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**UNITED NATIONS STATISTICAL COMMISSION and
ECONOMIC COMMISSION FOR EUROPE
CONFERENCE OF EUROPEAN STATISTICIANS**

**EUROPEAN COMMISSION
STATISTICAL OFFICE OF THE
EUROPEAN COMMUNITIES (EUROSTAT)**

**ORGANISATION FOR ECONOMIC COOPERATION
AND DEVELOPMENT (OECD)
STATISTICS DIRECTORATE**

Joint UNECE/Eurostat/OECD Meeting on the Management of Statistical Information Systems (MSIS 2007)
(Geneva, 8-10 May 2007)

REPORT OF THE MEETING ON THE MANAGEMENT OF STATISTICAL INFORMATION SYSTEMS

Prepared by the UNECE secretariat

1. The Joint UNECE/Eurostat/OECD Meeting on the Management of Statistical Information Systems was held in Geneva, Switzerland, from 8 to 10 May 2007. Participants from the following countries attended the meeting: Austria, Belarus, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Sweden, Switzerland, and United States of America. The European Commission was represented by Eurostat. Representatives from the following international organizations also attended: United Nations Conference on Trade and Development (UNCTAD), United Nations Industrial Development Organization (UNIDO), World Trade Organization (WTO), Organization for Economic Cooperation and Development (OECD), International Monetary Fund (IMF), European Central Bank (ECB), Bank for International Settlements (BIS), African Development Bank (AFDB) and Economic Community of West African States (ECOWAS). Experts also participated at the invitation of the secretariat.
2. Mr. Pedro Díaz Muñoz, Director, Eurostat addressed the meeting at the opening. He emphasized the growing demand on information technologies in statistical production. At the same time, he stressed the limitations set by available resources. Internet users are faced with large databases, and there are little or no ready-made data tables. This phenomenon may need to be addressed. He mentioned technical challenges and the need to seek optimal architectural solutions. He also informed the participants about the ongoing activities of Eurostat in IT management and developing a common architecture.
3. The agenda of the meeting (WP.1) consisted of the following substantive topics:
 - (i) Governance and management of statistical information systems;
 - (ii) Statistical information systems architecture;
 - (iii) Accessibility and usability of IT applications;
 - (iv) Review and follow-up to the activities of the Conference of European Statisticians.
4. The sponsoring international organizations (UNECE, OECD and Eurostat) thanked the members of the Steering Group on Management of Statistical Information Systems for their work in preparing this meeting.

5. Mr. Rune Gloersen (Norway) acted as Chairman of the meeting. The following persons acted as Discussants/Session Organizers: Topic (i) – Ms. Cathy Wright (IMF); Topic (ii) – Ms. Karen Doherty (Canada); Topic (iii) – Messrs. Michael D. Levi (United States of America) and Ernst Schrey (Germany); Topic (iv) – Mr. Juraj Riecan (UNECE).

6. The conclusions reached during the discussion of the substantive items of the agenda are contained in the Annex. Presentations and all background documents for the meeting are available on the website of the UNECE Statistical Division (<http://www.unece.org/stats/documents/2007.05.msis.htm>).

ANNEX

Summary of the conclusions reached during the discussion

Topic (i): Governance and management of statistical information systems

Discussant: Cathy Wright (IMF)

Documentation: Invited papers by Italy, Norway and Eurostat; supporting papers by Israel, Sweden, IMF and UNECE.

1. This topic reviewed the changes in statistical offices and their impact on IT strategies, particularly changes in funding, outsourcing and service partnerships. The presentations and the discussion focused on IT strategies, reengineering of processes and partnerships and outsourcing.
2. The following points were made during the discussion:
 - The IT strategy for a statistical office should focus on the business model of statistical processes, rather than on purely technological elements.
 - A governance model suggested for the creation of an IT strategy involved IT managers from subject-matter departments along with the IT Director of the statistical office. It may be useful to involve subject-matter statisticians in discussions about the business model and to learn more about their expectations.
 - There may be a scope for re-use of IT strategies between statistical offices. On the other hand, there are issues to be resolved, for example technical and business differences.
3. The discussion on process reengineering was of great interest to participants. The following issues were raised:
 - The active support of the senior management is a necessary condition for the success of reengineering efforts.
 - A governance structure has to be put in place with a clear division of responsibilities between subject-matter, IT and dissemination departments. Committees, new organizational structures and review boards have to be put in place.
 - Decentralization has its roots in the structure of subject-matter departments of the statistical office. Attempts at integration should take into account that these departments may be naturally opposed to it. It is necessary to deal with internal resistance to change and established power groups.
 - Criteria for measuring the success (benchmarks, achievement indicators, etc.) should help indicating whether goals were achieved.
 - Experience shows the importance of increasing standardization. The standardization of metadata was seen as a first step to overall standardization and integration.
 - The changes have an impact on human resources. While on the one hand some skills may not be readily available and additional training is needed, on the other hand the changes may be a motivating factor and provide new opportunities for development of skills and careers.
4. Partnerships and outsourcing were also discussed under this topic:
 - Growing demands for IT services under limitations of budgets and fixed staff resources are common motives for outsourcing. Long- and short-term budgets also have an impact on contractual arrangements.
 - Statistical offices have to retain the management of the project at a desirable level of detail. This level usually involves infrastructure requirements (system, database systems, etc.). When justified, statistical offices may also wish to approve algorithms, database structures, and other details. In any case the specifications and requirements have to be clearly defined by the statistical office.
 - It is important to define the roles and responsibility of internal and external actors within the project.
 - The project managers must have a mix of skills combining knowledge of statistical business processes with a desirable understanding of IT issues.

- Statistical offices try to outsource development of new products as well as maintenance and ongoing service tasks. Each of the situations has specific requirements. As contracts with service partners are completed, it is particularly important to consider terms for extension and/or termination of contracts and changes of outsourcing companies.
- The ownership of developed products by the statistical office should be maintained. This is a pre-condition to possible changes to outsourcing arrangements (change of contractor, conversion to in-house support, etc.).
- Services related to the core business are more likely to be handled in-house. Good candidates for outsourcing are non-core technical infrastructure and auxiliary services. However, there are considerable differences among statistical offices.
- The question was raised about the scope and costs for returning to an insourced model?

Topic (ii): Statistical information systems architecture

Discussant: Karen Doherty (Statistics Canada)

Documentation: Invited papers by Canada, Finland, New Zealand and OECD/IMF; supporting papers by Canada and Serbia.

5. This topic reviewed a variety of issues related to the architecture of statistical information systems, including consideration of the pros and cons of the re-usability of IT tools and components for official statistics. The presentations covered the general view of architecture, metadata driven approach and the re-use of components among statistical offices. Some specific issues like dissemination and access to microdata for research purposes were also discussed.
6. The following points were made during the discussion:
 - Metadata warehouses, along with metadata standardization, have an important place within the information systems architecture of statistical offices.
 - As metadata creation and maintenance involves the cooperation of a number of actors, offices are looking for on-line collaborating tools that would facilitate metadata related tasks. Statistics Canada shared an interesting experience with using MediaWiki (a product used by Wikipedia) that facilitates two-way communication of internal users with the Metadata database of Statistics Canada.
 - More generally, messages between processes and actors facilitate the coordination – for example passing the data to the methodological department for seasonal adjustment and back to the subject-matter department for the next phase of processing.
 - Standardizing processes, including harmonizing a code list is a way to speed up data processing. The importance of standardization is growing with the volume of data.
 - An XML-based environment facilitates the use of standardized semantic structural specifications. The specifications are, in principle, application independent, so data can be easily shared across heterogeneous applications.
7. The dissemination part of the statistical information system is often an architectural issue on its own:
 - The use of free-of-charge and unrestricted dissemination is on the increase. This influences the dissemination architecture in favour of direct access to warehouses through the Internet without the use of proprietary client software (just standard browsers).
 - This free-of-charge dissemination has implications on the performance requirements, as larger numbers of user requests have to be handled concurrently.
 - The Internet also allows sharing data among the international organizations. There are several initiatives in this respect, the best known being SDMX.
 - Access by researchers to microdata has implications on technical requirements. This requires construction of anonymized microdata files by statistical offices, evaluation of risks of disclosure and establishing a safe access environment. Australia, New Zealand and the Statistical Institute of Quebec have adopted solutions to this.

- Safe labs located mostly within the premises of statistical offices offer another option of researchers' access to microdata files. Some of the safe labs are located, for example, at universities under the condition that they guarantee a desirable level of disclosure prevention.
8. A general trend towards generalization was identified through the presentations and discussion. This motivates the re-use of components among statistical offices:
- OECD and IMF presented their experiences with sharing components. While the warehouse and other components do not meet, in a strict sense, the criteria of and open-source software, the OECD is willing to share them within the official statistics community.
 - The exchange of components between statistical offices may bring benefits, but organizational issues and technical differences should also be dealt with.
 - It may be possible to create a generic business process model. It was suggested that the presentation by New Zealand (see <http://www.unece.org/stats/documents/2007.05.msis.htm>) contains a general model that with few additions can also cover register-based data processing.
9. The rules engines that would facilitate data editing were also discussed at the meeting:
- Eurostat has made its generic rules engine available to Member States.
 - There were attempts in the past to develop rules engines, but were not generalized.
 - An alternative opinion was that the data have only to be checked for conformity with the data model including integrity constraints.

Topic (iii): Accessibility and usability of IT applications

Session Organizers: Michael D. Levi (U.S. Bureau of Labor Statistics), and Ernst Schrey (Destatis, Germany)

Documentation: Invited papers by Denmark, Germany, and Norway; supporting papers by Slovakia, OECD and UNECE.

10. This topic considered emerging technologies, user analysis, including understanding of user needs, and usability testing. The approaches discussed can help ensure that interfaces to statistical applications and on-line services are easy to use with minimal or no training. The proliferation of on-line services has brought new audiences with varied needs. Some of the papers focused on the use of online dynamic graphics and maps, and others looked at the use of statistical office websites.

11. Standards applicable to the Internet, as well as statistical data and metadata (SDMX, etc.) have to be taken into account when designing new statistical applications. Two ISO standards relevant to the design of IT systems were referred to at the meeting:

- ISO 9241 "Ergonomic requirements for office work with visual display terminals" part 1-14;
- ISO 13407 "User-oriented design of interactive systems".

12. The following points were made during the discussion:

- Accessibility and usability concerns not only interfaces and IT issues, but also accessibility and usability of statistics. Three layers were identified in this respect: (i) technical infrastructure, (ii) creative new approaches, and (iii) continued testing and evaluation.
- It is crucial to interact with the user. It is preferable to analyse user expectations and requirements before beginning the development phase. Further tests often take place on the basis of the developed application, with a view to their redesign.
- Usability tests of released applications may be late, as the application might have already built its reputation.
- Eye-tracking may appear too complex, because people presumably look where the cursor is. However, results of the tests show that people often look at a different place than where they position the cursor.
- Experience shows that some of the web application users browse patiently through the pages, while other important groups of users rely principally on search engines such as Google. As a consequence,

there are a number of users that do not enter through the home page, but directly through pages meeting their search criteria.

13. Integration through web services was also discussed at the meeting, and the following points were made:

- Web services can provide a human interface as well as an application interface for integrating databases in processes for production, dissemination and interchange of statistics.
- Germany's Genesis system showed that their web services, which have been available for about 6 months, have some 10 to 20 active users.
- Users of web services have to be notified in case of changes to data cubes. This issue is also linked to dissemination of metadata.

14. The accessibility and usability may also be influenced by technical formats:

- Some applications currently rely on Adobe SVG reader. In the event that it is no longer supported, alternative solutions have to be found, but this does not seem to be a major problem.
- The statistical application may have to support some statistics-specific formats, like SDMX-ML.
- Detailed map formats may not be needed for statistical purposes because the role of maps in statistics is to provide an overview. The creation of these overview maps should be simple without copyright concerns.

15. The delegates noted OECD's plans regarding dynamic graphics and the seminar organized in Rome (organized in cooperation with ISTAT). Further information can be found at <http://www.oecd.org/oecdworldforum/graphics>.

- The OECD World Forum in Istanbul in June 2007 will present plans and progress in the use of dynamic graphics for presenting statistics.
- Current applications, such as GapMinder, may have some shortcomings for metadata, but these shall be addressed through future improvements.
- There are differences, but also similarities in creating graphics for print publications and dynamic graphics for on-line presentations.

16. The OECD has presented Excel Populator that is part of the .Stat system.. Users can bring metadata, data structure definitions as well as data tables to their desktops and update them in a flexible way. The software is an add-in for MS Excel.

Topic (iv): Review and follow-up to the activities of the Conference of European Statisticians; Future work on MSIS

Discussant: Juraj Riecan (UNECE)

Documentation: Paper by UNECE

17. The paper prepared by the UNECE secretariat reviewed activities in the field of statistical information processing in which the Conference of European Statisticians is active and focused on the future challenges in the field of governance, architecture and the user perspective. It also provided information on other groups of interest to MSIS in the fields of statistical data confidentiality, electronic raw data reporting, statistical data editing, as well as statistical metadata (METIS) aiming at developing a Common Metadata Framework (CMF) for National Statistical Offices. It emphasized the role that MSIS can play as a unifying element for various activities on (electronic) data processing.

18. MSIS provides a forum for IT specialists from national and international statistical offices to exchange experiences and share knowledge. Future MSIS meetings could discuss issues of concern for national statistical offices and their interaction at the international level. MSIS may address cross-cutting issues arising from the work of other groups.

19. The UNECE reported on the outcome of the February 2007 meeting of the Bureau of the Conference of European Statisticians. The Bureau appreciated the MSIS meetings as a unique forum for contacts and discussions among information systems managers and experts from national statistical offices. The following possible ultimate outputs were identified:

- Update to “Information Systems Architecture for national statistical offices”;
- Publication on practices of governance and outsourcing;
- Cooperation in development of Web services.

20. The MSIS participants discussed the expectations on MSIS meetings along with their perception of benefits. The following points were made during the discussion:

- The major value of MSIS meetings is networking and exchange of experience, and participants found them very useful in this respect. In particular participants from non-European countries appreciate this unique opportunity for networking;
- Publications should come out as a by-product, primarily for documenting good practices. Different approaches may equally well lead to a desirable result and all deserve to be documented. It is too early to update the guidelines on information systems, and further research may be needed before commencement of drafting. Instead some elements on good practices should be posted on the MSIS website.
- MSIS participants may share experiences and/or tools that they can contribute to a toolbox. This can serve as an inspiration to others.
- The website of the UNECE should be “Google-friendly”. Use of alternative ways, like Wikipedia, may also be considered. MSIS participants expressed their general satisfaction with the UNECE website and suggested that there was not necessary to perform additional work on indexing MSIS related documents.
- Participation of developing countries may provide them with an opportunity to learn about advanced methods and experiences.

21. The following issues are of particular interest:

- Governance
 - Outsourcing.
 - Policies, decision making;
 - Management, priorities of statistical offices;
 - Work processes, resources, how to work with staff from different organizations;
- Architecture
 - Challenges faced by IT managers;
 - Technical solutions;
 - Service layer of architecture;
 - Exchange/sharing/re-use of components, common models among statistical offices;
- User perspective;
 - Dissemination aspects and impact of Internet;
 - Accessibility;
 - Internal GUI design etc.

22. MSIS participants also identified other topics and suggested that the Steering Group on MSIS consider them in composing agendas of future meetings.

- Geo-coded data; preparation of regional data;
- Advanced technologies; discussion with ICT companies such as Microsoft, Oracle, etc.;
- Changes in statistical information systems;
- Issues related to administrative sources for statistical purposes;
- Sharing experiences on “bad practices”: what did not work and why? – to help others to avoid similar failures.

