NVTC Health Tech Committee
Falls Church, VA
March 20, 2012
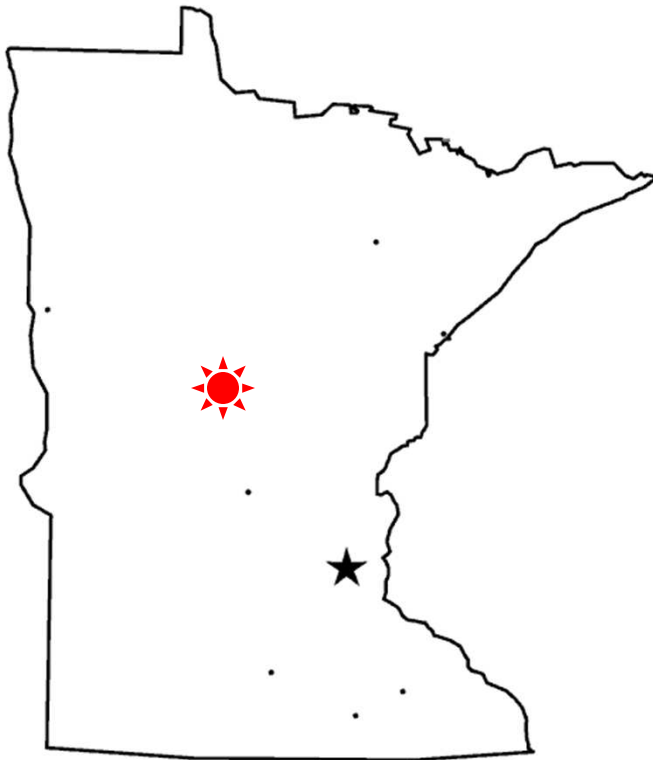
Integrating & Improving Healthcare Using Electronic Information

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Managing Partner, NHII Advisors

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Integrating & Improving Care…

Lake Wobegon

- ■ **Thanks to**
  - ● **Minnesota Health Department**
    - − **Martin LaVenture, MPH, PhD (Director of Informatics)**

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National Health Issues Impacting Lake Wobegon

- **Medical errors common**
  - 44,000-98,000 preventable deaths/year (just in hospitals)
- **Quality poor**
  - only 55% of adults receive recommended care (RAND study)
- **Costs out of control**
  - rising >10% annually
  - consuming an increasing proportion of GDP
  - now $2+ trillion/year and growing

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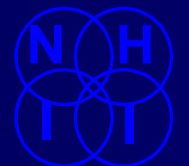
Health Info in Lake Wobegon

- **Scattered Records**
  - **Each person's records are scattered at whatever locations care has been given**
  - **Mostly paper**
- **Information sharing not effective**
  - **Cumbersome, expensive, time-consuming, and fallible**
  - **No mechanism to collect patient information from disparate sources**
- **No responsible institution**
  - **Each patient's complete records (from all sources) are not available for care or public health**
  - **Need to create these institutions**

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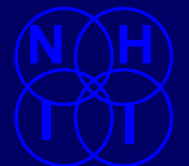
Goals for Lake Wobegon

- **Integrate & improve healthcare by creating a comprehensive health information infrastructure (HII)**

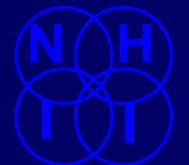- **Reduce errors, improve care, decrease costs – for both individuals and the population**

HII in Lake Wobegon

A. **Goal: comprehensive electronic patient information when & where needed**

B. **Challenges**
   - **Making information electronic**
   - **Stakeholder cooperation**
   - **Financial sustainability**
   - **Public trust (privacy)**

C. **Health record banks successfully address all the challenges**

D. **Implementation Steps**

E. **Results**

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A. LW Goal: Comprehensive Electronic Patient Information When and Where Needed

- **All medical records must be electronic**
- **Combine multiple scattered records into complete "master" record**
- **Enable rapid review**
  - **Graphs**
  - **Charts**
  - **Enhancement of relevant information**
- **Automated reminders to improve quality and reduce errors**

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B. Challenges of a Community Health Information Infrastructure

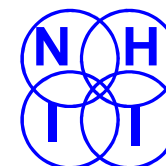Complete Electronic Patient Information

Stakeholder cooperation

Financial Sustainability

Public Trust

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Complete Electronic Patient Information
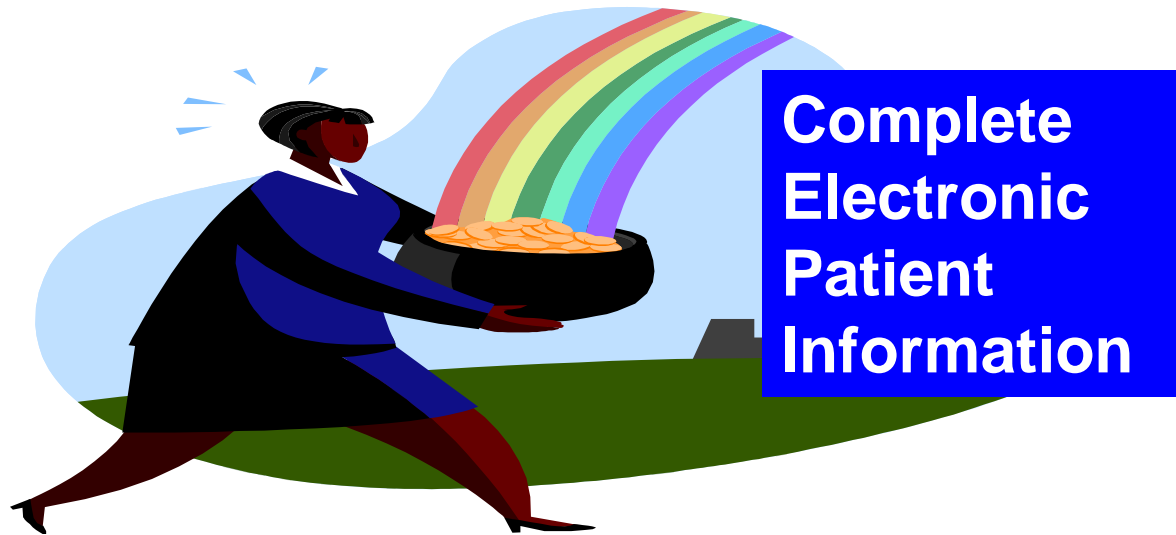
- **Most information is already electronic: Labs, Medications, Images, Hospital Records**
- **Outpatient records are mostly paper**
  - **Only 10-15% of physicians have EHRs**
  - **Business case for outpatient EHRs weak**
- ✓ **Requirement #1: Provide financial incentives to create good business case for outpatient EHRs**

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Complete Electronic Patient Information

- **Need single access point for electronic information**
- **Option 1: Gather data when needed (scattered model)**
  - **Pro: 1) data stays in current location; 2) no duplication of storage**
  - **Con: …**

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Scattered Model

Pointer to Encounter Data Added to Index

Hospital Record

Laboratory Results

Specialist Record

Records Returned

Requests for Records

Clinician EHR System

Patient Authorized Inquiry

Encounter Data Stored in EHR

Index of where patients have records

Temporary Aggregate Patient History

LHII

Clinical Encounter

Patient data delivered to Physician

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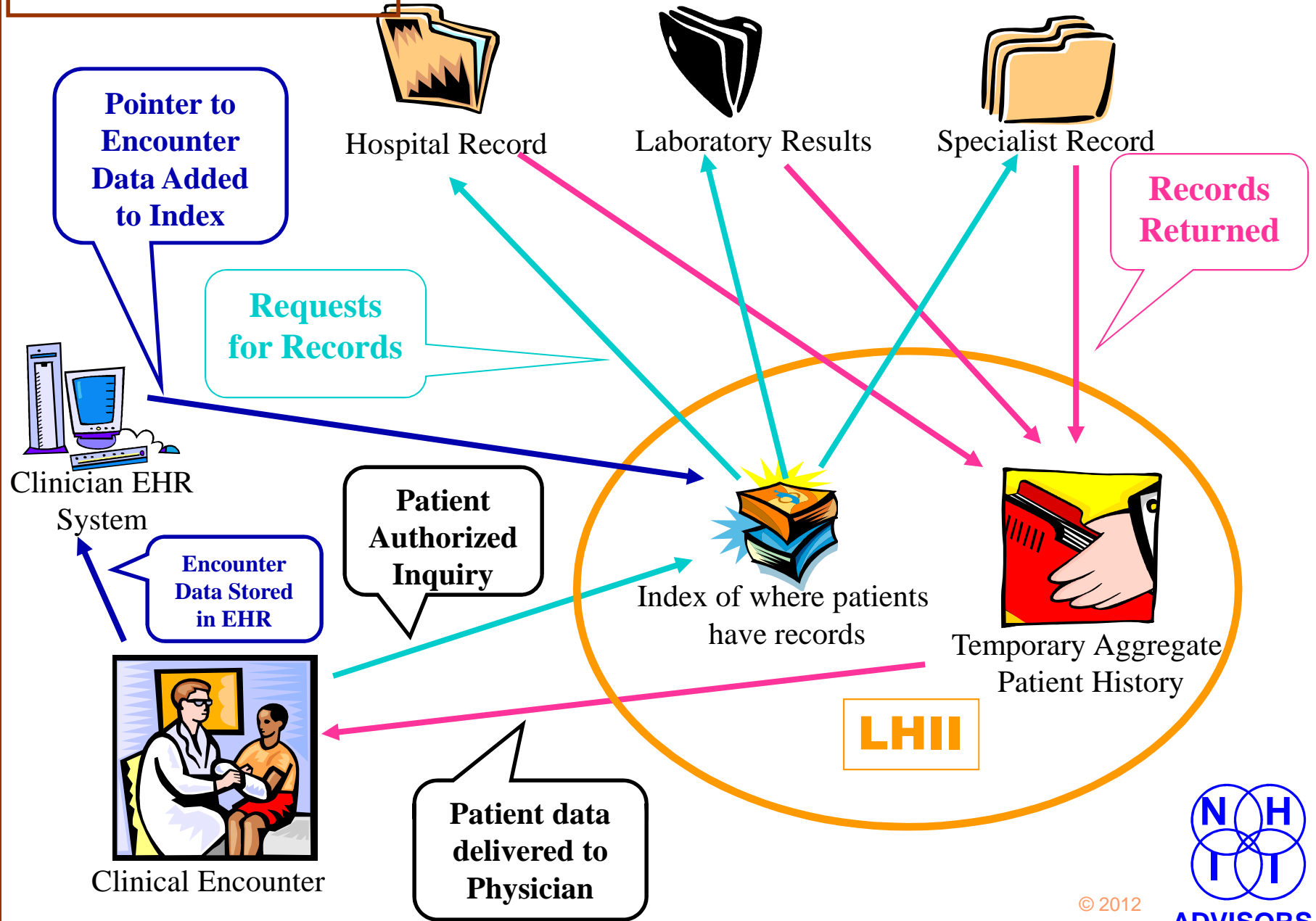
U.S.

Hospital Record

Laboratory Results

Specialist Record

Records Returned
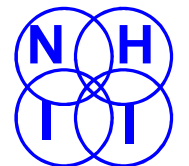
Requests for Records

Authorized Inquiry from LHII

another LHII

Index of where patients have records

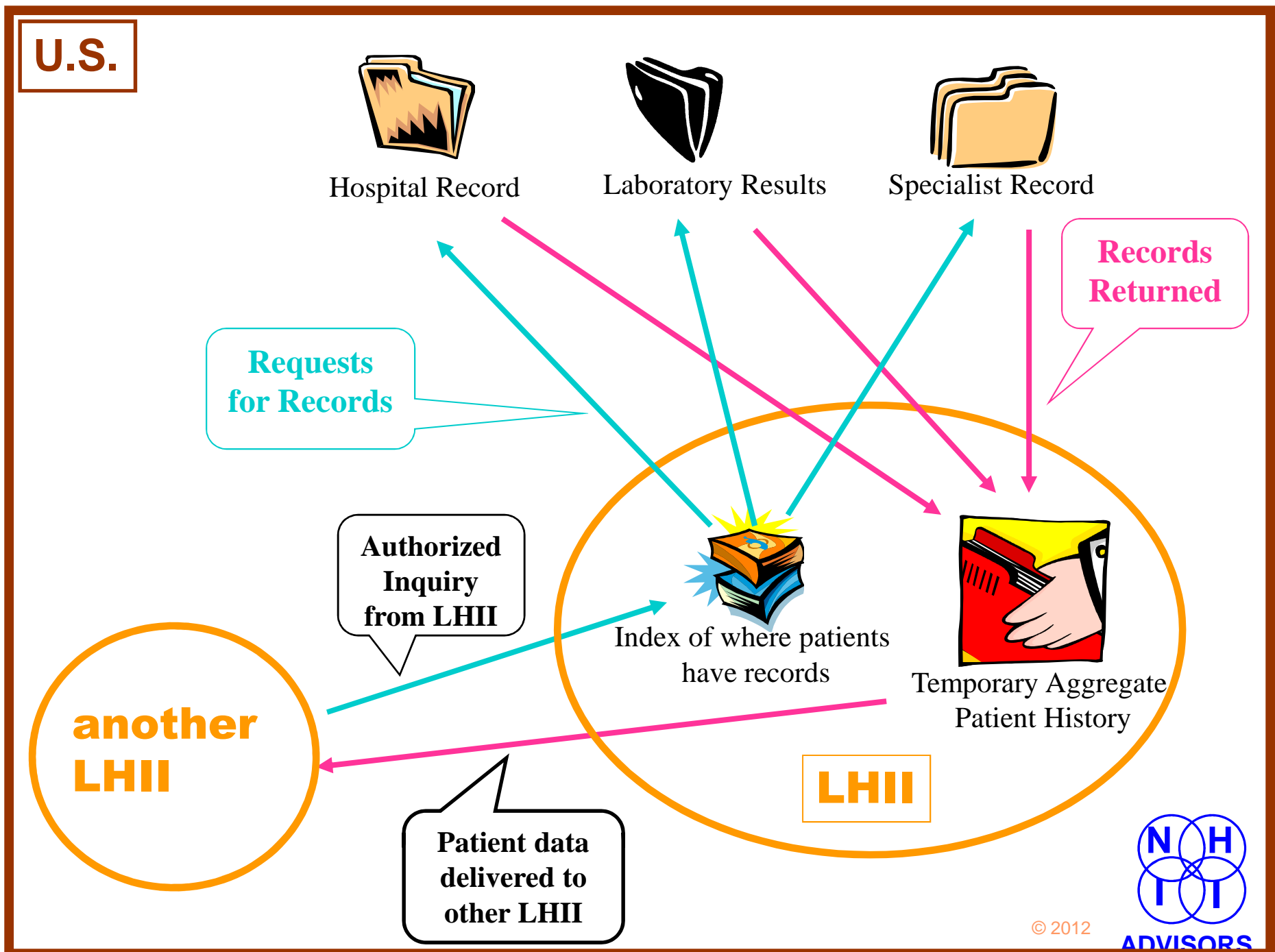Temporary Aggregate Patient History

LHII

Patient data delivered to other LHII

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Problems with scattered data model for community HII

- **<u>All</u> health information systems must have query capability (at extra cost)**
  - **Organizational cooperation challenge (especially for physicians)**
  - **Maintaining 24/7 availability with rapid response time will be operationally challenging (& costly)**
- **Searching patient records is sequential (e.g. for research & public health)**
- **Where is financial alignment & sustainability?**

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Examples of Community HII

Name	Data Storage
Spokane, WA	Central
South Bend, IN	Central
Indianapolis, IN	Central
Fishkill, NY	Central
Bellingham, WA	Central
Cincinnati, OH	Central

Number of operational community HII systems using scattered model: NONE

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Appeal of Scattered Model

- **Relates directly to existing process for obtaining "outside" records at office visits**
  - Contact "outside" provider
  - Ask for records (typically sent by fax)
- **Addresses "if only this could be automated" wish of providers**
- **Does not scale**
- **Does not allow searching**
- **Example of automating "how we do it now" vs. using IT to solve the underlying problem**

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Complete Electronic Patient Information

- Need single access point for electronic information
- Option 1: Gather data when needed (scattered model)
  - Pro: 1) data stays in current location; 2) no duplication of storage
  - **Con: 1) all systems must be available for query 24/7; 2) each system incurs added costs of queries (initial & ongoing); 3) slow response time; 4) searching not practical; 5) huge interoperability challenge (entire U.S.); 6) records only complete if every possible data source is operational**

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Complete Electronic Patient Information
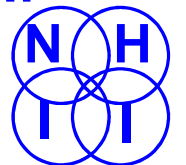
- **Need single access point for electronic information**
- **Option 2: Central repository**
  - **Pro: fast response time, no interoperability between communities, easy searching, reliability depends only on central system, security can be controlled in one location, completeness of record assured, low cost**
  - **Con: public trust challenging, duplicate storage (but storage is inexpensive)**
- ✓ **Requirement #2: Central repository for storage**

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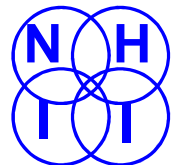
Stakeholder cooperation

- **Voluntary ➡ Impractical**
- **Financial incentives**
  - **Where find $$$$$?**
- **Mandates**
  - **New ➡ Impractical**
  - **Existing**
    - **HIPAA requires information to be provided on patient request**
- ✓ **Requirement #3: Patients must request all information**
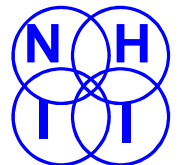
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Financial Sustainability

Funding options
- **Government**
  - **Federal: unlikely**
  - **State: unlikely**
  - **Startup funds at best**
- **Healthcare Stakeholders**
  - **Paid for giving care**
  - **New investments or transaction costs difficult**
- **Payers/Purchasers**
  - **Skeptical about benefits**
  - **Free rider/first mover effects**
- **Consumers**
  - **72% support electronic records**
  - **52% willing to pay >=$5/month**

✓ **Requirement #4: Solution must appeal to consumers so they will pay**

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Public Trust = Patient Control of Information

- **Consumers already control information in their records (13-17% admit "information hiding")**
- **Without control, too many will opt out OR politically force system to shut down**
- **Choices are today's system or consumer control -- complete information without consent is not (and should not be) a viable option**

✓ **Requirement #5: Patients must control all access to their information**

Public Trust

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Trusted Institution

- **Via regulation (like banks)** ➡️ **impractical (?)**
- **Community supervision**
  - **Community non-profit oversight**
  - **Include all key stakeholders (especially consumers)**
  - **Review regular privacy & security audits**
  - **Open & transparent**

✓ **Requirement #6: Governance by community non-profit that includes all stakeholders**

Public Trust

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Trustworthy Technical Architecture

- Prevent large-scale information loss
  - Searchable database offline
  - Carefully screen all employees
- Prevent inappropriate access to individual records
  - State-of-the-art computer security
    - Strong authentication
    - No searching capability
    - Secure operating system
  - Easier to secure central repository: efforts focus on one place

✓ **Requirement #7: Technical architecture must prevent information loss and misuse**

Public Trust

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C. Lake Wobegon Solution: Health Record Bank (HRB)

- **Secure community-based repository of complete health records**
- **Access to records completely controlled by patients (or designee)**
- **"Electronic safe deposit boxes"**
- **Information about care deposited once when created**
  - **Required by HIPAA**
- **Allows EHR incentives to physicians to make outpatient records electronic**
- **Operation simple and inexpensive**

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What is a Health Record Bank?

See video at:

http://www.healthbanking.org

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Health Record Bank Operation

Encounter Data sent to Health Record Bank

Clinician's Bank

Patient data delivered to Clinician

Secure patient health data files

optional payment

Clinician EHR System

Encounter Data Entered in EHR

YES

Patient Permission?

NO

DATA NOT SENT

Health Record Bank

Clinical Encounter

Clinician Inquiry

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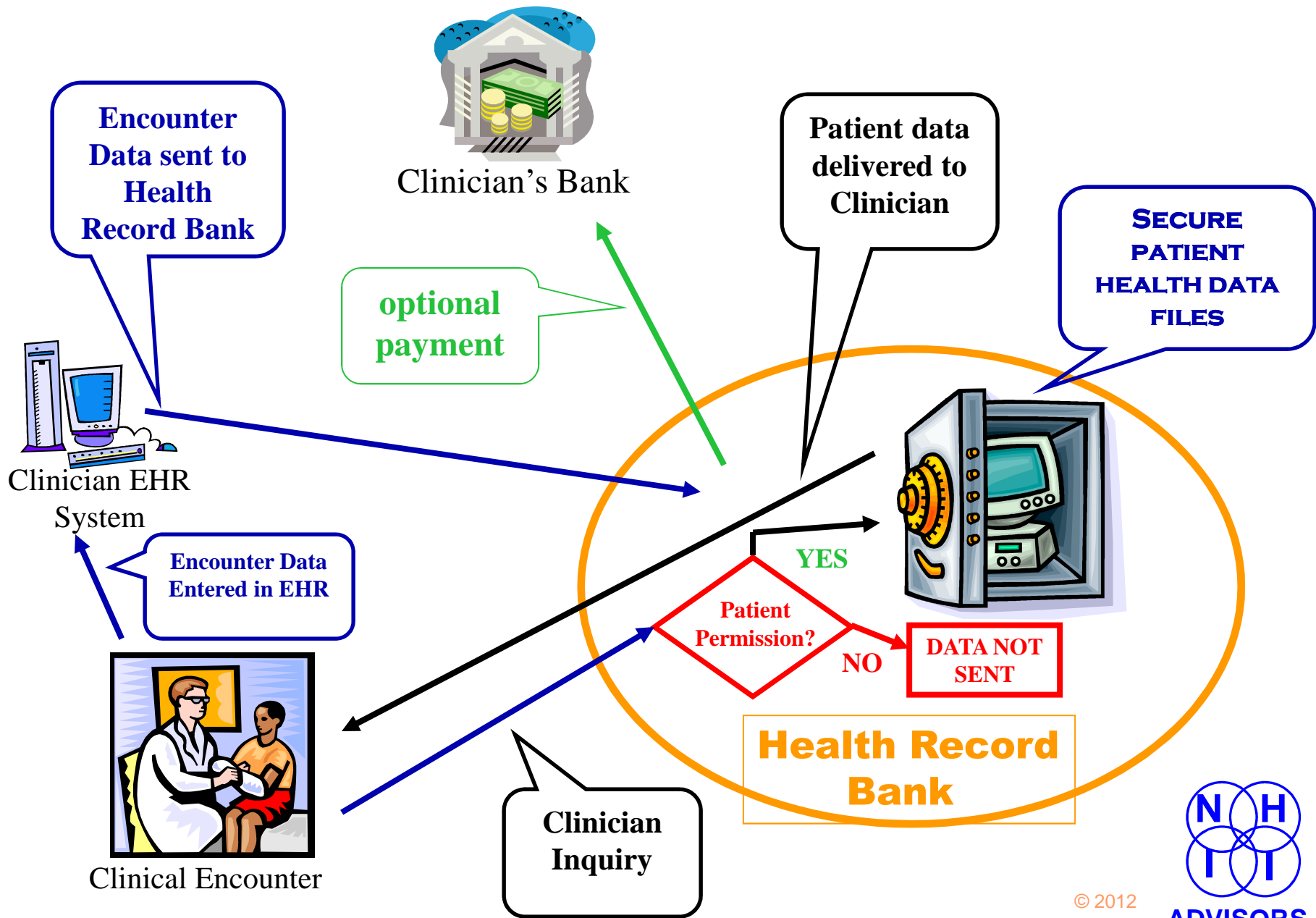
HRB Rationale

- **Operationally simple**
  - **Records immediately available**
  - **Deposit new records when created**
  - **Enables value-added services**
  - **Enables research queries**
- **Patient control** ➡
  - **Trust & privacy**
  - **Stakeholder cooperation (HIPAA)**
- **Low cost facilitates business model**
- **Creates EHR incentive options**
  - **Pay for deposits**
  - **Provide Internet-accessible EHRs**

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HRB Business Model

- **Costs (with 1,000,000 subscribers)**
  - **Operations: $6/person/year**
  - **EHR incentives: $10/person/year**
- **Revenue**
  - **Advertising: $6/person/year (option to opt out for small fee)**
  - **Reminders & Alerts: >= $12/person/year**
    - **"Peace of mind" alerts**
    - **Preventive care reminders**
    - **Medication reminders**
  - **Queries: ?**
- **No need to assume/capture any health care cost savings (!!)**

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Health Record Bank Organization

Lake Wobegon Health Foundation

RESPONSIBLE FOR:
Policy
Governance
Oversight

Community Board of Directors

Executive Director

Other Staff(Optional)

Other communities use same HRB

regulate via contract

% of profit

Lake Wobegon HRB Corp. (for-profit)

RESPONSIBLE FOR:
Obtaining Capital
Operating HRB

HRB Operator Board of Directors

Management

Marketing
Operations
Customer Support

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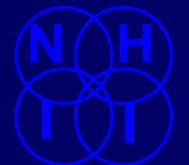
D. Implementation Steps

- **Lake Wobegon Health Foundation (non-profit)**
  - **Healthcare stakeholders & consumers**
  - **Linkage to community and oversight**
    - **Supervise privacy and security audits**
- **Establish agreement with Lake Wobegon HRB Corporation**
- **Implement HRB**
  - **Free EHRs for physicians**
  - **Profit allocation for LW Health Foundation**
  - **Profit allocation for data partners**
- **LW HRB Corp. uses private capital**

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HRB Implementation Strategy
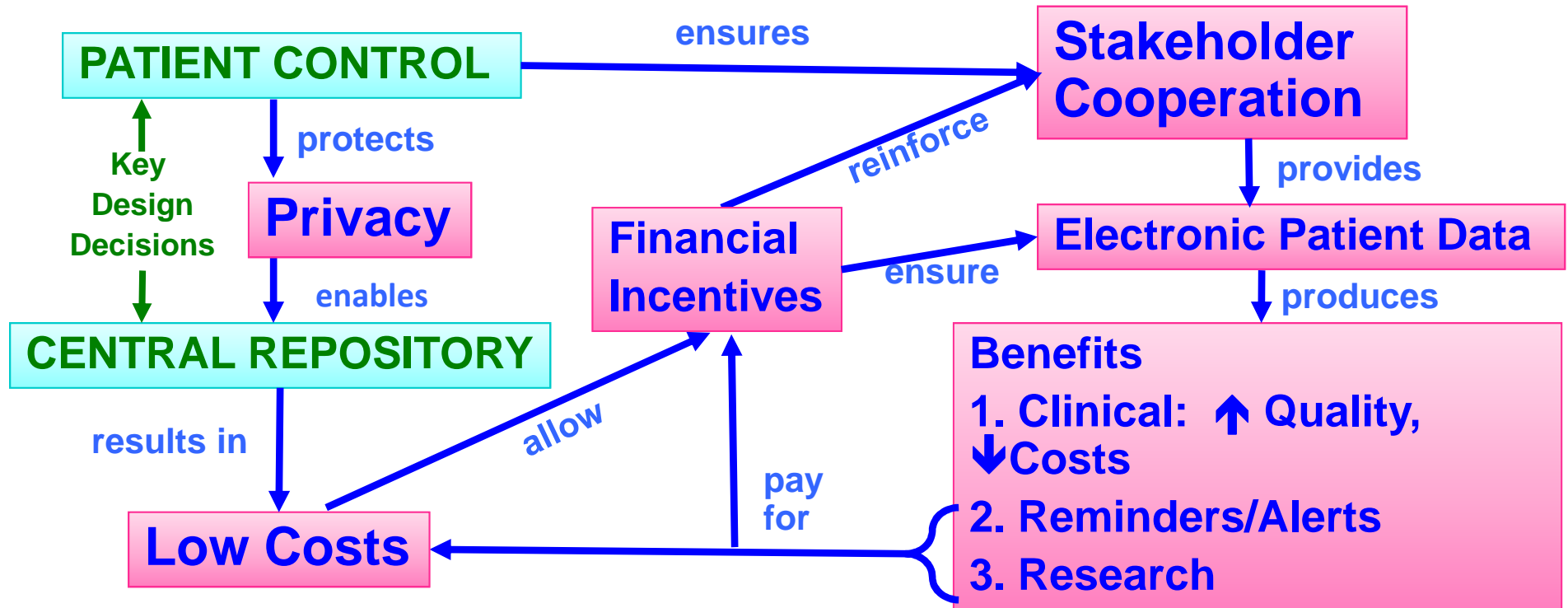
HRB Solves LW HII Problems

- **Making Information Electronic**
  - **Business model provides free EHRs for physicians**
- **Stakeholder Cooperation**
  - **Patients request data ➡ all stakeholders must provide it (by law)**
  - **HRB profit allocations to data partners**
- **Privacy**
  - **Patient control ➡ each person sets their own privacy policy**
- **Financial Sustainability**
  - **New compelling value for patients ➡ ~$20/person/year recurring revenue**

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E. Lake Wobegon Results

- **Health records are all electronic**
- **All providers have EMRs**
- **Comprehensive electronic records are always available for care (unlike the rest of the U.S.)**
- **Public health**
  - **Promptly detects and responds to outbreaks**
  - **Has up-to-date population health information – "Disease Report Daily" for providers**
  - **Enables individualized health interventions for entire population**
- **Per capita health care costs have declined**
- **Decision support being developed and deployed**
- **HRB expanding to reach critical mass**

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Key Lesson from Lake Wobegon

A health record bank can integrate & improve health care →

Healthy people living in healthy communities

… where patient engagement is strong, all the EHR interfaces are good looking, and all the health information infrastructure is above average.

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Questions?

Lake Wobegon

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