



CORHIO

Colorado Regional
Health Information
Organization

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CORHIO

Colorado's Strategy to Achieve Statewide Interoperability

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Western States Health-e Connection Summit
March 3, 2009

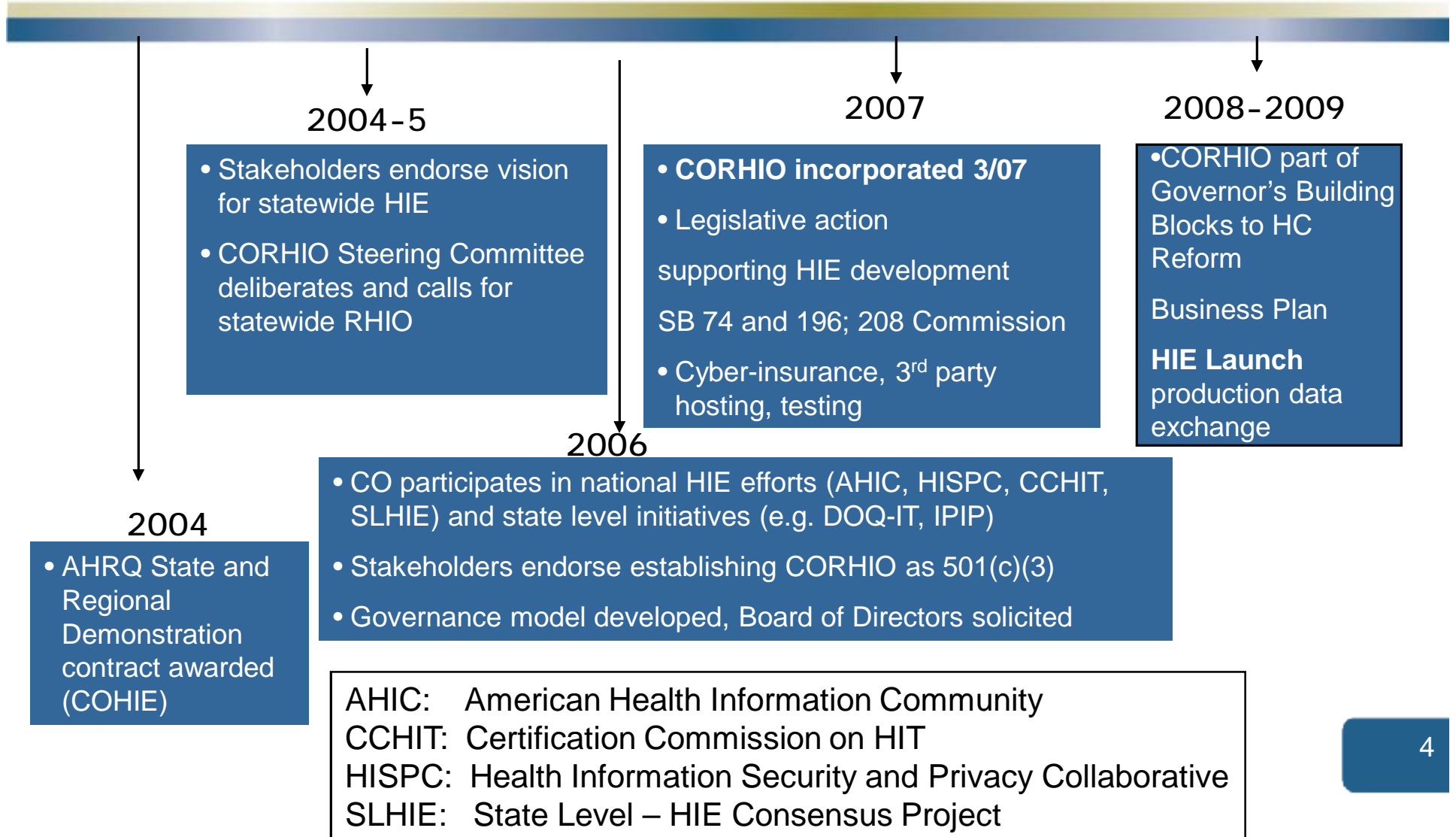
Presentation Outline

1. Background and context
 - § Colorado's early vision and evolution
2. Overview of efforts to build health information exchange
 - § Technical development
 - § Business plan
 - § Organizational capacity
3. Strategic issues, opportunities and challenges

Early Stakeholder Engagement Colorado's HIE Vision - 2004

- **Standardize**
 - Avoid investments that perpetuate limited health care information exchange
 - Establish technical standards (both content and message) based on open architecture.
- **Community of trust**
 - Focus on the needs of all Coloradans
 - Balance propriety interests
 - Support secure HIE to support care of individuals and communities
- **Shared investments**
 - Build a common, central, web-based service that costs less than individual organization technology solutions
 - Maximize return on investments (optimize shared use of technical components)
- **Non-profit service organization**
 - Reduce additional health care system costs through a cost-based model
 - Structure variable participant fees to create cross-subsidies and ensure inclusiveness

HIE Chronology



Developmental Approach (Design and Build Strategy)

- Technology
 - Identity management, federated authentication
 - AHRQ contract 2004 – 2009
- Policy
 - Data sharing agreement and interoperable policies to support 4 project partner exchange

CORHIO Architecture

CORHIO Central includes:

Hardware (computers):

- Hosted secure facility with technical support,
- Redundant servers
- Server maintenance

Telecommunications (connections):

- Redundant internet access

Software (functionality):

- Secure/audited web messaging services
- Common Vocabulary Engine
- Rules Engine (clinical decision support)
- Functions to manage all services

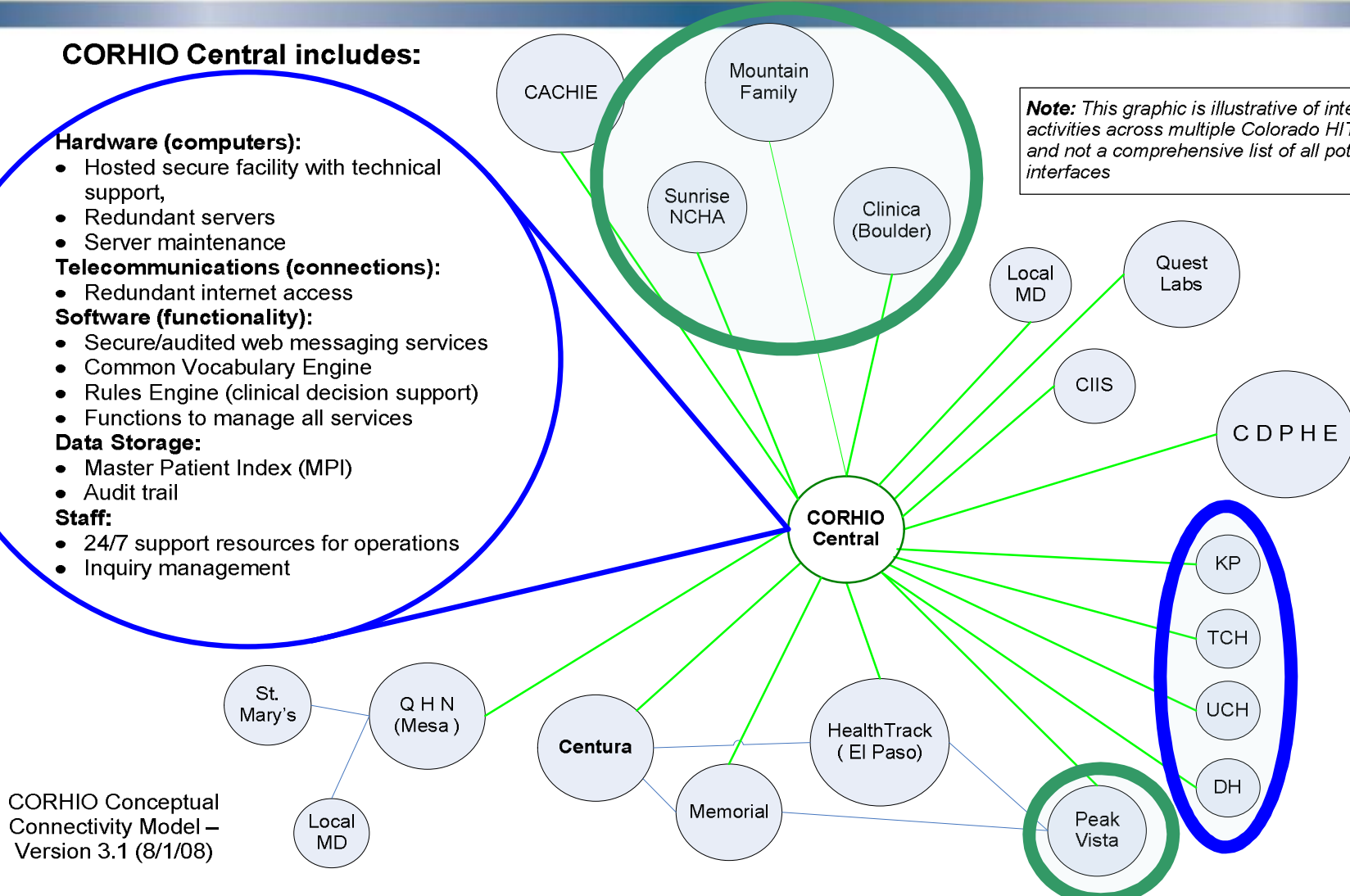
Data Storage:

- Master Patient Index (MPI)
- Audit trail

Staff:

- 24/7 support resources for operations
- Inquiry management

Note: This graphic is illustrative of interfacing activities across multiple Colorado HIT projects and not a comprehensive list of all potential interfaces



CORHIO Conceptual
Connectivity Model –
Version 3.1 (8/1/08)

CORHIO Technical Implementation

AHRQ contract terms

By	Year	Topic
Oct 05	1	COMPLETED - Patient matching prototype
Oct 06	2	COMPLETED - Connectivity with “test” data
Oct 07	3	COMPLETED: Test data exchange (demographic and laboratory) across 4 partners
Jun 08	4	COMPLETED: Production exchange with 4 partners: additional data types (medications, problem lists, EKG, radiology, encounters, diagnoses)
Oct 09	5	IN PROGRESS: Decision support (guidelines) Additional point of care participants Population-based analysis



Ongoing CORHIO Evolution

Establishing Permanent Operations

- Business strategy and planning
- Strengthening effective governance
- Realizing statewide leadership and services

Aiming for Diverse HIE Services

- **Point of care clinical data exchange (for patient and/or provider)**
 - Aggregation of patient's clinical health record
 - Information from variety of provider sources
 - visits, medication lists, allergies, laboratory, radiology, procedures, EKGs
 - Decision support to apply clinical guidelines
- **Clinical messaging (from provider to provider)**
 - Laboratory test orders/results exchange (e.g. to/from CDPHE, commercial labs)
 - e-Prescribing
 - Reportable disease/condition case reporting, electronic laboratory reporting
 - Ancillary/referral service results (e.g., radiology, consultant reports)
- **Population/public health (for provider, payer and/or public health)**
 - Analysis of quality, disparities, morbidity monitoring, pay for performance
 - Registry development and support
 - Bio-surveillance
 - Community health assessments
- **Administrative (for provider and payer)**
 - Claims submission
 - Eligibility, credentialing
 - Identity management and federated authentication



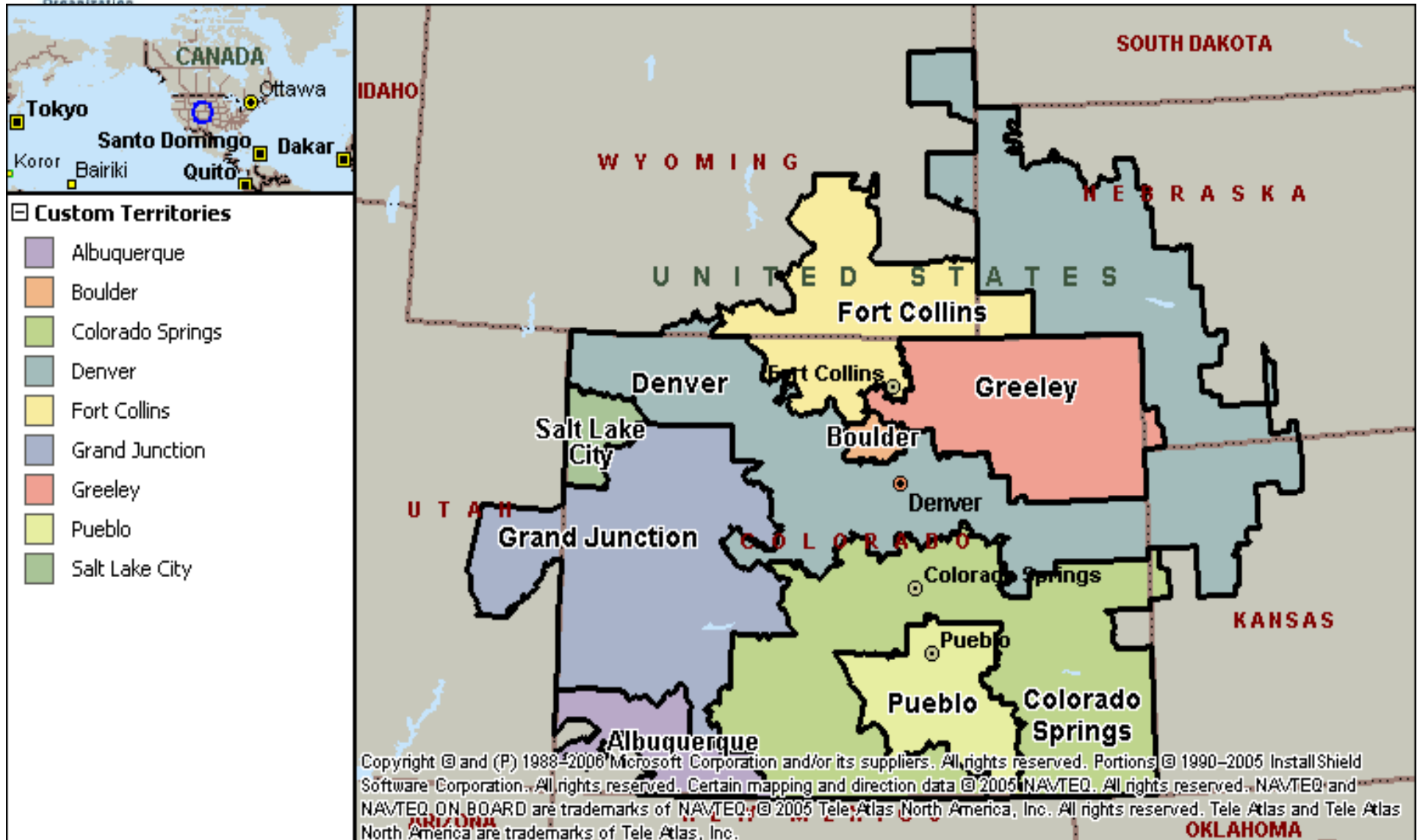
Early Planning and Development CORHIO Projects & Funding

- The Colorado Health Foundation
 - Awarded May 2008 \$1,400,000
- Governor's Building Blocks
 - Signed April 2008
 - State/Federal/Private Sector match \$1,000,000
- Point of Care Demonstration:
 - Federal (AHRQ) 5 years, ends Sep '09 \$5,000,000
- Clinical Decision Support:
 - State (CCPD) 2.5 years, ended Jun' 08 \$600,000
- Privacy and Security:
 - Federal (ONC) 1.5 years, ends March '09 \$875,000
- State Immunization Registry \$300,000

Business Plan

- Strategies for Tomorrow (8/2008 – 1/2009)
- Business Model
 - Link medical practice communities (Medical Referral Regions)
 - Sponsor state-level services to fill gaps
- Business Plan 3 Phases
 - Phase 1 – Launch POC pilot (Year 1)*
 - Phase 2 – Develop clinical messaging and expand inquiry (Years 2– 8)*
 - Launch clinical messaging and make available statewide starting with 12 pilots
 - Expand inquiry capability available state-wide
 - Phase 3 – Focus on Quality and Value (Years 4-8)*
 - Expand functionality to support physician quality initiatives, public health surveillance, consumer personal health records, and research.
- Financing
 - Continued capital investments, development grants/contracts (implementation projection \$15-20m)
 - Revenue projections 42% hospitals; 8% physicians; 18% nursing homes; and 32% health plans.

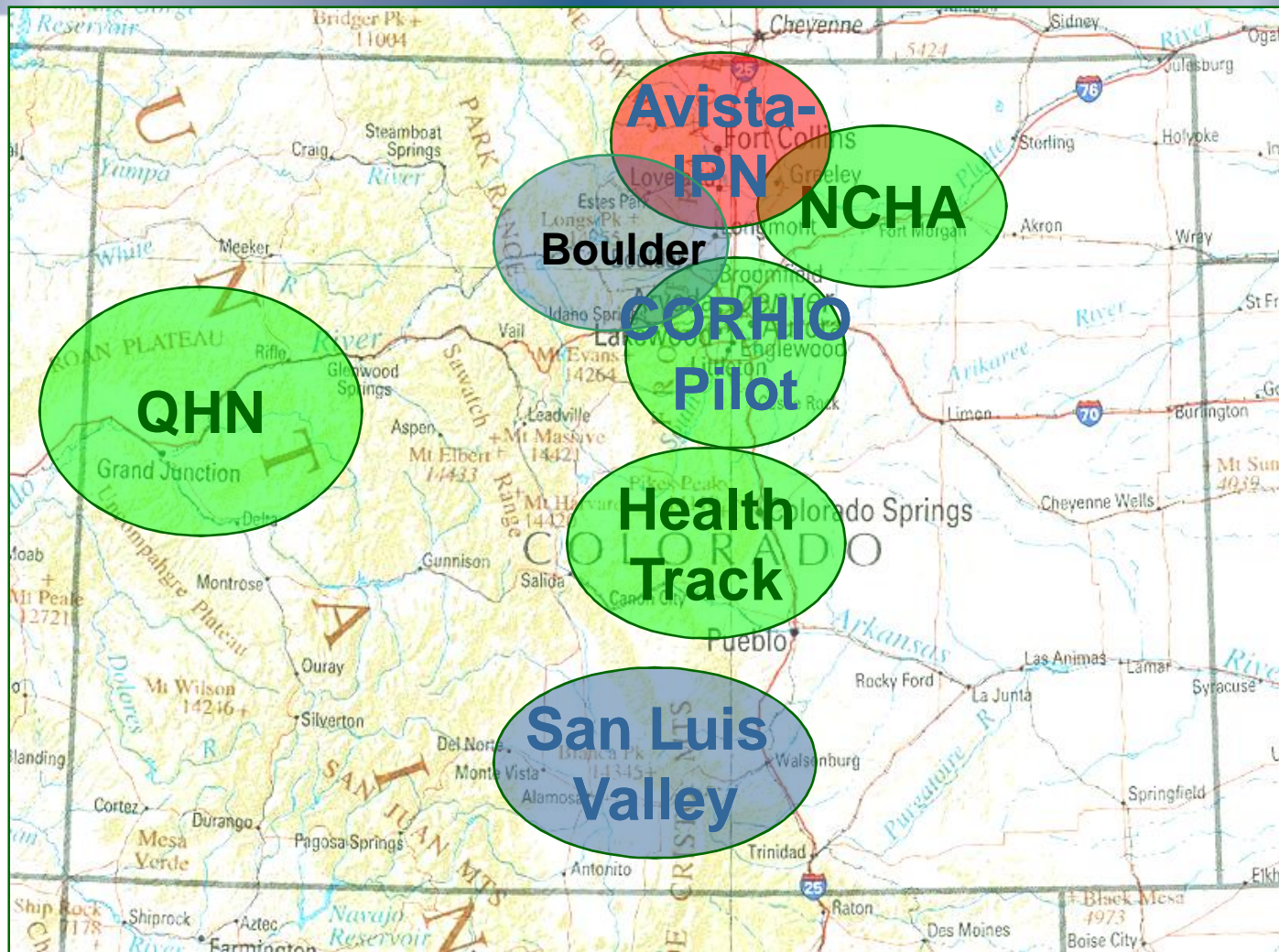
Medical Referral Regions (MRR)



Statewide HIE Development

CCGC
CMS

CACHIE



Realizing Effective Governance

- **CORHIO Mission:** Facilitate health information exchange to improve the health of all Coloradans
- **Board:** 21 members, 4 ex-officio (Medicaid agency, public health, state CIO, state QIO)
- Stakeholder Engagement
 - Committees
 - Consumer Advisory Committee
 - Policy
 - Technology

Strategic Issues Challenges and Opportunities

- Key partnerships
 - Colorado Health Foundation
 - Governor's health policy agenda, agency relationships (incoming board chair head of Co Dept of Health Care Policy and Financing)
- Responding to ARRA
 - Coordinated planning, PMO
- Establishing permanent business operations
 - Executive director Phyllis Albritton



CORHIO Board

Incorporated March/07

Donna Lynne, Kaiser Permanente, Chair
Forrest M Cason, PhD, Treasurer, Mental Health Corporation of Denver
[Arja Adair, Jr., Colorado Foundation for Medical Care \(ex-officio \[EO\]\)](#)
Les Berkowitz, Technology & Corporate Law
[B. Ned Calonge, MD, MPH, CO Dept. of Public Health and Environment \(EO\)](#)
George DelGrosso, Colorado Behavioral Health Council
Dede DePercin, Colorado Consumer Health Initiative
Lynn Dierker, RN, Foundation of Research & Education of AHIMA
Pam Hanes, PhD, Colorado Health Institute
Marjie Harbrecht, MD, Colorado Clinical Guidelines Collaborative
[Joan Henneberry, Colorado Dept of Health Care Policy & Financing \(EO\)](#)
James Hertzell, Alumni Consulting Group International, Inc.
Pete Leibig, CEO, Clinica Campesina
Gerry Lewis-Jenkins, COPIC Companies
[Michael Locatis, State of Colorado, Chief Information Officer \(EO\)](#)
Lynn Parry, MD, Colorado Medical Society
Jim Schmerling, The Children's Hospital
Beth Soberg, UnitedHealthcare
Steven J Summer, Colorado Health and Hospital Association
Dick Thompson, Quality Health Network
Mark Wallace, MD, Weld County Health Dept. & Northern Colorado Health Alliance



Contact Information

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Point of Care: *Build an MPI*

Identity Management

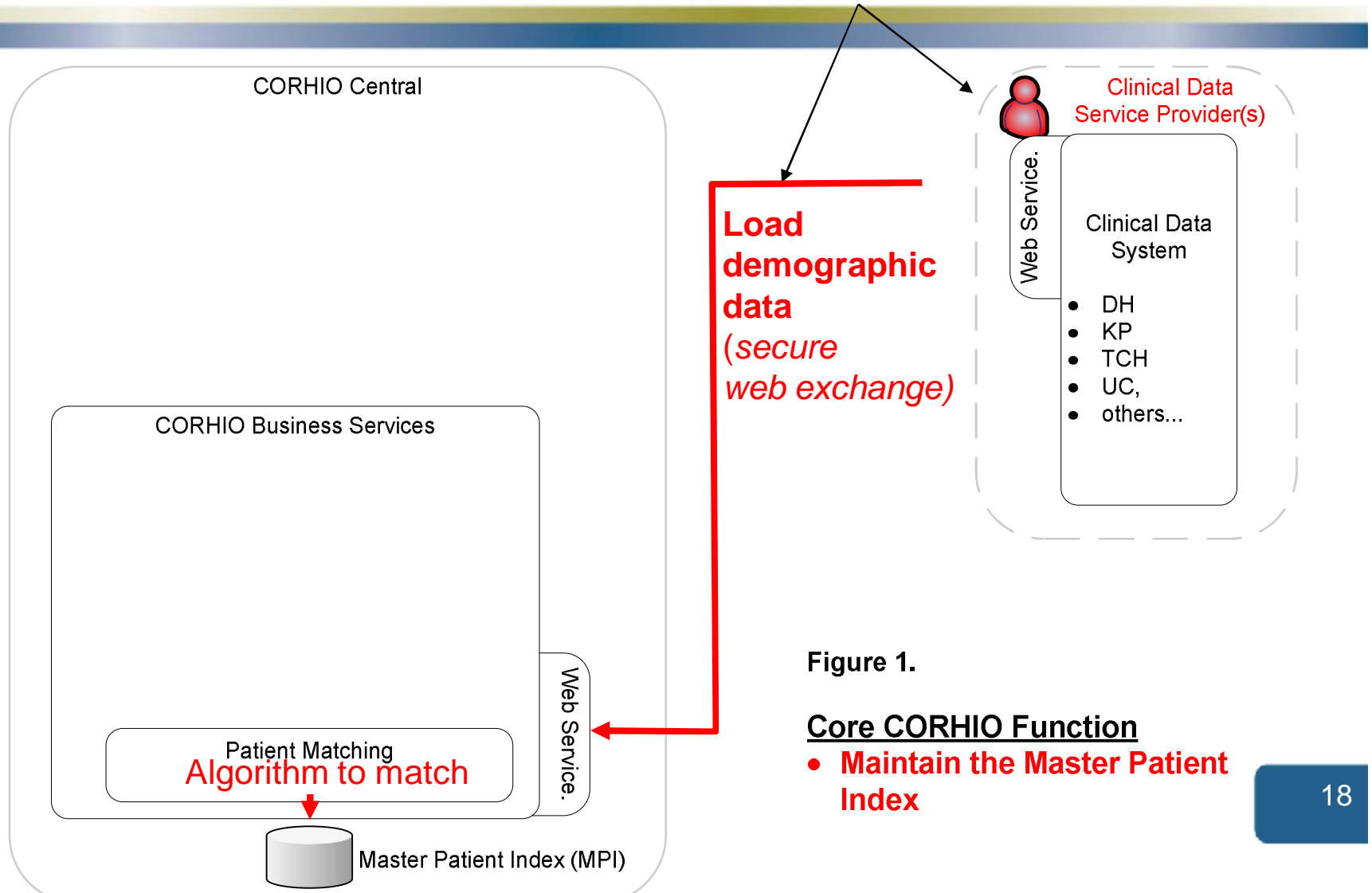


Figure 1.

Core CORHIO Function

- **Maintain the Master Patient Index**

Point of Care: *Find a Patient*

User Authentication

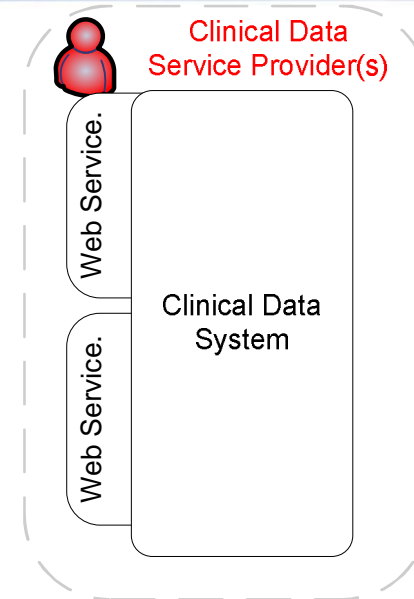
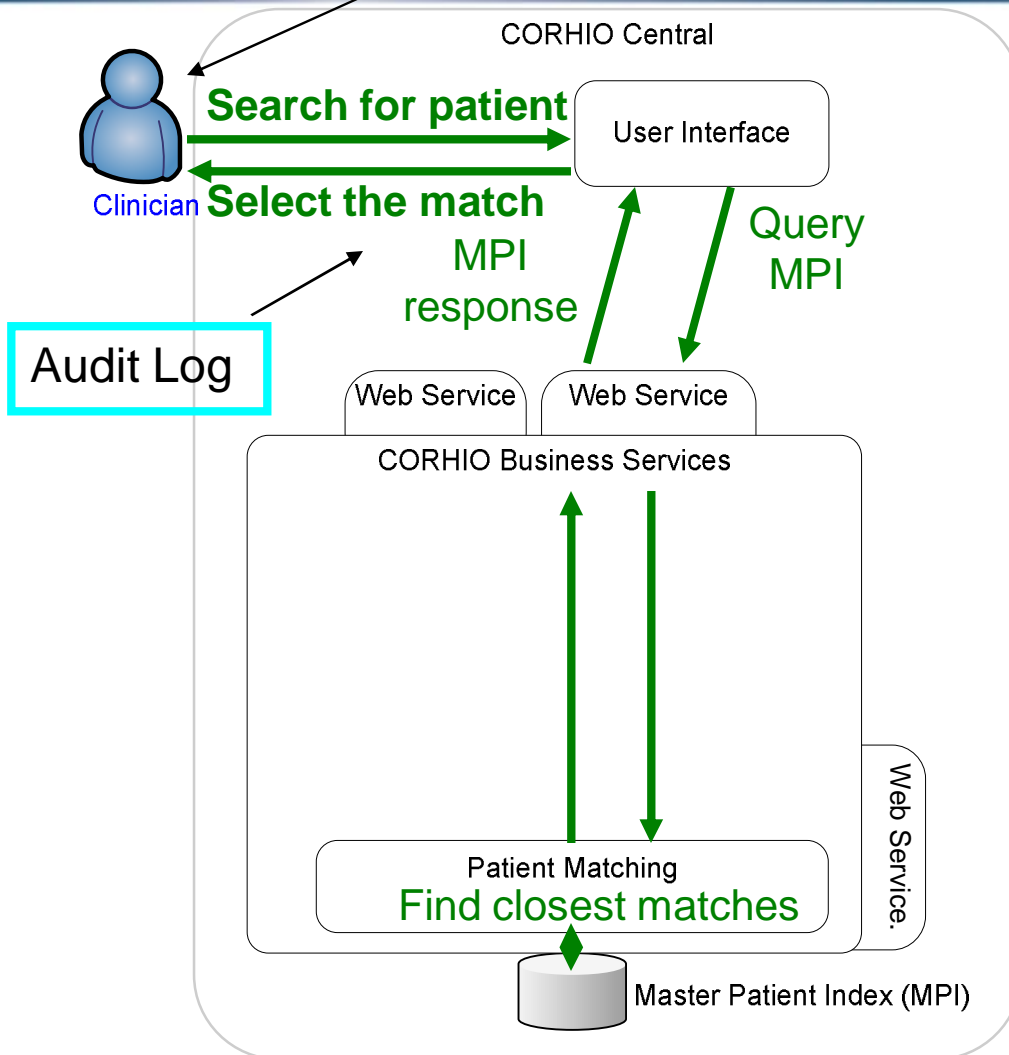


Figure 2.

Core CORHIO Functions

- **Maintain the Master Patient Index (MPI)**
- **Find patient**

Point of Care: *Display Clinical Data*

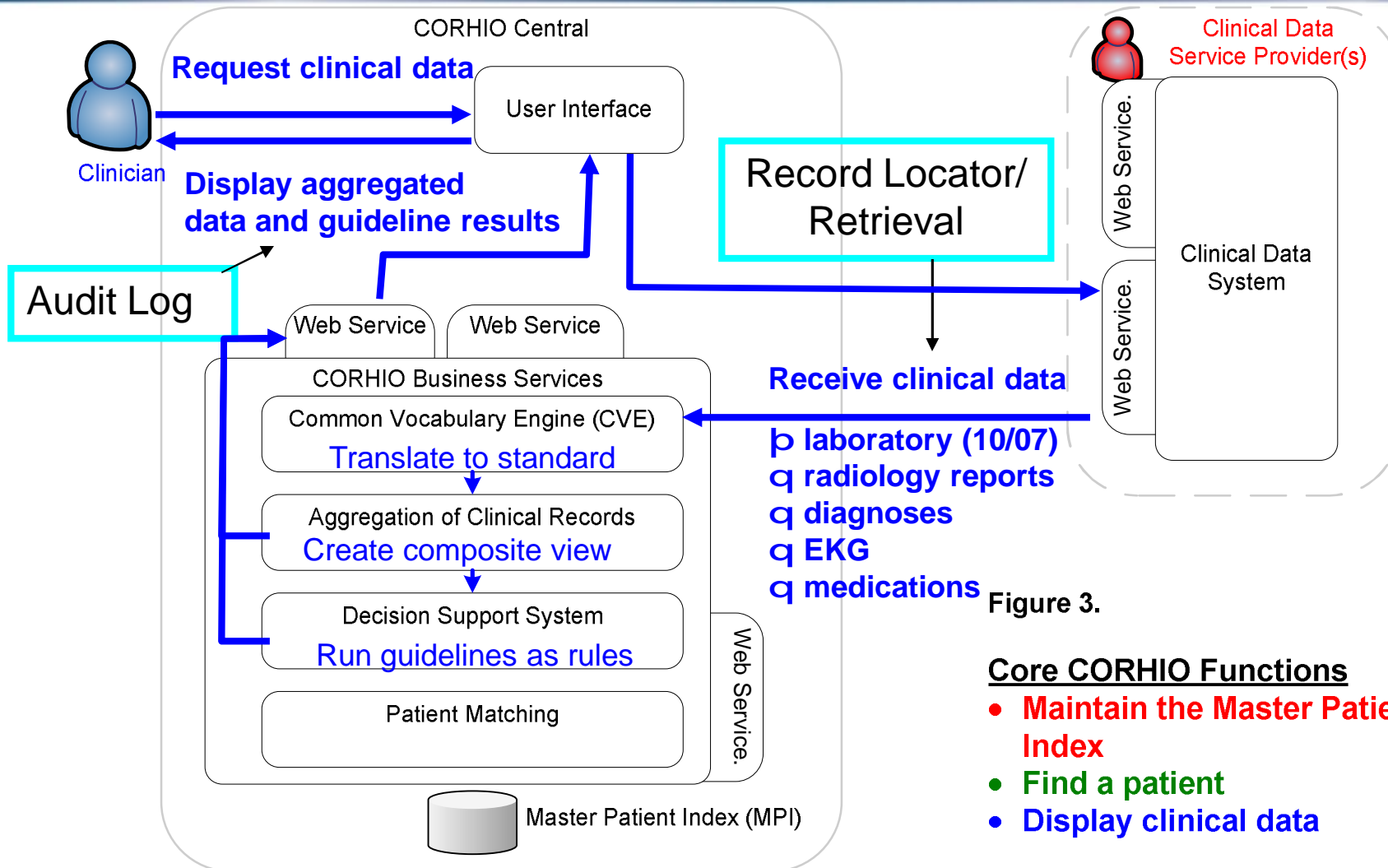


Figure 3.

Core CORHIO Functions

- **Maintain the Master Patient Index**
- **Find a patient**
- **Display clinical data**

Single Patient Report

(Colorado Clinical Guidelines Collaborative)

10/16/07: Aggregated data from 3 facilities

Mr. Davidson has diabetes and should have:

- HgA1C performed every 3 months: UTD*
- Last HgA1C: 6.5% good control
- Foot exam every year: not UTD
- LDL performed every year: not UTD
- Last LDL (4/3/06) goal <100mg/d: 100 good control

**Up to date (UTD)*

Population Health: *Build a Registry*

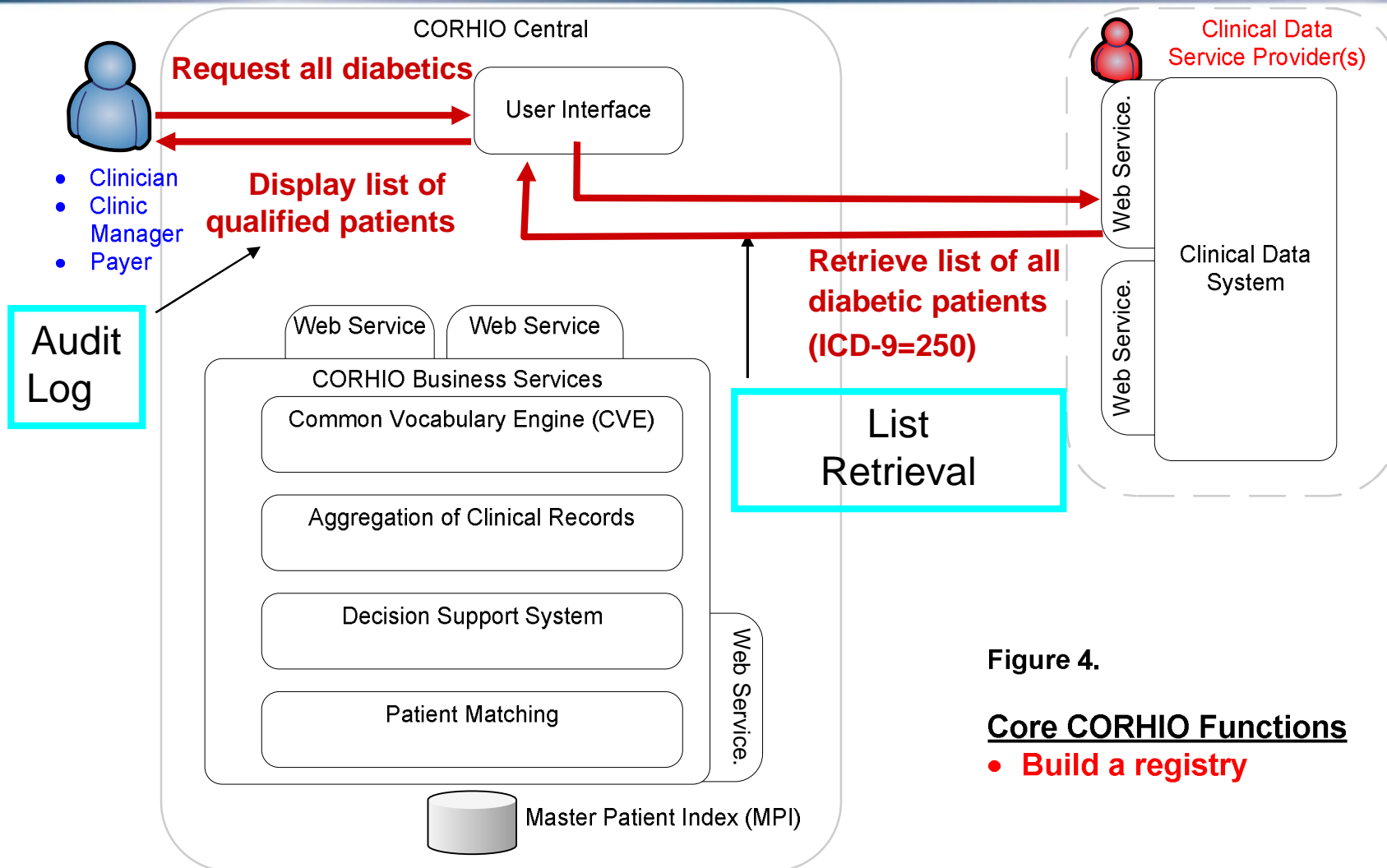


Figure 4.

Core CORHIO Functions

- **Build a registry**

Population Health: *Find Clinical Data*

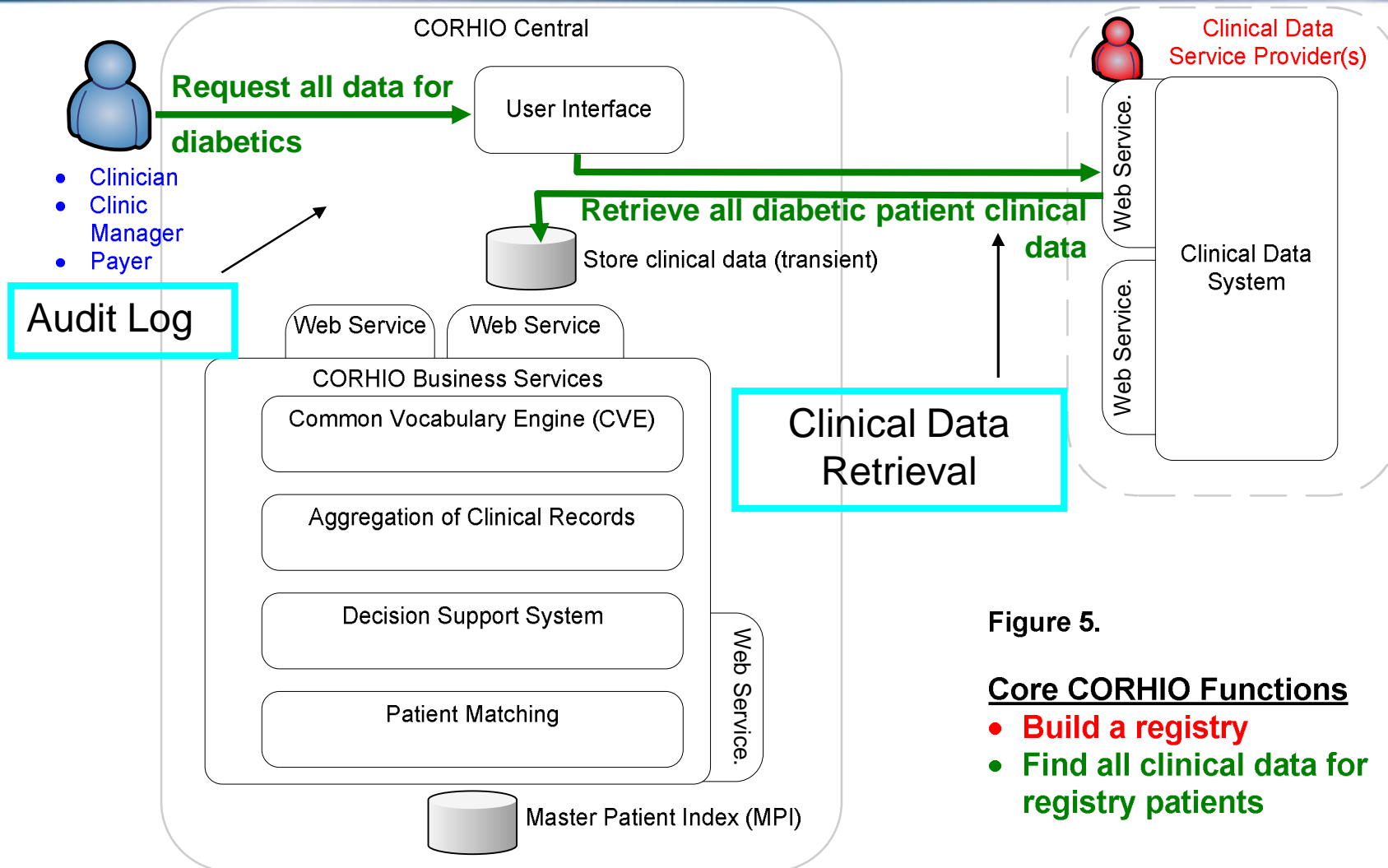


Figure 5.

Core CORHIO Functions

- **Build a registry**
- **Find all clinical data for registry patients**

Population Health: *Analyze/Report*

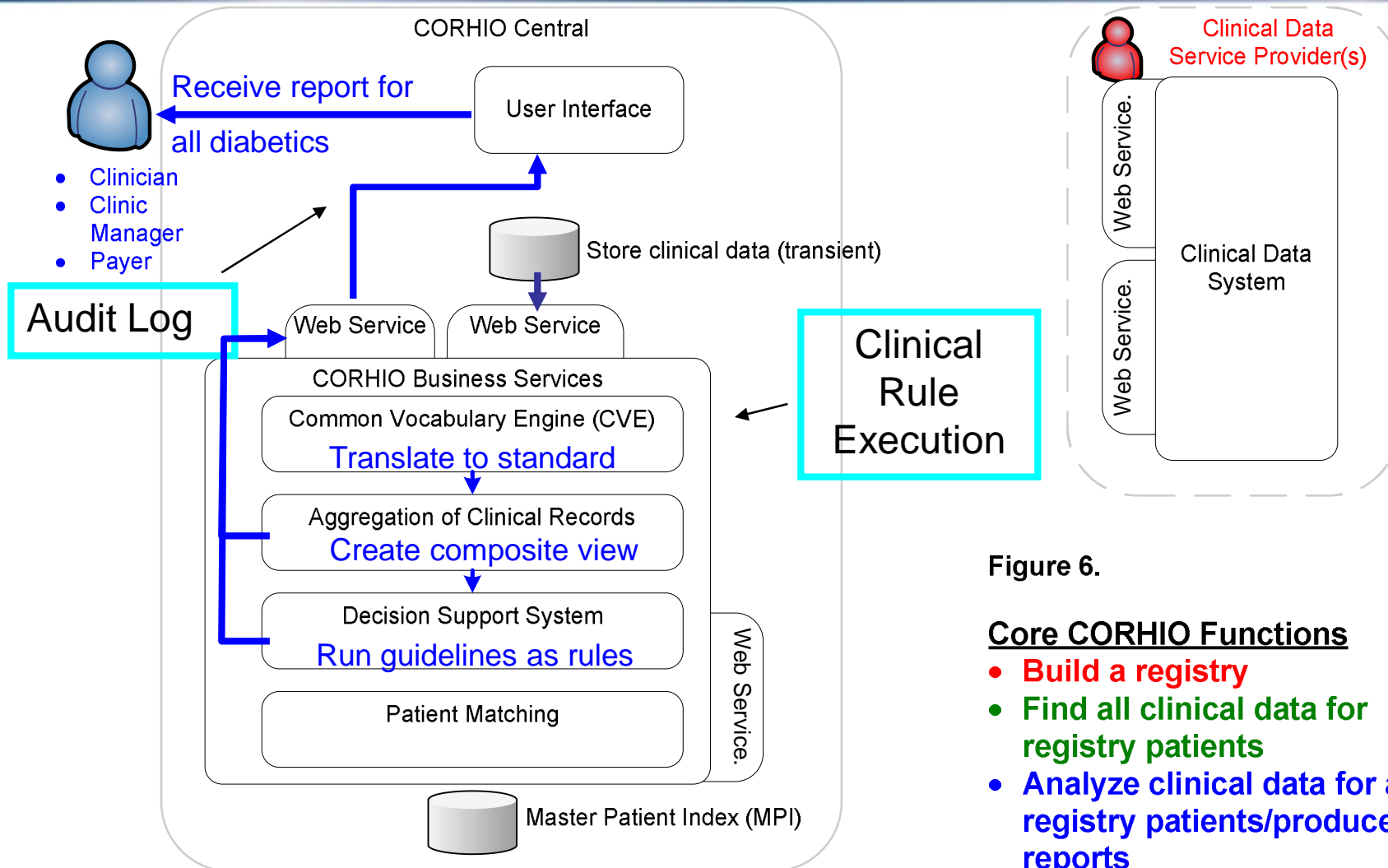


Figure 6.

Core CORHIO Functions

- **Build a registry**
- **Find all clinical data for registry patients**
- **Analyze clinical data for all registry patients/produce reports**

Multiple Patient Report - *SAMPLE* (Colorado Clinical Guidelines Collaborative)

10/16/07: Aggregated data for all patients

Dr. Davidson has 200 patients with diabetes

- HgA1C performed every 3 months: 100/200 **50%**
- Average last HgA1C (goal <7%): **8.5%**
- Foot exam every year – 50/200 **25%**
- LDL performed every year: 175/200 **88%**
- Last LDL (Goal:<100mg/dl): **75%**