Making digital transformation in healthcare a reality
Clinicians, researchers and health IT executives...

...all seek technologies that can help them to accelerate and improve diagnoses, and to better tailor patients’ treatments and recoveries. Today, Dell EMC is helping over 6,000 healthcare and life sciences organizations around the world make their digital transformation a reality as they:

- Simplify administration
- Coordinate and manage patient care
- Protect and secure patient data
- Transition from episodic care to coordinated, advanced personalized care that focuses on prevention and wellness
- Improve population health and individual patient outcomes
What does your transformation look like?

We know that your organization’s digital transformation journey is unique. Whether you need to give clinicians faster access to patient information, pinpoint how treatments impact outcomes, enhance collaboration, give patients access to their health records, or protect against digital threats — we can help.

Dell EMC is uniquely positioned to power your digital transformation with best-in-class application, data, infrastructure, cloud and security solutions for your entire healthcare delivery chain, from point of care to your data center. By taking advantage of products and services from our strategically aligned businesses and robust global partner ecosystem, you can get the comprehensive solutions you need to transform your organization, as outlined in the following table.
Health IT
You can...
Drive innovation and improve operational efficiency by automating processes, accelerating digital workflows and streamlining data and system management.

For example:
Humber River Hospital, one of Canada’s largest regional acute-care hospitals, increased efficiency by doubling the performance of applications including MEDITECH electronic health records. The hospital also cut data center power and cooling costs in half and accelerated the creation of clinical reports from 90 minutes to just 10 minutes.

Precision medicine
You can...
Advance clinical research to improve patient outcomes by developing more personalized and effective treatments using data analytics, machine learning and specialized compute solutions.

For example:
Three internationally recognized organizations — the Baker Institute, the Burnet Institute and the Centre for Eye Research in Australia — enhanced their ability to diagnosis and treat diabetes, heart disease, strokes and eye disorders. Scientists are also accelerating research now that they have on-demand access to big data.

Connected health
You can...
Increase efficiency, simplify collaboration and deepen engagement by empowering care teams and patients with devices that make anytime, anywhere data and application access a reality.

For example:
COLDPLASMATECH is helping more people by accelerating the development of treatments that help heal deep wounds faster than ever before. The organization also simplified mobility, so it’s easier for sales and marketing staff to educate global health organizations about COLDPLASMATECH’s innovative patch.

Security
You can...
Protect your patients’ and organization’s data from cyber threats, and embrace new technology with less risk, by implementing an intelligent, business-driven security strategy.

For example:
Inovalon, a healthcare technology company, halved the time it needs to deliver isolated, secure and HIPAA-compliant private clouds for new clients. And it’s increasing security and efficiency by automating the configuration of firewalls, load balancers and security appliances.

By transforming...
Making the future of healthcare real today

The urgency for your organization to become a digital leader is driven by patients and care providers, who require on-demand services, greater personalization and secure connections. We put technology at the heart of meeting those needs by combining our deep healthcare industry expertise with our world-class offerings and robust partner ecosystem.

On the following pages, you can see how organizations are improving patient care as they make their digital transformation journey. Each snapshot provides a high-level overview of a more-detailed story that’s in a corresponding case study or video on our website.
Medical records are worth up to 20 times more than credit card numbers to criminals. And in 2017, ransomware surged to the fifth-most common type of malware, up from the 22nd in 2014. To infiltrate virtual private networks, cybercriminals frequently attack client devices. St. Cloud Orthopedics transformed its client security solution with Dell Technologies to help reduce risk and give its patients peace of mind.

This is what St. Cloud Orthopedics’ digital transformation looks like:

- Patients’ health and credit card information is protected: the solution detects and stops ransomware and other malware before it can execute on devices.
- Facilitates mobility for clinicians and other employees: client devices can leave the clinic’s network and still stay HIPAA-compliant.
- Saves a day’s work each month for IT staff: tools are much easier to use and they’re managing substantially fewer issues.
- Simplifies compliance with federal regulations: IT staff have centralized consoles for security and client management.

What’s supporting the transformation?

- Client security: Dell EMC Data Protection | Endpoint Security Suite Enterprise software
- Client management: Dell EMC KACE K1000 systems management appliance
- Expert security configuration and management guidance: Dell EMC Deployment Services

“Conventional antivirus programs are only reactive…. Endpoint Security Suite Enterprise doesn’t even give malware a chance to run.”

Jeff Duclos, IT Director of Network Administration, St. Cloud Orthopedics
By 2020, humanity will have generated more than 2,314 exabytes of medical data. As a leader in patient care and medical education, Partners HealthCare is relentlessly exploring more and more of this information. By collaborating with Dell Technologies, the Partners HealthCare community of researchers and innovators now have the fundamental big data services they need to unlock insights from global health information, today and tomorrow.

This is what Partners HealthCare’s digital transformation looks like:

- Improved disease insight, diagnosis and treatment: researchers can analyze more big data, regardless of format.
- Cost savings: storing and protecting millions of patient records is more affordable.
- Increased collaboration: researchers can securely access and share data from any location.

What’s supporting the transformation?

- Through collaboration with Dell EMC, the Integrated Data Environment for Analytics platform provides the Partners HealthCare community of researchers and innovators with four key service capabilities that are fundamental to the enablement of big data solutions: storage, compute, analytics and infrastructure.
- With the new research platform, Partners HealthCare has been able to reduce their IT infrastructure costs through a more secure, higher performing analytics solution. More importantly, by enabling accelerated research, Partners is making a difference in the healthcare industry through medical advancements and improved patient outcomes.
- IT Infrastructure leveraging hardware and software solutions from Dell EMC, VMware, Pivotal, and RSA

“Realizing the vision of Big Science that is delivered from our extensive research and clinical development efforts, from basic research to cancer genomics, requires new technology collaboration. The Partners Data Lake offers us the chance to lead the world in novel treatments and diagnostics.”

Shawn N. Murphy, MD, PhD, Corporate Director of Research Information Systems and Computing, Partners HealthCare
Speed is imperative in the fight against rare diseases. Families need answers. People need treatment. For TGen and its Center for Rare Childhood Disorders, shortening the “diagnostic odyssey” to precision treatments via faster genomic analysis is only the beginning of its transformation journey with Dell Technologies.

This is what TGen’s digital transformation looks like:

- Hope to more children and their families: researchers develop custom treatments one week sooner.
- Answers to questions about previously “undiagnosable” diseases: researchers can complete more detailed analysis, quicker than ever before.
- Breakthrough discoveries: collaborative work with Boston Children’s Hospital uncovers the link between a gene mutation and pediatric disorders.
- Greater efficiency: researchers now have 1 million CPU hours available per month, and it’s easier for them to move and manage big data.

What’s supporting the transformation?

- An HPC cluster: Dell EMC Genomic Data Analysis Platform including Dell EMC PowerEdge M420 blade servers with Intel® Xeon® processors, Dell EMC PowerEdge M1000e chassis and Dell EMC Networking S4810 switches.

“Our partnership with Dell Technologies has been a cornerstone to a lot of work that we’ve done, and it has enabled TGen to stay ahead of the pack and be a leader in precision medicine.”

James Lowey, CIO, TGen

Company name: Translational Genomics Research Institute (TGen)
Employees: 200+
Country: United States

Understanding genomes

If you were to print out a map of a human genome, the stack of paper would be 300 feet high, which is about as tall as the Statue of Liberty.
Bumrungrad Hospital has embraced a culture of continuous transformation to reshape how it delivers healthcare. By building a flexible, high-performance digital foundation with Dell Technologies, the organization is implementing more effective, personalized care models that increase focus on prevention and wellness as well as patient compassion and safety.

This is what Bumrungrad Hospital’s digital transformation looks like:

• Better treatment plans: increased IT performance and interoperability boosts clinical collaboration, efficiency and analysis.
• Improved patient outcomes: clinicians can instantly access patient data using any device.
• Greater flexibility for international patients: many patients can return home and have their local physician continue care.
• Accelerated efficiency: today, it’s easier for IT staff to manage systems.
• Reduced risk: the organization strengthened security and boosted application uptime to 100%.

What’s supporting the transformation?

• A converged infrastructure: Dell EMC VxBlock, Isilon, XtremIO and Unity storage
• A hyper-converged platform: Dell EMC VxRail appliances
• Data protection tools: Dell EMC VPLEX storage
• Virtualization, mobility management, network virtualization and network security: VMware AirWatch, vSphere, vCenter and NSX technologies
• Client solutions: Dell Latitude and XPS laptops, Dell Precision workstations and OptiPlex desktops

By 2019, 60% of healthcare applications will help discover patterns, freeing up 30% of clinicians’ time.

“Access to more data about a patient allows me to develop a far more personalized medical plan. The technology that’s available to us in this hospital has improved our quality of care, clinical outcomes and safety for our patients.”

Dr. Erik Fleischman, International Medical Director, Bumrungrad International Hospital
Gustave Roussy, a premier European cancer center, is advancing the fight against cancer by accelerating scientific insight with Dell Technologies. As a result, the organization has improved outcomes for more patients. It’s expanding what’s possible in genomic analysis, increasing the effectiveness of precision treatments and shortening waiting lists.

According to the National Institutes of Health:

• Up to half of all cancers could be prevented if current knowledge about risk factors was translated into effective public health strategies.
• An integrated approach to prevention and treatment that includes precision medicine is the only viable strategy to avoid the increasing cancer burden worldwide.

This is what Gustave Roussy’s digital transformation looks like:

• Children receive treatments faster: it used to take up to 30 hours to pinpoint DNA sequences in just one sample but today, researchers can analyze 96 samples in less than a day.
• Greater agility to store and analyze more data: the hospital’s storage platform can scale to support 1 petabyte.
• Cost savings: the organization reduced its power requirements by 23%.

What’s supporting the transformation?

• Genomic analysis platform: Dell EMC HPC System for Life Sciences, which includes Dell EMC PowerEdge R820 and R630 servers with Intel® Xeon® processors
• Flexible storage: Dell EMC PowerVault and Isilon storage
• Faster network performance: Dell EMC Networking switches
• Education and support: Dell EMC Education and ProSupport services

“...The data we’re obtaining thanks to Dell EMC will help our staff make leaps forward in terms of their knowledge of cancer and progress toward new treatments.”

Daniel Gautheret, Bio-IT Platform Manager, Gustave Roussy

Company name: Gustave Roussy
Employees: 3,000
Country: France

Saving more lives
According to the National Institutes of Health:

• Up to half of all cancers could be prevented if current knowledge about risk factors was translated into effective public health strategies.
• An integrated approach to prevention and treatment that includes precision medicine is the only viable strategy to avoid the increasing cancer burden worldwide.
Scripps Health has an impressive list of awards for clinical quality, leadership and positive workplace environment. To realize even greater levels of excellence, especially in the care it provides patients, Scripps engaged Dell Technologies to help transform its health IT by accelerating workflows, increasing simplicity and consistency, and boosting agility and flexibility.

This is what Scripps’ digital transformation looks like:

- Greater clinical efficiency: staff now have just one electronic health record (EHR) system, Epic, which is faster and available 100% of the time.
- Supports growth and new requirements: Scripps can easily support massive data growth and maintain three copies of all files.
- Data protection that facilitates consistently fast production workloads: automatic orchestration of hundreds of backups, daily.
- Cost savings: IT now occupies just four racks and the data footprint is reduced by 75%.
- Less risk: staff can quickly restore systems to any point in time.
- Simplified innovation: developers can get a copy of a production system in minutes versus 12 hours.

What’s supporting the transformation?

- EHR data platform and VDI: Dell EMC XtremIO all-flash arrays
- Integrated copy data management: Dell EMC XtremIO Virtual Copy and AppSync technologies
- General storage: Dell EMC Isilon storage
- Data protection: Dell EMC Data Domain and RecoverPoint software
- Increased IT utilization and efficiency: VMware vSphere virtualizes 98% of systems

“Epic and the XtremIO arrays represent a total transformation of the way our healthcare system is run. We’ve unified our environment and ensured that we’ll always have the performance needed to care for our patients.”

Hector Aguirre, Senior Systems Engineer, Scripps Health
Worldwide, more than 3 million people suffer from chronic kidney failure. Fresenius Medical Care North America, the leading care provider of kidney-related conditions in the U.S., is improving patient care and global research that’s helping chronically ill patients, by collecting and protecting massive amounts of data using a solution from Dell Technologies.

This is what Fresenius’ digital transformation looks like:

- Increased clinical efficiency: applications are at least 33% faster, and storage IOPS speed is twice as fast.
- Reduced costs: the organization cut its three-year TCO by 23%, number of drives by 93%, data center floor tiles by 75%, and power and cooling consumption by up to 78%.
- Greater agility: staff can provision storage 15 times faster.

What’s supporting the transformation?

- Storage for applications, databases and VDI: Dell VMAX All Flash
- Data protection: Dell EMC VPLEX and Symmetrix Remote Data Facility

In the United States, 640,000 people live with end-stage renal disease and more than 40% percent live with at least one chronic illness.
Express Scripts is bringing new benefits plans to market faster that help minimize prescription drug costs and improve patient safety now that it has a flexible IT platform from Dell Technologies that’s simplifying innovation while meeting all its requirements.

This is what Scripps’ digital transformation looks like:

- Better customer service: people save money and time via digital ordering processes and mail delivery.
- Greater operational efficiency: employees are enjoying a 15% boost in IT performance.
- Faster innovation: developers can provision storage in minutes versus 6 months.
- Rapid transformation: the organization implemented IaaS in just 14 days, and new HIPAA-compliant, cloud-based applications, for staff and customers, in just 90 days.

What’s supporting the transformation?

- Enterprise hybrid cloud for internal and external-facing services: Dell EMC Enterprise Hybrid Cloud
- Development technologies: Pivotal Cloud Foundry

**Improving care by using the public cloud for some workflows**

In 2017, the cloud will become the de facto model for new technology platforms and solutions in healthcare.

“End users want a better web experience and a better digital experience all together. If you’re not trying to make change, iterate and be disruptive in your own space ... there are other people out there who are going to.”

Brian Gregory, Director of IT, Cloud Strategy and Engineering, Express Scripts
When Steward Health Care recently doubled the size of its network, it engaged Dell Technologies to help improve its infrastructure, which supports the care of 2 million patients. Today, clinicians and staff have instant access to patient information including images. Plus, the organization has the flexibility it needs to support rapid growth and change.

This is what Steward Health Care’s digital transformation looks like:

- **Better patient care:** physicians and staff are more efficient because the databases used by applications, including MEDITECH, are twice as fast.
- **Cost savings:** strategically designed storage as well as 5:1 data compression and deduplication cut data center floor space by 75 percent, power consumption by 80% and the cost per terabyte of storage by 50%.
- **Increased agility:** IT staff can move workloads between resources on the fly, without slowing application performance or incurring downtime.
- **Simplified growth:** the organization has a highly scalable data platform that can accommodate disparate file types and a data footprint that’s growing by nearly 2TB each month.

What’s supporting the transformation?

- A seamless storage platform for critical workloads including MEDITECH; Dell EMC XtremIO, VMAX All Flash and Unity All-Flash arrays
- A data lake for departmental file shares and patients’ images: Dell EMC Isilon network attached storage, VMware technologies, MEDITECH electronic health record and McKesson picture archiving and communication system (PACS)
- A simple, cost-predictive IT roadmap: Dell Financial Services Transformational License Agreement
- Solution design, configuration and deployment services: Dell EMC partner RoundTower Technologies

“We’ve really achieved a transformation of our core enterprise data center platforms since we began our partnership with Dell EMC.”

Michael Hale, Senior Director
– Enterprise Architecture, Steward Health Care

Company name: Steward Health Care
Employees: 23,000
Country: United States
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