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**Economic Commission for Europe****Conference of European Statisticians****Sixty-seventh plenary session**

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**Strategic partnerships****Modern partnership framework for official statistics****Note by Statistics Canada***Summary*

This document discusses various factors to consider for the establishment of a modern partnership framework for official statistics. It was prepared as an outcome of the High-level Seminar on Strategic Partnerships in Official Statistics, held in April 2018 in Geneva, by its organising committee (co-led by Canada and the United Kingdom, comprising Mexico, the Netherlands, Eurostat, PARIS21 and United Nations Economic Commission for Europe). The Bureau of the Conference of European Statisticians reviewed and approved the framework at its October 2018 meeting. The Bureau asked the secretariat to share the paper with all CES members.

The paper provides a good tool for statistical offices to move forward with establishing strategic partnerships. It includes principles and a framework for creating strategic partnerships, a mechanism to share good practices, a maturity model, and a description of the core assets that can make statistical organisations attractive to partners.

Members of the Conference are encouraged to use the framework and provide any feedback to the secretariat for possible follow-up.



## I. Background

1. This note discusses various factors to consider for the establishment of a modern partnership framework for official statistics. The terms national statistical system (NSS) and national statistical office (NSO) are used throughout the document and are meant to represent the official statistical requirements of the entire system. The intent is to initiate discussions that will be instrumental in defining future development in this area.

## II. Definitions

2. Given that there are many different definitions of “partnership”, the following example serves to define the meaning of a partnership in the context of this note.

*“Partnership is more than just collaboration on ad-hoc projects. It is about moving beyond responsibility for independent results to a relationship that involves co-creation, shared risks and responsibilities, interdependency, and organizational transformation. True partnership is about identifying shared value and leveraging the combined strengths of each partner to achieve a level of impact that could not be accomplished independently.” (KPMG, Unlocking the Power of Partnership – A Framework for Effective Cross-Sector Collaboration to Advance the Global Goals for Sustainable Development)*

3. The evolving roles of NSOs and external stakeholders are key factors to consider in any partnership. Culture change can be brought about by the establishment of new roles and the discovery of shared value with external stakeholders. The use of a partnership framework, as a key governance instrument, can contribute to attaining the expected outcomes. This note discusses current state, drivers for change and emerging roles that could be considered by NSOs.

## II. Current state of national statistical offices’ partnership agreements

4. NSOs are predominantly data/information providers and have formalized partnership agreements directed towards in-house creation of statistical output. NSOs traditionally ingest, clean, process, analyse and publish data and information. Much of this work is performed “in-house” using tools, techniques, expertise and infrastructure on premises.

## III. Data ecosystem drivers of change

5. The greatest driver of change in the data ecosystem has been the data revolution of the last several years with the increasing digitization of data and the emergence of the concept of “Big Data”. With the data revolution come the inherent issues of data access rules, data quality issues and privacy rights. One of the results of the data revolution has been the drive towards the management of data as a strategic asset to increase return on investment (ROI) and the resulting creation of statistical output by other organizations – these organizations leveraging the availability of new data sources, tools and techniques to create output. The data revolution has also resulted in a change in stakeholders’ expectations – the demand for more open data, available faster, and accessed through web portals, APIs and sharing platforms. The demand for access to data is driven by the fast-paced change in technology, including AI and machine learning and data literacy skills of the data analytics and data science communities.

6. A “whole of government approach” to data usage, storage and access and the naming of Chief Data Stewards and Chief Data Officers (CDOs) by some countries has also led to

increasing demand for modernization and a change in roles and responsibilities of NSOs<sup>1</sup>. This drive for modernization also includes the adoption of more robust IT infrastructure including access to cloud native storage capacity, open data sharing platforms, and collaborative work space for sharing code, tools, techniques and works in progress.

#### **IV. Collaboration/partnership enablers and the future role of national statistical offices**

7. The goal of a modern partnership framework is to think National Statistical System first and to build on the comparative advantage of partners who share a common goal and vision. Modern partnership agreements must be flexible, adaptable and be grounded upon a cost effective, efficient, quality driven agenda.

8. NSOs will drive a modern partnership agenda based on current strengths in terms of data stewardship and data governance. The good reputation in terms of confidentiality protection assurances and quality management positions NSOs well to take advantage of areas of mutual interest with traditional and non-traditional partners, focusing on creating tangible outputs that can be used in the partners' production processes.

9. Data stewardship is the management and oversight of data assets to provide users with high-quality data that is easily assessable in a consistent manner. More specifically, a data steward is responsible for ensuring fitness of data elements – both content and metadata and for ensuring compliance with policy and/or regulatory obligations of the entire system.

10. As the primary role of a data steward is data quality, including capturing/documenting meta information and meta data (including definitions, rules, logical models, code sets and classifications), identifying data custodians/owners, and documenting all elements of a data quality framework, NSOs are well positioned to assume the role of Data Stewards. Sound data stewardship is required throughout the entire data lifecycle, from acquisition and ingestion to data processing and cleaning to data analysis and finally the creation of statistical output.

11. A secondary role for NSOs would be the certification of data stewarded by other organizations but which forms part of the national statistical system; this certification is based on the same standards as those applied to the NSO stewarded data. NSOs could also provide training and knowledge transfer to ensure all data in the NSS follows the same rules, standards, legal and regulatory framework to enable sharing and discoverability.

#### **V. Partnerships – opportunities and challenges**

12. A modern partnership framework should include the following elements:

- Strategic “fit”, including aligned partnering strategy, sufficient budget and mutually agreed upon time-lines;
- Resource “fit” - management has sufficient partnership skills and roles and responsibilities are well defined in partnership parameters, including an equitable division of labour;
- Domain specialists, especially as it relates to new types of data and the knowledge and expertise required to ingest, analyse and create statistical output for these types of data;

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<sup>1</sup> The Chief Statistician of Statistics New Zealand has been named Government Chief Data Steward (GCDS). Statistics New Zealand is co-designing, with other agencies, a Data Stewardship Framework. The UK Government Transformation Strategy, which includes a list of activities to be completed by 2020, includes a recommendation to appoint a Chief Data Officer for government; the role of the CDO is to lead on the use of data. Canada is working towards a Government of Canada Data Strategy (GCDS) which includes discussions on the role of the Data Steward.

- Common understanding - ensuring that the culture, values, approach, goals, aims, and potential benefits of forming a strategic partnership are clear and partners agree upon the need;
  - Common purpose – ensuring that the foundation, rationale, ground rules, vision, anticipated outcomes, function and nature of the partnership are agreed upon, as well as the benefits. This aspect includes building trust, openness, and support within the organization for shared and transparent decision making;
  - Management commitment – the support required from senior management of the organizations involved in the strategic partnership;
  - Governance - identification of decision-making structures, accountabilities and conflict resolution mechanisms;
  - Work arrangements – identification of the roles and responsibilities of the partners, distinguishing single and joint responsibilities and accountabilities, activities, priorities, as well as potential barriers to the success of the partnership;
  - Communication and engagement strategy – focusing on the elements of open and honest communication, feedback loops, communication mechanisms and tools that apply both for inside and outside of the organization;
  - Data ingestion strategy that includes all types of data collection and acquisition processes;
  - Connection with expert organizations and academia, to be informed and able to use or at least consider state-of-the-art tools, techniques and methods;
  - IT network to fully enable the capacity to buy, borrow or build;
  - Stakeholders in general to be constantly on the lookout for potential partners for co-creation;
  - Performance measurement – determining how the partnership will be monitored and evaluated, and agreement upon how to measure successes and have continuous improvement.
13. These elements are explored further in the maturity model described in the Annex.
14. The strength of NSOs in a partnership arrangement are sound data governance and data stewardship; however, given the fast paced change in data availability and technology, NSOs must look to strategic partnerships with data providers, technology providers, academics and researchers and media outlets to continue to respond to the ever changing needs of stakeholders.
15. The focus of this document is on modern partnership agreements. Statistical Organizations have much experience with supplier/recipient types of partnerships and to some extent open innovation types of partnerships. Both these types of partnerships are discussed below; however, emphasis has been placed on co-creation types of partnerships as these types of partnerships are a potential growth area for creation of official statistics.

## **VI. Supplier/recipient partnerships**

16. The availability of an increasing number of data sources offers unique opportunities that have been recognized by many NSOs; however there are many challenges with ingesting data from other organizations. The greatest challenge is length of time it takes to negotiate with data providers to gain access to their data assets. Many data providers also have privacy concerns and may add restrictions in terms of usage, sharing and storage. There is also the issue of “paying for data”; especially, commercially available data sets or customized data sets that have monetary business value. The question being whether “paying for data” is a sustainable option for the creation of statistical output by NSOs.
17. Future partnerships of this nature may involve NSOs sending extraction routines (code which performs pre-processing of data based on defined standards) or analysis code directly

to source and retrieving only the data and information absolutely required by NSS. This would limit the amount of data that would need to be accessed and stored and the extraction and analysis programs could be shared with the data providers in exchange for data access. As well, NSOs could provide methods and tools for data quality assessment and certification and share any intelligence gained on data quality, data gaps or inconsistencies.

## **VII. Open innovation and co-creation partnerships**

18. The transition from survey data based programs to administrative data based programs or mixed survey and administrative data programs by many NSOs has resulted in the requirement for new and emerging skills sets and knowledge. These skill sets directed towards the ingestion, efficient access and storage, management and analysis of administrative data, especially big data and alternative data sets such as data created by social media sites. This includes data integration routines, anonymization techniques and adoption of data storage formats which permit sharing across the enterprise/system.

19. NSOs must partner with academic institutions, research facilities and think-tanks to gain access to individuals who possess these skill sets. Collaboration and sharing platforms would provide NSOs the ability to work directly with engineers, data scientists and researchers in other organizations.

20. Fast-paced change in technology has also been a major driver of stakeholder expectations and requirements over the last several years.

21. NSOs will require access to modern and efficient tools for data processing, data mining, real-time analytics, storage, computing, and data visualization which are essential to data scientists and researchers.

22. Private sector organizations may be able to provide training, expertise and software solutions in response to these challenges. However, care must be taken to ensure a sustainable, scalable, enterprise-wide strategy. The drive towards cloud native, open by design and privacy by design concepts must be inherent to any IT solution.

23. Partnerships with open source communities could also prove extremely beneficial to NSOs. Many NSOs currently post code, analysis and documentation in sharing repositories such as “Github”. Partnership arrangements with these communities could help further advance the creation of analysis code and encourage sharing and transparency.

24. The move towards more digitized data, more open data and more organizations using skill sets of data scientists and engineers to integrate data has led to stakeholder concerns as it relates to ethics and privacy. This is further emphasised by the recent creation of the General Data Protection Regulation (GDPR) for the protection of data and privacy of individuals of the European Union and the European Economic Area.

25. Future partnership arrangements with data protection organizations, citizen advocacy groups and ethics groups will be the key to build on and maintain a trust and accountability framework for the NSS to ensure transparency and open innovation.

26. Ethical use of AI will become an important area where transparency and collaboration within the entire NSS will be the key to stakeholder engagement. This is another area where both academics and specialists in the private sector could contribute to tools and methods for vetting of AI algorithms to ensure they are unbiased and adhere to the privacy and ethical requirements of the entire system.

27. Partnership arrangements with private sector organizations for provision of IT solutions could include NSOs operating as test beds for software design and development. This type of partnership/collaboration would involve the creation of use cases and models to further drive business requirements and design improvement – more explicitly the creation of data workflows and proof of concept (POC) experiments. The result of such arrangements would be mutually discovered solutions to data problems.

## VIII. Future challenges

28. Access to data, more specifically, access to data that is “fit” for use will continue to be a challenge for NSOs. Outreach, communication and maintenance of partnership agreements is key to continuing access to data flows. As well, an environment of continuous learning as it relates to understanding how best to ingest and integrate administrative and alternative data sources into NSS will be the key to finding true efficiency in the system. IP concerns, especially in terms of “who owns data” scrapped from websites and social media posts will also offer interesting future challenges.

29. Analytical capability, more specifically, data literacy skills of the emerging fields of data science and data engineering will be the key to managing data as a strategic asset and for NSOs to move from data providers to solution providers. However, managing data as a strategic asset often involves using sophisticated data integration routines and algorithms – this data integration must preserve individual privacy rights while uncovering as much value in the data as possible.

30. As discussed, modern IT infrastructure, including trusted sharing platforms, code repositories and discussion forums will be integral to a mature partnership framework. Risk mitigation and confidentiality and privacy protection will also provide challenges to IT architecture. Data storage and access from central versus distributed storage facilities (cloud, on premises, etc.) with access rights and privileges based on usage and roles will require careful consideration.

31. Finally, a legal framework which provides NSOs the ability to gain access to data assets of other organizations and to use these assets for statistical purposes will be the key to a robust NSS.

## IX. Future state

32. What will be the future role of national statistical organizations within the national statistical system?

33. Will NSOs of the future function as clearing houses for clean, processed and standardized data sets, made discoverable through open data catalogues and inventories? Will this future be service oriented rather than data oriented, including the provision of data, including master and reference data as a service, analysis as a service and simulation as a service?

34. Will NSOs naturally become data stewards for public sector data sets and take on the role of centres of expertise for certification and standardization of statistical output from other organizations?

35. Will NSOs move from data providers to service providers, stewarding data and information sharing and collaboration platforms – shared and trusted co-creation/collaboration zones where data (including synthetic data), metadata, analysis code, algorithms and tools are open and transparent?

36. Whatever is the future role(s) of NSOs as a result of the data and technology revolution, there is no doubt that partnership models are the way forward. Partnerships can increase our visibility and reinforce the relevance of NSOs. NSOs will need to partner with academics, data and technology providers and research institutes to continue to develop modern processes and methodologies for turning data into information and solutions.

37. Future partnership arrangements may also include multi-stakeholder arrangements, including partnerships that involve data providers, technology providers and researchers all working for the co-creation of data, information and insights.

## **X. Next steps**

38. The drive towards the creation of “strategic partnership” arrangements by NSOs, whether they should be for open innovation, co-creation or supplier/recipient arrangements are driven by country specific requirements and context. Partnerships may leverage legal/legislative frameworks, including privacy rights and rights to data access which are country specific.

39. The role of the United Nations might be to foster the concept of “generic innovation” and to provide enablers to strategic partnership arrangements which could be adopted and shared by various member countries. The creation of generic partnership principles, a generic code of ethics, open sharing/innovation platforms and the creation of open standards for metadata and data formats could further drive strategic partnership opportunities.

40. This document has presented a framework for strategic partnerships, along with a maturity model (see annex) that could be used by statistical offices to evaluate the level of maturity of their partnership arrangements. Some offices may want to apply scores to the maturity model in order to assess and examine where strategically they situate themselves.

## Annex

### Assessing maturity in the context of strategic partnerships

1. Under the High-Level Group for the Modernization of Statistics (HLG-MOS) 2016 project on implementing ModernStats standards, a Modernisation Maturity Model (MMM) was developed. This model has been adapted for use in the context where an organization would like to understand and assess their maturity across various dimensions of forming and maintaining a strategic partnership.
2. There are multiple aspects of maturity in the context of strategic partnerships, and as such the model that has been developed has a number of distinct *dimensions*. Within each dimension, different organisations may have different *levels* of maturity.
3. These dimensions and *levels* are described in the tables below in general terms. However, to be more specific, we have formulated a set of criteria that is specific to each *dimension* x *level* combination. This tool can be used by those undertaking a self-assessment (Annex A) to determine their maturity at the *current time*, as well as the *target level* of maturity that they are seeking to achieve in 3-5 years' time for a specific partnership. Additionally, they are invited to list the first major 1-3 steps they expect their organization would take to move its maturity level toward the target for each dimension. These could be steps the organization would undertake on its own or these might be steps based on enablers from for example the CES, HLG-MOS, multilateral organizations or country-specific strategic plans.

Table 1  
Description of maturity levels

<i>Level name</i>	<i>Level description</i>
Initial awareness	A few individuals are becoming interested in the potential value of the strategic partnership. The organization as a whole is unaware of the strategic partnership opportunity.
Pre-implementation	Parts of the organization are becoming interested in the potential value of the strategic partnership. Discussions on the details of the strategic partnership are preliminary and limited to a few individuals.
Early implementation	Discussions on the importance of strategic partnerships are spreading throughout the organization. Specific individuals and single business units are involved in the detailed discussions with partners.
Mature implementation	The strategic partnership is perceived as an important part of business operations/management, delivering value across the organization. There is a widespread awareness of the importance of strategic partnerships and they are being formed in a consistent way across the organization.

Table 2  
**Description of dimensions**

<i>Name</i>	<i>Description</i>
Common understanding	This dimension focuses on the culture, values, approach, goals, aims, potential benefits of forming a strategic partnership, and agreeing upon the need.
Common purpose	This dimension focuses on the foundation, rationale, defining the need, ground rules, shared and common vision, why and what to achieve, the function and nature of the partnership, as well as the benefits. It includes building trust, openness, and support within the organization for shared and transparent decision making.
Management commitment	This dimension focuses on the support provided by senior management of the organizations involved in the strategic partnership.
Governance	This dimension focuses on the governance and decision-making structures, accountabilities and conflict resolution mechanisms.
Work arrangements	This dimension focuses on the roles and responsibilities of the partners, distinguishing single and joint responsibilities and accountabilities, determine activities and priorities, as well as potential barriers to the success of the partnership.
Communication	This dimension focuses on the elements of open and honest communication, communication mechanisms and tools, feedback loops, and communication strategies.
Performance measurement	This dimension focuses on how the partnership will be monitored and evaluated, agreement upon how to measure successes and continuous improvement.

Table 3  
Strategic Partnership Maturity Model Criteria

<i>Levels</i> <i>Dimensions</i>	<i>Initial awareness</i>	<i>Pre-implementation</i>	<i>Early implementation</i>	<i>Mature implementation</i>
Common understanding	The potential for a win-win opportunity between partners is identified.	The organizational cultures, values, approach, goals, aims and benefits of a potential partnership are discussed.  Potential barriers to the success of the partnership are identified.	Partners agree upon the need and win-win opportunity. Discussions begin on ways of working together and potential outcomes in the short term and longer term.  Resolutions to potential barriers to the success of the partnership are discussed.	All partners are convinced of the benefits of the partnership. Shared values are understood and fostered.  A willingness to resolve potential barriers exists.
Common purpose	The need, rationale, and vision for a strategic partnership are discussed.  An open, transparent relationship based upon trust begins.  A common vision begins to form.  Socialization of the idea within participating organizations begins.	The ground rules for forming a strategic partnership are discussed in more detail.  The nature and form of the partnership are elaborated.  Benefits and potential outcomes are discussed.  Openness and transparency among partners is agreed upon.  Socialization of the idea and feedback from within participating organizations increases.	A common vision statement is drafted, including the purpose, benefits and potential outcomes.	A common vision statement is agreed upon and documented, including a shared and transparent decision-making process.
Management commitment <sup>2</sup>	Senior executives are briefed on potential opportunities and benefits of the partnership.	Executive management team agrees on parameters for forming the partnership (human and	Executive management team provides the required resources to enable the partnership.	Executive management team supports the vision, enables and publicizes the partnership.

<sup>2</sup> Senior management representing various hierarchical levels may be involved at different stages of the partnership process. Departure from a common understanding will impact the maturity model.

Dimensions	Levels			
	Initial awareness	Pre-implementation	Early implementation	Mature implementation
		financial resources, timelines, practical considerations, etc.)	Barriers to the success of the partnership are identified.  Skills and competency development of staff (as required) is supported.	Barriers to the success of the partnership are addressed.  Intermediate and front-line staff are encouraged to increase their engagement with partners.
Governance	Discussions on potential governance mechanisms acceptable to all partners begin.	Partners' needs for governance, formal decision-making structures and accountabilities discussed.  A memorandum of understanding/statement of intent/partnership agreement may be drafted.	An appropriate, flexible governance structure (including conflict resolution mechanisms) meeting the needs of all partners is agreed upon.  A memorandum of understanding/statement of intent/partnership agreement may be formalized.	The governance structure is implemented and reviewed occasionally to evolve in response to external or internal demands.  Conflict resolution mechanisms are operational.  Operationalization of the memorandum of understanding/statement of intent/partnership agreement (if a formal agreement exists)
Work arrangements	Potential options (in terms of human resources, timelines, financial resources, non-financial resources, etc.) for collaboration and partnership are explored.	Strengths, gaps, diversity of skills, innovative abilities of partners discussed.  Discussion begins on roles, responsibilities and accountabilities of partners discussed.	Activities, timelines, division of labour, priorities are determined and documented.  Roles, responsibilities, accountabilities are established and documented.  Barriers to the success of the partnership are identified.  Investments in skills, competencies and knowledge transfer are made.	Roles, responsibilities, and accountabilities are implemented by all partners.  Barriers to the success of the partnership are addressed.  Priorities are reviewed and revised as needed.
Communication	Initial lines of communication are opened.  The requirement for open and honest communication	Sharing of knowledge begins.  Discussions occur regarding how to maintain public trust, address	A communication strategy is developed and documented, including how to combat mistrust, and maintain public trust.	The communication strategy is in place and activities underway. Trust (public and within the partnership) is

<i>Dimensions</i>	<i>Levels</i>			
	<i>Initial awareness</i>	<i>Pre-implementation</i>	<i>Early implementation</i>	<i>Mature implementation</i>
Performance measurement	Discussion occurs as to how success could be measured.	Success criteria are agreed upon and documented.	There is agreement on the tools to be used for monitoring and reviewing the effectiveness of the partnership.  Tools (such as a performance measurement framework, project dashboards, etc.) are developed.	Tools for monitoring and reviewing the effectiveness of the partnership are in place and being used regularly.  The partnership aims, objectives and arrangements are reviewed and revised occasionally.  If/when the partnership should be adjourned is discussed.
	between parties is agreed upon.	privacy and Intellectual Property concerns.	Measures are developed in order to resolve privacy and Intellectual Property concerns.  Feedback loops within each organization and across members of the partnership are agreed upon.  Agreement is reached on systems/tools/shared platforms for communication and collaboration.	being monitored and corrective actions taken if necessary.  Successes are celebrated. Resistance to change is managed.  Feedback loops within each organization and across members of the partnership are used.  Systems/tools/shared platforms for communication and collaboration are used.