Version 2.3– 16 March 2015

TERMS OF REFERENCE

Task Team on Satellite Imagery and Geo-spatial Data

Global Working Group on Big Data for Official Statistics

Umbrella

1. The statistical community has a duty to explore the use of new data sources, such as Big Data, to meet societal expectations for enhanced products and improved and more efficient ways of working. Big Data may also support the monitoring of the Post-2015 development goals by improving timeliness and relevance of indicators without compromising their impartiality and methodological soundness. The report of the Global Working Group on Big Data for Official Statistics (GWG) to the Statistical Commission (E/CN.3/2015/4) provides additional background to the work of the Task Team.

Introduction

2. National statistical agencies face a major challenge in the delivery of their current statistical programs, due to ongoing reductions in funding and increasing demand for greater value from public sources of funding. In addition, response rates in many national statistical collections are falling as social and economic pressures on the time of citizens and businesses continue to grow. The ever increasing extent and availability of emerging sources of Big Data, such as those relating to remote sensing imagery, transactional and social media data and mobile device data provide a timely opportunity to meet users' increasingly more diversified and sophisticated statistical requirements.

3. In light of this, a number of statistical agencies around the world have a strong interest in investigating the viability of using satellite imagery data to improve and eventually produce official statistics on a wide range of topics spanning agriculture, the environment, business activity and transport. Satellite imagery data has significant potential to provide more timely statistical outputs, reduce the frequency of surveys, respondent burden and other costs and provide data at a more disaggregated level for informed decision making. This supports the work of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) http://ggim.un.org/.

Objectives

4. The broad objectives of this task team are to:

    a) Provide strategic vision, direction and development of a global work plan on satellite imagery and geo-spatial data for official statistics in the short to medium term, including for indicators of the post-2015 development goals.
    b) Build on the existing precedents and find solutions for the many challenges facing the use of satellite imagery and geo-spatial data sources for official statistics

5. In terms of specific objectives:

    a) Identify the most reliable and accurate statistical methods for estimating quantities of interest, using satellite imagery data,
    b) Suggest approaches for collecting representative training data of sufficient quality,
    c) Research, develop and implement assessment methods for predictive models including measures of accuracy and goodness of fit,
    d) Establish strategies to reuse and adapt algorithms developed for one topic to others, and their implementation for large volumes of data.

Deliverables and Time Schedule

6. We plan to meet the objectives above by undertaking a number of pilot projects involving relevant datasets. As such, the deliverables of the Task Team, by the end of 2015, may include the following elements:

    a. A report on the use of satellite imagery and geo-spatial data for official statistics, which provides a mapping of these data with official statistics, clarifies and provides solutions to methodological, information technology and privacy challenges, and includes possible use of these data for official statistics and for monitoring the post-2015 development agenda.

    b. An inventory of ongoing activities and examples regarding the use of satellite imagery and geo-spatial data, address concerns related to methodology, human resources, quality and confidentiality, and develop guidelines on classifying various types of satellite imagery and geo-spatial data sources.

    c. Pilot studies to examine the feasibility and the institutional/methodological issues of using satellite imagery and geo-spatial data for the production of official statistics.

7. The report will be based on strategic considerations, in particular the links to the post-2015 development agenda, the data revolution initiative and the Fundamental Principles of Official Statistics. Special attention will also be paid to the circumstances of developing countries, such as

the state of their legal frameworks and any disadvantages in respect of available information technology infrastructure.

Operating rules and Responsibilities

8. The task team will undertake pilot projects to explore the potential use of satellite imagery and geo-spatial data in relevant areas of official statistics that may include, but not limited to, the following areas (see http://ggim.un.org):

    - Agricultural statistics
    - Land cover and land use statistics
    - Geocoding statistical frame, such as business register and postcode address file
    - Ecosystem accounting
    - Integrated statistical production process
    - Area of environmental statistics, such as biomass, carbon, water, vegetation, soil, etc.
    - Census enumeration areas, business areas, rural/urban localities
    - Transportation statistics, spatial statistics, regional/local statistics
    - Disaster risk management

9. For each study area, the challenges facing the practical use of satellite imagery and geo-spatial data sources for official statistics may include the following areas that are to be explored:

    - Methodological issues, covering quality concerns and data analytics
    - Legal and other issues of access to data sources
    - Privacy issues
    - Security, IT issues and management of data, including advanced ways of data dissemination, assessment of cloud computing and storage, and cost-benefit analysis
    - Sustainability of data production process
    - Capacity building, training and sharing of experience
    - Policy applications

10. The Task Team may also explore the role of national statistics offices in the production, use and dissemination of satellite imagery and geo-spatial data, and how NSOs could engage with data providers to ensure collaboration and mainstreaming satellite imagery and geo-spatial data in the statistical production process.

11. The Task Team may also undertake stock-taking exercises to provide a list of satellite imagery or remote sensing datasets that could potentially be used for official statistics. The dataset could be evaluated based on the following criteria:

    - Dataset, type and format

- Subject/purpose of the satellite
- Spatial resolution
- Time series availability
- Sensor and Satellite
- Coverage: Global, regional or national?
- Cost: free or commercial?

12. For each Pilot Project, members of the Task Team should reach agreement on the prioritization of methods and associated software to be investigated. In order to keep all members of the Task Team informed about progress, we will endeavor to establish and utilize an internet site for the storage and access of documents, reports and results. Ideally this website will accommodate chat rooms and discussion forums. Importantly, an administrator will be appointed to manage the website.

13. Within the Task Team, a repository of data sources for shared use in the pilot projects will be established. The repository will keep record of any restrictions or conditions on the data concerning access, utilization and release of outputs.

14. The membership of the task team may be extended to include members of the non-official statistical communities such as representatives from UN Initiatives on Global Geospatial Management, the European Space Agency, NASA and other experts in satellite imagery.