Utilising satellite imagery and geo-spatial data for official statistics and indicators for post-2015 SDGs

- Identify the most reliable and accurate statistical methods for estimating quantities of interest.
- Suggest approaches for collecting representative training data of sufficient quality.
- Research, develop and implement assessment methods for predictive models including measures of accuracy and goodness of fit.
- Establish strategies to reuse and adapt algorithms across topics and to build implementations for large volumes of data.

Build methods to address challenges via pilot studies
Task Team Members

• Chaired by the Australian Bureau of Statistics

• 7 national statistical agencies
  • Australia, China, Colombia, Morocco, Pakistan, Mexico, Oman

• 7 international agencies, universities and companies
  • ITU, UNSD, Queensland University of Technology, University of Queensland, FAO, Google, IBM

• UN Committee of Experts on Global Geospatial Information Management
Sources
ITU: Identify the satellite sensing datasets useful for official statistics

Methodology
Australia: Crop type and yield prediction using satellite imagery
FAO: Ground truthing/measurement
QUT: Methodological analysis for agriculture

Applications
Colombia: land urbanisation (Sandra Rodriguez)
Google: crude oil consumption (Patrick Dunagan)
Mexico: Climate patterns + Identifying rural-urban systems (Juan Munoz)
Challenges

• Pre-processing of the satellite imagery data
  – Ensure reliability and comparability across sources and over time
  – Align data to statistical boundaries

• Gathering ground truth data
  – At the right level of granularity

• Image processing
  – Develop/learn algorithm

• Priority and resourcing
• 2015 - Complete and document pilot projects covering:
  Activities, sources used, processing methods, results, institutional issues, vision and recommendations for official statistics production

• 2016 - Report of the Task Team to UNSC
  • Sources
  • Methods
  • Pilot studies and learning

Aspirational Goal – A “turn key” statistical system for predicting crop classification and crop yields
5 Presentations

Sources
CSIRO: Remote sensing data sources outlook (Arnold Dekker)

Methodology
UQ: Beyond crop production estimates; integrated climate, biophysical and remote sensing approaches (Andries Potgieter)

Applications
Colombia: land urbanisation (Sandra Rodriguez)
Google: crude oil consumption (Patrick Dunagan)
Mexico: Climate patterns + Identifying rural-urban systems (Juan Munoz)