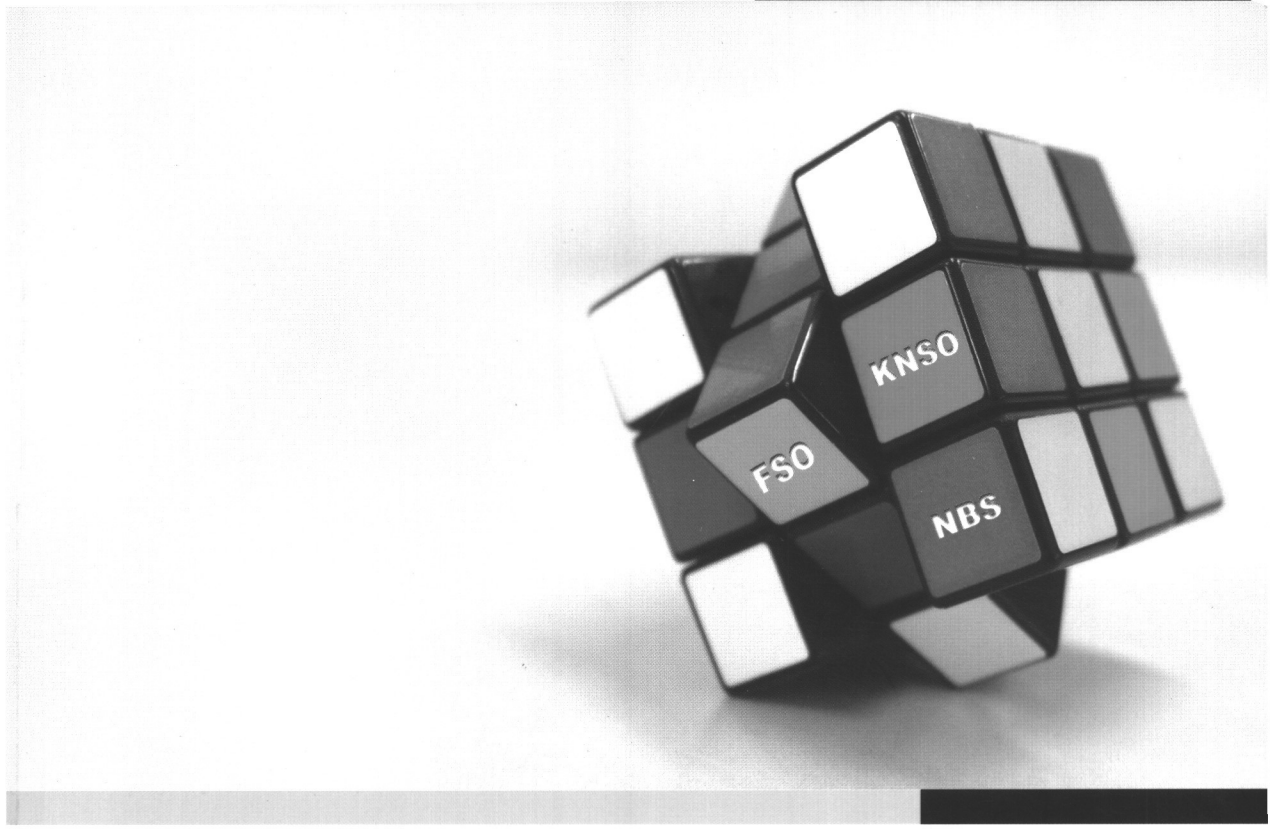


KNSO/FSO/NBS Second Joint Seminar

Impact of the Internet on Data Collection and Dissemination Procedures in Official Statistics

KNSO
Korea National Statistical Office

KNSO/FSO/NBS Second Joint Seminar

Impact of the Internet on Data Collection and
Dissemination Procedures
in Official Statistics

Korean/German/Chinese
Seminar in Daejeon
July 25 ~ 26, 2007

National Statistical Office
Republic of Korea

• KNSO/FSO/NBS Second Joint Seminar

Opening Speech : Walter Radermacher, Dae-You Kim and Xie Fuzhan

Session Meeting : Conference Room, Government Complex-Daejeon

Seminar Group Photo : Main Gate, Government Complex-Daejeon

Welcoming Reception : Garden in Hongin Farm, Daejeon

Contents

Session 3 : The impact of the Internet on data dissemination procedures

Session 4 : Topics on recent developments in Offices

Conclusions

Appendix

Dear Readers,

The second joint seminar titled "Impact of the Internet on Data Collection and Dissemination Procedures in Official Statistics" among the Federal Statistical Office of Germany (FSO), the National Bureau of Statistics of China (NBS), and the Korea National Statistical Office of Korea (KNSO) was held successfully in Government-Complex Daejeon in Korea during 25~26 July, 2007. This is followed by the first seminar on "Strategies of National Statistical Offices to Meet future Information Demands" which was held in Germany in 2005.

During the second seminar, representatives and other statistical experts from three national statistical offices discussed a wide range of creative agendas, shared experiences and exchanged own views more specifically. Under the consensus among participants on the necessity of utilizing the Internet for improving the quality of official statistics, the heads of three statistical offices suggested their unique ideas on how to build up more strong IT infrastructure and cooperation among concerning countries to meet specific topics on the four sessions respectively.

The outcomes from this second seminar are expected to contribute reinforcing partnerships among FSO, NBS and KNSO, which will remarkably lead development and innovation of statistics in the international statistics community. In the context of continuing the cooperation program among the three partner institutions, the heads of FSO, NBS and KNSO reached agreement to hold the third seminar in China in 2009.

The KNSO, as a host of the second seminar, compiled the valuable papers presented during the seminar into a book, which consists of seven parts including all papers, presentations, discussions, summaries and photos. I would like to appreciate the heads of FSO and NBS for participating and delivering the speeches during the seminar, which made it a success. I also would like to express my special thanks to all other participants and staffs who have been involved in the preparation of the seminar.

Best Regards,

KIM Dae-ki

Commissioner, KNSO

Programs and List of Participants

DAY 1 : 25 July 2007

Welcome & Opening	09:30 ~ 10:20
Welcome Speech	*Mr. Dae-You Kim*
Opening Speech	*Mr. Xie Fuzhan*
	Mr. Walter Radermacher
Session 1	10:40 ~ 12:30
: The Impact of the Internet on Data Collection and Dissemination Procedures in Official Statistics	
Chairperson :	*Mr. Dae-You Kim*
Speakers :	*Mr. Dae-You Kim* Impact of the Internet on Data Collection and Dissemination
	Mr. Walter Radermacher The Impact of the Internet on Data Collection and Dissemination Procedure in Official Statistics
	Mr. Xie Fuzhan Internet Use in China's Statistics
Discussant :	*Mr. Seok-Hun Lee*
Session 2	14:00 ~ 17:30
: The Impact of the Internet on Data Collection Procedures	
Chairperson :	*Mr. Walter Radermacher*
Speakers :	*Mr. Song Yuezheng* Data Collection via Internet in China
	Mr. Dieter Sarreither Link the Accounting Systems of the Enterprises to the Collecting Process for Statistical Data
	Ms. Hwa-Ok Chung Household Surveys Using the Internet
	Mr. Geng Qin "Data Collection via Internet in China"
	Mr. Jin-Ho Heo The Data Collection Method Using the Internet in the Business Survey

Discussant :	*Mr. Seok-Hun Lee*
Welcoming Reception	18:30 ~ 20:30 (Garden Restaurant in Hongin Farm)

DAY 2 : 26 July 2007

Session 3:	09:30 ~ 12:30
: The Impact of the Internet on Data Dissemination Procedures	
Chairperson :	*Mr. Xie Fuzhan (Chairperson)*
Speakers :	*Ms. Yeon-Ok Yun* Statistical Information Sysyem: KOSIS & MDSS
	Ms. Doris Staerk Communication and Dissemination Strategy 2007-2012
	Mr. Wen Jianwu Statistical Data Dissemination By Means of Internet in China
	Mr. Dieter Sarreither Communicating Statistics Effectively on the Web with Interactive Webgraphics
	Mr. Kwang-Seop Kim The e-National Indicator System as an Infrastructure to Support Policy Decision Makers and Evaluators
Discussant :	*Dr. Yong-Chan Byeon*
Session 4	14:00 ~ 17:00
: Topics on Recent Developments in Offices	
Chairperson :	*Ms. Jung-Im Ahn*
Speakers :	*Mr. Nian Yong* User's Point of View: Data Dissemination by Means of Internet

	Mr. Bernd Störtzbach The Standard Cost Model(SCM): A New challenge to the German Federal Statistical Office *Mr. Chi-Sung Jang* S-Navigator: An Ultimate Innovative Converting Tool of Statistical Information into Knowledge
Discussant :	*Dr. Yong-Chan Byeon*
Closing Session	17:00 ~ 17:20
	Mr. Walter Radermacher *Mr. Xie Fuzhan* *Mr. Dae-You Kim*
Dinner	18:00 ~ 20:00 (Daejeon City Hall)

List of Participants

• KNSO(Korea National Statistical Office)

Dae-You KIM	Commissioner of KNSO, chairperson/speaker
Hae-Soo KIM	Deputy Commissioner of KNSO
Jin-Kyu KIM	Director-General, Policy Management & Public Relations Office
Jeong-Bon JE	Director-General, Statistics Policy Bureau
In-Keun CHOI	Director-General, Economic Statistics Bureau
Sin-Ae JEON	Director-General, Population & Social Statistics Bureau
Dae-Hyeong LEE	Director-General, Statistical Information Service Bureau
KwangSeop KIM	Director, Statistics Policy Division, speaker
Jung-Im AHN	Director, International Statistical Cooperation Division, moderator
Jin-Ho HEO	Director, Price Statistics Division, speaker
Hwa-Ok CHUNG	Director, Social and Welfare Statistics Division, speaker
Yeon-Ok YUN	Director, Statistical Data Collection and Management Division, speaker
Chi-Sung JANG	Director, Statistical Geographic Information Division, speaker
Suk-Hoon LEE	Professor, Department of Statistics Chungnam Univ., discussant
Yong-Chan B	YUNDirector, Disability Policy Research Division, Health & Social Affairs of Institute, discussant

• FSO(Federal Statistical Office, Germany)

Walter Radermacher	President of FSO, chairperson/speaker
Dieter Sarreither	IT Director, Information Technology and Mathematical Statistical Methods, speaker
Doris Staerk	Head, Online Services · Publications · Corporate Design, speaker
Bernd Stöertzbach	Head of section, Cooperation with other Countries · Language Service, speaker

- **NBS(National Bureau of Statistics, China)**

Xie Fuzhan	Commissioner of NBS, chairperson/speaker
Du Weiqun	Director-General, Department of International Cooperation
Song Yuezheng	Director-General, Trade and External Economic Relations Statistics, speaker
Geng Qin	Deputy Director-General, Department of industry and Transport Statistics, speaker
Wen Jianwu	Director-General, Computer Center, speaker
Nian Yong	Deputy Director-General, Dept. of NDRC(National Economy National Development and Reform Commission), speaker

SESSION 1

The Impact of the Internet on Data Collection and Dissemination Procedures in Official Statistics

- Chairperson : Dae-You Kim
- Impact of the Internet on data Collection and Dissemination (Dae-You Kim)
- The Impact of the Internet on Data Collection and Data Dissemination Procedure in Official Statistics (Walter Radermacher)
- Internet Use in China's Statistics (Xie Fuzhan)
- Session Discussion

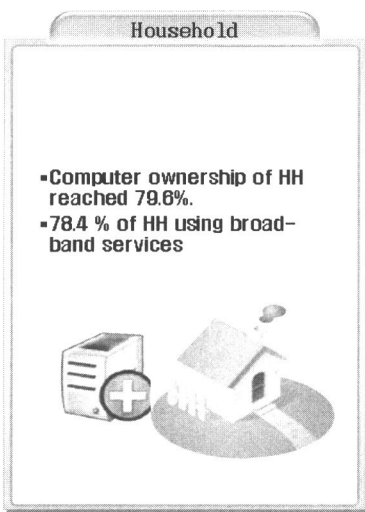
Dae-You Kim*

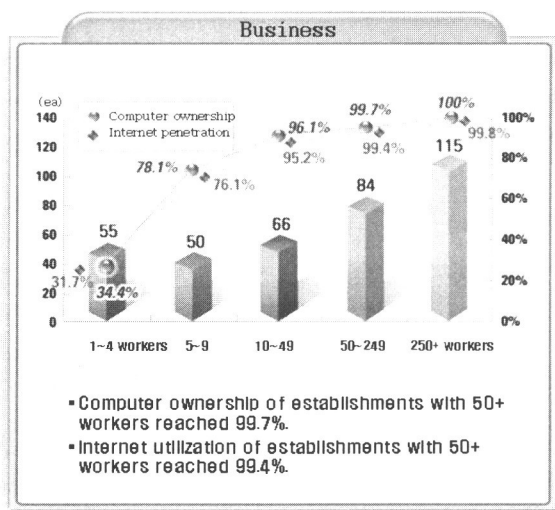
Impact of the Internet on Data Collection and Dissemination

I. Internet Environment of Korea

The Korean government has been carrying out strong policies for informatization under the motto "Let's take the lead in informatization although we fell behind in industrialization". The Internet has provided an opportunity to advance this motto by offering services in all areas of our daily lives.

As of 2006, 74.8% of Koreans aged 6 or older (about 34 million) has used the Internet. The computer ownership in households reached 79.6% with 78.4% of households using broadband services. The computer ownership in establishments with 50+ workers totaled 99.7%, with the Internet utilization ratio for work at 99.4%.





* **Dae-You Kim**, Commissioner of the KNSO, Korea

II. Environmental change and countermeasures

As for data collection, the survey environment has worsened due to the increase in day-time absent households such as in one-person households and dual-income households. In addition, the expanding awareness of privacy among respondents makes the situation even more serious.

In terms of data dissemination, the demands for statistical data have become increasingly diversified. In addition to traditional methods such as reports and CDs, more and more users want to use micro-data and computer networking.

To meet these challenges in the survey environment, the KNSO has been adopting the Internet-based data input system since 2001. Currently, 13 kinds of CASI survey systems and 32 kinds of web-based input systems are in use to collect data.

The KNSO aims at fulfilling the diversified needs of statistical data users by implementing the integrated DB services of national statistics together with GIS and meta data.

III. Impact of the Internet on Data Collection

The impact of Internet surveys can be evaluated in terms of conditions such as return/response rates, data accuracy, reduction of enumerator's workload, and timeliness. The three major Internet surveys of the KNSO, '2005 Population and Housing Census (PHC)', 'e-diary system for Household Income and Expenditure Survey (HIES)' and 'Current Mining and Manufacturing Survey (CMMS)' will be reviewed utilizing these criteria.

< Figure 1 : Impact of the Internet on data collection >

	2005 Population and Housing Census (PHC)	E-diary for HH Income & Expenditure Survey (HIES)	Current Mining & Manufacturing Survey (CMMS)
Return/response rate of questionnaires	No change	Increase by 2%p (81 % → 83 %)	No change
Data accuracy	Error rate: 1.20% lower by 2.68%p compared to the whole Census	More accurate due to automated data entry of financial transaction	Accurate on the whole, but discrepancy among statistical units and omission of new items.
Workload of enumerators	No more necessary distributing/collecting questionnaires, data input, classifying		
Timeliness	Data input: 3.5 months -> 24 days Data dissemination: 3 to 7 months' reduction	No change	No change

As for response rates, there was little change for the CMMS, while the return rate of the HHIS rose by 2%p from 81% to 83%. The 50,000 Korean won(KRW) reward for households and convenience of the e-diary system seem to have contributed to the increase in return rates. The response rate of the PHC was 0.9% which was lower by 1.1%p as compared to the target rate of 2.0%. This was mainly due to deficiencies in our approach to public relations.

A small number of changes in data accuracy were observed for the CMMS. Data accuracy for the HIES seems to have improved due to the automated recording of financial transactions. For the PHC, the total error rate of Internet surveys was 1.20%, which was lower by 2.68%p as compared to the aggregate Census error rate of 3.88%.

The workload for enumerators decreased as a result of reductions in time spent interviewing, distributing/collecting questionnaires, inputting and classifying data. But the reduction of workload has not led to cut-backs as yet.

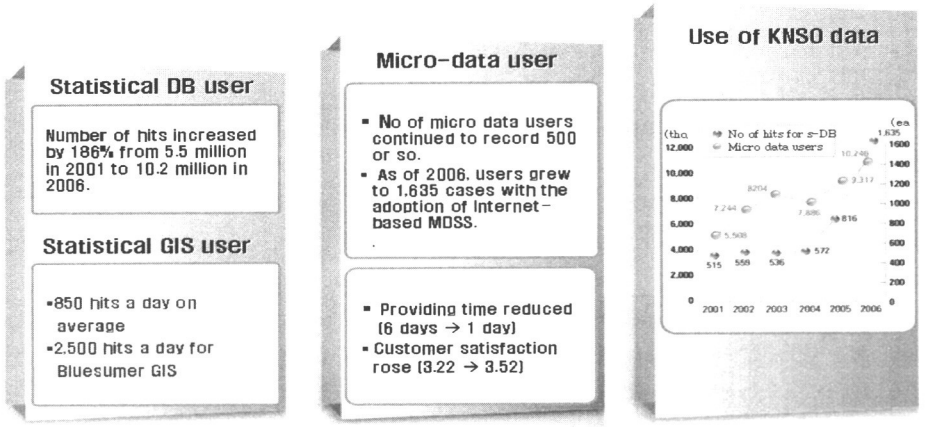
The E-Census system for the 2005 PHC was quite successful in terms of timeliness. The data input period was reduced from 3.5 months to 24 days. The final data release time was shortened about 3 ~ 7 months as compared to the 2000 PHC.

IV. Impact of the Internet on Data Dissemination

The expansion of the Internet seems to have contributed greatly to the increase in the number of hits/visits on the statistical information system. The number of hits on the statistical database increased by 186% from 5.5 million in 2001 to 10.2 million in 2006. On average, 850 users visited the statistical GIS per day. Bluesumer GIS, launched last April, has been visited by 2,500 users per day.

With the development of the Internet-based 'Micro Data Service System (MDSS)' in 2005, the number of micro data users increased significantly. The number of micro data users continually recorded approximately 500 users in 2004. With the adoption of the MDSS, micro data users grew to 1,635 cases as of 2006. In addition, the MDSS has reduced the micro-data distribution time from 6 days to 1 day. As a result, customer satisfaction increased from 3.22 points to 3.52 points.

< Figure 2 : Use of statistical data & GIS data >



V. Problems and Solutions

The Internet application also comprises some problems concerning the quality of statistical data, privacy protection in micro data, hacking prevention/system operation and digital divide.

In the Internet-based surveys, there is a possibility of low input-data quality as the error checking procedure by enumerators is skipped in the data collection step. To cope with this problem, various quality control procedures and help functions should be included in the system. Moreover, more detailed manuals and guidelines for statistical compilation should be provided in addition to the periodical evaluation of statistics by the KNSO.

When providing micro data via the Internet, cautious attention should be paid to protecting the identification of respondents. Various masking techniques can be applied for this purpose.

As data is collected and distributed via the public Internet, security policies become the primary priority in operating the computational system. To prevent hacking and secure a stable 24-hour operation, creating an intrusion blocking system is recommended at each step as well as a 2-tier computational system.

Digital divide problems for unskilled and/or unequipped respondents should be tackled for the success of the Internet system. The KNSO is planning to deal with this problem in accordance with the "U-Korea" project which aims at bridging the gap in infrastructure.

VI. Conclusion

Technological progress is the main driving force for the transitions facing societies and economies. The Internet, a core socio-economic infrastructure in the 21st century, is presently changing the world and the KNSO is no exception in that stream of change. To meet the various challenges in the statistical environment, the KNSO will continuously build an increasingly upgraded Internet-based system in terms of timeliness, accuracy and convenience.

Walter Radermacher*

The Impact of the Internet on Data Collection and Data Dissemination Procedure in Official Statistics

Before turning to the subject of my paper, which focuses on the challenges faced by official statistics in relation to society's changeover from an information to a knowledge society, I would like to comment briefly on an article published in The Economist yesterday. The article focuses the current economic development in Germany.

Using, as an illustration, the example of a racing cyclist (above), the article states that Germany's economy has picked up speed recently. The German economy has recovered quickly as growth rates have increased compared to previous years. The previous "sick man" seems to be sound again and is now among the top flight cyclists climbing the hill. However, the article also expresses open scepticism, and this is something we statisticians should note. The Economist critically states that the current assessment represents only a snapshot in time. So, how long will this development last? Is the German economy really on the road to full recovery? Or are the structural problems still there, which were indicated by the international community of economists? The author of the article presents the usual arguments

* **Walter Radermacher**, President of the FSO, Germany

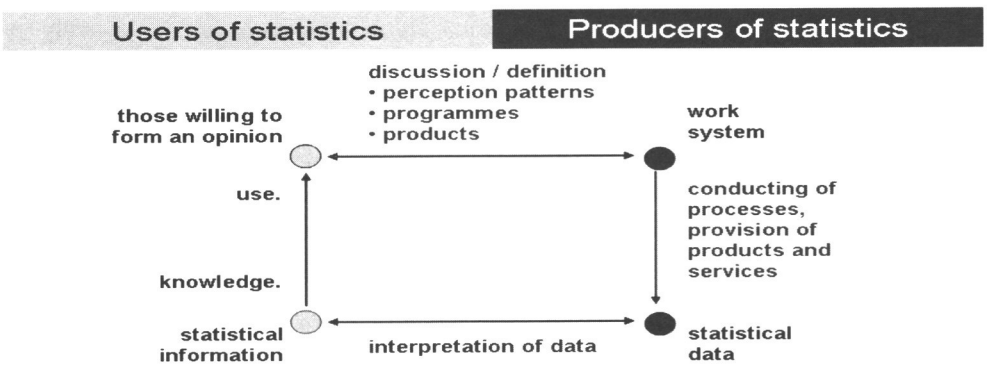
to justify his scepticism. In his view, the German labour and capital markets have, in structural terms, not yet been adjusted in a way that would actually be considered appropriate from a free market perspective.

As a German economist and statistician, I cannot help but feel somewhat uncomfortable because I have got the impression that here a certain perspective is imposed which considers only one possible solution to the growth problem. I however believe that it is definitely useful to leave economies with different cultural, historical and structural backgrounds in their traditional environment, thus giving them - like the cyclist - the opportunity to find their own way. I am of the opinion that we Germans are currently well on track to recover and to tackle many structural problems, including those caused by reunification. It is in this context that official statistics play an important role as a basis for social, economic and political decisions.

Turning now to the very topic of this seminar, I would like to move for a moment back to the subject of this year's OECD World Forum in Istanbul, which was "From statistics to knowledge." Of course, this issue could also be seen from the opposite angle. The question would then be whether the topic should not read 'From knowledge to statistics". It could be like that, because what we as statisticians measure based on our methodology depends on what is considered worth measuring by society and in the political debate. This means that, on the one hand, we statisticians are part of the knowledge society to which our work makes a considerable contribution. On the other hand, however, our activities depend on the framework conditions in that society. Generally, the phenomena to be measured by us depend on what society wants to know.

A rough structure of the statistical processes is given in the figure#1, which shows the group of the users of statistics on the left side and that of the producers on the right side. In Germany, we distinguish between three typical processes. The first is the process on top which could be described as the phase of designing statistics. The goal of this process is to determine the phenomena to be measured, which - of course - depends essentially on the perception patterns and concepts that are on the minds of politicians and the population. In the course of this process, the programmes and products of data collection are specified. The outcome is an operational system in which the design phase is decisive for the results we will provide in our publications and data bases.

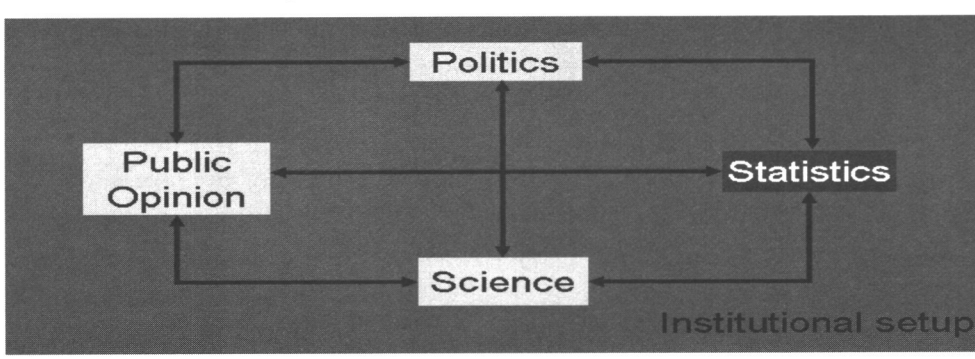
< Figure 1 : Processes of Statistics >



As a next step, we statisticians concentrate on doing what we are best at - we produce statistics. I will discuss the process of statistical production in more detail a bit later. Statistical production is followed by a process which I would refer to as the "youngest child" of the family of statistical operations. This process of data interpretation and communication is of utmost interest to us today. In its context, data are turned into information which will then be turned into knowledge. This process inevitably requires us to add the relevant describing metadata to our statistical results because information can only be generated by linking data and metadata. Interpreting subsequently the information on a sound subject-related basis will produce knowledge. And sound knowledge is in turn the basic requirement for achieving benefits. The goal of producing and providing knowledge as a precondition for achieving the greatest possible benefit is also reflected in the Federal Statistical Office's Logo "wissen.nutzen."

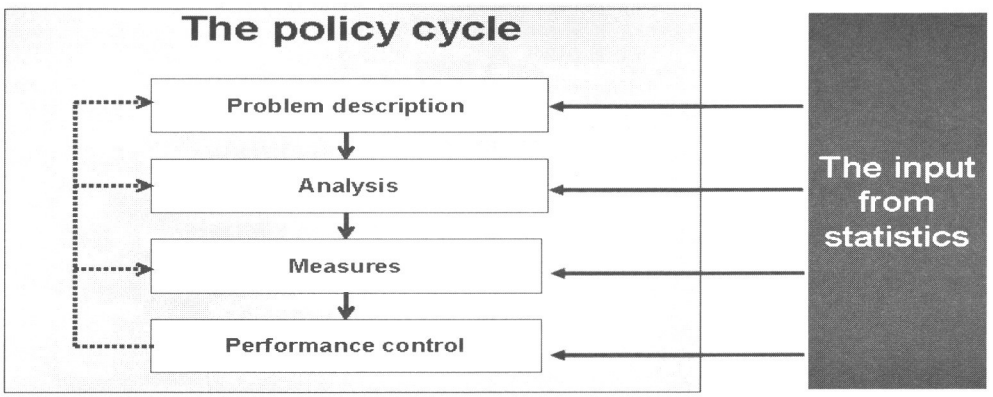
The described core processes are the basis for the operation of a 'motor' whose directions of movement differ and include feedback operations, too (Figure#2).

< Figure 2 : The Knowledge-Statistics-Motor >



The 'motor' generates interdependencies between politicians, the public, scientists and statisticians all of whom require knowledge. Thus, for instance, public opinion and policy are interrelated. Policy produces a public opinion, while the public opinion has an impact on policy. The same applies to science. Certainly, science and public opinion depend on each other. And, finally, statistics have an impact on all, that is public opinion, policy and science. In turn, these areas have an influence on statistics, too. All this has to be seen against the background of the institutional frame which determines our work. What we measure, how we measure and how accurately we measure depend decisively on the financial, technical and human resources we have at our disposal and also on how we - as the statistical office - are embedded in the relevant political system.

< Figure 3 : Fact Based Policy Making >



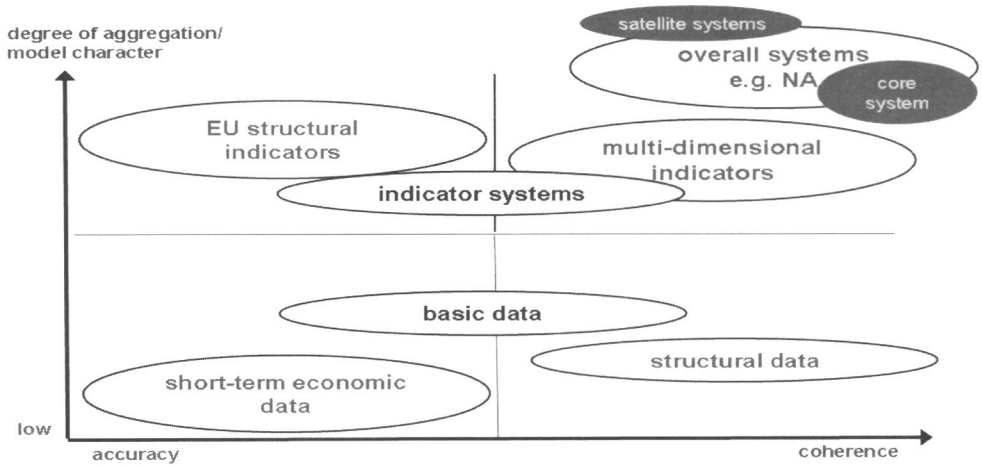
Figure#3 has been included for illustrative purposes to show the official statistical input into political decision-making processes. Actually, the process of taking a political decision as part of the policy cycle is initiated only at the moment a problem is identified. In the industrial nations, like for instance Germany, both the problem of demographic ageing and its immense effects on the social security systems and the actual environmental problem were not recognised earlier than after more than 20 years. Those problems had been repressed for a long time. For this reason, a laborious political opinion-forming process was required to make the population and politicians aware of the need for action.

As a next step, political decisions are taken on the basis of detailed analyses, and measures are initiated whose success will have to be finally evaluated.

All stages of this policy cycle require statistical input. However, one has to be aware of the fact that the requirements faced by statisticians differ considerably in

the individual phases of the policy cycle. While often the statistical data requirements are still rather vague during the initial phase of problem description, concrete parameters and indicators will be required at the stage of implementing political decisions and evaluating the goals achieved. Therefore, we statisticians always have to be clear about the relevant stage of the cycle to ensure that the quality of the statistical indicators we supply will meet the given requirements (Figure#4).

< Figure 4 : Species of Statistical Information >

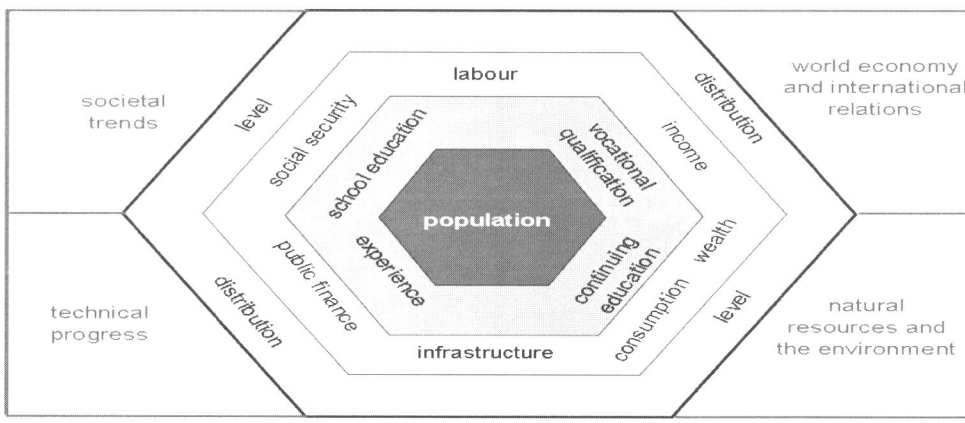


As you know, I am highly interested in environmental statistics and environmental-economic accounts. In this context, I would like to mention that, of course, there are many types of statistics which differ with respect to their quality dimension. There is a quality dimension of aggregated data with model properties where the figures are characterized by their artificial and scientific nature. In addition, there are dimensions of highly accurate and precise figures or of results which are not particularly coherent, but cover large areas. In this context, I would like to cite short-term economic data and structural data as examples of basic statistics. While coherence is rather a point in structural data, accuracy and rapid availability are a focus with respect to short-term economic data. At the level of indicator systems, I would like to mention the EU indicators and multi-dimensional indicator systems (for instance, the system of national accounts and its satellite systems). Both indicator systems are characterized by a high degree of aggregation and their model properties. However, they differ substantially with regard to the coherence of their results.

All these points should be borne in mind when talking to the users of our data. What is it that a user wants to know from us? Does he/she require a precise detail or need a highly aggregated indicator – "overtaking manoeuvre or progress"?

In addition, we offer a very wide range of products (Figure#5), starting with data on the population, education, social security, labour, income and welfare through to data on infrastructure (in the form of distributions and average values). Besides, we supply results regarding the global economy, the environment and technological progress. All these data form a stock of highly complex information. Users are faced with this extremely high complexity irrespective of whether they make use of our traditional print publications or the data we provide on the Internet in order to obtain the information they require. In this respect I feel that we have a special responsibility towards our users and face a big challenge regarding our data supplies.

< Figure 5 : Knowledge Economy - Knowledge Society >

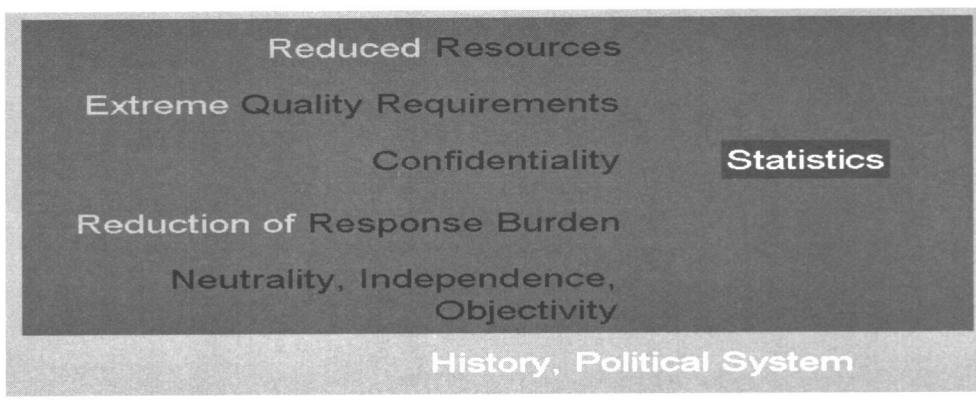


We must support the users, accompany them and lead them to the data they need. The focus will no longer be exclusively on one-way data supplies to the user groups. In view of the Internet, the dissemination of statistical results will require communication in the future. Communication is never a one-way street, it is rather characterized by a dialogue between producers and users. Again, the development from the traditional strategy of dissemination towards a new strategy of communication depends on the given institutional framework which determines our work and must be observed. What are then the components of the institutional framework? In addition to the resources in place, they include the quality requirements I mentioned before. Other components are statistical confidentiality,

a reduction of the respondents' burden, and also neutrality and objectivity which we official statisticians are bound to observe.

Having a look at the present situation of official statistics (Figure#6), we can see that it is essentially characterized by increasingly scarce resources - at least in Germany. Our budget has been reduced for several years. Although, on the one hand, the quality requirements imposed on our products are extremely high, on the other hand, permanent political pressure is put on us to reduce the respondents' burden. All that must generally be seen against the background of the history and the political system of a nation. In Germany, the past 120 years have shown rather clearly that the statistical system has always been affected by the political system.

< Figure 6 : Institutional Setup of Official Statistics >



In the last chapter of my paper I would like to mention some issues which are currently being discussed by the international statistical community. I would like to touch upon these issues here because I consider them important for the future of official statistics both national and international level. As we are not in a position to discuss them in detail in this seminar, I would like to suggest that these points be possibly considered in preparing the topics of further seminars to be held as part of the co-operation activities of the statistical offices of the Republic of Korea, the People's Republic of China and the Federal Republic of Germany.

All of you who attended the most recent session of the UN Statistical Commission or who were informed about its results know that, in particular, the Anglo-Saxon and European countries have had a highly controversial debate about a common strategic approach to national accounting in the future. This controversy, is based

on the significantly different economic systems of the two regions which have resulted in different statistical approaches to national accounting. Without going into further detail, I see this debate as a typical example of the general discussion presently taking place at the international level. The discussion focuses on the further development of official statistics based on international standards. Though the economic perspective continues to be important to me, there are other issues which, in my view, also play a very significant role. I regard these issues as a good basis for further trilateral co-operation between the statistical authorities of our countries.

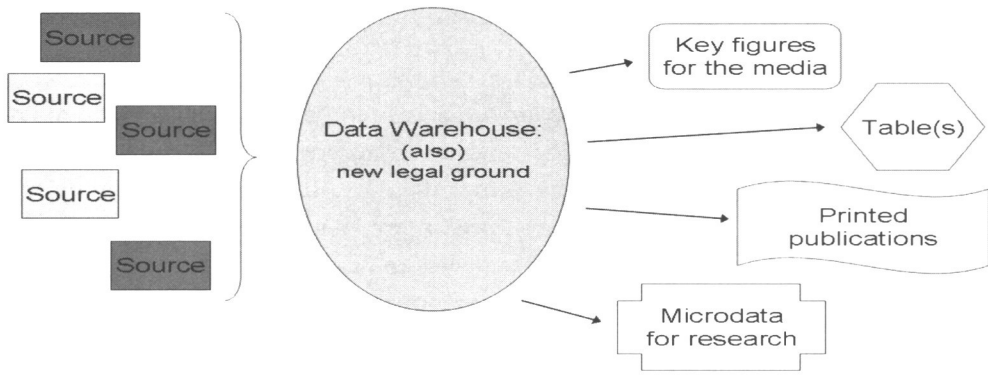
The four issues I have selected which are of decisive importance in the world today are demography, globalization, ecology and the knowledge society. As you can see, economy is not among them. I believe that these are the four essential subjects which will determine statistics, in the future. In my view, demography will be the first area to have an impact on the revised system of national accounts. Just think of old-age pensions and pension funds as examples.

And the foreign-trade statistics is an issue that has to do with globalisation. How can we make sure that the differences in the foreign trade results of the mirror comparisons between our countries will be reduced? How can we improve the integration of the trade in services and of capital transfers between different countries into our foreign trade statistics? Regarding ecology, the development of an internationally binding standard for the systems of environmental-economic accounting is of particular importance to me. The standard is to be applied from 2012 at the latest, so that we will then have standardized approaches to environmental accounting in our countries, too. In addition, as I have discussed in greater detail before, the knowledge society poses challenges to official statistics.

Figure#7 has been designed to briefly illustrate an issue which is of particular importance as regards the further development of our production processes. It is also related to the utilization of the Internet, which is the topic of this seminar. The production processes in the world will change very quickly due to new developments in the area of information technology. I believe that the traditional process of compiling statistics, which has so far been characterized by a production of results based on "one-to-one relations" will change into a network process based on "m-to-n relations." The centre piece of this new system will be a data warehouse architecture to store data integrated from different sources. The data in question will be data either provided by administrative authorities or derived from their registers, or data directly transferred from the business accounting systems of enterprises. In the future, too, it will however be necessary to conduct traditional

surveys to collect additional data. The 'trick' is to combine data from different sources in order to produce integrated products. In this context, the data warehouse architecture is of utmost importance. It should be designed to permit data supplies through different channels, access, and the utilization, on the input side, of the data transfer opportunities provided by the Internet.

< Figure 7 : The way from a one-to-one relation to a network of m-to-n-relations >



The last point I would like to mention is the future organization of the system of German official statistics, that is the way I think it should be and, at the same time, the goal towards which I am working. As you know, Germany is a federal republic characterized by co-operation between the federation (the state as a whole) and its 16 Länder (federal states). Hence the system of official statistics, too, is characterized by close co-operation between the Federal Statistical Office and the statistical offices of the Länder. I believe that this co-operation could be organized more efficiently based on a network structure. So far, about 250 statistical processes have been carried out in parallel in all statistical offices of the Länder. Of course, this approach has not been very efficient. In the future, we intend to develop a more effective network structure (that is what at least the Federal Statistical Office plans to do). One of the means to achieve this goal will be the close co-operation or even merger of the statistical offices to be involved. Currently, there are 14 statistical offices in 16 Länder. However, developing a statistical network where, in the broadest sense, the Internet and information technology will play a special role is even more important. This network will include the centers in different places to accomplish tasks in specific statistical or other areas of work. The centers and statistics will thus be designed both to concentrate on the core functions assigned to them and to co-operate through the network structure, using information technology.

Xie Fuzhan*

Internet Use in China's Statistics

Since the 1990s, innovations have been unceasingly made in the information technology, the development has been continuously achieved in the information industry, the popularization of the information network has been achieved widely and the universal application of information technology has become a driving force to the economic and social development in the world, and all these together have made an unprecedented opportunity for the statistical development. Now I would like to introduce the China's exploration and practice in statistical capacity building and work by the use of Internet in China.

I. Practice in the Application of Internet in China's Statistics

The Chinese government attaches great importance to the application of the modern information technology in the statistical work. As stipulated in the Statistics Law of the People's Republic of China, the government should strengthen the modernization of data processing, transmission and database system. The Resolution on Strengthening Statistical Work made by the State Council in 1984 declared that the modernization of statistical work should be achieved for the purposes of achieving modernization of industry, agriculture, science, technology and national defense in China. With the strong support and under the guidance of the Chinese government, the modern information technology has been widely applied in the statistical work in China. In 1982, computers were used in a large scale for the first time in China's population census to process the census data. The statistical departments at and above the county level were basically equipped with microcomputers in 1990 so that the long-distance point-to-point data communication was achieved. In early 1990s, the National Bureau of Statistics of China (NBS) made a programme on statistical database development, and gradually set up some statistical databases. All these measures have laid a solid foundation for the application of Internet in the statistical offices of China.

* **Xie Fuzhan**, Commissioner of the National Bureau of Statistics of China

In mid 1990s, Internet was introduced to China and was developed rapidly. The NBS made its efforts to promote the application of network in the statistical work and gradually carried out the activities of statistical design as well as the data collection, transmission, processing, storage and dissemination under the environment of computer network. In particular, the NBS developed three application systems based on the network.

The first is the **Internet-Based Data Reporting System**. This is a system by which the businesses and other respondents send their statistical information directly to the NBS via Internet. The system was developed in 1999 and included 5 thousand large industrial enterprises and 3 thousand large real estate developers. At present, the system has expanded its coverage to 26 thousand large and medium-sized industrial enterprises, 5 thousand real estate developers, 5 thousand wholesale and retail sale businesses and 200 large enterprise groups. In addition, the system has further used by provincial and local statistical offices for collecting statistics from all the enterprises above the cut-off point in their own areas.

The second is the **Statistical Intranet System**. The NBS started its statistical information project in 1997. The national statistical wide area networks with 64 nodes and local area networks by provincial offices and city offices were basically accomplished in 1999. As a result, China put into operation the Statistical Information Network, the Statistical Intranet System and the Office Automation System. At present, 31 provincial statistical bureaus, 300 prefecture statistical bureaus as well as 1,380 county statistical bureaus have joined the WAN, making it possible to transmit, process and disseminate statistical data through networks.

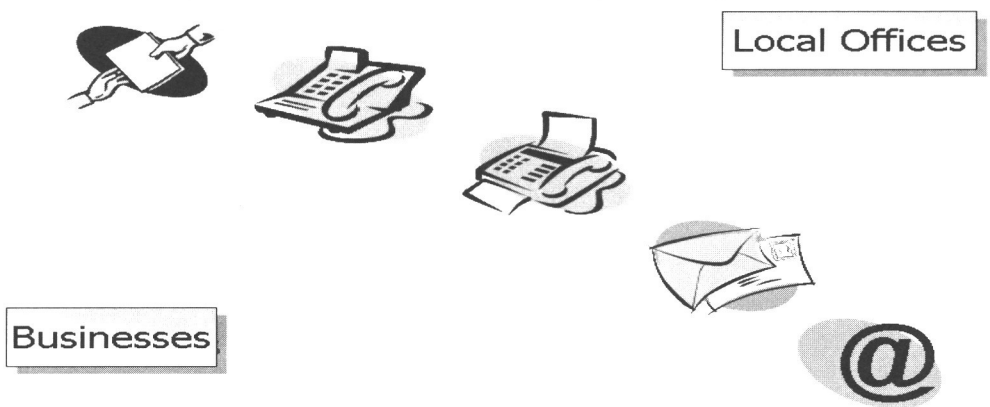
The third is the **Data Dissemination Networks System**. The statistical offices started the establishment of websites to disseminate statistical information to the public. Up to now, the NBS, 31 provincial statistical offices, most prefecture offices and some county offices have their own websites to disseminate statistical data. Ministries and other agencies of the central government have disseminated the data of their own departments by means of their own sites. All these demonstrate that the network has become a main channel for data dissemination in China.

II. Impacts of Internet on China's Statistics

Internet is not only an instrument of communication, but a revolution also. It has made and will continue to make profound impacts on China's statistics.

Firstly, it brings about changes in dada collection. The data collection in China has for a long time followed a hierarchical practice. Businesses and other respondents sent their completed questionnaires to local statistical offices, which went up to the prefecture offices and further to provincial offices before reaching the NBS. With the adoption of the Internet-Based Data Reporting System, businesses can log in the NBS website, make an on-line completion of the questionnaires and send them directly to the NBS. Provincial and local statistical offices have the authorization to get access to the questionnaires sent by the respondents in the areas under their own jurisdiction. The hierarchical reporting is then not needed any longer. The new practice has greatly improved the timeliness of statistical data on the one hand, and effectively reduced the possibility of deliberate intervention on the other.

< Figure 1 : Traditional: Data Collection by Reporting upwards >



Secondly, it brings about changes in the functions of local statistical offices. For a long time in the past, the basic functions of local statistical offices included the distribution of questionnaires to enterprises and other respondents, the collection of the questionnaires completed, reminding the respondents of sending back the questionnaires, making checks and making data entries of the data collected. After the implementation of the Internet-Based Data Reporting System, local offices have got out of their heavy work burden of data collection and data entries. Their work burden has been further reduced on reminding and data checking routine due the fact that an automatic reminding system and logical checking system are included in the Internet-Based Data Reporting System. Consequently, the local offices can concentrate their efforts to improve the data quality and data development.

Thirdly, an interactive relationship has been improved between statistical offices and the public. The active cooperation of respondents is the requisite for obtaining

the true statistical data. The Internet-Based Data Reporting System enables respondents to get an easy access to the methodological information and have immediate answers to their questions via Internet if such questions exist. At the same time, the NBS send periodic feedbacks of information to the respondents through the Internet-Based Data Reporting System. As a result, a relationship of mutual benefits between the statistical offices and respondents is achieved and the respondents are not only data suppliers but enjoy statistical services also. In addition, the interactions between statistical offices and users help statistical offices know what information is required by the public through the distribution users' clicks. At the same time, the general public can send their needs and proposals on improving statistical work to government statistical agencies through Internet. As a result, the change has taken place from one-way reporting to two-way communication and from users as passive services recipients to those as active takers.

Fourthly, statistical information has reached more users. The statistical information held by the government cannot become the wealth of the society until it is widely disseminated. In contrast to newspapers, magazines, radio, TV and other traditional media, Internet webs can host vast amounts of timely information with low cost. The establishment of statistical websites helps statistical offices provide as much statistical data as possible at the sites for the general public to consult, unlimited in time and places. The operation of the websites of statistical offices has greatly increased the magnitude and coverage of statistics and has made more and better statistics available for the public at the earliest possible time.

III. Application of Internet in China's Future Statistics

Though Internet facilitates the quick data collection and dissemination, there remain many limitations. The first and main limitation is that the respondents and users are only those organizations and individuals who can get access to the Internet. The popularization of Internet decides the coverage of data collection and dissemination. China now takes the first place in the world in the number of Internet users and the second place in the number of broadband users. However, due to the total number of units existing and large population, Internet use is far from popular and many units, individuals and even some statisticians cannot enjoy the facilities brought about by Internet, and especially in the rural areas of China. The Chinese government has included the Internet popularization as one of the important objectives of the national information development strategy for 2006-

2020, which will provide a good opportunity for Internet-based data collection and dissemination for statistical purposes. The Chinese statistical offices will closely follow the popularization process, actively use the modern computer technology, network technology, communication technology and database technology, make efforts to achieve the objective of undertaking the Internet-based statistical design, collection, transmission, processing, management and dissemination, and improve the informatics development for statistics.

Firstly, we will expand the coverage of Internet-Based Data Reporting System. Based on the electronic statistical records system and electronic questionnaires developed for enterprises, the NBS will set up an enterprise-oriented data collection system for the purpose that all the enterprises above the cut-off point would be able to send their information directly to the NBS via Internet. The second area is to include censuses and household surveys in this expansion by developing electronic census forms and household survey diary and eventually sending their information directly to the NBS via Internet. The NBS will make its efforts to make additional functions to the Internet-Based Data Reporting System by improving the interactions between the statistical offices and respondents.

Secondly, we will upgrade the national statistical wide area networks. The NBS will set up or improve the national primary database, business register and metadatabase so that the national statistical information networks will be in place which is linked with the provincial and prefecture offices and ministerial statistical offices across the central government. This WAN, when functioning, will enable the NBS to hold all the primary statistics from all the census and survey programmes, and have easy access to the primary records of provincial survey programmes and to the statistical information collected and administrative records maintained by ministries.

Thirdly, we will actively promote the use of statistical information by the public. The NBS will make its efforts to have a good management of the statistical websites, standardize the information released, increase the information available for the users, improve the functions of the websites and promote the influence of such websites. The system, supported by the WAN and Internet, will develop itself with the ultimate objective of providing good services to macro economic policy making and to the public, base itself on the metadatabase, business register, comprehensive database and subject matter databases, and provide timely, convenient and comprehensive services to the government and public.

Internet is the best instrument and vehicle to disseminate information and, in the final analysis, such information is the immediate products of statistical activities.

The features of the two prove that both of them can have a perfect combination and statistics can make a full use of the development of Internet. We are now in an era of rapid development of Internet which creates many challenges and opportunities as well for the official statistics. We shall take up the opportunities to push forward the progress in Internet-based statistics by making technological innovations and wide use of Internet.

Session Discussion

Seok-Hun Lee (Chungnam National Univ.)

As to collecting statistical data through the Internet, we need to conduct more precise research on the relation between the Internet and statistical data. In addition, it seems essential to set up a monitoring system that is able to detect data loss and errors of the Internet surveys, which usually would not happen in face to face interviews.

We also need to establish a good IT Statistical System and at the same time, enhance the knowledge of enumerators concerning the system, so that we can quickly react to the respondents' diverse requests. It is also vital in the future that we formulate adequate strategies for microdata confidentiality, hacking prevention, and digital divides.

Walter Radermacher (FSO)

I'm curious if we have ever had enough focus on the quality of statistical data collected from the Internet surveys before, such as data errors or inconsistencies in enterprises' annual sales survey. It is, I think, high time that we make a decision between Internet responses and traditional ones.

Xie Fuzhan (NBS of China)

Due to the remarkable economic growth of China, numerous organizations and people are becoming involved with official statistics and the number of statistical users is growing rapidly.

They used to be more interested in economic statistics like agriculture, industry, and live stock. Now, their interests are diversifying into various statistics such as consumer price index, environment, education and real estate. If we don't release the needed statistics on time, we're going to end up in various predicaments. Despite the importance of the timeliness in compiling and communicating statistics, however, we should try to strike a balance between accuracy and timeliness by utilizing IT skills.

Sin-Ae JEON (Population & Social Statistics Bureau, KNSO)

Considering the Households Survey, it is in the process of going forward to a 'Conversation between Computer and Respondent' from a One-Way Interview. We're going to see more accurate and objective statistics and the figures, I'm sure, will show those improvements.
We can also simplify data processing procedures by mounting some monitoring programs within the statistical system. Consequently, we're going to obtain timeliness, accuracy and restructuring effects.

Dae-Hyeong LEE (Statistical Information Service Bureau, KNSO)

I'm not sure if we have had enough discussion on how much progress has been delivered from the Internet surveys.
In the case of the KNSO, which has a decentralized statistical system, it does perform 13 Internet based surveys and 32 web based surveys in which the field staff send collected data to an enumerating database on the spot via PDA.
Specifically in the Population Census, I can call it 'a Statistical Revolution' since it takes less than a year from input and database setup to data dissemination.

Yoon-Soo Shin (Statistical Training Institute, KNSO)

I'd like to mention the importance of statistical education to boost statisticians' IT recognition, as well as produce and disseminate statistical data based on the Internet successfully. The Korea Statistical Training Institute has been focusing on the education of the staff working on statistics in government agencies and we're going to enlarge our programs for companies and the public in order to upgrade their statistical perceptions.

Q&A

Question

Yoon-Soo Shin (KNSO)

Do you, China or Germany, have any statistical programs for children, students or the general population?

Answer

Xie Fuzhan (NBS)

The Education Department of China is in charge of statistical education, and with rather good Internet connections, it offers online education programs for the people in the rural and remote areas to get statistical training. (It has trained about 2,000 field staff of 33 areas through the online education system)

Walter Radermacher (FSO)

The European Union has established an association for cooperating in the area of statistical education (chaired by Poland) to communicate information on European statistics and provide quality training programs such as WIKI technology, statistical survey methods and etc.

SESSION 2

The Impact of the Internet on Data Collection Procedures

- Chairperson : Walter Radermacher
- Data Collection via Internet in China
  (Song Yuezheng & Geng Qin)
- Link the Accounting Systems of the Enterprises to the Collecting Process for Statistical Data (eStatistik.core)
  (Dieter Sarreither)
- Household Surveys Using the Internet
  (Hwa-Ok Chung)
- The Data Collection Method using the Internet in the Business Survey
  (Jin-Ho Heo)
- Session Discussion

Song Yuezheng*
Geng Qin**

Data Collection via Internet in China

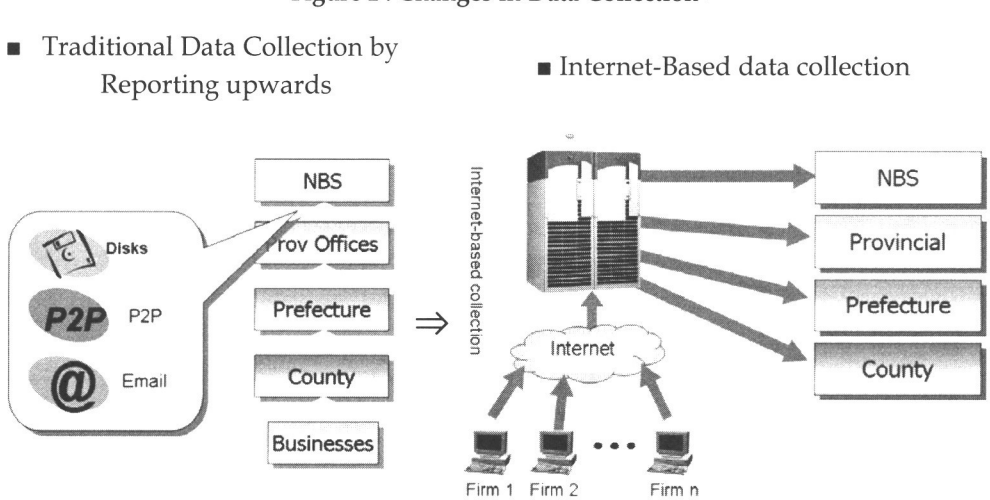
I. General: Data Collection via Internet

First of all, data collection and processing through Internet in China is limited to businesses only, excluding general users due to insufficient Internet availability of China. This is closely related to Internet network accessibility, thus companies have much better established Internet connections than households.

Chinese statistical survey experienced changes dramatically in two ways after Internet based data collection was conducted. It has brought about interactive data collection well advanced from unilateral collection of past and made it possible to share statistical data.

Left part of figure #1 shows what the data collection used to be.

< Figure 1 : Changes in Data Collection >



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* **Song Yuezheng,** Director-General, Trade and External Economic Relations Statistics
** **Geng Qin,** Deputy Director-General, Department of industry and Transport Statistics

As our bottom-up reporting system describes, the companies of a county return data to its authority and these local authorities gather and send them to its municipal government. The central government and province is at the top of the reporting system and get the whole data. This is one-way data flow and it's hard to share collected data among stakeholders. We got an answer how to troubleshoot problems in utilizing Internet effectively.

Internet Based Data collection should have a common platform for statistical table specifications and data communication frames. And the right part of figure #1 shows how to collect and communicate statistical data. Professor Lee mentioned in the morning session that Internet-based data collection technology should be a platform as well as work process. NBS also well acknowledged it and tried to transform Internet-based data collection process into a common platform to gather and share valuable information with companies. Once Internet-based data collection is achieved, we have to specify the statistical survey form. Though it is strictly regulated by related law in China, there's still some flexibility for local authorities such as provinces, cities and counties to add some indicators or contents that they're in need reflecting their own circumstances on the basis of common platform and standards to get integrated data and reduce respondent burden.

NBS has established a website on which companies report data directly and have their own identification for reliability and confidentiality. The procedure goes like this: 1st, log in through its own ID, 2nd, input statistical data, 3rd, transfer them to NBS. It has come to be possible for NBS to monitor respondent's reports in a real time instantly recognizing the status of transmissions and errors. Another advantage is a centralized process and management of statistical data so we can manage an integrated database efficiently.

Internet-based data collection system gives real benefits like enhancing efficiency, improving data quality and reducing cost and respondent burden. As to respondent burden, the companies can input data directly to governmental system in rather short time and decrease statistical or non-statistical errors by skipping intermediate procedures. This leads respondents to be relieved from reporting burden like making up statistical tables.

This technology also enables NBS to instantly acknowledge and observe socio-economic challenges and other hot issues. In other words, NBS examines the social and economic issues that companies face in the middle of performing their business and gives feedback to them by legitimate procedure.

When China did its effort to cope with SARS crisis a few years ago, for example, we quickly performed Internet survey on "SARS effect on the business operation" to avoid cross infections and got the survey results in 5 days. NBS has also monitored Chinese economy on the daily basis and has provided related useful services for the government leaders and their policy-making. In conclusion, the data collection method through Internet brings not only innovative changes in traditional statistics methodology but new phenomenon.

II. Internet-Based Data Collection in NBS

Regarding the data collection and the applications of statistical system, the key Internet-based statistical surveys conducted in China are:

1. Monthly and quarterly survey on 26,000 large and medium industrial enterprises
2. Quarterly survey on 5,000 large real estate developing companies
3. Monthly survey on 5,000 whole & retail service companies
4. Statistical survey on 200 large enterprises groups (yearly or half-yearly)
5. PMI survey on 700 manufacturing companies (2005)
6. PMI survey on 1,200 non-manufacturing companies (2007)

Program	Start Year	Business User	Special User
• Large and medium industrial firms	End of 1999	26,000	4,058
• Real estate developers	Beginning of 2001	5,000	107
• Wholesale, retail sale, hotel, catering businesses	Beginning of 2007	5,000	545
• Large enterprise groups	Mid 2003	200	389
• Manufacturing PMI	Beginning of 2005	700	288
• Non manufacturing PMI	Beginning of 2007	1,200	288
Total		38,100	5,645

These are huge statistical progress of China. The first three of the above are about large companies that we chose because they have rather advanced Internet infrastructure and play a key role in Chinese economy. We can easily understand business trends by simply observing them. The others are conducted in

cooperation with international organizations. These surveys are qualitative ones of economic phenomenon and in case of PMI surveys, one is quantitative and the other is qualitative. The surveys are conducted through web sites, which for now doesn't have English version(Chinese version only) but open to the public.

And figure 2 shows industrial enterprises network homepage and the 2nd is for Real Estate Companies. These two websites are accessible without any restriction. The 3rd is the homepage, also accessible freely, for the wholesale & retail trade service companies. PMI survey website started its service last year, too. All these websites are connected to international statistical information network of China.

< Figure 2 : Internet homepage of companies >

① Industrial Enterprises

② Real Estate Developers

③ wholesale & retail sales

In addition, some public organizations do conduct Internet statistical surveys over commercial trade to grasp the status of market and distribution and this commercial network is also accessible at any time and without limitation. Effectively supporting NBS surveys, they offer necessary services to companies on the base of collected information.

In conclusion, Internet based technology has influenced data collection and statistical surveys of China enormously and has encouraged stakeholders to cooperate and support one another. I believe that Internet based statistical survey will be wildly adapted, upgrade and provide better services in the future.

Dieter Sarreither*

Link the Accounting Systems of the Enterprises to the Collecting Process for Statistical Data (eStatistik.core)

I. General description of the project

The strategic goal is to obtain highly up-to-date statistical results while keeping the burden on responding enterprises to a minimum. This is where the eSTATISTIK.core project comes in, which was initiated in early 2003 by the statistical offices of the Federation and the Länder in cooperation with the Arbeitsgemeinschaft für wirtschaftliche Verwaltung e.V.(AWV). In cooperation with standard-software producers, software modules are developed for an automated extraction of raw statistical data from the businesses' accounting systems. Once the standard software has been extended by those statistics modules, the desired data packages can be produced for the relevant statistics "at the push of a button" and can then be sent via the Internet to a central point for incoming data of the statistical offices. That incoming data unit checks the data packages before automatically distributing them to the responsible statistical office for further processing. For the businesses, the new technology provides a reduction of burdens, it reduces handling time and, consequently, reduces costs. With eSTATISTIK.core, the statistical offices in Germany make a major contribution to the reduction of bureaucracy.

II. The main components of the architecture

To make statistical reporting easy and convenient for the respondents, the Federal Statistical Office has for some years, and to a growing extent, been using the Internet. For quite some time already, businesses have had the opportunity to supply their statistical data via the Internet. However, all data must still be entered "manually" into the online questionnaires. In some cases, such data have to be extracted manually from various data storage systems of the businesses and must

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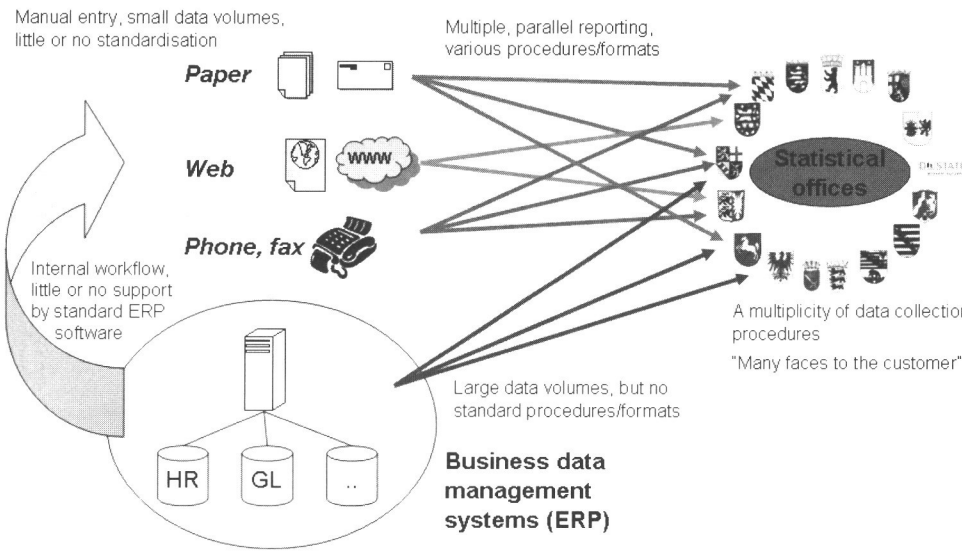
* **Dieter Sarreither,** Head of Department of Information Technology, Mathematical Statistical Methods

explicitly be compiled for official statistics. In many businesses, the time and staff effort required for the purpose is perceived as a burden.

< Figure 1 : Complex reporting channels >



As the data collected by the statistical offices generally are stored in the businesses' data systems, the important thing is to find an automated, and for all parties optimal way to extract the relevant data from the business accounting systems (ERP). Such automated extraction of statistical data from the accounting system is exactly what is provided by eSTATISTIK.core.

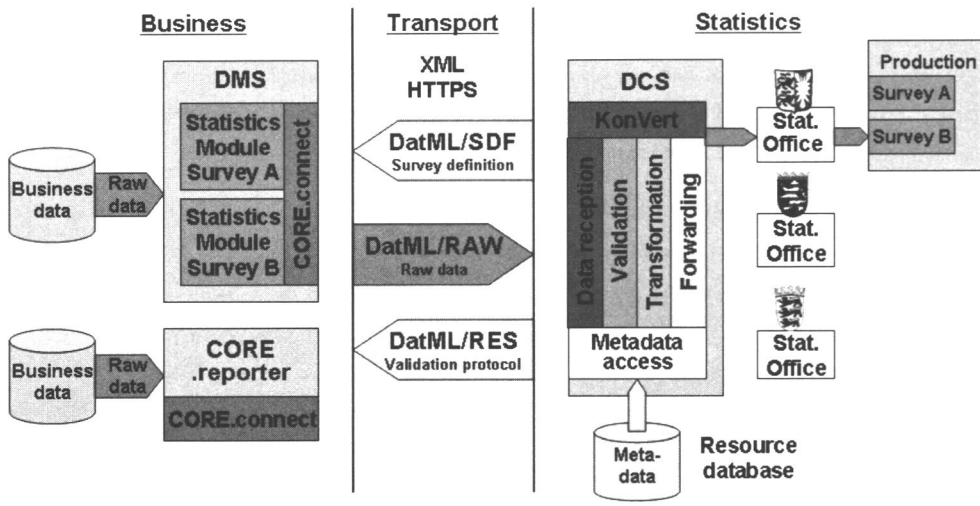
The package consists of the following components:

- Statistics software modules: Businesses obliged to provide information use the statistics modules which are provided through their standard software and extract – in a way tailored to the relevant statistical survey – the data from the business data available.
- Internet-based data reception of raw statistical data: Such data are then transmitted in an encrypted form via the Internet to a central point of the statistical offices for incoming data. There the data received are checked and distributed to the statistical office responsible.
- Data exchange through standardized XML formats: This allows easy checking and further processing of incoming data which have been generated from statistics modules of various software providers.

- "Support" of the statistical offices for software companies and responding businesses: First, the statistical offices support the software companies by providing a software library to extend the relevant standard software by the statistics modules and, second, the software users by providing the user identification and password required for using the central incoming data point. Those services are free of charge.

That technical solution has considerable potential for reducing burdens because a "mouse click" is all the responding business needs to initiate the compilation and transmission of a statistical data report; this means that in this way the entire data collection procedure within the enterprise is automated. At the same time, the statistical offices benefit from that approach: Automated production considerably improves data quality, analysis results become more accurate, and the data can immediately be further processed. As the statistical offices of the Federation and the Länder are networked through the central incoming data point, any responsible office can directly access the data, and data exchange is easy and rapid. Altogether, the new method improves the efficiency within the federal system of official statistics in Germany.

< Figure 2 : Architecture >



III. The objective to minimize the response burden

The statistical offices have started a reform of business statistics whose objective is to minimize the response burden on businesses, for example by using administrative data. As data demand in many cases is, however, highly complex and users require highly up-to-date statistical results, it will not be possible to cancel primary data surveys. It is therefore necessary to develop new methods allowing businesses to supply their statistical data easily, rapidly and without great efforts. This is precisely what the eSTATISTIK.core project is intended for.

eSTATISTIK.core started in early 2003. Discussions about improving the reporting procedure for wage statistics were held with the Arbeitsgemeinschaft für wirtschaftliche Verwaltung e.V.(AWV), with which contacts had been established in earlier cooperation projects. The Federal Statistical Office proposed to develop an automated data collection method for that area, such as eSTATISTIK.core . At the time, business associations, too, were looking for new reporting channels that could further disburden the enterprises. In October 2003, the Federation of German Industries presented its "proposals for the further development of the statistical information infrastructure from the German industry's point of view", arguing for more intensive use of Internet-based data collection. The recommendations also said that this would require specific statistics software modules which, prior to data transmission via the Internet, extract in an automated manner the data from the business accounting systems.

IV. Critical factors for success

What is crucial for the success of eSTATISTIK.core is that businesses and statistical offices have developed a common solution in close cooperation from the start. The partners agree that disburdening the responding enterprises is the top criterion for success. Thanks to AWV with its numerous contacts to associations, businesses and politicians, it has been possible to get the software companies with their ERP experts involved in the project. Together with the statistical offices, it enlists support for eSTATISTIK.core among political decision-makers and the associations which, acting as multipliers, transmit information to their member companies.

The project partners meet regularly in specific working groups where the possibilities of implementing eSTATISTIK.core are checked for every single statistics. The main issue here is to find out whether the data needed for specific statistics can be extracted direct from the businesses' accounting systems. The work

results of the various teams are checked by the Federal Statistical Office and the AWV. This ensures that the solutions developed in any team can be implemented also by other software producers and can be used by other working groups. Also, the working groups provide an ideal forum for direct exchange of opinions between statisticians, AWV, responding businesses and software companies. This is to the benefit of all parties because they can explain their requirements to the partners so that they will understand them.

Once the software companies have created first statistics modules for the extraction of data from business accounting systems, they are tested in selected responding enterprises. During the pilot phase, the activities are closely accompanied by the Federal Statistical Office and the responsible Land statistical office. What is tested is not only error free online transmission of data to the central incoming data point and their passing on to the statistical office responsible for those data, but also the quality of the incoming reports and, consequently, the quality of the software implemented. In this context, the data are compared with data supplied in the past to ensure that the data generated through the standard software really meet the requirements. Only when the pilot phase has successfully been terminated, the Federal Statistical Office will release the software extensions for the software producers and thus their delivery to the software users, i. e. the potential responding enterprises.

The success has, however, also been supported by some technological factors, including the fact that the Internet is now globally available as a standard technology. In the first quarter of 2005, just under 95% of businesses in Germany had Internet access. For businesses, eSTATISTIK.core therefore is a low-cost alternative to traditional reporting channels – even more so as the statistics modules can easily be integrated into existing standard software and as that service provided by the software producers is largely covered by regular maintenance, so that it does not cause any additional costs.

V. Practical Implementation

Since November 2005, responding enterprises where relevant statistics modules have been integrated into existing standard software may use eSTATISTIK.core to supply their data for three different economic statistics: These are the continuous earnings survey, the survey of gross annual earnings, and the monthly report in manufacturing. For those three statistics, six software providers have developed statistics modules for the extraction of data from business accounting systems and

have delivered them to their customers. The number of registered users supplying, or intending to supply, data through eSTATISTIK.core is increasing by the day. Now further statistics modules are offered, that is for the monthly surveys in distributive trade and the hotel and restaurant industry. eSTATISTIK.core is also successfully used for statistics in the areas of justice, health and social matters, where authorities and institutions in the Federation, Länder and municipalities are questioned.

As eSTATISTIK.core follows a generally valid approach to processing and providing data for the entire area of statistics, joint efforts are made by statisticians from the Federation and the Länder, AWV representatives and experts of the standard-software companies to introduce eSTATISTIK.core for a number of other surveys. These include the structure of earnings survey, the survey of investments, the cost structure survey, the production survey, and environmental statistics.

Among experts, too, the eSTATISTIK.core project has greatly been appreciated from the start. The project's innovative and trend-setting approach was awarded with prizes in several competitions. At the CeBIT fair 2005, eSTATISTIK.core won the highest award of the 5th eGovernment competition in the political field of "business and employment". In the same year, it won a prize of the 7th International Speyer Quality Award and the BundOnlineSuperStar of the Federal Ministry of the Interior in the category G2B (Government to Business).

VI. Lessons learned

eSTATISTIK.core has successfully finished the introduction phase and it is now in actual operation. It has turned out that automated data extraction is absolutely feasible in technological terms. However, that technological solution needs much subject-related support: Close coordination of definitions of business and statistical variables is a precondition for developing statistics modules which are integrated into the business software (ERP) of the responding enterprises. For the partners involved, this is a great obligation: eSTATISTIK.core can successfully be introduced for further statistics only if statisticians and ERP experts of the software companies, acting as multipliers, show the same commitment to the project. The special form of cooperation for eSTATISTIK.core and the structures of project organization require that all parties involved show a high ability to communicate and particular management qualities.

To make a noticeable contribution to disburdening businesses, eSTATISTIK.core must be used by a very large number of enterprises. This requires that potential users' awareness of the eSTATISTIK.core product is increased. Such a broad marketing campaign cannot be performed by the statistical offices alone without a strong partner such as the AWV, which acts as a link to businesses, associations and the political sphere, and without the support by other multipliers. The success of eSTATISTIK.core is mainly based on the fact that the project partners are in a classical win-win situation: They look for a sustainable solution which is supported and accepted by all parties involved because everyone is certain to gain something by that solution.

Hwa-Ok Chung*

Household Surveys Using the Internet

I. Introduction of the electronic diary for HIES

1) Background

The KNSO conducts the Household Income and Expenditure Survey(HIES) that collects about 7,200 households' daily receipt and expenditure records. The survey is conducted monthly by using the accounts diary. The households chosen for the sample are asked to keep the diary for 36 consecutive months.

This survey is burdensome for both the enumerators and respondents. Recently, the survey has become harder due to the increase of one-person households, dual-income households and public sensitivity to privacy issues. Recognizing the difficulties, efforts have been put forth to change the survey method from the paper diary to the electronic one.

2) Key components of the e-diary

The e-diary survey has several beneficial characteristics. First, the survey is conducted on the computer and the Internet. So the respondents can download the diary from an Internet website and type in income sources, expenditure items and their values on a daily basis. They transfer the data to an NSO processing DB online each month.

Second, there is a computerized screen scraping solution in the diary, by which respondents can extract data from their bank and credit card accounts and input them to the diary automatically. Third, data are classified by respondents using the code search engine in the paper diary survey, the data coding was manually done by enumerators, which was time-consuming.

Fourth, the e-diary has automated editing system, so data checking and correction take place when respondents enter the data. Respondents and enumerators can contact each other using mobile message service and the online message board of the survey system whenever they want to.

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* **Hwa-Ok Chung**, Director of Social & Welfare Statistics Division, KNSO

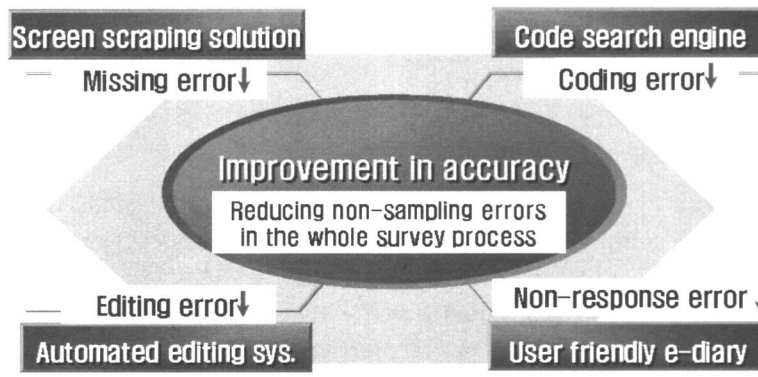
Finally, the respondents can make good use of it for their economic financial plans. They can assess the level, structure and trends of their economic well-being using diverse tables and graphic reports produced by the diary.

3) Benefits of using the e-diary

The e-diary survey, which was introduced last year, is expected to innovate data collection field work. Firstly, it will enhance the timeliness of statistical data. As enumerators do not need to do diary collection, data entry, coding and editing etc., approximately 10 days will be saved from data collection to transmission to the headquarters.

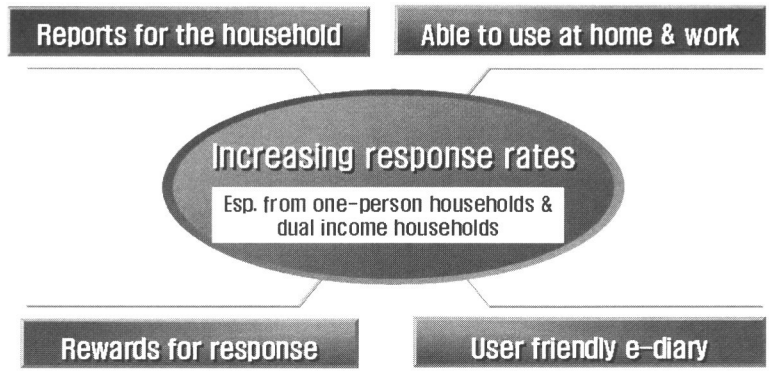
Secondly, we anticipate improvement in the accuracy of statistical data. The automated editing system, screen scraping solution, and the code search engine, as mentioned above, reduce errors that may occur in the survey process.

< Figure 1 >



Thirdly, the response rate will be increased gradually, especially from one-person households and dual-income households. It is mainly because the new method saves time for respondents. As a result, the representative of the households will improve.

< Figure 2 >



Finally, the workload of both the respondents and enumerators decreases. The enumerator does not need to visit households to collect the diary, code the data, and enter them into the DB. The respondent can use convenient software features such as the screen scraping solution. And they get a reward of 50,000 won in cash every month for recording and sending their daily receipts and expenditures.

The e-diary survey was hailed with a good reaction. Even though only 18 months have passed since its introduction, 38% of the sample households use it. At this pace, it is expected that more than 50% of the whole sample will convert to e-diary by 2009.

II. Introduction of the e-Census

1) Background

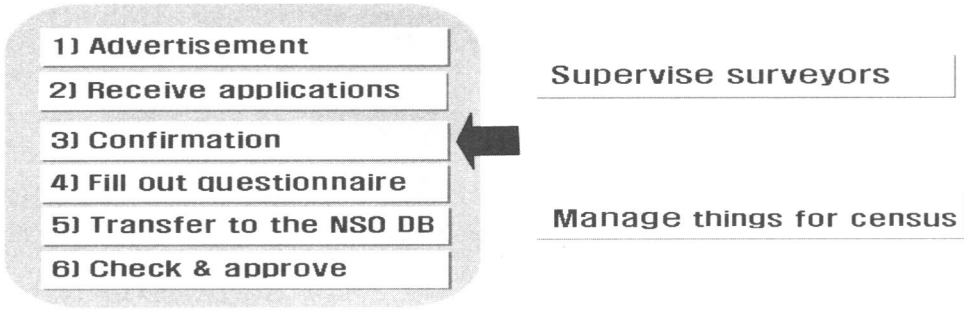
For the 2005 population Census, the e-census was introduced to ease the response burden of one-person households and dual-income families which have increased in Korea.

2) Main process of the e-census

In order to carry out the e-census, extensive advertisement on the implementation was required. The KNSO received applications from households that wanted to respond through the Internet. The system of the e-census consists of four steps. Beginning with the confirmation of the applications and one's legal name, respondents fill out the on-line questionnaire. The data of the electronic questionnaire were automatically transferred to the DB of the KNSO.

The KNSO staff checked the data and approved the form once it was determined to be errorless. For convenience in the process, various help functions related to the survey were provided for ease of response. Computer and the Internet were also used for checking the data, supervising the surveyors and managing things for the census as well as collecting data.

< Figure 3 : Main Process >



3) Future plan

However, since it was the first time to make use of the Internet for census, it was applied to only a small portion of the population. At the planning stage, 2% of all households were expected to participate but only 0.9% actually did. Nevertheless, the first e-census provided very valuable experience for the next-round Census. It is currently at the evaluation stage but this experience will have a huge influence on the improvement of future population censuses.

Jin-Ho Heo*

The Data Collection Method Using the Internet in the Business Survey

I. Background

Until recently, it was usual that surveys was completely carried out to visit an interviewer with a questionnaire and pencil. This traditional method requires a lot of time to complete the process of visiting respondents, filling out the questionnaires and recording the data. Moreover, it burdens respondents in the matters of time and privacy since they have to meet with the interviewer revealing some amount of personal information.

However, in accordance with the great developments in Information Technology and the Internet supply watch magnification, user diffusion, there has been a continuous effort to apply IT to statistical surveys to obtain a higher efficiency. In the late 90s, the Computer Assisted Self-Interviewing(CASI) method of using a palmtop or laptop was introduced in Korea, partly replacing the old method of paper questionnaires in the Consumer Price Survey(CPS). In addition, the Current Mining and Manufacturing Survey(CMMS) conducted through PC communication has been put into practice as well.

After 2000, the Internet became widespread throughout the nation and it rose as an important factor in finding efficient methods in statistical surveys since the 1990s. The idea of using the Internet for surveys has been tried in private sectors such as public opinion poll organizations. However, KNSO has been reluctant to use the Internet methods because of the lack of Internet environment and protection of privacy.

As there was an explosion in the number of Internet users, the Internet was finally applied to official statistical fields. As table 1 indicates, the rate of the Internet usage in Korea was over 51% in 2001 and further increased to 73% in 2006. As table 2 indicates, the Broadband Internet service subscribers in Korea was 7,806 thousand persons in 2001 and further increased to 14,043 thousand persons in 2006.

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* **Jin-Ho Heo,** Director of Price Statistics Division, KNSO

< Table 1 >

Year	01	02	03	04	05	06
rate of the Internet usage	51.6%	58.0%	64.1%	68.2%	71.9%	73.5%

Source: National Internet Development Agent of Korea (http://www.nida.or.kr/)

< Table 2 >

Year	01	02	03	04	05	06
Broadband Internet service subscribers(1,000 persons)	7,806	10,405	11,178	11,921	12,191	14,043

Source: Ministry of Information & Communication (http://www.istat.go.kr/)

Initially starting with application of the Internet survey for businesses and enterprises, the Internet survey has partially extended to Manufacturing Production Capacity & Operation Ratio Survey, E-commerce Enterprises Survey, Cyber Shopping Mall Survey and the 2005 Service Industry Census.

The changes in the survey methods are expected to bring about a whole new innovation to the traditional paper survey. It will save time conducting the survey, reduce the burden of respondents, increase the accuracy of the data and shorten the data processing time.

The following will discuss how Internet surveys on business are conducted in Korea and suggest a future direction by assessing our experience with the Internet survey.

II. Applying the Internet in a statistical survey

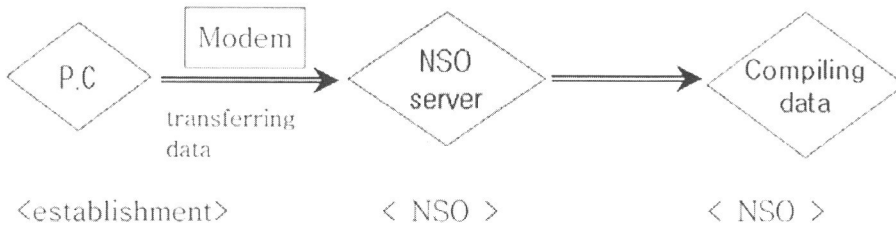
1) On the business survey

In Korea, the very first case of application of an electronic survey was the Current Mining and Manufacturing Survey(CMMS). In 1997, the KNSO conducted this survey using PC communication for the first time. It started by applying an electronic survey to a few of about 8,000 establishments. In 2001, the extent of the application was widened to 31% of the total, which included 2,500 establishments.

The survey was conducted according to a specific process. Software for an electronic survey was installed in the computers of a respondent within an establishment. Respondents received education concerning the use the program.

They were able to fill out the electronic questionnaire using the software at their convenience and then transfer the file to the KNSO. The KNSO examined the submitted files and sums them up with the result conducted in a paper survey to produce total statistics.

< Figure 1 : Basic concept >



Data collecting methods using PC communication encountered various difficulties when operated for the first time. Firstly, due to its time saving qualities, there was some opposition from local offices because they were aware of the possibility of a reduction in staff due to this new method. Therefore, it was hard to receive cooperation from field survey staffs. Secondly, while installing the survey program to a respondents' computer and attempting to operate the program, some technological errors occurred. The only options were reinstallation and re-operation. Thirdly, there were internal problems related with the capacity of computers, especially in the cases of small-scale business. It was difficult to install the surveying program primarily because the PCs were out of date. Moreover, if respondents were inexperienced with computers it was difficult to get assistance. Additional problems included the possible dangers of hacking and weaknesses in information protection.

For these reasons, the number of establishments who cooperated in the new data collecting system was very small in the early stages. In 1998, the participation rate was below 10%. However as the efficiency of survey has risen, increases in the rate occurred in the following years of 1999 and 2000 to about 15% and 20%, respectively.

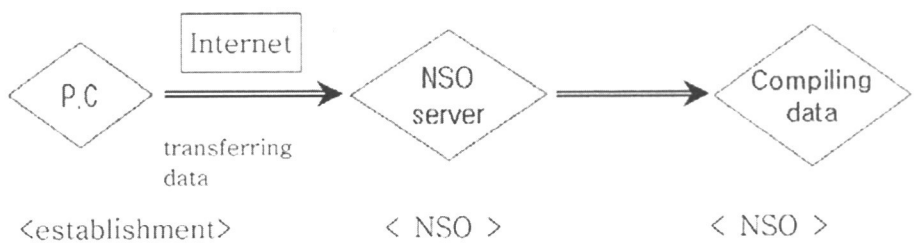
After the year 2000, the Internet became widespread and PC communication through a modem became out-of-date as a majority of establishments started to use the Internet instead of PC communication. In order to keep pace with this trend, the data-collecting system had also veered its direction towards the Internet. Instead of manually installing software for a questionnaire in a respondent's

computer, the software for the Internet data collecting system was available for download automatically through the Internet. It visualized far better function than before. As a result, there was a sense of elevated satisfaction levels among enumerators and respondents.

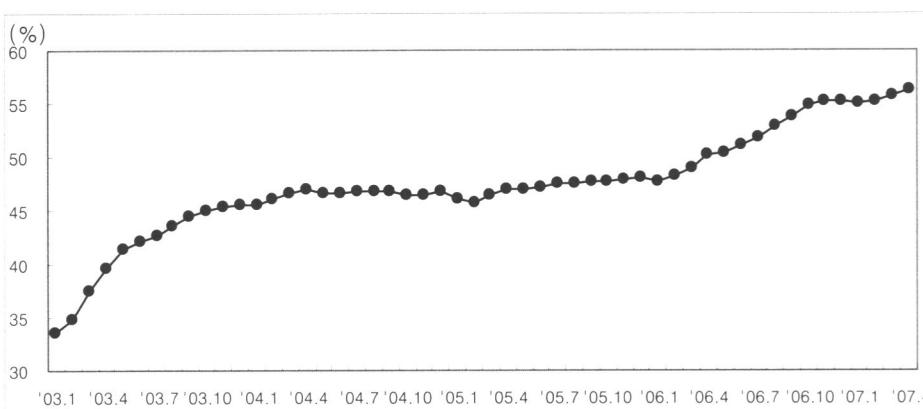
Respondents of the establishment can access the server of KNSO with their IDs and Passwords. When they filled out the electronic questionnaire, the data is automatically transferred to the KNSO. The electronic questionnaire program offers help-functions, explanations for survey terms and an editing function so that respondents can check input errors for increased accuracy.

For these reasons, in 2007, the KNSO could collect data from 4,200 establishments, which accounted for 56% of all entities (7,500) of the Current Mining and Manufacturing Survey and 1,400 establishments, which were 60% of the total entities (2,300) of the Monthly Manufacturing Production Capacity & Operation Ratio Survey (MMPCS).

< Figure 2 : Basic concept >



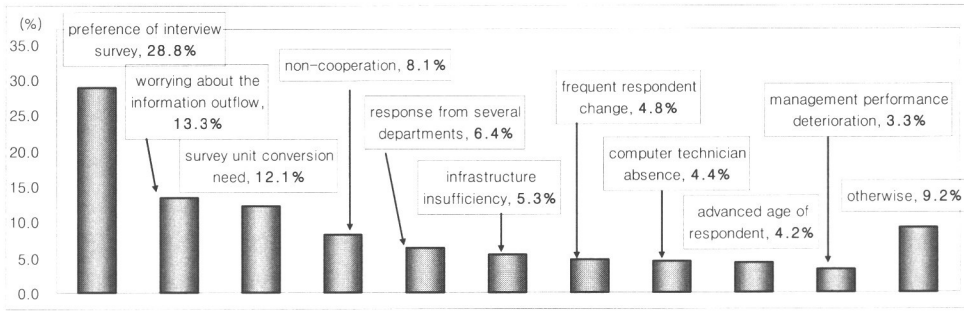
< Figure 3 : the trend of the ratio of Internet survey >



The ratio of the Internet survey has come out lowly in the metropolitan area, such as Seoul, Ulsan etc. It is 43% in Seoul, it is 32% in Ulsan. This shows indirectly that we have difficulty in carrying out the business survey in the metropolitan area. Also it appeared lowly in the rural area. This shows indirectly that the circumstance of the Internet network is not good in the rural area.

If any establishment doesn't want to have Internet survey, we analyzed the cause. The preference ratio of interview survey is 28.8%. The ratio of worrying about the information outflow is 13.3%. Therefore, the factor related to an intention of respondent interview survey preference, worrying about the information outflow and non-cooperation, etc. is 50.2%. That ratio is over the half of whole response. It appeared that impossible factor (response from several departments, frequent respondent change and deterioration in actual results from running a business) in responding system is 14.5%. It appeared that infrastructure insufficiency for Internet survey is 13.9%. 'Survey unit conversion need' factor related to survey accuracy is 12.1%, and existing interview survey should continue for accurate survey. The rest reason is fax survey, data sum delay, E-mail survey preference, frequent business trip of respondent, having a difficulty in filling up because of progress rate enumeration.

< Figure 4 : the cause of the non-Internet survey >



Consumer Price Survey is another example of employing Information Technology in statistical survey. The KNSO adopted PDA(personal digital assistant) method in place of paper questionnaire in 2003. Enumerators input data into PDA, return to local office, connect to PC and send data to KNSO's main computer. It saves a lot working hour of enumerators. In Consumer Price Survey, we collect data through Internet where prices are equal nationwide and available e.g. electricity, financial fee, tobacco etc. Such items total 113 where as total CPS items 489. We utilize Internet also to find appearance of new commodity in market.

2) Benefit analysis of Internet survey

As the KNSO succeeds in improvement of survey accuracy by workload curtailment(eg. shortened time in visiting for survey), it improves an efficiency with committing a manpower to newly-developed survey conduction.
For these reasons, the KNSO made an effort to persuade sample establishments to participate in the e-survey. Even though the ratio of participation in the e-survey was only 45.6% in 2003, the ratio steadily rose to 56.2% in 2007.

< Table 3 : The participation ratio of the e-CMMS >

2003.12	2004.12	2005.12	2006.12	2007.4
45.6%	46.8%	48.0%	55.1%	56.2%

III. Prospects and Limitations

As shown above in the case analysis, there is a strong probability that Korea will expand the e-survey through the Internet. The Internet survey has a very high efficiency rate compared to the traditional paper survey, as well as other various merits.

- Firstly, it cuts down the cost of the statistical survey. It can save on high personnel expenses and the surplus of labor could be put to use in other areas.
- Secondly, it can reduce the processing time of statistical data. The monthly industry e-survey could save 1.5 days of processing.
- Thirdly, it can increase the accuracy of data. The editing program can assure a high accuracy of responses and strengthen administration.

There are several limitations in utilizing the Internet.

- Firstly, an area deprived of Internet access cannot apply this method. Approximately 25% of the total populations in Korea, especially rural and the elderly areas, do not have access to the Internet. Therefore, it is necessary to continue using the traditional survey in rural and elderly communities, who might not be familiar with computers.
- Secondly, only those who want to respond through the Internet can be targeted in this method. Therefore, the e-survey is simply a supplemental method to the traditional paper survey.

- Thirdly, countermeasures for computation failure are required.
- Finally, a system is needed in order to prevent privacy leakage against hacking. For this, data should be managed with the clearest extent of responsibility.

Despite its weaknesses, the Internet survey is proven to be a very efficient method, which has the ability to suit the changing environment. Hence, it seems that it will eventually replace the traditional way. It will develop as an applicable and valid method in all areas including large scaled Census, business and household surveys.

Session Discussion

Seok-Hun Lee (Chungnam National Univ.)

We have confirmed discrepancies in the IT infrastructure, data sharing & accountability, related regulations or respondents' attitude on surveys of Germany, China and Korea. While embracing enhanced timeliness and accuracy acquired from the Internet use, we also need to prepare for the undesirable effects, though not presently visible on the horizon.

For Korea, a rather low Internet respondent rate in the metropolitan cities seems to originate from the security concerns of big companies whereas the cause of low respondent rate in the rural areas is more due to small businesses scattered around this area than bad Internet connections. We also have to figure out ways to persuade the respondents who refuse to give information via the Internet.

I consider the electronic household account book as a real success, above all, paying $50 per month seems to provide a good incentive for households to keep it. In the case of card and cash expenditures, which are for now automatically transferred to the account book, it can be easily biased by some entities so we need to confirm 'the real respondents' during the E-census.

The FSO has established a good connection with the financial systems of companies and I'd like to know what the benefits on companies' side are when they relay their financial information to FSO.

The statistical surveys of China have improved to be an interactive and data sharing survey from a one-way and traditional one. However, your major surveys are still performed by face-to-face interviews and Internet surveys are somewhat supplements. I'd like to know how you plan to soft-land when the roles are shifted. Also, I want to know if you have ever experienced, though survey period has shortened, any quality problems derived from strong law enforcement. (Korea has similar regulations to force surveys but we mainly rely on persuasion)

Walter Radermacher (FSO)

When the Tax Accountants association manages financial information of the responding companies, it first consults with software companies which are responsible for developing their financial systems and let them feed the needed

data to the FSO automatically. If additional information is needed, it presents comprehensive (or more) data to the FSO through the CORE system.

Our technology level has arrived at its adolescence stage, and although we have departed from our infantile beginnings, we still have a lot of issues to deal with so the advancement and applications of these technologies should go forward to solve latent challenges.

Kyu-Young Kim (Information System Development Division, KNSO)

To decide the eligibility of respondents, we check the validity of ID numbers and names. In addition, we must concern ourselves with the efficiency of the Internet survey for the fact that the respondents' concentration level dramatically decreases after 10~15 minutes from the commencement of the survey. Therefore we should have some flexibility to reduce reporting burden between the option of the paper questionnaire that has a full list and the online questionnaire that has abbreviated ones.

SESSION 3

The Impact of the Internet on Data Dissemination Procedures

- Chairperson : Xie Fuzhan
- Statistical Information System (KOSIS & MDSS)
  (Yeon-Ok Yun)
- The Impact of the Internet on the Communication and Dissemination Strategy of the FSO
  (Doris Stark)
- Statistical Data Dissemination by Means of Internet in China
  (Wen Jianwu)
- Communicating Statistics Effectively on the web with Interactive Web-graphics
  (Dieter Sarreither)
- The e-national Indicator System as an Infrastructure to Support Policy Decision Makers and Evaluators
  (Kwang-Seop Kim)
- Session Discussion

Yeon-Ok Yun*

Statistical Information System: KOSIS & MDSS

KOSIS and MDSS, two major statistical information service systems provided by KNSO, are explained with their background, major features, efficiency etc.

I. KOSIS(Korean Statistical Information Service)

1) Background

Decentralized statistical system was adopted in Korea, thus the KNSO and lots of other government organizations produce different kinds of statistics and disseminate them respectively. Users, who use statistical information from the organizations, have a lot of difficulties to access the data which they wanted, since they do not know exactly which organization produce or release the data what they wanted. To solve these problems, the KNSO implemented KOSIS, on which we integrated all statistical information which was produced from other organizations. Now users can visit just one web site KOSIS and get all statistical information without any trouble.

2) The largest DB in the world

KOSIS is currently providing 246 kinds of official statistics which is produced by 40 organizations. In case the organizations have their own DB, we collect data automatically by linking the DB of each organization into KOSIS. If the organizations only have the publications, we construct DB and connect KOSIS. So we implemented the largest DB service system in the world.

3) Provide various and convenient statistical services

Users can access statistical information on the web site of KOSIS(www.kosis.kr) whatever they want. They can find statistical information by category, by organization and by survey name using search function. As well we provide various output, therefore they can see it variously using pivot, drill and graph

* **Yeon-Ok Yun,** Director of Statistical Data Collection & Management Division

functions. We provide analysis functions, so they can calculate year to year rate and component ratio, too.

And what is more, we provide customized service for children, teenager and adult to help them understand statistical information easily by using animation, flash, and interesting educational contents.

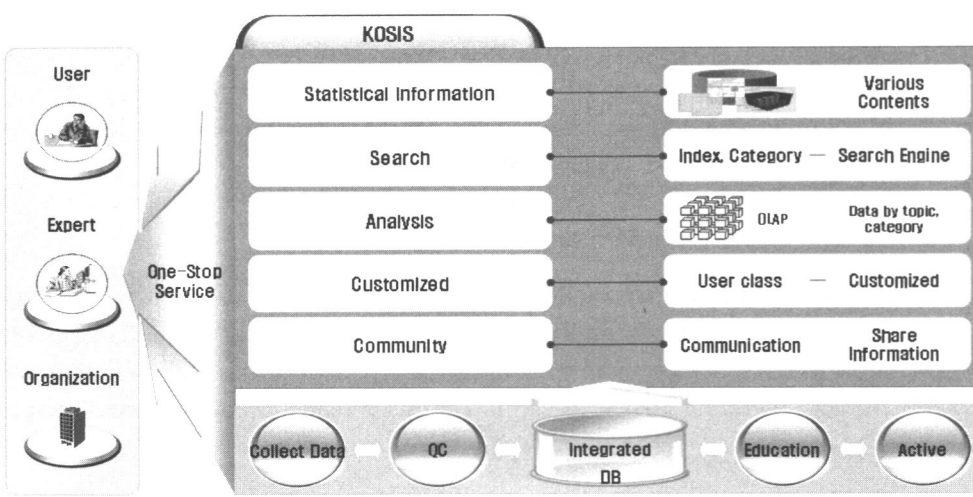
4) Expand service gradually

Constructing DB of KOSIS is three consecutive year project form 2006 to 2008. We constructed DB for 40 organizations in 2006, and we're constructing DB for 45 organization additionally in 2007. Finally in 2008 we'll construct DB for all remaining organizations.

5) Practical use of National Statistics in public

We standardize statistical DB and application, and then we disseminate public SW to help organizations construct statistical DB. After that we collect data automatically, periodically by scheduler into integrated statistical DB system from DB of each organization. And we provide one stop information service through the web site of KOSIS, so we avoid wasted budget to implement duplicate system in each organization and eventually we improve efficiency of work flow. In addition, we can check the status of current national statistics directly and it helps to use statistical information.

< Figure 1 : Service on KOSIS >



II. MDSS(Micro Data Service System)

1) Background

Statistics become more popular in analyzing social situation, which follows the request of microdata service is getting increasing a lot. However only limited number of staff members are worked for microdata service in the KNSO, consequently it takes long time to serve the microdata to users. In addition it was very complicated process to get microdata from the request, so users were displeased about the microdata service provided by the KNSO.
In order to solve these problem and made it efficiency to serve microdata, we did research and developed microdata service system(MDSS), accordingly we provided microdata service through the Internet since 2006.

2) Major features

The main functions of MDSS are calculating and extracting data through the Internet. At first users could select data according to the user-defined conditions and then download them in their PC. As well they could calculate some data according to conditions. And MDSS supports Drag & Drop, multi conditional input, and various options. In addition, users could download the data with various formats such as text, Excel and so on.

3) Efficiency

As you can see in <Table 1>, it was sharply increased the case of micro data service since 2006. Before MDSS we provided service only 541 cases through the regular service system in 2005. However, in 2006, we provided 784 cases by MDSS and 518 cases by regular service.

< Table 1 : Microdata service >

	2002	2003	2004	2005	2006
Regular Service	448	380	412	541	518
MDSS	-	-	-	-	784
CD	111	156	160	275	333
Total	559	536	572	816	1,635

Although the number of request for microdata service is increasing continuously, we have shortened the period of serving microdata become shorter. It takes 4.4 days in 2004, 4.2 days in 2005 and 3.5 days in 2006 to serve the microdata, respectively.

Doris Staerk*

The Impact of the Internet on the Communication and Dissemination Strategy of the Federal Statistical Office

I. Framework conditions

The rapid and extensive proliferation of the Internet as a communication channel for producers and suppliers as well as users of information has clearly shifted the focus of the statistical institutes' publication systems towards an increasing dissemination via the Internet. The Internet connects the users and suppliers of information across the world at all times and has relegated national borders to the background. National developments are in a contest and have to stand comparison with international ones. Developments in Germany are strongly linked to those in other European countries and at Eurostat, the European statistical institute. On the global market of information, the United States and international organizations like the United Nations, the World Bank and the OECD are benchmarkers.

In Germany, the Federal Government has supported and promoted the use of the Internet through a number of e-government initiatives. An active development of the e-government portfolio of all administrative agencies is seen as an important aspect of modernizing public administration. It is intended that the business community, citizens and public administration should be able to use all the online services provided by the state electronically on the required scale in 2010.

The eGovernment 2.0 Programme includes measures such as reducing access barriers as well as creating additional incentives aimed at increasing usage figures. For suitable services and selected user groups, electronic processing will even become compulsory.

The reduction of bureaucratic costs is the central objective behind promoting an innovative electronic cooperation between the business community and public administration in order to strengthen Germany as a business location. "The Internet is set to become the most popular communication and sales channel for administrative services." (Source: Federal Ministry of the Interior: eGovernment 2.0

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* **Doris Staerk,** Head of Division(Online-Service, Publication, Corporate Design)

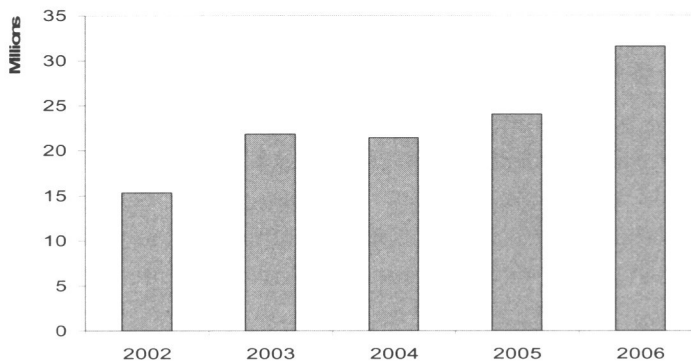
The Programme of the Federal Government, p. 12.) However, online services will also be supported by traditional communication channels because public administration is focused on economic efficiency and user needs.

This is also the target frame for German official statistics. The official statistical agencies are part of public administration and the results of their work - the statistical data - constitute a public good, which is incorporated into the informational infrastructure of a modern knowledge society. European legislation, too, calls for extended public services, such as free access to statistical information, and promotes their continued use with the aim of exploiting the potentials for growth and value added.

II. The Internet as part of the Federal Statistical Office's Dissemination strategy

The use of any new publication medium - be it discs, CD-ROMs or online services - offers an opportunity to reconsider the principles of the dissemination and publication system as well as of the marketing strategies: Does the new medium enter into competition with the traditional media? Does it replace them? Does it attract new groups of users? How will traditional customers respond to the new medium? How should the pricing system be adapted to the changed conditions?
The goals that are pursued by offering statistical data on the Internet are, on the one hand, to meet increasing user needs and, on the other, to reach new groups of users. The almost continuously increasing number of page views shows that the new medium is readily accepted by the users – something which has never been achieved with any other form of publication in such short time.

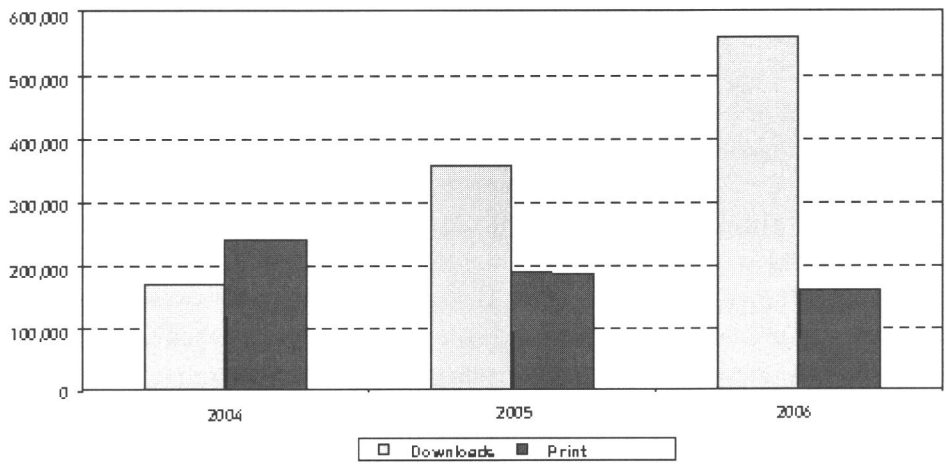
< Figure 1 >



The number of private Internet connections is growing steadily. The proportion of businesses using the Internet has risen to nearly 100%.

It is a fact that the retrieval of information via the Internet (downloads) has surpassed the demand for printed publications and this can not only be observed in Germany.

< Figure 2 : Sales of print products vs. downloads from the publication service >



For that reason, the Federal Statistical Office has gradually but consistently changed its publication practice from providing chargeable printed publications to offering Internet publications, which, as a matter of principle, are available free of charge. The Internet has become our number-one information and dissemination channel. This has helped to save a considerable amount of paper and printing costs and, in addition, has substantially improved the circulation of the publications concerned.

The Federal Statistical Office follows the principle that "data come free of charge, services have to be paid for". Printing publications, too, is a way of providing services. Consequently, we intend to reduce the supply of printed publications over the next four years (until 2012) to products that can be sold cost-effectively or are considered as scientific publications which must continue to be available to the scientific community as citable sources.

In future, print products will mainly be used to support public relations and advertising activities – even together with special online offers.

III. The Internet as an instrument of modernization

Let us start from the fact that the wealth of information to be extracted from statistical surveys can never be comprehensively processed and made available in a way that anticipates all types of user needs. Against this background, database solutions are the only feasible and practical approach to providing sufficient information for users on the Internet. Databases permit to define standardisable dissemination procedures as early as during the production process. They combine the basic data with the metadata in such a way that the Internet can offer user-friendly access to the data via the metadata and enable users at the same time to define alternative combinations of variables. The greatest efficiency benefits can be achieved if an output database is then used as the basis for all publications, online as well as offline.

The Federal Statistical Office and the statistical offices of the German Länder have jointly developed a statistical information system (the GENESIS database) to accomplish this range of complex tasks. The system is used to answer information requests and to prepare publications. It enables professional as well as occasional users to compile and download highly up-to-date information with a high level of detail or in aggregated form and to use it for their own purposes.

IV. Conclusion and prospects

The globalization of the markets and the increasing worldwide competition have led, on the one hand, to an increasing demand for factual information. On the other, they are imposing new demands on the manner of information dissemination. Every information provider faces the challenges of the rapidly progressing technologies for communicating and transmitting information. What comes immediately to mind is the picture of a shrinking world in which everyone can be at any place at any time – at least mentally if not physically. While, up to a few years, such visions were only cherished by a few believers in progress, they have become common knowledge by now.

Nevertheless, it is quite difficult to predict the future development, because there are many influencing factors. What can however be observed is that users increasingly require guidance through the flood of information. This can be achieved by good navigation and search tools, sufficient metadata and an appealing visualization of complex statistical topics, including individual interactive tools. It requires a lot of energy and a strong willingness to learn to

keep pace with the rapid development in Internet technologies. New possibilities will be opened up by the participation in social web developments (Google maps, Swivel, Gapminder and the like) if open interfaces are provided to the data and liberal conditions of access apply. These are the challenges that we will have to address over the coming years.

Wen Jianwu*

Statistical Data Dissemination By Means of Internet in China

Statistical data, as the main statistical result, need be supplied to wide users including the government, the industrial and commercial enterprises, and the general public as well as other domestic and international users. It is important to make the users obtain, understand and use data conveniently as far as possible. Actually the possibility and convenience on the application of statistical data is the main part of statistical function as a whole.

Along with the development of the network information technology, to disseminate the statistical data by means of Internet can make users get the information rapidly, efficiently and widely. The Internet has become one of the important channels for disseminating the statistical data.

I. The Present Conditions of Disseminating Statistical Data by Means of Internet in China

At present, the bone network of national statistical information system has been set up in China, with 65 nodes made up of all provincial agencies and local agencies in key cities, the National Bureau of Statistics (NBS) as the core, and covering national, provincial, prefecture and county four-level statistical agencies. The working environment of Internet and extranet have preliminarily found up. The statistical bureaus at the national, provincial and key city levels including the majority agencies on prefecture and county levels are connected and communicated on it. The building up of the network environment is the fundamental conditions for disseminating data on Internet.

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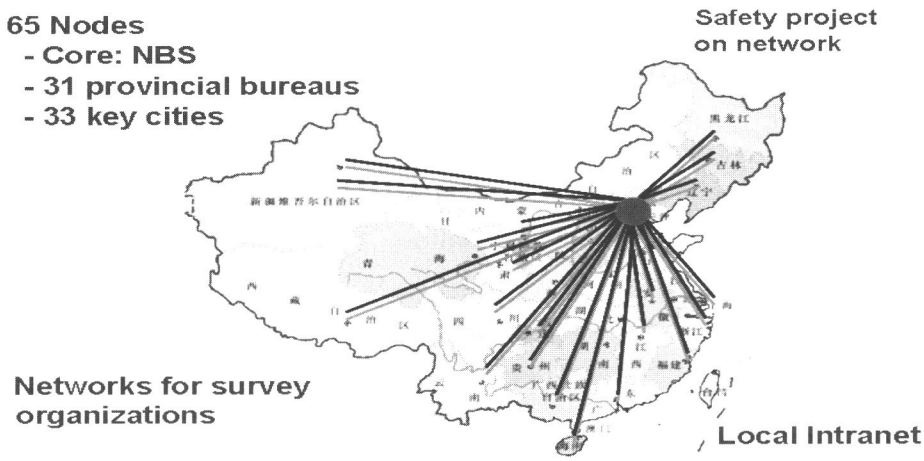
< Figure 1 : Network Environment of China >



Since the NBS website was established in 1997, NBS started to disseminate the statistical data by means of Internet. Up to now, NBS, 31 statistical bureaus at the provincial level, most statistical bureaus at the prefecture level and parts of statistical bureaus at the county level implement the dissemination of statistical data on their own external websites. Other national government ministries or agencies have also disseminated their statistical data through their own websites. As a result of the development in more than 10 years, considerable achievements have been made in disseminating statistical data by means of Internet in China. They are as follows:

1) More diversified contents of dissemination of statistical data

For example, NBS started to disseminate the annual statistical communiqué as the first step in disseminating the data on Internet. Gradually, the dissemination of data have been expanded to statistical communiqués, monthly, quarterly and annual statistical data, data on special subjects and statistical reports, etc. In addition to the current data, amount of longitudinal historical data has also been disseminated through Internet after they are properly processed. The ten-year data from 1996 to 2006 in China Statistical Yearbook have been disseminated on the NBS site.

2) Shortened periods for data dissemination

Compared with the periods for disseminating data by means of paper media, the periods for disseminating data by means of Internet have been shortened. For

example, the statistical data and statistical reports disseminated at the annual press conference on economic situations, the quarterly press conference on economic performance and press conference on annual statistical communiqué can be disseminated simultaneously at the NBS site and the sites of major media. Most monthly statistical data are disseminated on Internet successively on 5th to 20th date of next month.

3) Diversified forms for data dissemination

At present, the forms for disseminating statistical data through Internet include data tables, statistical graphs, reports and maps, etc. The users can also set individual specific searching and freely predetermine the forms of the results of enquiries. As a result of using these diversified forms, dissemination of statistical data became more visually and in a popular style.

4) Standardized administration of disseminating data

Official statistics of China participated in GDDS in 2002. The statistical data should be disseminated in accordance with the framework and rule formulated by GDDS. The work of data dissemination has advanced to the standardized path. Consulting the rules of GDDS, many disseminating institutions have worked out the administration rules of disseminating data on Internet, drawn up the lists of data to be disseminated and the schedule. Take NBS as an example, at the beginning of this year, the release calendar for 21 statistical reports and 28 statistical data in 2007 were announced through NBS website.

5) Diversified means of dissemination

In addition to browsing the pages in the Internet, the users can also get the specialized services by means of membership, statistical data subscribing, E-mail and E-Commerce, etc.

6) Feedback mechanism

For the purpose of data dissemination, most institutions have set up the mechanism for information flow and feedback with the users by means of network, so as to achieve the alternate communication between the two sides. It is the way to understand the needs of the users and continuously readjust and perfect the content to be disseminated in the Internet as well as the disseminating mechanism.

II. The Trend of Statistical Data Dissemination by means of Internet

Along with the rapid development of China's economy, the following changes have appeared in the demands of users for statistical data:

1) The increasing demands. In order to make the macro decision and public management, the government's demand for statistical data is continuously growing. Particularly the demand for statistical data, which reflect the rapid changes of the national economy and society, is growing more rapidly. Great changes have also taken place in the demands of the industrial and commercial enterprises and the general public for statistical data. In the intense market competition, industrial and commercial enterprises have the demands for more statistical data so as to assist them for decision-making. Along with the changes of the general public in the working and life styles, the people have the demand for more statistical data on individual or family investment, consumption, education, employment, security and welfare, etc. so as to assist them for making individual decision.

2) The timeliness of statistical data. Because the economic life is changing fast, making a decisive and correct decision should have the timely support of the statistical data.

3) More international demands. The development of the Internet has shortened the distance among the people and the nations. Along with the global economic changes, more demands for China's statistical data have come from the international community.

4) More individual-oriented services. Because of the differences among the users, among the problems they have and among the ways to solve the problems, more individual-oriented services should be provided with.

Due to the development of the network information technology, it is possible to meet these changing demands. As compared with other ways for data dissemination, the way of disseminating data by means of Internet is faster in dissemination, wider in coverage, more in the number of patterns and higher in the efficiency. On the basis of the analysis of the situations in recent years, the trend development of data dissemination through Internet can be expected that along with the development of the network information technology and the continuous increase of the number of the Internet users, the mode for disseminating statistical data by means of Internet will become the main mode and the most important

channel and will therefore become more rapidly in its growth. However, as one of the means for data dissemination, the way by means of Internet cannot completely replace the other ways, because the various ways of disseminating data have their own readers or audience, so that the different users can obtain the statistical data from different disseminating channels. Take the statistical yearbook with paper medium for example. It can meet the needs of users to use the statistical data under the non-electronic conditions.

III. Problems Confronted with in Disseminating Statistical Data by means of Internet in China

The main problems which exist in statistical data dissemination by means of Internet in China are as follows:

1) Lack of standardized management

At present, the resources of statistical data disseminated by means of Internet are managed in a scattered way. They are poor in common sharing and exchange with each other, and inconvenient for using again. The contents of the data disseminated include chiefly the comprehensive macro data and are lack of more detailed classified data and complete data on time series. In addition, only the statistical data are generally disseminated while the information on the data explanation and the data precision is released insufficiently and not in a systematic way. As a result, the users are unable to fully and right understand the content of data, and evaluate the quality of data. Therefore it causes the deviations in using data. In openness, some institutions have no strict list and schedule for data dissemination to inform the general public in advance. When the schedule for dissemination should be changed, no notice has been made in advance either. In languages used for disseminating data, quite big difference appeared in the contents between in Chinese and in other languages. Richer contents are disseminated in Chinese.

2) The data dissemination technology has not been widely used

At present, the database technology and the tools for disseminating data have not been widely used in data dissemination by means of Internet. Generally it is popular in Page disseminating on Internet, and the formats HTML, WORD and EXCEL are mostly used. Catalogue management is applied. The method of predetermination is used in this way of disseminating data. The contents decision

of dissemination is completely controlled by the disseminators. The decision is sometimes quite subjective and is therefore unable to meet the individual needs of the users. Under the condition that the amount of data disseminated is continuously growing, the users should spend a lot of time and consume great energy to seek the contents they need and the efficiency is therefore not high. Secondly, it is not easy to maintain the consistency and accuracy of the contents disseminated in different regions.

3) The privacy and security of the contents disseminated

At present, there is no strict and legal standard for classification of the public and non-public information, and there is no comparatively perfect and scientific system of classification. As a result, the public information is insufficiently provided. A lot of statistical data have been unable to be disseminated all along and a vast amount of survey data is unable to be effectively used. Secondly, because the method of effective analysis of data dissemination has not been widely used, the individual data of the respondents are possible to be disclosed or to be found out by calculation. Particularly, because the economic scale is comparatively small in some prefectures or counties, if the data disclosure analysis has not been used before data dissemination, the individual data of the enterprises are liable to be found out by calculation and the confidentiality is thus betrayed. This is a problem of common concern in statistical data dissemination of China, and is not the problem only confronted with in disseminating statistical data by means of Internet.

4) No standard for data exchange

The patterns and frameworks used in disseminating statistical data by means of Internet are quite different from each other in deferent agencies. No common standards for data exchange are applied. A great amount of cost for data processing should be paid in duplicated use of data.

IV. Actively Adopting Measures, so as to Promote the Development of the Work of Statistical Data Dissemination by means of the Internet

1) Strengthening the professional guidance, standardize the administration of dissemination by means of Internet

As the department responsible for the work of statistics in China, NBS will strengthen the research on the work of disseminating statistical data by means of Internet, explore the effective measure for administration, and standardize the process for dissemination, so as to promote the development of statistical data dissemination by this means. We should make efforts to promote the use of official data disseminated by means of Internet to the greatest extent. We should particularly pay close attention to the demands of the users and periodically evaluate and readjust the dissemination policies. We should concern the work as an important part in the whole statistics.

In content, we should pay particular attention to the work of data collection, editing and disseminating on key statistical indicators. Under the prerequisite of not violating the security regulations, we should disseminate more statistical data as far as possible, so as to promote the use of statistical data in the analysis and formulation of policies.

In order to make the users convenient to browse and obtain data through Internet, we should encourage the users to develop the data in depth, so as to meet their individual demands.

2) Strengthening the construction of databases, so as to promote the use of technology for disseminating data by means of Internet

To fully utilize the modern information technology is able to continuously improve the ability of the system for data collection and data dissemination. Adoption of some new technologies is not only possible to disseminate data by means of Internet, but also possible to disseminate the data directly to the desks of some important users. To utilize the modern information technology can make the users convenient to consult data and reduce the amount of keying operation when they browse the key information. As a result of utilizing the modern information technology, the professional people can conveniently make inquiries in an advanced way while the unprofessional people can be helped to accurately understand the statistical indicators and quickly find the data they need by inquiry.

The work for construction of metadata bases should be strengthened because it is the condition for improving the efficiency of disseminating data. More time is required to construct metadata bases than to develop the dissemination system. The metadata should be used in the beginning working links of the statistical surveys and should be revised in the various links of statistical surveys when necessary so as to ensure the efficiency of metadata when the data are disseminated.

The work for construction of statistical database should be well done. China's statistical department has continuously strengthened its work in this respect in recent years. The basic database on macroeconomic and social development, which is a project under construction in China, is a basic database which covers the fields of national economy, social development, urban construction, scientific and technological progress, resources and environment, etc. When it is built up, it is possible to achieve the aim of common sharing of the information of various departments and providing the government with timely and effective information services for management and making decision. In the respect of disseminating and using micro data, we should strengthen the utilization of the data collected from censuses and regular surveys and strengthen the construction of primary database. In order to serve the general public, statistical system of China is working hard to construct the system of database for disseminating data to it.

3) Strengthening data security and well treating the relationship between protection and utilization of data

In the work of disseminating statistical data, we should well treat the relationship between protection and utilization of data. The basic principle for disseminating data is that except the information related to the national security and involving the secrets of the country, enterprises and individuals, most statistical information products should be open to the general public, so as to ensure the maximum safely use of the statistical data. In the system of disseminating statistical data by means of Internet, we should use the information security technology, so as to ensure the accuracy of data and avoid the falsification of data. We should strengthen the study of the standard for classification of the public and nonpublic information and formulate the systematic and scientific system of standards for classification. We should strengthen the disclosure analysis before disseminating the data and apply the method of the disclosure processing , so as to ensure that the individual information of the data suppliers not to be disclosed or to be found out by calculation.

4) Strengthening the research on data standardization and the application of it

In the work of disseminating data by means of Internet, we should pay attention to the formulation of the international standards for exchanging the statistical data and metadata, such as SDMX (Statistical Data and Metadata Exchange) and DDI (Data Document Interface). We should participate in the research on these standards and the development of them as far as possible. Along with the continuous perfection of the work of these standards, we will achieve the aim of common sharing and exchange of the data among different data disseminators and among different countries so that the exchange and sharing of data will become easier and more efficient.

Dieter Sarreither*

Communicating Statistics Effectively on the Web with Interactive Web-Graphics

I. Introduction

The German experience in visualisation of statistical information with interactive graphics and maps started about five years ago with a handful applications using Scalable Vector Graphics (SVG), an XML-based open standard:

- an animated population pyramid (published in 2003)[1],
- a mapping application for the results of the European Election (2004)[2]
- the Atlas of Regional Statistics (2004)[3],
- an atlas for results of the election for the German Bundestag (2005)[4],
- an index calculator for a personalised inflation rate (2005)[5].

Even animation can be eye-catching and is mostly high-performance SVG has some drawbacks which should not be ignored. Copyright provisions regarding map geometry in the case of the interactive atlases resp. inconsistent support of SVG by browsers are the main obstacles for the vendor resp. the customer.

Concerning interactive maps the Federal Statistical Office Germany has therefore already taken the next step by applying the technology of an Internet-Map-Server (IMS). In May of this year the Atlas of Foreign Trade (2007)[6] was launched based on this technology. To make use of this application only JavaScript has to be activated.

1) www.destatis.de → Themen/Bevölkerung → animierte Alterspyramide
2) http://www.bundeswahlleiter.de/wahlen/europawahl2004/informationen/ergebnisse/src/start.htm
3) www.destatis.de/onlineatlas
4) http://www.bundeswahlleiter.de/bundestagswahl2005/onlineatlas/btwClientKarte.htm
5) www.destatis.de → Themen/Preise → Verbraucherpreise → Warenkorb und Wägungsschema → Persönlicher Inflationsrechner
6) www.destatis.de → Themen/Weitere Themen → Außenhandel → Außenhandelsatlas

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Beside the technological views there are conceptual ones. Fundamentally one has to answer the question how to link metadata, tables, graphics and maps. Of course there are different approaches. Surely the classical approach for statistical information is to navigate through metadata to get the required tables. In the Federal Statistical Office of Germany this year a project was started to improve the functionality and the "look and feel" of GENESIS Online[7], the online version of the common information database of the Federal Statistical Office and the statistical offices of the Länder. The project includes a concept to generate graphics and maps, subject to the condition that the data are adopted for that kind of presentation, directly out of the tabular data just researched by the user. There is fine example for such an integrated concept on a recent website from Eurostat.[8]

In addition to such ideas we are planning to offer a kind of map viewer for statistics which concentrates itself on maps and contains a navigation system of its own. The Atlas of Regional Statistics can be considered as a precursor of such a map viewer. Of course it is intended to develop the map viewer applying the IMS technology.

Last but not least it still will be essential to publish small and easy to use interactive applications that are involved with special statistics like the population pyramid or the index calculator. It doesn't make sense to drive graphics like that with data from other subjects.

7) http://www.statistik-portal.de/Statistik-Portal/GenesisUebersicht.asp
8) At the time writing this text the website is still in test- mode : http://epp.eurostat.ec.europa.eu/portal/page?_pageid=3013,65310704&_dad=portal&_schema=PORTAL

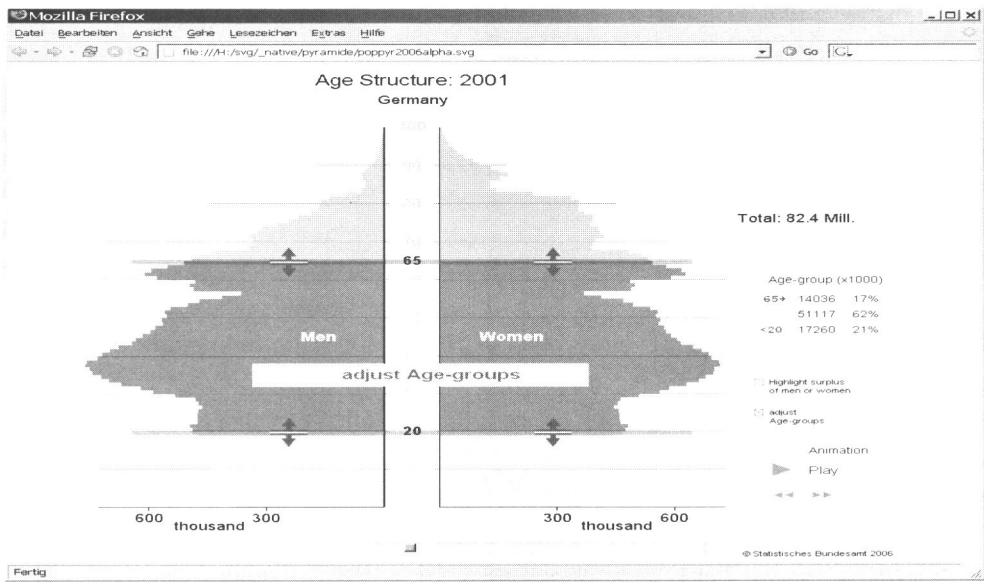
II. The Main Examples

User interaction is the key concept whereby users can explore the statistical data in new ways compared to static publications. The need for applications being data-driven is important for easy, frequent, and possibly automated updates to the data without interfering with the application logic or the graphic's layout. Animation can make understanding of statistics a lot easier and catch the visitor's attention in a very effective way.

The Animated Population Pyramid is the classic example (cf. figure 1). In its static occurrence, a population pyramid is a two-dimensional graph with three data

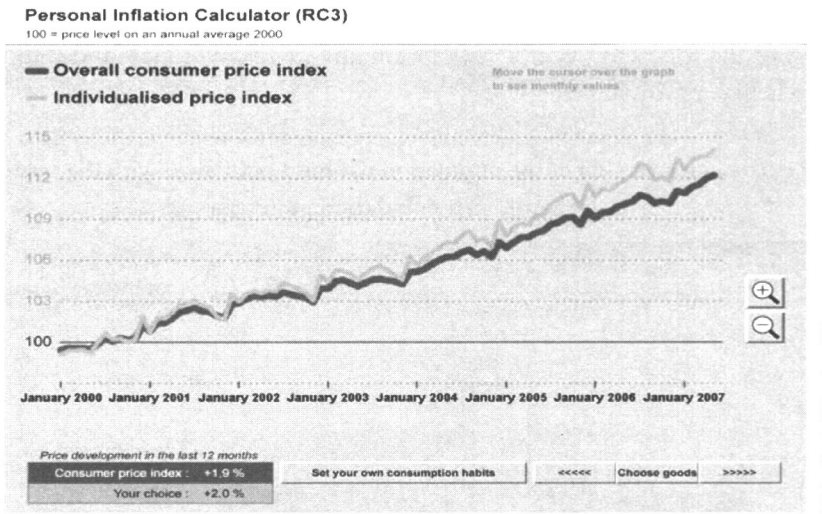
dimensions: population count, age, and sex. Adding animation can make the fourth variable "time" visible, thereby demonstrating the demographic concept that most of the following year's population already exists today and that the age-structure is like a growing tree.

< Figure 1: The latest version of the population pyramid published with the results of the 11th coordinated population projection >



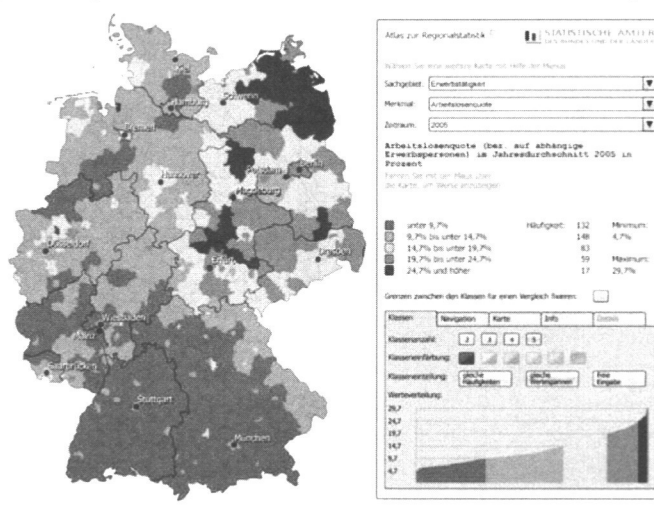
The Index Calculator was developed in the framework of a new communication policy to better explain the complex statistical results (cf. figure 2). The Index Calculator for a personalised inflation rate allows people to mix their own basket of goods, or more precisely, to adjust the weighting patterns of the basket of goods. People who don't smoke, for example, can set the weight for tobacco to zero. Thus individuals can develop a better understanding of how the average inflation rate is calculated and how individual consumption patterns can differ.

< Figure 2 : The just renewed index calculator >



Interactive thematic maps provide the opportunity to pinpoint spatial patterns of statistical data in a few seconds unlike any table. If, for example, we examine the unemployment rate in Germany by means of a thematic map at regional level[1)], we can immediately see a strong East-West-divide and a much slighter North-South-divide (cf. figure 3).

< Figure 3 : Spatial distributions of statistical data (Atlas of Regional Statistics). >



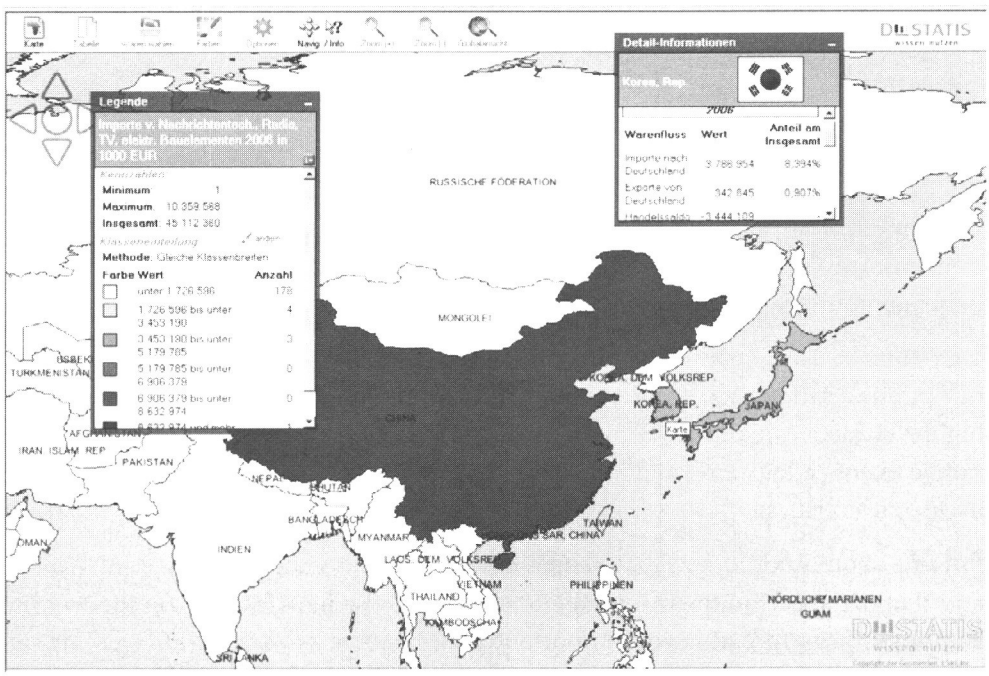
1) "Kreisfreie Städte und Landkreise" in Germany = 439 units of different extent

The Atlas of Regional Statistics offers more than 350 fully customizable thematic maps (cf. figure 3). The Atlas is provided with additional statistical tools like a chart that helps users more easily understand the distribution of values and makes analyzing regional disparities and outliers a much more interesting experience.

Interactive atlases extend the classic range of cartographic products in the form of printed media or static digital maps. Using the online atlases of the Federal Statistical Office, our customers may choose from a variety of statistical information and, at the same time, they can design the maps according to their individual convenience as regards colour, classification and additional information.

The Atlas of Foreign Trade was recently published in May this year and provides thematic maps of German trade transactions with partner countries for about 100 variable goods (cf. figure 4).

< Figure 4 : Detailed information on a certain region (Atlas of Foreign Trade) >



By applying IMS technology for this application, the Federal Statistical Office has taken the next technological step. Different from the SVG-based technology of the Atlas of Regional Statistics, three goals are achieved here that are crucial for the future:

First, the technical obstacle for the customers is reduced. They do not have to install additional software such as a plug-in. Every modern browser is able to execute the atlas; just JavaScript has to be activated. One has to consider that native SVG support in modern browsers still varies widely and the Microsoft Internet Explorer, which is still the most widespread browser, is not able to show SVG without additional software. Our experience has shown that many users hesitate to install additional software or cancel an installation because system rights are lacking on their computer. This is a serious problem concerning applications applying SVG which avoid many successful accesses to our range of products.

Second, the IMS technology takes account of the copyright provisions regarding map geometry. This target can be reached because only pixel graphics are rendered on server side and transmitted to the user's workstation instead of the true geometry. In times of worldwide discussions on rights management, this is a highly important aspect.

Third, it is possible to offer standardised web services, which allow using our data directly in applications of third parties.

III. Conclusion

With interactive graphics and maps traditional publications can be amended tremendously, and the Internet can be used as a medium as its best as a means to better communicate statistics.

Last but not least, such tools and applications have become an important part of our public relations activities. With "intelligent graphics" on our website, we have highly attractive material to present and to make demos at trade fairs or other public events a lot more convincing and interesting. They also improve the image of official statistics.

But one should not forget, that people don't look for something they don't expect, and that the space on the front page to promote these new features on the website is limited. Therefore, it is very important to implement new developments into an active public communication strategy and to use even the traditional printed publications as an additional reference medium to promote the interactive content on the web.

Kwang-Seop Kim*

The e-National Indicator System as an Infrastructure to Support Policy Decision Makers and Evaluators

1. Background

All governments need good statistics. To lead this knowledge and information society of the 21 century, they should analyze and evaluate their current status exactly. Statistics are the most objective and accurate measure for evaluating the past, diagnosing the present and predicting the future. Although many people reached an agreement that good statistics provide a basis for good policy making and help governments to identify the best courses of action in dealing with complex situations, such an infrastructure did not exist and if any, it was not good enough to encourage policy makers and evaluators to use statistics.

The e-national indicator system was started from the idea of President Noh. He mentioned the importance of national infrastructure which can support scientific and transparent decision making. It is a good chance for the KNSO to be able to identify the needs for statistics by enhancing statistics-based policy making to improve the national statistical system, to improve the national statistical system, and to obtain the political support.

2. Indicators provided in this system

The e-national indicator system, which was developed for that purpose, contains 825 national indicators. Some of them are officially approved statistics, and some of them are useful administrative information or official data published in international organizations such as IMD, WEF, and S&P. These indicators show the current status of our country in every respect.

There are three ways to browse these indicators: by topics(three-level hierarchy), by agencies and by keyword search. Examples of how to browse an indicator are as follows.

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* **Kwang-Seop Kim**, Director of Statistics Policy Division of KNSO

• By topic

How to browse 'Economic Growth Rate' by topic is to go to 'Economy' section at 1st level, to go to 'Macro economy' division at 2nd level, to go to 'object economy' group at 3rd level. You can find the data that you want if finally you can browse 'Economic Growth Rate' indicator under object economy group.

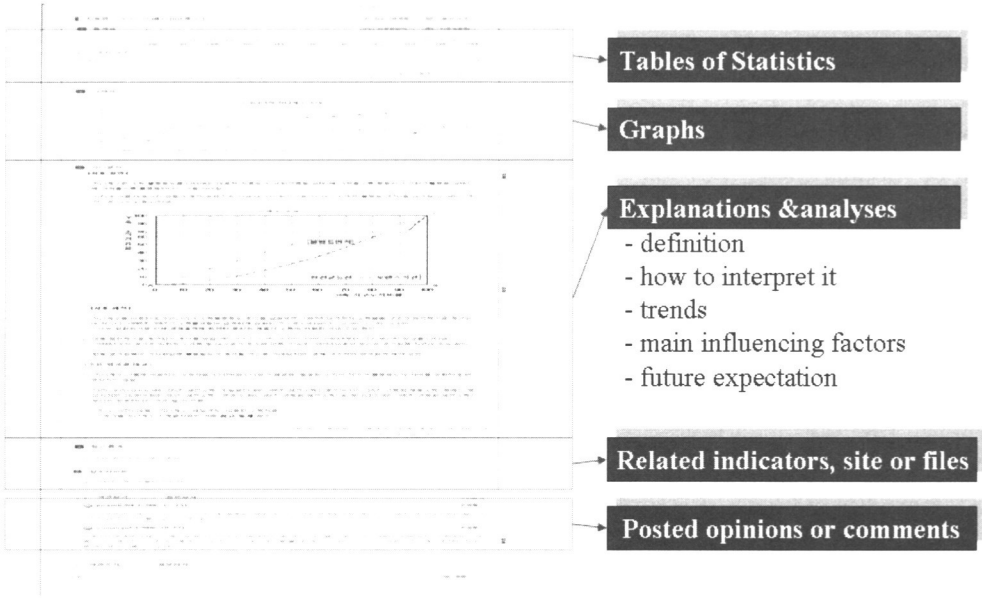
How to browse 'Economic Growth Rate' by agency Go to 'Ministry of Finance and Economy' agency among 41 agencies Browse 'Economic Growth Rate' within that agency

• By agency

How to browse 'Economic Growth Rate' by agency is to go to 'Ministry of Finance and Economy' agency among 41 agencies and then browse 'Economic Growth Rate' within that agency and you can find the data.

Each indicator that is browsed by this ways is represented as follows.

< Figure 1 : How each indicator is represented >



3. How to generate the enforcement of the system

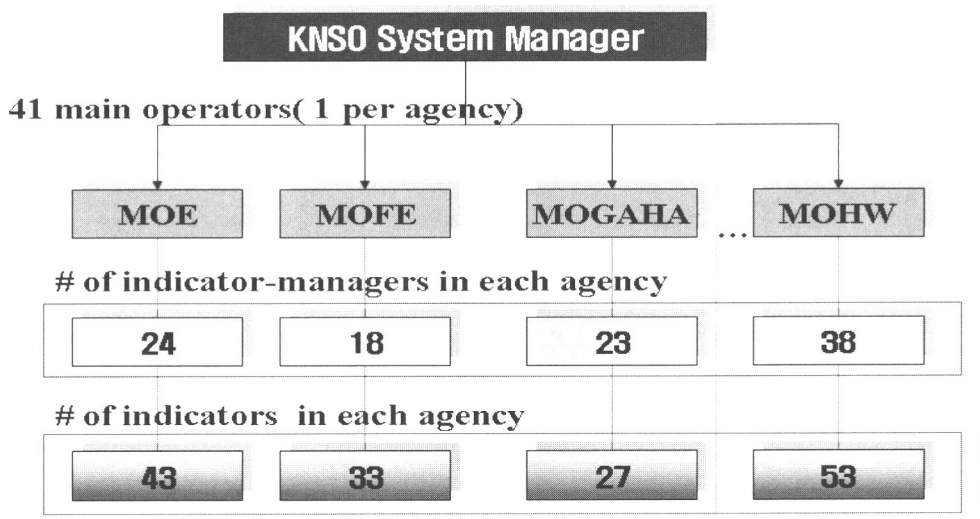
To enforce this system, the presidential instruction was enacted on March 13th, 2007 in order to obtain continuous cooperation from other governmental agencies. It states the roles and responsibilities of related government agencies and specifies the overall management procedures from creation of a new indicator to its management and removal.

KNSO, as the leading agency, takes responsibilities of overall operation, education on other agencies, semiannual check on how well they manage them.

41 related governmental agencies manage national indicators related to their own work, such as creation of new indicators reflecting the socio-economic change, regular update and removal of out-of-date indicators.

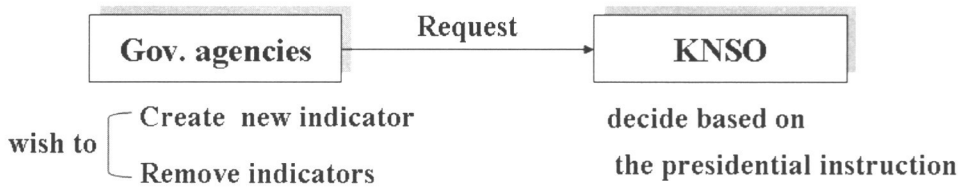
The diagram of management structure is represented as follows.

< Figure 2 : Management Structure >



The selection/removal procedure of national indicators is that if government agencies wish to create new indicator or to remove indicator, they should request it to the KNSO, and then the KNSO will decide it based on the presidential instruction.

< Figure 3 : selection/removal procedure of national indicators >



All published data should be updated within 5 days after its publication and specifies what kind of information should be provided.

4. Use of this system

Total number of visitors in this system is 5,365 people as of June 18th, 2007, and 487 visitors a day on average. And they retrieve 3 indicators on average per visit.

According to the result of Internet Survey conducted Feb. 2007, the major user group are government officials(49%), private company employees(17%) and academic group(20%), respectively.

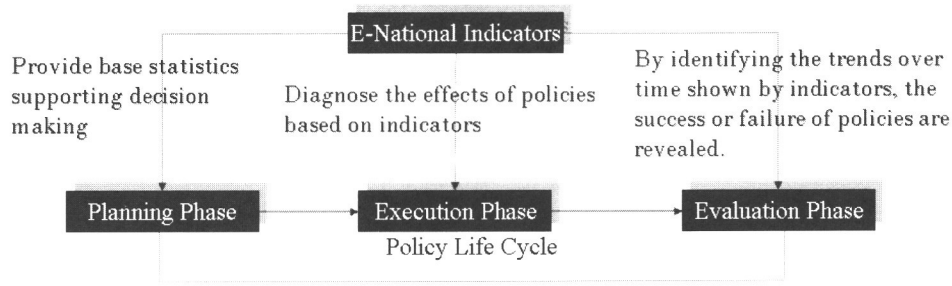
The main purposes of visiting this site are to obtain the fundamental data for policy making(31%), to simply meet their desire on information(27%), and to get data for their research or job(21%), respectively.

The most popular indicators are economic growth rate, population by sex & age, population & population growth rate, consumer price index, and employment trends of the youth, and they have more than 30 retrievals per day.

5. Expectation Effects

The effects we anticipate as of now after one year's operation are as follows. First of all, as all indicators concerning national policies are collected here, policy makers and evaluators can save their time and efforts. Especially providing the information about which stage of the policy life cycle(planning phase, execution phase and evaluation phase) each indicator is used, it brings convenience to select appropriate indicators for their purposes.

< Figure 4 : Infrastructure to support decision makers& evaluators >



Secondly, it is to reduce the misunderstandings of statistics and to enhance the understandings of government policies by providing analyses as well as statistics.

Lastly, it is to draw active participation of general public into policy making process by giving a way for general people to post their opinions or comments for each indicator.

Session Discussion

Yong-Chan Byeon (Korea Institute for Health and Social Affairs)

We have discussed a very important subject today. I am pleased to see progress in the dissemination of statistical information, especially through our endeavor to disseminate statistics in a user-friendly way. I think we should continue developing this user oriented statistical policy.

The presentation on KOSIS and MDSS of the KNSO with the title of 'Statistical Information System' showed how much they have contributed to microdata usability and dissemination and that have brought reduction of paper publications.

We are well aware of the FSO efforts on the dissemination of 'User Friendly' statistics. In addition to its counseling function, I got impressed by interactive graphic skills that draw much attention of users and animated population pyramid. For the KNSO, it should, I think, be concerned with insufficient statistics at the local government level and I recommend the Atlas of Regional Statistics of the FSO be introduced to the Korean system.

Q&A

Question *China*

I have a question for the KNSO. Would you let me know the approximate number of page views for your homepage and statistical databases?

Answer *Korea*

For KOSIS, it has about 6,800 visitors and 200,000 page views per day. In the case of MDSS, it has serviced 1,131 kinds of microdata in the last 6 months and the number is increasing. The KNSO homepage records about 2,000,000 hits per month.

Question *Korea*

The KNSO distributes online publications for free and paper reports with minimum charge. How about the FSO?

Answer *Germany*

We serve most of online publications in PDFs for free. Paper ones are not free, however, we have a plan to increase free distribution.

SESSION 4

Specialized Topics on Recent Developments in the Participated Statistical Offices

- Chairperson : Jung-Im Ahn
- Users' Point of view : Data Dissemination by Means of Internet (Nian Yong)
- The Standard Cost Model(SCM) : A Challenge to the German Federal Statistical Office (Bernd Stortzbach and Christian Zipse)
- S-Navigator: An Ultimate Innovative Converting Tool of Statistical Information into Knowledge (Chi-Sung Jang)
- Session Discussion

Nian Yon*

Users' Point of View: Data Dissemination by means of the Internet

The site of the National Bureau of Statistics (NBS) of China is the only window of network used by the NBS for disseminating information and serving the general public. It undertakes the important task for setting up the national authoritative database of the government. In order to meet the needs of users at different levels, the NBS has made remarkable contributions in processing and standardizing the macroeconomic longitudinal data as well as updating and safeguarding the system of macroeconomic data. Now I would like to put forward the following views and suggestions on the data dissemination by the NBS by means of Internet from the angle of users.

I. Main Characteristics in the Data Dissemination by the NBS by means of Internet

Judging by the design of pages, the pages of the site of the NBS are graceful in style, the format is succinct and the navigation is clear. Distinctly different from the commercial sites and the general inquiry sites, it shows the authoritative and solemn aspects of the government site. The pages take the sedate blue as the basic hue, mixed with black and yellow colours, thus embodying the dignified and easy image of the NBS. The angle of view is comfortable. The contents of columns are diversified and are not in confusion. They are comprehensive but lay stress on key points. The overall arrangement is reasonable, elegant and in good taste. The style of the format as a whole is simple, clear and distinctive in features. The navigation instruments have strong search functions. It is possible to make concerned inquiries in the whole site.

Judging by the classification of information, 17 categories of inquiries at the first level are designed at the site of the NBS, covering statistical communiqués, statistical data, statistical analyses, statistical consulting service, statistical system,

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statistical law and regulations and statistical standards, etc. They include columns of the category for making the government affairs known to the public, the category for disseminating information and the category for various statistical services. The annual, quarterly and monthly statistical data on various basic

indicators as well as the data of economic census and statistical data on specialized subjects of the whole country, the provinces, cities and other local areas are provided to the numerous users They reflect the basic situations on national economic and social development in a comparatively comprehensive way. With rich resources of network information as well as the authoritative and reliable network contents, the site of the NBS has evidently strengthened the fundamental capacity of disseminating and utilizing the national macroeconomic data and information.

Judging by the services for users, the site of the NBS abides by the aim of providing services for "making the government affairs known to the public and taking the users' benefit as the most important one", insists on the principle of self-perfection in the selection of columns, dissemination of information, administration of data and design of pages in the site. It embodies the good image of the NBS in managing government affairs for serving the general public. The managers put themselves in the position of users, consider and treat affairs from the users' angle and therefore lay stress on strengthening the function of services in this respect. In updating data information, the way of automatic readjustment is used in the pages to update the information. The newest statistical data and news appear at the top of the block and in the prominent position all along. In order to ensure the readers not to omit the important information, the managers use the methods of special symbols, information reminding and mobile texts to call the attention of readers. The longitudinal data are processed in a unified way in the databases so that the users can inquire about the other longitudinal data and compare them with each other. In the design of layout, the columns highly concerned with by the general public are placed at the most eye-catching positions in the pages. By the way of chain connection with key strokes, the users can easily and conveniently get the newest data on public welfare by means of Internet. In disseminating the information to the outside world, the NBS further standardizes the scope, dates and ways for disseminating statistical data and works out the timetable for disseminating data announced in advance and provides the ways and methods for further consulting information. While providing services to the users for inquiring about fundamental data, the site of the NBS pays more attention to the functions of government affairs, which reflects the reciprocal responses with the general public, effectively serving the users in an all-round way.

II. Application of the Data Disseminated at the site of the NBS by the National Development and Reform Commission in Main Respects

As a user of the site of NBS at the final end, the National Development and Reform Commission has obtained a vast amount of timely and accurate data information. The annual statistical communiqués, quarterly data, monthly data and statistical data on special subjects disseminated at the site of NBS have provided us with the timely, detailed and reliable bases for analysis and they are the basic data for us to judge the situations and formulate policies. Particularly, the data on the main indicators, such as national economic accounts, output of main industrial products, efficiency of industrial economy, transport, post and telecommunications, investment in fixed assets, domestic commerce, foreign trade and other foreign economic relations, finance, banking, securities, price index and people's livelihood, etc. have become the data information, which are objects of our long term concern and are indispensable for making economic analyses in our work . In addition, they have provided strong support for our work such as working out the annual plan, making analyses of the quarterly and monthly situations, writing the relevant reports on special subjects and formulating the macroeconomic policies.

As a site for overall managing the macro data information of the country, the site of the NBS has owned the data resources, which cover the main information on the national economic and social development. Its vertical and horizontal networks in the area are unimpeded in connection with each other. Its sub-catalogues are clear. It has not only formed an independent system of database, which owns the subsets, but has also met the functional requirements in diversified respects, such as the administration of the national macroeconomic data sources and the administration of the data storage, etc. Particularly, it has also actively provided the data processing services needed by us according to the different statistical coverage, different statistical methods used in data collection and different bases. The site of the NBS is now gradually becoming a large distribution-type environment for administration of the national macroeconomic data. The smooth development of our work has been benefited from the good performance of the site.

III. Some Suggestions on the Data Dissemination by the NBS by Means of Internet

The National Development and Reform Commission has close working contacts with the NBS all along. We will support the construction of the sites of NBS just as in the past and jointly safeguard the good environment of the site of NBS for its performance. As users, we would like to put forward some suggestions as follows:

1) Under the requisite for maintaining the advantages of the site in comprehensive content, authoritative information and convenient usage, improving the amount and quality of information and improving the timeliness and continuation of information dissemination by means of Internet.

2) Reasonably readjusting the format of distribution of the various blocks in the pages and providing more services on statistical coverage and statistical consulting.

3) Further processing the longitudinal data information and setting up a system in a concentrated way for inquiring about the system of indicators, which is clear and compatible in coverage and can be shared together so that the resource value of the longitudinal information can be fully put into use.

4) Properly increasing the indicators, which reflect the situations in implementing the concepts on scientific development and building socialist harmonious society. Paying more attention to the quality of people's livelihood and their living conditions and paying more attention to the employment of the residents in the urban and rural areas.

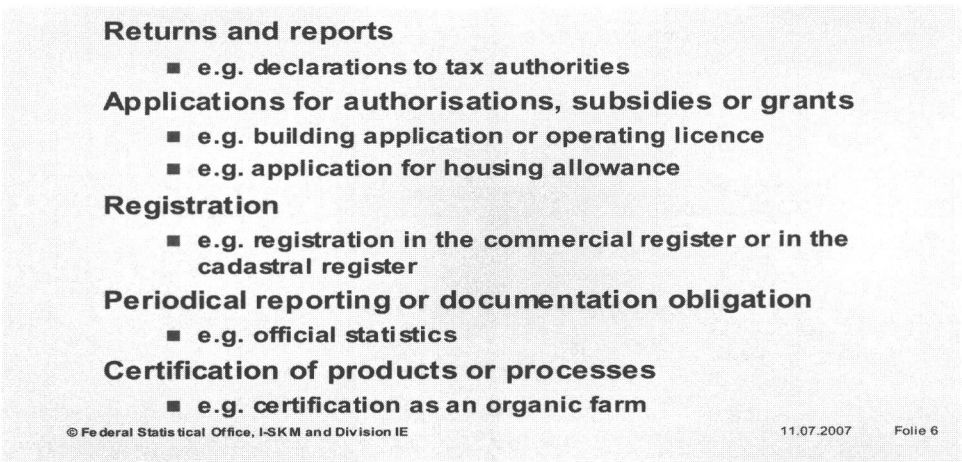
5) Further processing, developing and managing the rich resources of macroeconomic data of the country, so as to continuously provide important support for the macro decision-making and management and provide more and better information services to the general public.

Bernd Störtzbach*

The Standard Cost Model (SCM) : A Challenge to the German Federal Statistical Office

With the Cabinet decision of 25 April 2006, the Federal Government resolved that the Standard Cost Model (SCM) already employed in several other European countries to measure the administrative burden should be introduced in Germany as well. The Federal Statistical Office has played a central role in this process. The relevant measurements refer to the burdens borne by the economy, citizens and public administrations as a result of mandatory statutory information and reporting obligations (applications, forms, statistics, supporting documentation, reports, etc.). Identifying information obligations, measuring their extent and determining the costs of compliance with such obligations are not to be seen as an end in themselves. The objective rather is to achieve simplification and, as a result, to reduce the administrative burden on the economy, citizens and public administrations. The goal specified by the Federal Government is to achieve a 25% reduction in the administrative burden by 2011.

< Figure 1 : Examples of information obligations >



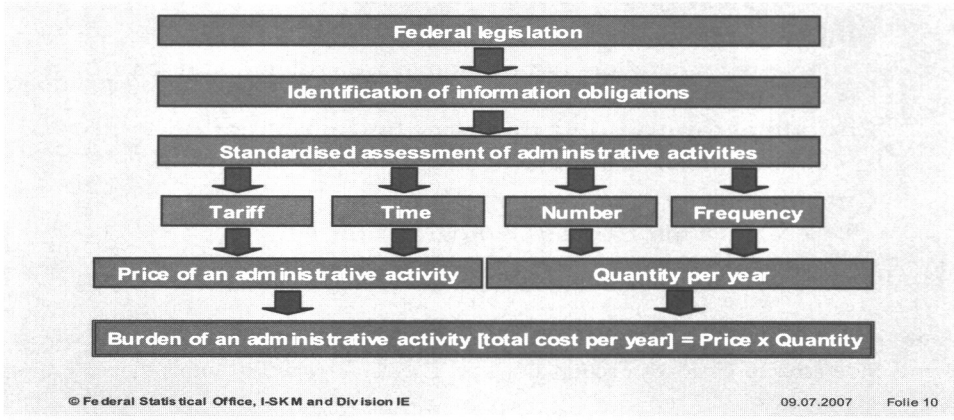
* **Bernd Stöertzbach,** Head of Section Division I E, Co-Operation with other countries, translation service

The Standard Cost Model is a methodological approach designed to measure in a systematic manner an essential part of the existing administrative burdens.

- The Standard Cost Model replaces subjective assessments of the administrative burden by objective measurements.
- The method, which is internationally recognised, has already been applied by a number of EU Member States.
- The Standard Cost Model is used to reflect the burdens created by information and documentation obligations in terms of both hours/minutes and euros (cost) and to allocate them to individual statutory regulations.
- Content-related obligations of a regulation are not covered by the model. Thus, for instance, the costs of installing a pollutant filter are not measured. However, the possibly required annual report on the prescribed regular maintenance of the filter would be considered an information obligation in accordance with the Standard Cost Model.
- The entire process of fulfilling an information obligation is broken down into individual standard activities. The times required to carry out a standard activity is then measured. This standardisation renders the different information obligations comparable. Examples of such activities are „Collecting the required information", "Filling in or entering the required data" and "Sending the information".

The benefit associated with a law or an information obligation is not investigated in the context of the Standard Cost Model. Assessing the benefit of statutory regulations continues to be a political decision.

< Figure 2 : The SCM scheme >



The centralized approach used in Germany for measuring the costs of administrative burdens is an effective and efficient method:

- A centralized approach ensures both the application of unified methods and maximum comparability.
- Since data processing and analysis are in one hand, the data can be merged and processed in a central database. Access is partly Internet-based.

Due to the expert knowledge available at the federal ministries, an identification of information obligations by the ministries themselves ensures efficiency.

- The relevant staff of the ministries know both the laws they are responsible for and the associated information obligations. There is no such thing as a law without underlying responsibility by a unit in one of the ministries.
- The Federal Statistical Office trained more than 500 ministry officials in the area of SCM methodology.
- Awareness of the burden incurred by enterprises in complying with information obligations is raised among all parties involved as early as during the legislative procedure. As for any new legislative project, the federal ministries are obliged to prepare an assessment of the costs expected to result from government-imposed information obligations (ex-ante assessment). That information is made available to the National Regulatory Control Council (Nationaler Normenkontrollrat) which was established by the Federal Government. Supporting the latter in reducing the administrative burden, the Council submits regular reports on the progress made to the Bundestag (Federal German Parliament). The Federal Statistical Office in turn assists the ministries in preparing their assessments and the National Regulatory Control Council in performing related scrutinies.

In view of its comprehensive expertise, the Federal Statistical Office is the right partner for the Federal Chancellery.

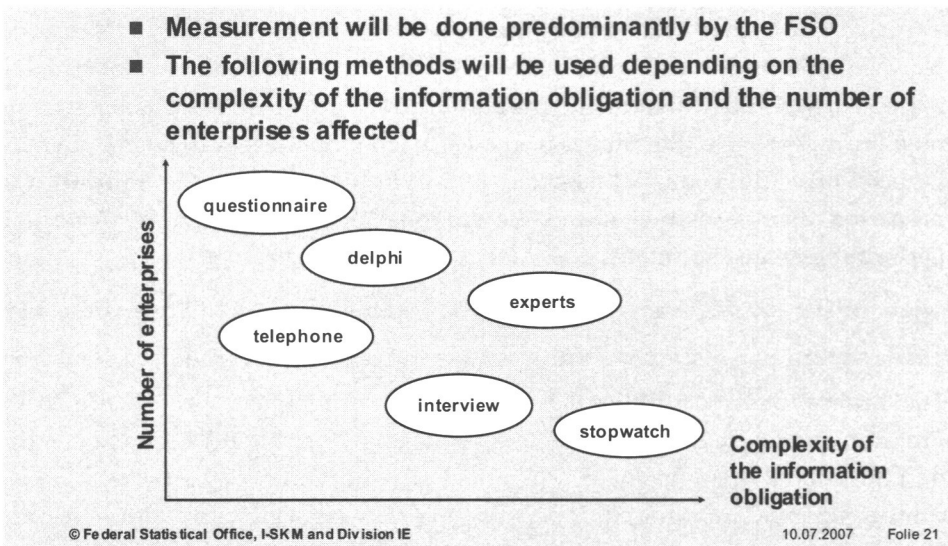
- The Federal Statistical Office has contributed its long-term experience to the Program for the Reduction of the Administrative Burden and Better Regulation by the Federal Government. The national statistical authority's methodological competence and recognised independence, its contacts with enterprises and statistical experts of all branches and also its direct access to other statistical databases and analyses makes it the perfect partner for federal ministries in the SCM-based measurement of administrative burdens.

- A specialised work unit with a total of 128 staff was set up at the Federal Statistical Office. The unit encompasses a working group on conceptual and methodological issues and analyses (23 staff members) and two working groups whose task is to identify appropriate measuring methods and conduct the relevant measurements.

Using a combination of methods in carrying out the expenditure of time measurements ensures that results of adequate quality will be obtained with a minimum effort.

- The expenditure of time by the entities affected is recorded, for instance, by means of online questionnaires or in the course of personal interviews, or it is assessed at expert meetings. The method selected to measure the administrative burden of an information obligation depends above all on the level of complexity of the given obligation and on the number of enterprises affected. Sometimes, a combination of methods is used to carry out a single measurement. This means that, for instance, expert estimations are substantiated by sample surveys among the entities affected or the content of written questionnaires is validated with the help of a range of personal interviews.

< Figure 3 : Measuring the expenditure of time >



The entire process will only be successful if the economy is prepared to get involved actively and constructively.

- Without measuring the expenditure of time in enterprises, an objective basis cannot be created for the measures to be subsequently taken with the aim to reduce bureaucracy. Also, measuring the time enterprises need to comply with the relevant obligations requires their voluntary participation. However, those who demand bureaucracy reduction should also be prepared to make available the data required for the measurement of administrative costs.
- There is agreement that transparency must be an integral part of the entire process. Therefore, the Länder and industry associations will be informed about the results achieved at an early time.

Measuring the costs of all existing information obligations and assessing ex ante the costs of new obligations to be fulfilled by the economy, citizens and public administrations can serve as pillars for a comprehensive system of controlling the administrative burden in Germany. The success of the measures taken can be documented by means of continuous control measurements.

However, measuring the costs of administrative burdens does not mean that bureaucracy will be reduced automatically. To achieve the goal of a 25% reduction in the existing administrative burden by 2011, the Federal Government will in October 2007 decide upon appropriate measures to reduce the costs measured. Such measures could for instance be the following:

- to avoid new and eliminate existing information obligations
- to simplify information obligations
- to enhance coherence between legal acts – also across ministries - and hence to avoid duplication of work caused by the fact that the same information is requested by several authorities
- to simplify administrative processes, for instance, by making use of information which is available in other government authorities, and to simplify forms
- to use information technology to an increasing extent in order to comply with information obligations

Chi-Sung Jang*

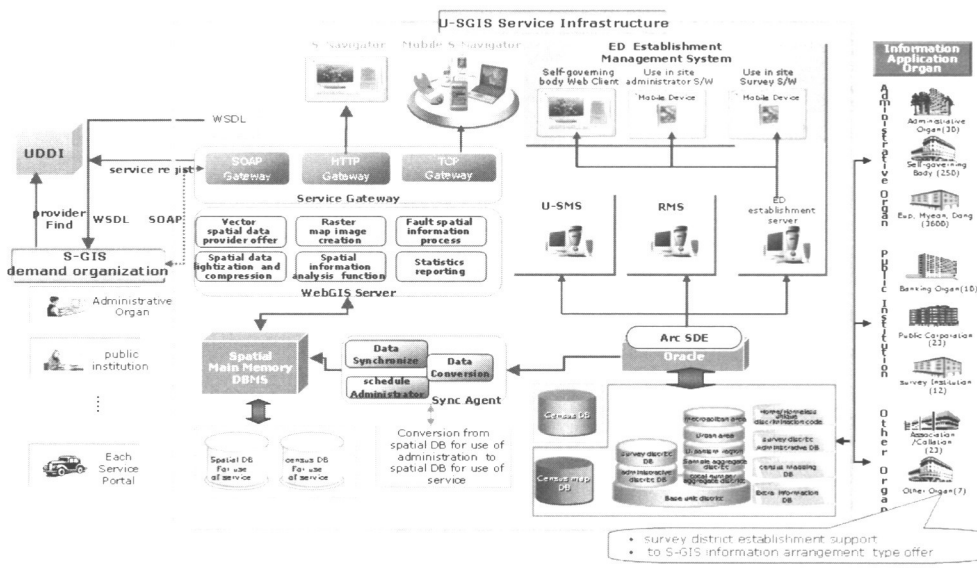
S-Navigator : An Ultimate Innovative Converting Tool of Statistical Information into Knowledge

I. Developmental Background

Korea is now in a rapid transition from an informative society into a knowledge based society, in which information processed is applied to policies and strategies. Statistical services should be developed to the level of a knowledge based society. Geographic Information System(GIS) is a useful tool in this case.

In Korea, a localized society was begun in 1995 when a nationwide local autonomy system was resurrected extensively. Geospatial information needs for small areas were thereafter expected to grow dramatically. S-Navigator is planned to provide services on a nationwide neighborhood areal scale (with as small as one square kilometer on average).

< Figure 1 : Overview of S-Navigator >



* **Chi-Sung Jang,** Director of Statistical Geographic Information Division

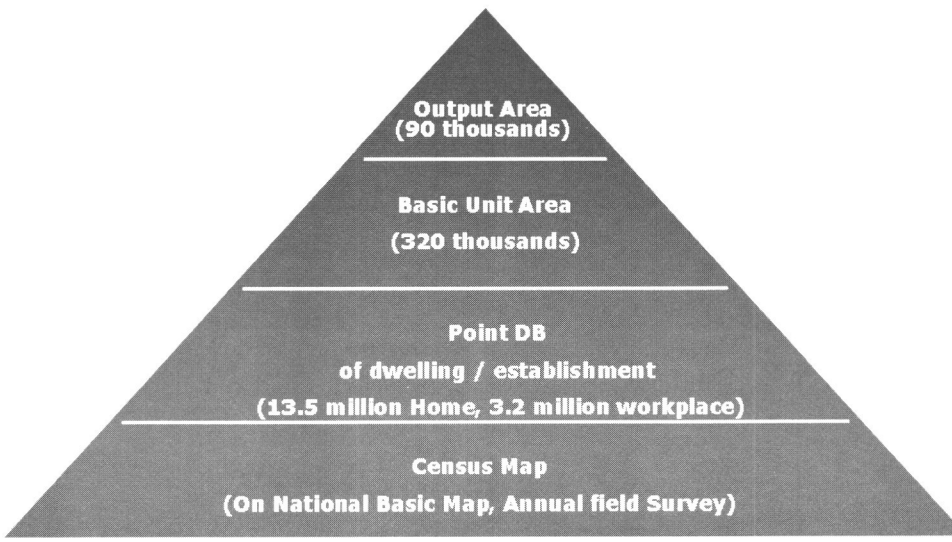
Owing to the grace of well developed information technology and its infrastructure, new generations of Koreans can enjoy an intellectual capability that is different from past generations. Being a visual generation they will soon join the major social-trend with a strong ability for spatial analysis. KNSO has a mission to provide suitable decision making tools for this generation.

II. Introduction to S-Navigator

S-Navigator is a user-oriented statistical service system that any user can use for census data after arbitrarily finding a certain place on the census web map. The service is characterized by a neighborhood level of an areal scale as small as one-square kilometer, on average. Also a time serial database on a spatial dimension.

S-Navigator is composed of four basic infrastructures such as ① a digital map of census with a large scale of 1:1,000 to 1:5,000, ② A 16.7 million point census database encompassing all dwellings and establishments in Korea, ③ 320 thousand basic unit areas, ④ 90 thousand output areas.

< Figure 2 : Contents of S-Navigator >



The above which are based geographic information system can a boast of a high accuracy level of service, but also has a weakness in privacy protection. S-

Navigator processes not to recognize individual information, and provides order-made detailed data.

S-Navigator is providing five items on the census database ranging from population, households, houses, and also enterprises. It composites indexes in a test service, and plans are to extend the privacy protection to a ten year-interval population, such as households (by certain group types, such as family types)

S-Navigator began its service for one of seven major cities, Daejeon Metropolitan City, on December 2006. At present, it extends service areas to all seven major cities, including the capital city of Seoul, and to all national territories by the end of 2008.

III. Future Development of Statistical Geographic Information Service

Vast amount of geospatial databases such as information on census maps, points, basic unit areas, output areas, and administrative districts are constructed for providing S-Navigator services. KNSO is developing a new geographic information service based on urbanized areas, micropolitan areas, and metropolitan areas which are all based on basic unit areas. KNSO is also developing new geographic information services by combining various administrative database such as central and local government agencies. On the bases of the KNSO's geospatial database, it will become a common national intellectual property.

IV. Expected Consequences

Citizens will be able to make effective use of the statistical information on a large scale by using S-Navigator. S-Navigator will be expected to raise administrative service quality by upgrading its geospatial databases on a national level and provide the navigator as a common national infrastructure.

Session Discussion

Yong-Chan Byeon (Korea Institute for Health and Social Affairs)

The discussions on free topics this afternoon, in contrast to prior sessions, have provided us with a valuable chance to introduce each country's experiences and know-how about various issues. I've learned of the efforts of the NBS to provide user-friendly services in offering statistical information service and design efficient web sites.

I highly value the FSO's work to reduce administrative burden on businesses and improve bureaucracy by measuring their reporting burdens such as declaration, profit reports and information obligation through the SCM.

Like China and Germany, the Korean government has been trying to achieve similar effects through the Regulatory Reform Committee which monitors regulations and recommends whether to abolish or continue according to the results of the cost-effectiveness analysis.

Q&A

Question *Korea*

You mentioned that the administrative burden per year, according to the SCM cost analysis, amounts to 32,000,000 euros and I can't tell whether it is a huge amount or not. Considering the number of companies, it is about 128 euros per company and I don't think it's a big problem.

Answer *Germany*

32,000,000 euro is just a simple instance, not a real figure and it is aggregated by 'one information obligation' unit. In addition, 250,000-the number of companies- is not a real count but a virtual one to demonstrate the comprehensive results consisting of frequency, wage and time. If we consider the 1,100 information obligations, the administrative cost from the information obligation will reach several billions euros. The Netherlands assumes that its administrative burden is approximately 4% of the GDP based on its statistical data and it would be equivalent to about 80 billion euros for Germany. In conclusion, we could cut about 25 per cent of this cost and much more effective if we invested that money into the SCM instead.

The objective of the SCM is to achieve simplification and, as a result, reduce the administrative burden on the economy, citizens and public administrations. The goal specified by the Federal Government is to achieve a 25% reduction in the administrative burden by 2011.

The SCM has such an adaptability that the system can be assimilated in the statistical process of any country following the decision that define the parameters of information obligations, measurements and organizations it is responsible for. Implementing the SCM needs accountability and action plans, and without commitment, you can't perform regulation reforms or simplification of administrative procedures.

Question *China*

First, I'd like to know how much the users of Germany appreciate the SCM? Secondly, using the S-navigator as an example, I want to know what agencies transfer needed data to the KNSO.

Answer *Germany*

The public might have some unpleasant experiences regarding the 'bureaucracy' and administrative procedures as kind of an obnoxious burden. Overall, our users are very positive about the SCM, as well of the media and politicians.

Answer *Korea*

The KNSO itself has data such as population and establishments while the Ministry of Land, Transportation and Marine Affairs provides geological information. We have been renewing data and maps by means of field research every year.

Conclusions

- Summary
- Suggestions for the Next Seminar

Summary

The dramatic progress in the arena of Information Technology has been achieved by each nation's strong support for IT infrastructure build-up, continuous efforts in R&D and passionate workers of this area and this in turn has fostered a so-called 'Generalization of Internet Access'. Traditional face to face interviews have already reached a limit of effectiveness whereas needs for timely and accurate statistical information and statistics that reflect economic, social and cultural changes have been rapidly growing.

In this context, the international statistical society is deeply considering the role of statistics within the knowledge society, in other words, how statistics can set up its status in the knowledge society. Mr. Walter Radermacher, for example, mentioned the importance of knowledge and statistics and emphasized during the seminar that statistical information should be presented to the public as one of useful knowledge.

This seminar provided a productive and valuable opportunity to discuss the challenges in collecting and disseminating statistical information that the national statistical offices of three nations have faced in this information age. The experience and expertise shared throughout this seminar will facilitate the development of statistical work within each nation.

There was a clear consensus that the role of the central statistical office is increasing in terms of collecting and disseminating statistical data via the Internet. As evident from the presentations, Germany, China and Korea are all in the process of shifting from traditional interviews to the Internet based system, at the same time the central statistical offices have become more engaged in the development of systems and software, staff education and statistics communication. In addition, the Internet based methods have been widely adapted in a variety of surveys and the process of producing and disseminating statistics. For instance, the FSO reported that all trade statistics and over 50% of mining and manufacturing statistics are collected via the Internet.

Since the NBS first applied IT technology in editing its 1982 Census data, it has experienced huge progress such as establishing related databases. One of the most impressive improvement in Chinese survey methods is the ability of the NBS to perform business survey quickly utilizing the Internet on the basis of strong law enforcement.

The KNSO also has a series of plans to introduce new technologies and improve existing systems such as the Internet Based Survey System, Households' Electronic Account Book System, E-Census System, GIS and Integrated Statistical Data Base.

Owing to sincere and constructive discussions of participants from the three countries, we recognized the efforts of the NBS which has launched ambitious projects including 'The Internet Based Enterprise's Direct Reporting System', 'Statistics Intranet System' and 'Data Dissemination Network System'. We also were able to take a look at its future strategy of development in encouraging Internet access through broadband with the purpose of extending Internet usage to the households surveys beyond the business survey.

For the FSO, it has taken strides in providing a WIKI based consolidated service and consulting services in order to reduce the respondent's reporting burden, collecting statistical data in the linkage with enterprise's fiscal systems and offering user friendly services which connect the FSO and 16 statistical offices of state governments.

We confirmed the imminent challenges needed to redefine the extent in which we serve the demands of users and how we will establish future strategies accordingly when defining the range of customers of the central statistical office from the general populace to the policy makers.

As you well know, the purpose of Korea-China-Germany Seminar is to pinpoint common statistical issues that exist within the three nations and discover methods to cope with them. Korea, China and Germany jointly discussed future development strategies, shared wisdom and experiences and were provided an opportunity in which to contribute to the progress of statistical works of the three nations.

The 2nd Joint Seminar assisted in the advancement of each country's statistical business and the outcome of this event is being based on the success of the 1st Joint Seminar in 2005, hosted by the FSO. The 3rd Joint Seminar, which will be hosted by the NBS in 2009, will be even more valuable as we build on the FSO and KNSO's experience of the first two events.

In closing, the KNSO would like to gratefully acknowledge the enthusiasm and support of all participants and convey our appreciation to Mr. Walter Radermacher, the President of Federal Statistical Office Germany, Mr. Xie Fuzhan, the Commissioner of National Bureau of Statistics of China, Mr. Song Yuezheng, Mr. Du Weiqun, Mr. Geng Qin, Mr. Wen Jianwu, Mr. Nian Yon, Mr. Dieter Sarreither, Ms. Doris Staerk, Mr. Bernd Stöertzbach, Prof. Lee Suk Hoon and Dr. Byun Yong Chan.

Suggestions for the Next Seminar

Walter Radermacher (President of FSO)

I would like to express some ideas for possible topics which could be considered in the program of the next Joint Seminar of the three national statistical offices in China.

Four topics are of particular importance in the ongoing and future discussions on the future development of official statistics;

- demography (impact of the demographic trends on the social security systems, e.g. pension funds, and integration into the revised system of national accounts)
- globalization (reduction of differences in mirror comparisons between national foreign trade statistics and improved coverage of international trade in services)
- ecology (international standardization of the system of environmental-economic accounting)
- knowledge society (future role of official statistics in the progress of transition from information to knowledge society; continuation of the discussion of the OECD World Forum in Istanbul)

Mr. Xie Fuzhan (Commissioner of NBS)

I think this Seminar is a high-level, quality, and informative one which provided an excellent forum for the statisticians from Korea, Germany, and China to demonstrate the past, present, and future practices of the individual countries in the area of the Internet use for data collection and dissemination. I congratulate you and your office on the complete success of the organization of the Seminar. I also wish that the Third Seminar to be held in China in 2009 would have a successful conclusion with the inputs expected from your office.

Appendix

- **KNSO Websites**

Need the latest statistical information?

News Release on the homepage: http://www.nso.go.kr/eng

Look for statistical data produced by the KNSO?

KOSIS(on-line database): http://www.kosis.go.kr

Want to browse micro data statistical information produced in Korea?

MDSS(Micro Data Service System): http://mdss.nso.go.kr

Look for geographic statistical information in Korea?

SGIS(Statistical Geographic Information Service): http://gis.nso.go.kr/

For interesting statistical materials for kids

Statistical Garden for Kids on the KNSO website

- **Contact Information**

Address : Korea National Statistical Office
Government Complex - Daejeon, 139 Seonsaro, Seo-gu, Daejeon, Republic of Korea (302-701)

Telephone : +82-42-481-2095, 2099

Fax : +82-42-481-2465

Homepage : http://www.nso.go.kr/eng

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KNSO/FSO/NBS Second Joint Seminar

Impact of the Internet on Data Collection and Dissemination Procedures in Official Statistics

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