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news from Istat technical
cooperation

 **Istat** | Italian National
Institute of Statistics

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focusing on...

Software for official statistics

The production of official statistics, in addition to the internationally agreed nomenclature classifications and methodologies, requires more and more the use of specialised software either to manage large databases OR to apply sophisticated either to apply sophisticated statistical methods.

From the point of view of sustainability, the choices regarding the IT environment and the software requirements play a key role. Donors dedicate limited time and resources to cooperation activities, and once methodologies are transferred and acquired, the required objectives and results are obtained by supplying beneficiary institutions with the software applications used by the relevant partner: this is often either a commercial software, whose costly licenses expire, or software developed ad hoc by the partner institution, whose applicability to other contexts is low or even null.

In its technical cooperation projects, Istat has always attempted not only to deliver the agreed results, but also to build the capacity in local partner institutions to perform them autonomously, in order to increase the sustainability of the activities implemented. This has been done by transferring not only the know-how related to the most advanced methodologies, but also the software

enabling their application.

The convenience to adopt free or open source software solutions to develop statistical applications is always self-evident from the point of view of costs. Also considering quality, nowadays there is no evidence of a superiority of proprietary software with respect to open source, in particular on the statistical side. On the contrary, the statisticians' world community is collaborating in producing open software that is "on the edge", i.e. implementing most advanced techniques. Let us consider, for instance, the dynamicity of the R world in contrast to the other proprietary statistical systems.

This convenience has proven even higher in the context of statistical cooperation projects, where sustainability is a key issue. In those situations, where funding is limited and not guaranteed, investments should be maximised in other relevant fields aimed at the development and strengthening of statistical capacity, rather than for providing proprietary software.

The experience of Istat in the application and adoption of free or open source software in statistical cooperation has shown that this approach is positive, providing returns that go even beyond the methodological and IT sphere.

www.istat.it

The use of the open source software in the statistical cooperation projects



by
Giulio Barcaroli
Istat

In the technical cooperation programmes, and from a more general point of view, Istat engaged to make beneficiary institutions aware of the need to develop and adopt an IT strategy, allowing them to invest in acquiring and training human resources, concentrating on a limited number of required software applications, developed and maintained on a long term basis within the house; in addition, such strategy would also provide these institutions with a defined set of standards to be adhered to by collaborating institutions.

Istat has attempted to tackle such problems by fostering the use of IT tools that should be:

- generalised, i.e. applicable to different cases without (or with a very limited) need to develop ad hoc code;
- portable, i.e. not depending on a particular platform;
- not costly: their use is free of charge.

Istat has been experimenting since long time the development and use of generalised software for statistical production processes. Recently, a strategic decision of adopting open source instruments for producing this generalised software has been taken, also because of the need to make this software portable everywhere, in particular in Institutions involved in cooperation. The work developed in the context of Istat cooperation projects has often triggered capacities and means to test new applications, or to transform existing ones in an "open" environment, with important returns also for Istat internal experience and use. Some examples of this: CONCORD for data editing and imputation, MAUSS and GENESEES respectively for sample design and estimation. Up to 2006, all of these tools could be used only in a SAS environment. It was not a concern in Istat, as SAS was available at no additional charge, but it proved to be a real problem in sharing these tools with other partners, and in particular it was a heavy limit in cooperation projects, where beneficiary could not afford to purchase SAS. This was one of the reasons, not the last one, that led to the decision to re-develop these tools by eliminating proprietary technologies, and adopting open ones (Java and R in first place). Now

these systems are completely portable on every platform with no charge.

Since then, the open version of CONCORD has been used in various projects: in 2004 and 2007 rounds of BiH Households Budget Survey (HBS), in 2007 for the Albanian HBS data; it is being used right now for the Population Census in Kosovo. As CONCORD deals mainly with categorical data, for the Kosovo census a new implementation of another open system, Adamsoft, has been carried out in order to replicate the SAS-based Banff system for edit and imputation of continuous variables: this is another example of a positive return from technical cooperation, as now this new Adamsoft module can be used also for Istat surveys.

The open version of MAUSS has been employed in 2007 BiH HBS. A new R package, EVER, had been developed in ISTAT to be used in substitution of the SAS-based version of GENESEES, to calibrate sample observations and to calculate sampling variance: its first application was also in this case in the 2007 BiH HBS. The open version of GENESEES, ReGeneeses, will be used from now on for all future applications.

The open option has not been limited to the software directly produced by Istat: whenever possible, an open (or at least, a free) solution has been adopted by considering all those available. It was the case, for instance, of CSPro, the free software for computer assisted data collection. Istat indicated this solution in various cooperation projects (Albanian 2001 Census, Kosovo 2011 Census), even if inside Istat a different system (BLAISE, neither open nor free) had been adopted. General indications have been given, also in those situations where proprietary technologies had been introduced since long, to put beside them also open technologies in order to acquire know-how on the latter and not depend only on the former.

At present, an almost complete line of open generalised software and tools are available, to cover all the phases of a statistical survey. The emphasis is now on the need to share knowledge on these instruments, obviously together with a continuous effort to improve their quality and usability.



interview with Valentin Todorov



BEST PRACTICES IN STATISTICAL SOFTWARE DEVELOPMENTS

by
Carlo Vaccari
Istat

In your experience, which are the best practices about software development and delivery in statistical cooperation projects?

Technical cooperation programmes serve not only as assistance to a national statistical system in need but also as an opportunity to implement recent developments in statistical methods and best practices in the national statistical system. A typical UNIDO project for industrial statistics is intended to:

- support the NSO in creating a computerized business register
- assist statistical operation with data collection methods and tools
- create a data-processing and reporting system of principle indicators of industrial statistics
- improve the database management
- undertake statistical data analysis of the results
- provide a monthly/quarterly survey design for production indices
- train national staff in the latest statistical methods and standards of industrial statistics and data-processing through on-the-job training, study tours and training abroad and in-country group training courses.

Do you think that open software is important for cooperation projects sustainability?

Maintaining and continuing the services of a system set up by a technical assistance project after the funding period is over, i.e. sustainability, is a major challenge in many developing countries. Many factors affect the sustainability of a project ranging from limitations in institutional support to financial and human resources. Installing a system based on proprietary software like Oracle or SAS will definitely reduce the already limited resources of the national statistical offices. But one should not forget that the open source software is not a panacea and brings also its own disadvantages - there are fewer trained people available to provide technical support, the problem with retaining trained and qualified people still remains, the interfaces to other organizations (using proprietary software) could be complicated.

Which are, in your opinion, the most successful software tools used in cooperation projects?

There are several well established among statistical agencies tools (Banff, Blaise, PC-Axis), which have a wide user community, others are on the way to this (OECD.Stat, FLEX-CB) but almost all of them require license fees which we cannot afford within the usually limited budget of our projects.

Several modules were developed in last years by UNIDO in the portable programming language Java (examples in the recently published "[Industrial Statistics - Guidelines and Methodology](#)").

A very useful software package for data entry is the public domain Census and Survey Processing System ([CSPPro](#)). It is user-friendly and flexible enough to handle many different applications and it can be easily used in conjunction with other statistical packages. When it comes to statistical data analysis, no doubt the best alternative to the pricey SAS, SPSS and Stata is the open source software environment for statistical computing [R](#). Although considered difficult to learn, with a steep learning curve, there is no other statistical package with such abundant, free learning resources, books, online help, blogs and mailing lists. UNIDO is publishing [methodological papers](#) and is considering developing of materials for training in R for industrial statistics.



Which is the connection between software tools and process standardization?

The process standardization between organisations (international and/or national) inspires and at the same time benefits from collaboration in software development and software sharing between these organizations. A suitable tool for description

and modelling of the business processes in official statistics is the Generic Statistical Business Process Model ([GSBPM](#)) which is rapidly becoming a de facto global standard. GSBPM was adopted by the joint UNECE/Eurostat/OECD group on Statistical Metadata (METIS) with the main purpose to provide a basis for statistical organizations to agree on standard terminology to aid their discussions on developing statistical metadata systems and processes. At the same time by fostering the standard terminology and defining the components of statistical processes, GSBPM will encourage the sharing of software tools.

Is there some repository and/or initiative that can facilitate software sharing?

Since end of 2009 MSIS has established the [Sharing Advisory Board](#) (SAB) to coordinate and encourage collaboration between organizations with the goal to unlock for one another the knowledge and the programs to create statistics with the emphasis on the principle that emerging economies are entitled to benefit from the work of others. Almost a year ago SAB launched a new Software Inventory platform with the purpose to collect information about existing shared products. Inventory already contains information and contact details for over 60 statistical software applications available for sharing. About half of the products are provided as open source and for most than the half of the products no charges apply.

Another more general repository for statistical software is the [The Comprehensive R Archive Network](#) (CRAN) from which many packages developed by R users, covering almost any possible area of the statistical science and practice, can be downloaded.

A very useful facility is the [Task View for Official Statistics & Survey Methodology](#) where references to more than 40 packages are listed.

interview with
Valentin Todorov



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<http://www.istat.it/en/archive/intheworld>

Albania

Support for the alignment of Albanian Statistics with EU standards

Implemented by: Istat (main contractor), Statistics Sweden, MIPA
Financed by: European Commission
Duration: March 2010 - December 2012

The objective of the project is the reinforcement of INSTAT capacities in National Accounts, the implementation of the economic census of non-agricultural enterprises and the census of agricultural holdings. The main results achieved at this stage of the project are
a) compilation of annual, quarterly and regional accounts and institutional sectors accounts,
b) the conclusion of the census of economic enterprises and
c) the implementation in mid December 2011 of the pilot census. A public event with the release of the results of the economic census is foreseen by the end of January 2012.

Bosnia Herzegovina

EU Twinning: Support to the State and Entity Statistical Institutions, phase V

Implemented by: Statistics Denmark (main contractor), Destatis, Istat, Statistics Finland and Statistics Lithuania
Financed by: European Commission
Duration: September 2011 - September 2013

The project on business statistics, analysis of the Extended Household Budget Survey and institutional capacity building started its activities in September 2011 and is currently in its inception phase.

FAO

Training course on Agriculture statistics: problems and methods for editing and imputation of statistical data

Implemented by: Istat
Financed by: FAO
Duration: 16 - 18 November 2011

A first three-day introductory course on data editing and imputation methodologies has been held with the aim to develop specific training programme tailor made on FAO statistical division needs.

Kosovo

Technical assistance to the Statistical Office of Kosovo for the preparation of Population and Housing Census (EU-CEP2011)

Implemented by: Istat (main contractor), CIRPS-Sapienza University of Rome, ICON-Institute Public Sector and Rrota.
Financed by: European Commission
Duration: May 2010 - November 2012

The project aims at the improvement of the capacity of the Statistical Office of Kosovo (SOK) for the preparation and implementation of the first Population and Housing Census of the Independent Kosovo and for the dissemination of its results. The main results achieved in this period were the finalisation of the data entry process, the development of the data editing and imputation, the adoption of the tabulation plan which will be the basis for the data warehouse and the planning of the activities for the components communication and outreach.

Mediterranean

Statistical cooperation in the Mediterranean Region (MedStat -Phase III)

Implemented by: Adetef (main contractor), INSEE (France), ISTAT (Italy), ONS (UK), INE (Spain), INE (Portugal), KSH (Hungary), Statistics Lithuania, InWent (Germany), ICON-Institut (Germany), Sogeti (Luxembourg), DOS (Jordan), HCP-DS (Morocco)
Financed by: European Commission
Duration: April 2010 - December 2013

The project builds its objectives on the achievements of the two previous phases of the Euro-Mediterranean Statistical cooperation to further strengthen national statistical systems of beneficiary countries and to promote harmonisation with EU and international standards in the six thematic sectors: agriculture, energy, migration, social statistics, transport, trade and balance of payments, plus two horizontal sectors, training and dissemination. Technical assistance and training activities, started in the second half 2010, continue for all the project components. Within the component Agriculture, Istat has implemented the training course for the questionnaire design. Within the component Training, Istat will be in charge of a course on measurement of quality in statistics.

The Gambia

Assessment of a survey on migration

Implemented by: Istat
Financed by: MIEUX
Duration: 22 - 27 October 2011

The aim of the survey on migration is to generate reliable and updated data in order to facilitate the formulation of a Migration Policy for The Gambia. The results of the survey are not yet available since the data collected need to be checked, cleaned and validated. Istat will assist Gambia authorities to elaborate the final results of the survey. A workshop has also been held to strengthen the capacities of the national authorities to collect and compile migration statistics.

EC TAIEX

Multicountry workshop on health statistics

Implemented by: Istat
Financed by: European Commission
Duration: 27 - 28 October 2011

Within the framework of the TAIEX instrument for EU technical assistance, Istat participated in the held in Skopje, FYROM, on 27 - 28 October. Istat contributed with a presentation on Health Data management in Member State countries: sources, methods, data needs, indicators and quality assurance.

Vietnam

Support to the General Statistical Office (GSO) on the LFS time series

Implemented by: Istat
Financed by: ILO
Duration: October 2011 - July 2012

ILO office in Hanoi has requested Istat assistance to support the General Statistical Office (GSO) of Viet Nam in the reconstruction of the Labour Force time series 1997 - 2010 and, assist the Ministry of Labour, Invalids and Social Affairs (MOLISA) to establish an Information System on Labour Market. A first assessment mission has taken place and a work plan proposal until July 2012 has been approved. It has also been discussed the possibility to strengthen the Institutional collaboration between ISTAT and GSO either signing a Memorandum of Understanding and providing additional technical assistance and training in the field of Labour market, NOE, and methodologies for yearly population estimates by sex and age groups results of the survey.



13 - 14 September: delegation from General Administration of Customs of China on **“International Merchandise Trade Statistics”** in collaboration with Eurostat, in the framework of the EU-China Trade Project

5 - 7 October: delegation from Belstat, the statistical institute of Belarus, on **“Household Budget Survey and Labour Force survey”** in the framework of the activities funded by the World Bank Trust Fund for Statistical Capacity Building

27 October - 2 November: delegation from the Moldova statistical institute on **“Agriculture Statistics System and Census”**. The study visit has been organised by FAO

15 - 18 November: delegation from BHAS to discuss about **“CPI further improvements, HICP implementation”** and further developments of collaboration among the two Institutes

27 and 31 October: visit of the President of INDEC of Argentina for technical meeting's on **“Quality, Household Budget Survey and Poverty Measures, Price Indices and Labour Force Surveys”**

22 November: delegation from the Vietnamese Academy of Social Sciences led by its President prof. dr. Nguyen Xuan Thang has met the President of Istat to discuss about **well being indicators** and possible methodological approaches in a context such as in Viet Nam with many ethnic groups, each one with its one life style and very different development levels. dr. Thang has also highlighted the need for the Vietnamese statistical system of **training and assistance** for data production and analysis, asking for Istat availability particularly in the field of social statistics and related methodologies



In partnership with...

Brasil - Fundacao Getulio Vargas

A Memorandum of Understanding will be signed with FGV with the aims of promoting joint research in the field of business cycle analysis, considering in particular the related areas of statistical methods, survey design and sampling techniques

Cape Verde - INE Duration: June 2009 - June 2012

The Memorandum of Understanding with INE focuses on Agriculture Statistics and Census, Agriculture accounts, sample surveys development of IT systems and infrastructures, methodologies and tools for strengthening the national capacity of the country's statistical system. It recognizes the importance to adopt and disseminate international standards, norms and classifications.

Cooperation with Cape Verde dates back to early 2000s, with the launching of the project 'Strengthening of the statistical system of the Ministry of Agriculture – Establishment of a permanent system of agricultural statistics'. The project, funded by the Italian Cooperation, was implemented by Istat with the Ministry of Environment and Rural Development and INE.

FAO - Statistics Division Duration: October 2010 - October 2013

The Memorandum of Understanding with FAO recognizes the importance of the establishment of international standards, norms and classifications for the production and dissemination of high quality statistics, and the need to strengthen the cooperation between international and national organizations to enhance the understanding and implementation of statistical methodologies and best practices. The Memorandum promotes joint research on estimation methods, integrated survey frameworks, innovative ways for survey conduction and GPS techniques, focusing on agriculture statistics and rural development.

Tunisia - INS Duration: December 2009 – December 2012

The Memorandum recognizes that an effective cooperation can contribute to the development of statistical systems, to a better understanding and a easier exchange of information particularly through the adoption of international standard methodologies, norms and classifications. The cooperation between the two institutes will focus on sector statistics (social, demographic, economics, environmental and national accounts), statistical methodologies, use of administrative sources and technical tools for statistical programming and coordination. The Memorandum has been signed during the implementation of a EU Twinning project (April 2008 – April 2010) on business statistics and register.





Agreements

China – National Bureau of Statistics

A Memorandum of Understanding with NBS recognizing the importance and the need to strengthen the cooperation between international and national organizations to enhance the understanding and implementation of shared statistical methodologies and best practices is planned to be signed at the beginning of July 2011. The fields of mutual interest identified by the MoU are training, statistical methodologies, ICT and social and economic analysis, production of economic, social and environment statistics, use of administrative sources, Institution building, strengthening of the national statistical system with special focus on regional organisation.

Tenders

Montenegro – Improving Statistical information system

Fields of intervention: Agricultural statistics, national accounts and business statistics

Financed by: EU through the European Union Delegation to Montenegro

Beneficiary: The National Statistical Institute of Montenegro (MONSTAT)

Duration: 2 years

Istat is leading a consortium composed by the Statistical Office of the Republic of Serbia (SORS), Adetef (France) and European Profile (Greece) for the participation in the tender for the award of a Service Contract in Montenegro. The Consortium submitted the technical and financial proposal to the Contracting Authority. Since none of the shortlisted met the tender requirements, a new call is expected by the end of 2011.

Turkey - Technical Assistance for Upgrading the Statistical System of Turkey Programme-Phase III

Istat intends to participate in the tender for the award of the above mentioned project, funded by the European Union through the Central Finance and Contracts Unit (CFCU) in Ankara.

Fields of intervention: business register system, social statistics, environmental statistics and accounts, macroeconomic statistics, business statistics and capacity building and institutional strengthening of TurkStat (the Turkish National Statistical Office). The procurement notice has not yet been published.

IPA 2011 - multi-beneficiary statistical cooperation programme

Istat plans to participate in the tender for the award of the above mentioned programme funded by the European Union.

Fields of intervention: macroeconomic statistics, price statistics, external trade statistics, environmental statistics, agricultural statistics, social statistics, and business statistics.

Study visits

12 - 16 December: visit of a delegation from INSTAT Albania to discuss and finalise the activities on the business registers. The action is part of the activities of the EU project 'Support for the alignment of Albanian statistics with EU standards'.

27 - 28 March 2012: visit of a high-level delegation of the Heads of the statistical offices of ASEAN Member States in the framework of EASCAB, the EU-ASEAN Statistical Capacity Building Programme.

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