



HOW HEALTHCARE PROVIDERS CAN REDUCE DATA MANAGEMENT COSTS

STORAGE ECONOMICS FOR HEALTHCARE PROVIDERS

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and Life Sciences, Americas**

December 2011



How Healthcare Providers Can Reduce Data Management Costs

See how to deliver measurable impact on patient care while demonstrating investment value. This webcast discusses the unique IT challenges healthcare providers face and offers a solution to help. Where other industries rely on ROI formulas for IT value, hospitals are more likely to focus on clinical benefits, including higher patient satisfaction and improved patient safety at a lower cost of delivery. Learn about methodologies and systems that help healthcare providers make the difficult choices in IT investments.

By attending this webcast you will learn how to:

- Realize clinical, patient and investment value
- Consolidate disparate silos of data for a single, accessible enterprise archiving strategy
- Establish an enterprise-wide central repository of intelligent data and seamlessly deliver a consolidated view of all relevant clinical data into a single longitudinal patient record
- Gain access to the data needed to make patient care decisions, independent of the source applications
- Choose infrastructure to implement healthcare-transforming technologies

- Our January WebTechs will be posted mid-December
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- **Please check www.hds.com/webtech for**
 - A link to the recordings, presentations and Q&As (available next week)
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- **Hitachi Commitment to Healthcare**

- **Healthcare Challenges and Storage Economics**

- **Healthcare Costs and General Infrastructure Costs**

- **Hitachi Clinical Repository Overview**

- **Hitachi Clinical Repository: Economic Proofs**

HITACHI COMMITMENT TO HEALTHCARE

HITACHI
Inspire the Next

Maintaining a clean,
constant environment

Hitachi Air Conditioning



Training and presenting to
staff, digital signage
(ultrathin displays,
projectors and Hitachi
StarBoard)

Hitachi Software Engineering



Advanced diagnostics:
Hitachi MR, CT and
ultrasound,
specialist solutions for
elastography and
sonography

Hitachi Medical Systems

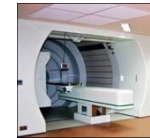
Viewing activity
within the brain:
optical topography

Hitachi Optical Topography



Advanced cancer
treatment: Hitachi proton
beam therapy

Hitachi America



Testing and
analyzing in
the laboratory and
surgery

Hitachi Plant Technologies, Ltd.



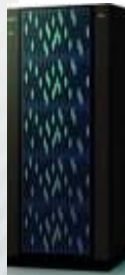
Track, trace and monitor
with integrated RFID
technology

Hitachi RFID



Essential services from
the data center:
Reliable, efficient
storage designed for
clinical and workflow
data applications to
provide information at
the point of care

Hitachi Data Systems



Control and monitor
access to buildings,
equipment and
confidential patient
records: Hitachi VeinID
biometrics

Hitachi High Technologies America



Advice on management
and change in the
organization

Hitachi Consulting



Building new facilities:
Construction
machinery and tools

Hitachi Construction Machinery

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Significant data growth

- Explosive data growth fueled by digital imaging (PACS) and electronic health record (EHR) adoption
- Record levels of clinically relevant data
- Increased government support and funding for electronic health records (Australia, Canada, Holland, UK, USA...)



**The amount of healthcare data
being generated quadruples every
two year**

* National Institutes of Health, 2009

Inefficient data access and administration

- Inefficiencies associated with departmental systems include islands of storage and multiple access points
- No longitudinal patient view of information
- Multiple data interfaces and complex and expensive, heterogeneous environments
- Legacy system lock-in and low utilization
- Poor productivity and data in non-consumable formats or siloed
- Severe data access bottlenecks increase costs and reduce the timely delivery of healthcare.



Compliance and regulatory management

- Evolving regulatory requirements regarding data privacy, retention, protection and security, and the increasing risk of severe financial consequences (e.g., HIPAA, PSQIA, EUDPD, EQDM, MHRA)
- Stringent RPO and RTO requirements to assure patient safety.
- Data preservation and retention measured over decades
- Hospital IT departments are likely to undergo multiple technology refreshes, so economic modeling has to take a decade-plus view of costs



Strict or reduced budgets

- The healthcare system is struggling to deliver cost-effective care, but suffers substantially from medical errors and waste
- IT is widely accepted as a means of improving patient care and reducing costs, but budget limitations constrain IT adoption



Risk due to outage

- Inefficient downtime and recovery processes threaten service disruption and loss of operational efficiency
- Data loss and corruption due to large-scale disaster could be life-threatening for patients
- Costs accrue as new and existing patient and research data comes online
- Hospital information systems, electronic health records, computerized physician order entry systems and research collection facilities offer both opportunity and risk



What is storage economics?

- The application of economic and financial principles to storage
 - Identify, measure and reduce storage costs
 - Define economically superior storage architectures
 - Align these architectures to future roadmaps and technological standards
 - Reduce costs through operational excellence
- The measurement and comparison of TCO among existing and new technologies
- Separation of price and cost in decision making
 - Differentiation between the cost of acquisition and the cost of ownership



An cost reduction strategy can include

- Reduce total cost of ownership
- Improve return on investment
- Improve return on assets

Think outside the box...

- Worldwide economy is forcing IT cost justification
- Price per gigabyte is only one metric in making storage decisions
- Cost-reduction opportunities exist in the storage infrastructure
- New or hidden costs are emerging all the time

...and benefit from reduced costs of storage ownership

- Helps companies identify and prioritize costs most relevant to their business and budget
- Justifies investments via business case and payback
- Enables the development of an economically superior architecture
- Enables strategic planning and prioritized, phased implementation of cost-reducing technology
- Increases business agility to manage growth and changing needs
- Boosts operational resilience and efficiency
- Increases economies of scale

Price does not equal cost

- Total cost of acquisition is only 20% of TCO
- Planners need a holistic view of costs as disk price approaches zero

There are some 34 different types of cost for storage TCO

- Some costs are paid by departments, some by other groups
- Some costs are hidden or soft and therefore harder to capture

Econometrics are needed to plan for and deliver efficiencies

- You cannot improve what you cannot measure

There are economically superior architectures

- Key ingredients include: Virtualization, dynamic provisioning, dynamic tiered storage, 3D scaling, common admin, SSD, de-dupe, active archive, VTL

The Hitachi Data Systems Model for Addressing the Challenges of Data Growth

Economically superior architectures

- Industry-leading architectures evolving over a decade
- Thought and market leadership

Comprehensive framework and offering

- Educate: Economically assess the total cost of ownership
- Develop: Create a roadmap for maximizing existing storage assets
- Extend: Portfolio includes methodologies, services, tools and other extensive collateral



The Hitachi Data Systems Model for Addressing the Challenges of Data Growth

Proven approach

- More than 900 customer engagements
- More than 12 years in the making

Necessary flexibility for a changing environment

- Address 34 distinct cost areas to help customers identify costs most relevant and impactful to their business
- Evolve to include server-side and other IT economics



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System adoption and integration

- Costs associated with new system deployment, data remastering and application integration
- Migration of data when implementing systems
- PACS, HER and ICT

Data discovery, access and performance

- Information retrieval needs to be instantaneous and complete for patient care, which is always time-sensitive
- Cost of accessing historical records, especially in paper formats
- Remote access to data that shows longitudinal patient records

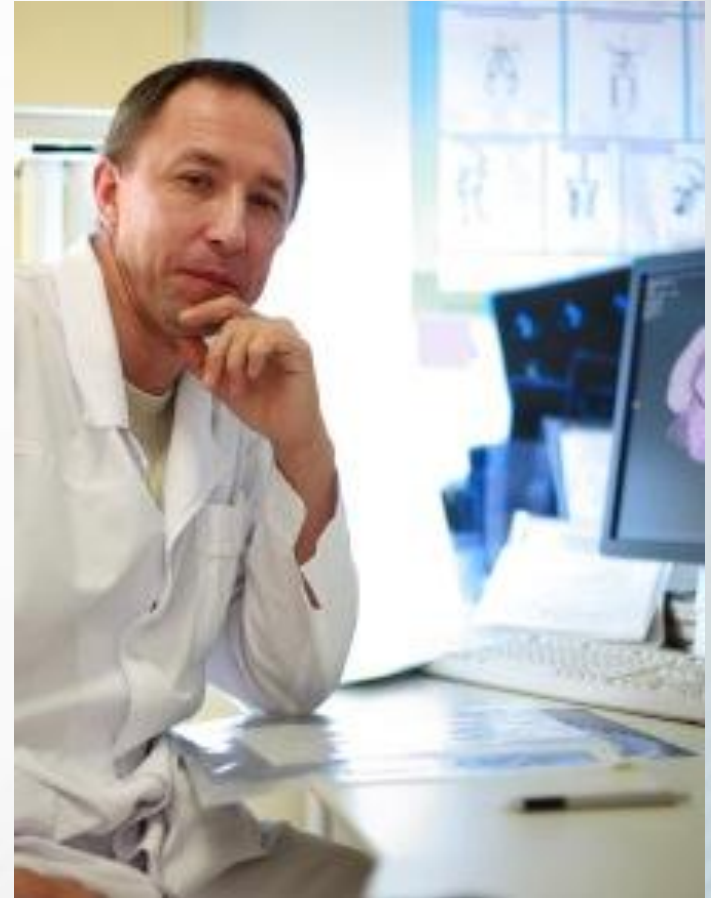


Government funding and incentives

- IT adoption is being fueled in part by government incentives that pay hospitals to implement and adopt IT strategies
- Providers must implement new systems in order to attain the incentives – additional costs are incurred in order to achieve financial incentives (with penalties in some cases for failing to comply)

Regulatory compliance

- Record and data preservation, recovery and retention
- Cost of regulatory compliance
- Cost of litigation



Administration

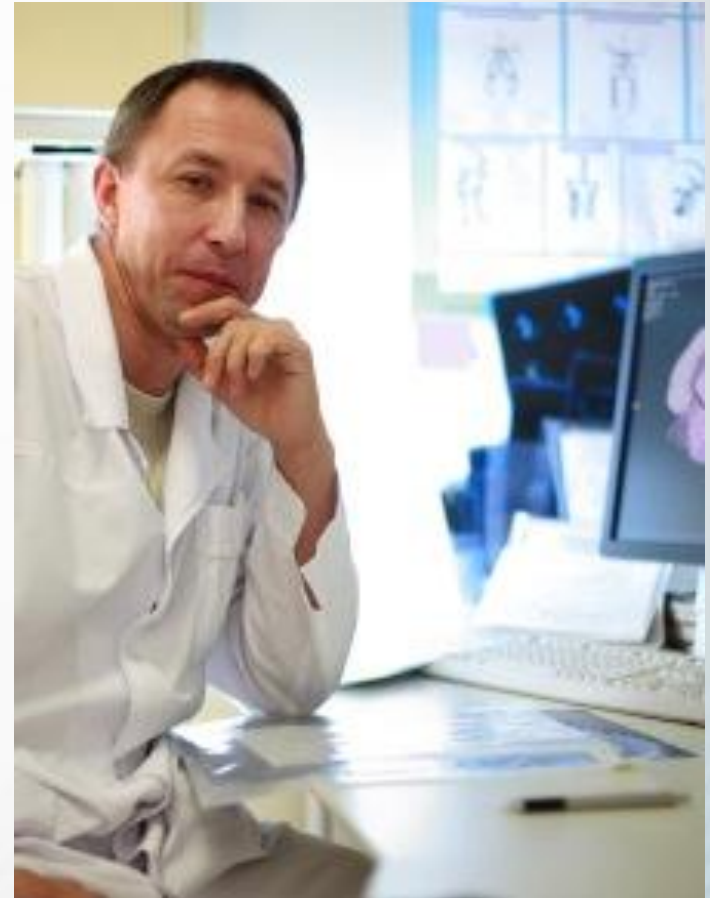
- Costs associated with the administration and maintenance of disparate systems (TB per person)

Productivity

- Cost per case
- Inefficiencies from lack of information (e.g., repeated exams)

Records management

- Cost of administrative personnel who could be freed up as a result of automating record discovery
- Physical space requirements of paper-based management and records



Patient safety

- Cost associated with patient safety and reduced medical errors resulting in productivity declines and/or litigation

Patient data security and confidentiality

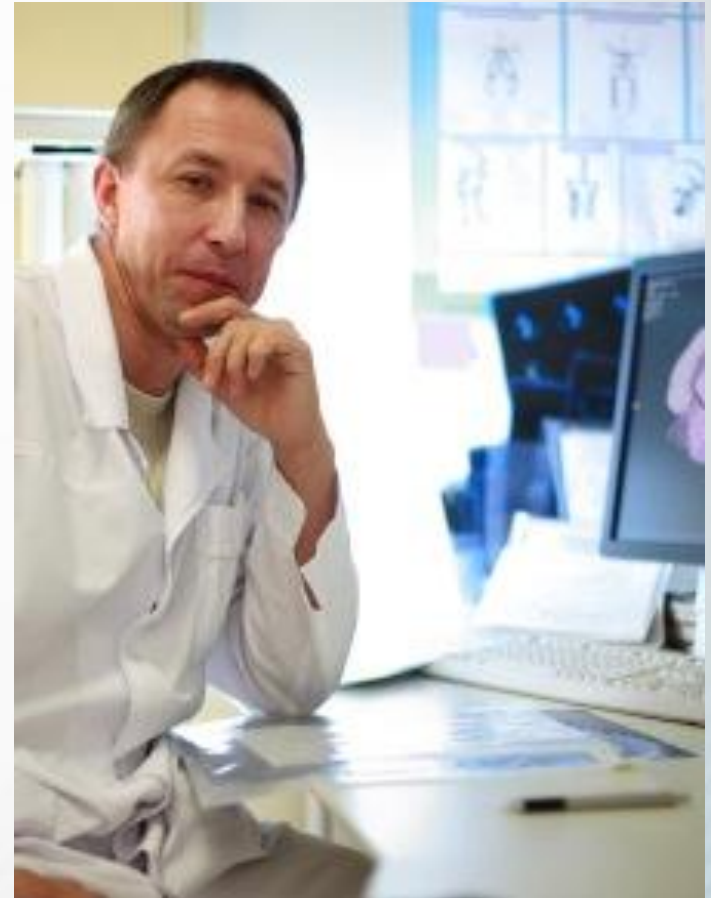
- Privacy and security compliance

Data loss

- Data loss can result in radiation over-exposure or a lack of information required for patient-care decisions, with lawsuits as a consequence.

Operations

- Costs associated with the delivery of health services



Hardware maintenance

- Includes recurring maintenance or warranty of costs for all storage hardware that starts after the base warranty period
- Providers may feel they are paying for nothing – and it typically equates to 12-18% of the deal



Storage management labor

- Includes management labor costs associated with the various tasks of storage management
 - Provisioning, tuning, load balancing, troubleshooting, upgrades
 - Departmental systems are often managed by clinical staff who have made the jump to IT operations.



Backup and DR labor

- Additional labor related to backups, restores, disaster recovery planning and testing
- Disaster recovery is a huge cost that is recognized for its value, but is treated like insurance – providers don't want to pay for it

Data center floor space

- Cost per square meter of data center floor space.
- Includes uninterruptible power supply and raised floor costs
- Space is limited for new applications; often have to outsource data center at some point due to space limitations



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At a glance

- Centralized enterprise-wide management of any type of clinical data generated by a healthcare institution
- Unique approach to healthcare data storage via a common virtualized platform for all data and content types
- Consolidates different storage systems into a single searchable view that is independent of source applications
- Transforms services, lowers the costs of healthcare delivery and improves patient outcomes



Enables providers to

- Consolidate disparate silos of data for a single, accessible enterprise archiving strategy
- Establish an enterprise-wide repository of intelligent data and seamlessly deliver a consolidated view of all relevant clinical data into a single longitudinal patient record
- Gain access to the data needed to make patient-care decisions independent of source applications
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Results in the following benefits:

- Enterprise-wide central repository for all clinical and business data
- Central image and data storage with high performance and availability
- Standards-based architecture supporting all image and data types
- Highly scalable, long-term repository
- Data-discovery migration tool
- Future-proof existing investments



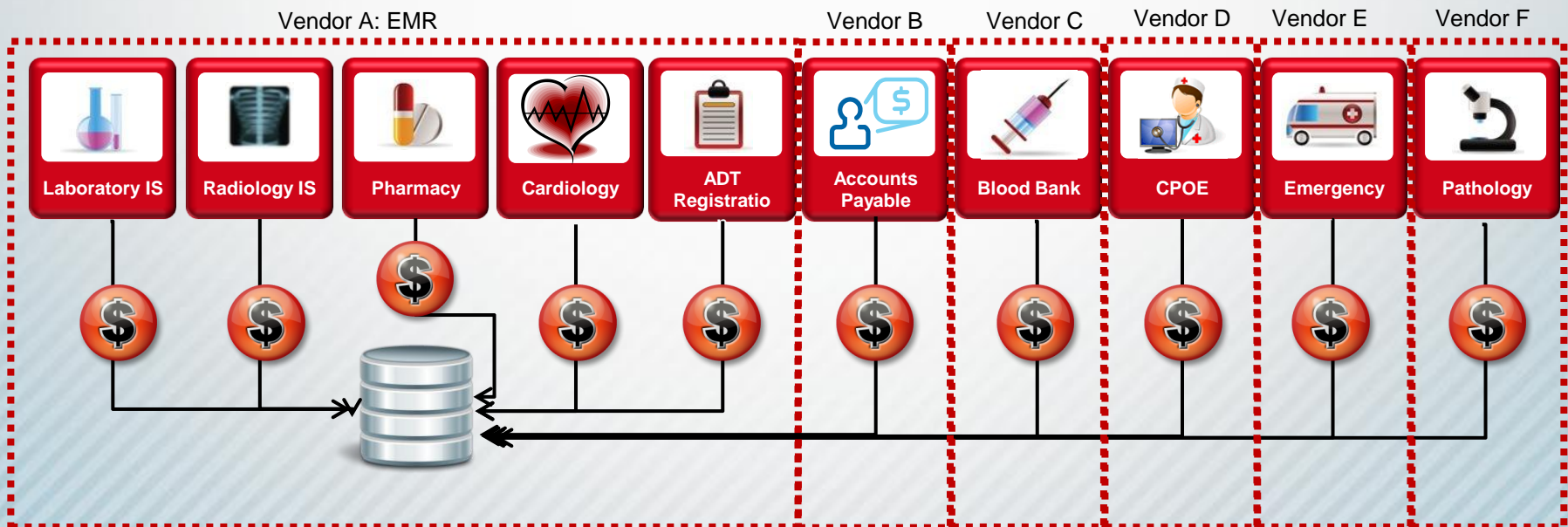
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HITACHI CLINICAL REPOSITORY (HCR): ECONOMIC PROOFS

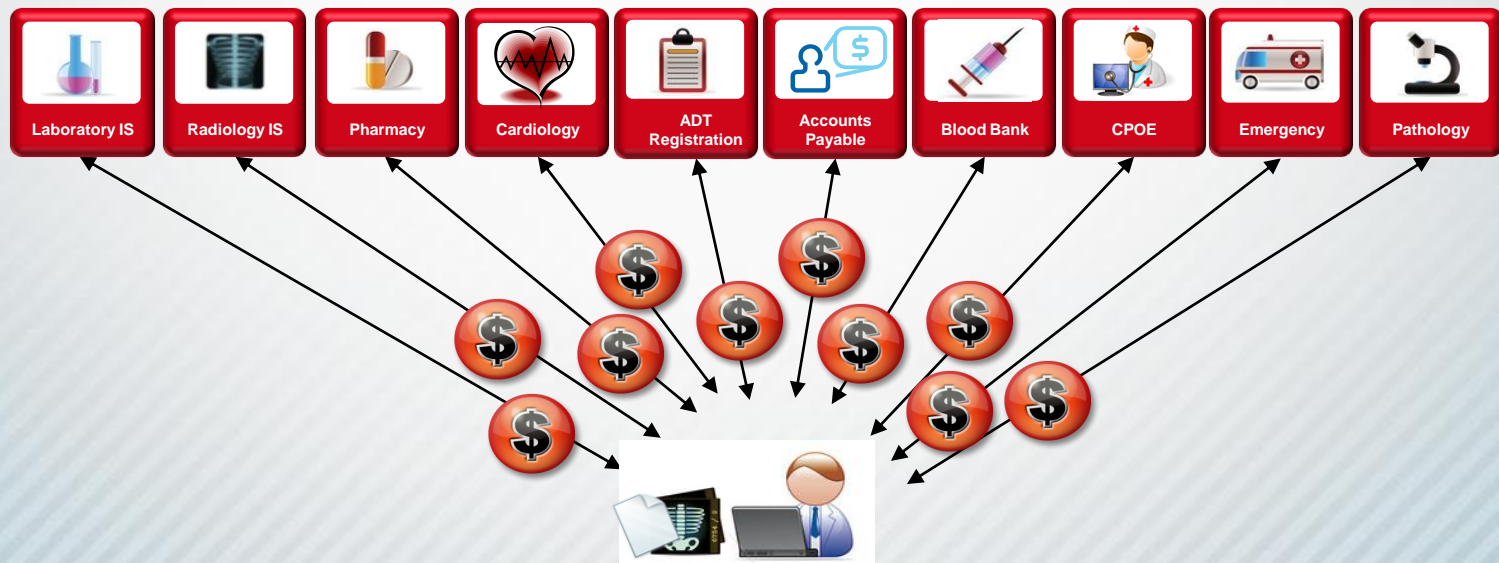
Consolidating silos requires costly and complex data integration

- HCR delivers relief from point-to-point integration efforts with its one-system-one-time ingestion of all data types, enabling a single searchable consolidated view that is independent of source applications
- IT adoption plans are realized faster and at less cost
- Provides optimal foundation for long-term data integration of current and future data integration projects



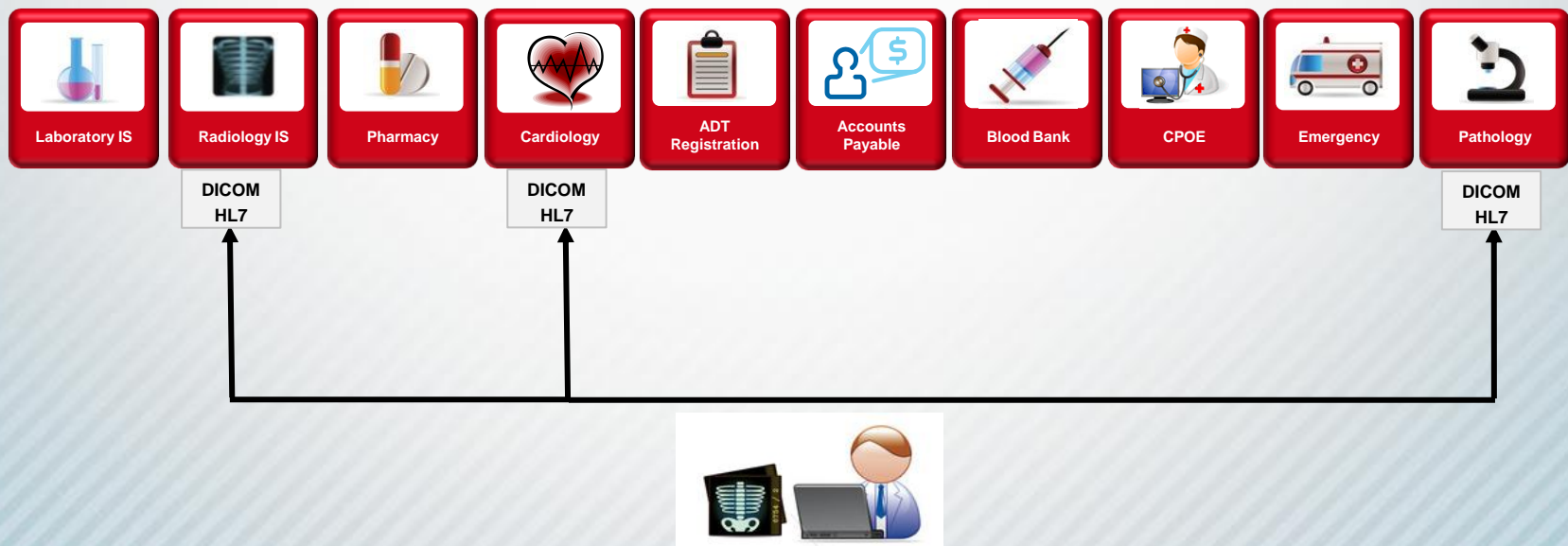
Addresses costly integration challenges

- Simplifies access to data via EHR or portal-like solutions by eliminating the need for point-to-point integration
- No need to individually integrate viewers to individual departmental or domain databases
- Integrate once, directly to HCR, and enable EHR or portal access to all of the data that resides in your clinical repository



Outdoes imaging archives that only solve half the problem

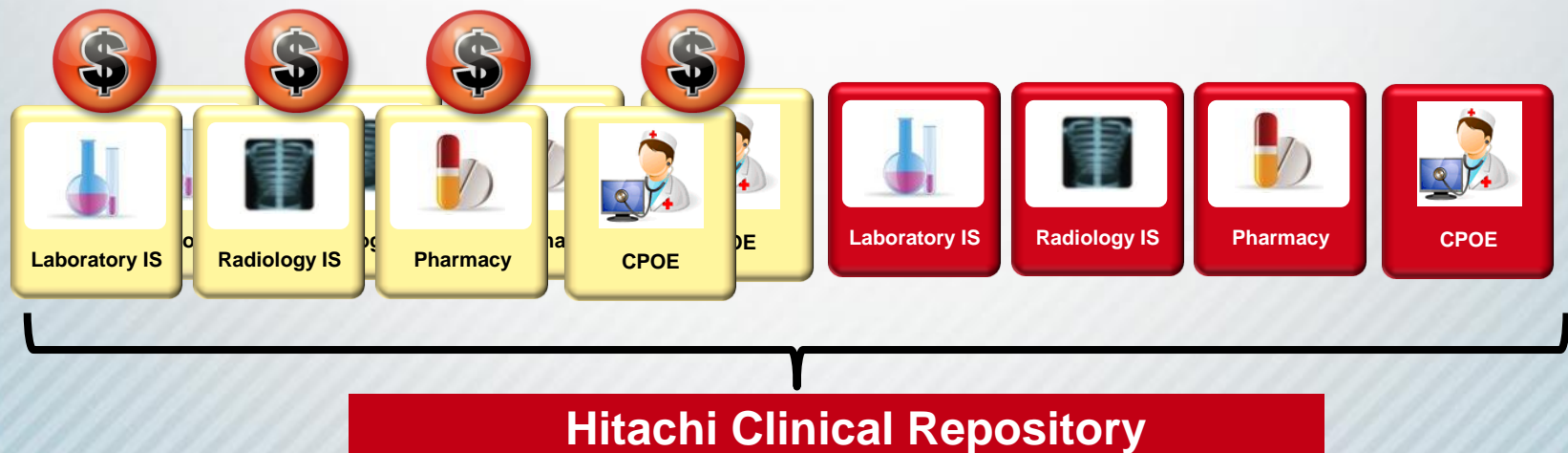
- Accepts multiple formats of data (both image and non-image)
- Creates intelligent data through metadata indexing
- Enables interoperability of this data between external applications
- Example: facilitating clinician access to patient data from portals or EHR applications



HITACHI CLINICAL REPOSITORY (HCR): ECONOMIC PROOFS

Retire the application – not the data

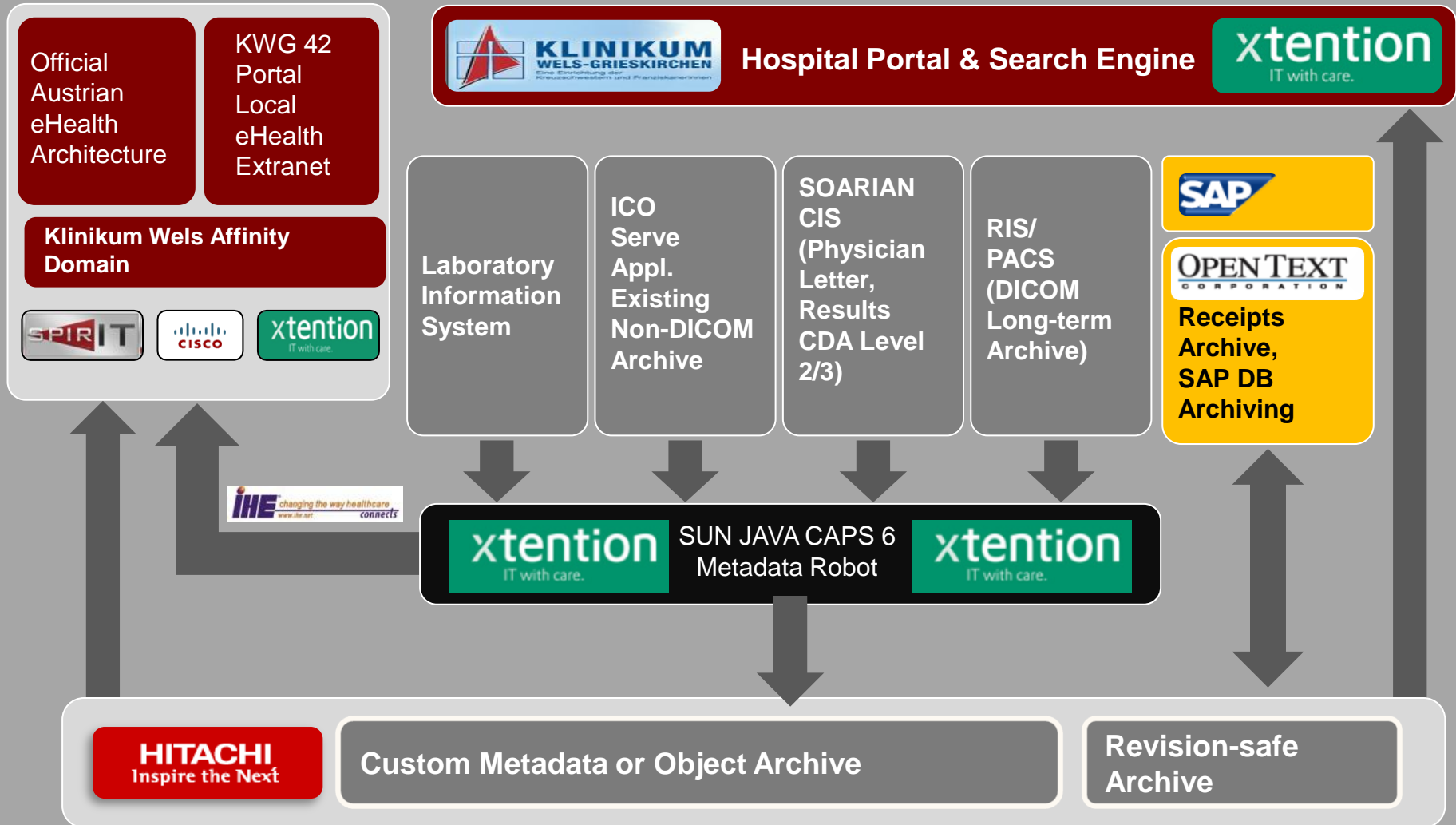
- HCR provides full and complete access to historical data while still enabling adoption of IT solutions
- Legacy data is consolidated into a single, searchable view and is available for secure access
- No need to maintain legacy systems, as HCR maintains the data index and the key information that was previously only accessible through the originating application



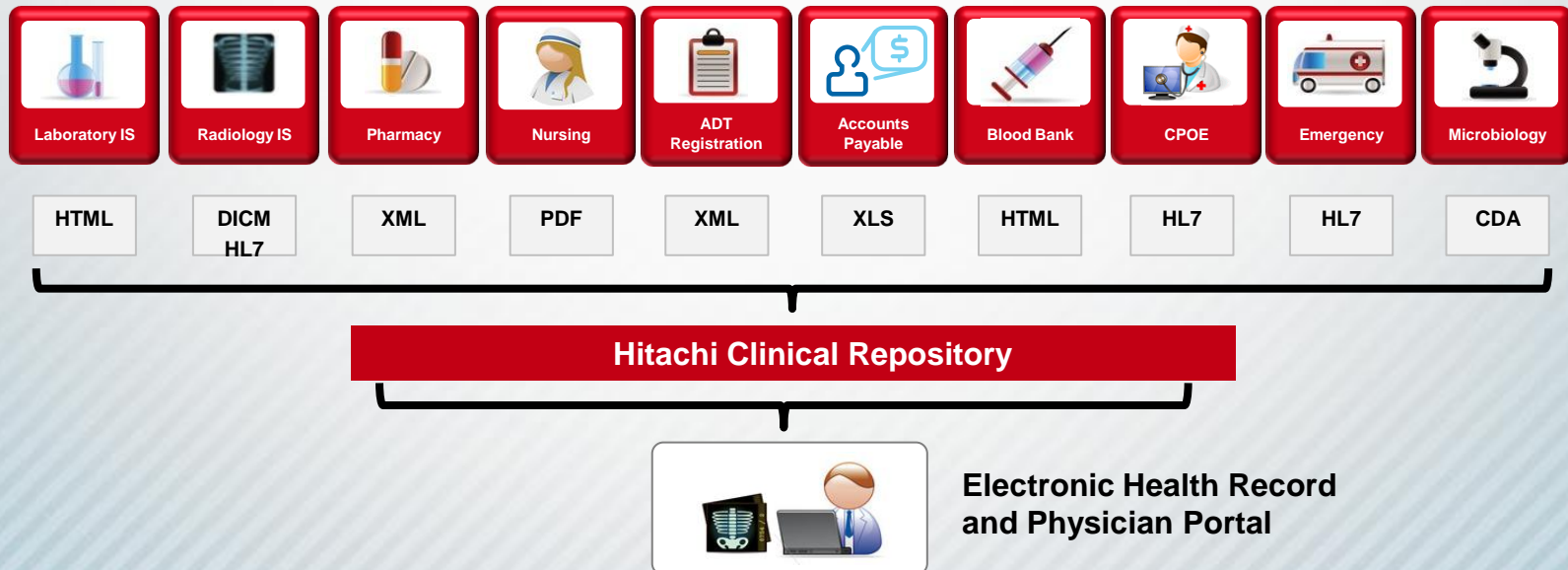
Customer Proof

- 1,349 beds, 4 locations
- 30,000 operations, 2,600 childbirths
- 80,000 inpatients
- 290,000 outpatients, 37 outpatient departments
- 3,500 employees (485 physicians, 1,138 nurses)
- Largest convent hospital in Europe
- 5th-largest hospital in Austria
- 3 data centers (new high-availability data center planned for 2011)
- 3,000 PCs, 400 servers
- CISCO UCS reference site since September 2009





- Lower capital and operating costs
 - Full clinical repository for all departments supporting all image and data types
- Highly scalable, vendor-neutral, long-term repository
- EHR implementation and adoption enabler



**THE HITACHI PHILOSOPHY
HAS ALWAYS BEEN TO
ENHANCE SOCIETY
THROUGH TECHNOLOGY**

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