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Formal Aspects of
Computing Science
Specialist Group

The Newsletter of the Formal Aspects of Computing Science (FACS) Specialist Group

About FACS FACTS

FACS FACTS (ISSN: 0950-1231) is the newsletter of the BCS Specialist Group on Formal Aspects of Computing Science (FACS). *FACS FACTS* is distributed in electronic form to all FACS members.

Submissions to *FACS FACTS* are always welcome. Please visit the newsletter area of the BCS FACS website for further details (see <http://www.bcs.org/category/12461>).

Back issues of *FACS FACTS* are available for download from:
<http://www.bcs.org/content/conWebDoc/33135>

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BCS-FACS websites

BCS: <http://www.bcs-facs.org>

LinkedIn: <http://www.linkedin.com/groups?gid=2427579>

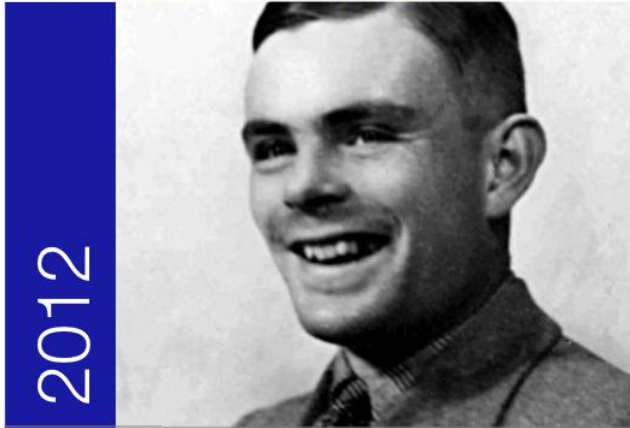
Facebook: <http://www.facebook.com/pages/BCS-FACS/120243984688255>

Wikipedia: <http://en.wikipedia.org/wiki/BCS-FACS>

If you have any questions about BCS-FACS, please send these to Paul Boca <paul.boca@googlemail.com>.

Editorial

ALAN TURING YEAR



The year 2012 is the centenary of the birth of Alan Turing and in this 2011 issue of the FACS FACTS newsletter we present announcements of future events of commemoration.

Welcome to our 2011 edition of the BCS-FACS newsletter.

On 21 September 2011 we held our AGM and this issue includes a report from our Chair, Professor Jawed Siddiqi. The AGM was followed by a seminar given by Professor John Derrick of Sheffield University and during the autumn of 2011 we are organising two further evening seminars. On 30 November 2011, Professor Andrew Ireland presented our annual joint event with the London Mathematical Society –held at De Morgan House, Russell Square. Our annual Peter Landin seminar was held on 6 December at the BCS offices in Southampton Street, London and was presented by Professor Cliff Jones. Titles, abstracts and information in these talks are provided later in this newsletter. We also include reports on earlier meetings from the 2010–2011 session.

As promised previously we continue, when possible, to keep you informed of activities concerning the BCS Academy. Given the amount of high profile media attention that computing has had recently the Council of Professors and Heads of Computing in UK universities have circulated the following information about a public web page: <http://academy.bcs.org/category/16234>

This includes details covering Ministerial meetings, the June letter to Mr Gove from captains of industry and details of our collaborations with other groups such as NESTA, CIHE, UKIE, E4E, the Royal Society, the Royal Society of Edinburgh, etc. You can also download the details as a PDF document from the above URL. (Note: CPHC and UKCRC are founding partners of the BCS Academy.)

Best Wishes for 2012!

2012: Centenary of the birth of Alan Turing

Alan Mathison Turing was born on 23rd June 1912 in Maida Vale, London, United Kingdom. He was a mathematician and logician and is widely regarded as the father of computer science and artificial intelligence. During World War 2, Turing worked at Britain's codebreaking centre at Bletchley Park where he devised a number of techniques for breaking German ciphers.

A fuller account of his life and achievements can be found on Wikipedia at: http://en.wikipedia.org/wiki/Alan_Turing

On the hundredth anniversary of his birth, a weekend course (23– 24 July 2012) will take place at Oxford, UK and further details can be found online at: <http://www.conted.ox.ac.uk/G100-20> (see later in this issue for further information).

A Centenary Celebration of the Life and Work of Alan Turing will take place during 2012 – <http://www.turingcentenary.eu> – with a number of major events throughout the year.

This will include a *Turing Lecture* which BCS-FACS is arranging in conjunction with LMS – the details will be announced when finalized.

BCS FACS Chair's Annual Report 2010–2011

During the year 2010–2011 our main activity consisted of a number of seminars presented at the London Offices of the BCS. This year we saw an interesting and diverse set, though we have had to reduce their number, focusing rather on a number of key seminars. We have also re-organised the tasks involved in the running of seminars so that they are more evenly distributed among the committee. This is clearly a step in the right direction in terms of not only distribution of work but also the diversity of speakers chosen. Paul Boca, our secretary has acted as co-ordinator.

We have continued to have our joint meetings with London Mathematical Society and the BCS Women's Group. In addition in 2010 we held the *Peter Landin Seminar*. We propose that this should be an annual event, not only in our own calendar but for the BCS also. This would mean that the BCS would take ownership and make it an Annual event in their calendar. Paul Boca, our secretary is taking the lead on this and it has the approval of the FACS Officers and Committee; there should be an official proposal to BCS by Spring 2012.

Finance has continued to be a problem in that we underestimated our expenditure and had to apply for additional funding, fortunately this was forthcoming and we were able to pay outstanding claims. In the light of this we have developed a more realistic business plan.

The chair thanked John Cooke and Margaret West for continuing to represent us at BCS meetings. We are particularly fortunate to have Margaret West co-ordinating the newsletter and she has our gratitude for her sterling work, we are grateful to all contributors particularly Tim Denvir. Jonathan Bowen has managed our finances and Paul Boca has managed our events and they have contributed with a little guidance from the Chair to many of our activities to make sure that FACS continues to operate smoothly.

Finally, we would like to thank the British Computer Society for the use of their excellent facilities in their offices at Southampton Street, situated in Central London close to Covent Garden.

Jawed Siddiqi
Chair, BCS-FACS

FACS Evening Seminar Series 2011–2012

Mechanising a Correctness Proof for a Lock-free Concurrent Stack

Prof. John Derrick (University of Sheffield)

The first seminar of the 2011–12 session took place on 21 September 2012 and followed the FACS AGM. The abstract was as follows:

Abstract

In this talk we describe our recent work on developing refinement proofs to show the correctness of concurrent implementations of data structures such as the stack. The work involves developing proof obligations that guarantee a form of refinement that in turn implies linearizability – the correctness notion for such concurrent implementations.



(Photograph by Jonathan Bowen.)

BCS-FACS Evening Seminar
Joint event with the London Mathematical Society
Reasoned Modelling: Towards Decision Support for
System Designers
Prof. Andrew Ireland (Heriot-Watt University)

The annual BCS-FACS joint event with the LMS was held on Wednesday 30 November 2011, 6:00pm, at De Morgan House, 57–58 Russell Square.

Abstract

Formal modelling and reasoning are closely related activities. In particular, modelling decisions are typically informed by the analysis of failed proofs. While such analysis is not intellectually challenging from the perspective of mathematical reasoning, it does represent a major barrier to the uptake of formal design methods by mainstream software engineers – whose intuitions lie in modelling and not proof. This problem is exacerbated by the huge number of proof obligations that arise during industrial scale developments.

Overcoming this barrier would increase the accessibility and productivity of formal design methods, and ultimately the dependability and security of software intensive systems. Andrew Ireland's talk will describe a programme of research called reasoned modelling which aims to reduce this barrier. In essence he and his collaborators are focused on the development of techniques that abstract away from the complexities of low-level proof obligations, in particular proof-failures, and provide designers with high-level modelling guidance. Their approach is based upon a classification of common modelling patterns. Combined with automatic proof-failure analysis, they use these patterns to automatically generate modelling guidance. Complementing this top-down process, they are experimenting with bottom-up AI theory formation techniques. Specifically, they are exploring how the HR automated theory formation system can be used to increase the flexibility of their modelling patterns. He will report on progress within the context of Event-B, a refinement based modelling formalism. Their longer-term vision for reasoned modelling will also be outlined. This talk is based upon joint work with Gudmund Grov, Maria Teresa Llano and Alison Pease.



From left to right: Andrew Ireland, Maria Teresa Llano, Gudmund Grov, and Alison Pease (on screen).

(Photograph courtesy of Andrew Ireland.)

Peter Landin Annual Semantics Seminar

“To Be or Not To Be” Valid?

Prof. Cliff Jones (University of Newcastle)

Peter Landin (1930–2009) was a pioneer whose ideas underpin modern computing. In the 1950s and 1960s, Landin showed that programs could be defined in terms of mathematical functions, translated into functional expressions in the lambda calculus, and their meaning calculated with an abstract mathematical machine. Compiler writers and designers of modern-day programming languages alike owe much to Landin’s pioneering work.

Each year, a leading figure in the area of semantics will pay tribute to Landin’s contribution to computing through a public seminar. This year’s seminar was entitled *“To Be or Not To Be” Valid?* It took place on 6 December 2011 and was given by Professor Cliff Jones (University of Newcastle).

Programme

5.15pm	Coffee
6.00pm	Welcome and introduction
6.05pm	Peter Landin seminar
7.20pm	Drinks reception
8.30pm	Close

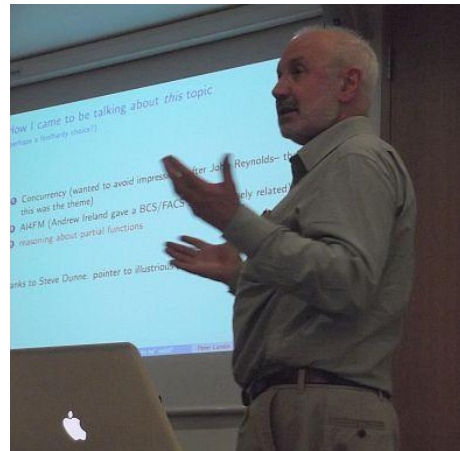
Abstract

The problem of reasoning about undefined terms has been "solved" (or avoided) in a variety of ways. (Think about division by zero – but undefinedness comes up in many ways in program specifications.)

For a long-time, I've used a non-standard logic (LPF) but few others have joined this movement because such good tools exist for standard, classical, logic. At some level, I believe that alternative approaches are "workarounds". I'll try to show why the workarounds present problems and report on recent positive ideas for mechanising LPF in a way whose efficiency is close to that of classical logic. To make the talk accessible to as wide an audience as possible, I'll place the ideas in a framework that goes back (if not to Shakespeare, at least) a long way.

The talk was very well attended and was introduced by Professor Edmund Robinson of Queen Mary, University of London, where Peter Landin was based for much of his career. After the talk, Bill Mitchell of the BCS presented Paul Boca with a Certificate of Appreciation for his tireless effort in organizing BCS-FACS events, including the initiation of the Peter Landin seminar series. Paul kindly donated the wine for a reception after the talk.

Photographs from the 2011 Peter Landin Seminar



Photographs from top left, clockwise:

1. Audience; 2. Talk by Cliff Jones; 3. Introduction by Edmund Robinson;
4. Tony Hoare, Bernie Cohen, Sue Black, and others; 5. Reception;
6. Jawed Siddiqi (Chair of FACS), Bill Mitchell (BCS), and Paul Boca (FACS Secretary) receiving a BCS Certificate of Appreciation.

(Photographs by Jonathan Bowen.)

Reports on Talks from 2010–2011 session

(Reports by Margaret West and photographs by Jonathan Bowen.)

Wanted: Formalisms for Natural Computing **Prof. Susan Stepney (University of York)**

The talk took place on 7 February 2011 at the BCS London offices in Southampton Street and was held jointly with BCSWomen. This is an e-group and BCS Specialist Group set up in 2001 – a network of women, of all ages, from around the globe, whose current membership exceeds 1,300.

Report

The objective of "*Grand Challenge 7*" (GC7) is to produce a fully mature science of all forms of computation, that unifies the classical and non-classical paradigms. Non-classical paradigms include computation under non-classical laws of physics and biological computing.

The speaker started by commenting on the well-established formalisms for classical computing which have been developed during the last seventy years. She wondered how long it would take to extend those formalisms to include non-classical paradigms.



David Deutch and Richard Feynman have noted that the Turing Machine is entirely classical – for quantum-mechanical paper has entirely different properties from the abstract paper tape of the Turing Machine. An example was given in the talk, using theoretical work: 'Malament-Hogarth spacetime'. There are solutions of General Relativity which allow one observer Ob_T to experience infinite time and another observer Ob_H to perceive the first observers lifetime as finite. This means there is a discrepancy in the experience of the two observers.

The problem in dealing with non-classical paradigms is in making the model 'natural' rather than in trying to reuse classical formalisms in an unnatural way. A biological example was presented in which a particular kind of self-reference is required. In this example the "data" (DNA codes) and "program" (protein/RNA machinery encoded on the DNA) are the "same kind of stuff". The RNA 'machines' have to be capable of modifying the DNA, and hence themselves.

The speaker gave some examples of naturally occurring entities - from termite mounds to slime mould – and wonders what, say, a slime mould programming language would look like?

The talk concluded with some interesting questions and a delicious buffet repast – for which thanks are due to the BCS. As this included wine it made for a convivial end to the evening.

The slides are online under:

http://formalmethods.wikia.com/wiki/File:BCS-FACS_Susan_Stepney_2011_slides.pdf

Dr Margaret West
University of Huddersfield

Reasoning about Programs Using a Scientific Method

Prof. Peter O'Hearn (Queen Mary, University of London)

The seminar took place on 16 November 2010 and was held jointly with the London Mathematical Society at the LMS headquarters in De Morgan House, Russell Square, London. In January 2011, Prof. O'Hearn was awarded the BCS Lovelace medal and on 8 June 2011 presented the BCS Lovelace Lecture. A video of this event is available from <http://www.bcs.org/category/15424>.

Report

The speaker reminded us of the Verified Software Challenge (suggested by Hoare) of *the feasibility of providing proofs of a variety of software systems with respect to a range of correctness properties*. He then described the use of the 'Scientific Method' in a tool which obtained specifications of pre and post conditions from large code bases. In this case, the scientific method (as viewed by Pierce) is the process of forming an explanatory hypothesis via Abductive Inference.

The tool is called Abduct and includes abduction as well as the 'usual' deduction. Abduct involves the application of separation logic, an extended version of Hoare's logic which includes the possibility of updatable field referencing from more than one point. The tool is composed of three phases:

- (1) the deduction of 'footprints' of commands and procedure preconditions;
- (2) the abduction or 'filling in' of missing parts of the precondition of the composed procedures;
- (3) the inductive generalisation of preconditions and eventually synthesis of postconditions.

Note that the intention is for the missing elements abduced during (2) to be of minimal order as well as consistent.

Experiments in running the tool on large open source programs were described and the proportion of procedures generating specifications indicated. The best result was the case of the *IMap* project which was composed of 226 K lines of Code: in 450 seconds specifications for two thirds of its procedures were found. Some caveats were mentioned however, for example the restrictiveness of corrective properties and that the (current) model ignores concurrency.

Dr Margaret West
University of Huddersfield

(The report also appeared in the March 2011 edition of the LMS newsletter.)

Embedded Control Software Design with Formal Methods and Engineering Models

Prof. Jan Broenink (University of Twente, The Netherlands)

The seminar took place on 13 September 2010 and was held jointly with Formal Methods Europe (FME). It took place at the BCS London offices in Southampton Street; the report is given below.

Report

The speaker presented ongoing work in the model driven design of embedded control software, entailing both dependability and safety. Such systems contain both continuous time (CT) and discrete event (DE) elements. During the seminar a test case, a production cell demonstrator, was also described for which two types of control computer had been tried and compared: a central processing unit (CPU) and a programmable integrated circuit (a Field Programmable Gate Array or FPGA).



Both CT and DE related formal methods had been utilised in the design of software for the demonstrator, including respectively bond graphs and CSP. Bond graphs are labelled and directional graphs based on energy exchange and are capable of generating equations (both ordinary differential and algebraic) and block diagrams. CSP and its graphical tool gCSP were used to model DE elements, together with the refinement checker FDR2. The CT and DE models were then integrated and realised to form ECS software, the two types of model being combined in co-simulation.

The case study (a Stork plastic moulding machine) was presented together with the problems encountered. The production process comprised moulding, extraction, transportation, storage where synchronisation was required of neighbouring processes and deadlock was possible for several blocks. The conclusions of the study were that there was a trade-off between the two types of computer: for the CPU, the design times were shorter but the real time behaviour was critical, while for the FPGA the design time was higher and black box debugging more difficult. However use of the FPGA resulted in more accurate timing. Overall however, valuable information for improvement of design methods and for tooling was gathered by the study- it was noted that gCSP version 2 was being developed.

The speaker discussed the combination of formal methods and engineering models for the model-driven design of embedded control software (ECS). Since the dynamic behaviour of these systems determines the timing behaviour of the ECS, both approaches are needed. A design method using CSP process algebra and bond graphs (engineering models) will be presented, including a discussion of its application to a case study (a production cell experimental setup), in which continuous-time and discrete-event control decisions are combined.

Dr Margaret West
University of Huddersfield

(This report also appeared on the FME website.)

Turing's Worlds

Turing's Worlds will cover the life and achievements of Alan Turing whose centenary is on 23 June 2012. A team of leading authorities on the multifarious subjects that Turing influenced will attempt to do some justice to the work of an extraordinary man.

(The slate sculpture of Alan Turing to the right is by the artist Stephen Kettle – <http://www.stephenkettle.co.uk> – and can be seen at Bletchley Park.)



Overview

The event is in association with British Society for the History of Mathematics (BSHM) and the Department of Continuing Education at Oxford University.

Alan Mathison Turing was born on 23 June, 1912 – exactly one hundred years before this weekend meeting which celebrates his life and achievements. Although most well-known for his work at Bletchley Park in the pioneering days which saw the birth of modern practical computing; Turing had achieved fame well before the second world war, with a seminal account of theoretical computation and his solution to the *Entscheidungsproblem*. An Olympic-class marathon runner, whose refusal to conform to the narrow sexual standards of the day led to persecution and an early death – Turing did fundamental research on Artificial Intelligence, Computer Programming and even Mathematical Biology. This weekend attempts a rounded view of a polymath, one of the great mathematicians of the twentieth century, his life and his times. We will have a number of distinguished speakers who have researched in some of the areas that Turing pioneered but our aim is an accessible and informative account of Turing's multifarious achievements.

Co-organizers: Jonathan Bowen (BCS-FACS/London South Bank University), Martin Campbell-Kelly (University of Warwick), Terry Froggatt (BSHM), Bob Lockhart (University of Oxford), Robin Wilson (BSHM/Open University).

Information

Type	Weekend
Location	Oxford, United Kingdom
Address	Rewley House 1 Wellington Square Oxford
Dates	Sat 23 to Sun 24 June 2012
Subject area(s)	Mathematics, computer science
Fees	From £100.00

Application status	Applications being accepted
Course code	O11P222COR
Course contact	If you have any questions about this course, please email ppdayweek@conted.ox.ac.uk .

Confirmed speakers:

Jonathan Bowen, London South Bank University
Sue Black, University College London
Robin Whitty, London South Bank University
John Tucker, Swansea University
Jack Copeland, University of Canterbury, New Zealand
Samson Abramsky, Oxford University
Cliff Jones, Newcastle University
Martin Campbell-Kelly, University of Warwick
Doron Swade, Royal Holloway, University of London
Teresa Numerico, University of Rome 3, Italy
Philip Maini, University of Oxford
Simon Greenish & Jean Valentine, Bletchley Park
Andrew Hodges, University of Oxford
Ivor Grattan-Guinness, Middlesex University
Darrel Ince, Open University

Further information:

Booking: <http://www.conted.ox.ac.uk/G100-20>

Facebook event: <http://www.facebook.com/event.php?eid=270894109620718>

Prof. Jonathan P. Bowen
London South Bank University

Formal Methods Online Publication Resources

There are an increasing number of resources on formal methods publications available online. Existing databases such as those from professional societies like the ACM Digital Library (<http://dl.acm.org>) and the IEEE Xplore Digital Library (<http://ieeexplore.ieee.org>), as well as independent resources like the DBLP Computer Science Bibliography (<http://dblp.uni-trier.de>) cover computer science in general. Now online search providers like Google and Microsoft are providing databases of publications with interactive facilities for updates.

Google Scholar (<http://scholar.google.com>) has provided a very extensive database of academic publications for a while and have more recently added a feature that allows an author to take control of their own publications and present this as a corpus of work. The facility includes the ability to include keywords that allows grouping of authors. For example, those that have added “formal methods” as a keyword can be found under <http://bit.ly/xV3ZOa>. For individual authors, a graph of citations per year is included, along with total number of citations, the author’s *h-index* (the number of top *h* papers each with at least *h* citations) and *i10-index* (the number papers with at least ten citations), both for all years and for the last five years. It is possible to add links to co-authors that also have an individual entry on Google Scholar. To use this facility, it is necessary to register with Google and log into Google Scholar.

Microsoft Academic Research (<http://academic.research.microsoft.com>) from Microsoft Research in Beijing provides a database of publications across many different disciplines. This has better visualization features than Google Scholar, but a less extensive corpus of publications. There is a different approach to Google Scholar, where only an individual’s publications can be edited. On Microsoft Academic Search, any entry can be edited, but it is checked before it is actually updated for viewing (a process that can take from days to weeks). Google Scholar is better at merging publications by a given author correctly, but Academic Search allows manual merging of authors. There is a “Formal Method” keyword entry on Academic Search that collects together authors, conferences, journals, etc. that are relevant to the field. See under: <http://academic.research.microsoft.com/Keyword/14916>. Entries for individual authors include a graph of papers and citations by year, together with the author’s *h-index* (see above) and *g-index* (the number of top *g* article with a total of at least g^2 citations). It is possible to view co-authors, citing authors, and transitive links between pairs of authors through co-authors, in a visual manner. To update information on Academic Search, it is necessary to register and log in with a Windows Live account.

For further information about formal methods online that is also updatable, see under: <http://formalmethods.wikia.com>

Prof. Jonathan P. Bowen
London South Bank University

FACS FACTS Issues in 2011

Call for Submissions

We welcome contributions for the next issue of *FACS FACTS*, in particular:

- Letters to the Editor
- Conference reports
- Reports on funded projects and initiatives
- Calls for papers
- Workshop announcements
- Seminar announcements
- Formal methods websites of interest
- Abstracts of PhD theses in the formal methods area
- Formal methods anecdotes
- Formal methods activities around the world
- Formal methods success stories
- News from formal methods-related organizations
- Experiences of using formal methods tools
- Novel applications of formal methods
- Technical articles
- Tutorials
- Book announcements
- Book reviews
- Adverts for upcoming conferences
- Job adverts
- Puzzles and light-hearted items

Please send your submissions (in Microsoft Word, LaTeX or plain text) to Margaret West <m.m.west@hud.ac.uk>, the Newsletter Editor.

If you would like to be an official *FACS FACTS* reporter or a guest columnist, please contact the Editor.

Recent and Forthcoming Events

BCS FACS Seminars: Unless stated otherwise, these take place at: BCS London Offices, 1st Floor, The Davidson Building, 5 Southampton Street, London WC2E 7HA. Major formal methods events are also included below.

John Derek	21 September 2011
<i>Mechanising a Correctness Proof For a Lock-Free Concurrent Stack</i>	
Preceded by the BCS-FACS AGM	
Andrew Ireland	30 November 2011
<i>Reasoned Modelling: Towards Decision Support for System Designers</i>	
Joint with LMS at De Morgan House	
Cliff Jones	6 December 2011
<i>"To Be or Not To Be" Valid?</i>	
Peter Landin Annual Semantics Seminar	
Bernie Cohen	16 February 2012
<i>Subjects are not Objects – Enterprise Modelling using Projective Analysis</i>	
Joint with the BCS London Central Branch	
Preceded by the Formal Methods Europe (FME) AGM	
iFM & ABZ 2012	18–22 June 2012
9th International Conference on <i>Integrated Formal Methods</i>	
<i>Abstract State Machines (ASM), Alloy, B, VDM and Z</i> Conference	
Pisa, Italy	http://ifm-abz.isti.cnr.it
TASE 2012	4–6 July 2012
6th IEEE International Symp. on <i>Theoretical Aspects of Software Engineering</i>	
Beijing, China	http://selab.bjut.edu.cn/tase2012
FM 2012	27–31 August 2012
18 th International Symposium on <i>Formal Methods</i>	
Paris, France	http://fm2012.cnam.fr
SEFM 2012	1–5 October 2012
10th International Conference on <i>Software Engineering and Formal Methods</i>	
Thessaloniki, Greece	http://sefm2012.city.academic.gr
FACS/LMS Turing lecture	2012 (TBA)
Joint FACS/BCS-WOMEN Seminar	2012 (TBA)

For further conference announcements, please visit the Formal Methods Europe (FME) website (www.fmeurope.org), the European Association for Theoretical Computer Science website (www.eatcs.org) and the Formal Methods Wiki Virtual Library (<http://formalmethods.wikia.com/wiki/Meetings>).

FACS Committee



Formal Aspects of Computing
Science Specialist Group



Jawed Siddiqi
FACS Chair



Jonathan Bowen
FACS Treasurer and
ZUG Liaison



Paul Boca
FACS Secretary



Roger Carsley
Minutes Secretary



John Cooke
FAC Journal Liaison
and BCS Liaison



John Fitzgerald
FME Liaison and
SCSC Liaison



Margaret West
FACS FACTS
Newsletter Editor and
LMS Liaison



Rob Hierons
Chair, Formal Methods
and Testing Subgroup



John Derrick
Chair, Refinement
Subgroup

External Liaison



Tom Melham
LMS Liaison Officer

FACS is always interested to hear from its members and keen to recruit additional helpers. Presently we have vacancies for officers to help with fund raising, to liaise with other specialist groups such as the Requirements Engineering group and the European Association for Theoretical Computer Science (EATCS), and to maintain the FACS website. If you are able to help, please contact the FACS Chair, Professor Jawed Siddiqi at the contact points below:

BCS-FACS
c/o Professor Jawed Siddiqi (Chair)
Sheffield Hallam University
Email info@bcs-facs.org.uk

You can also contact the other Committee members via this email address.

Please feel free to discuss any ideas you have for FACS or voice any opinions openly on the FACS mailing list <FACS@jiscmail.ac.uk>. You can also use this list to pose questions and to make contact with other members working in your area. Note: only FACS members can post to the list; archives are accessible to everyone at <http://www.jiscmail.ac.uk/lists/facs.html>.

Coming next in FACS FACTS...

Conference reports

Details of upcoming BCS-FACS Evening Seminars