High-Level Group for the Modernisation of Official Statistics (HLG-MOS)

Work Programme for 2024

I. INTRODUCTION

1.   The High-Level Group for the Modernisation of Official Statistics (HLG-MOS)[1] provides a collaborative platform for experts in statistics organizations to develop strategies and modernize solutions in a flexible and agile way. The strategic vision of HLG-MOS is regularly updated to adapt to the changing environment and new priorities are set accordingly. The annual work programme strives to reflect emerging needs, while at the same time continuing to support or further develop outputs from previous years.

2.   HLG-MOS is a unique platform that has made several important contributions to the modernization of official statistics such as the Generic Statistical Business Process Model (GSBPM) and the Generic Statistical Information Model (GSIM). The HLG-MOS projects in areas of big data, data integration, strategic communication and machine learning spearheaded the implementation of new technologies, methods and other capabilities in statistical organizations. Due to its success, the HLG-MOS mode of working is now being replicated in other modernization initiatives.

3.   The work of HLG-MOS is open to all who are willing to contribute to the advancement and modernization of official statistics. Many colleagues have contributed to the output and every year, about 250 colleagues actively participate in the programme activities while thousands of colleagues benefit indirectly by collaborating with members or by participating in the expert meetings, workshops and webinars organized under the HLG-MOS work programme. As experiences and all output developed under HLG-MOS are made available for public use, the real impact is even larger.

4.   Each year, all members of the Conference of European Statisticians (CES) are invited to submit project and activity proposals for consideration by HLG-MOS. Proposals should be aligned with the mission, long-term vision and short- and mid-term priority areas identified by HLG-MOS. The Blue Skies Thinking Network (BSTN) of HLG-MOS can also be requested to evaluate and strengthen ideas and proposals referred by the Executive Board of HLG-MOS. The Executive Board provides feedback and selects proposals that will be considered as HLG-MOS projects or flagged for other types of follow-ups. During the annual Workshop on the Modernisation of Official Statistics at the end of November, these proposals are presented and discussed by experts working on modernization. Through small group discussions, project proposals are evaluated and suggestions are made for follow-up on the proposals. The Executive Board then discusses and further refines the proposals and assesses available capacities. The project/activity proposals are finally submitted for endorsement of HLG-MOS.

5.   This document outlines the work programme for 2024 which was created as a result of the discussions at the Workshop on the Modernisation of Official Statistics 2023 (21-22,

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[1] See Annex 1 for the structure of HLG-MOS.

November, Geneva, Switzerland)[2] and subsequent refinements by the Executive Board so that the community members can participate in the activities that are of greatest benefit to them.

II.   PROJECTS

6.   The HLG-MOS projects work on emerging technologies and ideas, normally with a fixed time frame of 1-2 years.

7.   For 2024, two projects are proposed for the consideration of HLG-MOS: i) Statistical Open-Source Software and ii) Generative AI for Official Statistics. The projects concern two important technological changes with great potential for official statistics in recent years.

8.   The project proposals were presented at the Modernisation Workshop in November 2023 to incorporate needs of a broad statistics community. The feedback from participants and the Executive Board members are incorporated in the description of projects below[3].

A.   Statistical Open-Source Software Project

9.   Given the increasing need to become more open, transparent and efficient, many statistical organizations are undergoing a transition from traditional propriety software to open-source software. This transition, however, has challenges concerning support, maintenance, training, sharing conditions and legal aspects. The topic of open-source was discussed at the 71st CES Plenary Session [4] and **the CES Bureau has asked HLG-MOS to work on the topic.**

10.   The purpose of the Statistical Open-Source Software (SOSS) project is to develop a better common understanding of the pros and cons, as well as the dos and don'ts of moving forwards to a more comprehensive use of open-source software for official statistics production, with an aim to make it a cornerstone of said production.

11.   After a preliminary activity on scoping, the project aims to work on:

   a. **Generic aspects of the systematic use of open source-based approaches** for official statistic, covering issues such as the organization of maintenance, support and training; standards and principles; legal aspects and liabilities/responsibilities; licensing models and fair distribution of costs; community building, communication and external engagement (e.g., the scientific community and private sector); and the incubation process (from ideation to production). The user perspective (users of existing open-source solutions) and producer perspective (producers of new open-source solutions) may require different emphasis with regards to these aspects; and

   b. **Analysis of concrete open source-related use cases** in the data collection, analysis and processing, and dissemination domains. The use cases to be covered can be determined separately from the above work package or jointly. Findings from the analysis can be used to support the top-down work on open-source technology defined above by suggesting concrete open-source technology and approaches.

B.   Generative AI for Official Statistics

12.   The capabilities of artificial intelligence (AI) have made a significant leap forward in the last few years with the advance of large language models (LLM) that can process natural

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language and generate texts, and there is a growing recognition of the transformative potential of LLMs in the statistical community.

13.   Responding to the increasing interest, HLG-MOS modernization groups – the Blue Skies Thinking Network and the Applying Data Science and Modern Methods Group – started an initiative draft a white paper on LLMs in the context of official statistics which was completed in a relatively short period of time of 4-month. The paper[5] explored the opportunities and implications of LLMs for official statistics, associated risks, and provided recommendations and strategic considerations.

14.   Building on the LLM white paper, the project aims to further investigate the potential of generative AI, a broader category of advanced AI system that encompass LLMs (e.g., image generation), strategic considerations arising when statistical organizations want to use generative AI effectively and responsibly (e.g., governance, open models), as well as identify opportunities to actually co-develop concrete solutions.

15.   The project will start with initial scoping, after which, the following three main activities are planned:

a.   **Sharing use cases, experiences and lessons learned.** The scope of use cases is not limited to the production area but goes beyond to include other corporate areas such as HR and finance. This activity will help statistical organizations in prioritizing areas most promising and feasible for official statistics;

b.   **Co-development of solution(s)** on areas that are of common interest for many statistical organizations (e.g., prompt-engineering, co-piloting, chatbots, enhanced web searches); and

c.   **Compiling practices and concrete recommendations** based on the first and second activities as well as the LLM white paper. It is essential to focus on a few key themes that are particularly relevant and important to statistical organizations (e.g., confidentiality, security, quality assurance). The activity could also include a development of common protocols containing requirements from the official statistics perspectives, which can then be used for the engagement with technology companies.

16.   For both projects, it will be important to adopt an agile approach given the fast-evolving nature of the open-source and AI technology as well as a high-level of interest in the topics. The projects will also require a mix of technical, business and managerial expertise within the project teams, closely guided by the Executive Board.

17.   There is also interest in extending the ModernStats Carpentries project from 2023. The extension would allow for the Python lessons to be completed under its work package 1 and for other opportunities to eventually be further exploited.

C.   Operational Procedures for Projects

18.   The work of the HLG-MOS projects is normally led by project managers that are either assigned by a member of HLG-MOS (in-kind) or contracted by UNECE using the HLG-MOS Trust Fund. Projects can also be led jointly by a project manager and substantive lead. Work packages or theme groups are normally led by chairs chosen from the project members. The UNECE wiki and web conferences are used to monitor the progress of the projects. Project

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[5] https://unece.org/sites/default/files/2023-11/HLG2023%20LLM%20Paper.pdf

managers report on a regular basis to the Executive Board which is overseeing the progress and steers the work where needed. UNECE provides project management support and additional secretariat support where needed. Sprint-style workshops are often used to further scope and accelerate the work. The progress and outputs are presented at relevant expert meetings to share the work and receive feedback from a broader audience.

III. MODERNISATION GROUPS

19.   The HLG-MOS modernization groups were established to provide continuous support to the cross-cutting themes that are important for modernizing statistical organizations, such as standards, frameworks, communications and human resources. Unlike the HLG-MOS project, the modernization group operates in a longer term, but activities under each group (organized through task teams or subgroups) change every year to address the most urgent needs in the respective working area, thus continuing the modernization and staying current on the innovative fronts.

20.   The groups select an overall chair, and additional leads are selected for the various task teams and subgroups. The groups have monthly plenary meetings and the task teams (or subgroups) typically meet virtually at least once a month. The chairs of the groups provide updates regularly to the Executive Board.

21.   The groups may organize sprint workshops to expedite the work. The UNECE wiki and other platforms such as GitHub are used to collaborate and coordinate the work. Secretariat support is always provided by UNECE. The main constraints for the work are the availability of the group members and the resources at UNECE to support and coordinate efforts. As with all activities under HLG-MOS, participation is on a voluntary basis and anybody from the official statistics community interested in any part of the activities is encouraged to join. Participation in the modernization groups provides unique development and networking opportunities outside a national setting.

22.   HLG-MOS has mandated the Executive Board to regularly reflect on the structure and the areas of work of the modernization groups, evaluate whether the groups remain aligned with the key priorities identified by HLG-MOS and provide direction.

23.   The planned activities of the modernization groups for 2024 are briefly described below. More detailed descriptions of all activities can be found on the HLG-MOS website: https://statswiki.unece.org/x/lwF-EQ.

A. Applying Data Science and Modern Methods Group

24.   The Applying Data Science and Modern Methods (ADSaMM) Group, chaired by Statistics New Zealand, aims to go beyond conceptual frameworks for data science and modern methods, and identify concrete opportunities to further modernize the business processes in statistical organizations. In the 2023 round of identifying emerging topics, three suggestions were made for the 2024 cycle:

   a. **Advancing Responsible AI in Statistical Offices: Bridging Knowledge and Practice.** The activity aims to create a resource repository and tools to guide statistical organizations in aligning their operations with the responsible adoption of AI principles. The three work packages are planned: knowledge building through training, developing practical tools ethical AI applications in particular, based on the Responsible AI Framework developed in 2023 under ADSaMM Group, and implementing pilot

programs with case studies. The goal is to foster a culture of responsible AI, ensuring adherence to standards and promoting transparency and trust.

b. **Beyond Point Predictions: Ensuring Reliability in Official Statistics through Uncertainty Quantification**. The activity will conduct a literature review, with a focus on Conformal Prediction, a machine learning (ML) framework for uncertainty quantification, to understand the current state of uncertainty quantification research. The goal is to generate a comprehensive report with practical recommendations and guidelines for ML practitioners, aiding statistical organizations in effective application within official statistics and ML algorithm development. With the uncertainty quantification, statistical organizations can enhance the reliability in official statistics produced using ML, thus, can provide increased assurance when communicating the use of ML/AI in statistical organizations to both users and the general public.

c. **Business Case for Graph Modeling and Graph Databases support across the Granular Data Lifecycle**. The activity will focus on using graph modeling and databases to address challenges in meeting the rising demand for granular data resources among researchers. Objectives include mapping use cases, identifying barriers, and gaining insights into the potential benefits of graph-based approaches for knowledge-enriched AI services. The execution involves gathering and adapting information into shareable resources for capability building, from a modernization aspect.

25. The group will collaborate closely with the relevant activities of the Expert Meeting on Statistical Data Editing, the Blue Skies Thinking Network and other international initiatives where relevant.

B. Blue Skies Thinking Network

26. The Blue Skies Thinking Network (BSTN), chaired by Statistics Netherlands, is the ideas factory of the ModernStats community that has led to successful HLG-MOS projects such as those on ML, synthetic data and cloud. The group consists of members from various national and international organizations with a broad knowledge of innovation-related topics in the official statistics community. In 2024, following activities are planned:

a. **Identification of HLG-MOS project proposals:** Throughout the year, BSTN identifies new potential topics by actively engaging with the statistical community for new ideas and evaluating them based on HLG-MOS vision and priorities under the guidance of the Executive Board. The network may set up temporary activities to follow up on promising topics or project proposals that were not selected.

b. **Digital Twin Field Force:** The purpose is to investigate what is happening under the broad umbrella of the "digital twins" concept, where and how the official statistics community could contribute and if international standardization of relevant new notions could be useful. In the data collections space, digital twin models can be used to simulate data collection and test assumptions. Efforts will continue into stocktaking existing initiatives as well as determining use cases for statistical data and methods.

c. **Connecting with the 2024 Data Collection Expert Meeting:** The group will connect with the organizing committee of the 2024 Data Collection Expert Meeting with the aim of discussing ways that the numerous pitches given in BSTN meetings in 2023 on data collection could be explored or presented at the meeting.

27.   Given the increased number of initiatives on modernization and innovation in the official statistics field, a close coordination among them will become even more crucial in 2024. BSTN will continue to collaborate with the other HLG-MOS activities as well as external communities such as the ESS Innovation Network (EIN) horizon scanning subgroup.

C.   Capability and Communication Group

28.   The Capability and Communication (CapComm) Group focuses on the organizational changes and the communication challenges necessary to support modernization in statistical organizations. The group is jointly chaired by Statistics Poland and CSO Ireland.

29.   The group has been adjusting its work programme to assist statistical offices to cope with the changing working arrangements (e.g., post-pandemic) and the need for more extensive internal and external communication. The group will work in three task teams while setting up different sub-teams for various activities within each task team:

   a.   **The Job of the Future:** New generations of employees look differently at life, work and their job. It is and will become harder for national statistical organizations (NSOs) to attract new staff and retain them by simply offering a job and a salary. Based on available time and resources and the expertise of team members, the task team will select from the topics below what they will work on:

   i.   **Extending work on the Generic Growth Model:** The Job of the Future task team believes the Growth Model for Complex Organizational Themes and Toolkits (2023) have great potential and would like to stimulate the use of it by NSOs, support this usage, and share the experiences and lessons learned between the NSOs. This activity will: i) ask the participating NSOs to share their experiences with the Growth Model and the Toolkits; ii) actively promote the usage of the Growth Model and Toolkits at the NSOs; and iii) support the usage and developing means of (bi- or multi-national) collaboration for this support.

   ii.   **Employer branding**: The employer branding is very crucial in all NSOs especially given the high competition on the labor market, mainly with private sector. Good brand can attract future employees whose competences are necessary for NSOs. The activity will focus on gathering practices and sharing experiences within the HR and communication experts, by using the Generic Growth Model. Then the activity will develop a short document with an analysis of initial lessons learned and recommendations for the community, taking into account different level of maturity and necessary actions to be undertaken.

   iii.   **HR data analytics:** The activity will explore reporting tools such as Power BI to collate data from a range of sources such as attrition data, absence, recruitment time to hire, and percentage of diversity declarations. Using this report as part of the performance cycle allows individuals/teams to analyse areas of focus in their organization/section.

   b.   **Ethics:** The task team will be divided into two work packages - business and data ethics - and will focus on the following activating in 2024: (i) organise a Workshop on Ethics (26-28 March 2024 in Geneva, Switzerland)[6]; (ii) complete the analysis of the ethics survey results; (iii) complete a Reference Book on Ethics for NSOs; (iv) incorporate ethics within various areas of the Generic Activity Model for Statistical Organizations (GAMSO) and the Generic Statistical Business Process

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[6] See section IV. Expert Meetings and Workshops for more details

Model (GSBPM) in collaboration with the Supporting Standards Group; (v) develop a common international definition of data ethics and a common understanding of its relevance for NSOs; (vi) develop a principle based international data ethics framework that can be used by NSOs; (vii) collect training materials / guidance on ethics and best practices on defining, applying, and communicating data ethics across different NSOs; and (viii) provide case studies of good practices and the impacts.

c. **Communication – use of AI for official statistics from communication perspective:** The task team will work on the area of generative AI to explore the following: (i) how to use AI to boost the productivity of communication experts; (ii) how to communicate that statistical organizations are using AI so that they can maintain trust in official statistics; and (iii) how AI affects the information landscape with generative AI-based services becoming more and more prominent source of information and knowledge, and how statistical organizations should communicate their data and services.

D. Supporting Standards Group

33.   The Supporting Standards Group, chaired by Statistics Canada, provides support for the implementation of the "ModernStats" models (e.g., GAMSO, GSBPM) through a range of activities which include development, enhancement, integration, promotion and maintenance of the models. As HLG-MOS is the custodian of these models, which have a global reach, continued support is essential.

34.   Implementation standards in statistical domains have been expanding (e.g., SDMX, DDI, VTL, PROV, SKOS, DCAT, schema.org)[7] which makes it increasingly difficult for statistical organizations (and especially for the non -experts) to decide when, where and how to efficiently use them across the production process in an interoperable way. Since operational efficiencies rely on both automation and interoperability, which in turn rely often on international implementation standards, it is paramount to provide the community with clear guidance on how to use them together to achieve their modernization goals in a cost-effective way. Supporting Standards Group is in a unique position to provide quality guidance on how to use and integrate multiple standards and tools in their data platform infrastructures. The ModernStats models can (i) provide the right context to make the interoperability problem tractable; and (ii) they can be mapped to most, if not all, of the standards mentioned above. The Supporting Standards Group has been working towards that vision for some time now and plans to continue to achieve the vision. With this background, the Supporting Standards Group has prioritised the following activities:

a. **Continuation of the revision of GSBPM and GAMSO:** The purpose of the revision is to ensure the models remain relevant and continue serving as the reference framework for statistical organizations. As these models are closely related (GSBPM is actually part of GAMSO), they are being by a single task team as part of the same activity. Experiences from other relevant international expert groups (e.g., ethics task team under CapComm Group) will be considered along with user consultation feedback. As indicated in 2023 work programme, this work will be completed in 2024.

b. **Revision and update of the Common Statistical Data Architecture (CSDA):** The update to this existing model is required to reflect the updated versions of the Generic Statistical Information Model (GSIM), GSBPM and GAMSO, and extend

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[7] The Statistical Data and Metadata eXchange (SDMX), the Data Documentation Initiative (DDI), the Validation and Transformation Language (VTL), PROV, the Simple Knowledge Organization System (SKOS), the Data Catalog Vocabulary (DCAT)

CSDA to new areas of interest that arose over the past five years (e.g., generative AI, FAIR[8]) and areas that were not included in the 2018 specification (e.g., ML, privacy preservation).

c. **Using SDMX, VTL and DDI to implement GSIM:** Building upon the work of the SDMX-DDI-GSBPM task team (2022-23), this activity aims to make a deeper examination of elements within the SDMX, VTL and DDI standards to explore their mapping to classes within GSIM, as well as developing use cases that can facilitate the implementation of GSIM by statistical offices. It is also anticipated that this work will help to identify inputs and outputs of GSBPM subprocesses, based on earlier work on the relationship between GSBPM and GSIM (2021).

d. **Core Ontology for Official Statistics version 2:** The Core Ontology for Official Statistics (COOS) activity, launched in 2021, serves as an integration model for the core set of ModernStats standards, backed by elements of well-known external standard vocabularies. It has delivered key outputs in that respect: an ontology specification, a governance document, a URI policy and OWL ontology. The need to update the COOS is partly motivated by the need to consider updates to the GSIM, GSBPM and GAMSO models, as well as to take into account feedback received on the initial version of COOS. This update is also an opportunity to the latest Linked Open Data practices. This activity will develop use cases, guidelines, and documents for further communication and promotion of COOS.

35.   While the recent advancements in AI offer a significant opportunity for statistical organizations to make their operations more efficient, AI alone cannot transform the production process. Standards play a pivotal role in structuring processes and improving the quality of information (e.g., enriching data with semantics in the form of machine-actionable standardized metadata), leading to operational efficiencies and automation - a foundation upon which AI-assisted production can fully leverage its potential. The Supporting Standards Group started discussions on the benefits of standards in the AI era within the group and aims to develop a short document summarizing the discussion to help scope the next round of modernization activities.

36.   The group will also continue discussions on how to support the use of ModernStats models and other standards, and to strengthen its engagement with communities of interest relevant to them via a series of webinars. Where possible, the group will try to improve the visibility of the ModernStats models, for example, by organizing sessions and presentations at relevant conferences and expert meetings. The work will remain coordinated with other relevant international groups (e.g., ESSNet CoP, CODATA)[9] and with other HLG-MOS activities.

IV.   EXPERT MEETINGS AND WORKSHOPS

37.   As in the past, under the auspices of HLG-MOS, expert meetings will be organized in several substantive areas. Expert meetings and workshops have a 24-month cycle for in-person meetings. In the alternate year, online meetings can be organized. These can have a more specific focus on emerging issues and on related HLG-MOS projects and activities.

38.   The focus of the meetings and workshops is always on innovative developments and modernization. The topics and sessions are aligned with the HLG-MOS mission, vision and priority topics. Where relevant, the meetings are used to receive input on HLGMOS activities, and to share the work of HLG-MOS. A key output of these events is the identification of areas for future work and collaboration among organizations. The target audience for the expert

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[8] Findable, Accessible, Interoperable and Reusable
[9] The Community of Practice (CoP), the Committee on Data of the International Science Council (CODATA)

meetings includes senior and middle-level managers. For 2024, the following meetings are being planned:

  a. **Workshop on Ethics in Modern Statistical Organizations** (26-28 March, Geneva, Switzerland). The workshop will be organized around following topics: (i) ethics in institutional context; (ii) ethics in daily work life; (iii) ethics for new data sources and technology; and (iv) ethics and proactive communication.

  b. **Expert Meeting on Statistical Data Collection and Sources** (22-24 May, Geneva, Switzerland). The meeting will be organized around following topics with an emphasis on innovative approaches including AI: (i) approach to multimode and mixed source collection and acquisition; (ii) alternative data sources and process automation; and (iii) future of interview modes and interviewers.

  c. **Expert Meeting on Human Resources Management and Training** (14-16 October, Geneva, Switzerland)

  d. **Expert Meeting on Statistical Data Dissemination and Communication** (TBC, online)

  e. **ModernStats World Workshop** (21-22 October, Geneva, Switzerland)

  f. **HLG-MOS Workshop on the Modernization of Official Statistics** (TBC, tentatively scheduled for 4-6 November, Geneva, Switzerland).

39.   The meetings are organized by Steering Committees consists of members of NSOs, international organizations and academia.

40.   HLG-MOS, the Executive Board, HLG-MOS project teams and modernization groups can also request to set up short, focused ad-hoc webinar or online workshop on emerging areas as needed.

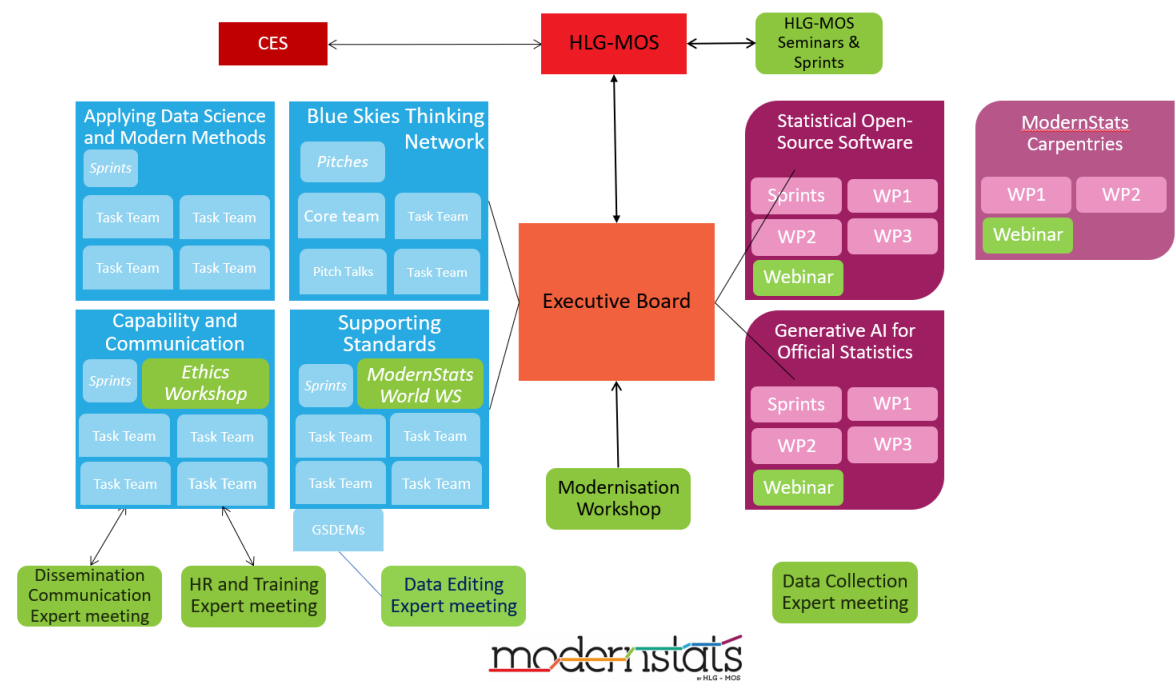## V.   MONITORING PROGRESS AND COORDINATION

41.   The work of the modernization groups and projects is reported monthly to the HLG-MOS Executive Board. The Executive Board discusses the updates and evaluates the progress together with the chairs of the groups and the project managers in their monthly meetings. If needed, the work programme is adjusted. The modernization updates are made available to the wider public every two months at the ModernStats wiki[10].

42.   There is a conscious effort to ensure that all activities are continuously aligned and coordinated with other international initiatives such as the programmes under the European Statistical System and the UN Global Platform. This can be achieved by the exchange of information, coordination and collaboration and, in most cases, by partly overlapping membership.

43.   The successful outputs of HLG-MOS have been possible only through the collective efforts and expertise of people in the community. Staff of national and international statistical organizations as well as academia and private sector are invited to participate in these joint endeavours to drive innovation and advancement for the modernization of official statistics.

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[10] https://statswiki.unece.org/display/hlgbas/Modernisation+updates

ANNEX 1: STRUCTURE OF HLG-MOS IN 2024

CES ⟷ HLG-MOS ⟷ HLG-MOS Seminars & Sprints

Applying Data Science and Modern Methods
- Sprints
- Task Team
- Task Team
- Task Team
- Task Team

Blue Skies Thinking Network
- Pitches
- Core team
- Task Team
- Pitch Talks
- Task Team

Capability and Communication
- Sprints
- Ethics Workshop
- Task Team
- Task Team
- Task Team
- Task Team

Supporting Standards
- Sprints
- ModernStats World WS
- Task Team
- Task Team
- Task Team
- Task Team
- GSDEMs

Executive Board

Modernisation Workshop

Statistical Open-Source Software
- Sprints
- WP1
- WP2
- WP3
- Webinar

Generative AI for Official Statistics
- Sprints
- WP1
- WP2
- WP3
- Webinar

ModernStats Carpentries
- WP1
- WP2
- Webinar

Dissemination Communication Expert meeting

HR and Training Expert meeting

Data Editing Expert meeting

Data Collection Expert meeting

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ANNEX 2: PROJECT PROPOSALS FOR 2024

Business Case for a Statistical Open-Source Software Project

This business case was prepared by Barteld Braaksma (Statistics Netherlands) and is submitted to the HLG-MOS for their approval.

Type of Activity			
☒	New project	☐	Extension of existing project
Purpose			

The Official Statistics community is increasingly looking into the opportunities of statistical open source software (SOSS) to replace existing (legacy) IT solutions based on closed (proprietary) software. The reasons for this interest are manifold: cost-efficiency, collaboration opportunities, avoiding vendor lock-in, quality improvements and fast development cycles. Moreover, the shift to OSS aligns with the fact that newly recruited staff members often have thorough knowledge in languages like R and Python, that are often used to develop statistical (and data science) open source solutions. At the same time, there may be challenges concerning support, maintenance, training, sharing conditions, legal aspects, etc. Given the generic and universal nature of the issues that arise and the huge gains that can be obtained, there is a strong case for collaboration in the official statistics community and formulating common policies. A series of knowledge sharing and discussion sessions, organised as a BSTN activity in 2023, already showed clear interest in various aspect of the OSS topic. Simultaneously the CES and the ESS organised activities around SOSS.

The purpose of the Statistical Open Source Software project is to develop a better common understanding of the pros and cons, do's and don'ts of moving to further and more comprehensive use of open source software as a cornerstone for official statistics production, based on concrete experiences through use cases of broad interest.

The experiences with CSPA have shown that developing common use cases is quite difficult. Even within a single organization, finding a common basis for open source cases of broad appeal is not trivial. There are, however, concrete examples and also new opportunities both in the input (data collection), throughput (analysis and processing) and the output (dissemination) domains. Suitable use cases may be found in all of these domains.

In the input domain, statistical organizations are looking into the use of apps to support/replace existing data collection systems. One example concerns Rapid Survey Systems (RSS), to collect data in areas where there is a sudden (and often urgent) need for additional information. Several institutes have built their own RSS solutions. It may be worthwhile to explore if there is a common ground here. As another example, the ESSnet Smart Surveys has conducted research on the development of apps to support the ESS Household Budget Survey and the ESS Time Use Survey. The transition from research to production would benefit tremendously from a collaboration model that includes an open source approach.

In the throughput domain many open source R-packages have been developed by multiple NSIs and are used throughout the ESS. See the Awesome List of official statistics software (www.awesomeofficialstatistics.org) for many examples.

In the output domain, the .Stat suite[11] is used by quite a number of statistical institutes, and that number is growing. The suite is supported by the SIS-CC community. Many users develop their own

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[11] From the SIS-CC site: "The **.Stat Suite** is a standard-based, componentised, open-source platform for the efficient production and dissemination of high-quality statistical data. The product is based on the General Statistical Business Process Model (GSBPM) and the Statistical Data and Metadata eXchange (SDMX) standards."

code on top of the core .Stat functionality, to integrate it better in their own environments. It may be useful to share code, experiences and practices in this area and identify which role a community like SIS-CC could play. Another interesting example is PxWeb (formerly PCAxis), used for many years by several users, originally developed by Statistics Sweden and now released as open source with the support of an ESSnet. Two further widely used open source examples in the output domain are Demetra for seasonal adjustment and the Argus package for statistical disclosure control.

Description of the project and the Work Packages/sub-activities

The Statistical Open Source Software project for 2024 could consist of several work packages. The exact definition can be left somewhat open at this stage and be made more concrete if the project is launched and the interests of participants are better known.

Workpackage 0 is a preliminary activity to decide on the **scope and ambition** level of the project. Which generic aspects to consider? Which particular use cases to deal with? A specific question is also if open source software developed in other communities (Pandas, PySyft, Spark, TensorFlow, …) should be considered.

Workpackage 1 focuses *on generic aspects* of the systematic use of open source-based approaches for official statistics and follows a top-down approach. Several sub-packages may be defined, covering aspects like organization of maintenance, support and training; standards and principles; legal aspects and liabilities/responsibilities; licensing model and fair distribution of costs; community building, communication and engagement with e.g. the scientific community and private sector.

Workpackage 2 deals with concrete open source-related *use cases* in the input, throughput, or output domains, in a bottom-up way. Use cases to be covered can be largely developed separately, while it remains important to define a way to learn from each other and interact with WP1.

Workpackage 3 deals with the usual project-wide activities like *management and communication* (internal and external), but also has an important role to facilitate and stimulate interaction between WP1 and WP2 and their sub-packages/use cases, to make sure there is cross-fertilization between practical experiences and theoretical ideas. Also, this WP will be the linking pin with other SOSS activities, such as the ESS OS4OS group), that has e.g. defined a set of principles for OSS in the ESS; and the Use of R in Official Statistics (uRos) conference.

Deliverables and timeline

The main deliverables for **Workpackage 1** will be templates/frameworks/checklists/guidelines for a standard approach for statistical open source software. The exact contents can only be decided along the way. It might be necessary to include an update strategy for the deliverables as well.

The main deliverables of **Workpackage 2** are concrete open source packages for the use cases considered, including (steps towards) core communities to support them.

The main external deliverable of **Workpackage 3** is a communication plan to spread the results from the project, which may include documentation/guidelines, training courses (e.g. related to the 2022 Meta Academy or 2023 Carpentries projects) and/or one or more workshops.

Offices/Countries committed

Right now, no offices or countries have formally committed but we expect sufficient interest based on recent activities in this area. In 2023, the BSTN organised a series of online meetings around open source (transformation)-related issues which attracted a wide audience. Moreover, in the European Statistical System a group around open source (OS4OS) was active that e.g. developed open source principles. Moreover, open source was one of the topics at the CES plenary meeting in June 2023. And there is a lot of interest in using ChatGPT-like systems to translate proprietary code to open source (SAS-to-R). It is important to choose a 'leave no-one behind' approach: countries are at different maturity levels and resources may differ depending on e.g. their sizes.

Alternatives considered
An alternative could be to continue the activities under the BSTN umbrella or wait for further initiatives from the European Statistical System, but 1) this topic attracts a lot of interest beyond the European Union and 2) this means that the visibility created by a formal project will not be achieved, and we miss the opportunity to create international guidelines and common perspectives that are broadly shared and supported.

How does it relate to the HLG-MOS vision and other activities under the HLG-MOS?
Further and more comprehensive use of (statistical) open source software directly contributes to modernization of official statistics production and is therefore directly aligned with the HLG-MOS vision. There are potential synergies with past and present projects, as well as with existing modernization committees and thematic meetings.

Proposed start and end dates	
Start: January 2024	**End:** November 2024
Further work plan will need to be elaborated by the project manager and project team, under guidance of the HLG-MOS and the Executive Board	

Business Case for "Generative AI for Official Statistics"

This business case was prepared by Applying Data Science and Modern Methods Group, Blue Skies Thinking Network and UNECE, and is submitted to the HLG-MOS for their approval.

Type of Activity			
☒	New project	☐	Extension of existing project
Purpose			

In recent years, statistical organizations have utilised machine learning (ML) to enhance the efficiency of resource-intensive tasks, such as classification and coding, editing and imagery analysis. ML has also enabled the production of new statistical products, such as sentiment indicators derived from social media posts. Some statistical organizations started exploring the application of ML in other parts of the GSBPM, but it is too early to understand the full potential of ML.

While these applications are primarily focused on improving decision-making efficiency (e.g., classification of textual job description into occupation codes, identification of outliers), the introduction of ChatGPT in late 2022 marked a significant shift in the field and increased the number of potential use cases of AI for official statistics.

Large Language Models (LLMs), which ChatGPT is based on, have unique capabilities which set them apart from traditional ML applications, such as being able to generate texts and engage in human-like conversations. Traditional ML applications, on the other hand, are primarily focused on assisting humans in prediction-tasks rather than creating content. Moreover, the introduction of user-friendly services based on LLMs (e.g., ChatGPT by OpenAI, Bard by Google) has lowered the barrier to generative AI beyond the research community to the wider public. These developments have substantial implications for statistical organizations, affecting their workflows and product dissemination methods.

In response to these new developments, the HLG-MOS Modernisation Groups - Blue Skies Thinking Network (BSTN) and Applying Data Science and Modern Methods (ADSaMM) Group - jointly initiated a white paper on the use of LLMs for official statistics in mid-2023. This report, currently in the finalisation stage, explore key issues such as the implications for official statistics, use cases within statistical organizations, associated risks, and provides some recommendations and strategic considerations. In parallel to the drafting of the white paper, there have been a series of "show-and-tell" sessions to demonstrate the concrete examples of ChatGPT/LLM application (e.g., SAS to R translation, using LLM for dissemination, using ChatGPT for updating classification system)

Building on the current works from the LLM white paper, the "Generative AI for Official Statistics" Project aims to investigate further on the strategic considerations arising when statistical organizations want to use generative AI effectively and responsibly (e.g., governance, open-source models), as well as co-develop concrete solutions.

Description of the project and the Work Packages/sub-activities

Given the fast-changing nature of this field, it is important to maintain the agile approach. Below are some activities that are considered particularly important at the current time. These activities are generally based on the work conducted by the HLG-MOS white paper draft team. However, the choice of activities is left somewhat open at this stage, with the selection of activities to be finalised if the project is launched.

Activity 0. Scoping and re-orientation if needed

Activity 1. Sharing use cases: the project will organise regular online meetings to share practical use cases and insights, not only for text based LLM output but also other types of multi-modal

generative AI uses (e.g., image generation). Participation is not limited to statistical organizations; it includes government agencies and research/academia provided its relevance to official statistics.

Activity 2. Co-development of solution(s) on common use cases: the project will identify use cases that are of common interest for statistical organizations (e.g., chatbot), and develop open-source solutions.

Activity 3. Compiling practices and concrete recommendations: based on the activities 1-2 as well as the HLG-MOS white paper, the project will work on the concrete recommendations on the use of generative AI for official statistics. It is essential to focus on a few themes that are particularly relevant to statistical organizations, instead of aiming for developing a comprehensive guidebook.

Deliverables and timeline

Activity 0: updated project proposal document (January 2024)

Activity 1: compilation of presentations and slides a shared GitHub repository of generative AI services developed by statistical organizations, if applicable, to be continuously updated throughout the project period (Jan. – Dec. 2024)

Activity 2: open-source solutions based on generative AI (Jan. – Dec. 2024)

Activity 3: recommendations on the use of generative AI for official statistics (Jan. – Dec. 2024)

Offices/Countries committed

Currently, no offices or countries have formally committed, but we expect sufficient interest based on recent activities in this area.

Alternatives considered

An alternative would be no action. There might be other international initiatives setting up on the topic, but it would be a missed opportunity not to respond to the quickly growing demand by leveraging existing works and our established network of experts.

How does it relate to the HLG-MOS vision and other activities under the HLG-MOS?

Generative AI is an emerging technology that could change the way statistical organizations work in a transformative way, thus the activity is highly in line with the vision of HLG-MOS. The project also has a close relation with other activities under the HLG-MOS such as the HLG-MOS Machine Learning Project (2019-2020), the joint collaboration with ONS for the Machine Learning Group (2021-2022) and Machine Learning Workshop (2023).

Proposed start and end dates	
Start: January 2024	**End:** December 2024

ANNEX 3. SUMMARY OF SMALL GROUP DISCUSSION ON 2024 PROJECT PROPOSALS AT MODERNIZATION WORKSHOP

1.   During the small group discussion session, participants provided their feedback on the project proposals (Statistical Open-Source Software Project and Generative AI for Official Statistics Project). The following comments are made for both projects:

- The projects should dedicate some time in the beginning for the creation of repository of current tools, use cases and documentations. The repository can be accumulated throughout the project period;
- Challenges of moving from experiment/ideation to production should be in the mind at the beginning of projects. The lessons learned from other projects such as ML can be useful. Guidelines or playbooks in this regard would be useful;
- Both are technical projects, so it will be important to have a diversity of talents in the projects (e.g., managerial level, connection with business and other parts of organizations horizontally);
- The projects should first focus on foundations needed in these spaces while developing and incorporating small relevant solutions to demonstrate the relevance and gaps in these foundations.

2.   For the Statistical Open-Source Software Project:

- Distinction between using and producing open-source software is important. While some aspects are of common concern, there are issues more specific for one perspective (e.g., for the producer-perspective, issues around maintenance, governance, support are particularly important). The project could focus on one perspective first and move to the other one;
- Regardless of which perspectives are looked at, a lot of training and collaboration tools are required;
- It is important to consider the culture and change of mindset to get different parts of the organization out of their comfort zone and consider open-source as an option from the beginning;
- Prompt engineering could be a use case that is covered joined by AI project;
- Analysis of real cost of doing open source
- It is important to look at other open-source solutions and community outside official statistics to adapt and collaborate;
- Different levels of sharing (e.g., public, semi-public/among statistical organizations);
- The project should consider lessons learned from previous experiences (e.g., CSPA).

3.   For the Generative AI for Official Statistics Project:

- A repository of use cases for generative AI would be helpful. 3-5 top use cases could be selected from this repository to collaborate on concrete solution;
- The scope of use cases is not just limited to the production part (GSBPM) but goes beyond (GAMSO) areas such as HR and finance;
- Through common experiments, the project can help filtering out what can be done by others (e.g., private sector) and what we should do ourselves;
- Areas that can be worked together: prompt engineering (e.g., through Carpentries) and co-piloting;
- While quickly scanning for application areas where AI can bring benefits, it would be also important to consider "dos" and "should not do" with AI;
- Confidentiality and security are big concerns for statistical organizations. Openness of algorithm and training data is also important aspect as public agency;
- Common quality assurance process (e.g., how to assess and validate the solution developed with AI) is needed;
- Engage with tech companies so that they can place different weights for official statistics when

training the models;

- Develop playbook for developing next models and putting application in production (e.g., considerations for bias, ethics);
- There is strong connection with other initiatives (e.g., ESSNet One Stop Shop) and other modernization groups (e.g., Responsible AI under ADSaMM group). Coordination will be important;
- Communicating to users how we use generative AI is vital;
- Given the fast-evolving nature of the field, it would be useful to share the progress of the project with the community more frequently than usual.