Connected Healthcare

Stefano SOLIANI
Healthcare Solution Architect

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Cisco's Healthcare Mission

Cisco will catalyze the deployment and adoption of interoperable networks to improve citizen health and wellness, safety, access, productivity, affordability and the overall quality of healthcare.

Cisco achieves this mission by:

- **Developing Healthcare experts**
- **Helping customers achieve their goals**
- **Partnering for success**
- **Fostering a connected health community**
- **Aligning with key healthcare organizations**
- **Gaining recognition for technical excellence**

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The Cisco Vision: Connected Health

"The prime drivers in health care are very similar to what drives other businesses - first, improving service to customers, second, cost reduction. Medical costs are growing almost out of control. Those organizations that can find a way to contain medical costs and provide a higher level of service are going to have a huge advantage. Cisco intends to supply that advantage to its customers by consolidating health-care voice, video, and data on a single network."

John Chambers – CEO, Cisco Systems

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Healthcare: The Opportunity for Transformation

- **Improve patient outcomes**
- **Promote healthcare without boundaries: better access to care for all patients**
- **Create more efficient clinical workflow and process**
- **Provide better point-of-care information fully integrated with the patient record**
- **Develop underlying IT required to manage infectious and chronic disease**
- **Offer better access to healthcare content for health worker capacity building**

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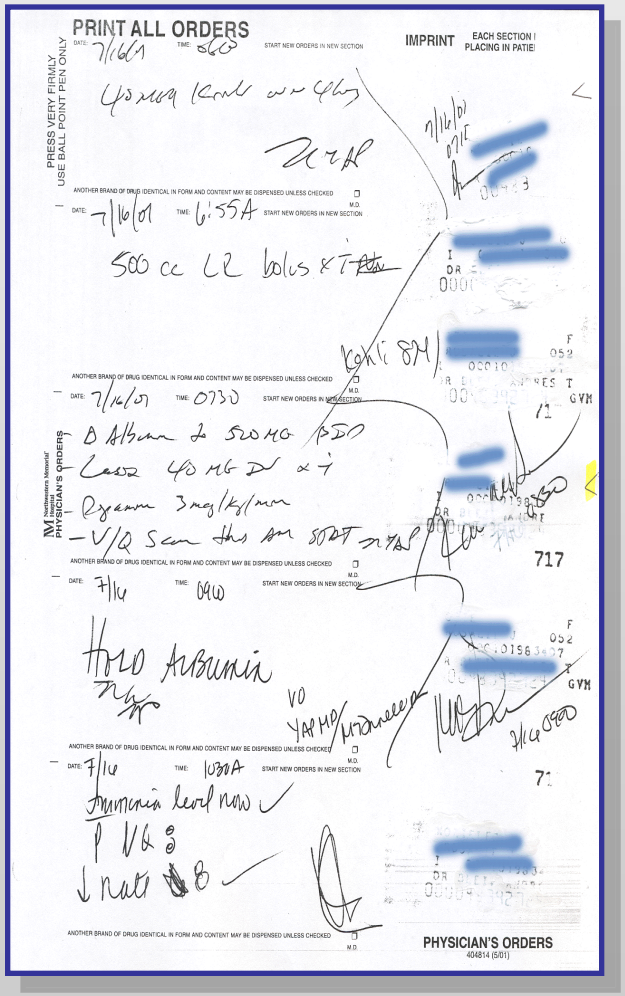
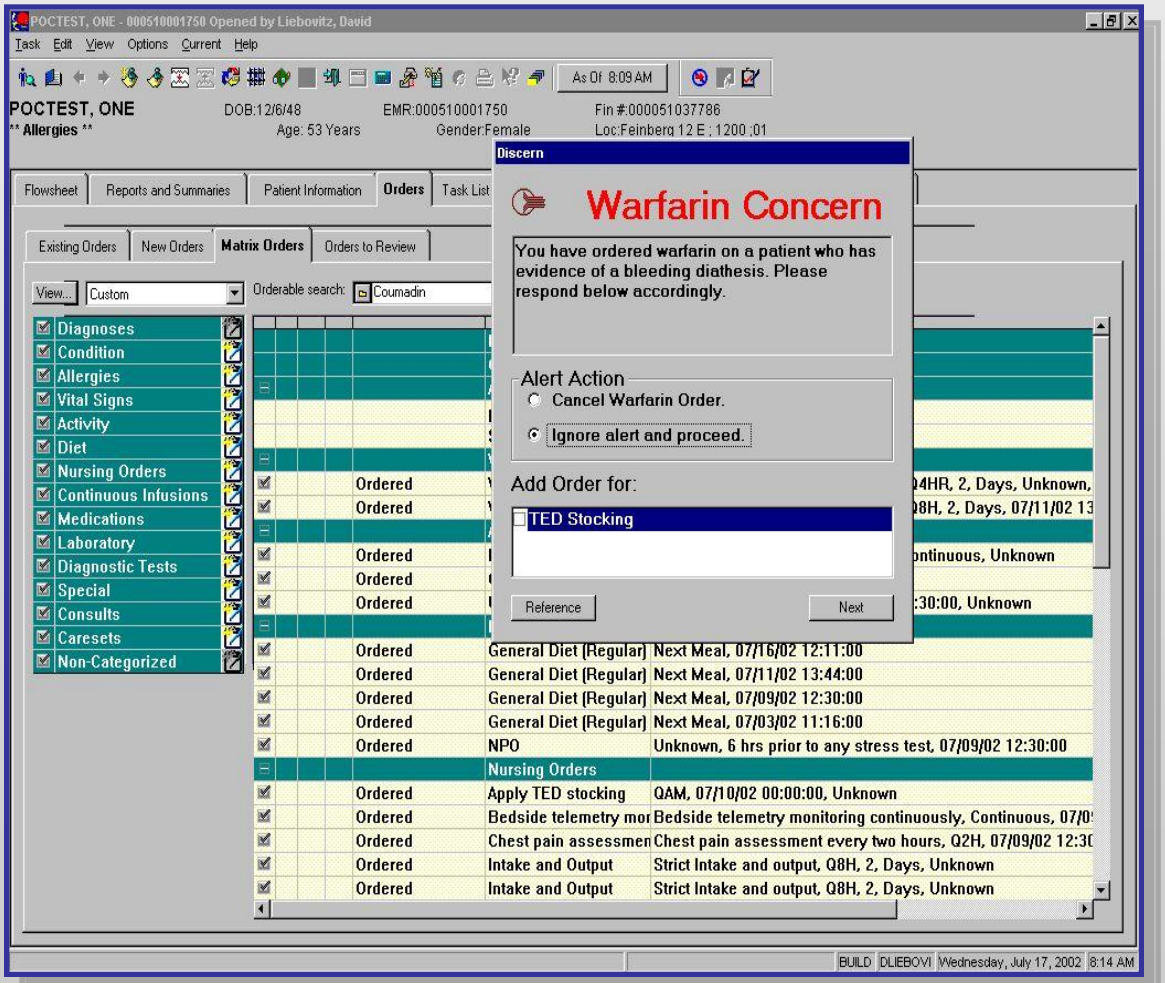
What We Are Trying to Fix

Handwritten Orders



Digital



With permission from Timothy Zoph, VP and CIO, Northwestern Memorial Hospital, 2004

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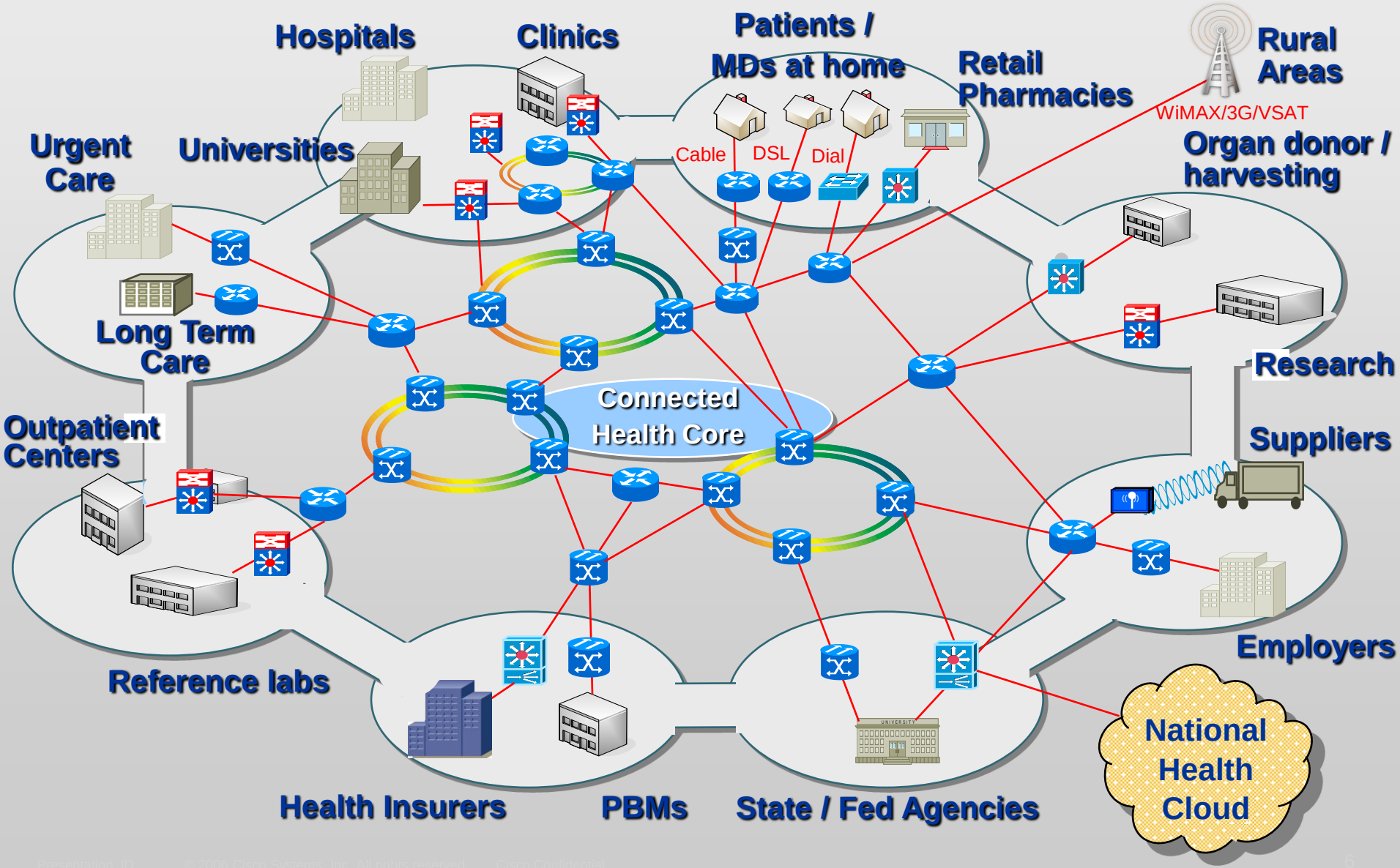
Vision for a Connected Healthcare Ecosystem



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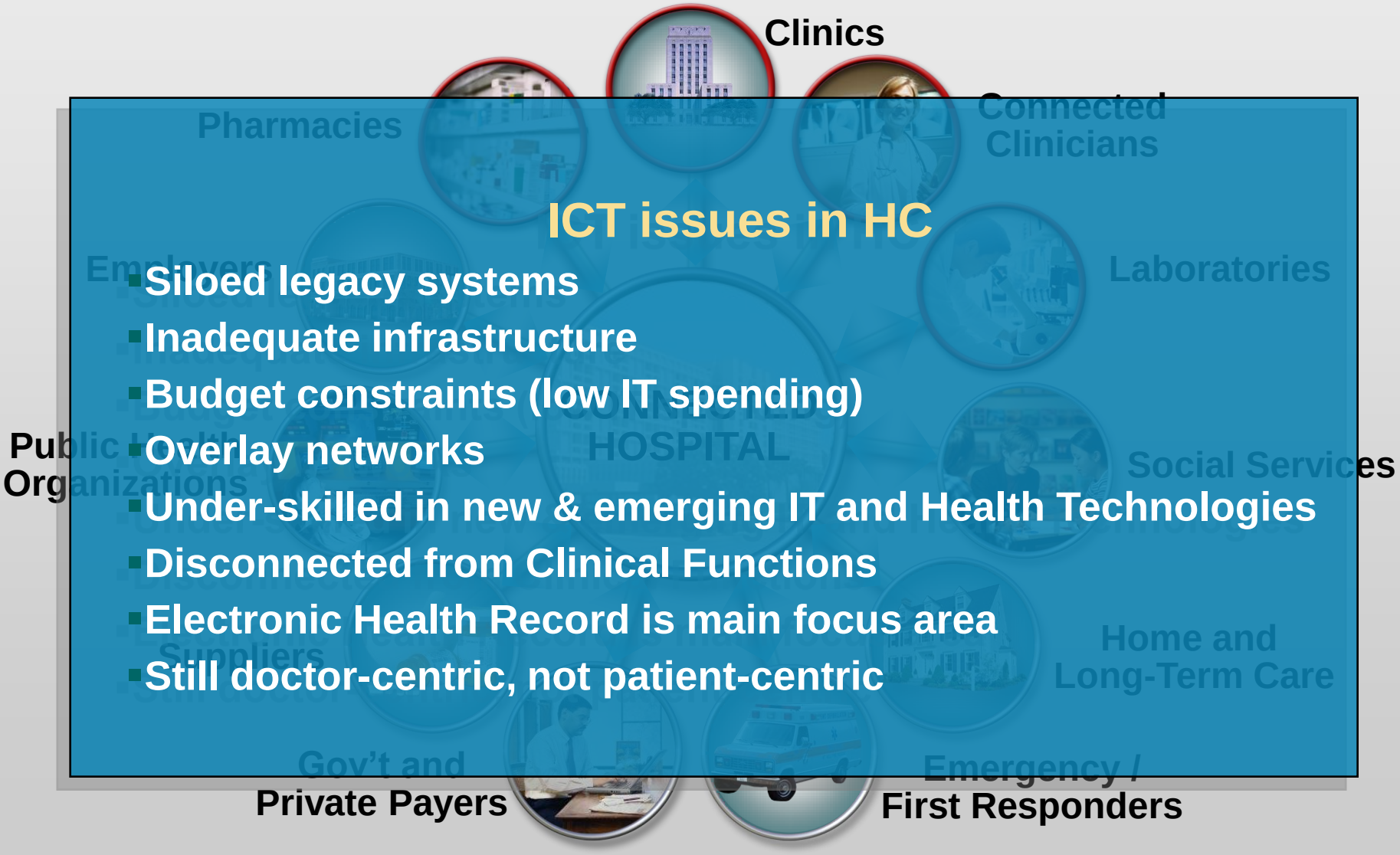
Connected Health



ICT issues in HC

- Siloed legacy systems
- Inadequate infrastructure
- Budget constraints (low IT spending)
- Overlay networks
- Under-skilled in new & emerging IT and Health Technologies
- Disconnected from Clinical Functions
- Electronic Health Record is main focus area
- Still doctor-centric, not patient-centric

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Healthcare Messaging

Theme: Connected Health: Reduce Costs. Improve Productivity. Deliver Better Care.

Key Drivers: Patient Safety • Quality of Care • Patient Satisfaction • Cost Effectiveness • Staff Satisfaction • Regulatory Compliance

Connected Imaging Solutions	Care-at-a-Distance Solutions	Clinical Workflow Solutions	Healthcare Tech. Foundations	Smart Healthcare Facility Solutions
Solutions that optimize imaging workflow and image access.	Solutions that support clinical care unbounded by distance, physical location or setting.	Solutions that streamline workflows and improve communication among clinicians.	Comprehensive healthcare IT infrastructure solutions that enable security, reliability, and regulatory compliance.	Services that enable hospitals to reduce capital and operating expenses of their facilities.
Solutions				
• Collaboration and Reporting • Medical Image Architecture • Horizon Medical Imaging Collaboration	• Collaboration and Reporting • TelePresence for Healthcare • Webex for Healthcare • HealthPresence	• Mobile Collaboration • Nurse Connect •Context-Aware Healthcare • Collaboration and Reporting • Mobile Care - Imatis	•Biomed NAC ▪Bedside Services ▪Medical Data Exchange ▪UCS for Healthcare (*)	• Connected Real Estate for Healthcare • Digital Signage for Healthcare *=Under Development
CIO, CMIO, Chief of Radiology	CMO, CMIO, CNO, Director of Telemedicine	CMO, CMIO, CNO	CIO, CSO, Director of Clinical/Biomedical Eng.	Hospital Administrators/Facilities

Framework: **Medical-Grade Network**
Framework to meet healthcare's unique needs for interoperability, security, availability, productivity, and flexibility.

Medical Grade Network

RELIABLE & AVAILABLE	Health Services, and thus networks, never stop. There is never a good time to take the network down.
SECURE	Security is not about protecting the edge of the network only. Health Security is holistic and operates at all levels, end-to-end in a Health System – including the network.
MOBILITY	Health Services must not be tethered to fixed locations. Health Networks must allow Health Services and information transfer to occur wherever the Health stakeholder is – Hospital, Home, National Roaming, Disaster, etc.
ANY SERVICE, ANYWHERE, AT RIGHT TIME	Health Information is diverse in nature – data transaction, telephony, rich media messaging, medical image transfer. Health networks need to support simultaneous transmission of all Health Information without service degradation or cross transactional impact.
PARTITIONED MANAGEMENT & AUDIT	Preserving control, trust and accountability across a federated network infrastructure.

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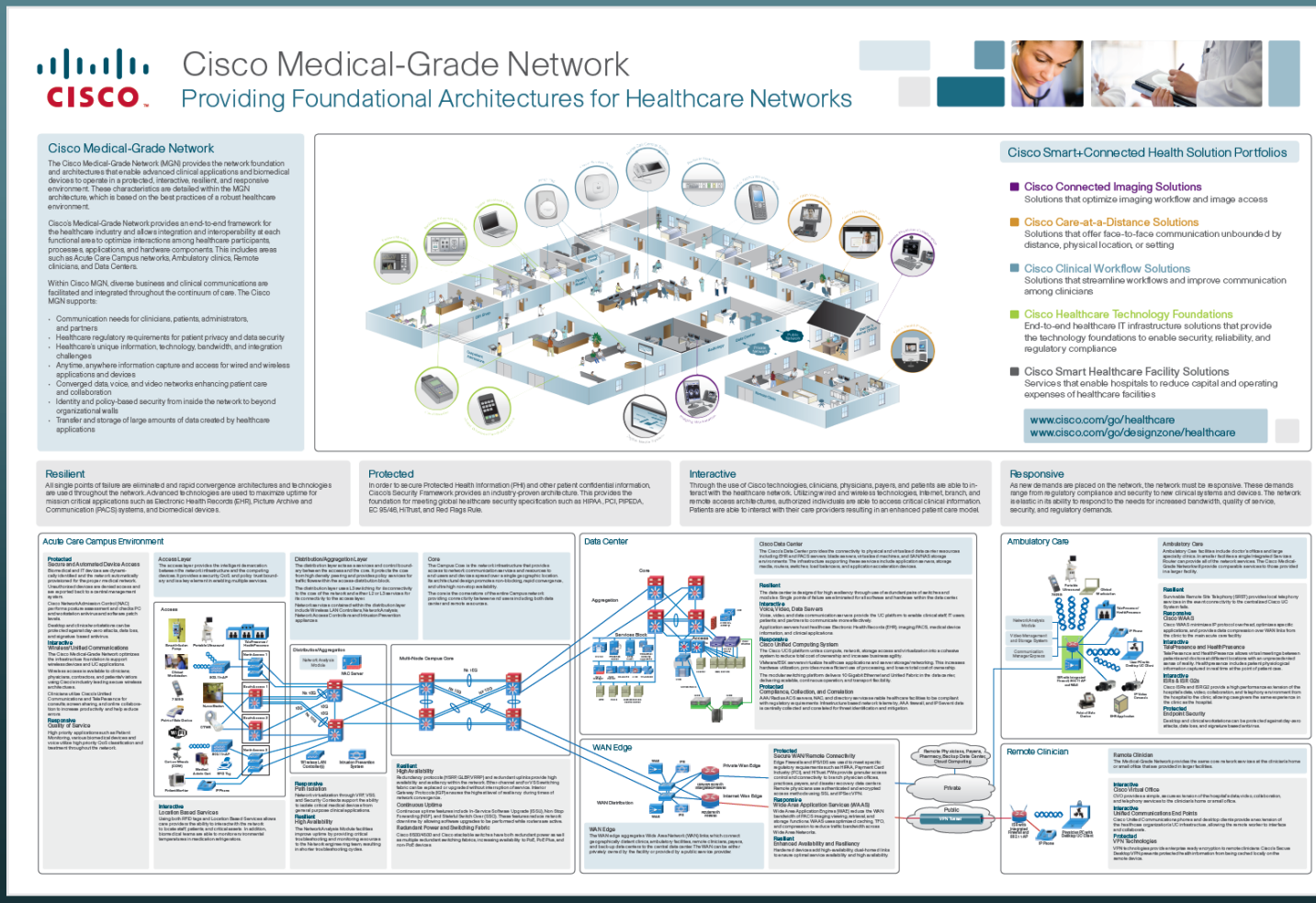
MGN—Architecture Overview Poster



http://www.cisco.com/web/strategy/healthcare/index.html

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Cisco's Connected Imaging Portfolio for Healthcare

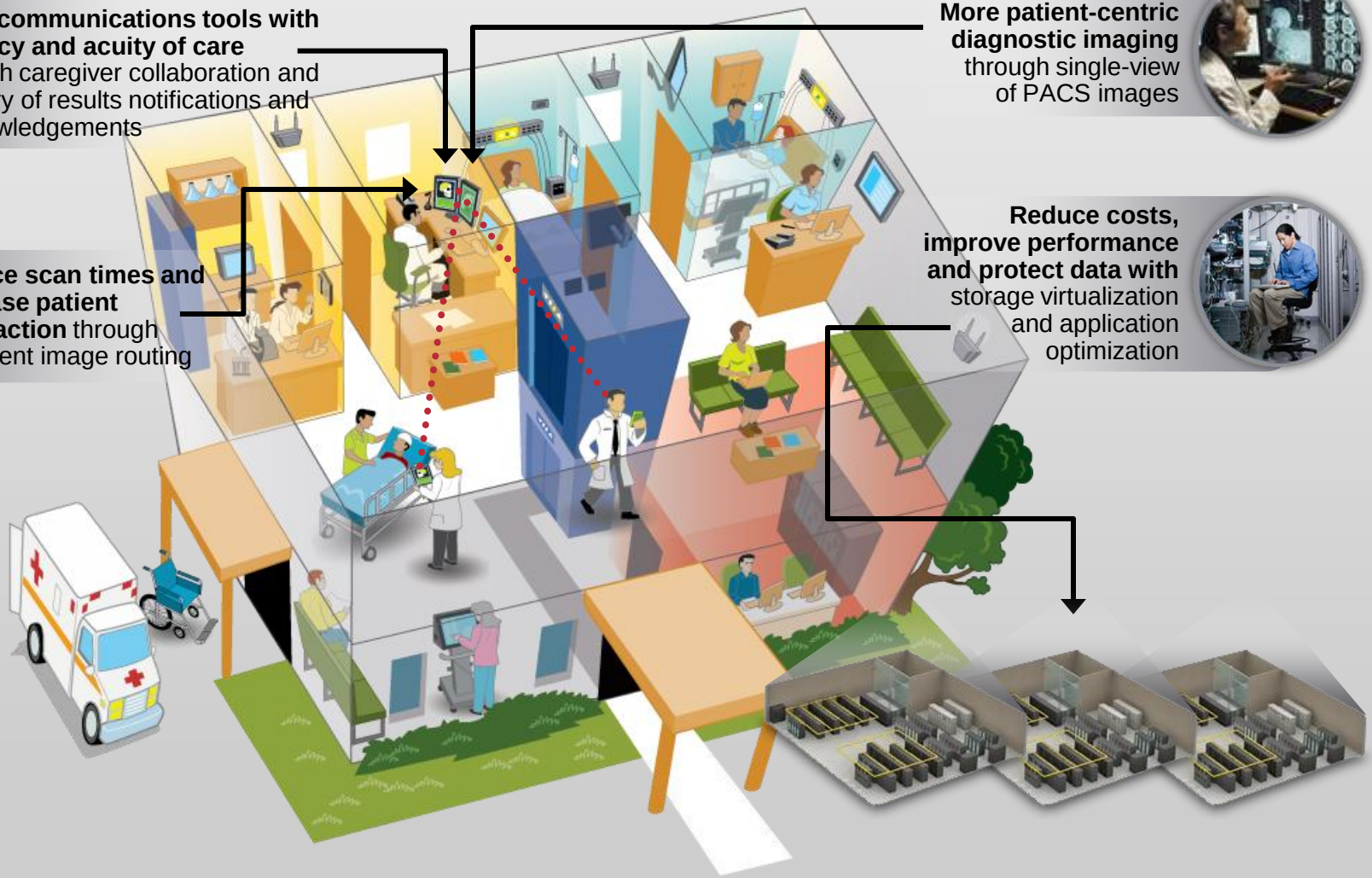
"Addressing the Medical Digital Imaging Revolution"

Align communications tools with urgency and acuity of care through caregiver collaboration and delivery of results notifications and acknowledgements

Reduce scan times and increase patient satisfaction through intelligent image routing

More patient-centric diagnostic imaging through single-view of PACS images

Reduce costs, improve performance and protect data with storage virtualization and application optimization



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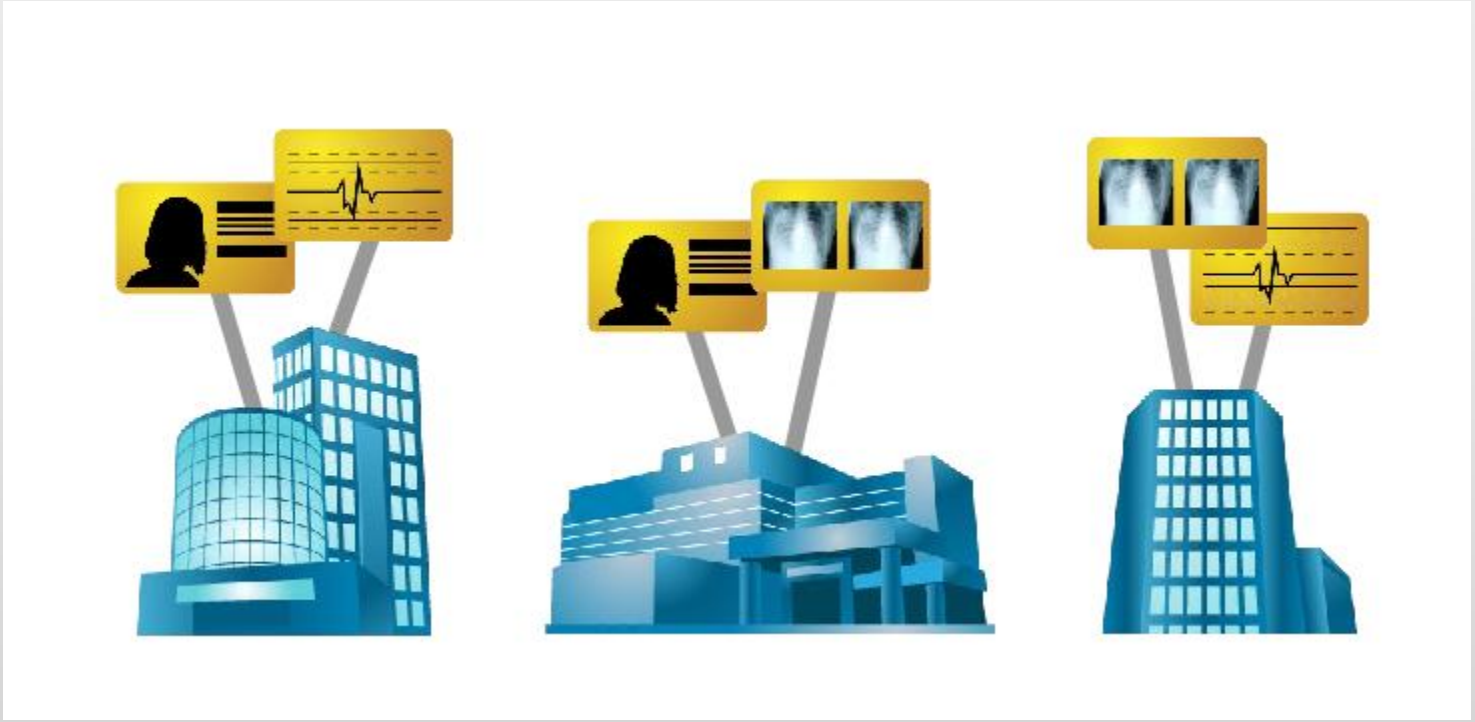
Challenges of Disparate Health Systems



- **Patients receive care from multiple organizations**
- **Providers cannot exchange and display data from a patient-centric view**
- **Exchanging patient data is increasingly challenging, poorly coordinated and jeopardizes patient care**
- **Security, Governance & Compliance of data exchange**

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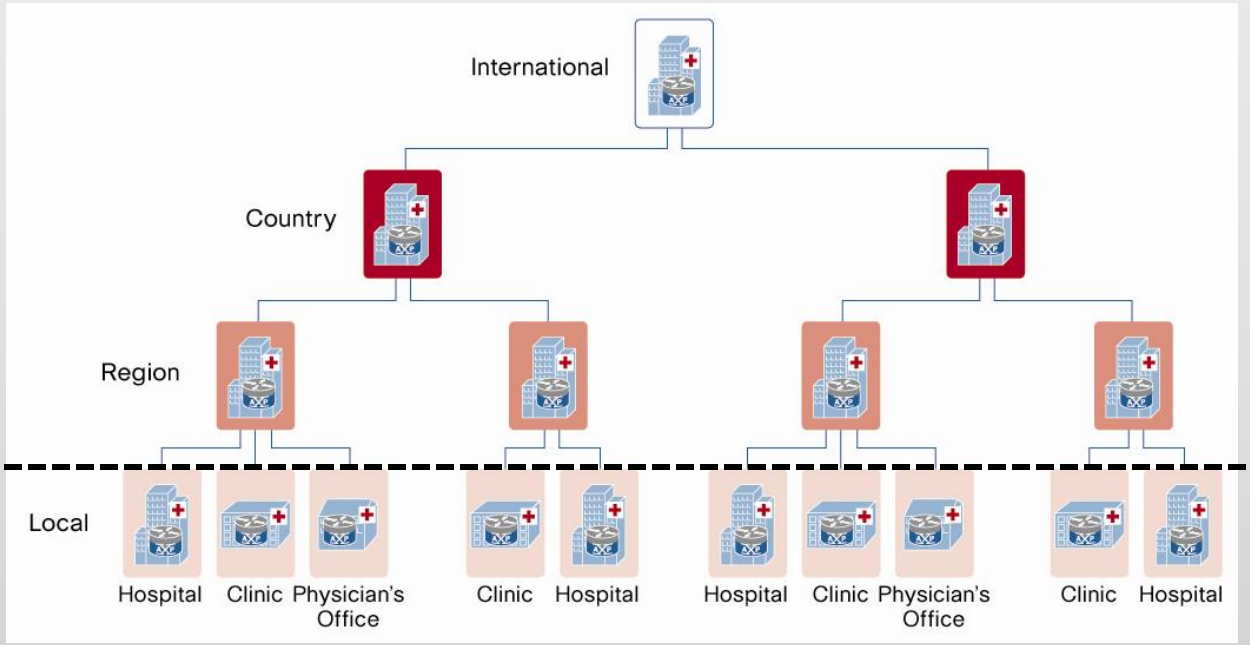
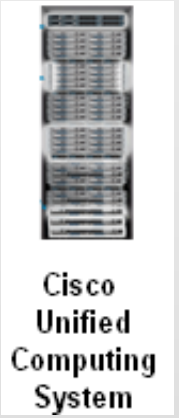
Cisco Medical Data Exchange Solution (MDES)

Federated Architecture lowers costs and improves scaling





Or other VM-ware environment

Cisco AXP Network Module

Cisco ISR Router

- **Interoperability is based on a federated concept**
- **Utilizes common standards based patient indexing (PIX)**
- **Data is also stored on a regional level for redundancy purposes (orange level)**
- **IHE, Cross Reference Manager enables communications between the regions (red) or countries (white)**

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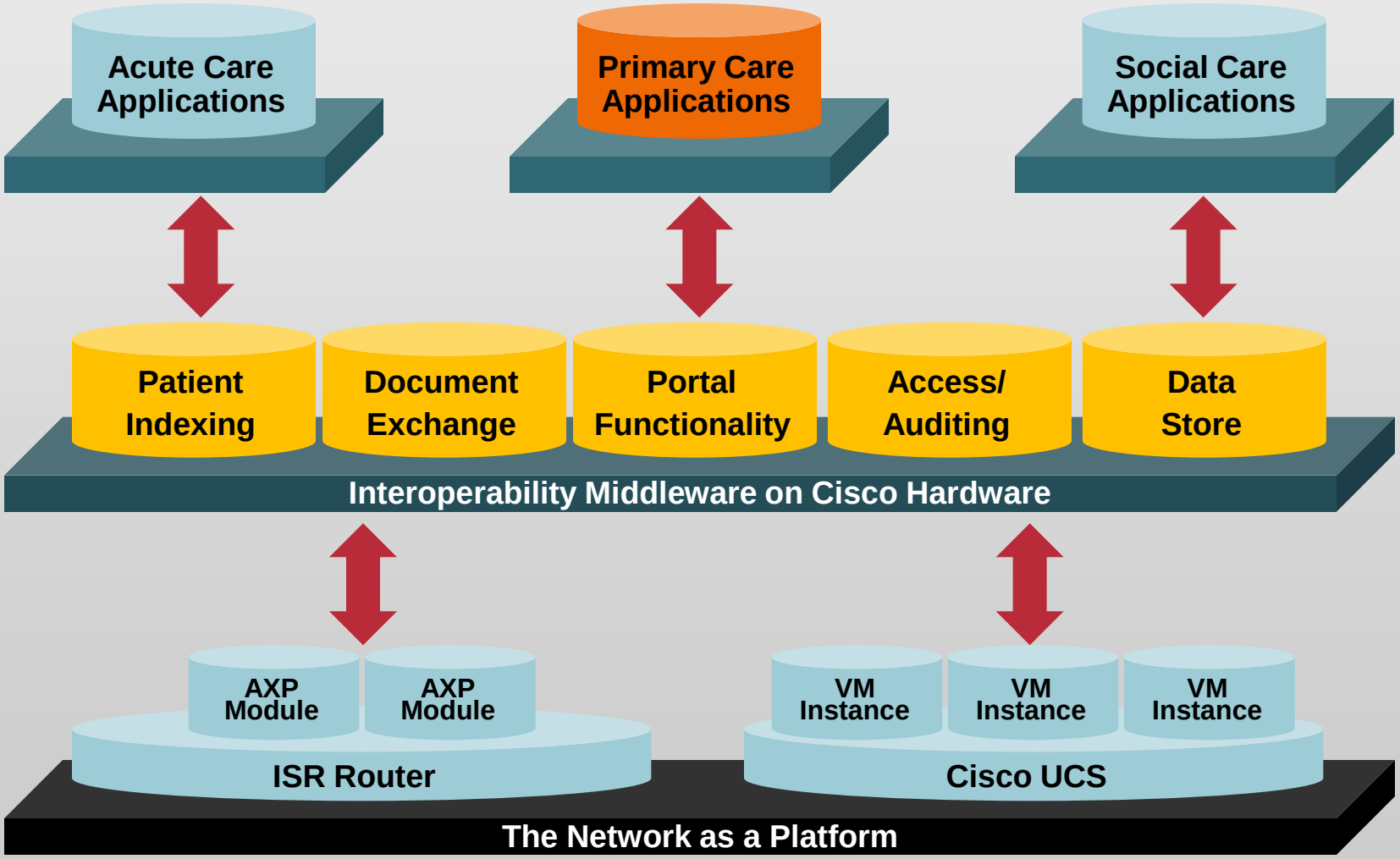
MDES

Solution Building Blocks



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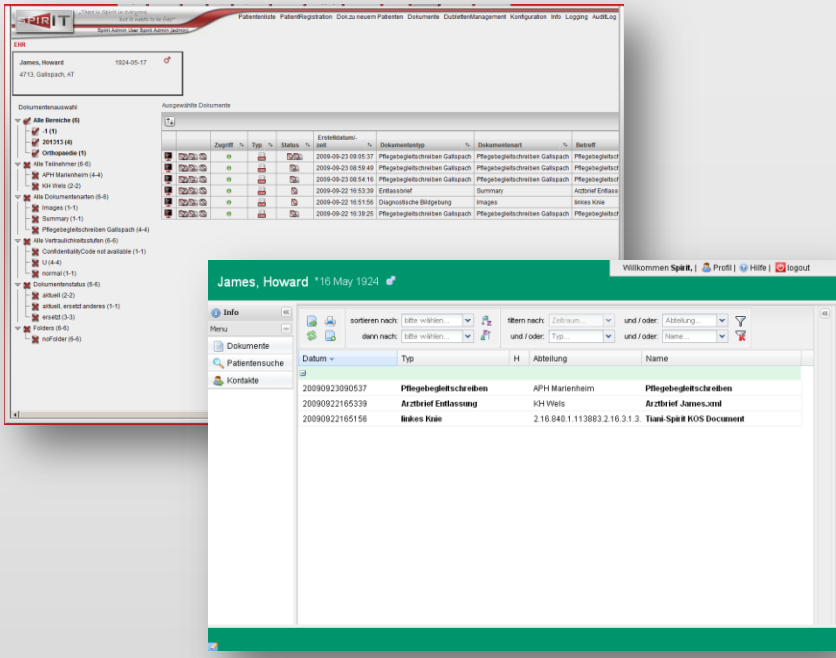
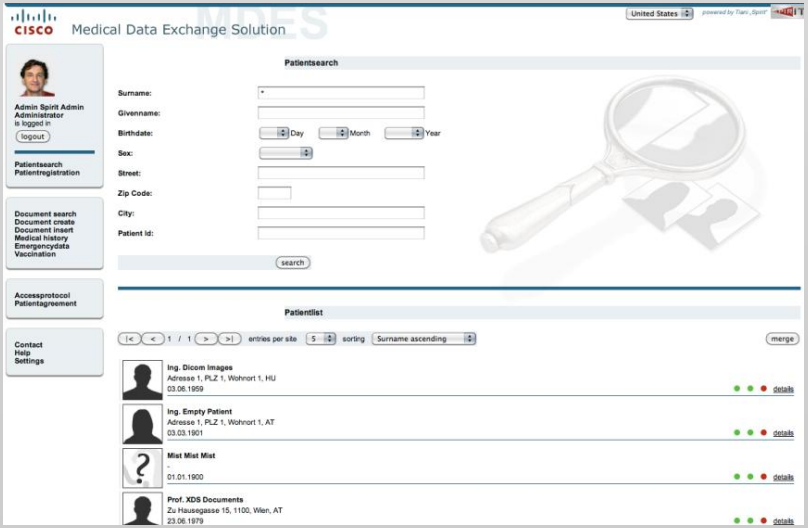
EHR Portal

Customer Has Choice

- **MDES provided Portal (Remark: Cisco's main target is to sell the IHE Middleware and not to compete against any EHR portal vendor!)**
  - –Green Fields
  - –South Africa Deployment
- **MDES WSDLs to build custom Portal**
  - –Typical choice
  - –Wels account





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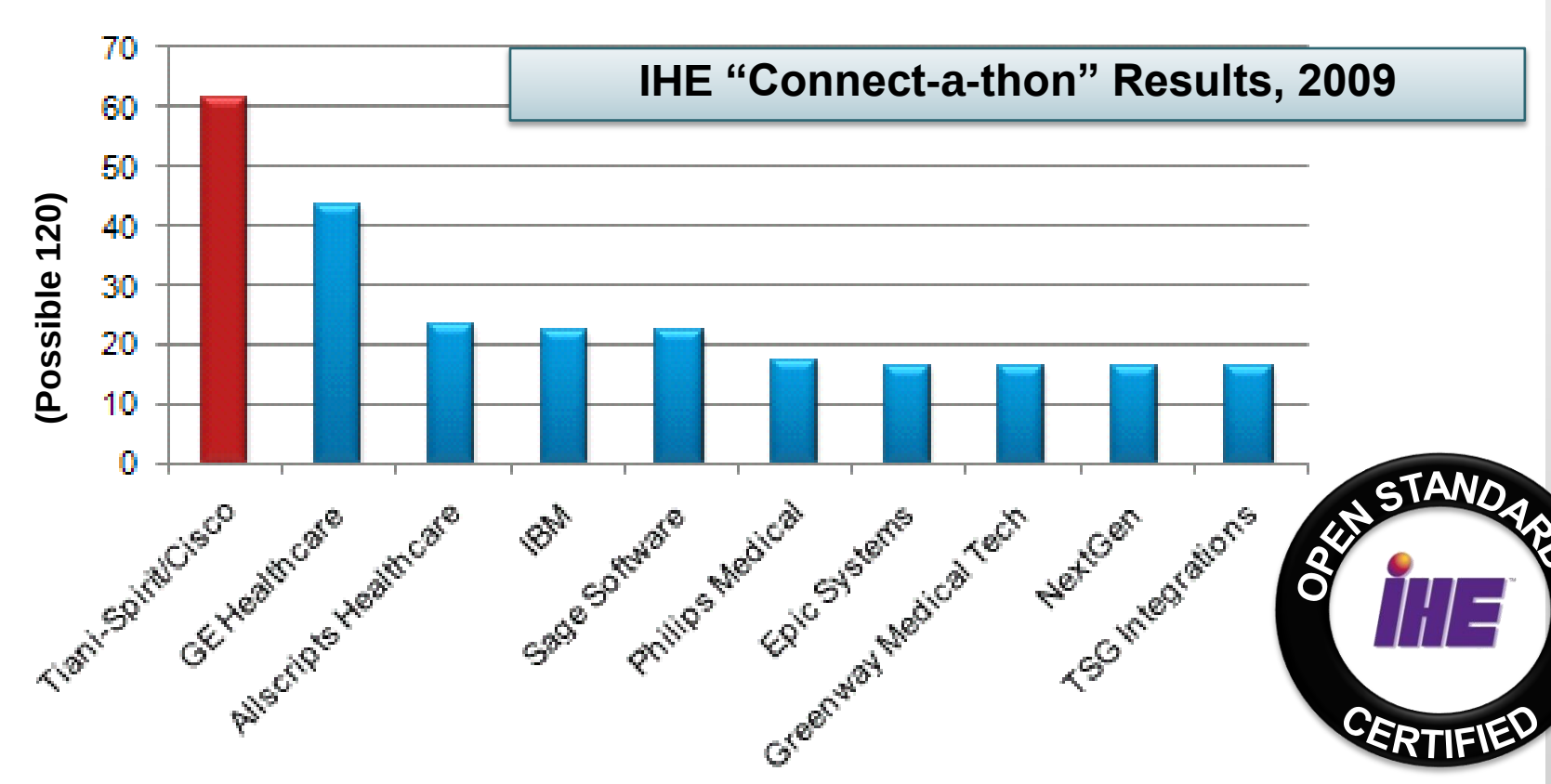
MDES wins industry interop test



- **Integrating the Healthcare Enterprise (IHE): industry group developing HIT interop "frameworks"**
- **IHE's "Connect-a-thon": Industry's key interoperability testing event.**
- **"IHE, more than any other single organization, has paved the way for practical healthcare interoperability." –Gartner**

Source: IHE, Gartner

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MDES to become an integral part of epsos

EUROPEAN PATIENTS SMART OPEN SERVICES

MDES, a joint solution from Cisco and Tiani-Spirit, both being board members in the epSOS industry team!

About epSOS:

- **European Patients Smart Open Services – epSOS**
- **eHealth initiative for large scale EU pilot for e-prescription & patient summary**
- **12 EU member states (AT, CZ, DE, DK, EL, ES, FR, IT, NL, SE, SK, UK)**
- **Industry team with 32 companies**
  (5 board members: Microsoft, Cisco, GE, Tiani-Spirit, Indra)

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Cisco Care-at-a-Distance Solutions for Healthcare

Clinical Care Unbounded by Distance, Physical Location or Setting

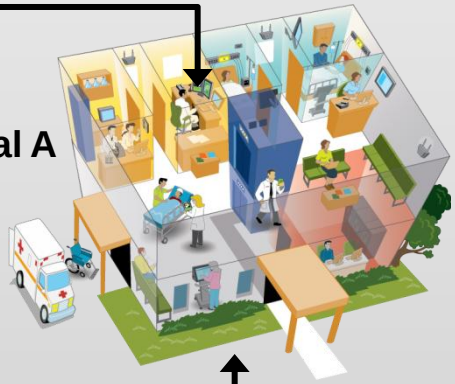
Allow radiologists and physicians to collaborate in real-time through unified communications and image sharing

Specialist

Physician's Office

Provide better and more cost-effective care through video conferencing

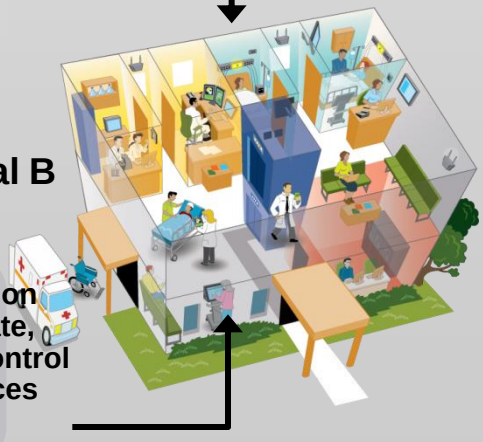
Hospital A



Reduce costs, and collaborate more effectively, and provide better access to care through telemedicine

Corporate Campus

Hospital B



Enable video communication for caregivers to collaborate, provide education, poison control help and psychiatric services remotely

Patient's Home

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What Is Cisco HealthPresence 1.0

- HealthPresence 1.0 is a technology enabled solution that creates a unique patient-to-doctor connection over the IP enabled network
- Leverages advanced technologies from Cisco to deliver an “End-to-End” service and immersive experience
- Fully scalable solution that can go from 1:1 to 1:Many
- Cisco’s HealthPresence solution is a “game changer”
  - Real-time and collaborative
  - Intelligent routing
  - UC Integrated
  - Integration points—APIs

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What's In The Solution

Cisco HealthPresence Portal - Client is the common UI that both doctors and nurses use to collaborate information and visual images; scheduling and Call Connect is initiated here

Device Aggregator terminates all the networked telemetry components

Cisco HealthPresence Application Server manages every unique telemetry flow through the network

Cisco HealthPresence Portal Server is the master portal that handles the UI presentation to each client desktop

Cisco supports various integrated telemetry components from 3rd party eco-system providers

Our integrated scheduler is an open source product that is used to integrate our scheduling into the workflow connections

Cisco TelePresence Multipoint System connects the calls and allows up to 48 simultaneous telemedicine connections to be made on the network

Cisco Unified Communication Servers Manages the call routing, partitioning, signaling, serviceability, and codec devices

Cisco TelePresence 500: primary codec for audio/video and in-band data collaboration. Video at 30fps and scalable between 720 and 1080p

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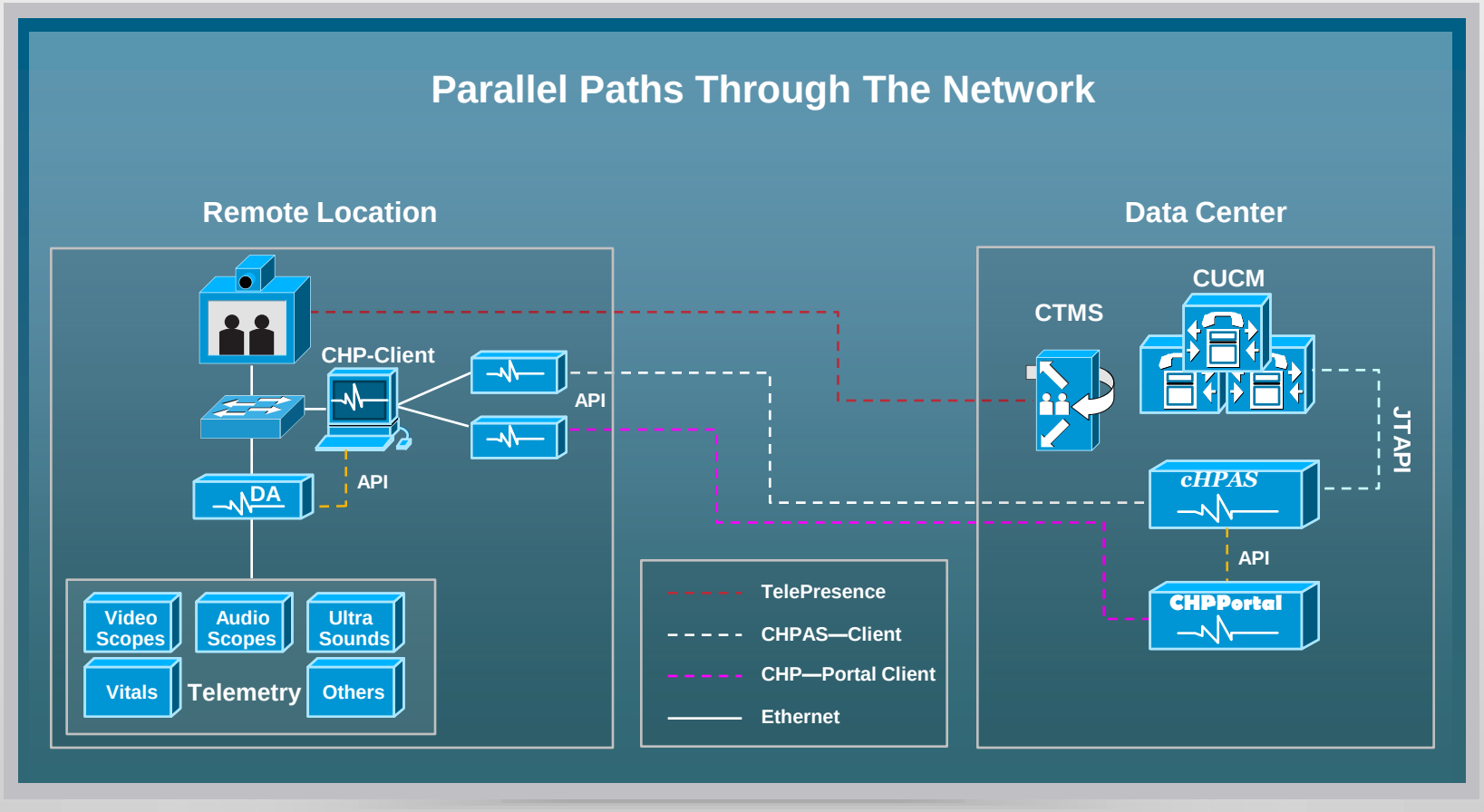
CHP Architecture



Ports

- Cisco TelePresence SIP/RTP UDP 5060,5061,16384-16389
- Cisco HealthPresence—HTTPS 8080,80,443, UDP 244x
- JTAPI CUCM 2748

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Interop Telemedicine

Cisco based HD Solutions

Display 37”

Display 37” 32” 27”

Features:

- Scalable Settings 384Kbps – 5Mbps
- Legacy Video with HD Video
- Centralized Dial-Plan
- Layered Telemetry routing
- Scalable endpoint connections with: HD, SD, CIF formats

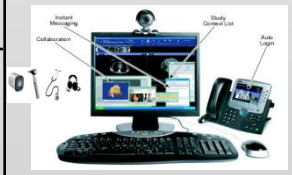
Multipoint Bridges

CallManager

HealthPresence Servers

Low bandwidth Connections

Tandberg



Desktop

HealthPresence to the Home

Smart Phones

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Healthcare Services Exchange

Network Embedded Software Services and HC Use Case Workflow

Crisis Coordination
Scheduling
EMR Integration
Device Integration
Encounter Management
Portal
Training
Pandemic Management
Emergency Response
Checkups
Specialty References
Chronic Care
Mental Health

Government
NGOs
Businesses

Mobile Access

Virtual Clinics

Chronic Care
Home Care

Providers
Hospitals
Clinics
Offices

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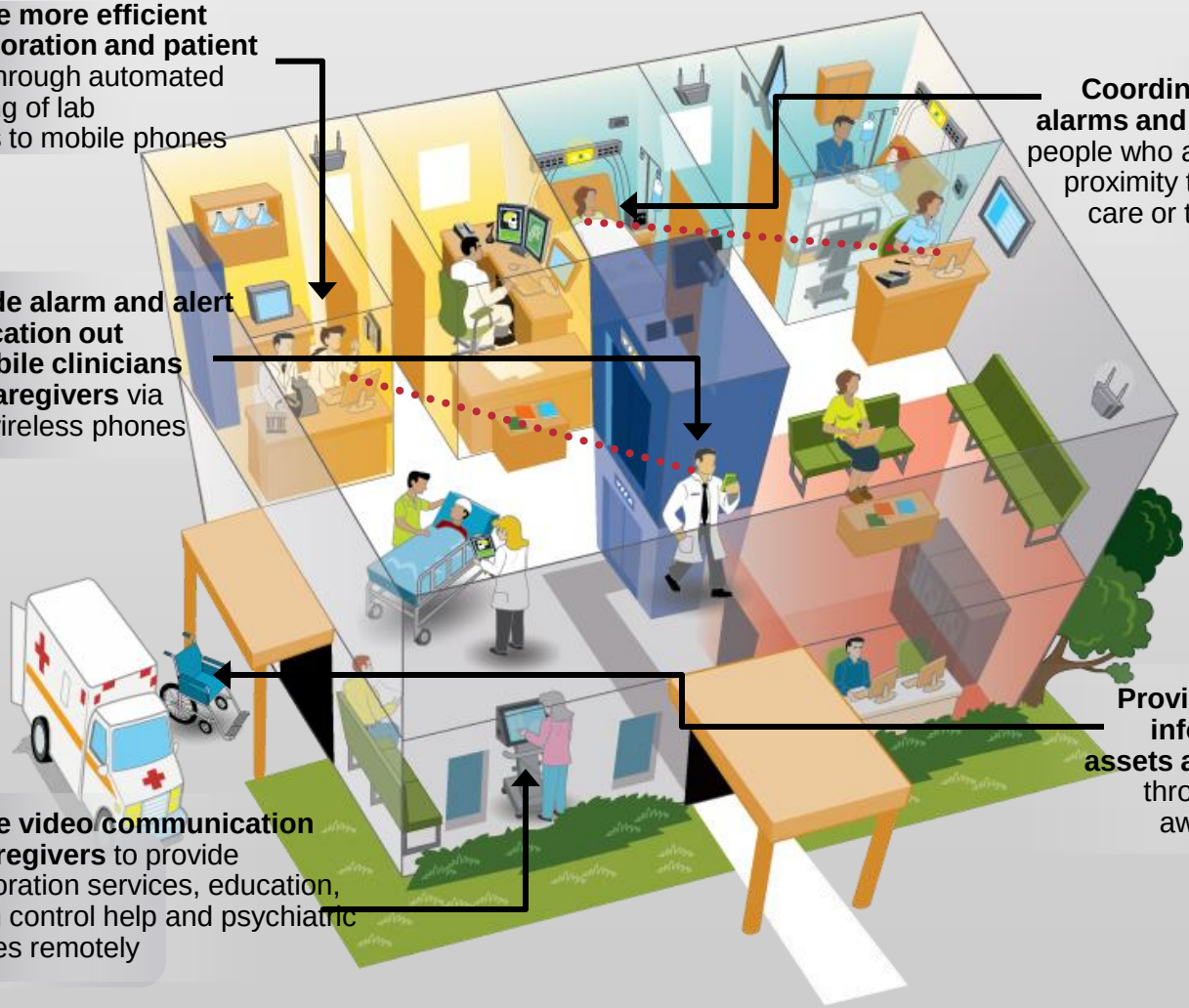
Cisco's Clinical Workflow Portfolio for Healthcare

"Optimizing Productivity and Effectiveness for Clinicians"

Enable more efficient collaboration and patient care through automated sending of lab results to mobile phones

Provide alarm and alert notification out to mobile clinicians and caregivers via their wireless phones

Enable video communication for caregivers to provide collaboration services, education, poison control help and psychiatric services remotely



Coordinate sending alarms and alerts to the people who are in closest proximity to deliver the care or task required

Provide real-time information on assets and patients through context-aware services

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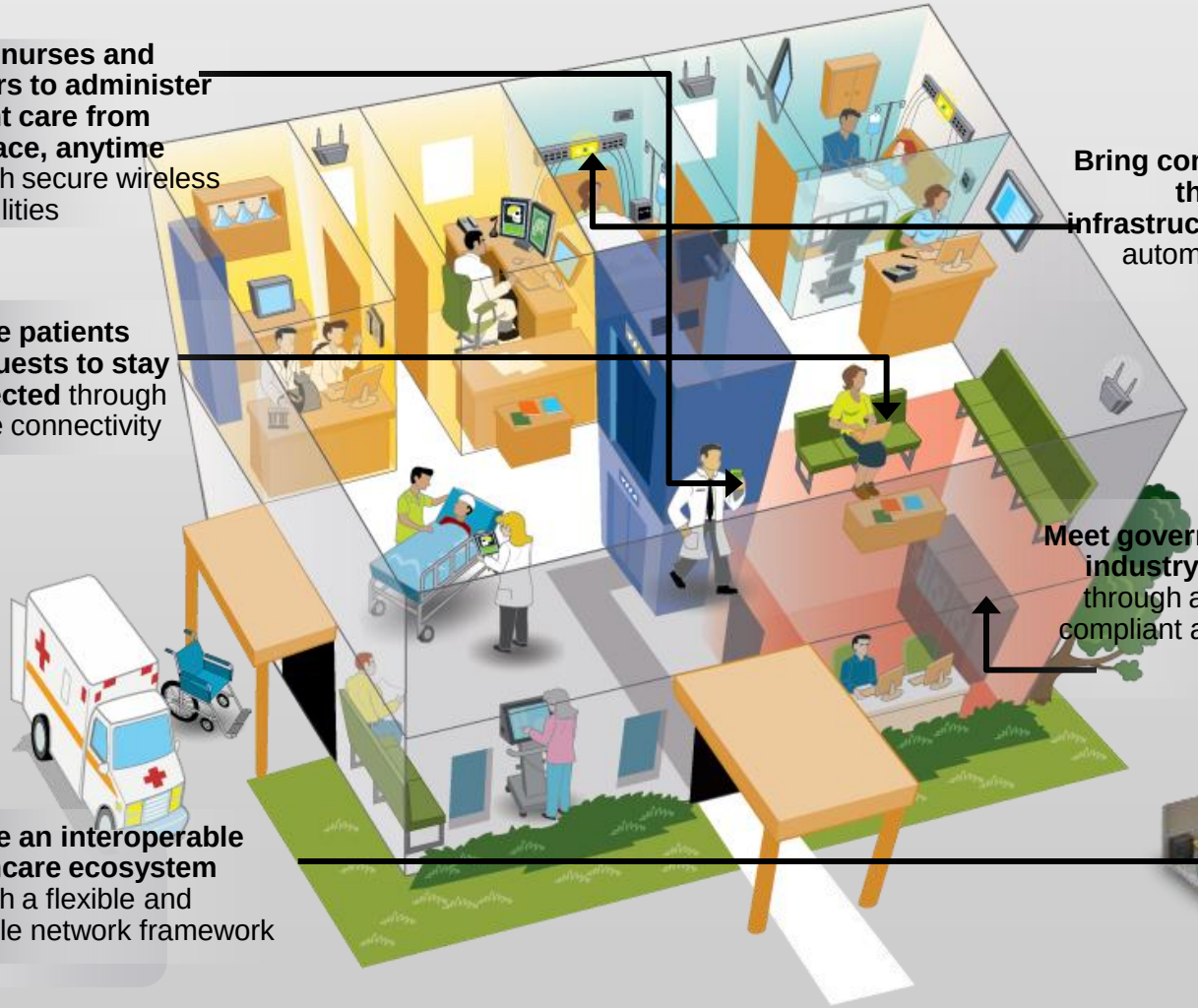
Cisco's Technology Foundation Portfolio for Healthcare

"Providing an Infrastructural Foundation Throughout the Continuum of Care"

Allow nurses and doctors to administer patient care from anyplace, anytime through secure wireless capabilities

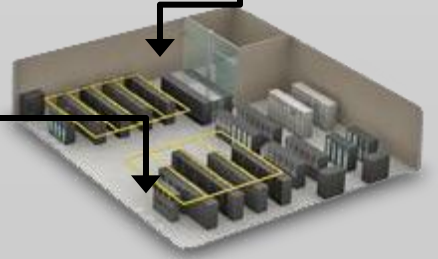
Enable patients and guests to stay connected through secure connectivity

Enable an interoperable healthcare ecosystem through a flexible and scalable network framework



Bring connectivity to the hospital's infrastructure through automated biomed devices

Meet government and industry mandates through a regulatory compliant architecture (ex: PCI)



Data Center

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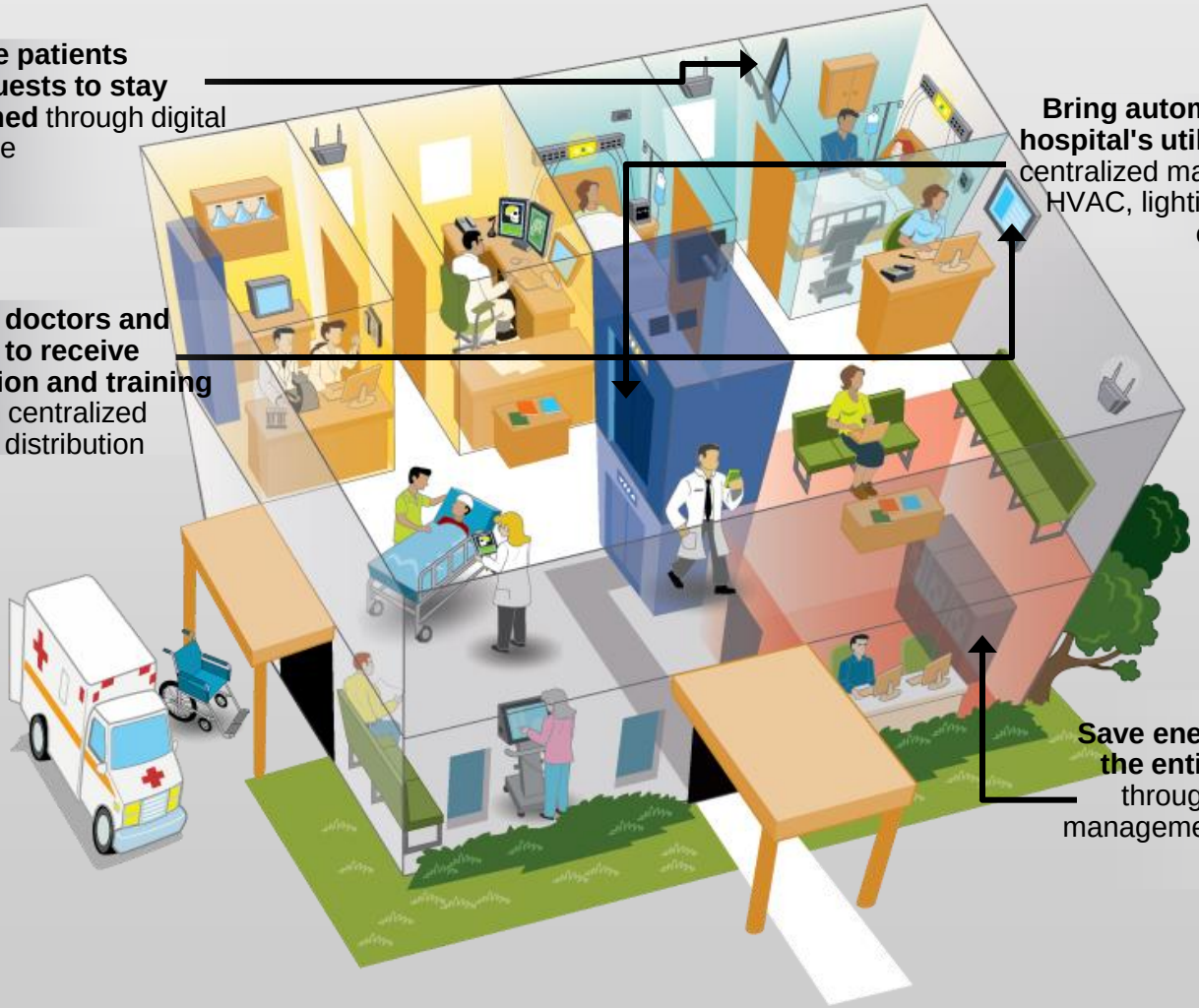
Cisco's Smart Facility Portfolio for Healthcare

"Services that enable hospitals to reduce capital and operating expenses of their facilities"

Enable patients and guests to stay Informed through digital signage

Enable doctors and nurses to receive education and training through centralized content distribution



Bring automation to the hospital's utilities through centralized management of HVAC, lighting, windows, elevators, etc

Save energy across the entire hospital through intelligent management of power

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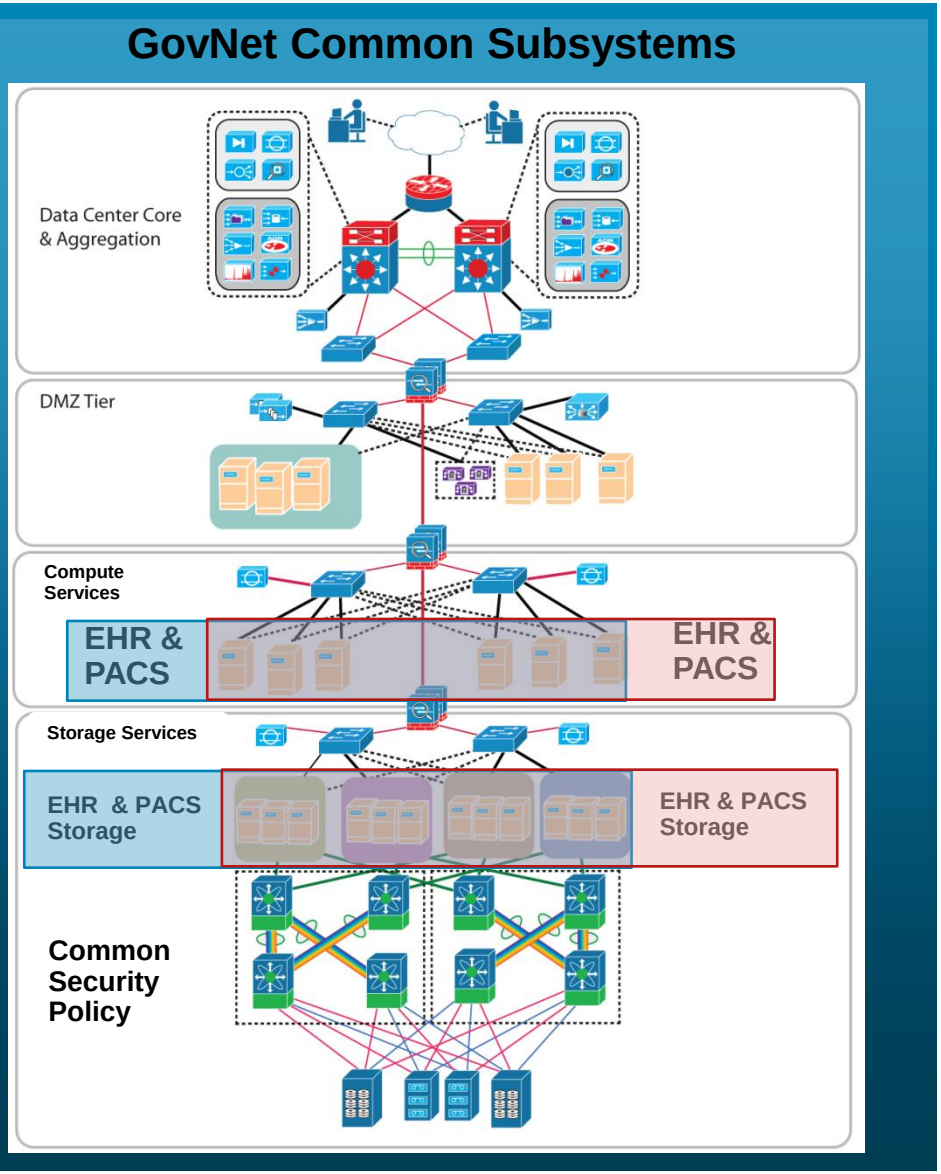
Providing Healthcare resources on demand



- **Image store**: stay where they are created (most use is local), copied on a central DC for backup and general availability purpose. PACS run out of the cloud (SaaS), with localized storage.

- **EHR/PACS Interoperability** requires local and central resources - federated architecture for minimized exchange of information (stored where they are created), but cross hospital indexing.

- **National services** (collaboration) are in common across verticals: email, voice, vmail, VC, webex, chat, ….

- **Journey to Cloud:** from individual DC per hospital, to shared DC per multiple hospital, to cloud-based services per HC ecosystem, to Government cloud to provide services to the whole Public Sector

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The HealthCare Cloud

Cloud Computing for HC:

- Scalability
- Cost optimization
- Reduced IT complexity
- Standardization
- OPEX vs CAPEX

HC SaaS opportunity:

- eHR
- PACS
- HIS
- RIS
- ePrescription
- TP/HealthPresence
- Web Collaboration
- Email/vmail/IP Tel

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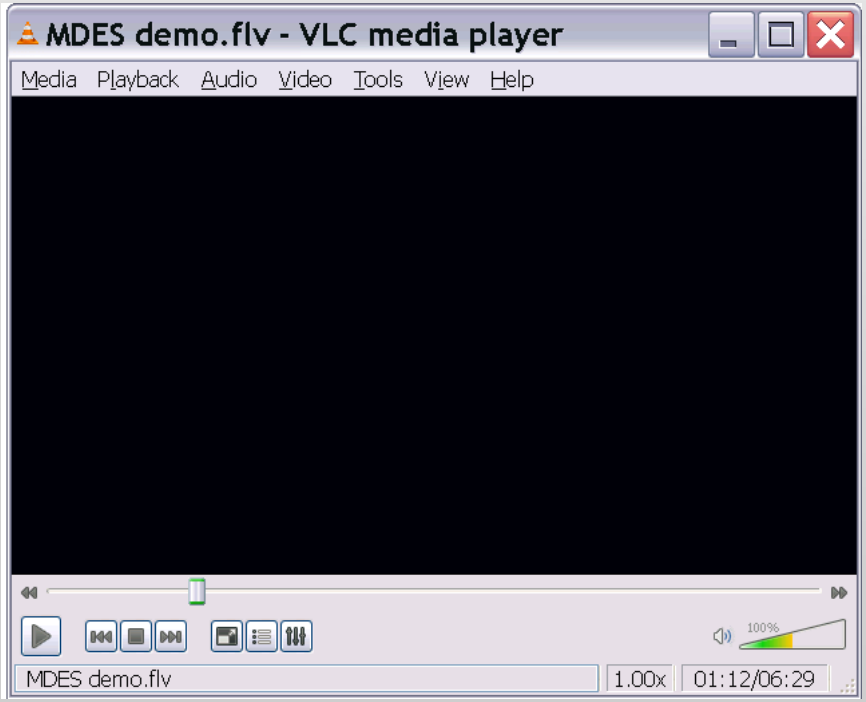
Getting Patient at Home Video



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Connected Hospital

Case studies

Cisco Healthcare

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The Cisco HealthPresence Solution

What People Are Saying

“I had not expected patients to like it as much as they did—especially the older ones who are less familiar with technology. I was gratified by the enthusiasm they showed, and many volunteered ideas about how the Cisco HealthPresence solution could improve medical care in their community.”

—Dr. James Ferguson,
Scottish Centre for Telehealth

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IMSS

INSTITUTO MEXICANO DEL SEGURO SOCIAL
SEGURIDAD Y SOLIDARIDAD SOCIAL

- **IMSS is the Public Social Security Agency in México offering Healthcare and other services to more than 45 Million non-government workers**
- **It made a public bid to acquire a Managed Services MPLS network providing Voice, Data and Video communication services for 3000 sites around the country.**
- **Cisco, with Telmex as partner and front bidder, won the public bid.**
- **Very aggressive competition: Huawei, Juniper, 3Com, Blue Coat, etc.**

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Oi Connected Health

Customer Profile

The Largest Service Provider in Brazil, with a network footprint that can reach 40,000 Brazilian hospitals.

Oi offers a portfolio of integrated and convergent communication products including telephony services, date transmission, ISP, and other services.

Oi offers these services to homes; small, medium, and large corporate users; government agencies; and other telecommunication companies.

Brazilian Healthcare Business Challenges

To control costs and reduce drug budgets

Lack of effective communication between citizens and health agencies

High incidence of medical errors

No interconnect between vested healthcare system parties

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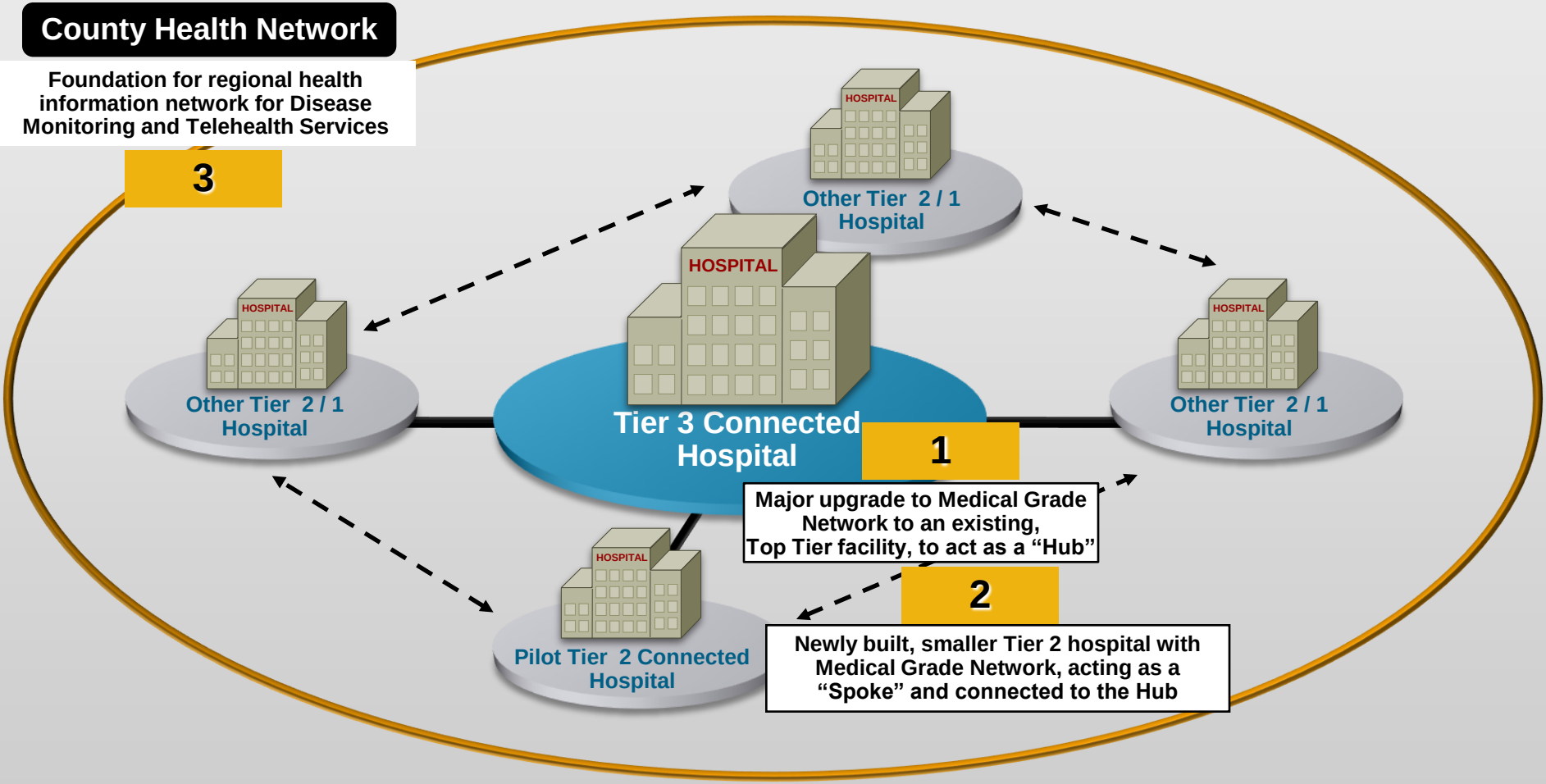
Sichuan Province Earthquake Rebuilding

County Health Network

Foundation for regional health information network for Disease Monitoring and Telehealth Services



Sichuan Province Health Network

Connectivity across the province

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Albert Einstein Hospital – Brazil

Business Challenge

- Increase productivity of all clinical staff
- Retain specialized doctors

Technical Challenge

- Sustainable network upgrade
- Outdated telephony network

Network Solution

- Cisco Medical Network providing voice, video and data integration
- AHA-certified wireless network

Business Results

- Clinical staff able to spend more time with patients
- Operational costs lower on integrated network infrastructure

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VA Caribbean Hospital, Puerto Rico

Challenges

- Equipment due for preventive maintenance cannot be located on time and valuable staff time is spent searching for equipment
- Staff perform manual temperature monitoring and logging of lab refrigeration units and clean utility rooms. Logging mechanisms are unreliable and labor is utilized inefficiently
- Safety issues due to elderly patients wandering unattended out of nursing homes
- Loss and theft of laptops

Solution

- Deployment of a Cisco Unified Wireless Network.
- Asset tracking of infusion pumps, defibrillators, ventilators and beds with AeroScout T2 Tags over the Wireless Network.
- Chokepoint Exciters at exits of nursing homes instantly detect wandering patients
- Alerts are sent to hospital staff via Cisco VOIP 7920 & 7921 phones
- Automated temperature monitoring of utility rooms and lab refrigerators with AeroScout temperature sensor tags

Benefits

- Increased patient safety
- Improved search times and utilization of equipment
- Increase efficiency of staff
- Improved regulatory compliance
- Minimize loss and theft of equipment

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King Fahd Medical City – Saudi Arabia

Challenge

- Design a state-of-the-art, specialized care centre
- Provide secure, reliable high-speed network to support high volumes of multimedia content
- Ensure scalable and flexible platform for future development

Solution

- End-to-end Medical-Grade Network using Gigabit Ethernet fiber optic technology

Results

- Always-available patient records keeps operating costs low, and staff productivity and patient care standards high
- Reduced time taken to access patient records by 75 percent and data entry by 60 percent
- Each doctor and nurse able to treat up to nine more patients per day

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Children's Cancer Hospital Egypt 57357

Establish Unified Communications throughout the facility to:

- **Improve access to critical patient data in all hospital units**
- **Capture and identify trends for epidemiological study**
- **Reduce costs by using single network across multiple applications**
- **Results help to sustain this charity-funded hospital**

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Austrian Health System Provides Medical Record Integration with AXP-Platform Solution

- Klinikum Wels-Grieskirchen health system
- System cares for 600,000 residents with 400 physicians and 1200 nurses
- Health system had several separate clinical information systems—requiring separate logins and lost information
- Health system deployed AXP platform solution to integrate disparate system
- Results
  - Improved clinical satisfaction
  - Reduction of redundant procedures
  - Reduction of manually-handled paperwork
  - Increase in overall productivity

"The technology has enabled us to substantially raise the level of information where and when it is needed to help our doctors in their efforts to provide the best care possible for our patients," Dr. Walter Aichinger, chief physician, Klinikum Wels-Grieskirchen

Juan Garrahan Pediatric Hospital pilots HealthPresence

RIO NEGRO

Tragedia en Huinganco

Dos hermanos de 28 y 30 años murieron al desbarrancarse 80 metros el auto en que viajaban. 32

18 Editorial

Sería positivo que en la etapa que está iniciándose el progresismo fuera representado por alguien como Binner y el conservadurismo por un dirigente con las cualidades que según los partidarios de Reutemann lo caracterizan.

Servini halló micrófono en su despacho

"Lo tomo como una intimidación", dijo la magistrada con competencia electoral. Advirtió que temas que hablaba con sus colaboradores trascendían a los medios. Vinculó el espionaje con la causa sobre gastos de campaña de la presidenta Cristina Fernández y con la diputada Diana Conti. 2

Decomisan 12 kilos de marihuana

La policía de Neuquén detuvo a un comercializador de Fernández Oro que llevaba droga en un utilitario. De su casa le secuestraron dinero. (Pág. 33)

Hoy

Cocina saludable y diccionario

Telepresencia

El Castro Rendón y el Garrahan de Buenos Aires quedaron conectados por un moderno sistema que permite interconsultas en tiempo real. Busca evitar derivaciones. 30

Sólo dos ambulancias

Como contrapartida, el principal hospital de Neuquén tiene grandes dificultades para atender urgencias locales. Ayer no pudo participar de un simulacro de accidente. (Pág. 29)

Chance de local

En Córdoba la selección alternativa se mide a las 21 con Ghana, con la cabeza en Perú. (Pág. 35)

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South Africa's Department of Health Successfully Road Tests Cisco HealthPresence Solution in Free State

Cisco Solution Connects Urban Health Care Professionals with Rural Patients at Batho Clinic

BLOEMFONTEIN, South Africa, February 2, 2010 - Cisco joined forces with the Free State Department of Health recently to test Cisco's HealthPresence™ solution in the province. The solution is aimed at improving rural health care and providing patients in the region with the best possible remote access to medical treatment. The solution was successfully tested at the Free State Department of Health Universitas Academic Hospital in Bloemfontein during the latter months of last year and proved to be a popular demonstration of how technology can be used to deliver health care over a distance..

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