



臺灣集中保管結算所  
Taiwan Depository & Clearing Corporation

# Data Analytics in Mutual Fund Market Supervision

Taiwan Depository & Clearing Corporation  
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2022.06



# Agenda

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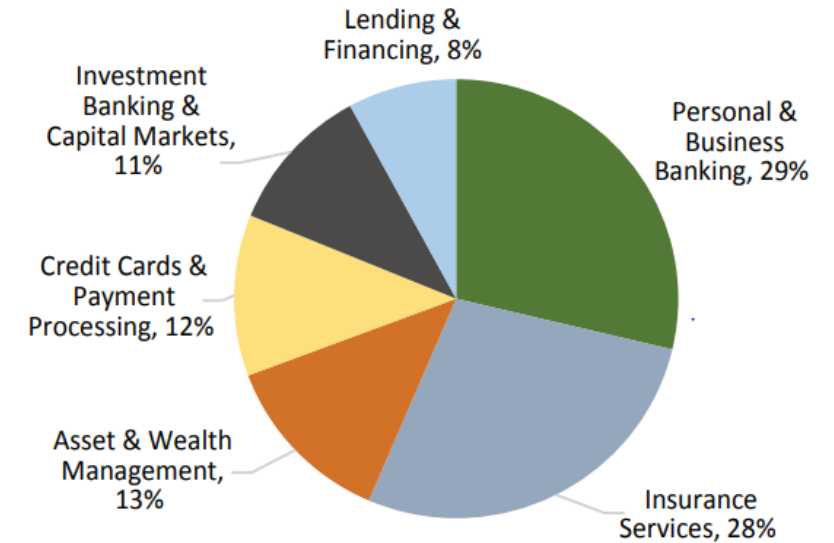
1. Background
2. Project Planning
3. Mutual Fund Market Supervision
4. Conclusion



# 1. Background

## Big data is taking off and it has revolutionized finance industry

- Big Data in finance has contributed to major technical advances in recent years
- The progress allowed the industry to come up with simple, tailored, data-driven, and safe solutions

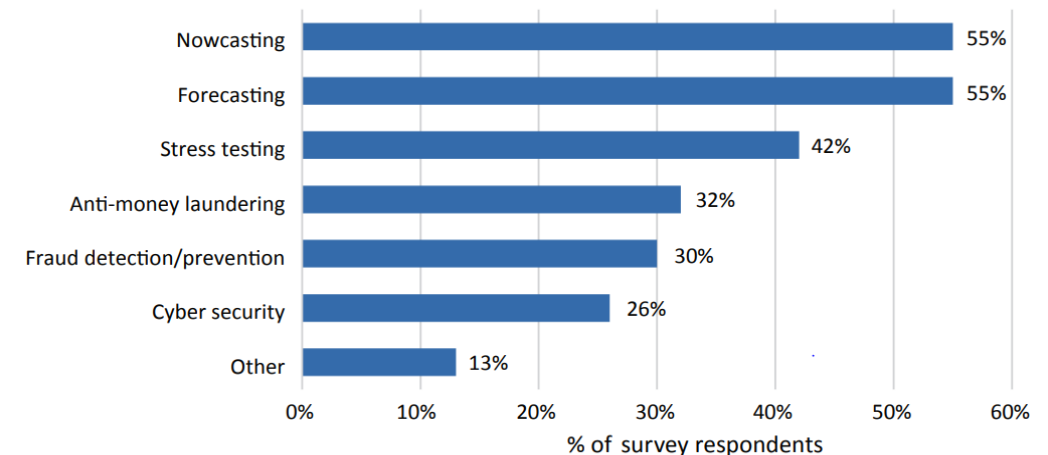


A wide range of industries within the financial sector use big data  
Source: World Bank

## Big data's disruptive potential

### Regulators are building capabilities in big data and related analytics

- Governments are also exploring ways to use big data collected by the financial sector
- To get a better picture of the financial system as a whole and the overall economy



Central banks are using big data in a variety of ways to enhance their operations  
Source: World Bank

# 1. Background

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## Financial Supervisory Commission published FinTech Development Strategy White Paper

- Fintech development has become an important strategy to enhance national competitiveness
- The White Paper encompasses Fintech trends in five major dimensions: financial services, innovative R&D, talent cultivation, risk management, and infrastructure.

## SupTech - Increasing efficiency through innovation

- This transformation also lead to changes of the supervisory processes, which can be accomplished more effectively with the support of SupTech tools
- SupTech solutions are now being developed for various stages of the supervisory process

金融科技  
發展策略白皮書

FinTech  
Development Strategy  
White Paper

May 2016

金融監督管理委員會

# 1. Background

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## Taiwan mutual funds industry

- Over the last 10 years, the volume invested in funds has increased substantially, forecasts for the next few years remain positive
- AUM continues to have an upward trend and the market continues to offer diversified products

With the complexity of mutual fund investment activity, it is necessary to use technology to satisfy regulatory and compliance requirements more effectively and efficiently

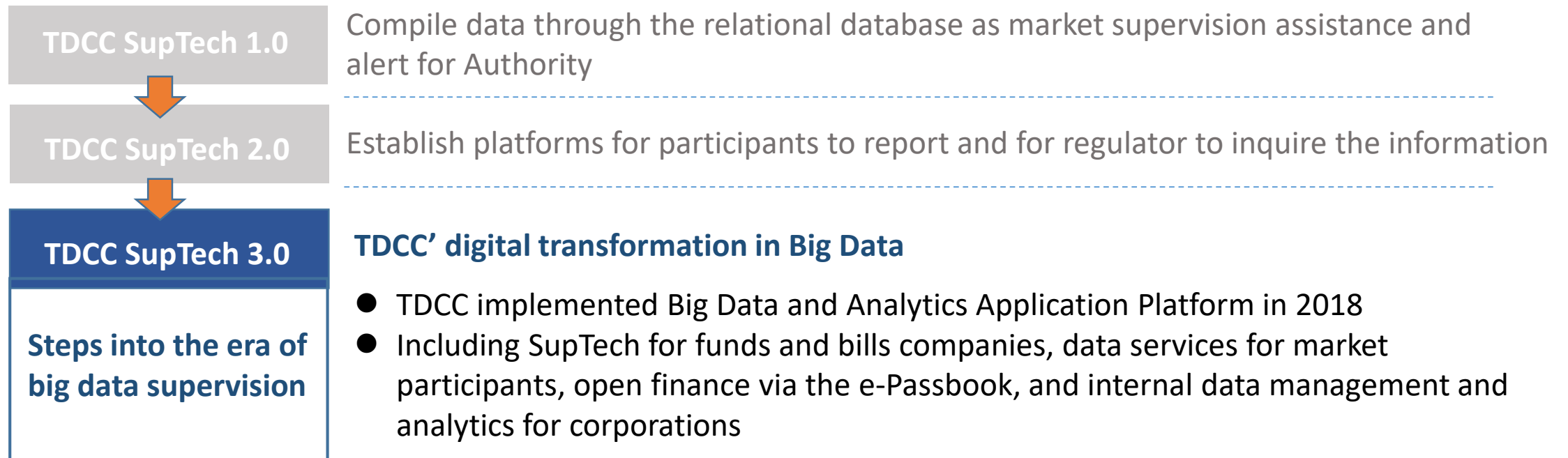


## 2. Project Planning

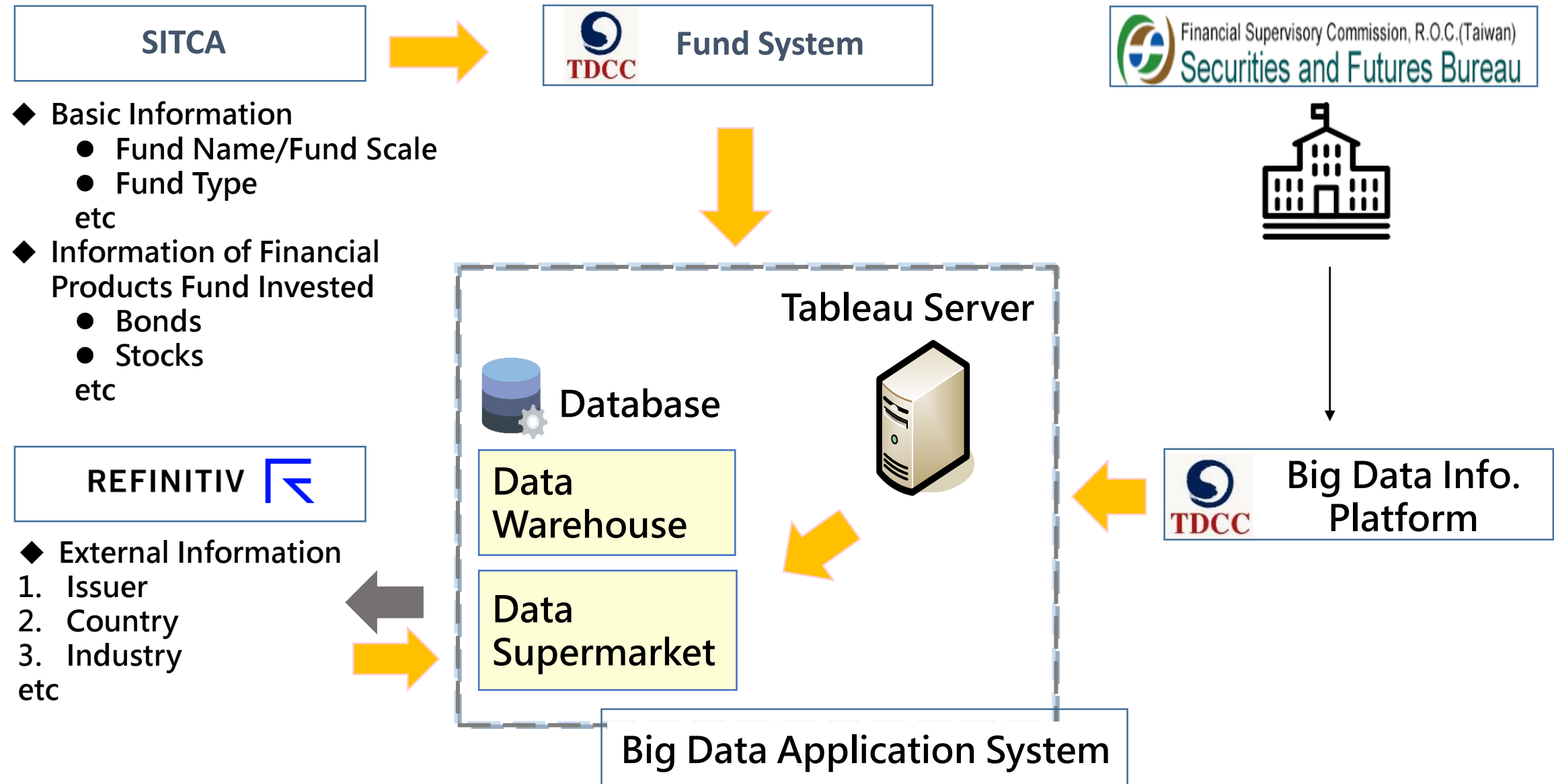
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- TDCC, as the major infrastructure of Taiwan's capital market, stores abundant and dynamic market data
- TDCC explores the value of data for supervision; collaborate with FSC in developing SupTech

### TDCC's SupTech development



## 2. Project Planning



## 2. Project Planning

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Cross-functional collaboration at TDCC to conduct the project, tasks including:

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### Data Collection

- Guided by the requirements that have been identified
- Collect the data from different sources
- Make sure to organize the collected data for analysis

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### Data Cleaning

- Not all of the data will be useful
- Data cleaning is mandatory before sending the information on for analysis.

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### Data Analysis

- Use data analysis software and other tools to help interpret and understand the data
- Lead to arrive at conclusions

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### Data Interpretation

Interpret results and come up with the best courses of action, based on findings

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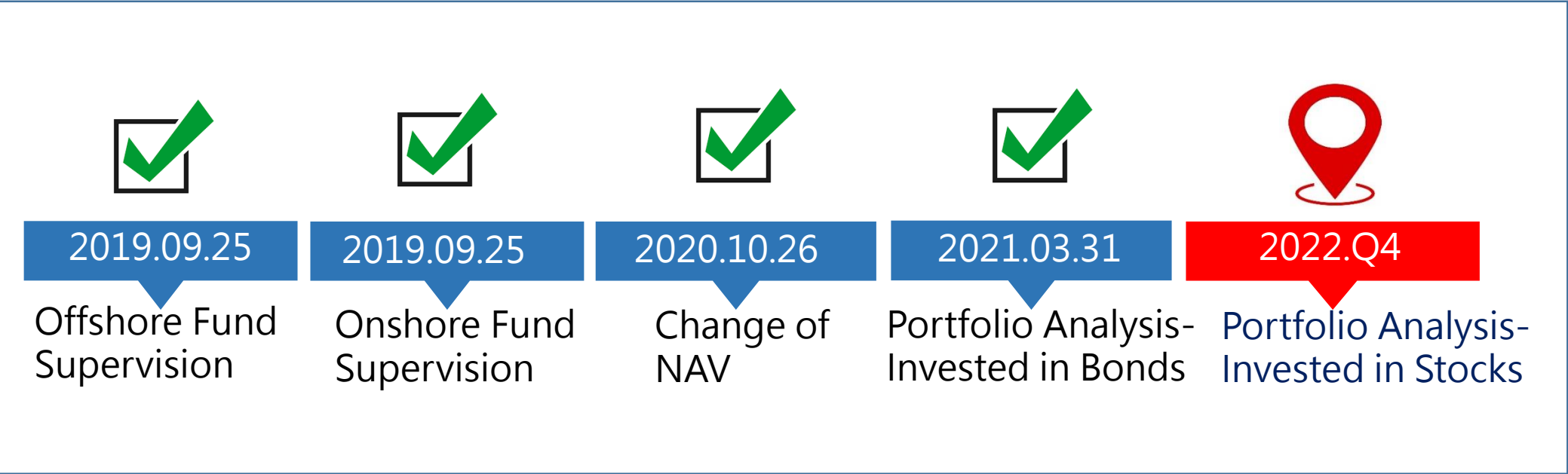
### Data Visualization:

- Graphically show your information in a way that people can read and understand it
- Use charts, graphs, maps, bullet points, or a host of other methods
- Visualization helps you derive valuable insights by helping you compare datasets and observe relationships

### 3. Mutual Fund Market Supervision

According to Authority's risk control perspective, TDCC developed applications in Mutual Fund Market Supervision

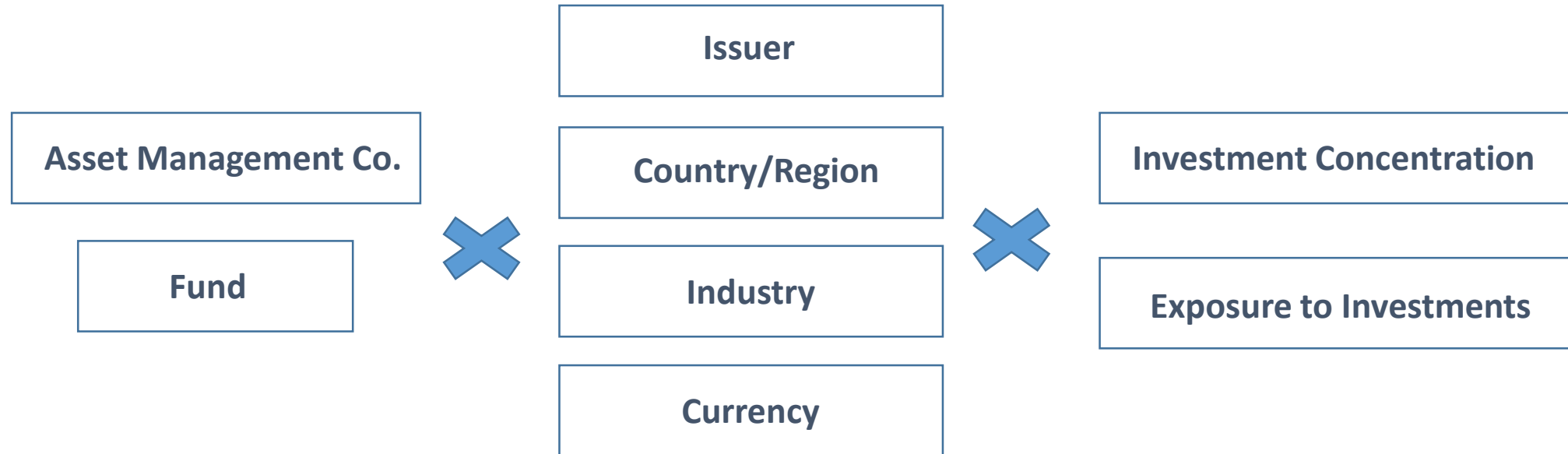
The development contains 5 phases



### 3. Mutual Fund Market Supervision

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- Analyze the following dimensions:



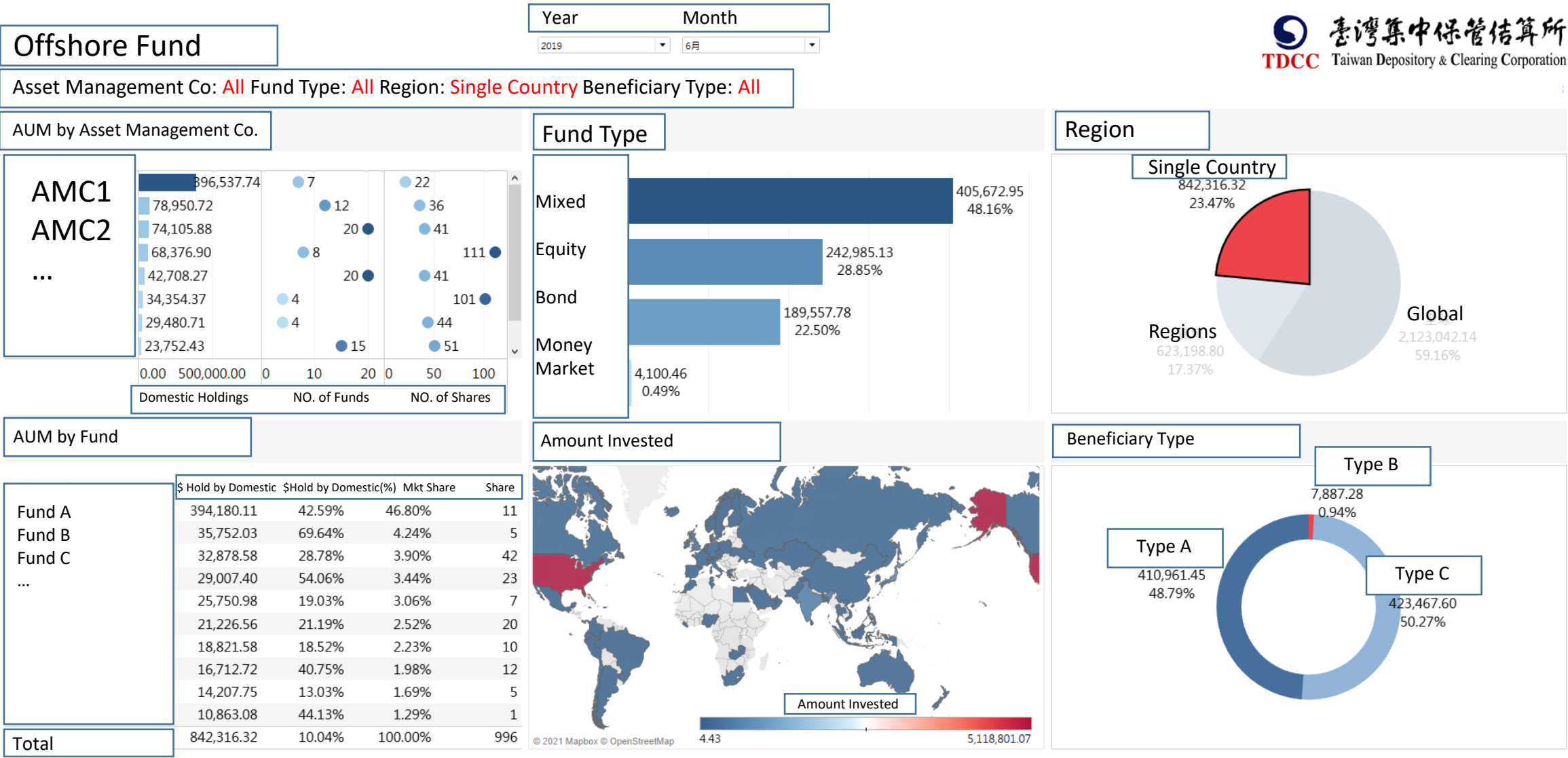
1. **Offshore Fund Supervision** :

Use internal data to analyze the amount domestic investors invest, subscription and redemption, and exposure

2. **Onshore Fund Supervision** :

Use internal data to analyze general information, subscription and redemption, and stocks held by mutual funds

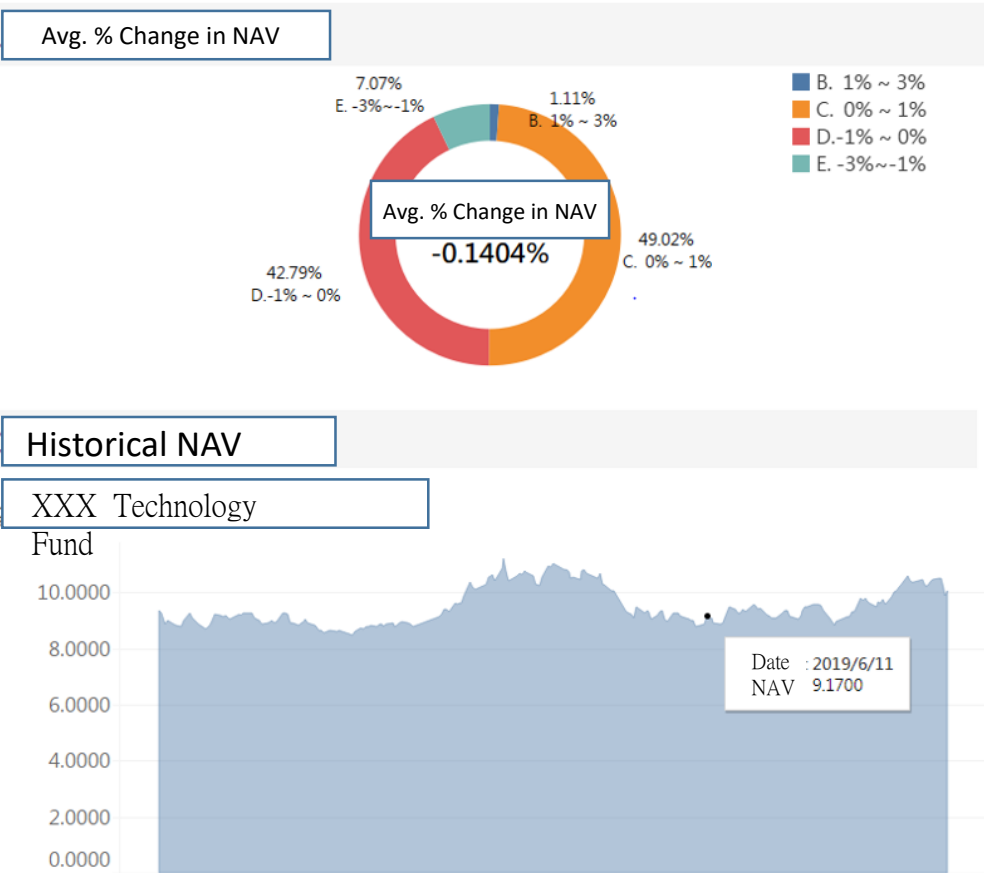
### 3. Mutual Fund Market Supervision



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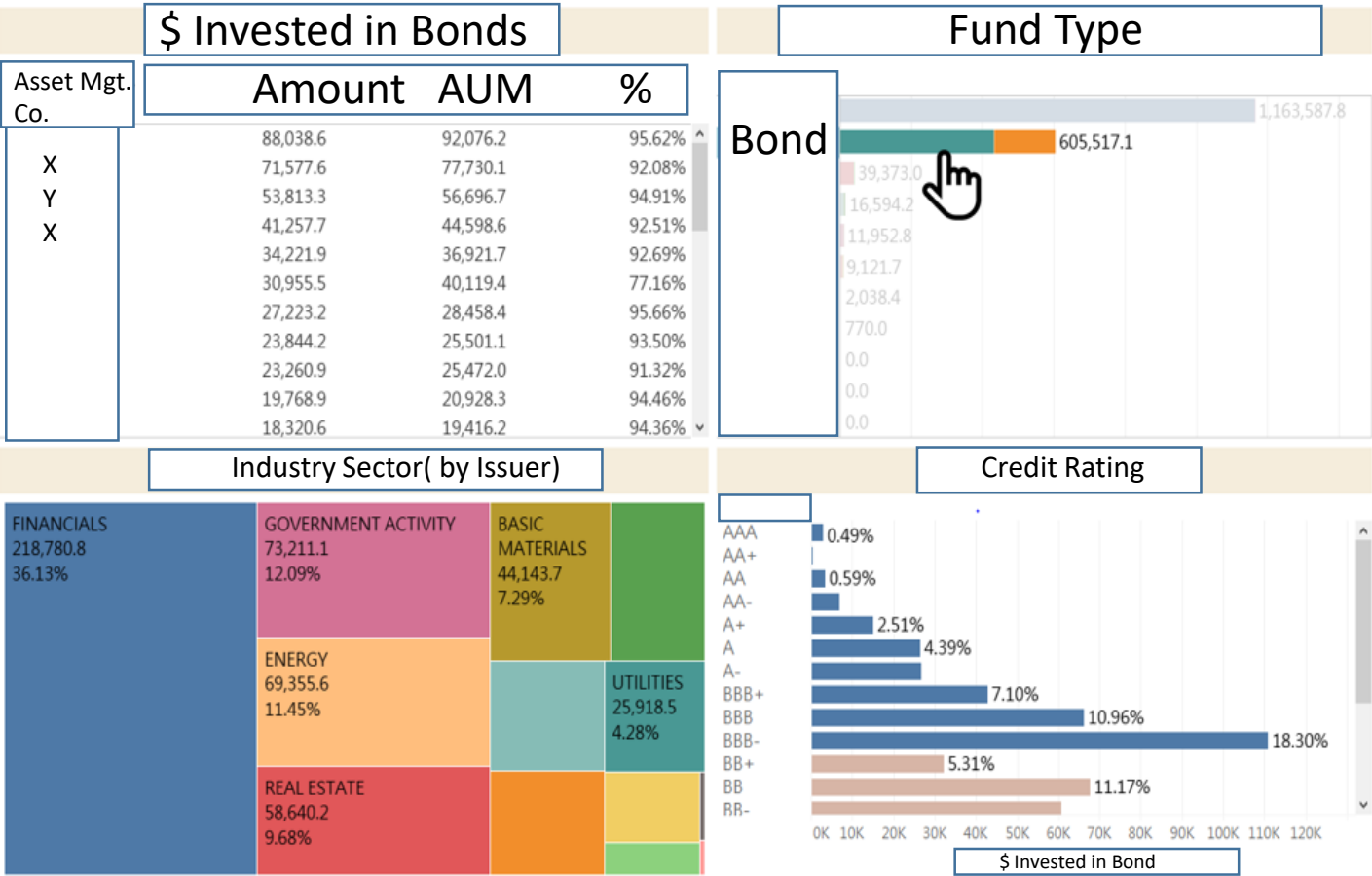
#### 3. NAV Change

Monitor the change in the NAV value by fund or fund type



#### 4. Portfolio Analysis- Invested in Bonds

Check portfolio invested in bonds, credit rating, Coupon Rate, etc.



Industry Sector( by Issuer)

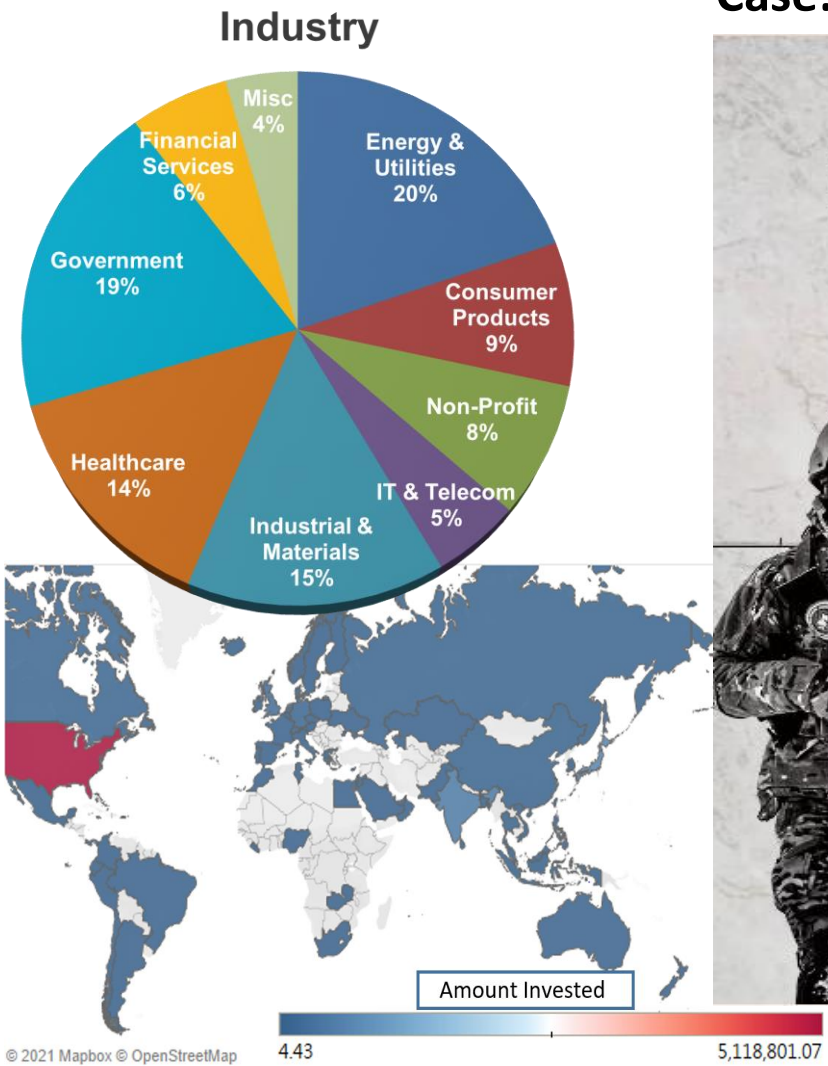
Industry Sector	Amount	Percentage
FINANCIALS	218,780.8	36.13%
GOVERNMENT ACTIVITY	73,211.1	12.09%
BASIC MATERIALS	44,143.7	7.29%
ENERGY	69,355.6	11.45%
UTILITIES	25,918.5	4.28%
REAL ESTATE	58,640.2	9.68%

Credit Rating

Credit Rating	Percentage
AAA	0.49%
AA+	0.59%
AA	2.51%
AA-	4.39%
A+	7.10%
A	10.96%
A-	18.30%
BBB+	5.31%
BBB	11.17%
BBB-	11.17%
BB+	11.17%
BB	11.17%
BB-	11.17%

# 3. Mutual Fund Market Supervision

## Case: Major Events that Shake Financial Market



## 4. Conclusion

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### **Advanced analytics will deliver new insights**

- Advanced analytics is going to become increasingly valuable for regulators in 2022 and beyond
- A core benefit is the ability to identify trends and predict problems before they occur
- AI and machine learning can be used to spot trends in data that would be almost invisible to the naked eye

### **The benefits are clear in assisting authorities**

- TDCC continues to enhance data collection and analysis, automate routine tasks, develop new analytical techniques, and provide better insights
- By extension, SupTech solutions also have the potential to alleviate the regulatory burden on regulated entities
- The goal is to assist authorities in exploring Suptech applications in different areas of supervision

In the future, TDCC will optimize the information development process, and in turn provide better financial services, building a more robust FinTech environment with the government's guidance

**THANK YOU**