



Saudi Association for
Health Informatics

المؤتمر السعودي للصحة الإلكترونية
Saudi e-Health Conference 2008
Towards National e-Health نحو تعاملات صحية إلكترونية موحدة



“Implementability” and “Sustainability” in Health Information Technology (HIT) Solutions

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SBM

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TEPE
INTERNATIONAL
HEALTH INFORMATION SYSTEMS

CompuGROUP
HOLDING AKTIENGESELLSCHAFT

BILKENT

HOLDING

Agenda:

- *Company Profiles*
- *Current Status in Healthcare & HIT*
- *What is Needed for a Successful HIT Implementation*
- *What is Needed for a Sustainable HIT Success?*
- *Some Good Examples*

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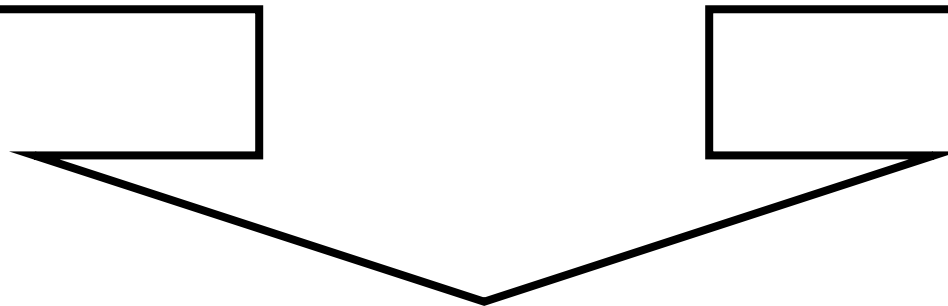
HOLDING



- Among top holdings in Turkey
- \$3+ Billion annual turnover
- 62 Companies
- 22,000 Employees.



- Leading e-Health company in Europe
- \$ 250+ Million annual turnover
- Serving 300,000 physicians, dentists, specialists
- 40+ companies and 1,700 employees,





- **Leading Health Information Technologies (HIT) Company In Turkey**
- **Operations in 6 countries**
- **\$32 M Turnover**
- **205 Employees**





corTTex® Enterprise

Enterprise EPR Information System

corTTex® HIS

Integrated Hospital Management System

corTTex® RAD

Multi Media Radiology Information System

corTTex® LAB

Multi Media Laboratory Information System

corTTex® PHARM

Pharmacology Information System

corTTex® MEDDat

Enterprise Medical Data Dictionary

corTTex® CIS

Cardiology Information System

corTTex® MedRas

Resource Planning, Cost Accounting

corTTex® ProMis

Distributed Asynchronous MIS

corTTex® RTIS

Radiotherapy Information System

corTTex® NMIS

Nuclear Medicine Information System

corTTex® DRGManager

DRG Management System

corTTex® ECP

Electronic Claims Processing System

MEDSIM

Optimization and Simulation

TERMAN

Semantic Terminology Manager

UBB

National DATA Bank for Pharma, Med. Dev

NORAL

Fraud Detection System

Tepe's Involvement in National Healthcare Reform

- Improving current Fee For Service Payment System
- Development of National On-line Provision and e-Invoicing Systems
- Development of National DRGs, ICD-10 TRM to enable Prospective Payment System
- Development of National Health Supply Chain Management System
- Development of National Data Banks, Registries
 - Drugs, Devices, Materials/Consumables
 - Hospitals, Physicians, Pharmacies, Citizens...
- Development of Simulation Tools
- Development of Fraud Detection Systems



Australian Government

Health Insurance Commission

SBM

is the only IT solution provider in KSA who can commit, deliver and sustain an end-to-end solution including Services, Hardware, Software and Technology



Plan and design the solution based on industry best practices and thorough leadership know-how

Build the solution using state-of-art technology including business applications, hardware, software, operating systems, and network

Run, manage and grow the solution using the highest operational standards





Martin Lindstrom, Brand Futurist

MartinLindstrom.com

LEAST TRUSTED:

1. Car sales men
2. Real estate agents
3. Computer sales men
4. The internet

Martin Lindstrom, born 1970, founded his own advertising agency at the age of 12. Needless to say, Lindstrom has a highly unusual background. According to the Chartered Institute of Marketing, the rapid rise of his career has made him one of today's most respected branding gurus in the world. He sits on several boards globally, and his clients include Disney, Mars, Pepsi, American Express, Mercedes-Benz, Reuters, McDonald's, Kellogg's, Yellow Pages and Microsoft.



Current Status in Healthcare & HIT

Top ten things the public wanted to see:

- *more and better paid staff* – more doctors, more nurses, more therapists and scientists
- *reduced waiting times* – reductions in waiting overall, for appointments and on trolleys and in casualty
- *new ways of working* – including ‘bringing back matron’
- *care centred on patients* – action on cancelled operations, more convenient services
- *higher quality of care* – especially for cancer and heart disease
- *better facilities* – more cleanliness, better food, getting the basics right
- *better conditions for NHS staff* – reward and recognition for the work NHS staff do
- *better local services* – improvements in local hospitals and surgeries
- *ending the postcode lottery* – high quality treatment assured wherever people live
- *more prevention* – better help and information on healthy living

Current Healthcare Environment

NHS

- 5% of UK GDP goes on NHS pay
- 700 separate business units (FTSE)
- Central direction: Local implementation
- It's the 5th biggest cause of death
- >50% of lung cancer patients become inoperable waiting for surgery
- BMA is the strongest union in the UK
- No management training scheme

How about the costs?

US Total Spending on Healthcare in 1980:
25 Billion USD

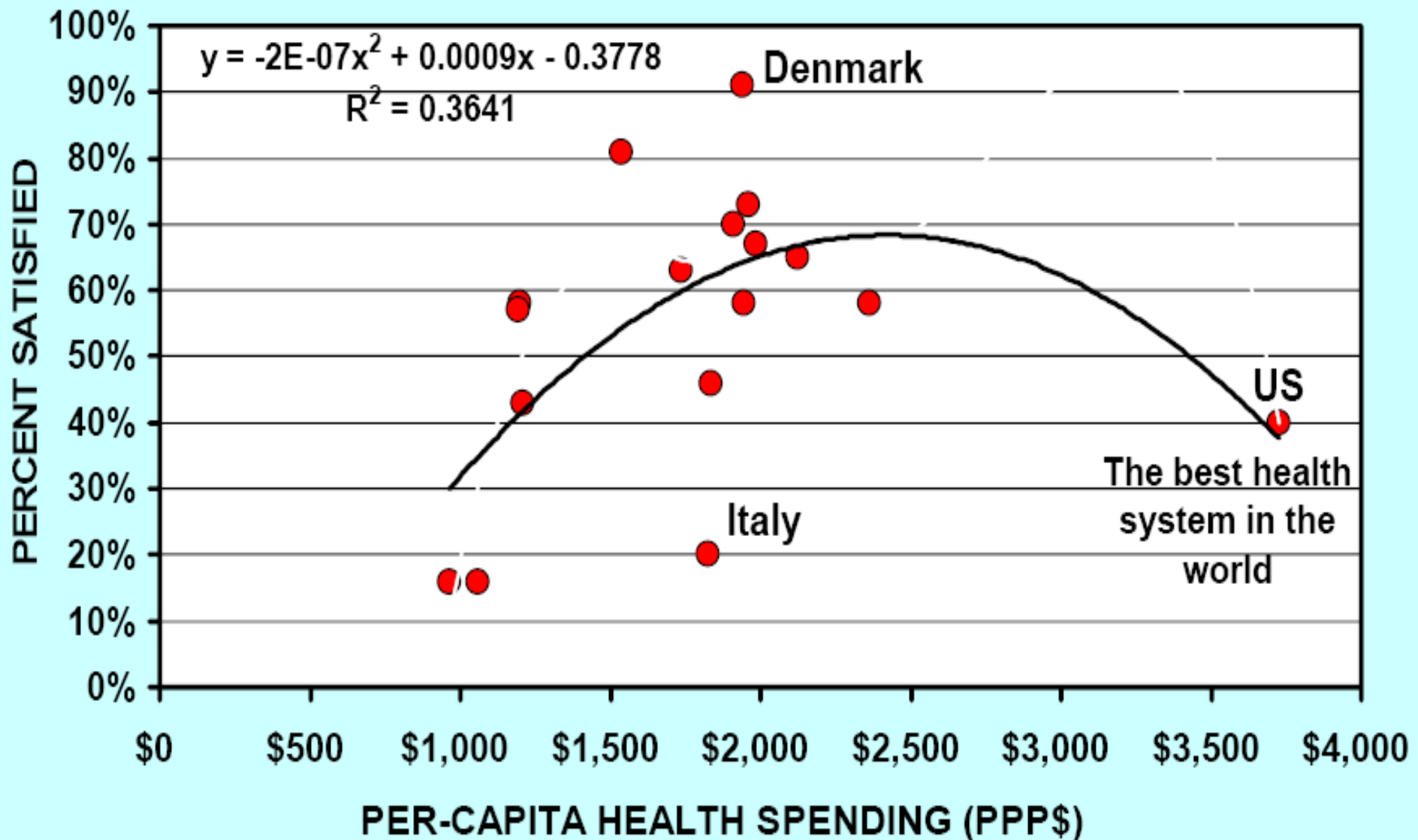
US Total Spending on Healthcare in 2005 :
1,600 Billion USD *



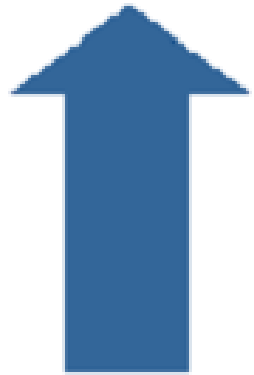
Relative Increase: 5,000+ %

* 31% Cost (\$500 Billion) caused by *paperwork*

Is it only about \$\$\$?



Please solve the paradox:



**Quality
of Care**



Cost

HIT Status: Something is wrong!



Comparative Industrial Performance

Health Care

Medical records

- 5-10% misplaced

Hospital transactions

- 2% or higher error rate

Medication administration

- 7-10% error rate

Appointment scheduling

- Give info each time

Other Industries

Federal Express

- 1/100,000 misplaced

Banking transactions

- 1/10,000,000 error rate

Plane landing/takeoff

- 1 in 1,000,000 miles

Hertz #1 reservations

- Customer profile stored

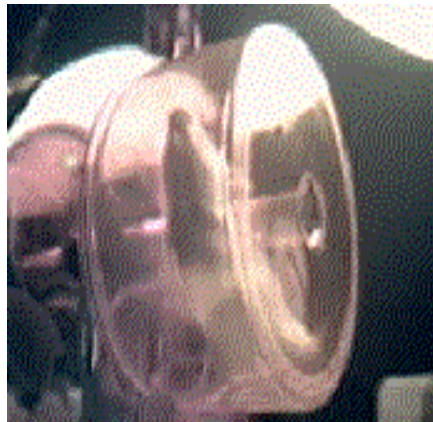


An analogy from the authorities:

This is healthcare



This is your healthcare IT provider in healthcare



This is the right analogy:

**What is needed for a
successful HIT
implementation?**



Some Facts:

“When projects fail, it’s rarely technical.”

Jim Johnson, The Standish Group

Average cost overrun: **189%**

Projects re-started: **94%**

Time overrun: **222%**

Functionality delivered on average: **61%**

Standish Group

Success factors for HIT Implementation

CEOs' View:

- 1. Strong organizational vision and strategy**
- 2. Talented and committed leadership**
- 3. Partnership between the clinical, administrative and IT staffs**
- 4. Thoughtful redesign of clinical processes**
- 5. Excellent implementation skills, especially in PM and support**
- 6. Good-to-excellent IT**

Glasser J. Success factors for clinical System implementation.

Hospital and Health, June 13, 2005

Ten Steps for Successful HIT Implementation

Physicians' View:

- 1. All hands on deck**
- 2. Pay physician champions**
- 3. Analyze your workflow**
- 4. Build adequate order sets**
- 5. Recognize politics**
- 6. Set a deadline and mean it**
- 7. Train, train, train**
- 8. Exploit physician resistance**
- 9. Sell the benefits**
- 10. Crack the whip**

Baldwin G. Bringing order to CPOE.

Health Leaders, October 2005

Six Deadly Mistakes to Avoid in HIT Implementation

CIOs' View:

- 1. Raising expectations too high**
- 2. Provide skimpy training**
- 3. Doing the “big bang” implementation**
- 4. Leaving the physicians to their own devices**
- 5. Disregarding dissidents**
- 6. Giving the physicians a choice**

*Baldwin G. Six Deadly Mistakes.
Health Leaders, January 2005*

What is needed for a sustainable success?



Quick Wins in HIT = Traps = Illusions



A good example: “ ... let us integrate ...”

Some phrases you hear frequently:

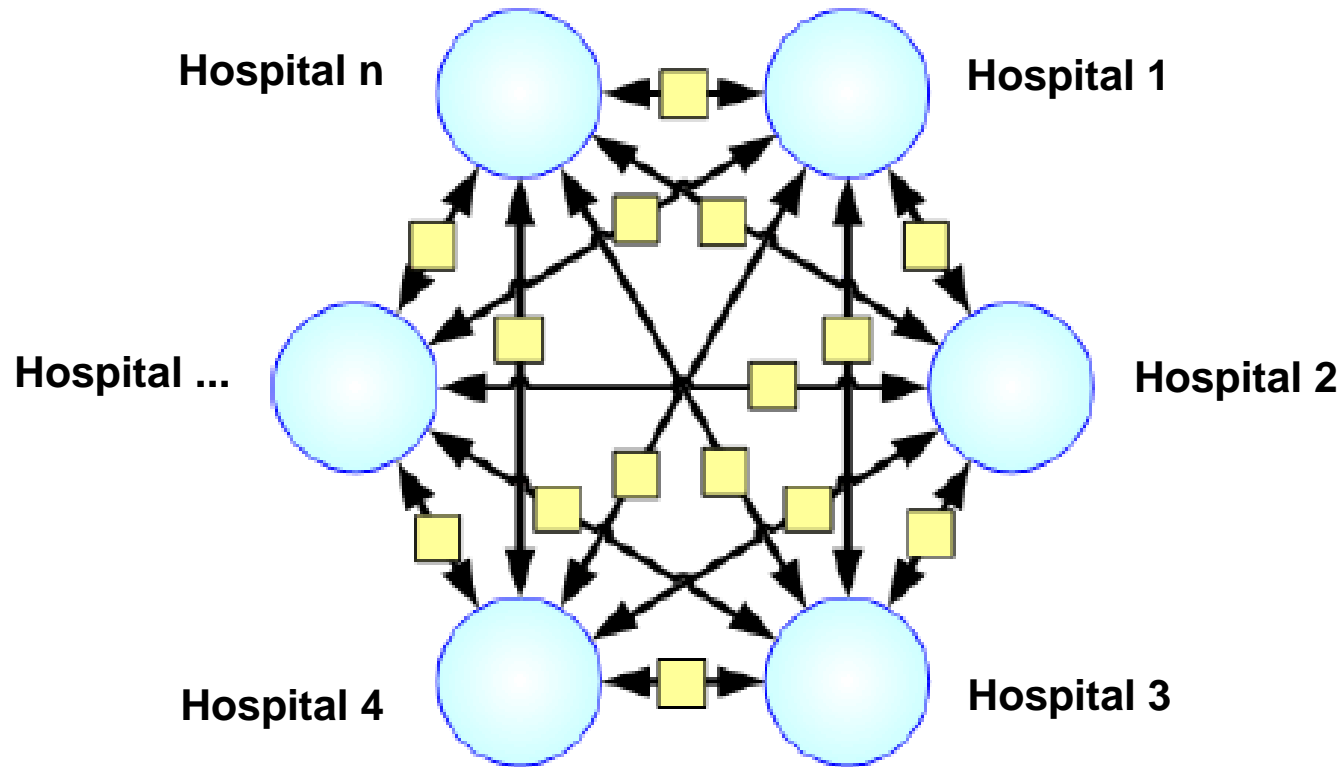
... no problem, we can integrate it ...

... it is not an issue for us, we have the interface for that ...

... we are XYZ compliant ...

... we have already integrated it before, this case seems quite similar ...

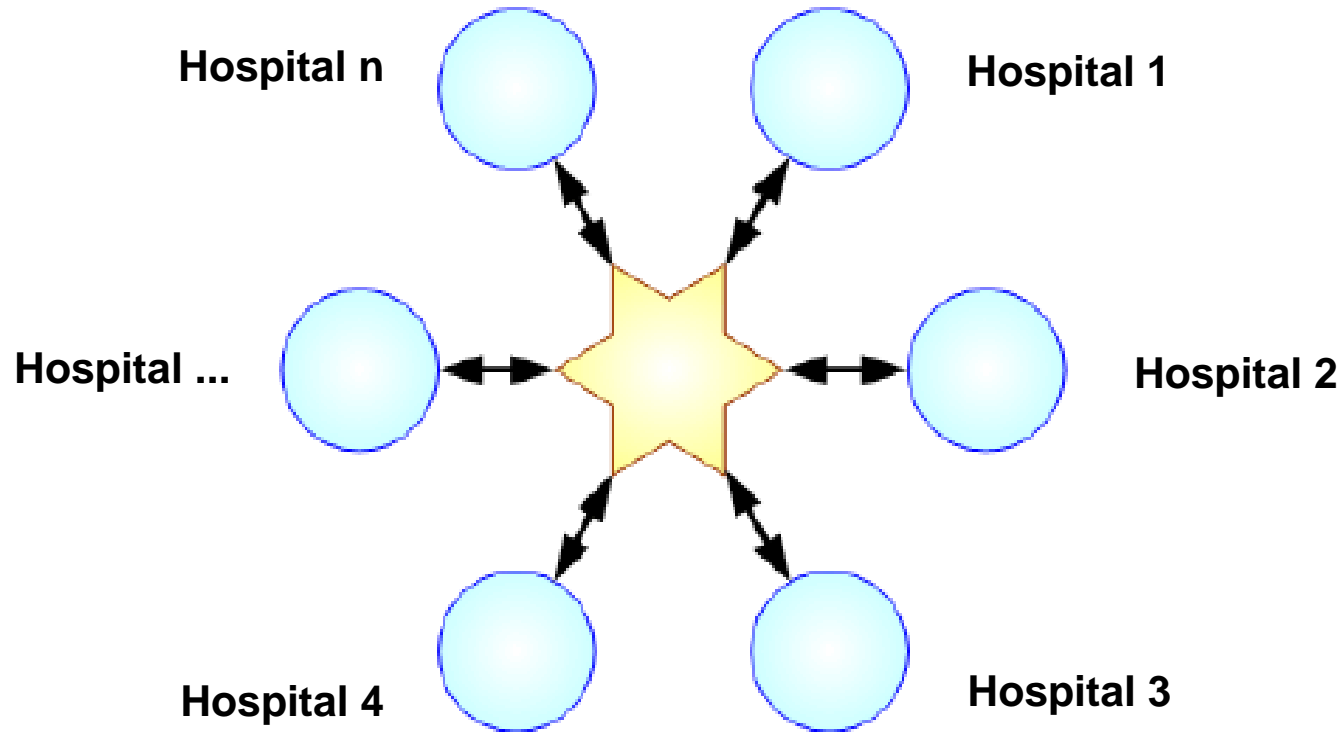
Classical Approach: Discrete (case by case) Integration



$$\text{Integration effort amount} = (n^2 - n) / 2$$

n: sites, systems or devices to be integrated

Ultimate Approach: Creating an Interoperable Environment



Connectivity effort amount = n

n : sites, systems or devices to be connected

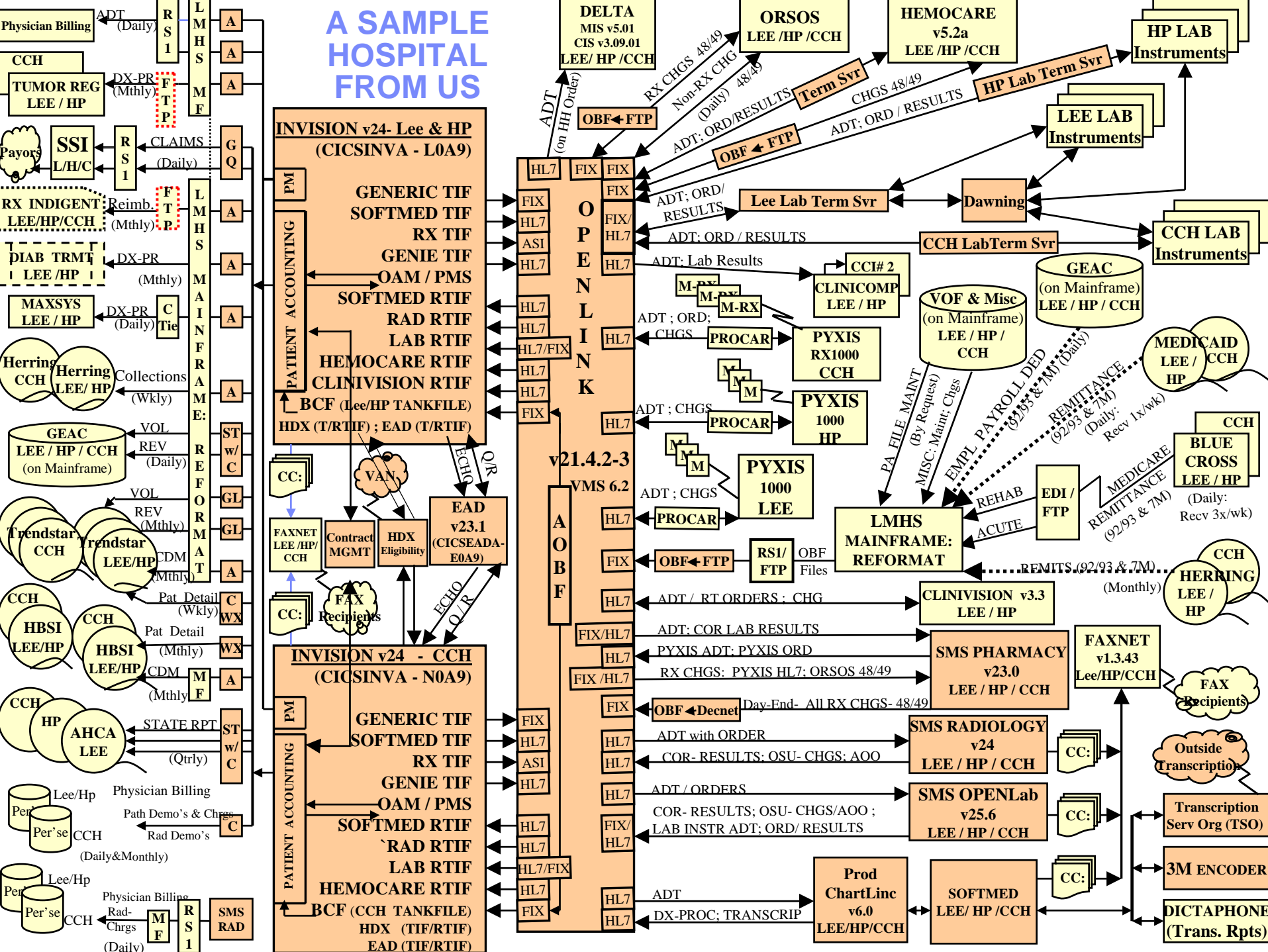
Discrete Integration vs Interoperable Environment

<u># sites/systems/devices</u>	<u><i>n</i></u>	<u><i>n=2</i></u>	<u><i>n=10</i></u>	<u><i>n=100</i></u>
Classical Approach (case by case Integration)	$(n^2-n)/2$	1	45	4,950
Interoperable Environment	<i>n</i>	2	10	100

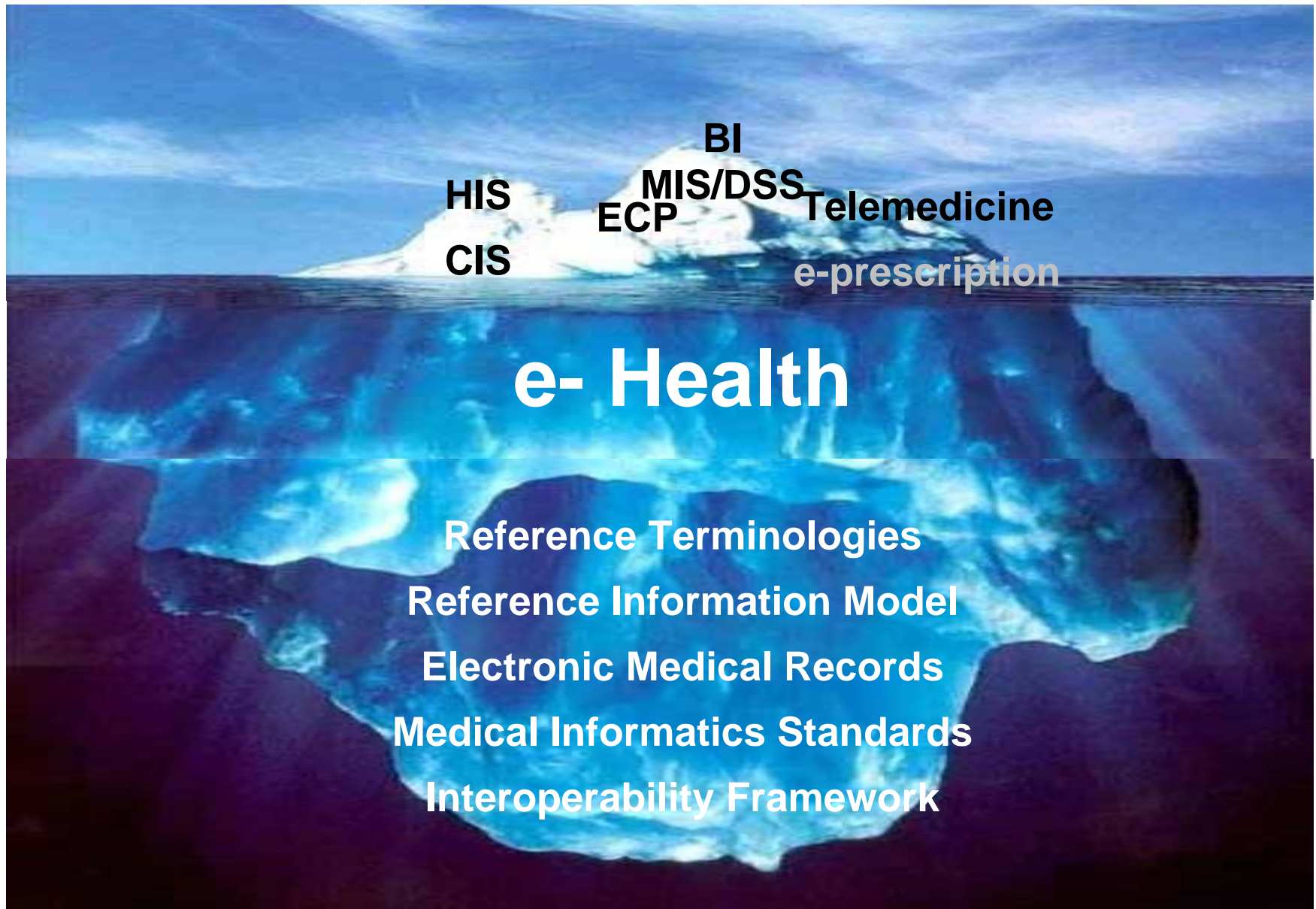


Still insisting ???

A SAMPLE HOSPITAL FROM US



See the "BIG PICTURE"



HIS
CIS
BI
MIS/DSS
ECP
Telemedicine
e-prescription

e- Health

Reference Terminologies
Reference Information Model
Electronic Medical Records
Medical Informatics Standards
Interoperability Framework

e-Health Environment

Stakeholders



Hospitals



Insurance Authorities



MoH, Government



Patient



Suppliers

Typical Applications

Hospital Information System, teleMedicine

Electronic Claim Processing, e-Invoice, e-Prescription

Health Information System, MIS / DSS

e-Health Portal, e-Appointment, EHR

Electronic Supply Chain Management, e-Procurement

MoH

Policies, Regulations & Rules

- Electronic National Framework Contract
- Guidelines
- Rulebases
- Key Performance Indicators

Processes

- Clinical
- Clinical-Support
- Administrative
- Financial
- Logistics
- Quality

Terminology Services

- Clinical Data Sets
 - ICD 10, ICF, NANDA
- Clinical Terminologies
 - SNOMED CT,
 - LOINC
 - ACHI, etc.

Data / Info Banks

- Drug Databank
 - ATC, DDD
- Device Directory
- Materials Directory
- Provider Databank

Electronic Medical Records

- OpenEHR
- CEN TC 251
- ENV 13606
- HL7 CDA

Interoperability Framework

- Health Level 7
- IHE
- DICOM
- ASTM
- ASC X12
- NCPDP, etc

Healthcare - HIT Ecosystem

Focus on Business Processes & Workflow

“If a system does not fit into a medical professional’s workflow, or it slows them down significantly, it does not matter how technologically advanced the system is – the system will simply not be used!”

“ ... Business logic is probably the single most important asset of a healthcare IT system...”

The Physician-
Computer
Conundrum:
Get Over It!

William F. Brin, II, M.D.
Richard L. Rydell, M.B.A.

HIMSS

HIMSS

Process - Workflow Hierarchy

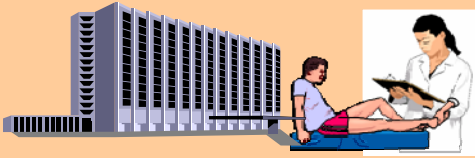


VIRTUAL HEALTHCARE ENVIRONMENT

WORKFLOW WITHIN AND BETWEEN HEALTHCARE ENVIRONMENT/S BETWEEN COUNTRIES



WORKFLOW WITHIN AND BETWEEN HEALTHCARE ENVIRONMENT/S IN A COUNTRY



WORKFLOW WITHIN AND BETWEEN HOSPITAL INFORMATION SYSTEM/S

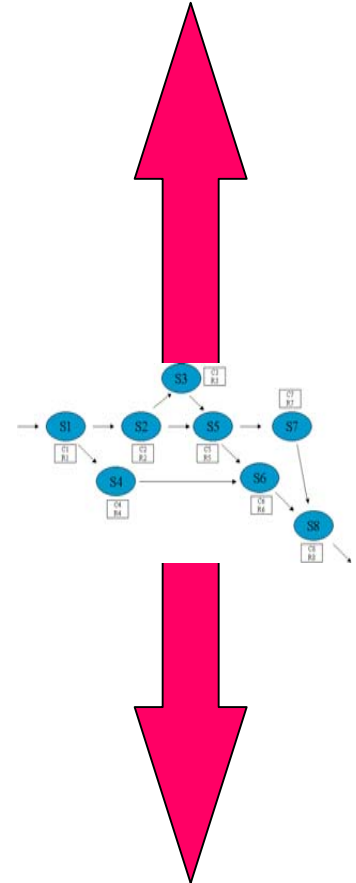


WORKFLOW WITHIN AND BETWEEN DEPARTMENTAL/CLINICAL SYSTEM/S



WORKFLOW WITHIN AND BETWEEN APPLICATION/S

MACROFLOWS



MICROFLOWS

Back to the paradox:

Efficiency improvement



**Quality
of Care**



Cost

By:

- **Innovation**
- **Process optimisation**

Manage the Change

Benefits depend on the organization's propensity to change

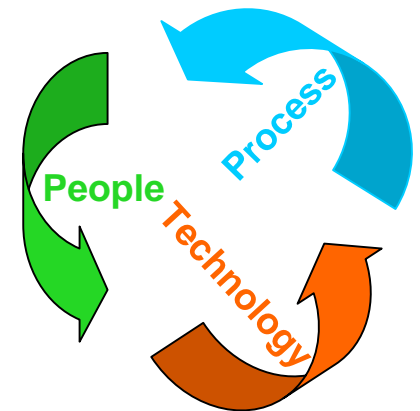
There are 4 ways to realize the value from an IT investment

1. Purchase an integrated system with rich **functionality**
2. Ensure the software allows for **flexibility** of design

10%
of value

3. Implement **best practice processes and workflows**
4. Persuade **people to change**

90%
of value

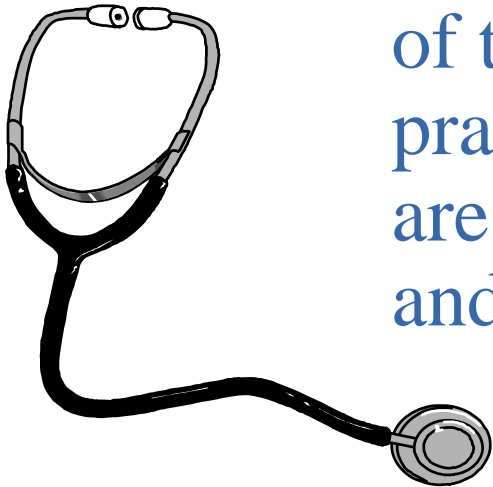


Healthlink

Be Determined !

A Computer in the Exam Room?

“That it will ever come into general use, notwithstanding its value, is extremely doubtful because its beneficial application requires much time and gives a good bit of trouble, both to the patient and to the practitioner because its hue and character are foreign and opposed to all our habits and associations.”



from The London Times in 1834

Commenting on ...

the “stethoscope”

Get top executives' support

REASONS WHEN HIT INITIATIVES FAIL TO PRODUCE DESIRED VALUE

% responding "most prevalent" to each underlying reason for not generating value from IT

Lack of process and IT alignment; inadequate process change

51

Lack of executive ownership and accountability

49

Lack of understanding of expected business benefits

41

Communication breakdown or failure

28

Bad business objectives

24

Lack of outcomes measurements

24

Lack of strong or adequate project governance

23

Failure to align business vision / goals with IT

22

Lack of understanding of what users really needed

20

Volatile situation: organization's needs changed

18

Poor project management

17

Costs exceeded benefits

16

Nothing significantly improved

14

Users did not want the IT solution

12

Poor performance by vendor or consultant

9

A problem of timing: the opportunity was lost

5

Technical failure of software or hardware

0

Adapted from CHIME CIO Survey: IT Value

Find Your Right = “trusted”, “knowledgeable”, “experienced” Partner

BECAUSE HIT PROJECT IS NOT:

- **Purchasing of Good HW and Good SW**
- **On the contrary, it is an “Continuing Project” which can only be accomplished:**
 - When the Healthcare Enterprise is **Ready to Work for the Project** rather than expecting from others
 - When both parties collaborate and are **committed for the same goal**
 - When both parties **communicate well and understand each other**

HIT Project is a Long Term Partnership of Healthcare Enterprise and Healthcare IT Solution Provider

... and if possible: "one" partner...



eHealth ROI at Denver Health



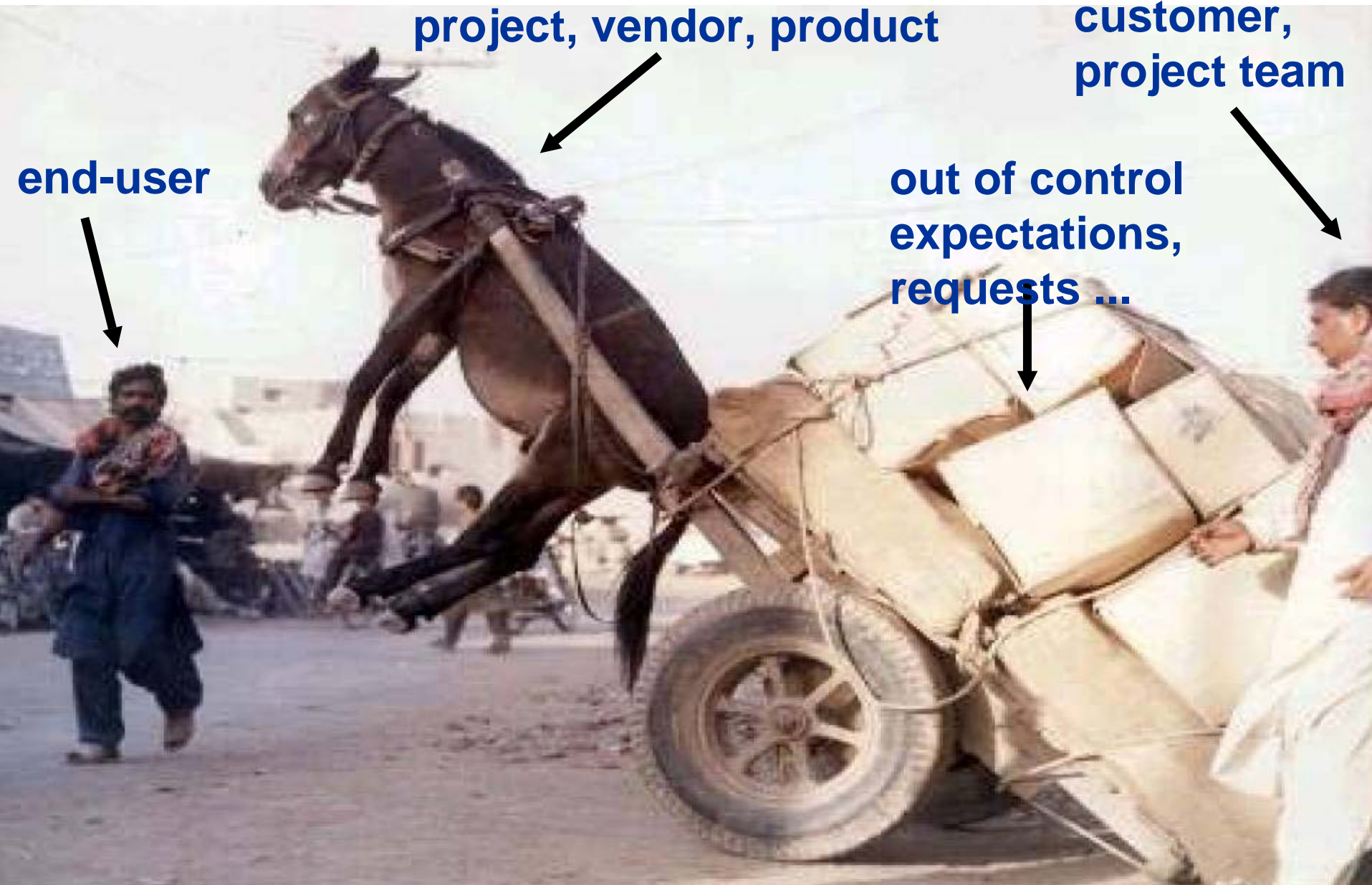
HIMSS EA

eHealth ROI- Eligibility

Success Differentiators

- ◆ Workflow Analysis
- ◆ Process Re-Engineering
- ◆ Continuous System Optimization
- ◆ Single Vendor Solution

Manage the expectations



Study & Implement Medical Informatics



Integrating the Healthcare Enterprise



ASC X12



DICOM-III



World Health Organization

OpenEHR



American Society for
Testing and Materials

ICD-10 AM

CEN TC 251

ECRI UMDNS

CPT-4 ACHI

LOINC

GMDN

SNOMED CT

DRG / CASE-MIX

UMLS



MIB

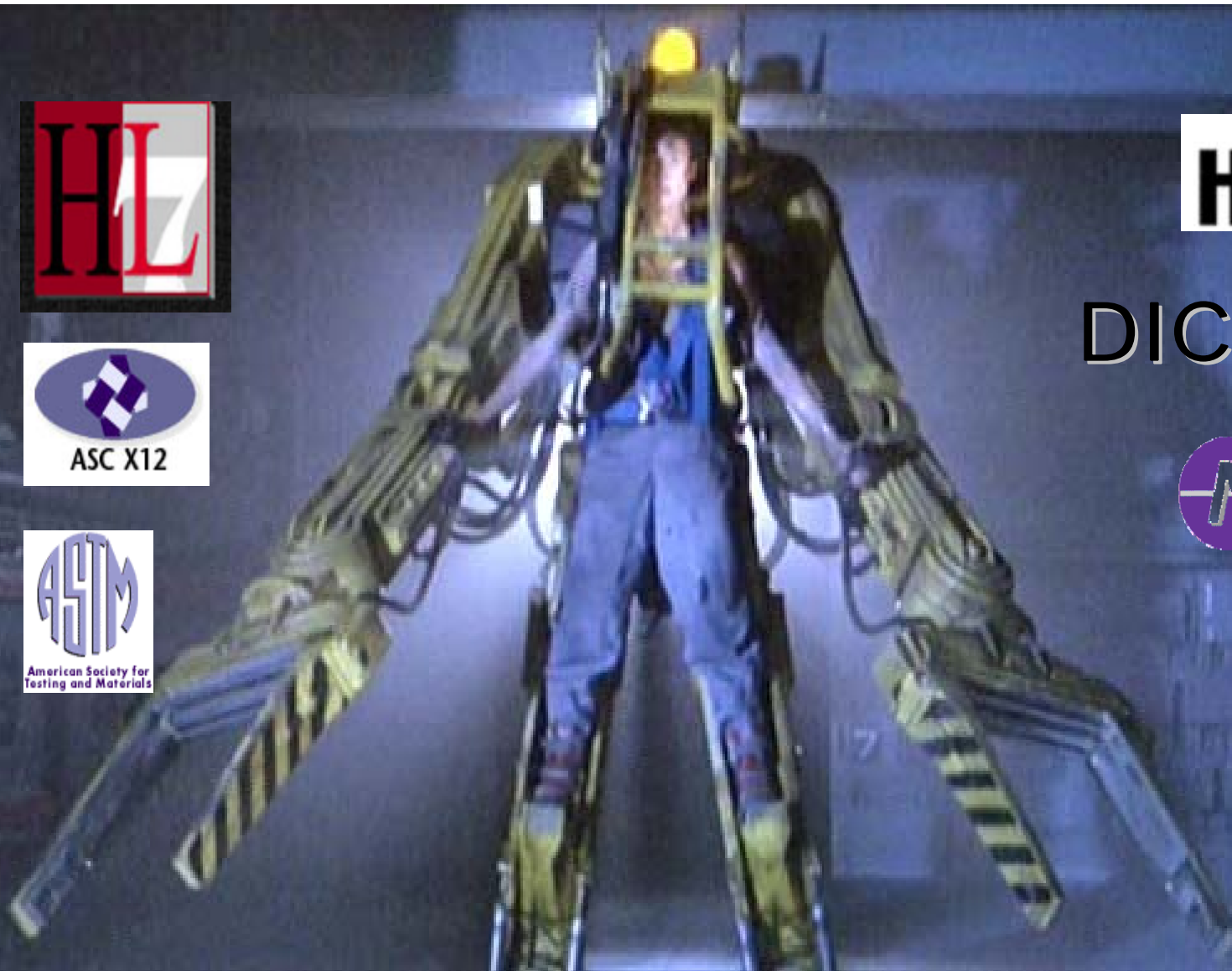


CDA, CCOW

Back to the Analogy



DICOM-III



Some Good Examples



An Excellent Example: KFMC IHIMS

King Fahad Medical City, Riyadh, KSA



An Excellent Example: KFMC IHIMS

“KFMC has successfully carried all business processes into an electronic and paperless domain with the help of multidisciplinary teams.

KFMC decided at the very early stage to implement a workflow based HIS system designed to assure the overall continuity and consistency of healthcare services within the healthcare enterprise via providing an intelligent process, information and control flow predefined by the authorities and standards. The system assures that the computer users perform all the activities from patient registration to patient discharge. “

Eng. Khalid Al-Salama, CIO, KFMC



Some Figures from KFMC IHIMS:

of workflows: 211

of workflow steps: 671

of screens : 1,192

of fields in screens : 19,517

of lists : 696

of reports : 775

of logic scripts : 1,844

of roles: 720

of rights in roles : 3,809

of patients: 191,176

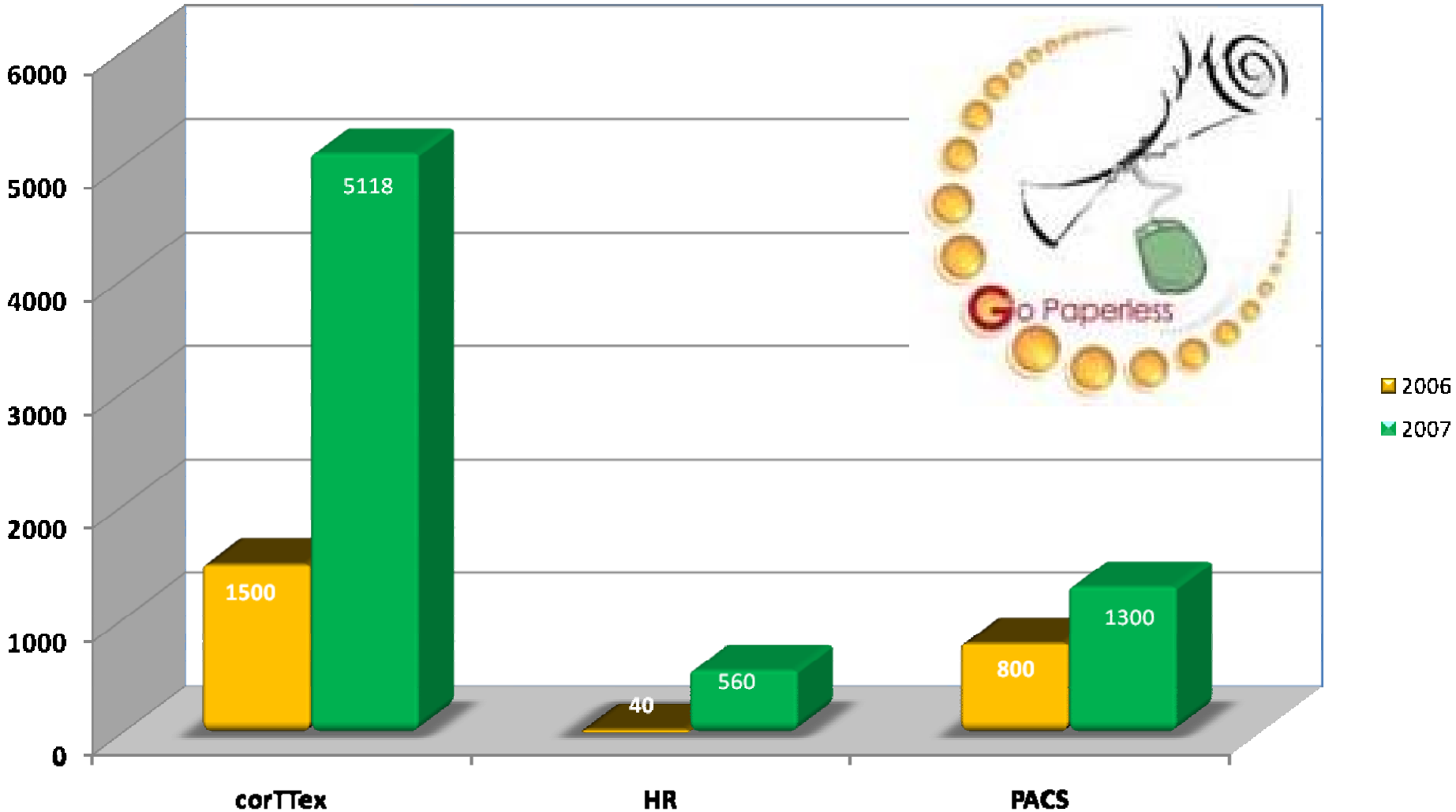
of actions: 4,234,493

of sub-actions: 11,733,854

of stock actions: 296,185



Number of Users 2007 vs. 2006



An Excellent Example: SMART Project

King Khalid Eye Specialist Hospital, Riyadh, KSA



An Excellent Example: KFMC IHIMS

“... the advances in IT have led to the creation of opportunities to represent and process different, richer forms of information that enhance our intellectual abilities. Our IT Department drives innovation which is a key to the institutions’s evolution and success in fulfilling its mission and vision... “

Fahad Abdulaziz Al-Eid, CIO, KKESH



Project Objectives

- Improve the Quality of Patient Care
- Enhanced Hospital Workflow
- Complete Computerized Patient Record
- Reliable and integrated Financial Management System
- Laying foundation for Reaching Paperless Environment
- Built a reliable, scaleable and full connectivity Infrastructure
- Disaster Recovery Solutions



SMART Program

Awareness

Infrastructure

Hardware

Network

Operating
Systems

Operational
Software

Application

Hospital
Management
Application

Enterprise
Resource
Planning

Learning
Management
System

Man Power

Qualified
Resources

Share
Knowledge

Increase
Employee
Experience

Training

IT Training

Application
Training

Computer
Skills
Training

SBM - KKESH

Cisco - Tepe Technology - ORACLE - Microsoft

Towards a healthy, paperless environment



Questions & Answers



Thank You ...

Bülent Kunaç

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Context-aware IT Solutions via Workflow Technologies...
Be corTTex aware.

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