EHR 2.0:
HITECH Act Stimulus Funds Create Care Collaboration Opportunities In A Networked Health System

BrightTALK™

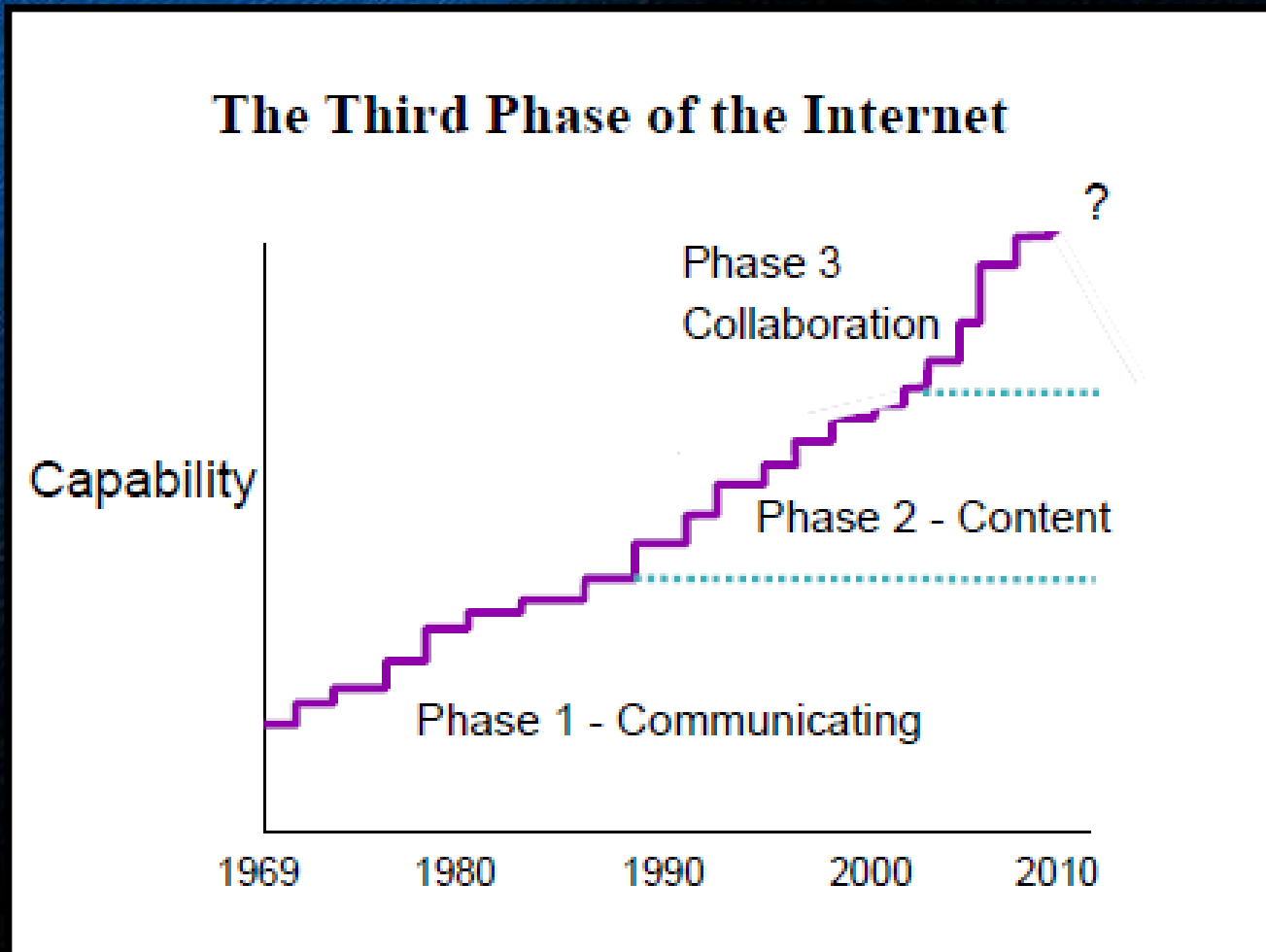**eHealth Webcast**   **July 2009**

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Better Health Technologies, LLC

www.e-CareManagement.com blog   (208) 395-1197

Care Collaboration Is A "Must Have";
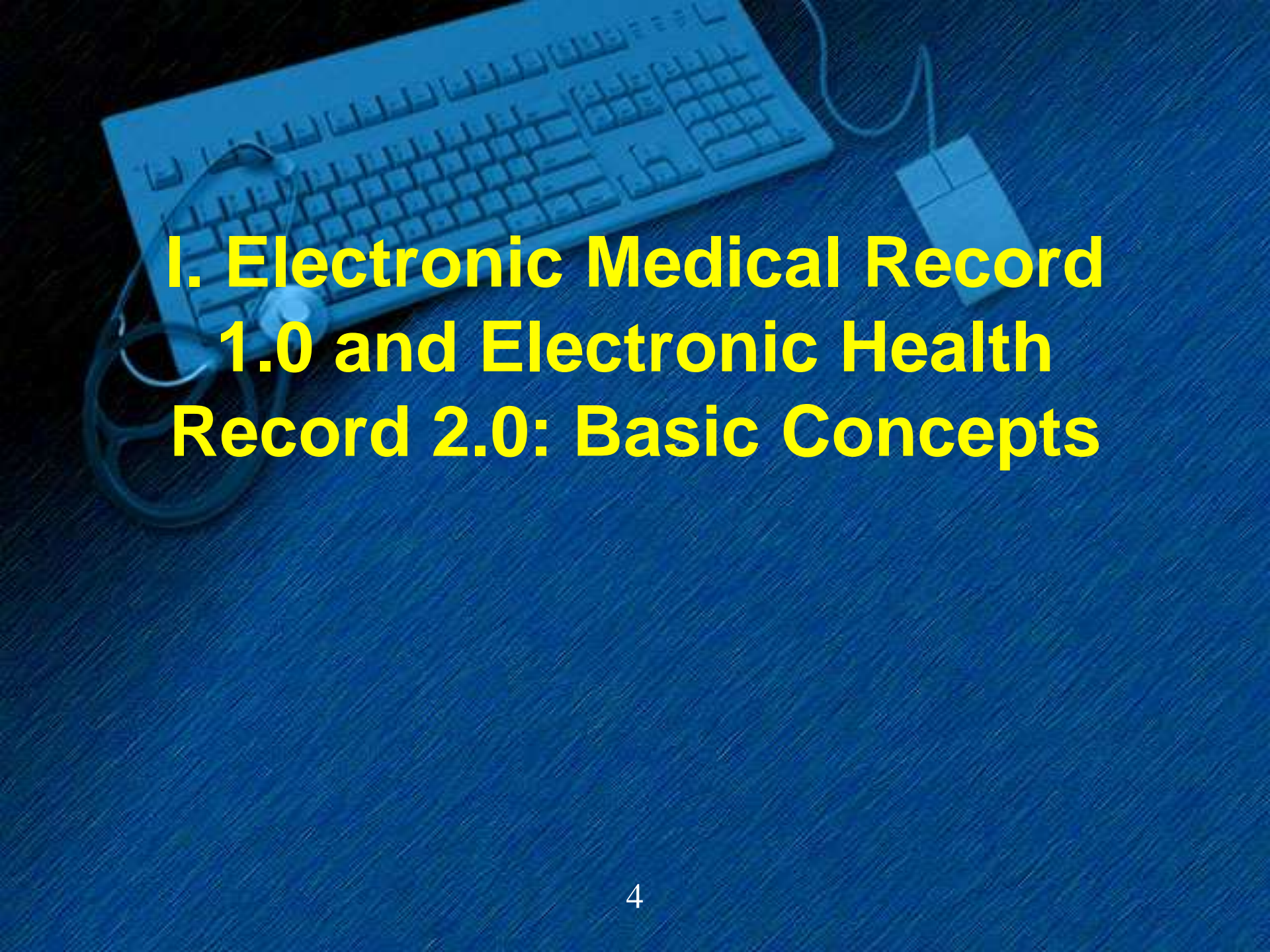# EHR 2.0 Is The Enabler

The Third Phase of the Internet

Agenda

I. **EMR and EHR: Basic Concepts**

II. **"Care Collaboration" Viewed Through Different Lenses:**

    A. Technology Lens: EMR 1.0 to EHR 2.0 (Clinical Groupware)
    B. Business Lens: New Ecosystem
    C. Clinical Lens: Team Collaboration

III. **Care Collaboration As A "MUST Have" In A Networked Healthcare System**

A copy of these slides is available at:
http://e-CareManagement.com/EHR2.ppt . For best printing, use "pure black and white" PowerPoint settings.
A recorded webcast is available at:
http://www.brighttalk.com/summit/ehealth

I. Electronic Medical Record 1.0 and Electronic Health Record 2.0: Basic Concepts

Key Distinction
EMR v. EHR

- **Electronic Medical Record (EMR) – contains information from a single organization**

- **Electronic Health Record (EHR) – records that span organizations**

  Source: AHRQ, Clinical Decision Support Systems, State of the Art; June 2009

"EMRs were never designed for collaboration"

What Are Some Of The Challenges With EMR 1.0?

- **Usability/design**
- **Implementation**
  - **Changes clinician workflow**
  - **Loss of productivity for physicians**
  - **Risk of failure/de-install**
- **Proprietary business model**
  - **Lack of interoperability**
  - **Dependent on customer lock-in and switching costs**
- **Current CCHIT certification only focuses on functionality**

Nutting Report: EHRs Need to Become Plug-and-Play

- **Technology needed in a PCMH is not "plug and play." The hodge-podge of information technology marketed to primary care practices resembles more a pile of jigsaw pieces than components of an integrated and interoperable system.**

- **…[I]t is possible and sometimes preferable to implement e-prescribing, local hospital system connections, evidence at the point of care, disease registries, and interactive patient Web portals without an EMR.**

ANNALS OF FAMILY MEDICINE

HOME | HELP | FEEDBACK | SUBSCRIPTIONS | ARCHIVE | SEARCH | TABLE OF CONTENTS

Annals of Family Medicine 7:254-260 (2009)
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doi: 10.1370/afm.1002

Initial Lessons From the First National Demonstration Project on Practice Transformation to a Patient-Centered Medical Home

Paul A. Nutting, MD, MSPH[1], William L. Miller, MD, MA[2], Benjamin F. Crabtree, PhD[3], Carlos Roberto Jaen, MD, PhD[4,5], Elizabeth E. Stewart, PhD[5] and Kurt C. Stange, MD, PhD[6]

II A. "Collaboration" Through A Technology Lens: From EMR 1.0 to EHR 2.0 (Clinical Groupware)
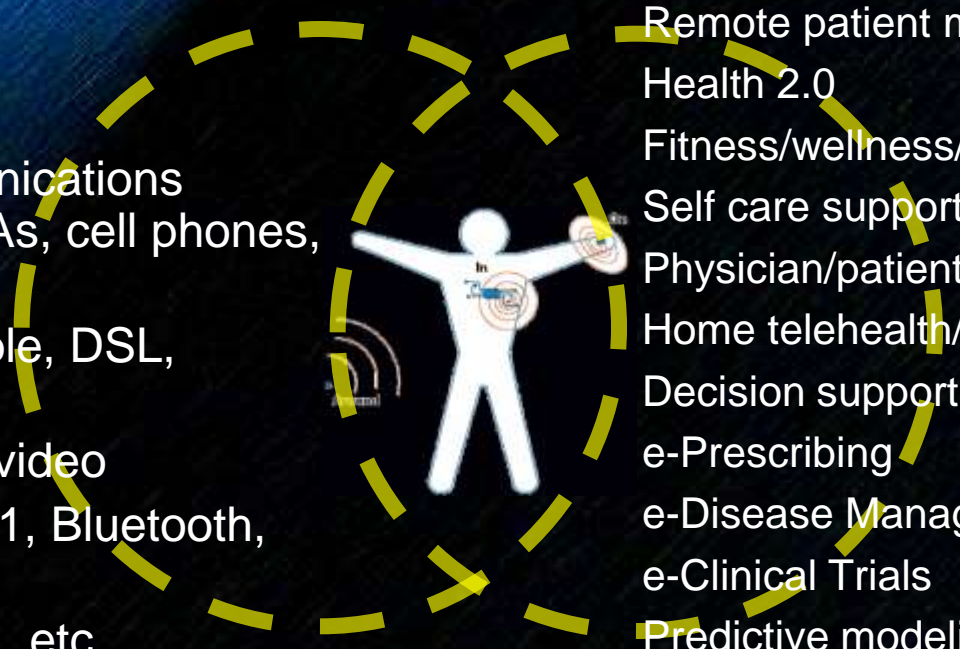
There Are MANY Technologies Vying For Adoption, But They Don't Interoperate

CONSUMER TECH INFRASTRUCTURE

Internet

Smart houses

Personal communications devices -- PDAs, cell phones, etc.

Broadband -- cable, DSL, satellite

Digital cameras, video

Wireless -- 802.11, Bluetooth, RFID, etc.

Voice recognition, etc.

eHEALTH APPLICATIONS

Electronic Health Records (EHRs)

Personal Health Records (PHRs)

Remote patient monitoring

Health 2.0

Fitness/wellness/prevention

Self care support

Physician/patient secure messaging

Home telehealth/telecare

Decision support systems

e-Prescribing

e-Disease Management

e-Clinical Trials

Predictive modeling

Computerized Physician Order Entry

Quality evaluation web sites

Patient reminder systems, etc.

Better Health Technologies

2 Schools of Thought
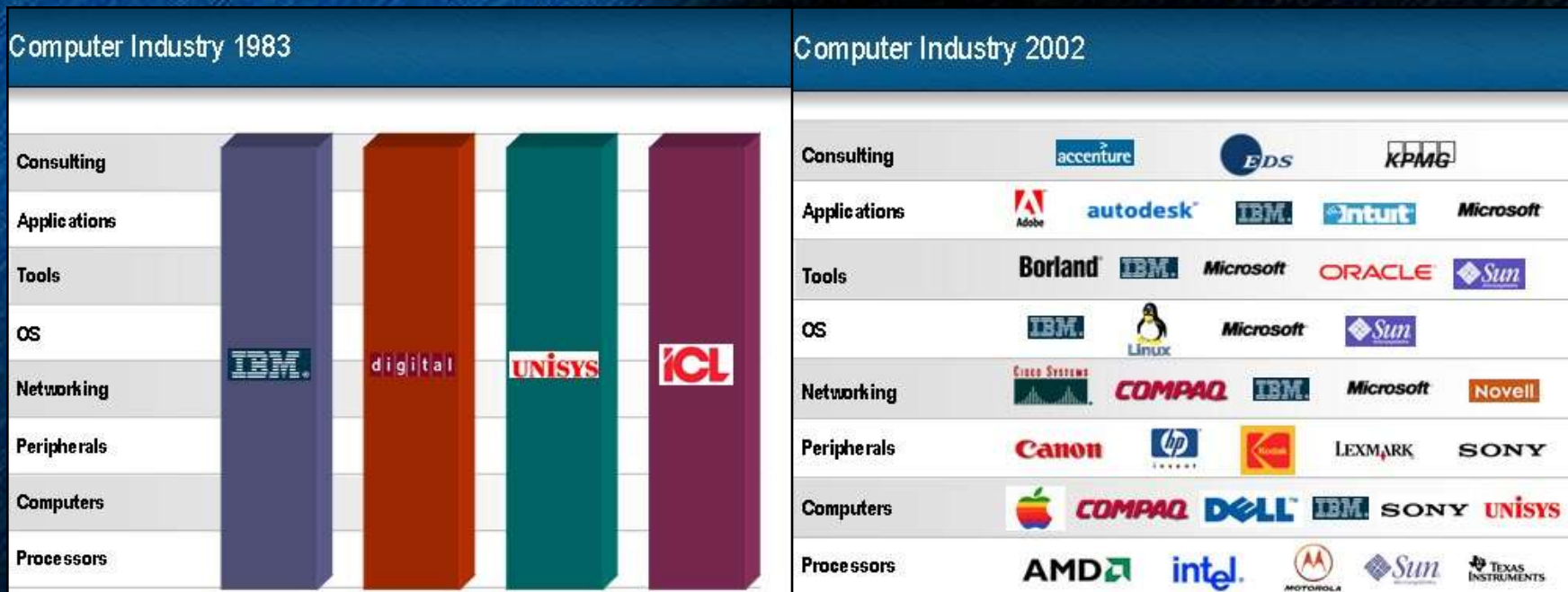## HOW Best To Spend Fed HIT Stimulus $$

Incumbents (Cats)
- **Pay for technology: fund IT & providers will use IT to improve quality and reduce costs**
- **EHR/ software as foundational technology**
- **Provider centric HIT investment needed**
- **Client-server, enterprise model architecture**
- **Focus on data standardization**
- **Current EHRs adequate & will improve**

Disruptive Innovators (Dogs)
- **Pay for desired outcomes: change financial incentives & IT will naturally follow**
- **EHR not necessarily foundational; many other options can contribute**
- **Patient centric HIT investment needed**
- **Web browser as platform, cloud computing**
- **Focus on data liquidity**
- **Investment in current EHRs could lock out innovation**

10

Modularity: Dis-integration Of The Computer Industry

Computer Industry 1983

Consulting	
Applications	
Tools	
OS	
Networking	
Peripherals	
Computers	
Processors	

(IBM, digital, UNISYS, ICL)

Computer Industry 2002

Consulting	accenture	EDS	KPMG		
Applications	Adobe	autodesk	IBM	Intuit	Microsoft
Tools	Borland	IBM	Microsoft	ORACLE	Sun
OS	IBM	Linux	Microsoft	Sun	
Networking	Cisco Systems	COMPAQ	IBM	Microsoft	Novell
Peripherals	Canon	hp	Kodak	LEXMARK	SONY
Computers	Apple	COMPAQ	DELL	IBM SONY	UNISYS
Processors	AMD	intel	MOTOROLA	Sun	TEXAS INSTRUMENTS

11

EMR 1.0 to EHR 2.0

- **Today's Predominant EMR 1.0**
  - **client server based**

  - **proprietary**
  - **non-interoperable**
  - **no connectivity to patients**
  - **monolithic**

- **Tomorrow's EHR 2.0**
  - **web-based, cloud computing**
  - **open**
  - **interoperable**
  - **networked**

  - **platform/application (clinical groupware)**

From EMR 1.0 -- 2008...

FUNCTION	Physician EMR 1.0 -- 2008				
Health Information and Data[1] **Order Entry Management** **Results Management** **Clinical Decision Support**	Allscripts	GE	Misys	Next Gen	Many others...

Source: David C. Kibbe MD, MBA, the Kibbe Group and
Vince Kuraitis JD, MBA, Better Health Technologies, LLC

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[1] Functions adapted from DesRoches,C. et. al., C. "Electronic Health Records in Ambulatory Care -- A National Survey of Physicians" NEJM; July 3, 2008

....To EHR 2.0/ Clinical Groupware – 2012

FUNCTION	Clinical Groupware/ EHR 2.0 -- 2012
Health Information and Data[1]	Company A, B, C
Order Entry Management	Company D, E, A
Results Management	Company F, G, D
Clinical Decision Support	Company H, I, B
Clinical Groupware Platform[2]	Company J, K, I
Patient Connectivity (Panel Management)	Company L, M, N
Quality Improvement	Company N, O, F
Administrative Tools	Company P, Q, M
Communication	Company R, S, C
Public Health Reporting	Company T, U, R
Research	Company V, W, C
Advanced Decision Support	Company X, Y, N
...hundreds of future apps!	Company Z, D, Q

Source: David C. Kibbe MD, MBA, the Kibbe Group and
Vince Kuraitis JD, MBA, Better Health Technologies, LLC

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[1] Functions adapted from DesRoches,C. et. al., C. "Electronic Health Records in Ambulatory Care -- A National Survey of Physicians" NEJM; July 3, 2008
[2] Functions adapted from Mandl, K. and Kohane, I. "No Small Change for the Information Economy" NEJM; March 26, 2009

Harmony Is Possible

Even CCHIT Is Coming Around

New Paths to Certification: In Brief

Certified EHR Comprehensive **EHR-C**	Certified EHR Module **EHR-M**	Certified EHR Site **EHR-S**
Rigorous certification of comprehensive EHR systems that significantly exceed minimum Federal standards requirements.	Flexible certification of Federal standards compliance for EHR, HIE, eRx, PHR, Registry and other EHR-related technologies.	Simplified, low cost certification of EHR technologies in use at a specific site.
For providers who seek maximal assurance of EHR compliance and capabilities.	For providers who prefer to integrate technologies from multiple certified sources.	For providers who self-develop or assemble EHRs from noncertified sources.

16

EMR v. Clinical Groupware

- **Metaphor: Paper**
  - **Word, Excel, static data views**
  - **Document-centric**
- **Orientation: Tasks**
  - **Data silos, many clicks**
  - **Documentation as end product**
- **Control: Vendors**
  - **Tightly bound, client-server**
  - **Closed systems**

- **Metaphor: Web, iPhone**
  - **Graphical representation**
  - **Interactive, actionable data**
- **Orientation: Workflow**
  - **One click, context critical, sharing**
  - **Documentation as byproduct**
- **Control: Users, shared**
  - **Data separated from App**
  - **Open API**

Source: David C. Kibbe MD, MBA, presentation at Healthcare Unbound Conference, June 2009

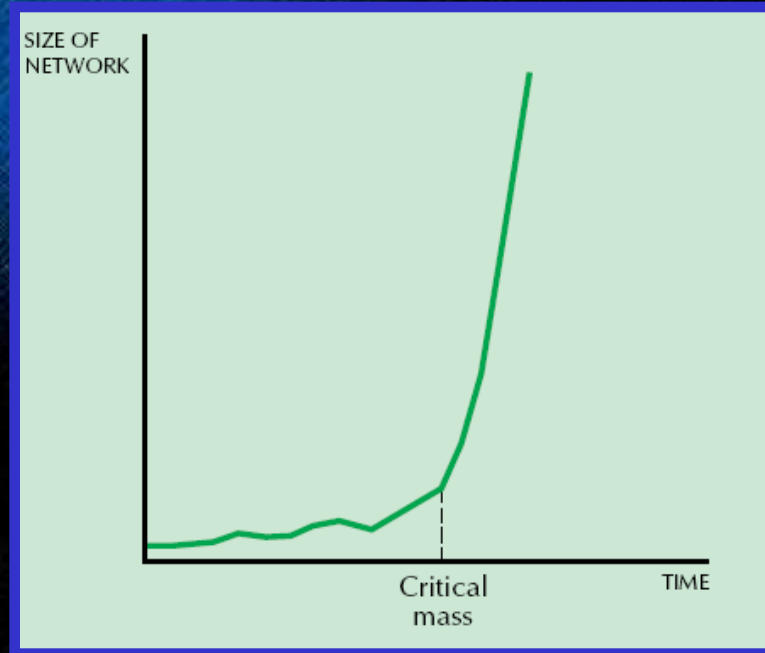For a more detailed explanation of clinical groupware, see:

http://e-caremanagement.com/why-clinical-groupware-may-be-the-next-big-thing-in-health-it/

II B. "Collaboration" through a Business Lens:
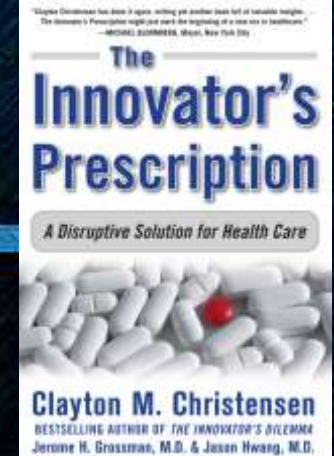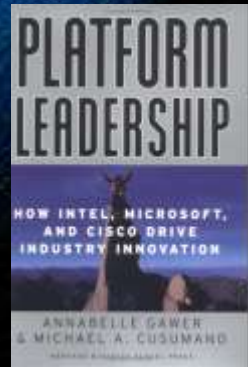# A New Ecosystem

Network Effects
(Tipping Point)

SIZE OF NETWORK

Critical mass   TIME

Source: Shapiro, C. Varian, H. Network Effects 1998

- **Different types of value**
  - **Stand-alone: my value from me using the product**
  - **Network: my value from you using the product**

Elements for Disruptive Innovation

1. **Technological enabler**.
2. **Business model innovation.**

3. Value network. A commercial infrastructure whose constituent companies have consistently disruptive, mutually reinforcing economic models.
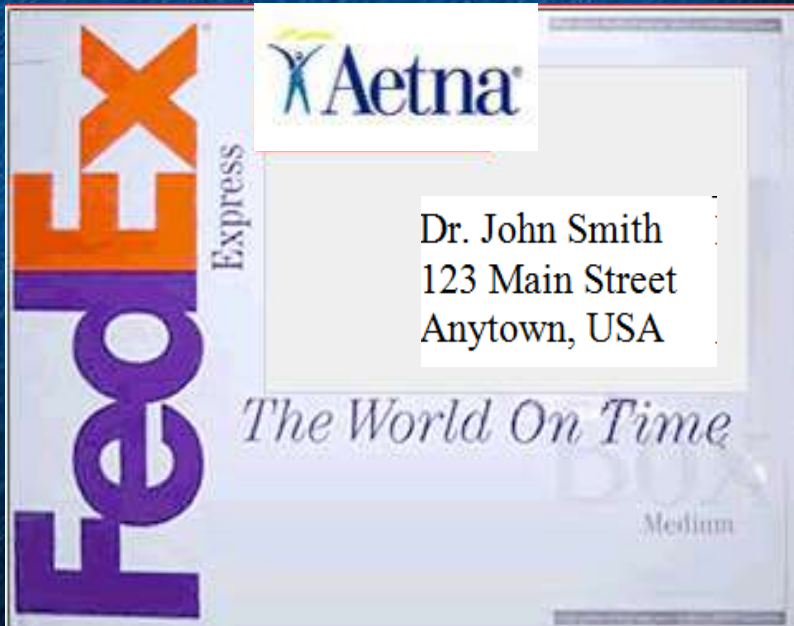
Clinical Groupware/EHR 2.0 Companies

- **RMD Networks**
- **VisionTree**
- **4Medica**
- **Covisint**
- **Kryptiq**
- **....many others**

II C. "Collaboration" Through A Clinical Lens:
Team Collaboration

The FedEx Phenomenon:
Physician Non-Adoption Of Guidelines

For a more detailed description of the FedEx Phenomenon, see:
http://e-caremanagement.com/megatrend-spotting-collaborative-care-management-networks/

Explanation

FedEx Phenomenon
=
lack of network effects

...Observe The Early Emergence Of Collaborative Care Management Networks

- **Characteristics**
  - **Multi-payer participation**
  - **Common clinical guidelines/shared care processes**
  - **Common IT infrastructure enabling information exchange and shared workflow (highly desirable today, essential in the future)**
  - **Aligned financial incentives and shared accountability across providers**
  - **Trust and shared responsibility**
- **Many embryonic examples**
  - **Institute for Clinical Systems Improvement , Minnesota**
  - **State Chronic Care Initiatives: Iowa, Pennsylvania, Vermont, Washington, Rhode Island, Colorado, others**
  - **Improving Performance in Practice initiatives**
  - **Accountable Care Organizations (Elliott Fisher, Dartmouth)**
  - **Patient Centered Medical Home (PCMH) initiatives**

Examine Current PHR Adoption

- **Typical 2- 5%**
- **Best Practice**
  - **Kaiser: 30%**
  - **Group Health Cooperative (GHC): 50%**
- **Why?**

Features/Functionality Of Kaiser & GHC PHRs (as of mid 2008)

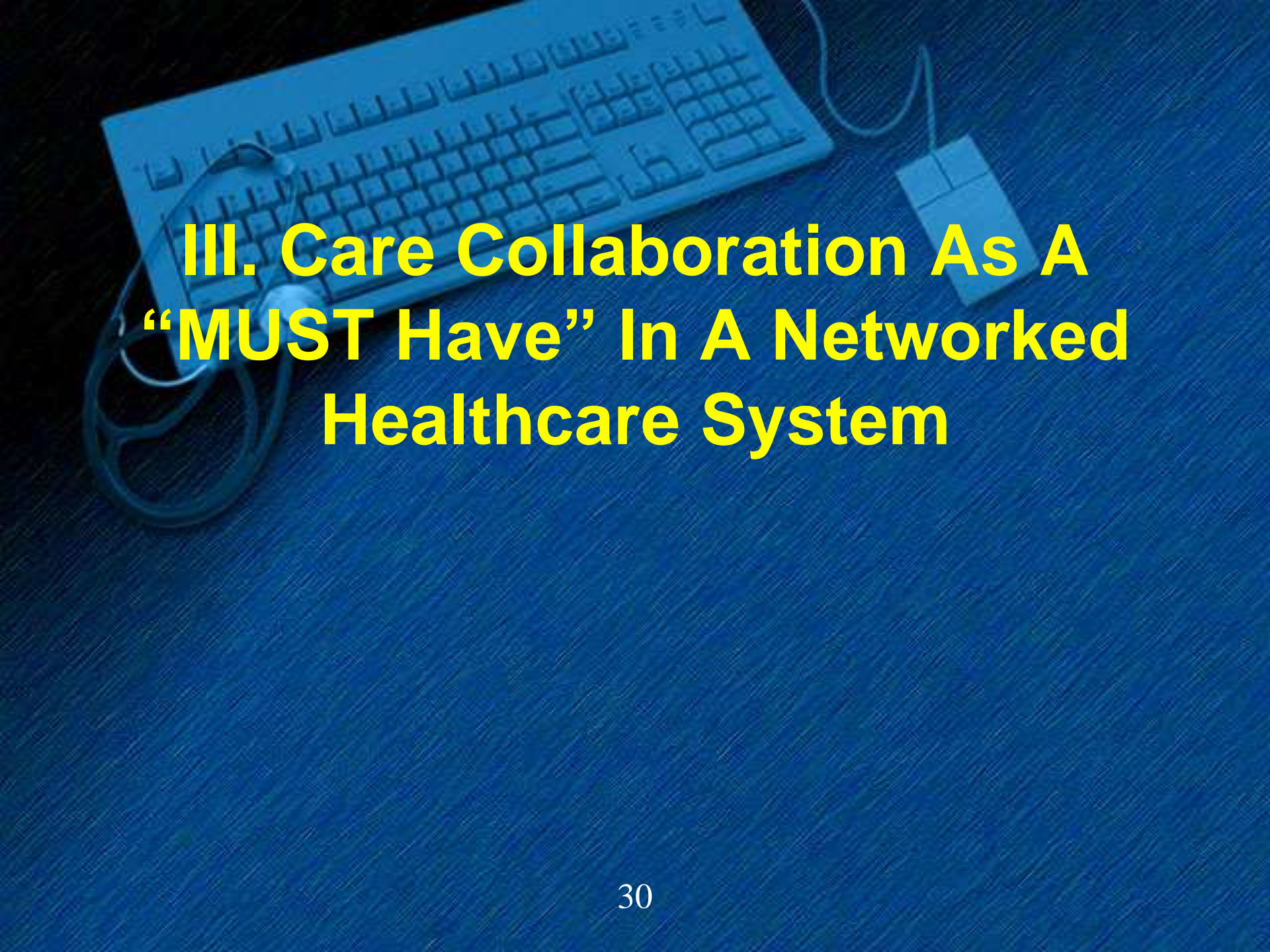|	GHC	Kaiser
PHR	X	X
EHR integration (patient view)	X	X
Secure patient/physician messaging	X	X
Prescription renewal	X	X
Lab/test results	X	X
Request for Dr. appointment	X	X
Integrated consumer health content	X	X
Health Risk Assessment	X	X
Caregiver/parental access	X	X
Review of insurance benefits	X	x
Appointment scheduling	x	X
Medication management	X	
Behavior change programs		X
After visit summary	x	
View x-ray, MRI, CT	x	

Explanation

Kaiser, GHC PHR adoption

=

early network effects

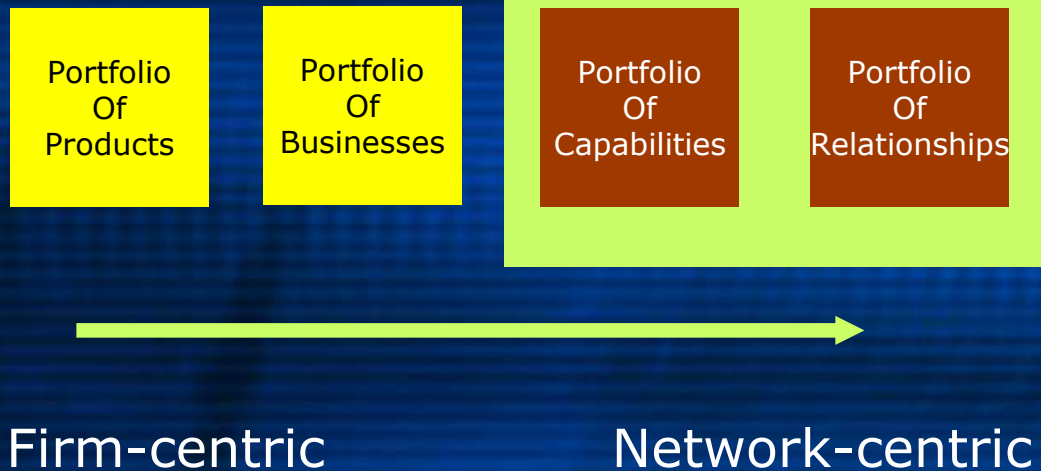# Evidence on Value of Collaboration

- **"...systems tended to have a positive effect when they provided a complete feedback loop that included:**
  - **Monitoring of current patient status.**
  - **Interpretation of this data in light of established, often individualized, treatment goals.**
  - **Adjustment of the management plan as needed.**
  - **Communication back to the patient with tailored recommendations or advice.**
  - **Repetition of this cycle at appropriate intervals.**
- **Systems that provided only one or a subset of these functions were less consistently effective."**

III. Care Collaboration As A "MUST Have" In A Networked Healthcare System

Healthcare Enters the Network Economy
A Fundamental Strategic Shift

Strategy: Shifting lens

Portfolio Of Products

Portfolio Of Businesses

Portfolio Of Capabilities

Portfolio Of Relationships

Firm-centric   Network-centric

Source: Venkatraman, N. Winning in a Network Era: Opportunities & Challenges, 2006

13

Expanded View:
Clinical Groupware/EHR 2.0 – 2012

(v. 1.1, June 2009)

FUNCTION	EXAMPLES	Clinical Groupware/ EHR 2.0 -- 2012
Health Information and Data[1]	demographics, problem lists, medications, clinical notes, pt. history	Company A, B, C
Order Entry Management	orders for Rx, lab, radiology; eRx	Company D, E, A
Results Management	viewing lab/imaging results	Company F, G, D
Clinical Decision Support	warnings of drug interactions, contraindications; out-of-range test levels; reminders	Company H, I, B
Clinical Groupware Platform[2]		Company J, K, I
Patient Connectivity (Panel Management)	disease management, appointment & testing reminders, care instructions, results notification, patient behavior modification	Company L, M, N
Quality Improvement	HEDIS, management of patient transfer and transition	Company N, O, F
Administrative Tools	billing, referral management, risk stratification	Company P, Q, M
Communication	doctor-patient communication, multispecialty or team communication, patient support, patient or clinician social networking	Company R,S,C
Public Health Reporting	notifiable disease reporting, biosurveillance, pharmacosurveillance	Company T, U, R
Research	clinical trial eligibility, cohort study tools, electronic data capture for trials	Company V, W, C
Advanced Decision Support	lab test interpretation, genomics, guideline management	Company X, Y, N
...hundreds of future apps!		Company Z, D, Q

Source: David C. Kibbe MD, MBA, the Kibbe Group and
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[2] Functions adapted from Mandl, K. and Kohane, I. "No Small Change for the Information Economy" NEJM; March 26, 2009

"...the healing professions are in the midst of a major sea-change, a once-in-a-century shift: We're moving from 'medicine practiced as individual heroism' to 'medicine as a team sport'"

Brent James MD, Intermountain Healthcare

**APPENDIX A
Better Health
Technologies, LLC**

Better Health Technologies, LLC

- **Technology and health care delivery are shifting:**
  - **From: Acute and episodic care delivered in hospitals and doctors' offices**
  - **To: Chronic disease and condition management delivered in homes, workplaces, and communities**
- **BHT provides consulting, business development, and speaking services to assist companies in:**
  1) <u>Understanding</u> the shift
  2) <u>Positioning</u> – what's the right strategy, tactics, and business model?
  3) <u>Integrating</u> your offering into the value chain – what are the right partnerships?

BHT Clients

Pre-IPO Companies

RMD Networks
HealthPost
Cardiobeat
EZWeb
Sensitron
Life Navigator
Medical Peace
Stress Less
DiabetesManager.com
CogniMed
Caresoft
Benchmark Oncology
SOS Wireless
Click4Care
eCare Technologies
The Healan Group
Fitsense
Elite Care Technologies

Established organizations

Intel Digital Health Group
Samsung Electronics, South Korea
-- Global Research Group
-- Samsung Advanced Institute of Technology
-- Digital Solution Center
Amedisys
Ascension Health System
Midmark
Medtronic
-- Neurological Disease Management
-- Cardiac Rhythm Patient Management
Siemens Medical Solutions
Philips Electronics
Joslin Diabetes Center
GSK
Disease Management Association of America
PCS Health Systems
Varian Medical Systems
VRI
Washoe Health System
S2 Systems
CorpHealth
Physician IPA
Centocor

END