

# ANNUAL SCIENTIFIC REPORT 2002 - 2003

## ESC WORKING GROUP ON COMPUTERS IN CARDIOLOGY (#15)

### Objectives

The objectives of the Working Group remain to promote the use of information technology (IT) as widely as possible within the field of Cardiology. This includes the application of IT in research and routine clinical practice, both inside and outside the hospital environment. A more expanded version of the scope of the working group activities can be found at <http://www.escardio.org/wg15/default.asp>

### Organisation of Sessions at the ESC Annual meeting in Vienna at August 30<sup>th</sup>-September 3<sup>rd</sup> 2003

The members of the Working Group proposed a number of symposia etc. for consideration for the annual meeting. Ultimately, pressure on space dictated that only two such sessions could be accepted. These are as follows:

- **Symposium** : How can informatics improve patient management and research? : *Sunday, August 31<sup>st</sup> : 11.00 - 12.30*
- **Clinical Seminar** : Computer assisted thrombolysis : *Monday, September 1<sup>st</sup> : 11.00 - 12.30*

In addition, one oral session and three poster sessions have been organised. These are as follows:

#### Oral Session

- Computer Applications in Cardiology  
*Sunday, August 31<sup>st</sup> : 2 - 3.30*

#### Poster Sessions

- Internet, databases and telemedicine :  
*Sunday, August 31<sup>st</sup> : 9 - 12.30*
- Miscellaneous computer applications :  
*Sunday, August 31<sup>st</sup> : 9 - 12.30*
- Diagnostic electrocardiogram, arrhythmia and image processing:  
*Tuesday, September 2 : 2.00 - 5.30*

The Working Group still receives for consideration many abstracts which are labelled as being linked with Computer Applications in Cardiology but which indeed should be directed elsewhere.

### Computer Demos at the ESC Meeting in Vienna

This year there will again be a series of computer demos on Sunday 31<sup>st</sup> August and Tuesday 2<sup>nd</sup> September. On each day, there will be a morning and an afternoon session allowing for the presentation of sixteen computer demos in total. The demo area will be in a room in the middle of the poster zone and should therefore be easily accessible to all participants in the meeting. This year the Working Group received the computer demo abstracts directly and it was encouraging to

note the large number of abstracts received. Unfortunately, only sixteen could be accepted owing to space limitations. However, this represents a 33% increase over the number of demos presented last year.

## **ESC Business**

The Chairman and Co-Chairman of the Society have participated in the various review processes that have taken place at the Heart House and elsewhere over the past year in order to contribute to the development of the ESC. The outcome of the deliberations will be presented for approval at the ESC AGM in Vienna.

## **Computers in Cardiology Annual Conference**

Working Group 15 is linked with the Computers in Cardiology organisation, which manages the annual Computers in Cardiology meeting. The Chairman of the Working Group is ex officio a member of the Computers in Cardiology Board and participates in the abstract selection process which is always held at the location of the annual meeting, several months in advance of course, while the Chairman is also expected to be an active participant in the conference. This year, the meeting will be held in Thessaloniki, Greece from 21<sup>st</sup> to 24<sup>th</sup> September 2003 and the WG Chairman has already participated in the abstract selection process.

Last year, the Computers in Cardiology meeting was held in Memphis, Tennessee and one of the Working Group, Professor Alan Murray, who is also Editor of the Conference Proceedings, has kindly prepared the following report on the meeting.

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### **Computers in Cardiology Annual Conference Memphis, USA - September 2002**

*Computers in Cardiology* exists to encourage inter-disciplinary communication among cardiologists and other clinicians, engineers, computer scientists and physical scientists, and physiologists. The annual meeting is the most important meeting of the *Computers in Cardiology* Working Group of the European Society of Cardiology. The Chairman of this Working Group, Professor Peter Macfarlane, is on the Board of Directors, which includes world-wide representation to ensure *Computers in Cardiology* is truly international.

In 2002, we met in September in Memphis, where the annual conference was ably chaired by Dr Robert Malkin, and assisted by Dr Jack Buchanan, Dr Semahat Demir, Dr Douglas Guan, Robyn Guinn, Melanie James, Dr Amy de Jongh, Dr Michael Neuman, and Dr Karl Weber (in simple alphabetical order).

The opening symposium focused on an area of local interest. The organisers chose the topic of "Fibrosis and fibrillation: engineering and clinical perspectives". This covered a wide range of relevant issues, detailing the clinical background, development topics and current research areas, including arrhythmogenesis, sudden death, electrophysiology, fibrosis, therapy, cellular structures, and gene chip analysis.

The main *Computers in Cardiology* Symposium opened the following day with presentations for the Rosanna Degani Young Investigator Award, which was won by Enrico Caiani from Milan, collaborating with colleagues at the University of Chicago. His paper was entitled "Automated

quantification of regional myocardial perfusion by analysis of contrast-enhanced echocardiographic images”.

This was followed by 27 sessions over the 2½ day period. This might seem a hectic programme, but the meeting is very deliberately designed to give participants time to interact and discuss, especially on the opening day. I can give only a brief outline of the research presented. Cardiac data processing was well featured, for both images and ECG (including electrophysiology) signals, The range of topics in ECG analysis included atrial fibrillation, as would be expected with expertise in this area at Memphis, and arrhythmias, non-linear dynamics and high-resolution ECG. In imaging, the topics included blood flow, left ventricular function, multi-modality and DICOM. There were also sessions on circulatory and cardiovascular control, heart rate variability, as well as current advances in cardiology information systems and telemedicine.

The *Computers in Cardiology Challenge*, which started only two years previously, is now seen as an important part of the proceedings. It has developed from the detection of sleep apnoea from the ECG alone, and the detection of patients at risk of atrial fibrillation, to the challenge for 2002, which was to produce realistic simulations of heart rate variability. This sounded easy, but in practice the simulations could often be detected as different from natural heart rate variability. The need to pursue this challenge, as a way of understanding heart rate variability was agreed. As in earlier years, the competition raised lots of excitement, along with calls for further challenges. The data for all challenges are still on 'PhysioNet' ([www.physionet.org](http://www.physionet.org)), so keep these challenges alive.

As always in my reports, I end with reference to the Poster Session. This session is one of the most popular at *Computers in Cardiology*. It has a well-publicised session all to itself, and almost everyone participates. As usual, there was so much discussion that delegates had to be encouraged to leave, when it was well past the official end of the session.

Hopefully you are now interested enough to want to look at the Proceedings. They were published in December 2002, two months after the meeting, and contain 187 manuscripts in 776 pages. The papers are indexed, so you should be able to find topics fairly easily. It is published by IEEE (Computers in Cardiology 2002, Vol 29, Catalogue No. 02CH37421, ISBN 0-7803-7735-4). Everyone who came to the conference also received the proceedings on CD.

For those of you who have access to the *Web of Science* produced by the Institute for Scientific Information, you can find *Computers in Cardiology* abstracts from 1991, under their Index to Scientific & Technical Publications (ISTP).

I and all other Members of the ESC Working Group hope that we have encouraged you to come to Computers in Cardiology 2003. It is hosted by the Laboratory of Medical Informatics, Aristotle University of Thessaloniki, and will be held in Athos-Pallini, Kassandra, Chalkidiki, Greece from 21-24 September 2003, under the chairmanship of Nicos Maglaveras. We hope to see you there.

Alan Murray  
Editor, Computers in Cardiology

<http://www.cinc.org> Computers in Cardiology Home Page

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## **Additional Activities**

During the past year, the Working Group was invited to submit an outline of a course on Computers in Cardiology. Many interesting contributions were suggested by various members of the WG Nucleus but the proposal was not accepted for further support by the ESC.

One of the Nucleus members, Dr. Christian Pristipino, is assisting with the organisation of the 5<sup>th</sup> International Heart Health conference to be held in Milan, Italy from June 13<sup>th</sup> to 16<sup>th</sup>, 2004. This meeting, with the sub title Technology, Bridging the Digital Divide in Strategies for Global Heart Health, will have the support of the European Society of Cardiology. It is hoped that Working Group members will contribute significantly to this meeting.

Another of the Nucleus members, Dr. A. Taddei, has been involved in developing a data base of long term ECG recordings in collaboration with Ljubljana University and Harvard-MIT for the study of the dynamics of myocardial ischaemia. This database is intended to complement the ESC ST-T Database, already published on ESC Web site in the section <http://www.escardio.org/scinfo/registries.htm>. The new long term ST database has been already published in Physionet and can be found at <http://www.physionet.org/physiobank/database/ltstdb/>

Some of the members of WG15, including the Chairman, participated in the workshop on the OpenECG project in Crete, in October 2002. The aim of this EC supported project is to stimulate the use of common protocols for the exchange of ECG data, particularly the Standardised Communications Protocol (SCP).

## **Internet Activities**

The ESC has a very effective website through which much of the organisation of abstract selection for the annual meeting is facilitated. In addition, much information is distributed to ESC members via the web site. As might be expected, WG15 with its interest in Computers in Cardiology, has representation on the ESC web committee in the person Dr. Willem Dassen. The activities of the ESC Web Advisory board, as it has been renamed, cover a number of projects aimed at improving the quality of the web site. An ESC market research study targeted at enhancing the web site has been undertaken.. Secondly, the nEwSCasts during the annual congress will be more formalised and extended, including the provision of an electronic version of the ESC congress news. Furthermore, the introduction of more professional journalism may result in two new sections: *Clinical Breakthroughs - In European Perspective* and *Basic Science News*. Finally, the web site will, in the coming year, host a European Research Fellowship Catalogue, listing all available research positions in Europe. A revised ESC website will be tested at the forthcoming ESC meeting and will go "live" in the near future.

## **Membership**

The membership of the society has increased slightly during the year to 161.

## **Conclusion**

The working group has continued to be active in the past year and has contributed in fair measure to the activities of the ESC.

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