Procuring Interoperability:

Achieving High-Quality, Connected, and Patient-centered Care Through Strategic Technology Acquisition Specifications

A NAM Special Publication

Report background, organization, and action priorities

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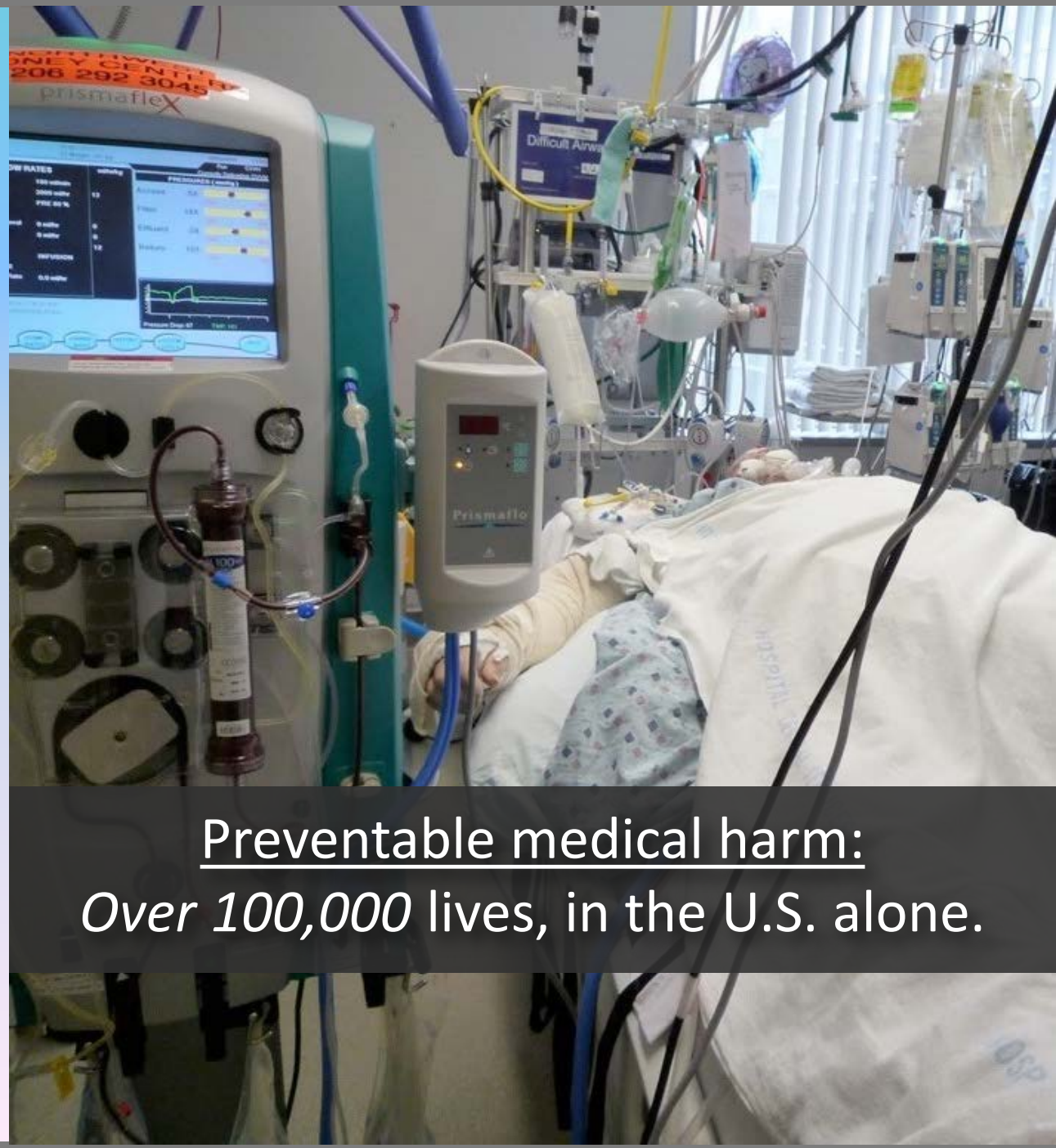
Background

- Medical errors result in as many as three million preventable adverse events each year, costing as much as $17 billion in excess annual medical costs
- Several of the most common causes of medical errors (drug, diagnostic and failure to prevent injury) can be directly addressed by better exchange of data between patients, medical devices, EMRs and other health technology



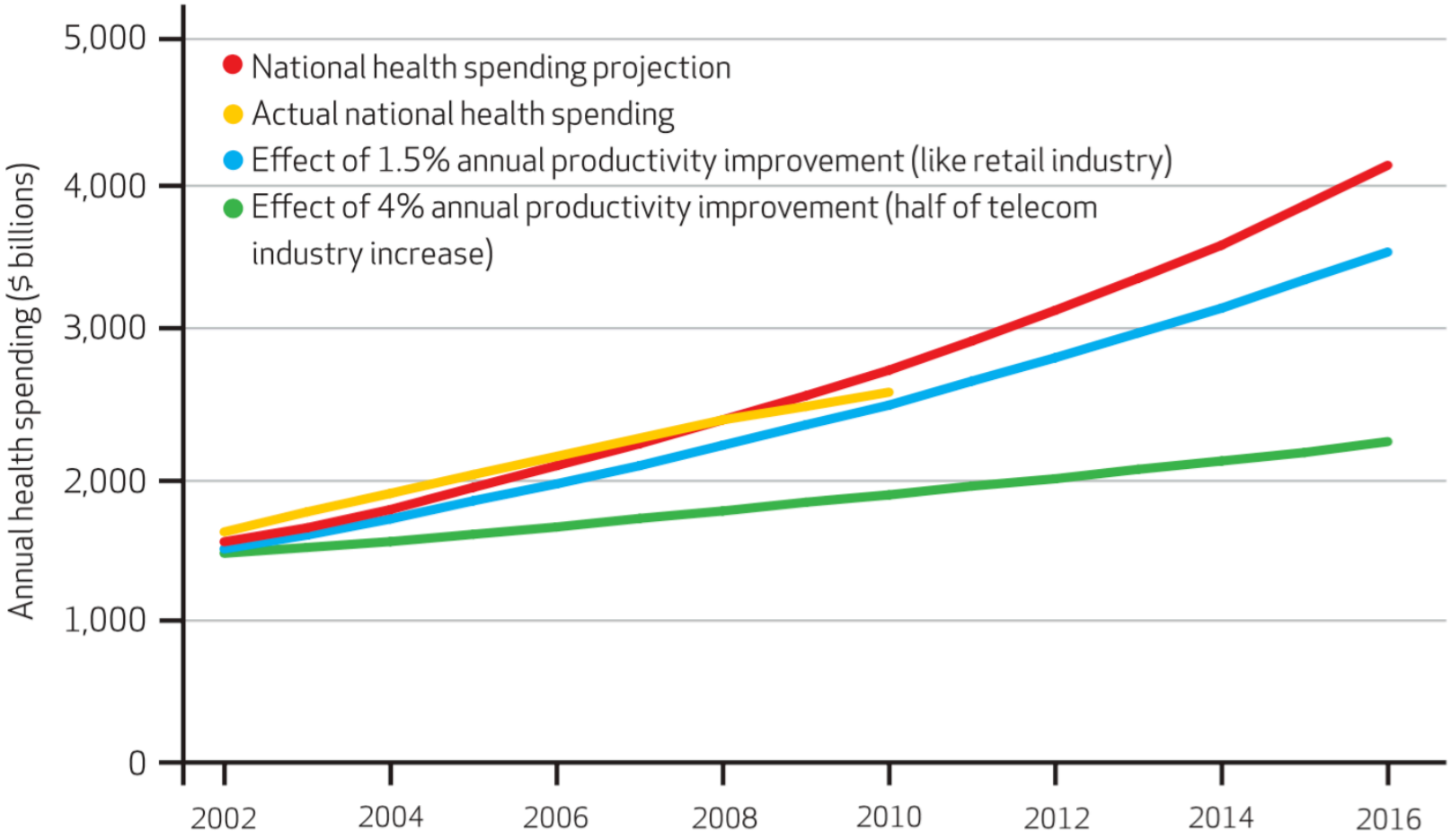
Preventable medical harm:

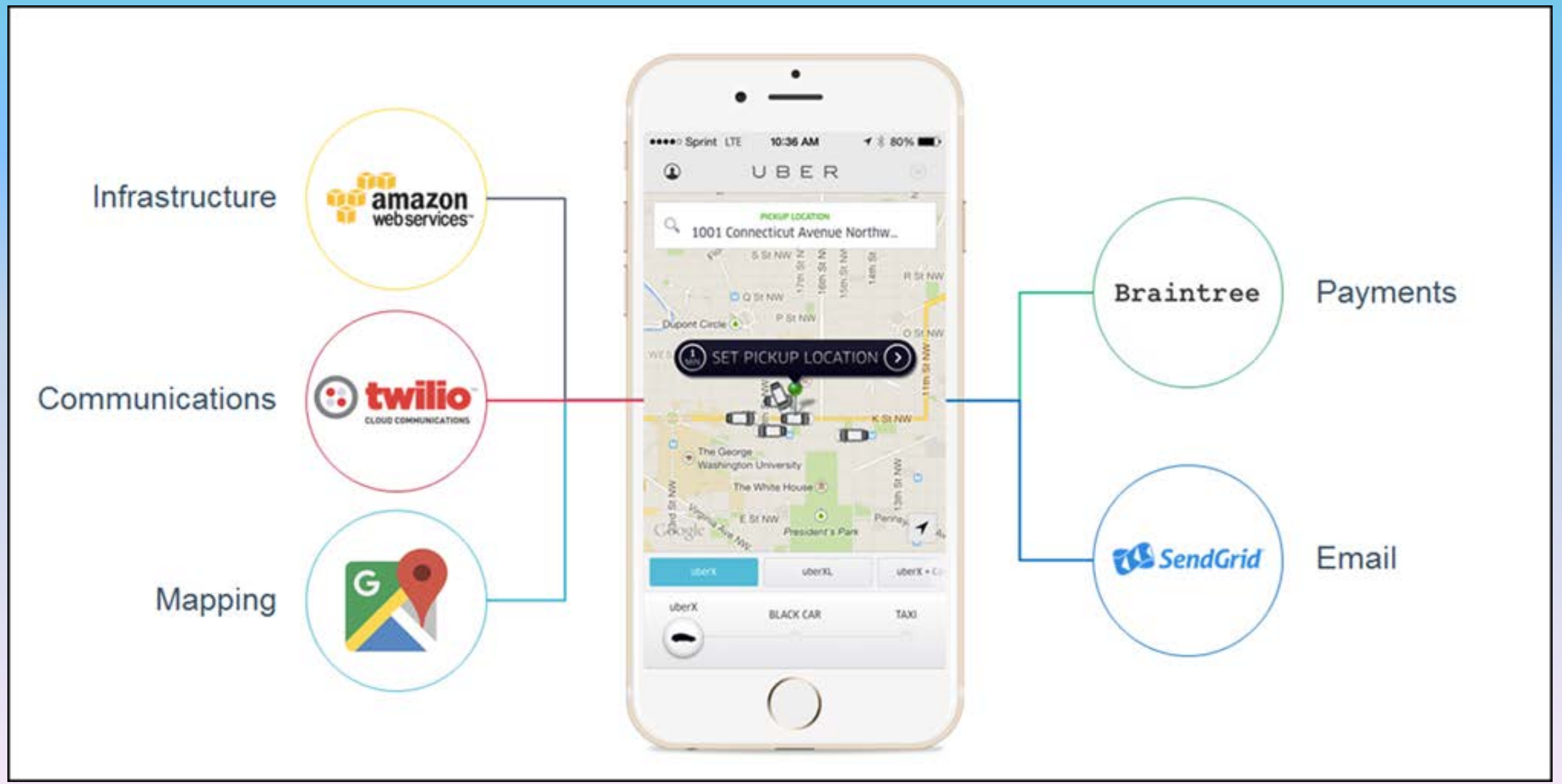
Over 100,000 lives, in the U.S. alone.

Background

- The lack of interoperability imposes a substantial burden on care providers, contributing to staff burnout and tremendous waste
- Documentation, manually entering readings from devices into charts, and manually programming devices accounts for over 1/3 of a hospital nurse's time
- Enhancing automatic and seamless exchanges of data can immensely increase productivity while positively affecting other measures as well, including patient safety

Possible Improved Productivity Effects Of Health Information Technology On Future National Health Spending, 2002–16

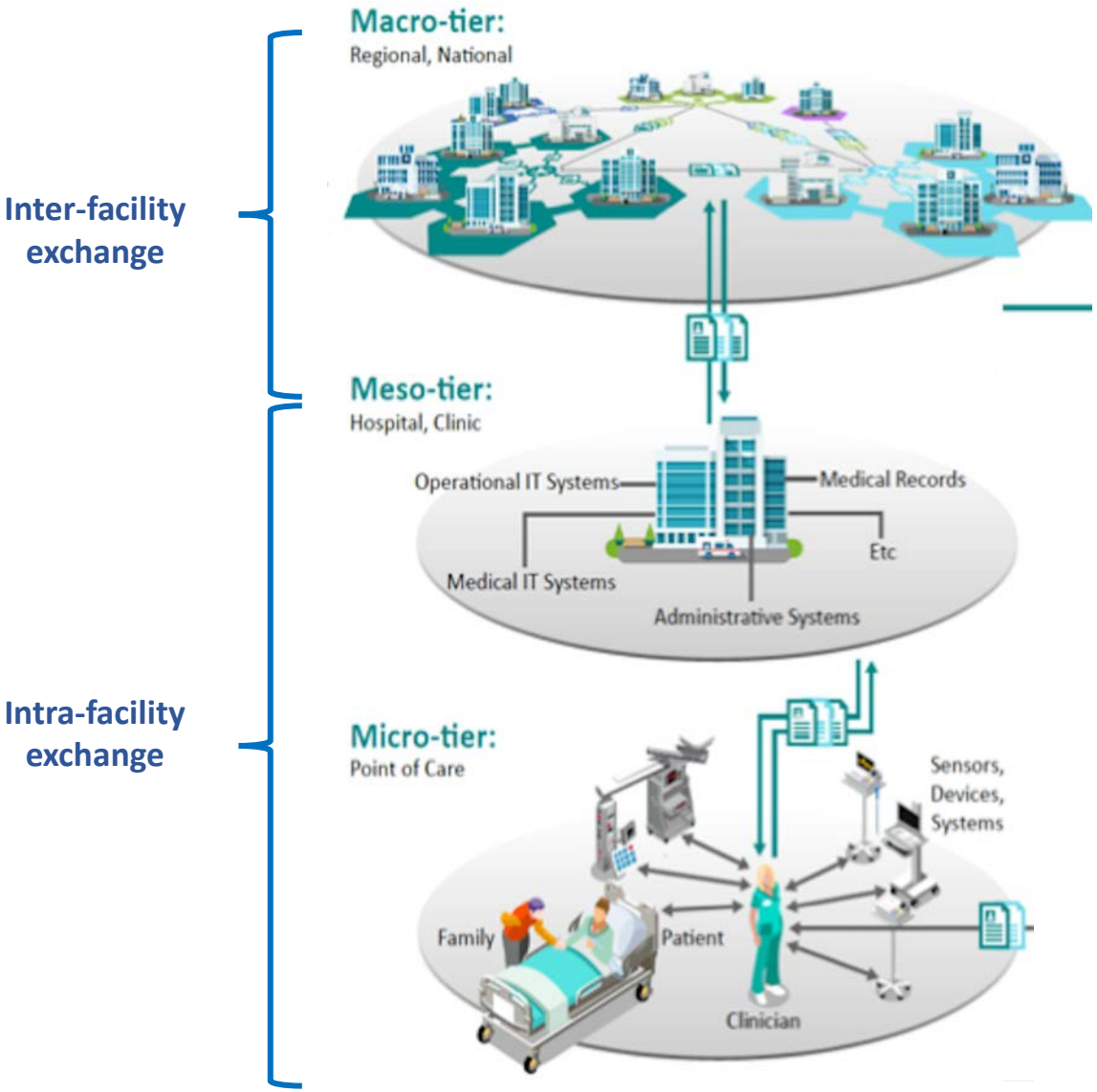



Infrastructure
amazon web services
Communications
twilio
CLOUD COMMUNICATIONS
Mapping
Sprint LTE 10:36 AM 80%
UBER
PICKUP LOCATION
1001 Connecticut Avenue Northw...
SET PICKUP LOCATION
uberX
uberXL
BLACK CAR
TAXI
Braintree
Payments
SendGrid
Email

How Do We Move Toward Interoperable Systems for Healthcare?

- Desire is for modular, open architecture systems
- Purchasers must take control of their destiny and require interoperability through procurement specifications
- Requires a shared vision and consistency to ensure end state is truly open
- Will hear from other industries including the Department of Defense about transforming the way they procure systems to drive this change

Three Tiers of Interoperability



Macro—tier: National, Regional

- Health Information Exchanges
- State, Local Health Depts.
- Radiological, Lab Services
- Commercial Pharmacy
- Payers

Meso—tier: Hospital, Clinic

- Electronic Health Record
- Medical Specialty-specific IT systems (e.g. PACS)
- Administrative IT

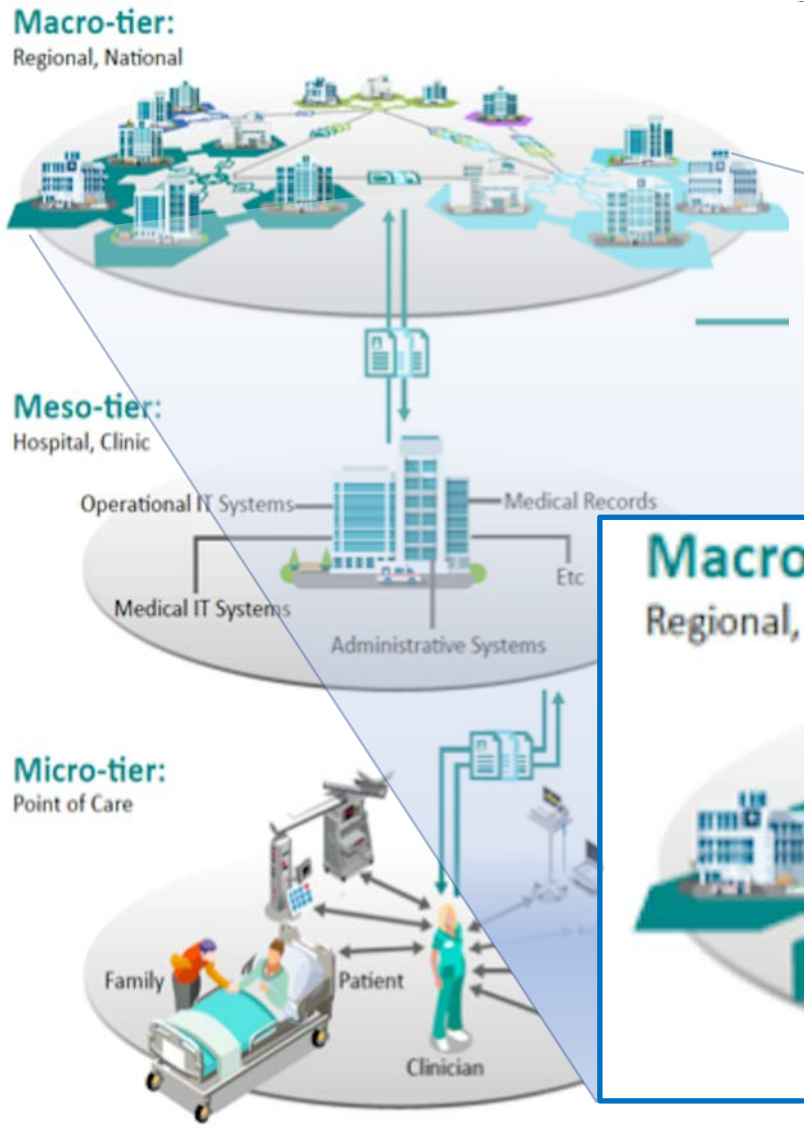
Micro—tier: Point-of-care

- Point-of-care devices, software
- Wearables

Three Tiers of Interoperability

Inter-facility exchange

Intra-facility exchange



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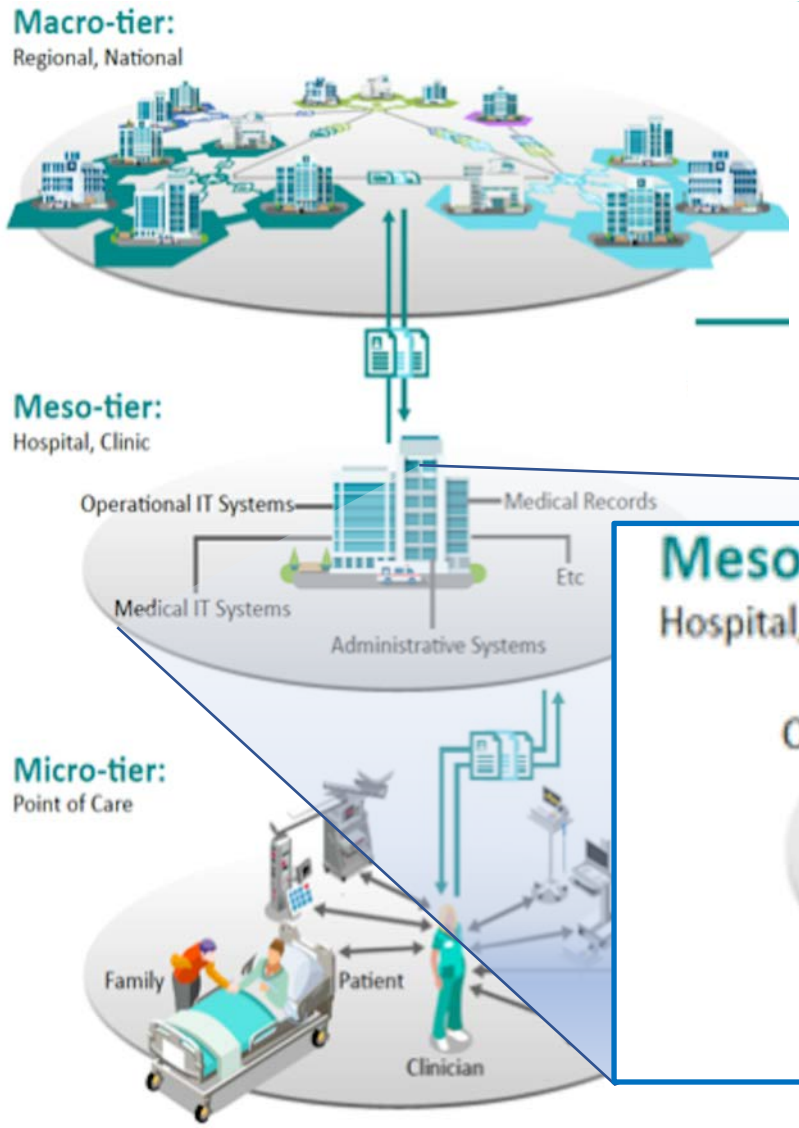

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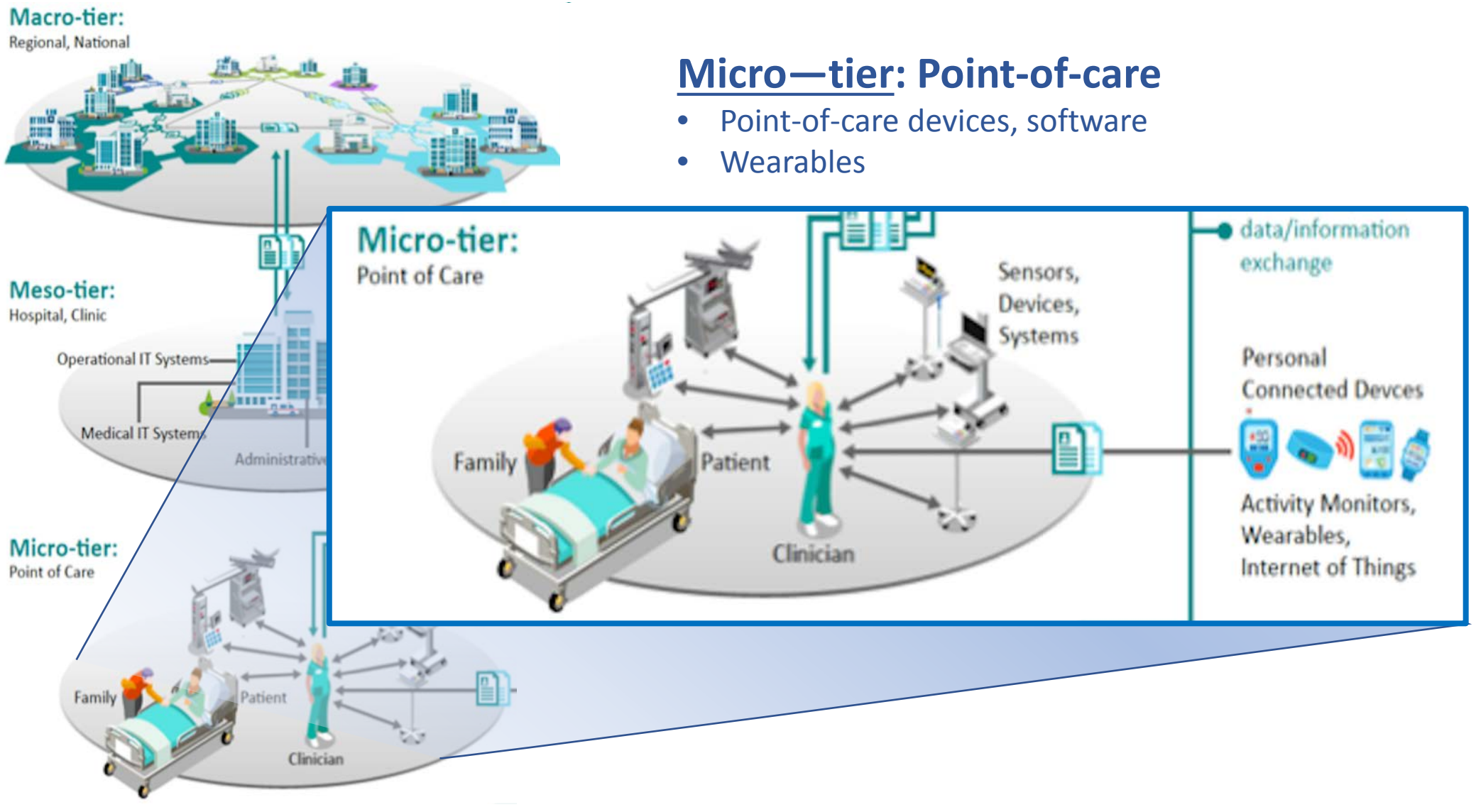

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Driving Interoperability

- In other industries, investments in technology and interoperability improved quality and productivity
- The purchasers of technologies drive interoperability through procurement contracts
- Healthcare could further use procurement to advance interoperability and improve quality and productivity

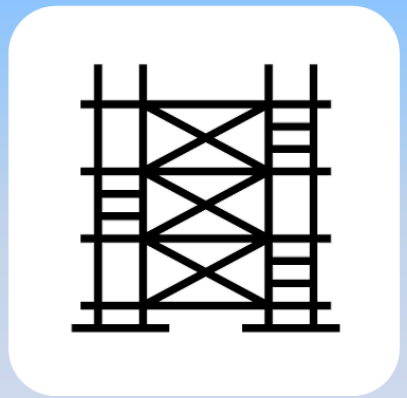
Action Priorities

Commit	Declare interoperability as a primary organizational priority; form an Interoperability Steering Group; develop a roadmap and champion acquisition strategy.
Identify	Identify the set of interoperability goals and requirements for the procurement process to deliver on organizational priorities and patient outcome goals.
Collaborate	Create a multi-institutional strategy to develop and align on common contracting requirements to move toward the next generation of interoperable systems.
Specify	Use specifications to state clear interoperability requirements in existing and future request for proposals and contracts.
Assess	Establish and monitor short-term and long-term metrics for performance to advance system-wide learning and improvement.

Technical Supplement

Sezin Palmer, Johns Hopkins Applied Physics Laboratory

Approach



Technical Supplement A: Overarching Framework

Technical Supplement B: Approach to Identifying Requirements

Technical Supplement C: Examples of Interoperability Specification Language

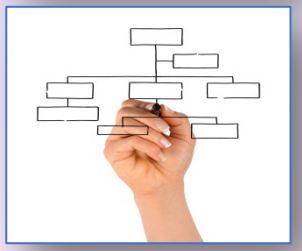
Technical Supplement D: Case Studies

Approach – Overarching Framework

Interoperability Steering Group

Long-range Interoperability Roadmap

Interoperability Needs Identification Process



Procurement Specification Process

Interoperability Steering Group

Decision-making body to guide procurement including interoperability-related requirements and specifications

- Advocates and facilitates interoperability and open architecture improvements across healthcare information systems and medical devices
- Defines interoperability requirements, writes specification language for procurement documents
- Organizational champion that motivates and executes procurement framework to achieve interoperability

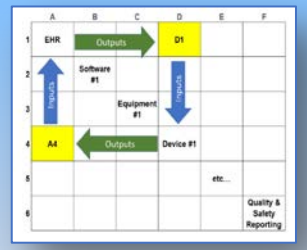
Long-Range Interoperability Roadmap

Multi-year plan that includes incremental objectives for improving interoperability

- Establishes milestones for planned development and procurement to move the organization toward the vision
- Develops roadmap through engagements with stakeholders
- Roadmap shared broadly within the healthcare organization; updated at least annually

Interoperability Needs Identification Process

Documentation of interoperability-related needs



- Many approaches available – focused on N-squared diagram
- Used to represent interfaces and interactions between systems, people, etc.
- Systematic way to identify and define interfaces – and interface requirements – based on information and workflow interactions in the healthcare setting
- Can capture numerous interacting entities and dynamic processes

Procurement Specification Process

Translation of needs to procurement specifications to include in requests for proposals

- Provides requirements for implementation of specified interfaces between technologies
- Data exchange standards and how they are to be implemented must be defined
- Leverage existing processes and tools (e.g. ONC/HIT's Interoperability Standards Advisory guidance – identifies best-practices on data exchange standards, implementation guides and integration profiles

Recommendations

Purchasers take control – require interoperable solutions

Think long-term; leverage resources to establish standards for data exchange among digital systems with end state in mind

Ensure specific language that defines requirements for interoperability and data exchange standard to be used and implemented is included in RFPs

Ensure long-term commitment to vision is embraced across the organization; requires strong leadership to see it through