Introduction to the Work Progress on Big Data for Official Statistics in China

National Bureau of Statistics of China (NBS)
Wenna Wang
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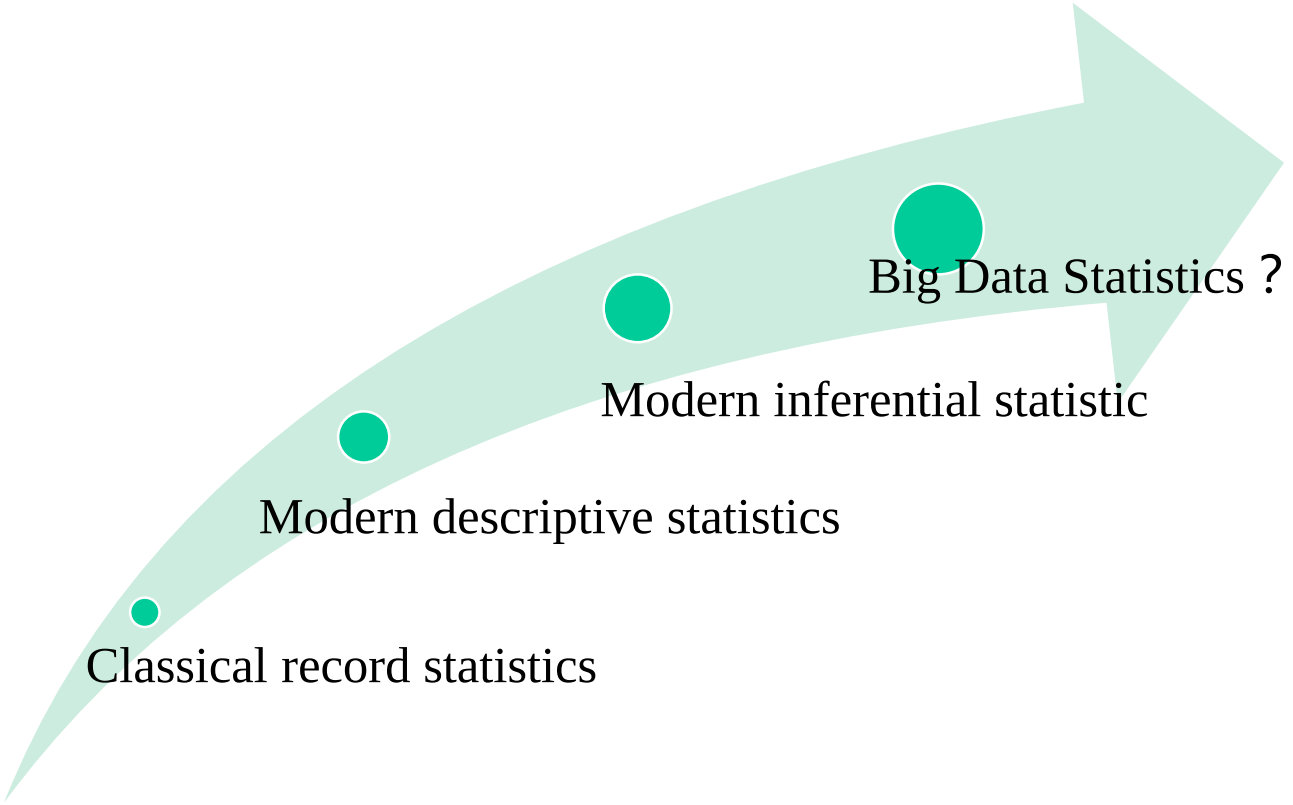
Contents

The Use of Big Data for Official Statistics in China

What restricts the development of statistics?
What is the next stage in the development of statistics?



The Use of Big Data for Official Statistics in China

What Does the Big Data Era Bring to Statistics?

1. More data sources with various types

Internet Data/ Internet of Things Data/ Remote Sensing Image/ Business Records/ Administrative Records ...

2. Increased modern information technologies

Cloud Computing/ Distributed Database/ More Efficient Big Data Processing Capability ...
Machine Learning/ Artificial Intelligence/ Deep Mining/ More Advanced Data Analysis Technologies ...

The Use of Big Data for Official Statistics in China

NBS's Attitude towards the Use of Big Data in Official Statistics

Data is the foundation for statistical departments. Statisticians should embrace big data with an open attitude, actively promote the deep integration between big data and modern statistics, striving to play a leading role in the development and utilization of big data.

Jizhe Ning, Commissioner of NBS

It is the requirement of our time and mission to embrace, harness and leverage big data so as to build a modern statistical survey system commensurate with the modernization of the national governance system and governance capability and to calculate, reflect and serve the new growth drivers.

Zude Xian, Deputy Commissioner of NBS

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Main Objectives for Big Data Work

Formulate Statistical Standard and Methodologies for Big Data

Expand Data Sources for Official Statistics

Reform Statistical Survey Methods and Data Collection Approaches

Improve Data Evaluation, Data Mining and Data Dissemination

Strengthen Infrastructure Construction and Improve Capabilities of Big Data Collection, Processing and Analysis

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The Application of Big Data for

Administrative Records	Internet Data	Business Record	Remote Sensing Image
• Industry and commerce • Tax • Public security • Health • …	• Internet search • Social media • Financial market • …	• Internet of Things • Electronic payment • Mobile phone signal • Commodity scanning data • …	• Domestic and Foreign Satellite Data • Aerial photography • UAV • …

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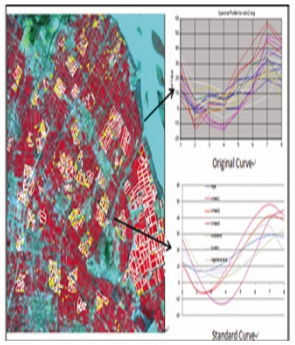
Application of Big Data in Official Statistics of China: Agricultural Statistics

A preliminary method for measuring the sown area of crops by remote sensing has been established with data acquisition and processing, remote sensing identification, field investigation, verification, revision of measurement results and formation of remote sensing measurement products as its main functions.

Data acquisition and processing

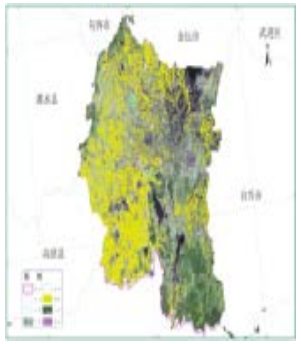


Remote sensing identification

PDA

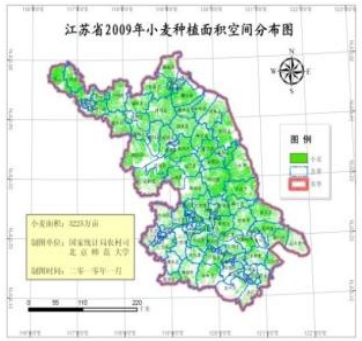
UAV

Field investigation



County area estimation

Provincial area estimation



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徐州市、	鼓楼区、	57814	南通市、	通州市、	326172
徐州市、	云龙区、	36287	南通市、	海门市、	47526
徐州市、	九里区、	29050	连云港市、	连云区、	21640
徐州市、	贾汪区、	259455	连云港市、	新浦区、	232018
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Application of Big Data in Official Statistics of China ---Demographic Statistics

1. Innovation in Methods of Population Statistics
   - Use grid-based database from line ministries such as the Ministry of Public Security, Ministry of Civil Affairs and Ministry of Social Security to provide more information for the census;
   - Use grid-based database in urban areas;
   - Fully explore the relationship between departmental data of domestic water, domestic electricity, and salt sales and usual residents.
2. Floating population statistics
   - Use administrative registration data from National Health Commission, Ministry of Public Security and other line ministries.
   - Use communication network data, such as mobile phone positioning information, GPS signal data, SMS survey data.

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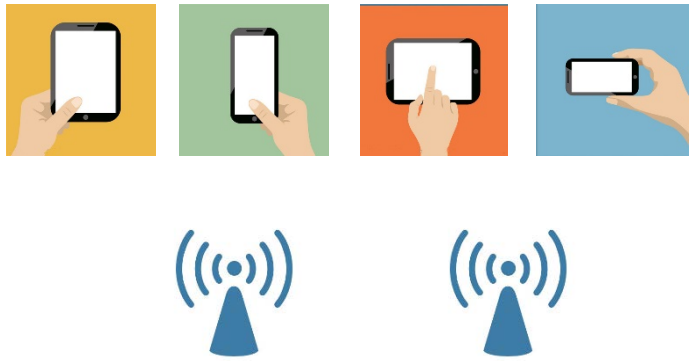
Application of Big Data in Official Statistics of China: A Case Study of Demographic Statistics Analysis

Case:
The Beijing Municipal Bureau of Statistics cooperates with communication operators and uses the base stations of the communication operators to capture the mobile phone signals of the users at certain intervals, monitor the residence time and location information of the mobile phone users in various administrative districts of Beijing, and then calculate the population situation in various regions according to certain standards to establish a population dynamic monitoring system.



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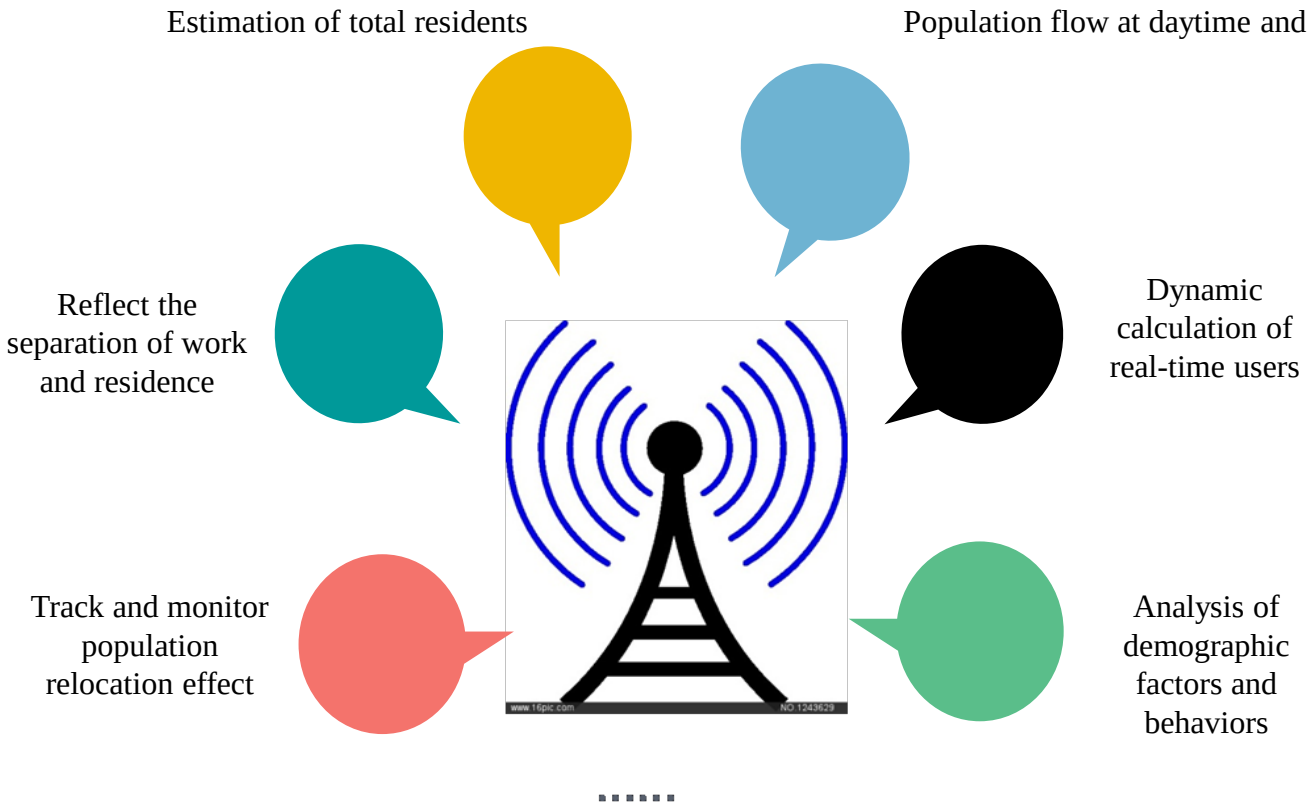
Application of Big Data in Official Statistics of China: A Case Study of Demographic Statistics Analysis



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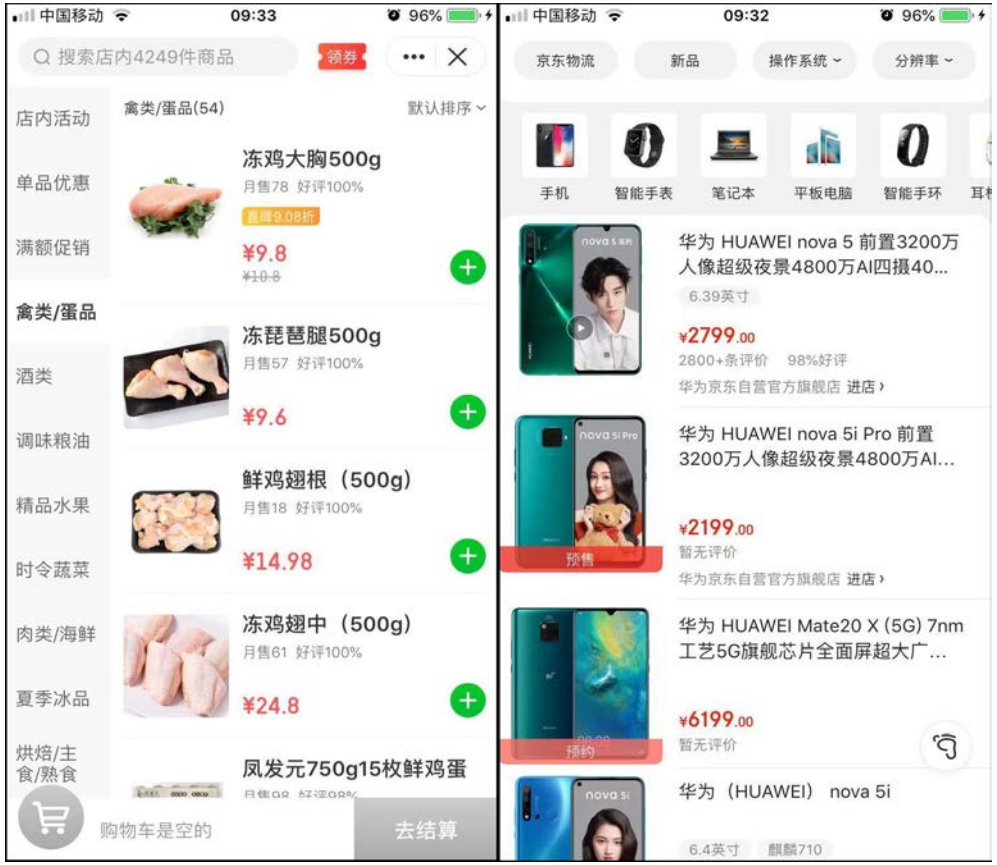
Application of Big Data in Official Statistics: CPI

- Search internet data directly from e-commerce and tourism service platforms to get data of prices
- Establish direct electronic reporting system for shopping malls, supermarkets, and hospitals;
- Cooperate with companies to obtain original price data.



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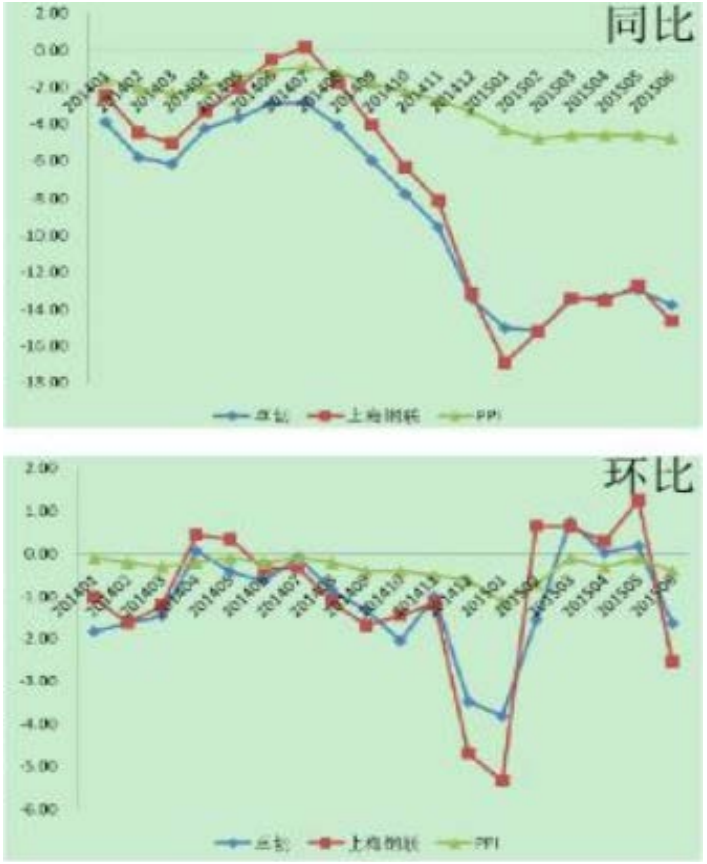
Application of Big Data in Official Statistics: PPI

- Collect relevant price data online
- Cooperate with companies in relevant industries
- Supplement and improve calculation of industrial product price



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Application of Big Data in Official Statistics: Trade and External Economic Relations Statistics

Disseminate online retail data regularly with data from online retail platforms;
Cooperate with UnionPay to verify data of retail sales of consumer goods;
Conduct special surveys of online purchase

For example:
In 2014, transaction data of goods and services were collected from more than 30 online retail platforms and data of online retail sales were released for the first time in April of that year.

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Application of Big Data in Official Statistics: Industrial Statistics

- Obtain data of logistics, establish indicators for logistical industry to reflect the characteristics of industrial operation;
- Study the relationship between major industrial products including coal, chemical industry and stone and freight volume, and make trend comparison with relevant statistical indicators;
- Undertake research into the collection methods of enterprise's original financial, production or transaction data;
- Obtain industrial data from Internet of Things to collect industrial production data directly.



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Application of Big Data in Official Statistics: Investment Statistics

- Collect data of the operation of major engineering machinery
- Collect production and price changes of building materials
- Cooperate with enterprises to obtain sales data of new and second-hand houses.

Get more timely and accurate data from investment sources and dynamically monitor investment.


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Application of Big Data in Official Statistics: Economic Forecast

- Cooperate with related companies to establish a statistical key search lexicon
- Establish relevant statistical analysis and measurement models to assist in judging economic trends

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Application of Big Data in Official Statistics: Household Income

- Collect data of individual income taxes from taxation department;
- The rich list data collected and published by the research department;
- Use information of wages sent by banks

The Use of Big Data for Official Statistics in China

Improving Infrastructure Capability and Data Acquisition and Processing Capability

The goal of information technology: to build statistical cloud and big data application platform, to realize the flexible combination and service of computing resources, network resources, storage resources and security resources and other infrastructure, to provide the omni-directional basic resource support and security protection for the existing and future new business applications of the National Bureau of statistics, as well as the innovative application of big data. Focus on three major capabilities:

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Part 2. The Basic Situation of Hangzhou Statistical Big Data Center (Temporary Name)

The Basic Situation of Hangzhou Big Data Center

Background of Big Data Centre

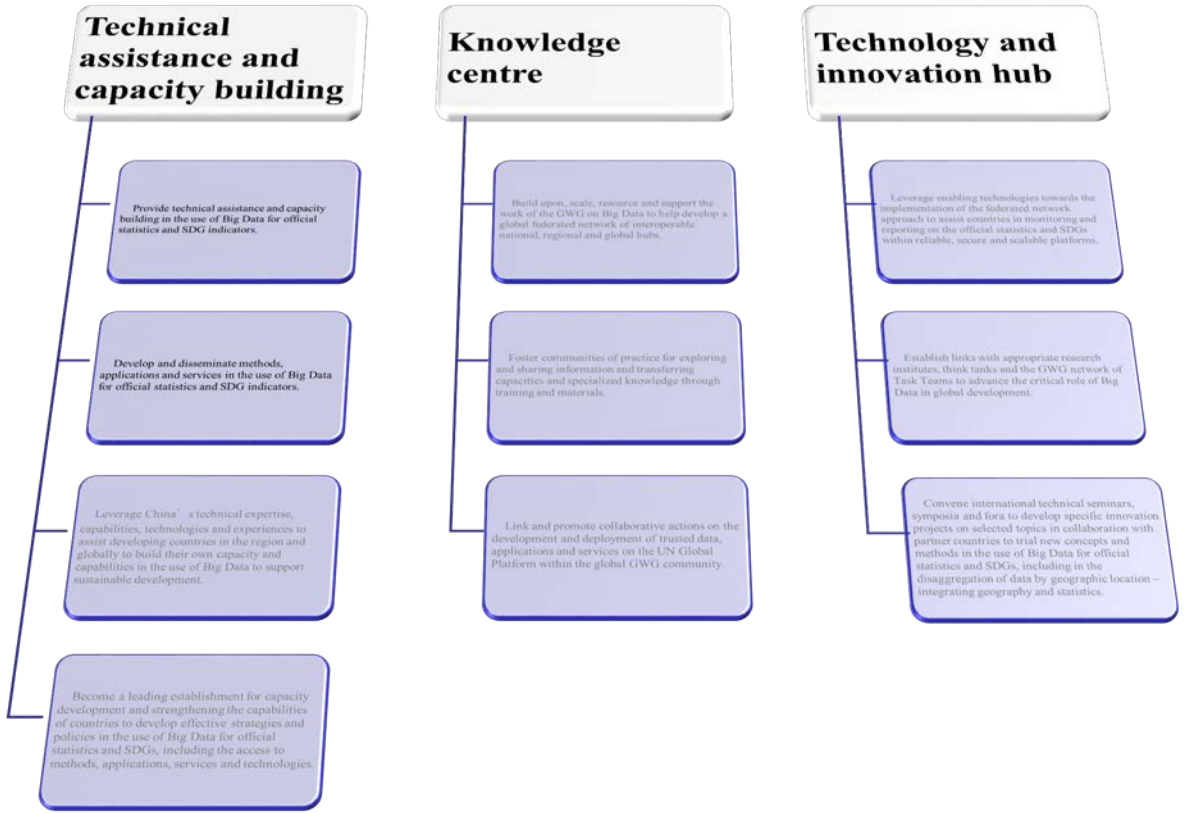
The National Bureau of Statistics of China and the United Nations Minister of Economic and Social Affairs have long been committed to strengthening national cooperation in economic and social affairs, especially in the use of large data for official statistics and the goal of sustainable development in 2030.

In October 2014, the National Bureau of Statistics and the United Nations Department of Economic and Social Affairs held the first International Conference on Big Data and Official Statistics in Beijing, which advanced the early work of the Global Working Group on Big Data in Official Statistics.

Since 2017, the Zhejiang Provincial Government has introduced big data into the field of government services, accelerated the government's digital transformation and digital Zhejiang construction, helped the government transformation, and accumulated rich experience in big data Bureau and government governance and digital transformation.

The Basic Situation of Hangzhou Big Data Center

Three Thematic Priorities of Hangzhou Big Data Centre



The Basic Situation of Hangzhou Big Data Center

Work objective:

Establish a globally recognized collaborative and action-oriented knowledge, technology and innovation centre; integrate innovative technologies and data science methods into big data applications; and provide an urgently needed platform for further promoting data science projects.
Promote projects to apply big data and data science to official statistics and sustainable development target indicators; share knowledge on newly developed research methods, algorithms and tools; and provide training on big data application and data science to the global official statistics community.

The Basic Situation of Hangzhou Big Data Center

Construction Content-Office Area

Address:
Zhejiang Statistical Survey and Data Processing Center
323 Tianmushan Road, Hangzhou City, Zhejiang Province, China

The Basic Situation of Hangzhou Big Data Center

Construction thinking

The statistical big data center will be jointly constructed by the National Bureau of statistics and the Zhejiang provincial government. It will make full use of the relevant resources of the cloud of the National Bureau of statistics and the government cloud of Zhejiang Province, establish a statistical big data application center for international and domestic statistical departments, experts, scholars, enterprises and other users, and carry out the research, application and promotion of big data. Statistical big data application platform mainly consists of three parts.

The Basic Situation of Hangzhou Big Data Center

Construction Content - Five-storey Office Area:

There are 8 central office staff, 1 expert office, 1 medium-sized conference room, 1 small conference room, 1 United Nations reference room, 1 open discussion room and 1 front desk reception area.

The Basic Situation of Hangzhou Big Data Center

Construction Content - Four-storey Office Area:

There are 6 office rooms, 1 expert office area, 1 video conference room, 1 medium-sized conference room, 1 small training room, 1 open discussion area and 1 gym.

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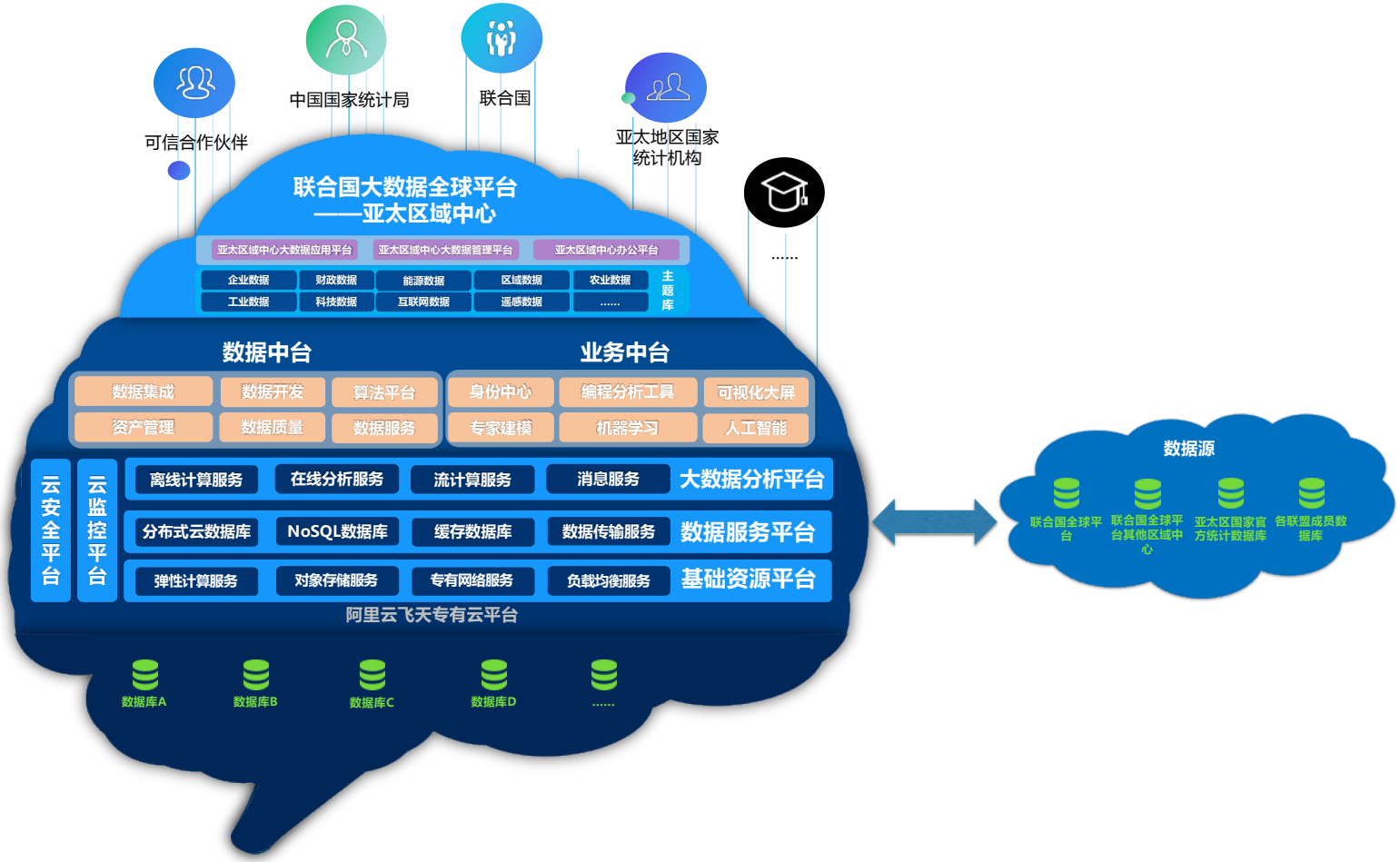
Construction Content: Big Data Center



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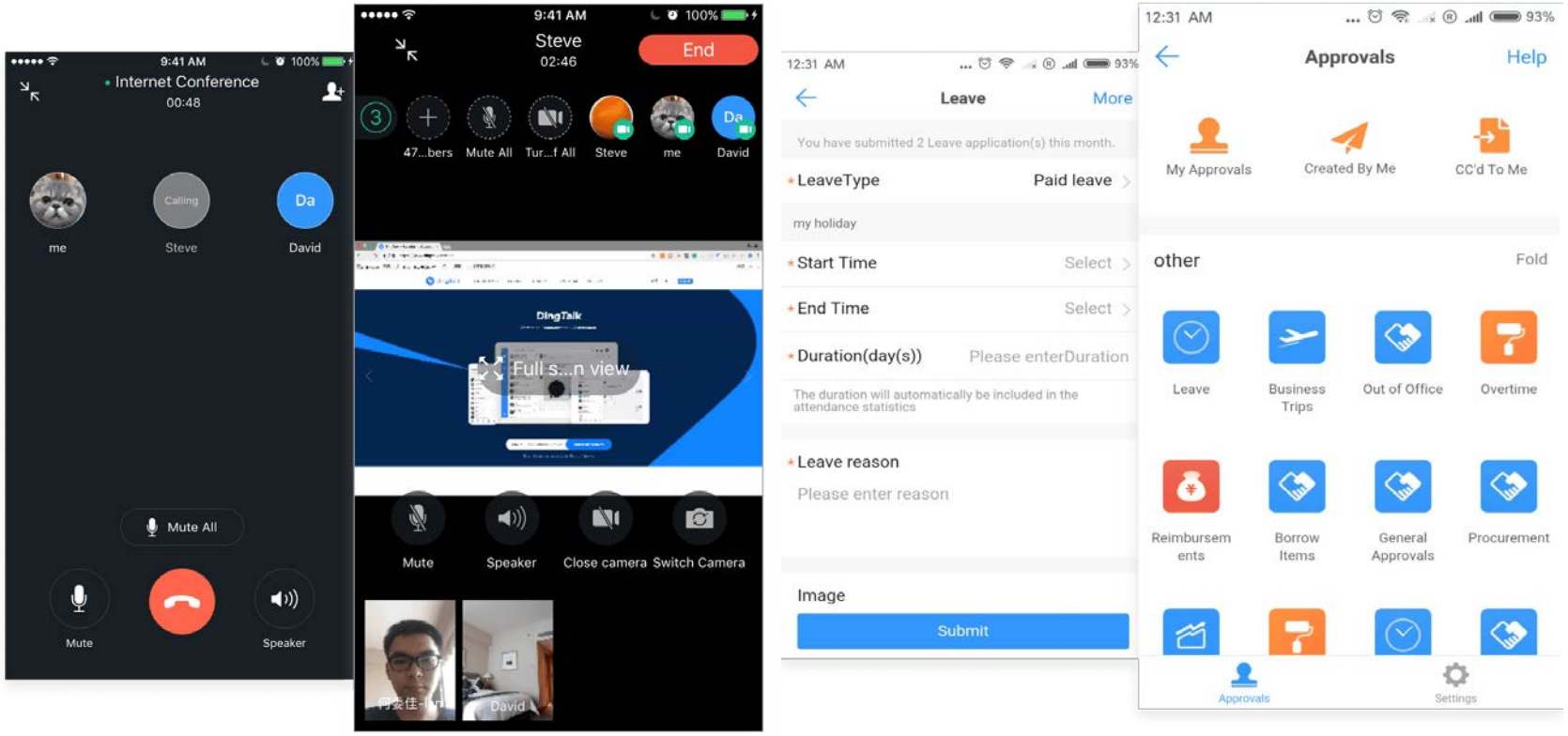
Construction Content: Cooperation Platform



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Work progress:

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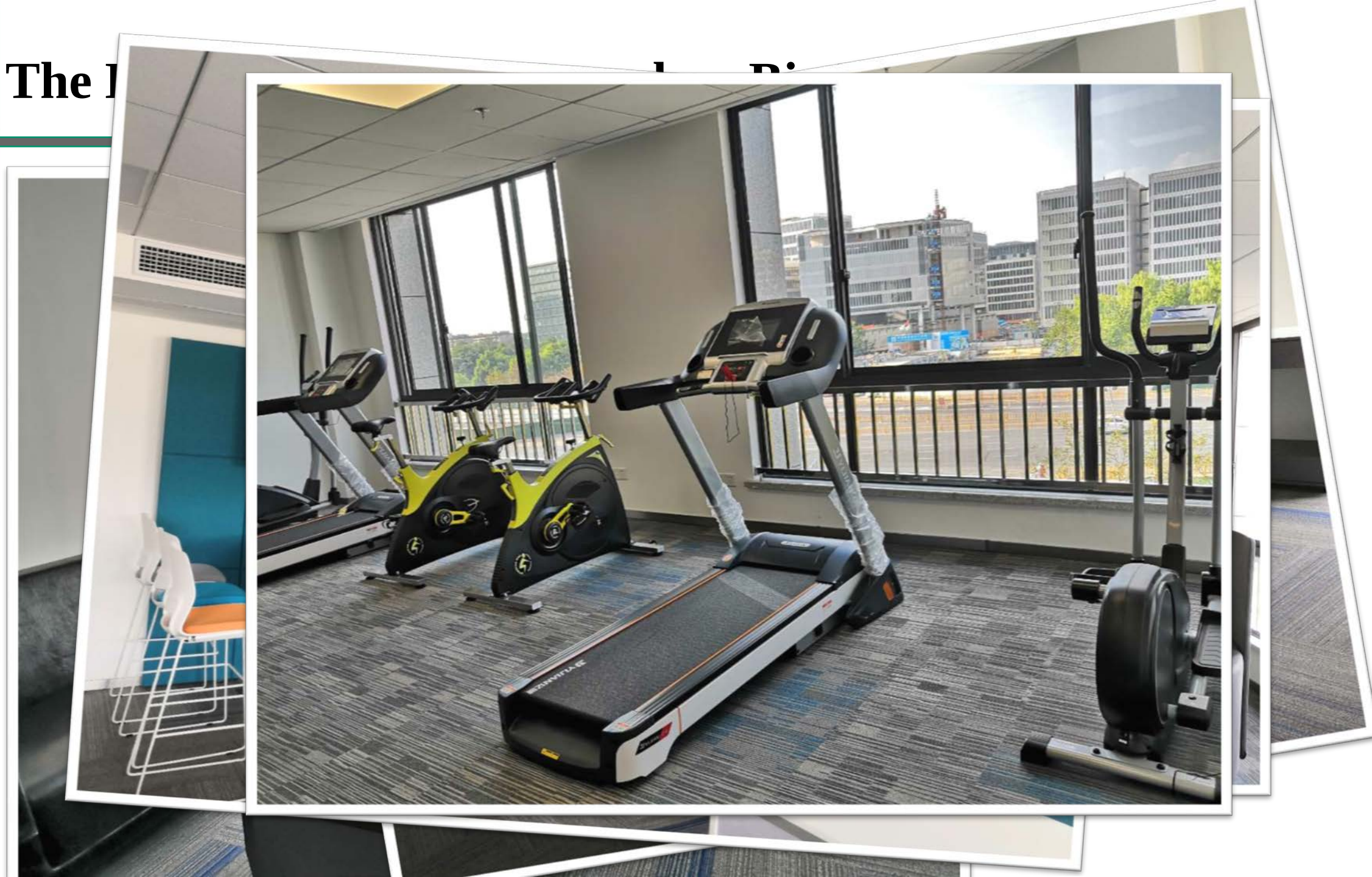

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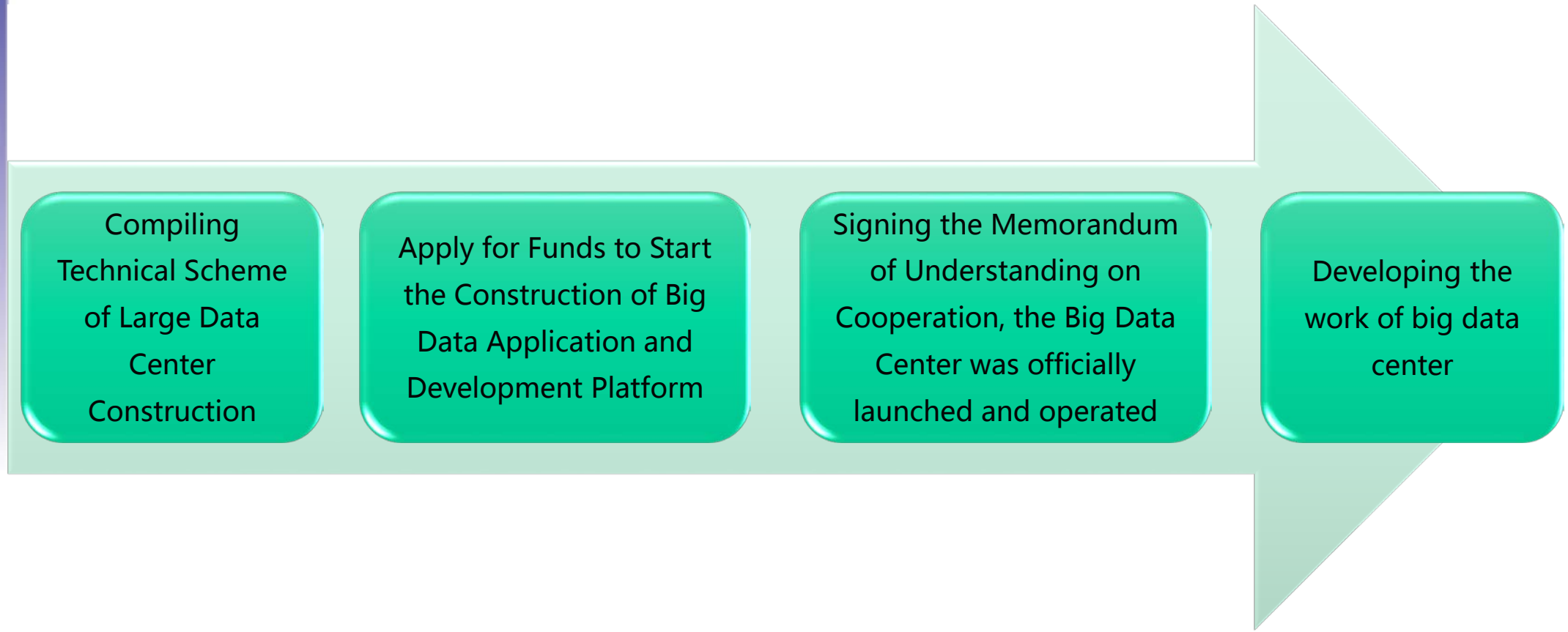
Next Work Plan:



Thank you