

Keynote ASYNC 2008 - *Tuesday 8th April 2008, 08:30-09:30* - Chair: Jordi Cortadella  
**"Asynchronous circuit technology is on the market"**. [Slides \(1.5MB PDF\)](#)  
Ad Peeters & Arjan Bink, Handshake Solutions.

### **Abstract**

The seventh international symposium on asynchronous circuits and systems, in Salt Lake City, March 2001, featured a presentation with the challenging title 'Where are the Async Millionaires?'

The morale of this invited talk by Kevin Normoyle, a Distinguished Engineer at Sun Microsystems, was that if the asynchronous community claims that their technology is so promising, why doesn't the technology create Greed and Fear. Greed in the sense that asynchronous technology might enable you to outperform your competition by exploiting unique possibilities, and Fear that the competition may be doing this. The talk demonstrated an absence of Fear and Greed in the area of high performance computing. The number of asynchronous millionaires was proposed as a way to measure success.

We are now at the fourteenth ASYNC conference in Newcastle, and seven years have passed. Today, hundreds of millions of asynchronous circuits are produced every year, and many of us may use it on a daily basis without being aware of it. As an example, asynchronous circuits designed using Handshake Solutions' Timeless Design Environment (TiDE) may be found in the vast majority of electronic (biometric) passports, in in-vehicle networks like CAN and LIN, in MEMS-based sensors such as for measuring tire pressure, in access-control systems, and in Near Field Communication devices such as Nokia's 6131 NFC phone.

In the talk I would want to address some of the steps that have been taken to bring this disruptive technology to the market, and the challenges that had and have to be overcome. It is now obvious to me that asynchronous technology can create Greed and Fear. It should be only a matter of time before the first asynchronous millionaires arise.

### **Biographies**

Ad Peeters is the CTO of Handshake Solutions, a business created by Royal Philips Electronics to bring asynchronous technology to the market. Ad has pushed Handshake Technology since his MSc and PhD work at Eindhoven University and Philips Research, and will continue to drive the growth of Handshake Solutions until he is a millionaire.

Arjan Bink is the Chief Design Engineer of Handshake Solutions. He graduated of the Technical University of Eindhoven, having studied Computer Science and Technological Design. It was during this time that he was involved in the work on the Single Track handshake protocol at Philips Research.

In 1995, Arjan joined Philips Research where he was involved in numerous processor-related projects looking at power reduction, clockless design, processor architectures (microprocessors, digital signal processors and multi-processor configurations). He then spent two years in the Strategic ASIC Group at Philips Semiconductors working on advanced prototyping architectures and System-on-Chip (SoC) design.

Arjan joined Handshake Solutions in 2003 and is responsible for self-timed processor design, e.g. the ARM996HS.