



Revitalizing Public Health Data Systems in the New World of Health Data Exchange

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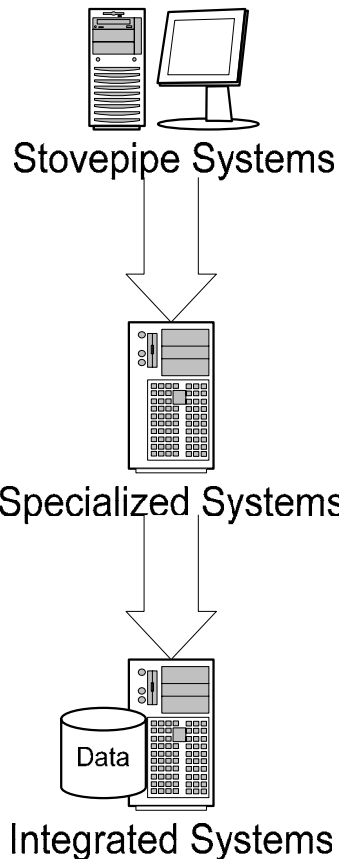
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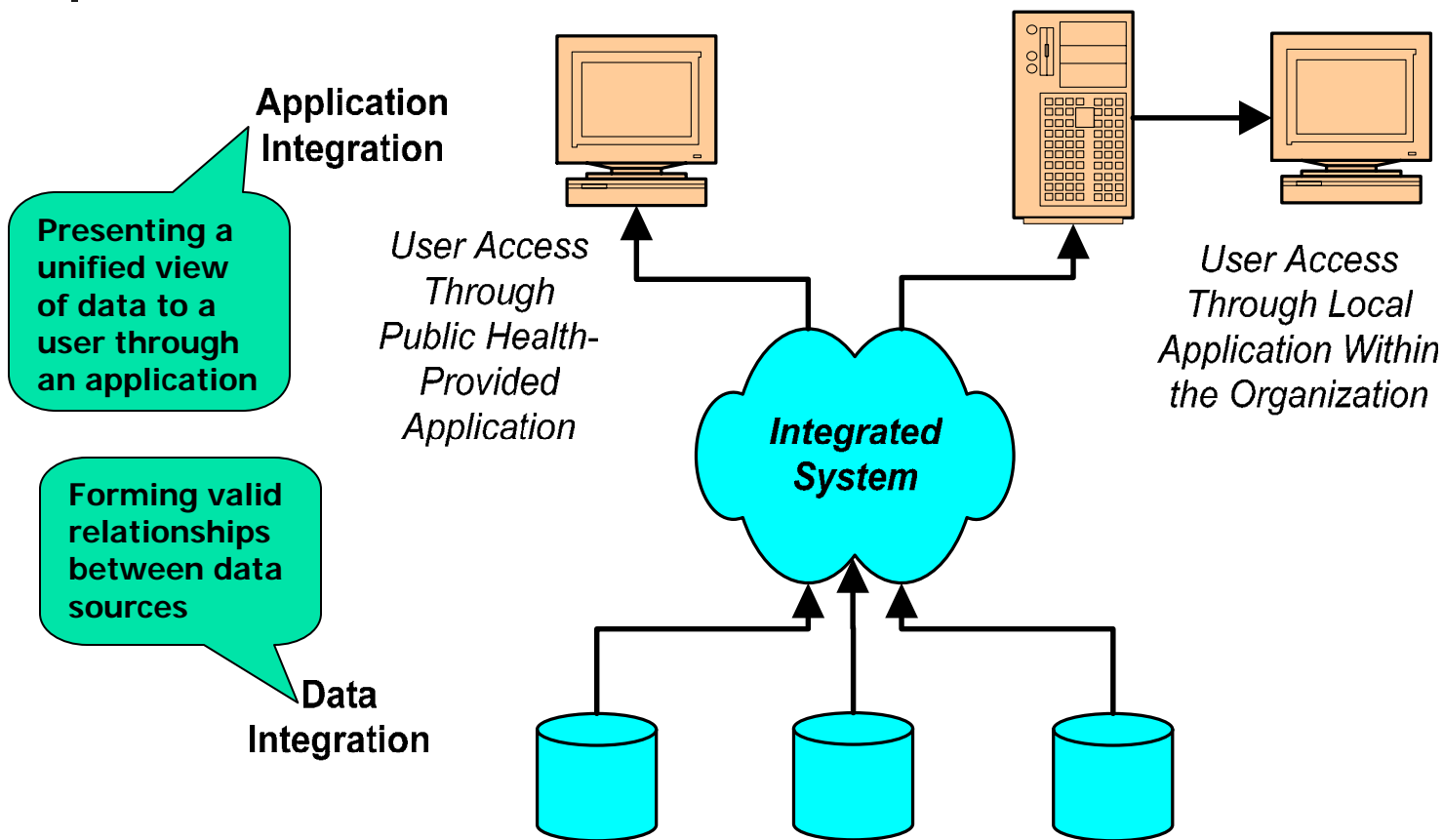
- Evolution of Public Health Systems and Provider Systems
- HIENs and RHIOs
- Imperatives for Public Health
- Likely Challenges and Potential Solutions

Public Health Systems

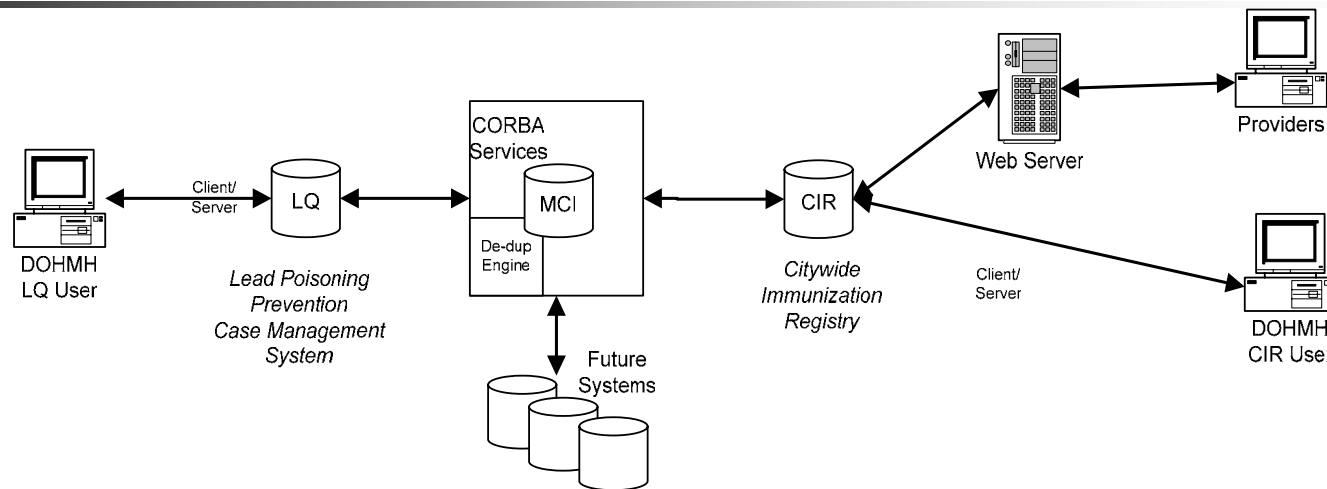


- Began as program-specific, stovepipe systems, often PC- or mainframe-based
- Evolved into more robust specialized systems
- In some cases became integrated systems, either patient-centric or case-centric

Two Types of Integration

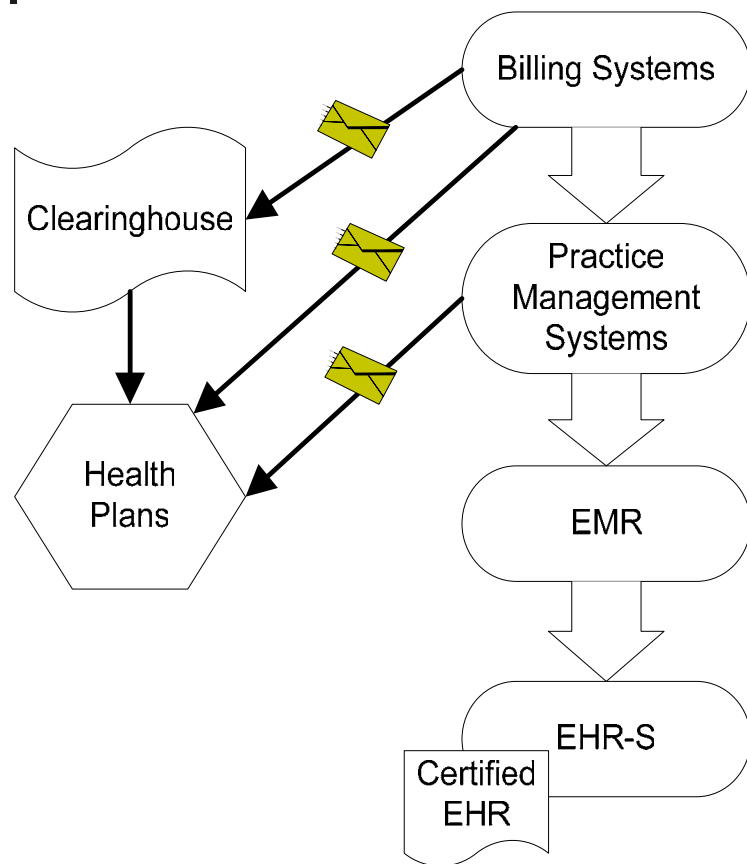


Case Study: NYC MCI



- LeadQuest and CIR developed independently
- Integrated by sharing a Master Patient Index
- Other systems may join in the future
- Both Data and Application Integration

Provider Systems



- Provider systems evolved from focus on administration to clinical support
- Future systems will have to be CCHIT certified with compliant EHRs
- Many different solutions available



EMR/EHR-S Penetration*

- 17% to 25% of physicians in an ambulatory setting use EHRs (probably closer to 24%)
- 13% to 16% of solo practitioners use EHRs (probably closer to 16%)
- 4% to 24% of hospitals use CPOE (probably closer to 5%)

* *Health Information Technology in the US: The Information Base for Progress*, Robert Wood Johnson Foundation, Oct. 2006



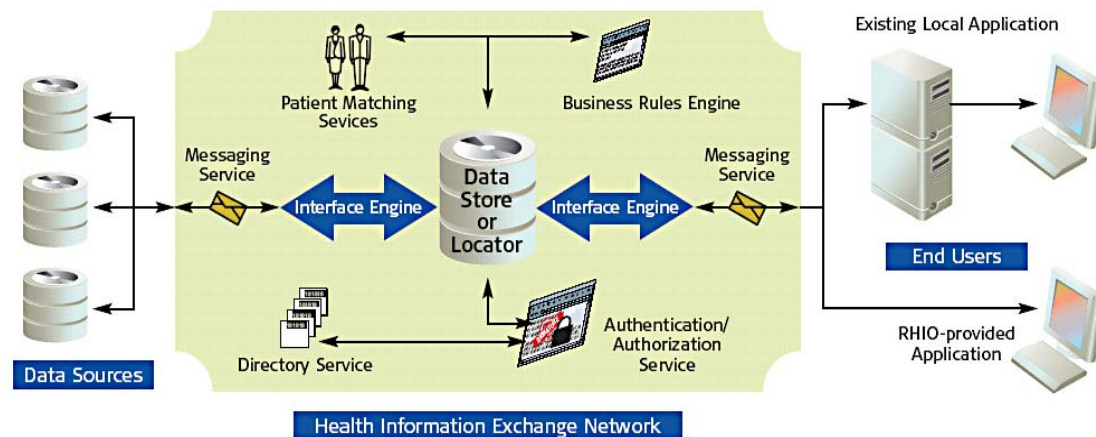
A new phenomenon is arising:

The Health Information Exchange
Network (HIEN)

operated by

The Regional Health Information
Organization (RHIO)

What is a Health Information Exchange Network (HIEN)?



- HIENs come in different sizes and shapes, but usually share these core components
- Shift is from system **integration** to system **interoperability**
- Together they will form Nationwide Health Information Network (NHIN)



What is a Regional Health Information Organization (RHIO)?

- A collaborative organization focused on health data exchange
- Participants: Physicians, labs, hospitals, pharmacies, patients, public health, payers
- Primarily driven by the private sector, but often has public health involvement (and may be driven by the public sector)
- Usually focused on clinical data exchange, but may focus on health services data in addition or instead
- Can span a metropolitan area, region, or a state



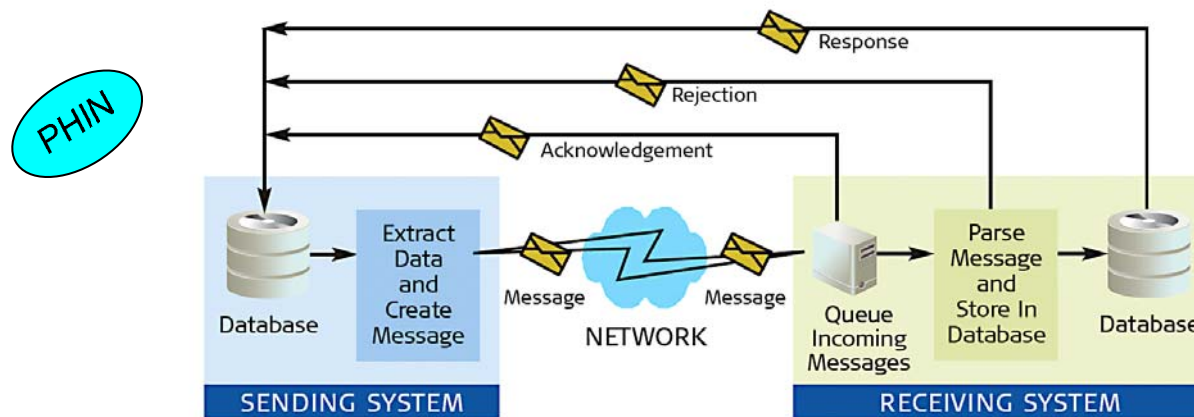
From Integration to Interoperability

“In healthcare, interoperability is the ability of different information technology systems and software applications to communicate, to exchange data accurately, effectively, and consistently, and to use the information that has been exchanged.”

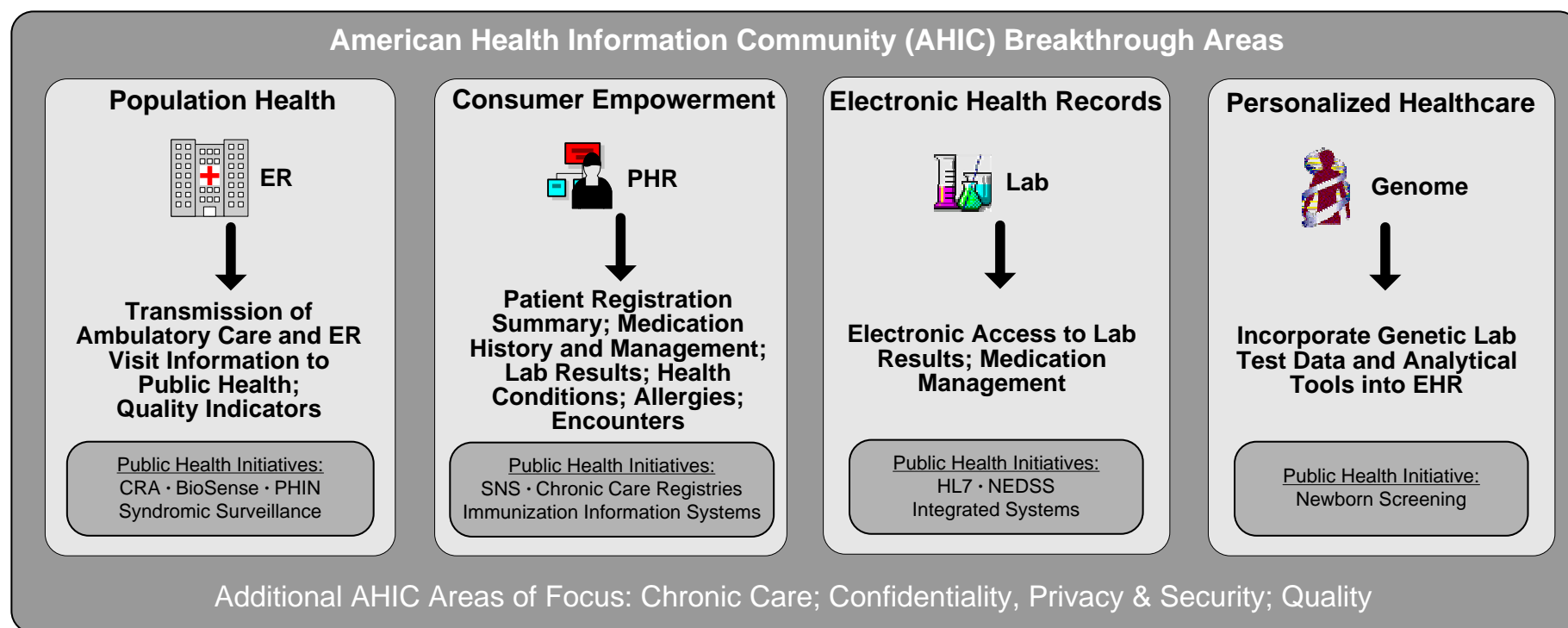
National Alliance for Health Information Technology (NAHIT), 2005
http://www.nahit.org/cms/index.php?option=com_content&task=view&id=220&Itemid=115

System-to-system Messaging

- Public health systems have been engaged in data exchange for years (mostly *to* them)
- Though flat file formats still dominate, HL7 messaging is beginning to gain steam



Public Health Alignment with the National Agenda



These national “breakthrough areas” align well with core public health information initiatives.



Benefits to Public Health of RHIO Participation

- Many of public health's data trading partners will choose to interoperate with an HIEN and reduce (or eliminate!) superfluous connections
- Public health can gain access to data and trading partners who previously might not have participated in its initiatives
- Better to be an insider than an outsider: Public health risks being left out as the medical community moves ahead

What Can Public Health Contribute to a RHIO?



- “Quick start” by leveraging existing activities, including interfaces to labs
- Existing data, including consolidated data and population-based data
- Expertise: de-duplication, database management, web applications, data exchange including HL7
- Existing relationships with many relevant stakeholders: providers, hospitals, payers, professional associations
- Governance: experience in negotiating and implementing data sharing agreements



Risks to Public Health

- Public health applications targeted at these users may have slower uptake as organizations encourage (or require) users to stay with institutionally-supported applications
- Pressure will build for providers to interoperate solely through HIENs
- Public health systems run the risk of becoming focused as data repositories as users over time lose access to their distinctive features
- While many specialized features are part of the approved HL7 EHR specification they are not *required* for CCHIT certification



Three Imperatives for Public Health:

1. Embrace emerging national standards for system interoperability
2. Enable “special functions” of public health systems to be accessed directly by user systems
3. Organize an informatics focus in the agency to engage in and support local, regional and national initiatives.



Emerging National Standards

- **ONC has contracted with**
 - ANSI to develop recommendations for health data interoperability standards (HITSP)
 - RTI to work with 34 states and investigate differences in security and privacy laws across the country (HISPC)
 - 4 vendor consortia to develop NHIN prototypes
- **CCHIT has begun certifying EMRs as EHR compliant.**
- **HL7 continues to vigorously develop v 3.0**

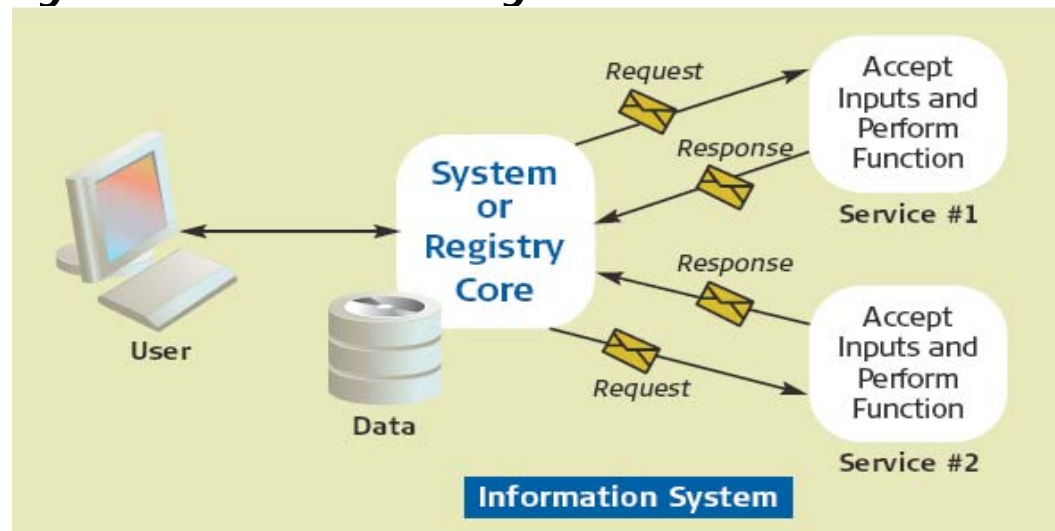


Enable Special Features: An Example

- Immunization Information Systems (IIS) serve a jurisdiction by providing a common repository for immunization information
- IIS provides specialized features not typically found in an EMR, like:
 - Recommendations of next immunizations due
 - Reminder and recall to ensure that patients return
 - Vaccine ordering and order processing
 - Practice-level assessment of up-to-date status

Enable Special Features: One Suggested Solution

Service-oriented Architecture (SOA): a building block approach to systems design that allows discreet functions to be accessed by any authorized system



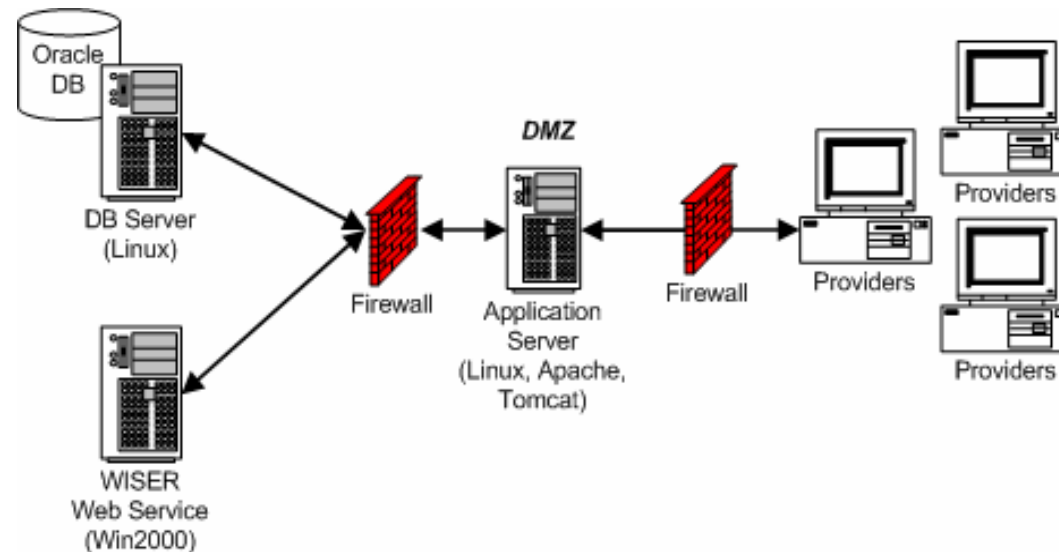


Enabling Special Features: A Case Study

- KIDSNET, the integrated child health system in RI, did not have a robust immunization predictor algorithm
- Decided to use a version of the algorithm developed in CA (with permission)
- Deployed algorithm as a web service rather than absorbed into KIDSNET
- Other applications could now easily make use of the service

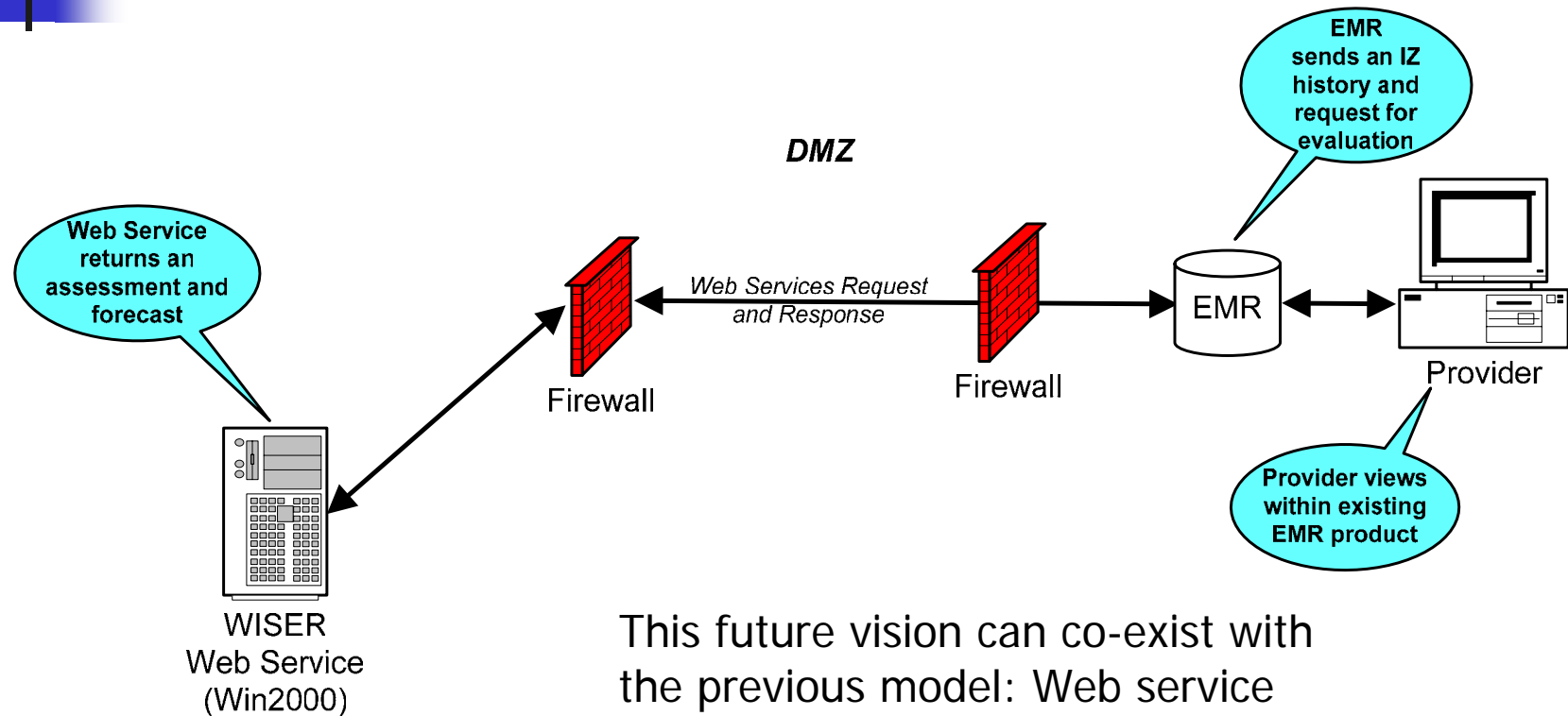
Enabling Special Features: A Case Study *(continued)*

KIDSNET
Architecture



- Web service is called in real time from KIDSNET application when needed.
- Core KIDSNET system (Linux/Oracle) interoperates with Microsoft-based Web Immunization Service Evaluation and Recommendation (WISER) without issue.

Enabling Special Features: A Possible Future



This future vision can co-exist with the previous model: Web service can interact with IIS *and* provider EMRs



Enabling Special Features: A Possible Future

- **HL7 Clinical Decision Support Technical Committee Decision Support Service Project** has selected the immunization forecast as the first service description to define as a DSS profile
- Join effort of HL7 and OMG



Informatics Focus

- Strategic, not tactical
- Reporting to a senior agency official
- Links to academic informatics programs
- Links to appropriate associations (*e.g.*, AMIA , HL7, HIMSS)
- Example: CDC National Center for Public Health Informatics (NCPHI), MN Center for Health Informatics



Selected Sources

- CCHIT: <http://www.cchit.org/>
- Connecting for Health (Markle Foundation):
<http://www.connectingforhealth.org/>
- eHI: <http://www.ehealthinitiative.org/>
- HITSP: <http://www.hitsp.org/>
- HLN: <http://www.hln.com/resources/>
- NCPHI: <http://www.cdc.gov/ncphi/>
- ONC: <http://www.hhs.gov/healthit/>
- PDHSC: <http://www.phdsc.org/>
- PHII: <http://www.phii.org/>



Selected Technical Sources

- HL7: <http://www.hl7.org/>
- PHIN: <http://www.cdc.gov/phin/>
- SOA: <http://www.webservices.org/>
- WWW: <http://www.w3.org/2002/ws/>