



Research on Modern Cooperative Commerce and Grid application

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I、background

- National Natural Science Foundation of China:
—Research on Theory and method of Network-based Cooperative Commerce Chain;
 - National 863 High Technology Project of China:
—Research on Electro-mechanical-oriented Application Service Platform;
 - National 973: — The Research on the RFID-based Logistic Tracing System for the Network-based Cooperative Commerce Chain
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II、 Research Production

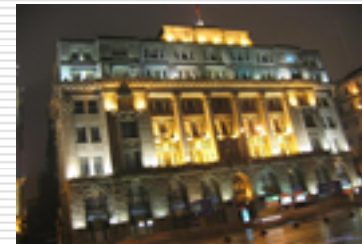
1. The fundamental theory of the Network-based Cooperative;
 2. An analysis of the competition and cooperation strategy of cooperative commerce;
 3. A discussion of the perspective of harmony in the network-based cooperative commerce;
 4. A study of the method of the network based cooperative commerce chain;
 5. A study of the main body model of the network-based cooperative commerce chain;
 6. The cooperative logistics strategy and its application in the industry;
 7. The grid technology construction of cooperative commerce system;
 8. Realization of the prototype of cooperative commerce platform
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一、The fundamental theory of the Network-based Cooperative Commerce

Based on the principles of system, cybernetics and information theory, a study of the theory of cooperative commerce is made:

1. An analysis of the cooperative effect of the commercial system from the angle of cooperation theory; a discussion, with the application of the “coordination and coexistence” theory, of the harmonious and coexistent environment of enterprise’s cooperative commerce;
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2. An analysis of the feedback mechanism of cooperative commerce by the inference of systems engineering;
 3. The setup of the information economic effectiveness model of the network-based cooperative commerce by analyzing the channel of information labor cooperative in network environment.

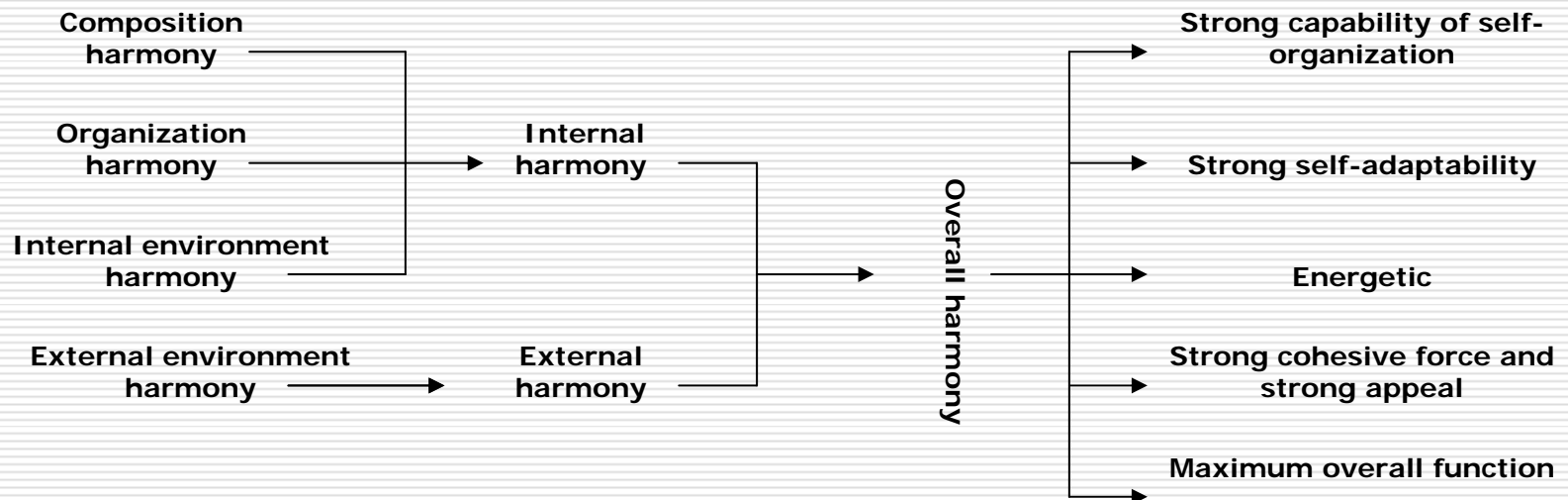


二、 An analysis of the competition and cooperation strategy of cooperative commerce

1. An introduction, on the basis of cooperation and system theory, of competition theory and harmony theory into the study of cooperative commerce ;
 2. An analysis of the existence competition of enterprises, a definition of zero countermeasure competition and cooperative competition, and the advancement of the theory of harmonious competition;
 3. The setup of the ordinary model of enterprise competition and the enterprise competition model under the condition of increasing benefit, i.e. the cooperative competition model.
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三、 A discussion of the perspective of harmony in the network-based cooperative commerce

shows the mutual relations in the harmonious system and the overall effect .



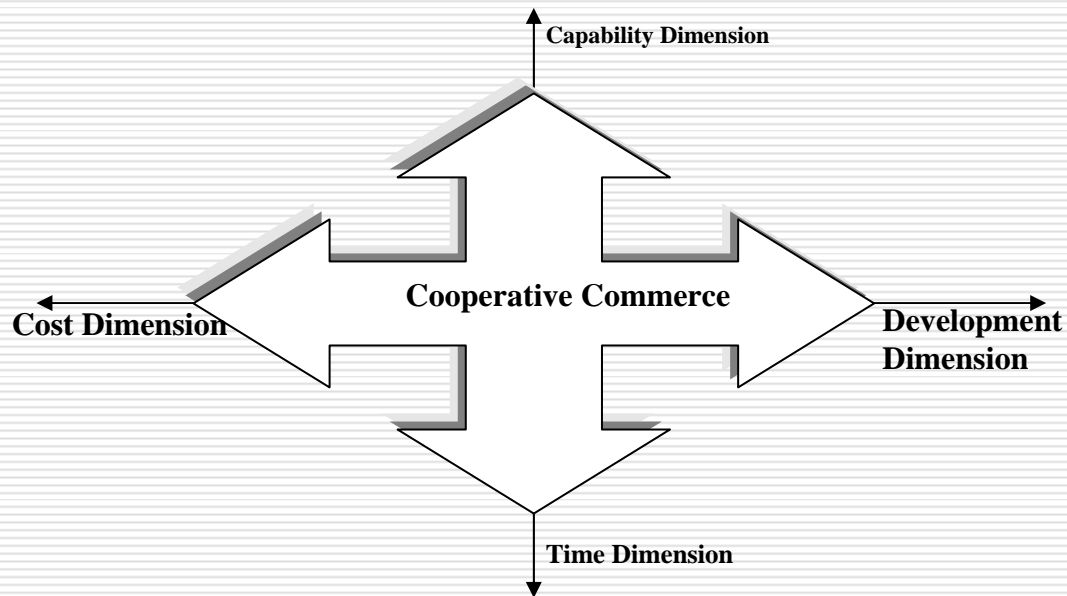
[Harmony and its function](#)

An understanding of the distribution of system elements in the space is arrived at through the calculation of the degree of non-harmony and the degree of being restricted of system elements and, according to the two calculated degrees, the division of spatial structure into :

- zone of easy control and harmony;
 - zone of difficult control and harmony;
 - zone of easy control and non-harmony;
 - zone of difficult control and non-harmony.
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四、A study of the method of the network based cooperative commerce chain

- A construction of the four-dimension structure of the network-based cooperative commerce chain, i.e. capability dimension、 cost dimension、 time dimension and development dimension ;



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- An elaboration of the definition of consultation、 language category、 decision-making category、 process category and theory model;



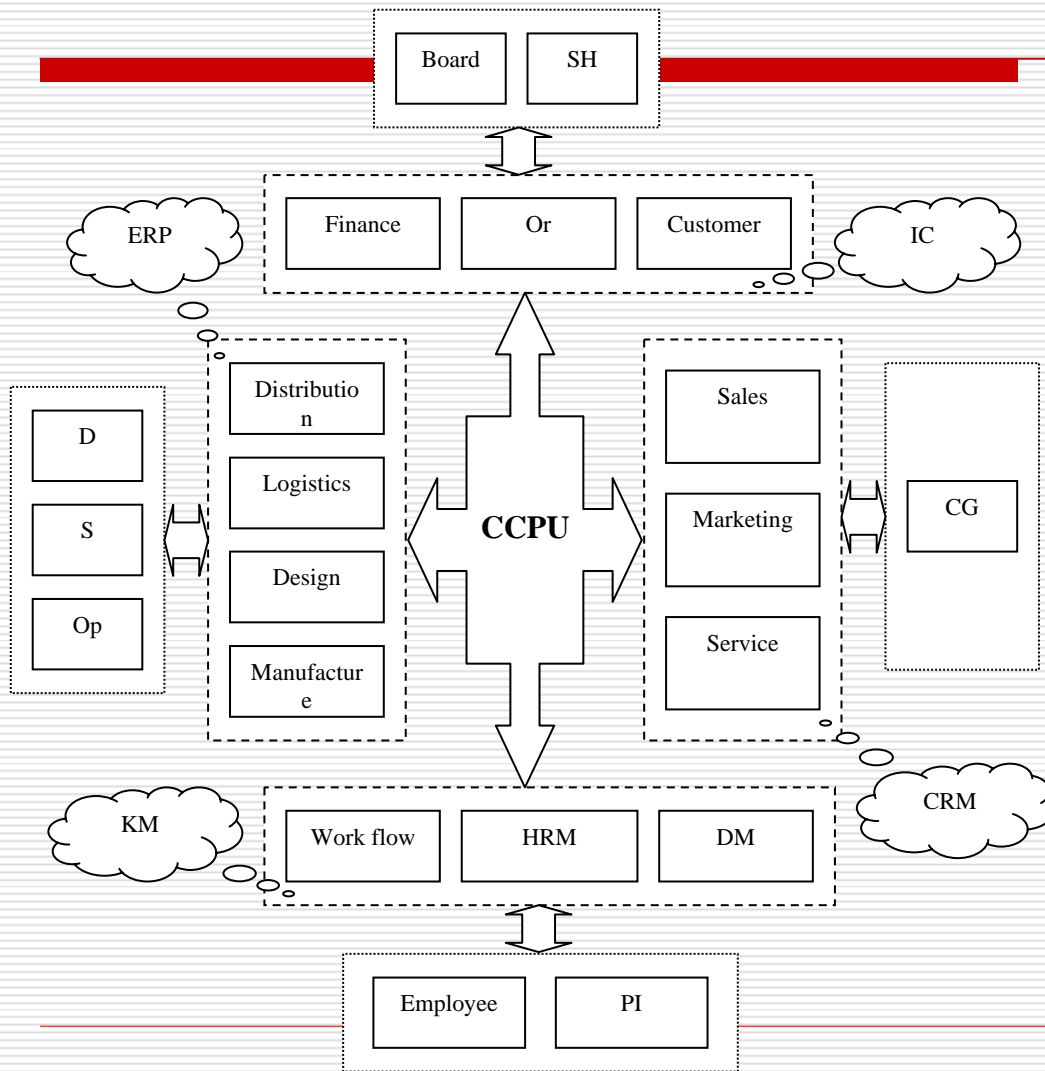
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- A description of the solution methods of problems from knowing the cooperation potential, forming a team, planning to team action;
 - An exploration of the semantic concept frame of the network-based cooperative commerce chain and the basic organization structure of intelligent commercial body;
 - A function and structure design of ICPU, the nerve centre of Commerce Grid, and hence a description of the functions of enterprises' decision-making management.
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五、 A study of the main body model of the network-based cooperative commerce chain

- The construction of the commercial main body model by analyzing the thought of cooperative commercial model construction and on the basis of main body technology ;
 - A profound analysis of the model、 goal、 structure、 program and process of the cooperative commerce chain;
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- An exploration of the operation mechanism of the core of the commercial main body and the manner of mutual communication between commercial main bodies;
 - The advancement of solutions to cooperation problems with a main content of splitting the coordination task with the bid inviting and submitting mechanism and the shortest route method .
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The architecture shows as below

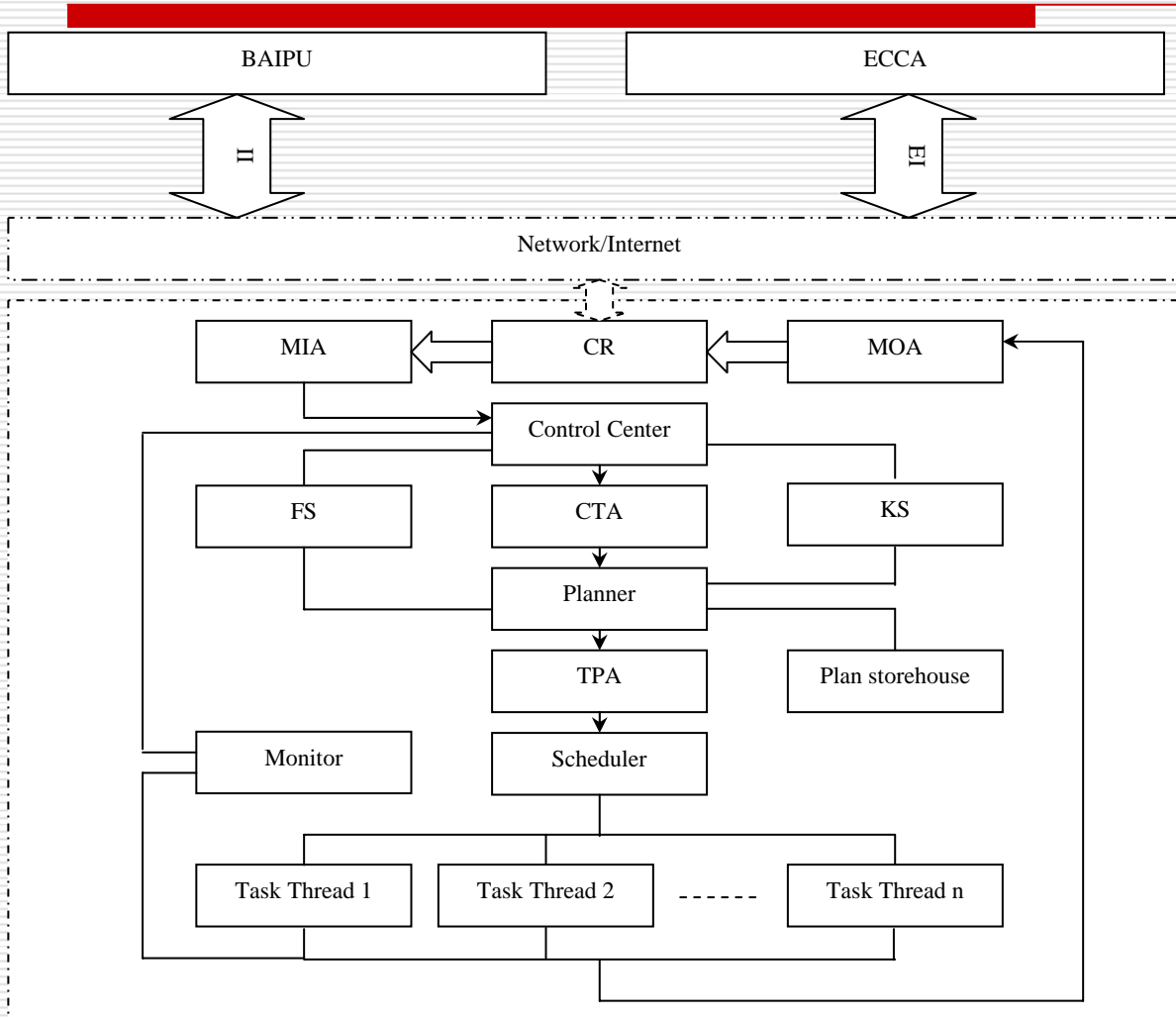


Commerce grid

- SH: shareholder
- CCPU: cooperative center process unit
- D: distributor
- S: supplier
- Op: operator
- KM: knowledge management
- HRM: human resource management
- DM: document management
- PI: private information
- CG: customer groups
- IC: internal control
- Or: organization

C-commerce Process unit

The architecture for CCPU shows as below:



BAIPU: business association internal process unit
II: internal interface
ECCA: external c-commerce association **EI:** external interface
MIA: message input array
CR: communication router
MOA: message output array
FS: faith storehouse
KS: knowledge storehouse
CTA: current task array
TPA: task planning array

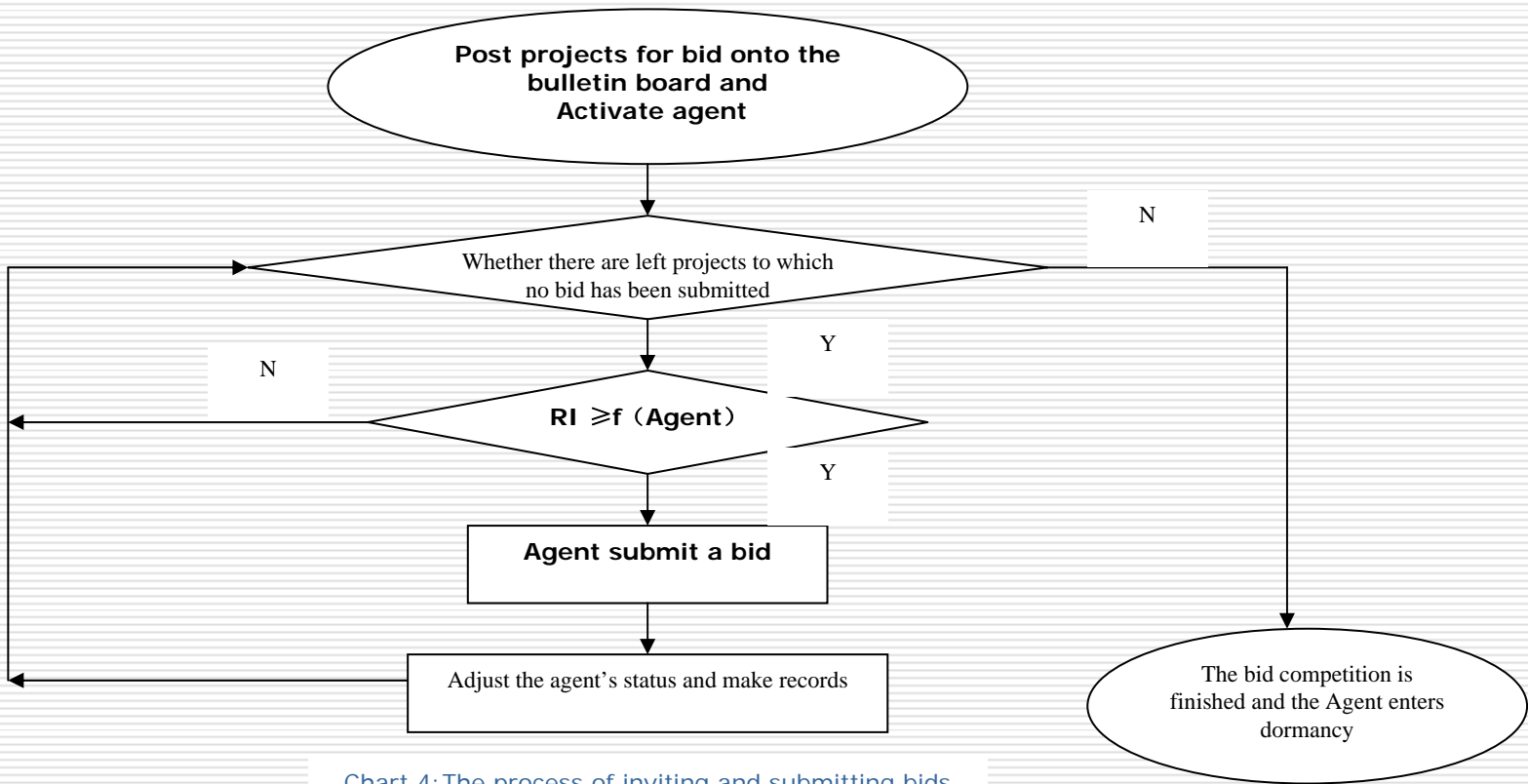
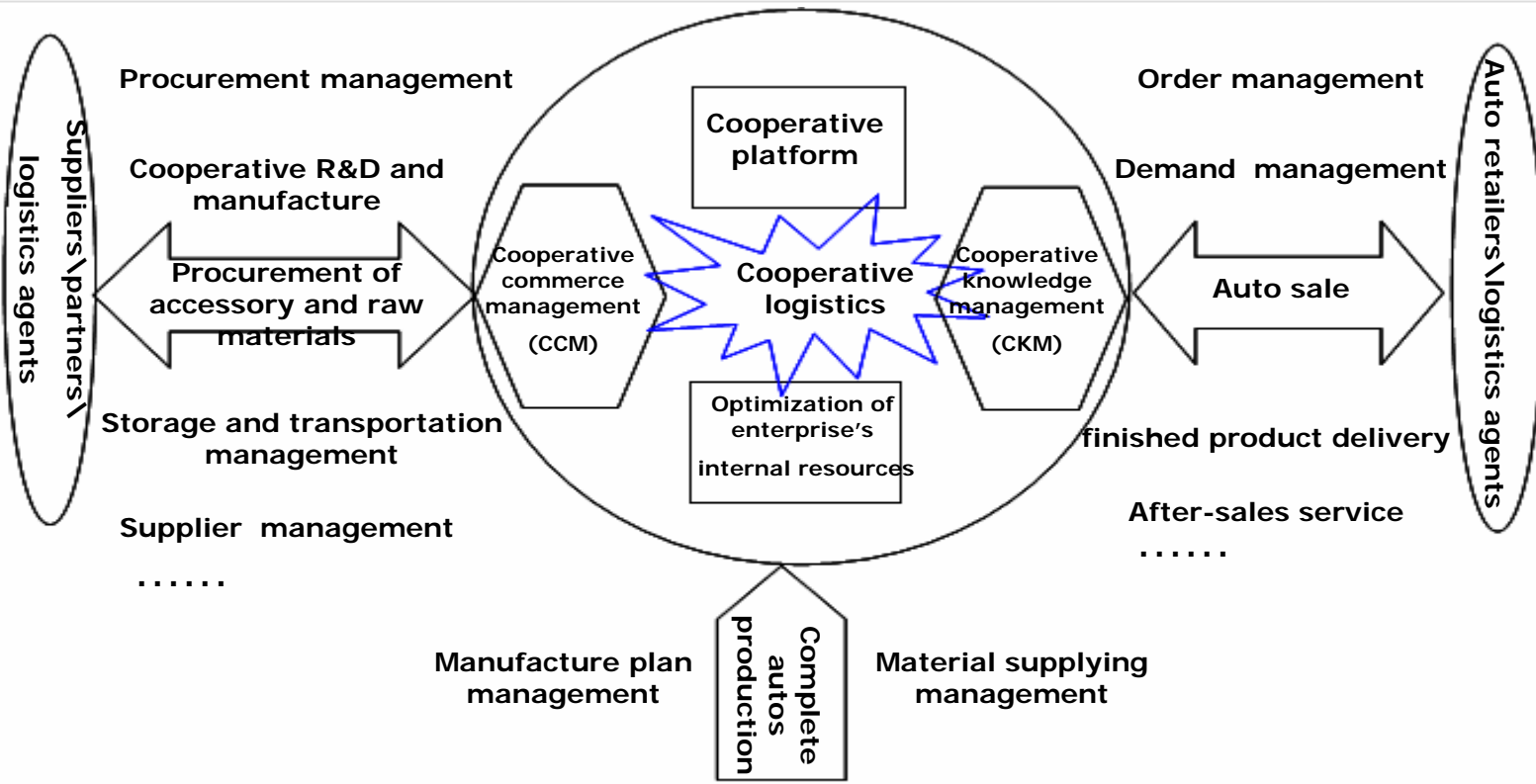


Chart 4: The process of inviting and submitting bids based on the Agent

六、 The cooperative logistics strategy and its application in the industry

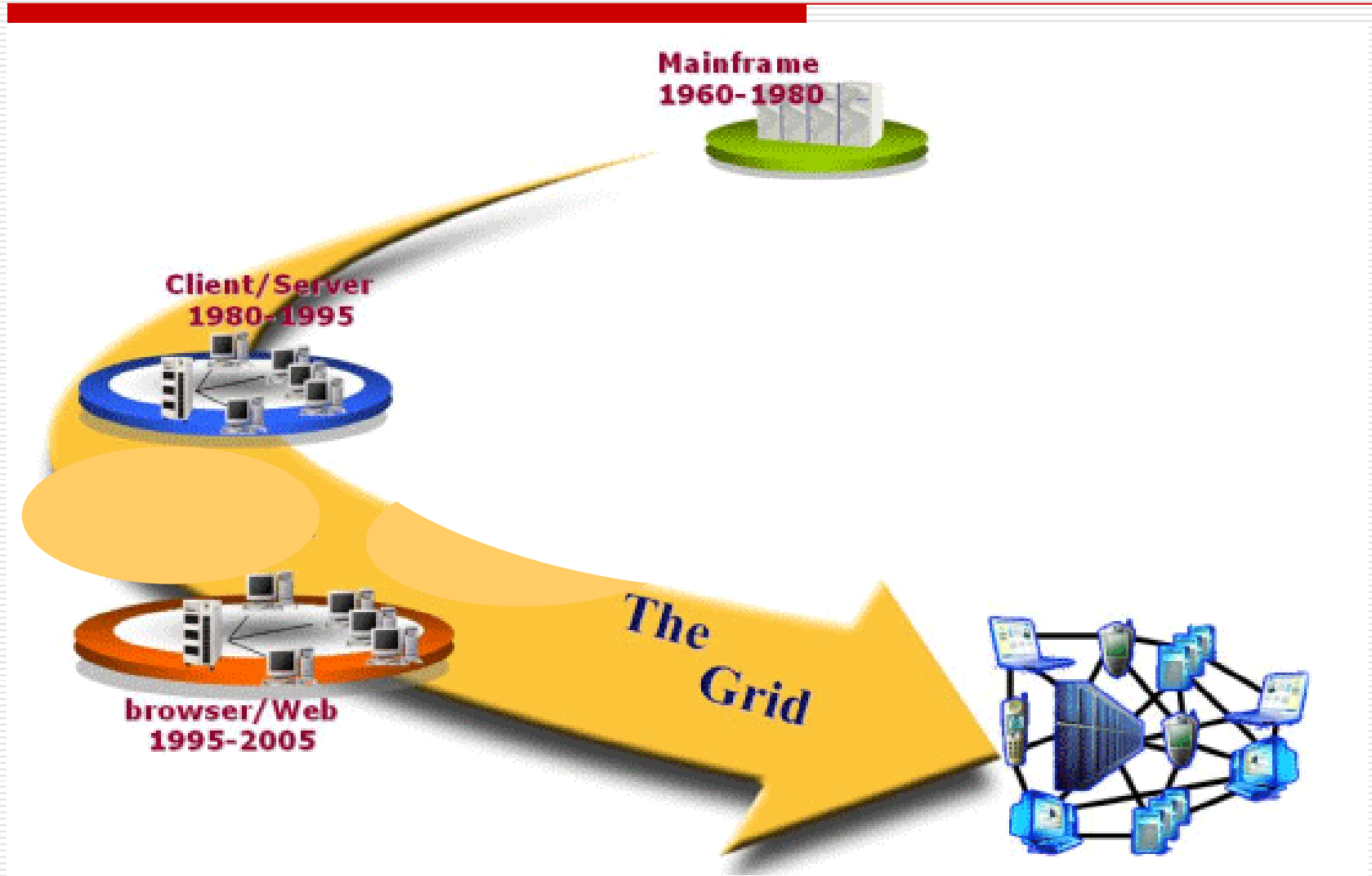
- A discussion of the development tendency of logistics in the cooperative commerce environment;
 - The establishment of the supporting theory of cooperative logistics based on restriction theory;
 - A discussion of the solution programs of cooperative logistics in three aspects;
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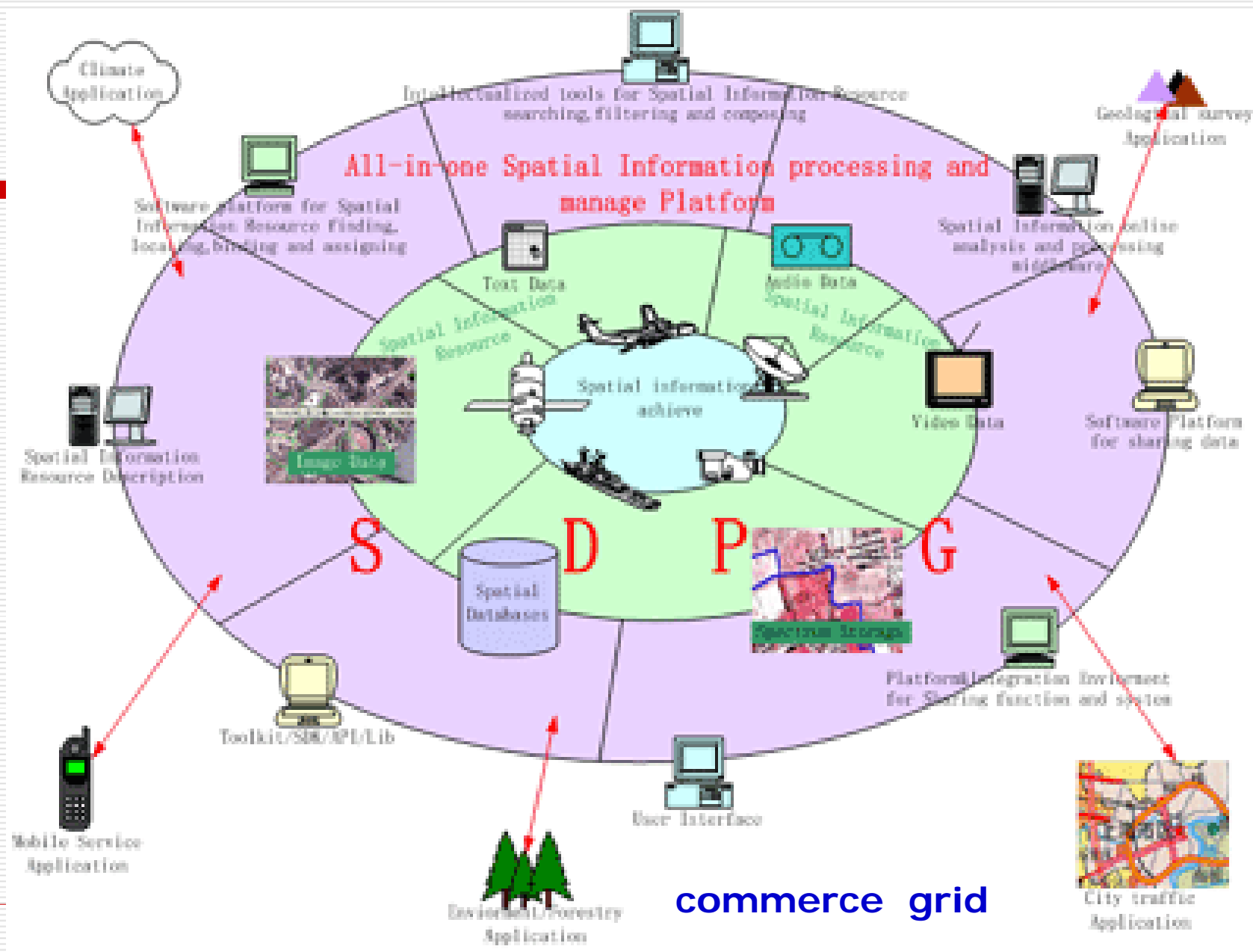
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- An analysis of the orderliness degree of the cooperative logistics coexistence system with the quantitative description model of system entropy's time effectiveness and quality;
 - The construction of cooperative logistics system and cooperative dispatching mechanism for the automobile industry of China : and the advancement of cooperative logistics dispatching program for the automobile industry.
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[cooperative logistics system for the automobile industry](#)

七、 The grid technology construction of cooperative commerce system





To meet the requirement of realizing the cooperative commerce system, a research is made on the comprehensive grid technology frame with a background of professional application and aiming at practical business process. Please see :

七、 The grid technology construction of cooperative commerce system

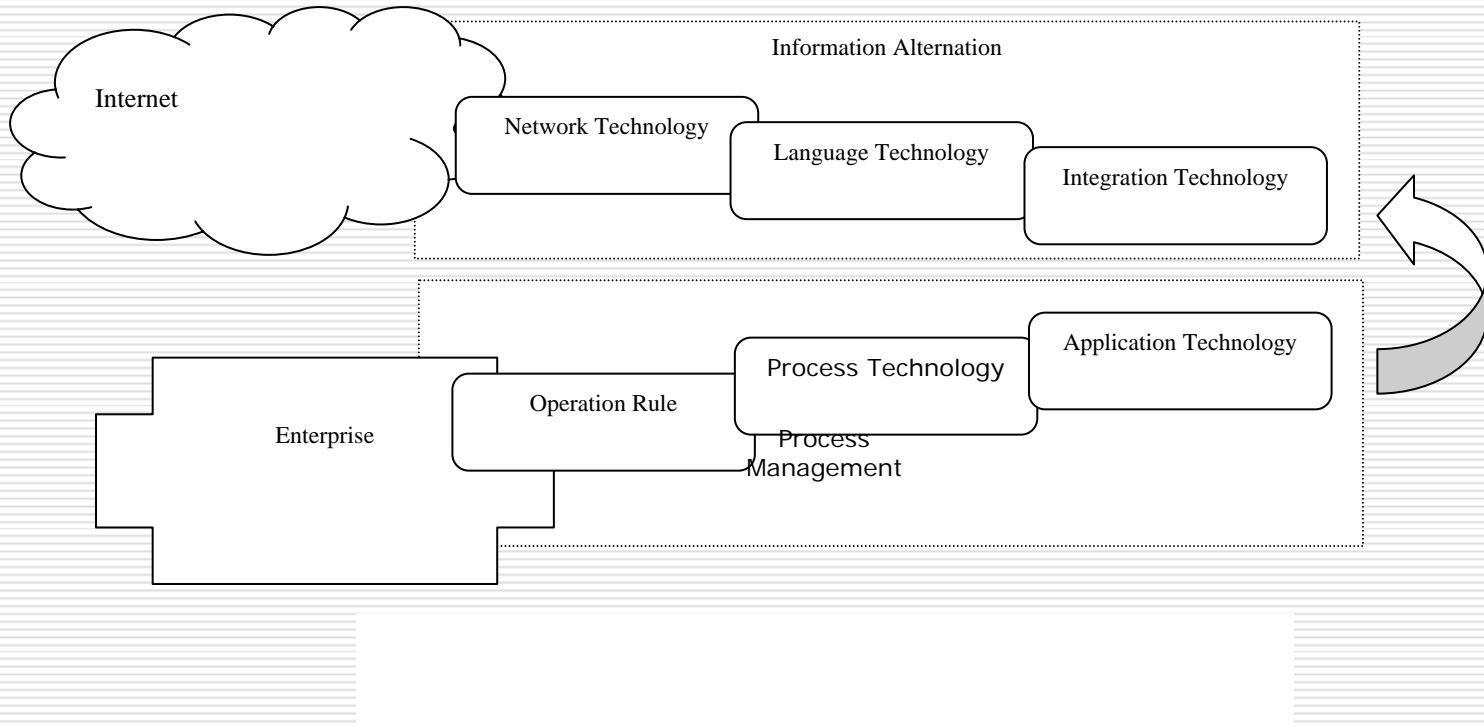


Chart 6: The grid technology frame of cooperative commerce

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- Information encoding and transmission mechanism;
 - The cooperative business process aiming at cooperative commerce;

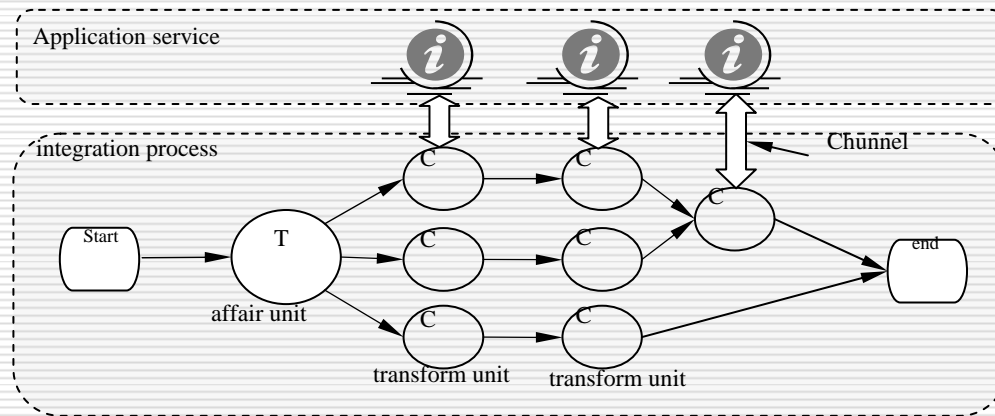


Chart 7: cooperative process definition

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- Relying on the crucial methods of cooperative process, a process planning platform that meets the basic requirements of cooperative commerce is constructed combined with information transmission mechanism. shows the details.
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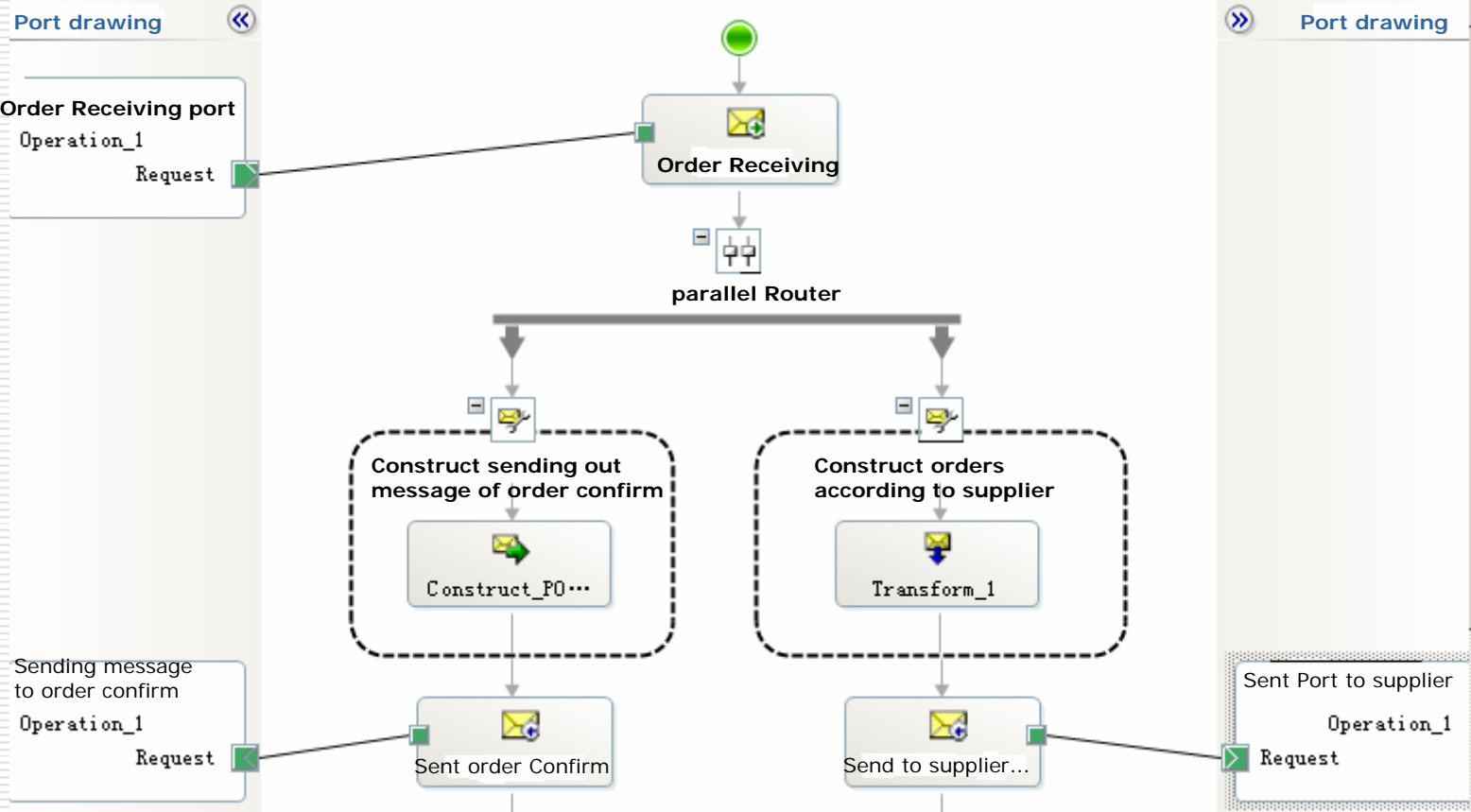


Chart 8: cooperative process planning

In course of developing the system, the interactive correspondence and the negotiation among the different modules run through the whole design process.

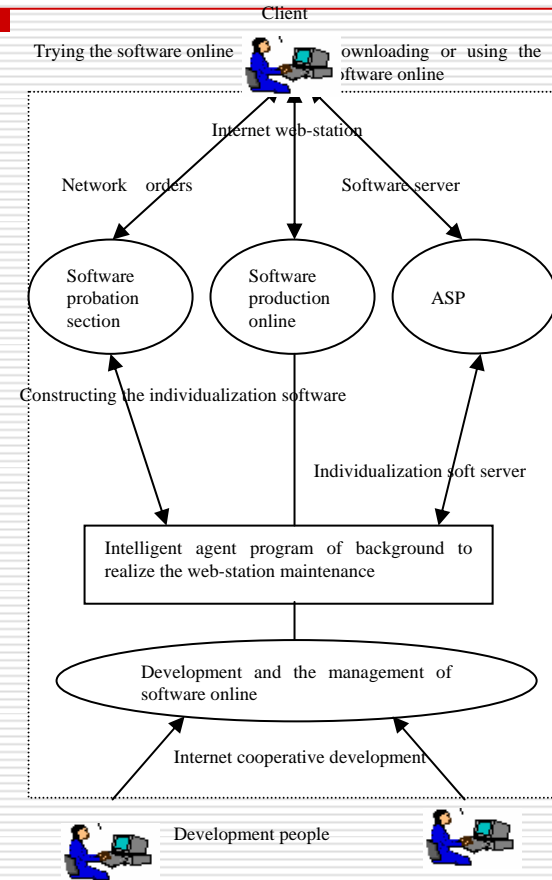
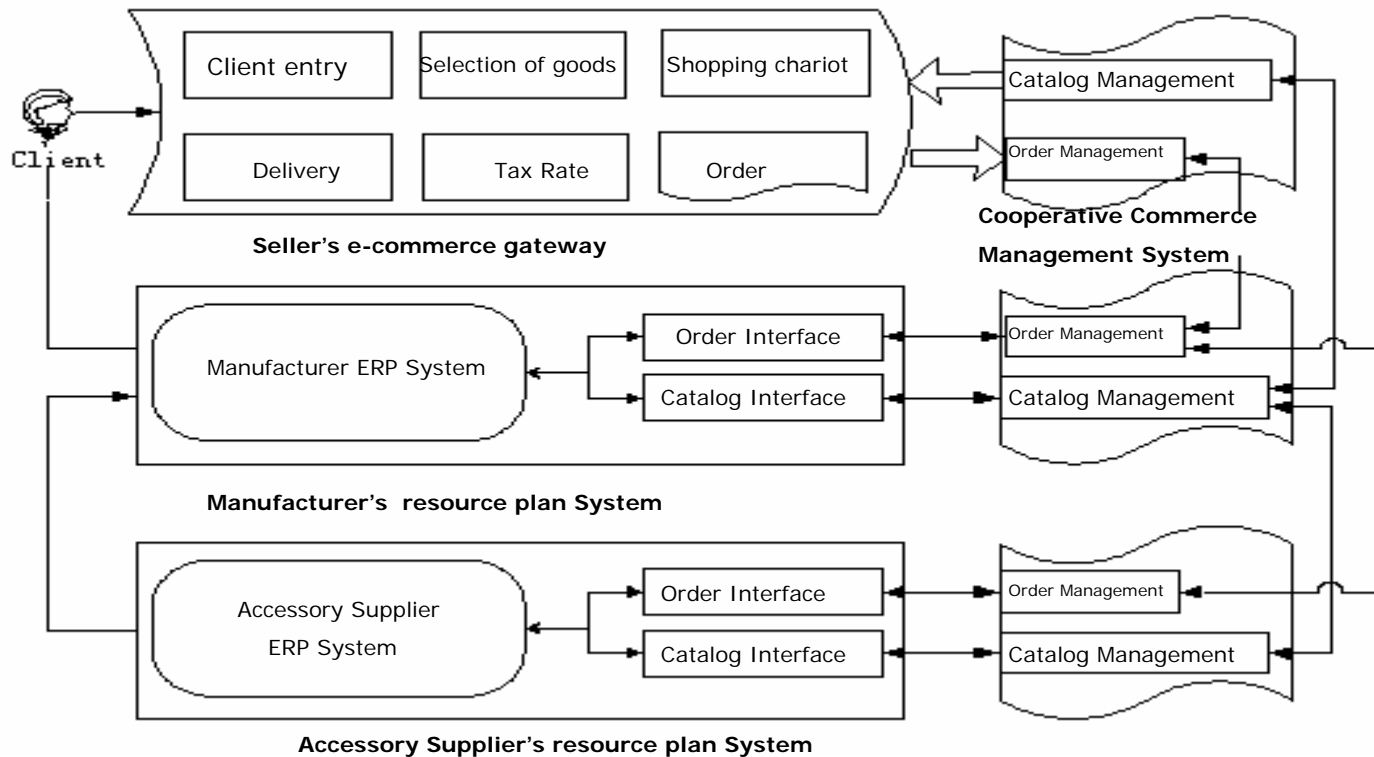


Fig.3 Method to develop the cooperation

八、Realization of the prototype of cooperative commerce platform

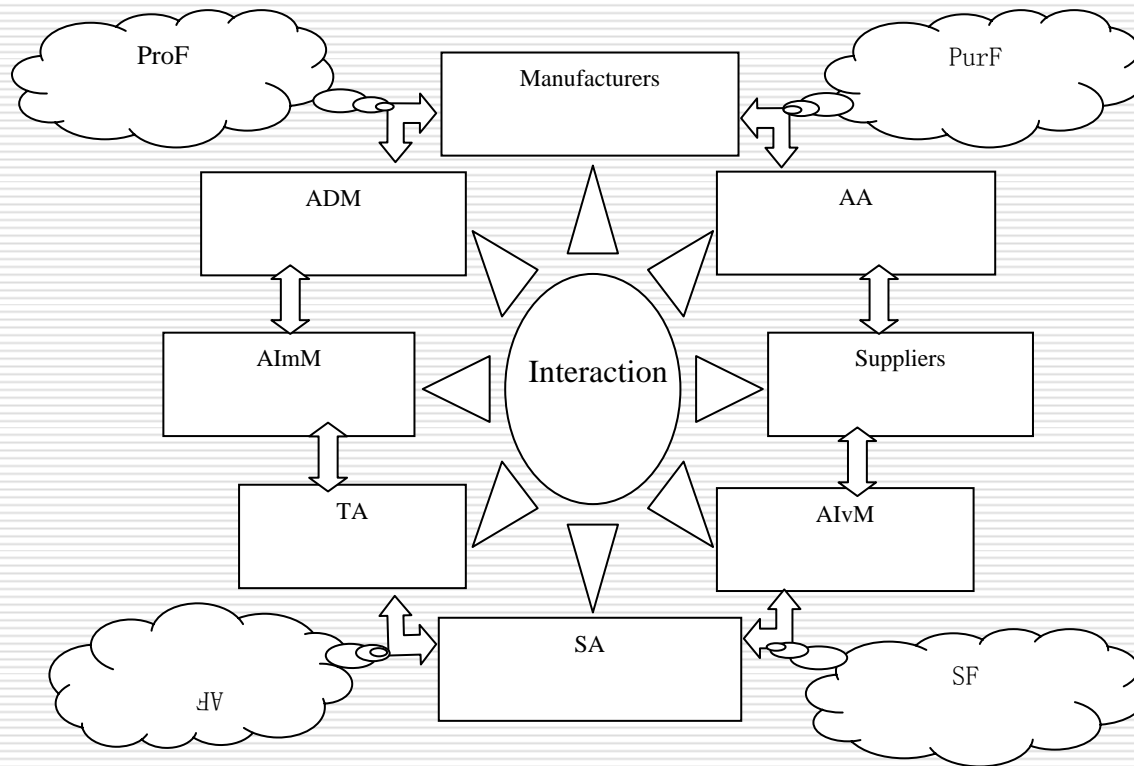
- A prototype system platform of the network-based cooperative commerce chain is developed and realized ;
 - Based on the crucial technologies of integrated process aiming at cooperative commerce, it melts various dispersed application services (programs) into an organic whole;
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八、 Realization of the prototype of cooperative commerce platform



platform's basic function

Interaction between associations of C-commerce



PF: producing flow
ADM: association of demand management
PurF: purchasing flow
AA: aided association
AIMM: association of information management
TA: transportation association
AIVM: association of inventory management
AF: aided flow
SA: sales association
SF: sales flow

八、 Realization of the prototype of cooperative commerce platform

- An analysis of the application effects of planning and carrying out the network-based cooperative commerce chain, and an elaboration of the feasibility of the conception of the network-based cooperative commerce chain and the correctness and effectiveness of the theory, methods and technologies that I have put forward.
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八、Realization of the prototype of cooperative commerce platform



the interface of cooperative commerce management

III、Papers

Number	Production or papers' name	Production explanation
1	《协同商务的理论与模式》专著	上海社会科学院出版社2006
2	<i>Research On Model And Method Of Network-Based Cooperative Commerce Chain In Automobile Industry</i>	<i>Chinese Journal of Mechanical Engineering</i> , Vol.16,No.4, 2003, EI收录
3	网络协同商务链的主体模型研究	计算机集成制造系统-CIMS,2004,9, EI收录
4	基于多Agent的协同商务协调机制	计算机集成制造系统-CIMS, Vol.9,No. 5, 2003, EI收录
5	汽车工业的物流协同配送策略性研究	汽车工程, Vol.25,No. 2, 2003
6	网络协同商务链的系统和谐性研究	中国机械工程, Vol.14,No.14,2003
7	基于合作对策的商务链协同营销模型求解	中国机械工程, Vol.15,2004
8	电子商务中制造业的物流策略	制造业自动化, Vol.26,No.5,2004
9	服从位相型分布的企业协同网络效率计算	计算机集成制造系统-CIMS,Vol.10,2004

III、Papers

10	<i>Research on efficiency computation of collaborative enterprise</i>	<i>Proceedings of 2004 International Conference on Machine Learning and Cybernetic,v3, p1900-1903, EI收录</i>
11	<i>Research On The Strategy Of Competition And Collaboration In Commerce Chain</i>	<i>The Third International Conference on Electronic Commerce Engineering, 2003,10, STP收录</i>
12	<i>Harmonious Management In The Network-based Collaborative Commerce Chain</i>	<i>The Third International Conference on Electronic Commerce Engineering, 2003,10 ISTP收录,</i>
13	<i>Strategy Study On Collaborative Logistics</i>	<i>The Third International Conference on Electronic Commerce Engineering, 2003,10, ISTP收录</i>
14	<i>Decision Method Based On M/M/C Queue With Synchronous Vacation Of Partial Servers In E-Commerce</i>	<i>The Third International Conference on Electronic Commerce Engineering, 2003,10, ISTP收录</i>
15	异类网络应用服务集成机制研究	全球高级制造论坛暨21世纪系统仿真技术研讨会, 2004 (10)



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