Lessons Learned from State and RHIOs:

Organizational, Technical and Financial Aspects

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Framework

- States and regions are different things
- Regions are not exclusively part of states
  - Tennessee borders 8 other states
  - 20-25% of patients seeking care in two Memphis hospitals were from other states
- People move a lot
- Even if health care delivery organizations do their jobs completely, their collective efforts will not achieve our goals for a transformed health care system
- We may be competing over the wrong things – e.g., data
- It's not "do we invest in HIT"? It's whether the investment is institution-centric or patient-centric.

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3

Workflow….All Directed "Inside"…and Insufficient…

- Total institutional IT expenditures across a number of health care sectors are expected to exceed $40 billion in 2005.
- Studies have shown that nearly 30% of US healthcare spending -- up to $300 billion each year -- is for treatments that may not improve health status, may be redundant, or may be inappropriate for the patient's condition[1].
- All-consuming attention to internal operations reflects "a healthcare landscape that's slim on resources but heavily laden with demand from varying internal constituencies."
- 11% of a Medicaid Managed Care population sought care in an ED more than once a year.
- The average use for this group was 5 visits per year!
- These visits are not always to the same ED
- Some day, our ability to deliver more efficient and effective care in our institutions will reach an asymptote….and it will not be enough….

Sources:

R. Blair and M. Hilts, "Cio Survey: At the Crossroads of Change and Constancy," Health Management Technology 24, no. 12 (2003): 22-30.
Gartner Group Research, "North American Healthcare It Spending Forecasts to 2007," 24 April, 2004
Data supplied by a Medicaid Managed Care Organization 07/2003-07/2004
"Health Spending Projections for 2002-2012" by Heffler, Keehan, Clemens, Won, Zezza; Feb 7 2003, p 54-56

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Why Hospitals (or Clinics, or Plans) are Insufficient

A tale of…..Mobility, Redundancy, & Absence

- In 2002-03, 41 million Americans changed their residence (20% of these to another county, another 20% to another state). 21% of children age 4 or less moved during the same period

- 11% of a Medicaid Managed Care population sought care in an ED more than once a year.

- The average use for this group was 5 visits per year…and not to the same ED

- Studies have shown that nearly 30% of US healthcare spending -- up to $300 billion each year -- is for treatments that may not improve health status, may be redundant, or may be inappropriate for the patient's condition[1].

- Recent claim that important clinical data missing in one in seven primary care visits. Physicians believe this loss results in delays or duplications 50% of the time.

Sources:
Data supplied by a Medicaid Managed Care Organization 07/2003-07/2004
Thompson, Brailer - "Decade for Health Information Technology: ….",
    US Dept of Health & Human Services, Wash DC, July 21, 2004).
U.S. Census Bureau and J. P. Schachter, "Geographical Mobility: 2002 to 2003."
P. C. Smith, et al., "Missing Clinical Information During
Primary Care Visits," JAMA 293, no. 5 (2005): 565-571

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Reaching Out to Other Venues of Care

- Your physicians and other clinical professionals working outside your institution require different information sets
- Most physicians are self-employed, and 60% of them work in practices with two or fewer other physicians.
- Transitions in care impact your ability to provide care (out-patient, in-patient, home care, long-term care)
- A <u>regional</u> perspective may force you to re-think what "competition" means in your market

M. E. Frisse and J. Metzger, "Information Technology in the Rural Setting: Challenges and More Challenges," J Am Med Inform Assoc 12, no. 1 (2005): 99-100.

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We Share a Common Goal

- ## Inform clinical practice
  - Create incentives for EHR adoption
  - Reduce risk of EHR investment
  - Promote EHR diffusion in rural & underserved areas

- ## Connect clinicians
  - Foster regional collaborations
  - Develop a national health information network

- ## Improve the health of populations
  - Encourage use of Personal Health Records
  - Enhance informed consumer choice

- ## Involve consumers
  - Unify public health surveillance architectures
  - Streamline quality and health status monitoring
  - Accelerate research and dissemination of evidence

Source: T. G. Thompson and D. J. Brailer, "The Decade of Health Information Technology: Delivering Consumer-Centric and Information-Rich Health Care Framework for Strategic Action," 21 July, 2004.

The NHII is "a comprehensive knowledge-based network of interoperable systems of clinical, public health, and personal health information that would improve decision-making by making health information available when and where it is needed."

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7

But Our Initial Steps May Differ

- Secure Networks – adopted by some IPAs and regions. Focus on communications, e-prescribing

- Service-Specific infrastructure – based on claims engines or e-prescribing

- Employer/Community Models – take a comprehensive view starting with compensation by payers to those who use HIT or adopt clinical programs requiring HIT

- Provider-Specific Networks – Hospitals and large clinics first, then expand to payers, consumers

- Consumers – consumer-driven models associated with specific plans or delivery organizations

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Value: Be Conservative and Take Multiple Perspectives

Overall Value

Providers
- Timely access to relevant data for improved decision making
- Rapid access -- anywhere, anytime
- Reduced clerical and administrative costs
- More efficient and appropriate referrals
- Increased safety in prescribing/ monitoring compliance; alerts to contraindications
- Better coordinated care
- Potential additional revenue sources (e.g. preventive care)
- Enhance revenue through decrease in rejected claims

Payers
- Improved customer service
- Improved disease and care management programs
- Improved information to support research, audit and policy development

Patient
- Improved quality of care through better informed caregivers
- Safer care
- Decreased cost of care
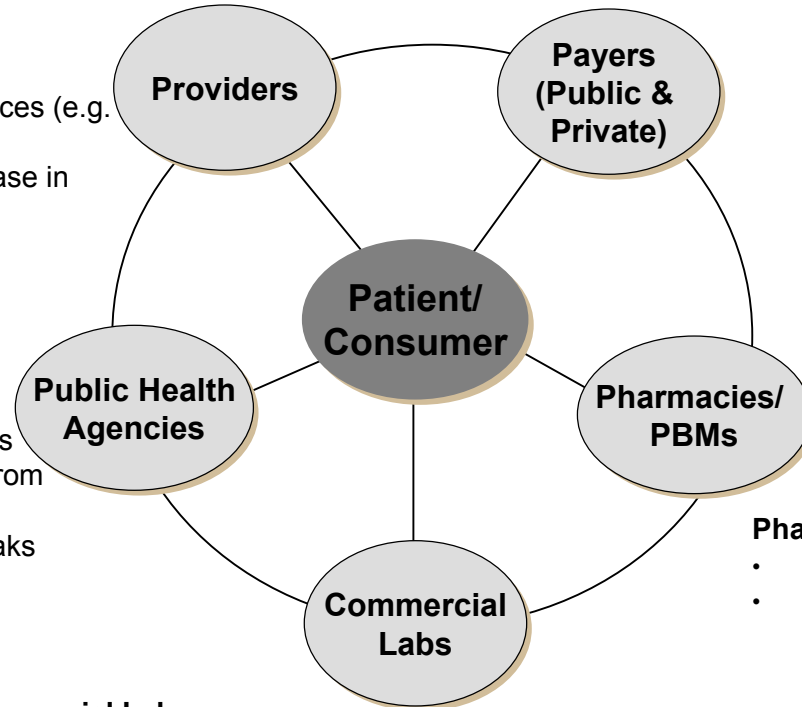
Public Health Agencies
- More comprehensive data
- Greater participation by physicians
- Easier integration of information from disparate sources
- Early detection of disease outbreaks or cases that suggest a local epidemic
- Outcomes analysis
- Bio-terrorism preparedness

Pharmacies/PBMs
- Reduced administrative costs
- Increased medication compliance

Commercial Labs
- Enhanced public relations; exclusive contracts
- Decreased write-offs from unnecessary tests
- Decreased EDI costs; increase efficiencies

Providers — Payers (Public & Private) — Patient/Consumer — Pharmacies/PBMs — Commercial Labs — Public Health Agencies

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9

Integration == Better Life

The infrastructure being established will create opportunities to improve data collection and aggregation processes with the public health arena

| Public Health Area	Opportunities
Immunizations	• Increase automation and volume of data collected in the State Immunization database (TWIS) from provider sources through integration with the Volunteer eHealth Initiative RHIO • Provide physicians with ability to see complete immunization records within RHIO to limit number of applications to access
Newborn Screening and Lead Poisoning Prevention	• Difficult to submit or receive information. Today must use mail or telephone to request information • Secure access through the internet can improve value
Child Health	• Integration of the immunization, newborn screening, genetics, and lead poisoning data to provide a holistic view of clinical history • Enables improved continuity in care for patients who change physicians or move to a different area of the state
Disease Surveillance	• May simplify reporting infectious diseases to appropriate agencies • Potential to improve early identification of public health threats
Home Visitation Programs	• More integrated information will ease in transitions of care from hospital to home and support other home visitation programs

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Few Data are Required to Address Many Clinical Challenges

Outcomes evaluated

Bold Items indicate priorities

- **Asthma**
- **Group B Strep**
- Cancer Screenings
- **Diabetes Management**
- **Immunizations**
- Hypertension
- Post MI care
- Congestive Heart Failure
- **Sickle Cell Pain Management**
- Depression
- **Medication Management**
- **Reducing Redundant Testing**
- Well Child Screening
- ER Utilization
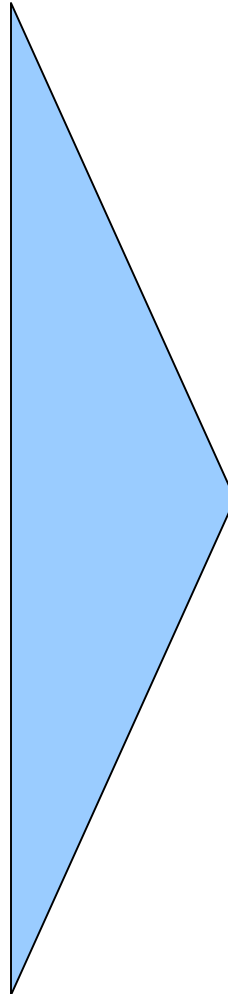
Data Elements

Detailed requirements for each element to be defined

Bold items indicate greatest significance

- **Medications**
- Problem list
- **Lab Results**
- **Radiology Results**
- **Cardiology Results**
- Weight
- **Allergies**
- **Encounter data**
  - Where was patient seen
  - When was patient seen
  - What was done during visit

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Source, Vanderbilt & Accenture Study

11

But How Difficult is it to Acquire These Data?

- Commercial laboratories
- Office laboratories
- Patient demographics
- Prescription drug data
- Allergies
- Problem Lists
- Radiographs
- Electrocardiograms
- Printed reports
- Patient-provided information

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RHIOs and HISPs

NHIN Conceptual Data Architecture
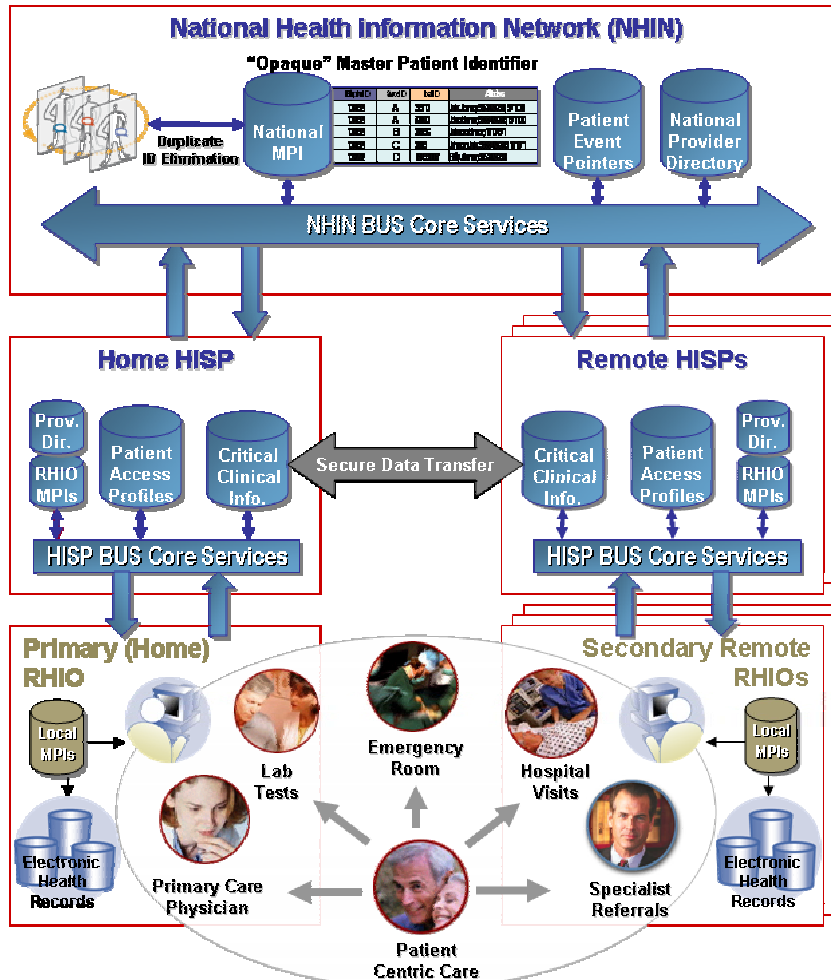
Regional Health Information Organization
- *Multi-stakeholders organizations enable the exchange and use of health care information for the general good*
- *Business organization*
- *Focused on the region*

Health Information Services Provider
- *Technical services organizations*
- *Can contract with a range of organization types including RHIOs*
- *Focused on the technologies*

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Lessons Learned: the Need for RHIOs

- A community emphasis requires a new organizational framework focused on the individual and requiring the participation of all providers of care for that individual
  - Identity – who is Dr. X? Who is patient Y?
  - Authority – can Dr. X. see my records?
  - Standards – can systems "talk" to each other?
  - Certification – do systems use standards?
  - Quality – am I getting the care I need?
  - Legal – Stark, HIPAA, safe harbor compliance

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Lessons Learned: HISPs

RHIOS in turn Require Health Information Services Providers (HISPs)

- Provide technical services to a RHIO

- Assure evolution and compliance

- Can work across RHIOs or other organizations to gain economies of scale

- Work upward – to the national level – to assure that the technology standards employed will communicate with others as individuals move from one RHIO to another.

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Example of Collaboration: West Tennessee
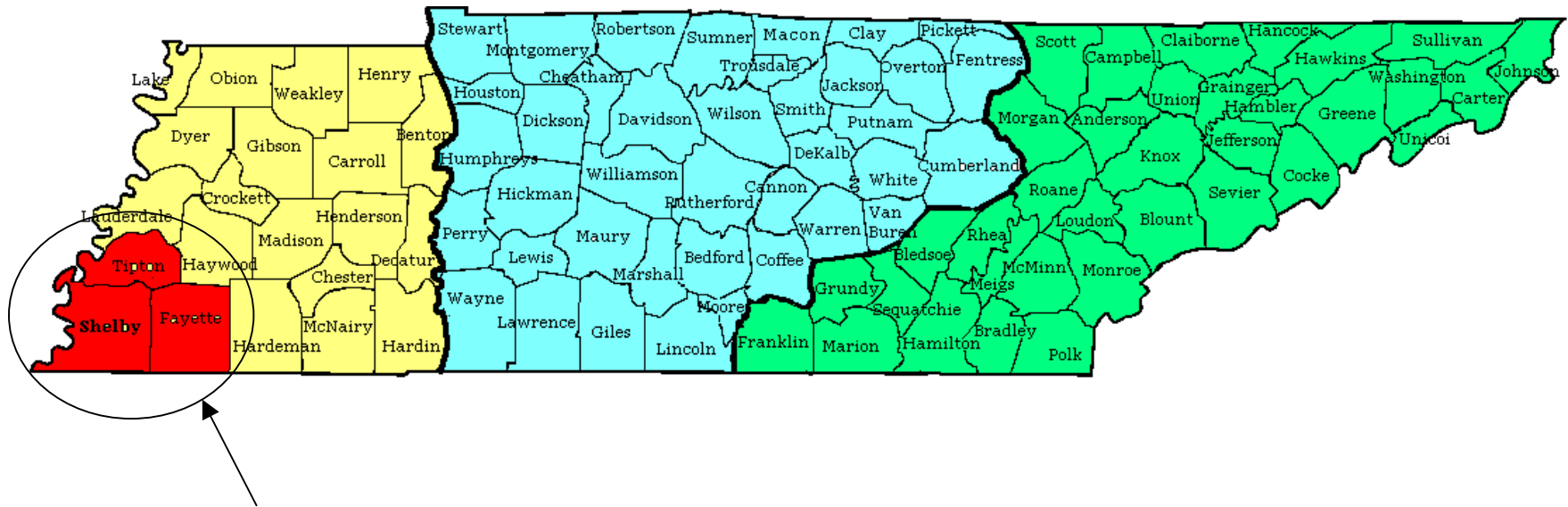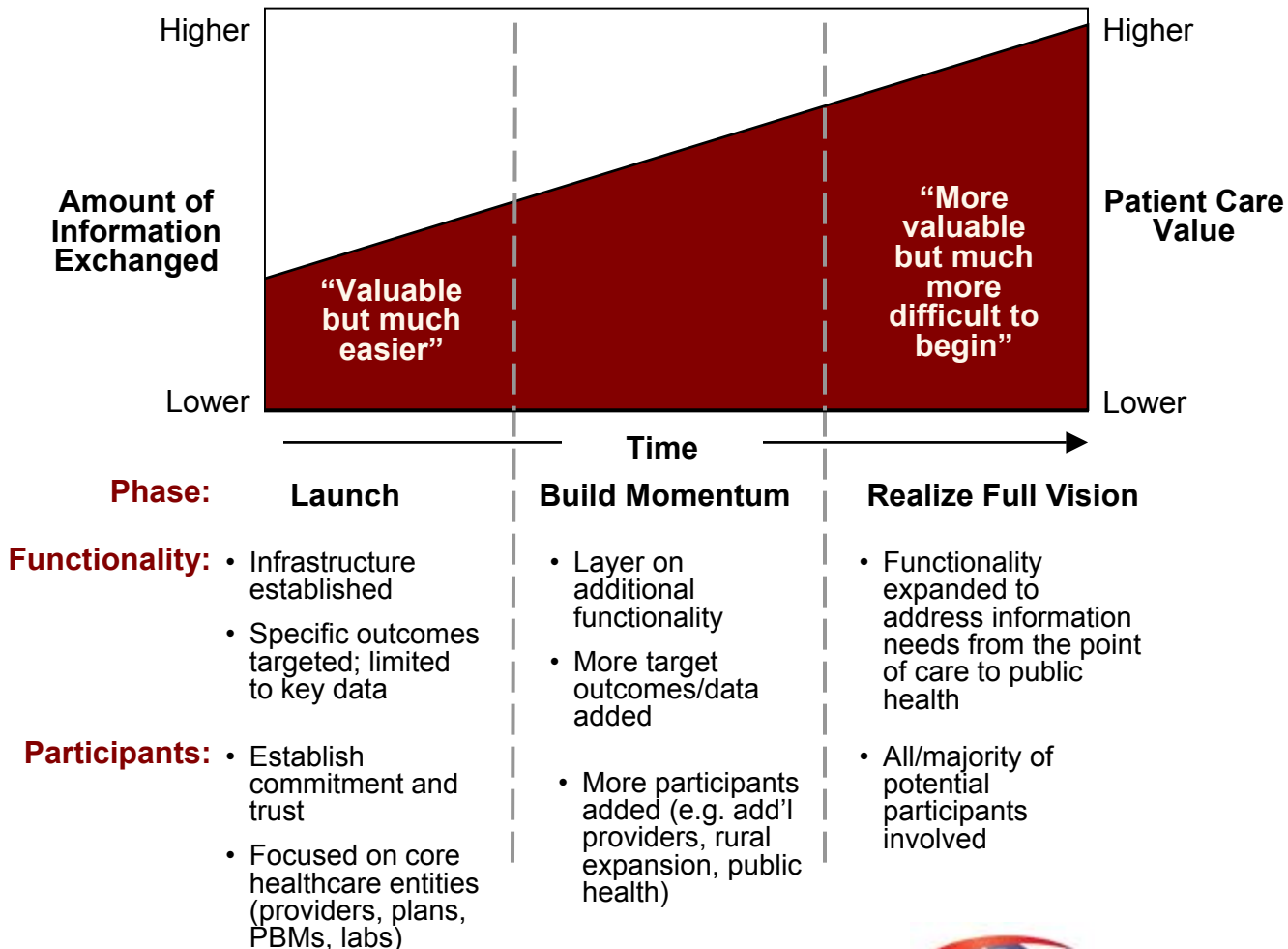

All parties recognize that health care is regional and that a significant number of individuals seeking care in Tennessee are residents of one of the 8 bordering states
Note – other regional initiatives and state-wide HIT initiatives funded by AHRQ or HRSA in the state include UT Memphis, UT Knoxville, Vanderbilt, and Kingsport-Johnson City.

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Establish trust and architecture; then expand

Begin with the end in mind. . .

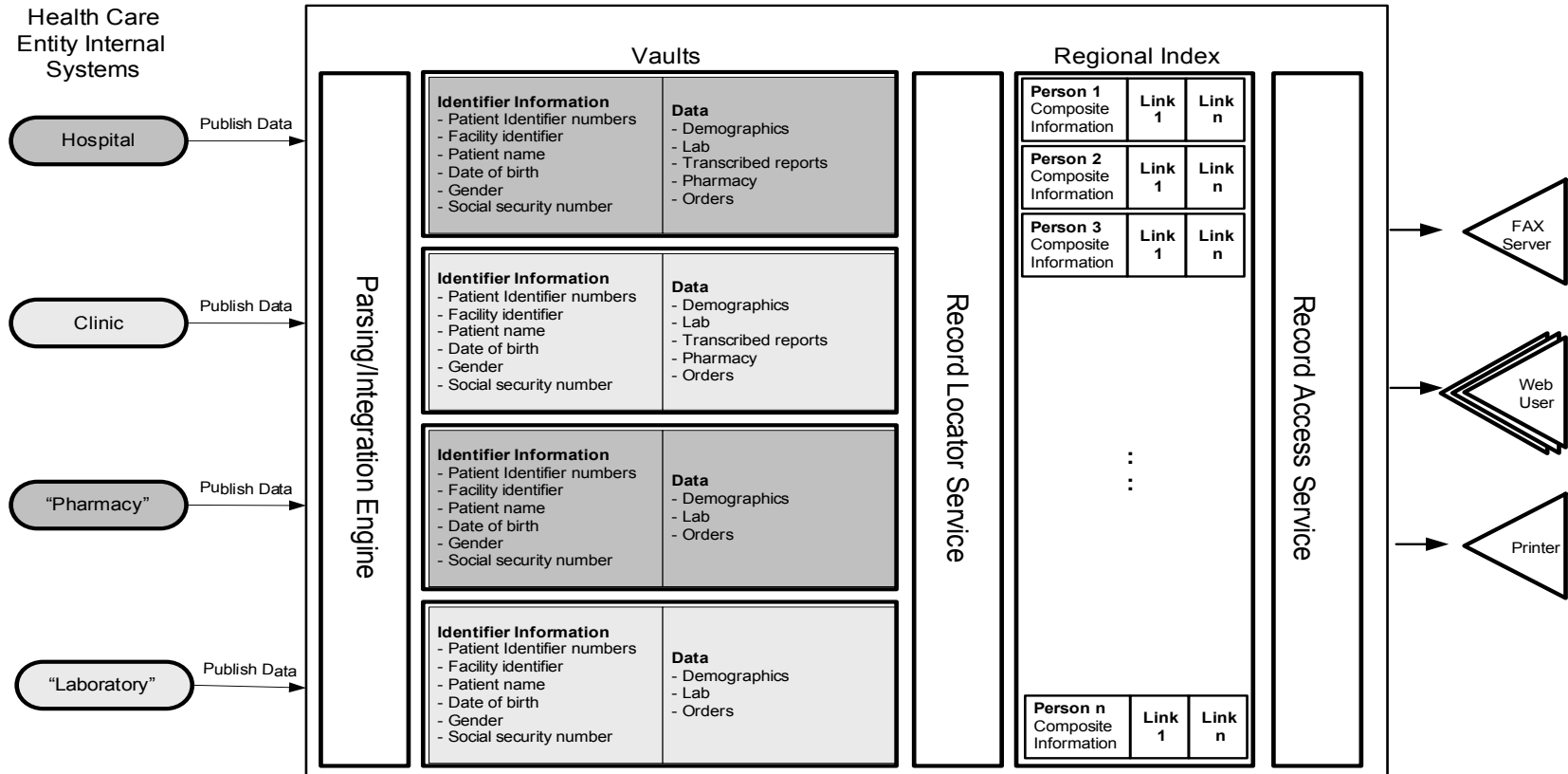|			
Phase:	**Launch**	**Build Momentum**	**Realize Full Vision**
Functionality:	• Infrastructure established • Specific outcomes targeted; limited to key data	• Layer on additional functionality • More target outcomes/data added	• Functionality expanded to address information needs from the point of care to public health
Participants:	• Establish commitment and trust • Focused on core healthcare entities (providers, plans, PBMs, labs)	• More participants added (e.g. add'l providers, rural expansion, public health)	• All/majority of potential participants involved

"It is more important to first build the highway than the hotel or fast food place," Clem McDonald, MD, FACP, Regenstrief Institute, Indianapolis, IN.

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17

Technology: Low Entry Costs and then Evolve

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Health Care Entity Internal Systems

Hospital — Publish Data →
Clinic — Publish Data →
"Pharmacy" — Publish Data →
"Laboratory" — Publish Data →

Parsing/Integration Engine

Vaults

Identifier Information
- Patient Identifier numbers
- Facility identifier
- Patient name
- Date of birth
- Gender
- Social security number

Data
- Demographics
- Lab
- Transcribed reports
- Pharmacy
- Orders

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Record Locator Service

Regional Index

Person 1 Composite Information	Link 1	Link n
Person 2 Composite Information	Link 1	Link n
Person 3 Composite Information	Link 1	Link n
Person n Composite Information	Link 1	Link n

Record Access Service

→ FAX Server
→ Web User
→ Printer

Data is published from data source to the exchange
- Participation Agreement
- Patient Data
- Secure Connection
- Batch / Real-Time

Exchange receives data & manages data transformation
- Mapping of Data
- Parsing of Data
- Standardization of Data
- Queue Management

Organizations will have a level of responsibility for management of data
- Issue Resolution
- Data Integrity
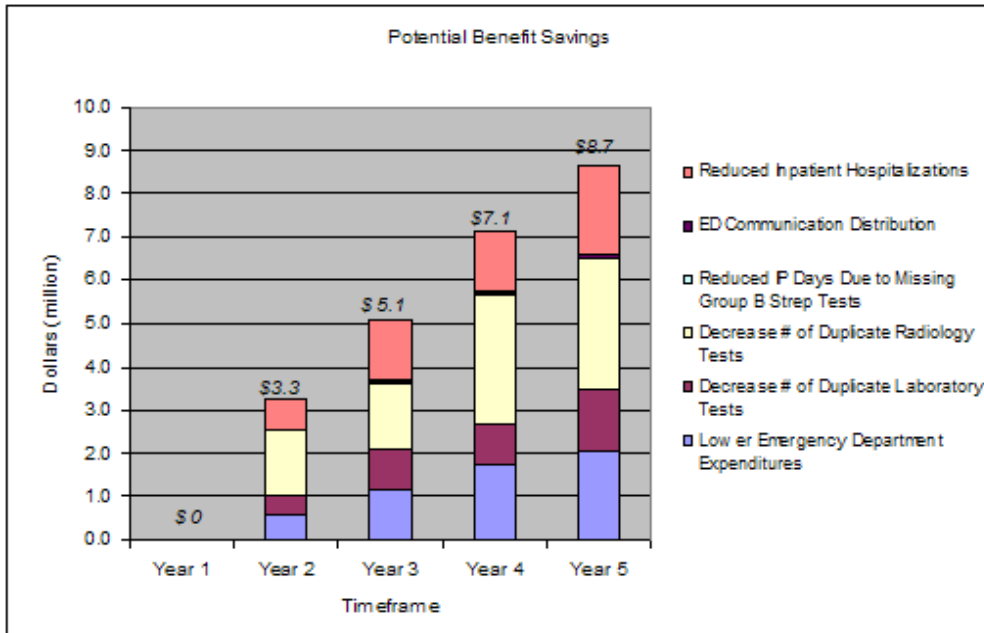- Entities are responsible for managing their Data

Data bank compiles and aggregates the patient Data at the regional level
- Compilation Algorithm
- Authentication
- Security
- User Access

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18

Value to a Participating Hospital

Potential Benefit Savings

Financial Measures	Dollar Savings (millions)
Reduced inpatient hospitalization	$5.6
ED communication distribution	$0.1
Reduced IP days due to missing Group B strep tests	$0.1
Decrease in # of duplicate radiology tests	$9.0
Decrease in # of duplicate lab tests	$3.8
Lower emergency department expenditures	$5.6
Total Benefit	**$24.2**

The overall benefit to the core healthcare entities has potential to reach $24.2 million*.

Assumptions

■ Based on data obtained from Memphis Managed Care (TLC) and extrapolated for the remaining population

■ Research factors are applied to calculate the benefits

■ Deployment schedule is limited initially to EDs and Labor & Delivery; years four and five will extend to all healthcare providers

■ Inflation and volumes remain constant

*If data is exchanged across all facilities within the three-county region the overall benefit has potential to reach $48.1 million.

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NPV - $4.3 Million (estimated)

Payback Period (years) = 5.1

Net Financial Benefit ($ Million)
Net Present Value (cumulative)

Project Return on Investment = .45
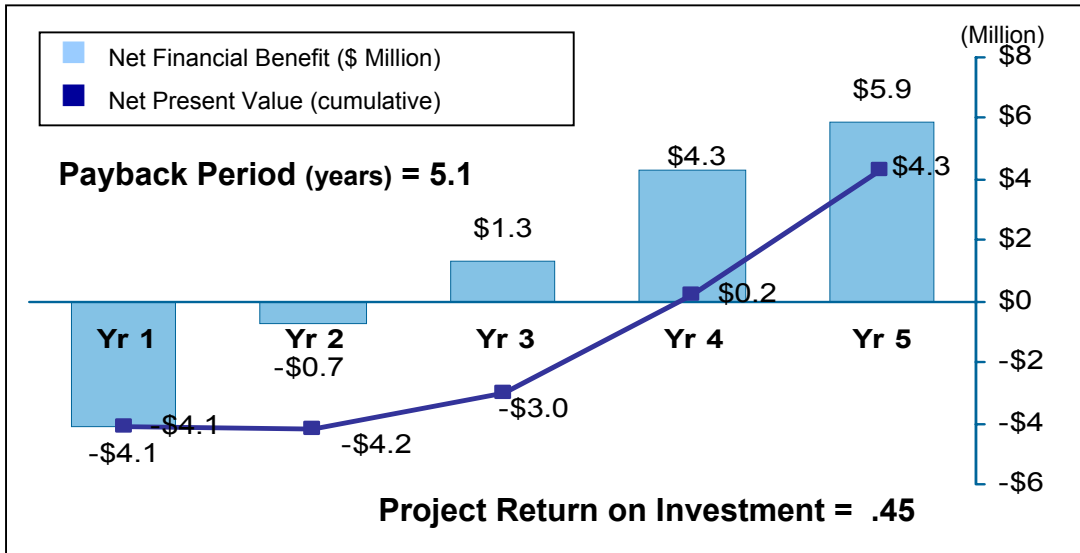
The State of Tennessee and the Core Healthcare Entities realize a higher financial gain when you consider the different stakeholder contributions.

State of Tennessee	Core Healthcare Entities
Payback Period = 2.7	Payback Period = 1.2
Return on Investment = 1.6	Return on Investment = 8.18

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Potential Benefit to a 600-bed hospital

Illustrative Example

| Financial Measures	Dollar Savings (thousands)
Reduced inpatient hospitalization	$857
ED communication distribution	$12
Reduced IP days due to missing Group B strep tests	$30
Decrease in # of duplicate radiology tests	$1,489
Decrease in # of duplicate lab tests	$636
Lower emergency department expenditures	$600
Total Benefit	**$3,624**

Assumptions

- Licensed Beds: 600
- Radiology Procedures: 200,000
- ER Visits: 50,000
- Admissions: 20,000
- Births: 4,000

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Develop a Realistic Budget and Discuss it

- Budget Breakdown
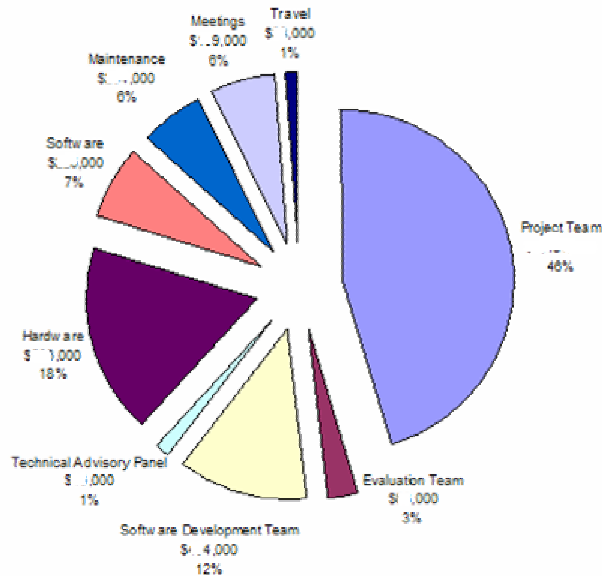
- Staffing Allocation

Year 1 (Oct '04 - Sept '05)		
Role	FTEs*	Location
Project Team Total	7.2	
PMO	1.15	Nashville
Clinical Coordinator	2	Memphis (1) and Nashville (1)
Phase II Project Team	0.5	Memphis
Andy Spooner	0.05	Memphis
6-Month Plan	3.5	Accenture
Evaluation Team Total	0.33	Nashville (Vanderbilt)
Software Development Team Total	3.04	
Technical Project Manager	1	
Technical Developers	1.75	
SMEs	0.25	
Grand Total	10.57	
		* The FTE counts are calculated based on a 12 person month year and reflect a resource's targeted start and roll-off date.

- Budget Assumptions
  - Resources are hired or subcontracted as the budget specifies
  - The cost estimates are approximate; after design the a more detailed estimate will be developed for the release implementation
  - The cost estimates do not contain contingency
  - The cost estimates do not include change management resources
  - The cost estimates do not include the effort incurred by the individual entities
  - G&A and overhead have been allocated across the categories within the budget
  - The Project Team category for year one includes the funding for the six-month planning effort

  - Hardware includes computer and database hardware
  - Software includes merge algorithm & standards software and system & database software
  - Maintenance includes the budget for network and hosting services, enterprise PMI and StarChart maintenance (this is 15% of the hardware and software costs)

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Everyone Must Play a Part

State	Regional Information Exchange	Participating Organization
• Encourage information exchange coverage across the State	• Facilitates collaboration among participating stakeholders	• Agrees to participate in a regional information exchange
• Set standards and policies as required for statewide interoperability	• Contains information from all participating stakeholders	• Serves as a medical data source
• Work in collaboration with neighboring states	• Coordinates data publication from stakeholders	• Publish information to the exchange and/or utilizes information from the exchange
• Provide financial support as appropriate	• Provides neutral governance organization	• Supports Entity workflow
• Ensure compliance with Federal Standards across projects	• Sets and implements regional policy (e.g., security, authorization, privacy, and authentication)	• Encourages use and adoption
• Facilitate negotiation and data collection from sources that can benefit all regions (e.g., RxHub, SureScripts, National Lab Companies)	• Identification management and support for regional patient identification	• Governs decision making as it relates to the organization
	• Pursues opportunity to expand exchange capabilities such as patient portal access or decision support	• Identification management and support for organization patient identification

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23

# Workflow: a Regional Perspective

- Can providers and others participate in a transition to an efficient, consumer-focused, regional approach while meeting their "inward" responsibilities?
- Can they identify ways in which they can work with their communities and our "competitors" to achieve a regional transformation in health care delivery?
- Can our health care systems evolve in this direction without major regulatory pressure?
- Can providers achieve these changes and remain solvent? (one person's "savings" is another's revenue loss)
- Is "transformation" possible without obsolescence in some sectors of the health care system?
- Can these transformations improve global changes to an extent not achievable by other means?

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Transformational Change is our Heritage
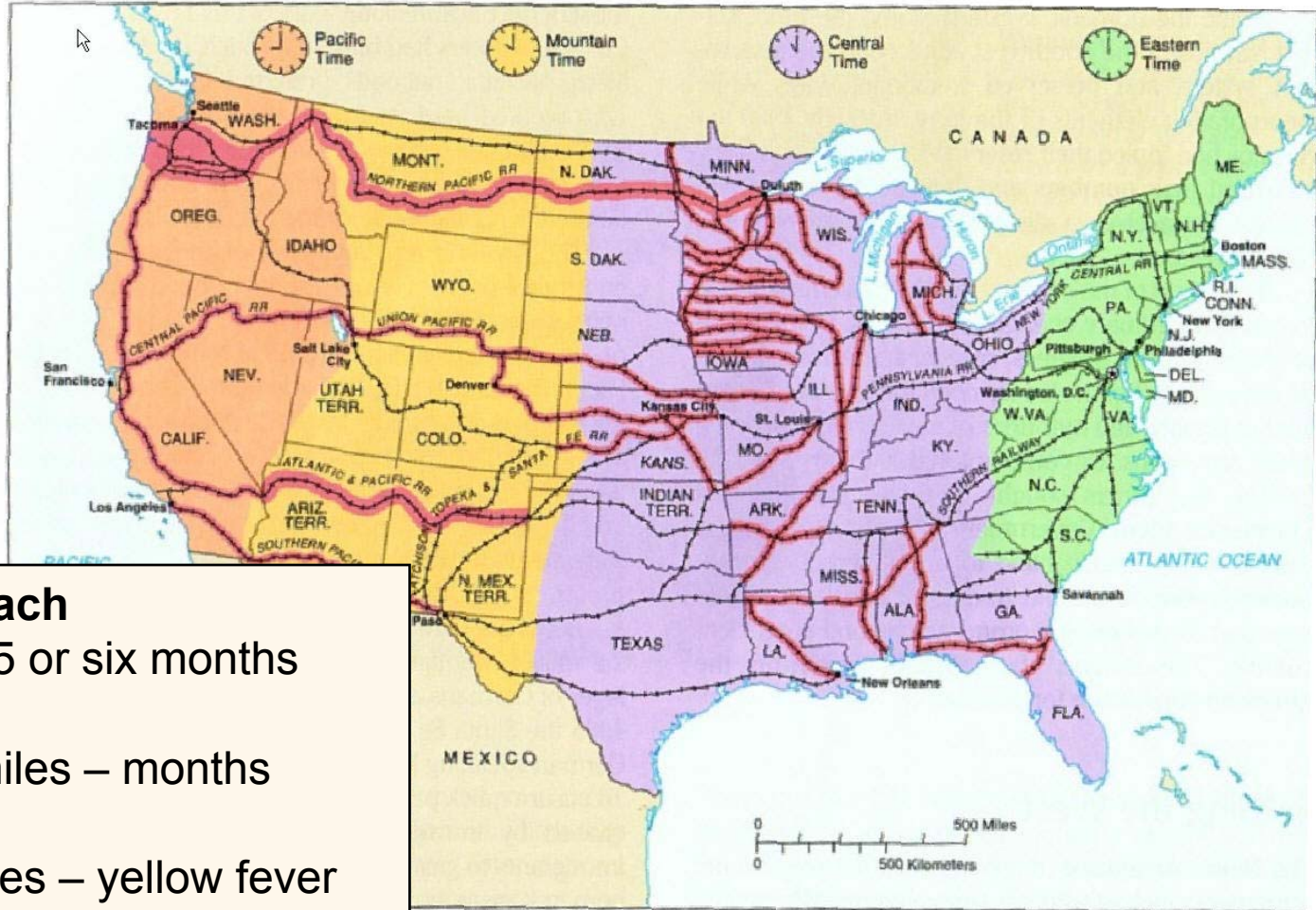
- **Stagecoach**
  $1000 – 5 or six months
- **Sea**
  18,000 miles – months
- **Panama**
  6,000 miles – yellow fever
- **Train** (**1870**)
  $150 – 5 days – First Class!!

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