TWG Chairperson)
- Marcelo Wanderlay
- Andy Hunt
- Gualtiero Volpe

The TWG2-Web site is composed by:

- Sandra Pauletto (TWG Chairperson)
- Thomas Hermann
- Mikael Fernström
- Nicola Bernardini

#### **TWGs Meetings 2004-2005:**

- TWG1 meeting (**Cost287–ConGAS** Book): Bielefeld, June 13-14 2005
- TWG2 meeting (**Cost287–ConGAS** Web Site): Padova, June 16-17 2005

#### **TWGs Meetings 2005-2006:**

- TWG1 meeting (**Cost287–ConGAS** Book): Salerno, November 22 2005

## 6 DISSEMINATION OF RESULTS

### 6.1 Publications and Reports

#### 6.1.1 Scientific Documents

Please see references [54, 49, 20, 52] in the bibliography provided on Sec. 6.1.2.

#### 6.1.2 Papers and individual publications of participants

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- [2] D. Arfib, J. M. Couturier, and L. Kessous. Design and use of some new digital musical instruments. In Camurri and Volpe [11], pages 509–518. Online version available.
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### 6.1.3 Administrative Documents

- **2003-2004:**

1. Inaugural **Cost287–ConGAS** MC Meeting Minutes
2. First **Cost287–ConGAS** MC Meeting Minutes
3. Second **Cost287–ConGAS** MC meeting Minutes
4. WG1 Meeting Minutes
5. WG2 Meeting Minutes
6. WG3 Meeting Minutes
7. Financial Report (2003-2004)
8. Annual Plan (2004-2005)

- **2004-2005:**

1. Third **Cost287–ConGAS** MC Meeting Minutes
2. Fourth **Cost287–ConGAS** MC Meeting Minutes
3. WG1 Meeting Minutes
4. WG2 Meeting Minutes
5. WG3 Meeting Minutes
6. Financial Report (2004-2005)
7. Annual Plan (2005-2006)

- **2005-2006:**

1. Fifth **Cost287–ConGAS** MC Meeting Minutes
2. Sixth **Cost287–ConGAS** MC Meeting Minutes
3. TWG1 Meeting Minutes
4. Financial Report (2005-2006)
5. Annual Plan (2006-2007)

## 6.2 Conferences and Workshops

### **Cost287–ConGAS Symposium on Gesture Interfaces for Multimedia Systems - GIMS04.** Leeds, March 29th 2004.

Attended by over 30 delegates from all over the world. Good interaction with the wider AI domain.

Symposium Chairs: Kia Ng, Antonio Camurri, Nicola Bernardini

This event has been organized within the “AISB 2004 Convention: Motion, Emotion and Cognition” (AISB: Artificial Intelligence and Simulation of Behavior), 29 March 2004 to 1 April 2004.

For further information, please see <http://www.leeds.ac.uk/aisb/gims>.

### **Cost287–ConGAS Session. 6th International Gesture Workshop.** Vannes, May 20th 2005.

This event has been organized within the “6th International Workshop on Gesture in Human-Computer Interaction and Simulation”, University Bretagne Sud, Vannes (F) - from 18 May 2005 to 20 May 2005.

For further information, please see <http://www-valoria.univ-ubs.fr/gw2005/>.

### **Cost287–ConGAS Presentation at Sound Music Computing SMC05.** Salerno, November 24th 2005.

A **Cost287–ConGAS** poster session was held the first day of the conference, attended by over 50 people. For further information and detailed programme, please see <http://www.smc05.unisa.it>.

### **2nd Cost287–ConGAS International Symposium on Gesture Interfaces for Multimedia Systems - GIMS06.** Leeds, May 09th-10th 2006.

First day, the scientific and technical paper session was attended by over 30 participants. In addition, the GIMS2006 has been organized in association with FUSE-LEEDS2006 (an international music festival organized by the Leeds City Council) with a public Demo Session on the second day with over 700 visitors at the West Yorkshire Playhouse.

For further information, please see <http://www.leeds.ac.uk/icsrim/gims/>.

**Cost287–ConGAS Poster and Demo Session at the International Conference on New Interfaces for Musical Expression - NIME06.** IRCAM, Paris - June 6th 2006.

The number of participants was approximately 250. The major attendees were professional, researchers and artists, working on musical interfaces and music technology.

**Cost287–ConGAS** posters and demos were selected through the NIME review process (peer-reviewed), and are published in the NIME 06 proceedings (Proceedings of the international conference on New Interfaces for Musical Expression-NIME 06, IRCAM-Centre Pompidou, Paris, France, June 4-8 2006) For further information, please see <http://recherche.ircam.fr/> and the detailed programme is available online at <http://recherche.ircam.fr/equipes/temps-reel/nime/program-summary.pdf>.

### 6.3 Web site

The Web site of COST Action 287 provides a general description and documents of the Action, links to participants, MoU, meetings minutes, MC material, etc. The home page advertise on next events related to the Action while the EVENTS section keeps track of past events, collecting minutes and reports too. The Documentation page has been implemented with an STSM section containing STSM's work-plans and Final Reports. The future plan for this section is to allow young STSM scientists to put their contribution online directly.

2005-2006 website development has been the creation of two online web forms to collect data on researchers and projects dealing with the **Cost287–ConGAS** scientific fields of study. Second steps will be the publication of all data collected after a proper validation by the national delegates.

<http://www.cost287.org>

### 6.4 Scientific and Technical Cooperation

Working liaison with other COST Actions in the field of telecommunications and teleinformatics and other scientific communities:

- COST 219-ter Action “Accessibility for All to services and terminals for next generation mobile networks”. Participation of Cost287 Chairperson Nicola Bernardini to 219-ter MCM Copenhagen, October 19th 2004.

- a collaboration has been established with the AISB Society for the Study of Artificial Intelligence and the Simulation of Behavior (<http://www.aisb.org.uk/>) during the 1st **Cost287–ConGAS** Workshop in Leeds.
- Strong links are being made with the ICAD Community on Auditory Display (<http://www.icad.org/>).

## 6.5 Transfer of Results

During its current research activities in the context of Gestural Audio Control WG3 started a contact with a motion capture company named Lukotronic <sup>7</sup>. Within this connection, WG3 extended their software system with an OpenSoundControl export module to significantly facilitate the creation of real-time systems. The interface is in principle capable of sending information according to the TUIO protocol, developed during a **Cost287–ConGAS** STSM by Till Bovermann.

WG2 established several contacts with related industries particularly on sensor acquisition devices such as iCubeX and AtoMIC and La Kitchen, and motion tracking companies including VICON Ltd.

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<sup>7</sup>[www.lukotronic.com](http://www.lukotronic.com)



## 7 ECONOMIC DIMENSION

The number of Signatories of the **Cost287–ConGAS** Action is constantly increasing. Denmark signed the MoU in September 2003 (after start of the Action), Iceland was accepted by an MC vote at the beginning of July 2004 (07/05/2004). The last new entry is Portugal - represented by two delegates - that has signed the MoU the 1st of August 2005.

Moreover, Austria has expressed interest in joining the **Cost287–ConGAS** Action in the coming year.

Number of Signatories of <b>Cost287–ConGAS</b> (2003-2006):	15
Non-COST institution participating to this Action:	1
Estimated number of new Signatories (2006-2007):	1
Total Estimated number of Signatories of <b>Cost287–ConGAS</b> :	17
Total duration:	4 years
Frequency of MC Meetings:	1-2
Frequency of WG/TWG Meetings:	1-2
Frequency of Symposia:	1-2

Estimated cost of the **Cost287–ConGAS** Action:

Estimated number of Person-years per year per signatory involved in Action:	2	
Estimated cost per person-year:	3,000	
Number of travel per year:	4-5	
Cost per signatory per year:		6,000
Total costs for the first year (14 signatories):		61,800
Total estimated costs over 3 years for 16 signatories:		270,000
<b>Total estimated costs over 4 years:</b>		<b>321,200</b>

**Funds received from the Commission:**

First year 2003-2004: € 51,011.95

Second year 2004-2005: € 61,800

Third year 2005-2006: € 65,268

<b>TEMPLATE</b>				
<b>COST Action Cost287-ConGAS</b>				
<b>Funds Received Distribution</b>				
<b>March 2003 to 15 June 2006</b>				
<b>Item</b>	<b>Allocation</b>		<b>COST SUPPORT</b>	
	<b>Unit cost</b>	<b>Sub-totals</b>	<b>sub-totals</b>	
<b>2003-2004</b>			<b>EUR 38,985.95</b>	
	<b>SECRETARIAT (13 countries)</b>	EUR 13,000.00		
	<b>MC, WG MEETINGS</b>	EUR 20,410.15		
	<b>WORKSHOPS and SEMINARS</b>	EUR 3,000.00		
	<b>STSMs</b>	EUR 2,000.00		
	<b>PUBLICATION</b>	EUR 575.80		
			EUR 38,985.95	
<b>2004-2005</b>			<b>EUR 61,800.00</b>	
	<b>SECRETARIAT (14 countries)</b>	EUR 13,000.00		
	<b>MC, WG TWG MEETINGS</b>	EUR 38,920.00		
	<b>WORKSHOPS AND SEMINARS</b>	EUR 3,000.00		
	<b>STSMs</b>	EUR 6,880.00		
	<b>PUBLICATION</b>	EUR -		
			EUR 61,800.00	
<b>2005-2006 - Prevision</b>			<b>EUR 65,268.00</b>	
	<b>SECRETARIAT (15 countries)</b>	EUR 13,000.00		
	<b>MC, WG TWG MEETINGS</b>	EUR 35,438.00		
	<b>WORKSHOPS AND SEMINARS</b>	EUR 5,500.00		
	<b>STSMs</b>	EUR 9,161.00		
	<b>PUBLICATION</b>	EUR 2,000.00		
			EUR 65,268.00	
<b>TOTAL</b>			<b>EUR 166,053.95</b>	

## 8 OVERVIEW: ACTION IDENTIFICATION DATA

**COST Action 287**

**Title:** *Gesture Controlled Audio Systems*

**TC Recommendation:** 17/10/2002

**First MC meeting:** 10/03/2003

**CSO Approval:** 03/12/2002

**Last MC meeting:**

**Start date:** 10/03/2003

**Final Report:**

**Duration:** 48 months

**Evaluation Report:**

**Extension:** 30/06/2007 - Requested

**TC Evaluation:**

**End date:** 13/03/2007

**Number of signatories:** 15

**Signatories and date of signature:** (day/month/year)

Belgium, 16/05/2003

Iceland, 05/07/2004

Portugal, 01/08/2005

Denmark, 05/09/2003

Ireland, 12/03/2003

Spain, 25/09/2003

Finland, 20/03/2003

Italy, 14/03/2003

Sweden, 16/05/2003

France, 05/05/2003

Netherlands, 12/03/2003

Switzerland, 17/04/2003

Germany, 12/03/2003

Norway, 20/03/2003

United Kingdom, 12/03/2003

**Institutes of non-COST countries:** *Faculty of Music, McGill University, Canada*

**Area:** Telecommunications Information Science and Technology

**Action Web site:** <http://www.cost287.org>

**Chairperson:**

Title, name: *Nicola Bernardini*

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P.O. code, City: *I-50122 FLORENCE*

Web: *http://www.miu-ft.org*

Country: *Italy*

**TC Rapporteurs:** *PD Dr. Michel Ansorge, Switzerland*

**External Evaluator:** none to date

**External Evaluator:** none to date