

# Curriculum Inventory Implementation Guidelines

Version: 1.0 Date: November 1, 2012 Author: Valerie Smothers Author email: vsmothers@jhmi.edu

# **Version History**

Version No.	Date	Changed By	Changes Made

## MedBiquitous Consortium XML Public License and Terms of Use

MedBiquitous XML (including schemas, specifications, sample documents, Web services description files, and related items) is provided by the copyright holders under the following license. By obtaining, using, and or copying this work, you (the licensee) agree that you have read, understood, and will comply with the following terms and conditions.

The Consortium hereby grants a perpetual, non-exclusive, non-transferable, license to copy, use, display, perform, modify, make derivative works of, and develop the MedBiquitous XML for any use and without any fee or royalty, provided that you include the following on ALL copies of the MedBiquitous XML or portions thereof, including modifications, that you make.

- Any pre-existing intellectual property disclaimers, notices, or terms and conditions. If none exist, the following notice should be used: "Copyright © [date of XML release] MedBiquitous Consortium. All Rights Reserved. http://www.medbiq.org"
- 2. Notice of any changes or modification to the MedBiquitous XML files.
- 3. Notice that any user is bound by the terms of this license and reference to the full text of this license in a location viewable to users of the redistributed or derivative work.

In the event that the licensee modifies any part of the MedBiquitous XML, it will not then represent to the public, through any act or omission, that the resulting modification is an official specification of the MedBiquitous Consortium unless and until such modification is officially adopted.

THE CONSORTIUM MAKES NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, WITH RESPECT TO ANY COMPUTER CODE, INCLUDING SCHEMAS, SPECIFICATIONS, SAMPLE DOCUMENTS, WEB SERVICES DESCRIPTION FILES, AND RELATED ITEMS. WITHOUT LIMITING THE FOREGOING, THE CONSORTIUM DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY, EXPRESS OR IMPLIED, AGAINST INFRINGEMENT BY THE MEDBIQUITOUS XML OF ANY THIRD PARTY PATENTS, TRADEMARKS, COPYRIGHTS OR OTHER RIGHTS. THE LICENSEE AGREES THAT ALL COMPUTER CODES OR RELATED ITEMS PROVIDED SHALL BE ACCEPTED BY LICENSEE "AS IS". THUS, THE ENTIRE RISK OF NON-PERFORMANCE OF THE MEDBIQUITOUS XML RESTS WITH THE LICENSEE WHO SHALL BEAR ALL COSTS OF ANY SERVICE, REPAIR OR CORRECTION.

IN NO EVENT SHALL THE CONSORTIUM OR ITS MEMBERS BE LIABLE TO THE LICENSEE OR ANY OTHER USER FOR DAMAGES OF ANY NATURE, INCLUDING, WITHOUT LIMITATION, ANY GENERAL, DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, INCLUDING LOST PROFITS, ARISING OUT OF ANY USE OF MEDBIQUITOUS XML.

LICENSEE SHALL INDEMNIFY THE CONSORTIUM AND EACH OF ITS MEMBERS FROM ANY LOSS, CLAIM, DAMAGE OR LIABILITY (INCLUDING, WITHOUT LIMITATION, PAYMENT OF ATTORNEYS' FEES AND COURT COSTS) ARISING OUT OF MODIFICATION OR USE OF THE MEDBIQUITOUS XML OR ANY RELATED CONTENT OR MATERIAL BY LICENSEE.

LICENSEE SHALL NOT OBTAIN OR ATTEMPT TO OBTAIN ANY PATENTS, COPYRIGHTS OR OTHER PROPRIETARY RIGHTS WITH RESPECT TO THE MEDBIQUITOUS XML.

THIS LICENSE SHALL TERMINATE AUTOMATICALLY IF LICENSEE VIOLATES ANY OF ITS TERMS AND CONDITIONS.

The name and trademarks of the MedBiquitous Consortium and its members may NOT be used in advertising or publicity pertaining to MedBiquitous XML without specific, prior written permission. Title to copyright in MedBiquitous XML and any associated documentation will at all times remain with the copyright holders.

## **Table of Contents**

1		Acknowledgements					
2		Overview					
3		Gen	eneral Guidelines9				
	3.:	1	Cont	text Specific Requirements9			
	3.2	2	Prov	viding a Visual Schematic of the Curriculum9			
	3.3	3	Iden	tifying Institutions and Programs9			
	3.4	4	Tran	sferring Data in Languages other than English10			
	3.5	5	Mod	leling Your Curriculum in the Standard10			
		3.5.1	L	Modeling Parallel Blocks11			
		3.5.2	2	Modeling Electives			
		3.5.3	3	Modeling Selectives			
		3.5.4	1	Modeling Tracks			
		3.5.5	5	Modeling Courses with Variable Dates			
	3.6	6	Usin	g Vocabularies13			
	3.7	7	Schema Locations14				
	3.8 Declaring Imported Schema						
	3.9	Э	Ada	pting the Schema to Meet Your Requirements17			
		3.9.1	L	Creating a Profile of Curriculum Inventory17			
		3.9.2	2	Extending the Curriculum Inventory Standard18			
4		References					
5		Glossary22					

## **1** Acknowledgements

The MedBiquitous Consortium wishes to acknowledge the MedBiquitous Curriculum Inventory Working Group members, invited experts, and other individuals that contributed to the creation of this document.

Co-chairs

- Susan Albright, Tufts University
- Marc Triola, M.D., New York University

#### Members

- Dmitriy Babichenko, University of Pittsburgh
- Adrian Ballard, Association of American Medical Colleges
- Terri Cameron, Association of American Medical Colleges
- Joshua Jacobs, National University of Singapore
- John Mahoney, University of Pittsburgh
- Quinn Montgomery, Advanced Informatics
- Robby Reynolds, Association of American Medical Colleges
- Al Salas, Association of American Medical Colleges
- Rosalyn Scott, Department of Veterans Affairs
- Nabil Zary, Karolinska Institutet

#### Invited Experts

- Michael Awad, Washington University School of Medicine
- Leslie Bofill, Florida International University
- Chris Candler, University of Oklahoma Health Sciences Center
- Charles Conway, Online Business Systems
- Rachel Ellaway, Northern Ontario School of Medicine
- Kristi Ferguson, University of Iowa
- Erica Friedman, Mount Sinai Medical Center
- Heather Hageman, Washington University School of Medicine
- Heidi Hays, New Innovations, Inc.
- Alison Loftus, Indiana University School of Medicine
- Cynthia Lybrand, ETSU Quillen College of Medicine
- Lise McCoy, AT Still University
- Tom May, MedHub
- Chandler Mayfield, University of California, San Francisco
- Steve Mitchell, University of New Mexico
- Dan Nelson, New Innovations, Inc.

- Peter Orr, MedHub, Inc. •
- Jamie Padmore, MedStar Health •
- Brian Rutledge, Mississippi Medical Center •
- Paul Schilling, Schilling Consulting, LLC •
- Juliane Schneider, Harvard School of Medicine •
- James Shumway, West Virginia University School of Medicine •
- Kevin Souza, University of California, San Francisco •
- Peter Speltz, Vanderbilt University •
- Hugh Stoddard, Nebraska Medical Center •
- Britta Thompson, University of Oklahoma College of Medicine •
- Carrie Thorn, Michigan State University •
- Janet Trial, University of Southern California •
- Peggy Weissinger, Georgetown University School of Medicine •
- David Wiener, Duke University School of Medicine •
- Tim Willett, SIM-one •

## **2 Overview**

The development of health professions education curricula is a time consuming and complex task. Educational reform efforts are encouraging the development of non-traditional curricula that use novel and innovative methods for teaching and assessment. In many institutions there is a push towards competency-based learning as the cornerstone of curriculum development efforts. In addition, health professions reform has mandated that new content or competencies be integrated into the curriculum, including cultural competencies, patient safety, team-based learning, systems-based practice, etc. To facilitate broad curricular reform, it is necessary to enable the aggregation of curriculum data for research and benchmarking purposes.

The MedBiquitous Curriculum Inventory Standard provides a data structure that allows one to represent a health professions curriculum in a standard format. This structure then enables the exchange and aggregation of curriculum data across the continuum of professional education and training.

This implementation guide provides general guidance for common implementations of the MedBiquitous Curriculum Inventory Standard version 1.0. Specific adaptations for your environment may be necessary.

## 3 General Guidelines

Health professions curricula are often complex. The Curriculum Inventory was designed to be flexible and abstract in order to appropriately represent the wide variety of health professions curricula. This flexibility also means that it requires some planning to implement the Curriculum Inventory within curriculum management systems and curriculum databases.

#### 3.1 Context Specific Requirements

Before implementing the Curriculum Inventory, analyze the context in which it will be used and determine:

- 1. Which data elements and attributes are necessary to achieve your goals.
- 2. Whether additional business rules or policies are necessary to achieve your goals.
- 3. Whether your business partners have additional requirements or business rules or policies.

Often the Curriculum Inventory XML schema may be modified to support context-specific requirements and restrictions. For more information, see "Adapting the Schema to Meet your Requirements."

## 3.2 Providing a Visual Schematic of the Curriculum

One comment Curriculum Inventory Implementers have made is that it is difficult to get a sense of the big picture with regards to curricula described using the Curriculum Inventory. Many institutions have developed visual schematics that provide the big picture on how the different components of the curriculum fit together to create a cohesive whole. If your organization has such a schematic, you may incorporate it via reference using the SupportingLink element, or make the visual available within the document referenced by SupportingLink.

## 3.3 Identifying Institutions and Programs

Identifying institutions and programs across organizations is essential to enable compilation and analysis of curriculum data. When identifying medical schools, MedBiquitous recommends using the FAIMER International Medical Education Directory (IMED) identifier for the medical school in the InstitutionID field. IMED may be accessed at: <a href="https://imed.faimer.org/">https://imed.faimer.org/</a> When using IMED identifiers, use the domain attribute to indicate that the identifier comes from IMED. For compatibility with the point releases leading to version 2 of the Healthcare Professional Profile, use the following value in the domain attribute when using IMED identifiers: idd:faimer.edu:imed

Other organizations may offer unique identifiers for schools of other health professions. In addition, other identifiers will be needed to identify the programs, medical and non-medical, that institutions offer. Agree with your business partners on the unique identifier that will be used for institution and program respectively and document these in your business rules. You should also indicate the domain attribute value that will be used for institution and program ids.

## 3.4 Transferring Data in Languages other than English

Many implementers may wish to use the Curriculum Inventory Standard to compile data in languages other than English. The standard is designed to support the exchange of curriculum data in languages other than English.

The following elements have a required vocabulary in English: EducationalContext, ClerkshipModel. The values of Educational Context and ClerkshipModel must be in English and must be one of the valid values specified in the Curriculum Inventory Standard.

The Curriculum Inventory Working group recommends that the organization compiling the data create business rules with regard to the following:

- Which languages may be used for data exchange
- What vocabularies will be used for the following elements with recommended vocabularies in English: Profession, Specialty, ResourceType, InstructionalMethod, AssessmentMethod.

Organizations may decide to translate the recommended vocabularies referenced in the standard into other languages. See the section "Using Vocabularies" for more information on the specifics of using translated vocabularies.

#### 3.5 Modeling Your Curriculum in the Standard

When modeling your curriculum in the standard, keep in mind the following principles.

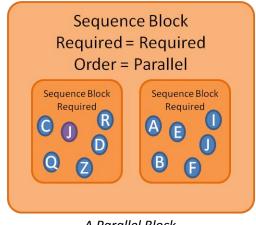
- Avoid creating duplicate events, sequence blocks, or competency objects. You may reference the same event from multiple sequence blocks. You may reference the same sequence block from multiple sequence blocks. You may reference the same competency object (ie competency/objective/learning outcome) from multiple events, sequence blocks, and competency frameworks.
- Use competency frameworks to show the relationships among your learning objectives, competencies, and or learning outcomes. You can create multiple competency frameworks I needed and show relationships among the competency frameworks.
- 3. Sequence blocks may contain many events. To paraphrase, a course may contain many events.
- 4. Sequence blocks may reference multiple expectations (ie competency/objective/learning outcome)
- 5. Sequence blocks may contain other sequence blocks. We recommend that you create a sequence block for each phase of the curriculum and reference all of the sequence blocks (ie courses/modules, etc.) that take place within that sequence block.
- 6. Sequence blocks may be nested to show a course within a phase/module/course/etc.
- 7. Integration block provide an alternate view of the curriculum organized around integrating themes.

Additional details about modeling commonly used structures follows.

#### 3.5.1 Modeling Parallel Blocks

Many institutions have courses that occur as parallel blocks during a particular time period. Create a "parent" Sequence Block that has the parallel courses as nested sequence blocks. In the parent sequence block, do the following:

- Give the required attribute a value of Required.
- Use the order attribute and give it a value of parallel.

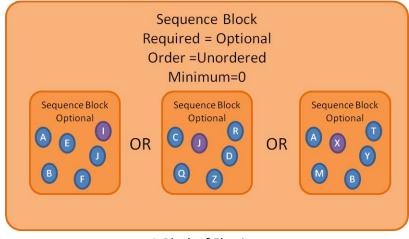


A Parallel Block

#### 3.5.2 Modeling Electives

If there are optional courses that students may take, these may be modeled as electives. Create a "parent" Sequence Block that has the elective courses as nested sequence blocks. In the parent sequence block, do the following:

- Give the required attribute a value of Optional.
- Use the order attribute and give it a value of unordered.
- Use the Minimum attribute and give it a value of 0.

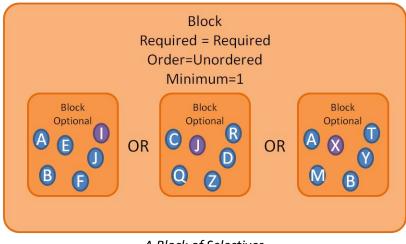


A Block of Electives

#### 3.5.3 Modeling Selectives

If there is a block of courses where each students must participate in a certain number of courses, model those courses as selectives. Create a "parent" Sequence Block that has the selective courses as nested sequence blocks. In the parent sequence block, do the following:

- Give the required attribute a value of Required.
- Use the order attribute and give it a value of Unordered.
- Use the Minimum attribute and give it a value of 1.



A Block of Selectives

## 3.5.4 Modeling Tracks

If there is a block of courses that constitute a special track, create a parent sequence block for the main track and the special track. Then create sequence blocks for the special track and the main track and do the following:

- In the parent sequence block, use the minimum and maximum attributes to indicate that students must select either the main track or the special track.
- For the sequence block representing the special track:
  - Give the required attribute a value of Optional.
  - Use the track attribute and give it a value of true.
- For the sequence block representing the special track:
  - Give the required attribute a value of Optional.
  - Use the track attribute and give it a value of true.
- For the sequence blocks within both the special track and the main track, use the RequiredInTrack and Optional values for the required attribute.

If there are courses that are required for all students regardless of track, create a third sequence block within the parent sequence block that is required. The following example shows a clerkship phase of a curriculum that has an Ambulatory track and a Main track. In addition, there are some clerkships that are required of all students, regardless of track.



Example of Tracks in Clerkships

#### 3.5.5 Modeling Courses with Variable Dates

Often times clerkships and other courses happen in rotations, where the course lasts a fixed amount of time but the exact dates of the course will vary based on the sequence assigned to each student (See the figure Example of Tracks in Clerkships). The Timing element in SequenceBlock allows you to indicate the duration of a sequence block and omit specific dates. The Duration element uses the XML schema duration type. A few examples are provided below:

Value	Description
P12M	12 months
P28D	28 days
РТ20Н	20 hours

## 3.6 Using Vocabularies

Vocabularies enhance the analysis that can be done on aggregate curriculum data by providing clearly delineated terms from which users can select the terms most appropriate to describe a given characteristic of the curriculum. When users choose non-vocabulary terms, it can be difficult to identify trends and determine commonalities and inconsistencies. Suppose Institution A classifies a course using

the MeSH term Quality Improvement, and Institution B classifies a similar course using the non-MeSH term Performance Improvement. Anyone compiling data using the term Quality Improvement will have an incomplete dataset because data from Institution B's course will be omitted.

MedBiquitous recommends using agreed-upon vocabularies for the following elements:

- Keyword
- Profession
- Specialty
- ResourceType
- InstructionalMethod
- AssessmentMethod

For Profession, Specialty, ResourceType, InstructionalMethod, and AssessmentMethod, we recommend using the source and sourceID attributes to indicate the source of the vocabulary and the unique id for this vocabulary term within that vocabulary. For the keyword element, use the source and id attributes to indicate the source of the vocabulary and the unique id for this vocabulary term within that vocabulary.

## 3.7 Schema Locations

In order to validate Curriculum Inventory XML documents, you may wish to store all of the associated schemas on a local server and reference those local copies for validation. To use local copies, the schema locations of the following schemas must be changed within the curriculuminventory.xsd schema document.

- competencyframework.xsd
- competencyobject.xsd
- healthcarelom.xsd
- healthcaremetadata.xsd
- healthcarevocabularies.xsd
- member.xsd

Change the schemaLocation attribute of the import element to change the location used for validation. The following example shows import statements that have been changed to use local versions of the schemas. In this example, the xsd files are all in the same directory as the curriculuminventory.xsd file. The schemaLocation attribute may use relative referencing, so the example schemaLocation references the file name since the file is in the same directory.

```
<xsd:import namespace="http://ns.medbiq.org/member/vl/"
schemaLocation="member.xsd"/>
<xsd:import namespace="http://ns.medbiq.org/competencyobject/vl/"
schemaLocation="competencyobject.xsd"/>
<xsd:import namespace="http://ns.medbiq.org/lom/extend/vl/"
schemaLocation="healthcaremetadata.xsd"/>
```

<xsd:import namespace="http://ltsc.ieee.org/xsd/LOM"
schemaLocation="healthcarelom.xsd"/>
<xsd:import namespace="http://ns.medbiq.org/competencyframework/v1/"
schemaLocation="competencyframework.xsd"/>
<xsd:import namespace="http://ns.medbiq.org/lom/vocab/v1/"
schemaLocation="healthcarevocabularies.xsd"/>

Curriculum Inventory instance documents may then reference the local copy of the curriculuminventory.xsd schema in the schemaLocation attribute of the root element as in the example below. In this example, the curriculuminventory.xsd schema is in the same directory as the instance document.

```
<CurriculumInventory
xsi:schemaLocation="http://ns.medbiq.org/curriculuminventory/v1/
curriculuminventory.xsd"
xmlns="http://ns.medbiq.org/curriculuminventory/v1/"
xmlns:lom="http://ltsc.ieee.org/xsd/LOM"
xmlns:a="http://ns.medbiq.org/address/v1/"
xmlns:cf="http://ns.medbiq.org/competencyframework/v1/"
xmlns:co="http://ns.medbiq.org/competencyobject/v1/"
xmlns:hx="http://ns.medbiq.org/lom/extend/v1/"
xmlns:m="http://ns.medbiq.org/lom/extend/v1/"
xmlns:m="http://ns.medbiq.org/2001/XMLSchema-instance">
```

Please note that changing the location of the schemas used for validation does not affect the conformance status of Professional Profile instance document.

#### 3.8 Declaring Imported Schema

The Curriculum Inventory schema imports several schemas for its use. The following schemas must be declared in an instance document when elements from those schemas are included in a Curriculum Inventory instance document:

- address.xsd
- competencyframework.xsd
- competencyobject.xsd
- healthcarelom.xsd
- healthcaremetadata.xsd
- healthcarevocabularies.xsd
- member.xsd

In the following example, the namespaces associated with these schemas are declared in the root CurriculumInventory element and assigned prefixes to be used when referencing elements from that namespace.

```
<CurriculumInventory
xsi:schemaLocation="http://ns.medbiq.org/curriculuminventory/v1/
```

```
curriculuminventory.xsd"
xmlns="http://ns.medbiq.org/curriculuminventory/v1/"
xmlns:lom="http://ltsc.ieee.org/xsd/LOM"
xmlns:a="http://ns.medbig.org/address/v1/"
xmlns:cf="http://ns.medbig.org/competencyframework/v1/"
xmlns:co="http://ns.medbiq.org/competencyobject/v1/"
xmlns:hx="http://ns.medbig.org/lom/extend/v1/"
xmlns:m="http://ns.medbig.org/member/v1/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
   <ReportID domain="idd:nosuch.edu:cip">12345</ReportID>
   <Institution>
      <m:InstitutionName>NoSuch University School of
Medicine</m:InstitutionName>
      <m:InstitutionID
domain="idd:aamc.org:institution">987</m:InstitutionID>
      <m: Address>
         <a:StreetAddressLine>720 Main Street</a:StreetAddressLine>
         <a:City>Baltimore</a:City>
         <a:StateOrProvince>MD</a:StateOrProvince>
         <a:PostalCode>21205</a:PostalCode>
         <a:Country>
            <a:CountryCode>US</a:CountryCode>
         </a:Country>
      </m:Address>
   </Institution>
   <Events>
      <Event id="E1">
         <Title>White Coat Ceremony</Title>
         <EventDuration>PT2H</EventDuration>
         <Description>First year students are given their white coats to
mark the transition to clinical rotations. The ceremony includes a
declaration of professional values. </Description>
         <Keyword hx:source="MeSH" hx:id="D010817">
            <hx:string>Physician-Patient Relations</hx:string>
         </Keyword>
         <Keyword hx:source="MeSH" hx:id="D012945">
            <hx:string>Social Values</hx:string>
         </Keyword>
         . . .
      </Event>
   </Events>
   <Expectations>
      <CompetencyObject>
         <lom:lom>
            <lom:general>
               <lom:identifier>
                  <lom:catalog>URI</lom:catalog>
                  <lom:entry>http://nosuchdomain.edu/zxcvb</lom:entry>
```

```
</lom:identifier>
               <lom:title>
                  <lom:string>Professionalism</lom:string>
               </lom:title>
            </lom:general>
         </lom:lom>
         <co:Category term="competency domain">
      </CompetencyObject>
      . . .
      <CompetencyFramework>
         <lom:lom>
            <lom:general>
               <lom:identifier>
                  <lom:catalog>URI</lom:catalog>
                  <lom:entry>http://nosuchdomain.edu/framework</lom:entry>
               </lom:identifier>
            </lom:general>
            <lom:lifeCycle>
               <lom:version>
                  <lom:string>1.0</lom:string>
               </lom:version>
            </lom:lifeCycle>
         </lom:lom>
         <cf:Includes>
            <cf:Catalog>URI</cf:Catalog>
            <cf:Entry>http://nosuchdomain.edu/zxcvb</cf:Entry>
         </cf:Includes>
      </CompetencyFramework>
  </Expectations>
</CurriculumInventory>
```

#### 3.9 Adapting the Schema to Meet Your Requirements

Organizations implementing the Curriculum Inventory may wish to further restrict the scope of data considered valid or add new data not addressed in the standard. The Curriculum Inventory schema is designed to support either of these scenarios.

#### 3.9.1 Creating a Profile of Curriculum Inventory

If you wish to further restrict the scope of data deemed valid for a particular use of the Curriculum Inventory Standard, you may create a profile of the Curriculum Inventory Standard. The XML documents developed based on the profile must validate against the original Curriculum Inventory XSD file in order for the profile to be valid.

- 1. **Identify the restrictions that you wish to make to the schema.** The following are a few examples of restrictions that may be included in a profile:
  - a. Making recommended vocabularies required vocabularies.
  - b. Further restricting the contents of free text elements or attributes.

- c. Further restricting the contents of elements or attributes with required vocabularies (for example, permitting only 2 of the values in a list with 10 values)
- d. Placing limits on the range of acceptable values for elements with numeric values.
- e. Eliminating optional elements or attributes that will not be used.
- f. Requiring optional elements or attributes that must always be used.
- 2. Create a version of the curriculuminventory.xsd file that implements your restrictions.

We recommend changing the name of the resulting XSD file and describing the restrictions made in annotations within the XSD file.

3. Document your profile of the Curriculum Inventory Standard.

Be sure to indicate that it is a profile of the standard, indicating the changes made and providing appropriate copyright references.

#### 3.9.2 Extending the Curriculum Inventory Standard

The Curriculum Inventory schema allows for elements from other namespaces to be included under the root element. Use the steps that follow to extend the Curriculum Inventory schema to incorporate new data.

1. Write a new XML schema for new data elements and declare a targetNamespace.

Develop a new XSD schema that defines the data elements that are missing from the Curriculum Inventory. All new elements must be associated with a namespace. This can be achieved by using the XSD targetNamespace attribute. The following example defines an element called CurriculumDean that can be used to identify the Dean in charge of curriculum. The schema defines http://ns.myurl.com/curriculumdean/ as the targetNamespace, so the CurriculumDean element is associated with that namespace.

# 2. Place new namespace qualified elements below the root at the end of the XML instance document.

Declare the namespace of the schema with new data elements in the instance document. Usually this is done by declaring the namespace in the root element and assigning a prefix to the namespace. Then the prefix can be used when referencing the new elements. You may also declare a default namespace for an element and its subelements by declaring the namespace in the uppermost element belonging to that namespace. Then include the new element(s) just before the closing CurriculumInventory tag. In the example below, the prefix cd is declared for the <u>http://ns.myurl.com/curriculumdean/</u> namespace within the CurriculumInventory root element. The cd prefix is then used to label the CurriculumDean element before the closing CurriculumInventory tag.

```
<CurriculumInventory
xsi:schemaLocation="http://ns.medbiq.org/curriculuminventory/v1/
curriculuminventory.xsd"
xmlns="http://ns.medbig.org/curriculuminventory/v1/"
xmlns:cd="http://ns.myurl.com/curriculumdean/"
xmlns:lom="http://ltsc.ieee.org/xsd/LOM"
xmlns:a="http://ns.medbig.org/address/v1/"
xmlns:cf="http://ns.medbiq.org/competencyframework/v1/"
xmlns:co="http://ns.medbiq.org/competencyobject/v1/"
xmlns:hx="http://ns.medbig.org/lom/extend/v1/"
xmlns:m="http://ns.medbig.org/member/v1/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
   <ReportID>12345</ReportID>
   <Institution>
   . . .
   </Institution>
   <Program>
      <ProgramName>M.D.</ProgramName>
      <ProgramID domain="idd:aamc.org:cip">5678</ProgramID>
   </Program>
   <Title>Johns Hopkins School of Medicine Genes to Society Curriculum
2010-2011</Title>
   <ReportDate>2011-07-01</ReportDate>
   <ReportingStartDate>2010-07-01</ReportingStartDate>
   <ReportingEndDate>2011-06-30</ReportingEndDate>
   <Language>en-us</Language>
   <Description>The Genes to Society curriculum reframes the context of
health and illness more broadly, to encourage students to explore the
biologic properties of a patient's health within a larger, integrated
system including social, cultural, psychological, and environmental
variables.</Description>
   <SupportingLink>http://www.hopkinsmedicine.org/crc/</SupportingLink>
   <Events>
      <Event>
       . . .
      </Event>
      <Event>
       . . .
      </Event>
   </Events>
   <Expectations>
      <CompetencyObject>
       . . .
      </CompetencyObject>
```

Copyright MedBiquitous Consortium 2012. All Right Reserved.

```
<CompetencyObject>
       . . .
      </CompetencyObject>
   </Expectations>
   <AcademicLevels>
   . . .
   </AcademicLevels>
   <Sequence>
      <SequenceBlock>
       . . .
      </SequenceBlock>
      <SequenceBlock>
       . . .
      </SequenceBlock>
   </Sequence>
   </Integration>
      <IntegrationBlock>
    . . .
      </IntegrationBlock>
      <IntegrationBlock>
    . . .
      </IntegrationBlock>
   </Integration>
   <cd:CurriculumDean>William Blake</cd:CurriculumDean>
</CurriculumInventory>
```

## **4** References

#### **Competency Framework**

MedBiquitous Competency Framework Specifications and Description Document. MedBiquitous website.

http://www.medbiq.org/working\_groups/competencies/CompetencyFrameworkSpecification.pdf. Accessed June 16, 2011.

#### **Competency Object**

MedBiquitous Competency Object Specifications and Description Document. MedBiquitous Website. <u>http://www.medbiq.org/sites/default/files/CompetencyObjectSpecification.pdf</u>. Accessed June 16, 2011.

#### Healthcare LOM

ANSI/MEDBIQ LO.10.1-2008, Healthcare Learning Object Metadata (Healthcare LOM). MedBiquitous Website. <u>http://www.medbiq.org/std\_specs/standards/index.html#HCLOM</u>. Accessed June 1, 2011.

#### **Professional Profile**

ANSI/MEDBIQ PP.10.1-2008, Healthcare Professional Profile. MedBiquitous Website. <u>http://www.medbiq.org/std\_specs/standards/index.html#HCProfProfile</u> Accessed June 13, 2011.

## **5** Glossary

To ensure clarity and consistency, we provide working definitions of the terminology we use in these guidelines.

- **Competency Framework** an organized and structured representation of a set of interrelated and purposeful competency objects.
- **Competency Object** an umbrella term used to describe <u>any</u> abstract statement of learning or performance expectations, and information related to the statement. Statements can be learning outcomes, competencies per se, learning objectives, professional roles, topics, classifications/collections, etc. The Competency Object may include additional data to expand on or support the statement. The Object is abstract in the sense that it does not inherently contain information about connections of the statement to individuals or events or other objects.
- **Event** a single education or assessment activity documented in a curriculum. Examples of events include: lecture, problem-based learning activity, virtual patient activity, Simulation activity, seminar, lab, and bedside learning activity, to name a few.
- **Expectation** the competencies, learning objectives, and learning outcomes implemented in a curriculum and how they are organized into competency frameworks.
- Integration Block An integrating concept for a curriculum, such as a theme.
- Sequence Block an organizational component of a curriculum, such as a year, phase, course, module, etc. Sequence blocks can be nested to show a variety of organizational methods.