

E-exhibition Towards International Trade under the Current Global Economic Crisis

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Abstract: - The current financial and economic crisis broke out all over the world which makes the international trade faced with unprecedented challenges, especially to Medium-Sized Enterprise (SME) of China. MICE (Meeting, Incentive, Convention and Exhibition) industry has been regard as the new engine to drag the economic improvement while the traditional exhibition show a decline for the lack of money to enterprise, which make E-exhibition to flourish because the comparative advantages of low cost, high efficiency, unlimited display space, non-restricted scale of operation, and a wide range of audiences, increasing trading opportunities, timely feedback, statistics and electronic evaluation by Web 2.0 and Web 3.0 technologies. We analyze the SME objects and requirements of E-exhibition; give the knowledge management method using semantic web service including product, process, technology, services and application domain sub ontology. Furthermore, we propose E-exhibition logical view using Semantic Web, select the consumer goods as the application domain, and set up an E-exhibition platform by J2EE. In the end, consumer goods ontology architecture is give and a case study is shown.

Key-Words: - knowledge management, E-exhibition, international trade, Small and Medium-Sized Enterprise, semantic, ontology, web services

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1 Introduction

The current economic crisis first broke out in the United States. It is well known that the emerging economies affected by the current global crisis should be involved in the process of drawing up the new exhibition industry architecture, as value for money of exhibition should be on the top position. International trade has entered the "global economy of the Internet Age." The new economy in the form of knowledge-based and network supported is high-tech industries with main content of network economy using IT and network technology. Internet has increasingly become the second space of people's lives, constitute an important information exchange platform for modern society. Networking technology is to infiltrate the economic and social life of mankind in all aspects which tremendous changes enterprises to carry out marketing and external communication. These have brought new opportunities and challenges to the exhibition industry. Exhibition industry has to keep pace with the trend, seize the opportunity, enhance industrial competitiveness and achieve sustainable development through the network of information technology as shown in Fig1. In recent years, the total

number of traditional exhibition in some developed countries such as Germany show a decline, particularly in the IT industry. Exhibitors are dropped because more of them use network technology to carry out on-line display products, the exchange of information and business. E-exhibition is to flourish [1].



Fig.1 E-exhibition model

In China, international trade stand great part of economy and its exhibition has become one of great concerns of both government and enterprises, for exhibition capability stands for one of great symbols of core competitiveness of modern enterprises.

According to the analysis from AMR organization, there are over 12 million of SME in China and less than 20% of them have somewhat information technologies is changing the economics of enterprise applications by making E-exhibition and international trade easier to acquire, implement, extend and change. It is very important to study how to make good use of E-exhibition to international trade.

The core competitiveness of SME is the professional product, technology, process and services in the special application domain which is simple than the big enterprise having mass complicating competitiveness. E-exhibition emerges and develops in the context of globalization manufacturing, which stresses the international trade and cooperation of core competencies of SME. From the perspective of information science, the core competitiveness, such as product, technology, process and services, can be published and provided in the form of SME knowledge with digital and networked web services on the Internet. E-exhibition is the outcome of in the Internet times. However, the current Internet providing non-structured and semi-structured knowledge can not meet the advanced demands of machine-to-machine automatic search in the vast knowledge of E-exhibition. Users manually search product, services in person until the emergence of the semantic web.

2 Requirements analysis

Under the background of global economy crisis, the development of SMEs in China is faced with great impact and the Exhibition industry also shows the trend of shrinking. The high costs and expenses in real exhibitions lead to challenge of SMEs. The new net technology brings new opportunity and E-exhibition provides SMEs with practical strategies as supplement of real exhibition. E-exhibition is bound to be the developing trend of exhibition industry. to the are, cargo expenses and short time cycles and are discouraged from making small and medium enterprises, and a new generation of network technology for the exhibition industry brought about new opportunities and challenges, network Convention and Exhibition as a kind of complement and expand very difficult for SMEs to provide a crisis against the background of the provision of practical strategies to deal with and will be the rapid development of exhibition industry is an inevitable trend in the future. E-exhibition is used for SMEs in the objects of the following aspects as shown in the

Fig 2 according to famous Wanhouse searching enquiry to 460 SMEs.

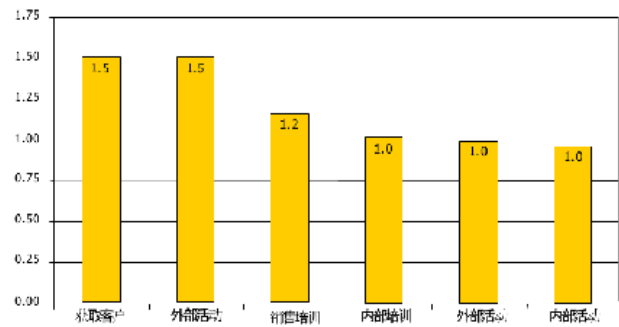


Fig.2 E-exhibition object

Meanwhile, not only there is the turbulence in world finance and economy, many Chinese enterprises are not optimistic with a great mount of SMEs going bankruptcy. It is rather a great opportunity than kind of crisis to E-exhibition. There are many challenges for SME of China by using E-exhibition as Fig 3:

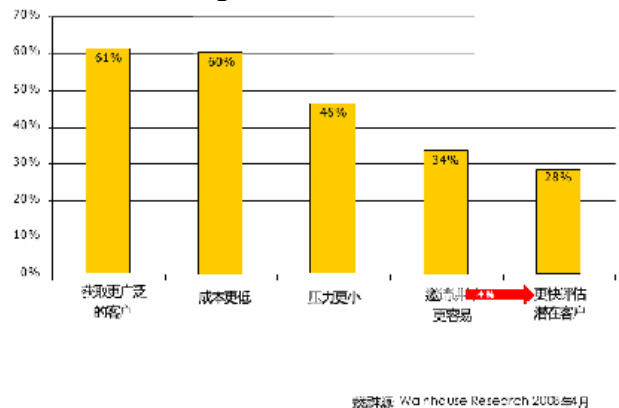


Fig.3 E-exhibition advantages

- 1) Globalization
Since enter WTO, the Chinese economy has become the essential part of global economy. E-exhibition can give the changes of connecting with international enterprise by Internet on convenience. According to Wanhouse research, the most important object of E-exhibition for SMEs is to acquire the all-world customers (Fig 3).
- 2) Effectiveness= competitiveness
E-exhibition breaks through the limit of time and space, known as all-time exhibition. It has features such as no restriction to the locations, low costs and easier organization etc, which can not only establish direct relationship with customers, but also maintain sustained one, in order to understand each other deeply. The impulsion of E-exhibition can bring unique penetration ability to exhibition industry.
- 3) Speed of tracing
E-exhibition can contract with attendee on line in time. It makes organizer to keep up with attendee by email, IM or other web2.0 style which make the

tracing easy and quickly after exhibition. At the age that the quick fish eats slow fish, the E-exhibition attendee must firstly achieve the high profit.

4) Low cost

The cost of E-exhibition is only a small percentage of that of the traditional exhibition which is more interest to the SME lack of cash. It reduces the cost of traveling and exhibition greatly. Of course, the pressure of the organization committee and conventioner is lighter than that of traditional exhibition. (Fig 4)

	现场研讨会/行业展会	网络研讨会
现场投入费用(场地、宣传)	10~30万/次	2~6万/次
获取有意向客户	100-300个	100-300个
获取潜在客户成本	1,000元/个	200元/个



Fig.4 Cost of E-exhibition is only a small percentage of that of the traditional exhibition

5) Easy to acquire the potential customer

Using the 3rd part of database of famous B2B website or other official trade organization, E-exhibition can send electronic exhibition notice by email or other style to plenty of potential customers flexible and conveniently before 4 or 6 days of the official E-exhibition deadline, according to the official detailed statistical analysis, about 4 percentage of the potential customer will attend the E-exhibition which is shown in Fig 5. There are 799 emails sent by organization committee, 762 emails delivered to invitee, 318 emails opened by invitee, 159 invitees clicked the linked E-exhibition webpage, 40 invitees enrolled the E-exhibition, and only 19 invitees attended the E-exhibition on time and some of invitees will contract organization committee for the record material of the E-exhibition after.

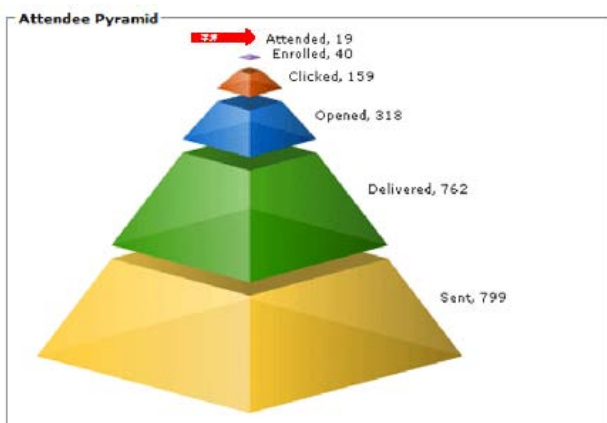


Fig.5 Attendee pyramid

The SMEs are very interested in finding the potential customer by E-exhibition. There are 46 percentages of the potential customer can transform to the sale threads, 24 percentages of the sale threads can transform to the cooperative customers, and only 28 percentages of the cooperative customers can make orders. But this is enough to the SMEs. (Fig 6)

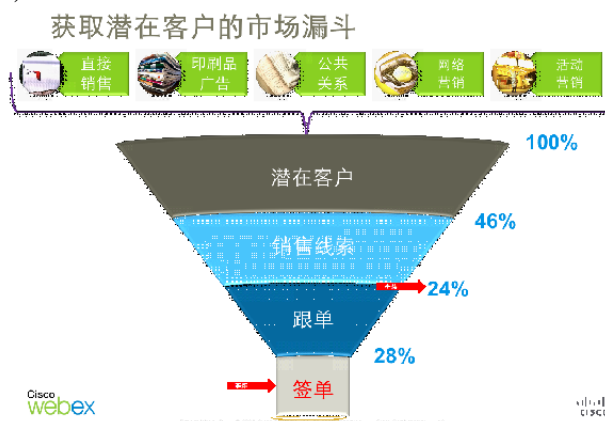


Fig.6 Market funnels of access to potential customers

As for the business-oriented marketing, each of the potential customers is valuable. Traditionally, manufacturers are keen to tour, seminars and conferences to have access to potential customers. However, the modern customers are negative towards those marketing methods and the rate of attendance declines every year. On the contrary, the E-exhibition is a means of innovation to tap the potential customers better. E-exhibition can not only assume more registered users and participants in a limited budget, but also provide customers with voice and video real-time interaction in the brand-new way. E-exhibition includes online exhibition fair, online conference, video conference and so on.

Online exhibition fair: It is a kind of virtual exhibition. All aspects of the organization, display and exhibitions can be both data information of Internet. In this way, the organizers, exhibitors and visitors can communicate through the Internet and computer.

Online conferencing: With technical support, the web-based real interactive multimedia communication platform can provide high-performance real-time communication services such as voice, video and data sharing. The units and customers can share documents, program, web pages, voice, image, video, or even operate a remote computer in anywhere to send voice and video to each other and hold real and interactive online conference. It makes it possible to communicate with in the customers, Colleagues or partners efficiently and economically. The online conference can be widely used in marketing, technology, customer

service and other departments in order to increase sales, cut expenses and improve efficiency and customer service satisfaction.

Video-conference: A video-based interactive multimedia services can achieve point-to-point and point-to-multipoint video transmission and enable image data and voice information in different locations to make secure and real-time transmission each other. Even though thousands of miles apart, the people can make face-to-face real-time communication. To enjoy video services, the people can only need purchase video terminals in office. It saves time of meetings and increase efficiency; save travel costs and shelter from exhausts to travel. Within 24 hours a day, the people can hold urgent meetings and transnational conference at any time.

3 Knowledge management

“Knowledge is a fluid mix of framed experience, values, contextual information, expert insight and grounded intuition.” [2] There is much discussion on whether one may actually manage knowledge since it is tied to one’s own experience and life. In this view, knowledge would be highly personal and impossible to express explicitly.

Without entering into this debate, we will consider that individuals can actually learn from each other and exchange knowledge. We will use a practical definition of knowledge management: “Knowledge Management enables the creation, communication, and application of knowledge of all kinds to achieve business goals”. [2] In this view, one differentiates tacit from explicit knowledge: Explicit knowledge is knowledge that has been captured and organized in a form that allows its distribution. In E-exhibition of SME, explicit knowledge could be an architectural model of a product, or a requirement specification. Tacit knowledge is particular to each individual and difficult to share as one is usually not even aware of all one knows. Externalization is the process to explicit what one knows. Through externalization, a knower may express (e.g., writing a manual) what he knows and this knowledge may then be circulated among a large group or across time. In E-exhibition of SME, a typical case would be the experience about the product, also may happen during an E-exhibition when one SME explains another some ideas. Combination is the process of combining various sources of explicit knowledge to create a new one, as one would do in a literature survey. We are looking for ways to help these activities happen in E-exhibition where knowledge of the products being shown to all world. Different techniques and tools

been proposed to support these activities of knowledge management. In this paper we will study knowledge organization: ontology.

Ontology is an explicit specification of a simplified, abstract, view of some domain that we want to describe, discuss, and study. The primary goal of ontology is to represent explicit knowledge, it is typically the result of a combination effort where one gathers various authoritative sources on the domain and creates a consensus. There are different types of ontology [3]; we use domain ontology to describe the domain of innovation design. Domain ontology should contain a description of the domain and their properties, relationships, and constraints.

Often, ontology may serve various purposes:

Reference on a domain: Explicit knowledge serves as a reference to which people looking for detailed information on the domain modeled.

Classification framework: The concepts explicated in ontology are a good way to categorize information on the domain modeled. Indication of synonyms in the ontology helps avoiding duplicate classification. Other relations among the concepts of the ontology help one browsing it and finding information one is looking for.

Interlingua: Tools and/or experts wishing to share information on the domain modeled, may use the ontology as a common base to resolve differing terminologies.

To certain degree, the core competence of SMEs is its special professional knowledge which including skill, process and method etc. E-exhibition is the excellent platform to show this knowledge to potential customer for the web2.0 and web3.0 style.

Web 2.0 styles describes the changing trends in the use of E-exhibition technology and web design that aim to enhance creativity, communications, secure information sharing, collaboration and functionality of the SMEs. Web 2.0 concepts have led to the development and evolution of web culture communities and hosted services, such as social-networking sites, video sharing sites, blogs, and folksonomies. Social-networking sites can be used for to set up the Special Interest Groups by which Members can foster a culture of mutual relations of mutual benefit between the on-line SMEs, share perspectives, knowledge and experience. Video sharing sites can be used to show the product, process and technology etc. In addition, it can distribute the copy of the E-exhibition which helps more potential customers reuse the material. Blogs can be used show the enterprise culture of SMEs. Folksonomies is used for cooperate of SMEs through E-exhibition platform by the collaboratively creating and managing tags to annotate and categorize cooperate content which is

not enough and will be taken the place of Web 3.0 style.

Web3.0 style of E-exhibition is an application that takes data -- usually Web service data of SME and usually from more than one source -- and uses it to create application suitable for E-exhibition that displays information for an arbitrary number of Web services from SMEs and displays it on a Web page. The application is built to be as generic as possible to achieve flexibility and maintainability. E-exhibition intelligent agent can process the business transaction only if the information published on the semantic Web is identified in a machine readable and understandable way by means of Web Ontology Language (OWL). OWL is a family of knowledge representation languages for authoring ontologies, and is endorsed by the World Wide Web Consortium. This family of languages is based on two (largely, but not entirely, compatible) semantics: OWL DL and OWL Lite semantics are based on Description Logics, which have attractive and well-understood computational properties, while OWL Full uses a novel semantic model intended to provide compatibility with RDF (Resource Description Framework) Schema. OWL ontologies are most commonly serialized using RDF/XML syntax. OWL is considered one of the fundamental technologies underpinning the Semantic Web, and has attracted both academic and commercial interest [6]. If we label the Web services of SMEs available to the E-exhibition and their data in this way, with more information, E-exhibition can enable the application to make intelligent choices. For example, the application is able to understand which services represent manufacturing information, and which represent online exhibition, or even further, online E-commerce. It would know which information from those services represent the title, description, price, cost, time, and capability and so on.

3 E-exhibition ontology

We defined ontology of the knowledge used in E-exhibition to serve as a structuring framework for our research. We will not enter in a detailed description here, and only present the main concepts of the ontology and how they relate so as to better illustrate afterward how it helped us in the rest of the work.

The ontology is divided into five subontologies: the Product subontology, the Technology subontology, the Process subontology, the Services subontology, and the application domain subontology. In the following, we present each of these subontologies, their concepts and relations. The

following conventions are used: ontology concepts are written in CAPITALS and associations are underlined>. Fig. 7 illustrates how the subontologies combine together. [4]

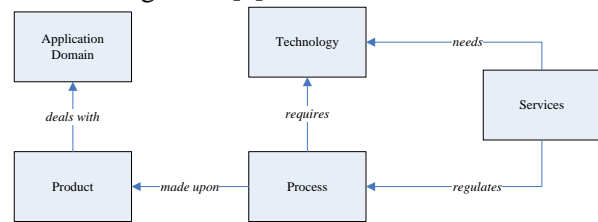


Fig.7 Ontology overview

3.1 Product ontology

A PRODUCT interacts with USERS and possibly other PRODUCTS. It is used by some CUSTOMERS and ENTERPRISE implementing FUNCTION and PERFORMACE (of the application domain). It is composed of COMPONENTS that can generally be decomposed in DOCUMENTATION and DEVICES. Three kinds of documentation are considered: (i) PRODUCT RELATED, describing the product itself; (ii) PROCESS RELATED, used to conduct manufacture; and (iii) SUPPORT RELATED, helping to operate the system.

DEVICES represent all the parts that compose the devices itself. They are classified them in: (i) EXECUTION COMPONENTS, generated for the device execution; (ii) DEPLOYMENT COMPONENTS, composing the executable program and machine; and (iii) WORK PRODUCT COMPONENTS, that are the row material, the prescription, and anything from which the deployment components are generated.

All those COMPONENTS are, in some way, related one to the other. For example, a requirement is related to product specifications which are related to deployment components. There are also relations among requirements.

3.2 Technology subontology

The second subontology describes the technology needed in product development. The DEVELOPER must know the DEVELOPMENT ACTIVITY that must be performed, the environment the system runs on, and various professional skills. Apart from that, the DEVELOPER must also understand the CONCEPTS of the application domain and the TASKS performed in it. There are four TECHNOLOGIES of interest: possible professional PROCEDURES to be followed, professional STANDARD used, professional LAW used, and

finally, the DEVICE'S ENVIRONMENT used in the system.

3.3 Process ontology

A PRODUCT originates in a DEVELOPMENT REQUEST submitted by a CUSTOMER. These REQUESTS are classified either as DEVELOPMENT REPORT or ENHANCEMENT REPORT. DEVELOPMENT REQUEST is divided into PERFORMANCE REQUIREMENT, INFORMATION REQUIREMENT, ECONOMY REQUIREMENT, CONTROL REQUIREMENT and EFFICIENCY REQUIREMENT, etc. One or more DEVELOPMENT REQUESTS generate a DEVELOPMENT PROJECT that will define the different product DEVELOPMENT ACTIVITIES to execute.

We classified the DEVELOPMENT ACTIVITIES in the following types: REQUIREMENT DETERMINATION, ANALYSIS, DESIGN, and IMPLEMENTATION.

Finally, different types of person (HUMAN RESOURCES) may participate in these ACTIVITIES (such as ENGINEERS, MANAGERS, and HUMAN RESOURCES).

3.4 Application domain subontology

The fourth subontology organizes the concepts of the Application Domain as shown in Figure 2. We represent it at a very high level that could be instantiated for any possible domain. We actually defined a meta-ontology specifying that a domain is composed of domain CLASS, related to each other and having SLOT which can be assigned values and FACET that defines constraints for the SLOT is meta-ontology would best be instantiated for each application domain with domain ontology. We also considered that the CLASS in an application domain is associated with the TASKS performed in that domain and those TASKS are regulated by some FACET.

3.5 Services subontology

Services are organizational structure where salesman and surfaceman fill different POSITIONS. We also included the fact that an organization defines GUIDELINES to be adopted in the execution of the E-exhibition which including hotels, catering, entertainment, tour, transportation, telecom, online and consultation. Our goal here was not to define all possible aspects of an organization, but only to define

that the development is an activity performed by people in SME with its own rules.

4 E-exhibition system

Most of the current "traditional" web content is geared for human use. Presentation languages such as HTML contain instructions for Web browsers advising how to present multi-media specifically for our visual and auditory perception. However, if we wanted to employ a computer program to search for Web-based information for us, then such methods would find it very difficult to make any sense of these Web pages, unless they had advanced human language skills. Furthermore, contemporary server-side Web languages like JSP or ASP support a random mixture of model and view parts in a single file, leading to much unstructured content.

The vision behind the Semantic Web is to make web content machine-readable so that it can be more easily analyzed by software agents and shared among Web Services. For that purpose, the World Wide Web Consortium (W3C) is recommending a number of Web-based languages that can be used to formalize web content. RDF Schema and OWL can be used to describe classes, attributes and relationships of E-exhibition in the form of ontology similar to object-oriented languages.

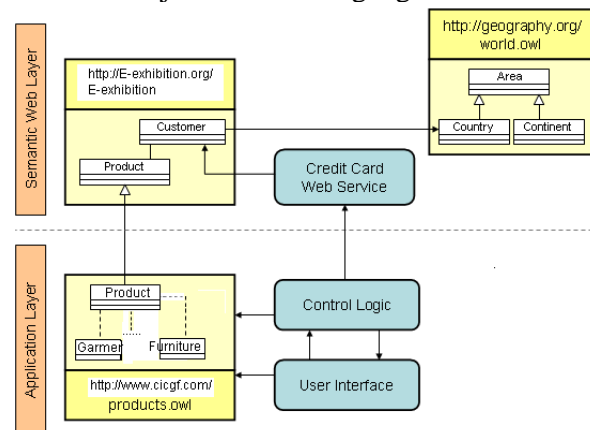


Fig.8. E-exhibition logical view using Semantic Web

E-exhibition domain models in any of these languages can be uploaded and linked into the Web just like you would publish an HTML page. Once an RDF or OWL file is online, other Web resources or applications can link to it. For example, a HTML page showing a specific product could encode metadata to link back to the corresponding entity in an OWL model so that all applications that understand what a "product" is can make sense out of the HTML page. Or, providers of specific products can instantiate the RDF Schema classes to announce their portfolio to E-exhibition agents in an

unambiguous exchange format. A typical scenario for such a Semantic Web application is shown in Fig. 8.

We deploy the E-exhibition business service by Servlet of J2EE which is shown as follow code. Everyone on line can access the E-exhibition by the Internet Explore just like the ordinary style, but the Semantic Web Service has been deploy on the server which provide the inference engine and knowledge database.

```
<?xml version="1.0" encoding="UTF-8" ?>
- <web-app id="WebApp_ID" version="2.4"
xmlns="http://java.sun.com/xml/ns/j2ee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-i
nstance"
xsi:schemaLocation="http://java.sun.com/xml/ns/j2e
e
http://java.sun.com/xml/ns/j2ee/web-app_2_4.xsd">
  <display-name>ExhibitionServlet</display-name>
- <servlet>
  <description />
  <display-name>ExpoServlet</display-name>
  <servlet-name>ExpoServlet</servlet-name>
  <servlet-class>ExpoServlet</servlet-class>
</servlet>
- <servlet>
  <description />
<display-name>ExpoClientServlet</display-name>
  <servlet-name>ExpoClientServlet</servlet-name>
  <servlet-class>ExpoClientServlet</servlet-class>
</servlet>
- <servlet>
  <description />
<display-name>ExpoClientServlet2</display-name
>
<servlet-name>ExpoClientServlet2</servlet-name>
  <servlet-class>ExpoClientServlet</servlet-class>
</servlet>
- <servlet-mapping>
  <servlet-name>ExpoServlet</servlet-name>
  <url-pattern>/ExpoServlet</url-pattern>
</servlet-mapping>
- <servlet-mapping>
  <servlet-name>ExpoClientServlet</servlet-name>
  <url-pattern>/ExpoClientServlet</url-pattern>
</servlet-mapping>
- <servlet-mapping>
<servlet-name>ExpoClientServlet2</servlet-name>
  <url-pattern>/ExpoClientServlet2</url-pattern>
</servlet-mapping>
```

```
- <welcome-file-list>
  <welcome-file>index.html</welcome-file>
  <welcome-file>index.htm</welcome-file>
  <welcome-file>index.jsp</welcome-file>
  <welcome-file>default.html</welcome-file>
  <welcome-file>default.htm</welcome-file>
  <welcome-file>default.jsp</welcome-file>
</welcome-file-list>
</web-app>
```

We develop E-exhibition system (E-expo) based on semantic web by combining knowledge engineering, and select the domain of consumer goods as the application domain. E-expo will be divided into the following 8 exhibiting sections: household textiles and garments; home appliances and electronics; furniture and office supply; sports, travel and recreation products; articles of daily use; arts-crafts and gifts; foodstuffs; overseas exhibits and trade service as shown in Fig.9. It will be an ideal platform for business people from all over the world to exchange information and to promote business.



Fig.9 E-expo product catalog according to Ontology Hierarchy

E-expo adopts the Spring - Java/J2EE application framework with MySQL database server, JBOSS4.0 application server. The role is divided into user groups, the administrator group and the domain group. By using Protégé, the development tool developed by Stanford University, the SME describe its capacity of the product, process, technology, services, and application knowledge based on OWL to build domain ontology. To show the effectiveness and benefits of E-expo, we select the consumer goods as the application domain. In this section, we first introduce the evaluating scenario, and then the important results are given. Suppose a customer wants to a provider of garments with special requirements. He needs to access E-expo and publish the requirements; E-expo software agent gets the requirements and launches the inference engine to match individual core competitiveness which has been stored in the knowledge database, the results is

shown as Fig. 10. As expected, the rate of search rate is improved because the knowledge library has been formatted as semantic ontology and ratiocination mechanism works. This also proves that semantic web can be used in the E-exhibition of SME to improve business performance.



Household textiles
& Garments

Textile Fabrics, Household Textiles, Carpet & Arras, Business Suit, Casual Garment, Vogue Garment, High-class Fashion and Banquet Dress, Underwear, Sports Wear, Children' s Wear, Fashion Ornaments and Accessories, Socks, Hat, Scarf, Tie, Gloves, etc.



Home Appliances
& Electronics

Refrigerator, TV, Washing Machine, Air Conditioner, Freezer, Water Heater, Electric Fan, Vacuum Cleaner, Dishwasher, Hair drier, Electric Heater, Humidifier, Electric Rice Cooker, Microwave Oven, Juice Extractor, Egg Mixer, Electric Mixer, Warming Stove, Iron, Electric Shaver, Torch, Water Drinker, Purifier, Electronic Mosquito Killer, Smoke Exhauster, Intelligent Safe, Camera, Video Recorder, Radio, Computer, Telephone, Fax Machine, Money Counting Machine, VCD, DVD, Air Purifier, Mobile Phone, Copy Machine, Repeating Machine, Alarm Machine, Electronic Lock, Electronic Balance, Electric Meter, Charger, Battery, Socket, Switch, Cable, Wire, other Home Appliances and Electronic Products, etc.



Furniture &
Office Supply

Antique Furniture, Living Room Furniture, Dining Room Furniture, Study Room Furniture, Bedroom Furniture, Office Furniture, Recreational Furniture, School Furniture, Hotel Furniture, Children' s Furniture, Stationery, Teaching Instrument, Art Articles, Storage & Shelf, Office Facilities, Accountant Articles, etc.

Exhibit	Company name	Products
5.1B34,5.1B35,5.1B36,5.1C09,5.1C10 5.1C11,8.1113,8.1114	Ninobo Ningshina International Inc.	Garments
5.1B37,5.1B38,5.1C07,5.1C08	Ninobo Elite Fashion Co., Ltd.	Ties, Scarfs and Sweaters
5.1B39	Ninobo Shenofeng Textile Co., Ltd.	Polyester Thread and Embroidery Silk
5.1B42	Zhuji Mingyang Textile Co., Ltd.	Socks

Fig.10 E-expo search result

The partly E-expo RDF source file is as follow:

```
<?xml version="1.0"?>
<!DOCTYPE rdf:RDF [
  <!ENTITY store "http://expo.com/stores#" >
  <!ENTITY owl
"http://www.w3.org/2002/07/owl#" >
  <!ENTITY xsd
"http://www.w3.org/2001/XMLSchema#" >

  <!ENTITY service
"http://www.daml.org/services/owl-s/1.2/Service.owl" >
  <!ENTITY process
"http://www.daml.org/services/owl-s/1.2/Process.owl" >
  <!ENTITY expr
"http://www.daml.org/services/owl-s/1.2/generic/Expression.owl" >
  <!ENTITY grounding
"http://www.daml.org/services/owl-s/1.2/Grounding.owl" >
  <!ENTITY swrl
"http://www.w3.org/2003/11/swrl" >
]>
```

```
<rdf:RDF
  xmlns = "http://expo.com/store#"
  xmlns:store = "http://expo.com/store#"
  xml:base = "http://expo.com/store#"
  xmlns:owl = "http://www.w3.org/2002/07/owl#"
  xmlns:rdf =
"http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs=
"http://www.w3.org/2000/01/rdf-schema#"
  xmlns:xsd =
"http://www.w3.org/2001/XMLSchema#"

  xmlns:service = "&service;#"
  xmlns:process = "&process;#"
  xmlns:expr = "&expr;#"
  xmlns:grounding = "&grounding;#"
  xmlns:swrl = "&swrl;#"

>
```

```
<owl:Ontology rdf:about="">
  <rdfs:comment>An expo OWL ontology for Online
Productstores (The Ultimate E-expo)
</rdfs:comment>
  <rdfs:label>ProductStore Ontology</rdfs:label>
</owl:Ontology>
```

```
<owl:Class rdf:ID="Service">
  <rdfs:label>Web Service</rdfs:label>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty rdf:resource="#endpoint" />
      <owl:minCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</owl:min
inCardinality>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="#rootoutputnode" />
      <owl:minCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</owl:min
inCardinality>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty rdf:resource="#template" />
      <owl:minCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</owl:min
inCardinality>
    </owl:Restriction>
  </rdfs:subClassOf>
```



```

</owl:Class>
<owl:DatatypeProperty rdf:ID="endpoint">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema
a#anyURI"/>
</owl:DatatypeProperty>
<owl:ObjectProperty rdf:ID="inputparameter">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range
rdf:resource="#ServiceParameterMap"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="outputmap">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range rdf:resource="#ServiceOutputMap"/>
</owl:ObjectProperty>
<owl:DatatypeProperty rdf:ID="rootoutputnode">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>
<owl:DatatypeProperty
rdf:ID="xsltTransformationString">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>

<owl:DatatypeProperty rdf:ID="queryParameter">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>

<owl:DatatypeProperty rdf:ID="template">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="elementValue">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="attributeValue">
  <rdfs:domain rdf:resource="#Service"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>

<owl:Class rdf:ID="ServiceParameterMap">
  <rdfs:label>Web Service Parameter
Map</rdfs:label>
  <rdfs:subClassOf>
  <owl:Restriction>
    <owl:onProperty rdf:resource="#paramname" />
    <owl:cardinality
rdf:datatype="&xsd;nonNegativeInteger">1</owl:ca
rdinality>
  </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>

</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:onProperty rdf:resource="#paramvalue" />
    <owl:cardinality
rdf:datatype="&xsd;nonNegativeInteger">1</owl:ca
rdinality>
  </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:DatatypeProperty rdf:ID="paramname">
  <rdfs:domain
rdf:resource="#ServiceParameterMap"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="paramvalue">
  <rdfs:domain
rdf:resource="#ServiceParameterMap"/>
  <rdfs:range rdf:resource="&xsd:string"/>
</owl:DatatypeProperty>

<owl:Class rdf:ID="ServiceOutputMap">
  <rdfs:label>Web Service Output Map</rdfs:label>
</owl:Class>

<owl:Class rdf:ID="Store">
  <rdfs:subClassOf rdf:resource="#Service"/>
  <rdfs:label>Online Store</rdfs:label>
</owl:Class>

<owl:Class rdf:ID="Productstore">
  <rdfs:subClassOf rdf:resource="#Store"/>
  <rdfs:label>Productstore</rdfs:label>
</owl:Class>

<owl:Class rdf:ID="Product">
  <rdfs:label>Product sold at online
store</rdfs:label>
</owl:Class>

<owl:Class rdf:ID="Product">
  <rdfs:subClassOf rdf:resource="#Product"/>
  <rdfs:label>Product</rdfs:label>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty rdf:resource="#producedBy"
/>
      <owl:minCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</owl:m
inCardinality>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>

<owl:DatatypeProperty rdf:ID="title">

```

```

<rdfs:domain rdf:resource="#Product"/>
<rdfs:range rdf:resource="#xsd:string"/>
</owl:DatatypeProperty>

<owl:Class rdf:ID="Barcode">
</owl:Class>
<owl:InverseFunctionalProperty rdf:ID="Barcode">
  <rdfs:domain rdf:resource="#Barcode"/>
  <rdfs:range rdf:resource="#Product"/>
</owl:InverseFunctionalProperty>

<owl:Class rdf:ID="Food">
  <rdfs:subClassOf rdf:resource="#Product"/>
  <rdfs:label>Food</rdfs:label>
</owl:Class>

<owl:Class rdf:ID="Enterprise">
  <rdfs:label>Enterprise</rdfs:label>
</owl:Class>
<owl:DatatypeProperty rdf:ID="name">
  <rdfs:domain rdf:resource="#Enterprise"/>
  <rdfs:range rdf:resource="#xsd:string"/>
</owl:DatatypeProperty>

<owl:Class rdf:ID="Producer">
  <rdfs:subClassOf rdf:resource="#Enterprise"/>
  <rdfs:label>Producer</rdfs:label>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="#ManufacturerOf" />
      <owl:minCardinality
rdf:datatype="#xsd:nonNegativeInteger">1</owl:m
inCardinality>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Manufacturer">
  <owl:equivalentClass rdf:resource="#Producer"/>
</owl:Class>

<owl:ObjectProperty rdf:ID="producedBy">
  <rdfs:domain rdf:resource="#Product"/>
  <rdfs:range rdf:resource="#Producer"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="ManufacturerOf">
  <owl:inverseOf rdf:resource="#producedBy"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="ProducerOf">
  <owl:equivalentProperty
rdf:resource="#ManufacturerOf"/>
</owl:ObjectProperty>

<owl:Class rdf:ID="Director">
  <rdfs:subClassOf rdf:resource="#Enterprise"/>
  <rdfs:label>Director</rdfs:label>
</owl:Class>
<!--
<owl:Class rdf:ID="ProductGenre">
  <rdfs:subClassOf>
    <owl:AllDifferent rdf:ID="GenreList">
      <owl:distinctMembers
rdf:parseType="Collection">
        <owl:Thing rdf:ID="Household textiles and
garments" />
        <owl:Thing rdf:ID="Home appliances and
Electronics" />
        <owl:Thing rdf:ID="Furniture and Office
supply" />
        <owl:Thing rdf:ID="Articles of daily use" />
        <owl:Thing rdf:ID="Foodstuffs" />
      </owl:distinctMembers>
    </owl:AllDifferent>
  </rdfs:subClassOf>
</owl:Class>
-->

<owl:Class rdf:ID="GenreList" />
<owl:Class rdf:ID="Genre" />
<Genre rdf:ID="Textiles"/>
<Genre rdf:ID="Appliances"/>
<Genre rdf:ID="Furniture"/>
<Genre rdf:ID="Articles"/>
<Genre rdf:ID="Foodstuffs"/>
.....
<Productstore rdf:ID="cantonfair.com"/>
<Producer rdf:ID="V_K_Holding"/>

<Producer rdf:ID="Veken Holding Group Co.,
Ltd.">
  <owl:sameAs rdf:resource="#V_K_Holding" />
</Producer>
<Producer rdf:ID="Wensli Group Co., Ltd." />
<Product rdf:ID="Yarn dyed polyester ">
  <producedBy rdf:resource="#V_K_Holding"/>
</Product>
<StockItem rdf:ID="Yarn dyed polyester _cicgf">
  <itemPrice
rdf:datatype="http://www.w3.org/2001/XMLSchema
a#double">29.99</itemPrice>
  <itemDescription>Whatever</itemDescription>

  <itemDetailURL>http://www.cicgfurlforProduct</it
emDetailURL>
  <stockedProduct rdf:resource="#Yarn dyed
polyester " />
</StockItem>
-->

```

```
<Product rdf:ID="Silk-carpet">
<producedBy rdf:resource="#Wensli Group Co.,
Ltd."/>
  <bundledWith rdf:resource="#Yarn dyed
polyester" />
</Product>

<Productstore rdf:ID="cantonfair.com"/>
<Productstore rdf:ID="Buy.com"/>
<Producer rdf:ID="V_K_Holding"/>

<Producer rdf:ID="Veken Holding Group Co.,
Ltd.">
  <owl:sameAs rdf:resource="#V_K_Holding" />
</Producer>
<Producer rdf:ID="Wensli Group Co., Ltd."/>

<Product rdf:ID="Yarn dyed polyester ">
<producedBy rdf:resource="#V_K_Holding"/>
</Product>

</rdf:RDF>
```

After comparison between online and real exhibition fairs, we find out the differences as follows:

- 1) Means of organization: the former give priority to release the information on line and make wide publications through other media. The latter gives priority to document, fax and telephone supplemented by e-mail and the Internet to carry out targeted publicity.
- 2) Places on display: Virtual spaces are instead of real exhibition halls.
- 3) Display means and content: the former displays text, images, sound, animation and so on. It publicizes the corporate image and products images through reasoning and logic. The latter displays the real products and make external publicity with direct image.
- 4) Exhibition expenses: Online exhibition expense is relatively low. The latter includes booth fees, exhibits transportation fees, venue rental, and construction and staff costs. Meanwhile, the expense grows year by year.
- 5) Extension period: the former can make fixed time to limitless period to hold exhibition fairs. The latter can only hold fixed extension.
- 6) Viewers: The former includes Internet users around the world, while the latter includes the regional and professionals.
- 7) Methods for audience to search target exhibitors: the former searches online and the latter observe on site.

- 8) Exchange means: the former make transactions through e-mail, online chat rooms and real-time audio and video. The latter provides space and opportunity for face-to-face communication.
- 9) Means of contract: the former makes contracts through electronic documents and signature. The latter makes contracts based on paper work.

5 Conclusion

Comparative advantages of E-exhibition to real exhibition fairs are low cost, high efficiency, unlimited display space, non-restricted scale of operation, and a wide range of audiences, increasing trading opportunities, timely feedback, statistics and electronic evaluation. E-exhibition can be an excellent platform to show SME competitiveness to potential customer by web2.0 and web3.0 technology. In terms of future work, there is a need to provide more completed knowledge database of SME and develop E-exhibition platform to government and enterprise which will improve the level of informationization of SME and E-Government.

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