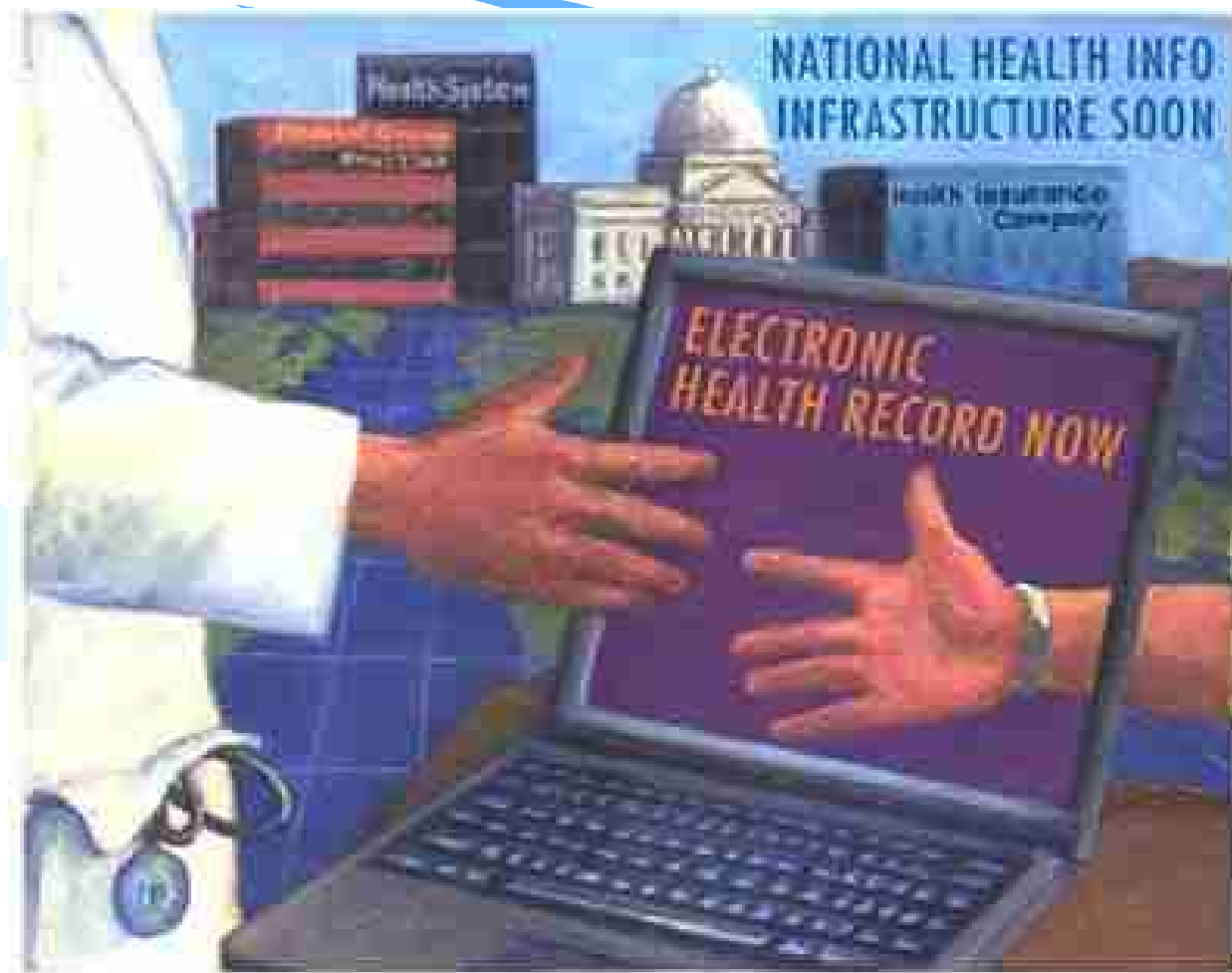


# THE HEALTH INFORMATION TECHNOLOGY SUMMIT



eHEALTH INITIATIVE

Real Solutions, Better Health

1.05

# Community-Based Collaborations: HIT Community-Based Collaborations 101

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October 22

10:15 AM

60 minutes

Frisse and me

# A Short History of the Indiana Health Information Exchange

**J. Marc Overhage, MD, PhD, FACP, FACMI**

CEO and President, Indiana Health Information Exchange

Associate Professor of Medicine, Indiana University School of Medicine

Senior Investigator, Regenstrief Institute

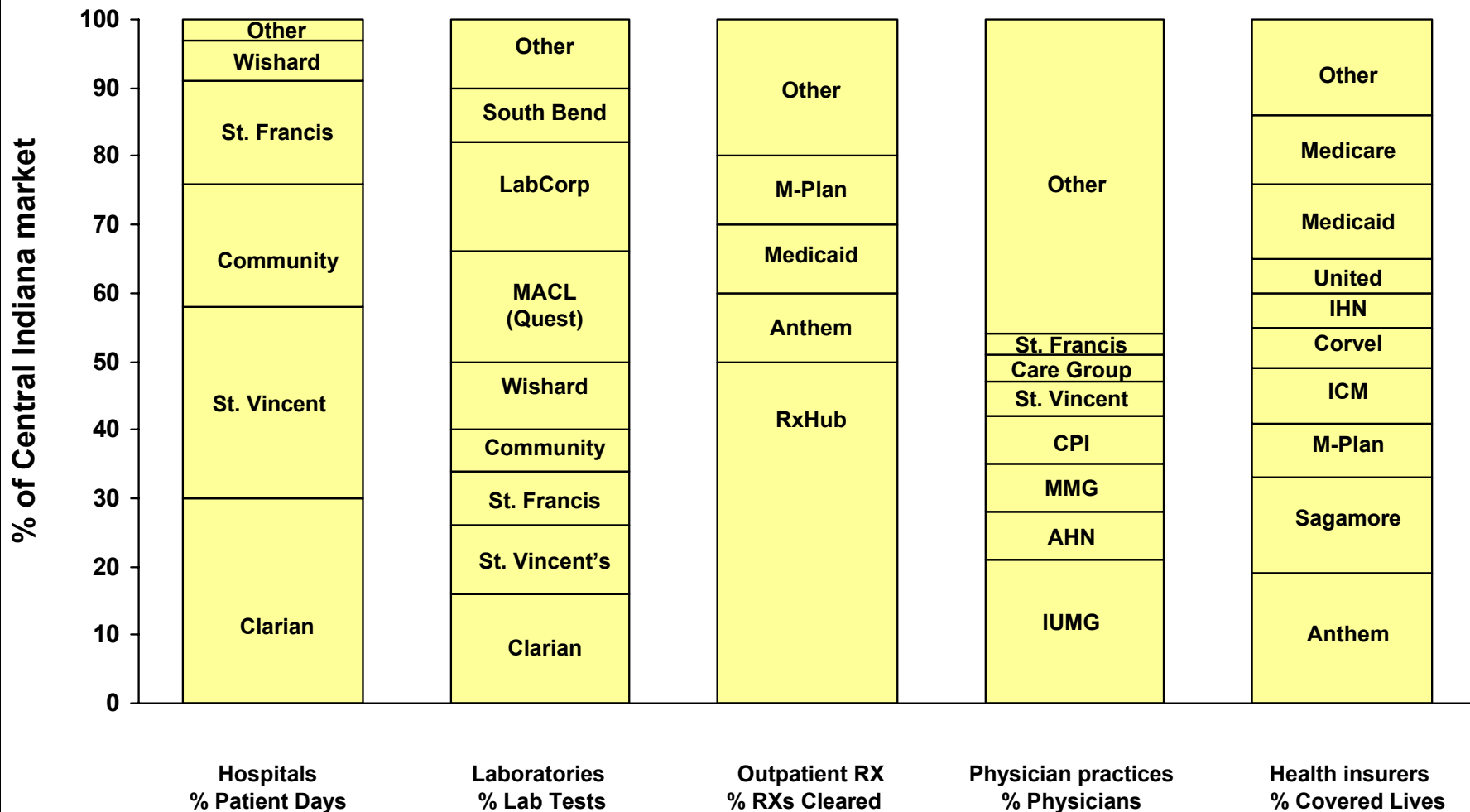
# Indianapolis, Indiana

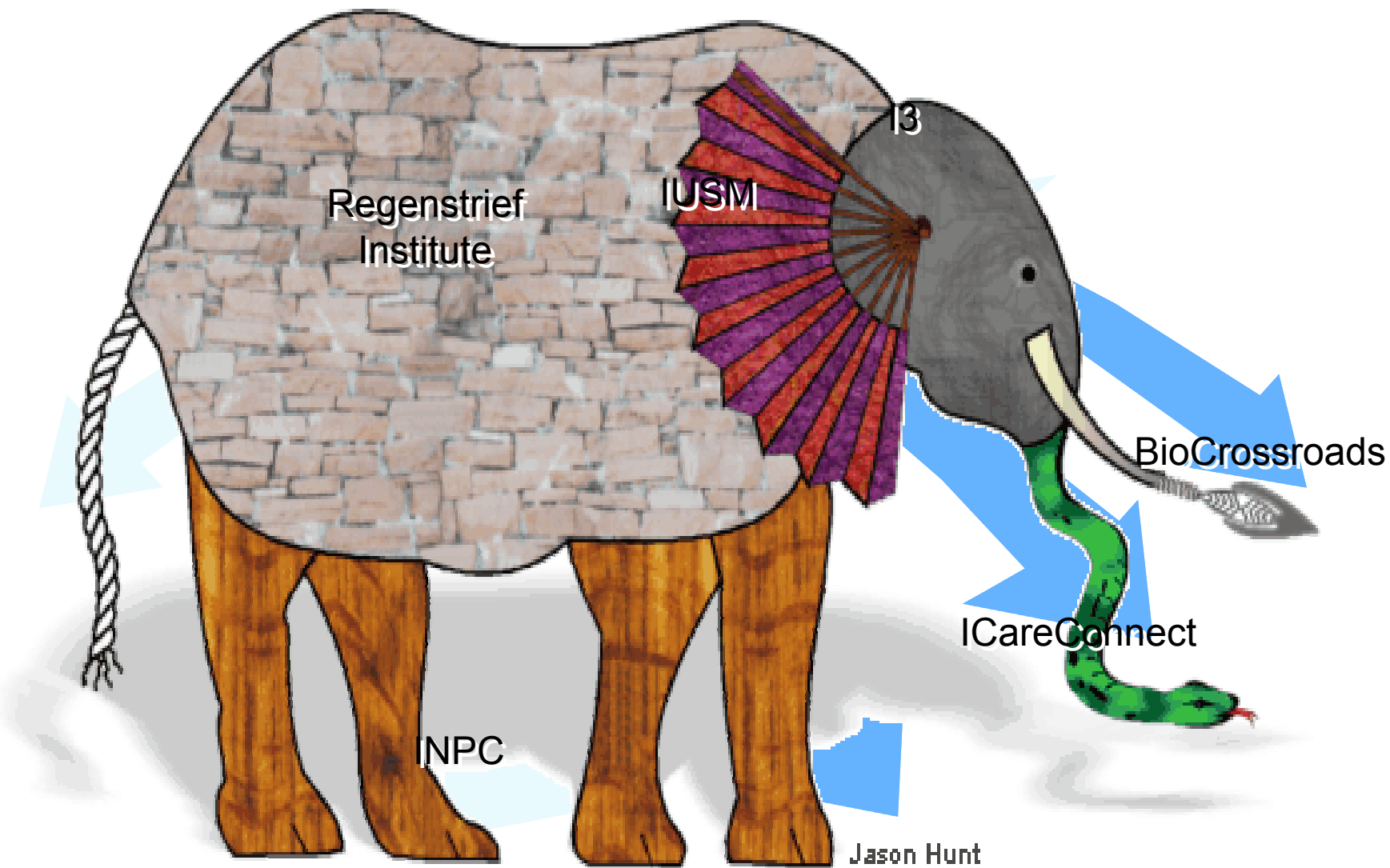
- 1.5 million population base
- 12th largest city in U.S.A.
- Home to Indiana's only medical school
- State Department of Health
- Referral center for entire state (7 million)





# Indianapolis Landscape







# Indiana Health Information Exchange



- Founded in 1969 by Sam Regenstrief
- Affiliated with IU School of Medicine
- ~\$12M annual budget largely from federal grants
- Pioneers in medical informatics
  - Standards: HL7, LOINC
  - EMRs: RMRS, INPC



- Founded in 1999 by 50 community physicians as the Central Indiana Coalition to Reinvent Health Care
- Early seed funding from Health & Hospital Corporation of Marion County
- Initiated community clinical messaging concept



- Founded in 2002 by the Central Indiana Corporate Partnership
- Economic development organization promoting academic/industry collaboration in life sciences



# Initial RMRS Aims

- Eliminate the logistic problems associated with the paper record
- Standardize the care process. Deliver information in a more organized and useful way. Actively process this record and provide decision support to clinicians.
- Analyze and understand the data to improve the health of populations

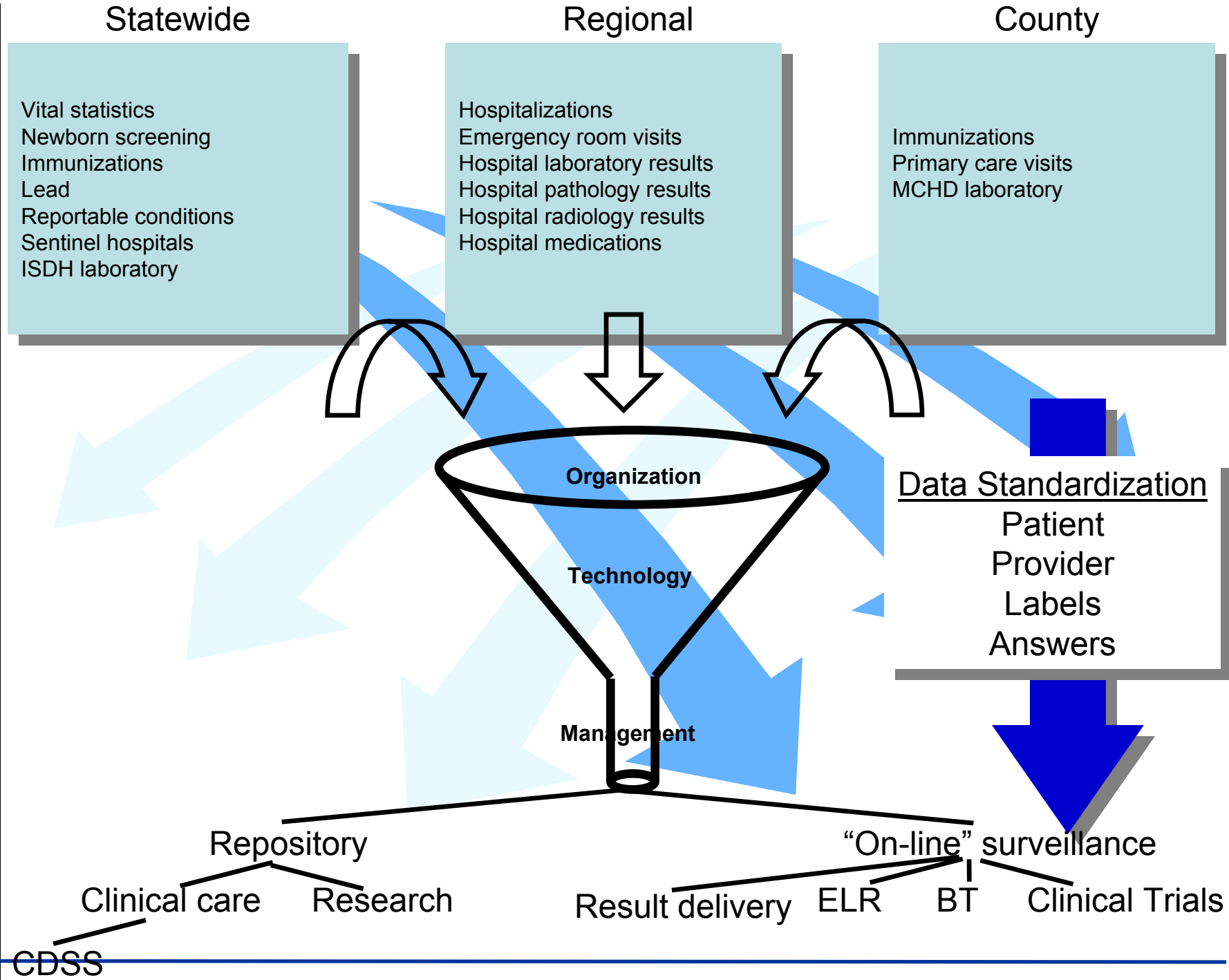


# INPC Project Goal

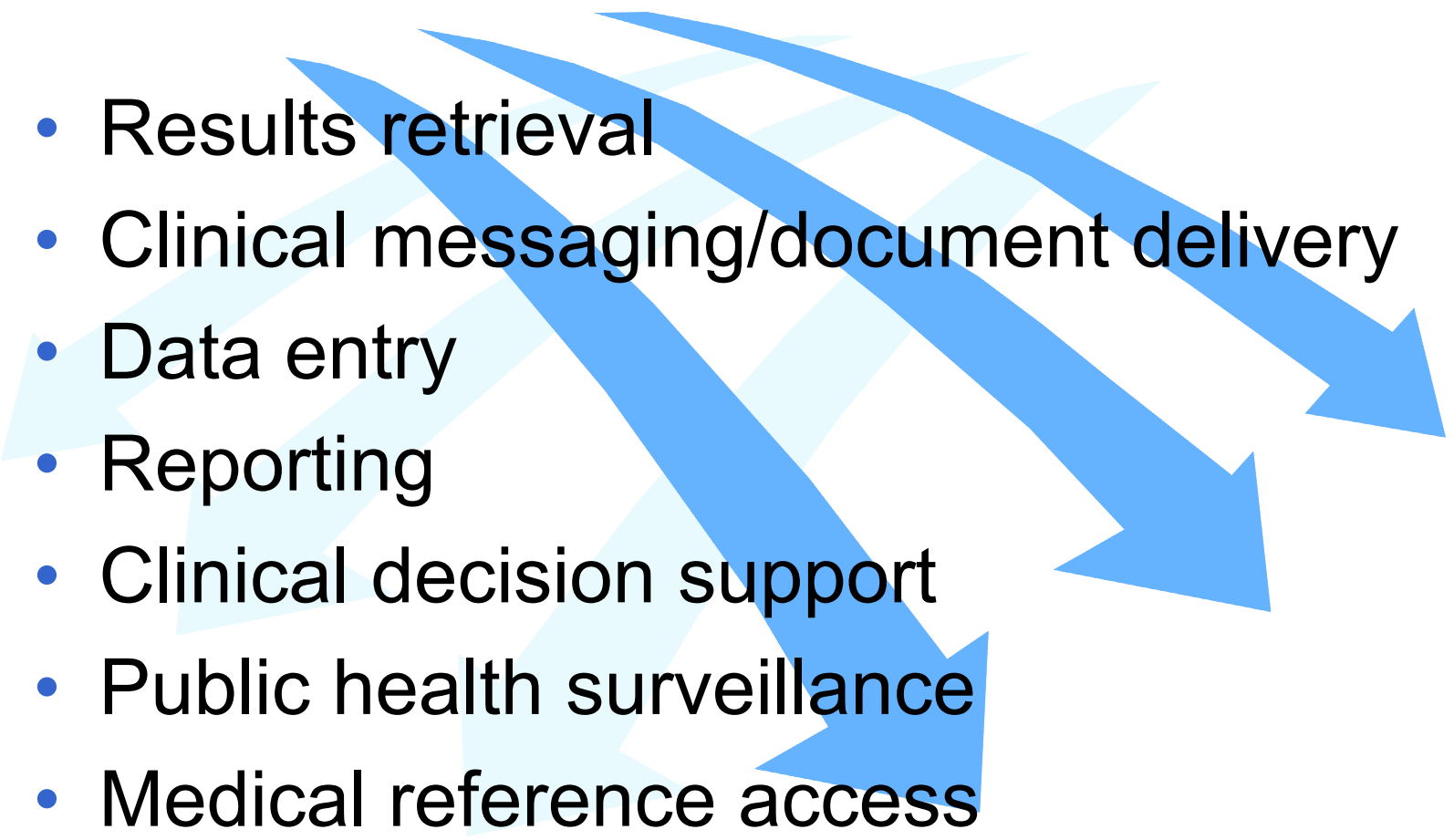
Demonstrate the feasibility and benefit of a community wide electronic medical record system in acute care situations.



# Indiana Health Information Exchange



# Functions

- Results retrieval
  - Clinical messaging/document delivery
  - Data entry
  - Reporting
  - Clinical decision support
  - Public health surveillance
  - Medical reference access
- 

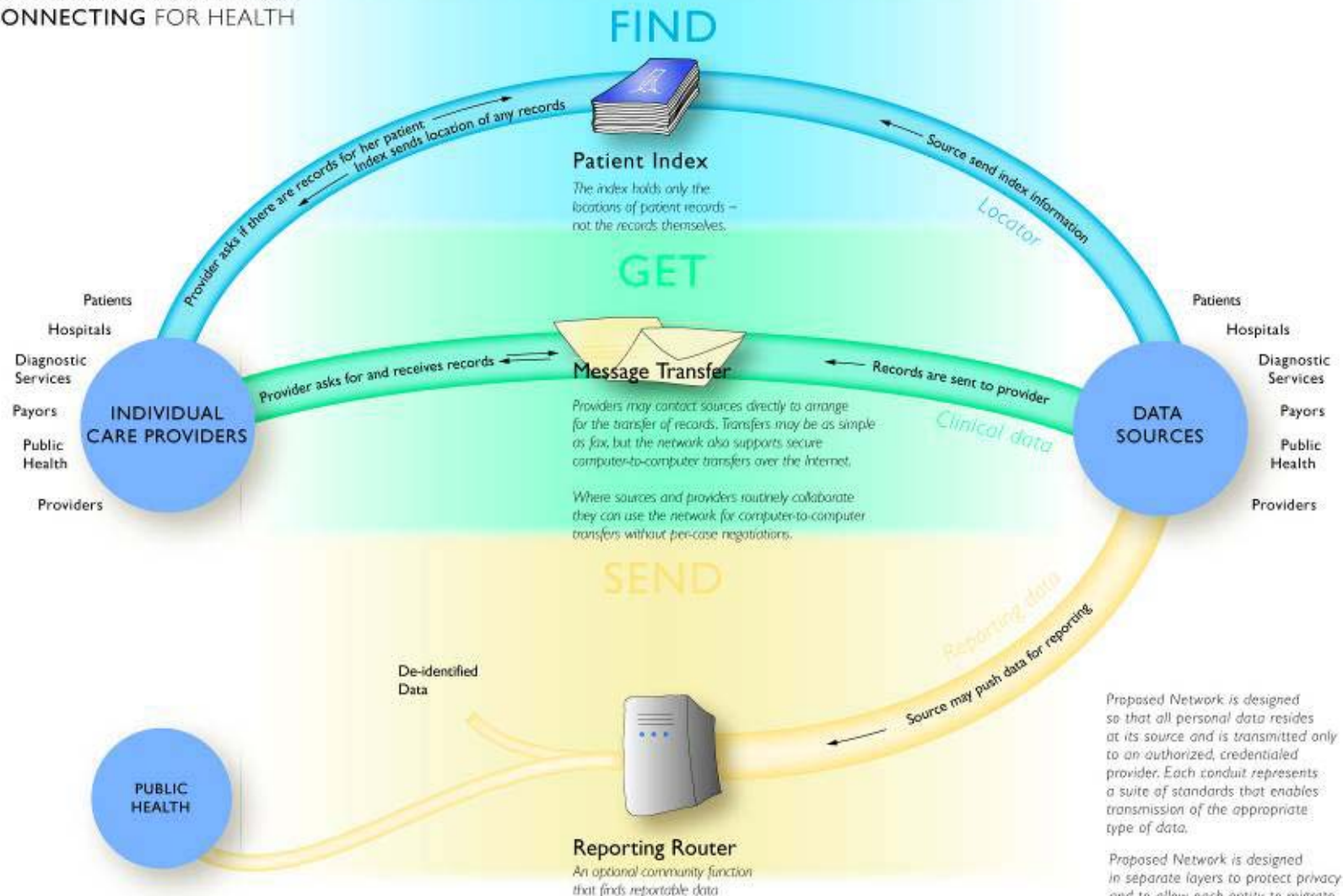
## Users

- Most central Indiana med/surgical hospital emergency departments
- Hospital based providers (expanding)
- Ambulatory physicians (approximately 40%)
- Homeless care network
- Public school clinics
- Marion County Health Department
- Indiana State Department of Health

A detailed map of Indianapolis, Indiana, and its surrounding suburbs. The map shows major highways (Interstates 65, 70, 40, 36, 465, 865, 1000, 136, 900, 267, 40, 70, 39, 37, 135, 825, 109, 69, 13, 36, 40, 52, 74) and numerous city and town names. A red arrow points to the location of the Indianapolis Zoo, which is situated near the center of the city, just north of the downtown area. Other notable locations include Zionsville, Fishers, Lawrence, Greenwood, and Plainfield. The map also shows various smaller neighborhoods and landmarks within the city limits.

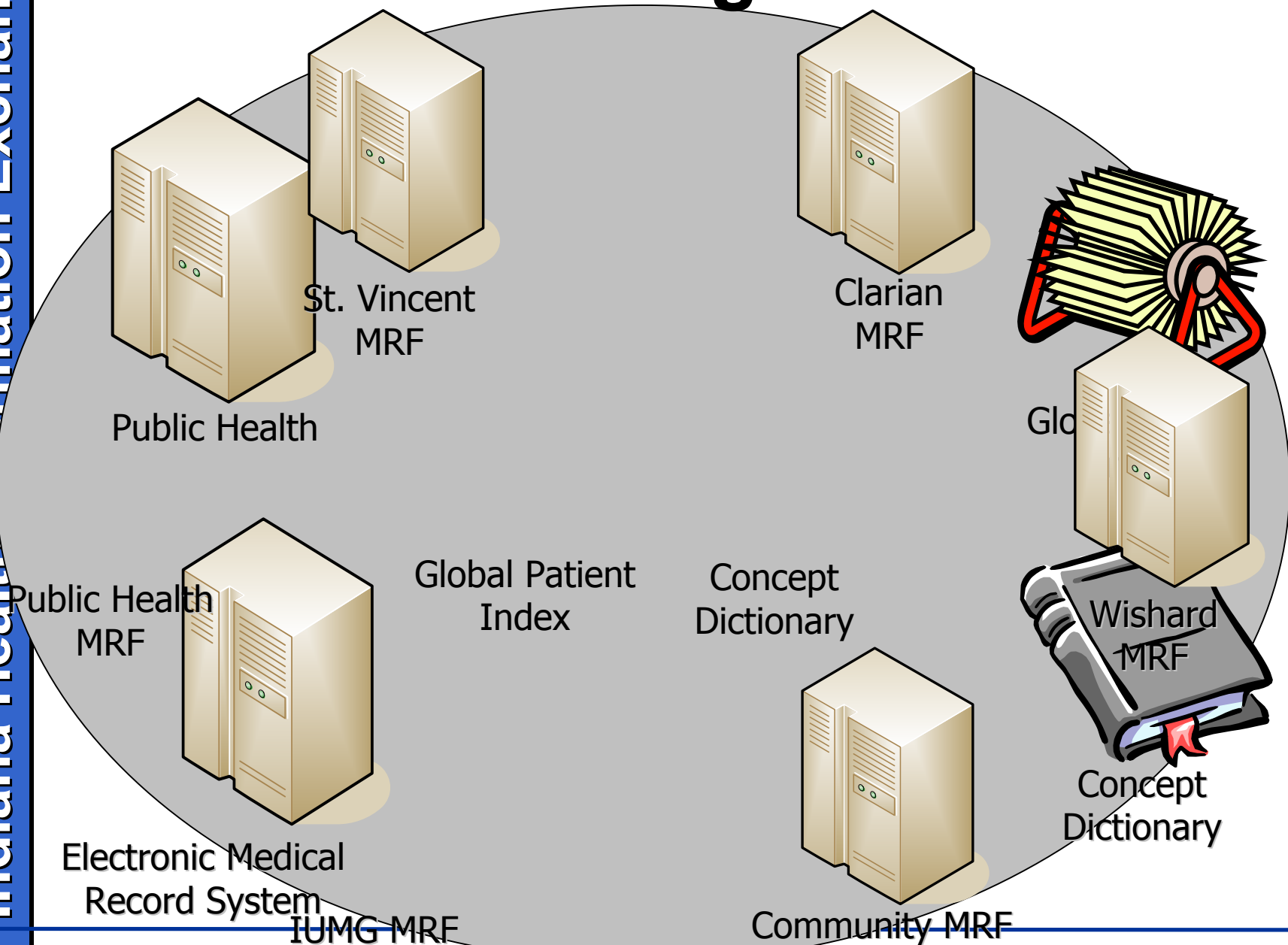
## PROPOSED NETWORK

THE MARKLE FOUNDATION  
CONNECTING FOR HEALTH

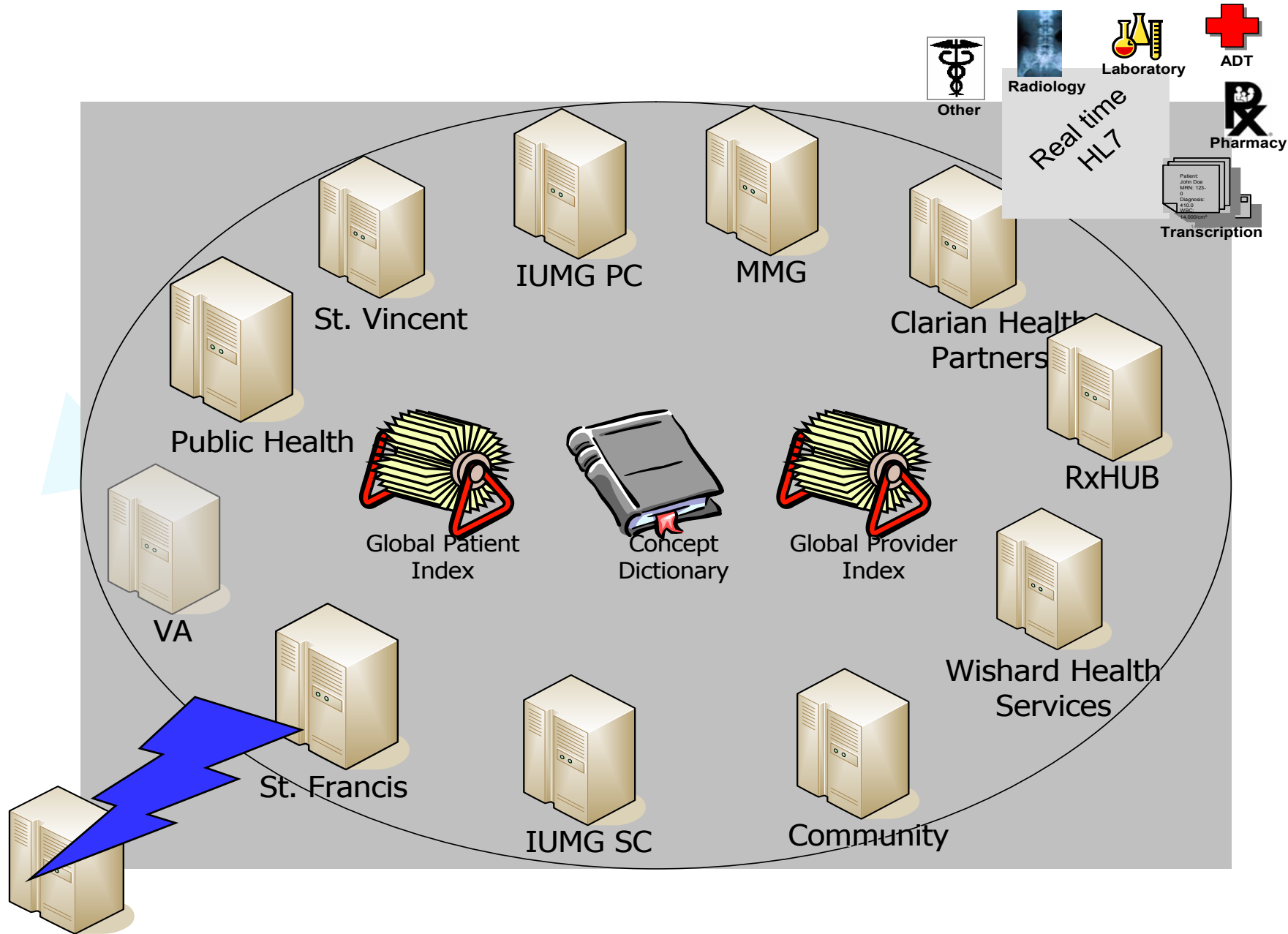




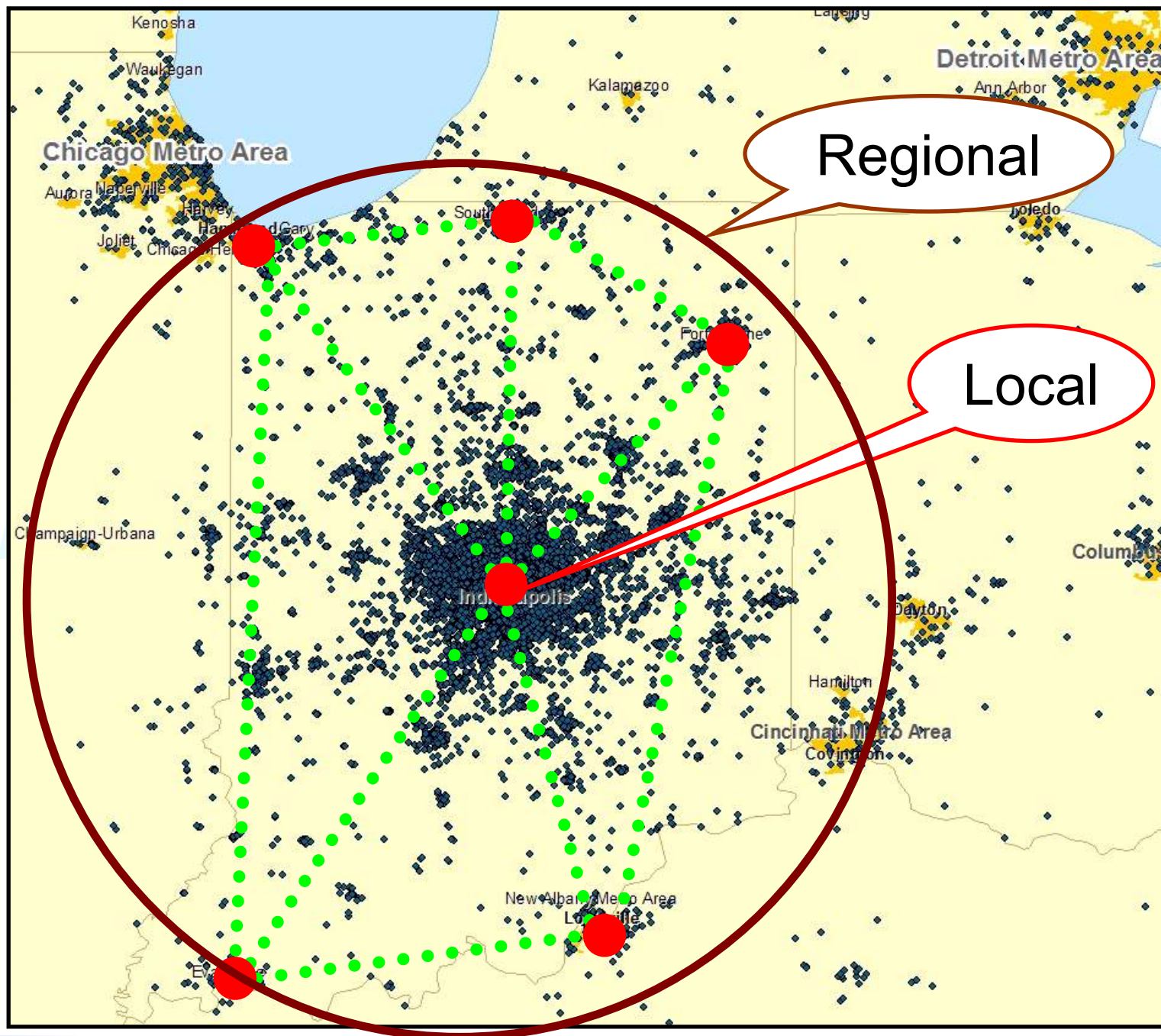
# The Indiana Network for Patient Care



# Indiana Health Information Exchange



# Indiana Health Information Exchange



## Data reuse

- Clinical care
    - Emergency room
    - Primary care
    - Inpatient
  - Public health (state and local HD)
    - Immunization registry
    - Reportable conditions
    - Surveillance
  - Health services research
  - Clinical research
  - Accreditation reports
- 
- A diagram illustrating data reuse. It features a large, light blue arrow pointing from the left towards the right, passing behind the list of reuse categories. Overlaid on this are three smaller, darker blue arrows that originate from the left side of the slide and point towards the right, each directed towards one of the main categories: Clinical care, Public health, and Health services research.

# Clinical Data Standards

- Current
  - HL7 messages for most as the envelope
  - DICOM messages for images as the envelope
  - LOINC for laboratory results content
  - CPT-4 for procedures content
  - ICD-9 for diagnoses content
  - NDC and RxNorm for medications content
- Anticipated
  - Organisms for microbiology content





OVERHAGE, JOSEPH M

**Help**

New Messages

EMO, JONATHAN DOE #99999999-8 @REGEN\_DEVELOP M Age: 56 years

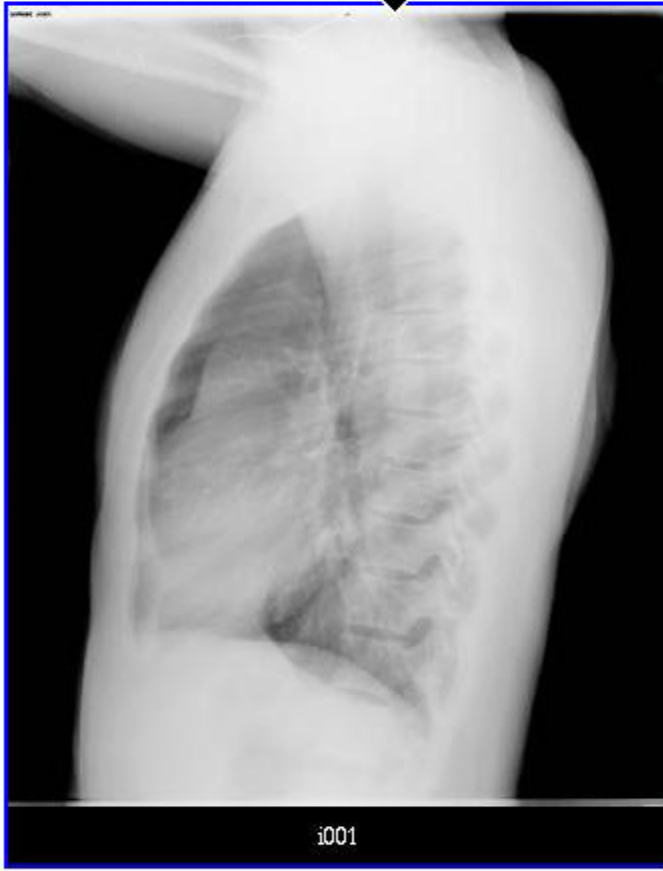
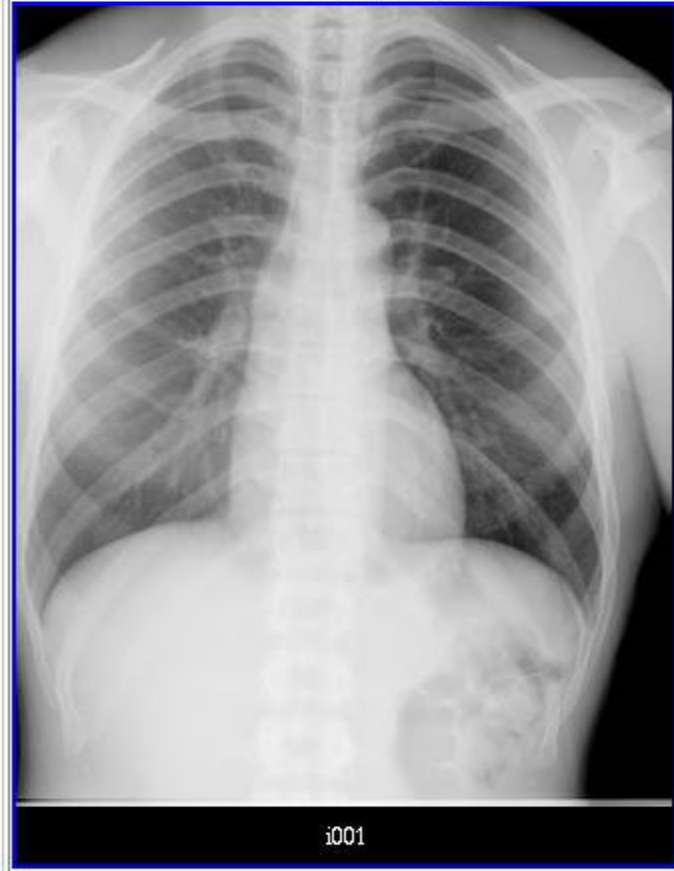
DEMO, USE

Select a patient Browse Patient Record Other Browse Patient Record » Flowsheet

- Chronologic Results
- Flowsheet
- Flowsheet (Advanced)
- Clinical Synopsis
- PORTS
- ALL REPORTS
- Discharge Summaries
- Miscellaneous
- Operative
- Pathology
- Radiology
- ce Sheet
- ders
- COUNTERS
- Brief
- Detailed
- Master
- DESCRIPTIONS
- Inpatient
- Outpatient
- Advance Directive
- Surgery Log

CHEST PA & LAT XR  
CHEST, 2 VIEW

Click on a thumbnail image to see full image.  
These are compressed images for clinical review.





**DOCS4DOCS****BARNES, MICHAEL R**  
**TEST BARNES****General**[New Documents](#)  
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[Change Password](#)  
[Help](#)  
[Logout](#)**Clarian Health**  
Methodist • IU • Riley**RADIOLOGY CONSULTATION REPORT****Exam:** Spine Lumbar 3V XR**Exam Date:** 05/02/2002**Patient Name:** COLE JAMES**Sex:** M**Exam Time:** **MRN:** **Patient Location:** OP Out Patient**Accession:** **Birth Date:** **Patient Class:** O**Report To:****Attending Provider:****Ordering Provider:** Barnes, Michael R**DICTIONATION DATE:** AP AND LATERAL RADIOGRAPHS OF THE LUMBAR SPINE, :**COMPARISON:** No comparison.**INDICATION:** Back pain.

**FINDINGS:** Alignment of the lumbar spine is within normal limits. No spondylolysis or spondylolisthesis is identified. There is mild narrowing of the L4/5 disc space. The remaining disc space heights are within normal limits. There is multilevel anterior osteophytes. The sacrum and sacroiliac joints are intact. The remaining visualized bones of the pelvis are unremarkable. There is an ovoid 2 cm calcification seen just to the right

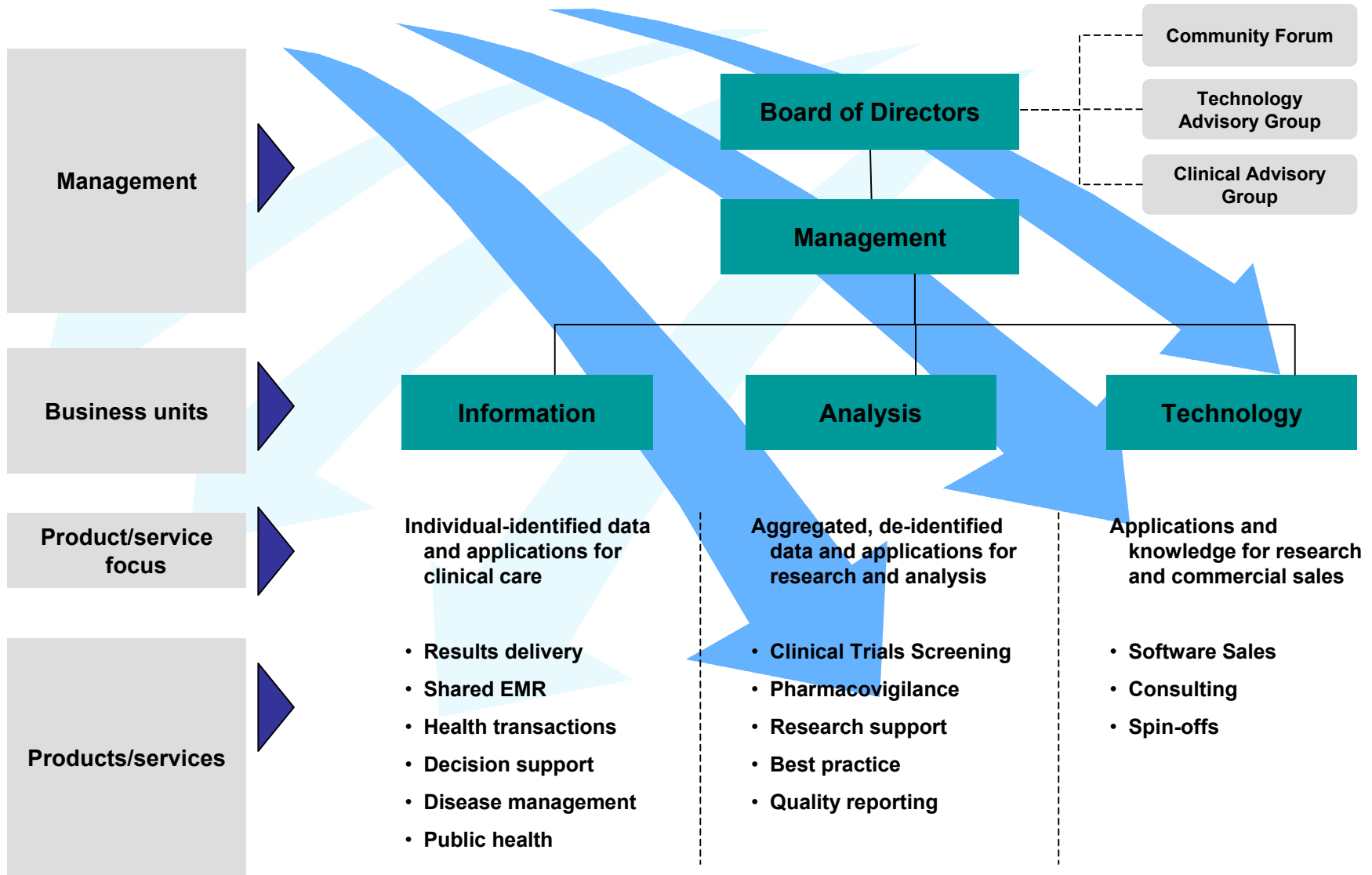


# Board Composition

- Hospital systems
  - Clarian Health Partners
  - St. Francis Hospitals and Health System
  - St. Vincent Health Care
  - Wishard Health Services
  - Community Hospitals of Indiana
- Government
  - City of Indianapolis
- Public Health
  - State Department of Health
  - Marion County Health Department
- Research
  - IU School of Medicine
  - Regenstrief Institute
- Medical societies
  - Indianapolis Medical Society
  - Indiana State Medical Association
- Economic development
  - BioCrossroads / Central Indiana Corporate Partnership



## Organizational Structure



## - Confidentiality

- While numerous measures are in place to protect confidentiality of patient's data, the provider has to know who the patient is.
  - Secure physical network
  - Encryption
  - Authentication
  - Agreements
  - Device controls

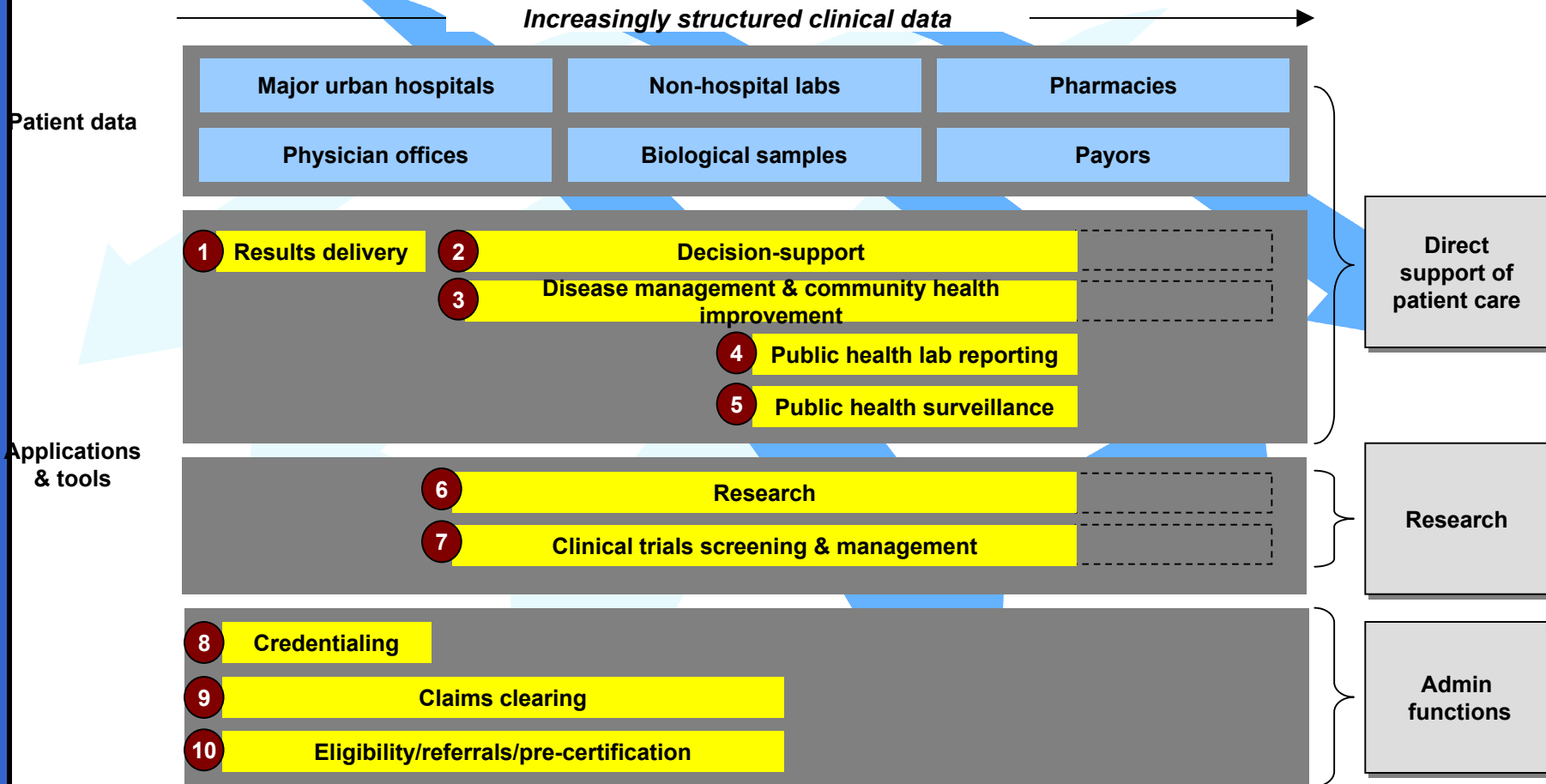


# Participants' Agreement

- How can participants share health data to treat patients?
- Who may have access to PHI for treatment purposes?
- What information is to be stored on the network?
- How may the PHI be used for research purposes?
- What are other considerations?
  - Equipment.
  - Consistency of data.
  - Other uses of information.
  - Indemnification..
  - Governance
  - Disposition of information upon termination
  - Security



# Application Framework

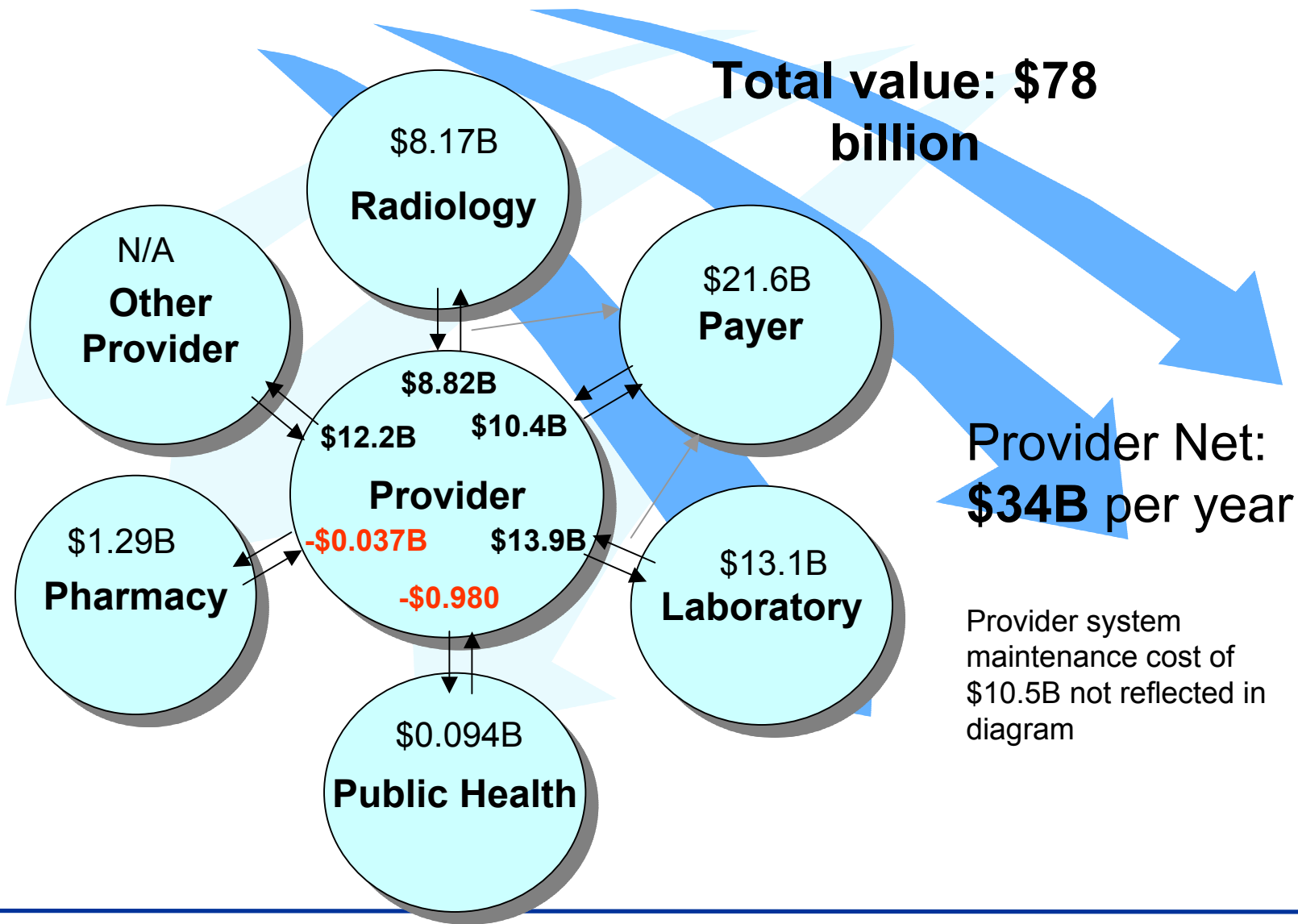




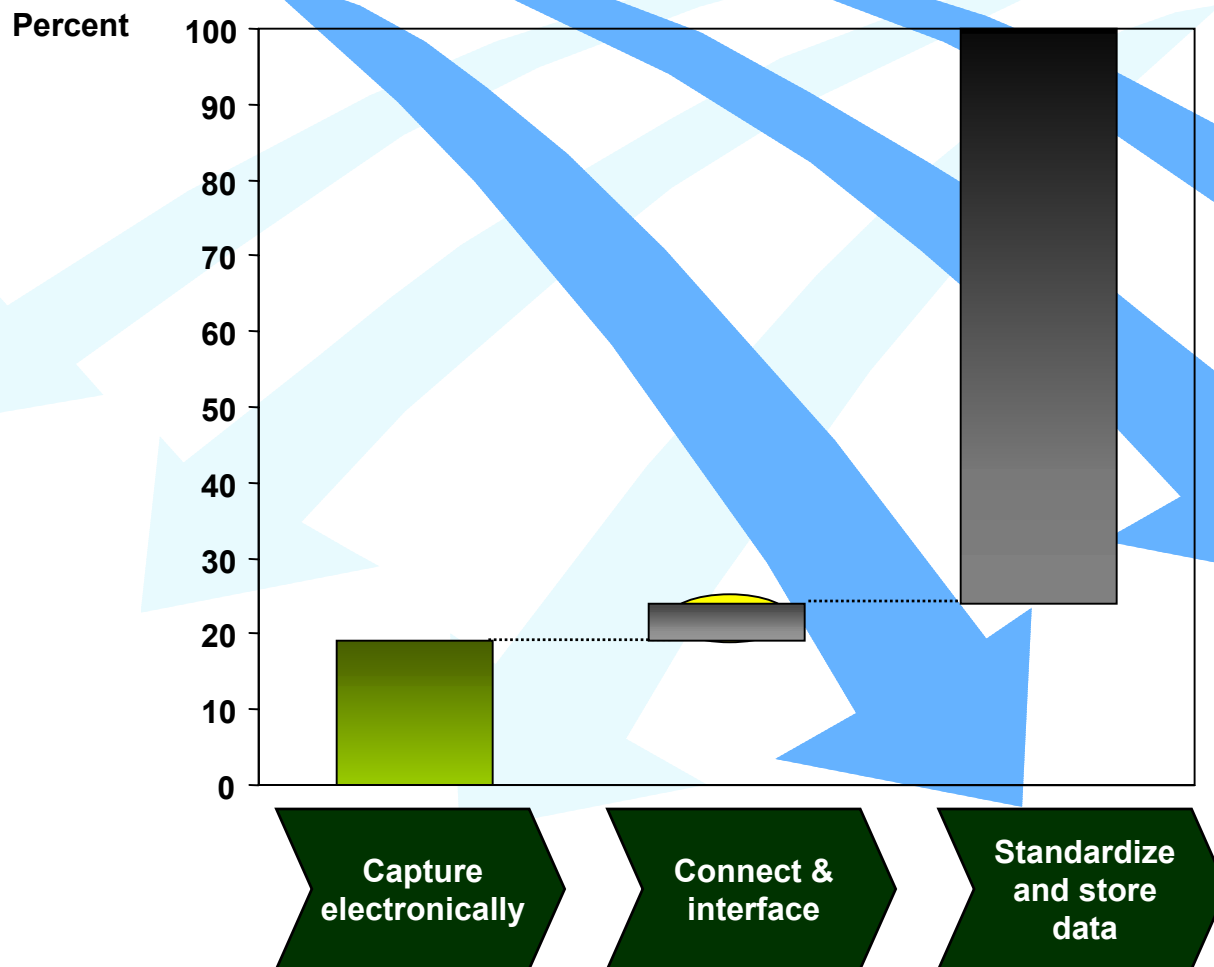
# HIE Taxonomy

Level	Description	Examples
1	Non-electronic data	No PC/information technology
2	Machine-transportable data	Fax/Email
3	Machine-organizable data	Structured messages, non-standard content/data
4	Machine-interpretable data	Structured messages, standardized content/data

# Annual Savings Nationally L4

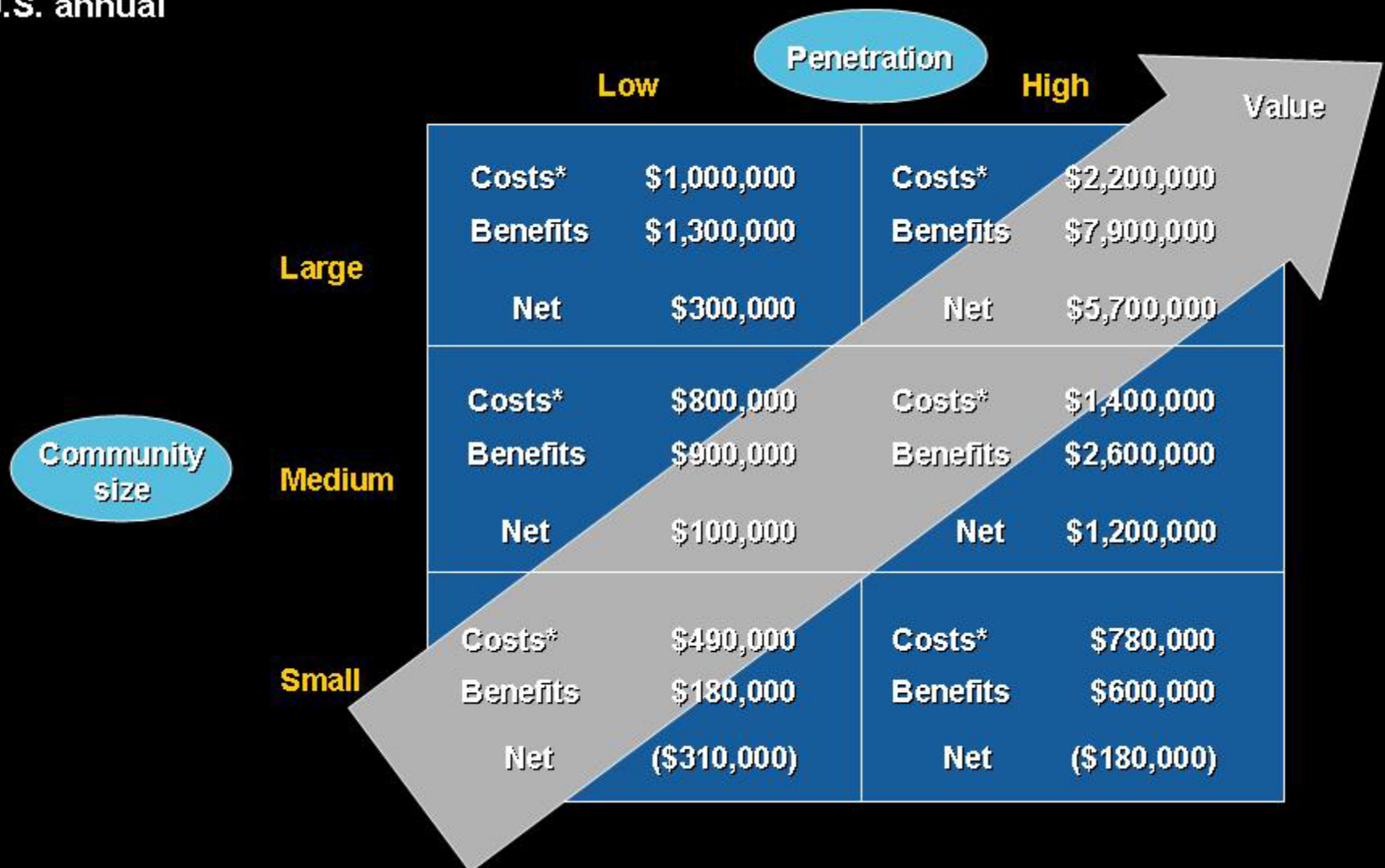


# Achieving full value requires structured data



# CHCF Model

\$U.S. annual



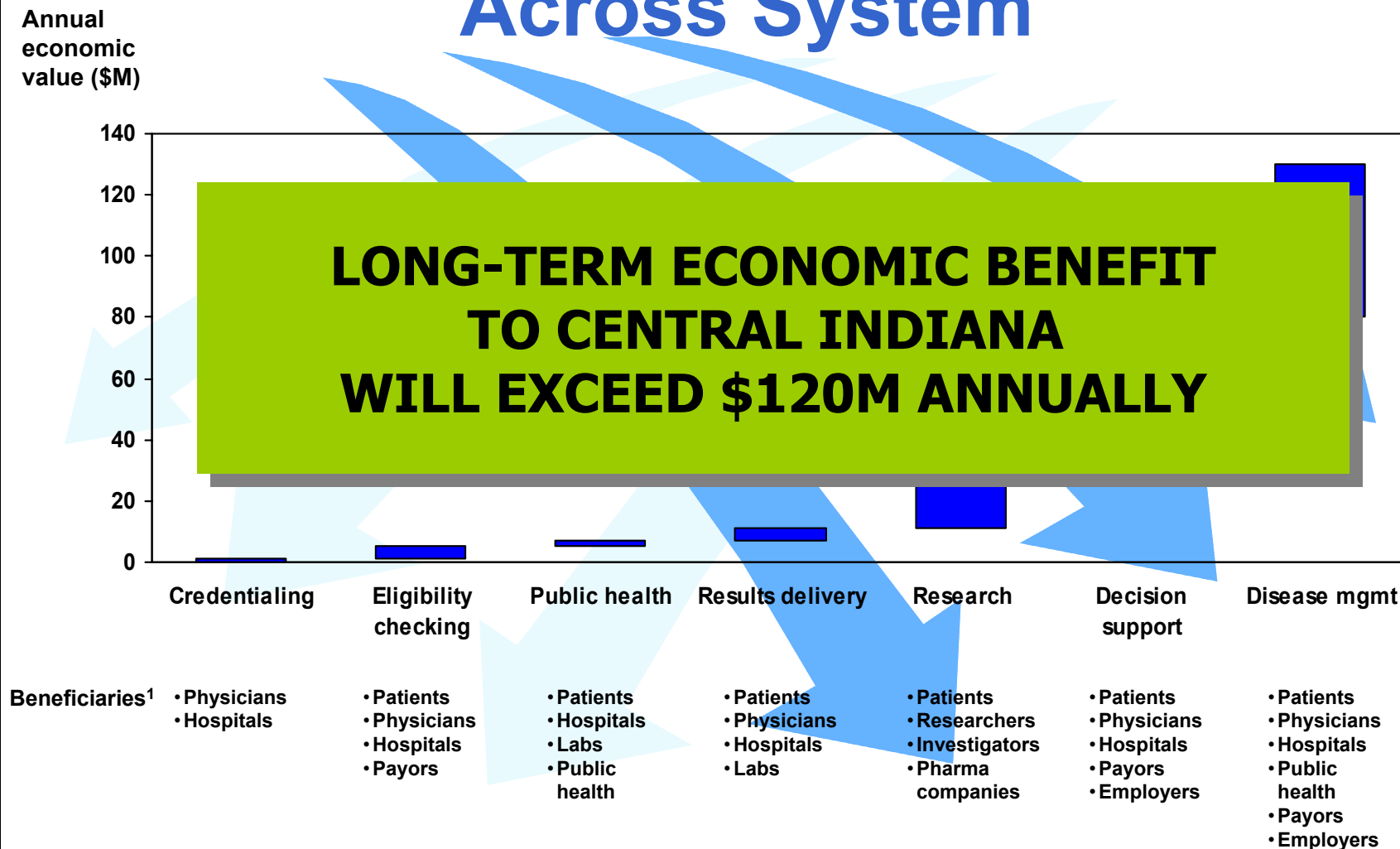
# CHCF Model

\$U.S. annual

LARGE COMMUNITY,  
HIGH PENETRATION

		Per constituent			Total for all constituents		
Most likely organizers	Costs <sup>1,2</sup>	Intrinsic benefits of providing data	Network benefits	Total individual benefits	Number of constituents	Total costs	Total benefits
Hospital	\$120,000	\$180,000	\$110,000	\$290,000	7	\$840,000	\$2,000,000
Imaging center	\$110,000	\$44,000	\$(15,000)	\$29,000	4	\$440,000	\$120,000
Laboratory	\$110,000	\$70,000	\$170,000	\$240,000	2	\$220,000	\$480,000
Physician group	\$120,000	\$90,000	\$280,000	\$370,000	3	\$360,000	\$1,100,000
Other physicians	\$40	\$0	\$2400	\$2400	MD free riders		
PBM	\$110,000	\$0	\$0	\$0	1,750	\$70,000	\$3,500,000
					3	\$330,000	\$0
						~\$2,200,000	~\$7,300,000
		First-mover disadvantage		Benefits fragmented			

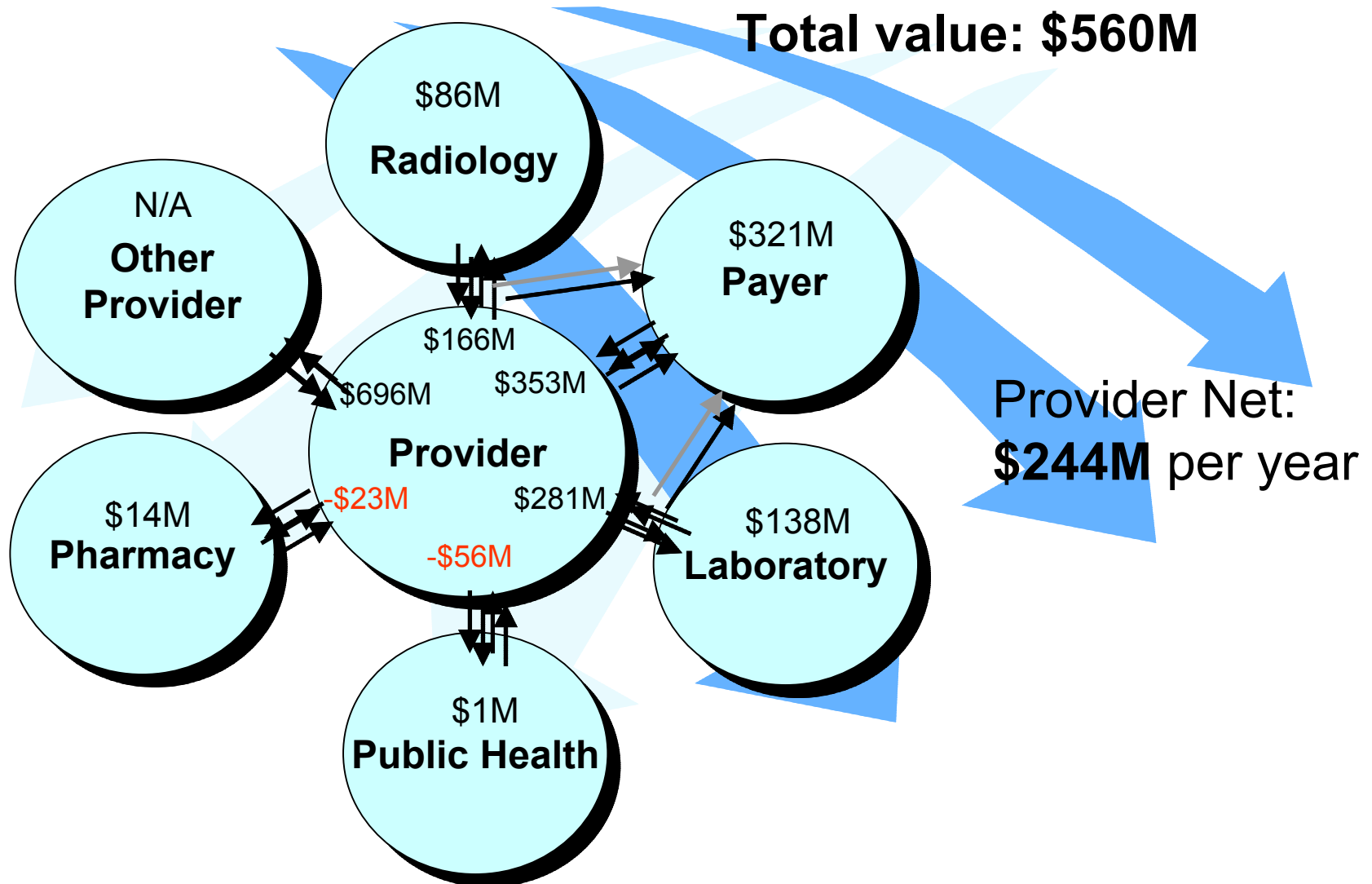
# Benefits Accrue to Stakeholders Across System



(1) Includes quality of care/other non-economic beneficiaries as well

Source: BCG Analysis & Estimates

# Annual Savings Indianapolis L4





# *Acknowledgement*

- Agency for Healthcare Research and Quality
  - BioCrossroads
  - Central Indiana Corporate Partnership
  - National Cancer Institute
  - National Library of Medicine
  - Regenstrief Foundation
- 



IHIE

Indiana Health Information Exchange

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