

CIMIT

A non-profit consortium of Boston's premier teaching hospitals, universities and labs, CIMIT fosters interdisciplinary collaboration among world-class experts in medicine, science and engineering, in concert with industry and government, to rapidly improve patient care

Consortium Institutions

Beth Israel Deaconess Medical Center
Boston Medical Center
Boston University
Brigham & Women's Hospital*
Children's Hospital Boston
Draper Laboratory*
Harvard Medical School
Massachusetts General Hospital*
Massachusetts Institute of Technology*
Newton-Wellesley Hospital
Northeastern University
Partners HealthCare
VA Boston Healthcare System
* Founding Institutions

International Affiliates

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Overview

CIMIT's Integrated Clinical Environments (ICE) initiative draws on the collective expertise of its Boston-based consortium of premier teaching hospitals, universities and labs to help clinicians be more informed as they make decisions at the point of care, while also making clinical systems more efficient and less error-prone. It leverages and adapts technology and systems engineering to improve the continuity of health care within and across care settings. It enables the more effective capture, transfer, use and display of information as patients move through clinical workflows and interact with healthcare systems and associated electronic medical records.

Challenge & Opportunity

ICE responds to a strategic challenge put forward by CIMIT's Executive Committee, the Presidents and CEOs of CIMIT's 14 member institutions. They challenged CIMIT to undertake a focused effort that leverages its consortium to apply technology in driving a rapid and significant impact on healthcare delivery.

Through ICE, CIMIT intends to address today's fragmented healthcare paradigm, which results in systems that are inefficient, error-prone, and subject to sub-optimal outcomes. The devices used for monitoring, collecting, analyzing and displaying device- and patient-generated data usually operate independently from each other and the electronic medical record, each using proprietary systems. Medical devices that deliver care, such as infusion pumps and ventilators, act autonomously to perform a specific set of functions, typically optimized for existing, conventional workflows.

Without an effort like ICE, systems will remain fragmented and inefficient. Standards and infrastructure need to be made widely available to support the development, validation and effective use of interoperable devices and systems. No one company or healthcare provider has the resources or infrastructure to optimize use of devices within an interoperable system, nor to ensure the safety and efficacy of the resulting clinical workflow, but all can benefit when these goals are achieved through a coordinated effort. Accordingly, CIMIT will convene the clinical, technical, regulatory and commercial expertise to demonstrate the potential, start building the necessary infrastructure and catalyze the action needed by stakeholders.

Focus & Approach

The ICE initiative integrates clinical workflow redesign with innovative technologies, medical device interoperability, and clinical use simulation to enable the effective use of electronic medical records and provide improved decision support for clinicians at the point of care. The core of the work is translational research and development that adapts and applies enabling technologies to specific problems experienced by clinicians and allied caregivers – providing rapidly implementable solutions.

CIMIT's approach is to stimulate and support a portfolio of investigator- and CIMIT member institution-led projects directed toward a vision of greater continuity of health care across all care settings. The portfolio is coordinated to develop and build the necessary infrastructure to support clinical investigators in gathering and sharing data as well as insights to achieve faster results and implementation at the bedside.

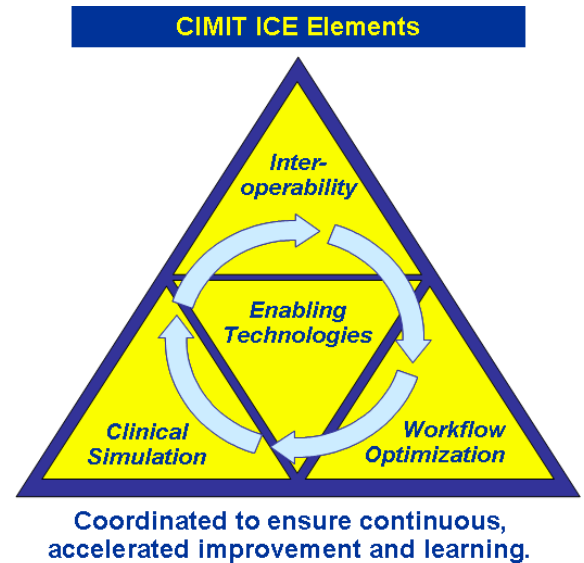
CIMIT ICE Elements

1. Workflow Optimization

Systems analysis and engineering to improve care pathways and clinical workflow based on “what should and could be”, and not limited to “what is”. CIMIT will leverage the system engineering and operational expertise of its members along with its experience with “learning laboratories” in clinical settings at all levels of acuity, from ICU to homecare.

2. Clinical Simulation

High fidelity patient and clinical environment simulations based on the CIMIT ICE projects to develop insights into improvement opportunities, validate performance and safety, and support dissemination and training. The initial focus will be pre-clinical testing, and subsequently we will look at simulation as part of routine workflow and provider education, as well as techniques to rapidly educate the diverse healthcare delivery workforce. CIMIT will leverage the experience with healthcare simulation technologies throughout the Boston academic community, consolidating expertise across technologies, curriculum, and human factor domains. CIMIT will catalyze innovation across the strong network of member Simulation Centers, including the Center for Medical Simulation, to embed simulation-based learning across clinical settings.



3. Interoperability

CIMIT will build on the international leadership and network of collaborators in this domain through its Medical Device Plug-and-Play (MD PnP) Program, with a focus on:

- Standards development for device integration, including for device-generated data, EMR observational and procedural data, and alignment with ongoing local, regional and national EMR initiatives
- Interoperable modalities and a repository of interoperability-related “clinical scenarios” generated through clinical experience for key medical devices and systems such as PCA pumps and respiration monitors. These scenarios will guide and stimulate development projects that improve outcomes and patient safety.

4. Enabling Technologies

CIMIT will leverage its numerous sponsored projects and those at its member institutions to develop and adapt technologies that address clinical needs, and will lead by example, such as with projects that address:

- “Smart” algorithms that process integrated data from devices and the EMR in a manner that efficiently empowers each level of caregiver to make better decisions, as well as allowing automated surveillance of patient status
- Wireless technologies that support communication and can encompass wearable sensors and effectors
- Devices and systems for appropriately and unobtrusively extending medical care systems to lower-acuity settings, including the home; not just moving complex hospital technologies directly to these settings

Collaboration

While ICE is a CIMIT initiative, we are seeking like-minded clinical, technical (device and IT), regulatory, policy and implementation organizations to collaborate in maximizing and extending the impact of the ICE initiative for patients. More information at www.cimit.org.