Building a Transparent Digital Government, Creating a Diversified Data Ecosystem and Developing a Robust Digital Economy

Guangdong-Hong Kong-Macao Greater Bay Area series report
This report comprises three sections. Introduction: This section introduces the context, China’s crucial role in global digital economy, Guangdong’s leading role in China’s digital economy, and further development needed in building a digital government that can help to develop digital economy and creating a data ecosystem. Future development: This section discusses how the People’s Government of Guangdong Province is building a digital government and enhancing data governance capacity to create a safe, diversified loop development of data collection and integration-data opening and circulation-data innovation and application at the regional level and flow-data innovation, in a bid to ultimately support industrial ecosystem construction and develop a digital economy through the built data ecosystem. Summary: This section recommends the points to be noted by policy makers and other related parties in Guangdong Province and explains the significance of the proposals.
Abstract

Digital economy is on the forefront in the international competition. Though leading in digital economy nationwide, Guangdong still needs to further speed up building a digital government and driving regional data ecosystem infrastructure to be improved step by step.

In such a context, it is the need of the hour to promote integration, development, innovation and application of B (business) and C (consumer) data, create a regional data ecosystem and enable digital development in the economy by building G (government) data governance capacity.

Here are some proposals for Guangdong Province:

1. From the view of policy planning and technology, authorities in Guangdong, especially the Greater Bay Area need to set up collecting and integrating their own data to lay a solid quantity and quality foundation for the following data application.

2. On the ground of mass quality data, government should set a model and take the lead in compiling an open public data, encouraging compliance data flow among businesses and institutions, and realizing efficient open data sharing to facilitate data application.

3. Based on open data, an ecosystem should be built for data application. In a value-oriented way, efforts should be made in probing into medical data integration, accelerating inclusive finance and other applied scenarios, thus enabling development in people’s livelihood and business.

The People’s Government of Guangdong Province may set a model and take the lead in establishing government data collection and integration-open data sharing-application and innovation loop. It can further give priority to the depth and breadth of data application to promote development of regional digital economy while leading an open government data innovation practice in China.
Contents

Introduction: Context for Development of Digital Economy ................................................................. 2

Future Development: Building a Data Ecosystem in the Greater Bay Area ................................. 4

   Link 1: Strengthening Government Building and Optimizing Data Consolidation and Integration .... 4
       Development Challenge: Conspicuous Data Silos Problem and Less Data for Integration ....... 4
       Development Reference: The US’s Guarantee for Data Management and Organization and
       Europe’s Data Pool Building ............................................................................................................ 5
       Development Advice: To Improve Top Level Planning and Standardize Data Consolidation
       and Integration ................................................................................................................................... 5

   Link 2: Leading Open Data Compliance and Promoting Data Circulating and Sharing .......... 6
       Development Challenge: Limited Open Data and No Safe and Credible Circulation Platform .... 6
       Development Reference: US Data Opening Priority, EU GDPR, Shanghai Data Exchange,
       Germany’s Industry Data Circulation ................................................................................................. 7
       Development Advice: Promoting Open Data on Each Level Step by Step and Building a
       Circulation Platform under Regulation of Standards and Systems .................................................... 9

   Link 3: Government-Enterprise Collaboration for Building and Unleashing Data Value in a
   Scenario-oriented Way ............................................................................................................................. 10
       Development Challenge: Inadequate Forms of Data Application and Poor Integration of Data .... 10
       Development Reference: Suzhou Digital Credit Reference Pilot Area for SMEs, US Healthcare
       Data Platform, Shanghai “Health Cloud” Regional Healthcare Integration ........................................ 10
       Development Advice: Value Unleashing in a Government-led, Enterprise-involved and
       Scenario-centered Way ................................................................................................................... 11

Summary: Closed Loop for Government Data Should Be Built first for Enabling Digital
Economy Ecosystem ................................................................................................................................. 12

Contacts ..................................................................................................................................... 15
Introduction:

Context for Development of Digital Economy

Building Digital Government, Creating Data Ecosystem and Developing Digital Economy

The global digital revolution is not only reshaping economic development, but also the modes of production and lifestyles at unprecedented speed and scale. Data, known as the “new oil”, has become a new driver to create value. Government, as an important regulator, data resource administrator, service provider and platform builder, is playing an increasingly crucial role in establishing a regional data ecosystem and promoting the progress of digital economy.

According to 2018 Report on Development of Digital Economy in G20 Members published by China Academy of Information and Communications Technology (CAICT), China’s aggregate and growth rate in digital economy stood at USD 4.02 trillion a total of 16.44% and ranked 2nd among the G20 members. In spite of a sound momentum in digital economy, the Government of China sees a wide gap in the leading states regarding digital building. The 14th Waseda - IAC International Digital Government Rankings Survey 2018 co-published by Institute of Digital Government, Waseda University, Tokyo and International Academy of CIO, shows that China ranked 32nd though it rose 12 places when compared to 2017. Compared with major developed economies, China has a comparatively slow progress on e-Government development, with performance on all the segments of ranking lower than the advanced nations. The ranking relies on 10 comprehensive benchmarking indicators listed below. Underdeveloped e-government building may influence long-term development of digital economy.

1. Network Preparedness/Infrastructure (NIP)
2. Management Optimization/Efficiency (MO)
3. Online Services/Functioning Applications (OS)
4. National Portal/Homepage (NPR)
5. Government CIO (GCIO)
6. D-Government Promotion (EPRO)
7. E-Participation/Digital Inclusion (EPAR)
8. Open Government (OGD)
9. Cyber Security (CYB)
10. The use of Emerging ICT

According to the digital economy index rankings (by province) released by Caixin Insight, Guangdong ranks top and has a high integration index in digital economy, primarily manifested in industrial Internet, smart supply chain, sharing economy and financial technology among other things. But Guangdong’s performance in other index rankings of digital economy is not satisfactory. This includes the overflow index rankings (ratio of products in digital economy as intermediate products in other industries, indicating driving effects of digital economy on other industries) where it stands sixth and basic index rankings (for measuring the growth of infrastructure in digital economy from four perspectives: data access, transmission, storage and use) where it stands third.
Regarding digital economy, Guangdong takes the nationwide lead but may need to speed up integration, sharing, and application of open core resources - data resources for further development. Therefore, it is advised to promote digital government building in Guangdong, facilitate G (government)-B (business)-C (consumer) data consolidation and integration, and further open data sharing to push forward data circulation and even application and set a model of development for digital economy in China.
Future Development:
Building a Data Ecosystem in the Greater Bay Area

Link 1: Strengthening Government Building and Optimizing Data Consolidation and Integration

Development Challenge: Conspicuous Data Silos Problem and Less Data for Integration

Though relevant guiding policies have been introduced nationwide in recent years to promote data consolidation and integration, the problems like challenging data integration and lack of inter-departmental cooperation remain and data silos prevail as the policies are enforced. Data of companies, public institutions, government agencies, and regional authorities at all levels are not planned or standardized as a whole. They are repeatedly handled and cannot be aggregated or effectively controlled. As a result, “data stacks” emerge one after another. Besides, IT government data predominate in the consolidated data while mass unstructured sensing data arising out of city management and public security are not incorporated into the scope of data integration. With the development of 5G and IoT technologies, object-based sensing data is booming, with increase in its applied value. In the future “data explosion”, data integration will become more daunting. It is mentioned in the 2019 Report on Open Data Index in China published by Fudan University that Guangdong stands much lower in the data preparedness rankings regarding data regulation and policy completeness, organization and execution efficiency and standard and specification formulation.

Data Preparedness Rankings in the 2019 Report on Open Data Index in China Published by Fudan University

Note: Open data preparedness is evaluated by regulation and policy completeness, organization and execution efficiency and standard and specification formulation.

A well-arranged institutional framework and well-defined powers and duties renders crucial support to breaking any information island. In American open data management, organization and building practice, for instance, open government data management work falls in the scope of management systems for e-government building. Government updates the institutional framework and defines powers and duties to ensure that the work is efficiently pushed forward. In the US, Office of Management and Budget (OMB) handles the open data work, while the key positions of the Federal Chief Information Officer (CIO) and Federal Chief Technology Officer (CTO) are set for promoting open data integration. And in each government agency (e.g., General Services Administration), a similar position - Chief Data Officer (CDO) - is created as well. CDO is granted with corresponding decision-making powers to cope with open data application obstacles in the corresponding department and arrange departmental data operations as a whole. In terms of cross-agency collaboration, the Federal CIO sets up a coordination work group while OMB establishes a cross-agency senior advisors team comprising delegates for the CIO Council, Interagency Council on Statistical Policy and Federal Geographic Data Committee among other agencies. As the duties and tasks are well defined and the cross-agency collaboration mechanism is set up, data of all administrative agencies are assured to be released and shared in time. Definitely this US architecture in practice can be adopted by China's Central Government for reference and applies to Guangdong, China.

A centralized data mid-end (DME) (mass data acquisition, computing, storage and processing through data techniques with a universal standard and criterion) can effectively guarantee data integration. Between 2012-2014, Italy, Spain, Sweden and Turkey officially co-funded an Opening Data Architectures and Infrastructures (Open-DAI) project with the objective of linking data silos of national authorities by setting up a centralized mid-end and data pool. In terms of structure, it has an advantage: its extensible mid-end structure includes data into the centralized cloud platform while causing no damage to the underlying data system in each department. Any new application and service can be further developed based on the platform.

Development Advice: To Improve Top Level Planning and Standardize Data Consolidation and Integration

Institutionally, policies and action plans should be drafted, implemented and put into practice under the leadership of the provincial big data management bureau, to drive each department to take the initiative to orderly contribute data for consolidation step by step. Moreover, a CDO position is created to plan department data sorting and consolidation as a whole, integrate decision powers and technical capabilities, promote data capture work and guarantee that data is available and machines are readable in public.

Technically, a centralized DME should be set up for capturing and centralizing data in the data pool. The data can then be put into cleansing, processing and structural processing for subsequent use of data.
Link 2: Leading Open Data Compliance and Promoting Data Circulating and Sharing

**Development Challenge:** Limited Open Data and No Safe and Credible Circulation Platform

As far as open data is concerned, China (including Guangdong) sees a gap with advanced economies regarding the number of data sets and that of the release departments in the open data platform. Characterized by few formats, poor experience and poor timeliness concerning data, China’s needs for development of digital economy are not gratified at the moment. The US Government has 230,000 data sets, 172 release departments and nine modes of search by category. In contrast, Guangdong has only 3,615 data sets, 40 release departments and three methods of search by category. Similar is the situation in Shanghai and Guiyang. For the limited open data, is not required for top-level planning requirements such as policy and legislation. Moreover, the limited data released has a low value because of no open mechanisms for sorting and prioritizing by “grade and category”.

### China Vs. Other Countries in Open Government Data Platform (Dimension: Quantity) ¹

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of data sets</th>
<th>Number of release departments</th>
<th>Number of classification-based retrieval methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US</strong></td>
<td>232431</td>
<td>172</td>
<td>9</td>
</tr>
<tr>
<td><strong>UK</strong></td>
<td>41522</td>
<td>1353</td>
<td>12</td>
</tr>
<tr>
<td>Beijing, P. R. China</td>
<td>1302</td>
<td>56</td>
<td>2</td>
</tr>
<tr>
<td>Shanghai, P. R. China</td>
<td>2111</td>
<td>45</td>
<td>2</td>
</tr>
<tr>
<td>Guiyang, P. R. China</td>
<td>3001</td>
<td>51</td>
<td>5</td>
</tr>
<tr>
<td>Guangdong, P. R. China</td>
<td>3615</td>
<td>40</td>
<td>3</td>
</tr>
</tbody>
</table>

¹ Comparative Study on Open Government Data between China and Other Countries, data.gov, data.gov.uk, data.sh.gov.cn, bjdata.gov.cn, gyopendata.gov.cn, gddata.gd.gov.cn et al, data as of August 2019
With regards to the data circulation system building, Guangdong lags slightly behind Guiyang and Shanghai among others in terms of development in data circulation and trading. To be specific, Guangdong needs to further define transparent and open circulation mechanisms, such as code of data compliance trading, legality of object of transaction, and code of asset assessment and pricing. On the legal monitoring front, Guangdong and even China have such data management defects due to absence of regulation and lax supervision. As a result, a number of data security problems arise one after another, overcollection of user information, leak of personal and sensitive information, and sale of information on the dark web, to name a few. In addition, a clarity is needed on how to transfer data into assets, i.e., right confirmation, evaluation, pricing, pledge, and mortgage of data assets. Though China has introduced Measures for Data Security Management (Exposure Draft), Guangdong may probe into and take the lead in implementing data monitoring and privacy protection with efforts depending upon the circumstances.

Meanwhile, data trading is faced with the impact of black-marketing operation that needs to tackled by the entire industry. In the backdrop of black-marketing trading in operation, regular big data trading amount merely accounts for 1% of the gross turnover. Based on well-regulated mechanisms, a trading platform needs to be set up to drive big data trading to become more open and transparent and facilitate growth of the big data industry. At present, a state-owned company affiliated to State-owned Assets Supervision and Administration Commission, the People’s Government of Guangdong Province, has founded a Guangdong Big Data Co., Ltd. for implementing a Guangdong Data Trading Platform. However, it has not yet gone live. In future, Guangdong may need to further define the code of data trading, legality of the object of transaction, and code of asset assessment and pricing, striving for transparent and open circulation mechanisms, and further complete the entire big data chain in Guangdong and Greater Bay Area to set a model for the entire country.

**Development Reference:** US Data Opening Priority, EU GDPR, Shanghai Data Exchange, Germany’s Industry Data Circulation

From the perspective of an open data policy and legislation, a law is a crucial driver to promoting open government agency data. In January 2009, the then US President Barack Obama signed a Memorandum on Transparency and Open Government, which was seen as an open international government data precedent with three principles--"transparent, participatory and collaborative”. Later in 2012, Strategy for E-government Implementation was launched to bring clarity in open government data through the Internet platform. Similarly, in 2014, US Open Data Action Plan was promulgated with the objective of implementing the open data work in all respects.

In view of priority of data opening, as not all data is available in the short run, the means to handle priority of open data is a key concern of government departments and agencies. The US Department of Health and Human Services (HHS) determines to involve the public in sorting by priority of open data to better understand the value of open data and instruct the work concerned. Besides, HHS has also launched a Demand Driven Open Data (DDOD) project aimed at building a mechanism where the industry and academia can interact with government departments and agencies in a better way and raise their data requirements. Given restricted resources, the HHS ensures that data will produce value for data users immediately after being released every time.

As for building a trading center, Shanghai, for instance, first assigns its big data center to all concerned, handle consolidation, application and integration of government data, industrial data and social data among other data. Besides, the big data center is in charge of data acquisition, transmission, storage, mining, presentation and other techniques. This center works out the technical standards and management measures for consolidation, interconnectivity, sharing, and application of data resources. Furthermore, the big data center works on integration of government information systems in Shanghai, establishes a centralized government service data sharing and exchange platform in the city, and implements cross-area, -level and -department data sharing, exchange and application.

<table>
<thead>
<tr>
<th>China Vs. Other Countries in Open Government Data Platform (Dimension: Quality)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The US</strong></td>
</tr>
<tr>
<td><strong>The UK</strong></td>
</tr>
<tr>
<td><strong>Beijing, P. R. China</strong></td>
</tr>
<tr>
<td><strong>Shanghai, P. R. China</strong></td>
</tr>
<tr>
<td><strong>Guiyang, P. R. China</strong></td>
</tr>
<tr>
<td><strong>Guangdong, P. R. China</strong></td>
</tr>
</tbody>
</table>
**Big Data Management Model of Shanghai Municipal People’s Government**

- **Sorting out and cataloging data resources in each district and prefecture-level city**
- **Consolidating and managing cross-area and -field government data as a whole**
- **Setting up an internal sharing mechanism and platform**
- **Building an open mechanism and channel**
- **Mining, analyzing and applying data**
- **Promoting smart government building**

(Source: Shanghai’s Work Plan on Promoting “Services Accessed via One Website” and Accelerating Smart Government Building in All Respects)

Shanghai Data Exchange has earned up a good reputation and credibility and has developed a data marker technique with Certification Center for the Third Research Institute of the Ministry of Public Security (CSPSH). It is a leading data protection and compliance circulation channel provider that guarantees security of data trading and operation.

International Data Spaces Association headquartered in Germany sets up a safe, credible, and compliance data exchange platform, which has involved hundreds of large companies, research institutions and government agencies in data circulation and integration.

---

**Architecture of Shanghai’s Open Public Data Portal**

- Application scenarios in the industry
  - Inclusive finance
  - ...

- Data organization service

- Data search engine

- Shanghai’s open public data portal

- Shanghai Big Data Center

- Public data resource platform

- Data resources of 49 government agencies in four basic databases in Shanghai
Framework of Building Shanghai into a Smart City during the “13th Five-Year Plan” Period

- Smart community
- Smart business circle
- Smart new town
- Smart park
- Smart village

New-generation information infrastructure
- Fiber broadband
- Wireless city
- Private IoT networking
- Communication hub

Data resources
- Government data
- Public data
- Social data
- Government, commercial and public services
- Technology research & development and industry

New-generation information technology industry
- Integrated circuit
- Premium software
- New display
- Cloud computing
- Smart equipment

Cyber Security (CYB)
- Integrated monitoring and emergency response
- Management system and environment
- Safety evaluation and certification
- Internet security technology and industry

Regarding data trading regulation, EU General Data Protection Regulation (GDPR) lays down a full range of regulatory rules covering all links including data consolidation, trading, use, etc. GDPR defines seven types of personal/sensitive data including race, nationality, sexual preference, personal bio-identification technology and gene data. As far as data trading is concerned, GDPR focuses more on data trading with other countries to avoid risks of abuse of data caused by lack of legal protection in other countries. For violations, GDPR has a legal provision of penalty up to EUR 20 million, or in the case of an undertaking, up to 4% of its total global turnover of the preceding fiscal year, whichever is higher”.

Development Advice: Promoting Open Data on Each Level Step by Step and Building a Circulation Platform under Regulation of Standards and Systems

For starters, open government data needs to be driven in legislation. Guangdong having a great economic power with local legislative authority among other provinces in China may take the lead in patterning open data regulation building to offer open department/agency data reference in law. On the Measures for Data Security Management (Exposure Draft) front, that has been enacted and implemented in China, Guangdong may lay down local regulations and further facilitate measures related to data security to be fit for and put into practice in depending upon local circumstances and practical needs to assure data ecosystem building and further protected by law.

Secondly, an open government data cannot come true overnight. A reference may be made to international cases of priority of open data by level and category, including setting up of a full communication mechanism with potential data users and list of applied scenarios to effectively help the government departments and agencies to concentrate on data requirements of the top priority by internal resources.

Last but not the least, implementation of a provincial data circulation should be expedited. Compliance data circulation and trading should be promoted by government endorsement, technical means, legal regulation and other mechanisms; state-owned enterprises and guilds should be motivated to get involved in building a data sharing ecosystem step by step and government and corporate data integration and application are to be facilitated.
Development Challenge: Inadequate Forms of Data Application and Poor Integration of Data

So far, two platforms have been initially built and have performed well for a certain extent in Guangdong: “YueShengShi” for individuals and “YueShangTong” for the companies. However, Guangdong is confronted with two challenges for further development in the future: few applied scenarios and inadequate application. So far, Guangdong has launched few big data application projects, over 70% of which are concerned with big data platform and infrastructure building. Application software development projects account for less than 5% of the total projects. And by applied scenario, Guangdong still needs to go deeper in building data applications such as the one for people’s livelihood (healthcare and education) and for governance (smart city management) compared with leading national and international practices.

On the other hand, Guangdong needs to learn from a few leading regions where efforts are made on coordination of G-B-C data integration to make data applied in and drive the key areas of finance and healthcare. At the moment, the People’s Government of Guangdong Province works very little on joining hands with companies to promote G-B-C data integration, marketization, innovation and collaboration.

To face the challenge, Guangdong, in healthcare, for example, has initiated a new round of institutional reforms to set up a provincial healthcare security administration where priority is given to medical insurance in risk control and cost supervision in medical charges. Further, the provincial healthcare security administration is initiating a project with the objective of promoting connectivity and real-time sharing of healthcare, medical insurance and pharmaceutical data and building a centralized data acquisition mechanism by integrating insurance, payment and centralized drug purchasing in the province for collecting data from a full range of sources. This includes the public health file database, electronic medical record database, drug database, and medical consumable database in each hospital and “purchasing-sale-stock” database in each designated pharmacy. But unfortunately, the project remains a research project, which has not yet been approved and is progressing slowly.
Closed Loop for Shanghai “Health Cloud” Regional Healthcare Integration

Offline diagnosis and treatment
Telemedicine for healthcare consortium
Area: Healthcare

Offline drug dispensing
Prescribed drug outflow system for patients
Information connectivity between medical institutions and pharmacies. Patients can get drugs at any designated community pharmacy after seeking medical advice from hospitals.
Area: Pharmaceutical

Commercial insurance claim settlement
Medical insurance cost control system
Information connectivity between medical institutions and insurers
Area: Medical insurance

Source: Literature research, Caitong Securities, PwC Strategy & Development Advice:
Value Unleashing in a Government-led, Enterprise-involved and Scenario-centered Way

On the planning front, on one hand, it is advised to cover all the key value points in the present and future data application scenarios, implement a general smart city plan. Similarly, on the provincial government front, it is recommended to define a full range functions such as smart government, smart public service, smart governance, and smart economy, introduce 5G and other leading technologies, and optimize patterning and strategic thinking from the top level planning to guide promotion of data integration through government-enterprise cooperation. On the other hand, consideration may be given to defining the role of government therein and determining whether the development pattern is dominated by government or enterprises/market to instruct on implementation of the plan.

As for data ecosystem building, the People’s Government of Guangdong Province may focus on key applied scenarios like finance and healthcare and speed up implementation of projects, e.g., "financing platform for SMEs". Besides, enterprises, non-governmental organizations (NGOs), scientific research institutions, media and other institutions could be mobilized to work together in all respects to drive elements of innovation to concentrate and integrate. After joining hands with a number of institutions for seeking and determining creative open data application scenarios, the government needs to act as an ecosystem infrastructure builder while setting up a mechanism for normalizing the cooperation pattern.
Summary:

Closed Loop for Government Data Should Be Built first for Enabling Digital Economy Ecosystem

To conclude, though Guangdong has taken the lead in digital economy nationwide, it needs to further promote the digital government and data ecosystem building to prop up long-term sustainable development of digital economy because China lags behind in keeping pace with the international leading digital government building standard as a whole.

Some recommendations are listed below:

1. From the view of policy planning and technology, authorities in Guangdong, especially the Greater Bay Area need to set up collecting and integrating their own data to lay a solid quantity and quality foundation for the following data application.

2. On the ground of mass quality data, government should set an example and take the lead in building open public data, encouraging compliance data flow among businesses and institutions, and realize efficient open data sharing to facilitate data application.

3. Based on open data, an ecosystem should be built for data application. In a value-oriented way, efforts should be made to look into scenario-based application such as medical data integration, accelerating implementation of application scenarios such as inclusive finance, and ensuring development in people’s lives and businesses.

The People’s Government of Guangdong Province plays a crucial role in the digital economy ecosystem. As a data provider and user, open data ecosystem driver and policy and law maker, the provincial government is advised to take the lead in creating a closed loop of data collection and integration-open data flow-data innovation & application. It is further advised to take the initiative to drive the entire ecosystem to grow and boom. An open data ecosystem will promote the reliability and credibility of both the government and the companies, optimize decision-making efficiency of the government and companies, and enable companies and entrepreneurs to provide quality services or groundbreaking products to ultimately boost development of the provincial digital economy in all the respects.

Last but not the least, digital economy building in Guangdong and Greater Bay Area may need flexible patterns with clear objectives to be promoted in all respects. To develop digital economy, a sound and well-arranged environment needs to be set up by taking advantage of expertise, capabilities and resources on all the fronts including digital infrastructure, digital intelligent application, digital thinking and business model, digital innovation and incubation mechanism and digital control system among others.

In the process, the government and the companies would require professional services and consulting particulars and models because of a great difference in institutional frameworks, industries, and corporate features. In this respect, PwC China and Global have gathered rich experience. We can render a variety of services set out as follows to government departments and enterprises.
<table>
<thead>
<tr>
<th>Type of enterprise and development characteristics</th>
<th>Professional services needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companies, which have not yet started digital building and are looking for opportunities for transformation.</td>
<td><strong>Strategic and business consulting services</strong>&lt;br&gt;To deliver strategic opportunity analytics and roadmap design on digital transformation, including design of institutional, business and technical roadmaps, culture building, communication training and other services during transformation.</td>
</tr>
<tr>
<td>Companies, which have set up their own digital teams and are working on digital building on their own with technical strengths.</td>
<td><strong>Professional teams putting into practice digital technology for them.</strong>&lt;br&gt;To avail services of technical professionals in various fields and experts in applying digital techniques to help enterprises implement all kinds of technologies and achieve business and digital values of the technology during transformation.</td>
</tr>
<tr>
<td>SMEs that expect to put into practice digital operation and realize value of data at the earliest by incurring minimum expenditure instead of building their own digital infrastructure.</td>
<td><strong>Professional guarantee measures on risks and legal affairs</strong>&lt;br&gt;To provide digital system guarantees related to risks and legal affairs, such as intelligent risk supervision system building, cyber security law compliance handling and tax handling, for the companies, which are engaged in digital building on their own or which have completed digital transformation and are setting up an industrial Internet or outputting value to the industry.</td>
</tr>
<tr>
<td>Companies that expect to set up digital infrastructure and promote digital transformation with the help of external resources in maximum cases.</td>
<td><strong>A variety of company-level applications and cloud services for intelligent analysis</strong>&lt;br&gt;To offer various company-level applications and cloud services covering industrial practices in application of digital techniques, such as intelligent purchasing platform, corporate business process management (BPM) platform, and intelligent industrial data analysis, which are software-as-a-service (SaaS), services intended to create a quick win for SMEs</td>
</tr>
<tr>
<td>Companies that are already highly digital and oriented in digital economy.</td>
<td></td>
</tr>
</tbody>
</table>
Contacts

**Thomas W Leung**
Mainland China and Hong Kong Markets Leader, PwC China  
+86 (10) 6533 2838  
+852 2289 8288  
thomas.w.Leung@cn.pwc.com

**James Chang**
China Consulting Leader, PwC China  
+86 (755) 8261 8882  
james.chang@cn.pwc.com

**Tiger Shan**
China Consulting, Strategy Consulting Leader, PwC China  
+86 (10) 6533 2166  
tiger.shan@strategyand.cn.pwc.com

**Joanne Wang**
Guangdong Markets Leader, Government Affairs Partner, PwC China  
+86 (20) 3819 2219  
Joanne.wang@cn.pwc.com

**Chen Qi**
Assurance Partner, PwC China  
+86 (10) 6533 937  
Qi.c.chen@cn.pwc.com

**Bin GB Zhao**
Senior Economist, PwC China  
+86 (755) 8261 8166  
bin.gb.zhao@cn.pwc.com