Community Access & Safety Net Act of 2005:

Interoperability 101

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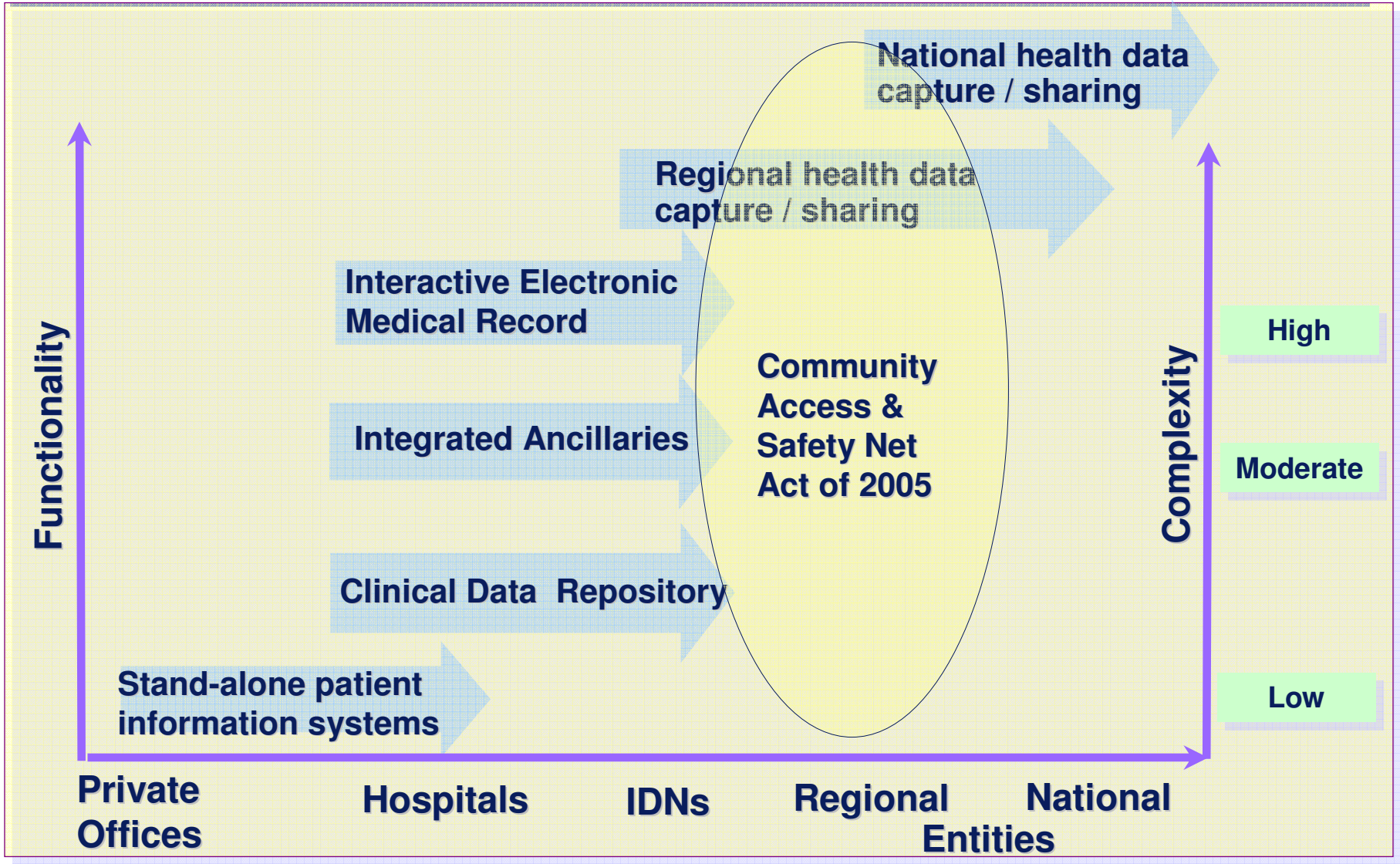
Healthcare system functionality has evolved with respect to entities served while increasing in complexity.



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What is Interoperability? – Basic definitions

General Definitions

The ability of software and hardware on different machines from different vendors to share data.

The ability of products, systems, or business processes to work together to accomplish a common task.

Healthcare Industry Definitions

Product Certification
- Interoperability, functionality, and security
- Vendors to compete by differentiating their products beyond minimum standards

Standard Product Identifiers and Vocabulary
- Standardizing data at the point of its creation

Data Standards
- HHS, American Health Information Community (AHIC) and National Committee for Vital and Health Statistics (NCVHS)
- A complete set of interoperable, non-overlapping data standards
- The complete range of clinical, administrative, payment system, public health, and research settings.
- National standards for authentication, authorization, and security

Drug Records
- Access, when authorized, to patients' medication records
- Establish a robust capability for post-marketing surveillance of drugs.
- Goal is for AHIC to take a phased approach to developing a fully interoperable drug record for every American by 2010

Source: Department of Health and Human Services, The Commission on Systemic Interoperability Ending the Document Game 3/2006 http://endingthedocumentgame.gov/

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Interoperability of healthcare information provides significant benefits

Interoperability promotes:

Convenience
- Medical history, lab results, and other pertinent information are shared in a more timely and accurate way.
- Backups of data easier to maintain, facilitating recover from catastrophic data loss
- Support for on-line services that will enhance and ease post-diagnosis and post-treatment contact

Confidentiality
- Limiting unauthorized access
- Tracking who views personal healthcare information

Access
- Prescription information and data: Stored electronically and not on paper, so they are always readable
- Notification of drug or device recalls is faster and more thorough
- National-level analysis of trends in disease and symptoms
- Public-health resource against bioterrorism, the spread of disease, and other nationwide medical concerns

Enhanced Quality of Care
- Shared information can decrease time spent fill out forms
- Supports ongoing treatment conducted among multiple healthcare providers, an especially important consideration for patients with chronic conditions
- After patients move or when they travel, interoperable healthcare information helps ensure care consistent with treatment that is already under way

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Interoperability allows access to information for health management

Health Management

- Provide health information to safety net facilities to support
  - Order entry
  - Referrals e.g. to specialists
  - Post ER follow-up
  - Access to medication information
  - Access to results, e.g. lab
- Proactive chronic disease management
- Support large-scale preventive care

Communication & Collaboration

Technical Infrastructure

- Link disparate EHR software systems
- Comply with emerging interop standards
- Implement emerging data standards
- Service-oriented architecture
- Solid & secure data exchange structures

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A scenario can illustrate the differences between levels of interoperability

SCENARIO

- WEEK 1: Patient is admitted to ER of Hospital A
  - MD diagnoses Asthma and prescribes medication
- WEEK 3: Patient is admitted to ER in Hospital B
  - MD diagnoses Bipolar Disorder, Substance Abuse. Prescribes Valium for 2 weeks with no refills
- WEEK 4: Patient visits Hospital C
  - Patient requests refill of Valium for the diagnosis at Hospital B

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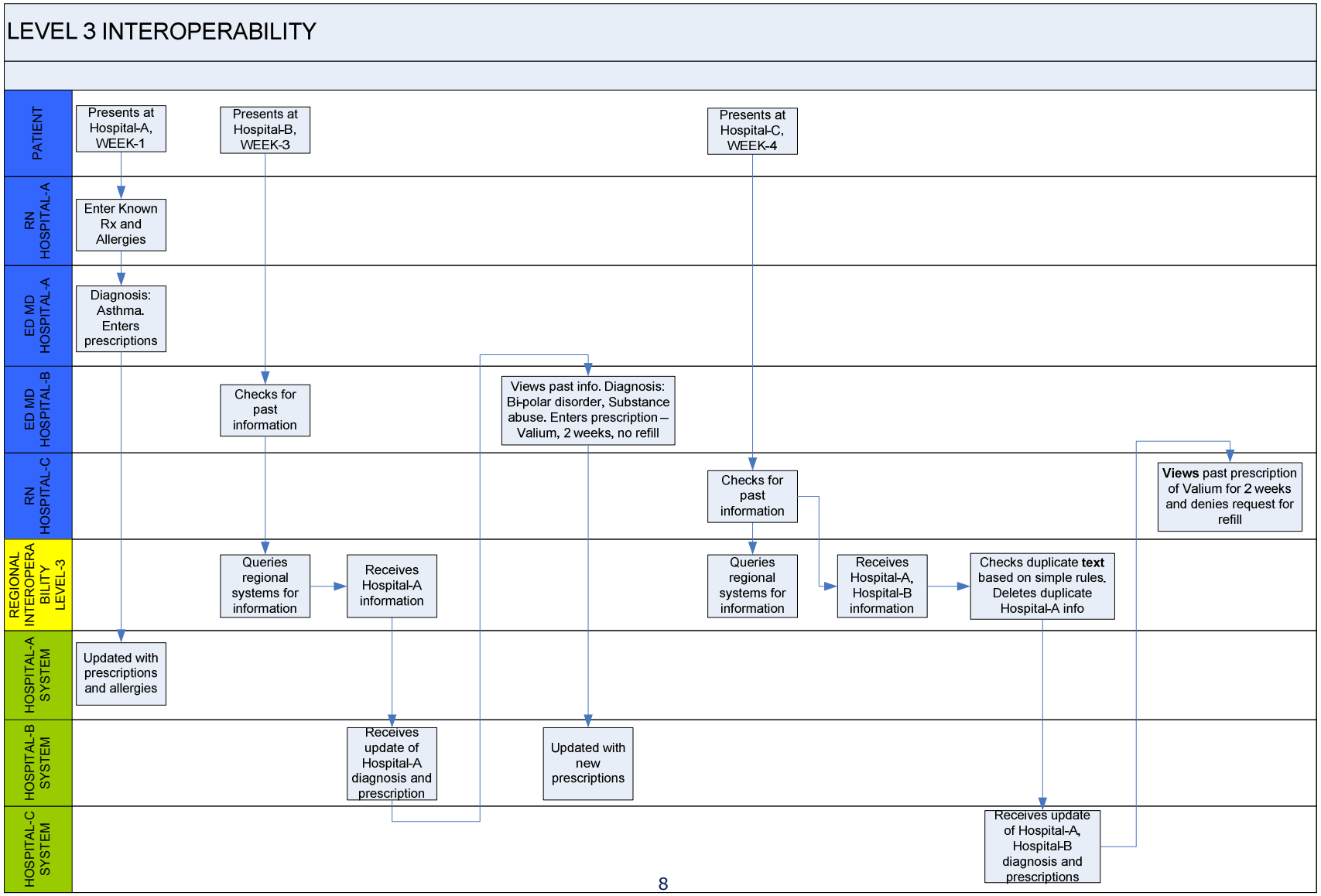
Interoperability can allow information to be shared among facilities for informed order entry



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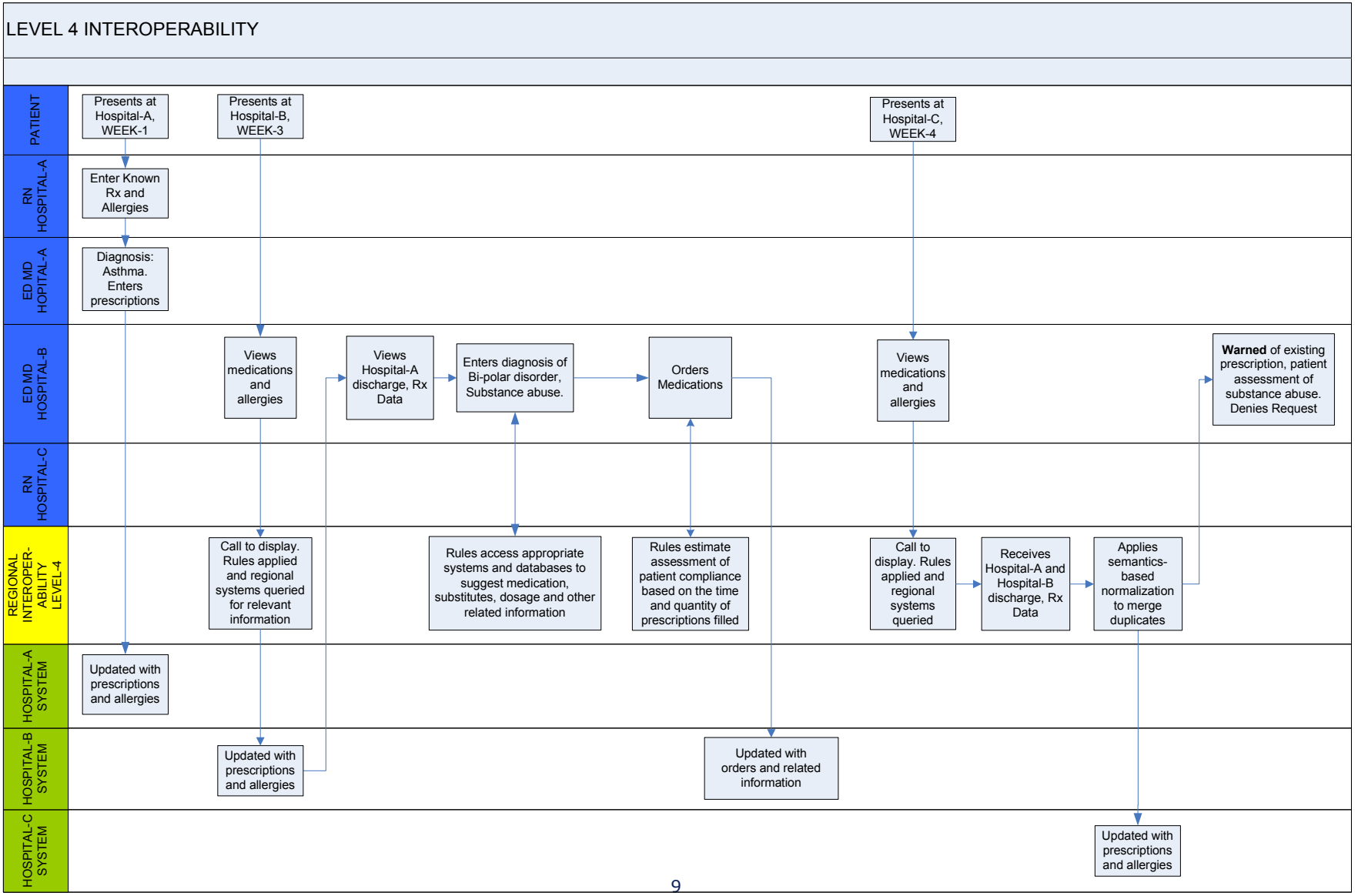
More complex interoperability builds on the previous level, providing rules and alerts



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There is a spectrum of interoperability from manual through complex semantic systems

Community Access & Safety Net Act of 2005

Level 1

Manual information exchange

Non-electronic

Level 2

- Structured machine communications protocols

Machine-transportable: Email, Fax

Level 3

- Structured interfaces with specific integration capability and limits
- Requires mapping and configuration for each requirement, and therefore has limited reusability
- Point-to-point

Machine-organizable: HL7 messages

Level 4

- The ability for information shared by systems to be understood at the level of formally defined domain concepts so that the information is computer processable by the receiving system
- Data Standards
- Standard Product Identifiers
- Standard Vocabulary

Machine-interpretable: HL7 with Semantic interoperability

Increasing Interoperability

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A high-level roadmap provides a path to interoperability

Phase	Business	Technology
1. Establish and Communicate Vision	‣ Leverage 3-5 Year IT Strategic Plan ‣ Build ROI Model ‣ Develop Business Case	‣ Develop Future-State BluePrint ‣ Establish Technology Success Criteria ‣ Identify Interoperability Challenges
2. Select Standards and Tools	‣ Define Detailed Requirements ‣ Establish Performance Benchmarks ‣ Document Desired Services	‣ Establish Technology interoperability Standards ‣ Establish Semantic interoperability Standards ‣ Select Technologies
3. Pilot	‣ Determine Pilot Domain ‣ Identity Pilot Users ‣ Conduct User Acceptance Survey ‣ Develop Adoption Plan	‣ Develop Analysis & Design Artifacts ‣ Establish Configuration/Change Management Processes ‣ Implement Sand-Boxed Environment
4. Establish Infrastructure	‣ Establish Quality Assurance Program ‣ Develop Quality of Service (QoS) Contracts ‣ Establish technology Center of Excellence	‣ Develop Governance Framework ‣ Deploy Development Tools ‣ Establish Environment Management Policies ‣ Deploy Technologies
5. Develop interoperable Applications	‣ Document Clinical and Business Policy Rules ‣ Prioritize Services based on Value Matrix ‣ Simulate Application Processes	‣ Develop Application Process Services ‣ Develop Shared Utility Services ‣ Develop New Clinical Functionality ‣ Develop New Business Functionality
6. Establish System Wide Interoperability	‣ Realize Process Models through interoperable applications ‣ Measure Adherence Against Performance Benchmarks and/or QoS Contracts	‣ Optimize process Flows ‣ Test Systems Interoperability

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A number of challenges need to be addressed in the move towards an interoperable healthcare system

Cost *	While some form of governmental and private incentives will fund a part of the cost, and direct savings will add to this, initial funding is still necessary
Heterogeneous IT environment	Variety of architectural and technology platforms in use: legacy mainframe systems, thick client systems, web-based
Wide spectrum of technologies	EMR's, Hospital ancillaries, Patient accounting systems, revenue cycle systems, EMPI, Patient/Provider portals, Practice office systems, Imaging, External lab information systems, Medical claims systems, Identity management systems
Multiple, incompatible formats	HL7 based interfaces, Web services based integration standards, legacy API based interfaces, EDI standards
Legal and Privacy issues *	Adhering to privacy requirements and interpreting laws concerning sharing of such data are important challenges to interoperability
Process challenges	Redesigning clinical and business process flows, Defining metadata, Architecting data translation and transformation, Network and application hosting, Performance management
No incentive for Vendors *	Vendors have financial incentives to work against each other, not with each other. Pressure from participants and public will have to drive vendor products to standards and interoperability
Fear of Change *	Not all participants may view the interoperability as welcome, and may resist change from current systems

Source: Commission on Systemic Interoperability – Ending the Document Game

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- Questions?

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