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From "Data Silos" to "Industrial Brain": A Study on the Construction of a Smart Governance System for "Sports + Tourism" in Qingyuan under the Digital Economy

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Abstract: The digital economy is profoundly driving the transformation of industrial governance from traditional models to smart paradigms. Deeply integrated industries, represented by "sports + tourism," are characterized by cross-border, dynamic, and high-density data features. Their governance effectiveness is increasingly constrained by the "data silo" dilemma inherent in traditional systems. This paper, taking Qingyuan City-a typical "sports + tourism" resource-based city-as a research sample, focuses on the core issue of constructing a smart governance system within the context of the digital economy. Using theoretical reflection and qualitative analysis, the study first systematically diagnoses the real-world "island-like" constraints of Qingyuan's "sports + tourism" governance across four dimensions: governance actors, data resources, policy tools, and service experience. Subsequently, this paper proposes that the "Industrial Brain" is the core vehicle for breaking down "data silos" and achieving smart governance. The study systematically constructs a top-level design for a "sports + tourism" Industrial Brain, featuring an overall architecture of "one central hub, four platforms, and multiple applications" and a "sense, transmit, know, use" closed-loop governance cycle. To ensure the long-term operation of this system, the paper further proposes key support strategies from three levels: data governance mechanisms, multi-actor collaborative mechanisms, and operational/maintenance mechanisms. This research aims to provide a theoretical framework and practical blueprint for Qingyuan and similarly-situated cities to move from "data silos" to an "Industrial Brain," thereby constructing a smart governance system for "sports + tourism."

Keywords: Digital Economy, Sports + Tourism, Smart Governance, Data Silos, Industrial Brain, Qingyuan City.

1. Introduction

The "14th Five-Year Plan" outline designates "accelerating digital development," "promoting the high-quality development of the sports industry," and "boosting the quality and expansion of consumption in culture, tourism, and sports" as key national strategic deployments [1]. Driven by the convergence of the "Digital China" and "Healthy China" strategies, the digital economy is reshaping industrial forms and governance models with unprecedented breadth and depth [2]. "Sports + tourism," as one of the most interconnected and highest-potential integration fields in the modern service industry, is not only a vital pathway to satisfying the people's needs for a better life but also a key driver for regional economic transformation and upgrading.

However, the deep integration of the "sports + tourism" industry possesses a natural "cross-border" attribute, involving multiple departments such as sports, culture & tourism, transportation, public security, health, market supervision, and emergency management. Its governance complexity far exceeds that of a single industry. In the digital age, this integrated format exhibits high levels of dynamism, situational awareness, and data intensity. The traditional governance model, based on "vertical fragmentation" and "ex-ante approval," is buckling under the strain. Most prominently, formidable data barriers exist between governance bodies and market entities, forming "Data Silos." This leads to policy "fragmentation," resource "mismatches," regulatory "lag," and service "disruptions," which have collectively become the core governance bottleneck constraining the deep integration and high-quality development of the industry [3].

As the northern ecological barrier of the Guangdong-Hong Kong-Macao Greater Bay Area, Qingyuan City possesses premier sports tourism resources, exemplified by the "Hometown of Rafting in China," as well as abundant complementary assets like mountains, forests, hot springs, and Yao ethnic culture [4]. Its "sports + tourism" industry has already achieved a considerable scale. At the same time, however, Qingyuan faces severe governance challenges: on one hand, high-risk projects like rafting demand extremely high levels of safety supervision and emergency response (e.g., real-time coordination of hydrology, meteorology, and tourist flow); on the other hand, the industry's digital transformation and format innovation (such as smart trails, online events) urgently require an agile, inclusive, and collaborative governance environment. Therefore, a profound structural contradiction exists between Qingyuan's "data silo" status quo and its pressing need for smart governance.

Against this backdrop, the concept of the "Industrial Brain" offers a path to breaking this impasse. Originating from the industrial sector, the "Industrial Brain" is essentially a new type of industrial infrastructure and governance hub based on data, algorithms, and computing power [5]. By breaking down data silos, it enables the aggregation and intelligent analysis of data across all factors, chains, and scenarios of an industry, and is thus regarded as the core vehicle for achieving smart governance [6].

Currently, there is considerable academic discussion on "sports + tourism" integration [7], "smart tourism" [8], and the "Industrial Brain" . However, few studies have placed all three within the same framework to systematically answer: How should an "Industrial Brain" for the specific integrated format of "sports + tourism" be designed? How can it, from a

top-level architectural perspective, break down "data silos"? And what governance mechanisms are required to ensure its operation? This paper focuses on the critical leap "From 'Data Silos' to 'Industrial Brain'," using Qingyuan as a typical case. Adhering strictly to a non-quantitative analysis and theoretical deduction paradigm, it aims to construct a top-level design blueprint for a "sports + tourism" smart governance system in Qingyuan, providing a theoretical reference and practical guide for Qingyuan and similarly-situated cities.

2. Theoretical Foundations: The Paradigm Shift from Traditional to Smart Governance

(1) The "Data Silo" Dilemma in Traditional Industrial Governance

"Data silos" are a persistent malady in public governance and industrial development in the information age. In the field of "sports + tourism" integration, their causes and manifestations are particularly complex. From a causal perspective, first are the "organizational barriers" rooted in "departmentalism." Functional departments (e.g., sports, culture & tourism, transportation) tend to "hoard" their own data based on their specific responsibilities and interests, lacking the motivation to share. Second are the "technical barriers" of "chimney stacks." The IT systems built by different departments and enterprises have inconsistent standards and disparate architectures, making data interoperability objectively difficult. Third are the "institutional barriers" of "ambiguous property rights." The rules for the collection, validation, use, and benefit-sharing of data as a new factor of production [9] are still unclear, leading to a reluctance to share ("dare not share," "unwilling to share").

This "data silo" dilemma directly leads to the systemic failure of "sports + tourism" governance. First, it leads to "decision-making blindness." Governors cannot obtain panoramic, real-time data, forcing decisions to rely heavily on outdated statistical reports and empirical judgment. Second, it leads to "regulatory failure." For cross-border sports tourism formats (like online events) and highly dynamic safety risks (like sudden extreme weather), the fragmented regulatory system reacts slowly, or even creates "regulatory vacuums." Third, it leads to "service misfocus." Tourists cannot obtain "one-stop" convenient services, facing obstacles at every turn in information acquisition, safety assurance, and consumer rights protection.

(2) Smart Governance: An Inevitable Requirement of the Digital Economy

The essence of the digital economy is data-driven. Unlike traditional governance, which relies on "experience" and "approval," Smart Governance emphasizes a new governance paradigm based on data, algorithms, and computing power [10]. Its core features include: First, "data-driven." Governance decisions shift from "empirical judgment" to "data analysis" and "intelligent forecasting." Second, "platform collaboration." It breaks down "vertical fragmentation" and relies on a unified digital platform to achieve cross-departmental, cross-level, and multi-actor business synergy. Third, "agile response." Governance processes shift from "static ex-ante approval" to "dynamic in-event/ex-post perception" and "agile response." Fourth, "polycentric co-governance." Government, enterprises, and the public achieve information interoperability and positive interaction through digital platforms, forming a governance ecosystem of co-construction, co-governance, and co-sharing.

(3) The "Industrial Brain": The Core Vehicle and Realization of Smart Governance

If smart governance is the philosophy and paradigm, the "Industrial Brain" is its technical vehicle and form of realization. The "Industrial Brain" was first applied in the industrial internet and serves as an "intelligent hub" for an industry or region. Through the integration of data, algorithms, computing power, and models, it "digitizes" industrial resources, operational status, and governance needs. On this basis, it provides intelligent analysis, early warning, decision-making, and dispatch capabilities.

Constructing an "Industrial Brain" is the fundamental path to resolving the "data silo" problem. Through the construction of a "data middle platform" (Data Middle-Office) and "business middle platform" (Business Middle-Office), it technically forces the connection of all "chimney" systems and drives the business process reengineering of various departments. It achieves a transformation from "data held by individual departments" to "applications empowered by a unified platform." For a highly complex and dynamic integrated industry like "sports + tourism," the "Industrial Brain" is the "singular solution" for achieving safety supervision, precision marketing, efficient services, and scientific decision-making.

3. Real-World Constraints: A Diagnosis of the "Silo" Status Quo in Qingyuan's "Sports + Tourism" Governance

The rapid development of Qingyuan's "sports + tourism" industry increasingly conflicts with the "siloed" status of its governance system. This "silo" status is not just a single data problem; it manifests as an all-encompassing constraint on the governance structure, resource endowment, policy tools, and end-user experience.

(1) "Vertical Fragmentation" of Governance Actors

The integrated and cross-border nature of "sports + tourism" first encounters the institutional barrier of "vertical fragmentation" (Tiaokuai Fenge) at the level of governance actors. Qingyuan's sports tourism management involves multiple peer-level departments, including the Bureau of Culture, Radio, Television, Tourism, and Sports; the Transportation Bureau; the Public Security Bureau; the Emergency Management Bureau; the Market Supervision Administration; the Natural Resources Bureau; the Meteorological Bureau; and the Water Resources Bureau. In actual operation:

- **Overlapping Functions and Regulatory Gaps Coexist.** For example, a large-scale cross-country race held within a natural scenic area involves multiple departments - sports, culture & tourism, natural resources, emergency management - in aspects like track safety standards, environmental protection responsibilities, and emergency rescue plans. This easily leads to a governance dilemma where "everyone is in charge, yet no one is fully in charge."
- **Policy "Fragmentation."** Policies formulated by different departments based on their own functions (e.g., sports event support measures, A-level scenic spot management rules) are mutually independent,

lacking an "integrated" policy design for the "sports + tourism" integrated format. For instance, an event that meets the sports department's standards may not meet the culture & tourism department's requirements for scenic capacity and visitor experience.

(2) "Privatization and Entrenchment" of Data Resources

A "vertically fragmented" organizational structure inevitably leads to the "privatization and entrenchment" of data resources and the proliferation of "chimney stacks."

- **G-side (Government) Data Silos.** Tourist statistical data from the culture & tourism department, event registration data from the sports department, real-time road condition data from the transportation department, crowd monitoring data from the public security department, and disaster warning data from the meteorology and water resources departments are all scattered in their respective independent business systems, with inconsistent standards and no interconnection.
- **B-side (Business) Data Silos.** Leading scenic spots (like Gulong Gorge, Huangteng Gorge) and OTA platforms, as market leaders, possess the most granular and valuable commercial data, such as real-time tourist flow, user portraits, and consumption preferences. This data is regarded by enterprises as a core asset and is extremely difficult to share with the government or other enterprises due to commercial barriers and security concerns.
- **G-B Data Divide.** There is a lack of a normalized, institutionalized data-sharing mechanism between the government and businesses. When the government makes decisions (e.g., assessing holiday tourist flow), it cannot obtain real-time data from enterprises and must rely on lagging reported information. When enterprises innovate (e.g., developing new routes), they cannot get support from public data (like transportation or weather).

(3) "Fragmented and Ineffective" Policy Tools

Due to the lack of integrated data support, the government's governance methods and policy tools are also "fragmented" and "inefficient."

- **Safety Supervision as "Groping an Elephant in the Dark."** Take Qingyuan's rafting as an example. Its safe operation is highly dependent on the real-time coordination of multi-dimensional data such as hydrology, meteorology, crowd density, and equipment status. In a "siloed" state, a hydrological warning from the Water Resources Bureau may not be accurately pushed to all rafting operators and tourists in the first instance, creating huge lags and blind spots in safety supervision.
- **Industrial Support as "Flood Irrigation."** Lacking precise data analysis, industrial support policies can only adopt broad-based "inclusive" or "project-based" models. This makes it impossible to accurately identify the weak links in the industrial chain, high-growth enterprises, or emerging consumption hotspots, leading to low efficiency in the use of public funds.
- **Marketing as "Firing a Cannon to Hit a Mosquito."** The city's sports tourism brand promotion, lacking precise customer portraits and user behavior analysis, must rely on traditional advertising, resulting in high costs and low conversion rates.

(4) "Rampant Disruptions" in Service Experience

The "siloed" state of governance is ultimately passed on to the consumer, manifesting as "rampant disruptions" (Duandian Congsheng) in the tourist experience.

- **Information Access is "Fragmented and Inconsistent."** When planning a trip, a tourist may need to check App A for events, App B for tickets, App C for traffic, and App D for weather, and the information from these platforms often conflicts.
- **Service Processes are "Constantly Stuck."** Tourists must repeatedly scan codes, re-verify their identity, and pay multiple times when moving between different scenic spots and different services (like accommodation, rafting, dining), failing to achieve a convenient "one-code-pass" experience.
- **Emergency Response is "Each Fighting Their Own Battle."** When a tourist has an accident on a remote trail, their distress signal may not be efficiently circulated among the sports, culture & tourism, emergency, public security, and health (medical) departments, leading to uncoordinated resource dispatch and missing the "golden hour" for rescue.

4. System Construction: The Top-Level Design of Qingyuan's "Sports + Tourism" Industrial Brain

To crack the "silo" dilemma in Qingyuan's "sports + tourism" governance, a smart transformation centered on "data collaboration" is imperative. The core vehicle for this is the construction of a "Sports + Tourism" Industrial Brain that integrates "monitoring, analysis, early warning, decision-making, command, and services."

(1) Overall Architecture: "One Central Hub, Four Platforms, Multiple Applications"

The Qingyuan "Sports + Tourism" Industrial Brain proposed in this paper is an organic whole with "cloud-network-edge-end" synergy. Its logical architecture can be designed as "One Central Hub, Four Platforms, and Multiple Applications."

- "One Central Hub": Data Fusion and Intelligent Computing Hub

This is the "base" and "CPU" of the Industrial Brain. It is essentially a "sports + tourism" domain-wide data lake and intelligent algorithm repository. Its core tasks are "data aggregation" and "capability building."

1) **Data Aggregation:** Forcibly pull in G-side (government) public data from culture & tourism, sports, transportation, public security, meteorology, water resources, emergency, etc., through standardized data interfaces and exchange technologies. Access B-side (business) commercial data from scenic spots, hotels, OTAs, and telecom operators through incentive and cooperation mechanisms (e.g., purchasing services, data-for-applications). Access T-side (terminal) real-time sensory data from IoT devices (hydrological stations, weather stations, crowd probes, smart wristbands).
2) **Capability Sedimentation:** This hub sediments data governance capabilities, AI algorithm capabilities (e.g., crowd prediction models, risk assessment models), spatio-temporal computing capabilities, and

visualization capabilities as "middle-office services" (Zhongtai), providing standardized APIs for the upper-level platforms.

- **"Four Platforms": Core Capability Platforms for Different Stakeholders**

1) **G-side - Panoramic Monitoring &** Collaborative **Command Platform (Cockpit):** This is the core platform for government governors. In the form of a "one-screen-views-all" visual cockpit, it displays panoramic information on industrial operations, tourist flow, traffic, safety, weather, hydrology, and online public opinion in real time. When an alert is triggered (e.g., crowd overload, rapid water level rise), the platform can switch to "collaborative command mode" with one click, automatically generating disposal plans and enabling "one-click dispatch, flat command" across departments (emergency, public security, culture & tourism, transportation).
2) **B-side - Industrial Collaboration & Empowerment Service Platform:** This is the service platform for businesses. On the one hand, it provides data interfaces and decision support to leading enterprises. On the other hand, it offers low-cost SaaS applications to the vast number of SMEs (e.g., smart scheduling, online marketing, membership management) to help them "use the cloud and data," achieving the Industrial Brain's inclusive empowerment of the entire industry.
3) **C-side - Domain-wide Smart & Convenient Service Platform ("Qingyuan Sports-Tourism Pass"):** This is the unified service portal (e.g., App, Mini-Program) for tourists. It integrates all resources to provide "one-stop" services, including smart itinerary planning, AR navigation, "travel-now-pay-later" credit services, event registration, one-click rescue, and consumer rights protection.
4) **P-side - Data Opening & Innovation Incubation Platform:** This is the platform for developers and research institutions. While ensuring security and compliance, anonymized and aggregated industry data is opened up through models like "data-available-but-not-visible". This encourages third-party developers to create innovative applications (Apps) or algorithm models centered on Qingyuan's "sports + tourism," incubating "living water" for industrial innovation.

- "Multiple Applications": N Smart Governance and Service Scenarios

Based on the capabilities of the "Four Platforms," N specific smart application scenarios can be incubated, for example:

Smart Safety (Rafting) Application: Integrate data from water resources, meteorology, scenic area videos, and tourist wristbands to achieve full-process intelligent monitoring and millisecond-level risk warning for rafting rivers.

Large-scale Event Integration Application: For marathons and cross-country races, achieve "integrated" command and dispatch for event registration, security deployment, traffic control, medical rescue, and media live-streaming.

Crowd "Peak-Shaving" Application: Monitor the city-wide tourist flow heat map in real time, use algorithms to predict crowd trends for the next hour, and issue warnings, push less-popular routes, and distribute time-sensitive coupons through the C-side platform to achieve intelligent crowd dispersal.

Precision Marketing & Investment Application: Deeply analyze tourist portraits and consumption chains to precisely identify source markets, and provide data-driven decision support for government investment promotion (e.g., targeting wellness or outdoor equipment sectors).

(2) Core Functions: The "Sense, Transmit, Know, Use" Governance Closed Loop

The operational logic of the "Industrial Brain" is a "Sense, Transmit, Know, Use" (Gan, Chuan, Zhi, Yong) data-driven closed-loop governance system:

- "Sense": Domain-wide, Real-time, Multi-dimensional Perception
- Through IoT devices deployed across Qingyuan (weather stations, hydrological stations, video probes, geomagnetic sensors, drones), as well as data touchpoints connecting the B-side and C-side, achieve real-time perception of all elements: "People (tourists, staff), Events (races, congestion), Things (facilities, vehicles), Places (scenic spots, rivers), and Environment (weather, hydrology)."
- "Transmit": High-speed, Ubiquitous, Secure Transmission
  Relying on new-generation network infrastructure like 5G, NB-IoT, and fiber-optic networks, ensure that massive sensory data is transmitted back to the "Central Hub" with low latency and high reliability.
- "Know": Fused, Analytical, Intelligent Cognition
  Within the "Central Hub," transform "dead data" into "living information" and "precise knowledge" through data cleaning, modeling, and AI algorithms (like machine learning, knowledge graphs). This achieves insight into the current situation, prediction of the future, and foreknowledge of risks.
- "Use": Scientific, Agile, Precise Application
  Based on the insights from "Know," empower the G, B, and C sides through the "Four Platforms." This enables scientific decision-making (e.g., crowd control), agile disposal (e.g., emergency rescue), and precise services (e.g., personalized recommendations). The final governance effect, in turn, generates new data that flows back to the "Sense" stage, forming a continuously optimizing closed loop.

5. Key Supports: Operational Guarantee Mechanisms for the Smart Governance System

The construction of the "Industrial Brain" is not a "one-off" deal. It is not a simple IT project but a complex, composite systemic project of "technology-organization-institution." Its long-term operation must rely on the support of three key mechanisms.

(1) Data Governance Mechanism: Reshaping the Rules from "Silos" to "Sharing"

Data is the "blood" of the "brain," and the data governance mechanism is the "rule" system that ensures the blood is fresh and flowing. Without effective data governance, the "Industrial Brain" is a "kitchen without rice."

1) **Establish Data Standards and Validation Systems:** Qingyuan must issue a "Sports + Tourism Data Resource Management Regulation" to unify the "weights and measures" for data collection, storage, format, and quality. More importantly, it must preliminarily define the ownership boundaries of

public data, corporate data, and personal data to lay the legal foundation for subsequent sharing and trading.

2) **Establish a Data Sharing and Exchange System:** Relying on the "Central Hub," establish a unified, city-wide data exchange platform. Clarify the "sharing catalog" and "responsibility list" for all departments and enterprises. For G-side public data, adhere to the principle of "sharing by default, no sharing by exception," mandating collection.
3) **Establish a Data Security and Incentive System:** The bottom line of data security and personal privacy must be strictly guarded. Adopt technologies like "data-available-but-not-visible," "federated learning," and "privacy computing" to ensure data security during the fusion analysis process. At the same time, establish a "data contribution" incentive mechanism. Enterprises that proactively share high-quality data should be given positive incentives in policy support, credit ratings, etc., to achieve "who contributes, benefits."

(2) Multi-actor Collaborative Mechanism: Organizational Change from "Fragmentation" to "Linkage"

The "Industrial Brain" is the technical hub, but its commands must ultimately be executed by the "hands and feet" (the departments). If the organization is not coordinated, the brain will "spin its wheels."

1) **G-G Collaboration (Intra-Governmental):** A leading group for the "Industrial Brain" construction and operation, headed by a main city leader, must be established. It must possess coordination and decision-making powers that transcend any single department, forcefully promoting organizational change and process reengineering. A permanent "Brain" operations office (which can be affiliated with the Data Bureau or Culture & Tourism Bureau) should be set up to handle daily cross-departmental coordination and technical iteration.
2) **G-B Collaboration (Government-Business Linkage):** Establish a normalized "data alliance." The government should proactively open available public data (like traffic, weather) to empower enterprises. Simultaneously, through purchasing services or joint modeling, it should incorporate core data from OTA platforms and leading scenic spots into the "Brain's" analysis system, forming a virtuous ecosystem where the "government builds the stage, enterprises perform, and data is mutually beneficial" .
3) **G-C Collaboration (Government-Citizen Interaction):** The "Brain's" C-side service platform is not just a "service" channel but also a "governance" channel. Functions like "snap-and-report" for complaints and suggestions should be established, allowing tourists to become the "peripheral neurons" of the "Brain" and achieving "co-governance by all."

(3) Operation and Maintenance (O&M) Mechanism: Ensuring the "Brain's" Continuous "Evolution"

The "Industrial Brain" is not "built"; it "grows." It must be ensured that it has continuous operational and iterative capabilities.

1) **Explore a Sustainable Operation Model:** The initial construction should be government-led and state-funded to ensure its public-good nature. However, long-term O&M and application innovation can explore a PPP model of "government guidance, state-owned enterprise operation, market participation." This involves bringing in professional tech companies and operation teams to maintain the "Brain's" technological edge and service agility.
2) **Adhere to the "Urgent-First" Iterative Principle:** Oppose "big-and-all" turnkey projects. Qingyuan should focus on the most painful and urgent governance scenarios (e.g., rafting safety, holiday crowd dispersal) and prioritize the construction of those application modules. By "taking small, quick steps and iterating rapidly," the governance value of the "Brain" can be quickly demonstrated, setting a benchmark and gaining support. The "Brain's" functions can be gradually perfected in this process, ensuring it is always "easy to use" and "willingly used."
3) **Build a Professional Talent Team:** The core of smart governance is "people who understand data." A composite talent team that understands both "sports + tourism" business and "data + algorithms" must be established. This team will be responsible for the "Brain's" daily O&M, model training, and application development, guaranteeing its continuous "evolution."

6. Conclusion and Policy Suggestions

(1) Research Conclusion

This study argues that under the wave of the digital economy, the governance of Qingyuan's "sports + tourism" industry is at a critical turning point, moving from "data silos" to "smart governance." The traditional "vertically fragmented" governance system has become the biggest constraint on deep industrial integration.

The core conclusion of this paper is: Constructing a "Sports + Tourism" Industrial Brain is the systematic solution to breaking "data silos" and achieving smart governance. This "Brain" is not an isolated technology platform but a composite governance system integrating "technology, organization, and institutions."

This paper has constructed a top-level design for this:

1) **Technical Architecture:** It proposes a blueprint of "one central hub, four platforms, and multiple applications," driven by a "sense, transmit, know, use" closed-loop logic to reengineer governance processes.
2) **Institutional Guarantees:** It emphasizes the need to synchronously build a "data governance mechanism" (to solve the "unwilling/afraid to share" problem), a "multi-actor collaborative mechanism" (to solve the "disconnected/obstructed" problem), and an "O&M mechanism" (to solve the "stagnant/outdated" problem).

(2) Policy Suggestions

Based on the above conclusions, to ensure the successful construction and implementation of Qingyuan's "sports + tourism" smart governance system, this paper proposes four policy suggestions:

1) **Strengthen Top-Level Design, Establish a Special Task Force:** It is recommended that Qingyuan City establish an "Industrial Brain" Construction Leading Group headed by a main city leader, with members from Development & Reform, Culture/Tourism/Sports, Data, Public Security, Emergency, Transportation, etc. A permanent special office should be set up, fully responsible for the "Brain's" planning, construction coordination, and operational supervision, using

executive power to overcome departmentalism.

2) **Issue Data Regulations, Clarify Sharing Rights and Responsibilities:** Accelerate the research and formulation of "Interim Measures for the Management of Qingyuan 'Sports + Tourism' Data Resources." Use local normative documents to clarify the responsibilities for public data collection, the sharing catalog, security boundaries, and incentive mechanisms. This provides a legal basis for government-enterprise data fusion, data security, and privacy protection.
3) **Adhere to "Urgent-First," Advance Iteratively:** Focus on the most critical pain points of Qingyuan's "sports + tourism"—"safety" and "congestion." In the first phase, prioritize the construction of the "Smart Safety (Rafting)" and "Domain-wide Crowd (Transportation)" application scenarios. This will quickly demonstrate the governance value of the "Brain," set a benchmark, and gain support. On this basis, gradually iterate and expand to other functions like precision marketing and industrial monitoring.
4) **Cultivate Data Talents, Ensure Long-Term Operation:** "Data talent" must be regarded as the primary resource for the "Brain's" operation. On the one hand, quickly assemble a core technical team by "bringing in" (flexibly attracting data scientists from the Greater Bay Area) and "sending out" (sending key personnel to advanced regions to learn). On the other hand, conduct large-scale training for grassroots governors and enterprise employees, equipping them with the basic literacy to use the "Brain" and understand data, ensuring that the "Brain's" commands can be effectively executed at the "last mile."

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References

[1] Xi Jinping. Speech at the symposium on solidly promoting the integrated development of the Yangtze River Delta [N]. People's Daily, 2023-12-02(01).

[2] Zhang Ling, Liu Bingxin. The logical rationale and practical path of digital economy empowering the high-quality development of the sports industry [J]. Sports Journal, 2022, 29(01): 24-33.

[3] Rosenberg, N. Technological interdependence in the American economy[J]. Technology and Culture, 1979, 20(1): 25-50.

[4] Li Xinjian, Zhang Yichi. The logic, vision, and path of high-quality development of the tourism industry in the digital economy era [J]. Tourism Tribune, 2021, 36(11): 16-29.

[5] Li Dong, Li Xue. "City Brain" empowering smart tourism governance: Mechanism and path [J]. Tourism Forum, 2022, 15(05): 12-23.

[6] Huang Haiyan, Wang Xiaofang. Research on the dynamic mechanism and realization path of sports tourism integration development [J]. Sports Journal, 2021, 28(04): 34-42.

[7] Yu Feng, Gou Qin. On the Chinese adaptation and path selection of the FinTech "Regulatory Sandbox" [J]. Legal and Business Research, 2020, 37(01): 146-157.

[8] Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. Platform revolution: How networked markets are transforming the economy-and how to make them work for you[M]. WW Norton & Company, 2016.

[9] The State Council. "14th Five-Year Plan" for Digital Economy Development [Z]. 2021-12-12.

[10] Shentu Mengchan, Ma Yaofeng. Spatio-temporal evolution and dynamic mechanism of high-quality development of China's tourism industry in the context of digital economy [J]. Geographical Research, 2023, 42(05): 1238-1257.