Technology Session

Infrastructure from a Data perspective

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Agenda

- ***Introduction***
- ***Dell Technologies***
- ***The digital, the society and the market transformation***
- ***Data Infrastructure***
- ***Data Protection***
- ***Analytics architectures***
- ***Cyber-Security***

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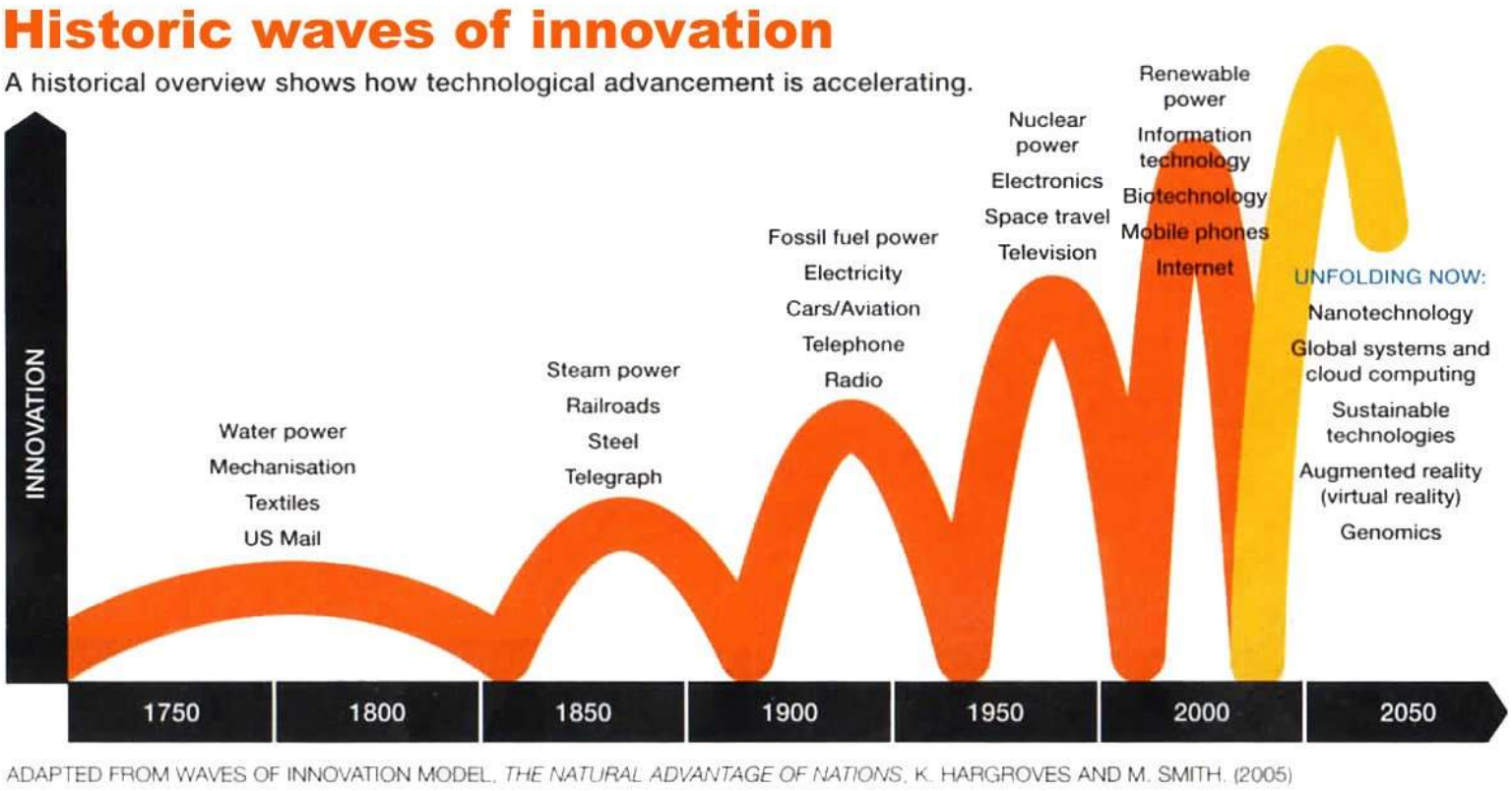
Some History facts

Technology waves



ADAPTED FROM WAVES OF INNOVATION MODEL, *THE NATURAL ADVANTAGE OF NATIONS*, K. HARGROVES AND M. SMITH. (2005)

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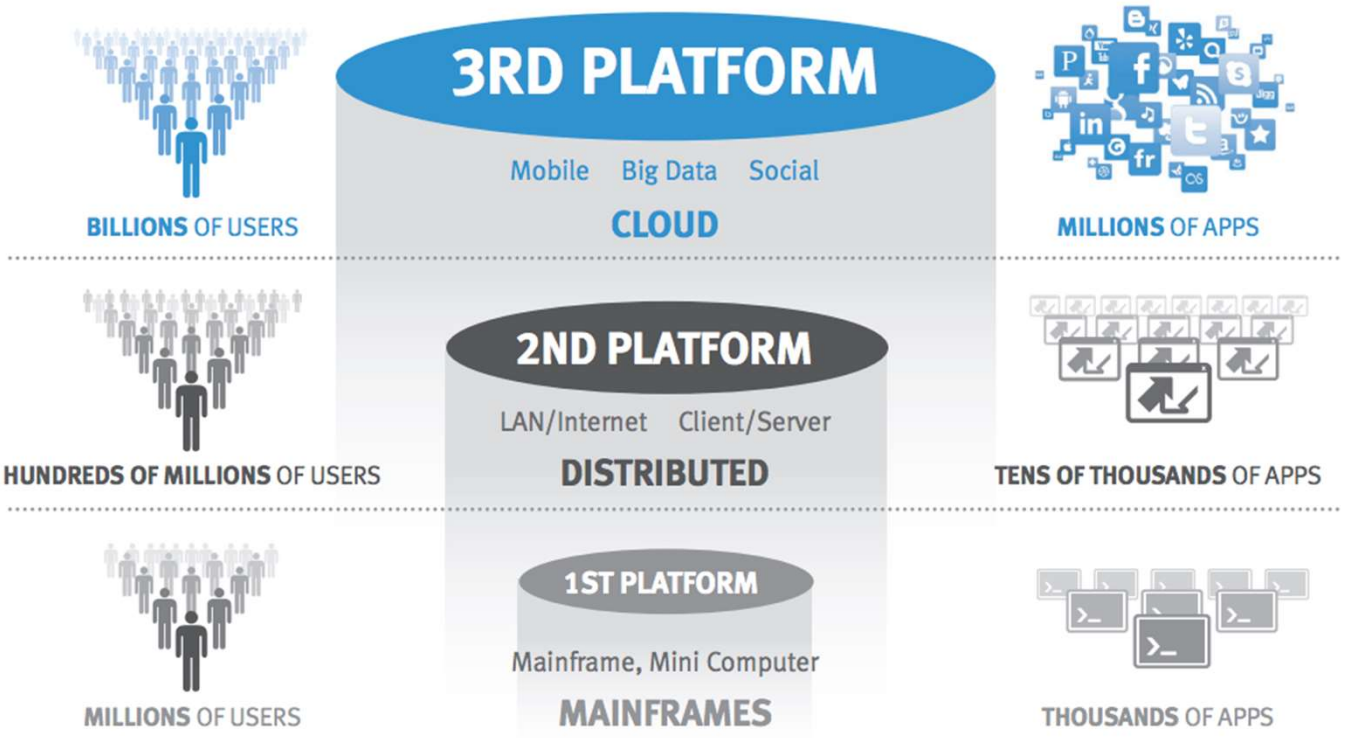
THE THIRD PLATFORM

The Third Platform is described by IDC as the next-generation compute platform that is accessed from mobile devices, utilizes Big Data, and is cloud based.



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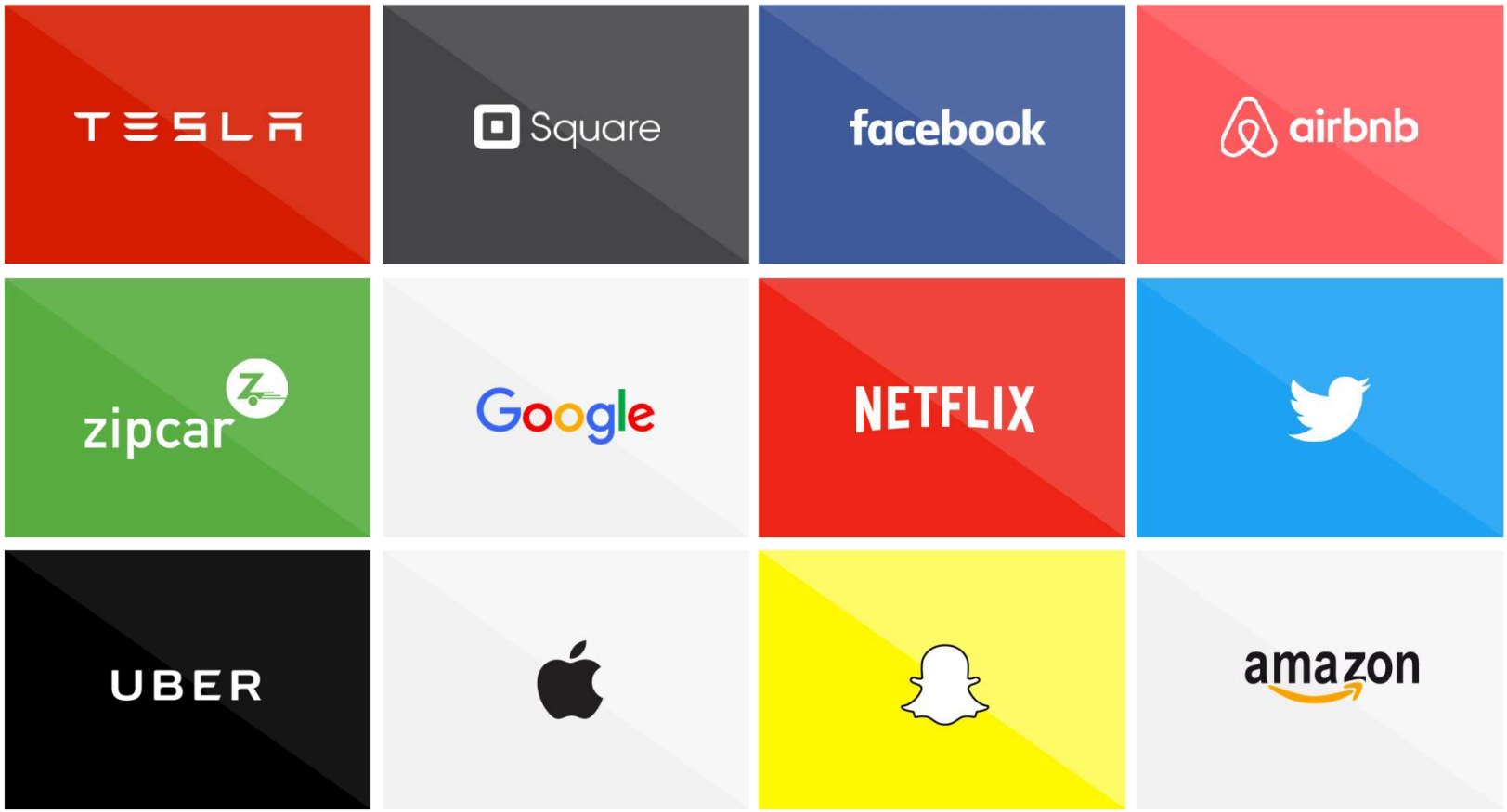
Digital
Transformation
The leading way to Industry 4.0
DELL Technologies

The Digital Disruptors



Incumbents Are Responding. Connected, Smarter Machines

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The Digital TWIN

WHAT CHANGED ?

Society

- Differences between generations
- Consumption models
- The desires and priorities
- The way we live

Environment

- Sustainability
- Drive power efficiency
- Reduce environmental footprint
- The way we live

Digital

- Digital Everywhere
- The Apps
- Interaction between individual and companies

Communications

- Communication capabilities
- Choice
- Always ON
- Raise of the “Edge”

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Characteristics	Maturists (pre-1945)	Baby Boomers (1945-1960)	Generation X (1961-1980)	Generation Y (1981-1995)	Generation Z (Born after 1995)
Formative experiences	Second World War Rationing Fixed-gender roles Rock 'n' Roll Nuclear families Defined gender roles — particularly for women	Cold War Post-War boom "Swinging Sixties" Apollo Moon landings Youth culture Woodstock Family-orientated Rise of the teenager	End of Cold War Fall of Berlin Wall Reagan / Corbachev Thatcherism Live Aid Introduction of first PC Early mobile technology Latch-key kids; rising levels of divorce	9/11 terrorist attacks PlayStation Social media Invasion of Iraq Reality TV Google Earth Glastonbury	Economic downturn Global warming Global focus Mobile devices Energy crisis Arab Spring Produce own media Cloud computing Wiki-leaks
Percentage in U.K. workforce*	3%	33%	35%	29%	Currently employed in either part-time jobs or new apprenticeships
Aspiration	Home ownership	Job security	Work-life balance	Freedom and flexibility	Security and stability
Attitude toward technology	Largely disengaged	Early information technology (IT) adaptors	Digital Immigrants	Digital Natives	"Technoholics" – entirely dependent on IT; limited grasp of alternatives
Attitude toward career	Jobs are for life	Organisational — careers are defined by employers	Early "portfolio" careers — loyal to profession, not necessarily to employer	Digital entrepreneurs — work "with" organisations not "for"	Career multitaskers — will move seamlessly between organisations and "pop-up" businesses
Signature product	Automobile	Television	Personal Computer	Tablet/Smart Phone	Google glass, graphene, nano-computing, 3-D printing, driverless cars
Communication media	Formal letter	Telephone	E-mail and text message	Text or social media	Hand-held (or integrated into clothing) communication devices
Communication preference	Face-to-face	Face-to-face ideally, but telephone or e-mail if required	Text messaging or e-mail	Online and mobile (text messaging)	Facetime
Preference when making financial decisions	Face-to-face meetings	Face-to-face ideally, but increasingly will go online	Online — would prefer face-to-face if time permitting	Face-to-face	Solutions will be digitally crowd-sourced

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Technology Session - Storage Tech

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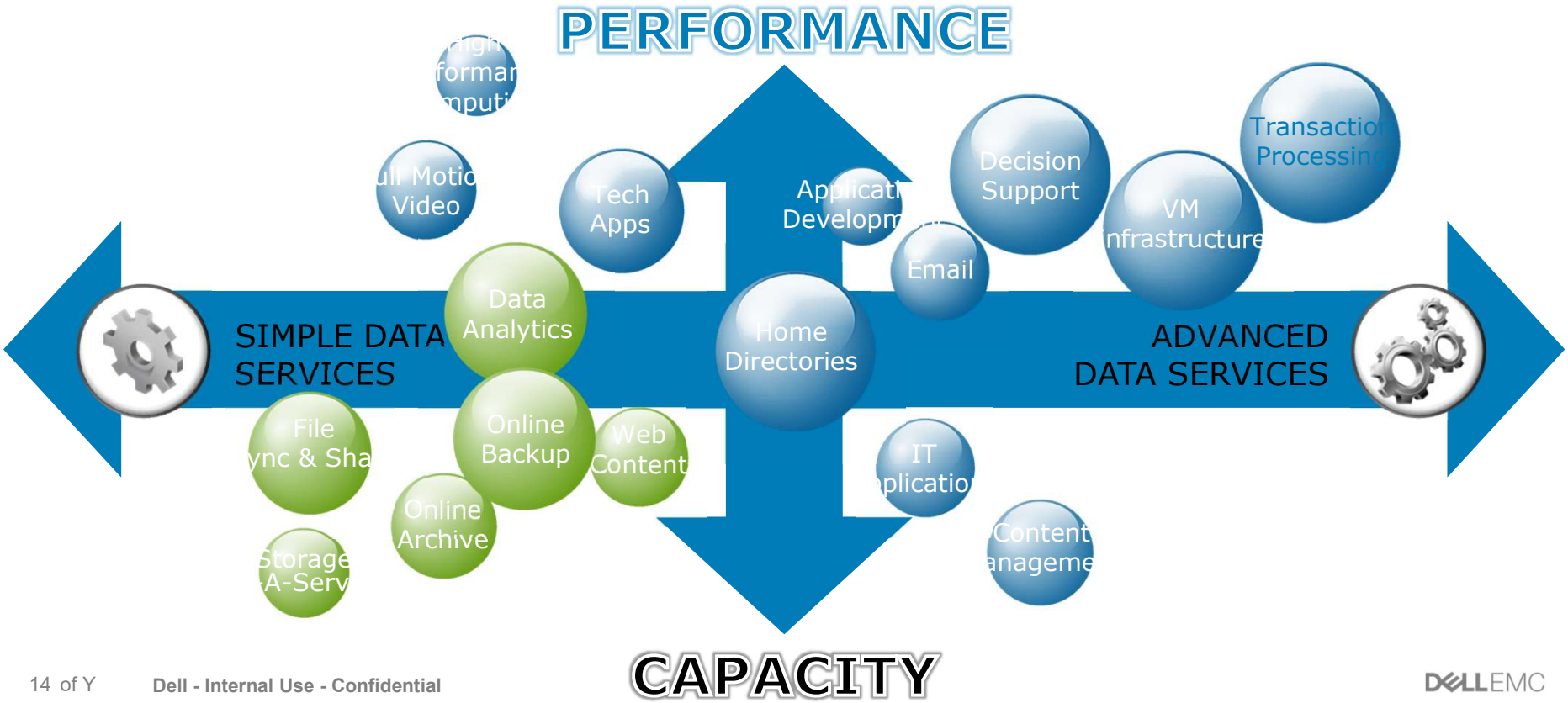
WORKLOADS HAVE DIFFERENT REQUIREMENTS



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Architecture Evolution Whiteboard
• Storage evolution
• Storage array architectures
• Virtualization
• Storage access
(protocols)
• Containers
• Sw-Defined

Technology Session - Data Protection

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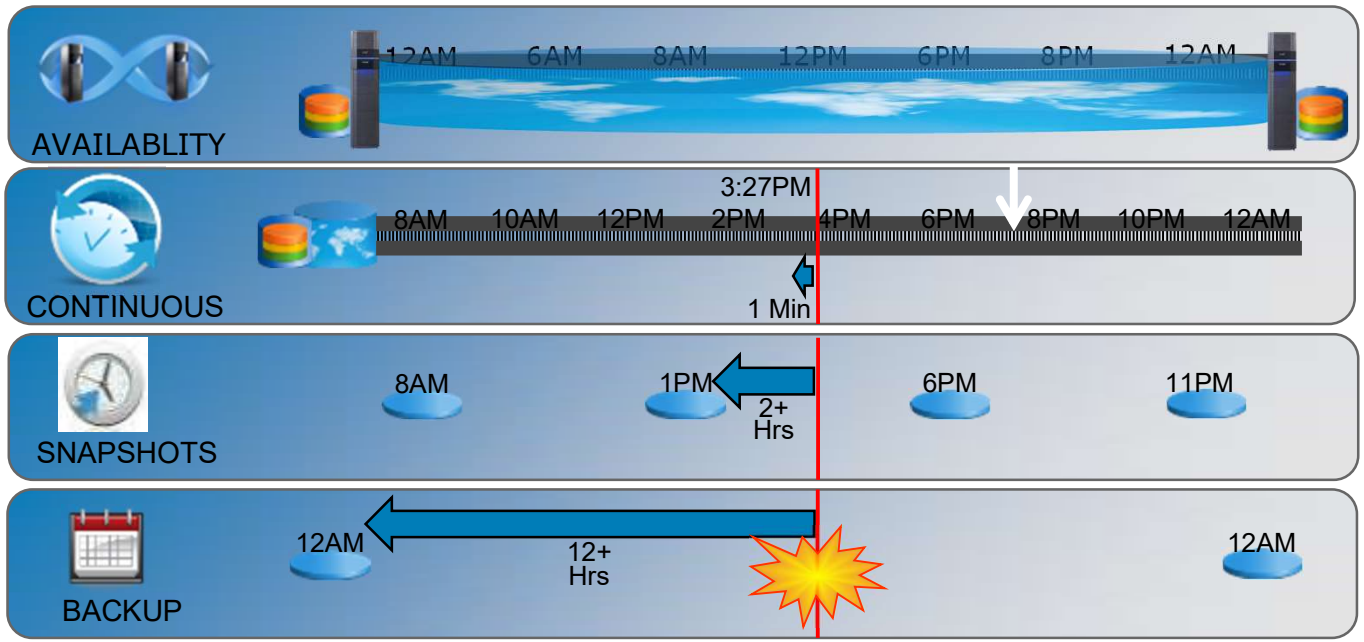
DATA PROTECTION FOR EVERY SLA



VPLEX

RecoverPoint

ProtectPoint

Data Protection Suite
Data Domain

Synchronous Replication

Asynchronous Replication

Point in Time Replication

Backup and Recovery

DATA CORRUPTION OCCURS AT 3:28pm

Zero

Seconds

Minutes

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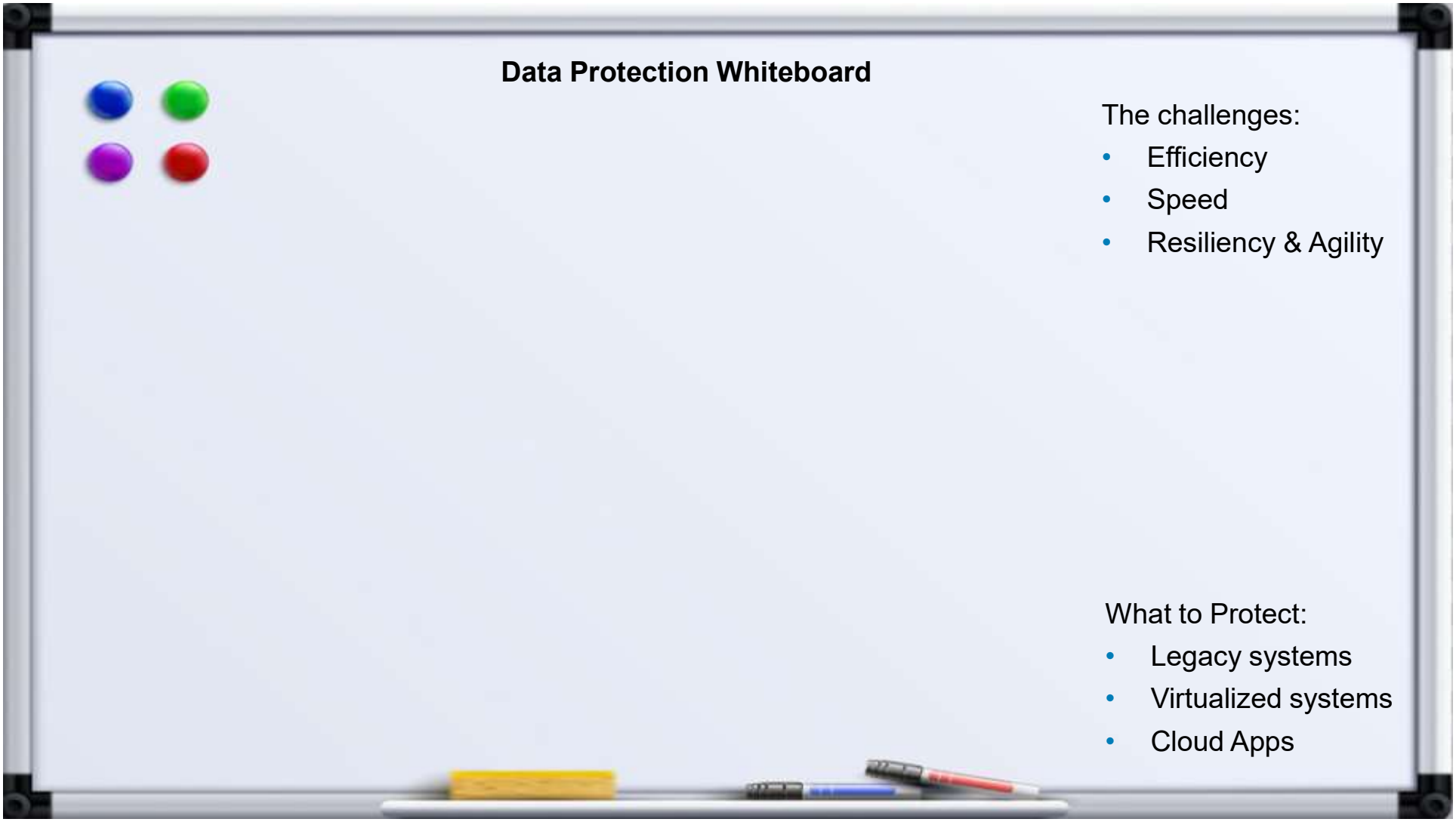
Data Protection Whiteboard
The challenges:
• Efficiency
• Speed
• Resiliency & Agility
What to Protect:
• Legacy systems
• Virtualized systems
• Cloud Apps

Technology Session – Analytics Architectures

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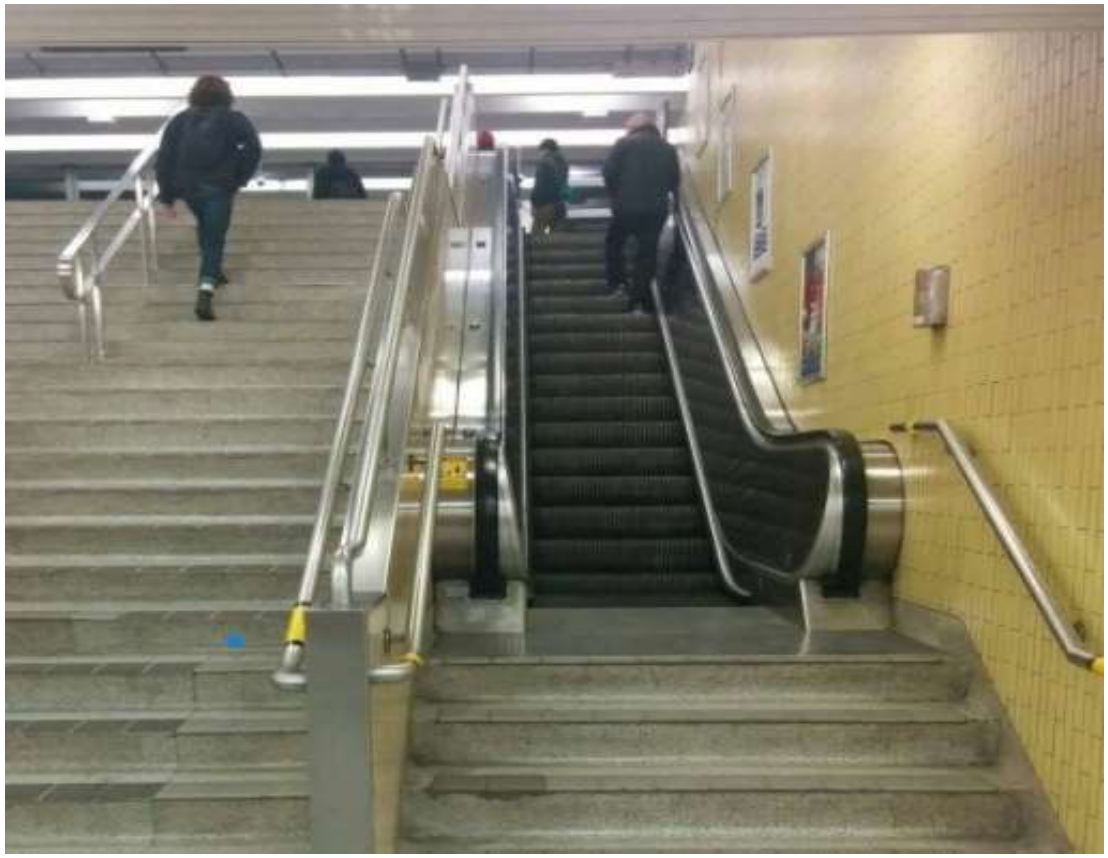
GOOD SIZED INFRASTRUCTURE MATTERS



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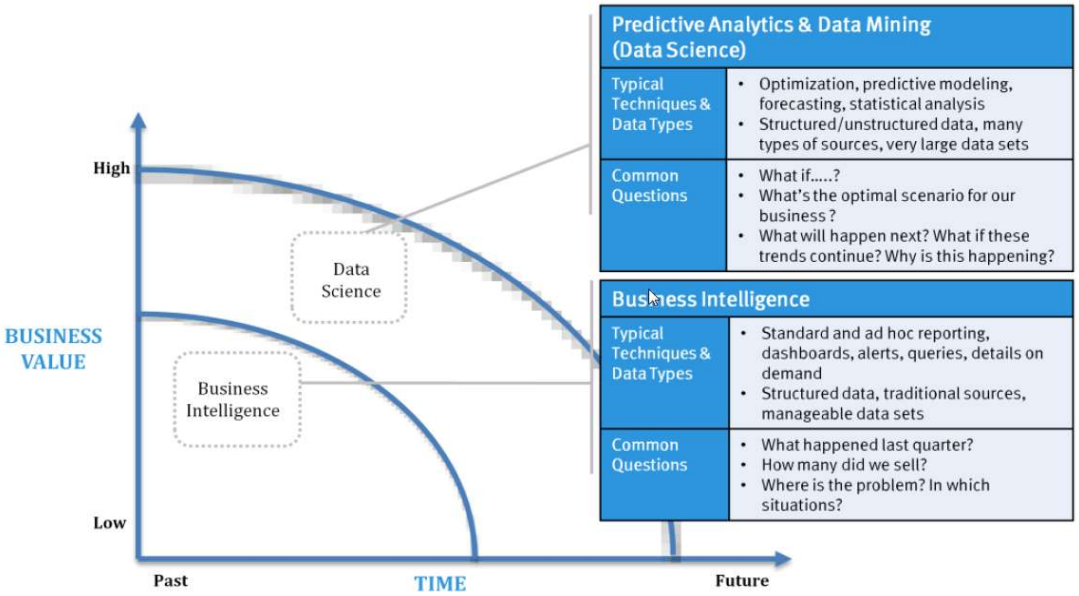
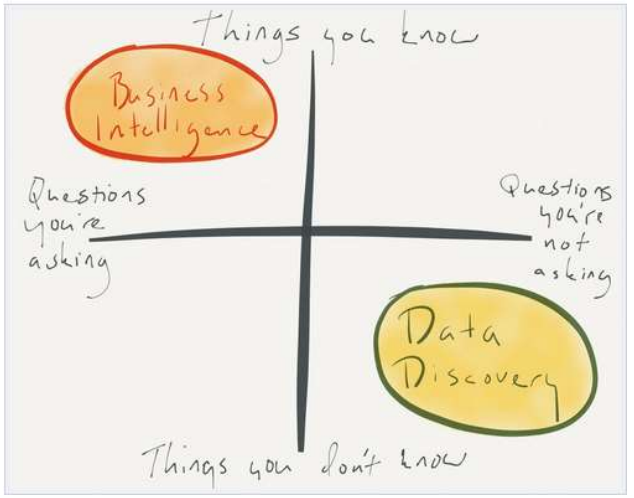
Data Science vs Business Intelligence

Business Intelligence (BI) focuses on using a consistent set of metrics to measure past performance and inform business planning.

Data Science refers to a combination of analytical and machine learning techniques used for drawing inferences and insight out of data.





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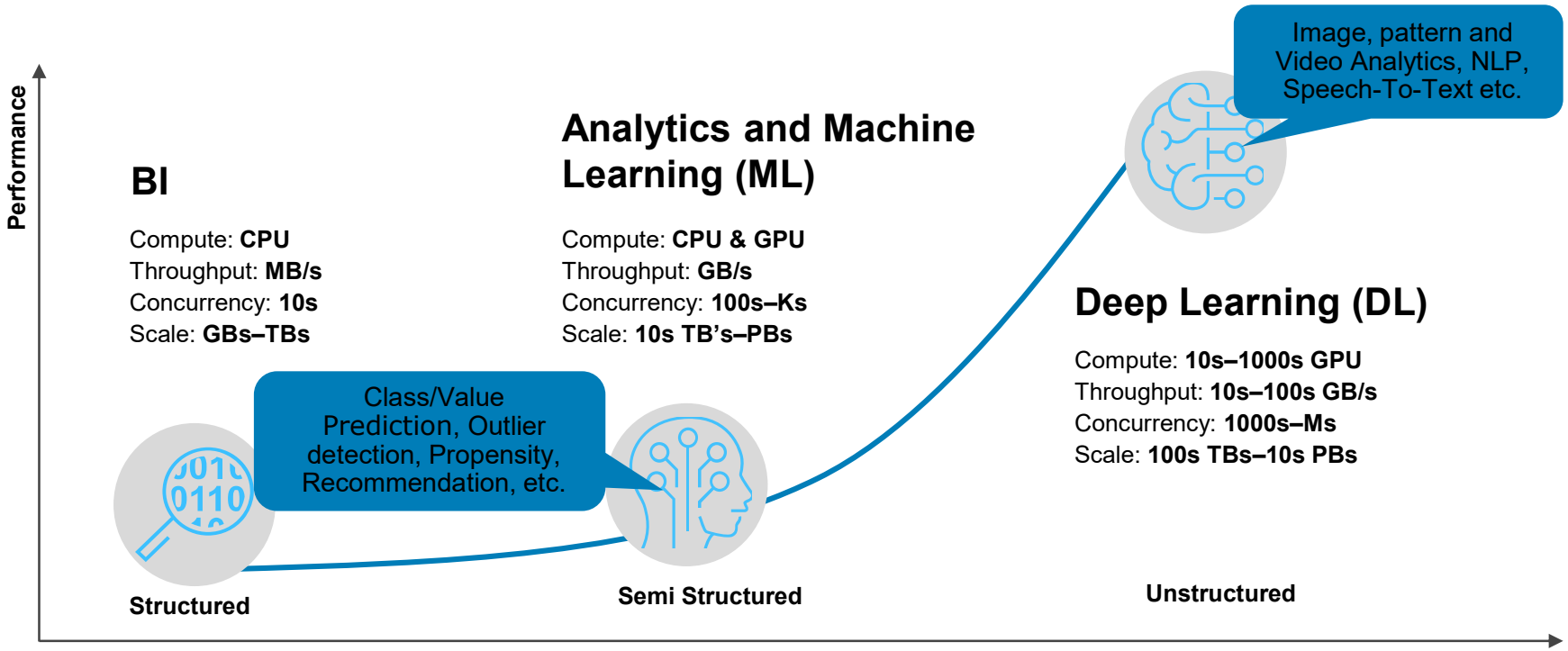
AI ESCALATES INFRASTRUCTURE REQUIREMENTS



YoY Growth Rate Est:	-10%	20%	45%

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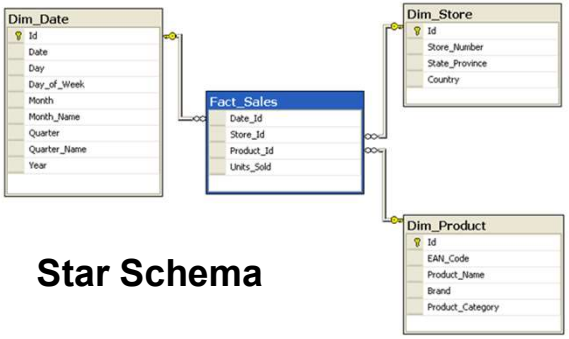
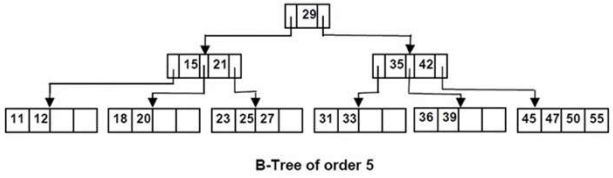
The architecture will depend on the data…

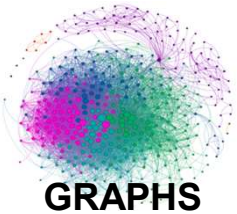


Star Schema



B-Tree of order 5

B-Tree Indices



GRAPHS

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Analytics Whiteboard

The challenges:

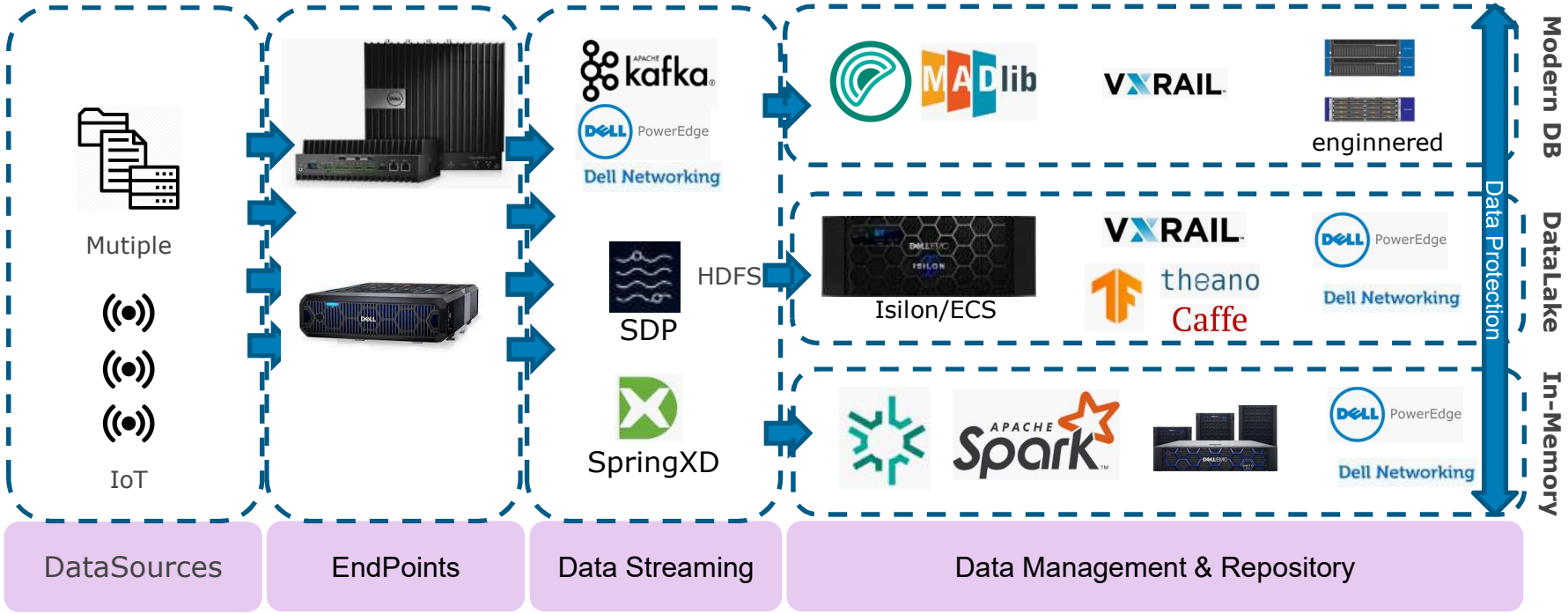
- ETL process
- Time spend
- Advanced analytics architecture

Outcomes:

- Scale
- Optimized TTR

WHERE DOES DELL TECHNOLOGIES FIT IN DA SPACE ?

• Edge → Core



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High Performance Computing
Architecture

Technology Session – Cyber Security

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Cyber-Security Whiteboard

The challenges:

- Ransomware
- Data Extorsion/Theft
- Business Recover

Outcomes:

- cyberVault
- Last line of defense

OPEN SOURCE AND COMMUNITY EDITION SOLUTIONS

- Greenplum Database -> https://greenplum.org/
- ECS (Object Store) -> https://portal.ecstestdrive.com/
- RabbitMQ (message broker) -> https://www.rabbitmq.com/
- Application modernization -> https://tanzucommunityedition.io/
- Dell OMNIA (Infrastructure Automation) -> https://github.com/dellhpc/omnia

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