



## February 2007 Issue

**TC-ECBS newsletter** is produced as a focal point for news concerning the (related) activities of the IEEE Computer Society Engineering of Computer-Based Systems technical committee. If you have any items for the next issue please contact [ecbs-news@computer.org](mailto:ecbs-news@computer.org).

## Call for Participation ECBS 2007

### Raising the Expectations of Computer-Based Systems

At Doubletree Hotel Tucson at Reid Park in Tucson, Arizona, U.S.A March 26th-29th, 2007.



**The 14th Annual ECBS** will be hosted by the University of Arizona in Tucson, AZ U.S.A March 26th-29th, 2007.

The conference website is available at <http://www.ece.arizona.edu/~ecbs07/>

What is the Engineering of Computer Based Systems? The emerging discipline of ECBS is devoted to the design, development, deployment, and analysis of complex systems whose behaviour is largely determined or controlled by computers. CBSs are characterized by functional, performance, and reliability requirements that mandate the tight integration of information processing and physical processes. ECBS encompasses many facets: system modelling, requirements specification, simulation, architectures, communications, safety, security, reliability, software, hardware, human computer interfacing, system integration, verification and validation and project management.

ECBS is the integration of several engineering disciplines including software, hardware, and communications into a complete systems engineering discipline. The conference provides a bridge between industry and academia; the program will provide a balanced view of academic research and industrial developments.

**SCOPE:** Contributions will be presented on two major categories: advances in fundamental ECBS technologies and reports of solutions that further ECBS practice in application domains. The meeting's theme represents the increasing expectations of stakeholders upon computer-based systems in terms of performance, security, reliability, safety, usability. As builders and researchers of CBSs, are we achieving these expectations? What are we doing well, where do we need to improve?

One or more of the topics listed below will be reflected in the presented papers – while the main focus should be the engineering of computer-based systems.

- o Architectures
- o Autonomic Systems
- o Codesign
- o Component-Based System Design
- o Design Evolution
- o Distributed Systems Design
- o ECBS Infrastructure (Tools, Environments)
- o Education & Training
- o Embedded RealTime Software Systems
- o Lifecycle Processes and Process Evolution
- o Integration Engineering
- o Model-Based System Development
- o Modeling and Analysis of Complex Systems
- o Open Systems
- o Product-Families Models and Architectures
- o Reengineering & Reuse
- o Reliability, Safety, Dependability, Security
- o Requirements Elicitation and Analysis
- o Standards
- o System on a Chip
- o System Assessment, Testing and Metrics
- o Verification & Validation

Reports of practical solutions, trends and new system characteristics for ECBSs will include application domains such as: Aerospace Systems, Command and Control, Continuous and Discrete Manufacturing, Environmental Systems, Instrumentation and Control Applications, Internet Technology and Applications, Intelligent Highway-Vehicle Systems (IHVS), Medical Systems, Telecommunication.

### WORKSHOPS:

ECBS 2007 will feature the following workshops:

#### 1. Domain-Specific Approaches to Model-Based Development

<http://www.theoinf.tu-ilmenau.de/~riebisch/mbd/>

#### 2. Engineering of Autonomic & Autonomous Systems

[www.ulster.ac.uk/ease/](http://www.ulster.ac.uk/ease/)

#### 3. Embedded Systems Workshop: theory and practice

The workshops include short presentations and a forum for focused discussions. Traditionally, at ECBS conferences, workshops are strongly connected to the conference sessions to enable continued in-depth discussions.

## ECBS-2007

### Early registration deadline:

26 February, 2007

Submission dates for workshop papers may differ, see separate Calls for Papers on the workshop websites.

General Chair: Jerzy W. Rozenblit ([ecbs07@ece.arizona.edu](mailto:ecbs07@ece.arizona.edu))

Program Co-Chairs: John Leaney, Tim O'Neill, Jianfeng Peng

Europe Co-Chairs: Matthias Riebisch, Peter Tabeling; Asia Pacific Co-Chairs: Tim O'Neill, John Leaney.; Publicity Chair: Brian Ten Eyck; Local Arrangements Chair: Rozanne Canizales

### STEERING COMMITTEE

Jerzy Rozenblit, Jianfeng Peng, John Leaney, Matthias Riebisch, Peter Tabeling, Stephanie White, Byron Purves, Roy Sterritt, Jonah Lavi, Miroslav Sveda, Wilhelm Rossak.

## – ECBS 2008 – First Announcement



### Belfast, Northern Ireland

It is expected that ECBS 2008 will be held in - **Belfast, Northern Ireland, March 2008** – the call for papers will be issued soon – so get researching!

To ensure you are kept up to date manage your TC-ECBS membership at <http://www.computer.org/services/teca>

Or to join the ECBS 2008 list email [dw.bustard@ulster.ac.uk](mailto:dw.bustard@ulster.ac.uk) or [r.sterritt@ulster.ac.uk](mailto:r.sterritt@ulster.ac.uk)

Watch for <http://www.ulster.ac.uk/ecbs>



## THINKING ABOUT SYSTEMS (pt2)

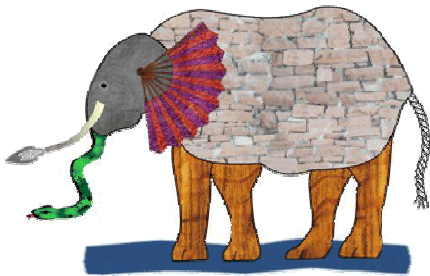
By **Byron Purves**

Byron Purves, TC ECBS chair, writes about his experiences as a System Engineer.

*(Continued from the last Issue of the TC-ECBS Newsletter).*

Another important lesson was this: SMEs hardly ever agree with each other, so get them together and listen to them argue. Help them to arrive at a conclusion.

I didn't understand the significance of this at the time. If I had only talked to one SME, or even two, I would have failed, because the others would have come along later and disagreed. Perhaps that is what the original consultant had done. I have, since that time, worked with SMEs in many domains. This lesson has only become more and more significant. The customer for a system will almost always give you access to experts. But, like the elephant and the blind men, each expert has a limited and biased perspective.



It was six men of Indostan  
To learning much inclined,  
Who went to see the Elephant  
(Though all of them were blind),  
That each by observation  
Might satisfy his mind  
The First approached the Elephant,  
And happening to fall  
Against his broad and sturdy side,  
At once began to bawl:  
"Why, bless me! but the Elephant  
Is very like a wall!"  
The Second, feeling of the tusk,  
Cried, "Ho! what have we here  
So very round and smooth and sharp?  
To me 'tis mighty clear  
This wonder of an Elephant  
Is very like a spear!"  
The Third approached the animal,  
And happening to take  
The squirming trunk within his hands,  
Thus boldly up and spake:  
"I see," quoth he, "the Elephant  
Is very like a snake!"  
The Fourth reached out an eager hand,  
And felt about the knee.  
"What most this wondrous beast is like

Is mighty plain," quoth he;  
" 'Tis clear enough the Elephant  
Is very like a tree!"  
The Fifth, who chanced to touch the ear,  
Said: "E'en the blindest man  
Can tell what this resembles most;  
Deny the fact who can  
This marvel of an Elephant  
Is very like a fan!"  
The Sixth no sooner had begun  
About the beast to grope,  
Than, seizing on the swinging tail  
That fell within his scope,  
"I see," quoth he, "the Elephant  
Is very like a rope!"  
And so these men of Indostan  
Disputed loud and long,  
Each in his own opinion  
Exceeding stiff and strong,  
Though each was partly in the right,  
And all were in the wrong!

The best approach is to get the experts together and help them to agree on what is needed.

Some time later I visited the operations center in Manhattan. At that time, it was a large room with many multi-monitor computer consoles. While I was there, there was an interesting crisis. Data communications had been lost with a generating station. That wasn't supposed to happen because there were redundant physical data paths, in this case telephone lines assured by the telephone company. These lines left the generating station at different locations, and then came together on a single utility pole. A truck coming out of the station hit the pole, and took out the redundant data paths.

No doubt you can draw an interesting conclusion on failure tolerance from that.

There was an interesting discussion in the control center. Some of the more junior system operators wanted to trip the generators off line, since they didn't know what the generators were doing. The senior system operator, a survivor of the big New York blackout, a cooler, more experienced head, decided to just let things run as they were. As it turned out, this was a good decision.

When people do something intentionally for a long time, some of them get to be really good at it. Some of the more competent experts we have to deal with have a most extraordinary, almost organic, feel for their system. I was sitting in the Nevada Power Company boardroom in Las Vegas several years later with some senior executives during an electric storm. There would be a flash of lightning, and the lights would dip, and then restore. One of them would lean over to another and whisper, "That'll be the Desert Inn," meaning the electrical substation on that road. Then another flash of lightning and a dip in the lights, and a similar comment.

Another observation about SME's: they know the system, and perhaps understand it in an organic sense, but they often do not understand what they know.

It was in this time frame that I was engaged in a heated argument with an integration manager. His approach to integration was to put everything together and keep repairing it until it worked. During this discussion I had a most curious insight. While we were arguing, a story leapt into my mind. My schoolteacher had told this story when I was ten, and I hadn't given it a thought in more than twenty five years. The story went like this:

I have a friend who was walking in the woods one day. He saw a fox. It was behaving very strangely. It was walking backwards. It kept walking backwards into a stream, very slowly. Soon only its nose was above water. Then it flipped something out of its mouth onto its nose, ducked under the water, and ran off. My friend walked over to the bank of the stream and picked up the thing the fox had placed on its nose, then dropped it very quickly. It was full of lice. With great ingenuity the fox had managed to remove these troublesome creatures.

The fox had debugged itself. If we had tried to do the fox a favor and turned a hose pipe on it, a few bugs would have been washed off, but most of them would just have moved to a more hospitable location.

And so it is with integration of computer based systems. We must sweep all the defects in one direction and out the end.

*(Continued in next Issue of the TC-ECBS Newsletter).*

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## Join TC ECBS

Details can be found at the web site  
<http://www.computer.org/tab/> where you can sign-up to TC-ECBS and three others free  
<http://www.computer.org/TCsignup/index.htm>