



中國工程院
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中国产业技术创新支撑体系研究

Research on the support system of China's industrial technology innovation

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2016年7月4日

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July 4, 2016



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一、研究思路和方法 (Research Ideas and Methods)

研究思路

以中国工业化中后期产业技术创新需求为基础，探索产业技术创新体系的有机集合。把握产业技术创新的一般规律，提出加快推进我国工业技术创新体系建设的政策建议。

Research ideas

Based on the demand of industrial technology innovation in the middle and late period of industrialization in China, the organic collection of industrial technology innovation system was explored. Grasping the general rules of industrial technology innovation, policy recommendations was put forward to accelerate the construction of China's industrial technology innovation system.



研究方法 (Research Methods)

- **统一理论框架。** 在本项目理论研究的基础上建立统一的理论分析框架。以创新技术供给、创新技术产业化、产业技术创新服务，加上产业技术创新政策环境，构成了产业技术创新支撑体系研究的“3+1”基本框架。
- **Unified theoretical framework.** Based on the theoretical research of this project, a unified theoretical analysis framework was established. With innovative technology supply, innovative technology industrialization, industrial technology innovation services, coupled with the industrial technology innovation policy environment, the "3+1" basic framework of the study of the industrial technology innovation support system was constituted.



二、关于中国工业发展阶段特征和挑战

(the Characteristics and Challenges of China's Industrial Development Stage)

1. 特点

① 一是产业发展不平衡性。包括产业之间发展水平，产业内部的生产模式、技术水平等，不同区域产业发展水平等都呈现出不平衡的状态。产业发展不平衡导致各类、各地产业技术创新需求不平衡；

1. Characteristics

① Firstly, the unbalanced development of the industries. Including the development level of the industries, the production mode, technical level Inside the industries, the level of industrial development in different regions are all showing an unbalanced state. The unbalanced industrial development leads to the unbalance demand of technological innovation among various types and several regions of industrial;



② 二是市场发展潜力巨大。我国目前已成为全球第二大市场，而且随着经济发展和生活水平的提升，仍然具有很大的市场发展潜力，这为各种类型产业发展提供了多种途径和广阔空间；

2014年国内人均公共设施资本存量5000美元，分别是西欧、北美、日韩的38%、23%和18%。

②secondly, the huge potential in the market development. China has become the world's second largest market, and with the economic development and the promotion of living standard, still has great development potential in the market, which provides a variety of ways and vast space for the various types of industrial development;

In 2014, chinese domestic public facilities capital stock per capita is about US\$5000, is 38%, 23% and 18% of that of Western Europe, North America and Japan-South Korea respectively.



③三是产业发展基础不牢。经历了改革开放后“爆发式”快速工业化过程，面对发展新需求，技术、资本、人才积累严重不足，产业链、供应链、创新链不健全，亟需在继续推进工业化同时，加强工业化基础的补课任务。

③Thirdly, the unstable industry development foundation. After the "explosively" rapid industrialization process after the reform and opening-up, facing the new demand of the development, the technology, capital, talent accumulation was serious shortage, industrial chain, supply chain and innovation chain was not perfect, all need to strengthen remedial tasks of the industrial base, at the same time continuing to promote industrialization.



2.关于中国工业发展国际环境与面临挑战的判断

(the Judgment on the International Environment and the Challenge of China's Industrial Development)

发达国家已完成了工业化，发展日益呈现信息化、网络化、智能化趋势。使处于工业化中后期的我国发展面临着严峻挑战和冲击：

- (1) 发达国家形成强大和高度融合的国际资本，历史原因使我国目前尚难融入。
- (2) 发达国家在成熟工业化基础上形成雄厚的技术积累，垄断着众多领域的技术发展路径。

The developed countries have completed the industrialization, the development is increasingly characterized by informationization, network, intellectualization trend. It made China's development in the middle and late period of industrialization, is facing severe challenges and impacts:

- (1) The developed countries has formed a strong and highly integrated international capital, China is still difficult to integrate by the historical reasons.
- (2) The developed countries has formed a strong technical accumulation based on the mature industrialization, monopolized a large number of areas of the technical development path.



(3) 发达国家在成熟市场机制下建立了完善的产业技术创新支撑体系；分工、协同的产业链、创新链、供应链。也由此掌握了产业发展的主导权。

(4) 发达国家建立起与现代工业化相适应的创新文化氛围、国民教育体系和创新人才培养方式；

(5) 发达国家已形成了以信息技术大规模应用为主导的技术改造和产业升级的工业发展基础；

(3) Under the mature market mechanism, the developed countries has establish a sound industrial technology innovation support system; the industrial chain, innovation chain, supply chain of division labor, collaboration. And thus grasp the leading power of the development of the industry.

(4) The developed countries has established a innovate cultural environment, the national education system and innovative talents training mode which adapting to the modern industrialization.

(5) The developed countries has formed the industrial development foundation of technical transformation and industrial upgrading with the large scale application of information technology as the leading.



这些都使得我国在参与国际竞争时，在资金投入规模、资本运作能力、产业技术积累、人才培养水平、产业发展管理能力以及市场秩序等方面处于劣势。

All these made China was at a disadvantage in many ways including the scale of capital investment, the ability of capital operation, the accumulation of industrial technology, the level of talent cultivation, the ability of industrial development management, and the market order, etc when participating in international competition.



三、国情现实与产业技术创新支撑体系建设需求

(the Reality of National Conditions and the Construction Needs of Industrial Technology Innovation Support System)

我国许多产业已经具备国际竞争力，支撑着我国综合国力的提升。但总体上看，大而不强的问题十分突出，亟需在现实国际背景下，结合国情，有针对性的加快工业领域产业技术创新支撑体系建设步伐，才能落实国家创新驱动战略，实现工业制造强国梦。

Many industries in China already have the international competitiveness, and support the promotion of China's comprehensive national strength. **But on the whole, the problem of large but not very strong is very prominent, and needs to accelerate the pace of construction of industrial technology innovation support system combined with national conditions in the context of international reality, Only in this way can implement the national innovation driven strategy, and realize the dream of industrial manufacturing power.**



1、我国是大国。 大国地位要求产业的独立和均衡发展，尤其是涉及国计民生的重要产业不能完全依赖于他国，**必须建立大国工业体系，才能够国际竞争劣势状态中获得发展主动权。** 而大国的资源潜力与巨大市场需求，为工业发展和技术进步提供现实可能性。

1. China is a major power. The status of the Great power requires an independent and balanced development industry, especially the important industry related to the national economy and the people's livelihood cannot rely solely on other country, **China must establish industrial power system, only in this way can gain development initiative in inferior status of the international competition position.** The great resources potential and the huge market demand provide a realistic possibility for industrial development and technological progress.



2、作为后发国家，后发优势与后发劣势并存。

一方面，可以借鉴发达国家工业化经验，通过学习先进技术和管理经验，避免走老路、走错路，实现快速发展和能力提高。

另一方面，后发国家往往因为可以在短期内通过技术模仿获得可观的发展成效，而忽视制度建设、市场环境完善、技术积累，给长期发展留下隐患。

2. As a later-development country, the advantages and disadvantages of later-development co-exist.

On the one hand, can learn from the industrialization experience of developed countries, achieve rapid development and improve the ability through studying the advanced technology and management experience, avoid taking the old way, the wrong way.

On the other hand, the later-development country can often obtain substantial development effect due to the technology imitation in short period, but ignoring the system construction, the perfection of the market environment, technology accumulation, leaving hidden dangers for the long-term development.



3、我国工业化进程要在全球化背景下完成。必须积极应对全球化挑战，抓住新科技突破和新技术革命带来的全球产业分工格局调整的历史性机遇，充分利用全球化带来的红利，在全球范围积极吸纳创新资源，在开放的环境下加快建立健全我国产业技术创新支撑体系。

3. China's industrialization process should be completed in the context of globalization. We must actively respond to the challenges of globalization, seize the historic opportunities of the adjustment of global industrial division pattern brought by new technological breakthroughs and the new technology revolution, fully make use of the dividend of global dividend, actively absorb innovation resources in the global scope, accelerate to establish and improve China's industrial technology innovation support system in the open environment.



4、我国原有产业技术创新支撑体系在改革开放以来发生很大变化，受到原有体制惯性和体制转轨不确定性的深刻影响，适应我国工业化、信息化发展需要的产业技术创新支撑体系建设模式尚未形成。世界产业技术创新的发展历史表明，一个国家的产业技术创新模式与该国的发展阶段、市场规模、所处的国际背景等因素密切相关。因此，我国需要从世情、国情现实出发加快产业技术创新支撑体系建设模式的探索。

4. The original industrial technology innovation support system in China has changed greatly since the reform and opening-up, the construction mode of the industry technological innovation support system which meet the development needs of China's industrialization and information has not yet formed, influenced deeply by the original system inertia and the uncertainty of system transition. The development history of the world industry technology innovation shows that, a country's industrial technology innovation model is closely related to the country's development stage, market size, international background and other factors. Therefore, **China needs to accelerate the exploration of the construction mode of industrial technology innovation supporting system from the reality of situation in the world and in China.**



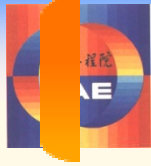
5、我国产业发展的不平衡性和差异化要求产业技术创新支撑体系建设模式要有差异性。必须改变计划经济体制下大一统的政策制定方式和体系建设思维，根据不同产业的发展阶段、技术创新特点和规律、以及在国民经济中的地位，差别化地进行战略谋划，有针对性地制定产业技术创新政策，逐一建立产业技术创新支撑体系，为形成和完善工业创新体系奠定基础。

5. The imbalance and differentiation of China's industrial development requires that the construction mode of industrial technology innovation support system should be different. We must change the unified policy formulation method and system construction thinking under the planned economy system, and make strategic plans in a different way according to the development stage of different industries, the characteristics and laws of technological innovation, and its status in the national economy, and formulate the policy of industrial technology innovation, set up each industrial technology innovation support system, to lay the foundation for the formation and improvement of industrial innovation system.



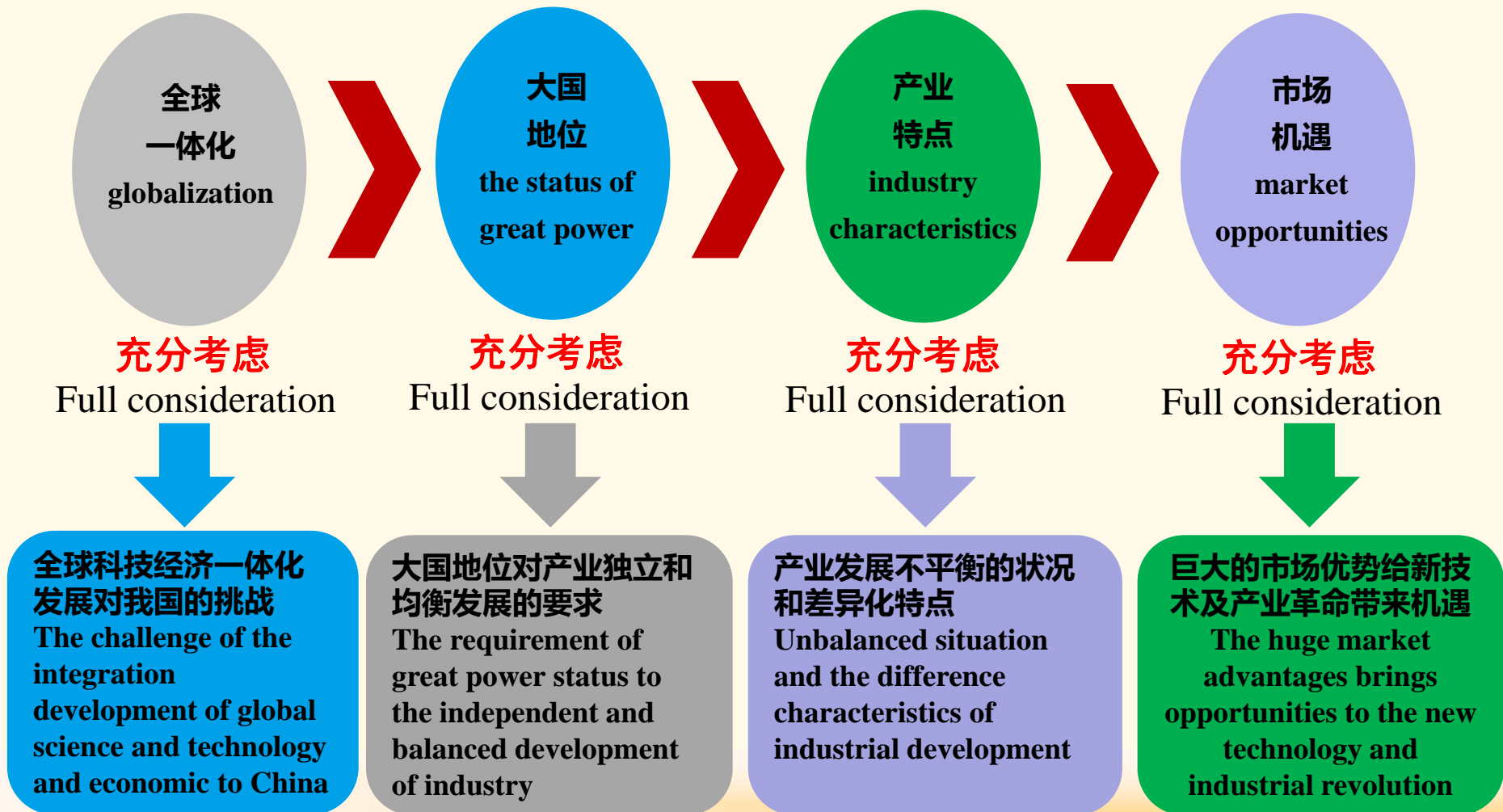
四、推进中国产业技术创新支撑体系建设的思路

(the Thinking of Promoting the construction of China's Industrial Technology Innovation Support System)



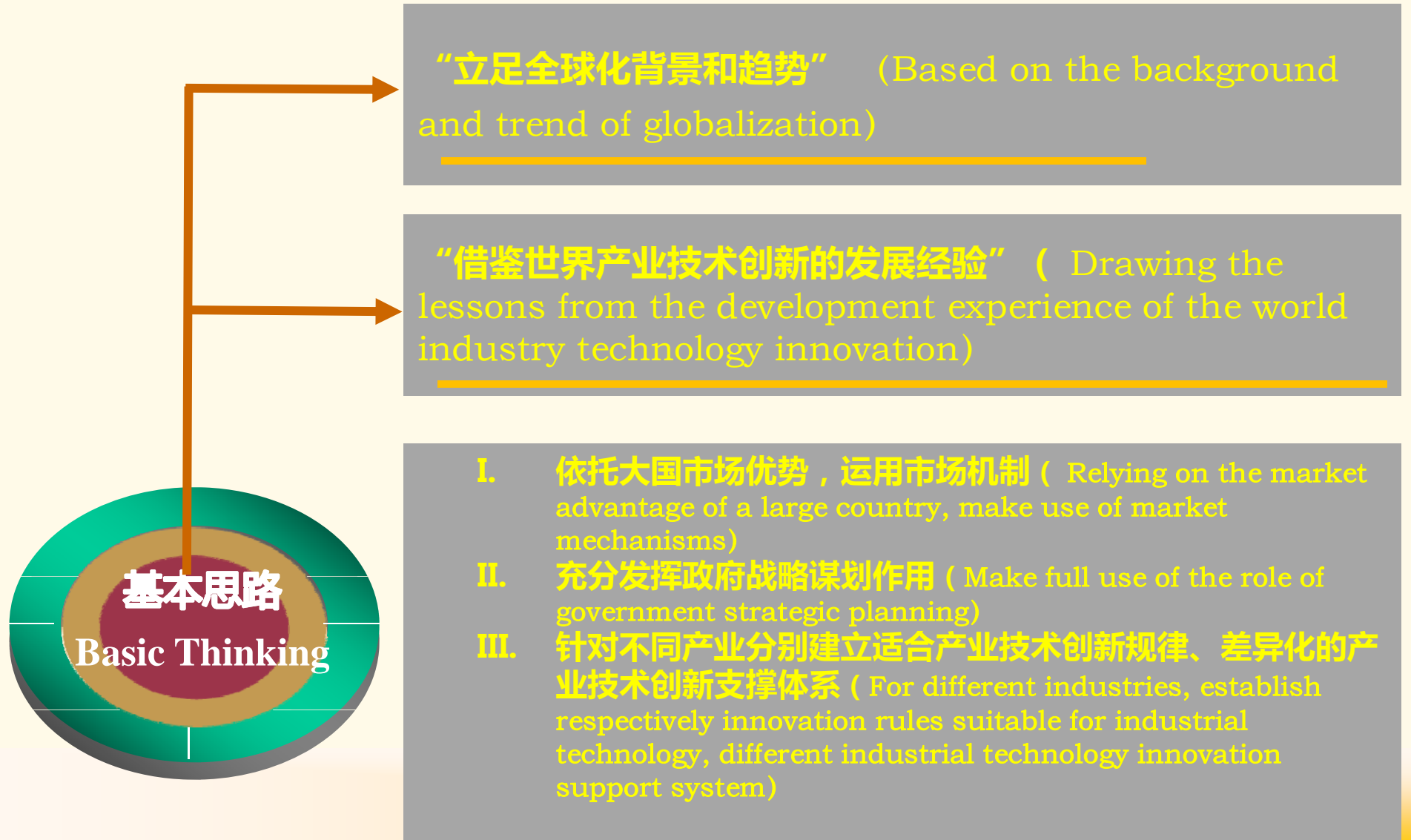
1.基本思考 (Basic Thinking)

(1) 推进产业技术创新体系建设的基本思考 (the basic thinking of promoting the construction of industrial technology innovation system)





(2) 产业技术创新支撑体系建设的基本思考 (Basic thinking on the construction of the industrial technology innovation support system)





(3) 产业技术创新支撑体系建设的八大路径

(eight construction paths of the industrial technology innovation support system)

战略谋划
Strategic plan

基金支持
fund support

技术供给
technology
supply

协同创新
collaborative
innovation

激励企业
encourage the
enterprises

服务支撑
service support

人才培养
personnel
training

国际发展
international
development



2. 成立重点产业创新发展基金 (Establish the Key Industrial Innovation and Development Fund)

国家层面及有条件的地方围绕重点产业成立产业创新发展基金
Establish industrial innovation and development fund focused on key industries in National level and in conditional place



产业创新发展基金
Industrial Innovation and Development Fund

资金

Capital

- ① **将中央各部委和地方政府的资源进行有效整合**
Make effective integration of the resources of central ministries and local governments
- ② **并以政府资源的集聚带动和引导社会资源的加入**
Promote and guide the gathering of social resources through the gathering of the government resources
- ③ **根据战略委员会的战略、规划进行投资配置**
Carry out the investment allocation according to the strategy and plan of the strategic committee

运营

Operate

- ① **采取以市场运营为基础，政府主导、政府资金引导、政府政策引导等不同的基金管理和运营模式**
Based on the market operation, take different fund management and operation modes including, government financial guidance, government policy guidance and so on
- ② **由专业化机构负责基金的日常管理和运营**
The specialized agency take the responsible for the daily management and operation of the fund

监督

Supervise

基金由来自科技、管理、法律、金融、投资、财务等领域的专家共同构成专家咨询委员会进行指导、监督和评价

The fund is guided, supervised and evaluated by an expert advisory committee composed of experts in the fields of science and technology, management, law, finance, investment, finance and other fields



3.建立针对产业特点的多样化的产业创新技术供给方式

(Establish a diversified industrial innovation technology supply mode according to the characteristics of the industry)

技术供给劣势

目前制约我国工业领域产业技术创新的主要障碍是许多产业创新技术供给不足。许多产业关键技术的自主研发能力偏弱、产业创新技术供给主要依赖引进或模仿，对外技术依存度高

供给方式创新

- (1) 在产业集中度较高的产业领域，建立以大企业研究院为主体，产学研相结合的创新技术供给模式
- (2) 在产业集中度不高或战略性新兴产业，建立以公共研发机构为主体、产学研相结合的创新技术供给模式
- (3) 对战略前沿技术构筑国家实验室。

供求

Supply mode innovation

(1) In the industrial field of high industry concentration, establish innovation technology supply mode with the Research Institute of large enterprises as its main body, and in the combination of producing- studying- researching.

(2) In the industrial field of low industry concentration or strategic emerging industries, establish innovative technology supply model with public R&D institutions as its main body, and in the combination of producing- studying- researching.

(3) Build National Laboratory for strategic frontier technology.



(4) 在技术更新换代快、市场化活跃和新兴产业领域，充分营造技术成果转化、应用和产业化的政策环境，发挥高校、科研机构、中小微企业、科技人员等多元化主体在产业创新技术供给中的作用

(4) In the field of technology updates, the market active, and new products, fully creates policy environment of the transformation, application and industrialization of technological achievements, gives full play to the universities, research institutions, micro and small and medium enterprises, science and technology personnel and other diversify main-body in the supply of industrial technology innovation

创新技术供给模式

需要在整合各产业原有创新技术供给的基础上，针对具体产业特点，采用集中与分布相结合、物理平台与网络平台相结合方式，建立多样化的产业创新技术供给模式。

Innovative technology supply model

Based on the integration of original innovation technology supply of various industries, according to the characteristics of the specific industry, make the use of the ways of the combination of concentration and distribution, the combination of physical platform and network platform, establish diversified industrial innovation technology supply mode.



①产业集中度高的行业：航天、石化、电网、通信、轨道交通，建立以行业骨干企业技术研发机构为主导的产业技术创新支撑系统。

① In the industries with high industrial concentration: **aerospace, petrochemical, power grid, communications, rail transport**, establish industry technology innovation support system with industry backbone enterprise technology R&D institutions as the leading.

加强产业技术创新基地和服务平台建设，构筑高效、多元、开放的产业技术创新支撑系统，把以企业为主体的技术创新体系建设落到实处

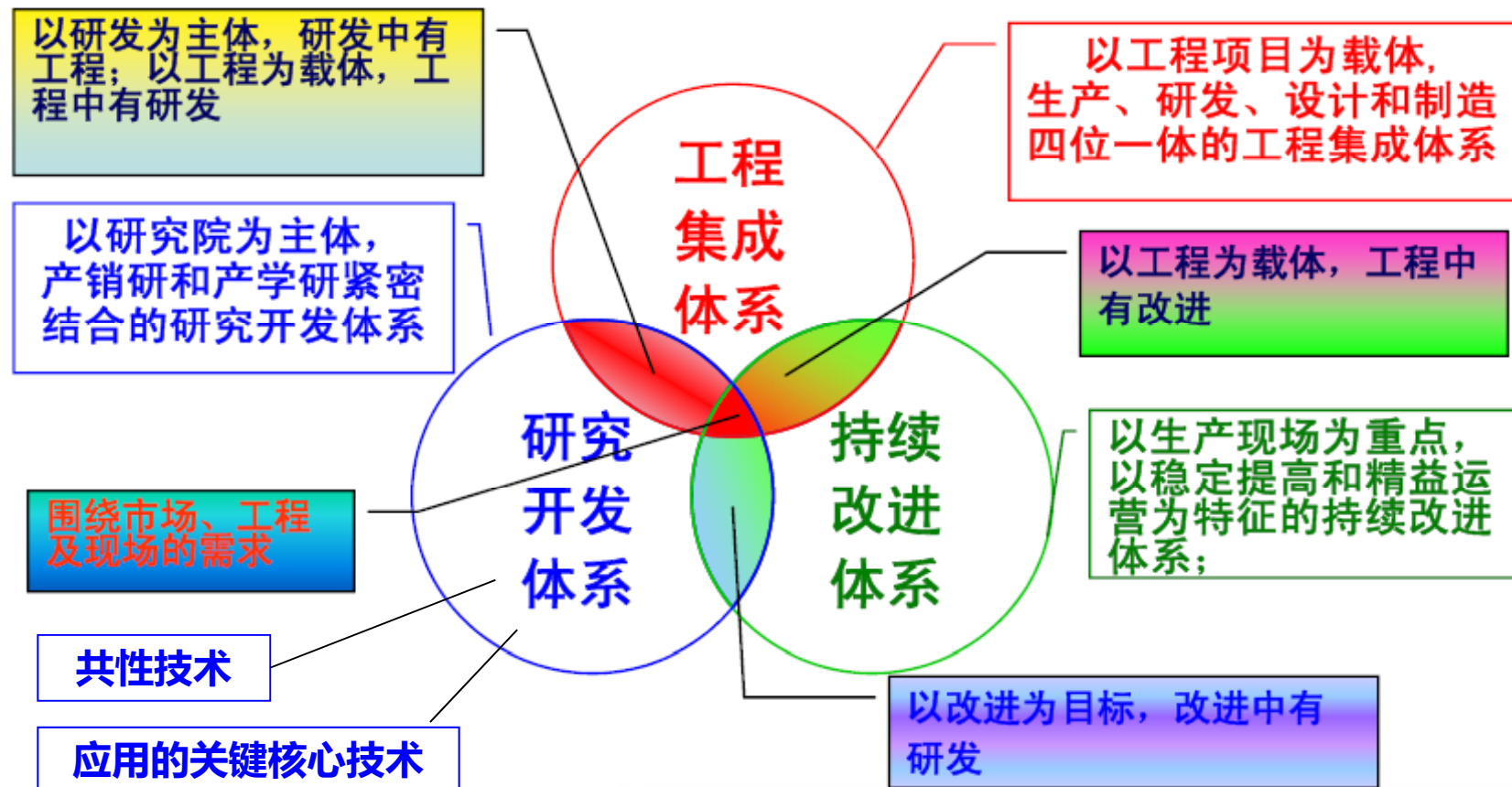
(Strengthening the construction of industrial technology innovation base and service platform, building a highly efficient, diversified and open industry technology innovation support system, implementing the construction of technological innovation system with enterprise as the main body)



产业集中度高、有大型企业的行业 (The industry with high industrial concentration, and large enterprises)

打造具有特色的技术创新体系，提升可持续创新能力

■三个子体系有分工、有侧重，互相交融、协同发展





② **产业集中度不高的行业：机械、钢铁、化工、轻工、建材、有色、电动汽车（汽车），构建以企业研发机构为内部主导，科研机构（含有实力的转制后科技型企业，其工业化继续推进，资产采取分类管理、分类考核即可）、大学、重点实验室、国家工程中心、专业技术公司、产业技术创新联盟等为外部支撑的产业技术创新支撑系统。**

② In the low industrial concentration industry: **machinery, iron and steel, chemical industry, light industry, building materials, nonferrous metals, electric vehicle (car)**, construct industry technological innovation support system with the enterprise R&D institutions as the internal leadership, the scientific research institutions (containing the powerful science and technology enterprises strength after restructuring, the industrialization continue to promote, and the assets can adopt classification management, classification assessment), University, Key Laboratory, National Engineering Center, professional technology companies, industrial technology innovation alliance as the external support.



产业集中度不高、但有大型企业的行业 (The industry with not high industrial concentration, but has large enterprises in the industry)

推进“集群式”产学研战略合作，在共性技术和核心技术研发上，提高外部资源利用能力，积极融入国家技术创新体系

在加速培育企业技术“内生能力”的同时，高度重视技术的“外部获取”。通过构建**产学研战略合作联盟**、开展**产业链和同行的战略合作**、搭建**国际交流与合作平台**等多种途径，充分利用外部优势科技资源，提升企业技术能力。通过承担国家、政府重点计划项目，**积极融入国家技术创新体系**。

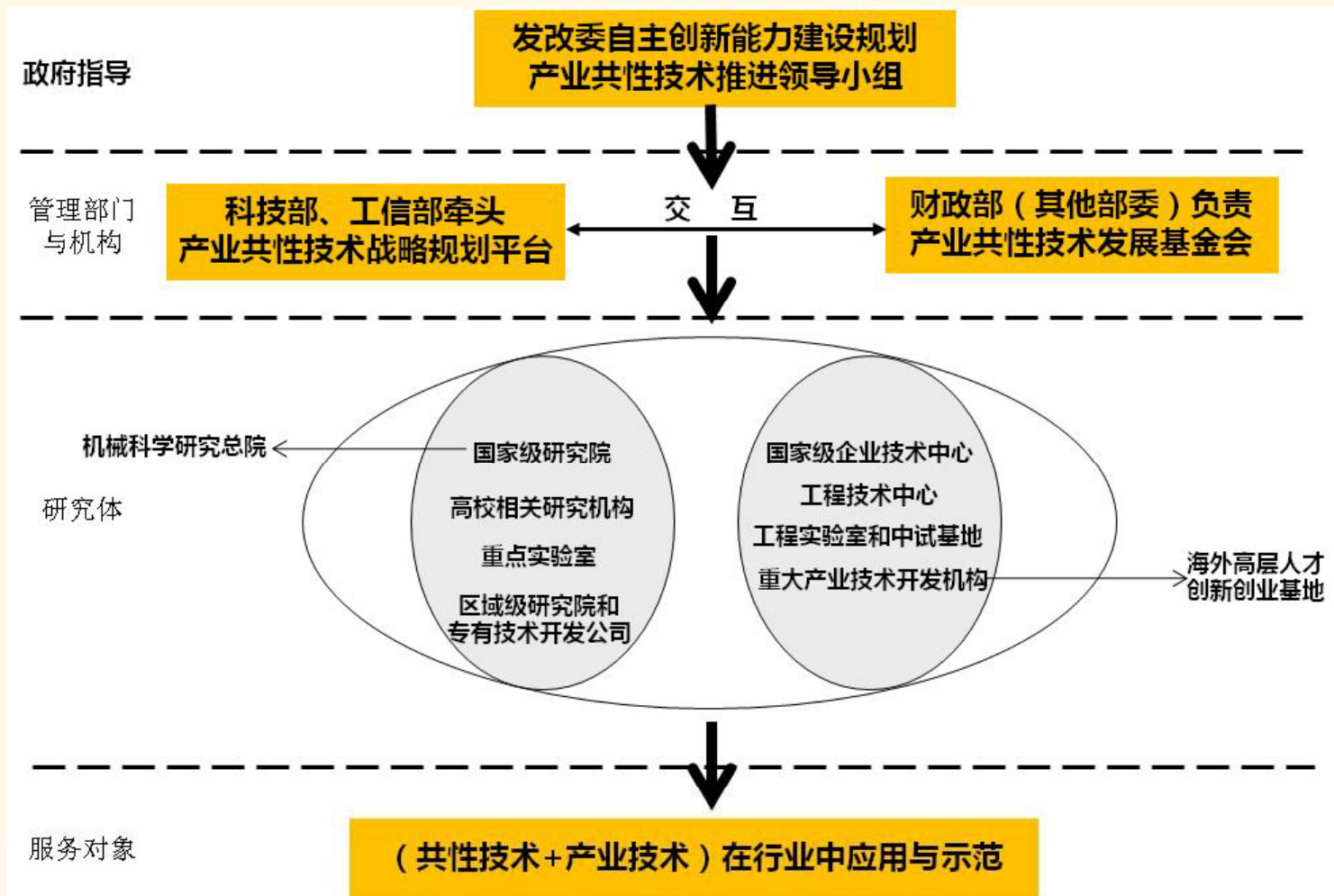




加快建设不同特色共性技术创新体系

(The type of enterprise and the composition form of technical support system)

机械行业产业共性技术研究体系





③ 统筹部署，尽快建设战略性前沿技术国家大实验室（创新基地）。

此类产业是体现国家主导战略意图的产业，是蕴含全新发展前景的产业，不可能短期成为支柱产业，而且更需要建立强大、系统、高效的研发支撑体系，力争早日在关键核心技术领域取得突破。

新能源、新一代信息网络安全、核能、生命科学、空天技术、海洋、新材料

实体研究基地：加大整合力度，统筹利用现有相对分散的研究力量，建立一批强大的、各具特色的行业关键共性技术研发基地。

③ Deployed as a whole, construct national laboratory of the strategic frontier technology as soon as possible (innovation base).

This kind of industry can reflect the national oriented strategic intent, contains the new development prospects, but is unlikely to become a pillar industry in short times, and needs to establish a strong, systematic and efficient R&D support system, strives early to make a breakthrough in the key core technology fields.

New energy, new generation of information network security, nuclear energy, seed of life, aerospace technology, marine, new materials

Entity research base: Increase integration efforts to co-ordinate the use of existing relatively decentralized research strength, and establish a number of strong, distinctive industry R&D base of key common technology.



④ 优化重组，不断完善区域或中小企业群技术创新服务平台。

支持地方政府因地制宜，充分发挥地方科研院所、高校、各类技术中介服务机构和区域骨干企业作用，吸引区域外技术创新资源建立为地方产业集群创新发展服务的新型科研机构。

搭建充满活力、形式多样、面向区域和中小企业的产业技术创新服务平台。

共性技术研发机构
Common technology
institutions

虚拟研发组织平台
Virtual organization
platform

检验检测服务机构
Test and detection
services organization

技术工程化/产业化示范基地
Technology
engineering/industrialization
demonstration base

④ Optimized and reorganized, constantly improves the technological innovation service platform of the regional or small and medium-sized enterprises.

Support local governments to adjust by local conditions, give full play to the local scientific research institutions, colleges and universities, and all kinds of technology intermediary service institutions, and regional backbone enterprises, attract technology innovation resources outside the regions to establish new scientific research institutions served for local industrial clusters innovation development.

Build an industrial technology innovation service platform, which should be full of vitality, various forms, and face to the regional and small and medium enterprises.



中小企业和区域技术创新体系——上海

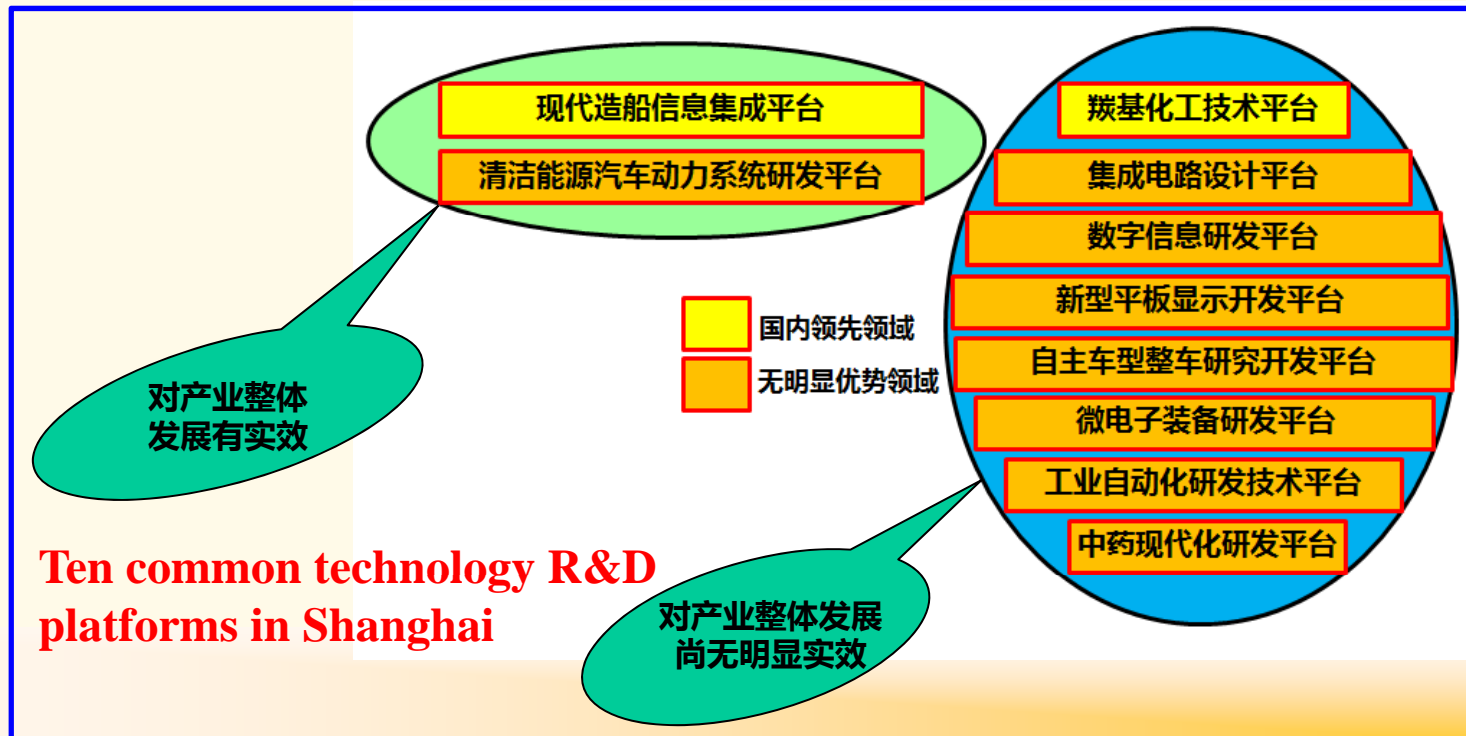
(The technology innovation system for the small and medium enterprises and region -----Shanghai)

- 建设了十大共性技术研发平台：117个市级研发基地，121个国家部委、地方重点实验室，110家国家和上海市工程技术中心，32家国家级企业技术中心；
- 对具有突出共性技术研发能力和显著行业技术服务能力的转制科研院所，整建制地转为“新型科研院所”，作为共性技术研发的重要力量(2012年8月23日,上海产业技术研究院正式成立)。

Has constructed 10 common technology platforms: 117 municipal research bases, 121 national ministries' or local key laboratory, 110 national and Shanghai Engineering and technology centers, 32 national enterprise technology centers;

The transformed scientific research institutions with highlighting common technology R&D capabilities and significant industry technical service capabilities, turn in a whole to "a new scientific research institute", become an important force of the common technology R&D (Shanghai Industrial Technology Research Institute was formally established on august 23, 2012).

上海十大共性技术研发平台





上海—全球—一流科创中心

Shanghai ----- Global First Class Technological Innovation Center

科创空间布局

(Technological innovation space layout)

特色创新集聚区:

(Distinctive innovation gathering area)

1. 建设张江综合性国家科学中心和若干重大创新功能型平台
2. 建设张江国家自主创新示范区

配套创新中心建设政策

(Corresponding construction policy in the innovation center)

创新生态环境

(Innovate the ecological environment)

中介服务:

Intermediary service:

1. 发挥科技类行业协会作用、若干科技服务产业集群
2. 建立国家级技术转移交易平台、建立健全市场化、国际化、专业化的营商服务体系

研发资金:

R & D funds:

1. 扩大政府天使投资在科技成果孵化过程中的作用
2. 拟上海证券交易所设立“战略新兴板”
3. 支持商业银行、保险机构在企业信贷和风险共担方面的作用。
4. 鼓励外资研发中心发展

其他:

other:

1. 建立更多众创空间
2. 建立知识产权侵权查处快速反应机制，推进知识产权民事、行政、刑事“三合一”审判机制，发挥上海知识产权法院作用

市场导向的创新型体制机制

政府管制: 1. 简化投资、创新创业、生产经营、高技术服务等领域的行政审批

regulation: 2. 放宽“互联网+”等新兴行业市场准入管制，改进对与互联网融合的金融、医疗保健、教育培训等企业的监管
3. 地理位置类、市场监管类、民生服务类等政务公共资源开放。

研发资金: 1. 建立跨部门的财政科技项目统筹决策和联动管理制度

R&D funds: 2. 建立覆盖基础研究、应用研究和产业化的项目投入管理和信息公开平台;
3. 通过风险补偿、后补助、创投引导等方式发挥财政资金的杠杆作用

成果转化: 1. 扩大对本市中小型科技企业创新产品和服务的采购比例

Achievements transformation: 2. 实施科技计划(专项)绩效评价
3. 争取支持科技成果转移转化的普惠税制等在上海先行先试

创新型人才培养 (Cultivation of innovative talents)

户籍制度: 1. 完善居住证积分、居住证转办户口、直接落户、海外人才居住的人才引进政策体系

人才培养: 1. 落实高校办学自主权、建设应用技术型高校、鼓励高校设立科技成果转化岗位
2. 健全人才评价、改革人才培养。强化实践能力评价，引入第三方专业机构参与人才评价

创业激励: 1. “双自”联动建设人才改革试验区、构建职务发明法定收益分配制度



4. 引导和激励企业完善研发体系

(Guide and encourage the enterprises to improve the R&D system)



通过税收、金融、财政补助、政府采购等政策手段，激励企业增加研发投入，建立健全研发体系，提高研发活动质量，增强自主创新能力



- I. 对国有大中型企业应建立更加明确的技术创新导向和激励政策,明确其健全研发体系的职责
- II. 建立和完善对国有企业技术创新绩效的评价考核机制
- III. 在部分产业集中度较高的产业领域,鼓励和资助行业骨干企业开展基础性、前瞻性的技术研发活动





5.加强产业技术创新服务体系建设 (Strengthen the construction of industrial technology innovation service system)

① 技术创新服务组织去行政化 (De-administration of the technical innovation service organization)

加快现有技术创新服务组织去行政化的改革步伐，通过政府购买、企业购买、用户购买等多种方式，发挥行业协会、转制院所、高校、中介服务机构、各类协同创新组织等的作用

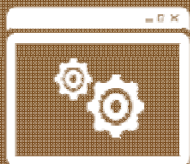
② 为产业技术创新提供多样化服务

(Provide diversified services for industrial technology innovation)

为产业技术创新提供科技文献服务、科学数据共享、仪器设施共用、资源条件保障、试验基地协作、技术检测、技术转移、创业孵化和管理咨询等服务

③ 建立产业大数据服务中心 (Build industry big data service center)

探索建立集技术、市场、产品、产能为一体的产业大数据服务中心，促进产业发展模式创新



产业技术创新服务体系健全与否关系到产业创新发展的技术基础



互联网、平台经济与大数据的发展趋势 服务平台建设揭示出支撑价值链重构的**产品服务生 命周期管理体系的新方向**

(The development trend of internet, platform economy and big data, The construction of service platform has revealed a new direction of the management system of product service in the life cycle which supports the reconstruction of value chain)

互联网正在颠覆传统行业。纵观那些因互联网而产生深刻变革的传统行业，虽然变革形式多种多样，但共性是打破了信息不对称的局面。互联网技术使得信息流动的范围、速度、成本发生了根本性改变，以往一切基于信息不对称的中间价值环节都将被颠覆或者边缘化。

无论是贸易、物流，还是加工、配送，技术方案提供和都蕴藏着巨大的优化空间和潜在价值，这些都为基于互联网的新商业模式的诞生提供了巨大的可能性。

互联网时代企业的形态发生了进化，很明显的特征就是由单一企业经济体演变为平台型经济体。



以大数据为支撑的平台经济体 (Platform economy supported by big data)

平台是一种由多方主体参与，共同建立、共同运营、共享资源和共享利益的商业生态系统。围绕一个强有力的平台，各种参与者可以共生共荣。

而商业竞争的格局，已经不简单是企业间的竞争，而是平台及其生态圈之间的竞争，诸如苹果iOS平台与谷歌安卓平台、阿里的淘宝平台与腾讯的微信平台等，都是最典型的案例。最强大的平台往往决定着该行业的长期发展秩序。

五大要素：电子商务+物流配送+金融配套+技术方案
↔ **大数据。**

Five elements: E-commerce + Logistics distribution + Financial support + Technical program
↔ **Big data.**



基于平台数据分析的技术服务、技术产业化和产业组织与协同等特色服务

(The technical services, technology industrialization, industrial organization and coordination, and other special services based on the analysis of the platform data)

线上与线下结合的产品技术服务和工程服务。如提供产品使用指南、性能数据库、材料与使用技术方案库支撑用材技术趋势分析；对创新产品、复杂使用环境提供用材推荐方案；提供用户需求的工程解析服务等。

另一方面通过技术服务开展数据的分析可获得技术研发趋势和研发来源，进而提供用户产品的加工、使用特性解析所对应产品的使用方案制定；推荐质量异议跟踪反馈及问题解决方案；提供产品转化为用户产品的成套技术解决方案等多种技术服务。还可以对加工配送服务商提供技术服务，如基于用户需求分析，对产品的改性、改形、改表面等提供材料可加工性数据库、加工方法库、加工方案设计等各种技术服务。在产品研发、生产技术服务领域，可向厂商提供技术服务。



技术研发设计产业化

(The industrialization of technology R&D design)

基于大量用户需求信息的服务平台，可以形成新的技术成果产业化途径、新的技术研发需求来源和新的技术研发模式：

A. 新的技术成果产业化途径 (The ways of new technological achievements industrialization)

一方面，平台可以为技术成果找到产业化载体。另一方面，平台可充分利用自身的金融服务功能，为研发人员和产业化载体提供资金支持，

B. 新的技术研发需求来源 (the source of new technology R&D demands)

通过对交易信息和用户行为的分析，可以将当前难以实现的用户需求转化为研发需求，

C. 新的技术研发模式 (the new model of technology R&D)

由于平台上可以聚集大量的、有实施载体的研发需求，同时还具备成果产业化的金融服务工具，将极有可能在平台上聚集众多的研发机构、研发人员、研发成果等，形成开放式研发资源平台，解决技术的来源问题。这样，技术研发项目就变成了一种可交易的“产品”，而服务平台则成为研发资源和研发需求的中介。



结语 (Conclusion)

一、根据中国不同的产业特色构筑的技术创新支撑体系：

- 1.对新兴产业和集中度不高的行业建立以大学、产业技术研究院、制造业创新中心等核心共性技术的公共服务平台；
- 2.在集中度较高的产业中构建起以企业为主体的行业共性技术的支撑体系（大型企业、科技型专业公司、大学）；
- 3.国家要尽快针对重要战略性前沿新技术研发建立高水平的国家级平台（科学院+大学+国家实验室）。

1.The technological innovation support system constructed according to the different characteristics of China's industries:

1.1 In the newly emerging industries or the industries with not high concentration, establish common technology public service platform with university, industrial technology research institute, manufacturing innovation center as the core;

1.2 In the industries with high industrial concentration, establish industrial common technology support system which takes the enterprises as its main body(large enterprises, science and technology professional companies, Universities);

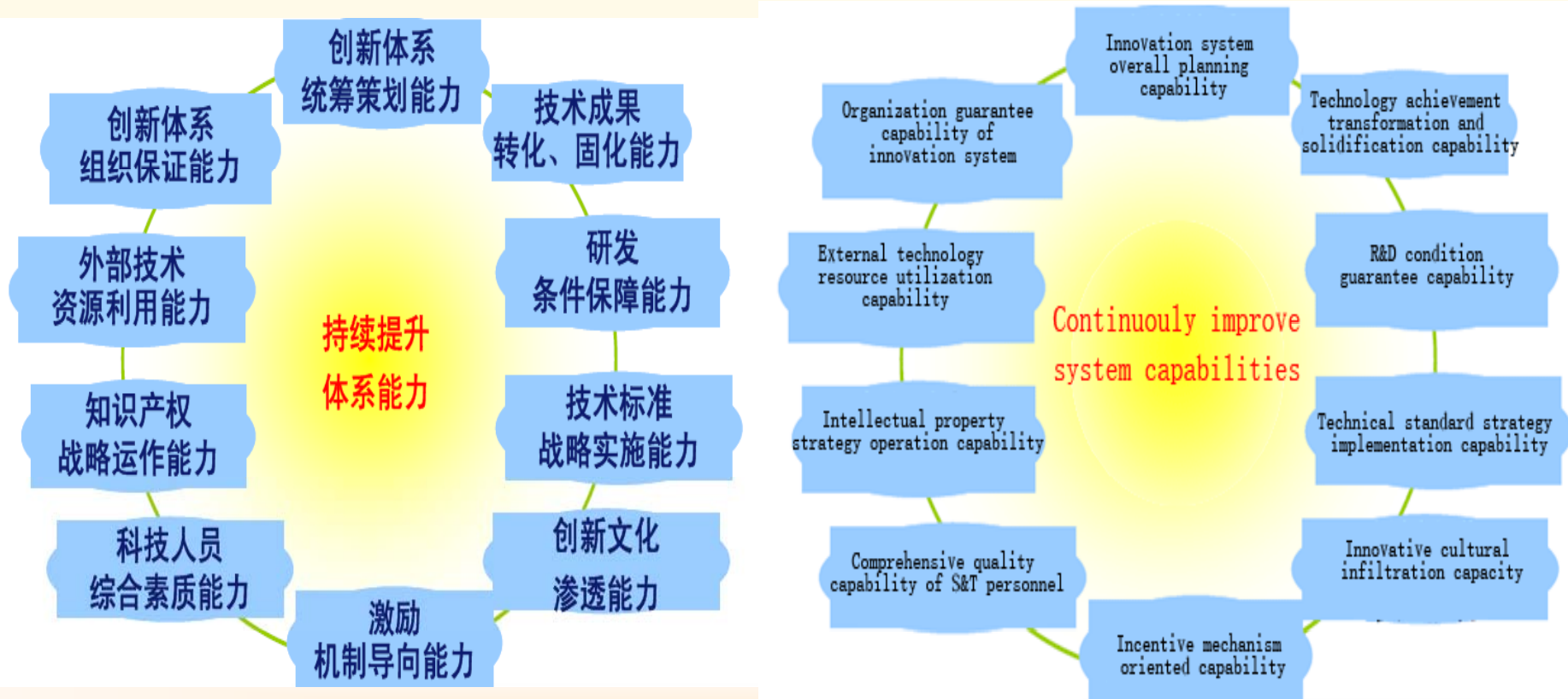
1.3.China should establish the high level of national platform as soon as possible for the important strategic frontier new technology R&D (Academy of Sciences + University + National Laboratory).

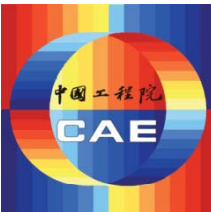


结语 (Conclusion)

二、形成中国技术创新体系的十大系统能力

Aimed at ten major systems capabilities in technological innovation, construct the innovation system with different characteristics according to different industries.





中國工程院
Chinese Academy of Engineering



谢谢!



THANK YOU