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

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

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Topic (iii): Accessibility and usability of IT applications

DYNAMIC GRAPHICS – TURNING STATISTICS INTO KNOWLEDGE

Supporting Paper

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I. INTRODUCTION

1. OECD is committed to promote informed decision making in all aspects of life: in policy making, in business decisions, in private life of citizens. OECD is a provider of high quality comparable statistics that lend themselves very well to international policy analysis and decision-making. But first decision makers must be aware and understand the messages buried inside the data.
2. To many people, and especially younger audiences, statistics are seen as boring and hard to understand. Thus, they may never be turned into knowledge, meaning information that an individual understands and can use as a basis for action. Statistical organisations thus face a serious challenge of making potential users aware of statistics as an interesting and useful basis for forming an opinion and making decisions.
3. One of the ways the OECD has chosen to address this problem is to use dynamic graphical methods to make indicators appealing and uncover the messages they hide. In order to explore best practices as a basis for action, OECD decided to organise a seminar, inviting people and organisations with excellent solutions to present them.
4. This paper describes the idea and results of the seminar and explains the strategy of the OECD for making statistics understandable and enhancing their use.

II. WHY DO STATISTICS HAVE AN IMAGE PROBLEM?

5. It is a fact that is difficult to understand for statisticians that statistics are seen as boring and hard to use. It seems to be linked to our habit of presenting tables, many tables and big tables. We do not realise that if you are not used to look at and digest tables, it is quite difficult to find the interesting information in them.

6. In addition, statisticians tend to find it difficult to understand the capability of non-specialist users to absorb their information. In order to be absolutely correct and irreproachable, they find it necessary to use of very precise and unfamiliar terminology and accompany their presentations with all kinds of reservations, warnings, exceptions, etc. This is deemed necessary to avoid possible misinterpretations and over-interpretations, but it also makes the story disappear in a forest of complications.

7. The news media have understood it and have managed to make statistics more edible. They typically select small and simple pieces of information that can underpin messages, use simple graphs with colours to structure the message. But this way, only rather few-dimensional stories can be told.

8. Surprisingly, many young people find it more fun to play computer games than reading statistics. When playing games with objects moving around in high graphical quality, they can take in quite complicated masses of information. Why shouldn't we try to imitate this in our attempts to make statistics available?

9. What the OECD endeavours to do is to use dynamic, interactive techniques to show the story in the statistics without necessarily removing the many-dimensional character of those stories. You could say that it is about the packaging rather than contents, although the packaging in this case goes a little deeper, it also involves the choice of what to see and in which sequence you see it. We believe that this kind of packaging is extremely important.

III. OECD – ISTAT SEMINAR ON DYNAMIC GRAPHICS

10. In cooperation with the Italian National Statistical Office (ISTAT), OECD arranged the seminar 5-6 March in Rome, kindly hosted by ISTAT. The website of the event is <http://www.oecd.org/oecdworldforum/graphics>

11. For the OECD, the main purpose of the seminar was to see if good practices can be identified and recommendations can be made, allowing OECD to choose the best solutions for further development on the dissemination layer of the OECD Statistical Information System.

12. The seminar had 140 participants coming from International Organizations, National Statistical Offices, National Banks, Universities, Ministries and private companies. It was a mixture of audiences with quite different cultures: statisticians who were keen to present their content, analysts and academia focusing on the messages themselves, and technical people mostly interested in what is inside the machine. This proved to be an excellent mix, fertilising discussions and giving new insights.

A. Types of graphs

13. Sixteen presentations showed applications of dynamic graphics. Several were work in progress, not yet presented on the web sites of the organisations presenting them. For this reason, only some of the tools can be seen on the web site ("Some examples of dynamic graphics"). They show a variety of approaches, which to some extent reflect the diversity of the data they present.

14. They have one aspect in common: they are (more or less) dynamic. This means that when you change one aspect or choose one value of a dimension, other parts are automatically following, using more or less elegant transitions. Time (observation time or reference time of the data) is typically seen as a special dimension, with a "play" button allowing users to see development over time like a movie.

15. The charting techniques include:

- (a) Population pyramids, giving an intuitive experience of the evolution of the demographic structure;

- (b) Maps of many kinds, suited for showing statistics where the regional or international dimension is important;
- (c) Bubble charts, which are suited to show four dimensions at the same time, one of them being time;
- (d) Special charts invented and intended for showing just one aspect, such as the Dutch Business Cycle Tracer
- (e) Traditional charts like bar, pie, and line charts, which can be used for many kinds of statistics; the charts are sometimes linked together so that choosing one value in one chart will change the contents of the others.

16. A distinction can be made between two types of graphs:

- (a) General purpose tools, aiming to show almost any kind of statistics, e.g. as a front end to a data warehouse with many different topics;
- (b) Special purpose tools, aiming to show a graph that is especially suited for just one kind of question or topic.

17. The special purpose tools can be more effective in the sense that they are adapted to the messages that the “sender” wants to get across. They can also give a more direct editing role to the sender.

18. Some concern was expressed during the seminar about the general purpose tools being prone to misuse or misunderstanding of statistics. When the user can correlate any data with one another, there is a risk of finding non-sense correlations.

B. Standards

19. A few standards were widely used in applications and discussed during the seminar.

20. Several applications used SDMX as standard for the input into the tools. As this is the general standard for exchange of statistical data and metadata, this seems a wise choice that would allow the tools to be easily plugged into any serious statistical data source.

21. There were also presenters advocating the use of the DDI (Data Documentation Initiative) for statistical metadata on sources, and UNIGW for geographical areas.

22. Regarding the graphing techniques, especially two standards were widely used: SVG (scalable vector graphics) and Flash.

23. The following strong points of SVG were tabled by Alan Smith from ONS:

- Scalability - deals well with resolution issues and zooming
- Support for building dynamic, interactive applications, as well as animation
- Can be designed as a template and uses open standards, so is easy to share
- Native support (not necessarily complete) in Firefox, Opera and next version of Safari browsers
- Being XML-based, it can be easily interfaced with an existing statistical production workflow

24. The following strong points of Flash were mentioned by Magdalena Lalik and Xavier Sosnowska from ECB:

- Rich user interface, excellent interactivity
- Charts and tables available are impressive
- Rapid response time (application runs locally)
- Flash player as a web browser plug-in is freely available – low deployment cost
- Prototyping is rapid
- Familiar technology and concepts

25. A presentation from Adobe of their standards and tools aroused a lot of attention. Especially the Flex tool for easy development of Flash applications and its upcoming extended version named Apollo convinced participants as being extremely powerful.

IV. OECD PLANS FOR THE FUTURE

26. Based on the seminar, the OECD has set up the following plans.

27. OECD is convinced that it is possible to improve the understanding and penetration of OECD statistics using dynamic graphical tools and will develop such tools. The development will start with a pilot project that will demonstrate the viability of the idea. The first results of this will be shown in the OECD World Forum - Measuring and Fostering the Progress of Societies, in Istanbul 27-30 June 2007. Following that event, results will be evaluated and decisions will be made about how to move towards putting tools in productions

28. There will be tools for different purposes: One will be a general purpose tool that sits on top of the OECD general data warehouse OECD.Stat and allows users to compose their own presentations, one will be more special purpose, aiming to show the main messages in the more limited contents of the OECD Factbook. www.sourceoecd.org/factbook.

29. In addition to presenting the interactive graphs, the tools are conceived to contain an SDMX viewer, thus offering easy-to-use tools to make all kinds of SDMX-ML messages readable to non XML specialists.

30. The solutions will build on standards. The interface for data and metadata will be SDMX. The general purpose tool will build on an SDMX web service out of OECD.Stat, which is already operational but will be further developed. The development will be made using Adobe Flex and the future Apollo.

31. A cooperation project has been started together with ECB, who presented some promising tools in the Rome seminar. It is hoped that the two development teams will be able to inspire one another and develop the tools in a complementary way.
