A listing of descriptive information about former Dorenfest Businesses can be found below.

ABOUT DORENFEST & ASSOCIATES

SHELDON I. DORENFEST ASSOCIATES

Formed in 1976, Sheldon I. Dorenfest & Associates, Ltd., is the leading source of information and knowledge about the health care information technology industry. Through its databases, market reports and analytical services, Dorenfest & Associates disseminates a wide variety of different types of information to the health care industry about information technology use in heath care.

Our cornerstone product, the annually updated THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM+ (IHDS+) DATABASE™, contains information about the health care information technology programs of almost 30,000 health care facilities associated with 1,500 integrated health care delivery systems.

THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM DATABASE™

THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM+ (IHDS+) DATABASE™ has become the primary source of information about health care information technology. Used by many companies as the foundation of their sales and marketing information system, this database contains demographic information describing the overall characteristics of each integrated delivery system in the nation, and contains a variety of important information about their information technology programs. This database, which contains almost 30,000 health care facilities associated with 1,500 integrated health care delivery systems, is a successor to a variety of other database products and is the primary source of information for a variety of publications. This information contained in THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM DATABASE™ is used for:

- Customer Understanding
- Sales Prospecting
- Territorial Management
- Telemarketing
- Direct Mail
- Market Understanding
- Competitive Analysis
- Increasing Sales

THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM+ (IHDS+) DATABASE™ contains the following types of information.

DEMOGRAPHIC DATA:

- Approximately 30,000 facilities by type, e.g. acute, sub-acute, ambulatory, home health, etc.
- Contact information for 23 titles at the delivery system and 19 for each acute(e.g. CEO, CFO, CIO, etc.) including e-mail addresses
- Sizing statistics, e.g. bed size, FTEs, net revenue/operating expenses and more
- Overall business I.T. strategy

INFORMATION TECHNOLOGY DATA:

- Installed software/hardware vendors used and number of facilities served
- Detailed data on more than 50 H.I.S. applications
- Purchase plans for all information technology activities
- I.S. decision-making process/steering committee makeup

H.I.T. SUPPLIER CONSULTING SERVICES

As specialists in health care I.T., Dorenfest provides a comprehensive array of consulting services designed to position health care information services and product companies with the greatest competitive advantage possible. With years of direct experience, our senior officers know firsthand the challenges posed by this complex and evolving marketplace. The unique combination of our industry experience and market intelligence databases can further your success by:

- Facilitating knowledge of H.I.T. market trends
- Implementing successful sales and marketing programs
- Developing winning business strategies
- Assisting in all forms of competitive analysis

H.I.T. INTERNATIONAL CONSULTING

- Conduct market studies and consulting assignments on use of information technology in health care in a number of countries
- Conduct worldwide studies comparing the state of the art in health care information technology
- Continuously monitor and update our understanding of worldwide health care information technology through a variety of ongoing activities

HEALTH CARE DELIVERY SYSTEMS I.T. CONSULTING

- Assessment Services

  The firm offers objective evaluation of information technology products and services for their effectiveness in supporting an organization's particular goals. These assessments include in-depth data gathering, documentation review, observation, and finally, a series of recommendations for success.

- Strategy and Planning Services

  Dorenfest & Associates is adept at developing, revising, and updating health care provider information technology strategies and offering comprehensive plans for implementation. Our goal is to understand the organization's business and clinical goals and prioritize projects to best support those objectives.

- Implementation

  With more than 25 years experience, the firm offers support in selecting new I.T. systems, supporting contract negotiations, providing project management and guidance, HIPAA compliance, networking strategies, and even direct I.T. organization management.

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THE DORENFEST COMPLETE INTEGRATED HEALTHCARE DELIVERY SYSTEM+ (IHDS+) DATABASE

SHELDON I. DORENFEST ASSOCIATES

Over the last 25 years, Sheldon I. Dorenfest & Associates has been the leading supplier of knowledge products and services within the health care information technology industry. Through its databases, market reports, research and consulting services, Dorenfest & Associates disseminates a wide variety of information and expertise to the health care industry. Our cornerstone product, THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM DATABASE™, profiles the IT efforts of all large healthcare providers and is used by over 150 H.I.T. companies as the foundation of their sales and marketing information systems.

PRODUCT DESCRIPTION

THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM+ (IHDS+) DATABASE™ has become the primary source of information about health care information technology. Used by many companies as the foundation of their sales and marketing information system, the database contains demographic information describing the overall characteristics of each integrated delivery system in the nation, and contains a variety of important information about their information technology programs. This database, which contains almost 36,000 health care facilities associated with 1,500 integrated health care delivery systems and covers 80% of the US healthcare provider market, is a successor to a variety of other database products and is the primary source of information for a variety of publications.

Our 2003 release is now available on CD-ROM for immediate delivery. This searchable database includes both extensive demographic and information technology information.

Dorenfest & Associates is now creating the 2004 Database. This product updates all of the information contained in our 2003 Database, along with the introduction of a variety of new market data.

WHY YOU NEED IT

Comprehensive information to:

- Improve sales force productivity
- Help direct the sales force to the best prospects
- Create effective sales and direct marketing programs
- Support inside telemarketing efforts
- Support e-mail marketing
- Support direct mail marketing
- Perform market and territory analysis
- Execute trend and competitive analysis projects
- Profile possible opportunities in the H.I.T. market and
- Increase sales

WHAT WE'VE GOT

Information Technology Data:

- Purchase plans for all information technology activities
- I.S. decision-making process/steering committee makeup
- Installed software/hardware vendors used and number of facilities served
- Detailed data on more than 50 H.I.S. applications

Demographic Data:

- Approximately 36,000 facilities by type, e.g. acute, sub-acute, ambulatory, home health, etc.
- Sizing statistics, e.g. bed size, FTEs, net revenue/operating expenses and more
- Contact information for 23 titles at the delivery system and 19 for each acute(e.g. CEO, CFO, CIO, etc.) including e-mail addresses
- Overall business I.T. strategy

THE DORENFEST IHDS+ DATABASE DATA COLLECTION METHODOLOGY

Dorenfest & Associates employs a unique survey methodology to collect its information:

- Information is collected by both telephone and mail
- Dorenfest & Associates conducts a thorough review of the data
- CIOs are interviewed for the information technology section
- Vice Presidents of marketing and/or strategic planning are interviewed for demographic data
- All responses are computer generated and validated
- Follow-up phone calls are made as necessary
- The firm then makes any corrections or updates to the delivery system as necessary

As a result, the information contained in these databases is the most accurate and reliable information in the industry.

Based on the information contained in THE DORENFEST IHDS+ DATABASE™, Dorenfest & Associates can provide comparisons to determine the state of the art of IHDS information technology, and help predict where the industry is headed. In addition, we can aggregate survey results to offer the most accurate market trends available on the health care I.T. industry.

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THE LEADING SOURCE OF INFORMATION ABOUT HEALTH CARE I.T.

THE DORENFEST DATA EXCHANGE PROGRAM

FREE BENEFITS FOR PROVIDERS OF DATA TO THE DORENFEST IHDS+ DATABASE™

Sheldon I. Dorenfest & Associates is the leading source of information and knowledge about the health care Information technology industry. Through its databases, market reports and analytical services, Dorenfest & Associates disseminates a wide variety of information to the health care information technology industry.

THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM+ (IHDS+) DATABASE ™ contains annually updated information for 1,500 integrated healthcare delivery systems and almost 30,000 facilities. The Data Exchange Program is designed to help health care providers make better decisions relating to budgeting, benchmarking, and the purchase of health care I.S. products.

The Data Exchange Program is our way of saying thank you for participating and taking the time to update our records. We make it easy for you. Simply take a few moments once a year to update your health care system's profile. In exchange for your valued participation, you will receive:

Four Queries to the Database

Query topics available for data mining among hundreds of possibilities include:

- Product Installations For Over 50 Applications Including PACS, ERP, CPR, and CPOE
- Annual Operating Expenditures
- Number of Desktop Computers
- Annual Net Revenue
- Contact information

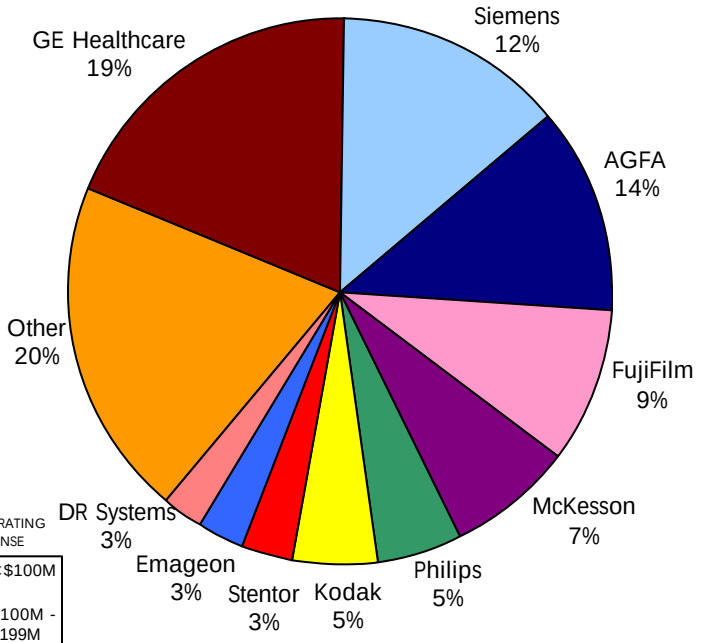
Find out how these free benefits can help you achieve your I.T. goals…

HOW CAN YOUR FOUR QUERIES HELP YOU?

ATTENTION CIOs!

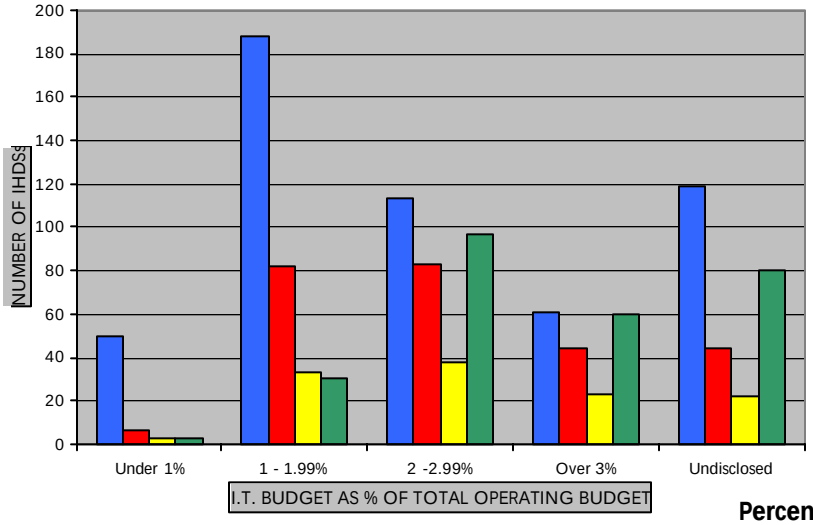
Are you considering the purchase or replacement of PACS? Would it be helpful to know the top ten PACS vendors and their market share? The data exchange program can provide this information as well as the breakdown of PACS installs based on a variety of sizing statistics. Would you like contact information so you can talk directly to the users of these systems? All of this information and more is available for the 50+ applications that are tracked in the Dorenfest Integrated Healthcare Delivery System+ (IHDS+) Database.

Market Share Among The Top Ten PACS Vendors



Budgeting and Benchmarking

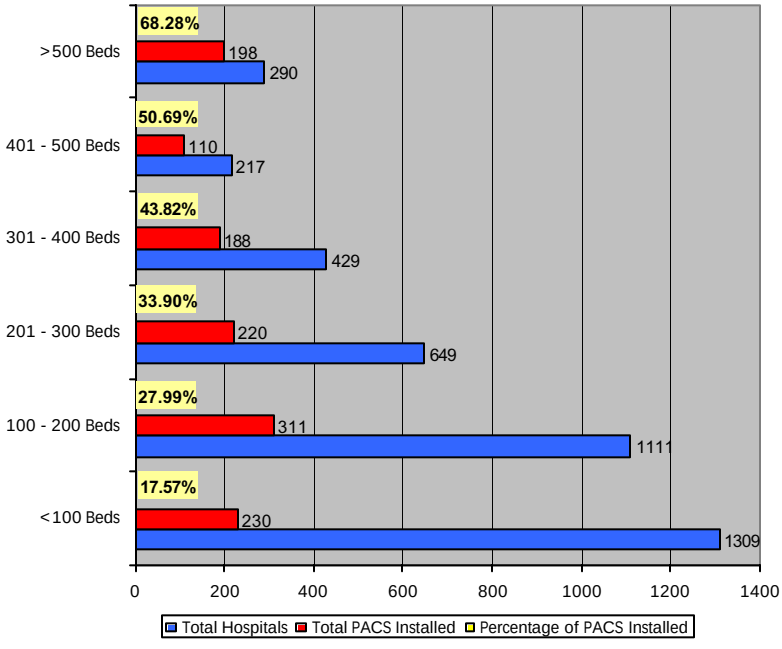
- Are you preparing your IHDS's budget?
- Have you ever wondered how your I.T. budget as a % of total operating budget compares to the I.T. budget of other IHDSs of similar size?



The information in our database can give you an indication of how your expenses and revenue compare to other IHDSs of similar size.

You can query based on bed count, facility count, revenue/expenses, FTEs - whatever works best for you.

Percentage of PACS Installs Based On Hospital Bed Size



FOR MORE INFORMATION CONTACT:

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E-MAIL queries@dorenfest.com

THE DORENFEST CONSULTING GROUP

SHELDON I. DORENFEST ASSOCIATES

Formed in 1976, Dorenfest & Associates is one of the leading independent consulting firms specializing in the health care information technology industry helping our health care clients to achieve better results from their use of information technology.

Health care organizations face greater challenges today than ever before. Dorenfest & Associates has the experience and proven methods necessary to help hospitals, physicians, payors and others deliver cost effective, quality health care in an increasingly complex environment. Our focus is on matching a client's needs with realistic and workable information technology to create an I.T. strategy that works.

HEALTHCARE DELIVERY SYSTEMS I.T. CONSULTING

The rapidly changing health care environment increases the need for greater progress and success in implementing information technology solutions. Dorenfest & Associates uses our knowledge and problem solving capabilities to help our clients avoid the information technology obstacle course and achieve better results from their information technology investments. Our consulting staff has extensive experience in developing information systems strategies and plans in a variety of multi-entity and integrated health care delivery settings. Representative service offerings include:

- Assessment, Strategy, and Planning Services
  - Reviewing effectiveness of current computer efforts
  - Defining options for moving forward
  - Educating decision makers on market issues and trends
  - Facilitating the management process leading to decisions management understands and can make work
  - Creating long-range plans for beneficial use of I.T. in the future
- Implementation of plans
  - Improving use of current systems
  - Selecting new systems
  - Supporting contract negotiation
  - Monitoring or managing implementation of new systems
  - Realizing benefits from I.T. through systems improvement and/or improving business processes
  - Managing information systems departments on an interim basis
  - Assigning staff resources to ensure timely project completion

H.I.T. SUPPLIER CONSULTING SERVICES

As specialists in health care information technology, Dorenfest & Associates provides a comprehensive array of consulting services designed to position health care information services and product companies with the greatest competitive advantage possible.

With years of direct experience, our senior officers know firsthand the challenges posed by this complex and evolving marketplace. Our unique combination of our industry experience and market intelligence databases can further your success by:

- Facilitating knowledge of market trends affecting your business
- Developing winning business strategies
- Implementing successful programs
- Assisting in all forms of competitive analysis

Our supplier consulting practice can assist you in any stage of product or market development. Whether you are a start-up, a new entrant, or a mature company, Dorenfest & Associates has the proven skill and expertise to position you for success.

AREAS OF EXPERTISE INCLUDE:

- Business planning
- Marketing planning
- Sales education
- Competitive analysis
- Strategic partnership
- Customized market research
- Image studies
- International markets
- Topic-specific focus groups
- Partner identification programs
- Product pricing
- New product evaluation
- New product introduction
- Expert witness testimony
- Due diligence
- Acquisition

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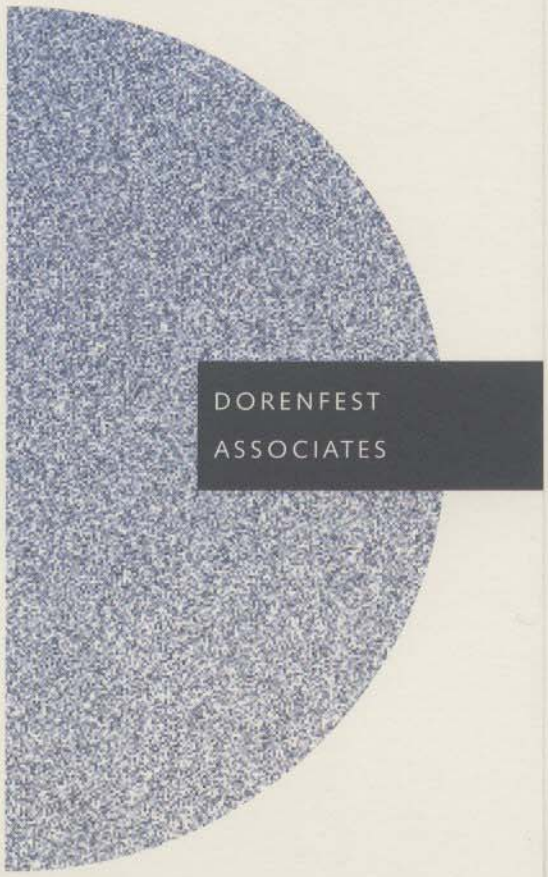
DORENFEST
ASSOCIATES

CONSULTANTS
IN HEALTH CARE
INFORMATION
SYSTEMS



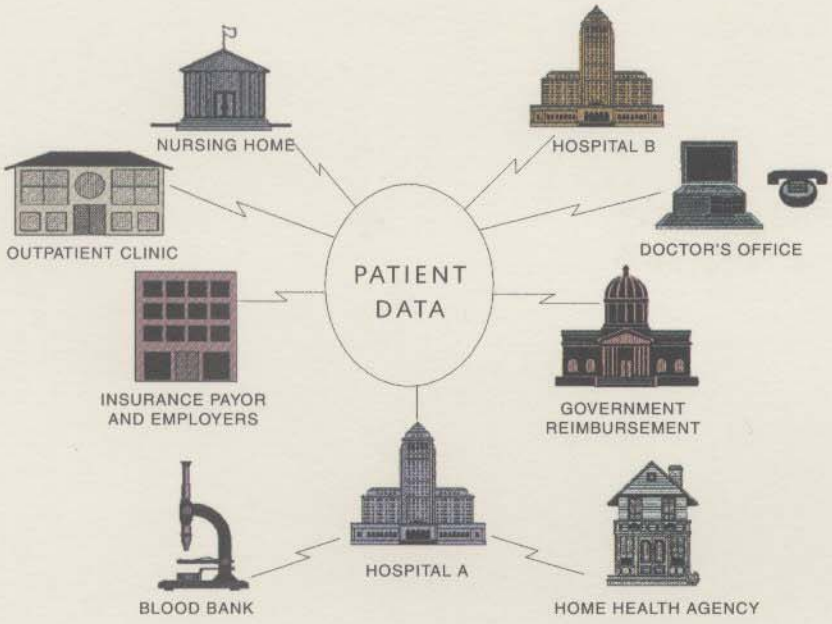
THE KNOWLEDGE LEADER IN
HEALTH CARE
INFORMATION SYSTEMS

Formed in 1976, Dorenfest Associates has used its databases and other information products to become the leading independent consulting firm in the health care information systems industry. We use our knowledge and problem solving capabilities to help our health care clients avoid the automation obstacle course and achieve better results from their automated systems. We also help suppliers shape better products for the industry.

CREATING SUCCESSFUL
AUTOMATION FOR
INTEGRATED HEALTH
CARE DELIVERY

THE VISION

INTEGRATED HEALTH CARE DELIVERY REQUIRES DIFFERENT AND BETTER INFORMATION SYSTEMS



CREATING SUCCESSFUL AUTOMATION FOR INTEGRATED HEALTH CARE DELIVERY

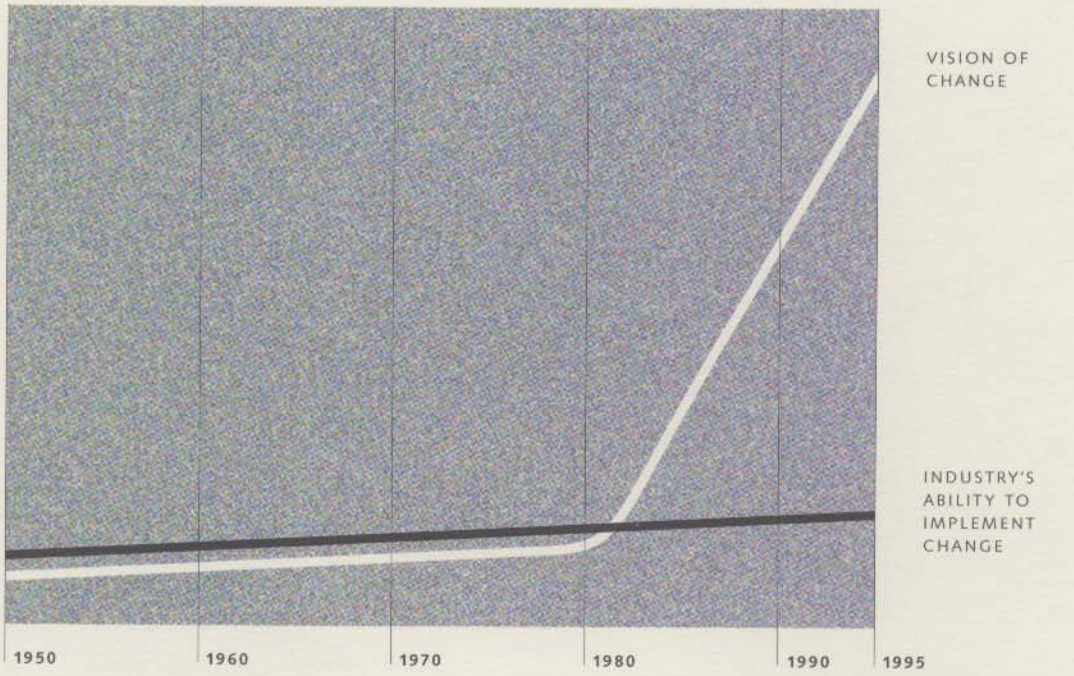
THE VISION

The rapidly changing health care environment increases the need for greater progress and success in implementing new automated information systems. The industry vision for automated information systems is clear:

- New automated systems which will effectively serve all episodes of care wherever they take place within the delivery system
- New automated systems which will provide immediate access at any place within the delivery system to all member and patient data for all episodes of care
- New automated systems which will provide the ability to manipulate member and patient data to support better clinical and business decision making
- New automated systems which will provide replacement of the manual chart with the electronic chart

THE PROBLEM IS THAT THE VISION FOR AUTOMATED SYSTEMS SUBSTANTIALLY EXCEEDS THE INDUSTRY'S CAPABILITY TO IMPLEMENT THESE SYSTEMS, AND MANY PROGRAMS OF CHANGE ARE FLOUNDERING AS INVESTMENTS ARE MISPLACED AND RESULTS ARE NOT OBTAINED.

THE PROBLEM

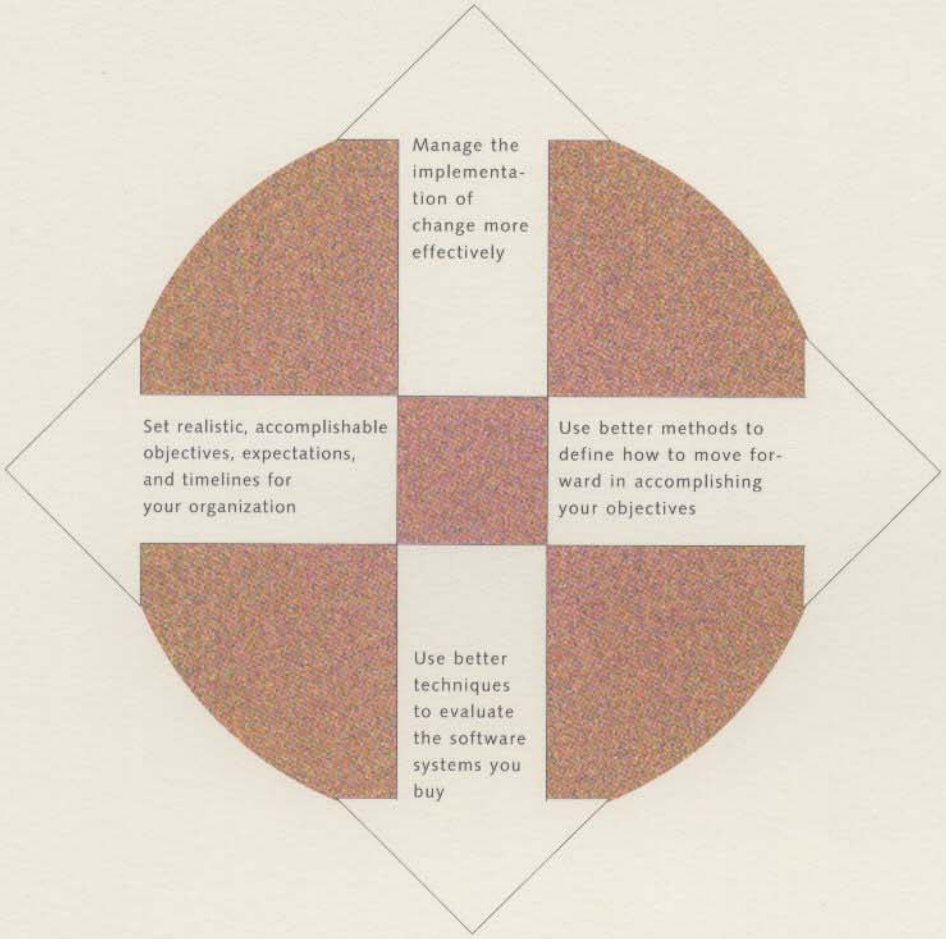


THE CAUSE

WHAT ARE THE ISSUES IMPEDING INDUSTRY SUCCESS?

- A history of poor results from past investments in automated information systems within the health care industry is being disregarded by integrated delivery systems as they purchase and implement the next phase of automation
- Instead, these organizations are greatly oversimplifying the ease with which future results can be accomplished
- Organizations implementing major new automated systems are not thorough enough in defining what is needed from these new systems
- Overselling of software readiness and capabilities by software suppliers is fueling incorrect expectations and timetables
- Poorly constructed software acquisition processes are being used to acquire the new software
- Integrated health care delivery organizations that are implementing new automated systems have not developed their change management skills to accomplish the vision and objectives they seek

THERE IS A PROBABILITY THAT
POOR RESULTS WILL CONTINUE
UNLESS WE CHANGE OUR
MANAGEMENT APPROACH TO:



DOING IT BETTER

THOSE INTEGRATED HEALTH CARE DELIVERY SYSTEMS THAT
ADOPT A MORE ORDERLY, REALISTIC, STEP-BY-STEP
APPROACH WILL GAIN THE COMPETITIVE EDGE, WHILE
THEIR COMPETITORS, FOLLOWING PRINCIPLES THAT HAVE
NOT WORKED, AND WILL NOT WORK, WILL FAIL

Use Dorenfest's consulting services to help you achieve better results from your automated systems investment.

DEVELOPING YOUR STRATEGY

WE ANSWER THESE QUESTIONS.

Where do you stand?
How do you compare to others? How effective are your current systems? What can be built upon? What should be replaced?

Where would you like to go?
How do you achieve integration? What changes should you make in your automation efforts? How do you get maximum benefit from your automated information systems? Are your expectations and desires for future systems realistic given the state of today's software? Can you get there?

GAINING THE COMPETITIVE EDGE

How do you get from where you are to where you want to be?
How do you make a choice from the wide range of options available? What works in the industry? What doesn't? What should you do? How much time should it take to get there? How much will it cost?

WE USE THIS APPROACH.

Learning about your situation by conducting intensive interviews with management and users, and by observing your current systems in operation.

Providing industry education to fill in your organization's knowledge gaps.

Identifying the best strategic options and presenting the analytical information needed to evaluate these options.

Helping top management select a strategy they understand and can make work by facilitating discussions of the advantages and disadvantages of each option for moving forward to accomplish your objectives.

IMPLEMENTING YOUR STRATEGY

WE TAILOR OUR SERVICES TO MEET YOUR NEEDS.

Improving current automated systems: we help you get the maximum value from the systems now in use.

Selecting new systems: we help you choose the system that will work best for you and make sure new systems acquisitions are worth the investment.

Supporting contract negotiation: we make sure that you will get what you bought and that you are protected in case you don't.

Monitoring or managing the new systems changeover: we help manage the period of change to ensure that the process goes smoothly and that the system is running as it should.

Realizing benefits from automated systems: we work with you to determine what benefits can actually be achieved—and to make sure you have a way of realizing those benefits.

Serving as your interim CIO: as an option, while we oversee the implementation of the new system, we will develop and leave behind a capable, cost-effective information systems organization.

Developing network strategies: we help develop network and integration strategies to tie together acute-care facilities, ambulatory clinics, physician offices, managed care entities, and other health care providers and payors into an integrated health care delivery system.

Reengineering processes: we work with organizations to identify, define, and implement work processes which best utilize information systems technology in order to make organizations more efficient and to better support business objectives.

THE DORENFEST DIFFERENCE

We bring a level of knowledge and experience to integrated health care delivery that cannot be duplicated elsewhere. The Dorenfest difference stems from:

MARKET INTELLIGENCE. We collect the industry's most complete and detailed market intelligence databases, containing current automation profiles and historical trends on the automation efforts of literally thousands of the nation's leading health care organizations. From this vast resource, we can provide information on how you compare to others, what the state of the art is, and where the industry is headed.

THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM DATABASE™ contains complete demographic and automation profiles for all components of all integrated health care delivery systems in the U.S. From this invaluable resource, we can determine how your health care system automation efforts compare to the rest of the industry.

THE DORENFEST 3000+ DATABASE™ and THE DORENFEST PHYSICIAN OFFICE DATABASE™ represent the acute-care and physician subsets of THE DORENFEST INTEGRATED HEALTHCARE DELIVERY SYSTEM DATABASE™. The result of these databases is objective, independent, hard-to-get information that no one else has on what works and what does not.

AN APPROACH THAT WORKS. We know the industry and the products, and we apply this knowledge to help create a realistic strategy. As a result, your key players will know what's possible and practical, and you will make and implement the right decisions.

THE DORENFEST DIFFERENCE

HONESTY AND INDEPENDENCE. We don't sell software; we have no ties to any vendor companies. Our only commitment is to telling the truth about health care automation and making sure our clients achieve success in their automation efforts.

IN-DEPTH EXPERIENCE. We put our approach and knowledge to work for you through a large, experienced consulting staff: all senior people, including former health care provider executives, and CEOs of health care automation companies.

THE PAYOFFS:

- ❒ A strategy you understand and can make work
- ❒ Knowledge of what can be accomplished through the use of automated systems
- ❒ Maximum use of your current automated systems
- ❒ New automated systems that meet your expectations
- ❒ More economic benefits in the form of cost savings, and more quality of care benefits in the form of fewer errors and more timely processing
- ❒ A competitive edge in information systems use

THE REAL BOTTOM LINE: better results from automation.

SHELDON I. DORENFEST ASSOCIATES

COMPUTER-BASED PATIENT RECORD (CPR) CONSULTING SERVICES

The industry is well-aligned on its vision for systems that will provide access to clinical information across the continuum of care and support the process of care. These systems, however, are described by various names, and their scope is variably interpreted from a limited focus on replacing the paper medical record, to a clinical data repository, to an integrated set of systems designed to reengineer the practice of health care. Dorenfest Associates has a full range of services to help achieve the vision of a CPR.

Pressures for improved access to and accuracy of clinical information not available from traditional claims data continue to build from industry consolidations, legislation, managed care initiatives, and renewed emphasis on quality. We help providers overcome lack of preparedness, analyze operations and improve work flow, integrate disparate systems, utilize clinical data standards, select clinical information systems vendors, and determine payback from each component of a CPR system.

STRATEGIC PLANNING SERVICES

Many organizations are in the CPR planning stage. We can supply:

- Facilitation of the development of a vision for information management that can be melded into the culture of the organization
- Assistance in creating an information systems strategy that will be:

  Developed for the organization and consistent with its business goals
  Sufficiently flexible to adapt to changing environments
  Benchmarked against comparable organizations and their goals
  Capable of providing overall direction toward a vision without being mired in tactics
  Practical, easily understood, by all in the organization, and achievable

READINESS ASSESSMENT AND PROCESS IMPROVEMENT

Multiple, diverse databases, systems which are not integrated, and error-prone manual processes are significant barriers to achieving effective use of information systems. To enhance current systems and improve chances for successful implementation of new systems, we provide:

- High level assessment of current organizational culture to prepare the organization for changes required to impact CPR systems
- Education about the state of CPR product development to establish clear expectations about what can and cannot be achieved
- Work flow analysis and process improvement to ensure the CPR will be overlayed on practices that support the value of information
- Assessment of supporting systems and networks to understand integration needs, potential replacements, and enhancements for improving utilization of existing systems. We will work with our clients to build data dictionaries, migrate to single source data collection, and use standards for EDI transactions, security, and quality compliance

VENDOR SELECTION

Dorenfest Associates has a long history of supporting the suppliers to the health care information technology industry. We collect and publish market information that assists vendors in understanding market trends, developing business strategies, and designing successful products, while maintaining no financial ties to any vendor. These features – knowledge and objectivity – afford us the greatest possible view of the industry for our supplier clients, and the most unbiased approach in helping our provider clients understand the supplier market, identify potential vendors that best fit their needs, and assist in negotiating a purchase that will ensure their needs are met.

The CPR market is especially diverse and dynamic. Well over half the vendors in existence today are different than two years ago. There are new vendors with the latest technology, established vendors with older technology, acute care versus ambulatory care products, and vendors from other industries entering the market. Striking a balance between these factors is key to the selection process. We have developed a vendor selection strategy that quickly enables a provider to narrow the field, conduct in-depth assessment, and negotiate the best terms for its level of risk acceptance, desired functionality, and implementation expertise. We have proven this tool's value in large integrated delivery systems as well as individual hospitals and clinics.

CPR PROJECT IMPLEMENTATION

Our staff has considerable experience in facilitating successful implementations of a variety of health care information systems that help our clients realize the objectives of their CPR strategy. The scope and level of our assistance can range from providing project oversight to assuming overall project management. We can also assist with a wide range of technical and end-user support activities.

BENEFITS REALIZATION

CPR systems can provide significant strategic, operational, and economic benefits. Some are short-term and tangible, others are long-term, and still others are less tangible. The value of a CPR project must be assessed against the organization's business goals. Dorenfest Associates has developed a methodology for identifying benefits at key milestones for primary business objectives based on how users expect to approach the CPR project. We assist clients benchmark their current position, understand costs, predict payback, and analyze benefits as they come to be realized.

FOR ADDITIONAL INFORMATION

We are pleased to discuss these and other consultative offerings with you in greater detail. Customer references are available upon request.

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H.I.T. SUPPLIER CONSULTING SERVICES

SHELDON I. DORENFEST ASSOCIATES

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With years of direct experience, our senior officers know firsthand the challenges posed by this complex and evolving marketplace. Our unique combination of our industry experience and market intelligence database can further your success by:

- Facilitating knowledge of market trends affecting your business
- Developing winning business strategies
- Implementing successful programs

Our supplier consulting practice can assist you in any stage of product or market development. Whether you are a start-up, a new entrant, or a mature company, Dorenfest Associates has the proven skill and expertise to position you for success.

SERVICE OFFERINGS

Each engagement is customized to meet your firm's specific objectives. Areas of expertise include:

- Business planning
- Marketing planning
- Sales education
- Competitive analysis
- Strategic partnership
- Customized market research
- Image studies
- International markets
- Topic-specific focus groups
- Partner identification programs
- Product pricing
- New product evaluation
- New product introduction
- Expert witness testimony
- Due diligence
- Acquisition

FOR ADDITIONAL INFORMATION

We would be pleased to discuss these and other consultative offerings with you in greater detail. Customer references are available upon request.

EXAMPLES OF RECENT CORPORATE CLIENTS

Abbott Laboratories
ALLTEL
Anixter, Inc.
Apple Computer, Inc.
AT&T Information Systems
AVNET
Bain and Associates, Inc.
Baxter Diagnostic, Inc.
BayNetworks
Becton Dickinson
Bell Atlantic
Biovation, Inc.
Bristol-Myers Squibb
Community Health Computing
COMPAQ Computer
Computer Sciences Corporation
Dell Computer Corporation
E.I. du Pont de Nemours & Company
Eli Lilly
Emtek
General Electric Company
Hambrecht & Quist, Inc.
HBO & Company
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SPECIALISTS IN HEALTH CARE INFORMATION

Defining CPOE

Here's a look at the current state of computerized physician order entry in U.S. integrated delivery systems.

By Sheldon I. Dorenfest

Fueled by health care's growing focus on patient safety, computerized physician order entry (CPOE) has emerged as the industry's newest No. 1 IT priority. The Institute of Medicine's 1999 report on patient safety, *To Err is Human*, brought a national focus to life-threatening errors made in hospitals and was followed by a variety of other patient safety initiatives, including the Leapfrog Group's efforts to make computerized physician medication order entry a mandatory requirement for its constituencies. Now, the question of whether to implement a CPOE system is being addressed in the executive suite of every large hospital.

This article addresses the what, why, how and when of CPOE deployment.

What is CPOE?

The term CPOE applies to systems ranging from the entry of all drug and clinical orders by the physician as part of a broadly defined clinical information system (CIS)/computer-based patient record (CPR) system to the more limited "medication-ordering-only" definition adopted by Leapfrog. So the "P" in CPOE can stand for "physician" or "prescription." Organizations beginning the investigation of CPOE systems should consider all options as they evolve to a CPOE strategy for their hospitals.

Why CPOE?

Studies have pointed out medication errors as major contributors to serious injury in hospital treatment. Researchers have focused on physicians' handwritten medication orders as a contributing factor in medication errors because of either illegibility or physicians' lack of understanding of the contraindications for a particular medication. Therefore, industry observers hypothesized that a system that eliminated or reduced the possibility of errors from these sources would have a significant impact on medication error reduction.

This line of thinking triggered the industry mandate for computerized medication order entry by physicians. In addition, experts further hypothesized that computer entry of all types of orders directly by physicians would be even more beneficial in reducing patient errors.

State of computerized ordering

Ever since the first CIS and CPR systems were introduced in the late 1960s, developers have been clamoring for physicians to enter orders directly into such systems. In fact, the early systems introduced during the 1960s and 1970s managed to get a high percentage of physicians entering orders.

Early adopters with a high percentage of physicians entering orders included the following organizations:

- Brigham and Womens Hospital, Boston;
- El Camino Hospital, Mountain View, Calif.;
- Latter Day Saints, Salt Lake City;
- Medical College of Virginia Hospital, Richmond, Va.; and
- New York University Medical Center, New York.

For many years, these early adopters were among a limited number of hospitals that had any type of interaction between physicians and computers within their facilities. During the 1980s, physician computer use broadened as hospitals began providing for physicians to access recent test results and patient census data. The use of computers by physicians to

Illustration by Tom Whalen

About the Database

According to Sheldon I. Dorenfest & Associates, Ltd., the IHDS+ database is "the primary source of information about health care IT activities." Used by many companies as the foundation of their sales and marketing information systems, this database contains demographic information describing the overall characteristics of each integrated delivery system in the nation, and contains a variety of important information about their IT programs. This database contains almost 40,000 health care facilities associated with 1,500 integrated health care delivery systems and is updated annually.

access results and census data has expanded to many hospitals since that time. But even today, many physicians may not interface directly with the computer to access these functions. Instead, nurses access the results and give paper copies to physicians.

Meanwhile, physician order entry expanded slowly beyond early adopters. In 2002, a small percentage of the nation's physicians entered some of their own orders into hospital computer systems. When compiling the 2002 version of The Dorenfest Complete Integrated Healthcare Delivery System (IHDS+) database (see sidebar), we asked each delivery system whether physicians were entering orders directly into their computer systems or whether they were still writing them for entry by nurses and unit secretaries. We found that less than 20 percent of the delivery systems had some physicians entering some orders directly into the computer system, and only a few delivery systems had most of their physicians entering some or all orders into their computer systems.

Why aren't physicians entering orders? (After all, this feature has been available in software products since the early 1970s.) The primary issue is physician time. No currently available systems allow the physician to save time entering his/her orders directly into the computer system; most systems require a substantial amount of additional time.

Because time is their most valuable asset, physicians have opted to continue handwriting their orders. However, physicians could be motivated to take more time to enter orders directly into a computer system if the time investment could be justified by other benefits. For example, in ambulatory practices with electronic medical record systems available as an integral part of the patient care process, physicians are more motivated to enter orders into computer systems.

The proliferation of physician order entry in ambulatory environments is aided by the simplicity — and fewer number — of orders compared to the inpatient environment. On the other hand, the basis of physician resistance to inpatient order entry, which often is logical and appropriate, must be considered when evolving to a CPOE system.

Other key strategic issues facing evaluators of CPOE include the following:

- What is the level of functionality in the computer systems now available to serve CPOE needs?
- Do we buy a medication-ordering-only system or a system that allows all physician orders to be entered?
- In the case of a medication-ordering-only system, should it be part of a larger CIS/CPR system or a stand-alone system?
- In the case of a stand-alone system, how will it interface and integrate with our current CIS/CPR and pharmacy department systems?
- Should we buy a new CIS/CPR system or expand the current one to accommodate limited or broad CPOE?

Next steps in CPOE adoption

Early results from the first 441 delivery systems interviewed for the 2002 IHDS+ database showed that 37.2 percent had a plan to evaluate CPOE (see Figure 1 for

Figure 1

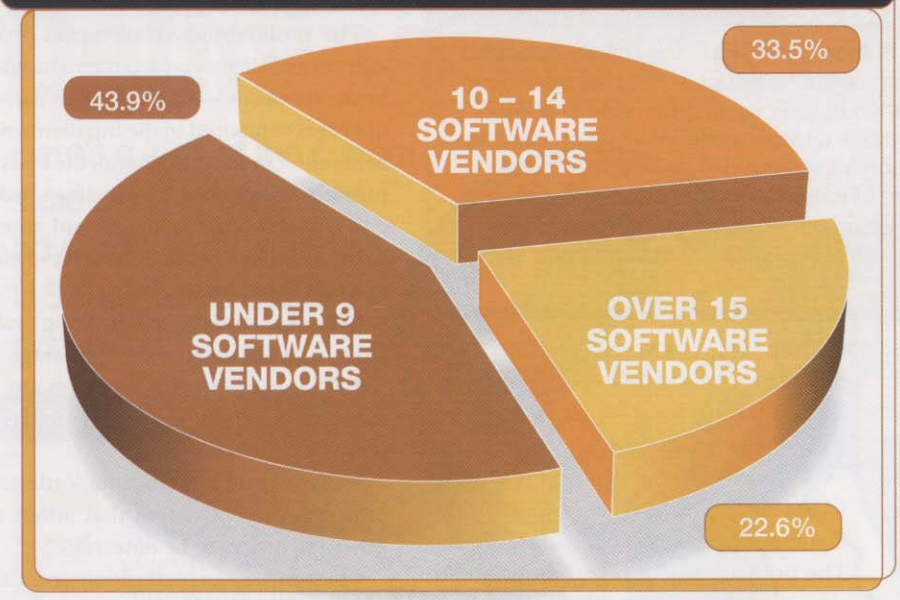
WHAT IS THE CURRENT STATUS OF YOUR STRATEGIC THINKING TOWARD IT SYSTEMS TO SUPPORT PATIENT SAFETY EFFORTS?

	TOTAL RESPONSES	
	NUMBER OF DELIVERY SYSTEMS	% OF 441 DELIVERY SYSTEMS
CONSIDERING ACQUISITION OF CPOE SYSTEM	164	37.19%
REVIEWING NEW CLINICAL SYSTEMS BUT UNCERTAIN OF FEATURES	56	12.70%
NOT SURE YET OF HOW SYSTEMS WILL PLAY INTO PATIENT SAFETY PROGRAMS	221	50.11%
EARLY RESPONDENTS TO 2002 SURVEY	441	100.00%

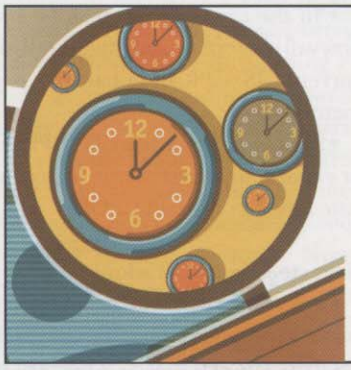
Source: The latest data from the Dorenfest Complete IHDS+ Database™

Figure 2

HOW MANY APPLICATION SOFTWARE SUPPLIERS ARE USED BY A DELIVERY SYSTEM?



Source: The latest data from the Dorenfest Complete IHDS+ Database™



Since CPOE has only recently emerged as a high priority, currently available systems are in an early stage of development and are not yet ready to meet the high demand that has been created.

additional responses). Since none of these delivery systems had a plan for CPOE in 2001, this indicates amazing new momentum for CPOE.

But since CPOE has only recently emerged as a high priority, currently available systems are in an early stage of development and are not yet ready to meet the high demand that has been created. If a large number of mature CPOE systems were available to service this new momentum, it would still take a typical delivery system a year to 18 months to select the appropriate CPOE system — and another year to 18 months to implement it. Given the immaturity of CPOE functionality, the first purchasers of such systems may struggle with implementation and these initial systems may not meet user expectations. If a hospital adopts CPOE technology now, the organization's attention will be diverted to a longer term solution taking three years or more to implement, during which time the errors motivating this demand will continue. Therefore, some hospitals are reviewing interim, less risky solutions by asking physicians to sign computerized orders entered by others so that legibility errors can be corrected before the orders are filled and administered.

If more hospitals quickly adopted policies such as this, life-threatening errors could be reduced while CPOE function could be allowed to emerge more naturally. Correspondingly, this would require more appropriate recognition of the true state of the art in CPOE by the industry leaders that are generating momentum for CPOE systems.

If a hospital decides it should implement a CPOE system now, it needs to establish how it should proceed toward successful execution. One issue is integration. In the 2002 IHDS+ database, over 56 percent of the delivery systems use 10 or more software suppliers (see Figure 2). These delivery systems face integration problems if they choose to purchase a stand-alone medication order entry system that otherwise has the best product features to support CPOE.

If the organization is using a satisfactory CIS from a vendor that does not have strong CPOE function, the only satisfactory routes to CPOE today will be to either purchase a stand-alone CPOE system or a new CIS/CPR system to replace a system that is already working satisfactorily. Neither of these options may be attractive as a solution. This situation could lead to a false or improper start into the CPOE arena — rather than helping to solve today's problems.

Timing of CPOE implementation

In our view, based on a realistic evaluation of the state of readiness of systems available to serve CPOE needs — and the condition of current work processes serving patients — CPOE has emerged as a high priority too quickly. The momentum created by Leapfrog runs a high risk of exacerbating the problems Leapfrog is trying to correct. So if Leapfrog and others take a deeper look at the problem, they may modify their recommendations to the industry to create a more effective movement toward better next steps to reduce the error-prone work processes that now exist.

If Leapfrog does not change its position, what should you do as a hospital leader? It depends on how important Leapfrog is to you, your board, and the financing of patient care in your community. If it is important, you will need to find some logical way to address Leapfrog requirements and have a successful implementation of a CPOE system.

However, if Leapfrog is not important, the CPOE priority should be deferred until early adopters demonstrate greater success. In any event, you should proceed with caution. ■

Mr. Dorenfest is president of Sheldon I. Dorenfest & Associates, Ltd., a Chicago-based consulting firm and a leading source of information and analytical services for the health care IT industry.

1990

The IOM study is the first factor in building the momentum to fuel huge investments in the CPR.

1992

Integrated delivery and managed care model gain popularity fueled by President-elect Clinton's healthcare reform platform.

1994

Organizations begin to invest in quick changeovers to new CPR systems or modifications of existing systems.

THE DECADE OF THE '90s

Poor use of IT investment contributes to the growing healthcare crisis

by Sheldon Dorenfest

Healthcare industry leaders are moving into the future with as much sense of direction as a colleague who faced an emergency and needed to get from Chicago to Denver as quickly as possible. With little sleep and no map, he headed onto the roadway. After a few hours he saw a road marker, "50 miles to Cleveland." Ignoring it, he kept driving. He also ignored the "20 miles to Pittsburgh" road sign. Then, "Philadelphia, 20 miles." When he stopped to get a road map, he turned around and headed toward Denver.

The healthcare industry is also heading the wrong way. It needs to turn around and get started in the right direction.

Healthcare information technology (IT) investment has more than tripled during the '90s, with annual expenditures for products and services rising from $6.5 billion in 1990 to a projected $20.4 billion in 2000.

IT was a top priority for capital investors in the healthcare industry over the past decade, with total investments by providers for products and services to support IT exceeding $125 billion. What did this investment buy for the nation's health? As we entered the '90s, healthcare was investing in new technology at a relatively modest pace. At the time, the industry received criticism for being technologically behind the rest of the world. Industry leadership defended its low investment strategy by citing poor returns from IT investments in the '80s, as well as the widespread perception that the software available in 1991 didn't offer enough benefits to justify its purchase.

Healthcare IT market growth during the decade proceeded slowly until early 1993, when several key factors converged to fuel large investment in the computer-based patient record (CPR) and integration of legacy systems already in use. These major factors included the following:

- The 1991 Institute of Medicine (IOM) study. The IOM study played an integral role in fueling significant investment in the CPR. Disregarding substantial investments over the previous 20 years in a series of failing attempts to automate the patient record, the 1991 IOM report led less experienced observers to conclude that the IOM was discovering the concept of a CPR for the first time (see "Early IT").
- Integrated delivery and managed care. This model emerged most prominently in California in the late '80s

1996

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) was signed into law on August 21, 1996.

1998

Industry leaders come to realize the failure of their present investments in the CPR.

2000

Emphasis increases on improving processes, simplifying workflow, reducing redundancy and saving money.

with the creation of numerous healthcare delivery systems providing a continuum of care services to a regional population. Proponents of the model presented its advantages nationally as a method of providing better patient care at lower cost. A key component of the integrated delivery model was that a person could enter the system at any location, and caregivers could access data about the person's healthcare status immediately through a multi-facility CPR. When President-elect Clinton made healthcare reform a key element of his platform in late 1992 and early 1993, the healthcare industry began a "reform" program of its own by implementing the California experiment throughout the nation.

As a theoretical vision, the early concept of the CPR had merit. But given the conditions of the healthcare industry at the time, the capabilities of its leadership, the timetable established for implementation, and the over-simplification of the solution, experienced observers predicted that the programs undertaken to implement such CPRs would surely fail.

- The Community Health Information Networks (CHINs). As the integrated delivery model began to take hold across the United States, many healthcare delivery organizations that didn't want to integrate through mergers explored local and regional collaboration. Large investments in CHINs to create programs for sharing patient data peaked between 1993 and 1996, with one or more CHIN efforts under way in most urban areas. Because of poorly conceived objectives for these collaborations, which led to much wasted effort, nearly all CHINs efforts failed by 2000, and little evidence of their existence remains.

Everybody invests in CPRs

The cumulative impact of the IOM study, the integrated delivery model, managed care and CHINs fueled a huge investment in CPRs. Nearly every healthcare delivery system in the country invested between $5 million and $50 million in CPR efforts between 1993 and 2000.

Despite serious criticisms from some experts that almost all investment plans to implement the vision of a CPR were flawed at inception, the majority prevailed, creating tremendous industry momentum. The newly evolving healthcare delivery model was driven by inexperienced industry leaders, consultants who increased their revenue by oversimplifying and overselling the ease of accomplishing CPR initiatives, IT vendors whose products were presented as keys to accomplishing CPRs, and various experts who contended that past failures weren't good indicators for predicting future success.

The CPR delivery model, presented by the IT industry, was based on the purchase of one of a number of suppliers' CPR systems. All were purported to integrate proprietary applications and provide an interface engine to merge data from a series of legacy systems and new applications provided by other suppliers. The model was built on the concept of housing data from previously disparate systems in a clinical data repository (CDR) from which a CPR would be produced. Many billions of dollars were spent on such CPR programs.

CPR programs fail

As the '90s came to a close, it became obvious that CPR investments were not accomplishing their objectives. While the vision of the CPR continues to be appropriate in 2000, faulty implementation in the '90s caused the healthcare industry to further weaken its work processes by building in another layer of redundant systems.

For example, a visit today to a nursing station at one of the facilities that once envisioned a "CPR" system would find, instead, a universal workstation accessing numerous legacy systems operating throughout the organization. Graphic user interfaces would be presenting a variety of attractive user views of data contained in these systems. A richly populated CDR would be accessible by users throughout the organization. Next to this universal workstation would be a pile of paper referred to as the manual patient record, which would be the patient record used by most physicians who usu-

ally only access the automated system for results not yet entered into the paper record.

Why is this so? There are a variety of opinions about why physicians tend to cling to paper-based records, and most center on physicians' trepidation about embracing technology. But this is far from the case. For physicians, time is money and patient lives. By reviewing the paper-based record, physicians gain immediate access to the only complete set of information regarding a patient's visit. Physicians who access the CDR must also use the paper record to obtain any information not yet in the system.

The industry's investment in the CPR in the '90s produced a highly redundant system that added substantial cost, produced little benefit and could be said to be analogous to going to a plastic surgeon to treat liver cancer. Most of the work processes involved in maintaining the paper record remained intact while new processes and IT systems were implemented. Meanwhile, many antiquated IT systems continued to be used, layering more redundant, tangled and convoluted work processes on top of already complex and inefficient methods.

Toward the close of the decade, the impropriety of these CPRs and other poorly conceived IT investments became obvious to more and more industry leaders. And Y2K was an issue. Many organizations invested in quick changeovers to new systems to replace old legacy systems that needed to be modified to operate in the new millennium. Others simply invested in the required modifications to the old systems.

The healthcare industry's investment in CPR in the '90s produced a highly redundant system.

As we enter the new millennium, the healthcare industry is in transition. The operating model of the '90s—integrated delivery and managed care—will not suffice. Experts argue about what form the new model of delivery should take, but all agree that the current model is not working.

Too much to do, too little to do it with

Although the nation's cost of healthcare stabilized for a

Early IT

WHEN I ENTERED THE HEALTHCARE IT INDUSTRY in 1969, it was in its infancy. Most hospitals operated 100 percent manually; only the largest providers had implemented automated billing systems. Software companies sold products by spinning a tale to meet client needs, which had to be "unspun" during implementation to align with product capabilities.

When a doctor prescribed medication, a nurse would post it to a requisition, enter data into a file at the nurses' station, update the patient's chart and send the order to the pharmacy by messenger or tube. The pharmacist would type a label, update the patient's profile and the inventory-control record, create a billing file, and forward a record of the transaction to a business office. At the business office, the transaction would be entered into an automated billing system.

Soon it became clear that everyone would benefit if the ordering process could be streamlined to a single entry of the order, updating of files and communication of new information to all involved personnel. Doctors could save time and money while improving quality of care. Medical records and patient bills would automatically be prepared as a by-product of this system. This became the industry's vision.

By 1974, some clinical processes had been automated, but the steps a hospital should take next to realize a true computer-based patient record (CPR) were unclear. Believing that I could serve the industry by helping providers realize what CPRs had to offer and by helping vendors improve the functionality of their products, I formed Sheldon I. Dorenfest and Associates Ltd., Chicago, in 1976.

Since then, hundreds of CPR-related products have been introduced, but due to limited understanding of change management, these offerings typically automate only part of the process. For example, a "bed board" with colored flags indicating room availability and patient condition is still used in many hospitals. The system could have been replaced by early automated patient-registration systems, but today it often operates parallel to present systems.

—*S.D.*

period of years, costs are again rising—and at a time when government reimbursement procedures are reducing resources to providers. In addition, consumers are adding their votes of dissatisfaction to the healthcare system and to declining quality of care.

A variety of well-intended government initiatives, including the Balanced Budget Act of 1997, Health Insurance Portability and Accountability Act of 1996 (HIPAA), Ambulatory Patient Classifications, and the IOM study on life-ending medical errors are creating awareness and increasing the pressure on the healthcare system. Frequently, these well-intended initiatives have a crippling rather than positive impact.

For example, the IOM assessed, using questionable statistics, that the number of life-ending errors ranged from 44,000 to 98,000. While medical errors may be growing, questionable statistics produce large numbers that are really meant to get people's attention. Also, the proposed remedies under consideration will not result in error reduction in the foreseeable future. Many other current thrusts in the healthcare industry create too many priorities and problems that are being addressed with too little management and resources. So how will IT use in healthcare evolve over the next few years?

Too much technology

Technology is taking the world by storm, with PCs on every desk transferring instant and frequent communications. There are a myriad of opportunities for improvement in healthcare through better use of IT. But is the industry up to the challenge? Can it benefit? Will its leaders know how to manage the change? Or will they be hornswoggled again?

Several consecutive generations of improperly implemented IT have confused the work processes within our organizations and created incredible redundancy. Work processes that required one step when carried out manually now require two or three steps. Dorenfest and Associates estimates that between 25 and 50 percent of a typical hospital's operating costs are invested in redundant work processes.

A well-orchestrated, long-term work simplification program could significantly reduce healthcare organization operating costs while improving quality of care by reducing opportunity for error in processing physicians' orders. Will this opportunity be addressed in the next few years?

As we enter the new millennium, the healthcare industry is in transition.

The next wave

Numerous forces are pushing the industry to continue to implement IT improperly. But other forces are beginning to form that may help the industry approach things more appropriately. Past technology investments haven't garnered the desired results because the industry has been oversimplifying the process, making too many mistakes and, thus far, not learning from its mistakes. The industry is in the early stages of shifting from rapidly assimilating poorly understood and poorly implemented technical solutions to improving use of technology already in place while simplifying its work processes. If it does this well, the industry stands to save considerable money.

Although IT budgets will continue to grow, fewer capital resources will result in slowed growth rates in IT spending. Spending will shift direction because products and services purchased over the next several years will differ in form from those purchased in the '90s. Growing emphasis will be placed on improving work processes, simplifying workflow, reducing redundancy and saving money. This emphasis will result in improvement in quality of care and patient satisfaction.

We will be moving toward a back-to-basics approach, with the industry focusing on gaining a greater return from its IT investment. It will invest in stronger analytical efforts to support IT investment decisions and move away from making strategic-advantage investments that don't accomplish these advantages.

The industry is at a crossroad. We can only hope that industry leadership and the federal government will recognize what needs to be done. A tremendous number of forces are moving in the wrong direction, so bringing change will be similar to turning around a semi-trailer. But let's hope that enough people with wisdom, clear thinking and an up-to-date road map soon will come to see the route that is needed. ■

Sheldon Dorenfest is president and CEO of Sheldon I. Dorenfest and Associates, Chicago.

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Has Consultants' Spigot Slowed as Providers Ponder Waste?

Smarter shopping for IT likely as HIPAA and Balanced Budget Act end the 90's buying spree.

By Ronald E. Keener

Healthcare information technology consultants, coming off the providers' robust spending spree of the 1990s, are their own worst critics, if conversations with several of them portend the general attitude in the new year and new millennium.

They seem to want to turn the corner and not look back on a decade that is seen as wasteful at best and inept at worst for the dollars they took in consulting services.

What's on the horizon of the new year in healthcare IT? E-healthcare and Web-enabled and Web-driven solutions will likely flourish, some say. Others worry about whether consulting dollars will be available in post-Y2K days, as they anticipate a retrenchment by providers in working better with what they have and gaining more value from their existing systems.

Lower CIO Budgets

Vince Ciotti

"All of a sudden, Y2K, the Balanced Budget Act, managed care, puff, the year 2000 is frightening, it is terrifying," says Vince Ciotti of H.I.S. Professionals in Santa Fe, NM. Not given easily to understatement, Ciotti says that the coming demands of the budget act and managed care have driven down CIO budgets.

Further, Ciotti, who says his firm "will be lucky to do $3 million this year," says it is hard to distinguish between vendors and consultant firms with "almost every large consulting firm offering software products, Web commerce, partnerships with Microsoft, PC products, and in some cases, even full-blown applications."

Will providers find dollars hard to come by for consulting? "Well, I hope so," responds Sheldon Dorenfest, the well-known Chicago healthcare IT consultant. "Because if they've wasted so much buying consulting poorly, if the money dries up a little, maybe they will spend their money more wisely and buy better consulting services."

Reasoned Approach Expected

Strange words coming from a consultant about his trade, perhaps, but respondents to the casual survey seemed almost relieved that they may be looking at a smarter, more reasoned, approach to purchases in the next year or more.

Sheldon Dorenfest

"If you have a perpetual fountain and never have to worry where the water comes from, then you don't have to think about what you're going to drink," Dorenfest says. "But if you are on the desert, and you've got three days to get to Cairo on a half a canteen of water, you have to ration it. That rationing helps discipline a person so that he makes better decisions."

This self-criticism by the consulting industry may be a splash of cold water in the face for providers.

Dorenfest, for example, talks at length about consultants helping clients get better business benefit from their IT investment. He says that the IT investments in the 90's for the most part "didn't work, it didn't pay off."

Producing Business Benefits

He for one looks at the next year as a time "when people are going to start focusing on the proper way to make IT investments" and produce a business benefit. It will be a year of "untangling the processes and reducing the costs," he says.

Vince Ciotti would seem to agree: "The first principle is don't use consultants as much as you have in the past. Stop throwing money away, you are not going to see much more." It is a time to "negotiate the rates extensively," he says.

Another Chicago consultant, Simmi P. Singh, a partner in the 5-month-old firm of Majkowski & Singh Partners, echoes the concern for adding "the value proposition." The issue for her is, "How significantly more competitive are you as a result of using IT than you were yesterday?"


Simmi P. Singh

It is not a question, in the aggregate in healthcare, that has been well answered. Or as Dorenfest notes, "The only reason for making an investment in IT is that it improves something. Most of the investment in healthcare IT in the past decade was wasted—with providers oversimplifying their problems and misjudging what they were buying."

Managed Care Affected

Lack of dollars in managed care is what Pam Waymack, managing director of Phoenix Services Managed Care Consulting Ltd. in Evanston, IL, sees for that part of the business.

"Many consultants and vendors expect pent up demand for system selection in 2000. We expect the opposite." Waymack expects the focus will be on maximizing the use of current systems.

An advisory services consultant sees the near future a bit differently when it comes to dollars, but he is cautious too.

Mark Anderson of META Group, Spring, TX, is another critic of how money was spent in the past decade for healthcare technology, and said he believes IT budgets "are going to be spent a lot wiser than providers did in the past."

Highest Ranking IT Issues by Chief Financial Officers

	Rank 2000	Rank 1999
Reduce operating costs	1	4
Recruit and retain IT staff	2	2
Improve data communications with physicians	3	5
Align organization's business strategies with IT issues	4	3
Expand outcomes analysis to improve patient care	5	8
Expand infrastructure to improve data communications	6	9
Improve data communications with payers	7	7
Justify IT costs through return on investment	8	10
Create a paperless business office	9	12
Develop or update IT strategic plans	10	6
Replace legacy computer systems	11	11
Install clinical charting systems	12	13
Recruit and retain IT executive (CIO)	13	16
Manage Y2K issues	14	1
Reduce costs of IT consultants	15	14
Outsource selected IT functions	16	15
Outsource all IT functions	17	17

Source: META Group Inc.

Little Internal Support


Mark Anderson

The issue for Anderson, vice president of META Group's Healthcare Information Technology Strategies, is not that recommendations or applications were so bad in the recent past, but that "hospitals would spend money on capital and consultants, [but] they wouldn't spend money on internal operations to make them work."

He cites the example where a point of care clinical charting system is installed in an ICU, and the head nurse is put in charge—already overloaded with duties—and with no knowledge of the new system. In another case, the head of transcription for radiology was put in charge of a new PAC system and "three years later they had nothing up and running yet."

"They spent a lot of time researching, they spent a lot of money on consultants, they bought halfway decent packages, but they would not bring in the expertise required to make the systems work," he says.

Anderson, a former hospital CIO, says he could easily get $5 million approved to buy an application, but found it difficult to get a half-time employee added to run the application.

ASP and Outsourcing

These mistakes of the past are pushing providers to look at application service providers and outsourcing, he says, where the CIO can cut costs and put the vendor at risk. Other hot buttons include e-health, presently of more interest to payers than to providers; HIPAA; and outcome measurement disease management programs.

And will money be there for consulting services? META Group surveyed 800 chief financial officers for Healthcare Financial Management Association last summer and 98 percent of them said they were not planning to spend any less money on consultants than they did in the past.

Anderson concludes: "So the [people] who actually spend the money, write the checks, are saying we're planning on spending the same amount or more. We think there will be a lot of consulting money out there; it's just going to be spent a lot wiser than in the past."

Web Solutions Expected

Marie Turks of The Kennedy Group in Redwood City, CA, foresees that clients will "have a tougher time maintaining their competitive edge in the market place if they do not have Web-enabled and Web-based solutions." She sees physician-patient connectivity as a leading interest in the new year with a rise in what is becoming known as patient empowerment.

Marie Turks

"Our prediction is that in the post-first quarter of 2000, the CIOs and healthcare enterprises will be in a position to partner with vendors offering these solutions that are Internet-based or enabled," says Turks, whose firm lost its founder this summer.

With the death of George Kennedy, his wife, Janet, has been heading the transition toward the hiring of a CEO, forming an advisory board, and bringing on Eileen Joschko as executive director of the Executive Services programs. Joschko was with the Chicago Medical Society.

Michael J. Tocco, R.Ph., heads Integrated Care Group in Waltham, MA, which specializes in consulting within the pharmaceutical area where, he says, "most health plans still are not able to integrate their pharmacy claim information with their medical claim information."

Michael J. Tocco

"So we really are at the beginning of a process to help integrate information and then to determine what that information means." Other hot buttons for pharmacy in 2000?—relating pharmacy interventions to health system savings, and determining the health economic benefit of new pharmacy products as they come on the market, he says.

Of course, there is no magic about the turn of a century in calming wasteful or ill-considered or poorly supported IT purchases. But government mandates like HIPAA and the budget act have a way of focusing attentions and budgets, and making providers and consultants alike more careful about the investments they do make in 2000.

Ronald E. Keener is editor of HEALTH MANAGEMENT TECHNOLOGY.

Four Trends in Managed Care IT for Y2K

By Pam Waymack

Getting the Bang from Prior IT Investments

Many consultants and vendors expect pent-up demand for system selections in 2000. We expect the opposite. Other than clients whose vendors require them to upgrade to their client server offering or migrate to a new system (e.g. Amisys by 2003), we anticipate limited selection activity in the core capitation system. Instead, focus will be on maximizing use of current systems. Workflow redesign is key to assure optimal use of system functionality. Increased training on specialized system features will be an area of focus, especially reporting and review of system configuration decisions that impact operations.

Exploring Growing Outsourcing Options

Managed care organizations, whether they are licensed health plans or sub-capitated provider groups, are under serious financial pressures. There will be an increased scrutiny of operating costs and review of selective outsourcing. Whether the concern centers solely on the cost of hardware and software (where a data center solution will be explored), focuses on the addition of a new capability (such as demand management), or is more broadly viewed to evaluate an entire processing area (such as claims or mailroom services), there are an increasing number of cost-effective solutions available in today's market.

Selecting Niche Products to Enhance Managed Care Processes

Core capitation systems are not able to meet the increasing administrative requirements for today's managed care organizations. Supplemental software and technology to enhance operations are required to automate burdensome manual processes such as credentialing, and automate workflows further. New business needs are resulting in a variety of niche applications that supplement the capabilities of existing core capitation systems.

Preparing for the Follow Up to Y2K

All the work for the new millennium is not done after systems are Y2K compliant. HIPAA regulations are being finalized which will require providers, payors and employers to address a number of e-health issues including confidentiality, security and electronic transactions. Given the far reaching breadth of these requirements, organizations will need to begin to address these concerns in 2000 to be ready for full compliance by the end of 2002.

Pam Waymack is managing director of Phoenix Services Managed Care Consulting Ltd., Evanston, IL.

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Leadership Profile: *Sheldon I. Dorenfest*


Sheldon I. Dorenfest

"Well, I put my pants on one leg at a time, I sometimes get angry at cab drivers in New York, and I sometimes spell 'valuable' with an 'e.'" This is what Sheldon I. Dorenfest thinks people should know about him. But there's more…there's much more.

Sheldon I. Dorenfest is the president of Sheldon I. Dorenfest & Associates, Ltd., which he started in 1976. When he entered the industry in 1969, most IT was in the acute care setting and in business applications. Clinical process was all manual and it took many steps to get each piece of information to all the right people and charts.

So, he fueled a vision for computerizing the patient record. By the late 70s the industry's implementation of clinical IT was not going very well. And he feels that the industry is in even worse shape today because poor implementation of IT over the last two decades has convoluted, tangled, and made even more redundant the industry's order execution and fulfillment processes.

"IT is a support tool, not an 'end-all.'"

"The latest technology is only valuable," he says, "if it does something useful for you. Changing a large healthcare organization's technology every few years has been a major problem for the industry, and what we really need to do is go back to the basics and remember that IT is a support tool, not an 'end-all.'" He has been frustrated in the last few years by the industry not doing what he feels is the right thing with their IT investment decisions.

"But now I am excited," says Dorenfest, "because I see a window opening to bring logic back to the industry and the decision-making process about how to use IT. I personally flourish when I can influence my clients to understand what to do next that will produce business benefit for them."

His renewed enthusiasm will keep Sheldon in the industry for awhile although he's not sure for how long. "I frankly would have thought that by now, I would have moved on to other productive endeavors and would not have been focusing as much of my energy on my company and on the industry as I am right now, and in the near term, it looks like I will be increasing my focus and energy on the industry."

"Solitude seems like a necessary ingredient to recharge my battery..."

In the long term, he has many things he'd like to do including writing books and traveling. "I know, at the same time," says Dorenfest, "that the world is changing, and I am changing, so positioning one changing object against another changing object is a tough act of physics. So, I guess I am saying your guess is as good as mine, and we'll just see what happens."

He enjoys meditating, exercising vigorously, long walks, reading books, and solitude for reflection. "Solitude seems like a necessary ingredient to recharge my battery," says Dorenfest, "for the reflection and activity required to do my job." He also spends a lot of time on metaphysical subjects, alternative health care, spiritual beliefs, and ancient cultures.

He has a strong desire to help people grow. "Too often," he says, "people limit themselves, and that frustrates me, and that probably is a major motivator for my wanting to help the industry the way I have over the years."

He enjoys spending time with friends. "Although this past year," he says, "has been a year that has been more focused on my business and personal growth, so some of my friends may be wondering where I have been this past year, but I am coming back. You can let them know that."

Sheldon shared a story that sums up his view of the state of the industry and his solution. "A friend of mine was visiting Chicago and had driven in one night quite late.

"He was up with all of us, and he went to bed about two in the morning, and he got a phone call from a friend in Denver, and he needed to see this friend right away.

"He got up with only an hour's sleep, and started driving. After driving for several hours, he saw a road sign that said '50 miles to Cleveland.'

"My friend was not very clear about geography, so he kept driving. A few hours later, he saw a road sign that said, '20 miles to Pittsburgh.' Still not thinking enough, he kept driving until he saw a sign that said, 'Philadelphia – 20 miles.'

"At that stage, he began to think that he should be in Denver already, and he pulled over to the side of the road and looked at his road map. He was able to make a correction by turning around and starting to drive in the right direction."

"The healthcare industry is heading the wrong way," warns Sheldon, "and if we do not turn around quick, we will create permanent damage to this industry, and we will have to rebuild from scratch or rebuild things side by side, both of which are too expensive and too damaging to the population."

"The industry is at a crossroads and if it wants to get to Denver, it is going to need to turn around right now. Where it will be tomorrow depends on what road map we use today." ✯