OPAL by Flowminder | Technology Overview
Unlocking the potential of mobile operator data for public good in a privacy-conscious, scalable, socially and economically sustainable manner

Mobile operator data, and particularly Call Detail Records (CDRs), have a strong potential for informing development and humanitarian programmes. Generated automatically on a real-time basis, CDR data contain information about the origin and destination of a call and the ID of the mobile phone tower routing the call. Performed on de-identified data and under appropriate data governance frameworks, analysis of such data can provide enormously important information, difficult to gather through other means. This includes for example information on movements of displaced populations after natural disasters to enable responders to reach affected people. CDR data can also provide critical information for disease spread models and planning of public infrastructure, as well as for many other applications.

Despite the potential of CDR data, routine use of this data for decision-making faces several challenges, including mobile network operators' (MNOs') lack of capacity to manage and process CDR data; complex legal and regulatory approval processes; insufficient understanding of the value of the data among decision makers and other impediments. With the OPAL programme (for "Open Algorithms"), Flowminder will address these limitations to spur safe access and use of aggregated CDR data for common good purposes in a privacy preserving manner[1]. As of May 2021, the OPAL programme is being set up in Haiti in collaboration with Digicel Haiti and in one Western African country.

The OPAL vision

Ethical & privacy-preserving access to timely and reliable data on mobility for accelerating SDGs in low- and middle-income countries.

The OPAL solution

A **web platform** serving anonymous mobility indicators, based on a **freemium model,** transparently monitored by a national committee with **civil society representation.**

What is the OPAL by Flowminder technology?
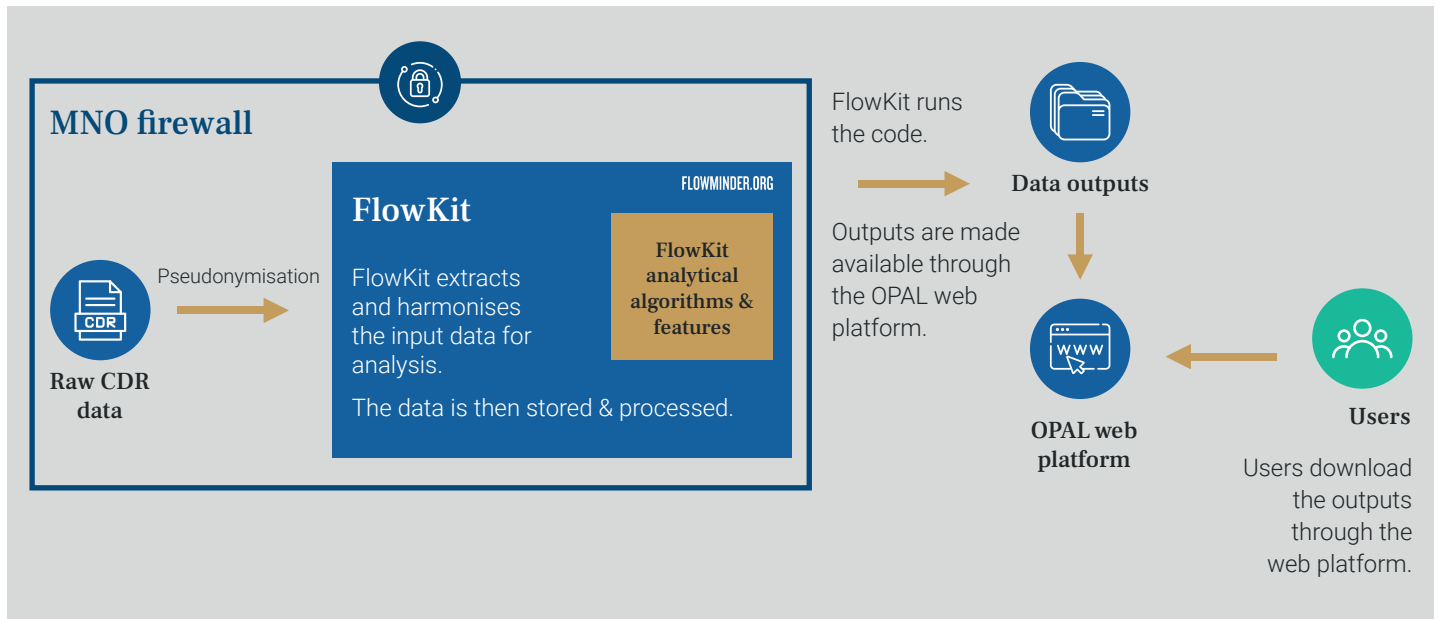
Technology: an online platform to facilitate data use

The main engine behind OPAL is FlowKit, Flowminder's open-source suite of software tools designed to enable the secure access and analysis of CDR data. FlowKit is a software run behind the MNO's firewall which provides users with a range of analytical features such as the identification of meaningful locations, the production of origin-destination matrices, the estimation of a range of subscriber features, or the extraction of network activity by location. Flowminder will develop an online platform to FlowKit and further improve the code to enable approved third parties to easily access privacy-safe mobility aggregates.

Data privacy, governance and ethics

OPAL abides by the strictest standard for protecting subscribers' data privacy. No individual data are ever exposed. Furthermore, it is GDPR compliant, with Flowminder acting as a data processor and each participating MNO as a data controller. OPAL by Flowminder will be monitored by national committees composed notably of representatives of the civil society in charge of ensuring that all analytics outputs of the OPAL platform are fair, ethical and transparent. These committees will not only play the key role of ensuring transparency toward the public, they will also contribute to the identification of new users and new applications for public good.

[1] Data privacy is the cornerstone of Flowminder activity. Its methods are compliant with the EU's General Data Protection Regulation (EU GDPR 2016/679[1])

How does the OPAL by Flowminder architecture work?

MNO firewall

Raw CDR data — Pseudonymisation →

FlowKit — FLOWMINDER.ORG

FlowKit extracts and harmonises the input data for analysis.

The data is then stored & processed.

FlowKit analytical algorithms & features

FlowKit runs the code.

Data outputs

Outputs are made available through the OPAL web platform.

OPAL web platform

Users

Users download the outputs through the web platform.

Data outputs generated by FlowKit are aggregated data (group level statistics) about subscribers' characteristics, network usage, mobility patterns and more, which no longer contain individual level information and which can be taken out of the MNO environment.

Access to these outputs is simplified through the OPAL web platform, which allows users to download data without having to run the FlowKit code themselves. Data can therefore be accessed more easily and rapidly by analysts.

The online platform will provide users with different access options, based on a freemium model. Depending on the option picked by users, the temporal and spatial resolution, the frequency of updates, the type of aggregates and the visualisations will vary. Outputs can then be integrated with other data to develop additional insights that can inform decision making across a wide range of sectors.

Applications

| Disaster preparedness | Health & epidemiology | Official statistics | Infrastructure development | Finance |

Users

The main users of the OPAL programme are expected to be from Ministries, Departments and Agencies (such as National Statistical Offices, Minitries of Health or Institutes of Disaster Management), international humanitarian and development organisations, NGOs and academic institutions.

What's FlowKit?

Download our FlowKit fact file to find out more about the underlying technology.

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