

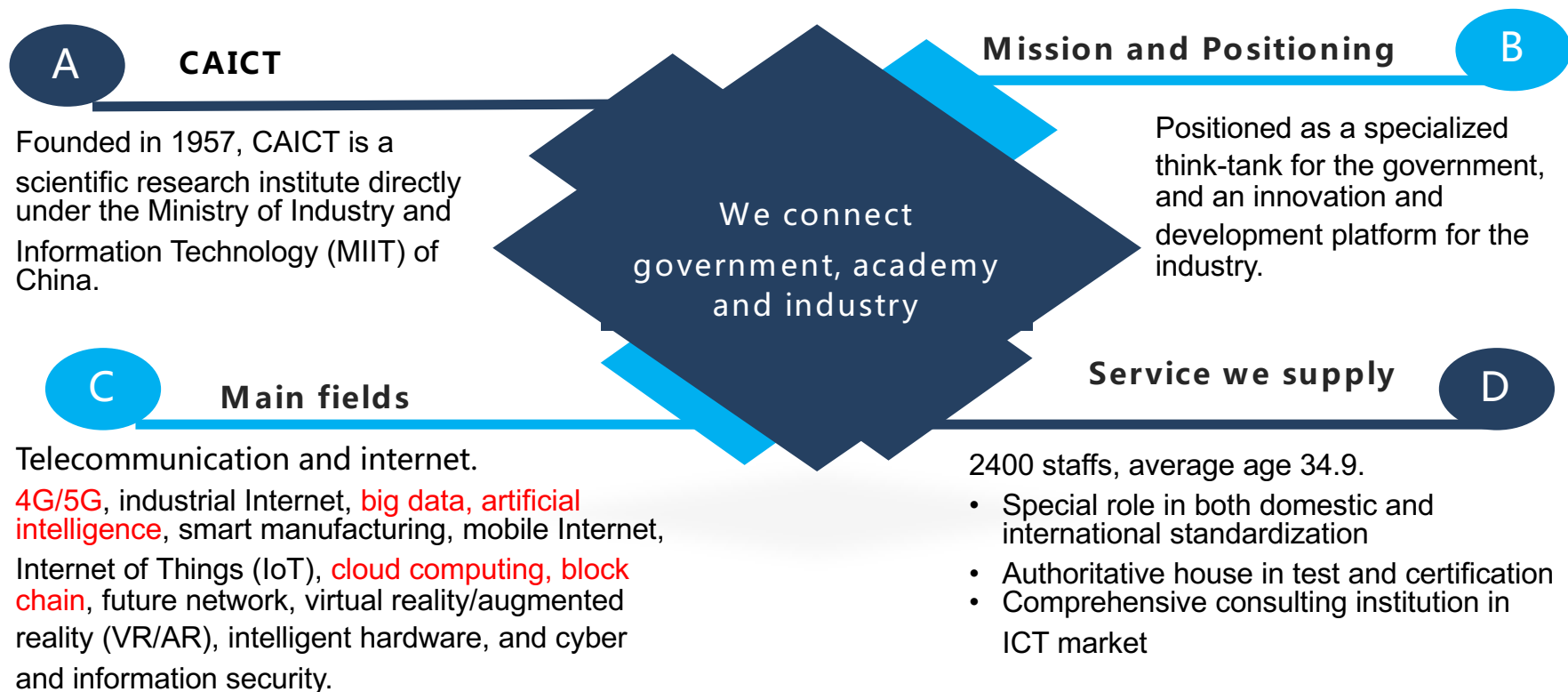


Big Data Industry in China

**China Academy of Information and
Communications Technology**

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China Academy of Information and Communications Technology



What we did in big data and cloud computing

Policy Support

- Action outline to promote the development of big data
- Big data industry development plan in 2016-2020

01

Technology and Industry Study

02

Publish:

Big data white paper 2014

Big data white paper 2016

Data asset management white paper 1.0

Big data platform selection and construction guideline 1.0

03

Standard and certification

- Trusted cloud computing service certification.
- Standard making and benchmark in big data technology and products.

Trusted cloud computing assessment and big data products evaluation

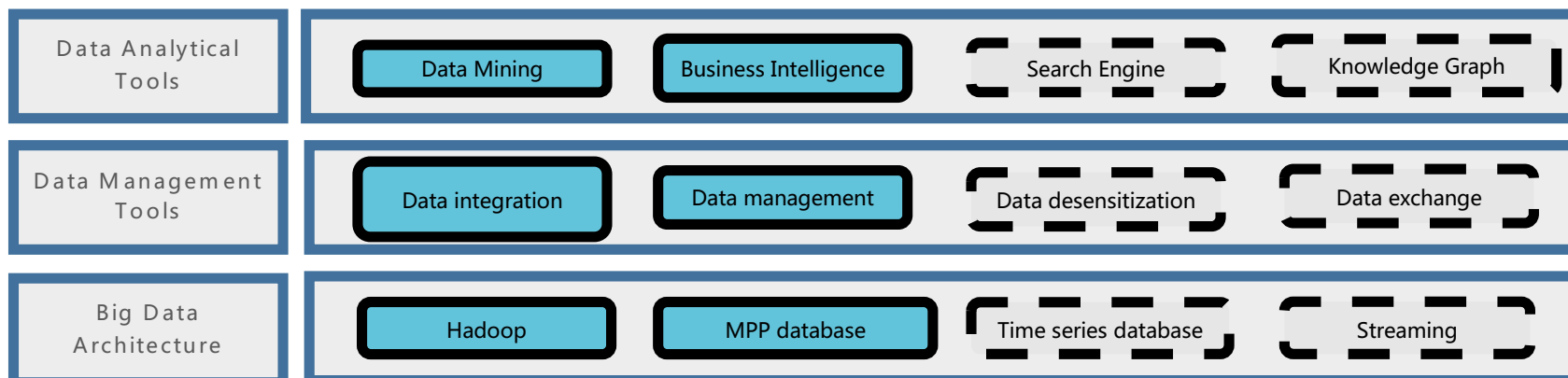
Service Agreements Integrity and Normative

Cloud Service Agreement Reference Framework, CCSA : YDB144-2014, ITU-T Y.3501

Authenticity of the Abilities to Service Agreement for industries purchasing, 45% customers use these standards

- Part 1 : Cloud hosting services
- Part 2 : Object storage service
- Part 3 : Cloud database service
- Part 4 : Block storage service
- Part 5 : Application container service
- Part 6 : Cloud cache service
- Part 7 : VPN between data centers
- Part 8 : Load balancing service
- Part 9 : Distribution of cloud service
- Part 10 : Online application service
- Part 11 : Cloud desktop service
- Part 12 : Enterprise mobile management

Big data products evaluation





■ Catalog

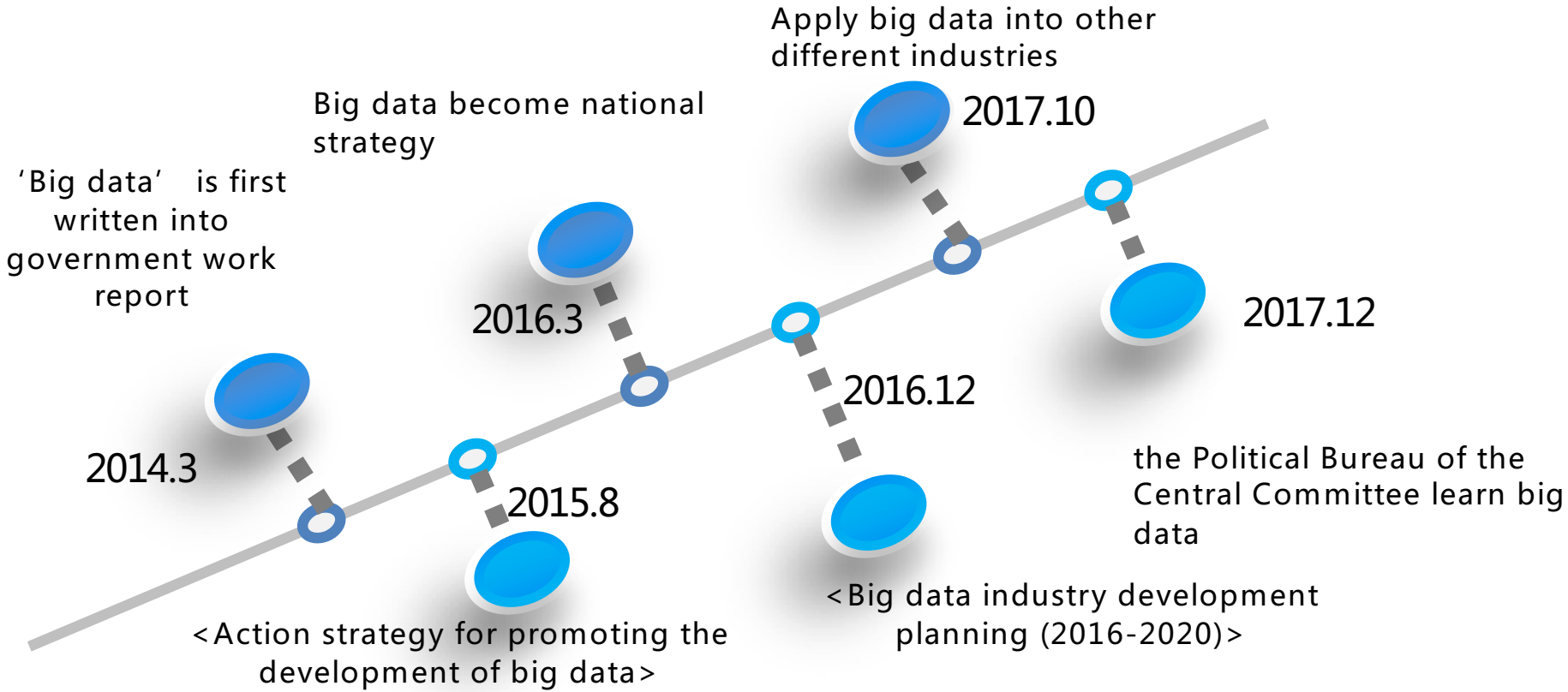
1、 Overview

2、 Technology Development Status and Trend

3、 Data Asset Management

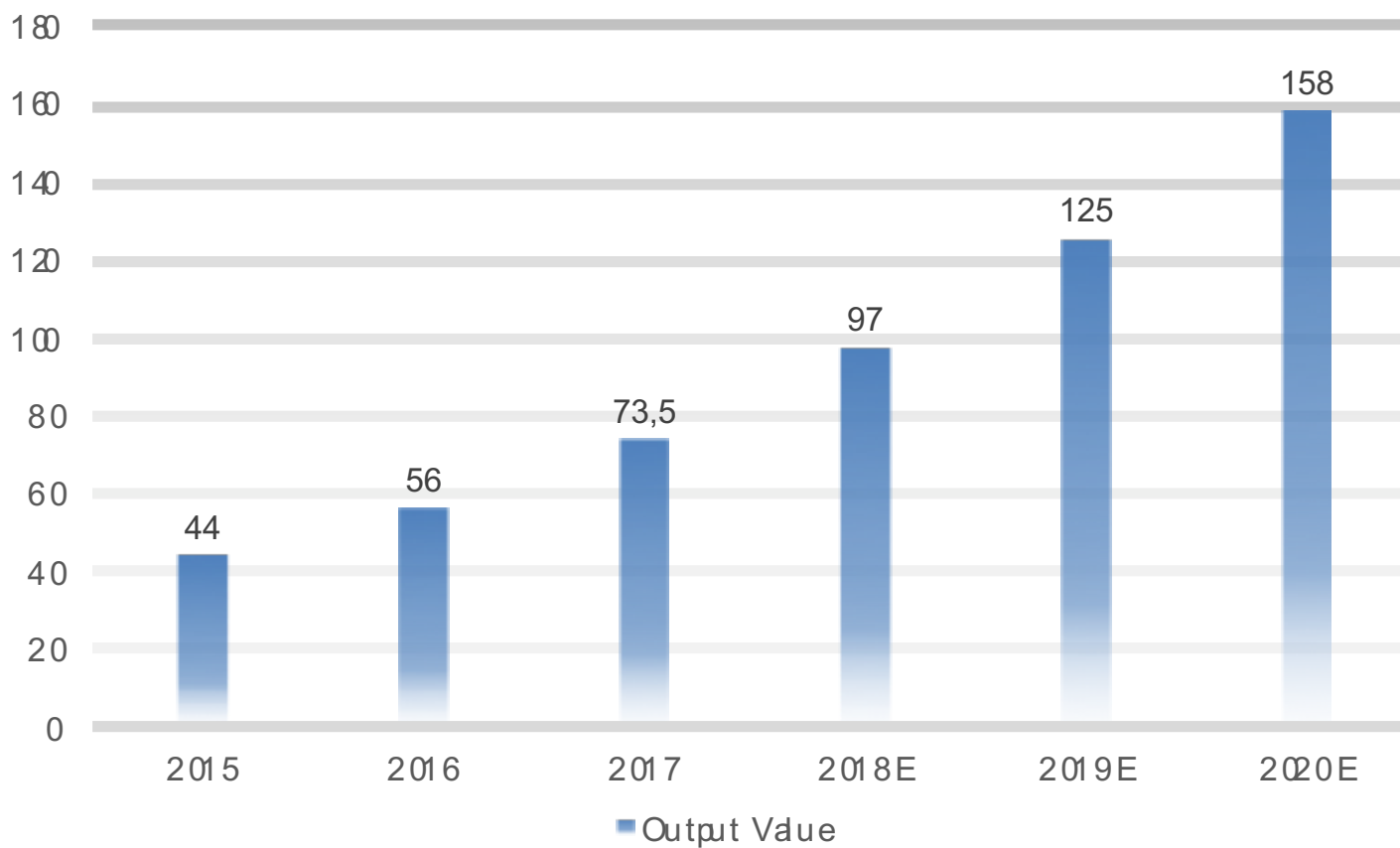
4、 Industry Practice

Big Data Related Policies in China



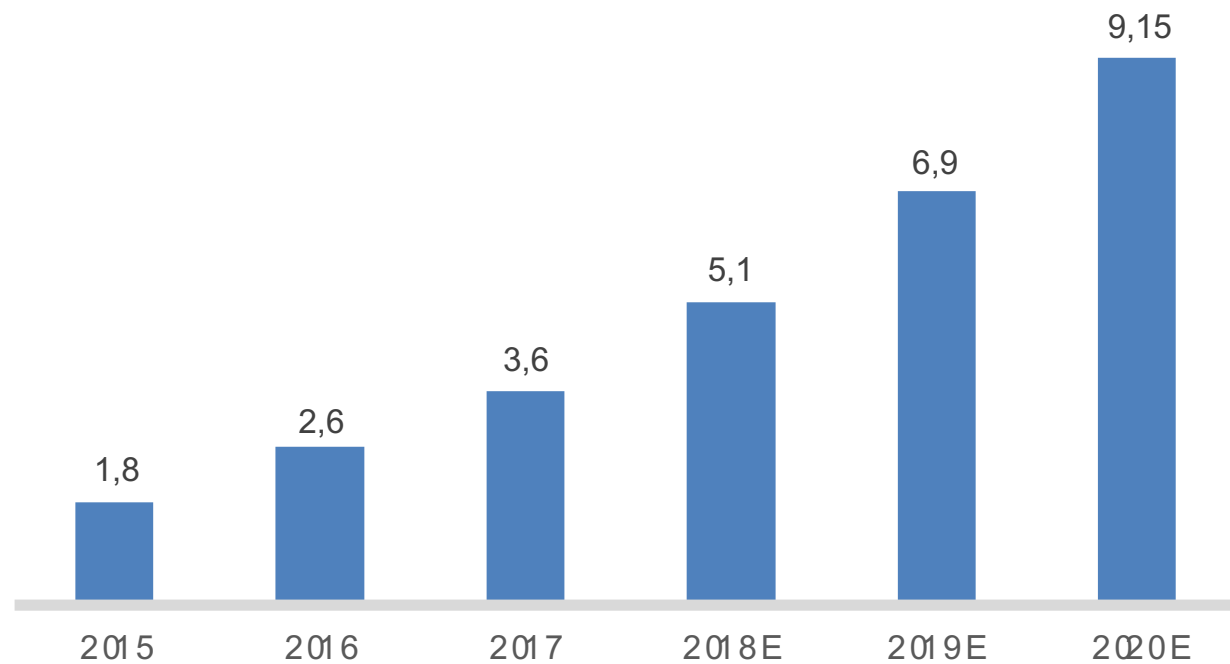
The scale of big data industry in China reaches 73 billion

In 2017, the scale of big data industry in China was 73 billion\$, an increase of 30.6% over 2016.



The scale of big data core industry is 3.6 billion \$

In 2017, the scale of big data core industry in China was 3.6 billion\$. an increase of 39% over last year.



The calculation caliber of big data core industry in this report includes the direct output value of big data software, hardware and service, excluding the added value due to big data application.



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Big data technology: Analytical, Transaction, Exchange

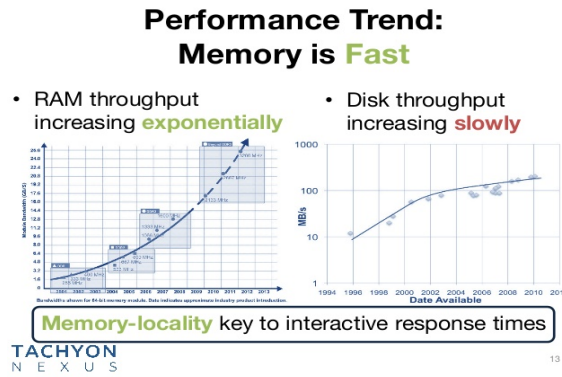
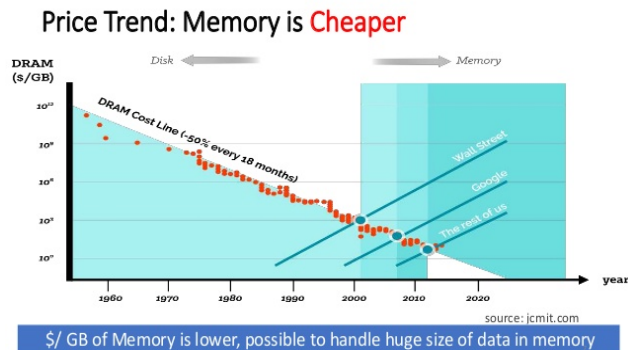
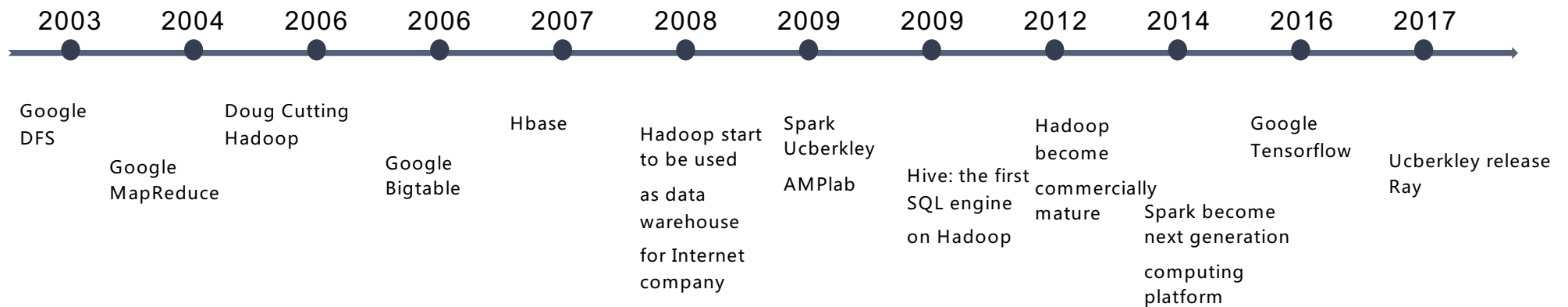
1 **Online Analytical Processing**

2 **Online Transaction Processing**

3 **Data Exchange Technology**

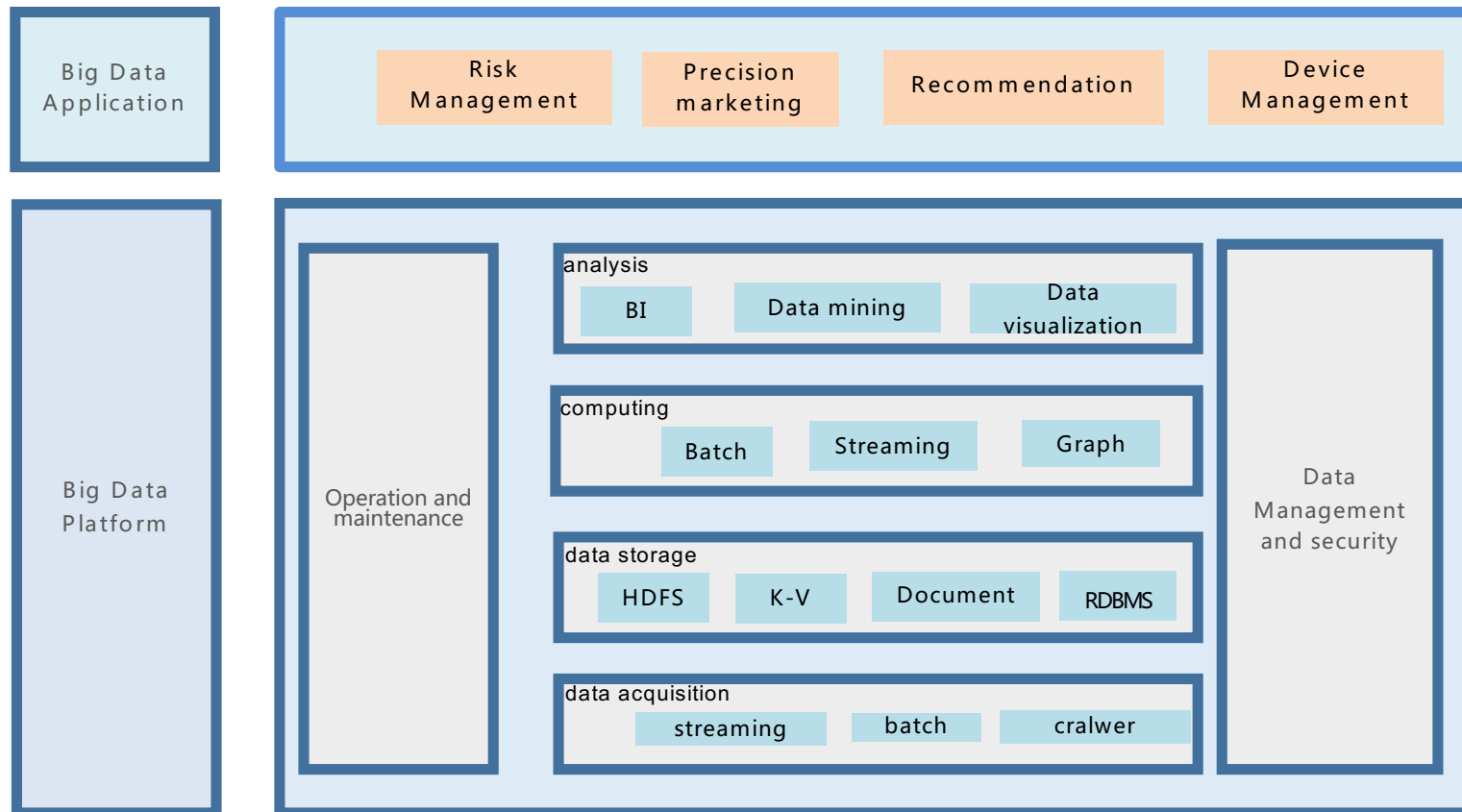
Online Analytical Processing: Status

Online Analytical Processing has begun the journey of distribution from the year of 2000. Changes in hardware will dramatically affect the online analysis software.



Storage NVRAM may become mainstream instead of DRAM
 Computing become bottleneck: single core → multicore;
 CPU → CPU, GPU, FPGA and ASIC
 Heterogeneous computing

Online Analytical Processing: Trend



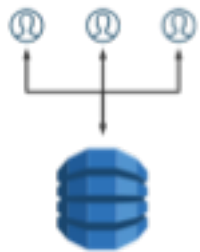
- Companies use open source big data technology like building blocks
- SQL-driven online analytics and online transactions tend to converge
- The big data platform and deep learning platform will continue to be split for some time until the next integration

Online Transaction Processing: Distribution

Distribution is the trend of online transaction processing systems

- Failure of Moore's Law
- Growth of business volume

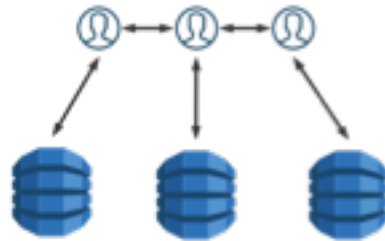
Centralized architecture



1960s

Oracle , DB2

Embedded business distributed architecture



1990s

Based on the traditional centralized architecture, the business layer is responsible for solving distributed transaction problems

Middleware based distributed architecture



2000s

Cobar , MyCAT , DRDS

New data model based distributed architecture



2010s

Spanner , OceanBase , TiDB

Strong consistency, high concurrency, and high reliability are the difficulties in transforming a transaction processing system from centralized to distributed. However, as the core business volume grows, the transaction system will usher in a turning point in the distributed transformation.

Data Exchange Technology

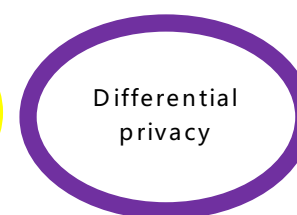
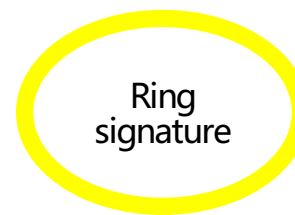
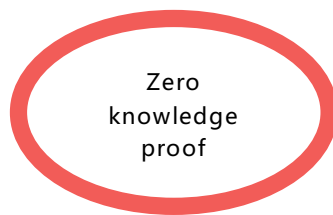
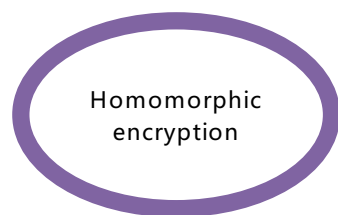
Data Exchange : Through technical means to ensure the security, controllable and personal information protection in the process of data sharing and exchange.



multi-party computing :
Applied to joint data analysis, data security query, data trusted exchange, etc.



Blockchain: applied to data verification, data authorization, data traceability, etc.



	Homomorphic encryption	Zero knowledge proof	Group signature	Ring signature	Differential privacy
Feature	Calculate and analyze ciphertext without decryption	The certifier can prove to the verifier that the event is true and reliable without any event-related data	Can provide signers with better anonymity, and at the same time, trace the identity of the signer through a trusted management	No need to assign the specified key, the anonymity of the signer cannot be revoked	With rigorous statistical models that provide quantifiable privacy guarantees
Scenario	Cloud computing, e-commerce, Internet of things, etc.	E-commerce, finance, banking, electronic money, etc.	Public resource management, e-commerce, electronic money, etc.	Cloud storage, Electronic money, etc.	E-commerce, Internet of things, etc.



1、 Overview

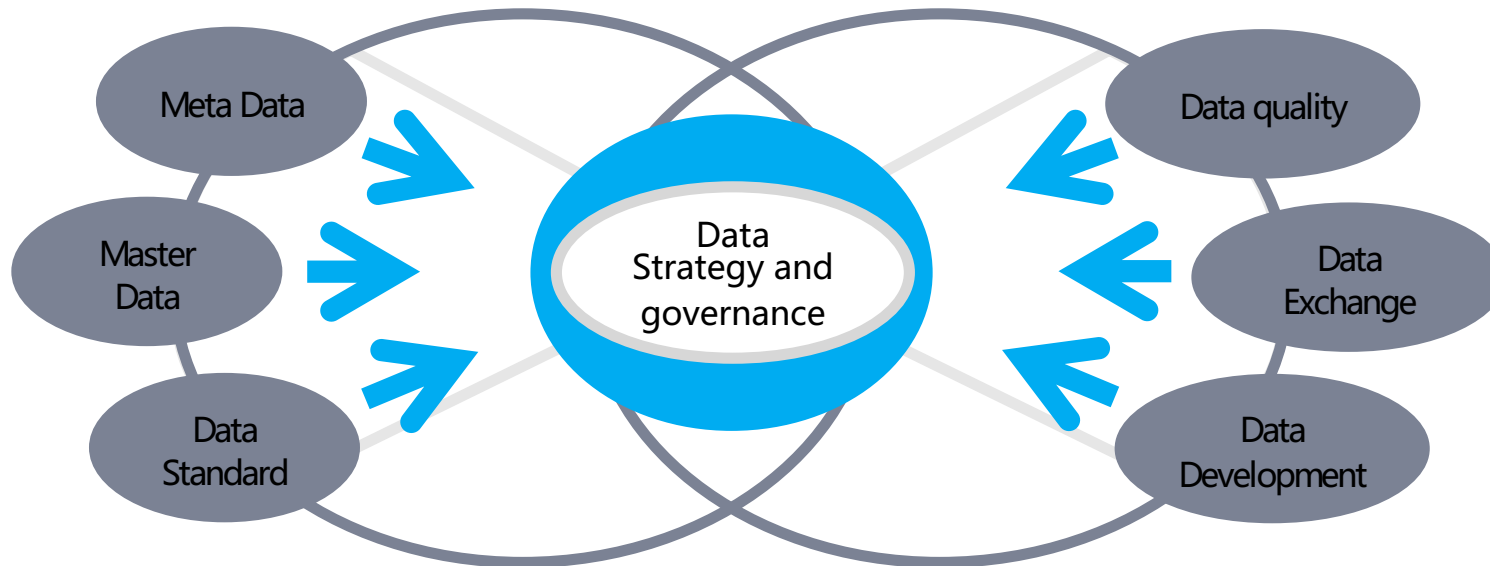
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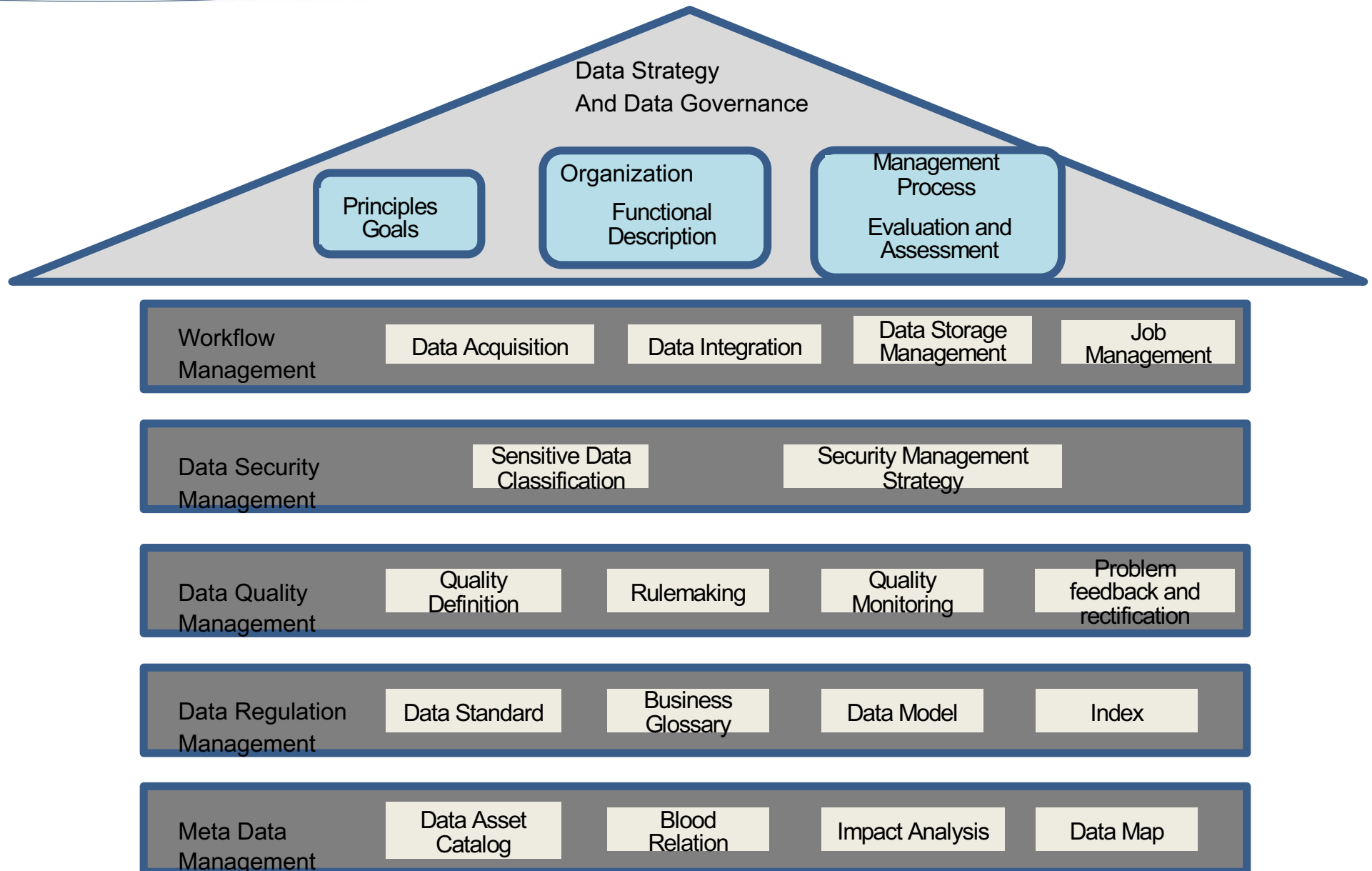
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Data Asset Management

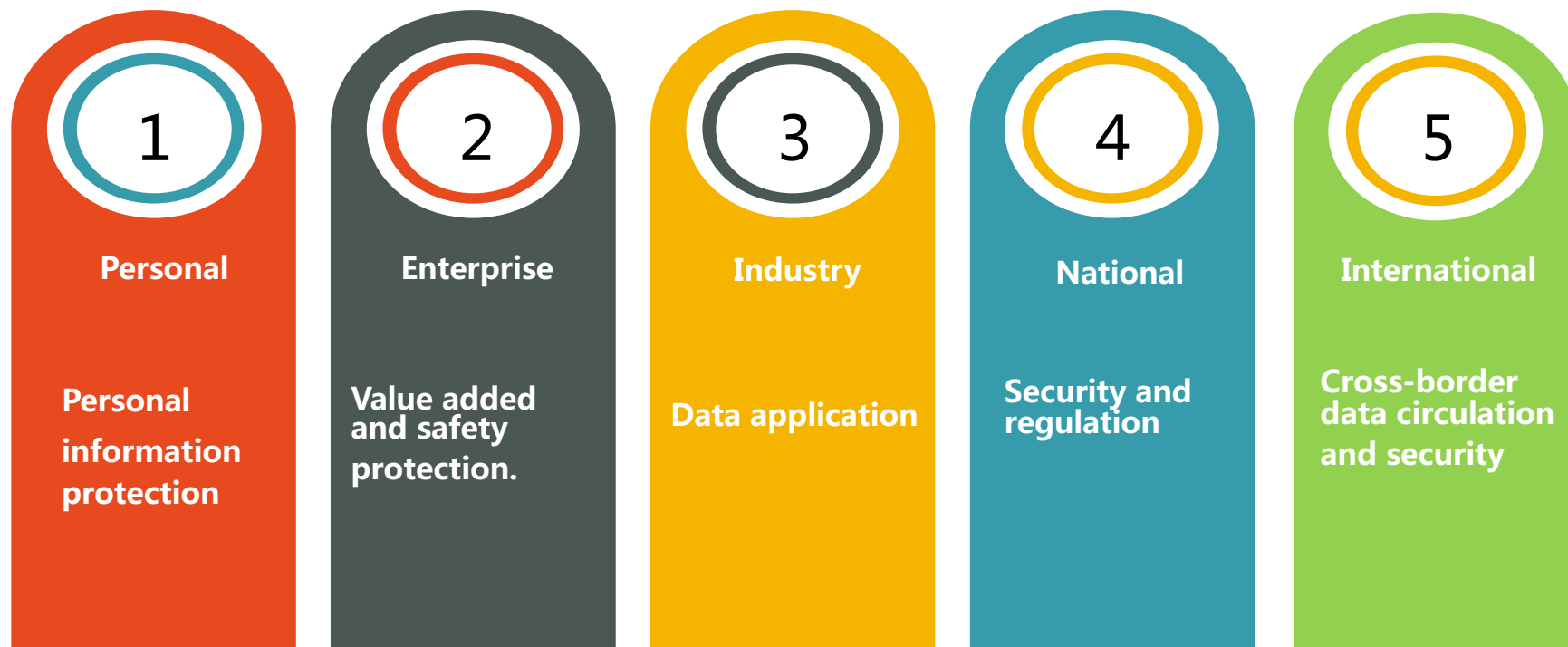
There is a consensus that data is an asset, but, how to manage data assets needs to be explored step by step to form a complete system.



Enterprise data asset management framework



From personal data management to international data management





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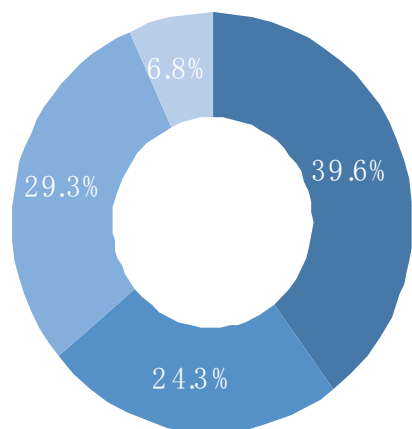
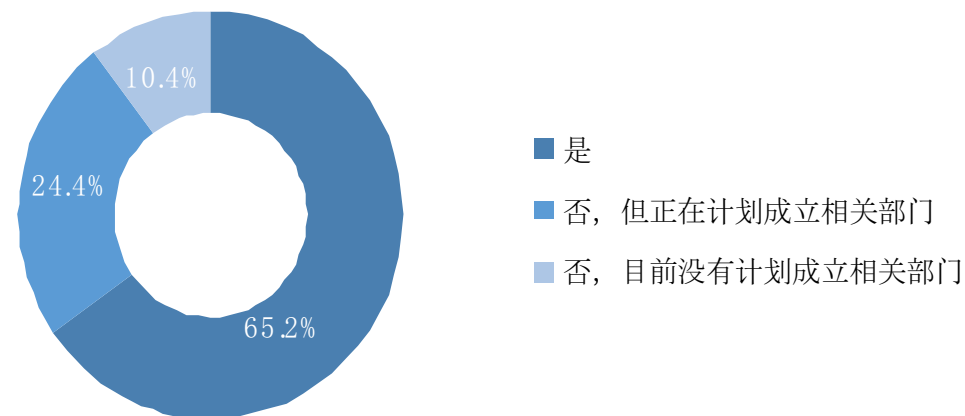
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Big data application status

According to the survey, 65.2% of the enterprises have set up data analysis departments.

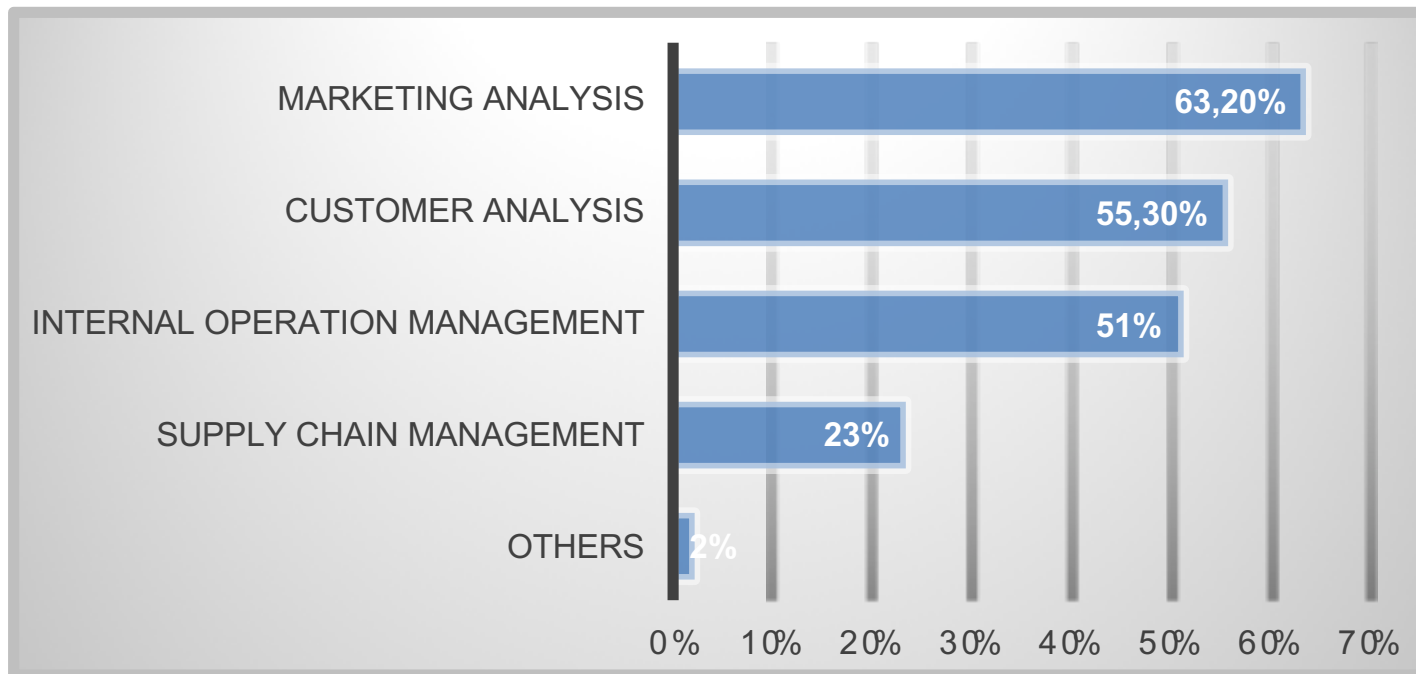


According to the survey, 39.6% of enterprises believe they have already used big data, up 4.5% from 2016.

Data source: China Academy of Information and Communication Technology

Big data application distribution

Marketing analysis, Customer analysis, Internal operation management are top 3 big data applications.

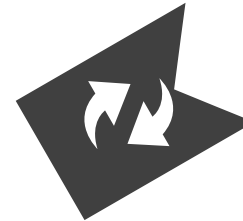


Enterprise big data capacity building



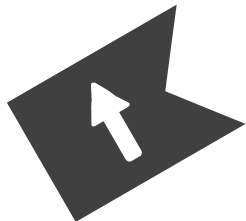
Build a unified big data platform

Unified construction, unified operation and maintenance, unified management, with the ability to handle massive data.



Data integration

Integrate internal data and external data resources, and build multi-level capabilities such as data acquisition, management, application and so on.



Data mining and application

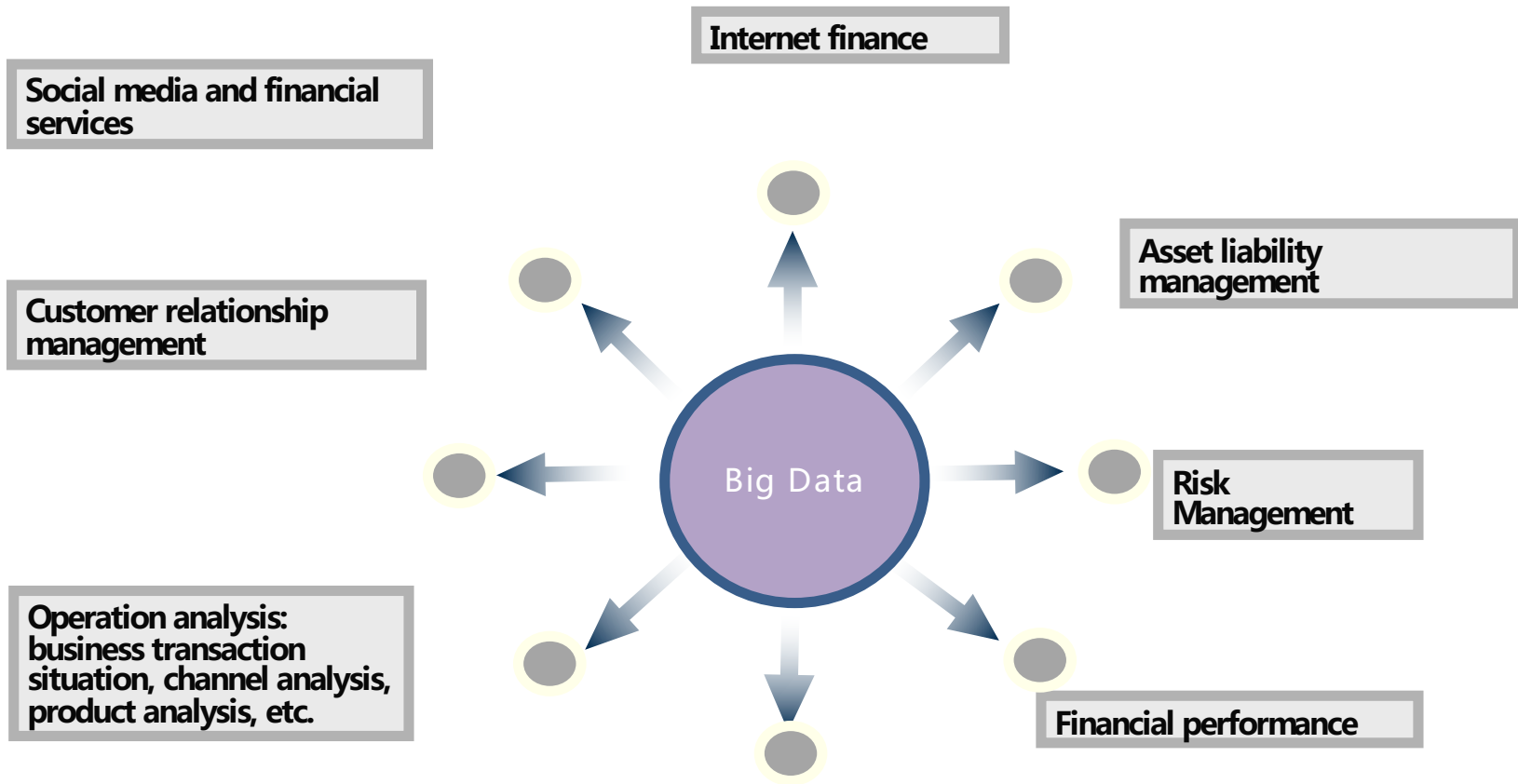
Use algorithm and a variety of data sources to build various data applications to support new product development, improve customer experience, improve operational efficiency, and guard against risks.



Talent training

Train qualified personnel with both data and business knowledge.

How big data used in financial field



Use case in financial risk management

Risk Management Framework based on big data



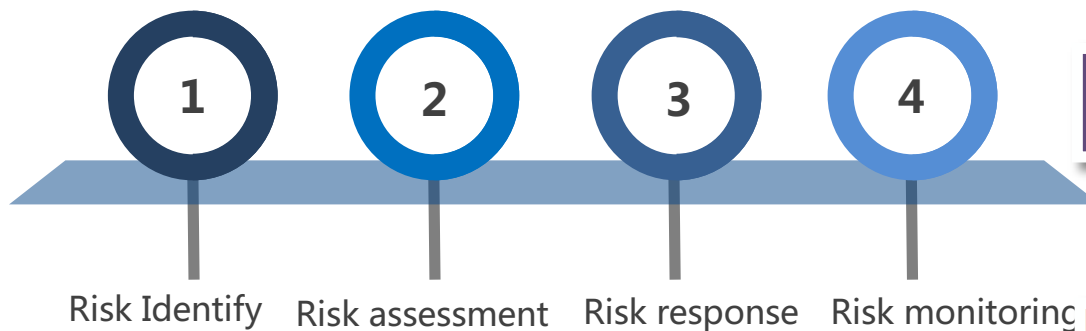
Data Conduct extensive external data collaboration to establish standard, secure, manageable internal and external data usage processes.

Rules Building risk models through machine learning and the use of other algorithms

Products Form anti-fraud, anti-money laundering, credit risk warning and other risk management products system to monitor the business process in an all-round way.

Management Monitor and control the whole process of risk identification, analysis and evaluation.

Process of risk management



Risk Identify

Risk assessment

Risk response

Risk monitoring

Challenge in using big data

- Data quantity problem.
 - Data island phenomenon.
 - The limited amount and variety of enterprise internal data.
- Data quality problem.
 - Governance of internal data quality.
 - External data quality is usually not guaranteed.
- Data compliance.
 - In the process of introducing external data, attention should be paid to the legitimacy of the source of the data and whether it has passed through a compliant authorization process.
- Data analysis and modeling capability.
 - Combination of data modeling skills and business knowledge.
- The value of the data is difficult to quantify.
 - It is difficult to quantify the value of big data and smart applications in a business



Thanks!

Questions?