

Big Data in China's Security Market: The practice in SSE

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Shanghai Stock Exchange
2018

FOCUS

01 The Demand of Regtech

02 Building the Big Data Platform

03 Practice of Big Data

01

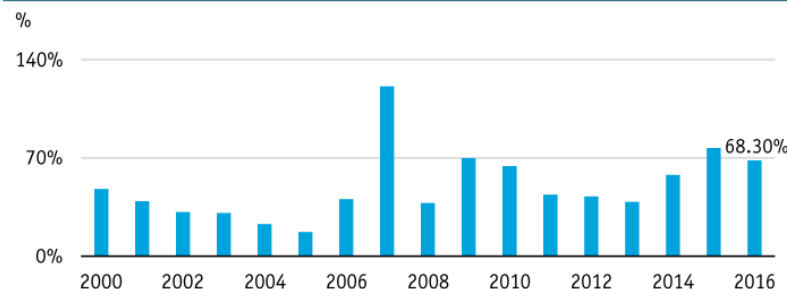
The demand of Regtech

01 SSE in China's capital market

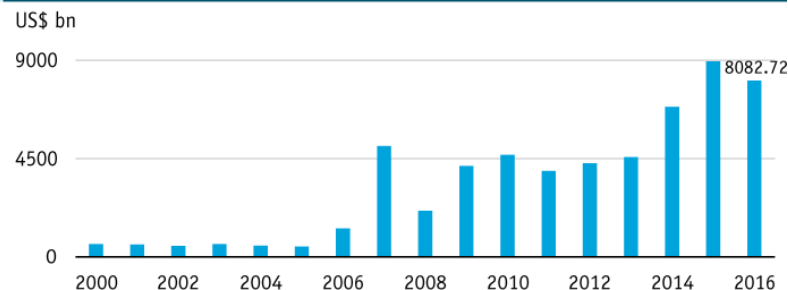
With 1407 listed companies and market capitalization of 5 trillion USD, SSE has over 60 technical systems to support 500 million quotes daily with 150 thousand quotes per second in peak.

The surveillance system of SSE handles 100 thousand real-time alerts every year with over 300 rules and thousands of parameters.

Dynamics of Market Cap. to GDP



Market Cap.



Source: Wind

Ranking among the Top Exchanges

Market Cap			Turnover			Fund Raised		
Exchange	Ranking	US\$ tn	Exchange	Ranking	US\$ tn	Exchange	Ranking	US\$ bn
NYSE	1	19.6	Nasdaq	1	31.9	SZSE	1	161.0
Nasdaq	2	7.8	NYSE	2	19.7	Euronext	2	143.4
TSE	3	5.1	SZSE	3	11.7	SSE	3	121.2
SSE	4	4.1	SSE	4	7.5	NYSE	4	113.4
LSE	5	3.5	TSE	5	6.4	HKEx	5	62.7

Source: WFE, as of the end of 2016

02

Technical Features

Numerous Participants

- **194 million** individual accounts with **2 million** new accounts per month
- **640,000** institutional accounts with **5,000** new accounts per month

Penetrating Surveillance

- Market positions of **every individual investor**
- Actual investor account and broker info of **every quote**

Surveillance through Transaction Lifecycle

- Position and authority check of accounts before every transaction
- Real-time alerts and history query

Data Sharing

- Sharing of data between exchanges
- Cross-market joint surveillance

- 1. Prevent systematic financial risks by monitoring market activities**
- 2. Protect investors by risk warning and sharing cross-market information**
- 3. Identify market manipulation by big data and AI**
- 4. Improve investigation efficiency by optimizing surveillance process**

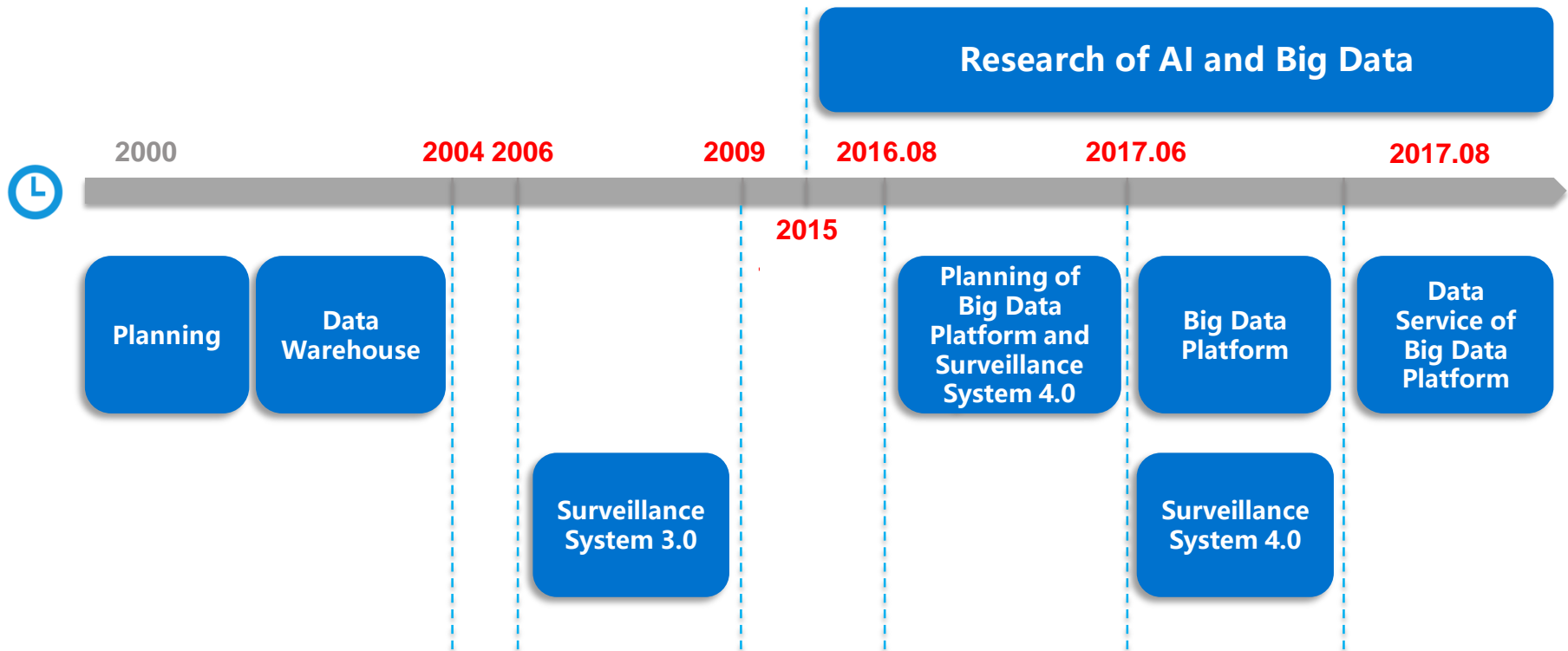
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Building the Big Data Platform

Building the Big Data Platform

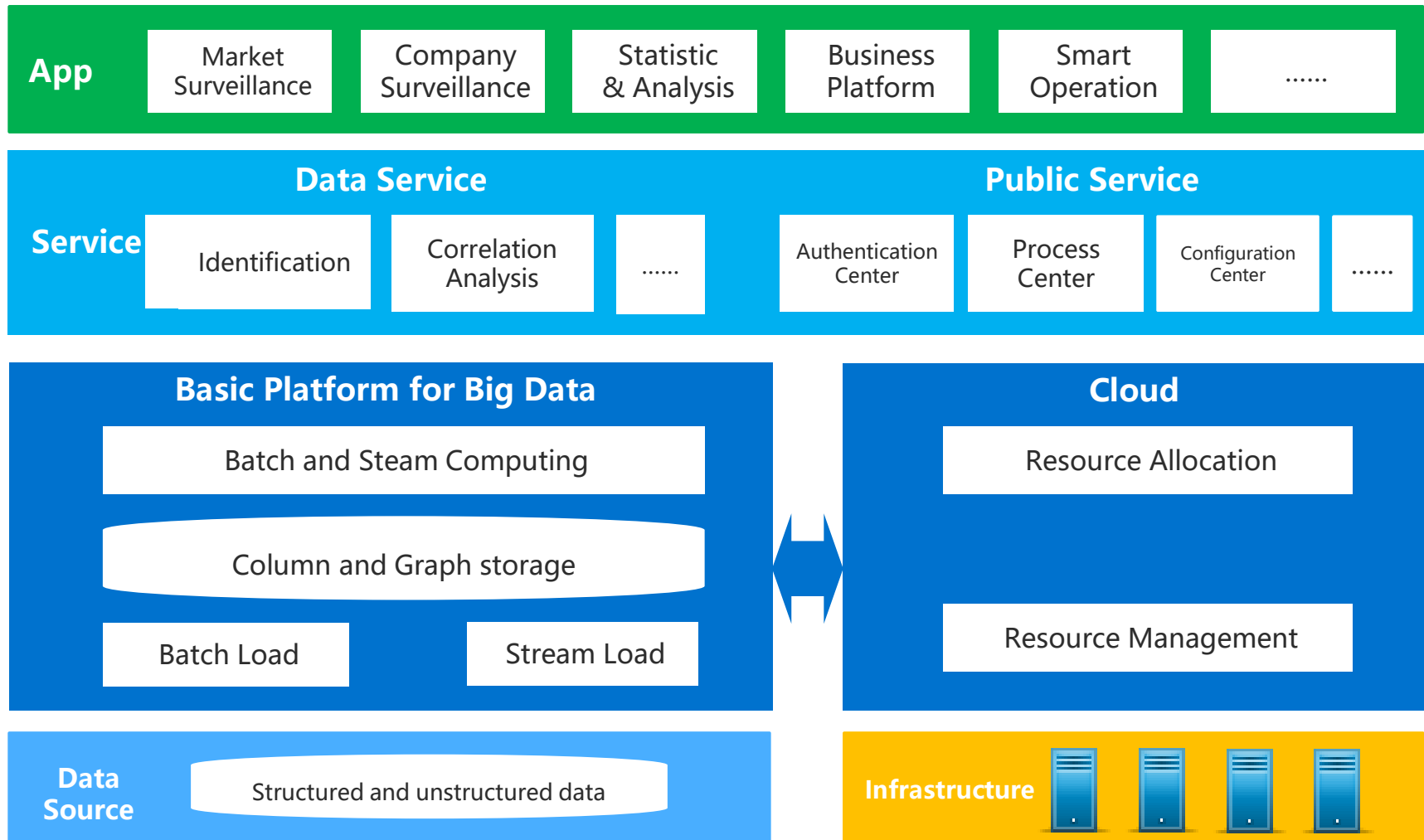
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Path



03

Platform Architecture



03

Practice of Big Data

01

Application Outlook



Market Behavior

Big Data +
Market Surveillance



Company Behaviors

Big Data +
Company Supervision



Product Innovation and
Supply-side Reform

Big Data +
Product Innovation



Big Data Platform

Data

Quotes
Trades
Position
Product
Participants
News
Credits
.....

Tech

Distributed storage
Elastic Computing
Stream Computing
Graph Database
Text Mining
NLP
Data Analysis and
Visualization
.....

App

Investor portrait
Company portrait
Company portrait
Correlation Analysis
Fluctuation Analysis
News Analysis
.....

02

Big Data + Application

Application	Features	Technology Involved
Surveillance	Complex Query of Historical Data, Cross-market Monitoring and Correlation Analysis	Parallel computing, Streaming Processing, Machine Learning, NLP, Data Warehouse, Big Data Storage
Risk Control	Risk Assessment, Credit Rating	Parallel computing, Streaming Processing, Machine Learning, Big Data Analysis
News Monitoring	News Monitoring	NLP, Streaming Processing, Unstructured Data Processing, Text Mining, Option Mining
Regulation	Market Operation Monitoring, Company Information Inquiry, Correlation Identification	Knowledge Graph, Big Data Analysis, Machine Learning, NLP
Data Governance	Data Modeling, Authentication Management, Data Security, Metadata Management, etc	Process Management, Data Security Technology and etc.

Market Behavior Analysis

- The surveillance of market activities to the level of individual investors
- The cross-market analysis system for market activities

Company Behavior Analysis

- Acquiring and analyzing company's financial reports, announcements, correspondences, public opinions, credit information
- Improving the review process for company listing and the issuance of products

04

Market Behavior Analysis

To percept, predict and prevent the market risk by in-depth monitoring the market risk based on the integration of shared and authoritative data

Macro Aspects

- ✓ **All-in-one intelligent surveillance platform**
- ✓ **A cross-market analysis system**
- ✓ **A risk index system**

Expand the breadth and depth of market surveillance

Micro Aspect

- ✓ **Smart Applications**
- ✓ **Optimized surveillance model groups**

Real-time, panoramic and penetrating surveillance

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Company Behavior Analysis

Establish the correlation between products and companies by expanding data sources to create a comprehensive and multi-dimensional supervision system for company behaviors



Financial reports, announcements, correspondence,
public opinion, credit information

THANKS

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