

WEST YORKSHIRE  
BRANCH



THE BRITISH COMPUTER SOCIETY

<http://www.westyorkshire.bcs.org>

NEWSLETTER

APRIL 2006

### APRIL VISIT

Wednesday 12<sup>th</sup> April 2006 at 18.30 and  
Thursday 20<sup>th</sup> April 2006 at 14:00

## Computers and Floods After the Deluge

A Visit to the Environment Agency's Incident Room

Venue: Coverdale House, Clifton Moor, York

### MAY MEETING AND AGM

Tuesday 23<sup>rd</sup> May 2006 18:30 (Light refreshments from 17:45)

## Annual General Meeting followed by

## The Phone meets the Web - An Overview of Internet Protocol Telephony

Speaker: Steve Metcalfe, Systems Engineer, Cisco Systems Ltd

Venue: Hotel Metropole, Leeds

Visit our Web site for up-to-date information on all our events, for directions to all venues and for fuller write ups of the talks.

<http://www.westyorkshire.bcs.org>

THANKS

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### EDITOR'S NOTES

Keeping BCS details up to date.

To enable you to benefit from BCS communications it is important that you keep the BCS advised of any changes to your details. There are several methods:

If you have registered to use the BCS Secure Area you can update your details at <http://www.bcs.org/update> (You will need your membership number and password.)

Alternatively all members can update their details using either of the following:

- Contacting Branches section on [branches@hq.bcs.org.uk](mailto:branches@hq.bcs.org.uk) or by phone
- Contacting me (see above)

*Margaret Moore*

## CHAIRMAN'S NOTES

Welcome to our Spring programme of events, which features a site visit and the AGM. We're very pleased to be having a speaker from Cisco to speak to us after the AGM about Internet Protocol Telephony and how organisations can deploy it. This promises to be a most interesting topic. We also have two forthcoming site visits to the Environment Agency in York, which have been previously advertised at the March branch meeting and by email.

Some of you may be aware that 2007, as well as being the golden jubilee of the BCS, is the golden jubilee of the West Yorkshire Branch. We are working with BCS HQ to plan suitable events to mark this. We would be pleased to hear from any members who have any suggestions for ways in which we could celebrate this special anniversary.

One of the main items of business at the AGM will be to elect the Committee for the forthcoming year. Some of our previous Committee members have had to leave us due to pressures of work, and although we are following up some expressions of interest that we have received recently, there is still room for other members to get involved and assist with the running of the Branch. We have not been able to stage as many events this year as we would have liked due to limitations on the spare time that the existing members of the Committee had available. I ask all of you reading this newsletter to consider whether you could spare a few hours from time to time to help with the organisation of Branch events. If you would like more information about what this might involve, please do not hesitate to contact one of the existing members of the committee. We would also be very pleased to hear from anyone with suggestions for topics and speakers that could be included in the future.

*Nick Seddon, Branch Chair*

## MEETINGS FOR SPRING 2006

**Wednesday 12<sup>th</sup> April 2006 18:30 and  
Thursday 20<sup>th</sup> April 2006 14:00**

### **Computers and Floods (After the Deluge)**

#### **A Visit to the Environment Agency's Incident Room**

**Venue: Coverdale House, Aviator Court, Amy Johnson Way, Clifton Moor, York YO30 4GZ**

The incident room in York covers the Wharfe catchment area. The Wharfe rises on the slopes of the Pennines, comes through Kettlewell, Grassington, Bolton Abbey, Ilkley etc., (see map) before joining the Ouse upstream of Selby.



EA staff will demonstrate the use of computers in detecting and forecasting floods and disseminating flood warnings. A

variety of technologies are used in the incident room, for example telemetry and maps.

As there is a maximum of ten people on each visit, the Environment Agency has kindly agreed to two visits. The visits are restricted to members of the West Yorkshire branch of the BCS and places will be reserved on a 'first come, first served' basis. Please contact me (see front page) if you would like to attend stating:

- BCS membership number and name
- Your preferred date
- Your ability to attend on the other date if necessary
- Full contact details including a day-time telephone number. (Should there be a real incident then the EA might have to cancel the visit at short notice.)

I will keep interested members advised of their position(s) in the list(s). Should you need to pull out then please let me know so that I can give your place to the next person on the list. The location is shown on <http://www.streetmap.co.uk/newmap.srf?x=458892&y=454985&z=0&sv=YO30+4GZ&st=2&pc=YO30+4GZ&mapp=newmap.srf&searchp=newsearch.srf>

*Margaret Moore*

**Tuesday 23<sup>rd</sup> May 2006 17:45 for 18:30**

**AGM followed by**

### **The Phone meets the Web – An Overview of Internet Protocol Telephony**

**Speaker: Steve Metcalfe, Systems Engineer, Cisco Systems Ltd**

**Venue: Hotel Metropole, Leeds**

The rapid rise of the Internet as a data network for sending emails, browsing web sites and exchanging information electronically has encouraged many organisations to explore the possibility of putting voice traffic onto the same networks that are used to transmit data, so that only one network needs to be maintained rather than separate networks for voice and data. Tonight's presentation will cover the following areas:

- The history of convergence between voice and data
- An introduction to, and definition of, Internet Protocol Telephony (IPT)
- Information about the current market for IPT
- A comparison with existing telephony solutions
- An overview of the components used to build an IPT solution
- Some frequently omitted considerations, such as Line Power, Resilience, Address Space
- Design of a simple IPT solution
- A summary of Cisco's current position in the marketplace and a basic product overview

Steve Metcalfe is a Systems Engineer working in the Cisco Finance team. Steve has been with Cisco for eight years and worked in the Retail, Pharmaceutical and Transport sectors for six years before moving to Finance. He has worked in the Telecommunications business since 1983 and has a background in Voice technology, gained primarily working for the early technology leader in Data and Voice Convergence, Timeplex. Since then Steve has also worked for 3Com where he focused on LAN and ATM technology before joining Cisco in 1998 to focus on the adoption of converged IP telephony and associated applications.

*Nick Seddon*

Tuesday 24<sup>th</sup> January 2006

### Computer Forensics

**Speaker: Russell May** Manager of Special and Partner Projects, Guidance Software Inc.

Some eighty people attended our first talk of the New Year. Russell May, introduced himself and gave a quick summary of his background, which included twenty-eight years experience in the West Midlands police force culminating in a spell as head of the High-Tech Crime Unit. Russell now works for Guidance Software, which specialises in developing software to assist in retrieving digital information for forensic purposes.

Russell then outlined the basic rules that must be followed when examining computers and other digital devices. These basic principles that must be abided by are enshrined in the ACPO (Association of Chief Police Officers) Guidelines on Computer Evidence. They are used in countries other than the UK, including the United States. These guidelines MUST be followed for evidence to be accepted in court.

\* Principle 1: No action taken by law enforcement agencies or their agents should change data held on a computer or storage medium which may subsequently be relied upon in court.

\* Principle 2: In exceptional circumstances, where a person finds it necessary to access original data held on a computer or on storage media, that person must be competent to do so and be able to give evidence explaining the relevance and the implications of their actions.

\* Principle 3: An audit trail or other record of all processes applied to computer based electronic evidence should be created and preserved. An independent third party should be able to examine those processes and achieve the same result. (In a court case, the defence would be entitled to require access to this.)

\* Principle 4: The onus is on the person in charge of the investigation (the case officer) to ensure that the law and these principles are adhered to.

A forensic analyst will make a bit-by-bit copy of the contents of the storage medium. The original should then be sealed and stored in a safe place while all analysis is carried out on the copy. If it is necessary to power up the machine, the analyst will either use a copy of the machine's hard drive or use a virtual machine. On many operating systems, the act of booting the machine leads to many files being created or modified on the machine's hard disc, and this could mean violating Principle 1 if the original hard disc is used.

The analyst will retrieve evidence and present it in a readable form, suitable for use in court. The contents of the machine will be examined for other evidence, such as money, keys, or drugs concealed in the machine, or additional hard discs that have been disconnected so that a casual user of the machine would not know that they existed.

It is important to ensure that the suspect device cannot be written to; this can be a problem with Windows machines as they will not recognise read-only hard discs, so a hardware write-blocking device needs to be used. Disc images are examined for hidden or deleted files and partitions; these can be recovered and data that may be of value can be retrieved.

Photographic evidence is also collected - this would be photographs of the computer hardware, how it was laid out, and how the various components were connected to one another. This is used to a) document how a system had been

set up (such as evidence of a facility for mass-producing illegal copies of CDs or DVDs) and b) to re-create the configuration of components if they have been disconnected.

One of the key messages from this talk was that forensics should not be taken in isolation - it is part of the body of evidence that has to be amassed for a prosecution to be brought.

Following this explanation, Russell explained some of the ways in which information and illicit images might be concealed and used the EnCase tool to demonstrate their retrieval. Some key points from the demonstration were:

1. On DOS/Windows systems, Fdisk only removes partition information - it does not physically delete files. A hard disc that has had Fdisk run on it may still contain data, as files may have only been logically rather than physically deleted. A disc editor can reveal the presence of files even though the operating system 'thinks' they no longer exist.

2. Files can be searched for by header, rather than by name. A particular type of file (such as a jpg image file) will have a particular type of header that identifies the file type. This is independent of the file name. For example, an image file containing pornographic material could be disguised by renaming it with a different extension. However, the file's header information would still reveal that it was an image file. A tool such as EnCase can identify such files.

3. It is possible to search archives (such as Zip files) and OLE containers to reveal layered images (such as a Word document in which one 'harmless' image is positioned on top of a 'suspect' image to hide it).

4. File signature analysis is used to find 'disguised' files, such as a .jpg file (image) disguised as a dll.

5. On a machine where virtual memory is in use, the swap file can be examined for unsaved changes.

*Nick Seddon*

Wednesday 15<sup>th</sup> February 2006

### The use of Digital Pens & Mobile Technology within Leeds City Council Social Services

**Speaker: Ian Jones**, Corporate ICT Services, Leeds City Council

Ian provided an overview of the motivation for Leeds City Council adopting digital pen technology. Within Social Services there are around 1,500 community support assistants who make regular home visits, and the various forms used meant that they had to fill in over two million pieces of paper every year. This leads to duplication of effort and affects the morale of staff, who would rather be doing their job than filling in and filing paperwork. The deployment of digital pen technology within Social Services has led to a saving of about three days a month for each community support assistant. It was relatively straightforward to equip each worker with the technology; all that was required was a digital pen, a stock of suitable forms and a mobile phone. This enables true mobile working without the need to use PDAs or laptops, which can be intrusive in the context of home visits.

A digital pen looks like a fatter version of an ordinary pen, and contains an infra-red camera that records movements over the dot patterns on the digital paper. It also contains ink, so it does write on the paper. The pen's movements are stored and transmitted; the pen does not perform optical character

recognition. Digital pens can be used for signature verification, because the pattern of pen strokes used can be analysed and stored for comparison.

Some pens include a Bluetooth interface and can be used in conjunction with a mobile phone to send data to a central server using secure HTTP. The deployment by Leeds City Council makes use of this facility.

Digital paper is paper that has been overprinted with a dot pattern. The miniscule dots are printed in a colour of ink that is visible to the infra-red camera in the pen. Other colours and types of ink are used to overprint information on the paper that is human-readable but will be ignored by the pen. The dots are arranged according to a pattern devised by the Swedish company Anoto, and the arrangement of the dots varies across the surface of the paper. The paper is divided into 2mm x 2mm squares, each square contains a particular dot pattern. The specific arrangement of dots indicates the current position of the pen on the page. Different dot patterns are also used to denote the type of paper or form in use. The Anoto system allows a paper area exceeding 4.6 million square kilometres to be covered with unique 2mm x 2mm dot patterns. This allows a very large number of different forms and types of paper to be in use, with the pen able to distinguish between them.

Digital forms are generated electronically and the dot patterns are stored on the server so that the data sent back to the server from the pen can be recognised. The data sent back is used to recreate the pen's movements giving an electronic representation of the form, and this can be made editable on-line (using a secure portal) to allow data review or corrections after the form has been initially filled in. Form fields can be free-text, or can be restricted to limited lists of values (known as limited lexicons) or tick boxes.

Ian concluded by outlining some of the benefits identified from deploying digital pens:-

- There is a low entry barrier; little training is required and most of the effort is associated with training users in the use of the mobile phone. Using a digital pen to fill in forms printed on digital paper is much like using conventional pens and forms. This minimises disruption and resistance.
- Data can be sent back from the pen in real time.
- Removes the overhead of ordinary paper forms having to be keyed onto the system.
- The mobile phone can also be used as a phone! This aids communication between members of staff; text messages can be sent to social workers who are doing home visits.

The presentation was rounded off by questions and answers, plus an opportunity to try out some digital pens.

*Nick Seddon*

Tuesday 14<sup>th</sup> March 2006

## **Doctors, Emergency Medicine and Computers**

**Speaker: Dr Susan Clamp** of Yorkshire Centre for Health Informatics, University of Leeds

**Background** Dr Clamp began her talk by describing health informatics, the diagnostic process and the emergency department (ED) environment. There are deaths caused by medical errors and the amount of knowledge is increasing rapidly. Evidence based medicine integrates individual expertise with clinical evidence from systematic research. The

diagnostic process is:- ascertain the history, examine the patient, arrange investigations, analyse the information then make a decision. A clinical decision support system (DSS) can help by integrating a medical knowledge base with patient data to give patient specific advice.

The team has worked with EDs. Patients are assessed and prioritized, condition diagnosed and treated and the care pathway for future treatment drawn up. IT is often fragmented in these departments. There may be some DSS used in an unstructured way and also some sophisticated DSS e.g. ECG machine which uses a neural network to print out comments.

**Decision support in acute abdominal pain (AAP)** Acute abdominal pain is a difficult clinical area; 80% of cases can be diagnosed on clinical signs and symptoms if the clinician is experienced. The software can help the inexperienced doctors. As you can measure outcomes in AAP you can build up a database of cases. Data has been gathered for 20 years and the information is now held in several databases e.g. A&E, children. The database holds the presenting symptoms and final diagnoses of patients with AAP.

The tool can be used as an educational tool and in a clinical setting. It helps clinicians with recording the history and symptoms and can prompt the user to ask pertinent questions to help arrive at a diagnosis. The patient's symptoms are entered and the relevant database selected. Bayesian analysis is performed and the database searched then the breakdown of outcomes of patients with similar clinical pictures is displayed. This analysis can be used alongside other investigations to help inform the decision making process.

All before and after studies showed an improvement when the tool was in use. Performance fell back after the system was taken out.

Problems identified include:

- Double entry (paper then IT) is needed
- Time taken to enter the information into the system
- Lack of integration with electronic patient record systems
- Interpretation of the results displayed
- Attitudes of some clinical staff to the tool including concerns of over reliance

The system may be able to be used in clinical decision units, by ambulance staff dealing with out of hours work and by nurse practitioners. Various clinical protocols for investigation and care of certain conditions have been developed for these settings. These protocols are often form based.

The full presentation, including many examples of the materials referred to, is available on this web site. Also, further background information and an online demonstration of the AAP tool is available on their web site ([www.aaphelp.leeds.ac.uk](http://www.aaphelp.leeds.ac.uk)).

Following Dr Clamp's interesting talk we ended the evening with a lively debate.

*Margaret Moore*