



Innovative Technologies for Higher Education

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What is **driving change** around teaching and learning in Higher Education?



The way we work and learn is changing at a dramatic pace

Technology improves by 10x every 5 years and with new technologies like AR, VR, smart offices, IOT, the rate of change is accelerating



Yet the PC remains the center of how work gets done.

When we work + how we work has changed



WORK AFTER HOURS



DO SOME WORK FROM HOME



WOULD QUIT A JOB WITH
POOR TECHNOLOGY



SAY TECHNOLOGY INFLUENCES
THE JOB THEY TAKE

And will continue to change
44% of millennials think their workspace isn't smart enough

By 2030 ...



125 billion devices & objects will be Internet connected



50% of cars will be driverless



Decoding a human genome will cost **\$1** & take **94** seconds

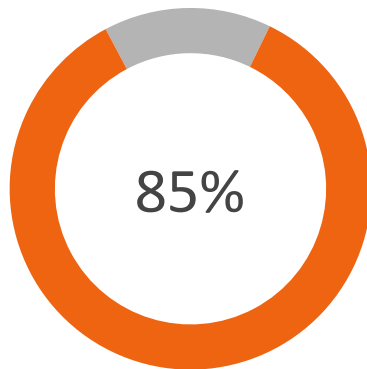


AI will be capable of cognitive **intelligence**

Dramatically changing jobs and workforce skills

2030 Jobs

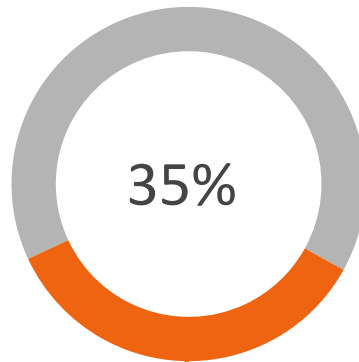
- Personal medical interpreter
- Human-technology integration specialist
- Autonomous transportation specialist
- Self-driving car mechanic



Jobs available in 2030
not yet invented.

2030 Skills*

- Contextualized intelligence
- In-the-moment learning
- Automation literacy
- Entrepreneurial mindset
- Personal brand cultivation



Skills important today that
will change in 5 years.











THE ABILITY TO GAIN NEW KNOWLEDGE WILL BE VALUED HIGHER THAN KNOWLEDGE PEOPLE ALREADY HAVE.

Student expectations

- 79% of students prefer blended learning environments
- 69% of the younger workers expect to be working in a smart office in the next five years
- 82% state that workplace technology influences their choice of employer













Educause 2018 top 10 IT issues

1	Information security		6	Higher education affordability	
2	Student success		7	IT staffing and organizational models	
3	Institution-wide IT strategy		8	Data management & governance	
4	Data-enabled institutional culture		9	Digital Integrations	
5	Student-centered institution		10	Change Leadership	

Source: EDUCAUSE Review Jan/Feb 2018

Educause 2019 top 10 IT issues

1	Information security		6	Data enabled institution	
2	Student success		7	Sustainable funding	
3	Privacy		8	Data management & governance	
4	Student-centered institution		9	Integrative CIO	
5	Digital integration		10	Higher education affordability	

Source: EDUCAUSE

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Digital learning

SHIFT TO MEET STUDENTS WHERE THEY ARE

- Less than 20% of higher education students fit the traditional profile today.
- Shift to “meeting students where they are”
- When students take course that engage digitally and in person:
 - Content mastery can occur 2x as fast
 - Pass rates for at-risk student can increase by 1/3
 - Degree completion can increase
- Digital learning benefits:
 - Adapting to student capabilities
 - Promoting active and collaborative learning
 - Supporting learners with timely feedback and individual support

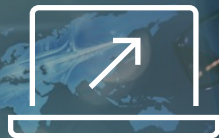
How is Dell Technologies
anticipating the needs of Higher
Education?

The path towards digital leadership



IT
Transformation

People



Workforce
Transformation

Process



Security
Transformation






Technologies



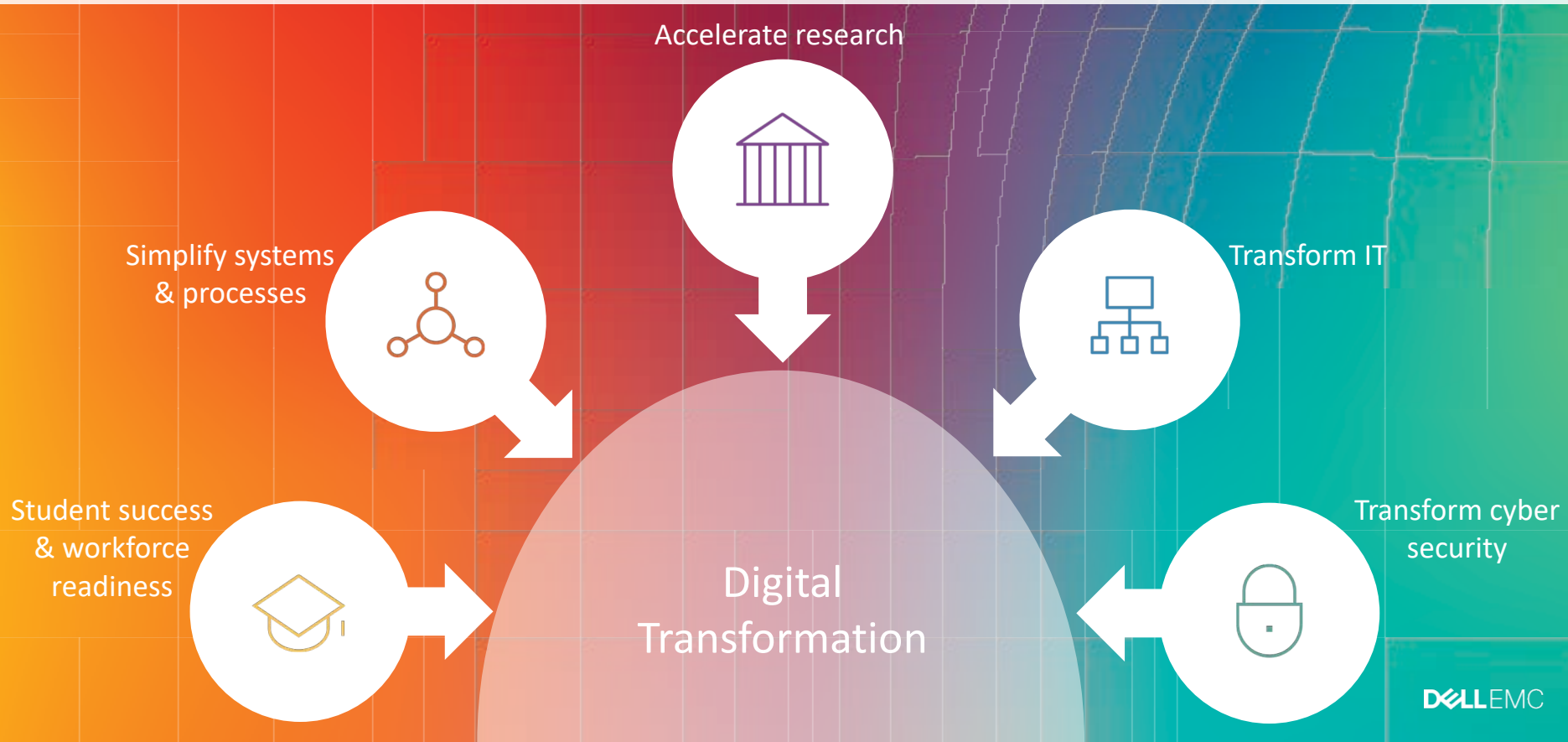
Application
Transformation

Digital Transformation in Higher Education

DRIVING INNOVATION AND STUDENT SUCCESS THROUGH DIGITAL TRANSFORMATION






Digital Transformation in Higher Education					
For What purpose?	TEACHING & ADMINISTRATION	RESEARCH	CAMPUS INFRASTRUCTURE		
Helping customers solve complex issues in higher education	 Student Success	 Simplify Systems and Process	 Accelerate Research	 IT Infrastructure	 Cyber Security
Dell EMC Solution Focus	ENGAGING LEARNING ENVIRONMENTS <ul style="list-style-type: none">• Active learning spaces• Immersive learning AR/VR• Collaboration solutions• Predictive analytics	DATA-INFORMED DECISION MAKING <ul style="list-style-type: none">• Digital Campus & IOT• Data lakes• Campus safety• Virtualized labs & environments	HIGH PERFORMANCE COMPUTING <ul style="list-style-type: none">• Integrated compute clusters & network fabrics• Research storage• Tools to support IRODS	MODERN IT PLATFORMS <ul style="list-style-type: none">• CI/HCI• Scale out• Multi-cloud• Software defined	BALANCE ACCESS & PROTECTION <ul style="list-style-type: none">• Information security• Data Management• Identity & access management• Data governance

Five Priorities in Higher Education



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Student success and workforce readiness

ENGAGING LEARNING PLATFORMS

- Active learning spaces
- Immersive learning
- Collaboration solutions
- Analytics: Education Data Management



DELL EMC

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WYSE



Microsoft





Redesigning Learning Spaces

Immersive Learning



We believe we're at a turning point

In this new world, the computer isn't just sitting on a desk or in your hand. It's all around you. Thoughtfully designed to make you more productive and your life easier. Letting you engage in more immersive ways. Inspiring you to collaborate more naturally. Even predicting things you need, before you know you need them.



Wave 1

Destination

Wave 2

Portable

Wave 3

Immersive

VR & AR are part of a story of changing usage patterns to increase productivity

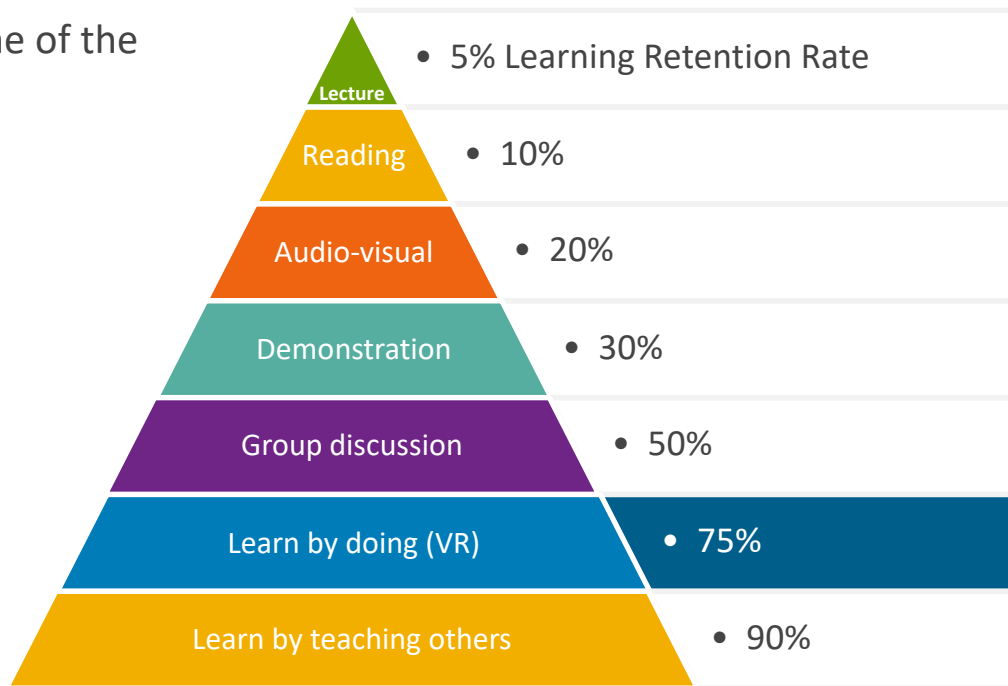
Deeper look at VR Training

Learning by doing at 75% retention has one of the highest effectiveness ratings

Greater value/return of VR training

- Limited or expensive resources
- High-risk situations
- Cost effective (e.g., limit travel)
- Detailed analytics

Learning is not just for new or acquired employees. There is also application for customers, external partners and their clients



Source: National Training Laboratories



Virtual Reality

- “Virtually” attend live lectures, concerts and sporting events
- Simulate real world learning
- New worlds for people with disabilities



Source: Dell/Intel Future Workforce study 2016



PTS Virtual Reality Exposure Training

Dell Precision powers Project Bravemind at the **University of Southern California**.

Project Bravemind is designed to help sufferers of PTSD, through Exposure Therapy, to reenact situations in VR under the control of a trained specialist that recreates the environment in VR and introduces vibration and smell to enhance immersion.



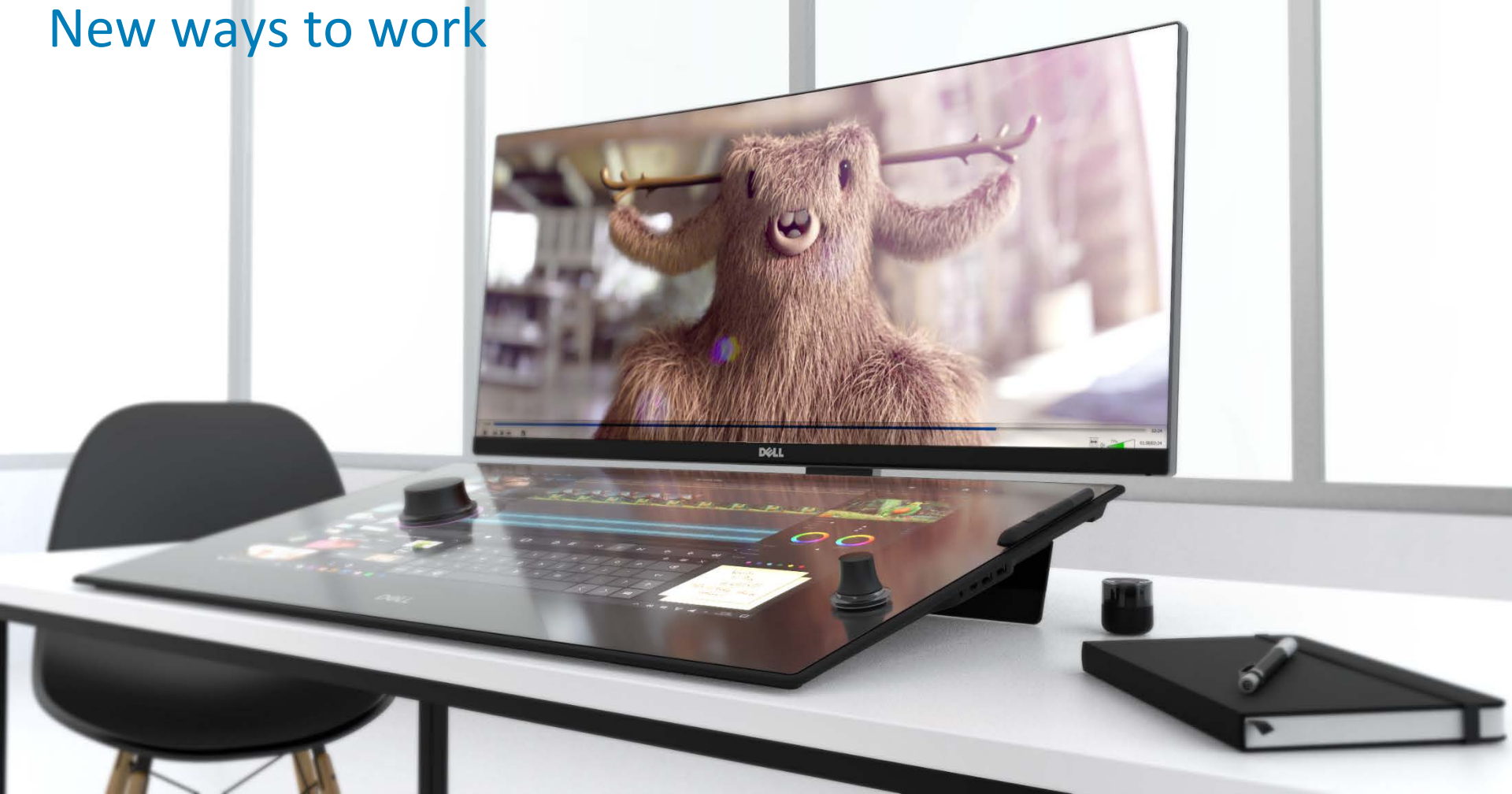


Augmented Reality

- Live direct environment with supplemented computer generated sensory input
- Simulate real world learning applications
- Collaborative learning
- IDC anticipates sales of AR devices to skyrocket to 15M by 2020



New ways to work





Collaboration Solutions

Innovative collaborative technologies



Dell 86" Interactive Digital Display

Secure collaboration with Intel™ Unite





Predictive Analytics

Student success is driving analytics

WHAT DRIVES INSTITUTIONS TO INVEST IN ANALYTICS?



Learning Analytics

- Improve student retention
- Improve student success
- Showcase educational effectiveness
- Reduce students' time to degree
- Better understand students








Institutional Analytics

- Optimize resources
- Showcase institutional effectiveness
- Improve student retention
- Contain or reduce costs
- Enhance transparency

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Simplifying Systems & Processes

- Data-informed Decision Making
- Digital communities & Internet of Things
- Data lakes
- Campus safety
- Virtualized labs & environments

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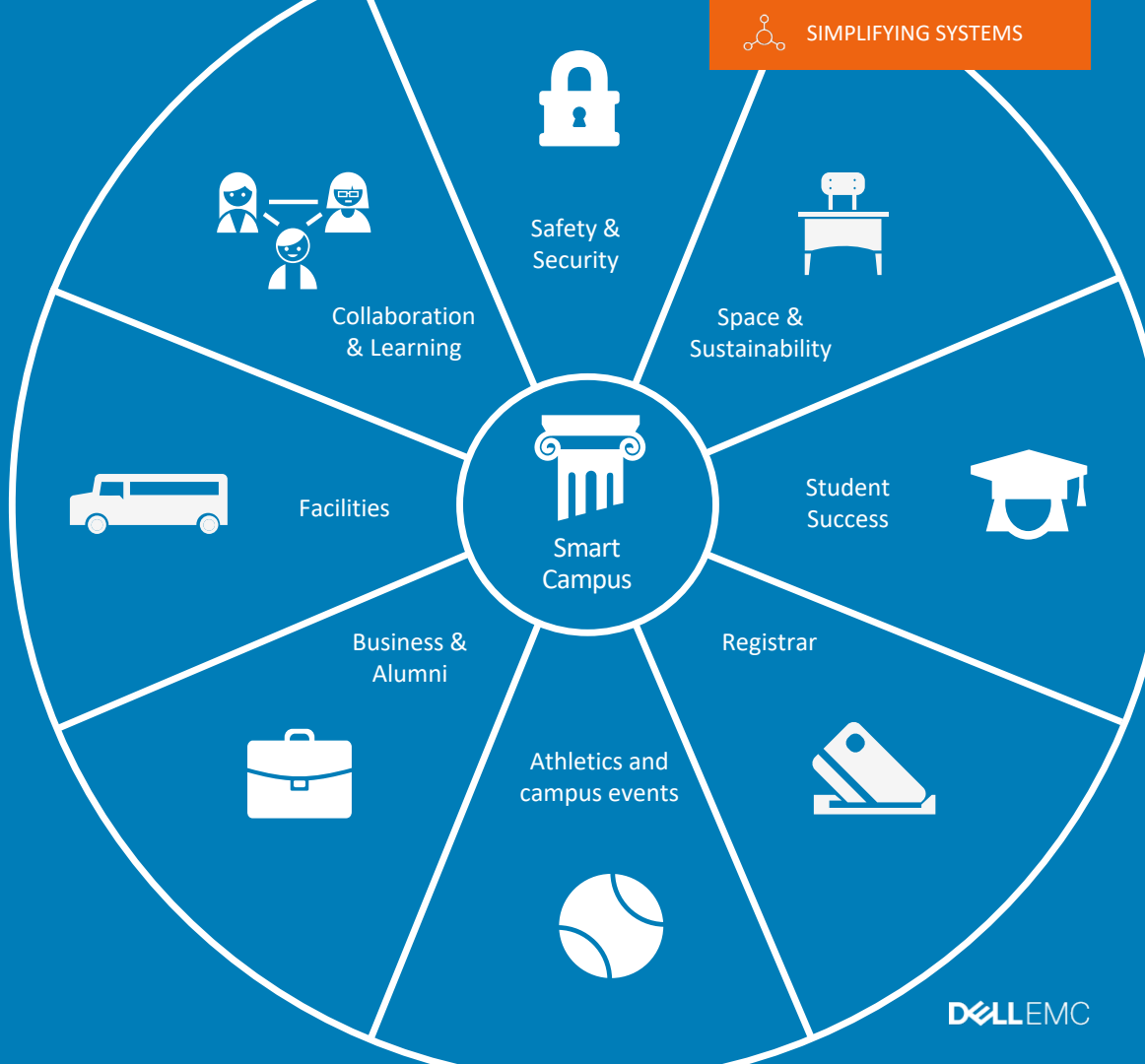
Pivotal





IOT – Advancing Smart Campuses

Implementing IOT across the campus supports institutional and learning decision making and improves the overall experience of students, faculty and administrators.





Arizona State University

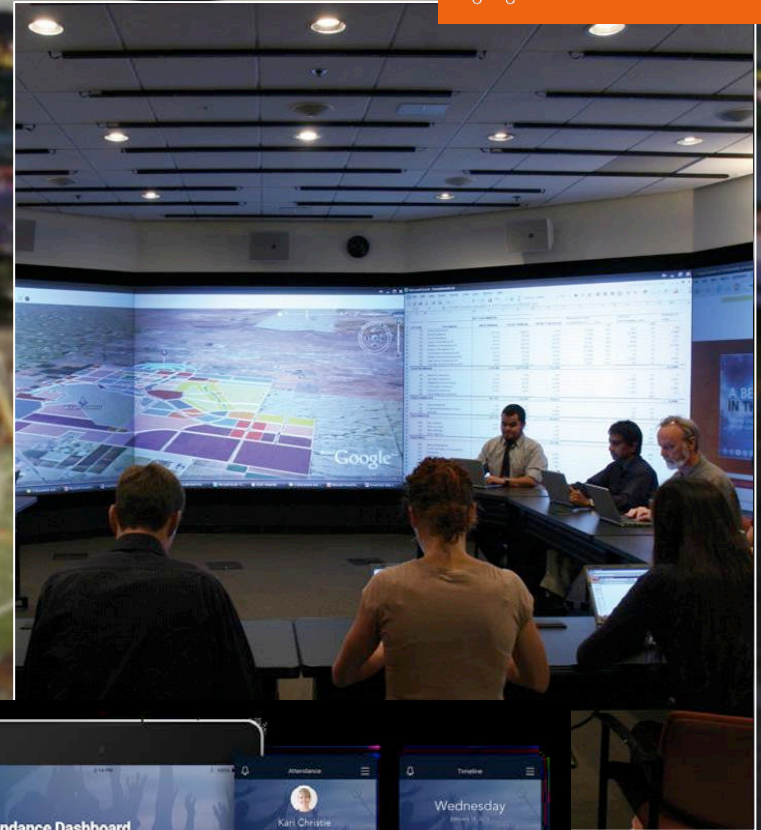
Future of classrooms

Analyze facial expression recognition in a class to measure overall sentiment to gauge engagement.

Anonymous polling to measure comprehension in real time.

Sensor data can help answer questions:

- How long was a student engaged in an activity?
- How does the student engage in activities the demonstrate subject mastery?





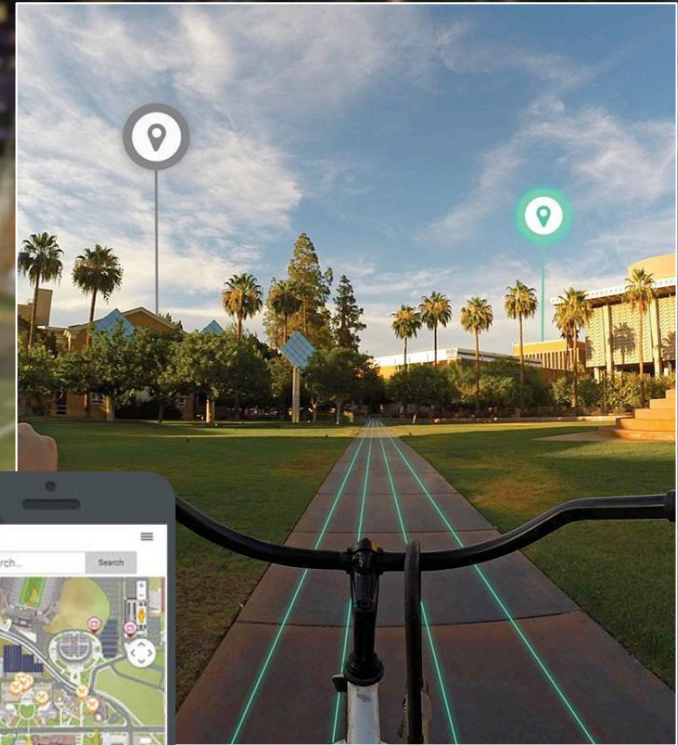
Arizona State University Wayfinding

Today: Custom event maps

- Relevant POI
- Custom information for events
- Internal building maps
- Real Time parking

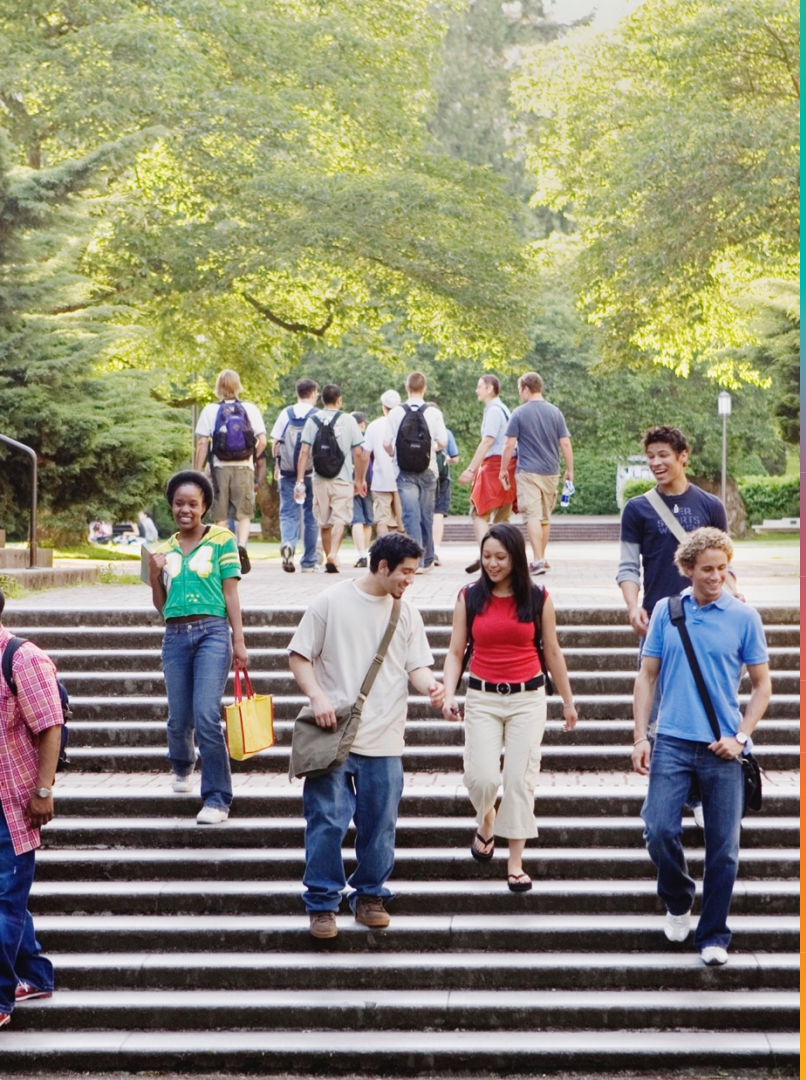
Future: Take navigation indoors.

- Take students to the right building, the right room on the right day.
- Campus navigation through mobile app maps, integrated digital kiosk or personal assistant.





Data Lakes



Campus Safety



San Jose State University Campus Safety

- Self powered outdoor security and computing platform
 - Truly portable
 - Intelligent multi sensors
 - Real time edge analytics
- Campus Challenges
- Situational awareness, chemical and gunshot detection
- Security in areas around campuses without power access





Virtualized labs and environments



The Evolution of VDI as a Crucial Technology in Higher Education

Desktop Virtualization Technologies:

- Impacts student work-study habits
- Use and purpose of computer labs
- IT support workloads

Online courses / MOOCS via desktop virtualization environments are

- Faster, easier, A
- Allows students to leverage their own hardware






Hyper-Converged Infrastructure VDI appliances

- Scalable, Flexible infrastructure
- Supports both remote and on-premise students and staff
- Building block architecture that provides
 - Data Security
 - Scalable software licensing
 - Cost effective compared to cloud solutions



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Accelerating Research

HIGH PERFORMANCE COMPUTING

- Integrated compute clusters & network fabrics
- Research storage
- Tools to support IRODS

VxRail
hyper-converged

Converged blocks,
appliances and racks










Digital Transformation isn't
just about **technology**,
it's about empowering
learning in ways never before
imagined.



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Transforming IT

MODERN IT PLATFORMS

- All flash
- Scale out
- Multi-cloud
- Software defined
- Trusted

PowerEdge 14th
Generation Servers

Public
cloud

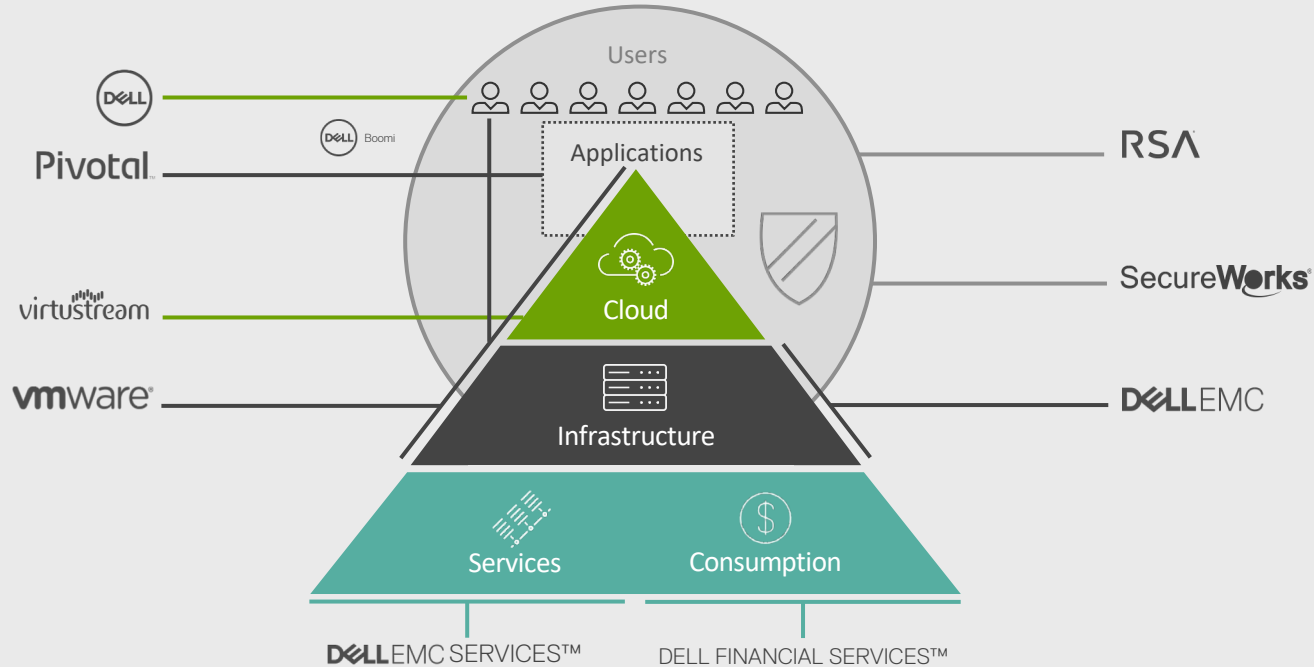
Private
cloud

Converged &
hyper-converged








Why Dell Technologies?

ESSENTIAL INFRASTRUCTURE SOLUTIONS FROM THE CITIZEN TO THE DATA CENTER TO THE CLOUD



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Transform Cyber-Security

BALANCE ACCESS AND PROTECTION

- Information security
- Data Management
- Identity & access management
- Data governance

vmware®
NSX

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ISOLATED RECOVERY

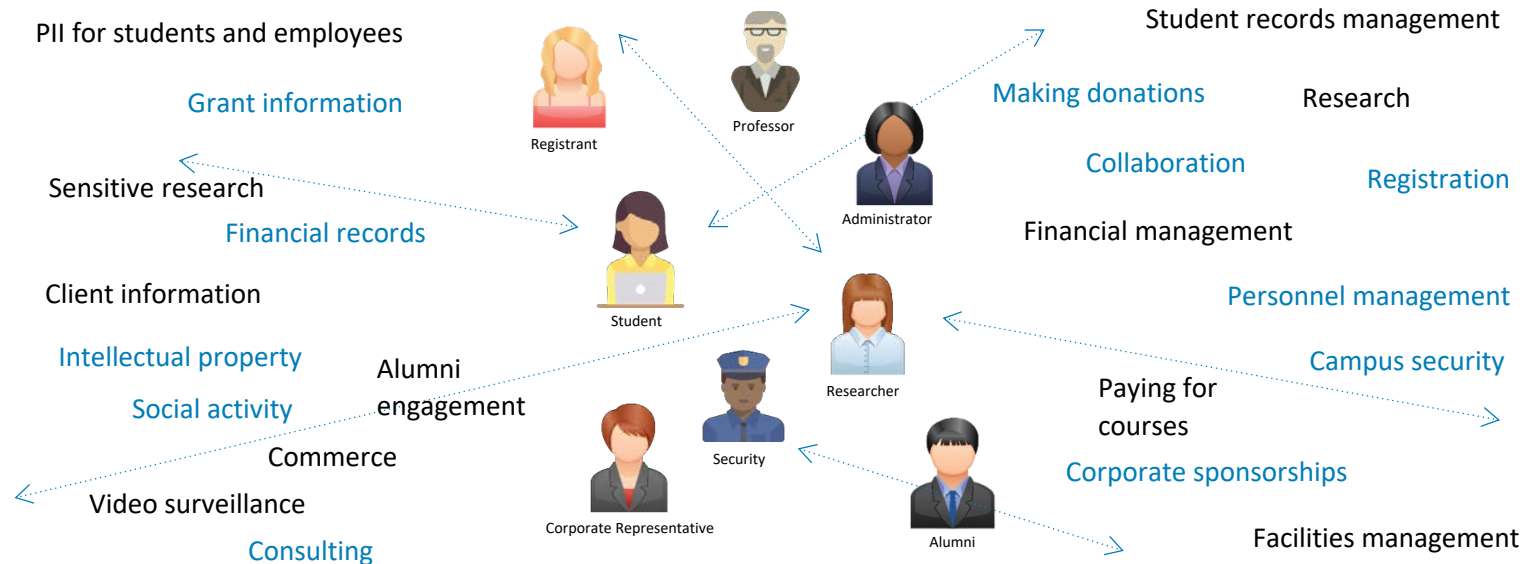
RSA

Secureworks®





HI-ED constituents create risk as they access and share a broad range of information across multiple devices.



All want data to be available, accessible, mobile and timely. Even if the path to access the data is secure, **users create risks by downloading, manipulating and forwarding information.**

Dell EMC leadership in Education

65



Youth Learning programs globally

#1



Client **device** sold to education organizations

+300K



Classrooms worldwide leveraging Dell EMC solutions for education

8



Generations of **student designed** devices

+170



CERN-affiliated schools globally enabled with High Performance Computing (HPC) Research

+65K



Dell EMC Professional Learning Services hours delivered to positively impact student learning and teaching practices

1M



Children around the world with access to Dell Classroom and Learning

+14K



College and university campuses worldwide leverage Dell EMC Solutions

Thank you

DELLEMC