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ECONOMIC COMMISSION FOR EUROPE (ECE)  
CONFERENCE OF EUROPEAN STATISTICIANS**

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

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

**UNITED NATIONS  
ECONOMIC AND SOCIAL COMMISSION  
FOR ASIA AND THE PACIFIC (ESCAP)**

**Meeting on the Management of Statistical Information Systems (MSIS 2014)**  
(Dublin, Ireland, and Manila, Philippines, 14-16 April 2014)

## **DRAFT REPORT**

1. The Joint UNECE/Eurostat/OECD/ESCAP Meeting on the Management of Statistical Information Systems (MSIS) was held in Dublin, Ireland, and Manila, Philippines from 14 to 16 April 2014. Participants from the following countries attended the meeting in Dublin: Albania, Australia, Azerbaijan, Canada, Estonia, Finland, France, Germany, Hong Kong China, Hungary, Iceland, India, Ireland, Italy, Latvia, Netherlands, Norway, Poland, Russian Federation, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States of America. The European Commission was represented by Eurostat. Representatives from the following international organizations also attended: Institute for Statistics of the United Nations Educational, Scientific and Cultural Organization (UNESCO), International Labour Organization (ILO), United Nations Industrial Development Organization (UNIDO), Organisation for Economic Co-operation and Development (OECD), Partnership in Statistics for Development in the 21<sup>st</sup> Century (PARIS 21), and International Monetary Fund (IMF).
2. The agenda of the meeting (WP.1) consisted of the following substantive topics:
  - (i) How IT can contribute to changing organizational culture;
  - (ii) Standards-based modernization;
  - (iii) Innovation;
  - (iv) Architecture.
3. Mr. Rune Gløersen (Norway) was elected Chairman of the meeting. The preparation of the substantive work was organized by: Messrs. Joe Treacy, (Ireland), Joseph Parsons, (United States of America) and Ms. Christine Wirtz, Eurostat for Topic (i); Messrs. Trevor Fletcher (OECD, Eric Hermouet and Marko Javorsek (ESCAP) for Topic (ii); Messrs. Marton Vuksan (Netherlands) and Carlo Vaccari (Italy) for Topic (iii); and Messrs. Robert McLellan (Canada) and Patrick Hadley (Australia) for Topic (iv). Mr. John Dunne (Ireland) was Organizer/Chair of the Panel discussion on the implementation of a Common Statistical Production Architecture.
4. Mr. Pdraig Dalton, Director General, Central Statistics Office, Ireland gave a keynote address, highlighting some of the challenges facing official statistics. He stressed the importance of modernisation and collaboration to address these challenges. He introduced the work of the High-Level Group for the Modernisation of Statistical Production and Services, in this area, and highlighted the importance of leaving a sound legacy for future generations of official statisticians.
5. Summaries of the topics discussed, the panel discussion, and the brainstorming on future work are included in the Annex.
6. The draft report was adopted by the participants before the close of the meeting.

7. In his summary, the chair reminded participants that this was the last MSIS meeting, and reflected on the achievements of the MSIS meetings over the years, recognising that many of the foundations for statistical modernisation were developed out of ideas discussed at MSIS meetings. As a new format for meetings on this topic is developed, it will be important not to lose the strengths of the MSIS group, and particularly the close network that has developed. He noted that Mr. Jean-Pierre Grandjean, who has contributed to the work of this group and its predecessors, would shortly retire, and, on behalf of the participants, wished him well. Finally, he thanked the organising committee, the UNECE Secretariat, and the staff of the Central Statistical Office and Dublin Castle for their contributions to ensuring a successful meeting.

## **Annex – Summary of the topics discussed**

### **Topic (i): How IT can contribute to changing organizational culture**

**Session Organizers:** Joe Treacy, Central Statistics Office (Ireland), Joseph Parsons (United States of America) and Christine Wirtz (Eurostat)

**Papers by:** Australia, United States, IMF, Eurostat, UNESCO Institute for Statistics, Italy and OECD

1. The papers presented under this topic described the efforts made in statistical offices to “do more with less” in order to streamline statistical business processes and change the way IT services are delivered.
2. Australia made a presentation on how IT is contributing to changing the Australian Bureau of Statistics Culture in order to meet the challenges for new and innovative statistics products; delivered in more sophisticated ways; faster, and at less cost; whilst maintaining data quality. The presentation discussed the opportunities, challenges and approach to IT in business transformation using the 2016 Population Census which will take advantage of emerging technologies in information analytics, mobile, cloud and social media. The Digital Census will also develop and heavily utilise geo-spatial infrastructure in the design, operations and outputs of the program.
3. The United States National Agricultural Statistics Service (NASS) presented case studies of information technology changes in the modernization effort to centralize their network, applications and databases in addition to an overall organizational restructuring. These efforts have had a distinct effect on the how NASS employees work, interact and the overall culture of the organization. The lessons learned from these projects clarified the importance of establishing a business process early on in the project.
4. The IMF presented a case study on pilot implementation of components of a streamlining strategy for statistical data processes within their Statistics Department. The streamlining of “Coordinated Portfolio Investment Survey” (CPIS) was taken up as a pilot implementation to validate the strategy and identify areas that would require attention during the migration process of the entire statistical domain. The successful implementation of the new process and tools for the expanded CPIS demonstrated the benefits a statistical operation can achieve by leveraging standardization and automation.
5. Eurostat presented information about two IT rationalisation projects. One concerned the whole of the European Commission, where Eurostat was given lead responsibility in the areas of analysis and database tools. The second was within Eurostat, where an inventory of IT tools identified those that are centrally managed, locally managed but centrally supported, and purely local. The aim is to significantly reduce the number of tools, and, in the longer-term to move towards a service-oriented architecture approach.
6. UNESCO Institute for Statistics reported on the results of a recent study which explored open source software benefits for the official statistics industry, measured the current state of adoption, and identified the motivators and amotivators affecting adoption. They found that there is a positive and receptive environment amongst statistical organisations towards open source software adoption, as well as a high level of agreement across the industry regarding business goals. This context will support efforts to increase open source software adoption and usage as a means of realising shared goals. Innovation adoption is a process to be managed as an organisational change, and people are critical to this process. Major concerns are maintenance, support and security, but these can be equivalent to commercial software. Statistical organisations need to carefully evaluate

the true lifecycle costs of open source software against other options. Open source software adoption could provide good lessons for industry sharing initiatives, and efforts to increase software sharing could benefit from targeting assistance at the various process stages.

7. The representative of Istat, Italy described the ICT Change Management Project that Istat has been carrying out since 2012 to redefine the Institute's ICT function, changing the approach, the way of working as well as the ICT organizational culture. The project is a concrete instance in the Stat2015 programme designed to allow an industrialization and standardization of the statistical process. The main goal of the Change Management Project is to redefine ICT function and environment processes with the target of enhancing productivity, quality of ICT services, control, ICT governance in general allowing quicker innovations. The model is based on ITIL best practices, adapted to the specificities of a public statistical producer. It covers processes, performance, results and compliance. Statistical organizations can evaluate this approach to focus on a flexible and service-oriented technical and organizational solution, to turn complexity into opportunity.

8. The OECD demonstrated their chart production tool OECD.Graph which assists authors by automating the formatting of graphs, facilitating the creation of alternative language versions, and automating the generation of associated StatLink files. This highly innovative approach to charts production enables significant efficiency gains through industrialization, also transforming the chart into a piece of smart content that can be easily produced, shared and repurposed.

9. Points raised in the discussion included:

- How to engage subject-matter areas in modernization activities? Building partnership mechanisms and structures, including shared governance arrangements, can help. NASS has an approach with two project managers, one from each area.
- Whether security risks are any greater for open-source software than for commercial equivalents – both types require active risk management.
- Developments for specific purposes such as censuses, which often have special funding arrangements, should be done in such a way that they can be re-used by other business processes.
- It can often be the case that processes are driven by the available tools. A change in mindset is needed to properly understand and standardise the processes, and find the most suitable IT tools to support them.
- The merits of centralised versus de-centralised IT functions. The latter approach brings IT closer to the users, but requires strong governance and management procedures, and can be a risk to standardisation and modernisation.
- Whether tools that combine commercial functionality with an open source core component can be considered as open source themselves.
- Good times to promote changes in tools are when the underlying workflow processes change, or when support is withdrawn by the suppliers of the tools.
- Innovation should be accompanied by active risk management, an important challenge is how to find the right counterparts in business areas.

### **Topic (ii): Standards-based modernization**

Session Organizers/Discussants: Trevor Fletcher (PARIS 21), Eric Hermouet and Marko Javorsek (ESCAP)

Papers by: Australia, Turkey, OECD, Eurostat, Asian Development Bank / ESCAP, and Norway

10. The topic covered the use of international standards such as the GSBPM and the Generic Statistical Information Model (GSIM) as a basis for modernising statistical production. These standards can be seen as key enablers for producing statistics more efficiently.

11. The representative of the Australian Bureau of Statistics reported on the practical application of new standards and infrastructure to the ABS's prototype of automatically generated Blaise E-forms as part of their effort to improve their business efficiency through standardised automated statistical processes. They found that

effective and efficient tools must also be used to create and maintain the metadata, in order to realise maximum business benefits.

12. Turkey presented the methods their office uses to standardise, capture, store, re-use and document metadata in order to monitor the statistical business process. They examined how the types of metadata in statistical processes could be specified and how these specified process metadata could be standardised under a common terminology. Metadata management is one of the overarching processes in GSBPM. TurkStat is currently working on how the process metadata could be captured, what kind of systems could be developed to store the metadata and how this metadata could be used to monitor the processes.

13. The OECD presented their work in developing and evolving their Statistical Information System (SIS), a suite of integrated software components for statistical data and metadata. Central to SIS is the .Stat data warehouse that integrates statistical production, sharing and dissemination processes. It is a core strategic platform which supports the analytical and statistical work of the SIS Collaboration Community members. Central to this has been the active adoption and advancement of common statistical standards in particular the Statistical Data and Metadata eXchange format (SDMX), to increase the efficiency of the data sharing with other organisations and data users.

14. Eurostat presented their cooperation model for dissemination of European Union statistics through the European Census Hub which is expected to be officially announced in the summer of 2014. Today, the Census Hub brings a new dimension to cooperation and sharing of data and services at EU level. With the official launch of the interface on Eurostat's website, participating countries are making a commitment to ensuring high availability of data and servers, and to providing statistical data of high quality that will be kept available online until at least 2025. The Census Hub project is expected to extend to other statistical domains (such as the ICT Hub) and multi-domain or multi-purpose applications (such as the Enhanced Hub). Dissemination of European statistics could gradually evolve into a data sharing system, in which each party owns, validates, shares and continuously maintains its information.

15. The Asian Development Bank (ADB) and the Economic and Social Commission for Asia and the Pacific (ESCAP) launched an SDMX capacity building initiative by piloting the use of existing global SDMX Data Structure Definitions (DSDs) developed by the international statistical community and of related tools. The main areas of focus of the project are the DSDs for balance of payments and the System of National Accounts. Involving initially national statistical systems from Australia, Malaysia, New Zealand, and Thailand, the initiative will focus on implementing practical solutions to facilitate data exchange between national statistical systems and international agencies compiling economic statistics. The project is in an early stage of implementation, and initial findings from national workshops in Thailand and Malaysia were presented.

16. Statistics Norway presented their experience in implementing GSBPM from the first version of their business process model published in 2008 up to now. They also described their current use of GSIM v1.1 in the Remote Access Infrastructure to Register Data (RAIRD) project, where it is used as a basis for the RAIRD information model. The project is still in an early phase and will continue until 2017. They will provide feedback on their experiences with the practical implementation of GSIM v1.1 to the UNECE Modernisation Committee on Standards.

17. Points raised in the discussion included:

- The Australian E-forms application is designed to be generic, and it may be possible to integrate it as a standard Blaise product.
- The approach being developed to manage metadata in Turkey could be linked to future management information systems, and possibly also to control statistical production systems.
- Italy is working on a research paper on the use of semantic standards in dissemination. The SIS Collaboration Community plans a pilot project on this in early 2015.
- Several organisations including OECD and UNESCO are starting to use SDMX-JSON formats.
- Possible extension of the Eurostat Census Hub approach to other areas

- The main challenge regarding SDMX implementation in the Asia-Pacific region is to build awareness of the possibilities offered by SDMX. This will be addressed in the ADB / ESCAP project
- The different SDMX implementation tools should not be seen as competing. Implementing a single tool is difficult due to the variety of platforms in statistical organisations.
- The integration of the GSBPM in IT strategies.
- GSIM adoption should be seen as an investment to enable future benefits as more CSPA services become available.
- How to manage processes where the timing of GSBPM phases overlaps.
- Standards for modernisation should evolve in response to changing needs, and are unlikely to ever be perfect.
- The move to enterprise-wide systems requires a re-evaluation of risks.
- The increasing use of standards is greatly facilitating international collaboration, so we are already starting to reap the benefits.

### Topic (iii): Innovation

Session Organizers/Discussants: Marton Vuksan (Netherlands) and Carlo Vaccari (Italy)

Papers by: Netherlands, OECD (not presented), Albania (2), Italy, Malaysia, Cambodia, India, and PARIS21

18. IT is facing big changes in accommodating big data or using cloud solutions, not to mention the move toward personal devices and platform changes. Methodology is facing a huge challenge in realizing that big data needs dramatically different methods and that adaptation of the “old” knowledge may no longer apply. This session examined the way organisations deal with these challenges and which solutions and organisational changes are needed. The papers in this session offered new IT solutions and their implementations, especially how to provide for new processing paradigms like pre-processing big data at the data provider’s site or using artificial intelligence or machine learning related to novel ways of arriving at statistical output.

19. Statistics Netherlands reported on their use of *internet robots* for official statistics. These are programs that imitate operations performed by a human visiting websites via a browser to store interesting data from these sites. Collection of data from internet can be done with internet robots that run without user interaction. For the collection of data from internet data sources with only a few items, a tool was developed to assist the data collector to check for changes in data on web sites. The use of internet robots can result in more detailed data compared to data collected in traditional ways, and may be used to study phenomena in a completely new way. Robot-assisted data collection is useful to collect prices from many different internet sites in an efficient way.

20. The Albanian National Institute of Statistics reported on the use of two innovations for the second Population and Housing Census in 2011. One of these innovations was the implementation of GIS technology in all phases of census process (pre-census, implementation and monitoring, publishing the results). The second was the introduction of optical scanners to capture the data using Optical Mark Recognition (OMR) and Intelligent Character Recognition (ICR) technologies. The use of GIS for statistical purposes and delineation of small statistical areas – Enumeration Areas - was very difficult. The lack of digital maps on the building level, roads, and digital map of administrative boundaries made this process more complicated. Since this geographic information doesn’t exist, the Institute of Statistics undertook the necessary steps for the digitalization of all necessary geographic information, without outsourcing.

21. Since Big Data are becoming more and more important as additional data sources for Official Statistics, Istat has set up three projects: “Persons and Places” which makes use of Big data sources by performing mobility analytics based on call data records; the use of “Google Trends” to improve prediction, by focusing on nowcasting and forecasting estimates of some indicators such as the unemployment rate; measuring “ICT Usage” in enterprises and public institutions using Web scraping, data mining and text mining techniques. They found that some IT issues also have methodological aspects. Hence the skills for dealing with them should come from the two worlds, through the data scientist profile.

22. A second presentation by the Albanian National Institute of Statistics focused on the quality and performance indicators recommended for inclusion in quality reports in the ESS of data collected by the Population and Housing Census in Albania. The main objective of this quality assurance is to provide valuable information for the producer and the user of the data regarding the quality of census data. They described all the steps used before, during and after the census enumeration in order to increase data reliability.

23. As part of their modernization program, the Department of Statistics Malaysia has started using data collection via the internet for some surveys. This was first introduced in 2008 for the International Trade Survey. The application of the method was then extended to the Monthly Manufacturing Survey in 2009, Population Census (2010) and Quarterly Services Survey (2012). Significant benefits were gained from the e-survey approach, such as the reduction of time spent on data collection and processing, survey cost and data entry errors as well as an increase in respondents' confidence. Efforts to strengthen the statistical services have already been put in place, including steps to improve and enhance the e-survey facilities and features, and extend the application to some other surveys. From the data quality perspective, this method provides a more effective supervision and monitoring.

24. The National Institute of Statistics (NIS) of Cambodia reported on the current situation of data management and dissemination for censuses and surveys and challenges related to data management. NIS faces some problems such as the low skill of staff in IT, low salaries of staff and lack of incentives. Some donors are reducing support for projects, which then require additional government support, though funds from the government are limited.

25. The Planning Commission of India presented the Open Data Initiative of the Government of India. There are immense possibilities of using Open Data to transform the way we live, think and make decisions. India has the talent, the ecosystem of service providers and rising technical base of users with mobile and social connections. GIS technology and smart phones are being used to collect data in Big Data, make use of Big Data analytic initiatives. There is commitment to use Open Data for transforming governance. India's National Data Sharing and Accessibility Policy (NDSAP) have been made a platform to facilitate this engagement and collaboration with domain experts, stakeholders and key participants to create an innovation movement in India.

26. The PARIS21 representative presented the Informing a Data Revolution (IDR) Project which was started in January 2014. The objective of the Project is to improve the production, accessibility and use of data to support and strengthen evidence-based decision-making. One of the main outcomes of the project is to improve the understanding of data systems in developing countries, including how they are best designed, managed and supported. The main output will be a document setting out a road map for the data revolution, supporting the post-2015 development process.

27. Points raised in the discussion included:

- How to improve collaboration based on shared software
- How to make the most of innovations by re-using them in other statistical areas
- Indexes can be used to help access unstructured Big Data sources
- The risk of internet price data varying for different types of users, or being manipulated to influence the resulting statistics – this is theoretically possible, and it is necessary to be aware of all possibilities, however, there is no evidence that this is a significant issue so far.
- The need to ensure harmonisation between different international initiatives
- Open government data initiatives may provide opportunities for statistical organisations to help other government agencies to improve the quality of their data. Monitoring quality, usage and impact is important.

#### **Topic (iv): Architecture**

Session Organizers/Discussants: Robert McLellan (Canada) and Patrick Hadley (Australia)

Papers by: Spain, Poland, Italy, UNIDO and Canada

28. Important initiatives in architecture development for statistical agencies and their production capabilities have been undertaken in the past year. The High-Level Group for the Modernization of Statistical Production and Services (HLG) has sponsored project work on a Common Statistical Production Architecture (CSPA - also known as "Plug and Play"), an initiative to develop a common architectural framework for sharing, co-development, and collaboration in the development of component-based statistical production solutions. A Proof of Concept is in progress, with multiple agencies participating to develop, share and integrate solution components. The Statistical Network (SN) has completed Phase 1 of its Business Architecture work stream and is moving on to developing common capability models; in addition, it is launching a work stream on information architecture and metadata management. Both of these ideas build on the GSBPM and GSIM frameworks, as well as related standards.

29. In recent years, the National Statistical Institute of Spain (INE) has made great efforts to transform the existing information systems based on "stovepipe" models to true statistical production models based on internationally recognised standards. One of the specific results of this has been the modelling of a new production system and the development of a new data collection tool called IRIA. This tool has been designed for execution in all of its phases by the end user and statistics managers. The aim of the IRIA system is to serve as a tool allowing end users to define, design, build and exploit data collection systems for both structural and short-term surveys of households and business and for different collection mechanisms; two of its main features are integration and reuse. The systems for the design, construction, management and entry into production of statistics that use the CAWI, PAPI or CAWI mechanism for their data collection are already in production.

30. The Central Statistical Office of Poland presented their Concept of Statistical Surveys Organization in which aims to increase the efficiency of the statistical production process and accompanying organizational and coordination processes. It uses a layered architecture model, and builds on international standards including the GSBPM. This approach covers the entire transformation programme from the current surveys organization model, based on a stovepipe model, to the Integrated Statistical Business Process System, with a process-based organisational model, which will be implemented by 2021.

31. The Italian National Statistics Institute (Istat) presented a Business Architecture (BA) model that is a common result established within both the ESSNet on Standardisation and the Statistical Network Business Architecture Project Team. This BA model can represent a first step towards the development of a common framework and principles sharable by different statistical organisations, so as to work in a more efficient and optimised way. Particular attention was placed on the activities defined within the different BA business lines aligned with the phases and sub-processes of the GSBPM 5.0, the shared infrastructures required to optimise the overall architecture, and the decision and design principles that are general guiding rules to be followed to ensure optimality (Statistical Network Business Architecture Project Team). The Business Architecture conceptual model can be made fully operational through a road map, concentrating on the implementation of some of the basic common infrastructures, both in terms of processes and shared services.

32. UNIDO presented their methodology for the evaluation of statistical information systems to analyse the content and the statistical business process implemented in a statistical information system and to perform an assessment of the system under consideration. The study used two methodologies in order to review the statistical information system under consideration. The first was the GSBPM, introduced by the Joint UNECE/Eurostat/OECD Work Sessions on Statistical Metadata (METIS). The second approach used in this report is the DeLone and McLean model for evaluation of Information Systems. In order to make it applicable to statistical information system, particular adaptations were necessary. The model and its adaptations as well as concrete applications were presented.

33. Canada presented lessons learned from their participation in the proof of concept work within the Common statistical Production Architecture (CSPA) project. As part of this project they created a CSPA-compliant service by "wrapping" functionality from the Canceis editing and imputation tool. Lessons learned

covered areas such as roles, resourcing, licensing, and service granularity. The CSPA seems to give a good basis for portfolio optimization, increasing efficiency and facilitating collaboration between organisations.

34. Points raised in the discussion included:

- How to ensure acceptance and use of architecture principles within statistical organisations – changing organizational culture is a major challenge, that can be addressed through communication and training.
- The importance of engaging subject-matter areas in the design phase, and to get them thinking about “business designs”.
- Sustaining interest of business areas throughout the change process can be a challenge, as their main focus is often on “business as usual”.
- Case studies documenting progress in moving to a service-oriented architecture (SOA) approach would help countries less advanced in this process.
- Approximately 20% of organisations present had an enterprise architecture model approved by senior management.
- Business architecture is a means to an end, and it is necessary to keep a holistic view of the needs of the organization.
- The relevance of enhancing collaboration forms involving different Countries in order to achieve an increasing generic Business Architecture Model and a common vision to be applied both at each Country level and at System level.

#### **Panel discussion on the implementation of a Common Statistical Production Architecture (CSPA)**

Chair: John Dunne, CSO, Ireland

Panellists: Patrick Hadley (Australia), Marton Vucsan (Netherlands), Rob McLellan (Canada), Carlo Vaccari and Monica Scannapieco (Italy)

35. The chair introduced the panel discussion and asked about the organisational changes and resources needed to implement CSPA.

36. Mr Hadley discussed how CSPA, together with the GSBPM and the GSIM provide the foundations for sharing and collaboration, enabling statistical organisations to get more value for less expense. He stressed the importance of establishing a catalogue of services and related artefacts, and the need to prioritise at a global level the services to be developed. He identified a number of challenges to effective collaboration, including legal and licensing issues, but suggested not to spend too much time trying to resolve them in a theoretical way in advance, but rather to tackle them if and when they arise in practice.

37. Mr Vucsan gave examples of other industries where products are assembled from common components developed by different organisations. There is a need to change the culture of statistical organisations to be more agile, and to collectively act as “a tribe with a purpose”. There is a risk of spending too much effort on thinking about how to change rather than just getting on with implementing change. It is important to be purpose rather than process driven.

38. Mr McLellan focused on how to make change happen. He stressed the importance of reaching a critical mass of CSPA-compliant services, to ensure successful implementation. It is necessary to make CSPA implementation relevant to business outcomes by involving the right people, across different areas of work. He considered the role of information technology in the context of industrialisation of statistical organisations, as well as measures of success. He concluded that CSPA implementation has a bright future, as long as there is sufficient imagination, focus and creativity.

39. Ms Scannapieco and Mr Vaccari traced the history of related initiatives from the CORA (Common Reference Architecture) and CORE (Common Reference Environment) projects. They stressed the need for careful design and building of CSPA-compliant services, so that it is possible for statistical organisations to get them “off the shelf”. To support this, the CSPA catalogue should be a repository of concepts and building blocks as well as services. They raised the possibility of translating the GSIM into an ontology for official

statistics. The distinct advantages of the CSPA approach over a standard web services approach, or a semantic web approach, should be specified. They stressed the importance of collaboration for CSPA implementation.

40. Key points raised by panelists and other participants included:

- Statistical organisations should determine their own priorities for CSPA components, then these priorities can be compared to identify collaboration opportunities.
- When talking to senior managers, the focus should be on delivering business value (outcomes) rather than the architectures themselves (tools).
- The appropriate levels of granularity for CSPA services. An individual piece of code to run an algorithm on a specific platform may be too low-level. Services could be packages of these, and should be platform-independent as far as possible.
- A component lifecycle management approach will be needed.
- A detailed understanding of statistical processes is needed in order to develop relevant services.
- Interfaces between components need to be generic, based on common standards.
- Tools can be seen in terms of their functions and their implementations. Whilst implementations are often specific, the functions or algorithms are easier to make generic. It is important to separate implementation-specific choices from more generic and re-usable design practices.
- How to encourage innovation and remove obstacles, particularly cultural and organizational ones.
- The component-based approach is not new, but the difference now is the availability and increasing maturity of common standards such as the GSBPM, GSIM and CSPA.
- There is a vicious circle of failure to invest in improving efficiency because resources are needed to maintain inefficient processes. This needs to be broken, and a suitable balance needs to be found between innovation and maintenance of existing systems.
- Process metrics should be used much more to identify where costs and inefficiencies arise within the statistical production process.
- Successful early implementations are needed to help convince managers to free resources for further developments.
- CSPA can be seen as providing the vocabulary and grammar for collaboration.
- The catalogue will never be complete – new components will always be needed to address emerging needs.
- Statistical organisations need to invest in developing the environment (technical, architectural, organizational and cultural) to benefit from shared CSPA-compliant services.
- It may be easier to start with components related to data collection and dissemination, as there could be more risk associated with modernising core production processes.

## Future Work

41. The meeting was asked for ideas on how to organise future events to maximise their value to participating organisations. Suggestions and comments included the following:

a) Organisational issues

- MSIS is currently the only forum for sharing both good and bad experiences in this area
- Are traditional presentations and big plenary sessions dead? Would a workshop format be better?
- Access to information between meetings through a dedicated portal
- Multiple working groups meeting together
- More exchange with methodologists / metadata / business people
- More virtual meetings beforehand, to define task teams
- Round tables / standing meetings?
- Make meetings more interactive / result oriented – focus on exchange of views
- Webinars would be useful to exchange information, but some physical meetings will be needed

- Parallel or plenary sessions?
- Get more smaller / developing countries involved
- Put forward topics that are of specific interest to individual organisations beforehand
- More passion! Selling ideas
- Need clear goals for meeting – keep sight of strategic issues
- Mechanisms for work between meetings - forums etc.
- Frame topics as questions to be answered
- Poster sessions
- Have a clearer link to Modernisation Committee work programmes – to get feedback on their activities
- Agree a common purpose first
- More innovation and networking – not presenting papers
- More consultation between different specialisms within organisations in preparation for meetings

b) Proposals for topics to be discussed

- Metadata / data management / service centres
- Measuring processes (quality, cost, ...)
- High-Level Group priority projects from an IT perspective
- Re-design of the global statistical system from an IT perspective
- IT implications of new types of statistics
- Data analytics / modelling
- Machine learning
- Data science / IT skills
- Operating plans and resource issues
- New approaches for collection and dissemination, including games and apps
- Tough questions facing statistical organisations
- Managing the robustness of systems for key outputs
- Impact of digitalisation
- Combining ideas of IT and methodology (methodology architects?)
- The changing paradigm of data collection changing (needs methodologists)
- Governance – control of processes / resources

42. Participants were encouraged to send further ideas to the UNECE Secretariat ([steven.vale@unece.org](mailto:steven.vale@unece.org)).