



Dak Systems Consulting

**THE ROLE OF CONTENT MANAGEMENT
IN ELECTRONIC HEALTH RECORDS**

AIIM GOLDEN GATE CHAPTER

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San Francisco CA

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More and more healthcare data are “native” electronic / computer-generated.

- **Much of the data are structured and comprise the Electronic Health Record (EHR) system.**
 - **Structured data are binary, discrete, and computer-readable, and, typically, are stored in relational databases with predefined fields.**

ELECTRONIC HEALTH RECORD SYSTEMS

The February 2009 passage of the **American Recovery and Reinvestment Act** (ARRA; a.k.a., the Economic Stimulus Bill) with its **Health Information Technology for Economic and Clinical Health** (HITECH) Act means, among many things, that US healthcare provider organizations and US healthcare providers, beginning in 2010 and 2011, respectively, will receive roughly \$19B - \$35B (net vs. gross outlays) via Medicare or Medicaid financial incentives for the **ADOPTION** and **“MEANINGFUL USE”** of **“CERTIFIED”** **Electronic Health Records (EHRs)**.

ELECTRONIC HEALTH RECORD SYSTEMS

For all intents and purposes,
certified EHRs are patient record systems
that consist of **structured data**
and are **certified to meet standards**
pursuant to the Act.

ELECTRONIC HEALTH RECORD SYSTEMS

Certified EHRs must include structured patient:

- administrative data (demographic data)
- clinical data (problem lists, medical histories, notes)

Certified EHRs must:

- capture and query the structured data in order to monitor healthcare quality and to exchange the data with and integrate the data from other healthcare sources.

ELECTRONIC HEALTH RECORD SYSTEMS

Certified EHRs must provide:

- **clinical decision support -- interactive tools that help clinicians identify and solve problems and make decisions**
- **computerized provider order entry (CPOE), such as ePrescribing tools**

ELECTRONIC HEALTH RECORD SYSTEMS

As such, EHR systems
are **THE** clinical, transactional,
line-of-business systems
for healthcare provider organizations.

More and more healthcare data are “native” electronic / computer-generated.

- **However, much of the data are unstructured and need to flow into the EHR system.**
 - **Unstructured data are non-binary and human-readable, such as the data contained in paper documents, text-based reports, drawings, diagnostic images, videos, audios, emails, web pages, etc.**

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

- **Enterprise Content Management Systems (ECMSs)** consist of the technologies, tools, and methods used to capture, manage, store, preserve, and deliver the intellectual substance (content) of documents and records across an enterprise.

AIIM/ANSI/ARMA TR48-2006

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

- **ECMSs** consist of a cluster of technologies, tools, and methods that, typically, manage the enterprise's unstructured intellectual substance (content) of its documents and records, such as symbol, text, image, video, and audio data.

DEBORAH KOHN

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

For all intents and purposes,
Enterprise Content Management Systems
are information systems
that consist of **unstructured data**
and, typically, are **NOT** certified to meet
standards pursuant to the Act.

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

Unstructured data-based systems,
such as **ECMSs**,
are not mentioned
in the ARRA/HITECH Act,
and, therefore,
are **NOT** covered by the Act.

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

**Federal Rules of Civil Procedure
Governing Electronic Discovery,
effective December 1, 2006:**

**ECMSs have become crucial for
healthcare compliance and regulatory
purposes.**

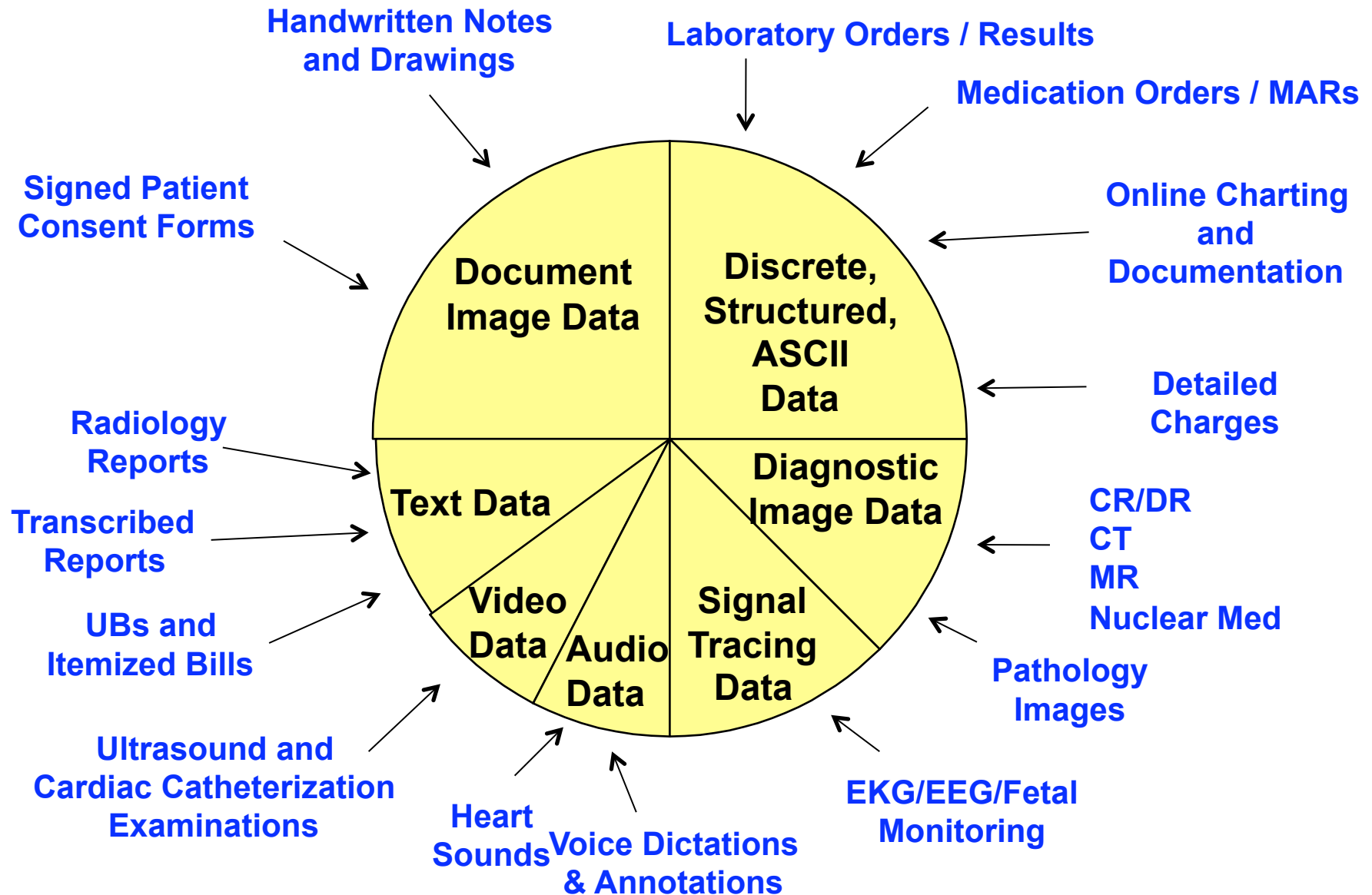
ENTERPRISE CONTENT MANAGEMENT SYSTEMS

ECMSs complement EHRs!

ELECTRONIC HEALTH RECORD SYSTEMS

- The EHR system is
 - NOT one product
 - a construct that consists of a plethora of integrated information systems and technologies, many of which are “component” (or “value-added” or “complementary”) systems and technologies.

THE ELECTRONIC HEALTH RECORD SYSTEM



ELECTRONIC HEALTH RECORD COMPONENT INFORMATION SYSTEMS

**EHR component information systems
and technologies include but are not
limited to:**

ELECTRONIC HEALTH RECORD COMPONENT INFORMATION SYSTEMS

- **Picture Archiving & Communications Systems (PACS)**
 - archive, retrieve, and transmit unstructured, digital diagnostic image data
 - typically, deployed to manage the digital diagnostic images generated by the many radiology-based modalities (digital x-ray, CT, MR, etc.)
 - also deployed to manage the digital diagnostic images generated by all the diagnostic image-generating disciplines; e.g., the “ologies”, such as cardiology, gastroenterology, pathology, etc.

ELECTRONIC HEALTH RECORD COMPONENT INFORMATION SYSTEMS

- **Voice / Text / Speech (VTS) Systems**
 - manage unstructured:
 - digital dictation data (a.k.a. VOICE)
 - digital transcription or word processed data (a.k.a. TEXT)
 - recognize and process unstructured:
 - digital speech data (a.k.a. SPEECH) into structured data

ELECTRONIC HEALTH RECORD COMPONENT INFORMATION SYSTEMS

- **Medical Device Systems**

- monitor / measure physiological / clinical indicators / variables (e.g., blood pressure, blood gases, heart rates, pulse rates, fluid levels, drug infusion rates, etc.) via devices such as IV pumps, pulse oximeters, ventilators, electrocardiograms, glucometers, etc.
- typically, such clinical indicators / variables are represented by unstructured vector-graphic data.

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

- **ECMS Technologies:**
 - Categorization or Classification technology
 - automates the placement of content into “categories” or “classes” for future search and retrieval purposes
 - eMail Management technologies
 - classify, store, and destroy eMail messages consistent with organization standards, just like any other organization document or record

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

- **ECMS Technologies:**

- Records Management (RM) technologies

- electronically identify records, retain records in a secured repository, provide controlled access to records, and destroy records in accordance with pre-determined, organization and regulation retention schedules

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

- **ECMS Technologies:**
 - **Search / Retrieval technology**
 - allows users to get out of the system what users put into the system
 - **Web Content Management technologies**
 - address web-based content creation, review, approval, and publishing processes

ENTERPRISE CONTENT MANAGEMENT SYSTEMS

- **ECMS Technologies:**
 - **Electronic Document Management technologies**
 - **enable businesses to use documents to realize significant improvements in work processes**

EDMSs are component systems of ECMSs!

ELECTRONIC HEALTH RECORD COMPONENT INFORMATION SYSTEMS

- **Electronic Document Management Systems (EDMS)**
 - EDMs not only complement the EHR but are used as “bridge” systems in achieving the EHR.
 - consist of a cluster of technologies that enable businesses to use documents to realize significant improvements in work processes

ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS

- **EDMS Technologies:**

- Automatic identification technologies

- **allow documents to be automatically identified**

- **Automatic / Intelligent Document**

- **Recognition (ADR/ IDR), used to recognize analog and digital form categories.**

- **Bar codes, used to eliminate the manual indexing of document type, patient name, provider name, and medical record number, etc., as well as medical record “separator” sheets during the digital scanning process.**

ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS

- **EDMS Technologies:**

- **Automatic identification technologies**

- **allow documents to be automatically identified**

- **Intelligent Character Recognition (ICR)**, used to recognize documents' hand printed / hand written orders, progress notes, signatures, etc.

- **Optical Character Recognition (OCR)**, used primarily to recognize the printed text on claim forms.

- **Optical Mark Recognition (OMR) or Mark Sense**, used for physician office paper super bills and charge tickets.

ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS

- **EDMS Technologies:**

- COLD / ERM (Computer Output to Laser Disk / Enterprise Report Management) technology
 - stores “computer output” to - and indexes “computer output” on - digital storage media

“Computer output” consists primarily of computer-generated reports whose data are report-formatted.

ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS

- **EDMS Technologies:**

- Document Management technologies

- **control and organize digital documents**

- Document Assembly

- Document Version Control

- Document Check-in / Check-out

- Document Security

ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS

- **EDMS Technologies:**

- Document Imaging / Capture technologies

- capture (via scanning, faxing, or automatic identification technologies), store, and retrieve documents -- regardless of original format.

**Contrary to popular thinking,
document imaging (capture) technology
is ONE component technology of an EDMS!**

ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS

- **EDMS Technologies:**

- Electronic Forms Management technologies

- electronically deliver paper forms for printing and completion
 - accept scanned paper forms and extracts data from the boxes and lines on the forms to populate databases
 - utilize eForm templates -- that look like paper forms -- for online data entry / data collection

ELECTRONIC DOCUMENT MANAGEMENT SYSTEMS

- **EDMS Technologies:**

- Workflow / Business Process Management (BPM) technology

- automates business processes, in whole or in part

**The most important component technology
of any information system!**

THE MISCONCEPTIONS

- **“There is no need for an ECMS and/or an EDMS because the healthcare enterprise is implementing all-digital information systems, such as EHRs, clinical information systems, financial information systems, etc.”**

THE CONSEQUENCES

**What if other healthcare organizations
are NOT fully digital
when all-digital information systems
are implemented in your organization?**

Externally-generated information

WHAT'S REAL

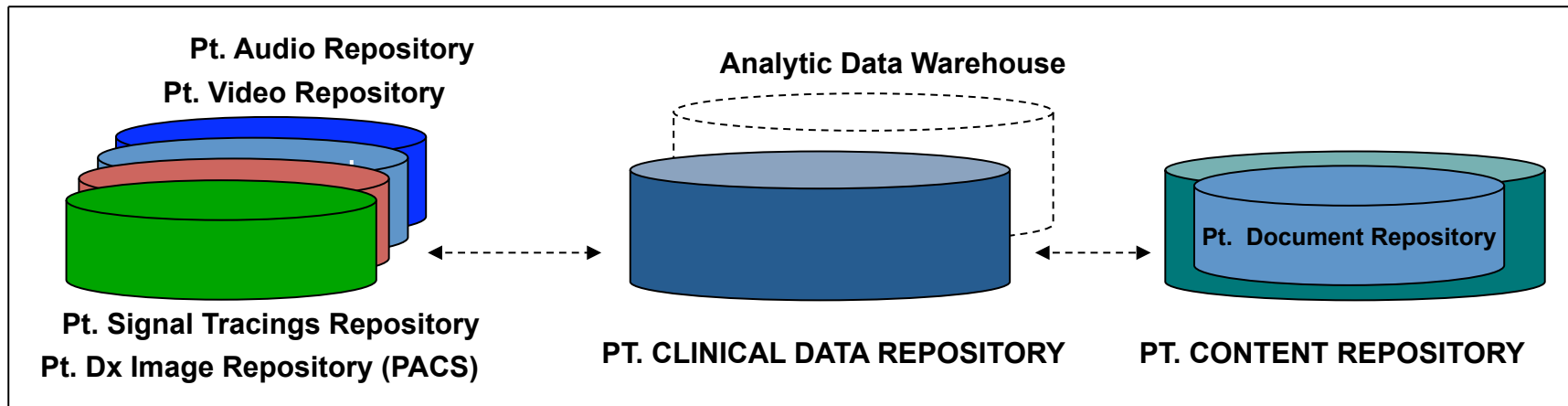
- Many IT decision-makers do not understand or how to manage unstructured data.
- Many executive decision-makers do not understand content management until they are confronted with a subpoena.

WHAT'S REAL

It's **VERY** difficult convincing healthcare decision-makers that enterprise content management and electronic document management are strategic EHR component systems, especially when they don't know what these systems are and do.

A PROPOSED STRATEGY

**Physical
data and content repositories,
logically linked**



FOUR
ENORMOUS HEALTHCARE
MANDATES
BEGIN THIS YEAR

I.A. Beginning in October 2010*

2009 ARRA / HITECH Act

Medicare / Medicaid
Incentive
Payments
MEANINGFUL USE
of
CERTIFIED EHRs
Providers / Hospitals

- **Division B, Title IV:**
Electronic Health Record (EHR) Installations
Incentive Payments are for “Adoption and Meaningful Use of Certified EHR Technology”

* Applies to **Medicare ONLY – US Hospitals**

I.B. Began in February 2010*

2009 ARRA / HITECH Act

HIPAA “TWO”
Confidentiality/
Privacy
and
Security Standards

- **Division A, Title XIII - Subtitle D:**

- 1996 HIPAA Title II--Administrative Simplification Standards Modifications**

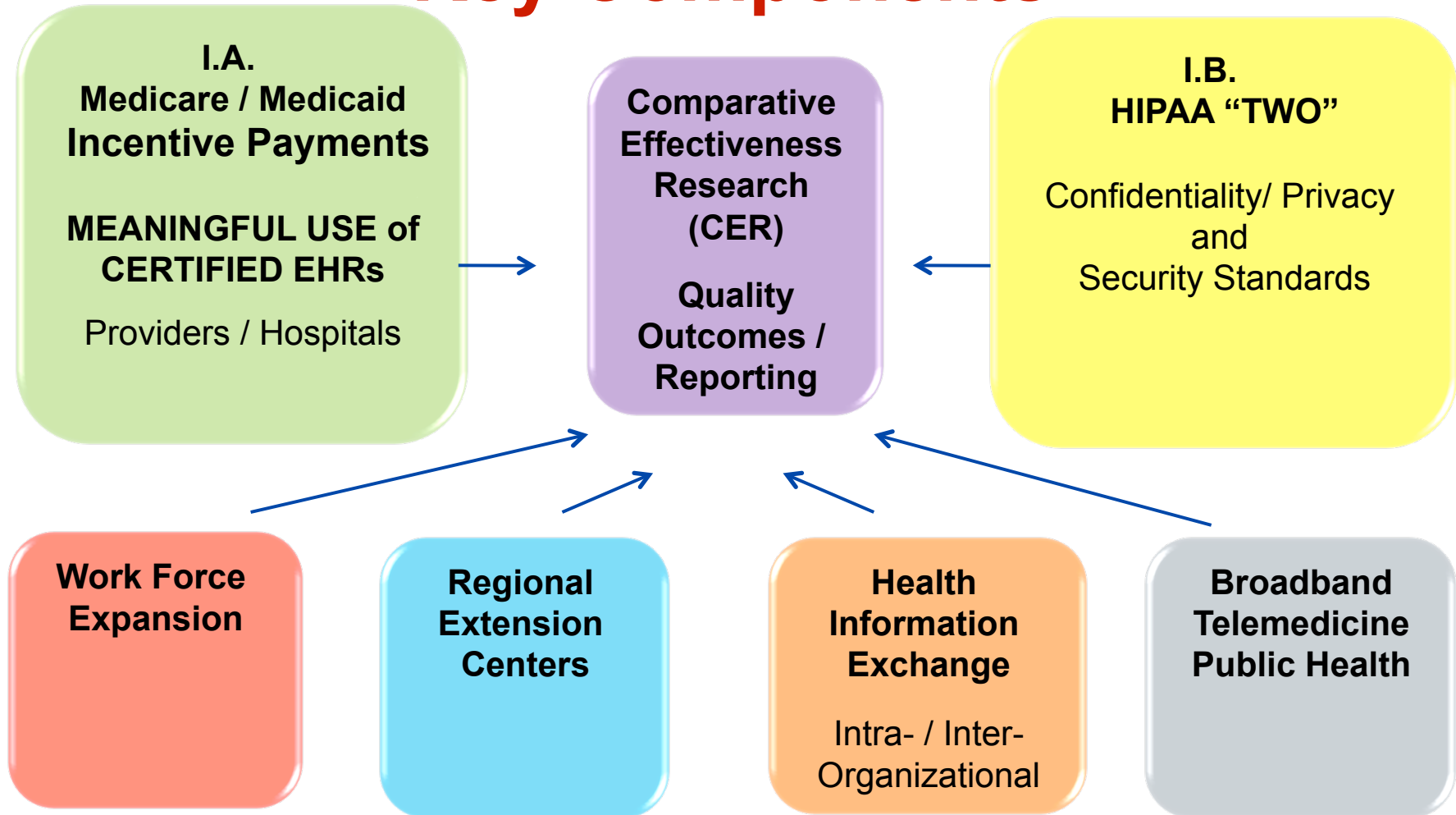
- The **Confidentiality and Privacy Standards**
- The **Security Standards**

* **HHS’ OCR begins to enforce Privacy Rule only after a rule is in place; Privacy’s Breach Rule already in place**

Applies to **ALL (new / existing) HIPAA CEs**

2009 ARRA / HITECH ACT

Key Components



II. Compliance on January 1, 2012

1996 HIPAA Title II--Administrative Simplification Standards Modifications

- The **EDI Transactions Set**

Version 5010 and D.0 Transactions

Applies to **ALL (new / existing) HIPAA Covered Entities** and **ALL Accredited Standards Committee (ASC) X12 and National Council for Prescription Drug Program (NCPDP) transactions**

III. Beginning on October 1, 2013

ICD-10-CM / PCS

Physician
ICD-10-CM
CPT / HCPCS

Hospital
ICD-10-CM
ICD-10-PCS
Inpatient

ICD-10-CM
CPT / HCPCS
Outpatient

Behavioral Health
ICD-10-CM
CPT / HCPCS

All Other
ICD-10-CM
CPT / HCPCS

Laboratory
ICD-10-CM
CPT / HCPCS

Long Term Healthcare
ICD-10-CM
CPT / HCPCS

IV. Beginning in 2010*

2010 PATIENT PROTECTION and AFFORDABLE CARE ACT (PPACA) (aka Healthcare Reform Act)

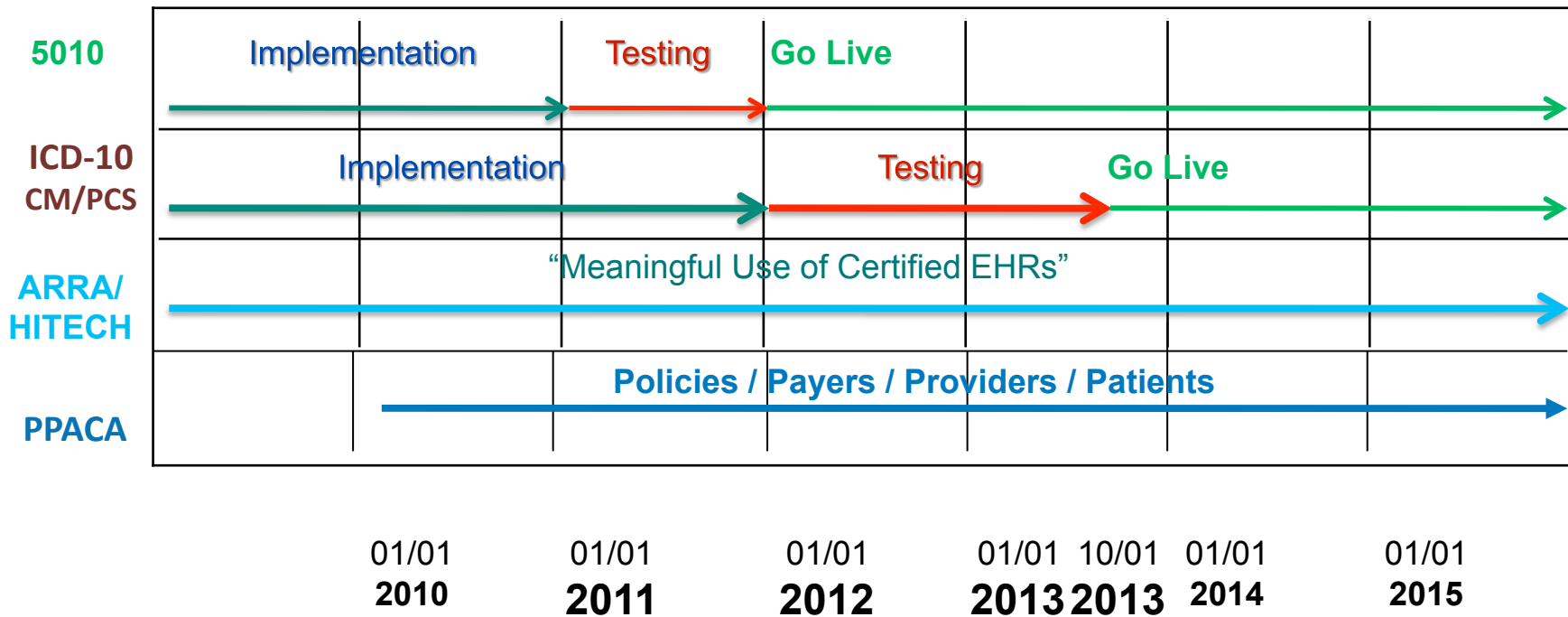
* Applies to **US Hospitals / Other Providers**

- **PPACA EFFECTIVE DATE:** **March 23, 2010**

- **CMS PAYMENT REDUCTIONS:** **2010**
- **INITIATIVES TO IMPROVE VALUE/ QUALITY:** **2012**
- **PENALTIES – HIGH HOSPITAL READMISSION RATES:** **2013**
- **MEDICAID:** **2014**
 - Coverage Expansion
 - State Health Insurance Exchanges
 - Payment Advisory Commission
 - Disproportionate-share Payment Cuts
- **PENALTIES – HOSPITAL-ACQUIRED INFECTIONS:** **2015**



AVOIDING THE “PERFECT STORM”





-
- Is a Best Practices Guide supplemented by an Implementation Guide
 - Describes attributes of PDF specific for the healthcare industry
 - PDF is an ISO-ratified, open, international, published standard, originally created by Adobe Systems, Inc., but now developed and maintained by ISO
 - PDF is freely viewable on almost every laptop / desktop around the world
 - Is supported by the internationally-recognized standards development organizations, ASTM and AIIM



-
- **Is proven to capture and preserve any type of health information, structured or unstructured**
 - Including handwritten notes, laboratory test results, word-processed summary reports, electronic forms, diagnostic images, signal tracings (e.g., ECGs) and more

 - **Allows for the exchange of health information via a secure, portable “container” for use by**
 - Patients
 - Physicians
 - Hospitals / Clinics / Medical Offices
 - Ancillary providers
 - Vendors



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