



## **Introduction**

Manufacturing is the cornerstone of national strength competition. Since the dawn of modern industrial civilization, UK, Germany and the USA have risen in this way. Their strong presence does not only come from well-thought-out strategies and tactics, but also rests on well-grounded foundations. Indeed, it's only by gaining strong industrial strength that various countries can establish themselves well in the world at large. Clearly, manufacturing deals with economy and livelihood, but it even shapes national confidence and rejuvenation.

In May 2015, the State Council issued the “Made in China 2025” initiative, which clarified the focus “informatization-industrialization integration,” the theme “smart manufacturing” and the development guidelines and top designs for the decade to come. And in March 2017, Premier Li Keqiang in NPC and CPPCC reports stated, “to promote accelerated application of big data, cloud computing, and the Internet of Things, and use modern technologies, new forms of business, and new models to bring about transformation in the production, management, and marketing models of traditional industries.” A new epoch of IoT and smart manufacturing is coming to us. From virtual network to Internet of Things, modern information technologies are reshaping our world with a degree of speed and depth that we have never experienced before. A range of technology revolutions are changing our visions of future life and work. IoT has a clearer and deeper impact on manufacturing. So, promoting in-depth application of IoT technology for the restructuring and revival of manufacturing holds the key to “integration of informatization into industrialization.”

As a response of Wuxi Hi-Tech Zone to the national initiative, this plan tries, based on the locality's IoT cluster, to promote manufacturing transformation and new and old kinetic energy conversion following the trends of informatization-industrialization integration and smart

manufacturing.

The Plan creates conditions for arousing by updating manufacturers' softwares/hardwares and iterating entrepreneurs' cognition; creates an ecosystem by mobilizing all walks of life and clustering innovation elements; quickens the arousing process by providing government-guaranteed policies, funds, talents, platform construction, etc. and strengthening service supports; achieves a new pattern of smart manufacturing characterized by networked coordination, smart manufacturing, personalized customization and servitized extension and reaches arousing state. Reinforce the cornerstone of IoT to lead the manufacturing fashion of being smart, green, service-oriented and high-end.

As a home-grown exploration, the Plan newly proposes a complete theoretical framework for manufacturing transformation and specific approaches for its implementation; establishes an awakenee-oriented maturity assessment model that clarifies the key process of arousing and the mechanism and function hierarchy concerned, and raises Three Stages and Five Projects in this regard. In a down-to-earth manner, it writes out excellent cases to show off Wuxi Hi-Tech Zone's groundbreaking courage and innovatively advanced processes, measures and methodology. In this way, we can infuse Xinwu's modern manufacturing with a new life.

The Plan embodies the hi-tech zone's future and the implementation of the national initiative. So, it is designed to be a long term plan. Along the road, we should bear in mind the first intent to achieve greatness as governments, enterprises and practitioners demand such as determination and wisdom.

Join hands with Xinwu to achieve the Chinese Dream and the Manufacturer Dream.

## Table of Contents

|  |           |
|--|-----------|
| <b>I. Dilemma: The Critical Moment—The Context at Large .....</b>      | <b>1</b>  |
| <b>II. Immersion: Xinwu’s Mission—The Underlying Foundation.....</b>   | <b>4</b>  |
| <b>III. Arousing: Profound Thought—The Principle of the Plan .....</b> | <b>5</b>  |
| <b>IV. New Birth: Systematic Activation—The Path to Revival .....</b>  | <b>9</b>  |
| <b>V. Takeoff: Indigenous Practice—Cases of the Arouse Plan .....</b>  | <b>18</b> |
| <b>VI. Stride: Gorgeous Future—The Blueprint of the Plan.....</b>      | <b>24</b> |

## **I. Dilemma: The Critical Moment—The Context at Large**

The 2008 global financial crisis loomed over Chinese manufacturing. China's foreign trade shrank as a result, with manufacturing holding a decreasing share of GDP year by year and PMI lingering around the “entrepreneurs' confidence threshold.” This situation gives life to the stark distress behind the bright surface of Chinese manufacturing. Premier Li Keqiang highlighted the “Rebirth” of Chinese manufacturing. Undoubtedly, on this critical moment, China can only march toward mid and high-end advanced manufacturing to transit from a large power into a strong power in this aspect. Only then can China face the increasingly violent international competition.

Now the global work division faces a major change—marked disparity between advanced countries and emerging powers. On one hand, advanced countries such as Germany, USA, Japan promote manufacturing's backflow to lead the future trend by bringing back mid and high-end manufacturing sectors. Germany formulated Industry 4.0 Initiative, USA proposed Industrial Internet Plan and Japan boosted New Robot Strategy. On the other hand, emerging powers like India, Southeast Asian countries attract the inflow and thus revitalize their domestic manufacturing industries by following the law of global manufacturing transfer. In this way, many low-end manufacturing sectors move to Vietnam, Cambodia, Myanmar and other countries. China simply is stuck between two opposite pressures—the outflow and the inflow.

At the same time, rising science and technology revolutions like industrial IoT, industrial big data and industrial cloud will altogether transform manufacturing into a new business—smart manufacturing. Smart manufacturing shall pervade all links like design, production,

## ■ ■ ■ The White Paper on the Arouse Plan

management and service as it is featured with functions such as information depth self-cognition (based on IoT technology), smart optimization self-decision-making and precise control self-execution (based on big data, cloud computing). Under the trend of smart manufacturing, enterprises won't promote production from top to bottom like before, but perform whole-process production on a basis of customer needs. As industrial capacity unleashes the future as needed by customers, smart manufacturing will advance according to four stages—interconnection, system integration, information integration and emerging businesses.

### Stage 1: Interconnection

Interconnection refers to deployment and application of Industrial Ethernet, wireless network, so that a factory can make all humans, machines and materials connected with each other.

### Stage 2: System Integration

This stage aims to achieve intra-enterprise interconnection and interoperation between various businesses, data and other aspects to finally reach full integration between information resources and physical reality.

### Stage 3: Data Integration

Such integration mainly optimizes design, production, service, etc. by means of data standardization, data model application and so forth for improved prediction, prewarning and independent decision-making.

### Stage 4: Emerging Businesses

Emerging businesses are the enterprise's production mode and organization mode reconsidered using informatization and smart management measures as driven by Internet.

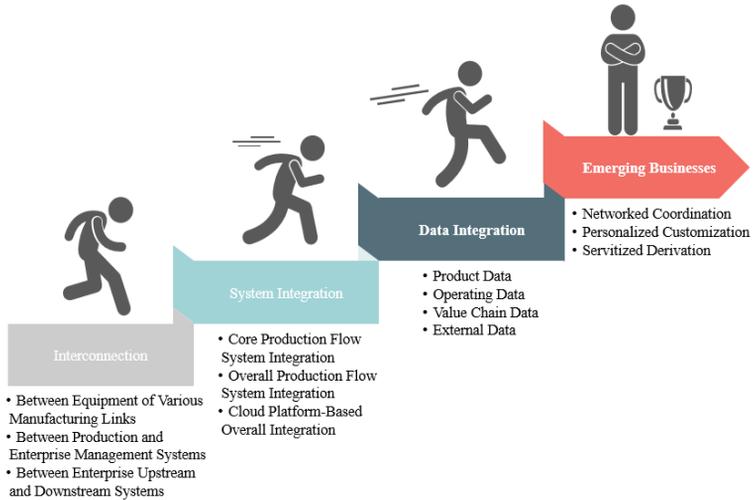


Fig. 1 The Four Stages of Smart Manufacturing

Only by improving development conception and production mode China can cope with the new wave of science and technology revolution/industrial revolution which leads the trend of smart manufacturing. Of course, risk and opportunity never come alone. Over the past years, Chinese manufacturing has completed primary accumulation. So, China must catch the opportunity to shift from a large power to a strong power in manufacturing.

In May 2015, the State Council issued Made in China 2025 initiative to boost industrial foundation, comprehensive integration and industrial restructuring so that Chinese manufacturing can transit from just being large to being strong.

We still have a long way to go in the implementation process. When confronted with the difficulty and the urgency of promoting smart manufacturing of the national initiative, Wuxi Hi-Tech Zone actively responds to the province’s cross-regional coordinated development integration idea by first exploring a feasible path of smart

manufacturing via local IoT, cloud computing, big data and other industrial clusters. And in this process, the Zone will set a good example on how to make manufacturing go smart in the surrounding areas and even in the entire country.

## **II. Immersion: Xinwu's Mission—The Underlying Foundation**

Wuxi boasts profound foundation, effective government promotion and enterprising ethos. For this reason, Wuxi, the leader of “Southern Jiangsu Mode,” ranks as one of the highest places in the domestic manufacturing by boosting private enterprises and export-oriented economy. Yet Wuxi has to face challenges—conventional industries acceleration and emerging industrial scales improvement, export-oriented economy adjustment and endogenous innovation driver intensification.

In this “new normal,” Wuxi clarifies its major strategies like innovation-driven development, industry-driven city development and overall opening. Wuxi Hi-Tech Zone should uphold its tenets of opening, innovation, pragmatism and responsibility as a major economic growth pole, opening window and transformation engine. With the idea of basing industrial development on innovations and making the district become stronger by industrial development, the zone will become a highland of science-technology innovation, modern industry and opening-up boosting Wuxi and even Southern Jiangsu.

### **Innovation-Driven Industry: High Technology**

It gathers innovative science-technology elements and improves innovation system. In this way, innovative resources and industrial development will interact with each other, local science and technology and international counterpart will come together, science-technology institution and innovation will catch up with international standards.

During the elaboration, National Sensor Innovation Pilot Park will unleash enterprise clustering, technological integration, industrial coordination and application demonstration.

### **Industry-Based District: Xinwu’s Emerging Industries**

It builds a modern industrial regime led by emerging industries, oriented to advanced manufacturing and supported by modern service sector. In this way, three 100-billion industrial clusters will be created by 2020.

By improving district innovation system and industrial planning capacity, the Hi-Tech Zone should carve out new heights of emerging industries and science-technology innovations for increased core competitiveness.

New and old kinetic energy conversion and industrial restructuring are two challenges facing Wuxi Hi-Tech Zone and even the whole China. China’s economy is now in deep reformation. In the mid and high-end realization, IoT will become a powerful boost helping Chinese manufacturing to blossom out. With a well-established presence in China, Wuxi Hi-Tech Zone may have great potential for first making any breakthrough in IoT.

In 2017, Wuxi Hi-Tech Zone ingeniously raises the industrial “Arouse Plan,” a well-grounded plan of “Made in China 2025.”

### **III. Arousing: Profound Thought—The Principle of the Plan**

The Arouse Plan is a comprehensive plan developed by Wuxi High-tech District echoing the national Made in China 2025 strategy.

Building on the success of local internet of things businesses and riding the wave of informatization and industrialization integration, as well as

## ■ ■ ■ The White Paper on the Arouse Plan

intelligent manufacturing, it sets the goal of promoting new economic driving forces as well as industrial upgrading. The Plan will “arouse” and propel local industries into taking new measures. Local manufacturers will update their soft and hard facilities as well as their knowledge of future industrial trends; investment of private capital will be encouraged to boost innovation; the government will provide solid support in terms of policies, financing, skilled workers and platforms. Through these efforts, a smart manufacturing model including network collaboration, intelligent production, personalized customization and extended service will be formed. It will strengthen the cornerstone of industrial development of the internet of things, and lead the industry to become intelligent, ecofriendly, service-oriented and high-end.

The objects of this plan are no other than awakeeness--enterprises yet to be awakened while the subjects are awakeners--”providers” having arousing capabilities and offering implementation schemes. As a main force in this regard, the government should define both subjects and objects, the former of which may include various institutions, organizations and enterprises as encouraged and the latter of which may be supported varyingly in various stages.

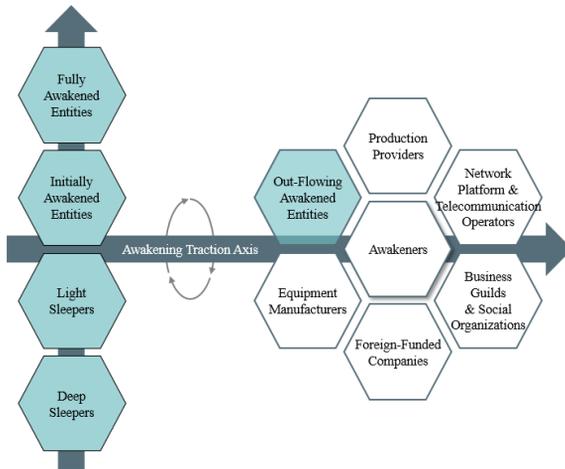


Fig. 2 The Players of the Arouse Plan

The Plan is divided into four stages: subject improving, elements clustering, service supporting and innovation realizing.

### **Subject Improving creates Arousing Conditions**

Improvement of subject's enterprise-wide environment comes as the presupposition of awakened manufacturing industry. Specifically, such improvement contains both hardware and software betterment. Yet either case can't be possible without the realization of intra-enterprise "IoTization". And entrepreneur's innovation awareness is something indispensable, too.

### **Elements Clustering builds Arousing Ecosystem**

Upon the subject environment's betterment, ecosystem construction should be based on the clustering of innovation elements. This term refers to the integration of innovative talents, organizations, enterprises and other entities as well as that of virtual resources like data.

### **Service Supporting quickens Arousing Process**

Government is undoubtedly the most direct force organizing and promoting the Plan. Or put another way, it is a booster in this regard. The manufacturing initiative also stated clearly that government should play an active role in planning deployment, policy guidance and other aspects. With foresight think tank's direction, financial capital's boost, the platform's support, high-end talents' introduction and leading enterprises' exemplification, the hi-tech zone promotes Top 5 Projects of the Plan (see keypoints in Chapter 4).

### **Innovation Realizing achieves Arousing State**

Once awakened, manufacturing will finally lead enterprises into four new innovations: networked coordination, smart manufacturing, personalized customization, servitized extension. Based on industrial interconnection, create new modes and businesses via data flowing and

analysis.

The Plan focuses on enterprises' actual problems, yet on the whole picture for expanding economic benefits. The Plan will extend from enterprises to industrial chains and even the entire ecosystem.

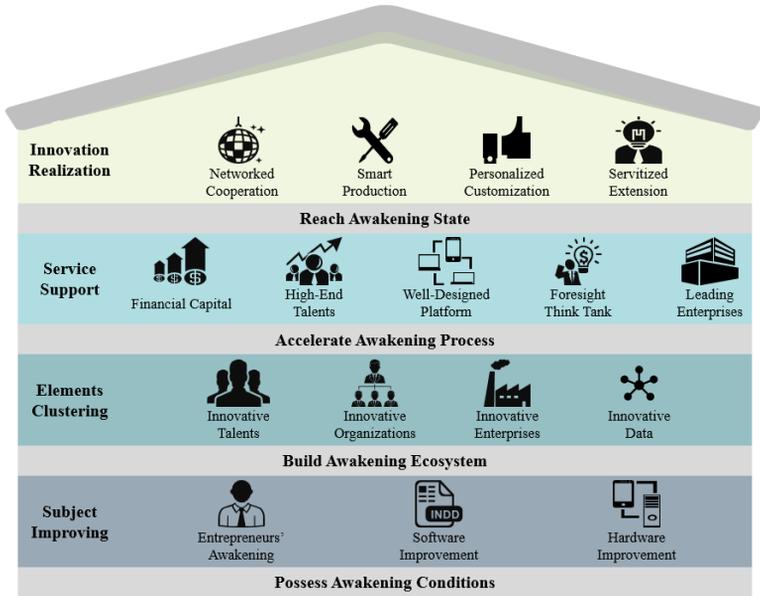


Fig. 3 The Key Process of the Arouse Plan

Enterprise arousing is the first layer. It aims to reach seamless connection between all links of information within an enterprise. Those links of the production chain will be interconnected to make information flow, capital flow and material flow converge into one flow.

Industrial chain arousing is the second layer. It aims to shift from intra-enterprise data integration to industrial chain data integration and from intra-enterprise value chain restructuring to inter-enterprise value chain restructuring.

Ecosystem arousing is the third layer. It aims to cluster manufacturing resources for overall sharing and coordination. Finally, an industrial ecosystem of abundant resources, multisided participation, coordinative evolution and win-win cooperation will come as a result.

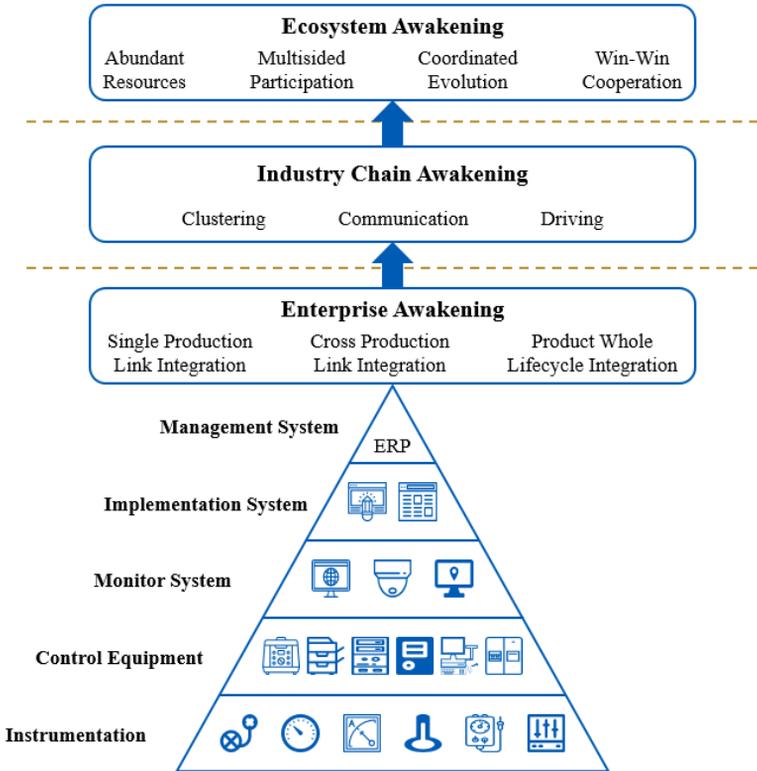


Fig. 4 The Three Layers of the Arouse Plan

#### IV. New Birth: Systematic Activation—The Path to Revival

##### 1. Three Stages

The Plan, if not driven by leading enterprises, can't be implemented. Such enterprises are made business leaders, around which local

industries may blossom out. And this process, in turn, promotes interaction between SMEs toward the goal of better communication and development. It strengthens intra industrial chain cooperation and makes the local ecosystem embrace a greater picture. Finally, many leading enterprises will form a cluster or an ecosystem.

### **1) Leaders: Focus on Leading Enterprises**

Enterprises are the main force of innovation. So, local industrial layout and market-oriented core resources allocation should be both based on enterprises. Then the selection of leading enterprises will naturally become a key step in following the leading enterprises-driven growth path. That is what local industrial development has to focus on. In this stage, our work will be centered on “Four Basics,” “Three Examples” and “Two Types.”

To drag manufacturing out of the mid and low ends of the global value chain, we should make breakthroughs in Four Basics—Key Basic Materials, Core Basic Parts, State-of-the-art Basic Processes, Basic Bottleneck for Industrial Technology Development); break new ground in three examples—Smart Workshop, Industrial Internet and Informatization-Industrialization Integration, improve and standardize project declaration and review, with the enterprise introduction being supported; with Wuxi’s industrial environmental and practice in mind, we should establish the leadership of promising enterprises and leading enterprises (two types) to quicken arousing process.

### **2) Communication: Focus on Inter-Industry Integration**

In May 2017, Premier Li Keqiang said at the executing meeting of the State Council, “When implementing the Made in China 2025” initiative, we should make relevant schemes and measures considering large enterprises and even more SMEs for the sake of their communicative

development.”

We should support the communicative development of large enterprises and SMEs so that all enterprises can jointly explore large-scale personalized customization, service-oriented manufacturing and so forth. SMEs infuse large enterprises with vim and vigor and, large enterprises, in return, help SMEs to grow and prosper. In this way, a great industrial trend will take shape. It boasts three features: beneficial interaction, innovative ambience and close integration. The key of such communication lies in boosting the new-generation manufacturing innovation and entrepreneurship platform.

As supported by industrial network, industrial software, industrial cloud and industrial big data, the platform is a groundbreaking open arena featured with networking of humans, equipment, technologies, capitals and other elements and integration of business systems to respond to the need of manufacturing-network integration. Opening and trading of manufacturing capabilities like R&D, production and incubation are placed at the core. The final goal is to boost the whole manufacturing, the whole industrial chain, the product lifecycle and the overall innovation. Many industrial cloud platforms, industrial Internet platforms and industrial big data platforms spawning recently are oriented to innovation and entrepreneurship. And each platform’s integration is reflected in elements clustering, capability opening, mode innovation, etc.

### **3) Transition: Focus on Branding and Cooperation**

Upon enterprises interaction and industrial integration, the Plan will enter into transition. That is to, centered on Wuxi Hi-Tech Zone, establish the branding of exhibitions and events, industries and the city and boost cooperation between domestic enterprises and their foreign counterparts. In this context, both leading enterprises and SMEs will take giant leaps altogether, so that regional cooperation and industrial

communication could stretch into broader frontiers.

Relying on platforms such as IoT (Sensor Network) Exposition, New Energy Meeting, Global Wuxi Merchants Conference, we should deepen international technology, talent and project cooperation in smart manufacturing software, systems, Internet, etc. to improve Wuxi Hi-Tech Zone's competitive industries and expand domestic and global marketing capacity; should sharpen cooperation with Taiwan, Hong Kong and Macao in manufacturing, agriculture, tourism, finance and other industries; should reach complementarity between various free trade agreements and free trade zone policies toward Japan, South Korea and countries along the Belt and the Road to encourage enterprises to set up foreign marketing windows, brand exhibition centers, after-sales service centers, overseas R&D centers, purchase famous foreign brands, to name a few, for the advent of increased international competitiveness.

At the same time, we should promote mutual talent exchange, perform platform-based expert-enterprise partnership service and establish a normalized work mechanism. We should boost exchanges like international experts' visiting lectures, high-end talents' visiting lectures, world-famous experts and consultants' visiting lectures, multinational entrepreneur teams' exchanges to stretch local entrepreneurs' vision and absorb overseas experience; should make local entrepreneurs and experts exchange views and broaden horizons abroad to equip the hi-tech zone's industrial development with a global perspective.

## **2. Five Projects**

### **1) Manufacturing Foresight Think Tank (Fengyan Project)**

In the flux of new technologies and industrial revolution, the think tank will unleash its functions in political suggestions, theoretical researches,

social services, talent pools and international exchanges. As the international situation becomes increasingly complex and the global manufacture changes profoundly, now we have heavier tasks and we need more talents. To this end, the hi-tech zone will initiate the district-wide “Manufacturing Foresight Think Tank” (Fengyan Project) to gather high-end talents of various fields and receive their suggestions and integrate segmented industrial alliances within various fields of smart manufacturing, so that a great pattern of “small core, large coverage” will take shape. The think tank will focus on:

- Trend Research and Prognosis;
- Policy Enactment and Assessment;
- Association Guidance and Connection;
- International Exchange and Dissemination.

The think tank should choose the following personnel:

- Topnotch IoT and manufacturing talents of sophistication and foresight.
- Heads of organizations like research institutes and industrial alliances.
- Founders and core senior executives of excellent smart equipment manufacturers, advanced enterprises after “smartization” and leading IT enterprises.

## **2) Special Financial Project for Smart Manufacturing (Fengyi Project)**

Manufacturing is the main body of real economy and the main arena of technology innovation. It is even the main focus of supply-side structural reform. And it certainly entails the support of financial industry.

## ■ The White Paper on the Arouse Plan

Along the road of exploring financial support for enterprises, Wuxi Hi-Tech Zone will implement the Fengyi Project to integrate all present fiscal supports and increase various economic departments and units' support for and management of funds on the Plan progress.

- Support restructuring of conventional manufacturers;
- Establish Smart Manufacturing Sub fund;
- Increase the support for smart equipment's financial leasing;
- Set up capital pools for compensating smart manufacturing loan risks.

To rejuvenate real economy, we must quicken new and old kinetic energy conversion for opening up a road of self-restructuring. As the conversion process is changing over time, Wuxi Hi-Tech Zone will continue to explore how to achieve finance's support for manufacturing so that innovation, finance and manufacturing may reach a win-win development. "Manufacturing and finance" will boost this process.

### **3) Innovative Platforms Construction (Fengchao Project)**

Innovation is the main engine to make the manufacturing industry evolve. With innovation-driven core strategy and industry-drive market strategy at the wheel, the zone government has been focusing on building and nurturing innovative platforms, with many national platforms taking shape presently. To better erect manufacturing platforms, the zone government will carry out the Fengchao Project to foster an interactive, innovative ecosystem. There are four platforms in question:

#### **Smart Manufacturing Public Service Platform**

It provides yet-to-transform manufacturers with smart manufacturing diagnosis, smart manufacturing assessment, professional solution matching, service provider selection, industry-level SaaS software and

hand-in-hand policy declaration.

### **Industrial Big Data Innovation Platform**

It taps into industrial big data's application technology breakthrough, productization, marketization and comprehensive operation; focus on industrial big data platform and application R&D to analyze and mine such big data so that numerous applications like manufacturing quality improvement, process optimization, product operation and maintenance can be achieved.

### **Industrial Cloud Platform**

It develops industrial cloud services including as-needed computing storage resources, application sharing and renting, and promotes the application of industrial cloud services and lowers the informatization threshold of SMEs.

### **Manufacturing “Entrepreneurship and Innovation” Platform**

It integrates “entrepreneurship and innovation” platform with elements clustering to mainly digitalize and “networkize” manufacturing elements; it integrates the platform with capacity opening to foster Internet-based R&D, design and production and an opening, pioneering incubation platform; it integrates the platform with pattern innovation to nurture an entrepreneurship and innovation platform supporting R&D innovation, production pattern change and organizational management change.

### **4) Leading Enterprises Pilot Nurturing (Fengtou Project)**

Manufacture restructuring demands the involvement of leading enterprises. Such enterprises are exemplar in exploring new technologies, new modes and new businesses. What's more, these enterprises will have a far-flung impact on other enterprises. As natural organizers of key resources of the industrial chain, they can promote integration of resources concerning the chain to boost development of

## ■ ■ ■ The White Paper on the Arouse Plan

upstream and downstream enterprises for clustering.

Wuxi Hi-Tech Zone always highlights the introduction of new leading enterprises and especially implements Fengtou Project (Leading Enterprises Pilot Nurturing Project). The project will spread out on the following dimensions:

**Actual Leadership:** The Zone should promote Wuxi's "1000-Enterprise Technology Reformation" initiative and particularly smart manufacturing, with those well-grounded, innovative leading enterprises serving as pilots; should support and encourage resident enterprises in declaring national, provincial, municipal and lower-level smart workshop (factory) pilot projects, informatization-industrialization integration pilot projects, industrial Internet pilot projects. Leading enterprises should take a lead in preparing pilot cases, organizing smart manufacturing publicity and performing onsite promotion meetings of major pilot projects.

**Key Cultivation:** The Zone should implement Opinions on the Distribution for Cultivating Specialized, Sophisticated, Unique, and New Products and Science and Technology Innovation Small Giant Enterprises by Jiangsu Province (2017-2020). It should support small and micro-enterprises to achieve specialization, sophistication, uniqueness and newness by issuing informatization vouchers, innovation vouchers and other preferential vouchers. It should publish development reports of both products and enterprises mentioned above and select typical enterprises as examples. Besides, it should publicize a list of provincial small giant enterprises in relevant media to increase their prestige and influence.

**Backbone-Driven:** The Zone should support leading enterprises to grow bigger and stronger by merging and reorganizing; should establish industrial investment funds to support leapfrog development of those

enterprises by mainly using fiscal funds and introducing social capitals as well; and it should support leading enterprises to “go global.”

### **5) Industrial High-end Talent Introduction Project (Fengqi Project)**

Talents are the basis for a manufacturing power. Especially in the flux of industrial restructuring, leading high-end talents hold the key to local economy and enterprise development. Indeed, high-end industrial talents support the entire plan. To boost Taihu Talent Plan and build a world-class excellent environment for manufacturing talents, Wuxi Hi-Tech Zone will implement “Industrial High-End Talent Introduction Project” (Fengqi Project) in four aspects:

**Talent Attraction:** The Zone should introduce topnotch manufacturing talents. Specifically, it should implement first-class support plans on first-class talents and simplify the procedure for introducing world-class talents to act on an ad hoc basis; should implement “Fengchao Project;” should support cooperation between itself and famous universities, scientific research institutions, establish university-enterprise alliances and industrial technology alliances and support and encourage the establishment of academicians workstations and postdoctoral workstations; should hold smart manufacturing innovation and entrepreneurship competitions relying on World Internet of Things Exposition to introduce industrial innovation talents and teams.

**Talent Identification:** The Zone should explore “Wuxi Manufacturing Talent Cloud” Big Data Platform to know well talent trend, strengthen talent demand prediction and prewarning and make a map of global high-level manufacturing talents for getting an accurate picture of global leading talents distribution in various fields. Furthermore, it should improve talent classification assessment and establishes diversified talent assessment system to take salary treatment, market value, entrepreneurship investment and so on as the basis for talent assessment.

## ■ ■ ■ The White Paper on the Arouse Plan

Talent Cultivation: The Zone should implement entrepreneur quality improvement plans and occupational manager cultivation plans to professionalize, marketize, specialize and internationalize managerial talents so that an excellent senior management team can take shape; should grasp stage features of handover between generations and select the second-generation entrepreneurs; should promote reforms in professional technical title system and occupational qualification system and improves lifelong talent cultivation system to train a series of high-skill talents that have adept technology applications, workmanship sophistication and extensive experience.

Talent Retaining: The Zone should break new ground in talent incentive policy. Specifically, it should put more focus on leading talents in smart manufacturing to implement the policy; should increase support for such talents and provide preferential subsidies, rewards and other policy supports for scientific and technological achievements industrialization, follow-up project investments, innovation and entrepreneurship and so forth; should smoothen talent flow channels in household register, region, identity and human relations.

### **V. Takeoff: Indigenous Practice—Cases of the Arouse Plan**

Along with market orientation, government promotion and enterprise operation, Wuxi Hi-Tech Zone has generated aspirant, competent and thoughtful enterprises. These excellent enterprises are all models for local manufacturing restructuring. Judging from networked coordination, smart production, personalized customization, servitized extension, platforming and other dimensions. Many enterprises featuring different priorities exemplify the restructuring in question and demonstrate a bold courage in this regard.

#### **1. Networked Coordination: Lead Intelligent**

—By means of innovating the production mode, Lead Intelligent builds up a coordinated development/cloud manufacturing platform to put into practice advanced manufacturing via platform-based factories.

On the road of informatization-industrialization integration, Lead Intelligent has been leading the industry, with tens of millions of RMB invested in the informatization. In 2013, Lead Intelligent established “Lead Cloud” and Big Data Center through cooperation with IBM, thus becoming a model of such integration and smart transformation in Wuxi.

“Lead Cloud” reaches coordination between office management system, big data, cloud computing and other technologies, which makes it possible to achieve whole-process coordinated management. By means of virtual production, flexible production, full automatic production and servitized products extension, the cloud will create a data-interactive “Industry 4.0 Factory” with improved capacities in R&D and design, production management, market service and so on.



## 2. Smart Manufacturing: HBaoSoft

—HBaoSoft promotes manufacturing automation and “smartization” centered on workshop manufacturing execution system to help customers build up smart factory systems via productized software services.

Jiangsu-based HBaoSoft specializes in “Manufacturing Execution System (MES)” and “Smart Factory Construction” informatization system integration and informatization-industrialization integration consulting. Yet the core business is helping discrete manufacturing to address the problem of execution automation for improving prompt delivery capacity and production



return ratio. In service, HBaoSoft has created a series of national and provincial pilot projects by the principle of “Full Investigation, Personalized Service.”

### **3. Personalized Customization: Three Enterprises Including Yinbang Clad Material**

—Resident enterprises explore how to make personalized customization applications via 3D printing and form a cluster over time to generate the transformation of material enterprises and other relevant manufacturers.3D.

As part of smart manufacturing, 3D printing is a key technical approach for satisfying personalized customization. This technology reducing product R&D cost considerably agrees with the trend of conventional industry restructuring. From 2016, the first Cloud Platform Based 3D Printing/Additive Manufacturing Center in China and the National Center for Testing Products of Additive Manufacturing have resided at Wuxi Hi-Tech Zone. As the earliest area of industrializing 3D printing in China, Wuxi boasts a broad market of the Yangtze River Delta Economic Zone, with scale and speed leading the nation. Now leading enterprises such as Yinbang Clad Material, FalconTech, Asia-Pacific Light Alloy Technology and 3DFocus have spawned here.



Yinbang Clad Material



Asia-Pacific Light Alloy Technology



3DFocus

### **4. Servitized Extension: LittleSwan**

—LittleSwan successfully improves its washing machines using IoT via production innovations namely integrated applications in products and equipment, thus evolving from the conventional manufacturing to a new production + service mode.

In 2010, LittleSwan first applied the IoT technology in household washing machines by using the Builtin NB-IOT network module that reaches data connection between washing machine and cloud platform, and developed a washing machine service software platform. From then on, smart sharing washing machine came into being. In this way, LittleSwan has developed from a family apparatus manufacturer into a smart life provider featuring network technology and a state-of-the-art manufacturing.



### **5. Servitized Extension: Guanwei Monitoring Technology**

—Guanwei Monitoring Technology provides smart platform-based equipment operation data acquisition and monitoring to help industrial manufacturers increase operation safety benefits.

Guanwei Monitoring Technology Wuxi mainly deals in equipment health examination and diagnostic analysis services to offer overall troubleshooting solutions and thus help customers improve equipment values and operation benefits. Thanks to strong technologies and services, Guanwei Monitoring Technology was included in A Collection of Excellent Cases of Big Data Excellent Products, Services and Application Solutions by National Industrial Information Security Development Research Center under the Ministry of Industry and Information Technology in 2016. Its equipment health examination center has served more than 6,000 various industrial equipment and issued more than 50,000 diagnosis reports involving



petroleum, biochemistry, electricity, military industry and coal industry. Despite these achievements, the center even aspires to become the largest and most professional remote equipment diagnosis service center in China.

## **6. Platforming Innovation: Siemens**

—Siemens blends itself into the local innovation system, as manifested by its Hongshan Industrial IoT Hackspace as well as state-of-the-art digitalization and automation and demand-driven industrial innovation projects introduced into China’s smart manufacturing.

From its birth in 2013, Siemens Wuxi Innovation Center has fulfilled in-depth cooperation with many enterprises in terms of smart equipments, transparent chemical factories, PROFINET, etc. via various modes on an ad hoc basis of local needs as a boost to industrial restructuring and enterprise automation. In 2017, the center even initiated Industrial IoT Innovation and Entrepreneurship Service Platform to create an ecosystem of coordinated innovation and multisided win-win situation, in which the center and local IoT small and micro-enterprises perform close cooperation to more quickly marketize their technologies, solutions, services and so forth for the arrival of overall industrialization. This platform mainly engages in technical scheme consulting, talent cultivation, skill training and risk investment.



## **7. Platforming Innovation: LongShine Technology**

—LongShine Technology accelerates restructuring of conventional manufacturers via innovative cloud computing and big data application, strengthens the platform support relying on four innovation centers to

promote Wuxi's manufacturing transformation and boost strategic new industries.

LongShine Technology was founded in 2003. From its foundation onwards, the company has applied itself to offering leading efficient IT solutions and services, with employees exceeding 1,800 and branches being scattered around 22 provinces and municipalities. Recently, LongShine Technology has stretched new business by T strategy to achieve innovations in energy Internet business, cloud computing application and big data application, with 4 established technology R&D and innovation centers being established.

**Industrial Big Data Innovation Center:** LongShine collaborates with universities, scientific research institutions and relevant industrial alliances in building an Industrial IoT Big Data Opening Platform oriented to manufacturers and third-party developers. This center will become a coordinated innovation base in R&D, achievements transfer, industrial service and talent cultivation.

**Energy Internet Innovation Center:** LongShine actively engages in new energies to spread its presence from Wuxi to the whole China and thus drive the innovation practice of Energy Internet.

**New Media Technology R&D Center:** LongShine expands this center and increases R&D investments in Internet TV OTT technology, various new media application technologies, etc.

**Smart Hardware Development & Design Center:** LongShine establishes this center to develop and design software and hardware of its own IPRs in IoT terminals, OTT smart terminals, smart home, smart security equipment.



## **VI. Stride: Gorgeous Future—The Blueprint of the Plan**

As business modes, economic modes and technical needs are changing, Chinese manufacturing will usher in a great revolution! In this context, the Plan will push Wuxi’s manufacturing onto the frontier of “Made in China 2025” to update industrial vitality, highlight enterprise will and inspire social creativity. Explore here and spread nationwide! This vibrant place will continue its leading presence in China’s manufacturing.

Concert our efforts for developing altogether. Wuxi Hi-Tech Zone will, with an open mind, embrace advanced talents, enterprises, technologies and funds. At the same time, it will establish an excellent service system to reach an efficient economic pattern, in which all talents, materials and natural resources can be utilized and all goods can be transported at their best.

However difficult it may seem to be, it’s important that we will stride ahead. China’s manufacturing still has much room for improvement. And it won’t be possible to reshape it unless all walks of life—the government, the society, enterprises and tens of millions of practitioners work hard together. “Giving China’s manufacturing a new life” entails all our courage and wisdom.

In this process, Wuxi Hi-Tech Zone hopes to contribute its fair share of effort and wisdom. Wuxi Hi-Tech Zone aspires to take a lead in implementing the national initiative and the Plan, and thus set a good example along the road to new manufacturing.

Wish Chinese manufacturing a brighter future and work harder to achieve this goal!



Add.: No. 28, Hefeng Road, Xinwu District, Wuxi, Jiangsu, China  
E-Mail: [bizwnd@wnd.gov.cn](mailto:bizwnd@wnd.gov.cn)  
Tel.: 0510-81890901 0510-68581726