# Cloud Computing:

## Accelerating Information-Driven Healthcare that Improves Health and Accelerates Innovation

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## Our Experience

- World's leading provider of Healthcare IT Services
- Serve 6 of Top 10 Pharmas
- 71% of the Stage 7 HIMSS EMR Adoption Model hospitals are Dell customers[2]
- Serve 7 of Top 10 Largest U.S. healthcare systems
- Serve 70 insurance orgs supporting 45 million policy holders
- #1 in U.S. EMR software and services by large hospitals and community hospitals[1]
- Dell's UCA Solution now storing more than 5 Billion Images in the cloud
- Manage 14 billion security events a day
- A leading computing provider for first, second and third-generation gene sequencing IT
- Managed 400 revenue cycle engagements recovering 15 billion dollars for customers over 7 years

[1] Blackbook February 2011
[2] HIMSS Analytics 2010

## Evolution of Healthcare Delivery


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## Nutrient Data Ecosystem

Databank catalogues 7,500 food items, 140 nutrients

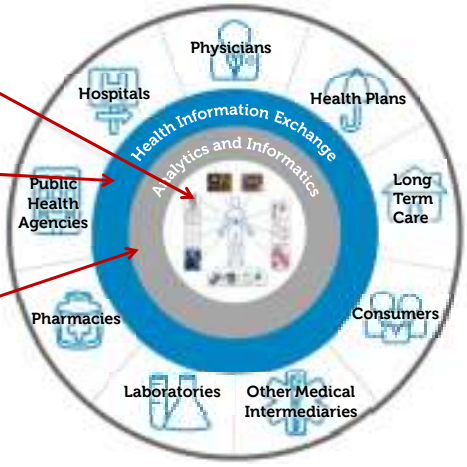
# Our Common Challenge:

Healthcare information trapped in silos

**Health Information** needs to be **Digitized**

**Health Information** needs to be **Exchanged** within Communities

Standardized **Analytics & Informatics** solutions drive improvements in **Quality & Efficiency**

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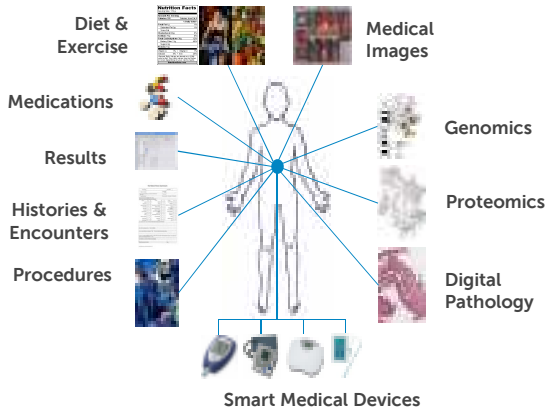
# More Information Becoming **Digital**




## Management Challenges

### Size

- 256-slice scan generates up to 7,000 images

### Volumes

- 35% of healthcare data will be medical images by 2015
- DNA sequencing = 300-500 GB/person

### Format

- 30% structured
- 70-80 % un or semi-structured

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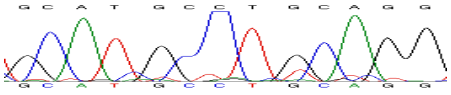
# Genomics Creates New Infrastructure Needs

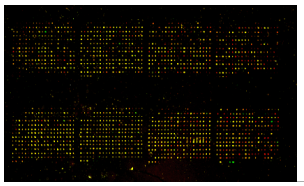
Requires massive compute and storage infrastructure

1. Baseline sequence identifies health risks and issues



DNA Sequencing - 300 TBytes per person

2. 1 GByte/person/year for profiling for life.



3. Central database identifies individuals with common demographic and medical histories and gene profiles

4. Lifetime care plan with drugs for specific genetic makeup

# Why Connect our Healthcare System?


- To move beyond episodic care to prevention and wellness management
- To coordinate and manage patient care
- To streamline administration and reduce costs
- For early warning and coordinated response to infectious disease
- To transition to personalized medicine

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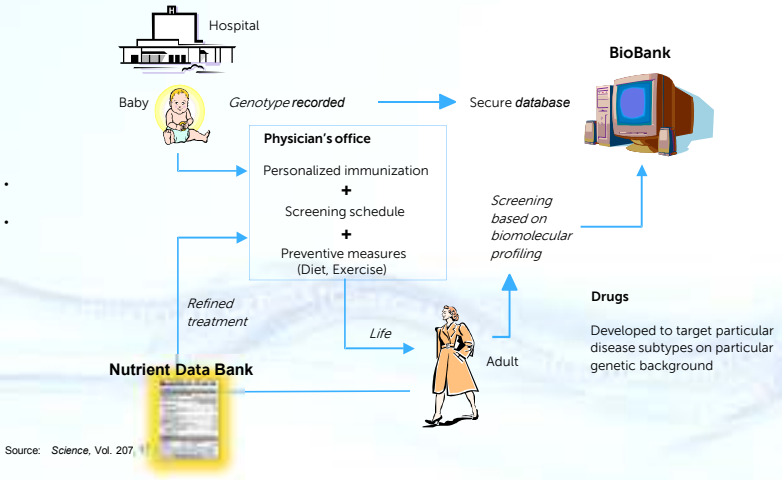
# The Future is Taking Shape

Information- driven prevention, wellness management and personalized medicine

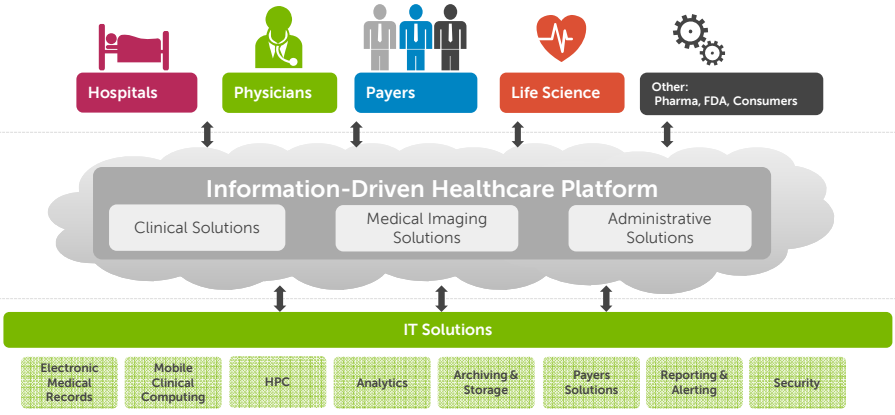



# The Path Forward:

Cloud Computing for Coordination, Collaboration, Innovation

# The Cloud Simplifies Coordination & Collaboration

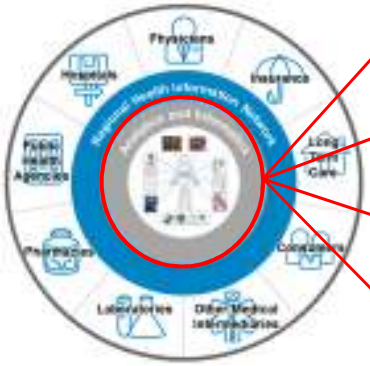
With interoperability that creates a true "healthcare system"






# And Analytics

That Improve Quality & Efficiency



**Individual/Patient**
- Care Gap Management
- Preventative Health
- Outreach/Education

**Healthcare Institution**
- Quality Reporting
- Meaningful Use Reporting
- Operational Efficiency

**Community/Region**
- Identified Data Analysis
- Care Coordination
- Financial Analysis

**Population**
- Disease Management
- Care Improvement
- Cohort Selection/Clinical Trials

# Fostering Innovation

## Cloud improves collaboration between science and medicine

Manages 200 billion data points generated **per patient**

Reduces mapping and analysis from months to **days**

Creates a **real-time, growing** body of knowledge

**NMTRC: Tumor sample is taken by the oncologist and added to genome database**

**TGen Cloud**
**Computation & Collaboration Powered by Dell**

- 8.2 teraflops and growing
- 1,200% increase in compute power over existing clinical computing cluster
- Dell Precision Workstations
- Dell PowerEdge Blade Servers
- Dell PowerVault Storage Arrays
- Dell Compellent Storage Center Arrays
- Dell Force10 Network Infrastructure
- Technical expertise and support

**TGen: Molecular characterization of the tumor is formulated**

**Specific tumor make-up is mapped against millions of patient DNA and treatment variables**

Best match is based on other patients with a similar make-up and the treatment that worked well for them

**DNA mapping results are saved to the TGen Cloud**

Information is stored in a protected, accessible manner so that doctors can get the results quickly

**NMTRC: Doctors administer treatment and add findings back into the database**

The database creates **real-time, global knowledge repository of latest findings on the most effective treatments**

Helps to refine cures for other children diagnosed with neuroblastoma

Lays the groundwork for expansion into other types of childhood cancers

# The Journey to the Cloud

## Starts with Intelligent Infrastructure

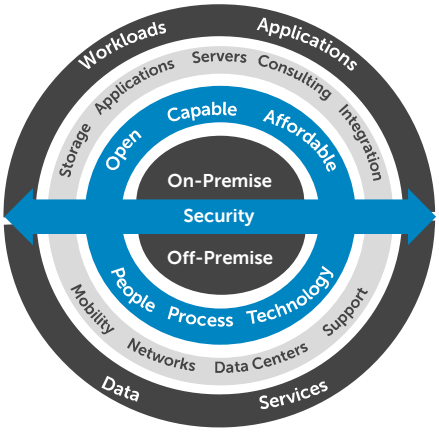
**Accomplish More**
Improve the performance of your IT for success

**Improve efficiency**
Use IT to boost productivity and get the most out of every dollar

**Ensure business continuity**
Secure, continual access to IT services that power your business

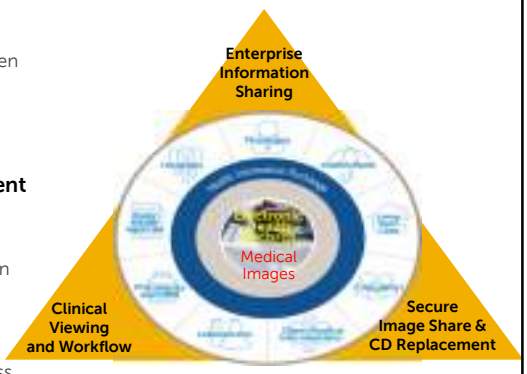
# Then Apply Cloud to Your Needs

- Simplify deployment and integration of workloads & applications
- Enable agility to meet changing organizational needs and outcomes
- Design to leverage existing investments and maintain processes
- Provide a secure extension of IT capability
- Integrate traditional architectures and evolving cloud architectures




# Clinical Collaboration Portal

- **Enterprise Information Sharing**
  - Gateway for Implementing XDS-i between sites
  - Health Information Exchanges (HIE) at Local, Regional, State, or Country level
- **Secure Image Share & CD Replacement**
  - Secure Image Sharing - Data Sharing to Replace CD Exchange
  - Personal Health Record (PHR) Integration and Implementation
- **Clinical Viewing and Workflow**
  - Universal Viewing with Zero Client access
  - Referring Physician Sharing of Images and Reports
  - PHR/EMR Clinical Data Enablement and Mobility solutions
  - Collaboration Portal for Telemedicine, Tele-consultation, Medical Education



# Thank You!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