

Ontario's Cloud First Journey

Public Sector CIO Committee

February 26, 2020

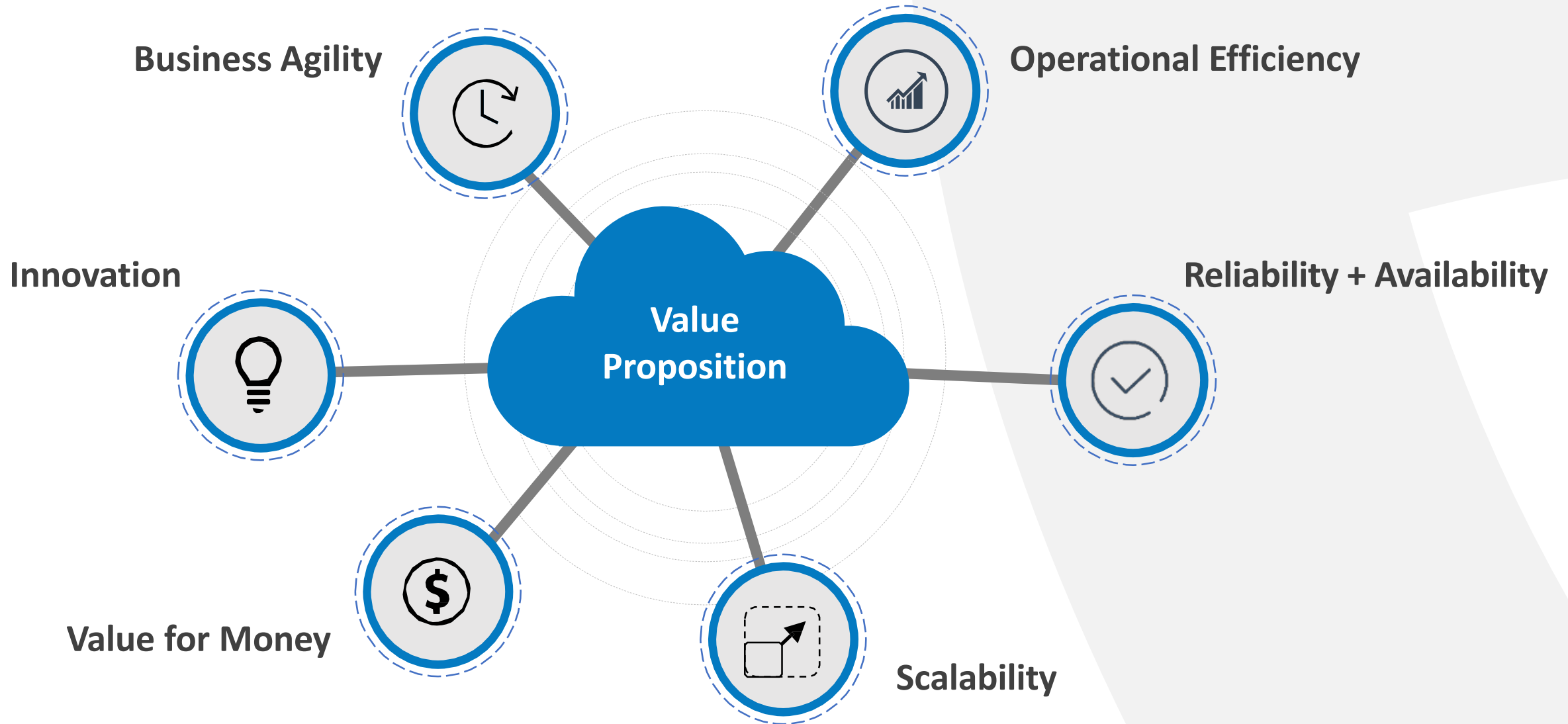
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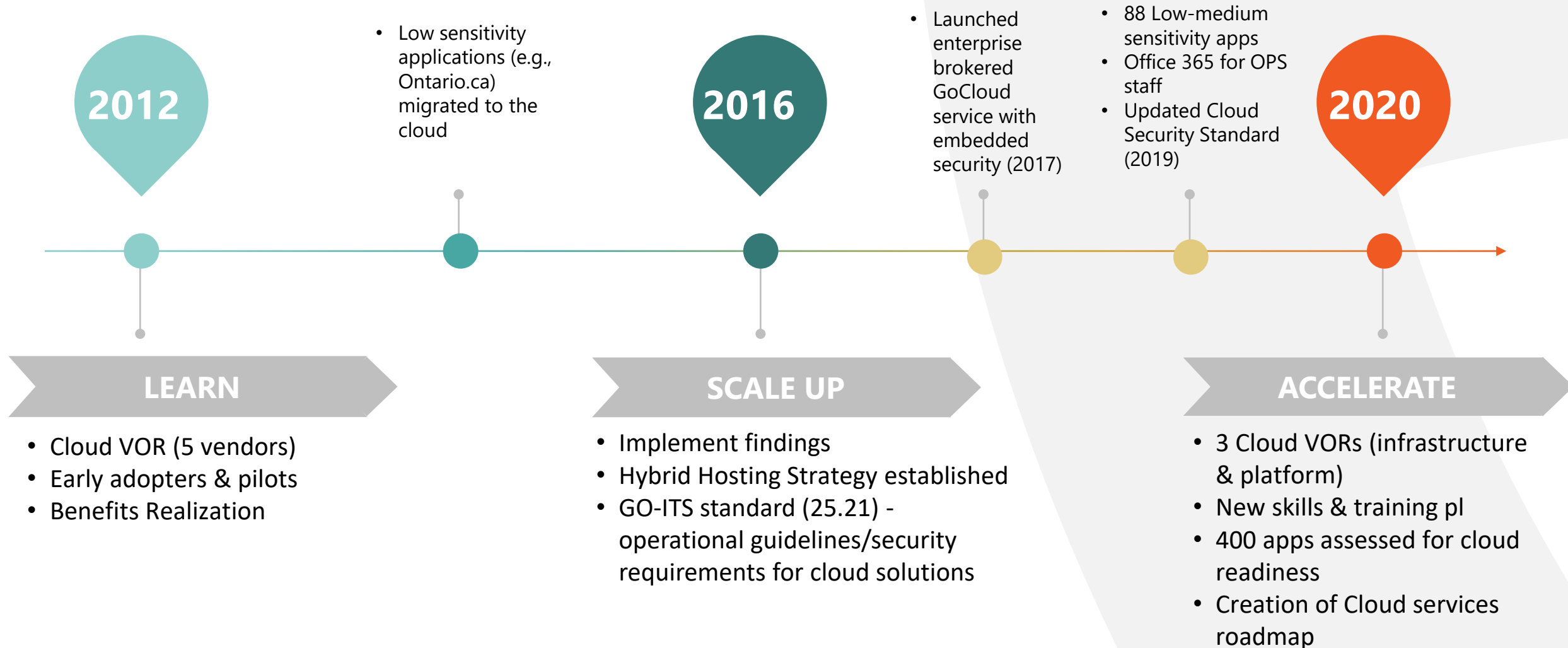
Context

- One of the key priorities of the Ontario government is to deliver simpler, faster and better services to the citizens of the province. Technology is a key enabler in achieving that outcome.
- Since 2012, the Ontario government has been on a cloud journey to determine how cloud technologies can help our organization drive business outcomes, while becoming more agile and efficient.
- Ontario has ~ 1200 applications which are mostly hosted in OPS data centers. Two, highly secure data centres are primarily reserved for ministry business and mission critical applications with highly sensitive data.

Cloud Adoption: Value Proposition



Our Cloud Journey



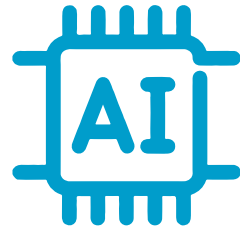
How Are We Currently Using Cloud?

Websites & Media



Ontario.ca open data portal

Artificial & Business Intelligence



Cloud enables use of artificial intelligence and business intelligence

Collaboration



Collaboration tools such as Ontario government email, presentations, file sharing

At-Risk Tech



- Aging IT assets
- Less reliance on data centres
- At-risk technologies

Greenfield application development is cloud ready

Pillars of Cloud Adoption

Policy



**Workforce +
Training**



**Security +
Technology**



Procurement



See Appendix

Key Lessons Learned

Policy



Principles/standards are critical to ensuring ongoing protection, security and privacy of personal information

Workforce + Training



New technology requires expanding cloud skillsets and new ways of working

Security + Technology



Evolved Cloud security framework. GoCLOUD enterprise broker service to safeguard configuration

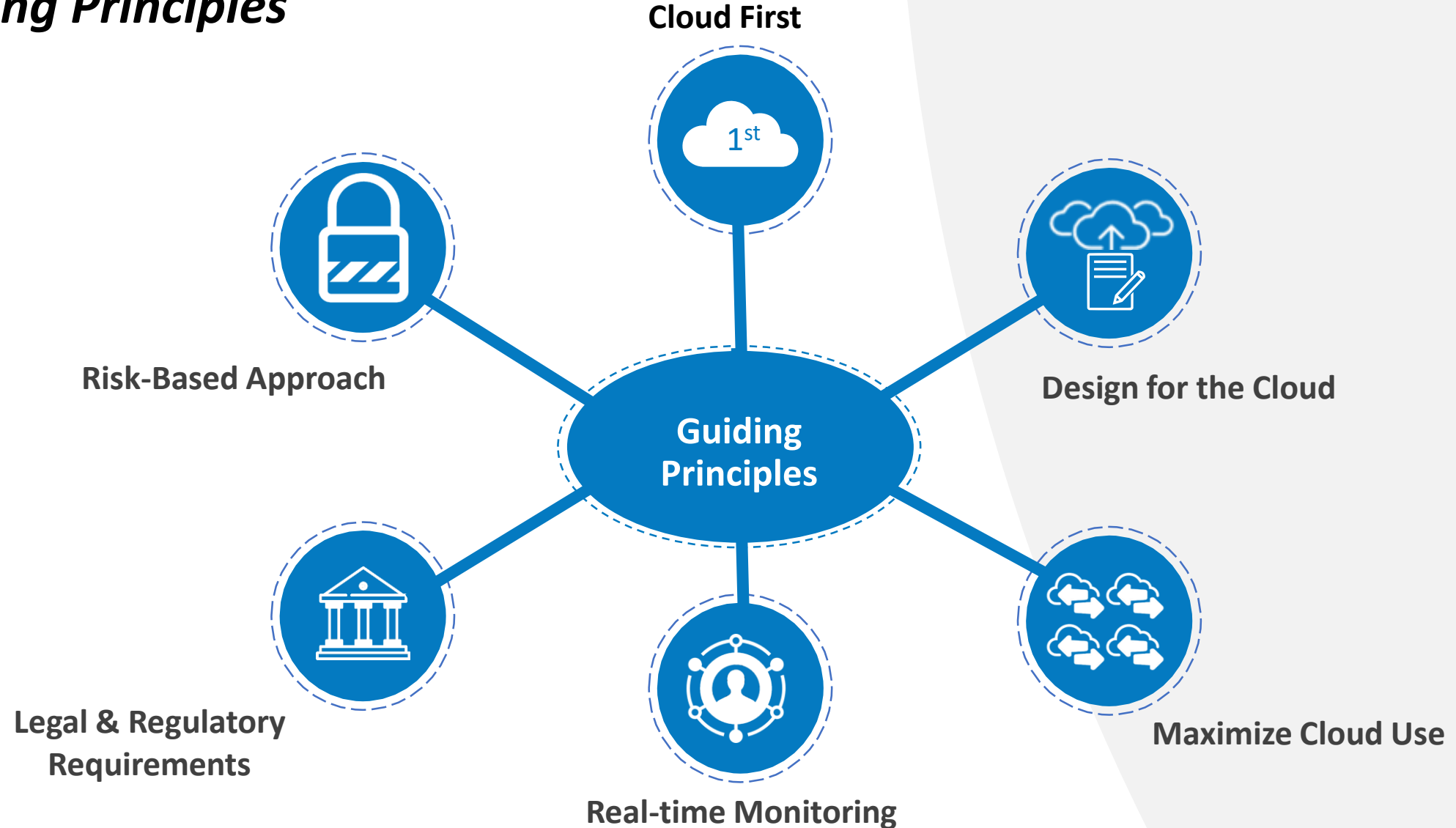
Procurement



A different approach was needed, including specific contractual terms and conditions (e.g., data ownership)

Accelerating Adoption with 'Cloud First'

Guiding Principles



Continuing the Cloud Journey

- Considering 'Cloud First' where appropriate, but not cloud only.
- Continuing to focus on enabling cloud adoption in a secure, privacy-enhancing manner.
- Becoming 'Cloud First' is a shift in mindset, not just a shift in technology (i.e., learning, change management, culture).
- Ontario's cloud journey will also be a key enabler to Ontario's technology roadmap that is currently under development and targeted for completion later in 2020.

Appendix

Cloud Adoption Supporting Pillars



Cloud Policy

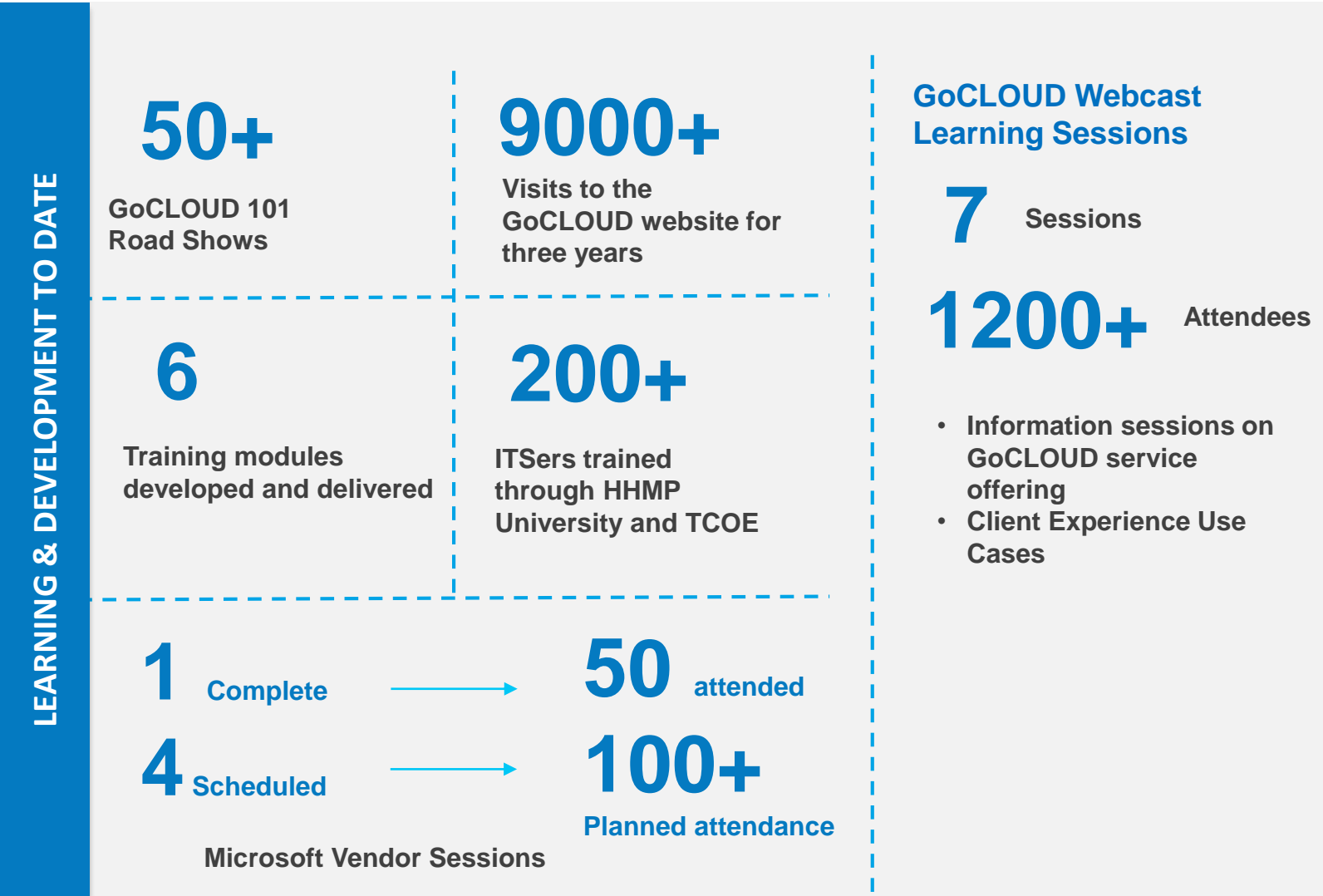
From Cloud pilots to 'Cloud First'



- In 2016, MGCS released GO-ITS standard (25.21) 'Cloud Security'
 - provided operational guidelines regarding security requirements for cloud solutions
 - covered a wide range of cloud services and helped OPS manage the risks related to the acquisition of cloud services.
- In 2019, Ontario updated its GO-ITS standard called 'Cloud First and Cloud Security' which
 - introduces "Cloud First" principles and
 - makes other technical updates to align with the most up-to-date international security standards and best practices.
- Working towards additional suite of strategic policy tools that will further accelerate the adoption of cloud services.

Workforce + Training

From L&D to New Learning Paths



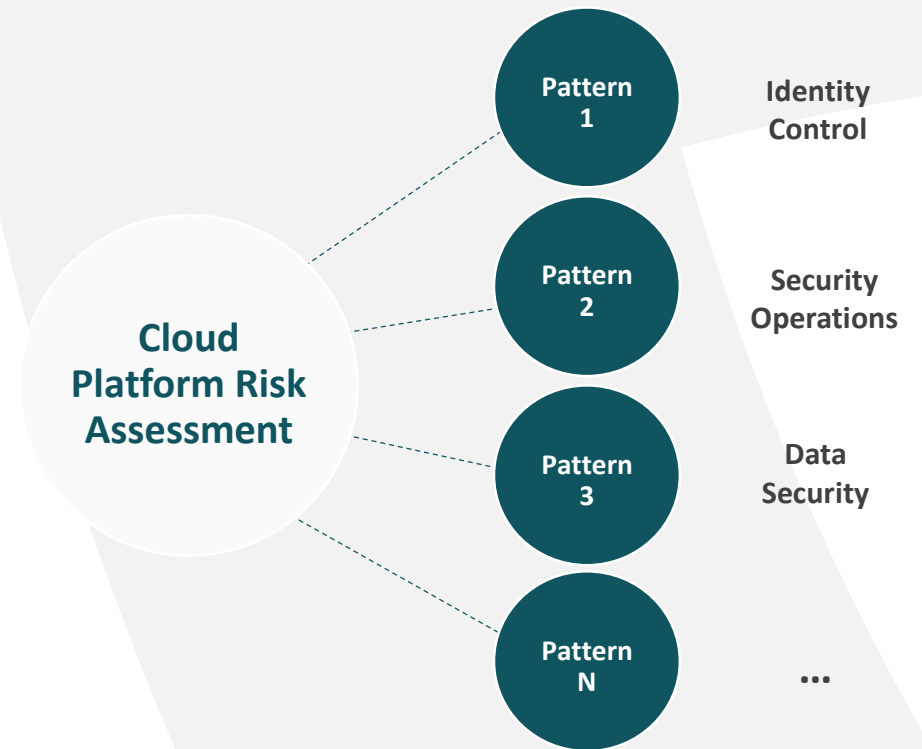
NEW LEARNING PATHS

Learning Path	Persona
Cloud for Business	Business Client
Cloud Infrastructure	Architect/ Designer Operator
Application Development	Developer
Data Analytics, Science, Reporting & AI	Data Engineer
Beginner Intermediate Advanced	
Cloud 101 GoCLOUD 101	All

Security & Technology

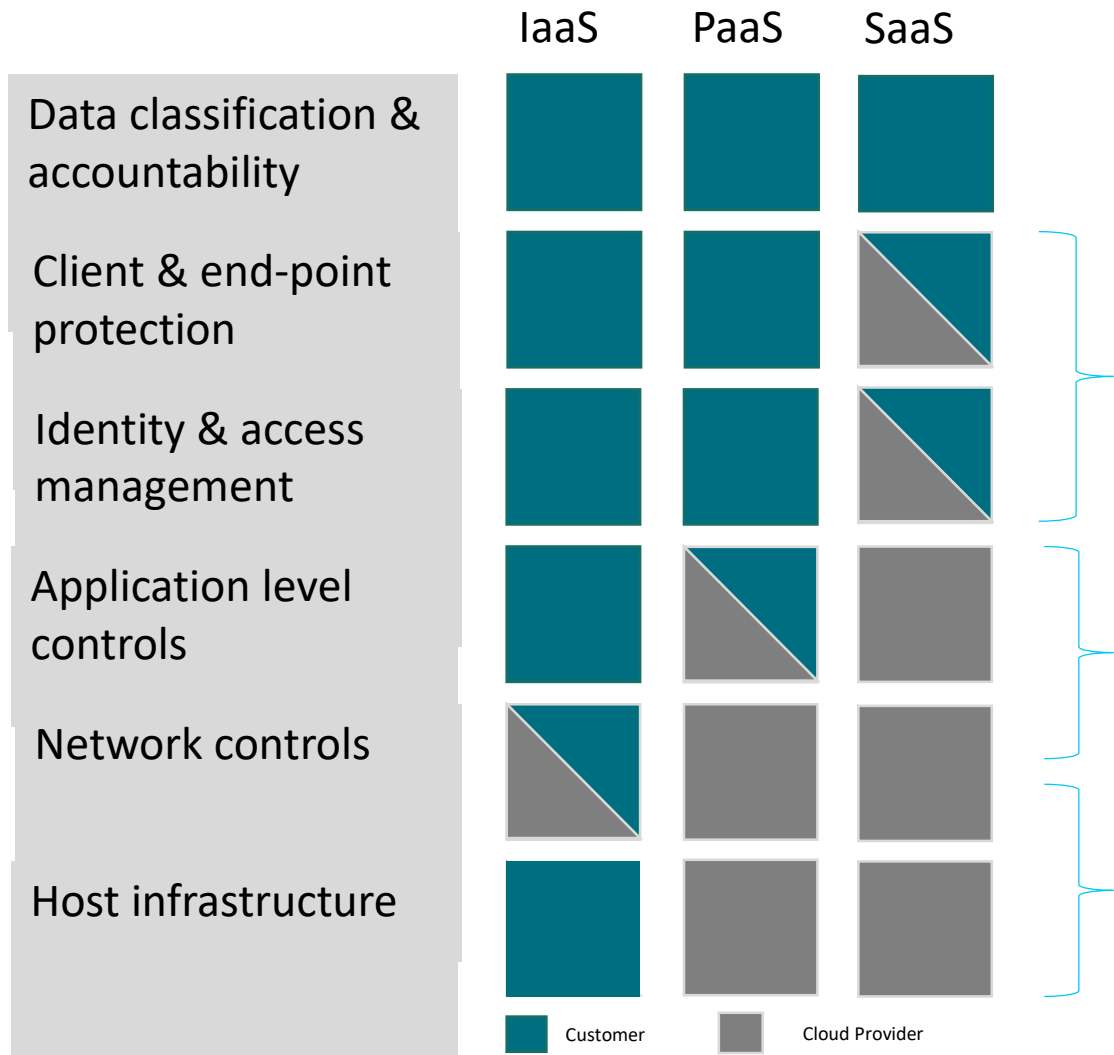
Cloud Security Approach

- Cloud security framework has evolved in partnership with cloud design/engineering and cyber security
- Orchestration and automation are essential elements of the security framework
- The cloud service catalogue is a collection of deployment patterns which have been security assessed



Security & Technology

Cloud Security Framework



- SSO
- Federation Services
- Conditional Access w/MFA
- Device Management / Access Control
- DLP
- Internet / Web Security
- File analysis/ antimalware services
- User & Device security analysis services



- Application Patterns
- Intent based security
- Context based access control
- Certified CI/CD pipelines with imbedded security controls and secret management
- PKI framework for encryption in transit & at rest



- Logging
- SIEM
- Monitoring
- Policy enforcement
- Compliancy verification



Procurement

From Traditional to a Different Approach

- In 2013, established the first Cloud VOR with five vendors
- New Cloud VORs targeted for 2020
 - Uses a different approach to procurement
 - Establishes three VORs (hosting, platforms, professional services)
 - Makes it easier for ministries to use cloud

Procurement

