UMassMed i2b2 Status Report

Leveraging an i2b2 Implementation for Quality Improvement

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Background

- Medical school initiative driven by our CTSA planning
- Now a shared strategic priority of UMassMed and UMMHC
- Key components:
  - Shared governance
  - Availability of i2b2 software and collaborators
  - Availability of commercial support
  - Leadership support

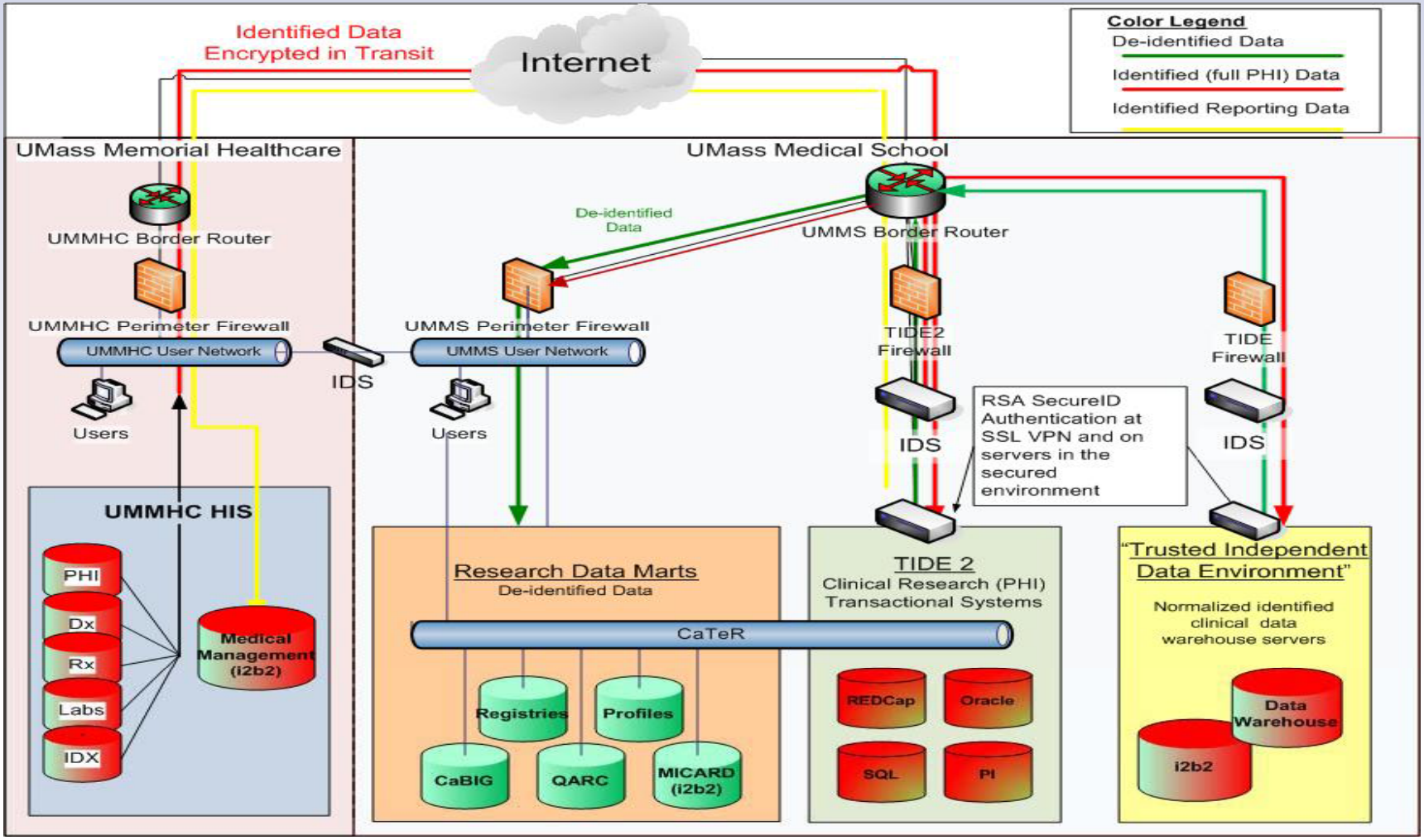
Current Status

- School developed an "honest broker" secure data center environment (TIDE) to host clinical data
- Clinical data warehouse (Data Trust) created
- Data currently updated monthly. Current data sources in the TIDE Data Trust include:
  - Meditech CDR (Demographics, Lab Data, Medications, Diagnoses, Procedures)
  - IDX (billing diagnoses, billing procedures, schedule) data
  - Claims data(Medventive, Payer System, …)

Current Status cont'd

- Mapped Meditech Lab Codes to LOINC standard; resultant dataset also leveraged by UMMHC for DB Motion Vocabulary Project
- UMMHC Medical Management Group monthly Quality Reports now created using the TIDE Data Trust as data source; developing identified i2b2 mart
- BioRepository Management System consent management and sample acquisition modules completed; Integrated with MICARD
- i2b2 version 1.3 in production
- Data in MICARD (UMassMed i2b2 implementation) includes 225,640,853 facts for 2,140,236 patients (9/09)

Architecture



BioRepository Management System

BRMS Sample Acquisition Functions:

- Candidates Screen: Provides the Consent Manager with a list of potential donors to contact. The Consent Manager will typically move candidates to a worklist when the Consent Manager has determined that they do want to contact the patient. Typically, this is done by clinic location.
- Worklist Screen: The Worklist screen provides the Consent Manager with a list of patient that they have contacted. The Consent Manager can then identify the patient's status based upon the patient's response. The patient's consent form is scanned and uploaded into the system.
- Consented Screen: Those patients that have consented will appear on the Consented screen. The Consent Manager will order tests from this screen.
- Pending Screen: Provides the Consent Manager and the Biorepository Lab Manager with a status of the tubes supplied by the Hospital Lab. The status is reported by HL7 messages.

UMass Memorial Health Care (UMMHC)

- Integrated Delivery System
- Dominant Provider in Central MA
- Clinical Partner to UMass Medical School
- Medical Center
- Community Hospitals
- Medical Group
- Managed Care Network

Managed Care Network

- ~ a thousand physicians
- Medical Group
  - Employed by clinical system
    - Medical Center based
    - Community based
- Independents
  - Private practitioners
  - Participate in commercial contracts
- Managed Care Committee
- Department of Medical Management

Medical Management

- Negotiates P4P incentives for Managed Care Network
- Develops centralized measurement and intervention tools
- Liaison with payer, government, professional, and quality improvement communities

External Environmental Influences in Massachusetts

- BCBSMA
- Harvard Pilgrim
- Tufts HP
- Fallon HP
- Massachusetts Health Quality Partners (MHQP)
- Group Insurance Commission
- Health Care Quality and Cost Council
- MassHealth
- CMS

Strategies

- P4P
- Public Reporting
- Tiering

Measures

- HEDIS (like)
  - Process
  - Intermediate Outcome
- Patient Experience
  - ACES
- Relative Resource Utilization (Efficiency)
  - Generic prescribing
  - Low back pain
  - ETGs
- Medical Home Functionality
  - Surveys

Medical Management

- Use health data to motivate, facilitate improvement
  - Performance measurement
    - Feedback
    - Multiple levels
  - Internal bonus
  - Reminder systems
- Sharing improvement knowledge

Medical Management Data Utilization

- Before Clinical Data Repository Use
- Early History of Clinical Data Repository Use
- Recent History of Clinical Data Repository Use
- Current Clinical Data Repository Use
- Future Plans for Clinical Data Repository Use

Before Clinical Data Repository Use

- Health plans and other players shared registry data with physicians on unsynchronized schedules using disparate measures, prone to errors
- Performance measurement done exclusively by external entities

Early History of Clinical Data Repository Use

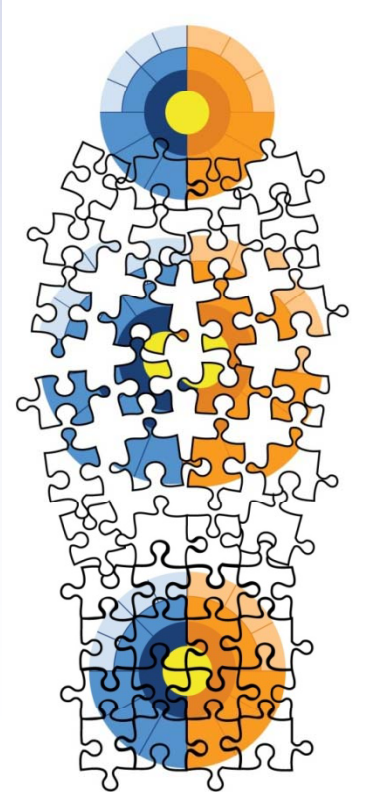
- Take paid claims data from commercial HMOs willing to share
- Compose standardized quality measures using claims data for performance feedback and reminder systems
- Win bonuses contingent upon implementing these interventions
- Reconcile health plan measurement with internal measurement
- Used in-state vendor, paid PMPM fee

Recent History of Clinical Data Repository Use

- Added laboratory test results
  - A1c, Lipid profiles
- Added billing and scheduling data from internal system
- Well Child Visit and Diabetes Examples

- Needed new vendor/partner
  - Build vs. Buy

Incremental approach promotes quick wins with big picture in view



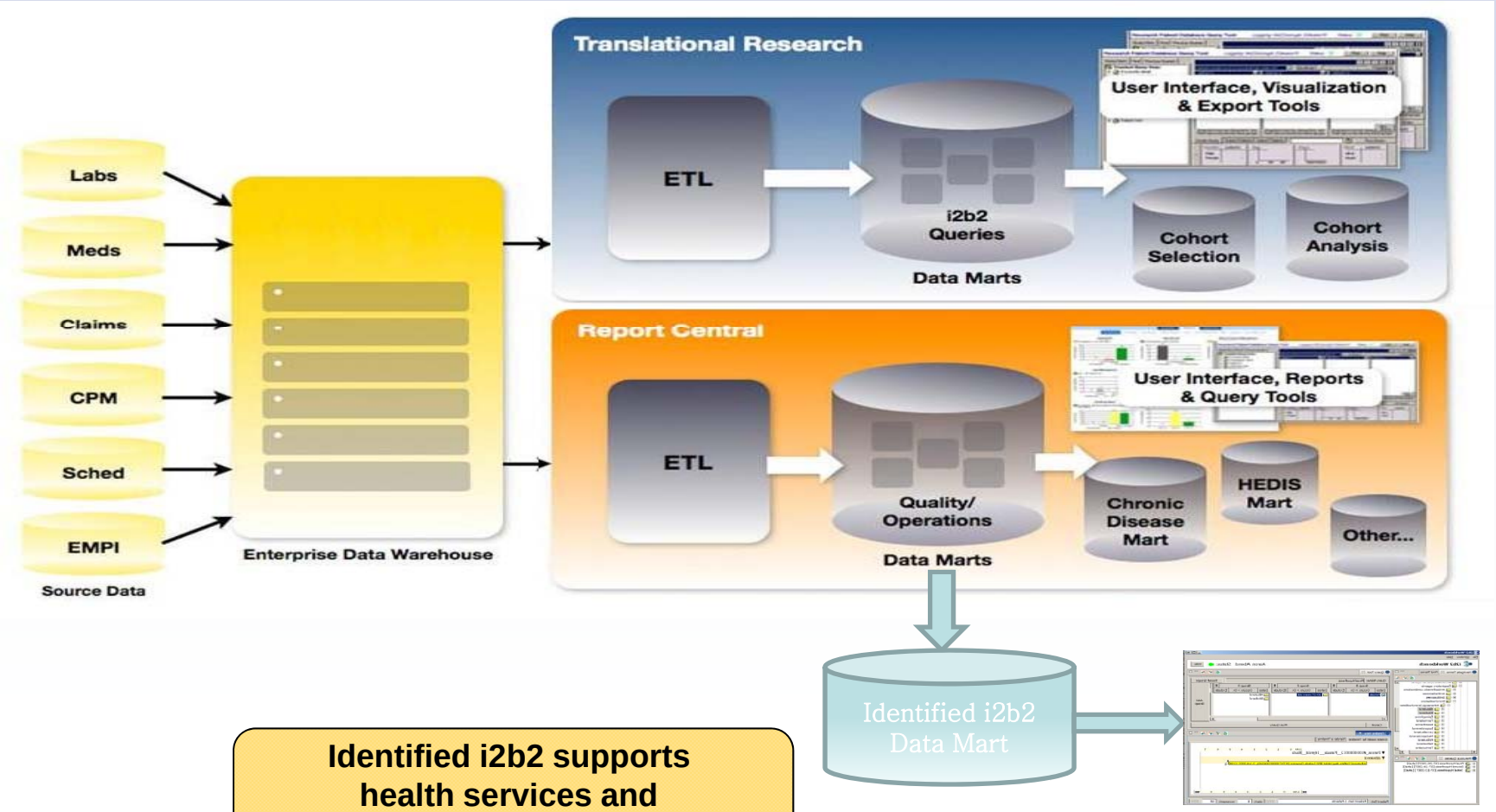
- Create vision for a long-term strategic goal
- Build applications that generate immediate value but contribute to long-term vision
- Assemble the components to achieve synergies and reduce redundancy
- Consolidate the Data Trust and incrementally improve

Courtesy of Recombinant Data Corporation

Current Clinical Data Repository Use

- Modeling future success on performance measures to enhance contracting effectiveness
- Building next cycle of interventions
- Building composite measure of quality and efficiency for primary care physician members of network
  - Performance feedback
  - Distribution of internal bonus
- Research
  - CDC
  - NSF

Data Warehouse supports Research and Operations



Identified i2b2 supports health services and comparative effectiveness research

In Development

- Medical Management
  - Developing an identified i2b2 mart
    - Populate provider and visit dimensions
    - Supports operations and comparative effectiveness research
- Efficiency/Relative Resource Utilization
  - Episode Based Analyses
    - ETGs
    - PROMETHEUS
  - Bundled Payments

In Development

- Strategy developed to integrate with EMPI
  - Initial one-time load of master patients
  - Ongoing master patient synchronization
  - Patient matching to be performed during data loading
  - Extend as EMPI for providers and clinics
- Add additional data sources
  - Allscripts
  - Additional Meditech data (from tape and ongoing)
  - DbMotion Physician Portal
  - Genetic data
  - Department systems