Objectives

At the conclusion of the workshop, participants will be able to:

• Describe the benefits of standards in healthcare education and competence assessment.
• Identify opportunities for participating in the standards development process.

Overview

• Introductions
• What is MedBiquitous?
• Why standards?
• Major Activities
• Summary
• How to participate
Introductions

What is MedBiquitous?

MedBiquitous Mission

To advance healthcare education through technology standards that promote professional competence, collaboration, and better patient care.

Non-profit, member-driven, standards development organization
The Fragmented Healthcare Industry

Universities
Societies
Certifying Boards
Licensing Boards
Government
Accrediting Bodies

MedBiquitous: Technology Standards for Healthcare Education

- 64 member organizations
- 7 Working Groups
- ANSI process
  - Openness
  - Transparency
  - Consensus
  - Due process
- Work with leading organizations that can drive adoption

MedBiquitous Goals

- Better tracking and evaluation of professional education and certification activities
- Easier discovery of relevant education and information resources when and where needed
- Interoperability and sharing of high quality online education
- Coordination and tracking of competence assessment data
<table>
<thead>
<tr>
<th>MedBiquitous Process</th>
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<tbody>
<tr>
<td><strong>Executive committee</strong></td>
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<tr>
<td>• Approves new standards projects</td>
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<tr>
<td><strong>Working groups</strong></td>
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<tr>
<td>• Meets via telco, in person</td>
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<tr>
<td>• Develops specifications</td>
</tr>
<tr>
<td><strong>Standards committee</strong></td>
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<tr>
<td>• Consensus body</td>
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<tr>
<td>• Votes</td>
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<tr>
<td><strong>ANSI</strong></td>
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<tr>
<td>• Final approval</td>
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<tbody>
<tr>
<td>• Professional Profile</td>
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<tr>
<td>• Standard for describing a healthcare professional</td>
</tr>
<tr>
<td>• Credentials verification, administration, identification</td>
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<tr>
<td>• Competencies</td>
</tr>
<tr>
<td>• Standard for describing competency framework</td>
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<tr>
<td>• Working with IEEE</td>
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<tr>
<td>• Learning Objects</td>
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<tr>
<td>• Healthcare LOM (describing learning activities)</td>
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<tr>
<td>• SCORM for Healthcare (running e-learning)</td>
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<tr>
<td>• Virtual Patient</td>
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<tr>
<td>• Standards for Web-based programs that simulate clinical encounter</td>
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<tr>
<td>• Activity Report</td>
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<tr>
<td>• Tracking CE/MoC activities</td>
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<tr>
<td>• Metrics</td>
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<tr>
<td>• Aggregate evaluation data</td>
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<tr>
<td>• Point of Care Learning</td>
</tr>
<tr>
<td>• Integration with clinical systems</td>
</tr>
<tr>
<td>• Tracking needs assessment and inquiry data</td>
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</table>
Why standards?

Activity
You are designing your own searchable cookbook for all of the recipes you download from the internet.

Develop a data structure for a cooking recipe. Describe some of the benefits of having this standard.
Why standards?

- To facilitate exchange of data and resources
- To enable collaboration
- To create economies and networks of scale

Your Challenges

**Activity**

What information exchange, coordination, or integration challenges do you have?

5 min
Major Activities

Coordinating Professional Healthcare

- Professional Profile
  - Coordinating clinician data

- Competencies
  - Coordinating competency data

Professional Profile Working Group

- Mission: to develop XML standards and Web services descriptions to enable the exchange of clinician profile information across organizations and systems
Participants

- Todd Tischendorf, CECity, Chair
- Skip Bartolanzo, American Board of Pediatrics
- Tom Brantigan, TMA Resources
- David Hooper, Federation of State Medical Boards
- Paul Jolly, Association of American Medical Colleges
- Don Jones, American College of Chest Physicians
- Laura Martin, American Board of Pediatrics
- Joe O’Conner, Educational Commission for Foreign Medical Graduates
- Kelly Reddick, American Board of Pediatrics
- Michael Rowan, Learn Something
- Cyndi Streun, Federation of State Medical Boards
- Howard Tanzman, American College of Surgeons
- Toby Vandermark

Professional Profile Use Case

- Common format for exchanging information about healthcare professionals
  - Contact
  - Education
  - Training
  - Certification
  - License
  - Disciplinary action
  - Academic appointments
  - Memberships
- Facilitates cross-organization collaboration

Benefits

- Faster to process standardized data
- Faster to develop new applications
- Easier to work with partner organizations
- Able to automate many business processes
**Status of Professional Profile**

- Public Review Complete
  - Ballot pending
  - Developing implementation guide
- Standards Implementation
  - Clinician credentialing
  - Data collection
  - Developing use-cases
  - AAMC
  - Nursing

**Competencies**

- Competency = any educational objective or educational outcome that results from knowledge, skills, or beliefs.

**Competencies Working Group**

- Co-chairs: Rosalyn Scott, MD and Chris Candler, MD
- Mission: develop a standardized framework to represent competency data
- Existing work: IEEE Learning Technology Standards Committee (LTSC) has convened a Competency study group
Uses for a Competency Standard

- Allow learners to track their accomplishments against a list of relevant competencies
- Enable educators to see how their curriculum fits into a competency framework
- Enable content developers to tie educational activities to a competency framework

Example: How might we locate educational materials using a specific competency we are interested in?

Search Based on Competency

Select a discipline: Pathology Pediatrics Physiology

Or, select a topic: Cultural sensitivity

Then, select one or more objectives/competencies:

OB/GYN Competency II. Effectively communicate with patients, demonstrating awareness of gender and cultural differences.

Select Learning Objective

- II-a. Describe how patient’s ideas, feelings, beliefs, expectations, and experience of illness affect health outcomes.
- II-b. Describe how sex, sexuality, gender, and sociocultural factors affect communication by and with female patients.

Search
Describe how patient's ideas, feelings, beliefs, expectations, and experience of illness affect health outcomes.

Learning Objective – OB/GYN II - b

Implementing a longitudinal patient-oriented curriculum during the third-year.

39 year-old white female with amenorrhea.

The Patient's Perspective: How personal beliefs affect outcomes.

Name

□ Select

OB-GYN V-1, INTMED 5.9
ACGME 5-c
Virtual Patient

OB-GYN V-1, INTMED 5.9
ACGME 5-c
Tutorial

Coordinating in Primary Care

Activity

Exchanging membership data

Promoting a core curriculum

10 min

Finding Educational Activities and Content

• Healthcare Learning Object Metadata (Healthcare LOM)
  • Finding learning activities
Healthcare Learning Object Metadata (LOM)

- **Metadata Definition:** the data that describes a resource.
  - Example: card catalog information for a book: author, title, publication date, topic, etc.
- **Problem:** many publishers, libraries, and faculty authors use completely different metadata schemes.
  - Example: Title = “Assistant Professor” vs. Title = “Chronic Renal Failure”

Healthcare LOM Working Group Mission

To develop XML and Web services standards to enable interoperability, accessibility and reusability of Web-based medical learning content.

Healthcare LOM Uses

- Learner searches a continuing education course catalog. All records are organized by LOM.
- An education provider is sending a board or other regulatory entity information about a clinician that has completed a required educational resource.
- A learner has a clinical question and searches a knowledge base.
- An educator searches a repository of teaching materials.
Healthcare LOM

• Builds on existing IEEE Learning Objects Metadata Standard
• Provides healthcare specific information needed by healthcare educators
  • CE Credit information
  • Medical vocabularies
  • Level of evidence
  • Educational context
  • And more…

Learning Objects Working Group

• Patti Abbot, Johns Hopkins
• Trupti Bakrania, St. George’s Univ. London
• Morgan Bantly, VA, Chair
• Ravi Teja Bhupatiraju, Oregon Health and Sciences University
• Gabrielle Campbell, AAMC
• Chris Candler, AAMC
• David Davies, IVIMEDS
• Sharon Dennis, HEAL
• Shona Dipple, HEAL
• David Davies, IVIMEDS
• Rachel Ellaway, University of Edinburgh
• Nancy Gathany, CDC
• Stuart Gilman, VA
• Bill Hersh, OHSU
• Lorena Hitchens, HighWire Press
• Tao Le, Johns Hopkins
• Joy Leffler, WEMOVE
• Jim Martino, Johns Hopkins
• Sandra McIntyre, HEAL
• Jennifer Ott, Healthstream
• Allison Peel, ASCO
• Andy Rabin, CEObility
• Dan Rehak, ADL
• Michael Rowan, LearnSomething
• Jorge Ruiz, U of Miami
• Chris Rueger, Healthstream
• Deborah Sher, VA
• Damon Silver, HighWire Press
• Carl Singer, CEObility
• Charles Willis, AGA

Healthcare LOM Structure
Healthcare LOM Structure

Learning Objects Working Group Status

- Healthcare LOM public review until 4/30
- Any comments will be addressed by the Standards Committee
- Followed by formal ballot

Break - 10 minutes
Sharing and Reuse of Educational Resources

- SCORM for Healthcare
  - Self-directed Web-based learning

- Virtual Patients
  - Web-based simulations of clinical encounters


SCORM

- An e-learning model that enables accessibility, reuse, and interoperability of learning objects and tracking of learner progress.
- Standards for running, packaging, and describing learning content
- Broad international adoption

SCORM for Healthcare

- Profile of SCORM
- Leverages extensions to SCORM metadata called Healthcare Learning Object Metadata (Healthcare LOM)
- Developed by MedBiquitous

All SCORM for Healthcare content is conformant with SCORM
Challenges in Defense Training

- Content not portable / interoperable
- Content monolithic and not easily updated
- Content cannot be shared

Goals of SCORM

<table>
<thead>
<tr>
<th>SCORM Content Is...</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessible</td>
<td>Easily discovered and located.</td>
<td>Searching an education repository for hemorrhagic fever brings relevant results.</td>
</tr>
<tr>
<td>Reusable</td>
<td>Independent of learning context. Can be used for multiple situations.</td>
<td>Module on effects of radiation exposure can be included in multiple courses.</td>
</tr>
<tr>
<td>Interoperable</td>
<td>Can function in multiple hardware/software environments.</td>
<td>Module run in one LMS can be shared with other organizations and run on their systems.</td>
</tr>
<tr>
<td>Durable</td>
<td>Will continue to function as systems are upgraded.</td>
<td>This year’s course on asthma will run on the LMS you buy next year.</td>
</tr>
</tbody>
</table>

Status of SCORM for Healthcare

- Draft specification available
- Awaiting completion of Healthcare LOM standard
Virtual Patients

**Definition:** An interactive computer simulation of real-life clinical scenarios for the purpose of medical training, education, or assessment.

- Several schools are developing
- Very costly to create
- No common framework that would allow these virtual patients to be shared across systems
Virtual Patient Working Group Mission

To develop XML standards and Web services requirements to enable interoperability, accessibility and reusability of Web-based virtual patient learning content.

Virtual Patients Working Group

- Rachel Ellaway, U of Edinburgh, Co-chair
- JB McGee, U of Pittsburgh, Co-chair
- Spencer Aden, Healthlink
- Susan Albright, Tufts
- Ben Atlan Johns Hopkins
- Chris Candler, AAMC
- Emily Connall, St. George's U of London
- David Davies, IVWEDS
- Parvati Dev, Stanford
- Uno Fors, Karolinska
- Robert Galbraith, NBME
- Michael Hagen, ABIM
- Matthias Holzer, U of Munich
- Grace Huang, Harvard
- Patrik Jonsson, Karolinska
- Carol Kamin, U of Colorado
- Joy Lefler, WEMOVE
- Sandra McIntyre, HEAL
- Yanko Michea, U of Connecticut
- Dick Moberg, Moberg Research
- Nancy Posel, McGill
- Narain Ramluchumun, St. George's U of London
- Dan Rehak, ADL
- Kathie Rose, NBME
- Kevin Souza, UCSF
- Greg Thompson, Medantic
- Max, Tufts, NYU
- Dan Walker, Tufts
- Pat Youngblood, Stanford
- Nabil Zary, Karolinska

Virtual Patient Architecture

- Component based approach
- Enables sharing and reuse of entire virtual patient or components
- Engaging and relevant
- Provides feedback on practice
- Hewlett funded grant for VP player (Tufts)
- U of Edinburgh, Pittsburgh, NYU, Tufts, Karolinska Institute implementing
The MVP Architecture

Virtual Patient Data
- Personal and clinical data
- Similar to a clinical chart
- May include references to healthcare terminologies
- Draft schema available

Virtual Patient Data

Data Availability Model
- Activity Model
- Global State Model

Virtual Patient Data

VPData XML Example

```xml
<InterviewItem>
  <Question>What can I do for you today?</Question>
  <Response>I’m feeling short of breath doctor</Response>
</InterviewItem>

<InterviewItem>
  <Question>How long has this been the case?</Question>
  <Response>For two days or more doc, since the weekend</Response>
</InterviewItem>
```
VP Working Group Status

VP Working Group accomplishments
• Controlled Vocabulary
• Use Cases Defined
• VP Development Roadmap
• VP Architecture Whitepaper
• Draft schemas available
• Specification in progress

Work continues on the XML data model

Reusing Content

Activity

Some have referred to educational materials as “legos” that may be reconfigured to form a variety of useful educational resources.

What are the various ways that the following resources may be combined to form a useful educational resource?

10 min
Tracking and Evaluation of Learning Activities

- Activity Report
  - Tracking CE and certification activities across organizations

- Point of Care Learning
  - Tracking clinical questions, resources searched, and application to practice

- Medical Education Metrics
  - Reporting aggregate evaluation data

Activity Report Working Group

- Mission: develop XML standards and Web services requirements and descriptions to enable tracking of the learning and certification activities of physicians and other healthcare professionals.

Participants

- Toby Vandemark, Chair
- Spencer Aden, Healthstream
- Dawn Ainger, Genova Technologies
- Ray Everingham, CTSNet
- Jeanette Harmon, AMA
- Lorena Hitchens, HighWire Press
- Don Jones, American College of Chest Physicians
- Edward Kennedy, ACCME
- Laura Martin, American Board of Pediatrics
- Christie Morales, American Heart Association
- Kelly Reddick, American Board of Pediatrics
- Barbara Rosenthal, ABMS
- Michael Rowan, LearnSomething
- Damon Silver, HighWire Press
- Carl Singer, CECity
- Todd Tischendorf, CECity
- Charles Willis, American Gastroenterological Association
Current Problems with CE Tracking and Measurement

• We aren’t tracking CE
• We don’t help the learner assess gaps
• We can’t tell if CE matches learner’s practice-based needs
• We don’t measure CE value consistently
• We don’t verify claimed credits for certification or licensure

Reporting and Tracking CE/MoC

Provider A

Activity Report

Provider B

Dr. John Doe’s CME Tracker

A: Asthma Management .5 cr
B: Bronchodilators .5 cr
A: Pain Management .5 cr

Benefits

• Enables centralized tracking of CE and Certification activities
• Increases accountability of all parties
• Reduces administrative burden on professional
Status of Activity Report

- Updated schema with committee proposed changes
- ABP and AAP are piloting the use of the standard for use in MOC

Point of Care Learning Working Group

- Mission: to develop XML standards and guidelines to support offering clinicians learning at the point of care, tracking point of care learning, and using point of care learning data for needs assessment.

Participants

- Jabin White, Silverchair, Chair
- Nick Ackerson, Thomson
- Michelle Adams, AAD
- Dawn Ainger, Genova Technologies
- Mary Carol Badat, RSNA
- Scott Bradbury, AAP
- Ron Carovano, METI
- Nancy Davis, NIQIE
- Irina Laghidze, Moberg Research
- Dick Moberg, Moberg Research
- Kevin O’Hara, Healthstream
- Allison Peel, ASCO
- Deborah Samuel, AAP
- Danette Somers, Wiley
- Jake Zarnegar, Silverchair
**Point of Care Learning Uses**

- Common format for exchanging point of care learning activity data
  - Clinical question
  - Search parameters
  - Resource used
  - Application to practice
- Allows providers to collect data for credit and needs assessment
- Draft specification

**MEMS: Medical Education Metrics**

- Technology standard for core evaluation data
- Users
  - **Educators** want best practices, ability to compare
  - **Funders** want to measure reach and efficacy
  - **Accreditors** want to measure success of activity and provider

**MEMS Data**

- Activity Description
  - What's being evaluated
- Participant Activity Evaluation
  - What did participants think
- Participation Metrics
  - How many people participated
- Learner Demographics
Metrics Working Group

• Mission: to develop XML standards and Web services requirements and descriptions for the exchange of aggregate evaluation data and other key metrics for health professions education.

Metrics Participants

• Linda Casebeer, Outcomes, Inc., Co-Chair
• Francis Kwakwa, RSNA, Co-Chair
• Robin Bay, WEMOVE
• Craig Bowen, Johns Hopkins
• David Cook, Mayo Clinic
• Ray Evergarn, CTSNet
• Michael Fordis, Baylor College of Medicine
• Stuart Gilman, Department of Veterans Affairs
• Ed Kennedy, ACCME
• Jack Kues, University of Cincinnati
• Tao Le, Johns Hopkins University
• Jackie Mayhew, Pfizer
• Kevin O’Hara, Healthstream
• Mellie Pouwels, RSNA
• Veronica Quinn, METI
• Andy Rabin, CECity
• Mike Saxton, Pfizer
• Donna Schoonover, VA

MEMS Use Case

• Best practices
• Standardize measurement of learning activities within a program
• Communication of participation and evaluation metrics to:
  • Accrediting bodies
  • Funders
MEMS Benefits & Status

- Basing updates on current research (CMEQUAL)
- Easy to compare metrics among programs
- Draft specification
- Moving to higher levels of evaluation

Exchanging CE Data

Activity

Streamlining CME Reporting and Administration

Summary
MedBiquitous Goals

- Better tracking and evaluation of professional education and certification activities
  - Activity Report
  - Point of Care Learning
  - Medical Education Metrics
- Easier discovery of relevant education and information resources when and where needed
  - Healthcare LOM

MedBiquitous Goals

- Interoperability and sharing of high quality online education
  - SCORM for Healthcare
  - Virtual Patients
- Coordination and tracking of competence assessment data
  - Professional Profile
  - Competencies

Back to your challenges

- Can existing standards address any of the challenges you face?
- Are there needs for other standards?
Questions for you

• Are standards a good idea?
• Should you develop them within your own organization?
• What are the benefits of standards to your organization?

How to Participate

Working Group Meetings

• Professional Profile WG
  Mon., 4 PM
• Competency WG
  Wed., 7:30 AM
• Activity Report WG
  Wed., 7:30 AM
• Virtual Patient WG
  Wed., 12 PM
• Point of Care Learning
  WG
  Wed., 12 PM
• Learning Objects WG,
  Wed., 3:30 PM
• Metrics WG
  Wed., 3:30 PM
Contact us

- Chris Candler
  ccandler@aamc.org
- Valerie Smothers
  valerie.smothers@medbiq.org