

National Workshop on The New Clockwork for Time-Critical Systems

October 25, 26, and 27, 2012

Hyatt Regency
300 Light Street
Baltimore, Maryland, USA

Preliminary Agenda

Paper titles, presenting authors, and organization of sessions are subject to minor changes. Several additional papers are expected to be added. The start and ending times each day will not change and can be used for travel planning.

The breakout sessions are a critical part of the workshop. Attendees are expected to use these sessions as an opportunity to voice their views on the overall theme of the workshop, the points raised (or not raised) by speakers, and to contribute to the identification of needed future research efforts to realize the benefits of the 'new clockwork'. Each of these sessions will produce a summary report to be incorporated into a final report to the NITRD.

October 25, 2012

0730 – 0830 **Continental Breakfast (Provided)**

0830 – 0900 **Session 1: Introduction (Ted Baker, John Eidson)**

Welcome, participant introduction and workshop objectives

0900 – 1000 **Session 2: (Al Mok)**

- *The state of the art in clock, clock synchronization, and time and frequency distribution technology:* John Eidson (UC Berkeley) and Doug Arnold, Symmetricom
- *Medical perspective:* Julian M. Goldman, MD. Attending Anesthesiologist, Massachusetts General Hospital Medical Director, Partners HealthCare Biomedical Engineering Director, CIMIT

1000 – 1030 **Coffee Break (Provided)**

1030 – 1200 **Session 2 continued: (Al Mok)**

- *Manufacturing Perspective:* Kang Lee. NIST,
- *Synchronization Issues in Prosumer Smart Grids:* Santiago Grijalva, Magnus Egerstedt, and Marilyn Wolf, Georgia Tech.
- *Real-Time Wireless Control Networks: Challenges and Directions:* Chenyang Lu, Washington University St Louis

1200 – 1300 Lunch (Provided)

1300 – 1430 Session 3: (Al Mok)

- *Transportation*: Raj Rajkumar, CMU
- *Telcom perspective*: Bob Iannucci, CMU-SV
- *Models of Time for Safety Critical Systems: Partial vs. Total Order – Polychronous vs. Synchronous*, Sandeep K. Shukla, Virginia Tech

1430 – 1500 Coffee Break (Provided)

1500 – 1630 Session 4: Breakout sessions (moderators and scribes TBD)

Brainstorm content for the report, and record the outcomes of the discussions.

1630 – 1730 Session 5: Reports on breakout sessions

1730 Adjourn for the day. Dinner is on your own.

October 26, 2012

0730 – 0830 Continental Breakfast (Provided)

0830 – 1000 Session 6: (Raj Rajkumar)

- *Towards Self-stabilizing Byzantine Fault-Tolerant Clock Generation in Systems-on-Chip*, Danny Dolev, Matthias Fuggery, Christoph Lenzen, and Ulrich Schmidy; Hebrew University of Jerusalem, Vienna University of Technology, Weitzmann Institute of Science
- *Precision Timed Infrastructure: Promoting Time to a First-Class Citizen in System Design*, David Broman, Stephen A. Edwards[†], Edward A. Lee[‡], UC Berkeley, Columbia.
- *Time Sensitive Data Transfer using COTS Technology*, Sundeep Chandhoke, Rodney Greenstreet, Arkadeb Ghosal, Hugo A Andrade, National Instruments.

1000 – 1030 Coffee Break (Provided)

1030 – 1200 Session 6 continued: (Raj Rajkumar)

- *Probabilistic Secure Time Transfer: Challenges and Opportunities in a Sub-Millisecond World*, Kyle D. Wesson, Todd E. Humphreys, and Brian L. Evans, UT Austin. kyle.wesson@utexas.edu
- *Efficiency considerations in the implementation of cyber-physical systems*, Jim Anderson and Sanjoy Baruah, The University of North Carolina baruah@cs.unc.edu
- *Models of Time for a Computational World*, E.A. Lee, UC Berkeley. eal@eecs.berkeley.edu

1200 – 1300 Lunch (Provided)

1300 – 1430 Session 7: (Raj Rajkumar)

- *Mixed Physical and Cyber Clocks for Cyber-Physical Systems*, Dionisio de Niz,
- *Timing Robustness and Fault-tolerance*: John Rushby, SRI
- *"Time and controls: when to exercise control?"*: Paulo Tabuada, UCLA

1500 – 1530 Coffee Break (Provided)

1530 – 1630 Session 8: Breakout sessions (moderators and scribes TBD)

Brainstorm content for the report, and record the outcomes of the discussions.

1630 – 1730 Session 9: Report out and discussion on breakout sessions and closing

1730 Adjourn for the day. Dinner is own your own for those involved in Saturday session.

October 27, 2012

Attendance at this Saturday writing and editing session is for a subset of the workshop attendees. Please contact John Eidson at eidson@eecs.berkeley.edu if you are interested in participating.

0730 – 0830 Continental Breakfast (Provided)

0830 – 1200 Session 10: Writing final report: (Raj Rajkumar moderator)

The goal of this session is to produce the final workshop report to be submitted to NITRD.

1200 Meeting Adjourn, Lunch available to those that want it.