China Hospital President Symposium

Beijing, China

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Evolution of Global H.I.T. and What It Means to China

THE DORENFEST CHINA HEALTHCARE GROUP

Presentation Agenda

- Describe Dorenfest China
- Share the H.I.T. Experience of Early Adopter Countries
- Summarize the China H.I.T. Situation
- Make Some Suggestions About Applying the Global H.I.T. Experience in China
- Q & A

The Dorenfest Group

- 40 Years Experience in H.I.T.
- Offer Healthcare Improvement Services
- Focus on Improving Patient Care and Operational Efficiency Through Better Change Management
  - Work Process Improvement
  - Management Systems Improvement
  - Improvement in Services for Patients
  - Improvement in Quality of Patient Care

Some Dorenfest Hospital Projects

Abington Memorial Hospital
Addison Gilbert Hospital
Adventist Health System/Sunbelt
Adventist Health System/West
Akron General Hospital
Albemarle Hospital
Baptist Healthcare System
Baxter County Regional Hospital
Baylor Health Care System
Benedictine Health System
Boulder Community Hospital
Brackenridge Hospital
Bristol Bay Regional Health System
Burlington Medical Center
Caritas Health Services
Carondelet Health System
Central DuPage Health System
Central Washington Hospital
Centura Health
Charleston Area Medical Center
Children's Health Care
Cleveland Home Health Agency
Community Memorial Hospital
Conway Regional Medical Center
Cortland Memorial Hospital
Cox Medical Centers and Health Services
DCH Healthcare Authority
Delnor Community Hospital
Dreyer Medical Clinic
Duluth Clinic
East Alabama Medical Center
Edward Health Services Corporation
Flagler Hospital
Florida Hospital
Freeman Health Services
Freeport Memorial Hospital
Glenoaks Medical Center
The Good Samaritan Hospital
Grady Health System
Greenwich Health Authority
Hamot Medical Center
Hazleton-St. Joseph Medical Center
Hinsdale Hospital
Holy Redeemer Hospital and Medical Center
Horizon Health Care Group
Howard Young Medical Center
Humility of Mary Health Care
Illinois Medical Billing Service
Integris Health System
Jackson County Memorial Hospital
Johnston Memorial Hospital
Kennebec Health System
Lakeland Regional Health System
Little Sisters of the Poor Health Services
Los Angeles County Department of Health Services
Marion General Hospital
Medical Center of Southern Indiana
Memorial Health Alliance of Burlington
Memorial Health Services – Long Beach
Memorial Hospital – Belleville
Memorial Health System – South Bend
Mid-Maine Medical Center
Michigan HealthLink
Miller-Dwan Health System
Mount Clemens General Hospital
Muskogee Regional Medical Center
Nebraska Methodist Health System
Presbyterian Health Care Services
Progressive Health System
Providence Medical Center
Pungo District Hospital
Rapides Regional Medical Center
Ravenswood Hospital
Resurrection Health Care Corporation
River District Hospital
Riverside County Health Services Agency
Robert Wood Johnson University Hospital
Rush North Shore Medical Center
Salinas Valley Memorial Hospital
San Antonio Community Hospital
Scripps Clinic
Shadyside Hospital
Sharp HealthCare
Sisters of Charity of Nazareth Healthcare System
South Jersey Hospital System
Southeastern Ohio Regional Medical Center
Southern Illinois Health Corporation
St. Agnes Hospital
St. Clare's Hospital
St. Elizabeth Hospital
St. Francis Medical Center
St. Joseph Health System – Orange, CA
St. Joseph Hospital – Cheektowaga, NY
St. Joseph's Hospital – Marshfield, WI
St. Joseph's Medical Center – Brainerd, MN
St. Luke's Hospital – Duluth
St. Mary's Hospital – Amsterdam, NY
St. Mary's Hospital – West Palm Beach
St. Mary's Medical Center – Duluth
St. Vincent Infirmary Medical Center
Stillwater Medical Center
SwedishAmerican Health System
Texoma Medical Center
Tulane University Hospital and Clinic
University of Tennessee Bowld Hospital
Valley Hospital
Washington County Health System
William Beaumont Hospital Corporation
Willis-Knighton Medical Center
Yuma Regional Medical Center

Some Dorenfest Healthcare Supplier Projects

3COM Corporation
3M Corporation
Abbott Laboratories
ALLTEL
American Business Computers
American Hospital Supply Corporation
American Medical International
Amicare
Anacomp, Inc.
Anixter, Inc.
Apple Computer, Inc.
Arthur D. Little, Inc.
Arthur Young & Company
AT&T Information Systems
AT&T Technologies
Automated Information Systems, Inc.
AVNET
Bacon, Whipple and Company
Bain and Associates, Inc.
Basic American Medical Inc.
Baxter Diagnostic, Inc.
Baxter Travenol Laboratories
BayNetworks
Becton Dickinson
Bell Atlantic
Bell Laboratories
Biovation, Inc.
Bristol-Myers Squibb
Brunswick Corporation
Cerner
Community Health Computing
COMPAQ Computer
Compucare
Computer Sciences Corporation
Crowntek, Inc.
Datacare, Inc.
Dell Computer Corporation
Digital Equipment Corporation
E.I. du Pont de Nemours & Company
Eclipsys/TDS
Eli Lilly
Emtek
General Electric Company
Habush & Habush, Inc.
Hambrecht & Quist, Inc.
HBO & Company
Health Data Network
Health Systems International, Inc.
Health-Comp. Inc.
Hewlett-Packard
Hill-Rom
Honeywell
Hospital Corporation of America
Humana, Inc.
IBM Corporation
IDX Corporation
IMS America, Ltd.
Information Strategies, Inc.
Intel Corporation
Intellimed
Johnson & Johnson
Kimberly Clark
Lawson Software
LORAL/Martin
Lotus Development
McDonnell-Douglas Health Information Systems
McGraw Hill
McMullen & Associates (Canada)
MedAmerica Health Systems
Medicus Systems
Mediflex Systems
Meta Software
Microsoft Corporation
Moore Business Systems, Inc.
Motorola, Inc.
National Medical Enterprises
NCR Corporation
NetFRAME
Nuvatec, Inc.
Ohio Nuclear
Pathlab
PeopleSoft
Physio Control
Praxis International
Prime Health, Inc.
PROMIS Health Technologies
Ransburg Corporation
Retrieval Systems
SAIC
Sentry Data, Inc.
Shared Medical Systems
Spacelabs, Inc.
Standard Register
Sun Information Systems
Sunquest Corporation
TETRAD (England)
Total Business Systems
Trinity Computing Systems
Universal Health Services
VoiceLinks Medical
Wisconsin Blue Cross
Xerox Computer

Dorenfest's Investigation of China Healthcare in 2005-2006

1. Visited 17 Cities in China
2. Met 100's of Healthcare Industry Leaders in China
3. Visited Over 100 Hospitals to Review Hospital Operations and Define Opportunities for Improvement
4. Met Provincial and City Health Bureau Leaders in Cities Visited
5. Met with Many Companies Selling Products and Services to the Healthcare Industry in China
6. Evaluated a Group of Hospital Ownership and Management Opportunities and Assessed Viability of the Dorenfest "Model Hospital" in China
7. Developed a Strategy for Bringing Dorenfest Skill and Experience to China

Examples of Dorenfest Projects in China

- Some Health Bureau Clients for RHN and Digital Hospital Planning
  - Shenzhen
  - Chongqing
- Some Hospital Clients
  - Peking University Third Hospital
  - Shanghai Changning Maternity & Infant Health Institute
  - Rizhao City People's Hospital
- Help Clients from Other Locations Bring Their Skills to Mainland China
  - Hong Kong Hospital Authority
  - Microsoft
  - Philips

The H.I.T. Experience of Early Adopter Countries

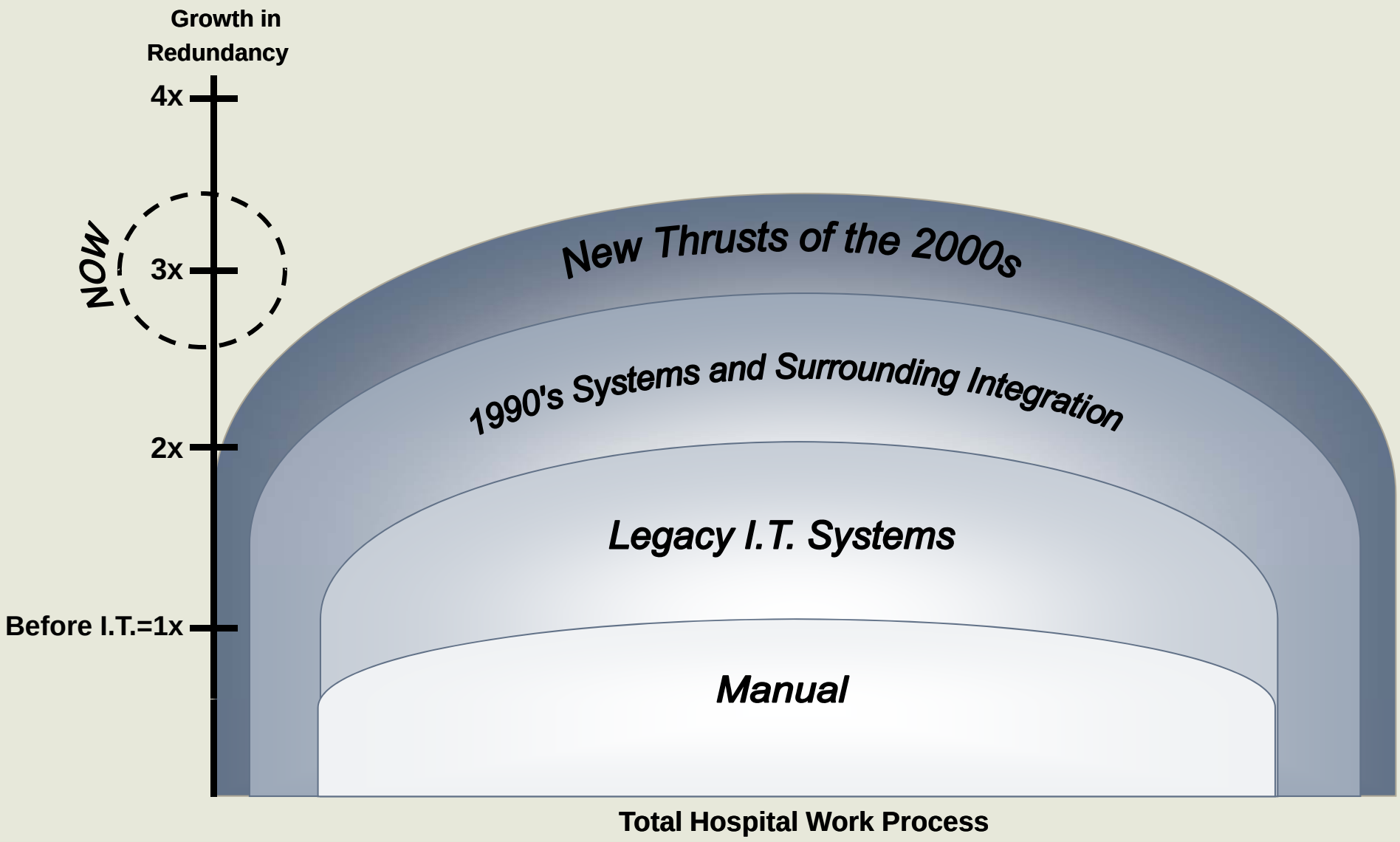
Opportunities to Improve Healthcare Delivery Have Been Pursued for Many Years

- Great Redundancy of Information
- High Error Potential
- Lack of Timeliness
- High Cost
- Organization Complexity

U.S. Hospitals Have Sought an EHR Since the 1960s Through Four Generations of I.T. Systems

1. Finance Systems (1960s and 1970s)
2. Limited Clinical Systems (1970s and 1980s)
3. More Advanced Clinical Systems (Late 1980s and 1990s)
4. Electronic Health Records (2000s)

But Poorly Implemented Change Layered Redundant Work on Top of Original Inefficiency



At the Beginning

- Large Vision
- Hardware Technology Limited and Expensive
  - Large Computers
  - Inefficient Software Development Methodologies
- Self Development was the Only Software Approach and Remained the Preferred Approach for a Period of Time
- Packaged Software Emerged First as a Customizable Starter Set and Later Became Products Requiring Less Customization from User to User
- As Time Passed, Packaged Software Products Became Preferred
  - Less Expensive
  - Faster to Implement
  - But Many Problems in implementation

The Late 1970s and 1980s

- Several Generations of Technology, Software Vendors, Software Approaches, and Products Came and Went
- Software Buying and Implementation Methods Improved
  - Users and Management Became More Involved
  - Functional Requirements to Define Needs and Compare Vendors Became More Complete and Useful
  - User Site Visits, User Customer References, and User Discussions With Counterparts at Other Hospitals Became Part of an Improved Buying Approach
- Integration Became a Large Problem as the Number of Software Vendors Used by a Hospital Increased
  - Started Out All Manual with Duplicate Entry Into Multiple Systems
  - Moved to “Hard Coding” of Interfaces Between Systems
  - Caused a Focus on the Development of Standards for Software Products of Different Vendors to Communicate with Each Other

The 1990s and 2000s

- Management of the Buying and Implementation of I.T. Software Continued to Improve
- A New Generation of Software Systems Emerged, With Better Features and Functions Built on Superior Technological Platforms
- Integration Problems Kept Growing, Causing the Movement from Hard Coded Interfaces to Standards Such as HL7, and Interface Engines Which Facilitated the Transfer of Data in a More Efficient Way Between Software Systems
- As the Decade of the 1990s Came to a Conclusion, the Pressure for Physicians to Enter Their Orders into Computer Systems Grew. Until That Time, Relatively Few Physicians in the U.S. Entered Their Own Orders into Computer Systems
- In the 2000's, the Long Sought After Vision of an EHR Began to Emerge in Inpatient and Ambulatory Settings. The U.S. 2009 Healthcare Stimulus Will Further Expand EHR Use
- Computerized Physician Order Entry (CPOE) Became a Reality as Many Physicians Began to Enter Their Own Orders into Computer Systems

H.I.T. Evolution in the Rest of the World

- Canada Started in the Late 1970s
- Europe and Australia Began in the Early 1980s
- Asia Began in the 1990s
- Canada, France, Germany, England, and Australia All Started Later Than the U.S., Invested Less, and Have Made More Progress
- Hong Kong Started Even Later, Invested Less, and Now Is the State of the Art in H.I.T. Use in the World
- China H.I.T. Is Now at an Earlier Stage of Development. China Has the Goals and Desire to “Leapfrog” the Rest of the World in H.I.T. Use in the Next Few Years

Successful Later Adopters Learned from the Experience of Earlier Adopters to Make Progress Faster

- By Playing Close Attention to What Worked and Did Not Work in Earlier Adopter Countries, Later Adopters Were Able to Avoid Many of the Difficulties Experienced by Earlier Adopters and Accomplish Better Results

- By Bringing Together the Experience of Some of the World Leaders in Health Information Technology Use, We Hope to Pass on to the Audience Today Some Good Ideas About How to Get Better Results from Your I.T. Programs

The Current Status of I.T. Use in Chinese Hospitals

The Development of H.I.T. in China

- Chinese Hospitals Began to Computerize in the Early 1990s
- The Initial Focus of Computer Efforts Was on Financial Systems
- In the Early 2000s, Chinese Hospitals Began to Implement I.T. for Clinical Systems
- Many Software Solutions Are Now Available, With Several Hundred Smaller Software Companies Emerging
- Between 2005 and 2010, China Hospital Spending on I.T. Grew From $600 Million (USD) In 2005 to Almost $3 Billion (USD) Expected To Be Spent in 2010
- This Rapid Growth in Spending Will Continue Over the Next Several Years

Factors Contributing to Future Spending Growth in China H.I.T.

1. China Hospital Work Processes Are Redundant, Expensive, And Error-prone

2. In 2003, the Ministry Of Health (MOH) Issued Guidelines for Health I.T. Development Which Called for All Cities in China to Implement RHN and Digital Hospital Programs by 2010
   - Gave Momentum to Hospitals to Purchase Clinical Systems
   - Very Slow Progress Towards Stated Goals During the Policy Period

3. Improved Use of I.T. Is One of 8 Pillars of the New China Healthcare Reform Plan. Focuses Include:
   - Improved Hospital I.T. Systems
   - Electronic Health Records
   - Data Sharing Through RHNs and Integration With Community Clinics
   - I.T. Systems to Support Expanded Health Insurance

4. Chinese Hospital Leaders Want to Take a Big Leap Forward in Improving Work Processes and in Digitizing Chinese Hospitals

Factors Impeding Success in China H.I.T.

1. Like Some Earlier Adopter Countries, Poor Approaches to Software Buying and Change Management Have Resulted in Many Problems in the Implementation of New Systems

2. Software Products and Integration Tools in Use Today Are More Like Other Earlier Adopter Countries Used Many Years Ago

3. This Has Resulted in New I.T. Systems Adding Work and Creating Unnecessarily Redundant Work Processes

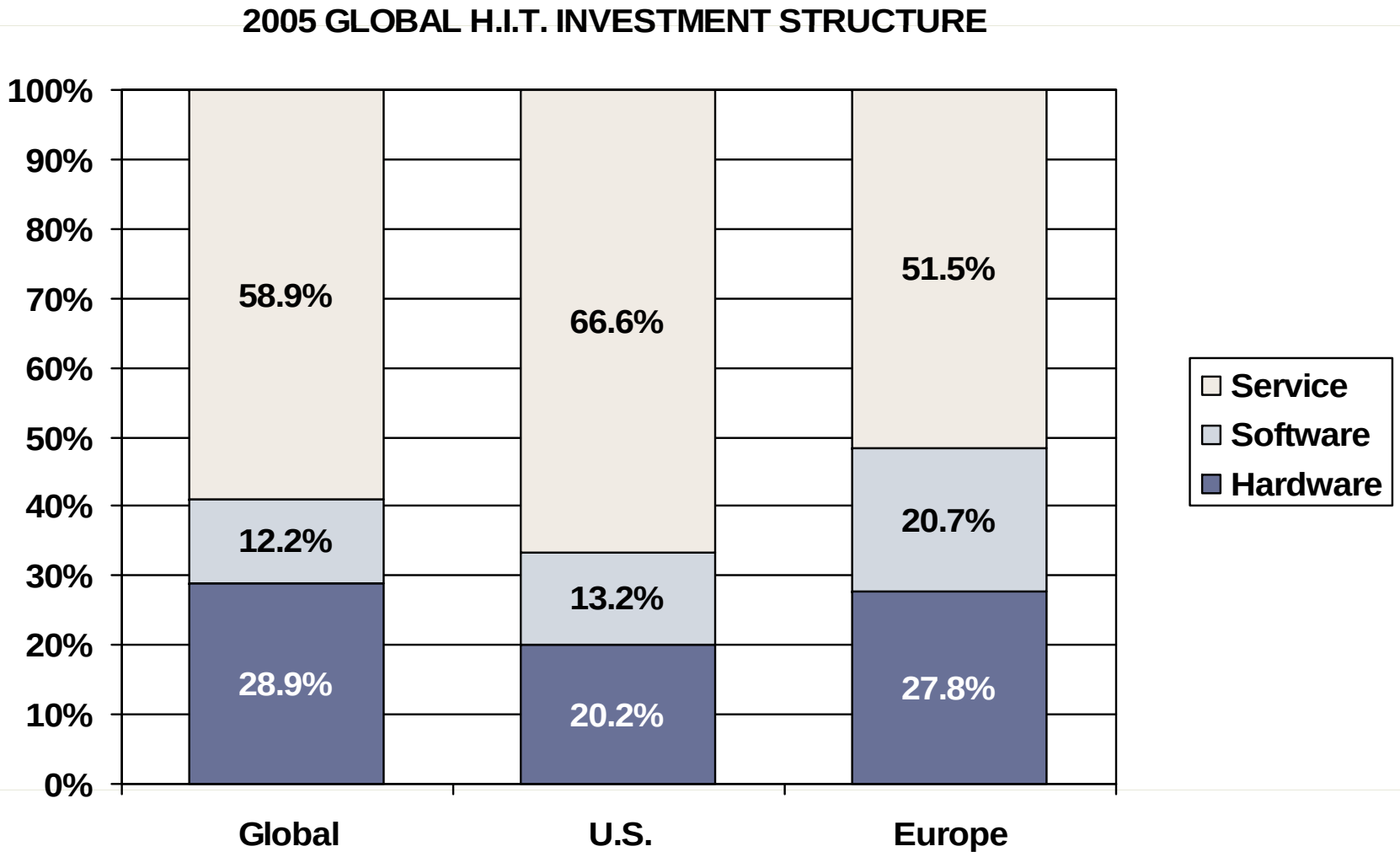
4. Hospital Leaders, Not Knowing What They Do Not Know, Continue to Use Poor Buying and Implementation Approaches Because They Do Not Know Better Ways Are Possible, and There Is a Strong Momentum to Continue With These Approaches

5. In the Past, Chinese Hospitals Have Invested Too Little Management Time and Money in I.T. Systems

The Competitive Environment

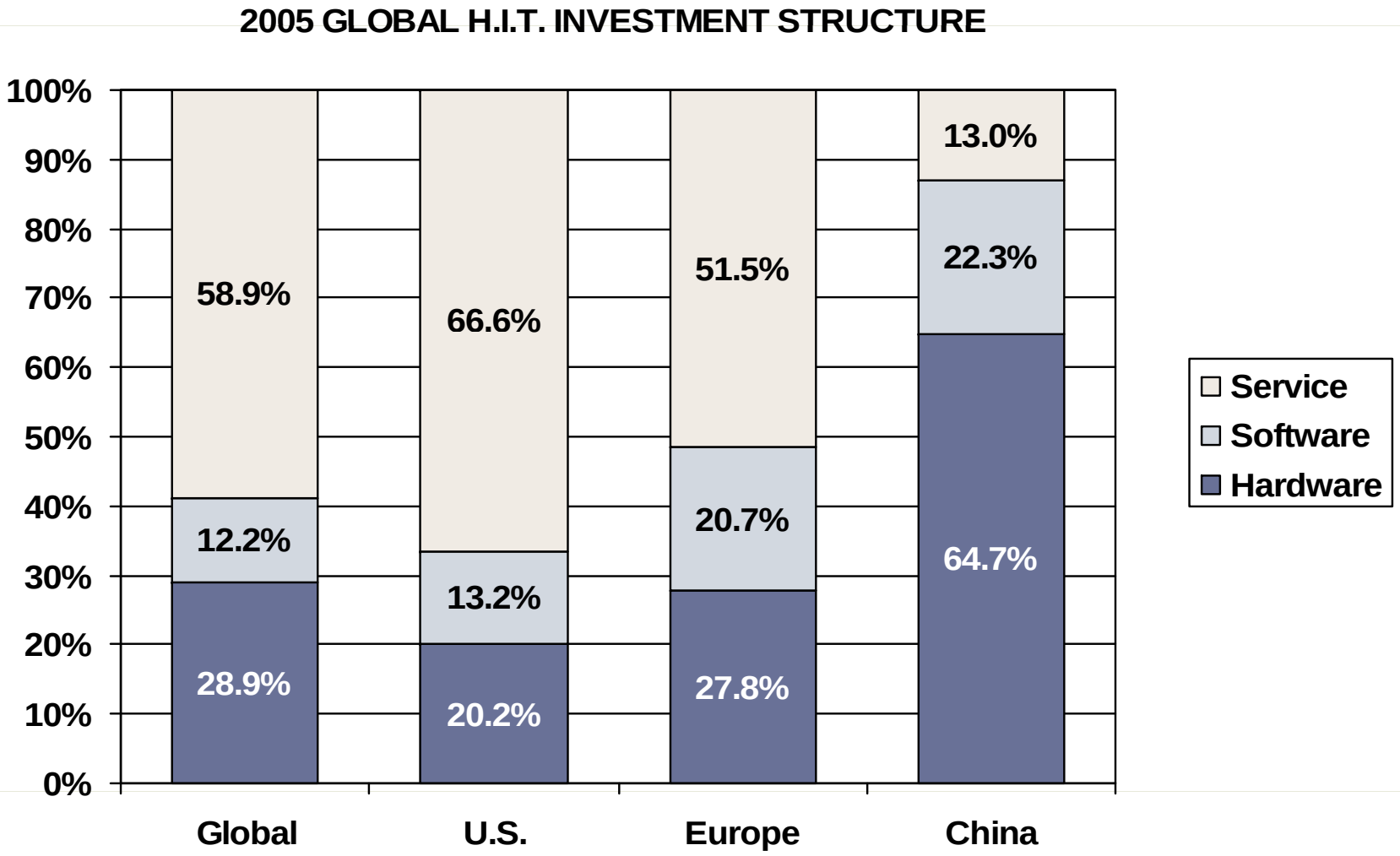
- There Are Hundreds of Small Software Vendors Active in China H.I.T.
- The Market Segments With the Most Vendors Are H.I.S., PACS, R.I.S., Lab, and EMR
- All H.I.T. Vendors in the Market Started in a City And Most Are Still Operating in That City or a Small Region Around the City. Some H.I.T. Vendors Are Becoming More National in Scope
- Many Vendors in the Hospital Computer Systems Market Offer Heavily Customized Solutions Rather Than Products. These Heavily Customizable Solutions Create Greater Dependency on the Software Vendor and Are More Difficult/Expensive to Keep Current When Vendors Release New Software Updates Periodically
- Chinese Hospital Leaders Would Like to See a New Generation of H.I.T. Software Developed for the Country to Assist in Helping Them Accomplish Their “Leapfrog” Objectives

Allocation of H.I.T. Investment Around the World



SOURCE: CCW Research

Today Chinese Hospital H.I.T. Investment Is Spent Differently Than the Rest of the World



SOURCE: CCW Research

China Healthcare Leaders Want to Leapfrog the World in I.T. Use

- Chinese Hospitals and Health Bureaus Are Carefully Considering How to Be More Successful in Taking Next Steps Forward in I.T. Use
- There Is a Recognition That for China to Accomplish Its Objectives in H.I.T. Requires the Following :
  - Learning Quickly From the Global Experience
  - Overcoming Resistance to Change
  - Knowing How to Manage Change
  - Doing More of What the Rest of the World Did Right and Less of What They Did Wrong to Avoid Mistakes Other Countries Have Made and China Is Still Making
  - Developing More Expertise in These Areas of Need Quickly

Suggestions to Help Chinese Hospital Leaders Make More Progress in H.I.T. Use

Common Themes Expressed By Leaders in Chinese Hospitals

- “The I.T. Program Is Not Working as Well as We Would Like It to Work”
- “Our Software Systems Do Not Talk to Each Other”
- “We Have a Desire to Solve Problems Through Better Integrated and More Extensive I.T. Use Throughout Our Clinical Areas”
- “We Want to Fix Up the Current I.T. Program and Implement an EMR in Our Hospital”
- “We See More and Better I.T. Use as Important to Our Future”
- “We Need a Better Software Vendor and A Better Software Product”

Key Steps to Improving Long Term I.T. Investment Results in Chinese Hospitals

1. Changing I.T. Governance Methods to Be More Effective
2. Increasing the Involvement of Hospital Clinicians in I.T. System Buying and Implementation
3. Reducing Reliance on the Software Vendor
4. Developing Better I.T. Planning and Priority-Setting Methods
5. Developing Better Ways of Buying Software to Increase Success
   - Accurately and Thoroughly Define User Needs Prior to Buying Software
   - Use Better Methods of Assessing Software Product Capabilities Prior to Purchase

Key Steps to Improving Long Term I.T. Investment Results in Chinese Hospitals (Continued)

6. Changing the Role of the I.T. Department from Doing It by Itself to Include Facilitating, Educating, and Training Hospital Management and Users

7. Developing Better Approaches to Training Users as Part of the Buying and Implementation Processes for New I.T. Systems

8. Develop Better Approaches to Systems Implementation So That Implementation of New Systems Will Not Add Work and Create Unnecessarily Redundant Work Processes

Thank You.

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