

PROCESS BRIEF

OPEN ALGORITHMS: USING PARTICIPATORY DESIGN FOR DATA PROJECTS

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INTRODUCTION

The Open Algorithms (OPAL) project is a socio-technological innovation to leverage private sector data for public good purposes by “sending the code to the data” in a privacy-preserving, participatory, commercially sensible, scalable, and sustainable manner. OPAL’s core element consists of an open platform and algorithms that can be run on partners companies’ servers, behind their firewalls, to extract key development indicators of relevance for a wide range of users. The resulting data are then available via an interface for users to analyze and interpret. In terms of methodology, OPAL aims to operate in a truly bottom-up approach by incorporating a participatory design dynamic in the development of the project, to ensure local relevance and limit external interference.

Two pilots are currently being undertaken in Senegal and Colombia, with their respective National Statistical Offices and leading local telecom operators. This brief attempts to highlight replicable lessons from the experiences of OPAL pilot projects in Senegal and Colombia in terms of participatory design of data projects.

Pilot 1: Senegal	Pilot 2: Colombia
<p>Timeline:</p> <p>User needs report: March 2017 January 2017: Pilot Workshop Mid-2016 - end 2017: MVP 1 Mid-2018: MVP2 + end of pilot phase</p> <p>Project lead: Data-Pop Alliance, Imperial College London, MIT Media Lab, Orange, World Economic Forum</p> <p>Project partners: Sonatel, ANSD</p>	<p>Timeline:</p> <p>User needs report: March 2017 June 2017: Pilot Workshop End-2017: MVP1 Mid-2018: MVP2 + end of pilot phase</p> <p>Project lead: Data-Pop Alliance, Imperial College London, MIT Media Lab, Orange, World Economic Forum</p> <p>Project partners: Telefónica, DANE, DNP</p>

WHY AND HOW PARTICIPATORY DESIGN?

Digital and technological development can be an integral part of sustainable development when done in an inclusive and responsive way. OPAL is intended to enable new data streams for better sustainable development insights and outcomes via digital technology. Therefore, the initiative embraces the Principles for Digital Development, decided in 2010 by a wide-reaching global working group. These principles are “living guidelines” that are meant to inform design of technology-forward initiatives so that they are responsive to user needs as well as existing contexts.

OPAL's process of defining its governance structure was closely informed by the first out of the nine Principles for Digital Development: design with the user. Users' participation in developing new technological tools is critical to ensure local ownership and sustainability of projects. This principle includes the following insightful guidance notes for projects:

1. develop context-appropriate solutions informed by user needs;
2. include all user groups in planning, development, implementation and assessment;
3. develop projects in an incremental and iterative manner; and
4. design solutions that learn from, and enhance, existing workflows and plan for organizational adaptation.

The design of the OPAL initiative includes multiple avenues to define local priorities and integrate feedback. Local engagement and empowerment are intrinsic to the development of OPAL in each of the two pilot countries and were incorporated into the project's implementation plan from the beginning. These are considered fundamental 'needs' which required further exploration through a User Needs Assessment, local workshops and discussions. The process of collecting this information also corresponds to the aim of OPAL to be “user-centered” by keeping user needs, environment, and preferences at the center of the project and product design.

The first step taken in the implementation process of the OPAL project in Senegal consisted of a User Needs Assessment, conducted in two pre-workshop and post-workshop stages. The aim of the report was to identify key priorities for use cases and indicators that could potentially be undertaken in both Senegal and Colombia. In order to do so, the OPAL team conducted consultations with diverse groups of stakeholders in both countries, such as government agencies, universities, think tanks, civil society organizations, small businesses and other potential users of the project. In the User Needs Final Report (<http://unsdsn.org/wp-content/uploads/2017/09/OPAL-User-Needs-Synthesis-Report-April2017.pdf>) OPAL identified 46 potential use cases in Senegal and 40 in Colombia. The process of creating a User Needs Final Report also identified locally-relevant perceptions of the challenges and concerns around the use of Big Data. For instance, the absence of a data-sharing culture, privacy risks, institutional and

THE PRINCIPLES

- 1 Design with the User
- 2 Understand the Existing Ecosystem
- 3 Design for Scale
- 4 Build for Sustainability
- 5 Be Data Driven
- 6 Use Open Standards, Open Data, Open Source, and Open Innovation
- 7 Reuse and Improve
- 8 Address Privacy & Security
- 9 Be Collaborative

regulatory obstacles, and challenges in data-literacy were prominent challenges in Senegal. These results informed the overall development of the project and were fed into the design of the Colombia Pilot Workshop, discussed below, and guided OPAL's strategic decisions towards the needs expressed by potential users and beneficiaries.

WORKSHOP DESIGN AND METHODOLOGY

The first pilot workshop took place in Dakar, on January 24th 2017, gathering 48 specialists, researchers, academics, experts and algorithm developers from 24 public, private, national and international organizations gathered to discuss inputs. The second pilot workshop was held in Bogotá on June 8, 2017 and gathered 35 professionals from different sectors, including representatives from the national government, city governments, civil society, the private sector, academia, private enterprises and international organizations.

In each workshop, the Executive Committee and key partners gave an introduction to OPAL. Key partners presented their interest or engagement with OPAL and the potential they see to rethink public action and to improve decision-making processes. In each country, stakeholders discussed the opportunities about the OPAL tool as a means to close data gaps specifically, and the concerns around data use for the country's development in general. Attendees had an opportunity to elaborate on the user needs report and to discuss potential use cases for pilots. Through hands-on activities and discussions, the OPAL team aimed to leverage participants' knowledge to inform the design of the country-specific OPAL governance framework.

	Senegal	Colombia
Purpose of the workshop	The main objectives of the workshop were: (1) Identify key priorities for use cases and user needs in Senegal and further develop service tracks (2) clarify and elaborate the local governance structure of OPAL and, (3) confirm all key stakeholders support and involvement in OPAL in Senegal.	The main objectives of the workshop were: (1) Launch the project with relevant partners and present it to relevant members of the data ecosystem in Colombia; and (2) work with potential users to define and explore data challenges/gaps in the country and scope ideas for effective governance mechanisms.
Results	(1) Identification of Priority indicators for the Plan Sénégal Emergent around 3 axis: 1. Structural transformation of the economy and growth 2. Human capital, social protection and sustainable development 3. Governance, institutions, peace and security (2) Pre-selection of use cases for pilot phase.	(1) Stakeholders map, including: - Value they bring to OPAL; - Value they obtain from OPAL. (2) List of recommendations for oversight mechanisms, including: - Activities the mechanisms should engage in; - Activities the mechanisms should NOT engage in.
Activities	(1) Questions and Answers game between participants and OPAL team, addressing the following topics: data anonymization, project's governance mechanism, relationship with the regulator instance. (2) Round-tables on a thematic challenge regarding data analysis, such as the definition and implementation of appropriate indicators, the inventory of data, and access to important target groups. Participants identified case studies and indicators with potential applications for Senegal. (2) 8 interviews with representatives of ANSD, Ministère de l'enseignement Supérieur, Ministère de la Primature, IPAR, UNFPA, Orange, Baamtu and Deloitte in order to better understand their ideas and contributions to development issues, institutional priorities as well as considerations to develop case studies and identify services and indicators relevant to OPAL.	(1) Presentation of the user needs report, open feedback and group discussions around the development topics prioritized in the report; potential indicators and relevant existing challenges. (2) Recognition of the local ecosystem to engage with OPAL and conversations on respect for personal data, norms and regulations, adequate supervision structure and local + global governance. The discussion focused on the importance of local project governance and inclusive development of the ecosystem. (3) Contribute to OPAL governance mechanism (Development and Ethics Orientation Committee - CODE)

PILOT INNOVATIONS MUST BE CONTEXT-SPECIFIC

Naturally, development priorities and needs are country-specific. Each country context results in its own ad hoc priority indicators and use cases, as highlighted by the comparative User Needs Report and corroborated through workshops' outcomes. In Senegal, priority areas were identified as health, employment and economy, education and agriculture, food security and nutrition. In Colombia, the focus was on infrastructure, mobility and transport, demographics, agriculture and peace and post-conflict.

OPAL is developing a methodology to promote knowledge and cross-learning between pilots. The pilots are currently in different stages of project development, which allows for a spillover of lessons learned from one pilot to another. For that reason, they have relied on the User Needs Report process in different ways: while the outcomes of the Senegal workshop served as input for the assessment, the Colombian workshop was built on those results and served to validate them.

In Senegal, 11 of the 46 ideas for use cases resulted from the workshop, as well as a series of recommendations for the conformation and operation of the CODE (acronym in French and Spanish for Development and Ethics Orientation Committee). Suggestions for the role of CODE included:

1. Advice on aligning development priorities;
2. Recommendations on Security and Private aspects;
3. Mediate/advise on sensitive cases;
4. Support for guaranteeing a “balanced” development.

In Colombia however, no new ideas for use cases were collected. Instead, four of the development use cases proposed in the Report were selected for further exploration around the following questions: 1) How is this currently solved? 2) What are some of the current challenges for solving this development challenge? 3) Which mobile data based indicators could be produced in order to close data gaps and contribute to solving the development challenge?

Regardless of the activities and dynamics of both workshops, they were fundamental for setting a roadmap for the pilots in each country, and provided valuable insights on the concerns and priorities present in their data ecosystems.

CHALLENGES EXIST ACROSS CONTEXTS

The use of private data and collateral risks of (re)identification of individuals were raised within and across countries. At different levels of technical knowledge, citizens and organizations understand the debate primarily through a legal-regulatory approach and only secondly through a technical lens. Implicitly, it is conceived that the necessary technical capacities are progressing and will take up the challenge in due time. Meanwhile, the gaps in institutional capacities, in terms of governance, access to information regulation and protection of personal data are acknowledged and constitute a primary concern.

Accordingly, the conception and implementation of the project's governance at a global and local level, raises interest and debate. In particular, the proposed Development and Ethics Orientation Committee (CODE for its acronym in French and Spanish) is expected to provide technical and ethics standards, guarantee impartiality and avoid politicization of the project, and avert abuses or violations of privacy. In addition to the CODE, conclusions of discussions conducted during the workshops suggest to create:

1. An accreditation body that would define the members and road-map of the CODE and
2. Local Committees of Experts for each topic addressed with OPAL, illustrating concerns about legitimacy, representativity and local relevance.
3. Replicable lessons and joint recommendations

ETHICS AND GOVERNANCE ARE AT THE HEART OF TECHNOLOGICAL FEASIBILITY

Across backgrounds and experiences, ethics and governance remain the first concern of interested parties and potential users. Issues around data protection and privacy are raised from both an organization's and a citizen's perspective, illustrating the potential extent and involvement of the Data Community. Across time and geography,

technological revolutions have left large groups on the side of progress and fueled negative externalities. The age of data should be carefully designed in order to materialize its promises to the greatest extent possible for the largest number of people on the planet. This requires building trust among groups through, and towards, greater transparency. Fostering ownership will enable efficiency in the implementation of the latest technological developments, making a participatory design approach all the more relevant.

MANY NON-DATA ACTORS ARE NECESSARY FOR THE DATA ECOSYSTEM TO THRIVE

The (Big) Data ecosystem must be undertaken as a collaborative and decentralized effort, bringing together the human, societal and political economy. Facilitators and conveners need to play their role, keeping in mind that this ecosystem is constituted of individual and institutional stakeholders that have incentives, objectives, skills and constraints that ought to be taken into consideration.

A TECHNOLOGICAL INNOVATION LIKE OPAL REQUIRES BOTH POLITICAL WILL AND A CERTAIN DEGREE OF BROAD DATA LITERACY.

A bottom-up participatory design approach must go hand-in-hand with high-level political and institutional will, in order to push forward implementation and collaboration. If governments are key elements of this ecosystem, clear understanding and consideration of the local dynamics is necessary in order to carefully choose partners while avoiding risks of political appropriation.

HUMAN RELATIONSHIPS ARE AT THE HEART OF DIGITAL INNOVATIONS.

Keeping the community engaged and nurture long-term collaborative relationships requires continuous efforts at a local level. In Senegal, regular check-in are conducted with partners involved and active dialogue is sustained with the main stakeholders. In Colombia, it was a challenge to leverage the post-workshop 'momentum' because of a lack of human resource capacities. In terms of project management, it is thus critical to ensure that the corresponding human and financial capacities are budgeted and allocated to community-building.

Innovative ideas will not thrive without sufficient organizational structure. The transnational and multi-stakeholder nature of data projects requires diligent identification of teams and focal points in charge throughout each stage of the project. In Senegal, specific meetings were held to clarify roles and responsibilities, improving the fluidity of exchanges and group dynamics.

Annex 1: User Needs Report Main findings

Organizations interviewed in Senegal	Organizations interviewed in Colombia
Agence Nationale de la Statistique et de la Démographie (ANSD) Orange-Sonatel Prime Minister Office, Ministry of Higher Education and Research, IPAR, Baamtu, Deloitte-Sénégal, UNFPA	Departamento Administrativo Nacional de Estadística de Colombia (DANE) Telefónica-Movistar National Planning Department (DNP), Alianza CAOBA (Big Data and Data Analytics Center), Ministry of Information and Communication Technologies, Los Andes University, Centro de Pensamiento Estratégico Internacional-CEPEI, Logyca, Fundación Ideas para la Paz, Quantil

MAIN FINDINGS:

In Senegal, 46 ideas for use cases and indicators were identified, most in areas of i) health; ii) employment and economy; iii) education; and iv) agriculture, food security and nutrition.

For Colombia, 40 ideas for use cases and indicators were defined. The most prominent areas were: i) infrastructure, mobility and transport; ii) social and demographics; iii) agriculture; and iv) peace and post-conflict.

Limitations for the project implementation and the use of big data for development:

In Senegal	In Colombia
(a) Institutional and regulatory obstacles	(a) Lack of a culture of data sharing
(b) Lack of financial and human resources	(b) Fragmented data approaches
(c) Lack of coordination between stakeholders for data sharing	(c) Lack of technical capacities- the need for data literacy
(d) Privacy	(d) Institutional and regulatory obstacles
(e) Data access	(e) Inappropriate formats and methodologies
(f) The project's neutrality	(f) Privacy and security issues