

Construction of Innovation Platform for CEEUSRO

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Abstract

On the basis of differentiating the meaning and function of platform of CEEUSRO, the contracture and the factors are discussed, and the approaches of organization and the administrative mechanism of the platform are put forward to supply specific thoughts to construct the platform of CEEUSRO.

Key words: CEEUSRO; Innovation platform; Structure; Operation administration

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INTRODUCTION

For a long time, there are many problems for Chinese CEEUSRO (cooperative education in promotion the mutual development of high education institutes and local economy) such as few achievements for independent innovation, narrow radiating surfaces for achievements, unstable operation, poor normalization and ineffective cooperation, whose important reason is that CEEUSRO rests on the inferior level of technology transfer,

technology consultation and cooperative development mainly based on project cooperation, and whose deep reason is the lack of normalized and effective platform for cooperation and innovation (Ministry of Science and Technology of the Peoples Republic of China, 2009). Therefore, it is very important to study how to establish the platform for CEEUSRO and innovation in order to solve the difficulties and problems of CEEUSRO and innovation.

Although the study of CEEUSRO and innovation is the focus of academic circles considering the existing research achievements, most of the achievements are about several subjects such as the motivation, cooperation models, existing problems, performance evaluation for CEEUSRO and the risks, knowledge transfer and technology transfer in enterprise-university-research cooperation, and the studies of construction and operation administration for the platform of CEEUSRO from the aspect of entity platform are still vacant.

1. THE CONNOTATION AND FUNCTION OF PLATFORM OF CEEUSRO

The platform of CEEUSRO and innovation means the enterprise, the university and the scientific research institution, with the base of cooperation for a win-win result, with the premise of resource sharing and complementary advantages, with the main cooperation model to undertake projects, research and develop technology and set up entities altogether for the research and development, with the method to integrate the innovation resources between subjects and resources between subjects and external environment, realize the target of technology cooperation and innovation and form some innovation organization to obtain certain economic and social benefits. However, two points of the platform of CEEUSRO and innovation need explaining. Firstly,

the base of CEEUSRO is not common benefit but the cooperation for a win-win result, which emphasizes that the benefit differences of the different sides to cooperate ought to be acknowledged and treated prudently, and is realized by accomplishing the common targets. Secondly, the platform we talk about is the one based on the requirement of present Chinese strategy of independent innovation and the requirement of establishment and perfection of the technology innovation, and it is also the new organization for strategic cooperation which is developed gradually on the basis of traditional platform of CEEUSRO. Comparing with the former platform of CEEUSRO, the construction of the platform is not based on inferior level of research and development cooperation, but on the target of appeal from different sides for independent innovation strategy. In addition, the span and depth of the cooperation among enterprise, university and scientific research institution are both greatly expanded, and the chronicity, deepness and stability are more emphasized for the cooperation manner and the operation mechanism.

The significance to establish new platform of CEEUSRO is that the organization entity with wholesome structure and function can be formed with the construction of the platform, the innovation function of CEEUSRO can be born and transformed, the innovation output of the platform can be realized and finally, the innovation requirement of the different sides to cooperate can be satisfied. It is generally thought that there are three functions of CEEUSRO and innovation. The first function is to integrate the resources to realize the synergistic effect of different innovation resources on different subjects. The second one is to reduce the risks as there are great risks in the process of technology innovation, which can be reduced with CEEUSRO. The third one is to cultivate talents by the CEEUSRO, so with the advantages of different sides to cultivate talents, the defects of cultivating talents can be remedied, innovative talents required by different sides can be cultivated and talents can be reserved (Chen, 2009). Nevertheless, the aforesaid functions cannot operate automatically, but it can only be transformed and realized depending on specific organization that can operate steadily for a long term.

1.1 The purpose and constructive principle of the construction of CEEUSRO

The purpose of the platform construction of CEEUSRO means the core is innovation of cooperative technology and superior resources of the enterprise, university and institute are integrated to attain high benefit that any single side cannot achieve individually, to improve operative efficiency of the platform maximally and to establish the platform system which adjust to the development of technology, economy and society. The specific purpose to design the platform is as followed:

Macroscopically, based on the improvement of the innovation ability of the platform, it selects appropriate development scale, forms the program of cooperative innovation according to the market demand, improves the contribution rate of the platform to technology and economic development and functions as the primary productive force. Microscopically, by giving full play of the technology power of the enterprise and the university, the platform constructs CEEUSRO teams that possess high perception of technological environments and commercial environments, reinforces the cooperation and communication among the teams of cooperation and innovation, integrates the innovative resources fully, realizes the reasonable configuration and sharing of innovative resources, completes the R&D (research and development) tasks, improves the ability and level of the technological innovation of the teams to cooperate and innovate, strengthens the efficiency of the teams to cooperate and innovate and then enhances the operative performance of the platform.

The CEEUSRO innovative platform should have higher efficiency to operate, take the technological innovation as the core, take the improvement of regional competition and ability of sustainable development as the ultimate direction, and develop into efficient public platform to innovate that is combined by market propelling and government guidance. Thus, for the construction of the platform, the followed principles should be abided.

(a) Reciprocity principle. The CEEUSRO relation tends to be unstable and short, because the beneficial situation is not formed which is reciprocal, all-win and develops together. To be reciprocal is not to yield benefit but to pursue more common benefit. The reciprocity principle is based on the equality and reciprocity of the enterprise, the university and the institute.

(b) Coupling principle. The coupling principle means two or more than two ecological systems that are qualitatively similar tend to be of mutual affinity, and when the condition is mature, they can combine to be a new and superior structure and function to realize coupling. The constructive features of the platform require that all the elements of the platform and the elements and eternal environments exchange all the innovative resources continually. All the innovative subjects of the platform care about mutual contact and cooperation and by the interaction of innovative subjects, mutual affinity is created to realize further coupling for the enterprise, the university and the institute to construct the innovative platform together.

(c) Principle to be beneficial to technological innovation. As to promote and realize technological innovation is the ultimate purpose for innovative platform of CEEUSRO, whether it is beneficial to form a good system that can promote technological innovation

and whether the scale and structure of the platform is beneficial to technological innovation should be fully considered during the process of the innovative platform of ECCUSRO.

2. THE ANALYSIS OF THE DESIGN FOR THE CONSTRUCTION AND THE ELEMENTS OF THE PLATFORM OF CEEUSRO

2.1 The Design for the Construction of the Platform

The construction of the platform of CEEUSRO means that the organism of researchers and their management teams from the enterprise, the university and the institute form the coordination system of interior structure and common regulation centering on the common targets of the platform (Ma, 2009). The platform organization is the project organization under the leadership of platform management committee, which is displayed as Figure 1.

The platform management committee is a specialized institution in possess of administrative function, which

is mainly in charge of the distribution of the platform, cooperative and R&D entities and teams to cooperate and innovate for all innovative resources, but not the daily management of the specific cooperative and R&D entities and teams to cooperate and innovate. There are administration sections inside the cooperative and R&D entities, which are also administered and supervised by the platform management committee upward, and are in charge of resource distribution and daily management of teams to cooperate and innovate in the cooperative and R&D entities. The heads of all the teams to cooperate and innovate inside the entities are in charge of administration sections in the entities and the administration sections are in charge of coordination and administration of the teams. There are specific heads of the teams to cooperate and innovate, which are administered and supervised by the platform management committee upward and are in charge of resource distribution and daily administration of their own teams. All the teams to cooperate and innovate are equal, whose relation is to research and develop paralleled. Therefore, they do not contact directly. If there comes any competition for the demand and application of new resources, the platform management committee will coordinate and solve problems.

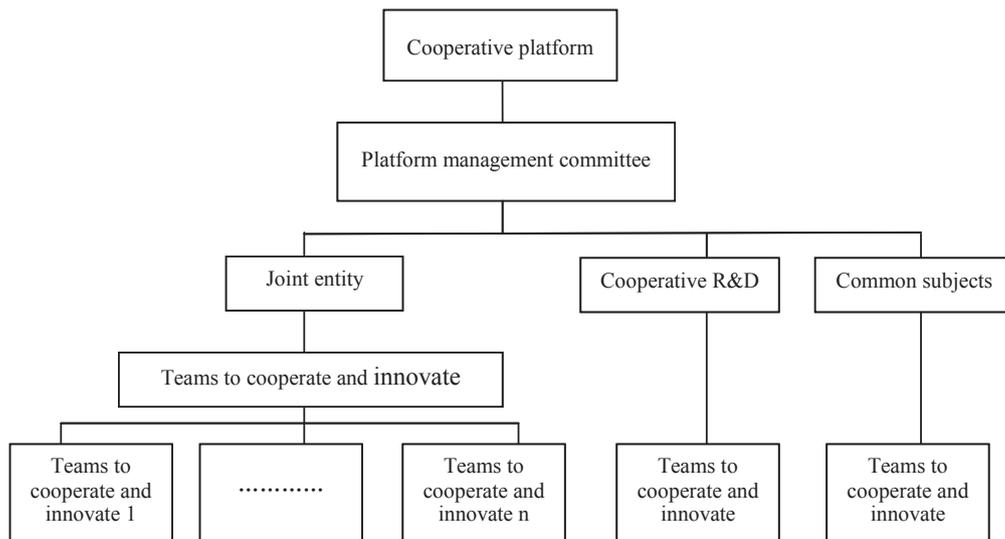


Figure 1
Organization Structure of Innovation Platform for CEEUSRO

Consisting of the council, the platform management committee and the expert committee, the administration platform undertakes the functions of decision and administration. Among it, the council decides the direction of technology development and the key tasks of work, and coordinate the important decisions and matters such as capital funding and using, achievement transformation and fund utilization. Being the operation and administration bodies of the platform of enterprise-university-research cooperation and innovation, subordinating to the council and reporting to it, the platform management committee

is in charge of the supervision of the execution of CEEUSRO and the decision of the council, the project approval by the opinions of expert committee, reasonable allocation of variety of innovation resources, the coordination and management of different relationships in the platform, but not the daily management work of the specific R&D entities and teams of cooperation and innovation. Being responsible for the council, the expert committee is in charge of the decision of direction of technology development and key projects to research and develop of CEEUSRO, and the work to argument the

feasibility of the projects, the budget of the projects and the feasibility of the schemes.

The entity platform refers to the entity organization composed by the actual undertakers of the CEEUSRO, and it can be divided into 3 departments by the functions and cooperation content, namely the department of co-construction entity, the R&D department of technology cooperation and the department of study team. With the respective management departments, all the departments are managed and supervised by the platform management committee, and in charge of the work of resource allocation and daily management of the innovation teams (study team) inside the departments. The persons in charge of the departments are responsible for the management department, and for the coordination and management of different teams. There are specific persons in charge in the cooperation and innovation teams, who are managed and supervised by the management department, and in charge of the work of resources allocation inside the teams and the daily management. All the teams are equal and the relationship between them is paralleled research and development without direct connections. However, if there are competitions of requirement and application for innovation resources among the teams, the respective management departments will coordinate to solve the problems.

2. THE ANALYSIS OF ELEMENTS OF THE PLATFORM

2.1 The Main Elements of the Platform

The innovative platform of CEEUSRO is one kind of advanced organization form when CEEUSRO develops

a certain phase. The elements of the innovative platform of CEEUSRO which is comparatively perfect are the enterprise, the university, the institute, the government, the agent and the financial organization, as is shown by Figure 2. The enterprise, the university and the institute comprise the basis and core of the platform, and the government, the agent and the financial organization comprise the peripheral part of the platform. The entities in the platform play different roles according to the strategy requirement and innovative advantages (Han, 2008).

(a) Leading subject: the enterprise. The strategy appeals for the participation of the platform for the enterprise are mainly the intellectual properties and the talents, and the innovation advantage of the enterprise is the ability to hold and exploit the market and to transform the technology, which determines the leading function in the platform of enterprise-university-research cooperation and innovation. There are 3 specific manifestations as follows. Firstly, as the sponsor of the innovation platform, the enterprise leads to establish the long-term cooperation form to share the benefit and the risk with the university and the scientific research institution, which satisfies the requirement of the chronicity and the deepness of technology innovation. Secondly, as the main inputter, the enterprise makes use of its R&D funds and the research project funds applied from the government to support the R&D projects, to co-construct the scientific research institutions and to cultivate the talents. Thirdly, as the developer of new products and technology, the enterprise transforms the prospective and upstream technology of the university and the scientific research institution to the market to try for the biggest comprehensive profit.

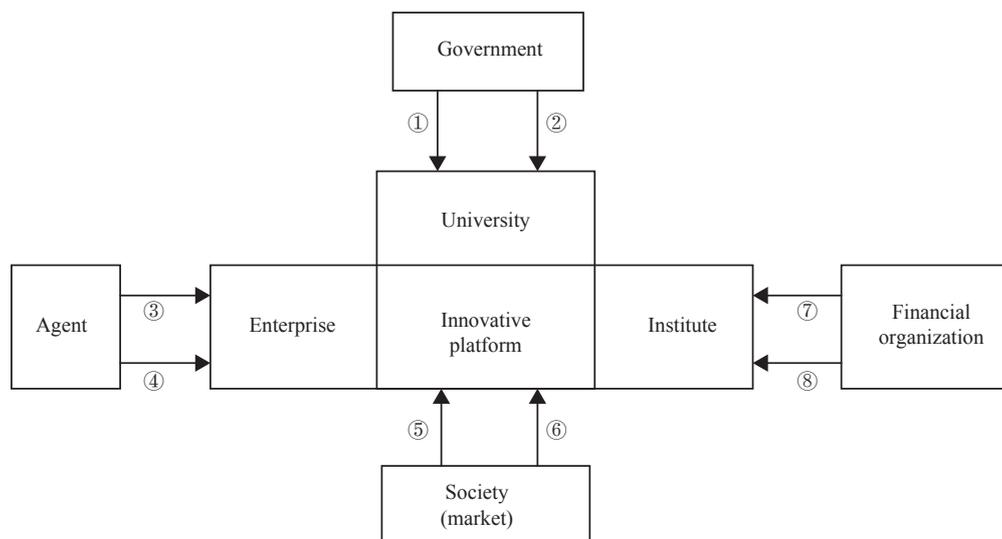


Figure 2
Organization Structure of the Main Elements of the Innovation Platform for CEEUSRO

① policy support, ② macroscopic guidance, ③ the construction of the platform, ④ the network of information, ⑤ the market guidance, ⑥ comprehensive service, ⑦ the loan channel, ⑧ risk investment

(b) Supporting subject: the university and the scientific research institution. The core of the strategy appeal of the university and the scientific research institution is the funds and the transformation of the achievements, and the advantage of the university and the scientific research institution is to have aggregated great deals of talents resources, subjects resources and innovation achievement resources and to possess superior environment of basic science and prospective technology research, and excellent teaching staff and effective cultivation of talents, which determines the mighty supporting function for the platform of CEEUSRO and innovation. There are 3 specific manifestations as follows. Firstly, as the intellectual property database of the platform of CEEUSRO and innovation, the university can satisfy the market-oriented requirement of the enterprise and utilize the existing innovation achievements as to industrialize them for the market value. Secondly, the university and the institute can remedy the research deficiency of the enterprise, satisfy the requirement of the upstream technology and prospective technology for the enterprise and undertake the research project with the outsourcing demand of the enterprise. Thirdly, the university and the scientific research institution can set up the platform for the international technology transfer, promote the foreign advanced technology to transfer home and provide variety of services for the foreign advanced to be introduced, digested and re-innovated in China.

(c) Coordinating subject (the government & serving subject): the intermediary organization and the financial organization. As the important periphery participant, the government gives play to the functions in the platform of CEEUSRO and innovation such as policy guidance, communication & coordination and policy service, whose strategy appeal is to improve the ability for the industry independent innovation and support the development strategy to construct innovation country through the improvement of the platform of CEEUSRO and innovation, and whose innovation advantages are administrative ability and information resource. The functions of the government playing in the platform of CEEUSRO and innovation run as follows. Firstly, the government will make the incentive policy for the development of the platform of CEEUSRO and innovation, set up the platform for the intermediary organization and the credit guarantee, support the information network construction for the intermediary organization and provide necessary services. Secondly, the government will provide financing channels for the technology cooperation projects and the industrialization of the innovation achievements, including providing preferential policies and tax deduction and exemption, attracting venture capital, starting growth enterprise

market and increasing key special funds for the CEEUSRO and innovation.

The intermediary organizations, such as financial intermediary organizations, information intermediary organizations, credit intermediary organizations, are the important links for knowledge and technology to diffuse, transform and apply, and its main functions include constructing information networks and building platform for the project venture capital. At present, the intermediary organizations serving for the platform of CEEUSRO and innovation are constructed mainly by the government and some universities, and as the functional development and the related policies are not perfect, the organizations will mature gradually with the development of the platform of enterprise-university-research cooperation and innovation. The main function for the financial organizations is to solve the problems of financing channels of the platform of CEEUSRO and innovation and venture capital funds and growth enterprise market will become the key of expanding the financing channels except commercial bank loans.

2.2.2 The Elements of the Environment and Resources of the Platform

The environment of the platform means all the conditions that influence the existence, development and change of the platform, which can be divided into external environment and internal environment. Every system has its own special external environment, and the two depend on each other, interact with each other, and exchange energy, material and information with each other incessantly. Internal environment refers to the interaction relationship among the enterprise, the university and the scientific research institution as well as among themselves; external environment refers to the social cultures, social education, social service, social economy, comprehensive technology, laws and regulations.

The essence of the platform of CEEUSRO and innovation is the integration and sharing of the innovation resources of the enterprise, the university and scientific research institution, so it is very important to differentiate the elements of the platform resources. As the advantage resources of the platform provided by the enterprise, the university and the scientific research institution, the platform resources are public resources shared by the university and the enterprise and the supporting resources for the platform to engage in innovation activities, which includes human resource, resources of knowledge, technology and information, fund resource, policy resource and infrastructure resource.

3. THE CONSTRUCTION AND OPERATION ADMINISTRATION OF THE PLATFORM OF CEEUSRO

3.1 Setting the Cooperating Target and the Development Strategy

The construction of the platform of CEEUSRO and innovation requires that the technology development direction of the cooperation innovation and the technology output target should be made clear, that is, why the platform of enterprise-university-research cooperation and innovation is to be constructed should be clear. For example, what are the technology problems to solve in the current cooperation? What are the R&D direction and field for long-term cooperation? What are the important influences of the technology problems or the R&D direction for the development of the cooperation sides or related enterprises? The specific cooperation target and development strategy can be made by the new management tool of technology innovation i.e. the technology roadmap. The position, present condition, the market requirement home and abroad, the industry target and the technology of the cooperation field of the platform of CEEUSRO and innovation should be analyzed scientifically and mastered; the important R&D requirement and the technology project in the main technology field involved in the industry should be condensed; the prior order should be determined; the technology difficult point and the risk of the project and the accomplishing time should be pointed out; related scheme should be made; influential strategy thought for the industry development should be proposed.

3.2 The Organization and Administration Structure of the Design Platform

As is stated above, the structure of the platform of CEEUSRO and innovation is the project mode structure under the leadership of the council of the platform of CEEUSRO and innovation, composed by the researchers from the enterprise, the university and the scientific research institution as well as their respective management teams. Its key point is the feature of project mode organization, which fits the non-enterprise-legal-person organization property of the platform. Considering the non-profit property of the platform, the dynamic property of the structure (the main manifestation is that the platform members combine selectively because of the cooperation, but their identities are subordinated to different sides of the subjects of the CEEUSRO and innovation) and the task character of the work, to adopt the organization and management manner of project mode ought to be the most appropriate. The former part of the article, "organization structure design of the platform of CEEUSRO and innovation" has well drawn the outline of the project mode structure, which is the basis for platform construction.

The entity platform is the core of the platform of CEEUSRO and innovation, and its members ought to be researchers (include the school students) and administrators from the different sides of the CEEUSRO, who can be recruited as part-time workers when necessary. The specific composition should be constructed according to the target decomposition of the platform of CEEUSRO. Meanwhile, specific team should be constructed by the way of project mode. There are management departments (or function setting) in the cooperation R&D entities (innovation teams or subject teams) in charge of resource allocation and daily management for all the cooperation innovation teams inside the cooperation R&D entities.

3.3 Making the Management Manners of Funds and Projects

As the platform of CEEUSRO and innovation is non-profit organization, stable financial sources should be promised to guarantee the operation of the platform of CEEUSRO and innovation. The financial sources should naturally come from the subject inside of the platform of CEEUSRO and innovation, but it needs demonstrating seriously and implementing feasibly to share the financial sources. Generally speaking, funds sharing should be determined by the profit output and the allocation in the operation process of the platform of CEEUSRO and innovation. The establishment of the aforesaid financial sources has contained the essential mechanism of the platform operation actually, i.e. the financial management and the project management mechanism, which is the financial management model under the dynamic project management model. That is, the platform operates in the manner of project (is normally manifested as the subject form) rolling to drive the financial management. Therefore, subject management is the essential manner of the platform operation. There is some particularity of the subject application and management of the platform except the normal features of the subject mode in other fields, which is manifested as that the researchers need to draft related subjects (or undertake related subjects outside the platform) according to the target of CEEUSRO, set up cooperation innovation teams (subject teams), demonstrate and analyze the platform resources that the subject needs to utilize and exhaust, elucidate the output of the operation process of the subject, final output, its value and the scheme to allocate the value, calculate the subject risk (such as the loss caused by the research failure) and make the sharing scheme. The platform management committee will plan and coordinate the resource allocation; final value allocation and risk sharing according to the subject, regularly account the cost and the benefit of the cooperation sides and work out reasonable proportion of cost sharing.

3.4 Defining the Right, the Responsibility and the Profit of the Participants of the Platform N and Establishing Mutual Benefit Mechanism

As is stated above, the definition of the right, the responsibility and the profit of the participants of the platform of enterprise-university-research cooperation and innovation is the cornerstone to maintain the constant and stable development of the CEEUSRO, as well as the guarantee to form the benign situation of mutual profit, mutual success and mutual development. The right of the platform of CEEUSRO and innovation is mainly manifested as the operation right, management right and the profit right; the responsibility is mainly the risk responsibility during the platform operation and the duty to invest resources; the profit mainly refers to the benefit allocation and resources sharing of the platform output. It is obvious that equivalent right, responsibility and profit is the basic principle to define the right, the responsibility and the profit, so the three of cooperation sides should be made clear to construct the platform. As a matter of fact, the abovementioned establishment of the management model of the funds and project is the system guarantee for the equivalent right, responsibility and profit and risk sharing. Meanwhile, risk sharing and profit allocation mechanism should be established in the manner of contract. The risks are everywhere, such as risks of project operation and risks caused by the invest of platform cost and resources, which must be defined one by one. As the ultimate motivation for the CEEUSRO to develop sustainably, profit allocation should be based on mutual profit. The platform of CEEUSRO and innovation should be constructed based on the profit increase of cooperation sides, seek for the symbiotic origin of different profits, make clear of the resource allocation, utilization mechanism, talents utilization, work mechanism, achievement utilization, ownership mechanism and incentive and constraint mechanism to operate the projects by the way of institutionalization during the CEEUSRO, and realize the mutual profits, satisfied demands and win-win equality among the enterprise, the university and the scientific research institution.

3.5 Incessant Exploration and Improvement of the Long-Acting Development Mechanism for the Platform

As the construction of the platform of CEEUSRO and innovation is a great project and the platform itself is always in dynamic development, the study for its structure and operation mechanism can not work for good, and we should explore incessantly the long-acting development mechanism of the platform of CEEUSRO and innovation. There are two aspects needing exploring and perfecting.

First, mechanism of supervision and performance appraisal of the platform should be set up and perfected. For the platform construction, to track and evaluate the

important projects of the platform of CEEUSRO and innovation should be taken seriously, especially the scientific prophase analysis, metaphase tracking and anaphase evaluation for the related projects. For the evaluation of the technology achievement such as the acceptance of the scientific research projects, scientific research awards and professional titles evaluations, the innovation and the technology level of the achievement should be taken seriously, and the applicability of the achievement and the industrialization prospect should be paid attention to. With an eye to the strategy direction of the technology innovation of the national key industry and the regional dominant economy, and combined with the development requirement of the regional dominant economy, the platform of cooperation and innovation should lead the direction of technology innovation to combine with the national strategy benefit. Centering on the key technology requirement of the pillar industry and the new industry, the platform should also make target and scheme to develop for a long term, which can form long-acting mechanism.

Second, allocation mechanism of profit sharing should be perfected incessantly. The core of the profit allocation mechanism of the cooperation sides is the protection of the intellectual property and the evaluation of the intellectual property, which can be summed up as the problem of profit re-allocation. The long-acting and close cooperation mechanism of the platform in the technology development and the market change should be dynamic and diverse. Therefore, the platform should establish the profit allocation mechanism centering on the intellectual property according to the market mechanism. For the CEEUSRO, the credit and the profit are the most important element to construct the platform. As great innovation of the industry technology needs long acting period, it needs sustained and stable cooperation credit of cooperation sides and the profit guarantee to satisfy every side. The platform should, based on the consensual will, establish credit of the long-term CEEUSRO and the constraint mechanism by the way of contract. The intellectual property being the central link to solve the problem of profit allocation, the platform should make clear of the right, the responsibility and the profit of the sides, guarantee the profits of all sides of CEEUSRO and realize the sharing of risk and profit centering on the links as the creation, application and protection of the intellectual property. The key is that the profit community that can operate by itself should be formed as sustained and stable cooperation can be realized only when the profit is shared and resultant force can be formed to face the challenges only when the risk is shared.

CONCLUSION

To set up and perfect the platform of CEEUSRO and innovation is the key to CEEUSRO. Only when the organization entity with wholesome structure and function is formed by the platform construction, the platform can bear and transform the function of the platform of enterprise-university-research cooperation and innovation, realize the innovation output of the platform organization and finally satisfy the innovation demand of all the cooperation sides. Made up by the researchers and their management teams from the enterprise, the university and the scientific research institution, the perfect structure of the platform of CEEUSRO and innovation should center on common goals of the platform and have certain coordination system of internal structure and common norm, whose structure, composed by management platform and entity platform, are the one of rolling project mode organization under the leadership of council of the platform of CEEUSRO and innovation. The work to construct the platform includes making cooperation target

and development strategy, designing the organization structure and management structure, making management manner of projects and funds and defining the right, the responsibility and the profit of the participants and the related mechanism to allocate the profit.

REFERENCES

- Chen, B. M. (2009). Problem and policy suggestion for CEEUSRO in China. *Chinese University Technology Transfer*, 4, 42-45.
- Han, L. M. (2008). Meaning and characteristics of innovation alliance to enterprise-university-research. *Journal of Ocean University of China (Social Sciences Edition)*, 16, 23-26.
- Ma, Y. Q. (2009). *Study of the operating mechanism of university-enterprise building innovation platform* (Doctoral dissertation).
- Ministry of Science and Technology of the Peoples Republic of China. (2009). *National technology innovation project implementation plan*. (Official document of MOST of China No.269).