JOINT WORKSHOP ON
HIGH CONFIDENCE MEDICAL DEVICE SOFTWARE AND SYSTEMS (HCMDSS) AND MEDICAL DEVICE PLUG-AND-PLAY (MD PNP) INTEROPERABILITY

JUNE 25-27, 2007
BOSTON, MA
http://www.cis.upenn.edu/hcmdss07/

CALL FOR PAPERS
(PRELIMINARY VERSION)

The joint workshop on HCMDSS (High Confidence Medical Device Software and Systems) and Medical Device Plug-and-Play (MD PnP) provides a forum for the presentation of research and development covering all aspects of high integrity medical device software and systems, which is essential to support innovative networked medical device systems to improve safety and efficiency in health care.

The purpose of the HCMDSS/MD PnP workshop is to provide a working forum for medical device specialists, including researchers, developers, and caregivers, from clinical environments, industry, research laboratories, academia, and government with the goal of advancing science, technology, and practice to overcome crucial medical device software and systems issues and challenges facing the design, manufacture, certification, and use of medical devices.

HCMDSS/MD PnP'07 welcomes the submission of papers in all aspects of HCMDSS and MD PnP, including but not limited to

- Foundations for Integration of Medical Device Systems/Models: Component-based technologies for accelerated design and verifiable system integration, Systems of systems, MD PnP (Plug-and-Play) to support interoperability of heterogeneous systems

- Enabling Technologies for Future Medical Devices: Implantable regulatory devices, networked biosensors, telesurgery, robotic surgery, physiologic signal QoS (Quality of Service)

- Distributed Control & Sensing of Networked Medical Device Systems: Robust, verifiable, fault-tolerant control of uncertain, multi-modal systems

- Medical Device Plug-and-Play Ecosystem: Requirements for supporting interoperability in the clinical environment, including 'black box' data recording, device authorization, and data security.

- Patient Modeling & Simulation: Large scale, high fidelity organ and patient models for design and testing

- Embedded, Real-Time, Networked System Infrastructures for HCMDSS: Architecture, platform, middleware, resource management, QoS in HCMDSS, Dynamic interoperation in HCMDSS, including MD PnP (Plug-and-Play) operation

- High Confidence Medical Device Software Development & Assurance: Care-giver requirements solicitation and capture, design and implementation, V&V (Verification and Validation), Heterogeneity in environment, architecture, platforms in medical devices

- Medical Practice-driven Models and Requirements: User-centric design, risk understanding, and use/misuse modeling in medical practice, management of failures in a clinical environment, , modeling of operational scenarios, including medical devices, care-givers, patients

- Certification of HCMDSS and MD PnP: Quantifiable incremental certification of HCMDSS and MD PnP interoperability, role of design tools and COTS, approval of non-determinisitic and self-adaptive medical device systems

- Life Cycle Management of Networked Devices and HCMDSS: Maintainability issues and methods, monitoring of networked devices, bringing new devices onto the network, implications for legacy systems

BACKGROUND AND SCOPE

The medical/healthcare sector represents about 20 cents of every dollar spent in the United States. The rapidly increasing use of software to control medical devices makes the development and production of medical device software and systems a crucial issue, both for the U.S. economy and to assure safe advances in health care delivery. Several Federal agencies are interested in identifying the research needs required to improve the design, certification, and operation (by both health care professionals and consumers) of medical device software and systems that will result in better, safer, and more cost-effective medical care.

The first HCMDSS workshop was held June 2-3, 2005, in Philadelphia, PA. The participants included a complete mix of the relevant stakeholders (including researchers, developers, certifiers, and users) who can help identify emerging systems and assurance needs. The workshop has resulted in a comprehensive research needs report that prioritizes recommendations with a roadmap to determine what, when, and how these priorities should be addressed over an identified time frame (see http://www.cis.upenn.edu/hcmdss).

The Medical Device Plug-and-Play (MD PnP) Interoperability Program was established in 2004 to lead the evaluation and adoption of a standards-based ecosystem for networked medical devices to support clinical solutions. The program has convened diverse stakeholders (clinicians, biomedical and clinical engineers, healthcare delivery systems, regulatory agencies, medical device vendors, standards development organizations) to identify current needs and build on past efforts to develop medical device interoperability solutions. More than 500 clinical experts and representatives of more than 65 institutions have participated. The program has elicited clinical scenarios of "better healthcare through interoperability" from clinicians and engineers, and has developed a methodology to analyze these clinical scenarios to derive engineering requirements. To support this activity, the MD PnP Lab opened in May 2006 to provide a vendor-neutral "sandbox" to evaluate the ability of candidate interoperability solutions to solve clinical problems, to model clinical use cases in a simulation environment, to develop and test related network safety and security systems, and to support interoperability and standards conformance testing. (see http://mdpnp.org/)

The synergies between the HCMDSS and MD PnP goals have led to this joint workshop to continue the momentum produced by prior HCMDSS and MD PnP meetings, and to provide a forum to exchange new research and development results by the emerging community of researchers, developers, regulators, users, and manufacturers.

IMPORTANT DATES

Febuary 5, 2007:   Submission Deadline
March 15, 2007:   Notification of Acceptance/Rejection
April 10, 2007:   Final Version Due
June 25-27, 2007:   Workshop

SUBMISSION INSTRUCTION

Submissions should be limited to 20 double-space pages (5,000 words).

VENUE

The workshop will be held at the Hyatt Regency in Cambridge, MA. The hotel is located on Memorial Drive, overlooking the Charles River (www.cambridge.hyatt.com).

INFORMATION

The workshop web site http://www.cis.upenn.edu/hcmdss07/ provides up-to-date information. For more information, or if you wish to be put on the workshop mailing list, please contact the workshop organizers at hcmdss07@cis.upenn.edu.

WORKSHOP ORGANIZERS

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Insup Lee, University of Pennsylvania
Oleg Sokolsky, University of Pennsyvanaia
Susan Whitehead, Center for the Integration of Medicine & Innovative Technlogiy (CIMIT)

PROGRAM COMMITTEE

See the workshop web site for the latest list.

SPONSORING AGENCIES (pending)

National Science Foundation
U.S. Army Telemedicine & Advanced Technology Research Center (TATRC)

AFFILIATED PROFESSIONAL ORGANIZATIONS

See the workshop web site for the latest list.