



## HCMDSS / MD PnP'07

### Improving Patient Safety through Medical Device Interoperability and High Confidence Software

#### Joint Workshop on High Confidence Medical Devices, Software, and Systems (HCMDSS) and Medical Device Plug-and-Play (MD PnP) Interoperability

June 25-27, 2007  
Cambridge, MA

With support from: TATRC (U.S. Army Telemedicine & Advanced Technology  
Research Center), NSF (National Science Foundation),  
AHRQ (Agency for Healthcare Research & Quality),  
CIMIT (Center for Integration of Medicine & Innovative Technology),  
Massachusetts General Hospital and the University of Pennsylvania

Hyatt Regency Cambridge, 575 Memorial Drive, Cambridge, MA

### Monday, June 25

7:30 – 8:30am	Registration / Continental Breakfast
8:30 – 8:55am	Welcome from Workshop Co-Chairs and Conference Overview <i>Insup Lee, PhD, University of Pennsylvania</i> <i>Julian M Goldman, MD, Massachusetts General Hospital / CIMIT</i>
8:55 – 9:00am	Welcome from CIMIT <i>John A Parrish, MD, Director</i>
9:00 – 10:00am	Keynote Address: <i>Robert M Kolodner, MD, National Coordinator for Health IT</i>
10:00 – 10:20am	Break

## Monday, June 25 (continued)

- 10:20 – 12:00 noon    **Panel on The Clinical Need**  
*Moderator and Introduction to Panel: Julian M Goldman, MD*  
*Jeffrey Cooper, PhD, Anesthesia Patient Safety Foundation, MGH*  
*Sandy Weininger, PhD, Food & Drug Administration*  
*Jennifer Jackson, MBA, CCE, Brigham & Women's Hospital*  
*James Philip, MEE, MD, Brigham & Women's Hospital*  
*Steven Dain, MD, University of Western Ontario*  
*James Fackler, MD, Johns Hopkins Medical Center*  
*Panel Discussion*
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- 12:00 – 1:00pm        Lunch Buffet and Extended Abstract Talks (starting at 12:30)
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- 1:00 – 3:00pm        **Technical Session 1: Interoperability Challenges**  
*Introduction to Session: Glenn Himes, Mitre Corporation*
- Medical Device Interoperability: Assessing the Environment  
*Kathy Lesh, Sandy Weininger, Julian Goldman, Bob Wilson, Glenn Himes*  
*See roster for institutional affiliations.*
- Moving Toward Semantic Interoperability of Medical Devices  
*John Garquilo, Sandra Martinez, Richard Rivello, Maria Cherkaoui*  
*NIST – National Institute of Standards & Technology*
- Clinical Requirements Methodology: Incorporating Clinical Workflows to Improve Device/System Development  
*Invited Speakers: Jennifer Jackson, Brigham & Women's Hospital, Tracy Rausch, DocBox Inc. (formerly at Kaiser Permanente)*
- Clinical Requirements Methodology: Ensuring Sufficient Breadth in Use Case Development – How Should Non-Functional Requirements be Elicited and Represented?  
*Invited Speaker: Richard Schrenker, Massachusetts General Hospital*
- Challenges for the Large Integrated Healthcare Delivery System  
*Invited Speaker: Michael Robkin, Kaiser Permanente*
- Session Recap & Discussion: Glenn Himes*
- 3:00 – 3:30pm        Break
- 3:30 – 5:00pm        **Technical Session 2: High Confidence Medical Device Software**  
*Introduction to Session: Helen Gill, NSF*
- Formal Methods Based Development of a PCA Infusion Pump Reference Model: Generic Infusion Pump (GIP) Project  
*David Arney, Raoul Jetley, Paul Jones, Insup Lee, Oleg Sokolsky*  
*See roster for institutional affiliations.*

## Monday, June 25 (continued)

Point-of-Care Support for Error-Free Medication Process  
*JWS Liu, CS Shih, PH Tsai, HC Yeh, PC Hsiu, CY Yu, WH Chang*  
See roster for institutional affiliations.

A Survey of Software Engineering Techniques in Medical Device Development  
*Raimund L. Feldmann, Forrest Shull, Christian Denger, Martin Höst, Christin Lindholm*  
See roster for institutional affiliations.

5:00 – 6:00pm Abstract Talks

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**6:00 – 7:00pm**      **Reception and**  
**7:00 – 9:00pm**      **Dinner – at Hyatt Regency, Charles View Ballroom**  
*Dinner Speaker: Nat Sims, MD, Physician Advisor, Partners HealthCare Biomedical Engineering at Massachusetts General Hospital*  
Introduced by *Warren M. Zapol, MD, Reginald Jenny Professor, and Chairman, Department of Anesthesia & Critical Care, Massachusetts General Hospital*

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## Tuesday, June 26

7:30 – 8:30am Continental Breakfast

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8:30 – 8:45am Introduction to **Day #2: Insup Lee**

8:45 – 9:45am Keynote Address:  
*John Rushby, PhD, Program Director for Formal Methods & Dependable Systems, SRI International*

9:45 – 10:00am Break

10:00 – 12:00 noon **Technical Session 3: Sensor Networks**  
*Introduction to Session: Azer Bestavros, Boston University*

User Access of Public Shared Devices in Pervasive Computing Environments  
*David Jea, Ian Yap, Mani Srivastava*  
UCLA

PAS: A Wireless-Enabled, Sensor-Integrated Personal Assistance System for Independent and Assisted Living  
*Jennifer Hou, Qixin Wang, Linda Ball, Stanley Birge, Marco Caccamo, Chin-Fei Cheah, Eric Gilbert, Carl Gunter, Elsa Gunter, Chang-Gun Lee, Karrie Karahalios, Min-Young Nam, Narasimhan Nitya, Chaudhri Rohit, Lui Sha, Wook Shin, Yang Yu, Zheng Zeng*  
See roster for institutional affiliations.

## Tuesday, June 26 (continued)

A Novel Method and Testbed for Sensor Management and Patient Diagnosis  
*Winston Wu, Maxim Batalin, Alex Bui, Majid Sarrafzadeh, William Kaiser*  
UCLA

Platform Design for Healthcare Monitoring Applications  
*Roozbeh Jafari, Ruzena Bajcsy, Steven Glaser, Bruce Gnade, Marco Sgroi*  
*See roster for institutional affiliations.*

*Session Recap: Azer Bestavros*

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12:00 – 1:00pm	Lunch Buffet and Extended Abstract Talks (starting at 12:30)
1:00 – 1:20pm	Overview of Afternoon Sessions <i>Julian Goldman</i>
1:20 – 1:45pm	<b>Transport to CIMIT (Cambridge), 65 Landsdowne Street, Cambridge</b>
1:45 – 3:50pm	Demos and Posters at MD PnP Lab, CIMIT (Cambridge) Various Presenters
3:50 – 4:00pm	Move into CIMIT Forum (beverages and snacks provided) 65 Landsdowne Street, Room 103 (same building)
4:00 – 6:00pm	<b>CIMIT Forum</b> <i>Moderated by Julian M. Goldman, MD</i> <b>Accelerating Interoperability:</b> <i>Dave Whitlinger, Director, Healthcare Device Standards, Intel Corporation</i> <i>Zachary Zimmerman, MD/MS, Chair of Chiefs of Anesthesia, Kaiser Permanente</i> <i>Ray Zambuto, IHE-USA</i> Panel: <i>Jeff Robbins, LiveData Inc., Carl Wallroth, Drager Medical, Dave Whitlinger, Zachary Zimmerman, Ray Zambuto</i>
6:30 – 8:30pm	<b>Reception – MIT Museum</b> Mass Ave, Cambridge (5-minute walk from 65 Landsdowne St)

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## Wednesday, June 27

7:30 – 8:30am Continental Breakfast

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8:30 – 8:45am Introduction to **Day #3**: *Julian Goldman*

8:45 – 9:45am **Government Perspectives**  
*Invited Speakers: Sally Howe, National Coordination Office for  
Networking & Information Technology Research & Development (NITRD)  
Sylvia Spengler, NSF, Michael Fitzmaurice, AHRQ  
Introduction to Panel: Vish Sankaran, Federal Health Architecture, Office  
of the National Coordinator for HIT*

9:45 – 10:00am Break

10:00 – 11:30am **Panel on Government Perspectives on Medical Device  
Interoperability**  
*Moderator: Vish Sankaran  
NIST: John J Garguilo  
FDA: Sandy Weininger  
TATRC: Ronald Marchessault  
NSF: Scott Midkiff  
NIH: Zohara Cohen  
Panel Discussion and Q&A*

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11:30 – 12:30pm Networking Lunch Buffet

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12:30 – 2:45pm **Technical Session 4: Interoperability Solutions**  
*Introduction to Session: Jeff Robbins, LiveData Inc.  
MD-Adapt: A Proposed Architecture for Open-Source Medical Device  
Interoperability*

*Interoperable Medical Devices Due to Standardized CANopen Interfaces  
Reiner Zitzmann, Thilo Schumann  
CAN in Automation*

*Building Reliable MD PnP Systems  
Mu Sun, Qixin Wang, Lui Sha  
University of Illinois, Urbana-Champaign*

*Agent-Based Plug-and-Play Integration of Role-Enabled Medical Devices  
Giacomo Cabri, Francesco De Mola, Letizia Leonardi  
University of Modena, ITALY*

*Plug-and-Play and Network-Capable Medical Instrumentation and Database  
with a Complete Healthcare Technology Suite: MediCAN  
Paul McKneely, Frank Chapman, Deniz Gurkan  
MediCAN Systems, University of Houston*

## Wednesday, June 27 (continued)

*Session Recap: Jeff Robbins*

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| 2:45 – 3:00pm | Break  |
| 3:00 – 3:45pm | <b>Breakouts for Working Groups</b> (brainstorming key issues)<br><i>Facilitators TBD</i> <ul style="list-style-type: none"><li>• <i>Adverse Event Reporting</i></li><li>• <i>Human Computer Interface</i></li><li>• <i>Validation and Certification</i></li><li>• <i>MD PnP Ontology</i></li><li>• <i>Life-Cycle Management of Interoperable Medical Device Systems</i></li><li>• <i>Interoperability Requirements in Contract Language</i></li></ul> |
| 3:45 – 4:15pm | Working Groups report back   |
| 4:15 – 4:30pm | <i>Commentary: View from the Blogosphere</i><br><i>Tim Gee, <a href="http://www.medicalconnectivity.com">www.medicalconnectivity.com</a></i>   |
| 4:30 – 5:00pm | Workshop Wrap-up: Lessons Learned and Next Steps<br><i>Insup Lee and Julian M. Goldman, MD</i>   |
| <b>5:00pm</b> | <b>Adjourn</b>   |

**Please Note:** Full institutional affiliations by individual will be available in the published Proceedings of the meeting.