

Healthcare & Life Sciences Practice

Spring 2007

Enterprise Data Warehouse



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INTRODUCTION

An internationally recognized, NCI-designated comprehensive cancer center is partnering with Edgewater Technology to complete a technology strategy, architecture, design, and implementation of an enterprise-level clinical and research data warehouse. The primary purpose of this program is to establish a foundation and an infrastructure to support personalized medicine across a network of affiliate providers and partners. As a multi-phased effort, this program is delivering an integrated reporting and analytical framework that brings together a wide variety of clinical and research data from many sources across the extended enterprise.

THE VISION

The enterprise data warehouse will support the cancer center's primary objectives of patient care, clinical and translational research and various outreach initiatives within the community and the region. Critical metrics and observations on individual patient experiences and various aspects of enterprise performance are being captured as part of normal ongoing operations. Industry-standard data streams (e.g. HL7, CDISC) and encodings (e.g. ICD, CPT, CAP) between major operational systems are being tapped and critical data is being captured, integrated and presented in a consistent, coherent manner for researchers, analysts and decision makers. As a total program, it will directly support measuring and improving patient outcomes by facilitating access to the most advanced treatment, clinical studies and screening and prevention programs, introducing technology along the entire continuum of translational research. The integrated data repository will provide a comprehensive and adaptive enterprise-level platform for advancing research and therapeutics across all the disciplines of oncology represented at the cancer center.

IMPLEMENTATION

Implementing a flexible analysis and reporting system in a healthcare and research setting represents a new frontier for the application of business intelligence best practices more commonly applied in the commercial world. The challenges of designing and developing the data warehouse has required a collaborative effort across many disciplines, including clinical services, research, information technology, and administration, not only within the core enterprise but across the extended network of providers and partners. Different user communities have demonstrated varying needs for data resources, processes and tools, so the program's requirements are expected to continue to evolve and mature as the various user communities do in kind. To support this evolution, the design and construction of the foundational data repository has been formulated and implemented in a series of distinct and successive phases.

Phase 1 - Enterprise Data Strategy

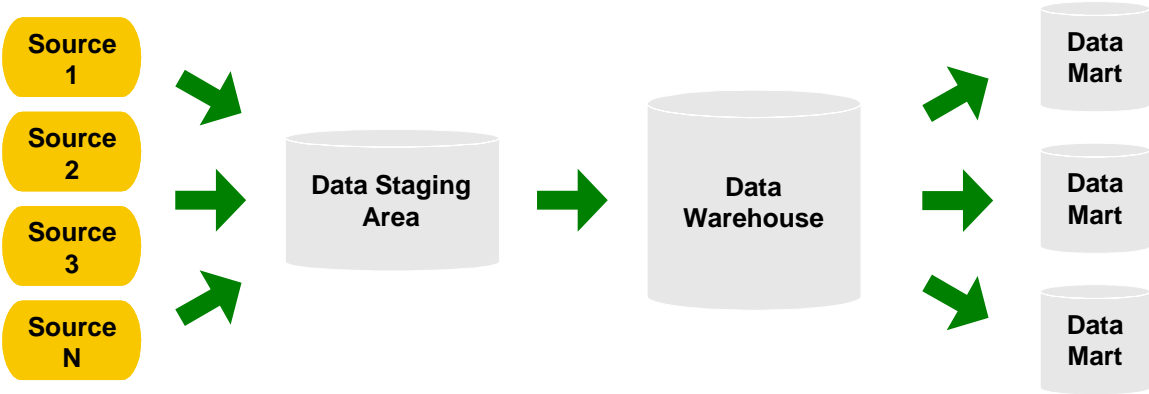
This phase identified and captured the primary functional, data and technical requirements of the diverse user groups, and formulated an overall vision of the solution needed to support the enterprise-level program objectives. Numerous interviews with representatives from various constituencies and targeted groups were conducted. A comprehensive definition of requirements, along with a technology architecture and multi-phase implementation plan were delivered.

Phase 2 - Pre-Production Implementation

The first few top-priority data sources were identified, and the core infrastructure for extraction, transformation and loading of data these sources into the various components of the integrated data repository was designed and implemented. Critical design components needed to accommodate and enable consistent semantics across data sources and subject areas were introduced. The core architecture of data staging, operational stores, core data warehouse and data marts was also designed, implemented and populated.

Phase 3 - Production Implementation

As the program moves forward, major new functions and additional data sources and subject areas are being incorporated into the core repository. Additional user groups are gaining access to the data using their preferred tools and applications. Further design work pertaining to the presentation layer and the overall user experience has begun, including operational and process considerations to ensure appropriate data governance and compliance (e.g. IRB, HIPAA). Demand for the service is growing, as users begin to see the immediate benefit, and begin to envision greater and longer-term value of the integrated data repository as a critical resource in support of research, planning and decision-making.



Sources and subject areas included or planned:

- Clinical Intake Data: Patient & Family History; Risk Assessment; Prior Treatments; Cancer Screening; Quality of Life; Informed Consent
- Electronic Medical Record: Clinical Data; Clinical Laboratory Results; Patient Demographics; Clinical Encounters; Medications
- Surgical System: Planned and Actual Procedures; Observations
- Pathology Lab: Pathology Reports; Biospecimen Analysis & Interpretation; Key Pathologic Findings
- Biospecimen Data: Tissues; Assay Results
- Cancer Registry: Reportable Cases; Treatment Outcomes; Follow-up
- Microarray: Gene Expression Data; Quality Control Data
- Clinical Trials: Protocol Details; Case Report Form Data
- Quality of Care
- Billing System: Billing Diagnosis; Billing & Reimbursement Details; Cost of Care

ABOUT EDGEWATER TECHNOLOGY

Founded in 1992, Edgewater Technology is an innovative technology management consulting firm. We provide a unique blend of premium IT services by leveraging our proven industry expertise in strategy, technology and corporate performance management. Headquartered in Wakefield, MA, we go to market by vertical industry and provide our clients with a wide range of business and technology offerings.

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