

Distr.
GENERAL

Working Paper No. 13
30 March 2008

ENGLISH ONLY

**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**

Meeting on the Management of Statistical Information Systems (MSIS 2008)
(Luxembourg, 7-9 April 2008)

Topic (iii): Exchange/sharing/re-use of components, common models among statistical offices

THE SOS GROUP

Invited Paper

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I. INTRODUCTION

1. This paper gives a short description of the Statistics and Open Standards (SOS) Group, including some general experiences from the cooperation as seen from the author's point of view. This paper has not been reviewed by the SOS Group, and any opinions, descriptions and errors are the sole responsibility of the author. However, the author has been a member, and participated in all meetings of the SOS Group since the beginning.
2. The Nordic NSIs have over many years established various contact networks among key personnel/managers, covering different statistical domains, statistical methods, statistical processes, HR and IT. The SOS group came into being from the Nordic Contact Network on IT, with members from all the Nordic NSIs. At a meeting in Stockholm in 1998, the Nordic IT meeting was visited by Statistics Netherlands. As a conclusion from this meeting, the Statistics Open Source (later Statistics Open Standards) Group was established, with Statistics Netherlands and The Swiss Statistical Office as extensions to the Nordic Contact Network. The Office for National Statistics in the United Kingdom joined the group in 2003.
3. The SOS Group has met once or twice a year since 1998. In 2003, the SOS Group discussed and agreed upon some common objectives for the cooperation. However, these objectives were never formally adopted by the NSIs.

II. THE OBJECTIVES OF THE SOS GROUP AS STATED IN 2003

4. The main objective is to increase the sharing and re-use of statistical software components used for the total statistics production model between the different countries' NSIs. For this reason SOS is a consortium of NSIs who have agreed that they wish to and are able to contribute to common development of their statistical production environment and associated systems. It is a prerequisite for this model, that the members constitute a

homogeneous group in relation to the use of IT, that their underlying production models are similar, and that they share a set of common visions.

5. The members are: Denmark, Finland, Iceland, Netherlands, Norway, Sweden, Switzerland, and United Kingdom.
6. SOS will try to agree on (1) logical models of business processes, and (2) the physical implementation of parts of these models in the form of standards, tools or components. A pragmatic and useful method is first to take stock of the potentially exportable components in the member organizations, and second to specify interfaces. For this purpose, country reports in meetings and e-mail communications between meetings are useful measures.
7. The focus is on the statistical production process, which is viewed as a standardized process composed of a number of elements or sub-processes. In addition, cooperation includes other IT systems aiming at administration and management of an NSI. Important components are Metadatabase (including Classification Database), Output Database (dissemination) and Reference Database (production).
8. It was agreed that some basic principles of SOS cooperation would be: adherence to de facto standards, component architecture built on agreed interfaces. Other principles were: copy as much as possible, get quick results. The cooperation is very informal and has been labelled *Co-operation between partners*. There are no financial obligations, no coordination functions, no infrastructure. For each meeting, one partner takes responsibility for calling the meeting, maybe another for hosting, a third for reporting.
9. The results from SOS will consist of Specifications and Components (source code). The specifications can be on interfaces or on functionality of components. They are specified by all members in agreement or by subgroups of members. New versions are decided upon in the same manner. The members commit themselves to attempt to implement the specifications as far as possible in their work. The specifications can be used freely by outside users. SOS may attempt to get their specification adopted as international standards. Each component (application, source code) must be the responsibility of one member: One member is committed. The basic idea is that this country develops what is important for its own use, that it would have developed anyway, but in the future it will take into account the agreements on common interfaces and specifications, as well as wishes from other members that have been stated in SOS. The components will normally be available as source code free of charge for the members, but some big elements may be licensed. Assistance and advice necessary for implementing the components with another user will be charged. It is the intention also to make components available as source to outsiders for non-commercial use, but this will need special agreement. We are not planning components developed in consortia.
10. SOS has two levels of organisation:
 - *SOS Steering Group*, which has the purpose to identify fields for cooperation, decide on the framework of the cooperation, give guidelines and decide on proposals from technical groups.
 - *Technical groups*, which will be set up on an ad hoc basis by the Steering Group for specified tasks. They will report to the Steering Group and will cease to exist when their task has been performed.

II. THE SOS GROUP IN PRACTICE

11. A major challenge for all NSIs in the area of IT, is to coordinate and govern IT developments into a coherent, standardized, transparent and manageable IT system. While the Nordic IT Contact Networks were often attended by domain experts, it was a clear idea when establishing SOS that the group should be anchored at a level having a quorum in IT matters, giving better possibilities to coordinate and prioritize initiatives according to more common strategies. Most of the NSIs have been represented by IT managers, but some have also been represented by high-level IT advisors. The position of IT varies within the different NSIs, leaving the group with various possibilities to commit the different NSIs in matters arising from the SOS Group.

12. The self-interest of the NSIs to join and to contribute to the work and ideas of the SOS Group has been the main driver for the cooperation. The informality and the relatively small size of the group, has led to open-minded meetings, and contributed to establish trustful relationship between the members. Statistics Iceland has only participated in a few meetings.

13. Areas of common interest and cooperation are described below.

14. *Dissemination databases.* Statistics Norway joined the already existing cooperation between Statistics Sweden and Statistics Denmark on dissemination databases, and launched the Norwegian version in 2001. This cooperation was from the beginning a core driver for the Norwegian involvement in the group. The cooperation in this field is still very strong, but organized separately from the SOS. Statistics Finland considered joining the cooperation, but decided to go for an implementation of StatLine from Statistics Netherlands instead.

15. *Metadata.* The work in the Neuchâtel group on statistical classifications started in 1999, independent of the SOS group. However, the first implementations of the Neuchâtel specification as a classification database attracted attention from the SOS Group. Both the Swedish, the Norwegian and the Swiss statistical offices implemented a beta version of the Neuchâtel specification using Bridge software. The implementation of the formal metadata structures is a core element of a coherent Statistical (IT) System, and the SOS Group were concerned whether the technological solutions of the first implementations could meet the requirements from an overall IT Architecture point of view. These discussions introduced the Swiss Federal Statistical Office as a member of the SOS Group. Later on these activities resulted in a joint development between Statistics Denmark and Statistics Norway to build a classification database based upon the Neuchâtel specification, implemented in Norway as STABAS. The first attempt of a classification database in the Swiss Statistical Office was further brought forward in the Swiss CODAM project. Other areas of metadata development have been discussed in the SOS Group, but have not led to any cooperative actions.

16. *Data Collection.* Standards for describing and formatting input data, and tools for data collection have been discussed and commented upon by the SOS Group. The outputs from the FP5 IQML projects were discussed and the data exchange format, XML4DR, was implemented in the Norwegian Kostra project, and also implemented as an alternative format in the Dutch EDR software.

17. *IT infrastructure and use of common software.* The members have been frequently updated, and discussed possible areas of common interest concerning IT infrastructure, the use of common, basic software like Microsoft, Oracle, SAS and other major software vendors. Experiences with outsourcing and IT governance issues in general have been on the agenda. The technical platform is different between the member NSIs, varying from a more or less complete Microsoft environment, via mixtures of Unix (dialects), open source and Microsoft environments, where some NSIs also have had mainframe as a part of the platform, with varying proportion of the total load.

18. *Architecture and tools for statistical production.* The use of basic software and specific tools for statistical production has mostly been subject to discussions and exchanges of experience. A common challenge for all has been the stove-piped and fragmented statistical production environments. Nevertheless, some concrete actions have arisen from the cooperation. The usage of SAS has for instance been discussed in common meetings between SAS experts in the NSIs, on initiative from the group. In 2002, the SOS Group negotiated jointly a common license agreement with SpaceTime Research Ltd. for the use of SuperStar software in Finland, Sweden, Norway and Denmark. This is one of a very few examples, perhaps the only example, of common licence agreements across NSIs in different countries. SuperStar is also licenced by ONS in the UK and the Swiss Federal Statistical Office. Furthermore, an appointed technical group followed closely the Dutch developments of Cristal (also presented at the Metis meeting in 2004).

19. *Standards.* The structure, suitability and usage of open or common standards for data collection, data dissemination and for harmonisation of data flows between production processes has been discussed, tested and partly trialled within the SOS Group. This includes standards like XML4DR for data collection, SDMX

(and Gesmes) for data dissemination and internal initiatives like the CoSSI (XML) format developed by Statistics Finland for streamlining statistical production and dissemination. The possibilities for developing common modules for dissemination from the Nordic statistical databases in SDMX format have been investigated.

20. *Other topics.* E-Government issues, especially in connection with data collection and issues concerning lowering the response burden have been discussed. Different ways of organizing IT at government level and impacts on the abilities to execute developments have also been on the agenda.

21. The areas mentioned above are of course not a complete list of items; it is not a complete list of common projects and not a complete list of results achieved. However, it shows the core business at the meetings. It is quite clear that exchange of experiences in general has been a major part of the cooperation, and that it has turned out to be quite difficult to really achieve the objectives; to develop in common and to take stock of each others investments and developments by sharing components that will fit into the different NSIs production environments.

III. THE SOS GROUP IN RETROSPECT – LESSONS LEARNED

22. The basic idea of the SOS Group with the principles of self-interest, informality and that no one really has the responsibility to drive the cooperation, has both advantages and disadvantages. Subjects of common interest will vary over time, and topics that really could grasp interest among all partners do not appear at every meeting. However, in periods where the SOS Group has not had a specific project in the pipeline, the frequency of meetings has been down to once per year. It is a rather low investment, to spend a couple of days once a year, and to be able to pick up advice, share experiences and look for possible common gains like common projects, new tools, new knowledge or a module to be tested in your own environment. Any useful output of such meetings, tend to have a potential far beyond the time and travel expenses spent. This has been the basic reason for participating at meetings, and has led to the SOS Group being regarded by the members as very useful.

23. On the other hand, informality leaves low responsibility. Agreements are not necessarily binding, decisions could end up unknown within the NSIs, or just be turned down. The lack of obligations implies lack of administration, insufficient flow of information etc. However, any disadvantage cannot be blamed on anyone but yourself.

24. There are some main obstacles that prevent the SOS Group from achieving all the ambitious goals stated in the objectives. Even though the different NSIs, and especially the Nordic NSIs, serve under quite equal conditions and produce more or less the same statistics, harmonized according to EU regulations, the production processes are implemented differently and the IT architectures are in no way harmonized. Because of this, the implementation of a software module for a specific purpose is rather cumbersome and expensive. Implementation will also often lead to changes in the module, and to development of specific input or output modules that prevent later cooperation on further developments. This is not only an experience from the SOS Group, but also an experience from a number of international meetings on different levels, with the basic idea of presenting software solutions for different purposes within the statistical production. It is often easier to redevelop the idea behind a component in your own environment, than to implement the component itself. Hence, the lack of unifying IT strategies within the NSIs, unclear IT governance and scattered IT organizations make it very difficult to cooperate closely in IT developments.

IV. THE FUTURE OF THE SOS GROUP

25. Recently, all participating NSIs have outlined updated IT strategies. To be able to discuss strategic challenges in common has been useful, and has given an opportunity for harmonization. At a certain level of details the strategies differ, but in general all NSIs have outlined a rather common view for the future. Service Oriented Architecture (SOA) is considered as a feasible method to modernize, standardize and improve the statistical production systems. Most likely, the implementation of SOA is the only way forward,

if we really want to facilitate the exchange of components and to take stock of each others investments in IT development.

26. Last autumn, the SOS Group met to investigate the possibilities to use common methods and vocabulary to describe the business model of an NSI. This was also an attempt to see if it is possible to achieve a greater degree of harmonization of the business process model itself. However, it turned out to be somewhat difficult. The competence in business modelling varies in the different countries. Contributions from external consultants bring in different methods and tools, and the timetable for this type of overall modelling work as part of implementing new strategies varies between the members. Still, establishing an overall IT architecture demands a well defined and approved business process model. Most likely, the SOS Group will continue to exchange experiences and look for harmonization in this area.

27. The SOS Group has attracted more attention than expected, both from international organizations and other NSIs. These types of neighbourhood clusters should be regarded as useful contributions along with the formal clusters, like Working Groups or other types of international meetings. Clusters will arise and die, and the participation will vary. There has been a lot of reorganization and shift in personnel within the IT function in the member NSIs lately. For the moment, the future of the SOS Group is somewhat uncertain.