On February 16, 2011 CMS’s Center for Consumer Information and Insurance Oversight (CCIIO) awarded a Massachusetts led New England collaborative an “Early Innovator” grant of $35.5 million over 2 years to create Health Insurance Exchange (HIX) IT components in Massachusetts that are consumer-focused, cost-effective, reusable, and sustainable and that can be leveraged by New England and other states to operate Health Insurance Exchanges in advance of the 2014 health reforms.
Health Insurance Exchange (HIX) Project Structure

The project is led by a combination of resources from the Massachusetts Executive Office of Health and Human Services, the Massachusetts Health Connector Authority, and the University of Massachusetts Medical School. Specifically,

- **Manu Tandon**, the Secretariat Chief Information Officer for the Executive Office of Health and Human Services (EOHHS), serves as Principal Technology Lead;
- **Robert Nevins**, the Chief Operating Officer of the Massachusetts Connector Authority, serves as Principal Functional Lead;
- **Jay Himmelstein** and **Michael Tutty** from the University of Massachusetts Medical School (UMMS), serve as Principal Investigator and Project Director respectively.
- **UMMS** serves as the grant recipient and manager for the lead state of Massachusetts.
- **NESCSO** serves as the collaborative enabler for the New England States.

For more information see the project’s web site [www.nescies.org](http://www.nescies.org)
Consumers (individuals and businesses) use the Exchange to search for health insurance options available in their geographic area.

Using an interactive rules engine based model the Exchange server collects basic information from the consumer.

In real time Exchange use standards based web services to interact with state, federal and commercial systems to collect, verify and submit information.

State-of-the-art Call center on standby to support consumer through the transaction.

Consumer mediated workflow supported by ability to handle electronic document submissions results in enrollment and subscription to appropriate insurance which may include ability to print temporary insurance card for the consumer. All in real time.

One Stop Portal - 2012

State Systems (Eligibility, Enrollment)

Federal Systems (Tax, Vitals, Hires)

Commercial Insurance (Rates, Subscription)
Business Need
Increase the number of insured by reducing barriers to affordable health insurance

- Help individuals and small businesses identify and purchase affordable coverage
- Insure individuals with means based needs by providing Medicaid coverage or tax credits to support the purchase of private insurance through Insurance Exchanges
- Allow individuals and small businesses comparison shop, thus facilitating competition among plans on price and quality
- Integrate enrollment with other state health subsidy programs

NESCIES Collaboration Goals

1. Coordinate efforts and learn from the Massachusetts HIX implementation, gaining efficiencies, and accelerating HIX development for each of the states.
2. Create standards-based HIX technology components that can be leveraged by New England and other states.
3. Leverage Massachusetts Exchange (Health Connector) experiences to deliver a scalable, flexible and robust exchange components.
PROJECT INFORMATION - Stakeholders

**Interstate Collaborative Steering Committee**
- **CONVENER:** New England Consortium Systems Organization (NESCO)
- **MEMBERS:** Connecticut, Maine, New Hampshire, Rhode Island, Vermont, Massachusetts
- **STAFF:** UMass Medical School and NESCO
- **CHAIR:** Brenda Havey

**UMass Medical School**
- Grant management
- Fiduciary responsibility
- Project management
- Evaluation / Best practices
- Documenting process
- Dissemination nationally

**Massachusetts**
- Bob Nevins, COO, Connector
- Scott Devonshire, CIO, Connector
- Manu Tandon, CIO, EOHHS
- Jay Himmelstein, PI, UMMS
- Michael Totty, PD, UMMS
- A.J. Bastarache, PM/PTA, EOHHS

**New England States Consortium Systems Organization (NESCO)**
- Convener
- Collaborative meetings
- Dissemination in New England

**HIX Components - Technology - Procurement - Operational Assistance - Lessons Learned**

**Maine**
- Will Kilbreth
- Karynlee Harrington
- Stefanie Nadeau
- Cindy Hopkins

**Connecticut**
- Lou Polzella
- Tia Cintron
- Marc Shok

**New Hampshire**
- Bill Baggeroer
- Alain Couture
- Andrew Chalsma
- Mindy Cox

**Rhode Island**
- Art Schnure
- Deb Faulkner
- Elena Nicolella
- Angela Sherwin

**Vermont**
- Hunt Blair
- Terry Bequette
- Betsy Forrest
- Joe Liscinsky
### Collaboration

<table>
<thead>
<tr>
<th>Interstate Collaborative Steering Committee/Technical Workgroups</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The NESCIES Interstate Collaborative Steering Committee will provide guidance and feedback to the Massachusetts team to assure that HIX components developed for Massachusetts will be consumer-friendly, cost-effective IT systems that can be used and adopted by other New England states (and nationally).</td>
</tr>
<tr>
<td>3. The committee, with the input from technical work groups, will be responsible for informing and assessing the MA development team on the ability for HIX components to be adaptable and reusable.</td>
</tr>
</tbody>
</table>

### Reusability

<table>
<thead>
<tr>
<th>NESCIES Reusability approach is categorized into 3 tiers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tier 1:</strong> Share artifacts with other states</td>
</tr>
<tr>
<td>• Business Rules</td>
</tr>
<tr>
<td>• Business Processes</td>
</tr>
<tr>
<td>• Common Information Models</td>
</tr>
<tr>
<td>• Service Interface Models</td>
</tr>
<tr>
<td>• Reference Architecture</td>
</tr>
<tr>
<td>• Project Management Methodology</td>
</tr>
<tr>
<td>• Risk Management Methodology</td>
</tr>
<tr>
<td>• Procurement Processes and Documentation</td>
</tr>
<tr>
<td><strong>Tier 2:</strong> Jointly procure hardware and software and manage deployments</td>
</tr>
<tr>
<td>• Hardware and Software Licensing</td>
</tr>
<tr>
<td>• Cloud based Data Centers</td>
</tr>
<tr>
<td><strong>Tier 3:</strong> Share the component or host them for use by other states (SaaS)</td>
</tr>
<tr>
<td>• Ref. Architecture Implementation</td>
</tr>
<tr>
<td>• HIPAA Translator, HL7 Translator</td>
</tr>
<tr>
<td>• Portal, Rules Engine, Mobile Engine</td>
</tr>
</tbody>
</table>

### Self-assessment

<table>
<thead>
<tr>
<th>Self-assessment performed by the New England states with likeliness for sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extremely likely</strong> (<em>All states agree</em>)</td>
</tr>
<tr>
<td>• HIPAA Gateway and Translation Service</td>
</tr>
<tr>
<td>• Federal Systems/Interfaces</td>
</tr>
<tr>
<td><strong>Highly likely</strong> (<em>Five out of six states agree</em>)</td>
</tr>
<tr>
<td>• Consumer Mediated Workflow Support Services</td>
</tr>
<tr>
<td>• Development Methodology Standardization and Web Services Architecture</td>
</tr>
<tr>
<td>• Loosely Coupled Interface Architecture Service</td>
</tr>
<tr>
<td>• Directory and Routing Services</td>
</tr>
<tr>
<td>• Data Repository and Dictionary Services</td>
</tr>
<tr>
<td><strong>Likely</strong> (<em>Four out of six states agree</em>)</td>
</tr>
<tr>
<td>• Oversight Function</td>
</tr>
<tr>
<td>• Premium Billing System</td>
</tr>
<tr>
<td>• Reporting and Analytics Services</td>
</tr>
<tr>
<td>• HL7 Gateway and Translation Service</td>
</tr>
<tr>
<td>• Record Locator Service</td>
</tr>
</tbody>
</table>

**The BPR will reevaluate with scorecards**

*Based on input from the Business Process Redesign vendor and recommendations from the Interstate Steering Committee, will identify and prioritize an initial set of HIX components to share*
Design Goals

1. Consumer-Friendly user interface with consumer-mediated workflow and authorization
2. Based on Exchange Reference Architecture
3. Reusable and Interoperable components based on Service Oriented Architecture (SOA)
4. Follows Federal and Industry standards for Accessibility, Business Rules, Messaging and Security
5. Reuse of existing MA EOHHS Virtual Gateway Enterprise Shared Services
6. Open Architecture – based on Open Source Frameworks
7. Scalable Infrastructure based on Cloud computing
8. Accountable and robust systems
9. State-of-the-art portal solution

Design Considerations

1. Heavily driven by usability and customer centric considerations
2. How far in the workflow can we take the users? (temporary card, etc.)
3. How can it ease operations? (reduce calls, change management, self-service, etc.)
4. Support for PHR
5. Authentication to follow industry best practices
PROPOSED SYSTEM – Scope

Health Insurance Exchange

Common Services
- Authentication/Authorization
- Notification (Email/SMS)
- Audit
- Document Management
- Logging

Presentation Services
- Business Process Orchestration
  - Process Engine
    - Eligibility & Enrollment
    - Plan & Contract Management
    - Financial Management
  - Business Domain Model
  - Business Rules
  - Data Transformation
- Batch and Data Extraction Services
- Data Analytics and Reporting Services

Input Channels
- User/Role Management
- Policy Management
- Monitoring

Operational Datastore
- Data Services
  - Transactional Datastore
  - Data Warehouse

Call Center
- Mobile

Agents/Brokers
- Portal

Outreach/Community Org
- Fax

Small Business
- Scanner

Citizen/Individual/Consumer
- Enterprise Shared Services
  - Access and Identity Management Service (AIMS)
  - Record Locator Service
  - HIPAA X12 Translator
  - HL7 Translator
  - ePay
  - Address Validation & Standardization
  - Electronic Document Management
  - Virus Scan

State Agencies
- Federal Agencies
- Insurance Companies
### PROPOSED SYSTEM— Functional Requirements

| 1. **Eligibility and Enrollment** | • Employer enrollment in an Insurance SHOP Exchange  
|                                  | • Individual enrollment in a qualified health plan offered through the Insurance Exchange  
|                                  | • Integration with Medicaid and CHIP  
| 2. **Plan Management**          | • Plan certification, recertification and decertification  
|                                  | • Issuer contracting  
|                                  | • Plan rating  
| 3. **Financial Management**     | • Premium determination including premium tax credits, vouchers, and cost sharing  
|                                  | • Plan assessment, reinsurance, risk adjustment, and risk corridors functions  
|                                  | • Individual and issuer reconciliation  
| 4. **Customer Service**         | • Manage responses to information requests and requests for service  
|                                  | • Efficient distribution/management of requests across phone, web, paper and face-to-face  
| 5. **Communications**           | • Communications and outreach strategies; content and messaging  
|                                  | • Measurement/reporting of communication effectiveness  
| 6. **Oversight**                | • Federal oversight of Exchange operations  
|                                  | • Insurance Exchange management and operations |
### Application Life Cycle Management (ALM) - Tools

<table>
<thead>
<tr>
<th>Areas</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management Tool</td>
<td>Microsoft Project</td>
</tr>
<tr>
<td>Collaboration Tool</td>
<td>MassForge – Implemented using CollabNet</td>
</tr>
<tr>
<td>Software Configuration Management/Version Control</td>
<td>SubVersion (OpenSource)</td>
</tr>
<tr>
<td>Defect Tracking</td>
<td>IBM Rational Clearquest</td>
</tr>
<tr>
<td>Continuous Integration</td>
<td>Hudson (Open Source)</td>
</tr>
<tr>
<td>Regression Testing</td>
<td>Open Source Tools – Selenium, JUnit, DbUnit, SOAPUI</td>
</tr>
<tr>
<td>Functional Testing</td>
<td>IBM Rational TestManager</td>
</tr>
<tr>
<td>ADA Compliance</td>
<td>IBM Policy Tester</td>
</tr>
<tr>
<td>Application Vulnerability</td>
<td>IBM Rational AppScan</td>
</tr>
<tr>
<td>Performance Testing</td>
<td>HP Load Runner</td>
</tr>
<tr>
<td>Application Performance Management</td>
<td>CA WILY</td>
</tr>
<tr>
<td>Coding Standards / QA</td>
<td>Findbugs &amp; Checkstyle</td>
</tr>
</tbody>
</table>
## PROJECT PERFORMANCE – Measures

<table>
<thead>
<tr>
<th>Measurement Area</th>
<th>Measurement Category</th>
<th>Measurement Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange Technical Development</td>
<td>SLDC Gate Reviews</td>
<td>All SLDC Gate Review timelines met and passed</td>
</tr>
<tr>
<td></td>
<td>Vendor and Staff Procurement</td>
<td>Appropriate vendors and staff augmentation procured according to timeline</td>
</tr>
<tr>
<td></td>
<td>System Development</td>
<td>Development of Exchange meets timelines and deliverables</td>
</tr>
<tr>
<td></td>
<td>IT Infrastructure</td>
<td>All hardware and software is procured to meet deadlines and system specifications</td>
</tr>
<tr>
<td>Information Security</td>
<td></td>
<td>Agreed upon security protocols are met</td>
</tr>
<tr>
<td>Reusability</td>
<td>Information shared with other states</td>
<td>Number of states participating in NESCIES and breadth of information shared more broadly</td>
</tr>
<tr>
<td></td>
<td>Joint procurement</td>
<td>Number of joint procurements</td>
</tr>
<tr>
<td></td>
<td>Sharing of Components</td>
<td>Number of components and number of states sharing in Massachusetts developed components.</td>
</tr>
<tr>
<td>Exchange Implementation</td>
<td>System Functionality</td>
<td>Updated Exchange has better and faster functionality than current Massachusetts Exchange</td>
</tr>
<tr>
<td></td>
<td>System Usage</td>
<td>The number of individual and small business users increases upon completion of updated Exchange</td>
</tr>
<tr>
<td></td>
<td>Operational Cost Sustainability</td>
<td>Post development Exchange system annual operating costs can be supported by annual revenues</td>
</tr>
</tbody>
</table>
HIX PROJECT PLANS – STD vs. ACCELERATED

ORIGINAL PROJECT PLAN

2/15 4/1 5/4 6/8 9/14 12/7 6/13 10/10 2/14
PSR AR PBR DDR FDDR PORR ORR Final CCIIO Evaluation
3/3 PBR RFR 8/22 SI RFP

2/15/2011
5/17 - 8/27 BPR Vendor
10/16/2011 - 11/16/2012 SI Vendor – DEVELOPMENT & TESTING PHASE
11/17/2012 - 2/15/2013 SI Vendor Stabilization Period

ACCELERATED PROJECT PLAN

2/15 4/1 5/4 6/8 8/5 10/7 5/18 8/24 10/9/2012
PSR AR PBR DDR FDDR PORR ORR Final CCIIO Evaluation
3/3 PBR RFR 6/3 Hub Prelm Specs 7/1/7/23 Hub Final Specs 12/12 Portal Demo 7/15 8/10 Hub * HIX Prod Full Env

2/15/2011
5/15 - 7/6 BPR Vendor
9/9/2011 - 8/30/2012 SI Vendor + EOHHS DEVELOPMENT & TESTING PHASE
8/30/2012 - 2/15/2013 SI Vendor Implementation and Stabilization Period

* May utilize few mock web services
** Dependent on Fed Hub and MA-21 web services
The Massachusetts Development Lifecycle is consistent with proposed Exchange Lifecycle (ELC).

The Massachusetts plan is to have a coordinated development team made up of state’s in-house resources (for shared service architecture and interfaces) and a contracted vendor (for exchange specific functions like user portal, plan management and financial management) with the state providing oversight to the overall project development.

We understand that the project needs to support the following CCIIO deliverables:

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Startup Review (PSR)</td>
<td>February 15, 2011 - Complete</td>
</tr>
<tr>
<td>Architecture Review (AR)</td>
<td>April 1, 2011 - Complete</td>
</tr>
<tr>
<td>Project Baseline Review (PBR)</td>
<td>May 4, 2011</td>
</tr>
<tr>
<td>Preliminary Design Review (PDR)</td>
<td>June 8, 2011</td>
</tr>
<tr>
<td>Detailed Design Review (DDR)</td>
<td>August 5, 2011</td>
</tr>
<tr>
<td>Final Detailed Design Review (FDDR)</td>
<td>October 7, 2011</td>
</tr>
<tr>
<td>Pre-Operational Readiness Review (PORR)</td>
<td>May 18, 2012</td>
</tr>
<tr>
<td>Operational Readiness Review (ORR)</td>
<td>August 24, 2012</td>
</tr>
<tr>
<td><strong>GO-LIVE</strong></td>
<td><strong>December 2, 2012 (proposed)</strong></td>
</tr>
</tbody>
</table>
Thank You

Bob Nevins, Bob.Nevins@state.ma.us
Manu Tandon, manu.tandon@state.ma.us

For more information visit the Project Web Site at
www.nescies.org