

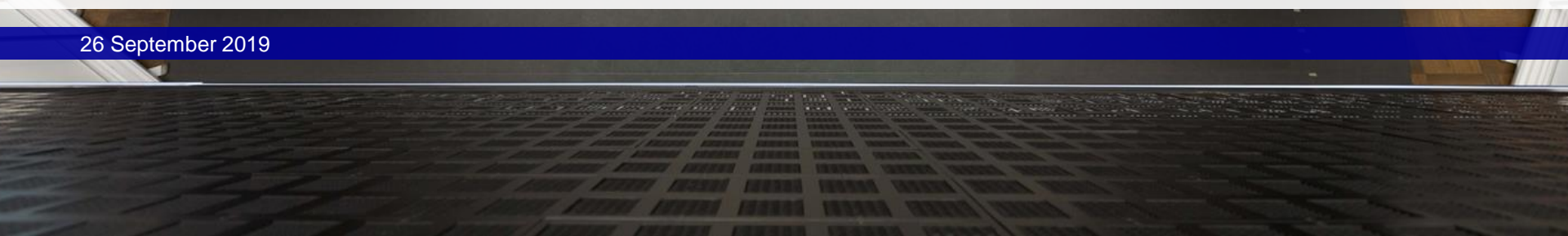


# Open Day 2019

Gearing up for future financial markets

Michael Girg

26 September 2019



# Agenda

**Getting ready for the next level of cloud usage**



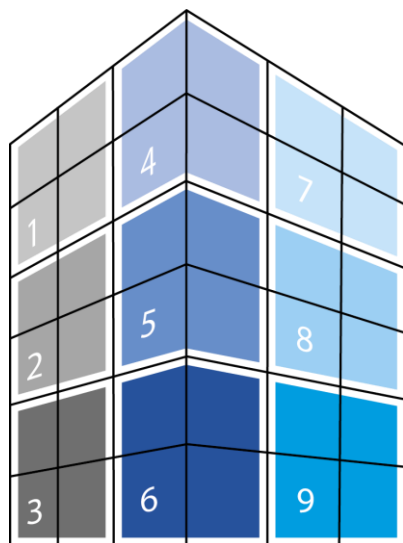
# An overview of Deutsche Börse Group

Deutsche Börse Group covers the entire value chain in securities and derivatives trading.

- 1 Pre-IPO and listing
- 2 Trading
- 3 Clearing
- 4 Settlement
- 5 Custody
- 6 Collateral and liquidity mgmt
- 7 Market data
- 8 Indices
- 9 Technology



- Leading European Financial Infrastructure provider and – Marketplace with roots since 1585
- Early adopter: Fully automated electronic trading since 1997
- Operating lowest latency network & technology
- Largest European Data Centre due to Deutsche Börse network effects
- ~2,000 IT staff organized in Product Organization
- Most DBG business applications own developed and maintained
- Core element of European and Global Capital Market – therefore under highest regulatory supervision



# Innovation is in our DNA – technology has been at the core of Deutsche Börse's success

## Selected major technological milestones

### Deutsche Börse IT established its leading position by

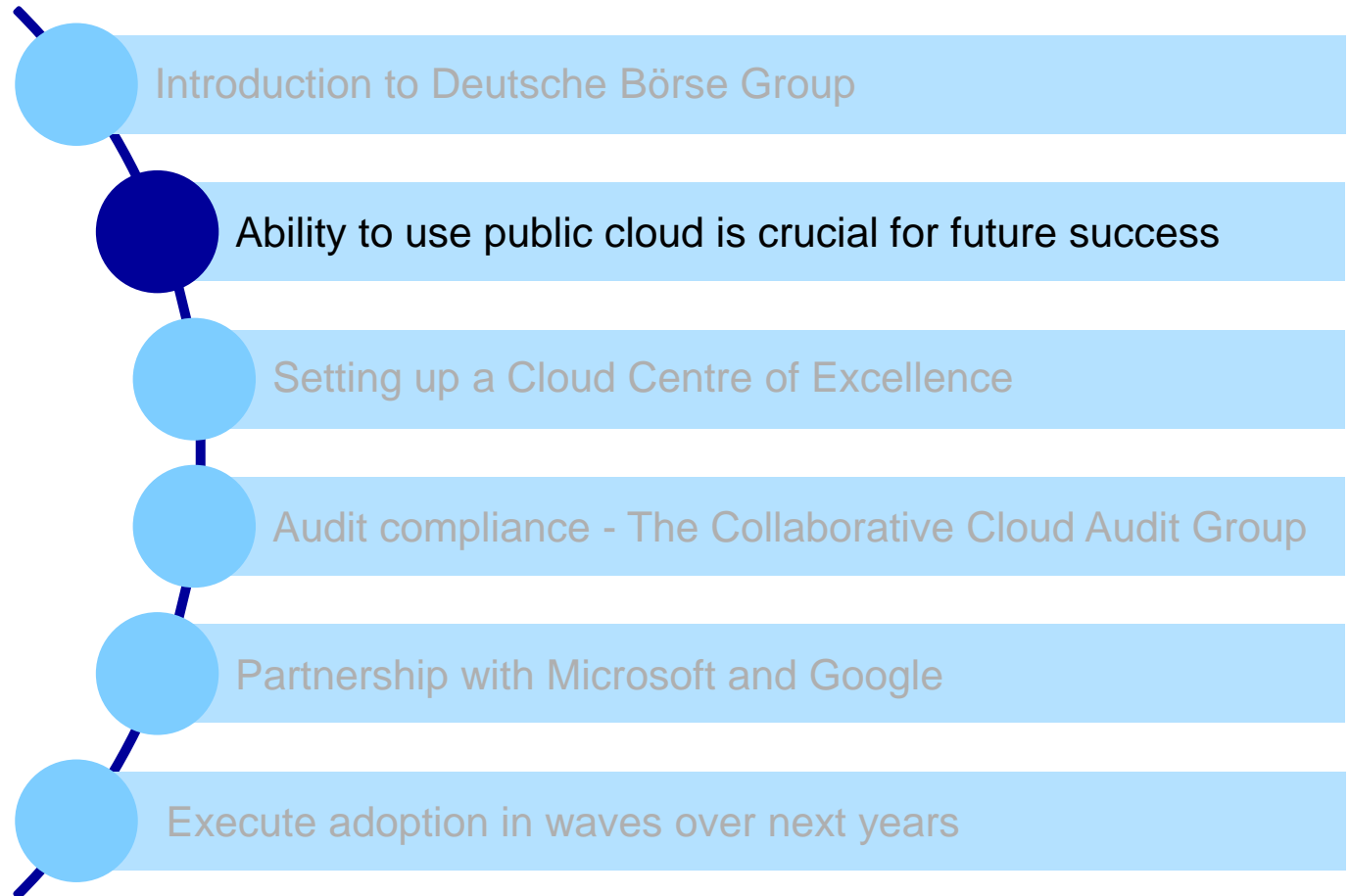
- Launching **electronic trading** system **Xetra**
- Founding **derivatives exchange** **Eurex**
- Launching **commodity market trading** platform
- Introducing **risk management** system **Prisma**
- Renewing the **Trading and Clearing systems "T7" and "C7"** (technology refresh)
- Establishing **Distributed Ledger Technology (DLT)** Center of Excellence
- Establishing strategic partnership with Microsoft Azure to **enable migration of material workloads to cloud**

## Key strengths of Deutsche Börse IT

- **Infrastructure technology leader** with strong track record for high-volume market infrastructure and large scale data processing
- **Operating excellence** with high process reliability, stability and scalability
- **Credible and reputable infrastructure provider** qualifying as a strategic partner for innovative IT solutions

# Agenda

**Getting ready for the next level of cloud usage**



# Public cloud is one of the main technologies to support our Roadmap 2020

Operating IT workload from a public cloud environment offers proven benefits ...

## Agility

**React dynamically to changing business demand** with instant provisioning of new systems and hundreds of services readily available

## Quality

**Leverage geographical spread of cloud service providers**, improve **quality** with **standardization, automation and repeatability**

## Cost

**Reduce operations cost, especially for standard software**, increase level of standardization and automation; optimize asset utilization



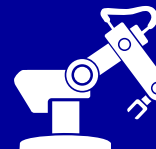
... and lays the foundation for other Roadmap 2020 initiatives



Use public cloud technology to develop and run **blockchain-based services**



Include public cloud components in **big data/ analytics solutions** to analyze large data sets

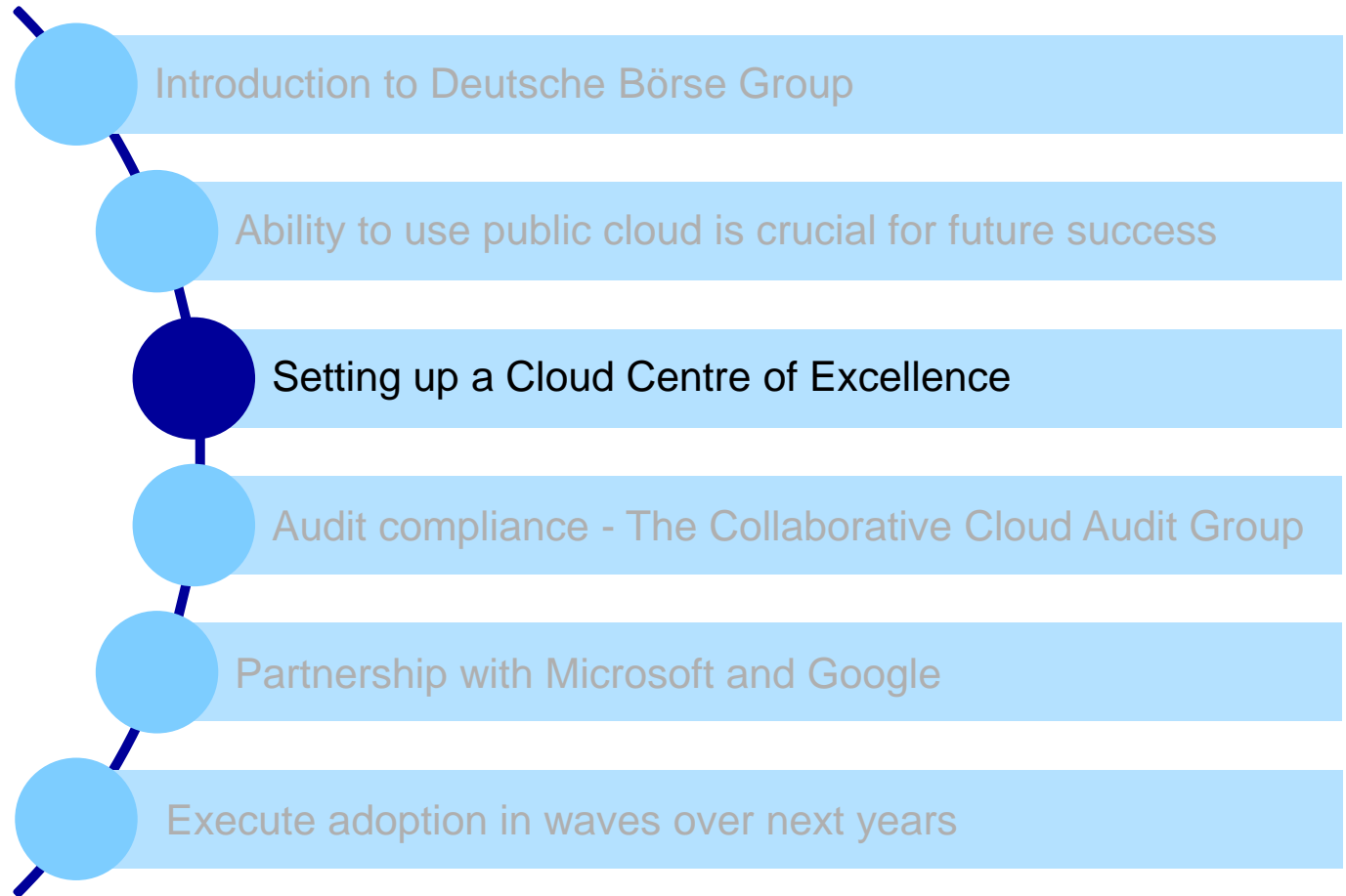


Use specialized services for **machine learning**, e.g. complex GPU<sup>1</sup> computing

<sup>1</sup> Graphics Processing Unit

# Agenda

**Getting ready for the next level of cloud usage**



# Multi-cloud, hybrid strategy unlocks cloud benefits whilst maintaining resiliency on-premise

## Cloud strategy drivers

### Multi-cloud

- Access to scalability and agility of cloud
- Able to select best supplier for each use case
- Prevent vendor lock in and ensure portability

### Hybrid

- Able to dynamically shift workload between on-premise and cloud
- Retain existing competitive advantages on-premise

## Cloud model Example services

### SaaS<sup>1</sup>



Office 365, including email and SharePoint



Concur travel booking, Ariba procurement



SAP cloud platform and supporting infrastructure for SAP solutions

### PaaS IaaS



Infrastructure for DBAG applications, e.g. EC2



Infrastructure provided via Azure IaaS

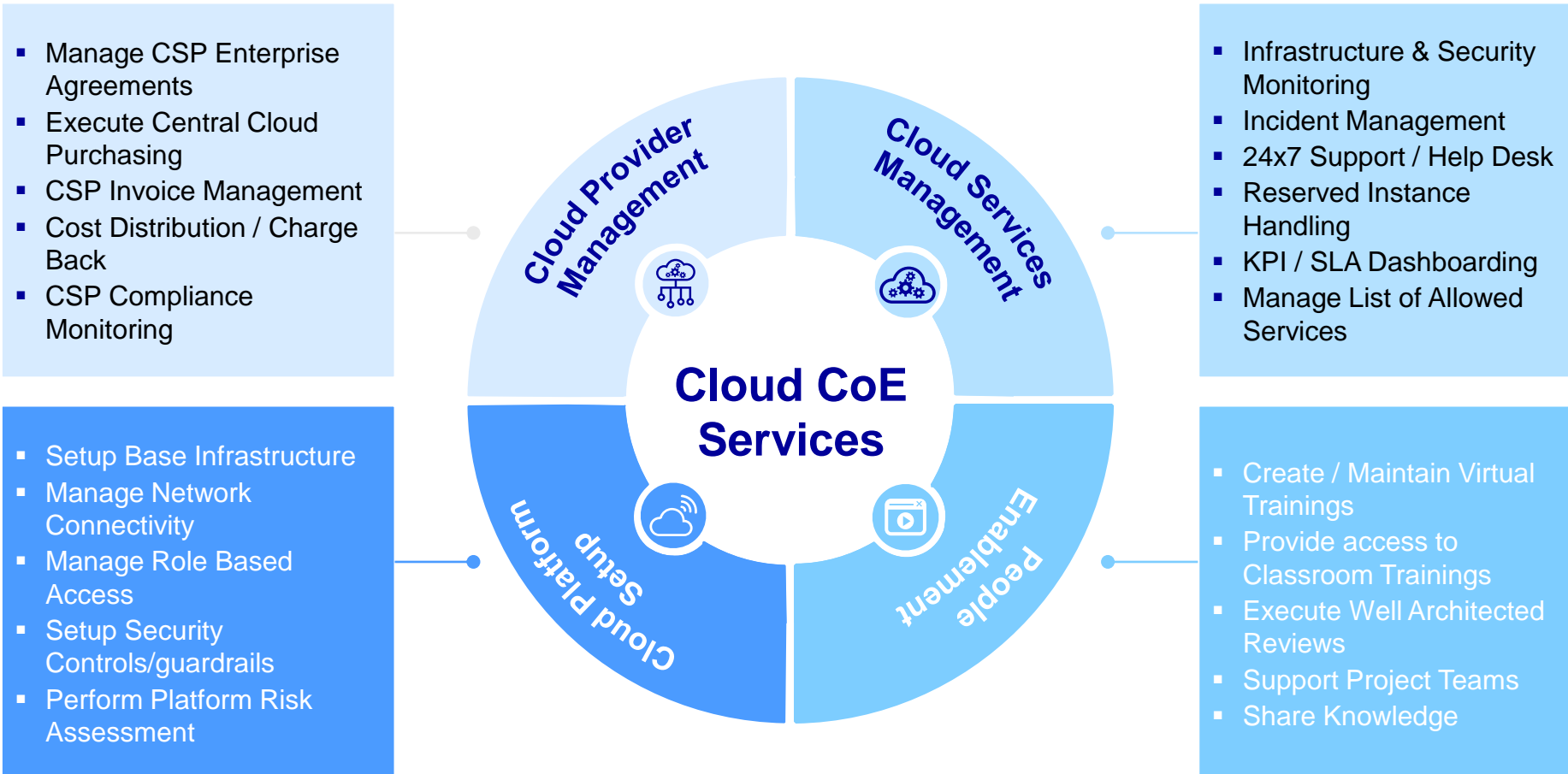


Google Cloud Platform

Infrastructure such as compute and TensorFlow



## Services offered by Cloud CoE circles around enabling the organisation to use Public Cloud services



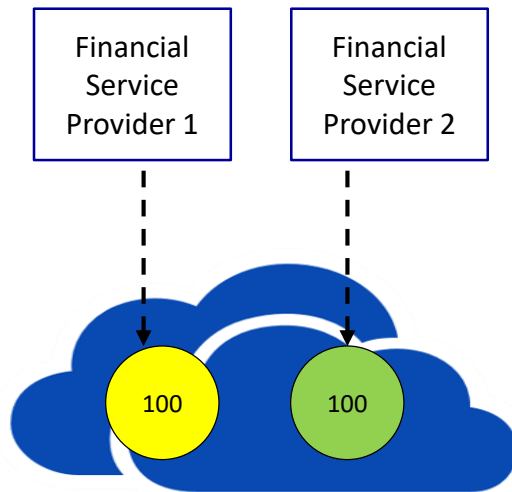
# Agenda

**Getting ready for the next level of cloud usage**



# Core idea: Collaborative Audit Group to execute unrestricted audit rights

Individual audit scope

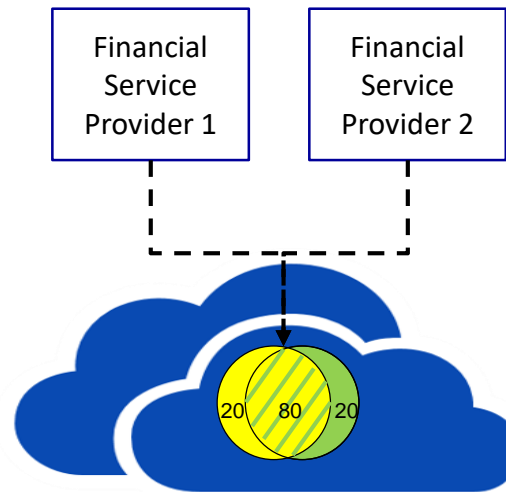


Effort

Vendor:  $100 + 100 = 200$

Outsourcer: **100**

Collaborative audit scope



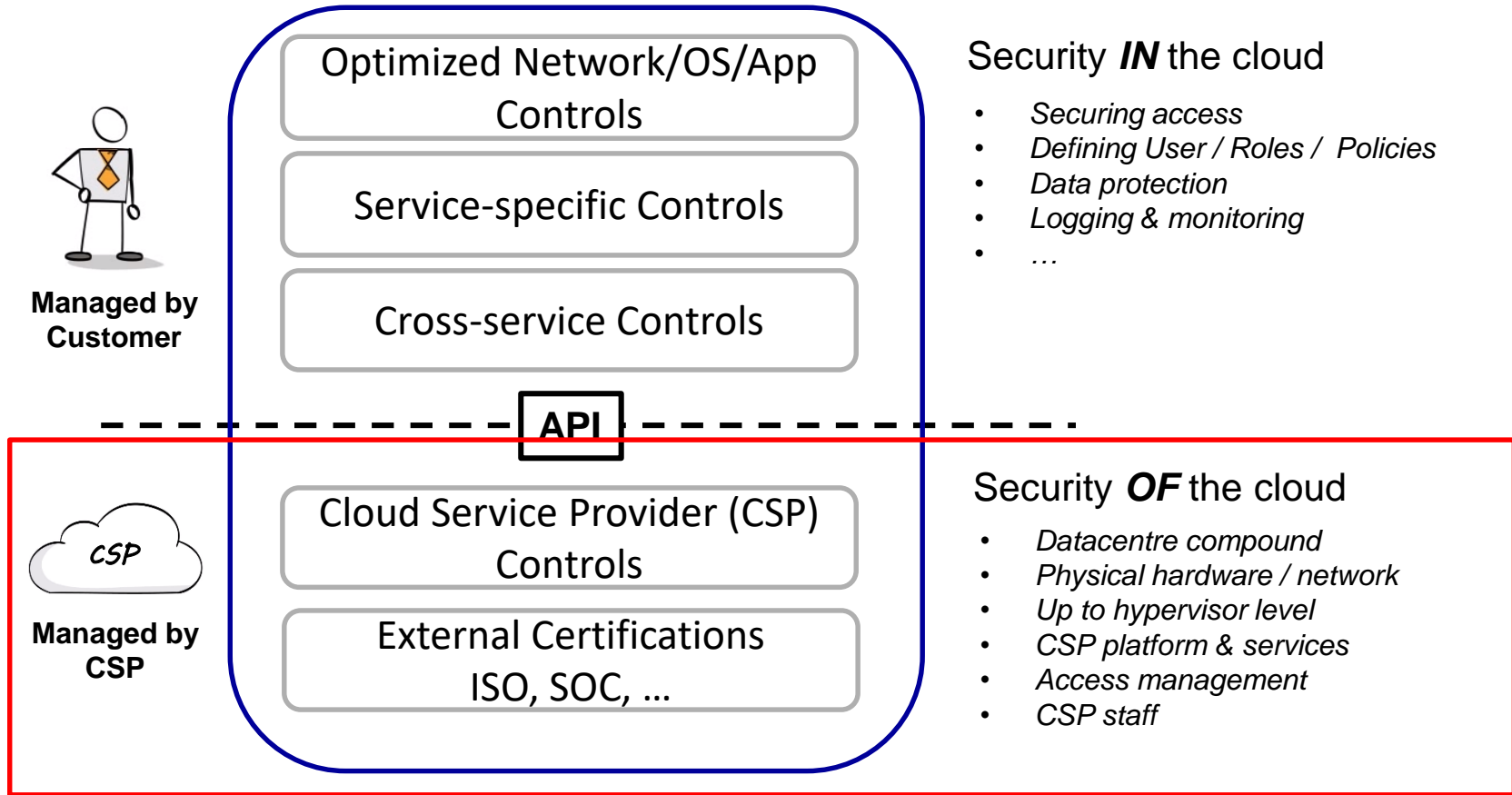
Effort

Vendor:  $20 + 20 + 80 = 120$

Outsourcer: **20** + small collaboration group share

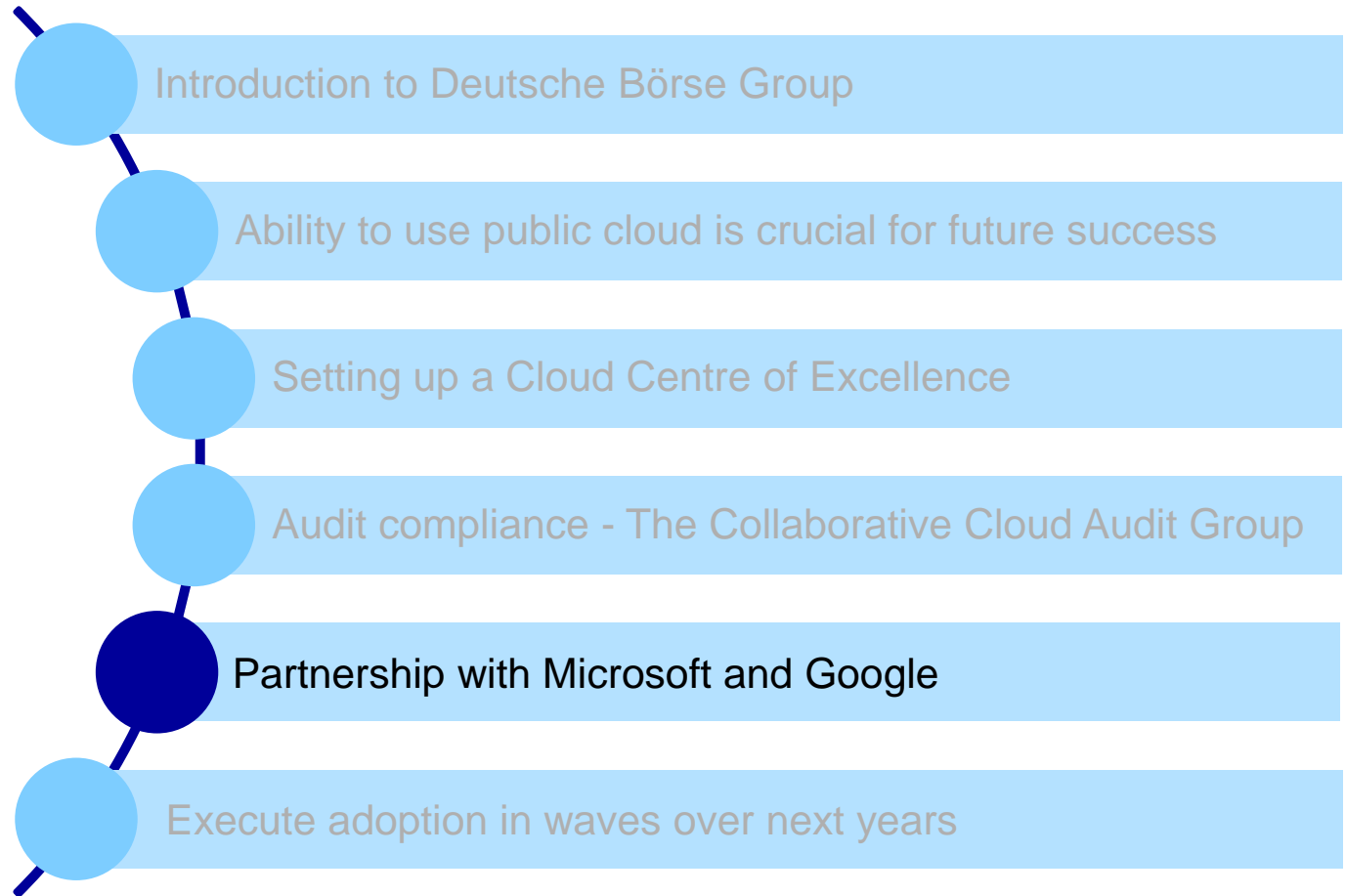
- Maximises efficiency and effectiveness
- Based on audit best-practices
- Executes individual audit rights in a group format
- Open format – all interested financial institutions can join

# Focus of group audit on “security OF the cloud”



# Agenda

**Getting ready for the next level of cloud usage**



# Our newly announced partnership with Microsoft and Google will streamline planned cloud migration initiatives and pave the way for a broad cloud adoption



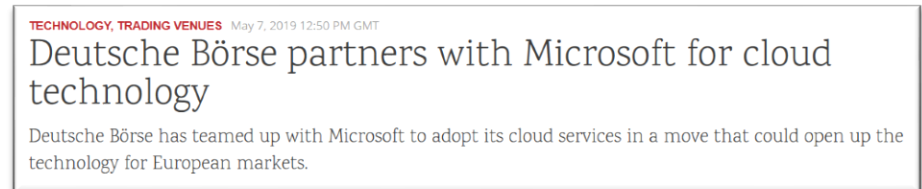
Frankfurter Allgemeine Zeitung



Handelsblatt



Focus Online



The Trade



Handelsblatt

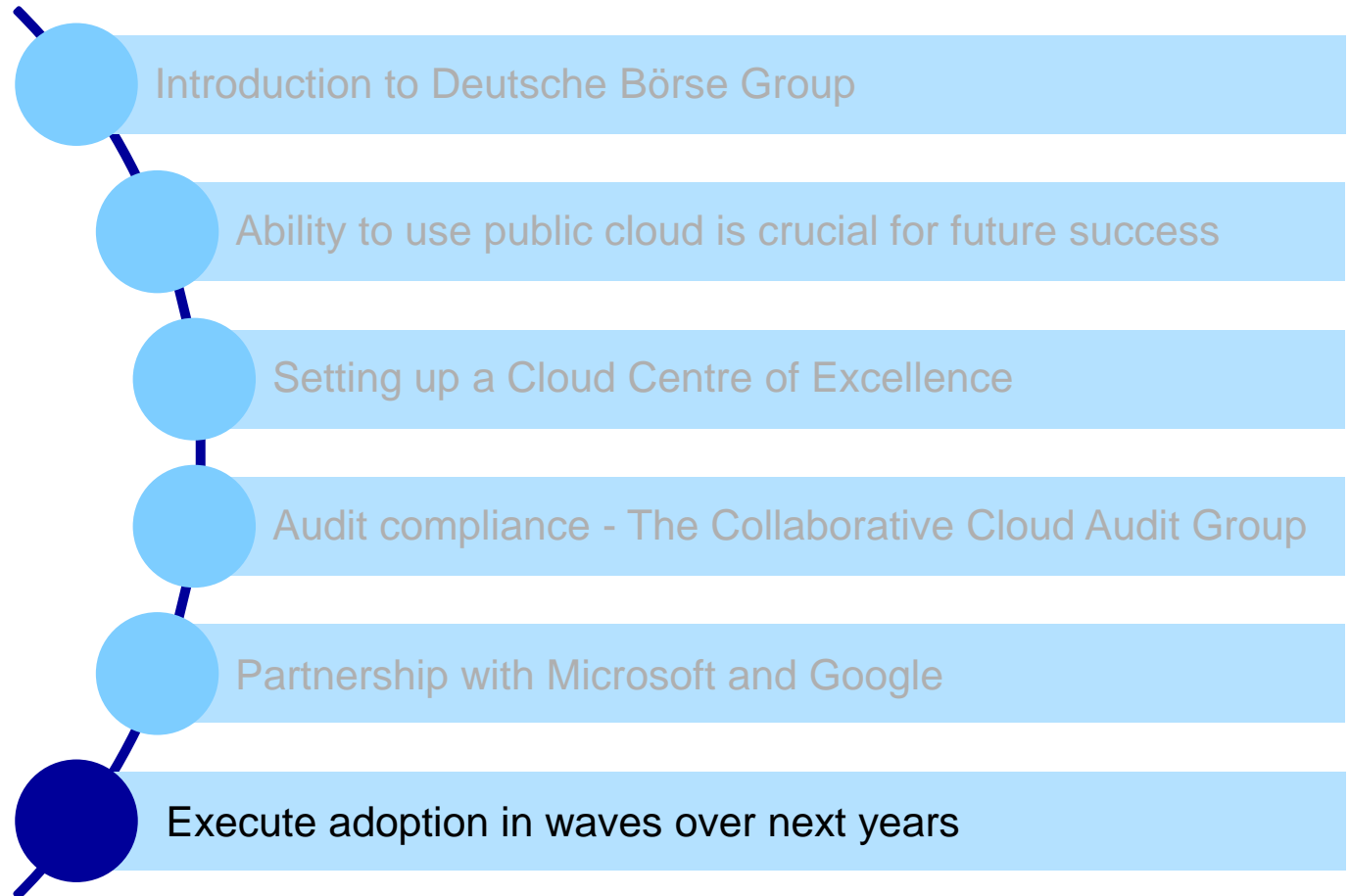


Börsenzeitung

**Further partnerships coming soon**

# Agenda

**Getting ready for the next level of cloud usage**



# We are committed to use public cloud as a driver for innovation and efficiency

## Cloud strategy

- Move now to benefit fast, work with market leaders, execute in waves over next years
- We expect to increase speed, automation and resilience
- We will invest a high double-digit million euro amount (expected payback after ~3 years) and take a leading position

2019

- **Established partnership** with **Microsoft Azure**, addressing **regulatory requirements**
- **Partnerships** with other **leading cloud service providers** in **negotiation**
- **First wave: migrating test and development systems to cloud, migrating material enterprise workloads**
- Prepare **2020 moves to cloud**

2020

- **Migrate** substantial share of **business apps** and **production workloads** to **cloud**, **reduce on premise footprint**
- **Drive agility, innovation** and **cost efficiency**
- **Increase performance** and **stability** of core products through cloud features
- Prepare **2021 moves to cloud**

## Expected benefits

- **Agility and faster time to market**
- **Higher reliability and global scale**
- **Higher quality, better security, lower risk**
- **Efficiency through more automation and standardization**
- **Leverage native cloud capabilities like machine learning services to benefit from ecosystem**





Thank you for your attention.

**Contact**

Michael Girg, Chief Cloud Officer  
E-mail Michael.girg@deutsche-boerse.com  
Phone +49-(0) 69-2 11-1 5929

**Contact**

Mark Barte, CCAG Speaker and Audit Coordinator  
of the Google Cloud Services stream  
E-mail Mark.barte@deutsche-boerse.com  
Phone +49-(0) 69-2 11-1 4306



# Disclaimer

Deutsche Börse AG opens up international capital markets for its customers. Its product and service portfolio covers the entire process chain – from pre-IPO services and the admission of securities, through securities and derivatives trading through the settlement of transactions and the provision of market information to the development and operation of electronic trading, clearing and settlement systems. With its process-oriented business model, Deutsche Börse increases the efficiency of capital markets. Committed employees are the key factor for innovation and further growth: without them, Deutsche Börse Group would not have developed into one of the most modern exchange organisations in the world. More than 5,000 employees work for the Group – a dynamic, motivated and international team.