



What You are Seeing Today

The Medical Device Plug-and-Play (MD PnP) Interoperability research program at CIMIT/Massachusetts General Hospital is demonstrating an open test bed for medical device interoperability being developed under the NIH/NIBIB U01 Quantum Medical Device Interoperability Project (QMDI). The QMDI project has been developing this test bed (platform and tools) for use by clinicians and hospitals, the computer science and engineering research community, and medical device manufacturers, to enable innovative clinical, engineering, and HIT research to improve healthcare.

NIH/NIBIB U01 Project Description

The QMDI Project will identify and validate the clinical, technical, and regulatory requirements of interoperable medical devices in hospital settings, provide the open-source system and software components necessary to build, evaluate, and validate interoperable medical devices, and provide the clinical processes and safety protocols necessary to safely use interoperable medical devices.



PCA Safety Interlock

Prevent pain medication overdose and create smart alarms in patient-controlled analgesia infusions

Preparing ICU to Receive Patient from OR

Automatically read OR device settings and pre-set ICU equipment; Smart checklists

Open Source Medical Device Connectivity

Open source repository of software for the ICE* platform
Clinical research test bed using MATLAB

Architecture Safety

The features required for the safe assembly and operation of systems made up of interoperable medical devices

Synergistic Projects



Data Logger

Tracking adverse events with the “flight data recorder” of the healthcare environment

Clinical Scenario Repository

Documenting clinical scenarios in which interoperability could improve patient safety

Integrating Clinical Technology for Military Health

DocBox implementation of ICE manager in clinical environment

Collaborator Research[†]



ICE* Authentication Framework

Enabling ICE components such as devices, apps, and infrastructure to be integrated at the point-of-care in a trustworthy manner

ICE* Device Model Framework

Addressing gaps in existing interfacing technologies to enable flexible automated interoperability checking between ICE apps and devices

MIDAS Real-Time Middleware

A system ensuring that clinical applications receive the necessary resources to guarantee real-time performance

Medical Device and Network Security

Problems and solutions that support building secure interoperable medical device systems

*ICE: Integrated Clinical Environment

[†]Anakena Solutions, DocBox, Kansas State University, Moberg Research, University of Illinois, University of Pennsylvania