



# Commonwealth of Massachusetts

Mobilization for Federal Economic Recovery Infrastructure  
Investments – Task Force Reports

Excerpt: e-Health Projects

February 2009

## Information Technology (IT) Task Force

### 1. Introduction

In today's environment, Information Technology (IT) is an element of almost everything we do. IT is as much a component of modern infrastructure as roads and bridges. Over the years, the Commonwealth has come to rely on IT to support the operation of state government. More importantly, IT has enhanced and enriched the quality and reach of vital services that the Commonwealth provides to citizens and businesses, improving the quality of lives as well as transforming government by making it more accessible, efficient, and responsive to the public.

The IT Mobilization Task Force represents every branch and virtually every office of state government, along with the Massachusetts eHealth Institute (MeHI). Through an extraordinarily collaborative effort, consistent with its charge, the IT Task Force identified critical projects that will not only stimulate the Massachusetts economy but also provide long term and sustained benefits to every segment of society. More specifically, the projects:

- Will generate Massachusetts jobs in the near-term and strengthen the Massachusetts workforce for the long-term at all levels throughout the Commonwealth's economy. The jobs that will be created and sustained are skilled "knowledge" jobs.
- Adhere strictly to the Governor's Guiding Principles for mobilizing the state-wide efforts to ready projects and receive funding from the Federal Act.
- Create transformational services that will position the Commonwealth as fertile ground for economic development and growth in the health care, education, and technology sectors.
- Make state government more efficient, effective, accessible and responsive for citizens and businesses.
- Are ready to move forward now. The Task Force has reached broad consensus on a list of high-value IT and eHealth projects that are ready to begin within 180 days. In addition, the Task Force has developed a priority-setting process and set of tools for the IT Projects to enable a consensus approach to prioritizing the list consistent with Federal Act objectives and Commonwealth goals.

The projects proposed by the IT Task Force will advance the Commonwealth's automation capabilities at a time when we need greater efficiency and streamlining to adjust to the difficult financial circumstances we face. In short, these move projects beyond simply renovating what is aging; instead, they *innovate* for a 21st century state government that will better serve citizens, prepare the future workforce, and nurture and support businesses and communities more effectively and efficiently.

The projects reviewed by the IT Taskforce take two forms:

- 1) IT Projects that were submitted by the judiciary, secretariats, and agencies across state government, and
- 2) eHealth projects that are the culmination of years of thoughtful and collaborative work to improve the efficiency and effectiveness of health care delivery in Massachusetts.

The IT project list comprises 194 initiatives valued at \$975 million. Recognizing that there are many important and potentially competing demands for infrastructure investment, the IT Task Force has

developed a priority-setting process and tool capable of narrowing the list of IT projects to fit the shape of the Federal Act<sup>2</sup> and budget.

The four eHealth projects total \$513 million. The entire program is fully designed, developed, and “shovel-ready.” These projects will create state-wide, interoperable Electronic Health Records (EHRs) as part of an ubiquitous Health Information Exchange (HIE). When complete, this system will improve the healthcare of millions of residents of the Commonwealth, lower the costs of health care, and create good jobs. The program has been designed to ensure the security of data and the privacy of all individuals.

By tapping the rich knowledge and experience in health care in the Commonwealth, the Task Force offered a forum for focusing eHealth options down to an essential sequence of initiatives that will move the Commonwealth from paper-based files to EHRs. The move to EHRs will enable a patient-centered and appropriately secure system of health support. The goal of the eHealth program is for essentially all Massachusetts healthcare providers to use EHRs linked via a HIE. This will improve quality, as well as reduce errors and costs of healthcare, especially among underserved populations and geographic locations across the Commonwealth. A byproduct of this effort will include a de-identified data warehouse of health data useful for assessments, research, and policy development.

## 2. Members

The IT Mobilization Task Force has worked with a genuine spirit of collaboration and a keen sense of the importance and urgency of this effort. The Task Force conducted a rigorous process over a very short time to identify vital technology and eHealth projects. The table below shows the membership of the Task Force.

Name	Title	Agency / Organization
Margulies, Anne (Chair)	Assistant Secretary and Chief Information Officer	Information Technology Division
Montigny, Mark	State Senator	The Commonwealth of Massachusetts The 186th General Court – Senate
Sanchez, Jeffrey	State Representative	The Commonwealth of Massachusetts The 186th General Court – House of Representatives
Adams, Mitchell	Executive Director	Massachusetts Technology Collaborative
Benison, Marty	State Comptroller	Office of the Comptroller
Beveridge, John	Deputy Auditor	Office of the State Auditor
Bickerton, Bob	Associate Commissioner	Massachusetts Department of Elementary and Secondary Education
Boronski-Burack, Debra	President and Chief Executive Officer	Massachusetts Chamber of Business & Industry
Burlingame, Craig	Chief Information Officer	Administrative Office of the Trial Court

<sup>2</sup> At this writing, the Task Force had the opportunity to review the January 15 House of Representatives draft of the proposed Federal Act. Many of the projects identified in this report align closely with the initiatives specified in the draft bill. But because the proposed legislation is prescriptive and envisions making infrastructure investments through established formulas and existing channels, there is no discretionary money for the Governor to address other state priorities, including IT priorities, even though these would fully serve the jobs and economic objectives of the Federal Act. Nevertheless, the Task Force hopes that some of the Commonwealth’s other IT priorities captured in this report might be addressed through modifications to the legislation or through the ability to reallocate capital funds that may be freed up by stimulus grants in other areas.

Name	Title	Agency / Organization
Davies, David	Director of Information Technology, Division of Local Services	Department of Revenue
Day, Rosemarie	Deputy Director and Chief Information Officer	Commonwealth Health Insurance Connector Authority
Dougherty, Terry	Assistant Secretary for Administration and Operations	Executive Office of Health and Human Services
Frias, Valerie	General Counsel & Legislative Director	Office of Senator Mark Montigny
Fuller, John	Chief Information Officer	Executive Office of Transportation
Glennon, John	Chief Information Officer	Executive Office of Labor and Workforce Development
Gray, David	Chief Information Officer and Vice President of UMassOnline	University of Massachusetts
Grossman, John	Undersecretary of Forensic Sciences & Technology	Executive Office of Public Safety and Security
Hopcroft, Thomas	President and CEO	Mass. Technology Leadership Council
Horan, Mark	Executive Director	Massachusetts Network Communications Council
Jackson, Tito	Industry Director for IT	Mass Office of Business Development
Kelley, David B.	Executive Director	Massachusetts Colleges Online
Norman, Michele	Director of Strategic Planning and Collaboration	Executive Office of Education
Oates, Bill	Chief Information Officer	City of Boston
Wallace, David	Director, Division of Apprentice Training	Executive Office of Labor and Workforce Development
Wcislo, Celia	Assistant Director	1199 SEIU Massachusetts Division
Weber, Ken	Chief Administrative Officer	Executive Office of Transportation
Wilbur, Robert	Chief Information Officer	Executive Office of Energy and Environmental Affairs

While the Task Force itself is broadly representative, with members from every branch and most offices of state government, many others contributed to the effort by providing research and data needed to generate a sound set of projects proposed to the Governor for consideration.

### 3. Key Objectives for the Information Technology Task Force

The work of the Task Force centered on identifying projects that would strike an appropriate balance among the following objectives

- Federal Act objectives
  - Can begin within 180 days
  - Can be completed within 2 years
  - Creates jobs now and expands future job opportunities
- Governor's Guiding Principles
  - These guiding principles are inclusive of and based on the Federal Act objectives.
    - Invests for the long term
    - Limits impact on operating budgets (reduction or neutral)
    - Follows established infrastructure priorities
    - Diversifies funding and project benefits across industries and geography
    - Buys Massachusetts: To the extent possible, contract with Massachusetts contractors, purchase goods and services from Massachusetts companies, and hire Massachusetts people
- Commonwealth IT goals
  - Provides efficient and easily accessible services for all constituents
  - Promotes open and transparent engagement with citizens of the Commonwealth
  - Ensures accurate and timely data for policy making, service delivery, and results evaluation
  - Manages project risk and complexity at a reasonable level
- Secretariat/Branch/Agency priorities
  - Aligns with priorities of sponsoring agency
  - Is within ability of agency to execute based on capability and track record

These objectives were incorporated as part of the IT Task Force project database and are the recommended criteria for prioritizing projects. The IT Task Force used the criteria to develop a data driven process and tool to support their recommended process for an efficient, objective and fair prioritization of projects once the Federal Act is finalized.

In addition, objectives for the eHealth projects are:

- Increased patient safety
- Enhance the quality of care
- Decrease costs

These objectives are completely aligned with the goals of the “Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care” signed by Governor Patrick in August 2008.

## Governor's Guiding Principles

Guiding Principle	Description	Proposed IT Projects Will...	Proposed eHealth Projects Will...
Invest for the Long Term	All projects under this program should have a long-term benefit in addition to the stimulus effect of putting people back to work now	<ul style="list-style-type: none"> <li>Focus on 21st century "smart" services and processes</li> <li>Make state government more efficient, effective, accessible, transparent, and responsive for citizens and businesses</li> </ul>	<ul style="list-style-type: none"> <li>Create a state-wide Healthcare Data Warehouse (HDW) to enable collection of data for use in analyzing trends, case management, and reporting</li> <li>Provide a technical architecture that could connect to a national HIE</li> </ul>
Limit Impact on Operating Budgets	Prefer investments that will reduce – or at least not add to – demands on the operating budget	<ul style="list-style-type: none"> <li>Drive efficiency, and streamline operations</li> <li>Reduce or limit increases to operating budgets over the long term</li> </ul>	<ul style="list-style-type: none"> <li>Provide data for health monitoring efforts and quality improvement programs that create cost efficiency opportunities for state and private payors</li> <li>Reduce the occurrence and costs attributed to serious medication errors</li> </ul>
Follow Established Infrastructure Priorities	Make choices based on the infrastructure recommendations recently approved at the Development Cabinet	<ul style="list-style-type: none"> <li>Boost IT sector of Massachusetts economy</li> </ul>	<ul style="list-style-type: none"> <li>Boost both the IT and healthcare sectors of Massachusetts economy</li> </ul>
Diversify	Subject to whatever constraints there may be in the federal legislation, prioritize projects for funding in a manner that ensures funds will be allocated across a variety of industries and geographic locations	<ul style="list-style-type: none"> <li>Create "knowledge" jobs at all skill levels</li> <li>Reduce digital divide and democratize access to government services for all citizens</li> </ul>	<ul style="list-style-type: none"> <li>Involve State health agencies, public health departments, CHCs, and a variety of public and not-for-profit health organizations</li> <li>Enable health care organizations to isolate specific demographic pockets through analysis of community health data</li> <li>Create geographically dispersed jobs</li> </ul>

Guiding Principle	Description	Proposed IT Projects Will...	Proposed eHealth Projects Will...
Buy Massachusetts	To the extent possible, contract with Massachusetts contractors, purchase goods and services from Massachusetts companies, and hire Massachusetts people	<ul style="list-style-type: none"> <li>Draw on services of many technology companies either headquartered or with strong presence in the Commonwealth</li> </ul>	<ul style="list-style-type: none"> <li>Draw on the large concentration of software and hardware vendors with AEHR, CPOE, and HIE applications located in the Commonwealth</li> </ul>

#### 4. “Shovel-Ready” Projects

The Task Force utilized one approach for the IT projects and another for eHealth projects; the Task Force recommends use of these approaches for prioritizing projects. Because of the number and variety of the IT projects, it was necessary to build consensus across the project sponsors to identify projects and develop a prioritization process that can be used at a later date to quickly prioritize the portfolio of IT projects in a way that is fair and objective. To that end, the Task Force created a standard tool and a scoring methodology that it recommends using to prioritize projects. The recommended prioritization process for eHealth projects evolved from the work of the MeHI, HHS, and eHealth thought leaders from across the Commonwealth.

##### IT Projects

The Task Force developed a process for obtaining project recommendations from all of state government and for evaluating each candidate project according to the key objectives described earlier. The Task Force believes that this process has resulted in a balanced portfolio of high-impact projects that address a mix of needs and satisfy the range of objectives listed in Section 3.

To aid in the evaluation and priority-setting process, the Task Force developed:

- A web-based survey instrument to gather project proposals and data from all agencies
- A database to inventory projects and serve as a platform for analysis
- A scoring tool and numerical scale to assess alignment with key objectives

With these tools, the Task Force employed a data-driven, functional and flexible methodology to validate that projects will meet the Federal Act, Commonwealth, and agency goals. This prioritization process was expedited by the unprecedented collaboration among the task force members. As a result, these projects are ready to be prioritized for implementation, and the Task Force recommends utilizing its approach.

See *Appendix 2A – IT: Scoring System for IT Projects* for a detailed overview of the scoring tool.

##### eHealth Projects

Massachusetts has a wealth of thought leaders who have been collaborating to develop a Commonwealth-wide eHealth infrastructure. As a result, Massachusetts is uniquely positioned for eHealth innovation given health care reforms, the Chapter 305 of the Acts of 2008 legislation passed that created the governing body of the Massachusetts eHealth Institute, and the input from hospitals and other providers to implement these projects. These projects are indeed ready for execution and are able to quickly put funding to work, as it becomes available.

The IT Task Force's eHealth recommendations are the collaborative result of analyses by the Massachusetts eHealth Institute (MeHI) and the Executive Office of Health and Human Services (EOHHS). These organizations are described briefly below.

- MeHI is a division of the Massachusetts Technology Collaborative that was created by the Massachusetts legislature in 2008 to advance the dissemination of health IT across the Commonwealth. It is designed to provide a mechanism for mobilizing the deployment of EHRs in all physician settings state-wide, that are to be networked through a state-wide health information exchange (S-HIE). MeHI provides a state-wide organization and framework to ensure that all EHRs meet standards for applications and interoperability.
- EOHHS, the largest Commonwealth secretariat, focuses on improving the lives of Massachusetts residents. EOHHS provides a variety of programs and services for children, adults, and the elderly. In addition, EOHHS pursues health care research as well as ways to improve the accessibility of health care services.

Each bringing their unique perspectives, MeHI and EOHHS developed joint recommendations to identify and accelerate the deployment of eHealth. This partnership also drew recommendations from many organizations with an eHealth focus in the Commonwealth, including:

- Massachusetts Health Data Consortium (MHDC);
- New England Healthcare EDI Network (NEHEN);
- Massachusetts Simplifying Healthcare Among Regional Entities (MA-SHARE), and;
- Massachusetts eHealth Collaborative (MAeHC).

MeHI and EOHHS will jointly facilitate the interoperability of the projects selected; a critical factor in optimizing the value of each individual effort and the overall value of the Commonwealth's eHealth program.

## 5. Projects

### IT Projects

The IT project portfolio recommended by the Task Force comprises a vast array of initiatives across all branches and virtually all agencies of state government. Among these initiatives, there are important technology projects that will:

- Provide innovative services to citizens and businesses
- Enhance education, public safety, and economic development
- Connect disparate databases for more effective analysis, planning, and evaluation
- Streamline government operations

The following table summarizes the IT projects:

IT Project Summary		
Secretariat or Constitutional Office	Total Project Count	Total Federal Act Request (\$)
Administration and Finance	42	\$296,758,226
Education	14	\$166,310,000
Energy and Environmental Affairs	37	\$78,885,000



IT Project Summary		
Secretariat or Constitutional Office	Total Project Count	Total Federal Act Request (\$)
Health and Human Services	31	\$101,981,028
Housing and Economic Development	12	\$2,351,000
Independent Offices and Commissions	5	\$6,500,000
Judiciary	11	\$11,076,434
Labor and Workforce Development	9	\$26,230,000
Massachusetts District Attorney Association	3	\$1,315,000
Office of the Comptroller	3	\$26,500,000
Public Safety	9	\$185,150,000
State Auditor	1	\$6,562,300
Transportation and Public Works	15	\$64,310,000
Treasurer and Receiver General	2	\$1,500,000
<b>TOTAL</b>	<b>194</b>	<b>\$975,428,988</b>

See the *Project List* for a detailed list of the projects.

Each project has a specific plan (captured in the IT Task Force database) that estimates both state worker and contractor job requirements. Additional contractor jobs will be created through the establishment of an outsourced Project Management Office (PMO) within ITD that will oversee project execution, monitoring, and reporting across all initiatives.

### eHealth Projects

The following four eHealth projects have been jointly selected by MeHI and EOHHS, and constitute the eHealth projects portfolio recommended by the IT Task Force:

- *Ambulatory Electronic Health Record (AEHR)* – Deploy AEHR in 13,000 individual physician practices throughout the Commonwealth;
- *Computerized Physician Order Entry (CPOE)* – Deploy CPOE systems in the 63 acute care hospitals throughout the Commonwealth that still do not have CPOE or one fully implemented;
- *Community Health Centers (CHCs)* – In the Commonwealth, there are CHCs that do not have an EHR or one fully implemented. This project includes deploying an EHR in the 12 CHCs, as well as implementing a central clinical data repository (CDR) for the CHCs; and
- *Health Information Exchange (HIE)* – In parallel with the general deployment of EHRs in the prior three care-delivery settings (individual physician practices, acute care hospitals, and CHCs), deploying a state-wide health information exchange (S-HIE) that will support the secure sharing of patient information among the care-delivery settings where new EHRs are being implemented and the care settings that already have EHRs. This project also includes the deployment of a state healthcare data warehouse (HDW) that will aggregate de-identified patient data for the purposes of bio-surveillance and quality/outcome measurement.

Individually, each project offers specific value to the State Legislature, government health agencies, care providers, and the people of Massachusetts. Combined, the four projects contribute a powerful

combination of benefits that will significantly assist the Commonwealth in achieving its goals of improved patient safety, reduced health care costs, and enhanced coordination of care.

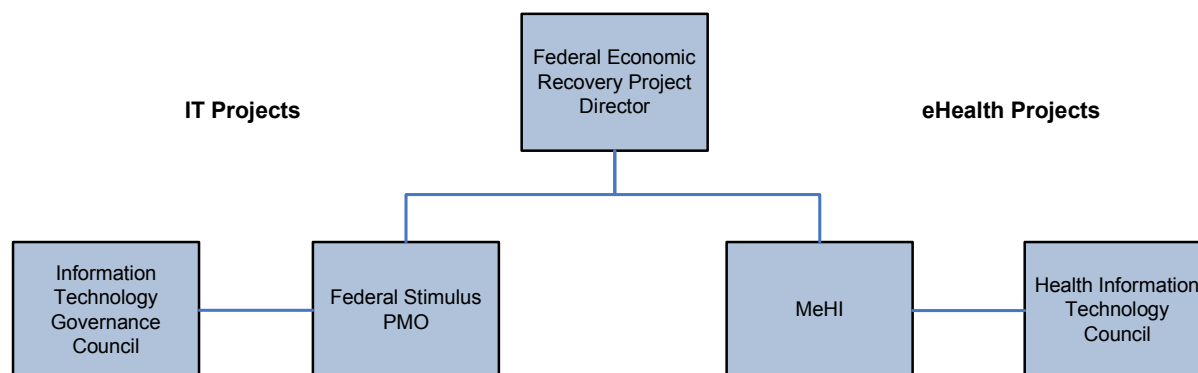
The following table summarizes the eHealth projects:

eHealth Projects		
Project	Total Project Count	Total Federal Act Request (\$)
Ambulatory Electronic Health Records (AEHR)	1	\$340,000,000
Computerized Physician Order Entry (CPOE)	1	\$125,000,000
Community Health Center EHRs (CHC)	1	\$13,000,000
State-level Health Information Exchange (S-HIE)	1	\$35,000,000
<b>TOTAL</b>	<b>4</b>	<b>\$513,000,000</b>

See the *Project List* for a detailed list of the projects.

## 6. Agency Staffing Plans

The oversight, governance and contract/vendor management for the final selected IT and eHealth projects will be managed by the Commonwealth. A clear governance structure can quickly be established to support monitoring and accountability of the IT and eHealth projects.



Effective Project Management includes implementing protocols, templates, and tools based on generally accepted best practices to standardize the project activities. There are many areas that will require oversight, including: governance, scope management, work plan and milestone management, risk management, issue management, quality management, communications, and reporting and financial performance management.

### IT Projects

The following table provides a summary snapshot of the staffing needs discussed in more detail throughout this section.

IT Projects	
Secretariat or Constitutional Office	Federally funded FTE Request Based on Agency Staffing Analysis

IT Projects	
Secretariat or Constitutional Office	Federally funded FTE Request Based on Agency Staffing Analysis
Administration and Finance	245
Education	79
Energy and Environmental Affairs	106
Health and Human Services	247
Housing and Economic Development	14
Independent Offices and Commissions	14
Judiciary	9
Labor and Workforce Development	31
Massachusetts District Attorney Association	10
Office of the Comptroller	47
Public Safety	34
State Auditor	10
Transportation and Public Works	81
Treasurer and Receiver General	4
<b>TOTAL</b>	<b>931</b>

Each IT project has a specific plan (captured in the IT Task Force database) that includes estimates of state workers that will be needed to support these projects. This number of internal agency jobs is a best estimate at this time and may include some reallocation of existing personnel.

### eHealth Projects

For the eHealth projects, MeHI will be adding a few resources to augment their current staff to strengthen the program management office. These additional resources are not expected to be funded through the Federal Act. At this time, EOHHHS does not anticipate adding any staff as existing staff will be leveraged to support the four eHealth projects.

## 7. Barriers and Obstacles to Achieve Objectives

The IT Task Force identified five key challenges that will be addressed to ensure successful execution of the IT and eHealth projects:

- Lengthy recruitment and hiring process
- Fragmented and slow procurement process
- Ineffective project management
- Inadequate governance and oversight
- Resistance to technology and business process change

- The table below outlines the major obstacles anticipated and the corresponding mitigation strategies planned. A significant amount of planning and design work has already been accomplished, and most remediation strategies have already been completed or are under way. For this reason, the Task Force believes that these projects are truly “shovel-ready.”

		Mitigation Strategy / Actions Required	
Barrier / Obstacle	Solution	IT Projects	eHealth Projects
Lengthy recruitment and hiring process	Streamline recruitment of qualified workers and contractors	<ul style="list-style-type: none"> <li>• Create centralized recruitment team and portal to develop candidate pool for agency-based projects</li> <li>• Optimize recruitment pipelines via partnerships with Year Up program and UMass</li> <li>• Develop streamlined onboarding process to make new hires productive in less than two weeks of start date</li> </ul>	<ul style="list-style-type: none"> <li>• Create processes to streamline hiring staff of implementing organizations</li> <li>• Ensure appropriate support is in place for a successful execution of projects</li> </ul>
Fragmented and slow procurement process	Maximize economies of scale; streamline processes while preserving fair, open, and competitive procurement  <i>See the Procurement Taskforce Section for more details.</i>	<ul style="list-style-type: none"> <li>• Create specialized Procurement Speed Teams</li> <li>• Develop RFQ and RFR templates to simplify and standardize the procurement process</li> <li>• Use established state contractors where possible to avoid lengthy RFR and contracting processes</li> </ul>	<ul style="list-style-type: none"> <li>• Simplify procurement processes for implementing organizations</li> <li>• Leverage expedited procurement processes that will be established</li> </ul>
Inadequate governance and oversight	Establish appropriate governance structures	<ul style="list-style-type: none"> <li>• Manage projects at the source, in sponsoring agencies</li> <li>• Establish overarching Project Management Office (PMO) to standardize management disciplines across projects (Note: RFQ for PMO already written)</li> <li>• Employ industry best-practices to monitor projects and hold project</li> </ul>	<ul style="list-style-type: none"> <li>• Launch Health Information Technology Council as defined in C305 legislation.</li> <li>• Create (and test) a PMO responsible for organizing and monitoring the eHealth projects procurement and implementation activities.</li> <li>• Establish Data Governance structure that clearly articulates points of data</li> </ul>

		Mitigation Strategy / Actions Required	
Barrier / Obstacle	Solution	IT Projects	eHealth Projects
		managers accountable <ul style="list-style-type: none"> <li>• Convene broad-based oversight/governance group that builds on the success of the Task Force</li> </ul>	transmission. <ul style="list-style-type: none"> <li>• Establish a data exchange partnership among stakeholders to nurture “a chain of trust” relationship among the key groups</li> </ul>
Resistance to technology and business process change	Institute an effective change management process	<ul style="list-style-type: none"> <li>• Establish clear vision to obtain stakeholder buy-in during planning and implementation of projects</li> <li>• Provide training and change management tools to facilitate the transition of end users to new systems and business processes</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct outreach and communication strategies</li> <li>• Educate healthcare practitioners on the benefits of the proposed projects and foster cultural sensitization</li> <li>• Develop change management plans focused on communicating to physicians how they will integrate the new technology, and clearly communicate expectations about the initiative.</li> </ul>

## 8. Metrics for Measuring Success

Each individual project has specific milestones and measures of success, as recorded in the IT project database. In addition, success shall be further ensured by:

- Coordinating all IT and eHealth project work with the Federal Economic Recovery Project Director,
- Making all work transparent and accountable; plans are in place to create an open, web-based “dashboard” to show progress throughout the project implementation process,
- Establishing a professional Project Management Office to support and to monitor all initiatives across the entire portfolio of projects, and;
- Using the governance structures already in place via the eHealth Institute and the Health Information Technology Council to have oversight of the projects and to approve plans for the eHealth Projects.

### **The Importance of Investing in Information Technology and eHealth Projects**

The Federal Act offers a unique opportunity for the Commonwealth to make unprecedented investments in the future through its IT and eHealth infrastructure. The projects put forth by the IT Task Force not only fulfill the stimulus objective of creating immediate jobs that will boost the state's economy, but they also offer long-term and profound impacts on the quality of state government, on the lives and health of our citizens, and on the economic development of the Commonwealth. These projects should be adapted to the greatest extent possible consistent with the final parameters of the Federal Act.<sup>3</sup>

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<sup>3</sup> As the Federal Act is finalized, the governing structure of the IT projects may need to be reconsidered. Additionally, the eHealth projects may need to be restructured to align with the requirements outlined to qualify for more funding.

## **Appendix 2: Information Technology (IT)**

The appendices include the following:

- Appendix 2A: Scoring System for IT Projects
- Appendix 2B: Job Estimates Summary and Methodology
- Appendix 2C: eHealth Projects Recommendations Details
- Appendix 2D: eHealth – Potential Cost Savings
- Appendix 2E: eHealth – Potential Cost Avoidance
- Appendix 2F: eHealth – System Performance

## Appendix 2A: Scoring System for IT Projects

Below is the recommended approach to prioritizing IT projects. The database contains the following information about each project:

1. Project Identification
  - a. Project Title
  - b. Secretariat
  - c. Department
  - d. Location
2. Project Description and Objectives
  - a. Project Description
  - b. Measurable objectives
  - c. Metrics for Success in Meeting Objectives
  - d. Gaps or Barriers
  - e. Plans to Mitigate Gaps or Barriers
3. Project Schedule
  - a. Earliest Start Date
  - b. Expected Finish Date
  - c. High-Level Milestones
  - d. Expected Completion Date-Each Milestone
4. Project Staffing
  - a. Est. Number of Full-time employees
  - b. Est. Number of Contractors
  - c. Expected Job Titles
  - d. Expected Job Skills
5. Project Costs

In addition to these categories, the database also contains information about the benefits and improvements for Massachusetts citizens. The flexibility of the database allows for projects to be re-analyzed in accord with changing criteria and with the parameters of the Federal Act once they are finalized.

The scoring tool includes the Federal Act goals, the Governor's guiding principles, the alignment with Secretariat and Commonwealth strategic priorities, and a risk/complexity assessment. The following table shows the numerical weighting system built into the tool.

Criterion	Scoring Detail	Descriptor	Max Points
<b>Start in 180 days?</b>	Self reported factor indicates a project is ready (5) or not (0)	Binary score	5.00
<b>Completed in 2 years from January 20th?</b>	Reflects whether the self reported project end date is before Jan. 20 2011 (5) or is not before (0)	Binary score	5.00
<b>Weighted Score</b>	Place holder for in the version dated 01042009. Should any column need to be prioritized and weighted above others, this will be the factor multiplying the results.		
<b>Current Project Stage</b>	Preference is given to projects in farther stages of development, those that are closer to		5.00



Criterion	Scoring Detail	Descriptor	Max Points
	procurement.		
	1.25	Level 1: Initiation- Project charter, high level scope complete	
	2.50	Level 2: Planning and Design – project planning complete, resource needs and timeline in place	
	3.75	Level 3: Procurement Started – Draft RFQ developed	
	5.00	Level 4: Procurement Ready – Final RFQ developed	
<b>Operating Budget Impact</b>	Preference is given to projects that improve operating budget outlooks over those that add burdens to operating budgets.		5.00
	1.25	Will increase operating budget	
	2.50	No change to operating budget	
	3.75	Modest decrease in operating budget	
	5.00	Significant decrease in operating budget	
<b>Project Mix/Job Impact</b>	With each 10% increase in total funds being dedicated to labor/employment, the project receives a (.5) point increase in score. Preference is given to those projects dedicating more funds to labor than to hardware or software.		5.00
<b>Employment Score-Self Reported</b>	Drawing from the sum of the reported factor indicating the estimated number of full time employees a project is likely to require/create, this score grants preference to those projects that require/create higher numbers of jobs.		5.00
	0.00	No labor required	
	1.00	1-10 FTEs	

Criterion	Scoring Detail	Descriptor	Max Points
	2.00	11-20 FTEs	
	3.00	21-50 FTEs	
	4.00	51-200 FTEs	
	5.00	> 200 FTE	
<b>Employment Score-Calculated</b>	Similar to the Self Reported Employment Score in its preference to more labor, this version estimates the number of FTEs based on the Project Mix/Job Impact reported as compared to the total project costs		
	Score is same break down as self reported (0, 1-10, 11-20, 21-50, 21-200, greater than 200)		
<b>Total Governor's Federal Act Points</b>			<b>30.00</b>
<b>Project Risk</b>	Preference is given to lower risk projects over those with higher risks.		2.50
	2.50	Minimal	
	1.75	Moderate	
	1.00	High	
	0.25	Very High	
<b>Project Complexity</b>	Preference is given to less complex projects over those that are more complete.		2.50
	2.50	Extremely Low	
	2.00	Low	
	1.50	Moderate	
	1.00	High	
	0.50	Extremely High	
<b>Total Risk/Complexity Points</b>			<b>5.00</b>
<b>Alignment with Secretariat/Constitutional Strategic Goals</b>	Self reported factor indicates the degree to which a project aligns with the Secretariat/Constitutional Office's	2 points for increased alignment	10.00
	2.00	Not Aligned/Unknown	
	4.00	Modest	

Criterion	Scoring Detail	Descriptor	Max Points
	6.00	Significant	
	7.00	Transformational for the Secretariat	
	10.00	Transformational Commonwealth wide	
<b>Secretariat Alignment Points</b>			<b>10.00</b>
<b>Alignment with Commonwealth Strategic Plan</b>	score 10 for alignment with the Commonwealth's Strategic Plan	Binary score	10.00
<b>Commonwealth Alignment Points</b>			<b>10.00</b>
<b>ITD Evaluation</b> <i>(points not currently awarded)</i>	ITD Evaluation of agency's track record and capacity to deliver project successfully	1 point for increased capability	5.00
	1.00	Limited Capacity	
	2.00	Somewhat Capable	
	3.00	Mostly Capable	
	4.00	Capable	
	5.00	Fully Capable	
<b>ITD Evaluation Points</b>			<b>5.00</b>
<b>Grand Total Maximum Points</b>			<b>60.00</b>
<b>"Extra Credit/Tie Breaker" Points</b>			
<b>Use MA Based Resources</b>	Self reported factor indicates a project is anticipates using MA based resources (5) or does not (0)	Binary score	5.00
<b>Promote other economic activities (e.g. Green Energy)</b>	Self reported factor indicates a project aligns with additional Commonwealth wide objectives (5) or not (0)	Binary score	5.00

The Task Force process itself followed these steps:

1. Asked Branches/Secretariats/Constitutional Offices and agencies to submit projects to be considered for funding from the Federal Act (Christmas week) via web-based survey tool. Data compiled into database.
2. Branches/Secretariats/Constitutional Offices or agencies scored their projects based on these criteria shown in the table above.
3. Task Force reviewed the results of this scoring and adjusted where necessary to align with all criteria.
4. With all projects now scored, the Task Force agreed to wait until for final definition of the priorities and/or constraints in the Federal Act to complete the effort.

## Appendix 2B: Job Estimates Summary and Methodology

### IT Projects

The following table summarizes the IT projects and their potential impact:

IT Projects			
Secretariat or Constitutional Office	Total Project Count	Total Cost / Federal Act Request	Potential for New External Jobs
Administration and Finance	42	296,758,226	595
Education	14	166,310,000	95
Energy and Environmental Affairs	37	78,885,000	285
Health and Human Services	31	101,981,028	338
Housing and Economic Development	12	2,351,000	17
Independent Offices and Commissions	5	6,500,000	25
Judiciary	11	11,076,434	9
Labor and Workforce Development	9	26,230,000	59
Massachusetts District Attorney Association	3	1,315,000	11
Office of the Comptroller	3	26,500,000	57
Public Safety	9	185,150,000	523
State Auditor	1	6,562,300	16
Transportation and Public Works	15	64,310,000	151
Treasurer and Receiver General	2	1,500,000	3
<b>TOTAL</b>	<b>194</b>	<b>975,428,988</b>	<b>2184</b>

Each project has a specific plan (captured in the IT Task Force database) that estimates contractor job requirements. Additional contractor jobs will be created through the establishment of an outsourced Federal Act Project Management Office (PMO) within ITD that will oversee project execution, monitoring and reporting across all initiatives.

In total, approximately 2,200 external jobs would be created as a result of the IT Project List if all projects were to be implemented. These jobs will cover roles from entry to high-level positions, including:

- Entry Level Positions
  - Developer
  - Web Developer
  - .NET Developer
  - Java Developer
  - Trainer
- Mid-Level Positions
  - Database Administrator

- Architect
- System Analyst
- Business Analyst
- Network/Telecommunications
- High-Level Positions
- Project Manager
- Program / Portfolio Managers

## eHealth Projects

The following table summarizes the eHealth projects and their potential impact:

eHealth Projects			
Project	Total Project Count	Total Cost / Federal Act Request	Potential for New External Jobs
Ambulatory Electronic Health Records (AEHR)	1	340,000,000	805
Computerized Physician Order Entry (CPOE)	1	125,000,000	275
Community Health Center EHRs (CHC)	1	13,000,000	32
State-level Health Information Exchange (S-HIE)	1	35,000,000	96
<b>TOTAL</b>	<b>4</b>	<b>513,000,000</b>	<b>1208</b>

Most of the eHealth projects will be staffed through contracts with implementing organizations. Therefore, most of the jobs created will be in the private sector.

In total, an estimated 1200 external jobs would be created if all of the projects were to be implemented. These jobs will cover roles from entry level jobs to high-level positions, such as:

- Entry Level Positions
  - Trainer
  - Business Analyst
  - Programmer
- Mid-Level Positions
  - Implementation Lead
  - Database Administrator
  - System Architect
- High-Level Positions
  - Project Manager

## Appendix 2C: eHealth Projects Recommendations Details

Healthcare is information intensive. In the U.S. in general, it is also very much paper-based and highly fragmented with well documented associated issues in terms of patient safety, quality of care, and costs. While the Commonwealth of Massachusetts is one of the most advanced States in both the deployment of electronic health records (EHRs) in its various care-delivery settings, and the deployment of health information exchanges (HIEs) across settings, it is far from having achieved ubiquitous EHR automation and information sharing.

The four eHealth projects identified below are designed to close the automation gaps within three critical care-delivery settings (individual physician practices, acute care hospitals, and community health centers) and to deploy a state-wide HIE:

### 1. Ambulatory Electronic Health Records (AEHR)

This project is designed to deploy an AEHR in 13,000 individual physician practices (out of the estimated 14,000 physician practices that exist in the Commonwealth).

On average, only 15% of the individual physician practices have clinical information systems (with typically the larger practices being more automated and the solo practitioners [there are 4,000 of them in the Commonwealth] being far less so). Yet, also on average, 35 to 40% of all the care provided in a community takes place in these individual physician practices. The lack of automation means that these physicians cannot easily trend patient data; do not have the clinical decision support tools that could alert them of adverse drug-to-drug interactions; cannot be electronically reminded of best medical practices; etc.

AEHR systems include these alert and reminder features. They typically include productivity tools such as an electronic prescribing that allows orders to be renewed and communicated automatically to pharmacies. AEHRs also allow patient data to be exchanged among authorized care providers both within a practice and with external providers (and increasingly with patients themselves).

The two primary obstacles to the deployment of AEHR systems in individual physician practices have been costs and implementation/support issues. This project is intended to alleviate these two concerns by lowering the adoption costs (on average, physicians will only contribute 15% of their practice installation's total costs), and by selecting AEHR systems that would be deployed by implementation organizations (IOs) vetted and monitored by the MeHI/DOH. In addition, the AEHR systems will be proposed in an ASP (Application Service Provider) mode where the application is remotely operated and maintained by approved service organizations (SOs).

## **2. Computerized Physician Order Entry (CPOE)**

This project is designed to deploy a CPOE system in the 63 acute care hospitals throughout the Commonwealth that still do not have one or one fully implemented.

Most hospitals have installed ancillary (laboratory, radiology, pharmacy, etc.) and order entry/results reporting (OE/RR) systems. Yet, most of these OE/RR systems are typically used by data entry clerks and nurses, with well documented patient safety issues. For instance, the greatest percentage of preventable adverse drug events (ADEs) occurs during physician ordering( ). Less than 5% of U.S. hospitals have CPOE, i.e., clinical systems designed to be directly used by the attending physicians so that they can access patient information real time at the point and time of decision making, and enter their own orders so that transcription errors are eliminated. They can also take advantage of a variety of built-in clinical decision support tools: e.g., alerts regarding a potential medication error (wrong dosage, allergic reaction, drug-to-drug interaction, etc.); alerts regarding the existence of test results to avoid duplicate ordering; best practice reminders; recommended switch to a generic drug; etc. CPOE systems also typically automated workflows, electronic physician documentation (using templates that increase the electronic capture of structured data), and an integrated medication administration-pharmacy application. They are designed to be used by physicians and therefore incorporate special user interface and performance requirements.

The two primary obstacles to the deployment of CPOE systems in acute care hospitals have been costs and adoption issues. CPOE implementation is a time-consuming and expensive undertaking requiring at least two years for most hospitals, with a price tag that is beyond the reach of many community hospitals (especially those in relatively poor communities). Achieving physician utilization is also a daunting challenge as CPOE changes the way in which physicians practice medicine on a day-to-day basis. This project is intended to alleviate these two concerns by lowering CPOE costs and selecting implementation organizations (IOs) that have a proven methodology and the resources to support these complex clinical transformation projects.

## **3. Community Health Center EHRs**

This project is designed to deploy an EHR in the 12 Community Health Centers (CHCs) in the Commonwealth that still do not have one or one fully implemented. The project also includes deploying a central clinical data repository (CDR).

CHCs serve as the front line of the primary care system for the Commonwealth. They are typically designed to provide underserved populations with preventive care and chronic disease care management services, thereby alleviating the burden on hospitals' emergency departments. It is critical that these care-delivery settings be clinically automated to enhance patient safety and care quality, increase staff productivity, and allow patient information to be shared with the acute care hospitals. Functionally, these CHC EHR systems are very similar to the physician practices' AEHR systems mentioned earlier.

Because of the populations they served, CHCs also function as an "early warning system" of emerging trends in public health. To exploit this potential, an additional project component is the deployment of a central CHC-specific CDR which will provide timely outcome and gap reporting on preventive and chronic care programs, and quality measures and improvement reports for the management of public health programs and the individual centers.

The two primary obstacles to the deployment of CHC EHR systems have been costs and implementation issues. This project is intended to alleviate these two concerns by lowering the system costs and selecting EHR solutions that would be deployed by implementation organizations (IOs) vetted and monitored by MeHI/DOH. In addition, the central CDR implementation can deploy data mining and reporting tools cost-effectively and provide each CHC with shared resources to help address their analysis and reporting needs.

## **4. State-level Health Information Exchange (S-HIE)**

The three prior projects are designed to enhance the clinical automation level of three major care- delivery channels: individual physician practices (where the biggest automation gap probably resides); acute care hospitals; and CHCs. In parallel with the general deployment of EHRs in these three care-delivery channels, this project is designed to deploy a state-level health information exchange (S-HIE) that will support the

secure sharing of patient information among them and the care-settings that already have EHRs. The project also includes the deployment of a state healthcare data warehouse that will aggregate and normalize de-identified patient data for the purpose of population management, bio-surveillance, and quality/outcome measurement.

HIEs support the electronic movement of health-related data according to an agreed upon set of interoperability standards, across non-affiliated organizations in a manner protecting privacy and security. HIEs are expected to yield a wide range of benefits: increased patient safety (for instance, by sharing a patient's allergy data and medication list among his/her care providers); increased care quality (as a provider has access to patient data across the whole continuum of care at the time of decision making); and reduced cost (as information sharing reduces duplicate testing and the number of ADEs, streamlines or eliminates administrative processes like the manual pulling of patient charts, etc.). In fact, the state-level HIE (S-HIE) is intended to be a "network of networks" both connecting C-HIEs and encouraging their development. The S-HIE also includes a state-wide clinical data warehouse (CDW) made of de-identified patient data and including clinical analytics for the purpose of population management, bio-surveillance, compliance reporting, and outcome/performance analysis.

The primary obstacle to the deployment of a S-HIE has been its initial deployment cost. This project is intended to finance the S-HIE for a finite amount of fund and a finite amount of time; with the expectation that the project will become financially self-sustainable after that initial investment period. Indirectly, the S-HIE project is expected to foster the development of C-HIEs in medical trading areas throughout the Commonwealth.

To a large extent, these four projects should be considered as one e-Health program, engaging both EHRs and HIEs within the same initiative. Though unusual, this approach is highly logical and can offer important advantages:

- For physicians to gain value from a C-HIE, certain conditions must be met that EHR deployment enables. Specifically, a large quantity of medical information needs to be collected in a standardized electronic format and made available through the HIE, so that identifying and obtaining clinical data becomes a practical part of an office visit. Only a broad set of EHR-enabled physicians, as part of a coordinated community-wide system will generate such a store of standard, electronic clinical data;
- The value of an EHR system increases greatly if it has the power to integrate –quickly, easily, accurately, and consistently at the point of care – data obtained through a HIE from other care-delivery settings; and
- A concerted implementation process for EHRs and HIEs will leverage their interdependent value, facilitate networking and interoperability, and promote the establishment of a functional, useful HIE.

### **The Powerful Vision of an Interoperable EHR**

The value of the four eHealth projects recommended is both individual and synergistic. Synergistic means that the value of each project is increased by the others. For instance, the "value proposition" of an individual EHR is strongly increased when that EHR serves as a conduit for a provider to send and receive electronic information about a patient, and allow coordination of care across the continuum. Conversely, the automation of individual physician practices greatly increases the value of an HIE. The base EHRs also permit the accumulation of valuable clinical data for purposes of health assessments and policy development, bio-surveillance, research, etc.

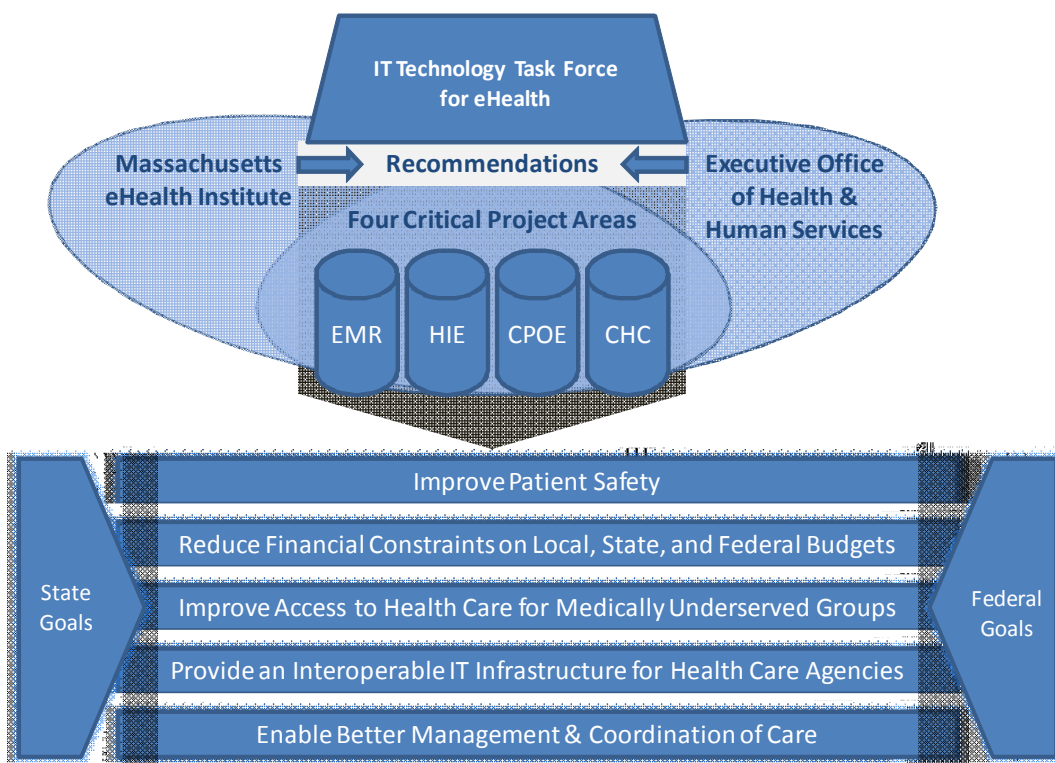
**Considered together, these four eHealth projects promote the concept of a state-wide interoperable EHR** is to provide integrated clinical information systems across the whole care continuum. The concept provides a powerful model which can potentially be applied across all care settings and will support all care professionals and disciplines. The interoperable EHR will be integral to delivering the medicine of the future in the Commonwealth. A future where care-delivery settings will be fully integrated across the whole care continuum and the patient will pass seamlessly through the system with controlled and managed 'hand-offs' with information flowing with the patient. A future where the expertise and skills of a wider range of clinicians will be used to deliver healthcare and where there will be much more emphasis on team working with



clinicians moving between different settings to deliver the care that is required, rather than asking the patient to travel as is now the case.

A future where the interoperable EHR will provide the foundation for integrated care and as a by-product will provide reliable and timely information for research and population management.

A future where patients will be better informed about their illness, their general health and well being, and about the services that are available to them. This will enable patients to make informed decisions about their own health and will support choice in how services are delivered and tailored to meet their individual needs. As a result the population as a whole will take more ownership and personal responsibility for their own health and, in turn, this will ensure more appropriate emphasis is placed on disease/illness prevention and health promotion rather than cure.



## Appendix 2D: eHealth – Potential Cost Savings

Potential Cost Savings		
Benefit Area	Description	Metric
<b>Communication &amp; Clinical Documentation</b>	Due to enhanced communication among care providers and enhanced clinical documentation mechanisms resulting from EMRs, health care delivery organizations, such as hospitals and community health centers would expect to see a decrease in partial shift overtime.	<p>The overtime that overlaps in a given shift allocated to documenting and transferring knowledge regarding patient(s) to the next staff member of the following work shift.</p> <ul style="list-style-type: none"> <li>Partial Shift Overtime.</li> </ul>
<b>Inpatient Throughput &amp; Capacity</b>	Resulting from automated work flow delivered by an EMR and greater ease of retrieving patient information through an HIE, more patients would be able to access services resulting in increased medical admissions, and a decrease in the average number of transfers pending each day.	<ul style="list-style-type: none"> <li>Number of Inpatient Medical Admissions.</li> <li>Average number of transfers pending each day.</li> </ul>
<b>Inpatient Length of Stay Reduction</b>	Length of Stay determines the number of days that a patient resides in an acute care setting following their admission; and Excess of Days per service area, such as hospital unit,	<ul style="list-style-type: none"> <li>Length of Stay.</li> <li>Excess of Days per service area.</li> </ul>
<b>Perioperative Services Throughput &amp; Capacity</b>	An automated workflow properly implemented has been proven to enhance throughput in perioperative environments conducting surgeries by increasing the number of OR cases per month, decrease OR Suite turnaround times, decrease the length of stay in the recovery room (PACU), and decrease room utilization.	<ul style="list-style-type: none"> <li>Number of OR Cases per month.</li> <li>OR Suite Turn-around Times.</li> <li>PACU Length of Stay.</li> <li>Room Utilization.</li> </ul>
<b>Emergency Department Throughput &amp; Capacity</b>	Immediate access to patient information and medical history through an HIE can facilitate care delivered in emergency situations, thus enabling greater access to care. This translates into increased number of ED visits, a decreased number of patients who leave without being seen, and a decrease in diversion time because an ER is able to see more patients. Also, with the automated EMR system and physician order system, the average length of stay in the ED would decrease due to greater efficiency in the process of delivering care.	<ul style="list-style-type: none"> <li>Number of ED Visits.</li> <li>Diversion Time, (length of time an ER diverts patients from other care providers, such as emergency medical response teams).</li> <li>Average Length of Stay in ED.</li> <li>Number of Left Without Being Seen (LWBS).</li> </ul>
<b>Pharmacy Utilization &amp; Supply</b>	The fusion of CPOE applications, tied to EMRs, and networked through an HIE can facilitate transfer of information and reduce redundant tests and orders based on availability of information for a given patient. Hence, the supply costs and pharmacy costs associated with procedures would decrease. In the process of automating workflow would enable a degree of supply and drug standardization at care organizations.	<ul style="list-style-type: none"> <li>Clinical Supply Costs.</li> <li>Pharmacy Costs.</li> <li>Supply &amp; Drug Standardization.</li> </ul>

## Appendix 2E: eHealth – Potential Cost Avoidance

Potential Cost Avoidance		
Benefit Area	Description	Metric
<b>Adverse Drug Events</b>	CPOE systems can be remarkably effective in reducing the rate of serious medication errors identified as “adverse drug events.” Both the number of cases and the rate of occurrence are important factors to monitor adoption as well as forecast a reduction in financial costs associated with adverse drug events.	<ul style="list-style-type: none"> <li>• Number of Adverse Drug Events.</li> <li>• Rate of Adverse Drug Events Occurring.</li> </ul>
<b>Duplicate Test Reduction</b>	As a result of disparate systems across health care organizations and presence of data integrity issues associated with the data, care providers order the same tests thus duplicating services rendered in the lab or for other diagnostic purposes.	<ul style="list-style-type: none"> <li>• Number of duplicate lab tests.</li> <li>• Number of duplicate radiology tests.</li> </ul>

## Appendix F: eHealth – System Performance

System Performance		
Benefit Area	Description	Metric
<b>System Uptime</b>	When the system is in a “steady state” the users can use and operate the system and applications in a normal manner. The system is not recovering from failures in its technology infrastructure or attempting to process work that was a result of a down state, (i.e. when the system was not available to the user), whether planned or unplanned, or conducting a history upload.	<ul style="list-style-type: none"> <li>• System Uptime.</li> </ul>
<b>Average Response Resolution&amp; Time</b>	Refers to the elapsed time for a user activity when using the System in a “steady state.” The Response Time measurement typically commences when the user completes an activity in the application itself, such as: (i) enters the last character in a field on a form and presses either the enter, return, tab, or similar end of activity action on the keyboard; or (ii) clicks on a confirmation to proceed indicator such as an OK, sign, confirm, done, or next dialogue box or icon. This measurement typically ends when: (i) the System is ready to accept the User’s next action such as the input of data; or (ii) the data requested by the user begins to display.	<ul style="list-style-type: none"> <li>• Time elapsed to complete a specific activity in the application.</li> </ul>
<b>Frequency of System Usage</b>	By measuring the number of transactions (orders, results, referrals, etc.) flowing through the exchange, the Task Force will be able to gauge the facilitation of information sharing.	<ul style="list-style-type: none"> <li>• Number of transactions flowing through the exchange utility.</li> </ul>

System Performance		
Benefit Area	Description	Metric
<b>Number of Users</b>	Having the vast majority of hospitals, physician practices, and other care provider organizations, such as labs, Imaging Centers, Pharmacies, etc. connected to the exchange utility means that data is being captured from multiple venues of care and creating a patient centric record across the entire continuum that is accessible to all care providers.	<ul style="list-style-type: none"> <li>• Number of users participating in the exchange utility by organization type.</li> <li>• Number of users allowed to access the exchange utility.</li> </ul>
<b>Accuracy of Master Patient Index/ Record Locator Service</b>	It is critical for use and adoption of an exchange utility to ensure that data coming into the system is standardized and is connected to the right patient.	<ul style="list-style-type: none"> <li>• Monitor accuracy of the utility's algorithms in retrieving the right patient data during a selected time frame.</li> </ul>