



**Information Technology
Strategic Plan
Executive Summary**

September 10, 2008

The University of Rochester Medical Center (URMC) developed its 7 year business plan in 2007. The Information Service Department (ISD) developed the supporting strategic IT Plan in the spring of 2008.

URMC's strategic vision is to be among the top Academic Medical Centers (AMC) in the Northeast. It is a deceptively simple goal as being one of the top AMCs essentially means that the institution must excel at everything it does. From an information technology (IT) perspective, there is no strict correlation between the automation level achieved by the top 5 AMCs and their ranking. In fact, far less prestigious institutions have better technologies in place, at least in some parts of their organizations, than the top AMCs do—in part because of the organizational complexity of these behemoths. Conversely, healthcare is so information intensive that it is impossible to be a world-class AMC without world-class IT. To be a top AMC, enable Medicine of the Highest Order, continuously enhance patient safety and care outcomes, and attract top talents, URMC must have an advanced application portfolio and an agile IT infrastructure.

1. IT Strategic Plan Approach and Summary

URMC is well aware of the importance of IT as a critical enabler of its vision. This Strategic IT Plan is designed to ensure that the Information Systems Division's (ISD) initiatives are completely aligned with the institution's 2007-2012 Strategic Plan. The IT plan was built from the bottom up, with a broad consultation of users throughout the institution (over 60 group interviews), and direct senior management input. The interview process pointed to the urgent need for URMC to deploy clinical information systems which provide a single point of access to a comprehensive patient electronic medical record. The solution must focus on enhancing the quality and safety of patient care through standardized data and practices along with workflow considerations within and across the delivery of care. We must focus on providing access to a complete, patient-centric record to our partners, including regional hospitals, long term care, and community physicians. To achieve the comprehensive vision, the following discrete goals were identified by URMC leadership as the highest priority:

- To replace its existing inpatient care Siemens Invision clinical information system;
- To increase the level of integration among information systems, especially the clinical ones. Beyond its core (order management, pharmacy, nursing documentation, CPOE, physician documentation), the new clinical information system (CIS) should include as many of the currently standalone departmental clinical systems as possible (e.g., ED, Radiology, ICU, Oncology, Cardiology, Dietary, etc.);
- To both enhance and integrate its financial and clinical analytics capability;
- To better support Research (Research Data Repository);
- To automate the patient matching process between URMC's two hospitals: Strong Memorial Hospital and Highland Hospital; and
- To better support URMC's referring network.

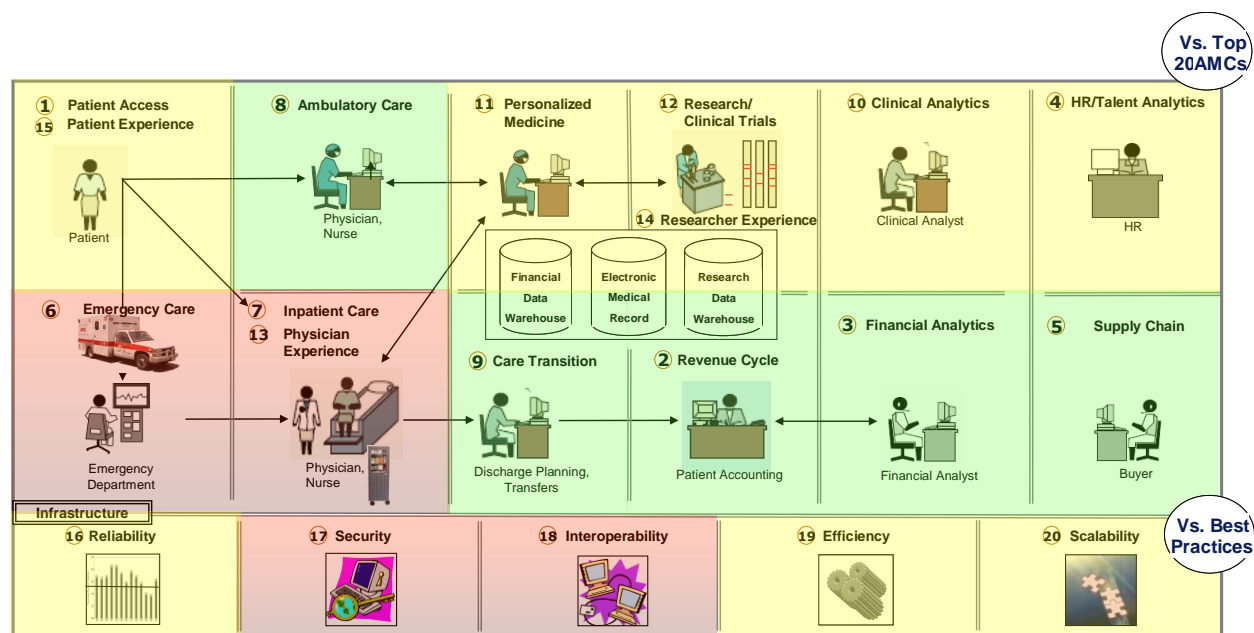
Conversely, the IT Plan identified that the current back-office functions are supported well: patient management and patient accounting (even though the two hospitals use different systems); supply chain; HR, etc. The outpatient care function is also supported well (via Allscripts) and, overall, URMC's infrastructure is robust (including an enterprise wide wireless network).

The IT Plan has been reviewed by URMC management, and a tentative implementation roadmap has been developed pending financial analysis during the 4th quarter of 2008. It is now entering a detailed planning phase. URMC will issue a request for quote (RFQ) to assist in understanding the total cost of ownership of the planned projects and in selecting the vendors that will power the IT Plan. As importantly, the RFQ will assist URMC to complete the overall reference architecture that will be used over the foreseeable future: URMC is not looking at the IT Plan as a series of discrete events; each

package should be integrated with both existing and new applications, and an overall detailed implementation schedule will be developed.

2. Current IT State

The current IT state analysis was done on a process basis to assess how well current IT capability supports URMC's critical processes and how it compares to best industry practices. The following exhibit illustrates the results:



The processes evaluated include the business of medicine, the delivery of medicine, the future of medicine and the infrastructure of medicine. The findings for each area are summarized below:

Business of Medicine - The Revenue Cycle is satisfactorily supported. There is no perceived need to migrate URMC's two hospitals to the same registration and billing system. However, the front-office functions (Patient Access) should be reengineered to better link the two hospitals (Enterprise Master Patient Index [EMPI] application) and improve the patient experience. The Supply Chain and Human Resources (HR) functions also seem to address URMC's needs adequately, with the exception of HR recruiting. The General Ledger system is provided to the medical center by the University and is quite old and requires replacement in a timeline to be determined by the University.

Delivery of Medicine - The main inpatient clinical information system (CIS) is an obsolete package (Siemens Invision) that provides users with inadequate functionality and inability to view a complete picture of a patient centric medical record. The Ambulatory Care process is satisfactorily supported by the Allscripts Touchworks package still being deployed. Departmental clinical applications are poorly integrated which curtails the automation benefits of each individual application.

Future of Medicine/Research - URMC seems to have adequate, though not integrated financial and clinical analytic capability. It does not have an enterprise data warehouse to support combined analysis.

Research is impacted by the lack of an enterprise clinical data warehouse. If Personalized Medicine is confirmed as a main priority (as it is in URM's Business Plan), ISD's strategy will need to be modified to focus on that domain.

Infrastructure of Medicine - URM's overall infrastructure is in a good shape (e.g., ubiquitous wireless) however we need to continue keeping up with security threat and to vastly expand our integration capability.

3. Future IT State and Planned IT Initiatives

The future IT state analysis was also done on a process basis, projecting future IT trends, both in and outside of healthcare. Given the long elapsed time needed to deploy IT capabilities, the goal was to establish a plan of action that will bring URM at par with where the top AMCs are today. Depending on the results of further financial feasibility analysis once vendor proposals are received, URM may establish an IT plan of action that will bring URM to where the top AMCs will be in 5-6 years. This is obviously a complex exercise. It is also needed as current IT benchmarking points to a seemingly growing digital divide between the top 5 and the rest of the AMCs as healthcare is entering the era of personalized medicine and outcome-based reimbursement. This **Art of the Possible** analysis relied on identifying key drivers of change, and building and assessing various IT investment options. Over 50 IT projects were documented and prioritized. The new strategic initiatives each enable one integrated view of a patient's complete electronic medical record across all episodes of care while enhancing provider workflow with the overall goal of providing an efficient solution for improving the quality and safety of patient care. New high priority strategic initiatives are as follows:

Business of Medicine - An Enterprise Master Patient Index (EMPI) system will be deployed to better link the two hospitals' existing Patient Access systems and to enable communications of patient data across the continuity of care.

Delivery of Medicine - A state-of-the-art Inpatient CIS will be deployed to replace the existing CIS. Core functions include order management, nursing documentation, pharmacy and medication administration, computerized physician order entry, and physician documentation. ***It is important to manage user expectations: There is no perfect integrated EMR solution available on the market today. URM will be able to improve the overall integration and therefore overall patient safety and quality of care, but this may require sacrifices on the part of individual departmental EMR users.*** It is also expected that this new CIS will be able to address the automation requirements of many clinical departments now using standalone systems; and support an electronic medical record (EMR) that will integrate both inpatient and ambulatory care data. A comprehensive, integrated financial and clinical analytical system will be deployed as well as, in a subsequent phase, an enterprise data warehouse (EDW). A URM Community Network (UCN) is envisioned to streamline the clinical and administrative processes between URM and referring community hospitals and physician practices. The UCN will complement the Greater Rochester RHIO of which URM will continue to be an active participant.

Future of Medicine/Research - It is expected that the EMR and the EDW (see above) will greatly benefit Research. Given that Personalized Medicine is still an emerging IT field and given the magnitude of the clinical system initiatives already planned, no active Personalized Medicine IT initiative is planned at this stage. URM will actively pursue specific joint development opportunities with industry partners.

Infrastructure of Medicine - URM will continue to grow its infrastructure (storage notably), and continuously invest in enhancing the reliability, security and efficiency of this infrastructure. A new interface engine (enterprise service Bus) and additional ISD resources will be deployed to improve integration capability.

Exhibit 1 illustrates the very preliminary applications portfolio targeted with its mix of existing and new components.

Exhibit 1: Preliminary Applications Portfolio

