

# IEEE Rebooting Computing Initiative:

part of the IEEE Future Directions Committee

Change is coming to the computing industry

Let's talk and think about it so we can be prepared

# Motivation

End of Moore's Law

Opportunities for new approaches

Continued growth of computing devices for non-scientific applications

Smart phone, social networking, analytics

Increasing coupling of cyber-physical systems

Internet of Things

Let's take a look at computing in a general, holistic way

# Purpose

Learning/insight

Roadmaps

Initiatives

Collaborations

Advocacy/communication

Proper role for the IEEE

# Activities

Held 3 technical summits over the past 18 months

Formally collaborating with ITRS 2.0

(ITRS = International Technology Roadmap for Semiconductors)

Low power image recognition challenge at this year's DAC

(DAC = Design Automation Conference)

Special issue on rebooting computing in December IEEE Computer

December workshop to be held in DC after IEDM conference

(IEDM = International Electron Devices Meeting)

Initial planning for a conference in 2016 is underway

# RC1 summit

December 2013 in Washington DC

Four invited talks (DARPA, IARPA, OSTP, IBM) followed by small group discussions

The talks provided context for a brainstorming activity – what current computing problems have been “magically solved’ by 2023

Highlight: Identified 3 pillars for rebooting computing

- Energy efficiency

- Security

- Human-computer interface

OSTP = Office of Science and Technology of the President, I hope you know the others

# RC2 summit

May 2014 in Santa Cruz

Invited speakers described potential future models of computing

Augmented CMOS

Approximate/Probabilistic

Neuromorphic

Adiabatic/reversible

Small group discussions and a poster session

Highlight: Different models of computing are essentially complementary, not competitive

# RC3 summit

October 2014 in Santa Cruz

Four invited talks

- Security & privacy

- Parallelism

- Approximate computing

- Human computer interface

Small group discussions and a poster session

Low power image recognition challenge announced

Sneak peek at the National Strategic Computing Initiative

Highlight: Initial discussions on possible roadmaps, initiatives, and the IEEE role

# More information

IEEE RC website at [rebootingcomputing.ieee.org](http://rebootingcomputing.ieee.org)

Details and reports from each summit

Articles

IEEE RC Committee information

Related IEEE events

Join the RC community to keep up to date on events and activities