3 Strategies for Achieving Interoperability

June 27, 2017
2 pm – 3 pm ET

Agenda

- Welcome and Introductions
  - Claudia Ellison, Program Director, eHealth Initiative

- Discussion & Comments
  - ANDREA DARBY, R.Ph, M.H.A, System Vice President, OhioHealth Information Services
  - WES RISHEL, Board member, North Coast Health Improvement and Information Network (NCHIIN); Former VP and Distinguished Analyst, Gartner Group
  - MARK LaROW, Chief Executive Officer, Verato

- Questions & Answers from Audience

Housekeeping Issues

- ## All participants are muted
  - To ask a question or make a comment, please submit via the chat feature and we will address as many as possible after the presentations.

- ## Technical difficulties:
  - Use the chat box and we will respond as soon as possible

- ## Questions & Answers
  - Use the Q&A

- ## Today's slides will be available for download on the eHI Resource page at: **https://www.ehidc.org/resources/eventsummaries**

Overview of eHealth Initiative

- Since 2001, eHealth Initiative (c6) and the Foundation for eHealth Initiative (c3) have conducted research, education and advocacy to demonstrate the value of technology and innovation in health.

- Serve as the industry leader convening executives from multi-stakeholder groups to identify best practices to transform care through use of health IT

- The missions of the two organizations are the same: to drive improvement in the quality, safety, and efficiency of healthcare through information and technology.

- Our work is centered around the *2020 Roadmap*. The primary objective of the *2020 Roadmap* is to craft a multi-stakeholder solution to enable coordinated efforts by public and private sector organizations to transform care delivery through data exchange and health IT.

Roadmap to Transforming Care

eHealth - Convening Executives to Research & Identify Best Practices

- Data Analytics

- Data Access and Privacy

- Interoperability

- Patient and Provider Technology Adoption

This webinar was made possible through the generosity and support of Verato!

Slides are available at www.ehidc.org/resources
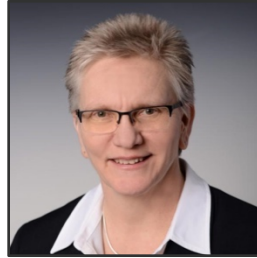
Strategies for Achieving Interoperability

3 Unique Perspectives on the Challenge of Health IT Interoperability

Three Perspectives – One Challenge

Healthcare System Executive

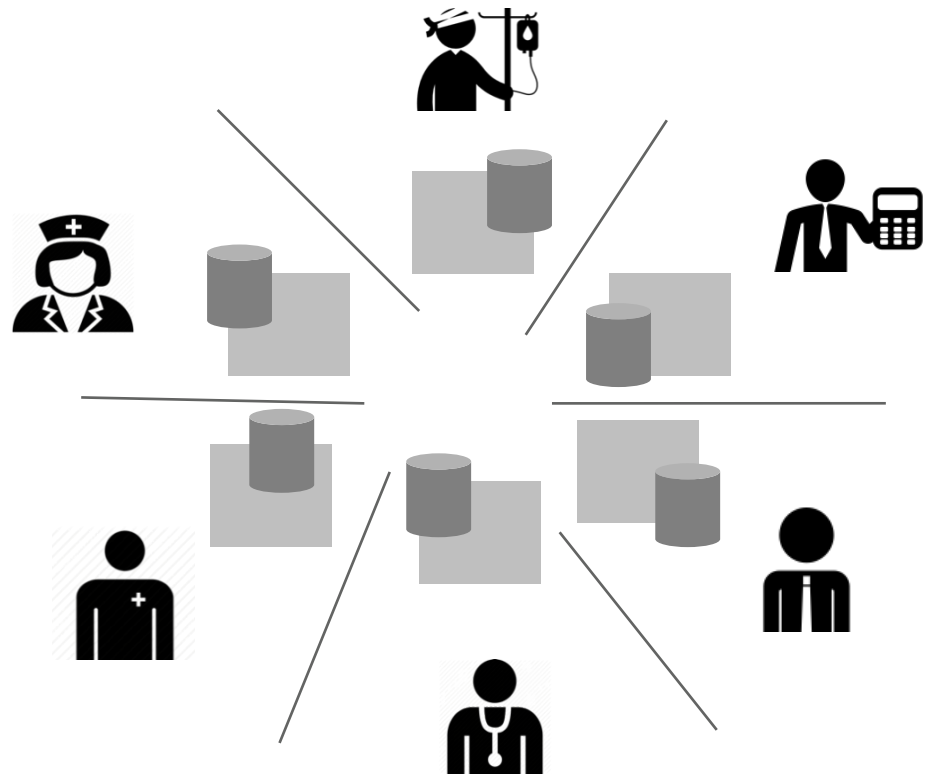Healthcare Interoperability

Industry Analyst

Technology Innovator

In a World Where There is no Interoperability …

Each system …

- Serves different users

- "Automates" a different part of the business

Leading to …

- Excessive manual effort

- Inefficiencies and errors

- Inability to measure/improve

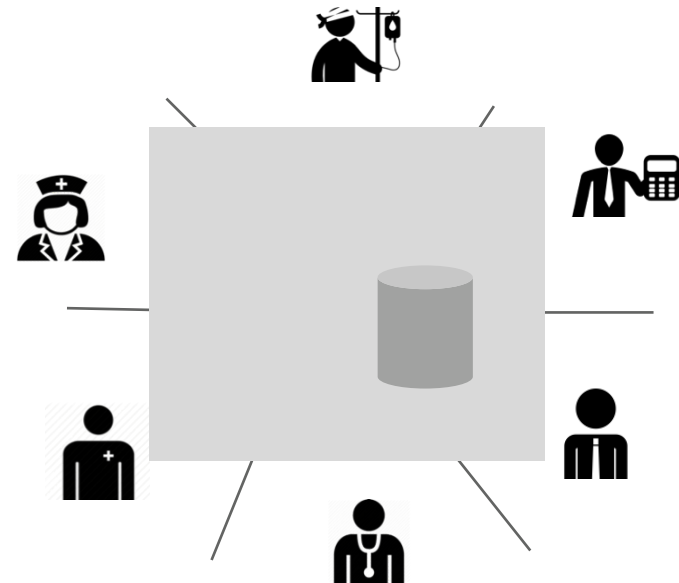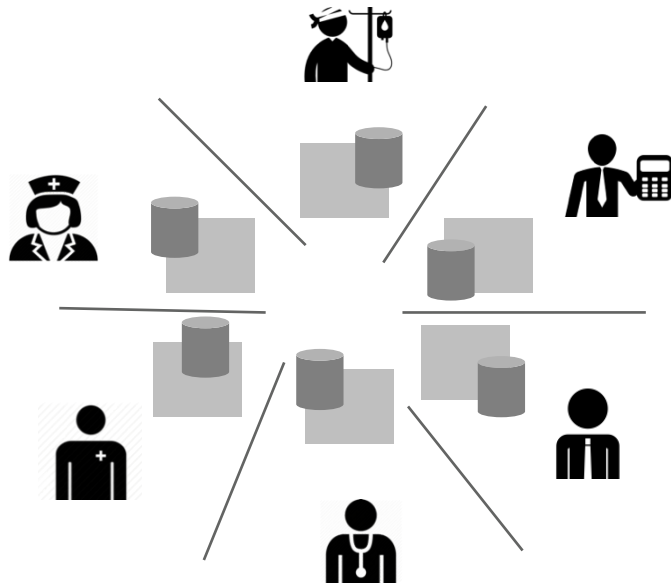# In Healthcare, Interoperability is Essential for Strategic Initiatives

Interoperability is necessary to:

- **Merge** hospital systems

- Measure **risk**

- Report **compliance**

- **Coordinate** care

- Manage **population** health

- **Connect** with patients

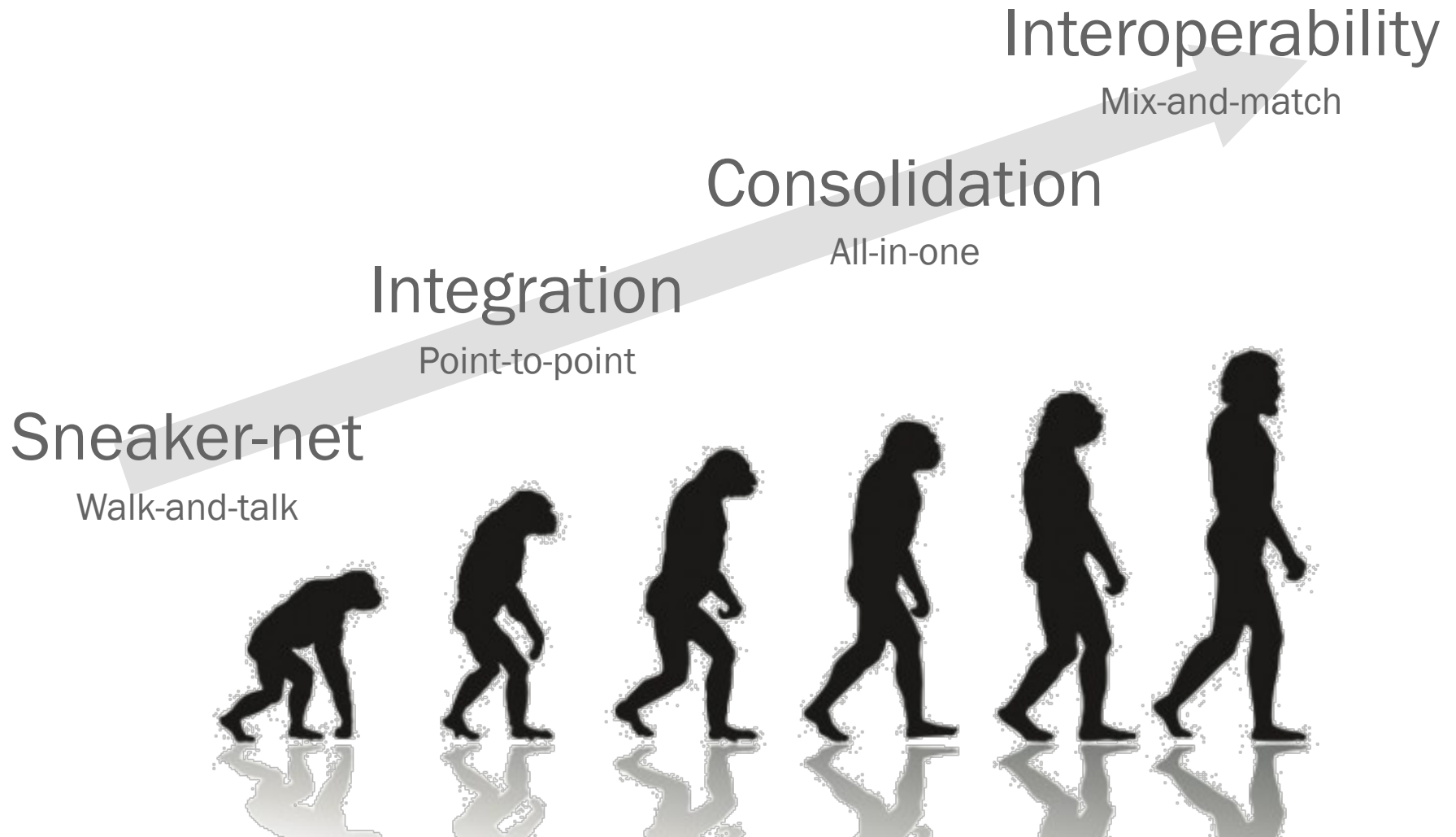- Incorporate new **innovative** applications - physician assistance, translational medicine, expert systems
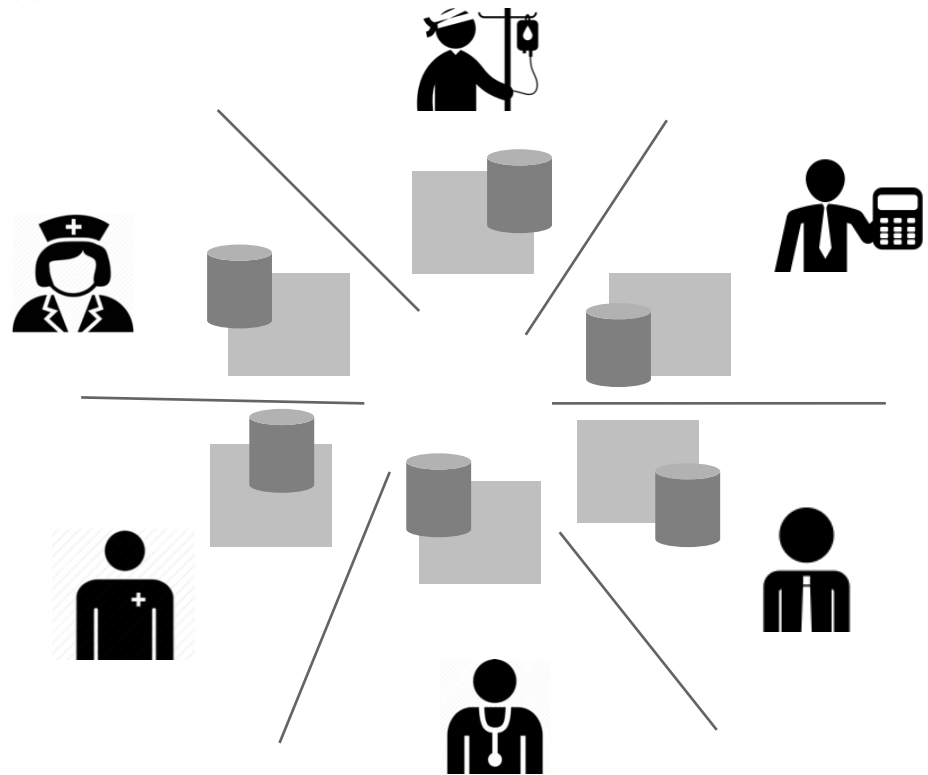
Challenge of Interoperability in Healthcare

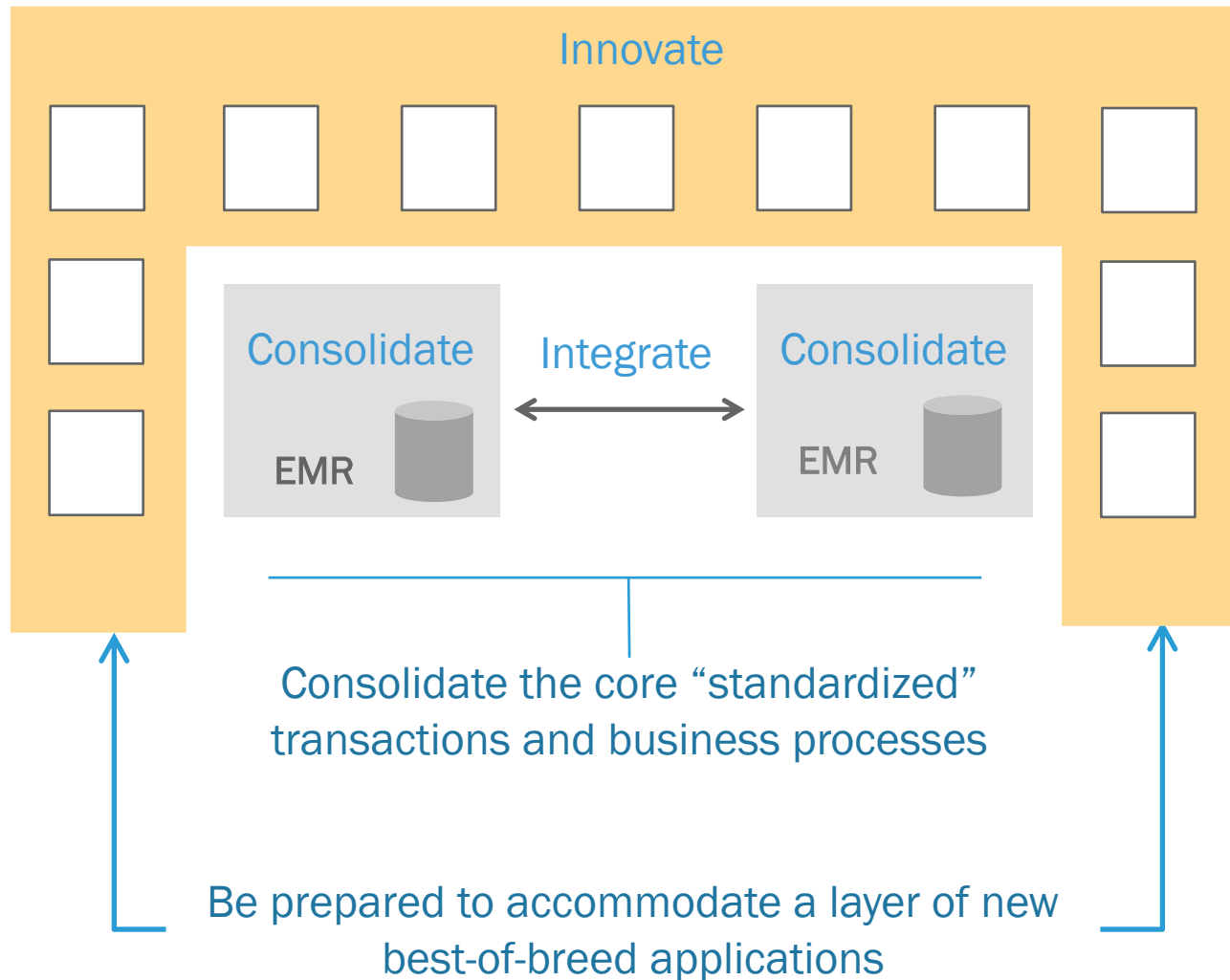## How do we get this . . . to behave like this?

Evolution to Interoperability

Interoperability

Mix-and-match

Consolidation

All-in-one

Integration

Point-to-point

Sneaker-net

Walk-and-talk

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Healthcare Interoperability Landscape:
- Consolidate, Integrate, and Innovate

Innovate

Consolidate

Integrate

Consolidate

EMR

EMR

Consolidate the core "standardized" transactions and business processes

Be prepared to accommodate a layer of new best-of-breed applications

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Interoperability Platform is Needed to Make this Strategy Work

Innovate

EMR ⟷ EMR

Interoperability Platform

- API-based
- Standards-based (e.g., HL7, FHIR)
- Common Services (e.g., Data, Analytics, Identity)

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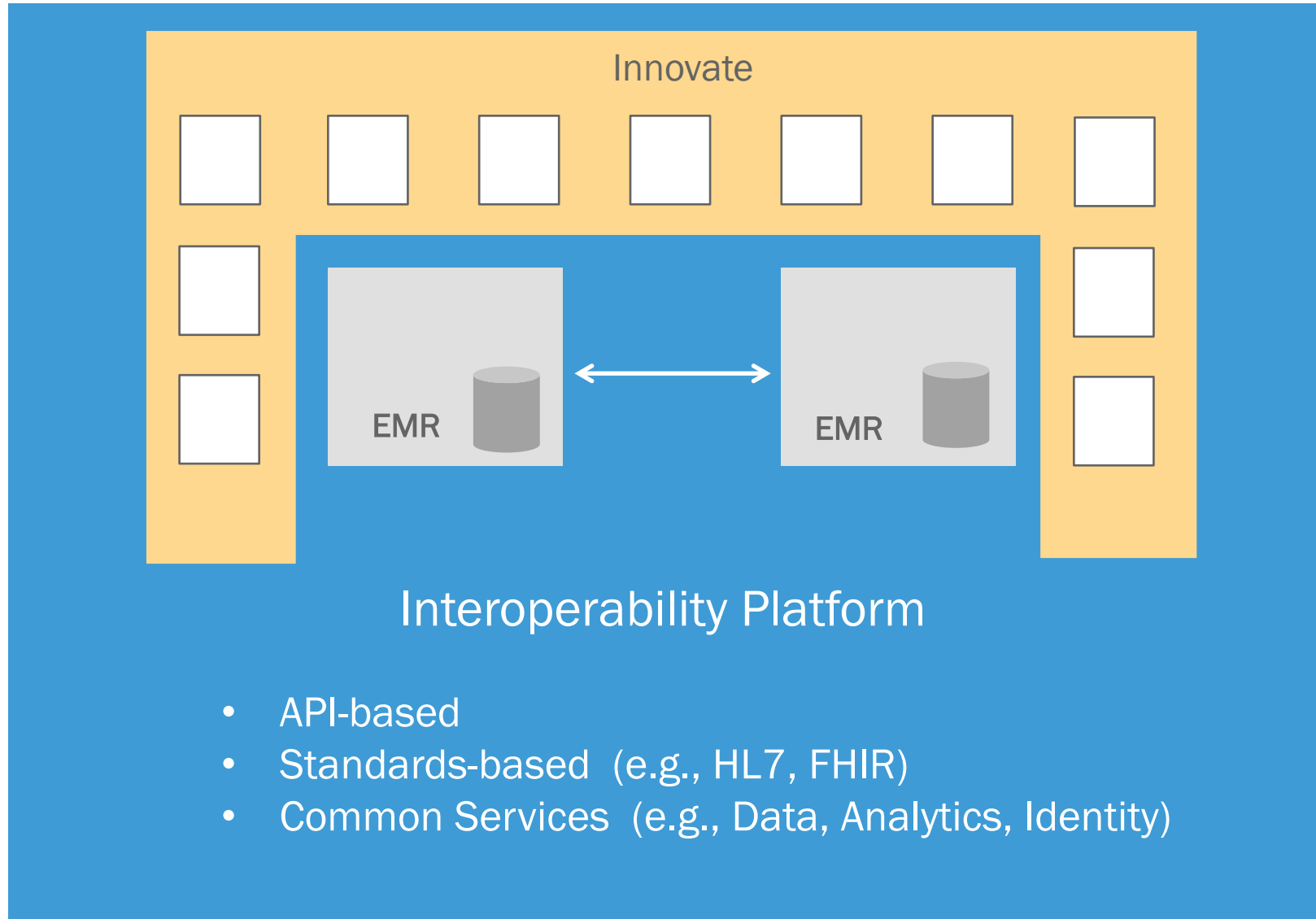
Real-World Experience From OhioHealth

Introduction To OhioHealth

Large Ohio Footprint

- 11 Hospitals
- 250 Practice Locations
- 600 Providers

Diverse Network

- Large affiliated network
- Managed care, population health programs
- OhioHealth Physician Group
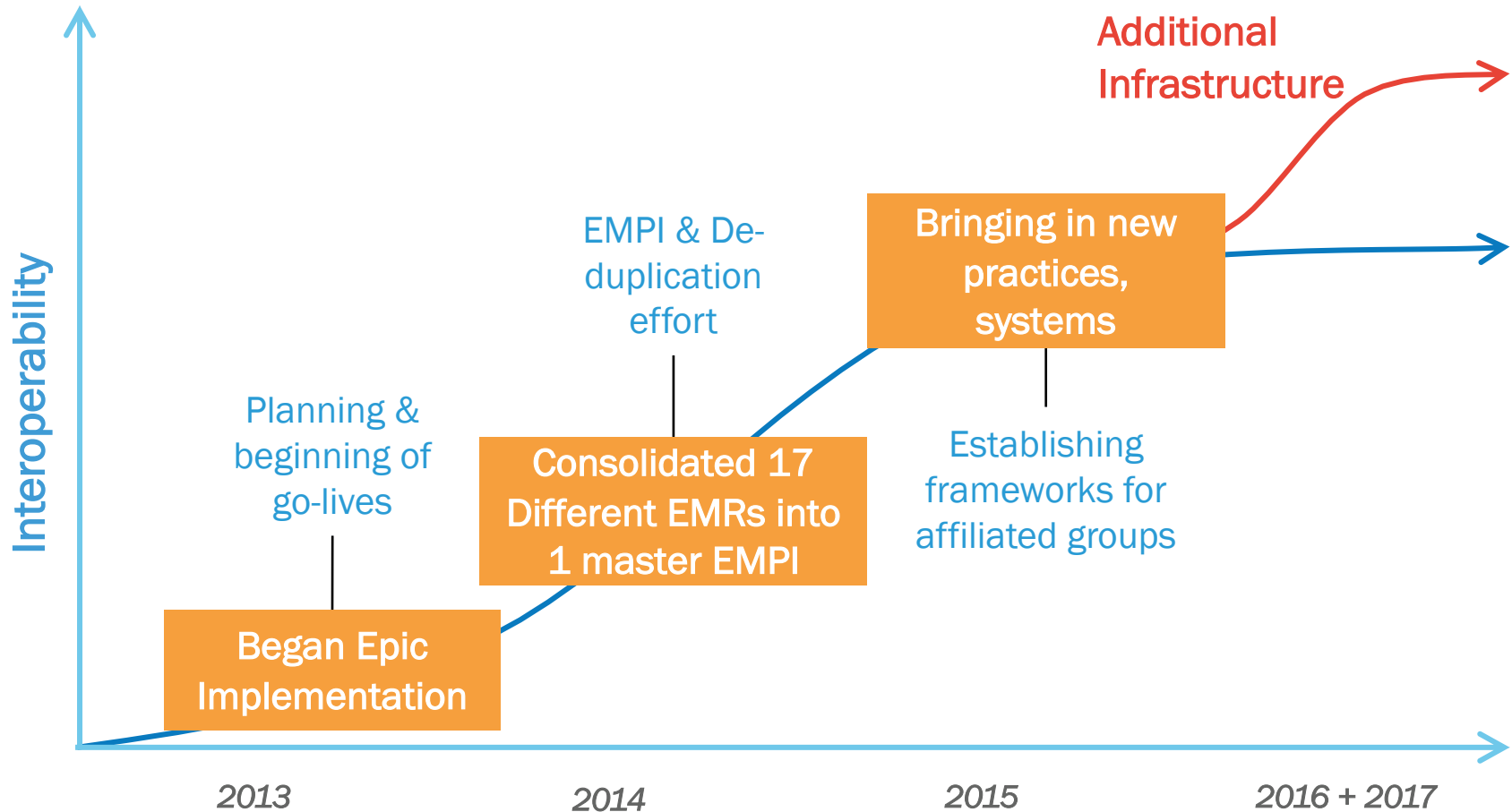
Employer Solutions

- Health & wellness services
- Onsite Clinics

COURTESY: OHIOHEALTH

OhioHealth's Journey To Interoperability - 2012 To Today

Our Epic investment helped us achieve a great deal of interoperability, but more work is needed

Interoperability (y-axis)

Additional Infrastructure

Planning & beginning of go-lives

Began Epic Implementation

EMPI & De-duplication effort

Consolidated 17 Different EMRs into 1 master EMPI

Bringing in new practices, systems

Establishing frameworks for affiliated groups

2013 *2014* *2015* *2016 + 2017*

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While Great Progress Has Been Made, Challenges Persist

Within OhioHealth

- 5 – 6% duplicate rate
- 30 – 70% of physicians - depending on location - are independent with disparate EMR at their practices

With Payers

- Increased focus on bundled payments, quality measurements
- Challenges with electronic access to the right information for the right patient
  - Establishing meaningful exchange beyond claims data
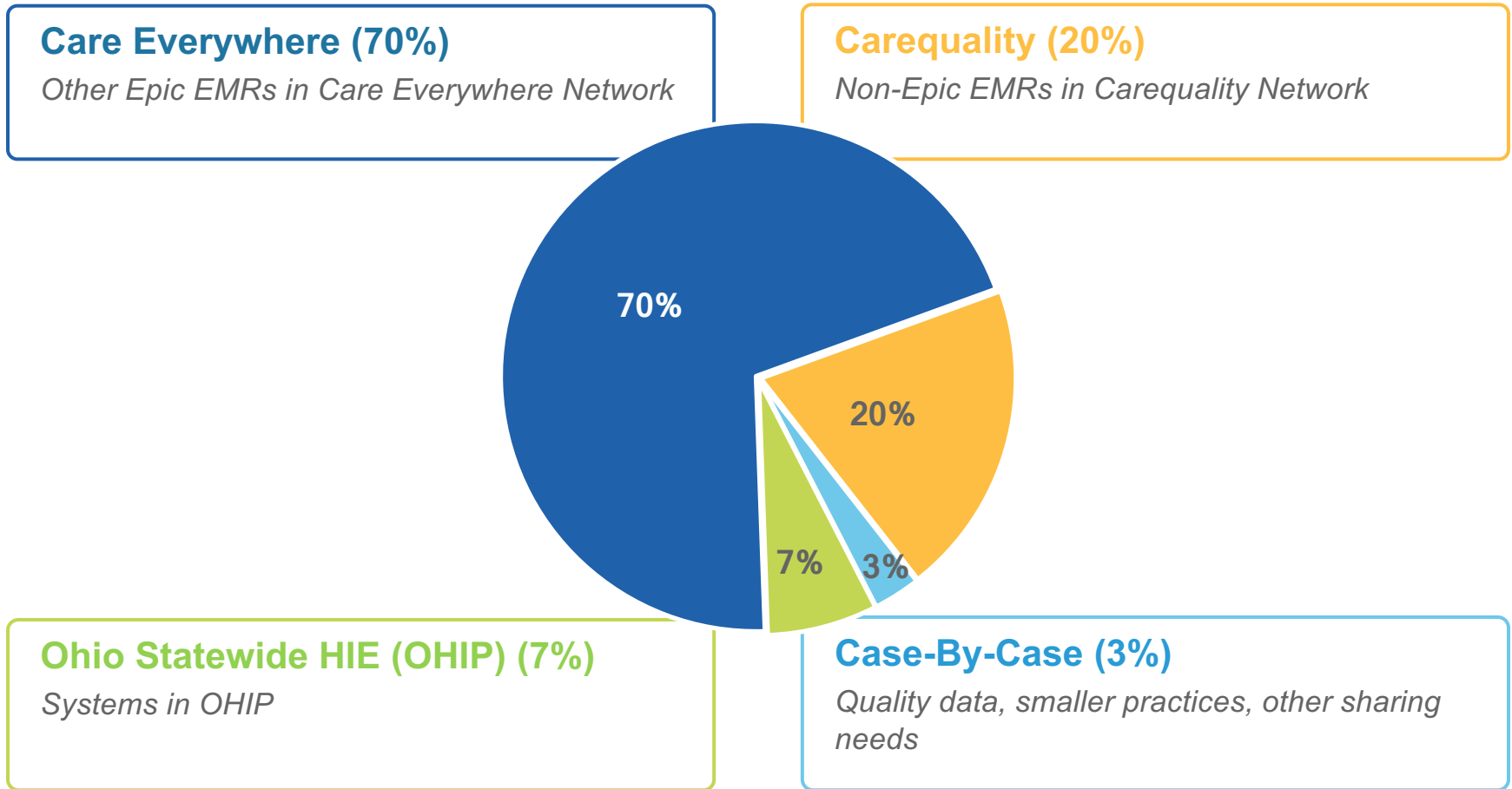
Other Providers

Those providers not in existing HIEs are still difficult to communicate with

- Difficulty increases when working to exchange images or more complex information

Taking A Four-Pronged Approach To Interoperability

The industry does not allow for a "one-size-fits-all" approach to interoperability, requiring us to be flexible

Care Everywhere (70%)
Other Epic EMRs in Care Everywhere Network

Carequality (20%)
Non-Epic EMRs in Carequality Network

70%

20%

7%

3%

Ohio Statewide HIE (OHIP) (7%)
Systems in OHIP

Case-By-Case (3%)
Quality data, smaller practices, other sharing needs

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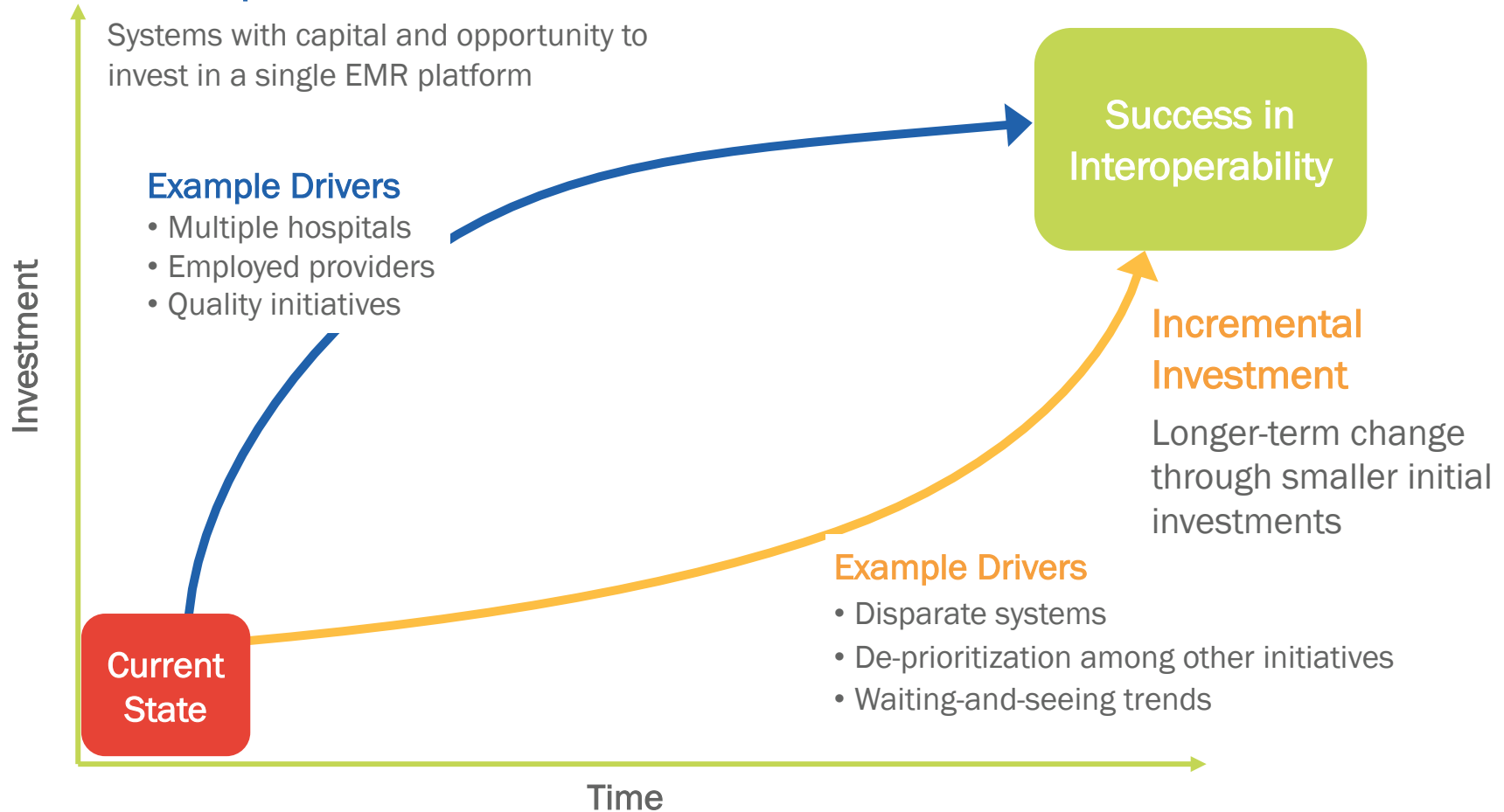# Strategy #1: Take Active Steps Toward Interoperability - Today

Every provider must take ownership and begin taking immediate steps toward interoperability. There are two fundamental approaches.

Initial Upfront Investment

Systems with capital and opportunity to invest in a single EMR platform

Example Drivers
- Multiple hospitals
- Employed providers
- Quality initiatives

Success in Interoperability

Incremental Investment

Longer-term change through smaller initial investments

Example Drivers
- Disparate systems
- De-prioritization among other initiatives
- Waiting-and-seeing trends

Investment

Current State

Time

Development Areas To Watch For Full Interoperability Achievement

Three critical areas will need innovation before we can achieve full interoperability

1) Better patient matching

Identify right patients for the right stakeholder, without error

2) Clean data exchange

Accurate, consistent data exchange with semantic comprehension
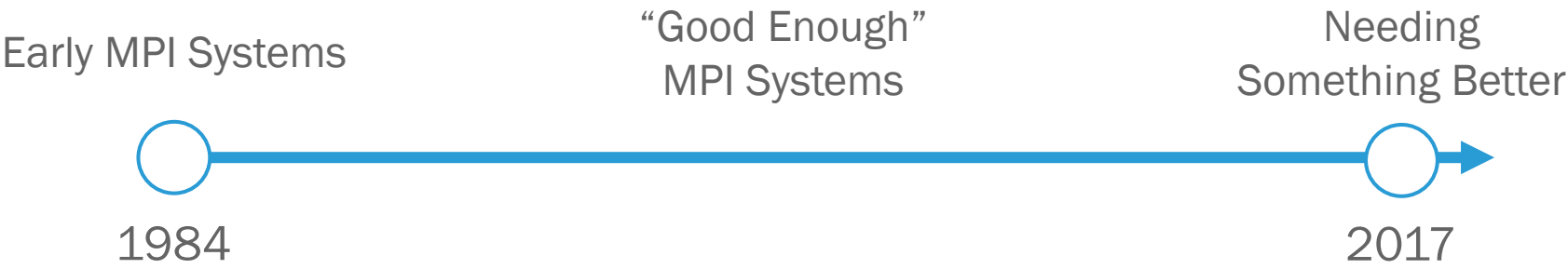
3) Meaningful exchange

Ability to share much larger amounts of meaningful information

A Retired Healthcare Nerd's Perspective On Interoperability

Problems Worthy Of Attack Prove Their Worth By Fighting Back

Early MPI Systems

"Good Enough" MPI Systems

Needing Something Better

1984

2017

A PROBABILISTIC APPROACH TO THE PATIENT IDENTIFICATION PROBLEM

Max G. Arellano and Donald W. Simborg, M.D.

University of California
San Francisco, California

ABSTRACT

Patient identification, viz, the association of a person with a hospital medical record number is the foundation of all hospital information sys-

2. The association of a patient with records for another person. This can seriously comprom- ise the medical care which that patient receives if the course of treatment is unduly influenced by the information which that

Symposium on Computer Applications in Medical Care, 1981

NCHIIN

Health *Improvement* Information Network

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About Humboldt County, California
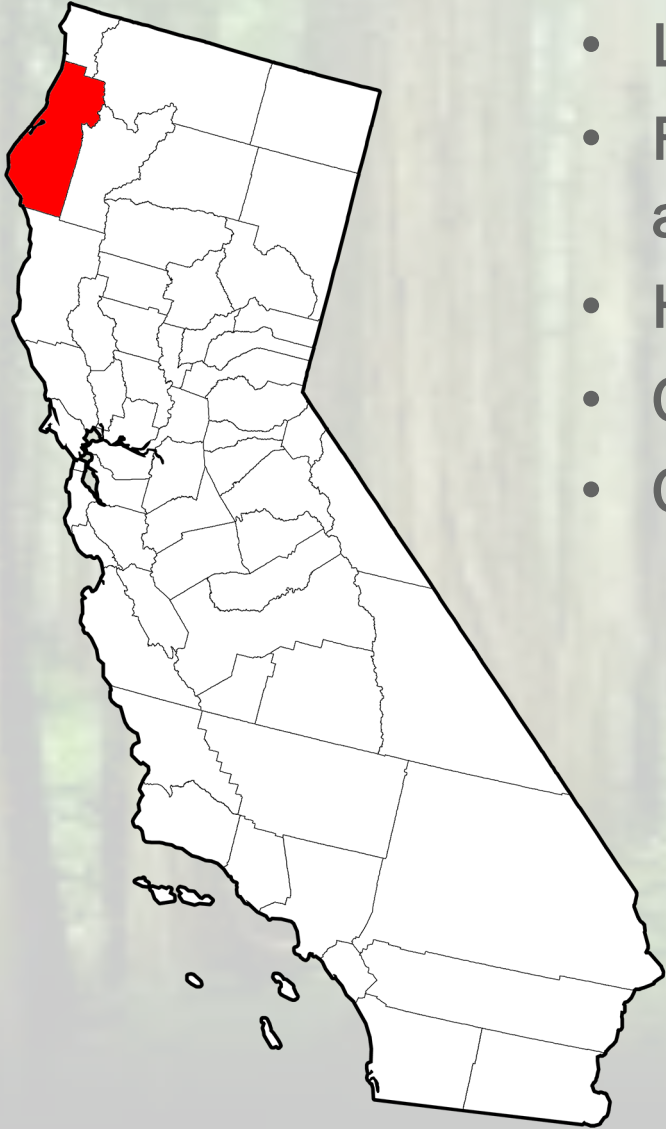
- Located in rural Northern California

- Four times the area of Rhode Island, with a population of ~135,000.

- High poverty rate

- Opioid death rate twice state average

- Out of 58 California Counties, Humboldt is:
  - 43rd in Health Outcomes
  - 21st in Quality of Life
  - 39th in Health Behaviors
  - 20th in Clinical Care
  - (lower number is better)

The Number One Real-World Interoperability Challenge: Garbage Out – Garbage In

Passed on to everyone else

Good enough for the boss?

YES

NO

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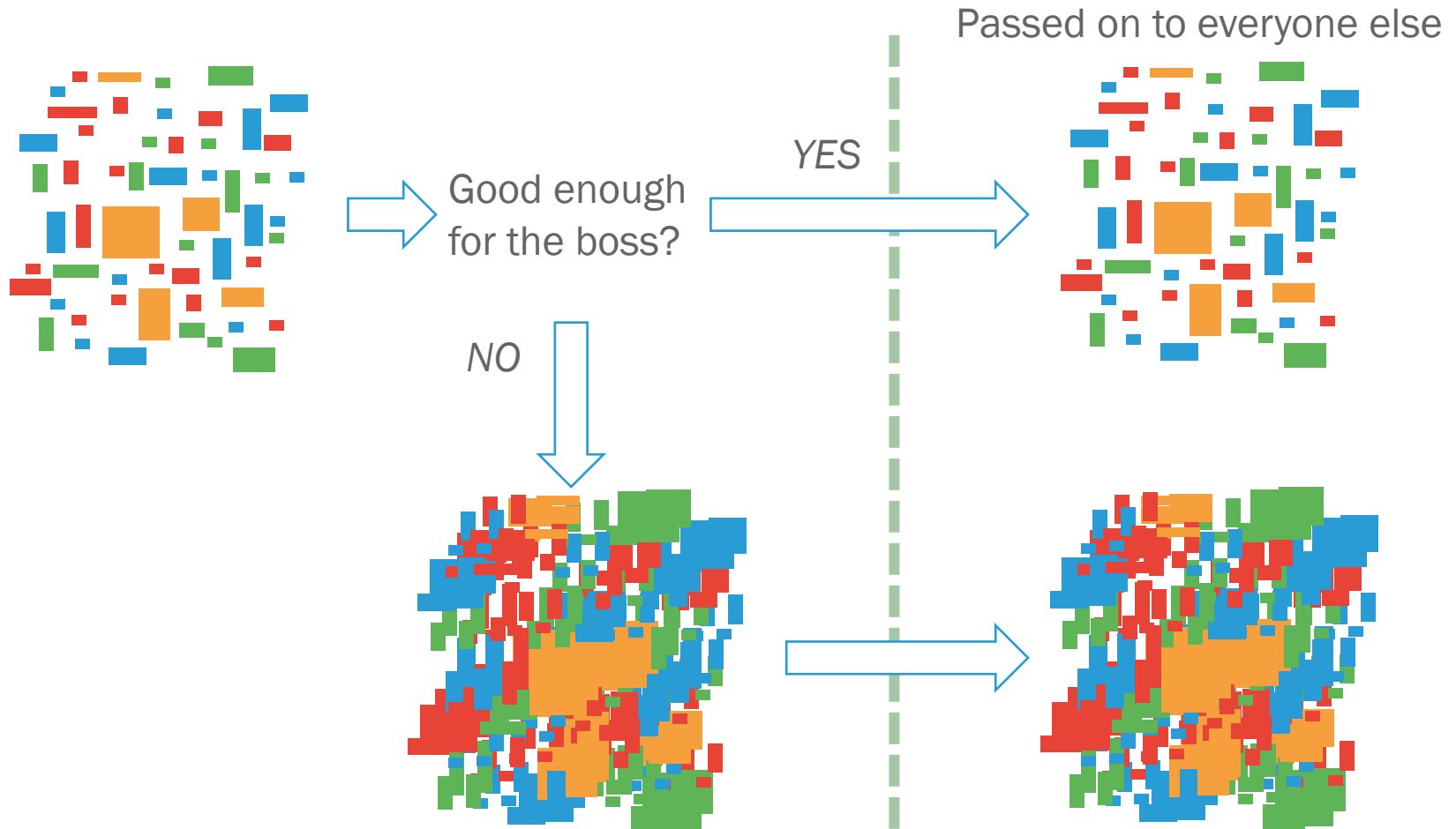
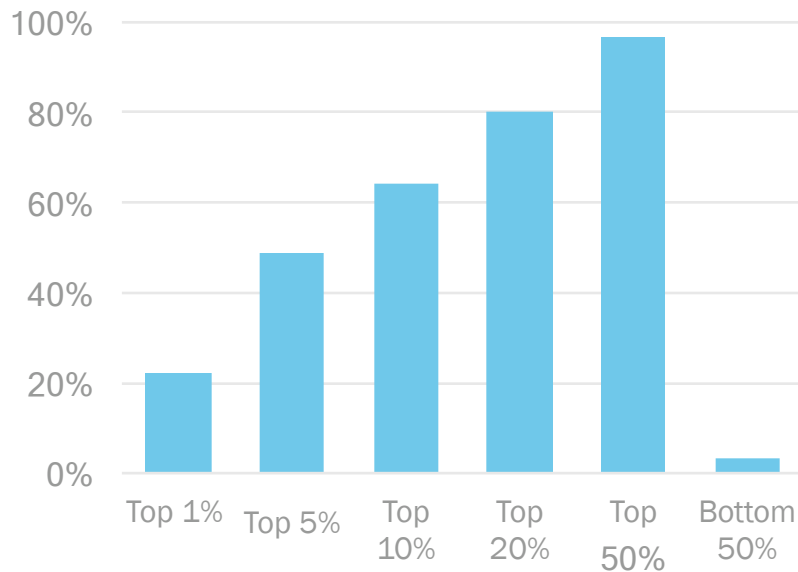# The Next Challenge: The Triple Aim

- Improving the patient experience of care (including quality and satisfaction);
- Improving the health of populations; and
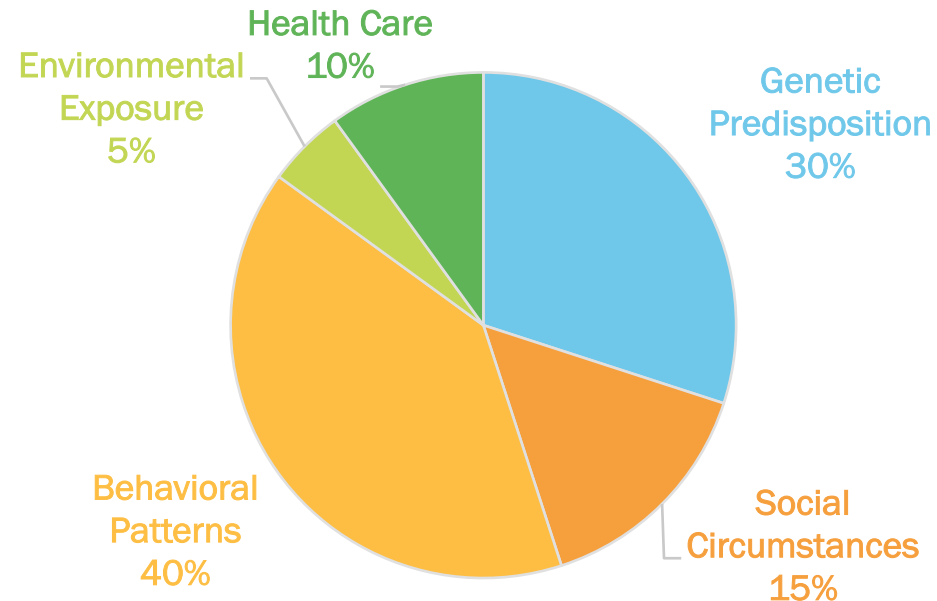- Reducing the per capita cost of health care.

⚠️ Costs Are Not Distributed Evenly

⚠️ Health extends beyond healthcare

Expenditure By Population

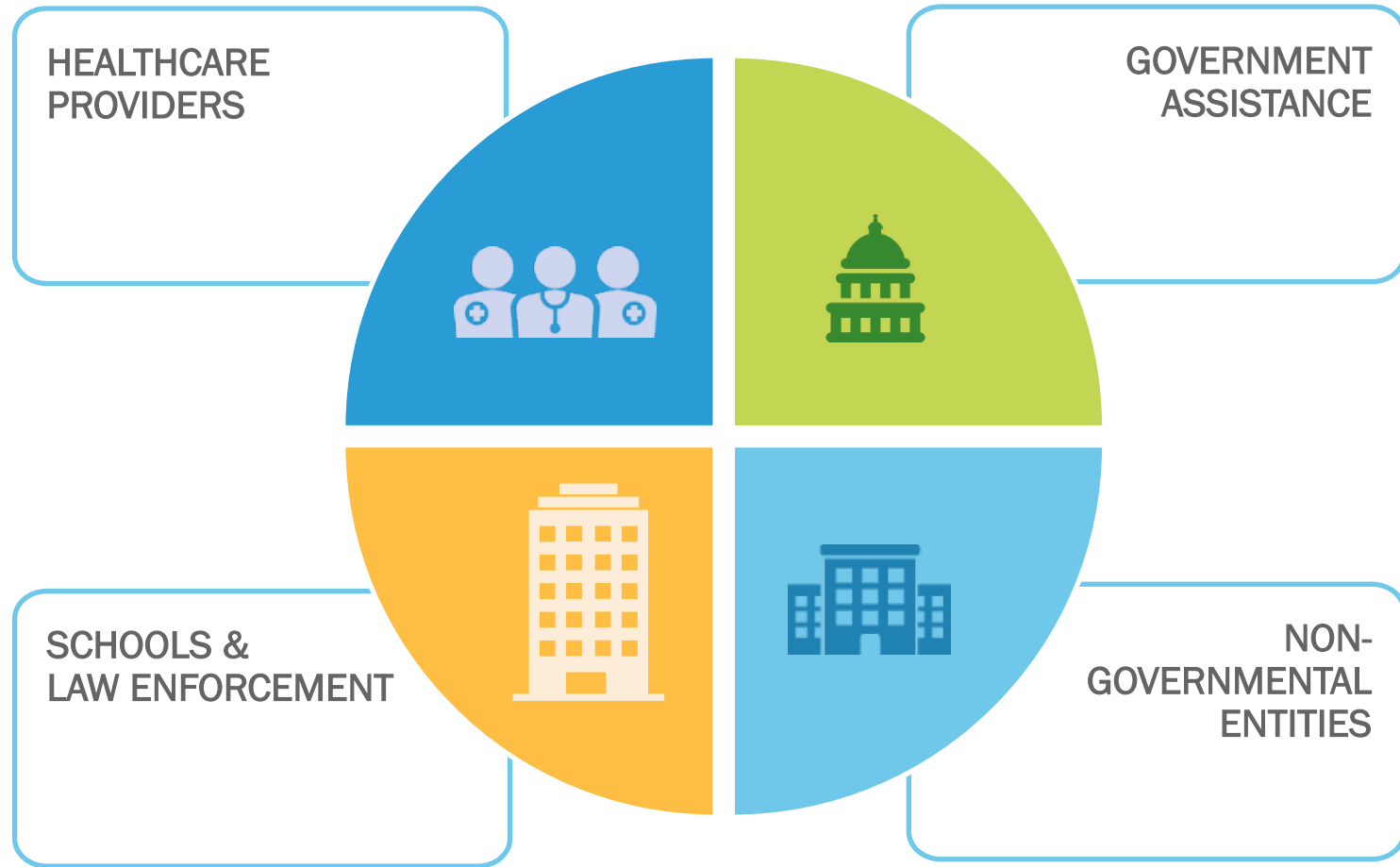## Contribution to Premature Death

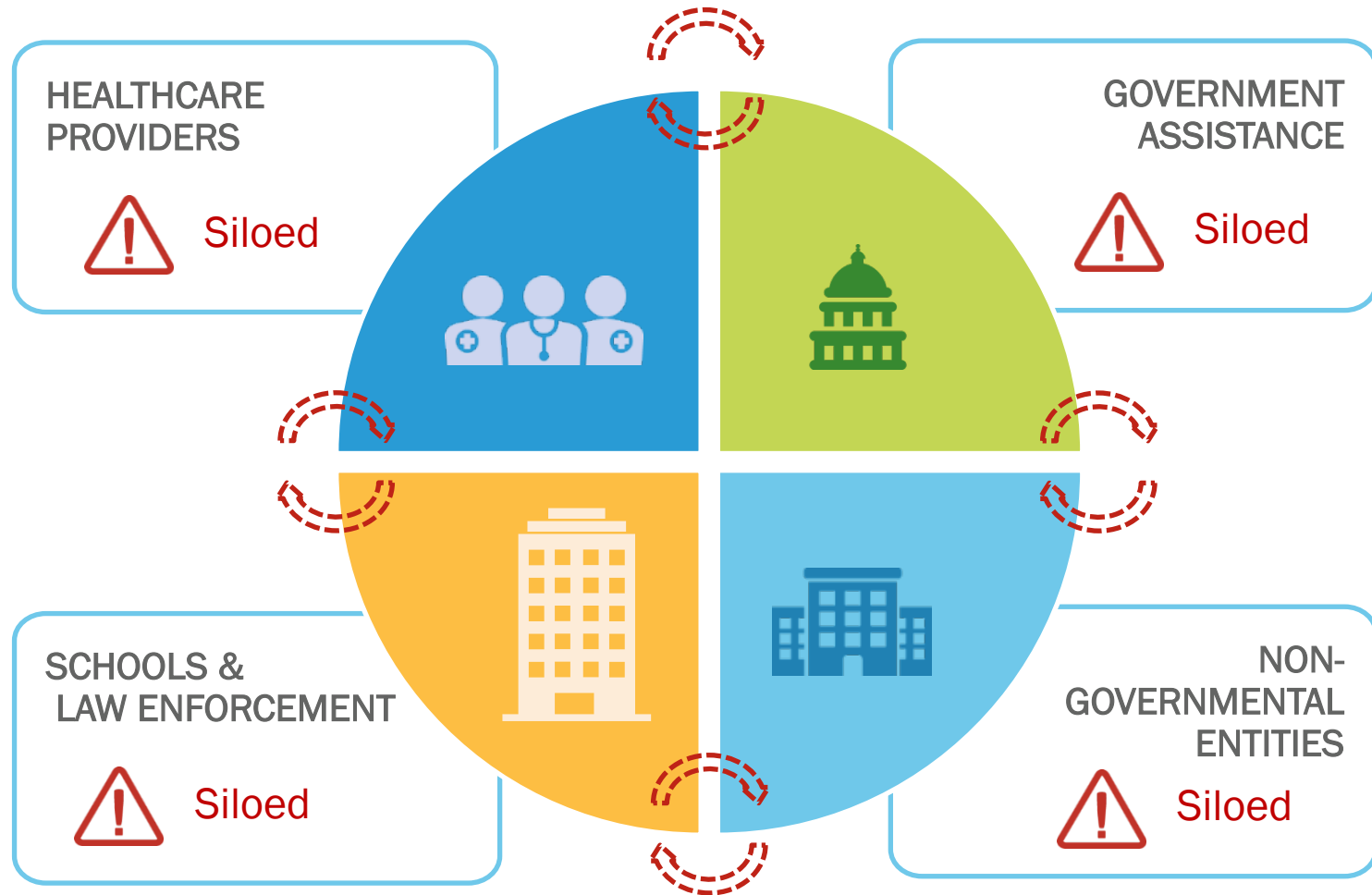Stanton MW, Rutherford MK. Agency for Healthcare Research and Quality; 2005.

Steven A. Schroeder, M.D. N Engl J Med 2007
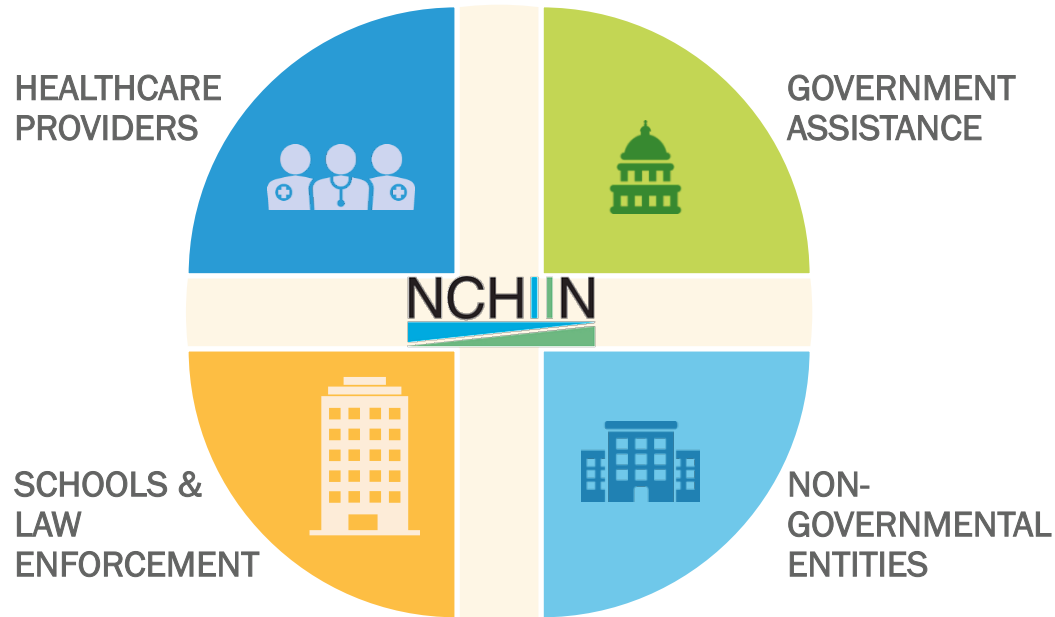
A Glimmer of Hope: A Collaborative Community

HEALTHCARE PROVIDERS

GOVERNMENT ASSISTANCE

SCHOOLS & LAW ENFORCEMENT

NON-GOVERNMENTAL ENTITIES

But This Community Is Not Interoperable

HEALTHCARE PROVIDERS

⚠️ Siloed

GOVERNMENT ASSISTANCE

⚠️ Siloed

SCHOOLS & LAW ENFORCEMENT

⚠️ Siloed

NON-GOVERNMENTAL ENTITIES

⚠️ Siloed

Strategy #2: Expand From "Healthcare" to "Health"

HEALTHCARE PROVIDERS

GOVERNMENT ASSISTANCE

NCHIIN

SCHOOLS & LAW ENFORCEMENT

NON-GOVERNMENTAL ENTITIES

Executive Roles
1. Convener
2. Grant management
3. Publication

Functional Services
1. Identity & consent management
2. Event notification
3. Case management technology
4. Curation of analytic data

To 1984 and Beyond!

Options

1. Merge more "good enough" patient identity information using probabilistic matching.

2. Match the "good enough" data from a source to a curated national database of people

A Tech Innovator's Approach To Solving Identity Interoperability

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Verato Introduction

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Venture backed software company

Cloud-based identity resolution

API-based MPI service

More accurate, More nimble

Identity is the Fourth Level of Interoperability

Identity — Are we talking about the same person?

Semantic — Can we understand one another?

Structural — Can we talk to one another?

Foundational — Can we connect to one another?

30% of all identity information stored in databases is incorrect or out-of-date

Identity = Name | Address | Birthdate | Gender | SSN | Phone | Email

Time

Name change
Address change
Phone change
Email change
Birth | Death

18% change per year

Ambiguity

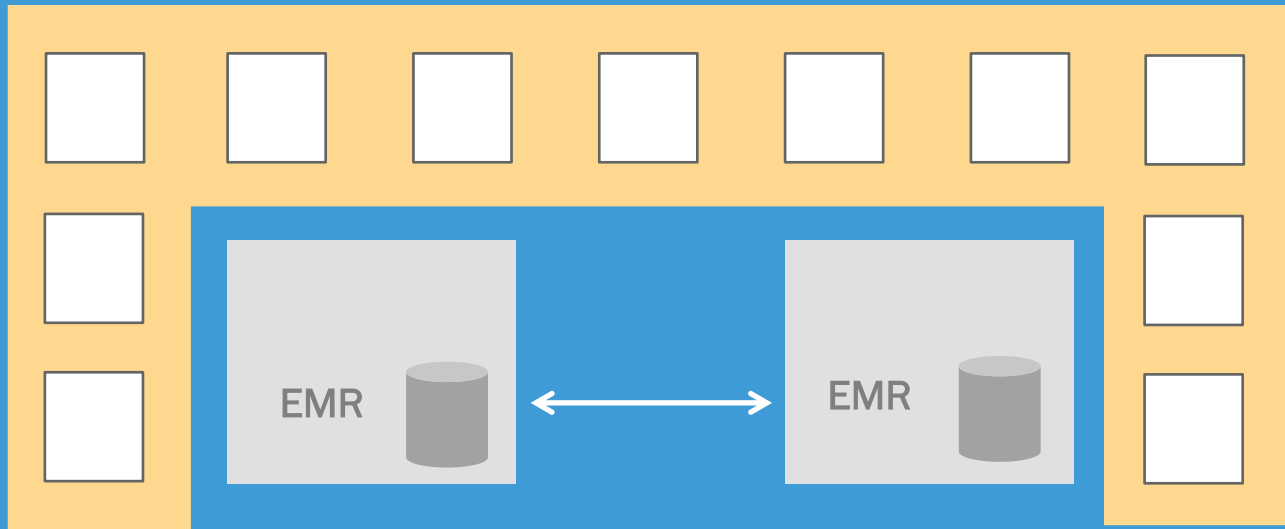Hispanic name hyphens
Asian name order
Nicknames
Junior / Senior
Twins

25% of adult pop.

Errors

Spelling error
Transcription error
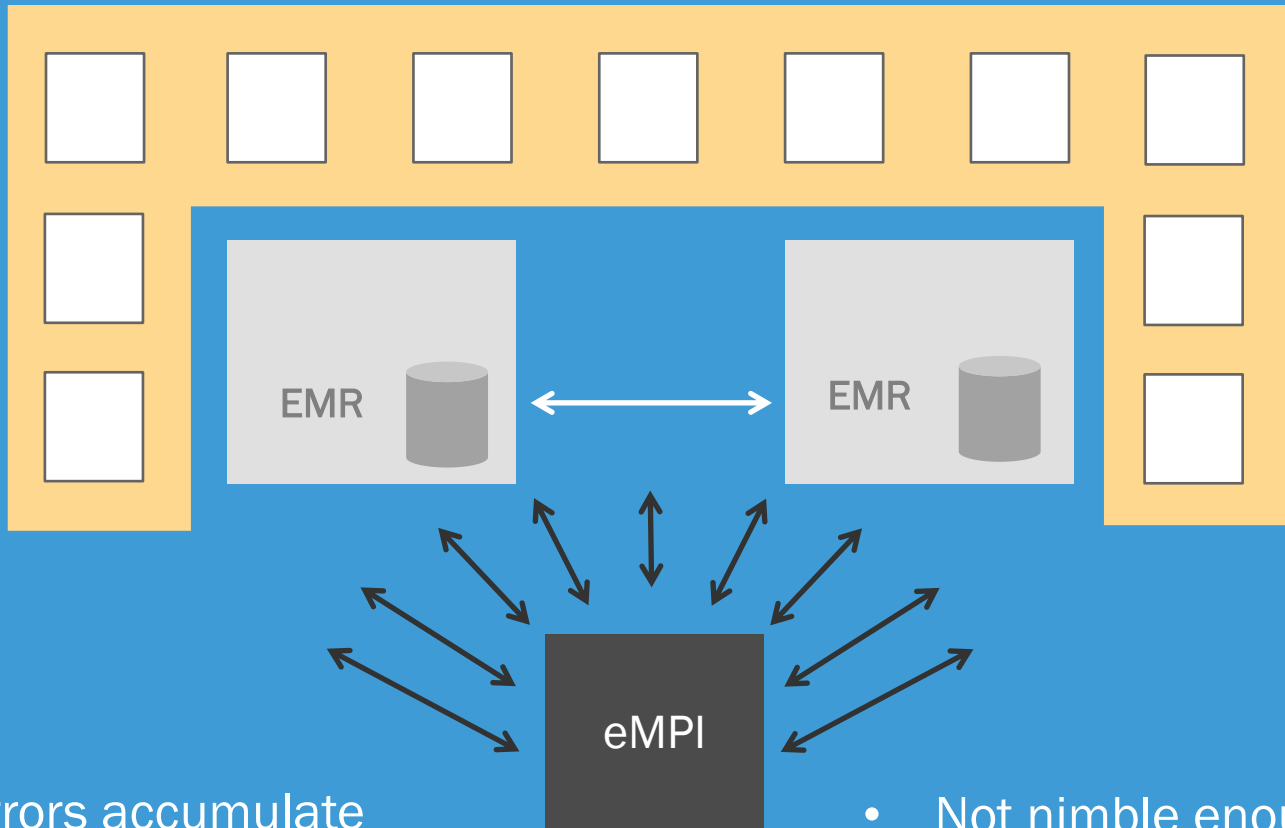Homonym error
Default entries
Missing data

6% of data
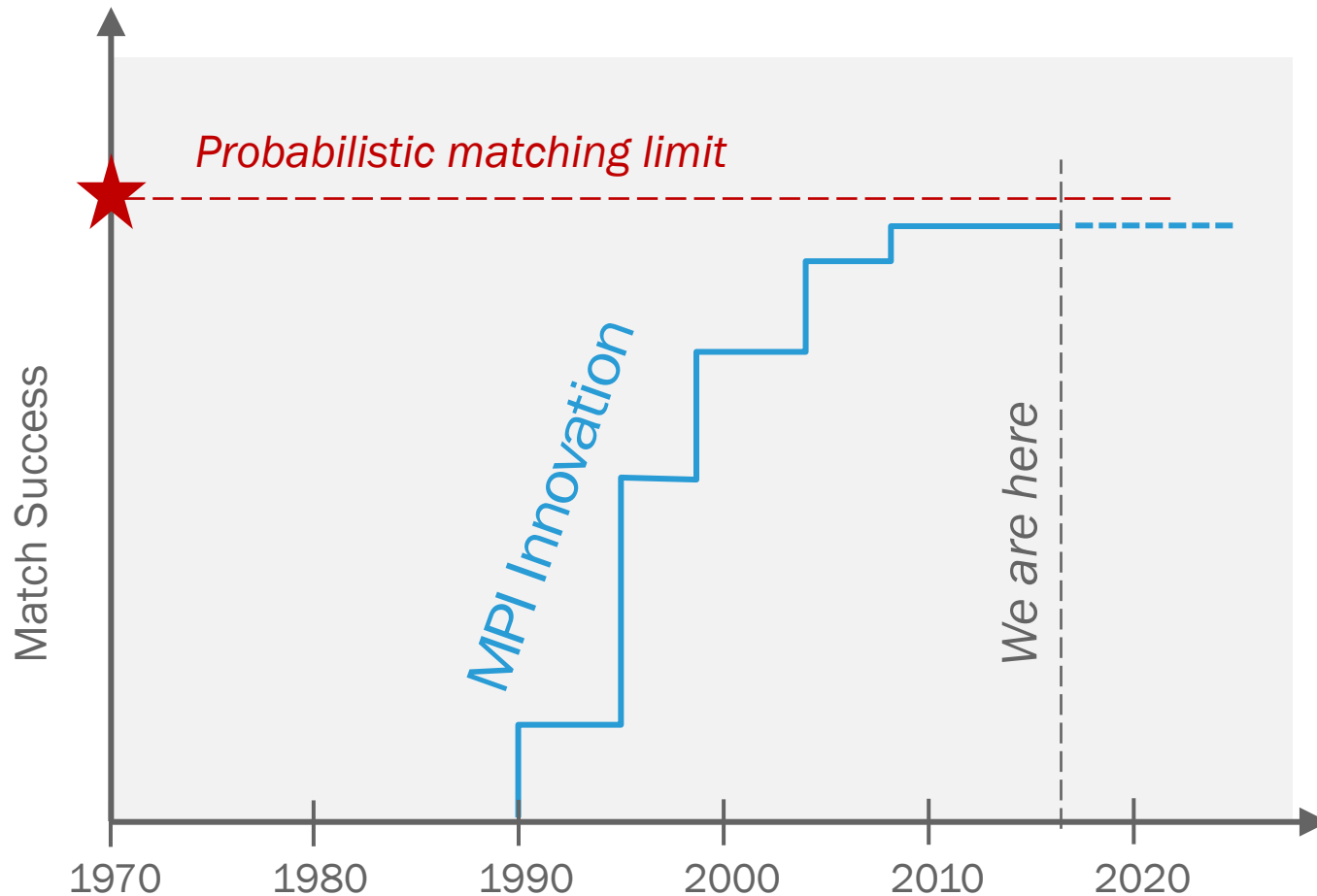
What Would an Identity Resolution Service look like?

EMR

EMR

Identity Resolution Service?

Enterprise MPI Technology Cannot Serve This Need

EMR ⟷ EMR

eMPI

- Errors accumulate
- Too much tuning required
- Too much dependence on data quality

- Not nimble enough
- Not scalable enough
- Not accurate enough

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Conventional EMPIs Have Reached their Limit

Match Success

Probabilistic matching limit

MPI Innovation

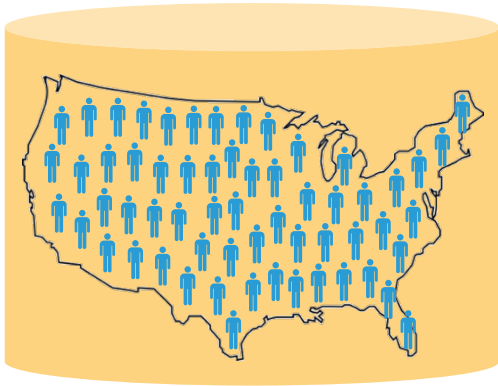We are here

1970   1980   1990   2000   2010   2020

★ The Fellegi Sunter "record linking" algorithms that formed the basis for all probabilistic matching was invented in 1969

Next-generation Technologies is Needed to Achieve Identity Interoperability – A "Universal MPI"
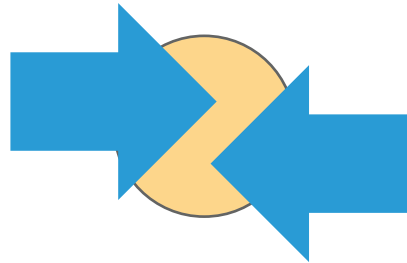
1 Big Data

The Reference Database

Nationwide database of demographics.

2 Machine Learning

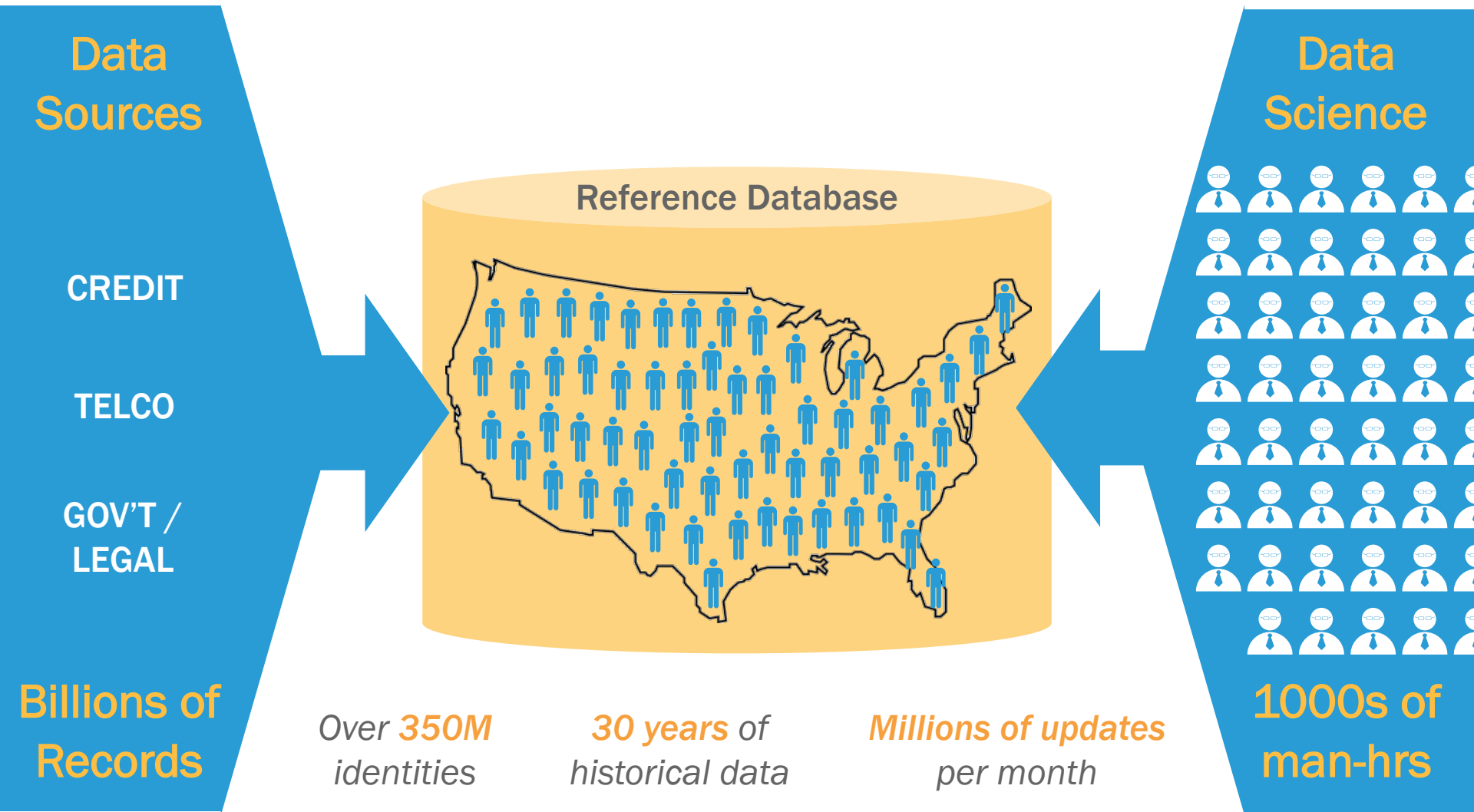Referential Matching

More accurate.
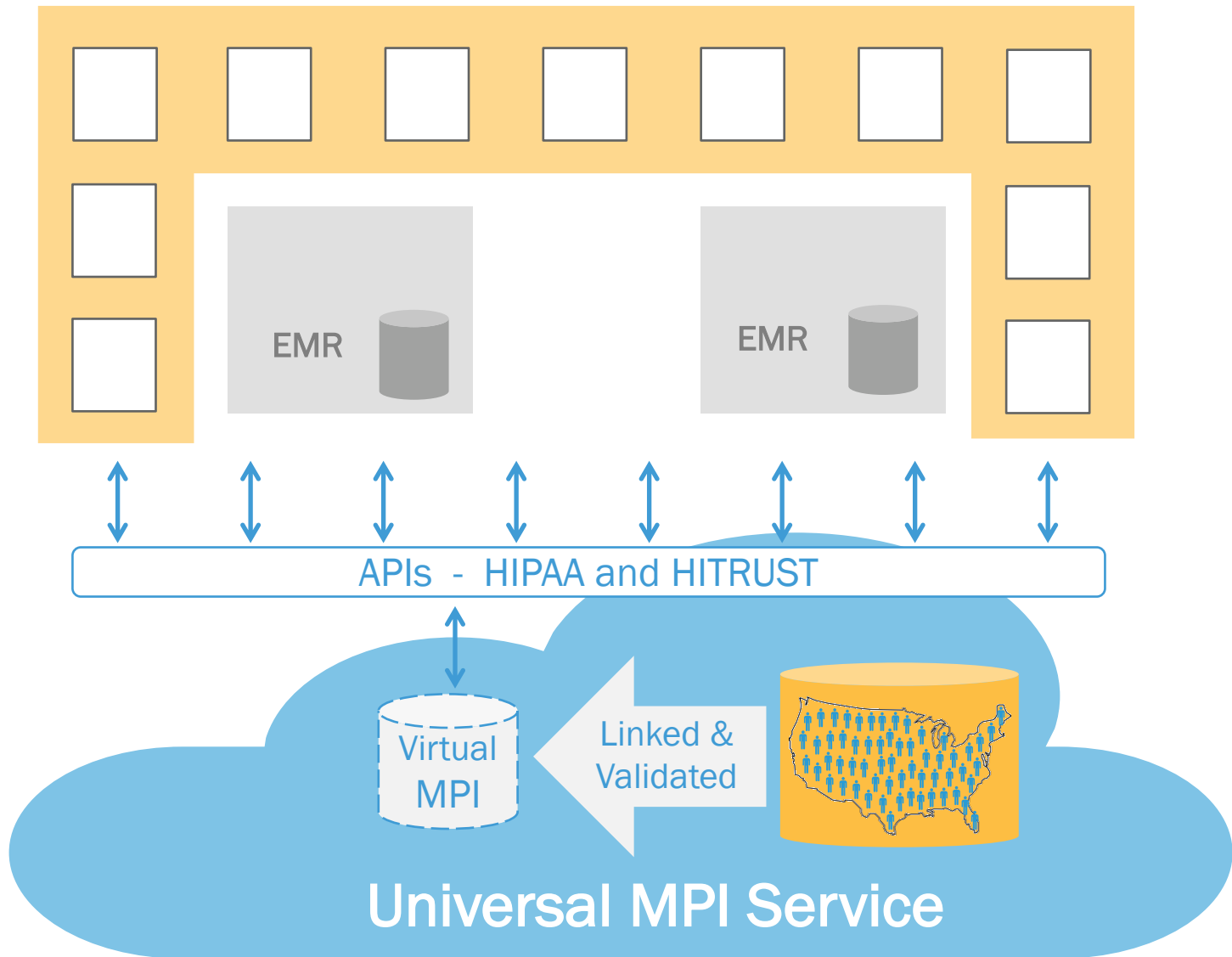No tuning.

3 Cloud-Based

API-based Simplicity

Just plug in.

The Foundation of a Universal MPI is a Massive Reference Database of Identities

Data Sources

CREDIT

TELCO

GOV'T / LEGAL

Billions of Records

Reference Database

*Over **350M** identities*

***30 years** of historical data*

***Millions of updates** per month*

Data Science

1000s of man-hrs

A Universal MPI Service: Description

EMR

EMR

APIs - HIPAA and HITRUST

Virtual MPI

Linked & Validated

Universal MPI Service

A Universal MPI Service: Benefits

EMR

EMR

APIs - HIPAA and HITRUST

- More accurate
- No tuning
- Just plug in

Virtual MPI

Linked & Validated

Universal MPI Service
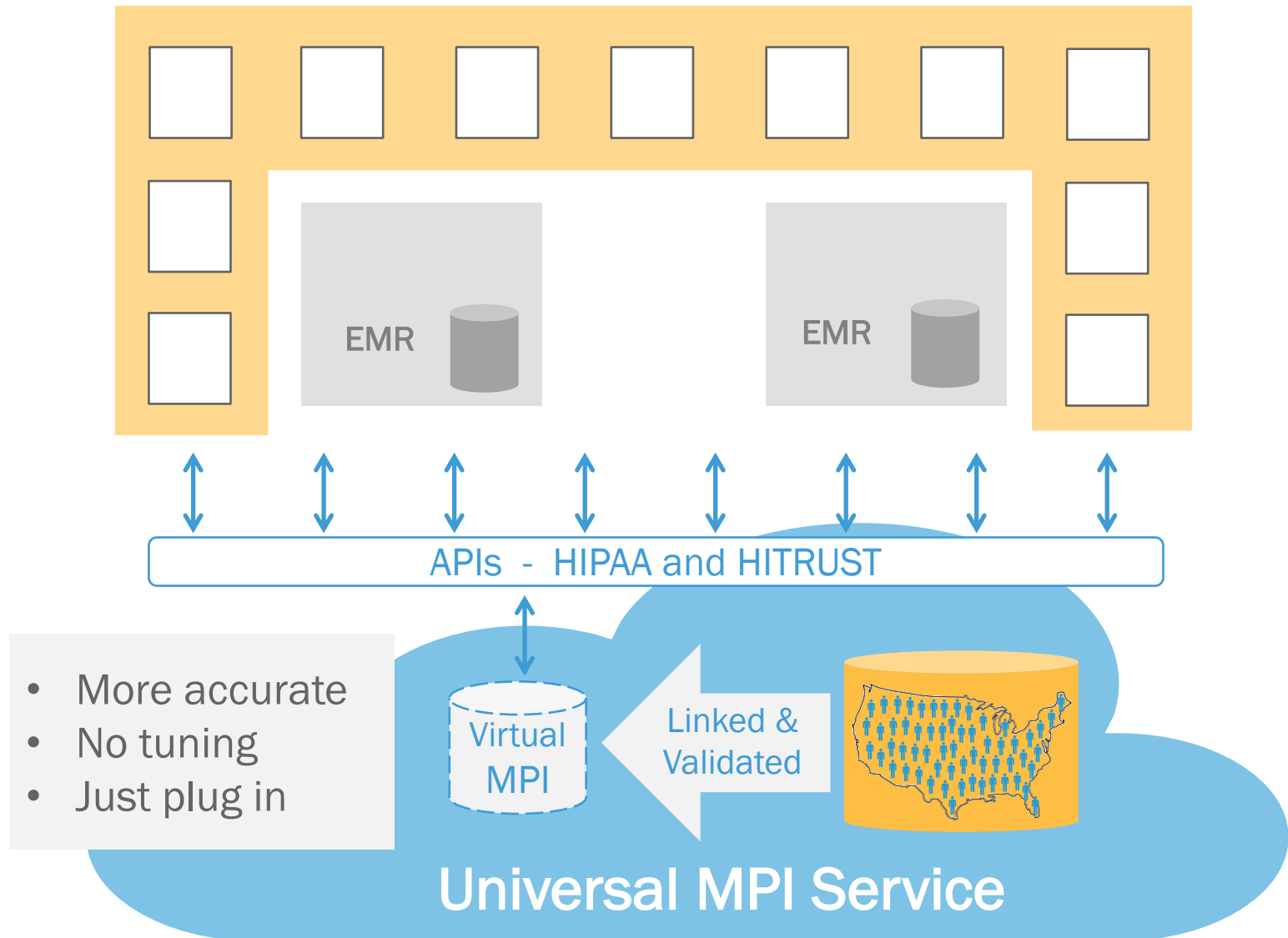
A Universal MPI Service: Stays Up to Date

EMR

EMR

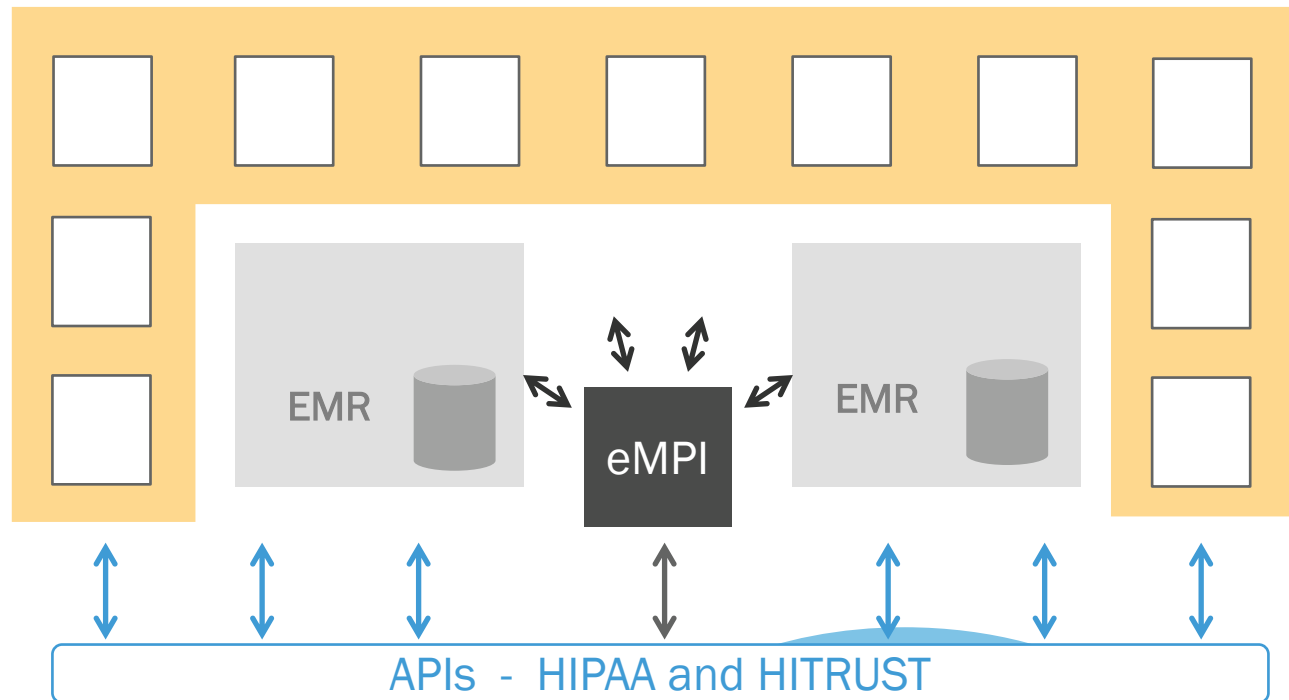APIs - HIPAA and HITRUST

Virtual MPI

Linked & Validated

Millions of updates each month

Universal MPI Service
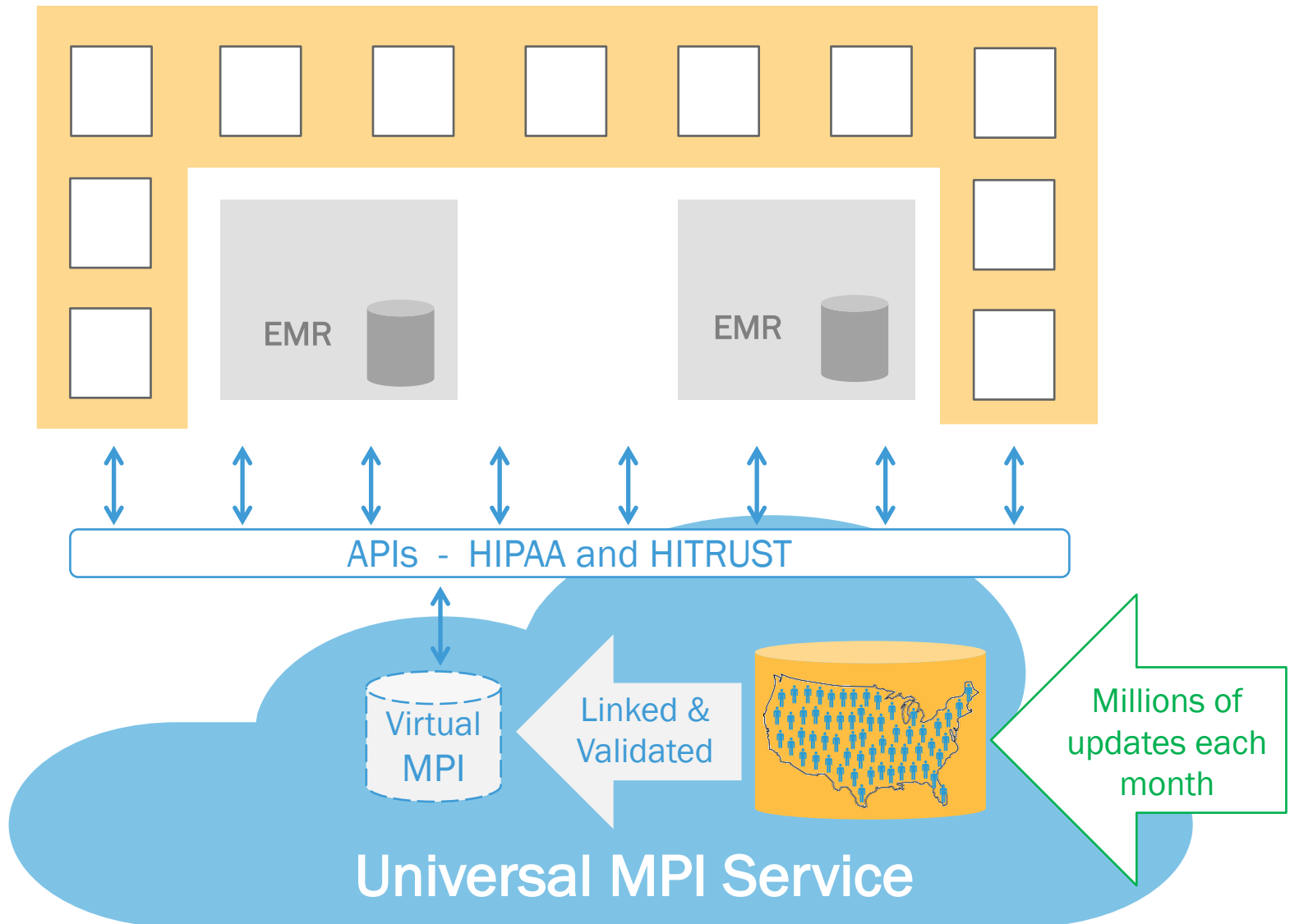
Strategy #3: Use a Universal MPI in conjunction with existing eMPI – minimal disruption with maximum nimbleness

EMR

eMPI

EMR

APIs - HIPAA and HITRUST

- Stop cleaning your data
- Automate data stewardship
- Add new systems easily

Virtual MPI

Linked & Validated

Universal MPI Service

Because all identities are linked to common reference identities, cooperating enterprises can easily refer to common patients

Hospital System

Public Health Dept

Payer

Virtual MPI

Virtual MPI

Virtual MPI

Universal MPI Service

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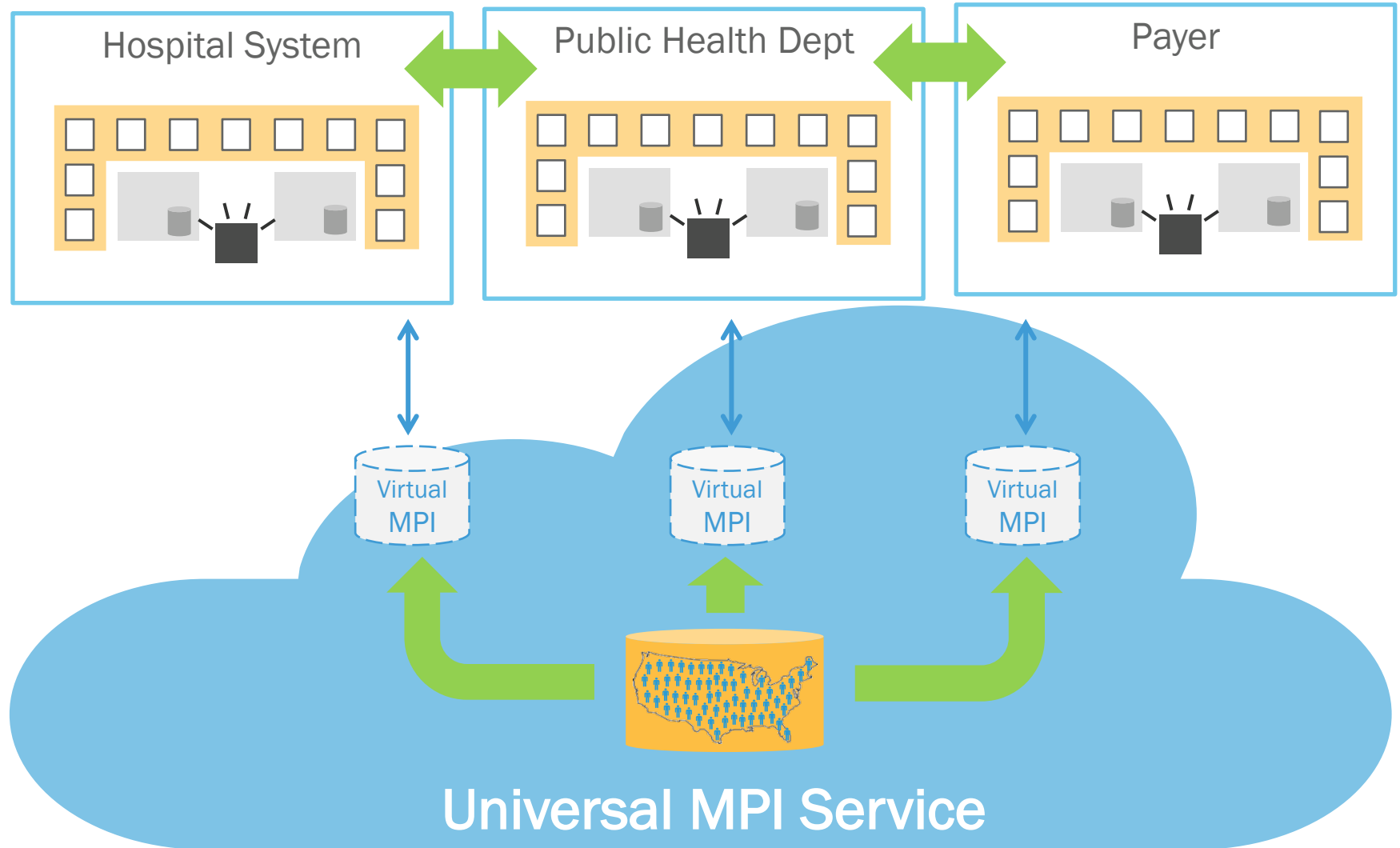
The Strategies

ANDREA DARBY

Regardless of the path you choose, you should take active steps toward interoperability - today

WES RISHEL

Real "Health" requires interoperability that goes well beyond the healthcare institution

MARK LaROW

Full "Identity interoperability" is essential and can be achieved by adding a Universal MPI functionality

Contact Verato to learn how you can...

Use the Verato Universal™ MPI solution as your primary MPI

Turbocharge your existing MPI solution with automated data stewardship and duplicate resolution.

www.verato.com | info@verato.com