UNITED NATIONS GLOBAL PULSE

Global Pulse is a United Nations innovation initiative of the Secretary-General, exploring how new, digital data sources and real-time analytics technologies can help policymakers gain a better understanding of changes in human well-being and emerging vulnerabilities.

BACKGROUND

Policymakers today are confronting a volatile, hyperconnected landscape in which economic crises, social change and political instability can emerge without warning, affecting vulnerable populations and reverberating around the globe. Compounding this challenge is the fact that the development community still relies largely on 20th Century tools for understanding how a population is being affected, or for measuring the impact of a programme or policy.

Traditional statistics, household surveys and census data have been effective in tracking medium to long-term development trends, but can be ineffective in generating the real-time picture required to develop timely action to protect vulnerable populations in a fast-changing world.

Today, thanks to the digital revolution, we are entering an Age of Big Data. Particularly with the explosion of internet and mobile phone-based services in developing countries, communities around the world are generating real-time digital data in ever-increasing volumes. By some estimates, 90% of the data in the world today has been created in the last two years alone. Once properly anonymised to protect privacy, patterns in these big digital datasets can offer insights and proxy indicators of change in perceptions, intentions, activities and overall well-being on a massive scale.

Global Pulse is an innovation initiative of the UN Secretary-General developing the capacity to harness this explosion in digital data as a key resource for sustainable development. Since its inception in 2009, Global Pulse has been investigating the viability of using new sources of real-time information to support development planning, monitoring and evaluation.

The private sector is already finding ways to efficiently analyze this type of information to better understand its customers and match their needs. The development community must do the same for its most vulnerable constituents: people around the world who are losing jobs, getting sick, or struggling to afford food and other basic needs.

Global Pulse serves as a laboratory through which the UN System and its partners are discovering how to harness the power of Big Data to meet the challenges of global development in a Post-2015 world.

"Big Data for Development" is a concept that refers to the identification of sources of Big Data relevant to measuring human well-being and planning of development programmes. A preliminary categorisation includes:

WHAT PEOPLE SAY

Online Content: International and local online news sources, publicly accessible blogs, forum posts, comments and public social media content, online advertising, e-commerce sites and websites created by local retailers that list prices and inventory.

WHAT PEOPLE DO

Data Exhaust: Passively collected transactional data from the use of digital services such as financial services (including purchases, money transfers, savings and loan repayments), communications services (such as anonymised records of mobile phone usage patterns) or information services (such as anonymised records of search queries).

PROJECT OBJECTIVES

Global Pulse encourages and facilitates joint innovation that leads to successful approaches for using Big Data to understand changes in human well-being in real time. The development of a new set of technology tools, partnerships and capacities—designed to complement existing data gathering and analysis methods—will contribute to improved global development outcomes in three ways:

1. Enhanced early warning: Detection of anomalous trends and patterns of events enables early warning of emerging crises and earlier responses to prevent long-term harm.

2. Real-time awareness: An up-to-date picture of trends, hotspots and dynamic changes in population behavior enhances programme planning and monitoring of implementation.

3. Rapid impact evaluation: More timely feedback on the impact of programmes and policies allows for adaptive course correction and accelerated achievement of results.

OPERATIONAL STRATEGY AND APPROACH

Global Pulse is working to promote awareness of the opportunities Big Data presents for development, forge public-private data sharing partnerships, generate high-impact analytical tools and approaches through its network of Pulse Labs and drive broad adoption of useful innovations across the UN System. The three-fold project strategy includes:

1. Pulse Lab network: Establishing an integrated network of country-level innovation centers—or Pulse Labs—that bring together government experts, UN agencies, academia and the private sector to pioneer and implement new methods for utilising Big Data to address development challenges

2. Research & Development: Conducting research to discover digital proxy indicators for tracking development progress and emerging vulnerabilities, and assembling a toolkit of technologies for analyzing real-time data

3. Big Data partnerships: Forging partnerships with companies, organisations, researchers and academic institutions that have the data, technology and analytical expertise needed for Big Data for Development projects and advocacy

PULSE LAB NETWORK

Pulse Labs are innovation centers that bring together local government, the UN and partners from academia and the private sector to test, refine and scale methods for using new sources of digital data to support development goals. Involving both government and local expertise is crucial to the management and success of Pulse Labs. Global Pulse's headquarters—Pulse Lab New York—was established in 2009. Pulse Lab Jakarta opened in 2012 and Pulse Lab Kampala opens in 2013.

Each Pulse Lab shares insights from project findings and best practices from partnerships with the other Labs, and facilitates regional cooperation. Sharing of expertise contributes to the development of new policy frameworks to advance *Big Data for Development* at a global level.

RESEARCH & DEVELOPMENT

Using an "innovation as a service" model, Global Pulse matches UN agencies and their development partners' problem statements with private sector organisations and research institutions that have the requisite data, tools, and technical expertise needed to collaborate on the development of effective solutions. Global Pulse works on cross-sectoral issues, designed to add value and operational impact for the UN system and provide new insights or solutions to programme challenges.

A snapshot of recent and current projects include:

• Utilising Twitter analysis techniques to identify priority topics related to the "Post 2015" development agenda

• Mining public online content for proxy indicators of non-communicable disease risk factors

• Utilising social media analysis techniques to understand attitudes toward immunisation

• Analysing anonymised mobile phone data to monitor populations' mobility patterns before, during and after natural disasters

• Analysing mobile phone data to estimate socio-economic levels and map vulnerability indicators

• Utilizing social media mining techniques to add depth to unemployment statistics

• Comparing official food prices with price quotes published online to gauge inflation in real time

For information about the research goals and findings, visit http://www.unglobalpulse.com/.

BIG DATA PARTNERSHIPS

A network of strategic partners, at both the global and country-level, is required to ensure sustainable access to the resources required for joint innovation in the Pulse Labs, and to create the enabling environment needed for the success of "Big Data for Development" research and advocacy. Partners collaborate with Pulse Labs through:

• **Data:** Sharing data sets or providing access to streaming data to support Pulse Labs' public research into areas such as unemployment, food security, urban poverty, migration, public health and climate change

• **Technology:** Sharing tools for data mining, real-time analytics and data visualization, or sharing storage and computing capabilities

• **Expertise:** Making engineers, data scientists or researchers available to collaborate on specific projects that support the UN, public sector, and international development organisations

• **Sponsorship:** Providing funding to support Global Pulse's ongoing efforts to transform Big Data into a public good

SUPPORT UN GLOBAL PULSE

Global Pulse is funded through voluntary contributions from UN Member States, foundations and the private sector. Past and current donors include the Governments of Australia, Denmark, Sweden, United Kingdom and the Rockefeller Foundation. Key staff and facilities have been contributed by UN agencies including WFP, UNDP and UNICEF.