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For discussion and
recommendations

Item 2 (a) of the Provisional
Agenda

**In-depth review of strategic partnerships with the
information industry**

Prepared by Statistics Canada

The present note is the in-depth review paper on “strategic partnerships with the information industry.” The purpose of the reviews is to improve coordination of statistical activities in the region of the United Nations Economic Commission for Europe (UNECE), identify gaps or duplication of work, and address emerging issues.

*The note explores national and international statistical activities related to strategic partnerships with the information industry, identifies issues and challenges, and makes recommendations on how the international statistical community could tackle the issues. **The Bureau is invited to discuss issues raised in the paper and consider the need for further work.** It was agreed on 15 June 2015 at the Conference of European Statisticians (CES) 63rd plenary session that this in-depth paper will form the basis of a seminar at the 2016 CES conference.*

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I. Executive summary

1. This paper reviews strategic partnerships with the information industry by providing examples of partnerships carried out with the public sector, the private sector, civil society organizations and academia. It also includes partnerships through crowdsourcing and engagement activities with various actors. A number of countries provided partnership examples, and other examples were found on the Internet.

2. The examples described in this paper represent only a small sample of the types of partnerships undertaken by international organizations and national statistical offices (NSOs). It is likely that other types or models of partnerships not presented in this paper are also taking place. However, the diversity of the partnerships described does illustrate the importance of these partnerships in fulfilling the needs of an organization.

3. The motivations for starting partnerships are varied. A wide range of specific contributions may be sought from different actors to support an organization's existing statistical programs and address data gaps. The role of different stakeholders in the examples described included providing: 1) financial support; 2) knowledge sharing; 3) advocacy; 4) support for the coordination and production of national statistics and international commitments; 5) development of international reference manuals and practices; 6) data access and 7) outsourced services. Engagement activities were also done to accomplish various goals, such as encouraging respondent participation, gaining support from influential bodies, showcasing the value of official statistics and promoting their use by giving access to data and tools, and offering training and support.

4. A large body of literature documents the establishment, implementation, monitoring and evaluation of successful partnerships (see Section III). Based on the information provided, none of the partnerships presented appear to be at the philanthropic stage; however, many examples reflect partnerships at the transactional or integrative stages. A few examples could be considered to be approaching the transformational stage (see Annex E for a description of the stages).

5. Issues, challenges and key factors for success are presented for the following themes: crowdsourcing; data acquisition; the development of information technology infrastructure, tools and software; the outsourcing of operational and statistical processes; partnerships carried out with academia and engagement activities.

6. Depending on the type of partnerships, a number of factors emerge as being crucial such as: 1) having an enabling **legal framework** for data access; 2) using efficient **governance models** for developing, implementing, monitoring, evaluating and renegotiating agreements, but also strengthening the influence of organizations coordinating national and international commitments; 3) considering **operational issues** brought by new partnership initiatives (for example interoperability challenges when outsourced solutions are integrated with existing in-house systems); 4) maintaining **organizational requirements** when a third party is involved (for example an accreditation process may be necessary to ensure that quality, privacy and confidentiality requirements are met and also to manage third party risks); 5) negotiating efficient **funding model** with risk sharing among all partners; 6) managing resistance to **cultural changes** brought by new initiatives (for example the acceptance of the authority given to various contributors to official data, the use of outsourcing, and the implementation of a whole-of-government approach); 7) having the **capacity to respond to the varying and evolving needs** of users and stakeholders; 8) taking into account how **intellectual property** can be an enabler or a disabler; and 9) **maintaining public trust and addressing privacy concerns**.

7. Two recommendations are being submitted for further consideration:
- (a) Recommendation 1: Determine the requirements of NSOs and other organizations for sharing information related to innovative strategic partnerships with the information industry and determine the best means to do so.
 - (b) Recommendation 2: The following four themes are being proposed for further discussion in other forums or possibly at the upcoming seminar on partnerships that will take place in June 2016:
 - (i) partnerships instrumental to the development and strengthening of national statistical systems,
 - (ii) strategic partnerships with the private sector,
 - (iii) strengthening or developing new partnerships addressing emerging needs, and
 - (iv) being influential while maintaining political independence.

II. Introduction

8. The Bureau of the Conference of European Statisticians (CES) regularly reviews in-depth selected statistical areas. The aim of the reviews is to improve coordination of statistical activities in the United Nations Economic Commission for Europe (UNECE) region, identify gaps or duplication of work and address emerging issues. The review focuses on strategic issues and highlights concerns of statistical offices of both a conceptual and a coordinating nature. The current paper provides the basis for the review by summarizing the international statistical activities in the selected area, identifying issues and problems and making recommendations on possible follow-up actions.

9. The CES Bureau selected strategic partnerships with the information industry for an in-depth review at its meeting in February 2015. Statistics Canada was requested to prepare the paper providing the main basis for the review.

10. Part of the research in this paper was Internet based; the list of references is included in Annex A. To avoid repetition, references to documentation are added as footnotes only for their first occurrence in the document. A call for contributions also went out at the end of June 2015 to 26 countries that indicated their interest in the topic of partnerships, and, despite the tight deadlines, 14 countries provided input. Also, different organisations were asked to provide input on specific partnership initiatives. Many examples included in this review were extracted from the material provided by the various countries for the in-depth review. References for those examples are not included as footnotes; they are instead listed in Annex B. Moreover, not all of the examples provided by the countries could be included in this short document. Interested readers are invited to consult the footnotes referring to various initiatives that could not be described in detail—these references are also listed in Annex B. A review process was carried out; nevertheless, the author takes full responsibility for any errors.

III. Scope and definition: strategic partnerships with the information industry

11. Strategic partnerships with the information industry are defined as partnerships that are instrumental in the delivery of the business model of a statistical organization. Typically, these partnerships are covered under section 1.3, “Manage strategic collaboration and cooperation,” of the Generic Activity Model for Statistical Organizations¹. They may take place for any business processes defined in the Generic Statistical Business Process Model² to meet organizational, as well as sub-national, national and international, commitments. The definition of ‘information industry’ provided by Wikipedia is used for this review. It includes six categories: 1) producers and sellers of information, 2) information-processing services, 3) dissemination services, 4) manufacturers of information-processing devices, 5) research-intensive industries, and 6) providers of infrastructure for information production and sophisticated decision making. Outreach and engagement activities that can lead to specific partnerships are also included in this review.

12. This paper covers a wide range of partnerships with various stakeholders, such as individuals (crowdsourcing), the public sector (public–public partnerships), the private sector (public–private partnerships [PPPs]), civil society organizations (CSOs)³, researchers and academia. The term PPP has been defined in different ways worldwide by various countries and international organizations.⁴ For example, the Canadian Council for Public–Private Partnerships defines a PPP as follows: “A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.”⁵ Other terms are used in the literature, such as ‘public–private development partnership’ (which involves the private sector as a proactive partner), ‘cross-sector development partnership’ (CSDP) and ‘private finance initiative.’

13. There are various models of PPP, where roles and responsibilities, specific functions (design, build, operate, manage), and financial and operating risks are shared among parties following a particular arrangement. As stated in the European Commission’s *Guidelines for Successful Public–Private Partnerships*,⁶ “many forms of PPP exist and are continuously being developed to suit project characteristics.”

14. The motivations for embarking on partnerships are varied. A wide range of specific contributions (financial support, expertise in specific areas, advocacy, etc.) may be sought from different actors⁷ (see Annex C). Furthermore, as reported by Kindornay et al.,⁸ “there

¹ See <http://www1.unece.org/stat/platform/display/GAMSO/GAMSO+v1.0>

² See

<http://www1.unece.org/stat/platform/display/metis/The+Generic+Statistical+Business+Process+Model>

³ Civil society is the “aggregate of non-governmental organizations and institutions that manifest interests and will of citizens.” Civil society includes the family and the private sphere, referred to as the “third sector” of society, distinct from government and business. Source: Wikipedia.

⁴ See http://www.pppinindia.com/pdf/ppp_definition_approach_paper.pdf for an overview of 19 different definitions.

⁵ <http://www.pppcouncil.ca/resources/about-ppp/definitions.html>

⁶ See http://europa.eu.int/comm/regional_policy/sources/docgener/guides/PPPguide.htm

⁷ Kindornay, S., Tissot, S. And Sheiban, N., 2014. The Value of Cross-Sector Development Partnerships, the North-South Institute.

are four different types of value created for participants in CSDPs (Austin and Seitanidi⁹). These are associational, transferred resource, interaction, and synergistic value” (see Annex D for definitions).

15. Furthermore, Kindornay et al. (2014a) discuss the four stages of partnerships associated with value creation: the philanthropic stage, the transactional stage, the integrative stage and the transformational stage (see Annex E for definitions). They also discuss how greater value can be generated as the partnership evolves from the philanthropic to the transformational stage. As stated by Kindornay et al. (2014a), “Partnerships often include elements of more than one stage of partnership as they progress along the collaboration continuum.”

IV. International overview of statistical activities associated with strategic partnerships

16. This section presents examples of activities associated with strategic partnerships provided by various international and national organizations; these examples include reference documents produced for establishing partnerships, discussion forums on partnerships and specific partnerships that have been carried out with the information industry.

A. Reference documents and support

17. A large number of reference documents for establishing partnerships are available, including guides,^{10,11} guidelines,^{12,13,14} principles^{15,16} and handbooks¹⁷ produced by international organizations, such as the UNECE, the World Bank, the Organisation for Economic Co-operation and Development (OECD) and the European Commission. As

⁸ Kindornay, S., Tissot, S. And Sheiban, N., 2014. Finding Value in Development Partnerships: Where to look. The North-South Institute.

⁹ Austin, James E., and M. May Seitanidi. 2012. Collaborative value Creation: A Review of Partnering between Nonprofits and Businesses. Part 2: Partnership Processes and Outcomes. *Nonprofit and Voluntary Sector Quarterly* 41 (6): 929–68. www.nvs.sagepub.com

¹⁰ UNECE, 2008. GuideBook in Promoting Good Governance in Public-Private Partnership.

¹¹ World Bank Institute, 2012, Public-Private Partnership Reference Guide.

¹² OECD, 2006 Successful Partnerships: A Guide.

¹³ High-Level Group for the Modernization of Statistical Production and Services (HLG). Guidelines for the establishment and use of partnerships in Big Data projects for official statistics were produced as one of the deliverables of the Big Data project that was carried out in 2014 on request of the High-Level Group for the Modernization of Statistical Production and Services (HLG).

¹⁴ European Commission Directorate-General Regional Policy, 2003. Guidelines For Successful Public – Private Partnerships.

¹⁵ OECD, From Lessons to Principles for the use of Public-Private partnerships, Governance and Territorial Development Public Management Committee.

¹⁶ OECD, 2012 Recommendation of the Council on Principles for Public Governance of Public-Private Partnerships.

¹⁷ OECD, 2001, Citizens as Partners OECD Handbook On Information, Consultation And Public Participation In Policy-Making.

well, some countries have put dedicated PPP units in place to ensure robust value-for-money assessments of PPPs.¹⁸

B. Partnership forums¹⁹

18. Many international organizations, such as the OECD, Eurostat, the World Bank and national statistical offices (NSOs), have active offers on their websites inviting various actors to engage in partnerships with them. As well, a number of forums are taking place through these organizations to discuss partnerships. For example, the 2015 Economic and Social Council Forum on Partnership, held in May 2015, brought together leaders from businesses, foundations, civil society and academia to engage in a dialogue with governments on the role of partnerships in achieving the post-2015 development agenda.²⁰ Partnerships may also be sought through involvement in professional associations such as the International Statistical Institute (ISI)²¹ or other national or supra-national organizations. These provide experts with a forum to discuss and exchange theoretical and practical developments in their respective fields.

C. Examples of partnerships

19. The following sections present examples of partnerships carried out with individuals (crowdsourcing), the public sector, the private sector, CSOs and academia, as well as engagement activities with various actors.

1. Crowdsourcing

20. As described by Brabham,²² crowdsourcing can be used to 1) locate and assemble information, 2) analyze existing information, 3) seek help to find an empirical solution, and 4) evaluate public taste or public support (see Annex F for more details).

21. Haklay et al.²³ have documented findings from 29 case studies where crowdsourcing was used to collect and update geographic information used in the government. The drivers for using crowdsourcing varied between case studies: they included responsiveness (especially in disaster situations), limited resources and limited access to specific geographic areas. The crowdsourcing models presented included various actors, such as the general public, the public sector, CSOs, international organizations, academia and the private sector. The lengths of the projects ranged from a few days (e.g., for disaster response) to many months, and some projects are ongoing.

¹⁸ OECD, 2013, *Government at a Glance*, OECD Publishing, Paris. DOI:

http://dx.doi.org/10.1787/gov_glance-2013-en.

¹⁹ See also the Busan Partnership agreement that sets out principles, commitments and actions that offer a foundation for effective co-operation in support of international development, <http://www.oecd.org/development/effectiveness/busanpartnership.htm>.

²⁰ See <http://www.un.org/en/ecosoc/about/>.

²¹ See <http://www.isi-web.org/>.

²² Brabham, C., 2013. *Using Crowdsourcing in Government*. IBM Center for the Business of Government.

²³ Haklay, M., Antoniou, V., Basiouka, S., Soden, R., and Mooney, P. 2014 *Crowdsourced geographic information use in government*, Report to GFDRR (World Bank). London. License: Creative Commons Attribution CC BY 3.0.

22. Contributors provided information by visiting specific websites to perform updates using platforms such as OpenStreetMap, Google Earth, Google Maps, FINTAN²⁴ and HTML forms. Depending on the project, information could also be sent through text messages, pictures or emails. For example, for the Boston's Street Bump project, road condition data were relayed through an application that used the motion-sensing capability of the contributors' smartphones.

23. Methods of engagement included reaching out to the public and specific organizations for support, providing access to datasets, incorporating legal changes to facilitate data access, directly employing contributors, financially compensating the public (in areas of very low income) and champions actively participating in specific communities of practice.

24. For example, for the U.S. national map crowdsourcing case study described in Haklay et al. (2014), public volunteers can register online and then collect and edit data about human-made structures (including schools, hospitals, post offices, police stations and other important public buildings) using a web-based mapping platform. Editing guidelines are provided online. Volunteers who have contributed 25 edits can act as peer-review editors to review other volunteers' contributions for accuracy and make further improvements to the data.²⁵ A pilot study performed in Colorado demonstrated that volunteer information did improve baseline structure data. Peer reviews by more experienced editors improved the data even more. Various gamification techniques or incentives are used to engage volunteers, such as a volunteer recognition program with virtual recognition badges, online recognition of volunteers based on the number of edits contributed and a tiered editing approach.

2. Public sector

25. Public-sector partnerships can be carried out through bilateral or multilateral agreements with all national and international levels of government. Examples provided include public-sector partnerships for data acquisition; the development of information technology (IT) infrastructure, tools and software; and statistical business processes.

1. Data acquisition²⁶

26. Data acquisition can serve to support an organization's existing programs and address data gaps. It is also a crucial activity for organizations responsible for coordinating national administrative statistics, such as the National Statistical Service of the Republic of Armenia and other organizations, such as Statistics Finland, where the majority of statistics produced is based on data from registers and other administrative sources, and Statistics Austria, which coordinates the delivery of European statistics produced by other national authorities.

27. The **Australian Bureau of Statistics (ABS)** and the **Australian Taxation Office (ATO)** are both agencies within the Treasury portfolio of the Australian government. As major collectors of data, the ABS and the ATO work together to improve Australia's National Statistical Service. The ABS-ATO partnership spans a wide range of areas across both agencies and enables the transfer of data from a number of ATO areas to the ABS, as well as collaboration on several data-related fronts, including data analytics,

²⁴ FINTAN is an OS application that enables the crowdsourcing of vernacular local names of coastal areas.

²⁵ Site web <http://nationalmap.gov/TheNationalMapCorps/>.

²⁶ See also [3], and [8] to [11] in Annex B.

whole-of-government data acquisition infrastructure and access to government-held data. The partnership exists under a memorandum of understanding with a head agreement and a number of subsidiary agreements. The relationship is governed through annual reporting and regular meetings between senior officers from both agencies. The benefits of the partnership include the following: 1) reduced red tape and burden on the community through the reuse of government-held data; 2) improved data for use by other agencies through ABS–ATO collaborative development work; 3) shared expertise and experiences (e.g., big data analytics and taxonomy); and 4) shared infrastructure to further reduce the burden on the community and result in more efficient data collection by the government (e.g., the ABS’s adoption of standard business reporting).

28. The **Databank of Official Statistics on Quebec** (BDSO) (Canada) was implemented more than 10 years ago as a government initiative to share and optimize resources. This partnership of more than 25 ministries and agencies, unique to the Quebec government, was specifically created to provide access to a wide range of reliable, comparable, and high-quality data on Quebec in one location (the BDSO website). Since the project launch, ministries and agencies have collaborated closely on defining its common and shared components — particularly the standards, nomenclatures and classifications — with the goal of ensuring coherence and complementarity of the disseminated statistics on Quebec. The databank’s operational processes provide an overall picture of Quebec statistics and use a sophisticated approach that can generate economies of scale. The BDSO meets three main objectives: to make it easier to find Quebec statistics without having to navigate the government structure; to standardize concepts based on a single official source and to preserve Quebec’s statistical heritage in digital format. A steering committee comprises representatives from each partner, and a management team at the Institut employs rigorous mechanisms to ensure the coherence of the BDSO’s content and its comparability with international reference frameworks. The governance is based on collaboration mechanisms for definitions, information quality, classifications and concepts to support the partners’ work in a provincial system with decentralized statistical production.

2. *Information technology infrastructure, tools and software*²⁷

29. **Shared Services Canada** (SSC) was established in 2011 to modernize the way the Government of Canada (GC) manages IT infrastructure to better support the delivery of programs and services to Canadians. SSC’s mandate is to provide email, data-centre and telecommunications services to 43 federal departments and agencies, referred to as partners. The consolidation and standardization of the GC’s IT infrastructure aims to create efficiencies, achieve cost savings by creating economies of scale with a whole-of-government approach to IT, and improve security. Many employees from existing departments joined SSC, facilitating the knowledge transfer of current best practices. Furthermore, each GC department has identified a single point of contact (an SSC liaison) to ensure efficient communication and collaboration with SSC. The duties of the SSC liaison include management activities related to governance, communications, coordination, day-to-day operations, process alignment with new standards and capacity planning.

30. The **PC-Axis family**²⁸ consists of a number of programs for the Windows and Internet environment used to present statistical information. It is mostly used by statistical offices in various countries to allow their users to retrieve statistics. PC-Axis is a software

²⁷ See also [12] in Annex B.

²⁸ Extracted from http://www.scb.se/sv_/PC-Axis/About-PC-Axis.

family with several programs all aimed at facilitating quick and easy dissemination of statistics. It is the result of an ongoing development project started at **Statistics Sweden** (SCB) in the 1970s. Today, the software family has grown to include not only the statistical browser for Windows and the Internet but also complementary software, such as programs to create files, Internet solutions and publishing facilities. Currently, over 50 statistical agencies and international organizations use the products and are part of the PC-Axis consortium. All members are encouraged to participate actively in the growth of the program. The responsibility for the different programs and their development is distributed among the nordic countries, which form the core of the consortium. Once a year, an international reference group meeting is held to gather all of the licensees and discuss the product and current developments, as well as make requests for the future. The common goal is to improve the product to meet the needs of the users, and new functions are added in each version.

3. *Statistical business processes*²⁹

31. **Statistics Finland** develops, maintains and distributes the SISU microsimulation model³⁰ that models the personal taxation and social security systems of Finland. The SISU model is a calculation tool intended for planning, monitoring and assessing personal taxation and social security legislation. The model has been developed at Statistics Finland since 2011 in close collaboration with the Research Department of the Social Insurance Institution of Finland. The development work also included contributions from several experts from the Ministry of Finance, the Ministry of Social Affairs and Health, the National Institute for Health and Welfare and the Government Institute for Economic Research. This initiative led to a significant increase in data usage, as well as active interaction and communication with the researchers.

32. As promoted by the tenth UN Fundamental Principle of Official Statistics, there are numerous international statistical partnership activities which are taking place. Under the UN family of organisations, high-level committees, expert and technical committees are in place globally and regionally to advance statistical concepts, methods, processes, systems, and standards on all front. For example, the UNECE **High-Level Group for the Modernization of Official Statistics** (HLG-MOS) was established by the Bureau of the Conference of European Statisticians (CES) in 2010 to oversee and coordinate international work relating to statistical modernization. It promotes standards-based modernization of statistical production and services. It reports directly to the Bureau of the CES and received its mandate from this body. The mission of the HLG-MOS is to oversee the development of frameworks, and sharing of information, tools and methods, which support the modernization of statistical organizations. The aim is to improve the efficiency of the statistical production process and the ability to produce outputs that better meet user needs. The HLG-MOS also advises the Bureau of the CES on the direction of strategic developments in the modernization of official statistics, and ensure that there is a maximum of convergence and coordination within the statistical "industry". The work of the HLG-MOS is led by four modernization committees (MCs).³¹ The HLG MC members include representatives from NSOs and international organizations, such as Eurostat and the OECD. This forum has been particularly useful for practical and concrete knowledge sharing. Typically, some members have an extensive background and work experience with the priority topics, and this has led to synergy and timely high-quality and shareable outputs. Members can contribute in kind resources, direct financial support or both. Annual

²⁹ See also [16] and [17] in Annex B.

³⁰ See http://tilastokeskus.fi/tup/mikrosimulointi/index_en.html.

³¹ See <http://www1.unece.org/stat/platform/display/hlgbas/Strategic+vision+of+the+HLG>.

workshops bring together expert representatives from the relevant committees, to collectively identify priorities and plan strategies while avoiding duplication or conflicting outcomes. Annual projects which focus on priorities identified by the workshops, using participatory techniques to find rapid and collectively-developed and transportable solutions to the challenges of statistical modernization.³²

3. Private sector

33. Examples of partnerships with the private sector include those carried out for data acquisition; the development of IT infrastructure, tools and software and the outsourcing of operational processes.

1. *Data acquisition*³³

34. The **U.S. Bureau of Economic Analysis** (BEA) has been using private-sector data in its estimation processes for at least 15 years. In collaboration with the **U.S. Census Bureau**, it has recently entered into an agreement with a major credit card company to allow researchers to evaluate the usefulness of credit-card transaction data in the production and development of official U.S. economic statistics. Also, the credit card company will explore the usefulness of the data in the creation of new data products for its customers. A non-disclosure agreement has been established for this pilot project. The tabulations from the pilot project, along with the modelled estimates produced by the credit card company, will enable BEA to evaluate the quality of the existing annual estimates of consumer spending by state and to investigate the feasibility of producing consumer-spending estimates by county.

2. *Information technology infrastructure, tools and software*³⁴

35. In 2011, the **Croatian Bureau of Statistics** contracted a premier support agreement with a major software company. The agreement provides three main categories of services: 1) reactive services, 2) proactive services and 3) a direct relationship with the private company through a dedicated resource (a technical account manager). Reactive services ensure that critical issues that could affect the business systems are dealt with by the private company and are addressed with the highest priority until they are successfully resolved. Proactive services ensure that systems are running according to industry standards and best practices. Actively monitoring IT health and addressing risks helps to lower the probability of system downtime and ensure that business systems are running at expected service levels.

36. The **Philippines National Statistics Office** established a ‘build-operate-transfer’ public-private partnership, where the private sector was responsible for developing imaging solutions and supporting infrastructure to improve access to civil registry information.³⁵ In this case, the private sector also financed the development and operations. This is a revenue-generating initiative, as access fees incurred by users are paid back to the private sector and the National Statistics Office (NSO). The share of the NSO is subsequently remitted to the National Treasury of the Philippines.

³² The review of the HLG Modernisation Committee was prepared by Statistic Canada.

³³ See also [20] and [21] in Annex B.

³⁴ See also [22] in Annex B.

³⁵ Civil Registry System Project Under the ICT Sector of the BOT Program, Management Services Report No. 2004-03D, Sectoral Performance Audit National Statistics Office.

3. *Operational and statistical business processes*

37. Contracts were awarded to a private company after requests for proposals were issued for competitive bids on two separate occasions for the 2006 and 2011 censuses of Canada. The activities under contract for 2006 included printing, the shipping of questionnaire packages, developing systems for computer-assisted telephone interviewing and the Census Help Line, the design and development of an Internet response option and the design and development of systems for processing. The scope of the second contract awarded was considerably changed after the 2006 Census cycle, as **Statistics Canada** took over many elements of work that had been done under contract in 2006. As part of each contract, Statistics Canada (through the Government of Canada) retained the right to modify and use portions of the installed solutions in future activities, and, in fact, portions of the original solutions are to be used for the 2016 cycle. The governance of work performed under the contract reflected the complexity and interdependence of major work efforts. A change-management approach was implemented to ensure that requests or issues could be escalated quickly for discussion if either Statistics Canada or the contractor leads felt that work was not progressing quickly enough or to their satisfaction.

38. As it did for the 2001 Census, the **United Kingdom's Office for National Statistics (ONS)** contracted out a number of services for the 2011 Census.³⁶ As stated in the 2011 Census report produced by ONS, "given the 10-year cycle of the census and the short timetable requiring a large temporary workforce, it would not have been appropriate for ONS to recruit and train such personnel itself". The following activities were outsourced in 2011: recruiting, training and paying field staff; printing the questionnaires, delivering the questionnaires and collecting completed returns via a postal service; designing a questionnaire-tracking system; providing an online questionnaire-completion system; providing a contact centre; translating, printing and distributing non-questionnaire material and other field logistics services; providing the publicity campaign; capturing and coding census data in electronic format; producing the archival records and developing a Web data-access system.

4. **Civil society organizations**

39. As reported Ghaus-Pasha³⁷ "the civil society sector is instrumental in promoting local economic development, alleviating poverty, advocating policy change, contributing to good governance and campaigning for the Millennium Declaration".³⁸ Examples of partnerships carried out with CSOs illustrate how the partners collaborated on statistical business processes and for data acquisition³⁹, funding purposes, as well as to share knowledge and explore strategic issues.

40. The **Austrian Chamber of Commerce (WKÖ)** is the statutory representative of all the industrial and commercial enterprises in Austria and also one of the main users of business statistics data in Austria. **Statistics Austria** and the WKÖ have had a formal co-operation agreement in place for many years, under which the overall coordination of

³⁶ Extracted from 2011 Census England and Wales General Report, Office of National Statistics, 2015

³⁷ A discussion on the roles of civil society can be found in Ghaus-Pasha, A., 2005. Role of Civil Society Organizations In Governance. 6th Global Forum on Reinventing Government Towards Participatory and Transparent Governance 24 – 27 May 2005, Seoul, Republic of Korea

³⁸ For a summary of current trends in support to civil society see Coventry, C., 2013. "Support to Civil Society Emerging Evaluation Lessons. OECD Development Assistance Committee working paper.

³⁹ See also [28] in Annex B

the manifold activities takes place in a high-level steering committee. The defined co-operation areas mainly relate to business statistics and to minimizing the burden on enterprises caused by statistical surveys. The committee's main tasks are to discuss strategic issues relating to business statistics, exchange information relevant to the other partner and collaborate to prepare new legal acts or amend existing legal acts. Furthermore, day-to-day tasks and issues are efficiently addressed bilaterally: ad hoc working groups cover more complex issues, and advisory boards address strategic decisions beyond the scope of the high-level steering committee. In the future, one of the challenges related to business statistics will be the implementation of the Framework Regulation Integrating Business Statistics (FRIBS)⁴⁰, which needs a new national legal basis. Finding the best practicable ways of overcoming this challenge will require ongoing discussions between Statistics Austria, the WKÖ and other stakeholders.

41. For many years, **Statistics Netherlands (CBS)** and the **Netherlands Organisation for Applied Scientific Research (TNO)** have conducted a joint survey on working conditions, commissioned by the Dutch Ministry of Social Affairs and Employment (and with many other important users). TNO is an organization regulated by public law; it is not part of any government, university or company.⁴¹ CBS is responsible for collecting data and producing statistics, while TNO carries out additional analyses and produces dedicated advisory reports. When the agreement that formalized this partnership had to be renewed, it was expanded to include all themes of common interest, with an emphasis on innovative approaches, which included searching jointly for external funding. Since the new agreement was signed in April 2015, over 20 new ideas are being explored.

42. With initial funding from the **Ewing Marion Kauffman Foundation**, the **U.S. Census Bureau (USCB)** developed the Business Dynamics Statistics (BDS) program to better understand entrepreneurship and the dynamic economy. The BDS provides annual statistics on establishment openings and closings, firm start-ups and shutdowns, employment, job creation and job destruction from 1976 to 2012, by firm (or establishment) size, age, industrial sector, state and metropolitan area status. The BDS received additional support from the Small Business Administration. Most recently, in 2015, the Kauffman Foundation provided partial funding to the USCB to establish an annual survey of entrepreneurs, which would collect data more frequently than the quinquennial Survey of Business Owners. A clear benefit of partnering with the Kauffman Foundation is the funds it provided, as well as the feedback received from the Kauffman Foundation's network of experts.

5. Multistakeholder partnerships (public–private–academia–non-governmental organizations)

43. In many cases, a large number of different stakeholders are involved in the partnerships. Examples of these partnerships include those carried out for data acquisition; the development of IT infrastructure, tools and software; and statistical business processes.

1. Data acquisition⁴²

44. As described by Moody⁴³, “the **United Kingdom's Data Service** has been instrumental in voicing the benefits of less restrictive access to the data community, helping

⁴⁰ <http://ec.europa.eu/eurostat/about/opportunities/consultations/fribs>

⁴¹ See www.tno.nl.

⁴² See also [32] in Annex B.

⁴³ Moody, V., 2015. Helping Depositors Share Data: Negotiating Away Difficult License Conditions.

maximise the re-use of data and ensure that historic data deposited with us remains available for research practice in years to come. The Collections Development team at the UK Data Service undertook an initial three-month programme of renegotiation of access conditions for some of their data collections, helping to open up data to more users by encouraging depositors to move away from restrictive conditions towards more open access. The Collections Development team has streamlined and standardised the access conditions that apply to new datasets, so that they can easily fit into three broad categories – Open (no registration required), Safeguarded (registration required) or Controlled (secure remote access only).”

2. *Information technology infrastructure, tools and software*⁴⁴

45. The **OECD Statistical Information System (SIS)** is a suite of integrated software components for statistical data and metadata.⁴⁵ Central to SIS is the OECD.Stat data warehouse, which integrates statistical production, sharing and dissemination processes. As a result of requests from several other organizations, the OECD began sharing OECD.Stat in 2007. Since then, a set of bilateral relations were established that have enabled organizations to use OECD.Stat in combination with their own branding (e.g., ABS.Stat). At the same time, the OECD has retained the leadership role in the development of OECD.Stat to ensure that the product continues to evolve and meet its own business objectives. In addition to the bilateral agreements, in 2010, the OECD set up the SIS Collaboration Community (SIS-CC). The SIS-CC was officially launched in March 2011 at the first annual workshop, when the community members gathered for the first time. The SIS-CC is a community of OECD.Stat users, and it was set up to allow participating members to benefit from broad collaboration and from sharing experiences, knowledge and best practices, and to enable cost-effective innovation in minimal time. In 2011, the OECD implemented a governance framework in consultation with the SIS-CC members to oversee the community-related elements and work plan.

46. Blaise is a powerful and flexible system used for computer-assisted survey processing.⁴⁶ It is used worldwide by NSOs and related scientific research organizations to produce official statistics. Blaise was developed by the methodology department of **Statistics Netherlands (CBS)** as a tool to improve the data editing process and was first released in 1986 as Blaise 1.0. Through the years, updated versions were released with new functionalities to respond to user requirements (the latest version is Blaise 5). CBS organized its first user meeting in 1992 and established the International Blaise User Group, which started organizing international user meetings.⁴⁷ In 1996, a licensing structure was introduced by CBS based on an annual payment for using the software. CBS also established a partnership with Westat, which acts as the reseller in North and South America. Organizations that use Blaise extensively to collect large, complex data and that often have multi-mode requirements are offered a corporate licence. These licences provide users with a free, open relationship and a ‘partnership’ of sorts with CBS. Corporate licence holders are automatically part of the Blaise Corporate License Users Board (B-CLUB) and, as such, can learn about proposed Blaise developments and comment on their needs and

⁴⁴ See also SDMX [36] and XBRL [37] in Annex B.

⁴⁵ Extracted from “The .Stat and SIS-CC Strategy 2014-2019”, version 2, published March 26 2014, last update March 18, 2015.

⁴⁶ It can perform computer-assisted telephone interviewing, computer-assisted personal interviewing, computer-assisted self-interviewing, computer audio recorded interviewing, web-interviewing, interactive editing, high-speed data entry, and data manipulation. Blaise also has full survey management capabilities.

⁴⁷ See www.blaiseusers.org for an overview of all meetings.

priorities regarding research data collection software capabilities. The main goal in establishing the B-CLUB was to create a platform to exchange information on Blaise and to give large users of Blaise the opportunity to influence its development.

47. The e-VT project, a centralized data-collection system, was established under the leadership of the **Turkish Statistical Institute** (TurkStat) in collaboration with the **Union of Chambers of Certified Public Accountants** and **Sworn-in Certified Public Accountants** of Turkey and accounting software firms. TurkStat has also consulted with accountants who have been using accounting software programs. Through the e-VT system, data are collected automatically from different accounting software services and transferred safely and directly to the TurkStat database system. The system's goal is to reduce the burden on respondents and improve efficiency (cost and quality). There is no formal agreement—it is a consensus based on mutual trust and support among stakeholders of the e-VT system. TurkStat provides consulting services to software providers on integrating their software into the e-VT system. Other collection methods are available for respondents who do not use software with integrated e-VT modules.

3. *Statistical business processes*⁴⁸

48. House-sale statistics have been produced with the collaboration of the **Turkish Statistical Institute** (TurkStat) and the **General Directorate of Land Registry and Cadastre** (GDLC) of the Turkish Ministry of Environment and Urbanization since 2008. TurkStat has also a close cooperation with CSOs such as the Housing Developers and Investors Organization, the Association of Real Estate, Real Estate Investment Companies and other users to determine their needs. The GDLC revises the database in order to satisfy new requirements. TurkStat collaborates closely with the GDLC to ensure the quality of data.

6. **Public-academia partnerships**

49. Examples of partnerships with academia are those carried out to promote microdata access and analytical tools, influence academic curricula, establish joint professorships and share knowledge.

1. *Microdata access*⁴⁹

50. Established in 1996, the Data Liberation Initiative (DLI) was the result of a collaborative effort between **Statistics Canada** and the academic community to substantially increase the availability of public-use microdata files (PUMFs)⁵⁰ for researchers at Canadian universities. Prior to the DLI, researchers interested in working with microdata would have to either travel to Statistics Canada headquarters in Ottawa to access the data or pay substantial fees to obtain the files. Universities now only pay a modest annual fee to house the data files. The DLI proved to be a cost-effective program for improving access to data resources at Canadian postsecondary institutions. Over the years, the focus of the DLI program evolved from purchasing access to major Statistics Canada datasets to providing training services and ongoing support required for the proper understanding and use of an ever-expanding research data collection. The program now

⁴⁸ See also [38] and [39] in Annex B.

⁴⁹ See also [41] and [44] in Annex B.

⁵⁰ PUMFs are modified microdata files where sensitive variables and geographical variables have been collapsed, capped or removed to protect the identity of the respondents. This confidentialization of the data allows these files to be available outside a secure setting.

includes 79 postsecondary institutions across the country with access to over 350 survey cycles of PUMFs. The academic community and Statistics Canada continue to work together to find innovative methods for data delivery, share best practices on how to use data and ensure that the services provided by Statistics Canada to the academic community are relevant to current needs.

51. Established in 2000, the Research Data Centres Program was meant to complement the DLI by extending the social science research capabilities in Canada to include access to a broad range of confidential data files⁵¹ that could not be placed in university libraries or other non-secure locations for public access. These files are available to researchers with approved projects in secure **Statistics Canada** facilities at university campuses across Canada. Among its benefits, the program greatly enhances the relevance of Statistics Canada data by increasing their use and serves as a platform for training quantitative researchers. This access program is managed as a collaborative partnership between Statistics Canada, Canadian universities and Canadian research funding agencies,⁵² which form the Canadian Research Data Centres Network⁵³. Annually, the program provides services to over 1,500 researchers, and the level of activity continues to grow. By 2014, more than 4,300 researchers had analyzed information on a broad range of socioeconomic and health issues and had produced over 3,000 publications since the inception of the program.

2. *Academic curricula, joint professorships and knowledge sharing*⁵⁴

52. **Statistics Austria** has established a formal co-operation agreement with the **Vienna University of Economics and Business**. The goals of the agreement are to transfer and improve the competencies of both parties, co-operate in empirical analyses of socioeconomic issues, and improve access to official statistical data. To facilitate access to microdata, a website has been established offering several standard datasets, along with corresponding metadata and all necessary technical information. Any researcher can submit a research proposal and apply for registration, which allows him or her to download a suitable standard dataset. If none of the standard datasets are suitable, an offer to produce a tailored dataset is made.

53. **Statistics Austria** offers courses on statistical literacy and organized a so-called “Statistics Day” for schools for the first time in October 2011. The main intent was to improve the statistical literacy of future generations of statistics users at an early stage. Because of the success of the first event, statistics days for schools have been held once or twice a year ever since, reaching around 100 to 200 high-school students and their teachers every year. This is a voluntary service offered by Statistics Austria. School classes and teachers are invited by Statistics Austria to attend short lessons on various statistical topics. Even after four years, the response is still very high and Statistics Austria receives more requests than it can handle.

54. **Statistics Finland** has had joint professorships with Finnish universities, previously with the University of Helsinki and the University of Tampere, and currently with the University of Helsinki. The disciplines have included statistical methods and national

⁵¹ The confidential microdata in the RDCs includes low levels of geography, variable categories have not been collapsed or capped. Only personal identifiers such as name and address have been removed.

⁵²The funding agencies include the Canadian Foundation for Innovation (CFI), Social Science Humanities Research Council (SSHRC) and Canadian Institute for Health Research (CIHR).

⁵³ Currie, R. F., Fortin, S., h2015. Social Statistics Matter: A History of the RDC Network, CRDCN-RCCDR, Hamilton, Ontario.

⁵⁴ See also [49] in Annex B.

economics. The universities and Statistics Finland have shared costs as mutually agreed. The main benefits of these joint professorships for Statistics Finland are in methodological developments, the development of staff competencies, the development of theses based on relevant topics, the improved use of statistics and statistical data by students, and a lively interaction and communication with students. These students are potential future statisticians and users of statistics. In addition to the professorships, some joint courses in national economics have been organized, in which experts from Statistics Finland have participated both as students and as tutors and teachers.

55. Strengthening relations with universities and research institutes is a policy target for **Statistics Netherlands** (CBS). A dedicated relations officer has been appointed to formulate policies, identify best practices and undertake relevant initiatives to stimulate co-operation. The focus is on Dutch universities, but some universities abroad are also targeted. A LinkedIn group has been started as a platform for communication with the academic community and a website (“CBS in the Lecture Hall”) is being prepared to collect statistical material for university teaching. Bilateral agreements with a number of universities have been signed or are being prepared. A number of senior CBS researchers double as university professors, and they advise PhD students working on CBS subjects, who are largely financed by CBS. CBS also offers internships and other opportunities for bachelor’s degree and master’s degree students. A change from a supply-driven approach (what students can CBS get) to a demand-driven approach (what students does CBS need) is gradually occurring. Specific events are sometimes organized. Recently, a workshop was organized with Maastricht University to identify areas of common interest, which generated a number of new ideas. A successful summer school on survey methodology has been organized twice with Utrecht University. Students in the PREMIUM program at Maastricht University work on CBS problems as part of their honours program. CBS is preparing a data camp with the University of Twente, where CBS researchers will join forces with PhD students to help them gain experience in big data research.

7. Engagement activities

56. Engagement activities were done to accomplish various goals, such as encouraging respondent participation, gaining support from influential bodies, showcasing the value of official statistics and promoting their use by giving access to data and tools, and offering training and support. Other activities were also done to strengthen existing relationships.⁵⁵

1. *Encouraging respondent participation and gaining support from influential bodies*⁵⁶

57. In general and in its mission statement in particular, **Statistics Austria** considers respondents as partners. It sees reducing response burden, whenever possible, as an obligation. Numerous measures for relief and support of the reporting units have already been implemented successfully, including the use of other data sources, customized electronic questionnaires with numerous features for assistance, extensive survey-related explanations on the website and the establishment of hotlines for technical and content-related support. Statistics Austria also offers statistical information feedback to respondents in different forms.

58. As stated in the 2011 Census report from the **United Kingdom’s Office of National Statistics** (ONS), ONS took a more consistent approach to communicating with stakeholders than it had taken in previous censuses. In particular, a program of local

⁵⁵See also [61] in Annex B.

⁵⁶ See also [51] in Annex B

authority liaison was initiated to maximize coverage of the 2011 Census. Its aims were to raise local authority awareness and understanding of the census and the role that local authorities can play in delivering a successful 2011 Census, build confidence and trust in the census methodology and the resulting outputs, and encourage local authorities to participate in and support the census. Engagement with stakeholders (such as users, partners, Parliament and the media) comprised four steps, each providing a progressively higher level of engagement: raising awareness, providing explanations, consulting, and working in partnerships. ONS recognized that stakeholder groups would require different methods and degrees of approach, so different modes of engagement were developed to reflect this.

59. To sustain a partnership program that was just as robust and active as the 2010 Census national partnership program, the **USCB** developed an evergreen national partnership program. The new program was built on the success of the 2010 Census and continues to develop and foster relationships with national organizations, federal agencies and businesses. For example, for the 2010 Census, national organizations signed national partnership agreement forms or verbally committed to assisting in the 2010 Census campaign. A small-scale partnership effort was implemented during the 2015 Census Test, to show how these partnership efforts translate on a local level. During this test, the Census Bureau looked at messaging and partnership materials; worked with a contractor to develop a social hub with partner content, including messaging, video content and tool kits for partners; and developed a champion campaign. The National Partnership Office has also continued to work very closely with many of the national partners from the 2010 Census by providing webinars, briefings, presentations and interactive workshops targeted to the specific audience.

2. *Showcasing the value of official statistics and promoting their use*⁵⁷

60. Since 2012, under the premise that information is a public good, **Mexico's National Institute of Statistics and Geography** (INEGI) began to develop a new strategy that favors the use of information from different segments of society (the public sector, the private sector, CSOs, academia and the media). INEGI also approved new guidelines that promote free access to the information it generates. A key engagement strategy is "INEGI at hand," a no-cost program that links INEGI with strategic segments of society. Guidelines for the strategy establish rules to be followed by INEGI administrative units and public servants operating in their respective fields of competence. INEGI also developed an ad hoc training program for strategic users to facilitate the understanding of statistical concepts, data analysis and data communication. The relationship with the strategic users is ongoing and dynamic, and this maintains a continuous dialogue, fluid communication and reciprocal commitments for collaboration and information exchanges. As a result of this program, more than 290 co-operation agreements have been made with strategic users. Up to date, 19,785 individual strategic users have been trained.

61. Since 2013, **Statistics Canada** has hosted "Talking Stats: A discussion series with StatCan" in different Canadian cities to discuss the uses of statistics in various fields.⁵⁸ These half-day events are an opportunity to connect and engage with the public, data users and stakeholders, and to better understand their evolving data needs. Participants meet the Chief Statistician of Canada, who presents a keynote presentation featuring major statistical findings about a particular aspect of the Canadian society and economy. The presentation is followed by a discussion with a panel of experts on public policy issues, academic research avenues, private-sector opportunities and community-level engagement, among other

⁵⁷ See also [54], [55], [57], [59], [61] and [62] in Annex B.

⁵⁸ See <http://www.statcan.gc.ca/eng/events/talkingstats>.

topics. All participants receive paper and electronic copies of the presentation. This partnership with specialists from various sectors allows for an in-depth discussion with the public about observed social and economic phenomena, truly demonstrating the value of official statistics.

62. As well, **Statistics Canada** uses a variety of activities to engage data users and the public in strategic partnerships that will benefit both parties. Some of these activities include the StatCan Blog, a vehicle for informing the public about its priorities, programs, and new initiatives and for responding to questions and comments online; the question of the month, a quick qualitative survey that gives a voice to users regarding various aspects of Statistics Canada's website, products and services; and "chat with an expert" sessions, one-hour live online sessions during which the public asks an expert questions on a specific topic. Statistics Canada also publishes factual information on a daily basis on Facebook and Twitter. Social media channels invite comments and feedback from the public, which are valuable for Statistics Canada to follow the evolution of users' needs and adapt to them. One of the major challenges of this type of partnership is to keep up with the pace by being visible on the most popular platforms, in a timely manner. The feedback is rapid and takes many forms, and Statistics Canada must remain agile to respond to comments and feedback online, and to determine what must be examined further to inform program design and delivery. One of the strategies used to keep up the pace was to improve platforms and strategies for various products. For example, in 2014, the "chat with an expert" platform was completely overhauled to make the module more functional and user-friendly, thus simplifying its use and making it more popular.

63. In May 2013, the first version of **Statistics Sweden's** (SCB) application programming interface (API) was released⁵⁹. The API can be used to build applications for smartphones and new Web services with information from Statistics Sweden's statistical database, free of charge. API access can serve to improve data dissemination, communicate openness and transparency to the public, and communicate statistics to new audiences. A communications strategy was developed to attract potential users. Since using the API requires specific skills and knowledge, the target audience for marketing the API was quite specific (e.g., developers, IT students and people engaged in open-data issues). The plan was to invite potential users to create new applications and services and later communicate the results to a broader audience. The first Hack for Sweden event that took place in 2014 was created in collaboration with eleven other government agencies. Given its success, another event was launched in 2015 with the collaboration of 20 government agencies. The events consisted of a competition in which programmers and developers were invited to create new services and applications based on public open data. An event website was created, as well as accounts on Twitter and Facebook, to reach target audiences and enroll teams at low cost. The organizers also sent press releases and contacted journalists. Inviting external experts to be part of the jury proved to be a success factor. All the participating agencies sent a joint press release and used their own communication channels to communicate the results.

64. The **United Kingdom's Office of National Statistics** (ONS) Big Data Project includes four pilot projects that cover economic and social themes using different data sources (Internet price data, Twitter messaging, smart-meter data and mobile phone positioning data). Alongside the pilot projects, a significant activity will be stakeholder engagement and communications. As stated in the ONS Big Data Project progress report,⁶⁰

⁵⁹ See also the Canadian open data initiative described in [62] in Annex B.

⁶⁰ See <http://www.ons.gov.uk/ons/about-ons/who-ons-are/programmes-and-projects/the-ons-big-dataproject/index.html>.

stakeholder engagement activities seek to achieve the following through communications and other means: engage with data users and the public to understand their concerns with the use of big data in official statistics and their requirements for new types of outputs; engage with external stakeholders to acquire their data, tools and technologies for use in pilot projects; engage with external stakeholders to learn from their experience, develop ONS knowledge and skills, coordinate efforts, and develop partnerships and work collaboratively; engage with internal stakeholders to coordinate efforts, ensure the project's objectives align with ONS strategic objectives and ensure support for the project exists across ONS; and manage stakeholder expectations at various stages of the program. The following nine groups of stakeholders have been identified for the project: privacy groups, ONS, international stakeholders, academia, the private sector, big-data companies, technology providers, government and data users (including the public).

V. Issues, challenges and key factors for success

65. Issues, challenges and key factors for success are presented below for the following themes: crowdsourcing; data acquisition; the development of information technology (IT) infrastructure, tools and software; the outsourcing of operational and statistical business processes; partnerships carried out with academia and engagement activities.

A. Crowdsourcing

66. Haklay et al. (2014) identify the following challenges associated with crowdsourcing: 1) many projects use a wide range of conventional and open-source software applications, and these specific tools may not be available to everyone and may require high technical abilities; 2) the format of the dataset used in open-source software may be difficult to integrate with proprietary software packages, hence limiting interoperability; 3) the accuracy and quality of the data; 4) the acceptance of the authority given to various contributors (which is a departure from the belief that only information originating from a government organization is authoritative) and 5) data ownership and specific licensing agreements can limit the way that the data can be used.

67. Braham (2013) defines best practices for crowdsourcing at the planning, implementation and post-implementation phases. Haklay et al. (2014) identify key factors associated with crowdsourcing used by governments that can be summarized as follows: 1) identifying the appropriate level of co-operation between the public and the government during and possibly after the life of the project; 2) developing strong collaboration between different organizations that have specific expertise; 3) establishing workshops to train volunteers; 4) targeting the recruitment of volunteers according to the needs of the project and, when needed, offering appropriate incentives (financial or non-financial); 5) using innovative techniques to keep the public interested, such as gamification, and using other media, such as SMS, videos, photographs, and social media, for reporting information; 6) indicating clearly how the data will be used by the government or organization; 7) recognizing that crowdsourcing of this type supplements and enhances the work of professionals, but does not replace it; 8) implementing a recruitment strategy for volunteers that reduces coverage bias (volunteers may be more numerous in specific areas); 9) conducting quality assessments; 10) establishing open and clear lines of communication and identifying contact people; 11) determining early in the project any limitations related to intellectual property rights and 12) recognizing that the role of champions and change leaders within the public sector organization can be critical.

B. Data acquisition

68. The use of administrative data for statistical purposes can involve various challenges that are well documented in the literature (for example, see Brackstone⁶¹, and Wallgreen and Wallgreen⁶²). The particular challenges emphasized in the submitted papers relate to data access and its relevant legal framework, ⁶³ developing and implementing agreements, the need to renegotiate agreement that were too restrictive, quality issues (e.g., coverage and fitness for use), stability issues (administrative changes or unforeseen events⁶⁴ can affect the program generating the data), specific demands regarding the coordination role for national and international commitments, privacy concerns and funding. The examples below highlight these challenges and explain how they were addressed.

69. “Strategies for dealing with quality and stability issues in the partnership between the **Australian Bureau of Statistics** and the **Australian Taxation Office** include the following: 1) a proactive effort to align definitions and data maintenance procedures to achieve greater coherence; 2) joint work in managing and testing processing systems and 3) discussion regarding proposed changes to legislation or reporting requirements to enable decisions to be made in the context of whole-of-government impacts on the community. Sharing information and expertise through this partnership also led to unexpected benefits. For example, ABS advice on confidentiality methods has allowed the ATO to release more unit record data to researchers and policy officers, without identifying individual taxpayers. It also led to quality improvements to the Australian Business Register (ABR). These have benefitted all ABR partner agencies (Australian governments at all levels) for a wide variety of purposes, such as planning and emergency response.

70. **Statistics Austria**’s access to administrative data is bound by national laws that state precisely what administrative data can be accessed free of charge, electronically. Article 10 of the *Federal Statistics Act* focuses on the responsibilities of administrative data providers, particularly with respect to the transmission of data to Statistics Austria; provides information on the definitions and methods used; and address changes affecting the production of official statistics. Despite the Statistics Council’s possibility to deliver official opinions on the design of administrative databases to the responsible ministries, the actual possibility of influencing the quality of the delivered administrative data or changes in data structure has been comparatively poor in the past. The amendment of Regulation (EC) no. 223/2009 on European statistics strengthens the role of national statistical institutes in terms of free and timely access to administrative data and should presumably enable Statistics Austria to strengthen existing partnerships with administrative data providers. This new role requires a new form of co-operation and common understanding and a rethink by administrative data owners.

⁶¹ Brackstone, G. J., 1987. Issues in the Use of Administrative Records for Statistical Purposes, Survey Methodology Vol. 13, pp. 29-43, Statistics Canada.

⁶² Wallgren, A. and Wallgren, B., 2014. Register-Based Statistics - Statistical Methods for Administrative Data. Second Edition. Chisester: JohnWiley & Sons Ltd.

⁶³ For a review of legal, policy and organizational frameworks for the statistical use of administrative data in Canada, Ireland, the United Kingdom, New Zealand, Australia and the United States see Royce, D. 2013. A Survey of International Frameworks for the Statistical Use of Administrative Data, Statistics Canada.

⁶⁴ For example, on two occasions, data exchange between Statistics Canada and the US Census Bureau (USCB) was stopped for short periods due to a locked out in the USCB. As well, the decision by the US governments to increase timeliness also affected the production schedules. This was an operational challenge for Statistics Canada as internal operations and release schedules needed to be adjusted and revision policies revised (see [9] in Annex B).

71. For **Statistics Austria**, one of the most outstanding co-operation agreements is the Framework Co-operation Agreement (FCA) with the **Austrian National Bank (OeNB)** on macroeconomic statistics. The FCA serves as an umbrella agreement and is the formalization of decades of collaboration. The main challenge in this long-standing co-operation was fulfilling European requirements in the context of Austria's accession to the European Union. A newer challenge has arisen from the differing views of Eurostat and the European Central Bank on certain issues that are covered by statistics compiled by two systems (the European Statistical System and the European System of Central Banks). Consequently, the reporting requirements for Statistics Austria and OeNB differ, and this increases the administrative burden for Austria as a whole. The governance structure, which includes a high-level steering committee with two regular participants from each institution, is a key feature in addressing these challenges. These challenges are also being addressed through joint participation in European forums dealing with statistical matters.

72. A strategic aim of **Statistics Austria** is to increase the possibility to use big data as new data sources (e.g. telecommunication data or toll data from motorway operator). In the context of the acquisition of new big data sources from the private sector, Statistics Austria has identified the need to develop an accreditation process. Its aim is to ensure Statistics Austria receives relevant big data and is involved if there are any changes to the nature or structure of these data. Additional challenges relate to the need to respect the business model of the data custodian, data privacy, and the development of strict protocols for data transfer.

73. Some of the challenges identified by the *Institut de la statistique du Québec* (ISQ) related to the development of a data portal which integrates statistics provided by many organizations include: 1) developing and sharing standards, nomenclatures, classifications and metadata to improve quality and ensure a correct interpretation of the statistics concepts and 2) identifying relevant statistics to be integrated. As well, in light of the current budgetary context, the ISQ, who was the sole funding partner for the maintenance, recently needed to seek annual funding from government authorities and partners to avoid the dismantlement of the Databank of Official Statistics on Quebec. According to the ISQ, important factors to consider for collaborative projects of this nature include 1) obtaining political support for the project to ensure funding for both the start-up and the ongoing maintenance phases: 2) obtaining administrative support from central agencies such as the Treasury Board Secretariat, to integrate the government project into the government's orientations and policies and, in so doing, compel the ministries and agencies to present their dissemination needs to the project authority for evaluation and recommendation: 3) implementing a tripartite governance model (central agency, project authority and partner representatives) to ensure risk-sharing across all levels and 4) establishing a funding model at the start of the project that covers not only the start-up costs, but also the annual operating costs, to ensure its sustainability.

74. The **National Statistical Service of the Republic of Armenia (NSS RA)** actively cooperates with administrative data providers and acts effectively as the coordinator of administrative statistics. This activity is based on partnership relations on the access to and use of administrative data for statistical purposes. The NSS RA stressed the importance of supporting ministries and other public bodies in properly managing their administrative registers through exchange of information, methodological support and development of training material.⁶⁵ Further strengthening the influence of the NSS RA on the content of the registers is another important factor. Future plans include the development of online

⁶⁵ The document is posted on the NSS RA Website at <http://www.armstat.am/file/doc/99465743.pdf> in Armenian, English and Russian.

reporting to reduce the reporting burden for businesses and increase the NSS RA's efficiency.

75. The **U.S. Bureau of Economic Analysis (BEA)** and a major credit card company have been working together for almost a year to develop a pilot project that will provide BEA and the **U.S. Census Bureau** with selected aggregated monthly data from the credit card company transactions database. Data privacy concerns presented a challenge for both parties. Data sharing between BEA and the Census Bureau was also problematic. These issues were negotiated and written into the non-disclosure agreement.

C. Information technology infrastructure, tools and software, and operational and statistical business processes

76. Some of the challenges identified with outsourcing activities or with partnerships related to the development of IT infrastructure, tools and software, and operational and statistical business processes include the cultural change associated with outsourcing, the integration of an outsourced solution with existing in-house systems, funding requirements, public perception and other challenges associated with different partnership strategies.

77. The **Australian Bureau of Statistics (ABS)** is planning a major transformation program over the next four years to replace a large number of legacy systems. The ABS cannot continue to build and maintain its own infrastructure, as it is expensive, difficult to update and fragile. The ABS is considering different partnership strategies, such as a lobbying bloc,⁶⁶ a wrapper for an existing off-the-shelf product,⁶⁷ a request for tender⁶⁸ (for an existing off-the-shelf product or a new product) and joint funding.⁶⁹ A number of potential issues need to be explored with other statistical organizations to test the feasibility of these options, including issues related to legislation, whole-of-government rules, intellectual property, funding restrictions, timeframes and requirements.

78. The success of the High Level Group for the Modernization of Official Statistics (HLG-MOS) is highly dependent on goodwill and is often referred to as "the coalition of the willing". A lack of both long term and permanent funding poses the risk that the resources required to support priority projects will either stop or be insufficient to support the required project scope. A mitigating strategy is to find a critical mass of participants whose work within their own organizations is well aligned with the objectives of the HLG-MOS projects.

79. The Civil Registry System (CRS) Project Report (**Philippines National Statistics Office**, 2014), describes a number of issues related to the build-operate-transfer partnership with the private sector for developing imaging solutions and supporting infrastructure to improve access to civil registry information. As stated in the report, "the effective implementation of the CRS project was adversely affected by its failure to achieve the acceptable service level in the presence of additional charges imposed to the users in at least three local governments units, system deficiencies, failure to comply with some

⁶⁶ Statistical organizations could push vendors to alter their products to better suit our needs.

⁶⁷ Statistical organizations could partner together to fund a vendor to have an existing component wrapped to be CSPA compliant.

⁶⁸ The statistical organizations agree to a common set of requirements which are used in a Request for Tender (RfT) put out by a single organization.

⁶⁹ A group of statistical organizations each contribute to a fund which will be used to approach a vendor to build a new product which will meet their shared requirements.

contract requirements and inadequacy of controls to protect the interest of both the government and the public". A number of recommendations to address these issues are documented in the report.

80. Transformational initiatives carried out by **Shared Services Canada** (SSC), in which new IT solutions replace existing IT solutions, can represent a cultural change and trigger resistance. To address this, information sessions organized by the IT branch of partner departments and SSC are taking place to provide IT staff with the latest information, benefits and impacts of important transformational initiatives. As specific projects or initiatives arise, SSC engages with its partners to solicit their requirements. It is sometimes difficult to align the requirements and timelines of departments with SSC timelines. As departments operate in a rapidly changing and increasingly complex IT environment, they are learning to adapt quickly and be aware of shifting internal and external factors. Departments will also be evaluating the need for new or additional training as development tools become standardized across the Canadian federal government. With major transformational initiatives, departments may not always have all the expertise in-house or sufficient resources. In these cases, departments have to make provisions in their budgets for additional resources. As SSC engages more with partners in different forums and moves forward with its transformational activities, it will be able to increase awareness of, and leverage, the well-planned, well-designed and well-managed services and processes it develops for its partners. SSC will also be able to enhance these services and processes to the enterprise level by working with partner lead organizations. This awareness will help SSC seize opportunities as they occur, anticipate possible obstacles and correct its course when needed. However, SSC's readiness and ability to deliver on its services are at various stages and could significantly affect the department's ability to meet its plans and priorities.

81. The investment for the development, maintenance and support of Blaise by **Statistics Netherlands** (CBS) is being offset by the multiple advantages associated with the widespread use of Blaise by organizations. This success can be attributed to the Blaise Corporate License Users Board (B-CLUB) partnership model that enables worldwide use and active feedback from users. Through the B-CLUB, users can influence the development of Blaise and contribute to enhancing its quality and applicability. Through these exchanges, Blaise has become capable and comprehensive software driven by the production of high-quality survey data. If Blaise had remained as initially developed, an in-house product, CBS would not have benefitted from the intellectual input of researchers and developers from across the world.

82. Efficient knowledge transfer was seen as a key element for efficiently integrating business solutions developed by a contractor for the Canadian censuses within **Statistics Canada's** production systems. Having Statistics Canada employees participating at various levels (from governance to day-to-day operations) meant that after solutions (technical or business) were delivered, knowledge of the functions and history of work efforts was retained within the organization. Bilateral knowledge transfer occurred during the period the contract was in place. Because Statistics Canada employees were involved at all stages of development, their feedback was used to improve the contractor's work products, from interface screens to management reports. While this was done within the context of the Canadian census program, it was frequently acknowledged that Statistics Canada approaches (such as data-quality approaches and interactive coding) brought value to the contractor's business. Lessons learned in working with contracting staff have stimulated Statistics Canada employees to rethink in-house processes. All participants acknowledged that the governance structure in place was a key factor in the successful implementation of solutions for both the 2006 and 2011 censuses.

83. Because of the long duration of specific projects, external factors can change, causing changes to the risk profiles associated with these factors. In the case of the Canadian census, where some work was awarded to a contractor, public opinion on the awarding of any work associated with confidential data holdings shifted considerably between the time of contract development and award. While safeguards had already been in

place, work under contract was further restructured in response to public perception that any data were at risk. The strong collaborative nature of the work partnership allowed this to take place in a minimum amount of time.

84. The transition from delivered systems supported under contract to systems maintained and improved within the department can be problematic. In some instances, knowledge can be lost even when documentation is thorough. For example, **Statistics Canada** staff found that the documentation provided by the contractor for the census project, although well done, was not detailed enough for someone making detailed changes to systems. Over time, third-party vendors who supplied components of an original system may change their software products or the licensing agreements under which they were originally obtained. This may make their integration within current overall systems more difficult. Likewise, hardware acquisition policies or directions within the government may change (e.g., from one operating system to another), requiring adjustments to delivered systems. While this is no different from the problems faced during any development cycle, a lack of in-depth knowledge on systems or production implementation can exacerbate this challenge.

D. Partnerships with academia

85. Factors to consider when establishing partnerships with academia included the importance to involve relevant stakeholders when negotiating an agreement and the necessity to target specific audience using tailored presentation material for outreach activities.

86. **Statistics Austria** reports that collaboration agreements carried out with academia, such as its agreement with the Vienna University of Economics and Business, should not be organized in a top-down process, as the commitment of the experts involved depends largely on their personal fields of interest. Hence, it is of the utmost importance to include all stakeholders from the beginning and to build up the collaboration as a partnership between institutions and experts.

87. One of the lessons learned with the Statistics Day project for Austrian schools was the importance of targeting the audience that is most likely to be interested and to benefit from the experience. A lot of effort was put into developing a statistical training program for teachers; however, this experience showed that it is difficult to win over teachers in Austria to this form of training, which is different from their usual qualification process.

E. Engagement activities

88. Engagement activities require adopting an agile approach to adapt to varying and evolving needs of the various stakeholders and information platforms.

89. As states in the ONS 2011 Census report (**United Kingdom's Office for National Statistics, 2015a**), "engagement with Parliament, ministers and the National Assembly for Wales was seen as being an essential element of the wider 2011 Census stakeholder management strategy. The engagement approach was intended to be more proactive than had been the case in the 2001 Census. The 2001 Census showed that it was difficult to encourage Westminster MPs interest and enthusiasm for the census more than a few months before the event. So, for engagement to be as effective as possible for the 2011 Census, ONS contacted several parliamentary stakeholder groups: MPs as individual constituency representatives; relevant Select Committees; All-Party Parliamentary Groups (APPGs) with a potential interest; the House of Commons Library and Journals Office; and ministers of key policy departments. There was a similar programme of engagement with Assembly Members (AMs) and committees in Wales, led by Welsh Government officials. Success

varied considerably across these forums: while it was still difficult to engage the attention of all MPs, Assembly Members were generally supportive”.

VI. Conclusions and recommendations

90. The examples described in this paper represent only a small sample of the types of partnerships undertaken by international organizations and national statistical offices (NSOs). It is likely that other types or models of partnerships not presented in this paper are also taking place. However, the diversity of the partnerships described does illustrate the importance of these partnerships in fulfilling the needs of an organization.

91. A large body of literature documents the establishment, implementation, monitoring and evaluation of successful partnerships (see Section III). However, Colverson and Perera state in the February 2012 International Institute for Sustainable Development (IISD) report⁷⁰ that the IISD believes that the principles of transparency, accountability, whole-life costing and value for money, and the importance of triggering positive economic externalities across the domestic economy, have not been prioritized in the design of public–private partnerships to date.

92. The motivations for starting partnerships are varied. A wide range of specific contributions may be sought from different actors to support an organization’s existing statistical programs and address data gaps. The role of different stakeholders in the examples described included providing: 1) financial support; 2) knowledge sharing; 3) advocacy; 4) support for the coordination and production of national statistics and international commitments; 5) development of international reference manuals and practices; 6) data access and 7) outsourced services. Engagement activities were also done to accomplish various goals, such as encouraging respondent participation, gaining support from influential bodies, showcasing the value of official statistics and promoting their use by giving access to data and tools, and offering training and support.

93. Based on the information provided, none of the partnerships presented appear to be at the philanthropic stage; however, many examples reflect partnerships at the transactional or integrative stages. A few examples, such as the Blaise partnership through the Blaise Corporate License Users Board, could be considered to be approaching the transformational stage (see Annex E for a description of the stages).

94. A historical perspective on how partnership business models evolved within different organizations was not included in the in-depth review; however, drawing from **Statistics Canada**’s experience, interesting patterns are revealed. Partnerships with the public were, from the onset, part of Statistics Canada’s business model and have increased through the years as new collaboration forums (national and international) are developed to respond to emerging needs. More recently, transformational initiatives led to partnerships with a whole-of-government approach. Partnerships with the public and private sectors leading to data acquisition have increased significantly through the years, reflecting the increasing use of administrative data to produce official statistics. Statistics Canada is also seeking new partnerships with the private sector to explore new sources of data and is developing guidelines for the procurement of data available to the public.⁷¹ Public concerns

⁷⁰ See p. 47, Colverson, S. Perera, O., *Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development*, IISD report February 2012.

⁷¹ At Statistics Canada data available to the public are defined as data or information that is publicly available, including on the Internet, or data that can be obtained, under licence or not, by anyone, with or without a fee.

related to privacy and confidentiality have led to a different approach for contracts with the private sector. Engagement activities have evolved to adapt to the newest communication platforms and to the changing communication needs of users. Statistics Canada has not yet considered the use of crowdsourcing to produce official statistics.

95. Depending on the type of partnerships, a number of factors emerge as being crucial such as: 1) an enabling **legal framework** for data access; 2) efficient **governance models** for developing, implementing, monitoring, evaluating and renegotiating agreements, but also strengthening the influence of organizations coordinating national and international commitments; 3) considering **operational issues** brought by new partnership initiatives (for example interoperability challenges when outsourced solutions are integrated with existing in-house systems); 4) meeting **organizational requirements** when a third party is involved (for example an accreditation process⁷² may be necessary to ensure that quality, privacy and confidentiality requirements are met and also to manage third party risks); 5) efficient **funding model** with risk sharing among all partners; 6) managing resistance to **cultural changes** brought by new initiatives (for example the acceptance of the authority given to various contributors to official data, the use of outsourcing, the implementation of a whole-of-government approach); 7) the **capacity to respond to the varying and evolving needs** of users and stakeholders; 8) taking into account how **intellectual property** can be an enabler or a disabler and 9) **maintaining public trust and addressing privacy concerns**.

96. Two recommendations are being submitted for further consideration.

97. Recommendation 1. Determine the requirements of NSOs and other organizations for sharing information related to innovative strategic partnerships with the information industry and determine the best means to do so. For example, information need may be specific to certain types of partnerships. As well, the creation of a dynamic inventory of innovative partnerships may also be identified as a specific need. In this particular case, organizations could be invited to use the existing Observatory of Public Sector Innovation maintained by OECD to post about innovative strategic partnerships with the information industry. Postings on this portal describe an initiative, how it was developed, the results obtained and the lessons learned. If this proposal is received favourably, discussion could take place with the OECD on including various categories related to partnerships under the current heading “Type of innovation” to facilitate searches.

98. Recommendation 2. The following four themes are being proposed for further discussion in other forums or possibly at the upcoming seminar on partnerships that will take place in June 2016: 1) partnerships instrumental to the development and strengthening of national statistical systems; 2) strategic partnerships with the private sector; 3) partnerships addressing emerging needs and 4) being influential while maintaining political independence. Topics that could be explored for each of these themes are described below.

⁷² For an example of implementation of a certification process, see the AAPOR Transparency Initiative. Organizations pledge to abide by AAPOR’s disclosure standards and other requirements by signing an agreement. The names and logos of Charter Member organizations are included on the official Transparency members’ page on the [AAPOR website](#).

A. Partnerships instrumental to the development and strengthening of national statistical systems⁷³

99. Discussion papers on this theme could include case studies on the following topics: 1) a review of enabling legal frameworks and governance model strengthening the influence of organizations coordinating national and international commitments; 2) a governance model for the whole-of-government approach; 3) specific needs for strengthening national statistical systems to monitor global goals;⁷⁴ 4) coordination of statistics to meet new initiatives, such as the Framework Regulation Integrating Business Statistics and INSPIRE;⁷⁵ 5) how to move partnerships from the transactional stage to the transformational stage and 6) a review of best practices for developing and implementing an accreditation process to ensure that all stakeholders meet quality requirements and specific organizational requirements (e.g., confidentiality, security and privacy requirements).

B. Strategic partnerships with the private sector

100. Discussion papers on this theme could include case studies on the following topics: 1) different partnership strategies, as mentioned by the **Australian Bureau of Statistics**, such as a lobbying bloc, a wrapper for an existing off-the-shelf product, a request for tender (for an existing off-the-shelf product or a new product) and joint funding; 2) a review of best practices to influence and maintain public trust in NSOs and of the value of official statistics when third parties are involved in their production (if this topic is chosen, collaboration with the UNECE Task Force on the Value of Official Statistics⁷⁶ is recommended) and 3) a review of principles and best practices to establish a win-win situation with the private sector that could pave the way toward partnerships at the transformational stage.

C. Strengthening or developing new partnerships addressing emerging needs (national and international level)

101. As there is greater alignment in development needs from one NSO to the next, partnerships such as the HLG, as supported by the CES/UNECE are becoming more important and even necessary. All the factors raised above concerning the legal framework, the governance, operational issues, cultural issues, etc., are put to the forefront of the issues to consider in international partnerships, but such partnerships will allow sharing of not

⁷³ A number of reference documents exist regarding the development of national statistical systems from international organizations, see UNSD <https://unstats.un.org/unsd/dnss/>, and Eurostat http://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_in_development_cooperation_-_national_statistical_systems).

⁷⁴ This was one of the areas identified which could play an important role in shaping the post 2015 agenda and framework. See OECD POST-2015 report, Element 5, Paper 1 at <http://www.oecd.org/dac/POST-2015%20P21.pdf>.

⁷⁵ The INSPIRE directive came into force on 15 May 2007 and will be implemented in various stages, with full implementation required by 2019. The INSPIRE directive aims to create a European Union (EU) spatial data infrastructure. This will enable the sharing of environmental spatial information among public sector organisations and better facilitate public access to spatial information across Europe. A European Spatial Data Infrastructure will assist in policy-making across boundaries. Therefore the spatial information considered under the directive is extensive and includes a great variety of topical and technical themes.

⁷⁶ See <http://www.unece.org/statistics/about-us/statstos/task-force-on-the-value-of-official-statistics.html>

only the various expertise of NSOs, but also the development and maintenance burden that is getting more difficult to sustain by a single NSO. Specific emerging needs could be identified and collaboration could be sought through various relevant forums. For example, the strengthening of small-area statistics through better access to georeferenced information and visualization tools may be a common interest. As mentioned by **Statistics Sweden**⁷⁷, the increasing use of Geographic Information System software both by authorities and in the private sector creates a growing demand for statistics on grids and other small areas. More and more decisions are based on geographical analysis; the ability to visualize various scenarios or conditions geographically is essential and the demand for statistics is likely to grow in the foreseeable future.

D. Being influential while maintaining political independence

102. This topic is aligned with a paper proposed by the **Swiss Federal Statistical Office** (FSO). The FSO's paper would highlight how the process for positioning official statistics has been redesigned in Switzerland and how coordination between various stakeholders has been redefined in a sustainable and binding way.

⁷⁷ See example [39] in Annex B.

Annex A

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Table 1
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Annex B

Examples of partnerships

Table 2

List of partnership examples

More information is given for examples that are not discussed in the main body of the paper (reference number with a *).

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
Crowdsourcing - Data acquisition		
1	Haklay et al. [2014]	Findings from 29 case studies where crowdsourcing was used to collect and update geographic information used in government. See paragraphs 21. to 24., 66. and 67.
Public - Data acquisition		
2	Australian Bureau of Statistics (ABS)	Through an agreement, the ABS obtains data from a number of Australian Taxation Office (ATO) areas. Collaboration is taking place on several data related fronts including data analytics, whole-of-government data acquisition infrastructure and access to government-held data. See paragraphs 27. and 69.
3*	Federal State Statistics Service (Rosstat)	Rosstat is the coordinator and the main producer of official statistics in the Russian Federation. Current goals include implementing a more efficient use of information, avoiding duplication in data collection and, reducing the reporting burden on businesses by reducing business costs associated with administrative paperwork. The objective is to establish the minimum set of information necessary from respondents to implement state functions. This also implies monitoring the introduction of new forms of accountability and regulating inter-agency electronic exchange of information received from the respondents.
4	Institut de la statistique du Québec (ISQ)	The Databank of Official Statistics (BDSO) on Quebec (Canada) was coordinated by the ISQ through collaboration between 25 ministries and agencies. See paragraphs 28. and 73.
5	National Statistical Service of the Republic of Armenia (NSS RA)	The NSS RA actively cooperates with administrative data providers and acts effectively as the coordinator of administrative statistics. This activity is based on partnership relations on the access to and use of administrative data for statistical purposes. See paragraph 74.
6	Statistics Austria	Statistics Austria's access to administrative data is bound by national laws that state precisely what administrative data can be accessed free of charge, electronically. See paragraph 70.
7	Statistics Austria	For Statistics Austria, one of the most outstanding co-operation agreements is the Framework Co-operation Agreement (FCA) with the Austrian National Bank (OeNB) on macroeconomic statistics. The FCA serves as an umbrella agreement and is the formalization of decades of collaboration. See paragraph 71.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
8*	Statistics Austria	The goal of a partnership between Statistics Austria and other national authorities (ONA) is that Statistics Austria is able to coordinate the delivery of European Statistics produced by the ONA in accordance to the principles of the European Statistics Code of Practice.
9*	Statistics Canada (StatCan)	An international data-sharing agreement related to import statistics has been in place since 1987 between Statistics Canada and the U.S. Census Bureau. The strength of the agreement is its simplicity (five articles and two annexes). Through the years, modifications have been made only to the annexes to reflect evolving business processes. Bilateral governance meetings take place twice a year to discuss production schedules and changing requirements. This data exchange helped to improve the quality of trade statistics and reduce the burden on respondents. It also created a general openness with respect to data confrontation during the regular production forum, as well as other forums. Furthermore, it has provided a launch pad for future data exchange in foreign affiliate statistics. One of the key factors that contributed to the success is the fact that the motivation for the agreement was incorporated into the agreement itself. The agreement serves as collective international memory and to verify that the original drivers still exist. Other key factors relate to the clarity of information regarding specific requirements, the importance of consultation when one of the partners is considering a change in the program, and the inclusion of quality control measures. Finally, each agency agreed to absorb all expenses related to the agreement, including the implementation costs and the ongoing costs.
10*	U.S. Census Bureau (USCB)	The Local Employment Dynamics (LED) Partnership is a voluntary federal-state partnership, which started in 1999. Its main purpose is to merge data from workers with data from employers to produce enhanced labor market statistics. Under the LED partnership, the Longitudinal Employer-Household Dynamics (LEHD) program at the Census Bureau produces new, cost effective, public-use information combining federal, state, and Census Bureau data on employers and employees.
11*	U.S. Census Bureau (USCB)	In 1959, the USCB began collecting data on building permits and housing starts with the objective of producing estimates of the value of construction put in place. In the 1960s, the U.S. Department of Housing and Urban Development (HUD) requested and funded additional data on housing completions, sales of new single-family homes, and characteristics of the new housing units. The Survey of Construction (SOC), which includes a full survey of starts, completions, sales, and characteristics, has continued with HUD since the 1960s through an Interagency Agreement, renewed each year.
Public - IT infrastructure, IT tools and software		
12*	Central Statistical Bureau of Latvia.	Data of the CSB of Latvia are open to all users for use or reuse on equal basis without any restrictions. Dissemination Database of the CSB of Latvia is based on PC-Axis family software PX-WEB which includes PX-WEB API (Application Programming Interface). Common use of standardized solution among more than one official statistics dissemination systems creates an environment that allows third parties to develop solutions to add on additional services to the existing ones.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
13	Statistics Canada (StatCan)	Shared Services Canada (SSC) was established in 2011 to modernize how the Canadian Federal Government (GC) manages information technology (IT) infrastructure in order to better support the delivery of programs and services to Canadians. See paragraphs 29. and 80.
14	Extracted from //www.scb.se/sv/_P/C-Axis/About-PC-Axis	The PC-Axis family consists of a number of programs for the Windows and Internet environment used to present statistical information. It is mostly used by the statistical offices in different countries to let their users retrieve statistics. PC-Axis is a software family with several programs all aimed at facilitating quick and easy dissemination of statistics. See paragraph 30.
Public - Statistical business processes		
15	Statistics Finland	Statistics Finland develops, maintains and distributes the SISU microsimulation model that models the personal taxation and social security systems of Finland. http://tilastokeskus.fi/tup/mikrosimulointi/index_en.html . See paragraph 31.
16*	Statistics Finland	Statistics Finland cooperated with the National Land Survey of Finland for the dissemination and use of geospatial statistical information. This includes, e.g., the dissemination of the INSPIRE-directive (European Spatial Data infrastructure) related data and other open geospatial open data via the national portal “Paikkatietoikkuna” (http://www.paikkatietoikkuna.fi/web/en), a public and free website that is open to all containing geographic information and statistics. The cooperation has included dissemination of sets of open statistical data via the portal, development of tools for analysing statistical information, joint projects related to service development and open source development, and shared communication activities.
17*	Statistics Finland	Statistics Finland has implemented a number of cooperative projects where the focus have been to improve customer and user services through the availability of automated and streamlined processes. For example, the “Findicator” service is a portal including a total of over 100 central indicators describing the state and development of society. The service includes data from a total of nearly 30 organizations, and is updated continuously. The service is owned jointly by the Prime minister’s Office and Statistics Finland. An agreement of cooperation defines the roles and the distribution of labour. A steering committee follows closely the use and development of the service. All the data producers have signed an agreement to guarantee the continuity of data supply for the service. There is also an active cooperation with the national and international networks working with sustainable development and indicators. The ongoing challenge is to meet the changing needs of the users and the changing ways to approach and use information.
18	HLG website	The High-level group for the Modernization of Statistical Production and services committees. http://www1.unece.org/stat/platform/display/hlgbas/Strategic+vision+of+the+HLG . See paragraphs 32. and 78.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
Private - Data acquisition		
19	The Bureau of Economic Analysis (BEA)	The BEA, in coordination with the U.S. Census Bureau, they have recently entered into an agreement with a major credit card company to allow researchers to evaluate the usefulness of credit card transaction data in the production and development of official U.S. economic statistics. See paragraphs 34. and 75.
20*	Statistics Sweden	Statistics Sweden is using scanner data, i.e. transaction data, in monthly CPI compilations for daily necessities and non-alcoholic beverages. Data is obtained from the three largest daily necessity chains which together cover more than 80 percent of the Swedish market for that domain. Initial contact with the data providers were done at headquarter level. Data are obtained free of charge on a weekly basis. Formal written agreements for data transfer have been signed with these providers.
21*	U.S. Census Bureau (USCB)	The USCB is obtaining information on nonresidential construction projects around the country from a private company. The USCB needs information on these projects to create the sampling frames for the Construction Progress Reporting Surveys, which provide principal economic indicator data on the value of construction put in place. The arrangement is mutually beneficial. The cost to the Census Bureau is lower than collecting these data directly. The USCB performs an inexpensive monthly coverage evaluation, with field staff listing permits in about 150 permit offices each month. This allows the Census Bureau to evaluate the coverage of the sampling frame and estimates can be adjusted accordingly. This information is shared with the private company, who uses it to identify improvements needed to their data collection operations.
Private - IT infrastructure, IT tools, software		
22	Australian Bureau of Statistics (ABS)	The ABS is planning a major transformation program over the next 4 years to replace a large number of legacy systems. The ABS is considering different partnership strategies to explore with other organizations. See paragraph 77.
23	Croatian Bureau of Statistics	Since 2011, the Croatian Bureau of Statistics has contracted the Premier Support Agreement with a major software company. See paragraph 35.
24	Extracted from Philippines National Statistics Office, 2004	The Philippines National Statistical Office established a Build Operate Transfer (BOT) PPP where the private sector was responsible to develop imaging solutions and support infrastructure for improving access to civil registry information. See paragraphs 36. and 79.
Private - Operational and statistical business processes		
25	Statistics Canada (StatCan)	Contracts were awarded to private company after Request for Proposals were issued for competitive bids on two separate occasions, for the 2006 and 2011 Censuses of Canada. See paragraphs 37. , 82., 83., and 84.
26	Extracted from United Kingdom's Office for National Statistics, 2015a	As with the 2001 Census, ONS contracted out a number of services for the 2011 Census. See paragraph 38.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
Civil society organizations		
27	Statistics Austria	The Austrian chamber of commerce (WKÖ) is the statutory representation of all the industrial and commercial enterprises in Austria and also one of the main users for business statistics data in Austria. Statistics Austria and WKÖ have a formal cooperation agreement that exists since many years, where the overall coordination of the manifold activities takes place in a high-level Steering Committee. See paragraph 40.
28*	Federal State Statistics Service (Rosstat)	Rosstat develops partnerships with different administrative data custodians and other producers of information. For example, the Russian Union of Insurers provides Rosstat with information on the activities of insurance companies. This information is used to derive statistical indicators for this sector of the economy. As well, agreements are negotiated with other organizations such the Russian Orthodox Church which provides information regarding the activities of religious organizations. In this specific case, Rosstat, understanding the unique character of their activities, has accepted to integrate in its statistical outputs the statistical report produced by this organization.
29	Statistics Netherlands (CBS)	CBS and TNO conduct a joint survey on working conditions, commissioned by the Dutch ministry of Social Affairs (and with many more important users). See paragraph 41.
30	U.S. Census Bureau (USCB)	With initial funding from the Ewing Marion Kauffman Foundation, the USCB developed the Business Dynamics Statistics (BDS) program, to increase understanding of entrepreneurship and our dynamic economy. See paragraph 42.
Multistakeholders - Data acquisition		
31	Moody [2015]	The UK Data Service has been instrumental in voicing the benefits of less restrictive access to the data community, helping maximise the re-use of data and ensure that historic data deposited with us remains available for research practice in years to come. See paragraph 44.
32*	Statistics Canada StatCan	The Ottawa Working Group (OWG) was formed as a cooperative effort between XBRL Canada and departments of the federal Canadian government, such as StatCan, to explore the use of Standard Business Reporting (SBR) using XBRL in the Canadian government. SBR involves the use of a method of identifying the various data points being collected across the government and then sharing those data collected such that filers with the government only need to submit those data points once, rather than to several different departments and agencies. By eliminating the duplication of data points, the total data collected can be substantially reduced, thus reducing the cost of collecting, handling data, and reducing respondent burden. In addition, such data, being standardized, can be shared more readily between departments. See example 36 for a description of XBRL.
Multistakeholders - It infrastructure, IT tools, software		
33	Extracted from OECD [2015]	Development of the OECD Statistical Information System (SIS) is a suite of integrated software components for statistical data and metadata. See paragraph 45.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
34	Statistics Netherlands CBS	Partnerships established through the International Blaise Users Group (IBUG) and the B-CLUB. See www.blaiseusers.org for an overview of all meetings. See paragraphs 46. and 81.
35	Turkish Statistical Institute (TurkStat)	Centralized data collection system named “e- VT Project” set up under the leadership of TurkStat in cooperation with the Union of Chambers of Certified Public Accountants and Sworn-in Certified Public Accountants of Turkey (TURMOB) and accounting software firms. See paragraph 47.
36*	//www.SDMX.org	The Bank for International Settlements (BIS), the European Central Bank (ECB), the Statistical Office of the European Union (EUROSTAT), the International Monetary Fund (IMF), the Organization for Economic Co-operation and Development (OECD), the United Nations (UN), and the World Bank have joined together to focus on business practices in the field of statistical information that would allow more efficient processes for exchange and sharing of data and metadata within the current scope of our collective activities. The sponsor organizations created common (SDMX) technical and statistical standards and guidelines, together with an IT architecture and IT tools, to be used for the efficient exchange and sharing of statistical data and metadata. Standardised file formats for data and metadata and standardised contents of these files are the pre-condition for the automated production, processing and exchange of SDMX data and metadata files between national and international statistical organizations. For an example of the use of an Open Data platform in African countries see Statistics Department International Monetary Fund, 2014.
37*	https://www.xbrl.org/the-standard/what/an-introduction-to-xbrl/	<p>XBRL (eXtensible Business Reporting Language) is the open international standard for digital business reporting, managed by a global not for profit consortium, XBRL International.</p> <p>In a nutshell, XBRL provides a language in which reporting terms can be authoritatively defined. Those terms can then be used to uniquely represent the contents of financial statements or other kinds of compliance, performance and business reports. XBRL lets reporting information move between organizations rapidly, accurately and digitally.</p> <p>The international XBRL consortium is supported by more than 600 member organizations, from both the private and public sectors. The standard has been developed and refined over more than a decade and supports almost every kind of conceivable reporting, while providing a wide range of features that enhance the quality and consistency of reports, as well as their usability. XBRL is used around the world, in more than 50 countries. Millions of XBRL documents are created every year, replacing older, paper-based reports with more useful, more effective and more accurate digital versions.</p>

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
Multistakeholders - Statistical business processes		
38*	Statistics Sweden (SCB)	<p>The main task for SCB is to produce official statistics financed by appropriations. But since the statistical system in Sweden got decentralized in the mid 1990's almost half of SCB's budget comes from commissioned work, mainly as a provider of statistical services to other governmental agencies which rely on the statistical expertise and production capacity of SCB.</p> <p>The government also wishes that SCB increases the use of statistics in society by providing services based on the unique access to register data from 1968 and onwards. This is something greatly appreciated by researchers doing research based on microdata, as well as by a lot of other users in need of detailed small area statistics. Such mixed funding requires that SCB can separate the appropriations and the revenue from commissioned work in the accounting system. Another basic principle is that all prices are calculated to ensure full recovery of costs.</p>
39*	Statistics Sweden (SCB)	<p>SCB did for some years have partnership agreements with software suppliers specialized in Geographic Information Systems (GIS). SCB delivered a fixed number of statistical tables that the partners were allowed to sell together with their own products/services. The agreement with the GIS companies allowed them to sell a package of 10 tables, selected from a total of 15 tables, together with their software. However, the private partners were not able to sell the packages to their customers. Hence, the expected benefits of having new distribution channels to customers that SCB normally would not reach did not come true and the agreements were terminated earlier this year. A new concept with resellers has been developed that hopefully will better meet user requirements.</p> <p>The increasing use of GIS software, by both authorities and the private sector, creates a growing demand for statistics on grids and other small areas. As more and more decisions are based on geographical analysis, the capacity to visualize various scenarios or conditions geographically is essential and the demand for statistics is likely to grow in the foreseeable future. The statistical products should be easily consumable and explained in a way that the potential private partners as well as the customers understand their potential use.</p>
40	Turkish Statistical Institute (TurkStat)	House sales statistics has been produced with the cooperation of TurkStat and the Ministry of Environment and Urbanization, General Directorate of Land Registry and Cadastre (GDLC) since 2008. See paragraph 48.
Academia - Microdata access		
41*	Statistics Finland	<p>The current service for researchers includes ready-made or tailored micro-data sets, remote access use solutions, and also the possibility to combine Statistics Finland's data with unit-level data of other authorities. The services can be used by authorised researchers. Some anonymised public use files (PUF) have been published for educational purposes. These services have been developed in joint projects with the National Archive Service of Finland, Ministry of Education and Culture, and a number of other actors in the research field (http://tilastokeskus.fi/tup/tutki-musaineistot/index_en.html)</p>

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
42	Statistics Canada (StatCan)	Established in 1996, the Data Liberation Initiative was the result of a collaborative effort between StatCan and the academic community to substantially increase the availability of public use microdata files (PUMFs) to researchers at Canadian universities. See paragraph 50.
43	Statistics Canada (StatCan)	Established in 2000, the RDC program was meant to complement the DLI by extending the social science research capabilities in Canada to include access to a broad range of confidential data files that could not be placed in university libraries or other non-secure locations for public access. See paragraph 51.
44*	U.S. Census Bureau (USCB)	Through partnerships with leading universities and research organizations, the USCB currently operates 20 Research Data Centers located across the country, with more being planned. The USCB facilities provide secure access to restricted-use microdata for statistical purposes. The microdata is not limited to USCB data. For example, selected restricted-access data from the Agency for Healthcare Research and Quality (AHRQ) and the National Center for Health Statistics (NCHS) can be accessed in the RDCs. Partnerships with other statistical agencies are currently being developed, including with the Bureau of Labor Statistics.
Academia - Academic curricula, joint professorships and knowledge sharing		
45	Statistics Austria	Statistics Austria has established a formal co-operation agreement with the Vienna University of Economics and Business. See paragraphs 52. and 86.
46	Statistics Austria	Statistics Austria offers courses on statistical literacy and organized a so-called “Statistics Day” for schools for the first time in October 2011. See paragraphs 53. and 87.
47	Statistics Finland	Statistics Finland has had joint professorships with Finnish Universities. See paragraph 54.
48	Statistics Netherlands (CBS)	Strengthening relations with universities and research institutes is a spearhead of CBS policy. A dedicated relations officer has been appointed, joint professorship are taking place as well as other initiatives. See paragraph 55.
49*	Extracted from United Kingdom’s Office for National Statistics, 2015a	The ONS consulted several university course leaders in business and communications about how they use census data in their courses. This consultation also informed the development of information materials and instructions for university students.
Engagement activities - Encouraging respondent participation and gaining support from influential bodies		
50	Statistics Austria	In general and in its mission statement in particular, Statistics Austria considers respondents as partners. Numerous measures for relief and support of the reporting units have already been implemented successfully. See paragraph 57.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
51*	Statistics Canada (StatCan)	StatCan often partners with other organizations to improve survey response. For example, Statistics Canada will be conducting the National Apprenticeship Survey on behalf of another government department. Statistics Canada and the other government department have established a close partnership for many aspects of the survey, including the development of various communications products aimed at raising awareness about the survey and encouraging participation. For example, the invitation letter not only provides details about how the survey is conducted (“Participating is easy and secure”), but also informs participants about why this survey is important and what difference it can make for them (“Your experience counts!”). Other communications products, such as a video and a social media campaign, were also developed.
52	Extracted from United Kingdom’s Office for National Statistics, 2015a	For the 2011 Census, ONS set up a programme of local authority liaison was initiated with the aims of: raising local authority awareness and understanding of the census and the role that local authorities can play in delivering a successful 2011 Census. See paragraphs 58. and 89.
53	US Census Bureau (USBC)	In order to sustain a partnership program that was just as robust and active as the 2010 Census National Partnership program, the US Census Bureau developed an Evergreen National Partnership program. See paragraph 59.
Engagement activities - Showcasing the value of official statistics and promoting their use		
54*	Statistics Austria	The following voluntary services/cooperation are offered by Statistics Austria: 1) media workshops: journalists receive statistical background information in thematic workshops (the statistical knowledge they gain will influence the quality of their articles and contribute indirectly to improving public statistical expertise), 2) cooperation to deliver texts on a regular basis and, 3) cooperation to deliver data for special purposes.
55*	Mexico’s National Institute of Statistics and Geography (INEGI)	INEGI is promoting the use of statistic and geographic data in all society segments. To achieve this goal, especially in children, INEGI has established an agreement with the Ministry of Education , in charge of National Education for elementary and high school students, in order to include statistical and geographical information in all the available channels as text books, computer programs and videos. At the same time, INEGI offers a dedicated section in the institutional INEGI website. Since 2012, The Ministry of Education included 60 INEGI contents and adapted 30 computer programs as learning objects, in order to improve student’s retention and comprehension.
56	Mexico’s National Institute of Statistics and Geography (INEGI)	A key engagement strategy is “INEGI AT THE HAND”, a no-cost program that links the Institute with the strategic segments of society. As a result of this program, more than 290 cooperation agreements have been fulfill with strategic users. See paragraph 60.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
57*	Statistics Sweden	The MONA system provides secure access to micro data at Statistics Sweden from an Internet connection. Data are processed and analyzed through a rich set of applications. Aggregated results are automatically sent to a user's designated mail account. Users can also store intermediate results on Statistics Sweden servers for future use. The opportunity to communicate data via the Internet to other countries is limited given that the Swedish law cannot protect data transmitted to another country. Under the Personal Data Act, it is in principle prohibited to transfer data to countries outside of the EU and EEA regions if the country does not have an adequate level of protection of personal data.
58	Statistics Canada (StatCan)	Since 2013, Statistics Canada has hosted Talking Stats: A discussion series with Statistics Canada in different Canadian cities, discussing the uses of statistics in various fields. http://www.statcan.gc.ca/eng/events/talkingstats . See paragraph 61.
59*	Statistics Canada (StatCan)	With the proliferation of online and alternate platforms, publishers are avid for newsworthy and reliable content to maintain their readers' interest. Statistics Canada endeavours to meet that need for information while increasing the visibility and awareness of the agency's statistical products, and fostering use and engagement with specific audiences. To that end, StatCan has established solid partnerships with blog publishers (including the Canada Business Network) and magazines, providing them with articles for publication. In two years, 15 articles have been published in blogs, and three articles in a national business journal. Strong strategic partnerships with relevant organizations yield more visibility and use of editorial content based on official statistics.
60	Statistics Canada (StatCan)	Statistics Canada uses a variety of activities to engage data users and the public in strategic partnerships that will benefit both parties. Some of these activities include: Statistics Canada Blog; Question of the month; "Chat with an expert" sessions and social media venues. See paragraph 62.
61*	Statistics Canada (StatCan)	Journalists rely on Statistics Canada for accurate and timely information to prepare their news stories, while Statistics Canada counts on media to reach the Canadian public by covering releases and promoting stories through their various outlets, including print, television, radio and Internet. In an effort to strengthen that relationship, Statistics Canada welcomed four media representatives in March 2015 for a "Meet the press" panel discussion with senior managers and spokespersons. The purpose of the panel was to help the Agency better understand how to meet the needs of journalists in the current 24/7 news reporting environment.

Ref. No.	Source	Description / Stakeholders *More information is given for examples that are not discussed in the main body of the paper.
62*	Statistics Canada (StatCan)	<p>The Canadian Open Data Experience (C.O.D.E) https://www.canadianopendataexperience.ca/ is an excellent example of a partnership with another government department which resulted in the expanded use of official statistics.</p> <p>Sponsored by the Treasury Board of Canada, the event which is billed as the largest hackathon in Canadian History, attracted over 1,300 application developers for a 48 hour coding sprint in February 2015. Developers were challenged to use the data holdings found on the Government of Canada open data portal (open.canada.ca). Statistics Canada had representatives on hand throughout the C.O.D.E. 2015 weekend to field all questions that came up regarding our data.</p> <p>As about three quarters of the datasets found on the open data portal originate from Statistics Canada (excluding geo-spatial files), it is not surprising that Statistics Canada's data were heavily used during the event. Of all data sets accessed during the weekend event, almost one-half (47%) belonged to StatCan and 12 of the 15 event winners used at least one StatCan data file. These results prove that this type of collaborative outreach can be a powerful tool to encourage the consumption and redistribution of Statistics Canada's statistical output.</p>
63	Statistics Sweden	<p>In May 2013, the first version of Statistics Sweden's application programming interface (API) was released. The API can be used to build apps for smart phones or new web services with information from Statistics Sweden Statistical Database free of charge. See paragraph 63.</p>
64	Extracted from United Kingdom's Office for National Statistics, 2015b	<p>The ONS Big Data project includes four pilot projects covering economic and social themes using different data sources (Internet price data, Twitter messaging, smart meter data and mobile phone positioning data). Alongside the pilot projects a significant activity will be stakeholder engagement and communication. See paragraph 64.</p>

Annex C - Examples of contributions in a partnership

Table 1.

Examples of contributions from the public, private and non-profit sectors in a partnership. Adapted from figure 1 in Kindornay et al. (2014a)

Examples of contributions	Public sector	Private sector	Non-profit sector
Finance	√	√	√
Development expertise	√		
Facilitation of cross-sector partnerships	√		
Implementation		√	√
Promotion of industry standards	√	√	
Standard setting	√	√	√
Project development and management	√		
Advocacy		√	√
Human rights defence, watchdog function			√
Development expertise			√
Commercial expertise		√	
Facilitation of market and/or product development		√	
Facilitation of community/beneficiary involvement			√

Annex D

Value creation in partnerships

1. Values creation through partnerships as defined by Austin, and Seitani (2012). Are presented below.
2. “Associational value” is a derived benefit accruing to another partner simply from having a collaborative relationship with the other organization. Projected credibility is generated. For example, one global survey of public attitudes revealed that more than two thirds of the respondents agreed with the statement, “My respect for a company would go up if it partnered with an NGO to help solve social problems” (GlobeScan, 2003). However, a positive perception is dependent on the type and goodness of organizational fit (Kim, Sung, & Lee, 2011). Bhattacharya et al. (Bhattacharya, Sen, & Korschun, 2011, p. 49) contend, “The real value of CR (corporate responsibility) transcends any single transaction. Instead CR value stems from the deep, meaningful and enduring relationships.”
3. “Transferred resource value” is the benefit derived by a partner from the receipt of a resource from the other partner. The significance of the value will depend on the nature of the assets transferred and how they are used. Some assets are depreciable, for example, a cash or product donation gets used up, and other assets are durable, for example, a new skill learned from a partner becomes an ongoing improvement in capability. In either case, once the asset is transferred, to remain an attractive ongoing value proposition the partnership needs to repeat the transfer of more or different assets that are perceived as valuable by the receiving partner. In effect, value renewal is essential to collaborative longevity.
4. “Interaction value” is the intangibles that derive from the processes of partners working together. Cocreating value both requires and produces these intangibles, for example, reputation, trust, relational capital, learning, knowledge, joint problem solving, communication, coordination, transparency, accountability, and conflict resolution.
5. “Synergistic value” arises from the underlying premise of all collaborations that combining partners’ resources enables them to accomplish more together than they could have separately. Our specific focus is that the collaborative creation of social or environmental value can generate economic value and vice versa, sequentially or simultaneously, thereby creating a virtuous value circle. Innovation is a driver of the synergistic value creation that produces completely new forms of change due to the combination of the collaborators’ distinctive assets, thereby holding the potential for significant organizational and systemic transformation and advancement at the micro, meso, and macro levels.

Annex E

Partnership stages

1. Four stages of partnerships associated with value creation as defined by Kindornay, et al. (2014) are described below.
2. Partnerships at the philanthropic stage largely refer to relationships based on unilateral transfers of resources where no repayment is required. An example of this is when a company makes a financial or in-kind contribution to a public or non-profit actor for a particular initiative.
3. Partnerships at the transactional stage are those in which a reciprocal exchange of resources occurs through specific activities and where there is an agreed exchange of goods or services based upon an explicit or implicit contract. An example of this is when a business and a NGO enter into a contractual agreement under which the business transfers resources to the NGO for the implementation of a specific project.
4. Partnerships at the integrative stage are those which require greater effort from partners to work jointly to define a common partnership plan that will meet each partner's interests and create benefits. In cross-sector development partnerships, this stage of partnership is typically manifested in the form of a joint development project supported by public, private, and non-profit actors, where partners develop clear objectives and employ joint decision-making processes and implementation strategies.
5. The transformational stage is the most advanced collaborative stage that a partnership can reach. Partners not only agree on the social issues relevant to those involved, but also on their intention to deliver transformation through social innovation and better the lives of those afflicted. Interdependence and collective action is the operational modality, with partners collaborating on longer-term timeframes and expressing stronger commitments to the development initiative. Partnerships at the transformational stage include catalytic engagements between public, private, and non-profit actors that have clear and sustainable development impacts, have the potential to alter or reform business practices, and may allow new modalities for public service provision.

Annex F

A typology of crowdsourcing problem

Table 1

A Typology of Crowdsourcing Problem Types for Governance as defined by Brabham (2013)

Type	How it Works	Kinds of Problems	Examples of Uses in Government
Type One: Knowledge Discovery and Management	Organization tasks crowd with finding and collecting information into a common location and format	Ideal for information gathering, organization, and reporting problems, such as the creation of collective resources	Example: <i>SeeClickFix</i> ; USGS's <i>Did You Feel It?</i> ; USPTO's <i>Peer to Patent</i> Possible Uses: Reporting conditions and use of public parks and hiking trails; tracking use of public transit; cataloguing public art projects and murals for historical boards
Type Two: Distributed Human Intelligence Tasking	Organization tasks crowd with analyzing large amounts of information	Ideal for large-scale data analysis where human intelligence is more efficient or effective than computer analysis	Example: Transcribing digital scans of old handwritten census records Possible Uses: Language translation for documents and websites; data entry; behavioral modeling
Type Three: Broadcast Search	Organization tasks crowd with solving empirical problems	Ideal for ideation problems with empirically provable solutions, such as scientific problems	Example: White House <i>SAVE Award</i> ; NASA's use of InnoCentive for a solar flare prediction formula Possible Uses: Finding better algorithms for timing traffic signals; improving actuarial formulas for Social Security
Type Four: Peer-Vetted Creative Production	Organization tasks crowd with creating and selecting creative ideas	Ideal for ideation problems where solutions are matters of taste or market support, such as design or aesthetic problems	Example: <i>Next Stop Design</i> bus stop shelter design competition; ITS Congestion Challenge for alleviating traffic congestion Possible Uses: Designs for public structures and art projects; urban plans; transit plans; policy proposals; school redistricting plans