OPAL: Status and Plans 2018-19

May 2018

1 OPAL's vision: Open Algorithms for Better decisions

2 Pilots in Colombia and Senegal (2017-18)

3 Expansion options and needs (2019-22)

1 **OPAL's vision: Open Algorithms for Better decisions**

2 Pilots in Colombia and Senegal (2017-18)

3 Expansion options and needs (2019-22)

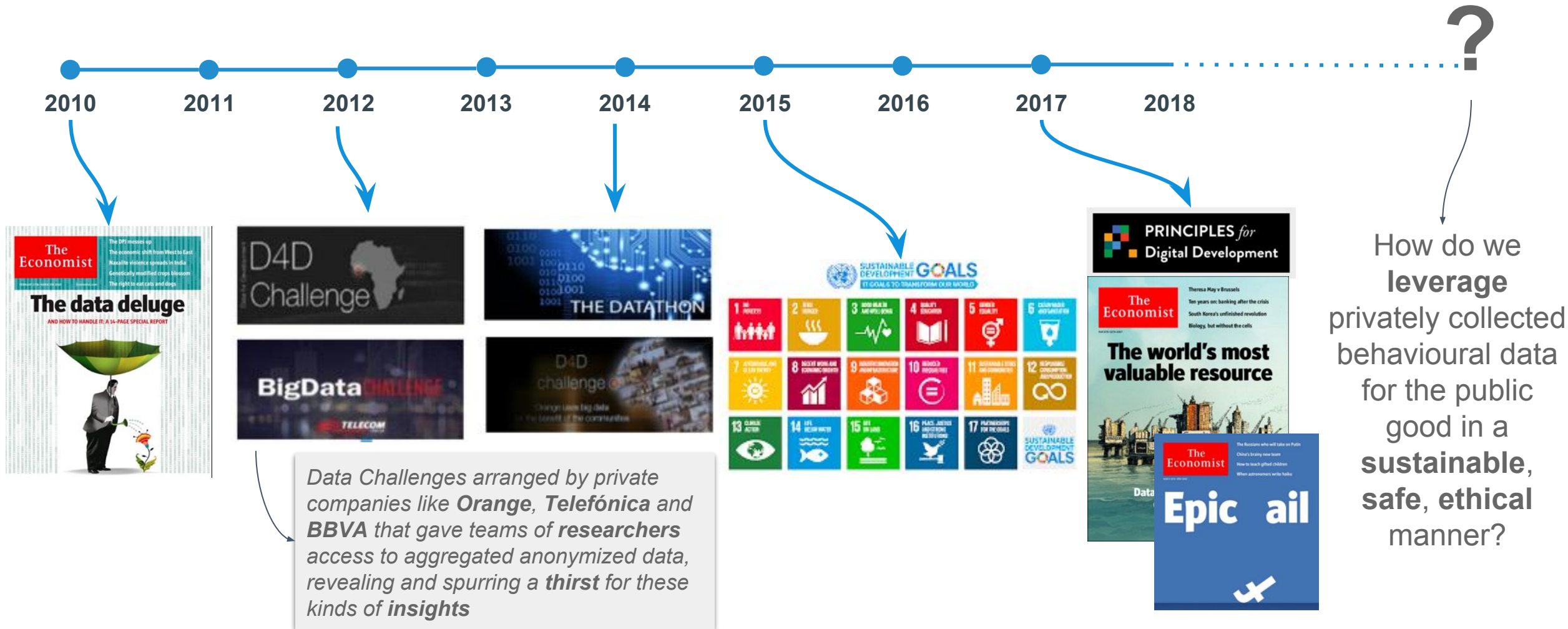# OPAL at a glance

Problems	Objectives	Means
OPAL is trying to solve	OPAL is trying to achieve	OPAL is leveraging and deploying

Problems — OPAL is trying to solve

1. Even well-intended governments, private companies, NGOs, researchers and citizens **lack timely fine-grained reliable statistics and insights to make and evaluate decisions** to improve the lives of millions of people.
2. Private companies such as telecom operators collect **large amounts of behavioral data from which highly valuable insights can be gleaned**, but using these data at scale is hampered by legitimate ethical concerns and commercial questions.
3. Developing countries **lack institutional channels and human capacities to access, analyze, and use new data sources and techniques** for systemic and sustainable change.

Objectives — OPAL is trying to achieve

1. Build a Public-Private-People platform to contribute to **better civic systems and a vision where data is at the heart of societal development around the globe**, in support of the measurement and achievement of the UN Sustainable Developments Goals and democracy.
2. Provide a **far better picture of human reality** to official statisticians, policymakers, planners, businesses, and citizens **to facilitate and incentivize better decisions** in all sectors and all levels of societies
3. Enable **greater inclusion and inputs of all members of societies on the kinds and uses of analyses performed on data about themselves** that they produce passively.

Means — OPAL is leveraging and deploying

1. The **world-class expertise of a consortium composed of Data-Pop Alliance, Imperial College London, MIT Media Lab, Orange, and the World Economic Forum**, building on years of experience.
2. A **state-of-the-art technology with open algorithms and an open-source platform** running on private sector data to ensure privacy, combined with **inclusive governance ethical oversight and capacity building.**
3. Two €1.5M **pilots with the governments and civil societies of Senegal and Colombia and telecom operators Sonatel and Telefónica**, paving the way for expansion to **another industry and 10 more countries by 2025.**

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The Origin of OPAL:

The (Big) Data Revolution, experiments, expectations, and questions

?

2010   2011   2012   2013   2014   2015   2016   2017   2018

The Economist — The data deluge
AND HOW TO HANDLE IT: A 14-PAGE SPECIAL REPORT

D4D Challenge

BigData CHALLENGE — TELECOM

THE DATATHON

D4D challenge

*Data Challenges arranged by private companies like **Orange**, **Telefónica** and **BBVA** that gave teams of **researchers** access to aggregated anonymized data, revealing and spurring a **thirst** for these kinds of **insights***

SUSTAINABLE DEVELOPMENT GOALS

PRINCIPLES for Digital Development

The Economist — The world's most valuable resource

The Economist — Epic fail

How do we **leverage** privately collected behavioural data for the public good in a **sustainable**, **safe**, **ethical** manner?

Global/Local/Crowd Open Algo check & certification

1 Partner **private companies** (here a telecom operator) allow OPAL to access its servers through a **secured platform**

4 **Certified open algorithms** developed by developers are sent and run on the servers of partner private companies, **behind their firewalls**

ALGO DEVELOPERS

2 A governance system including a **Council for the Orientations of Development and Ethics (**CODE) ensures that the algorithms and use cases are ethically sound, context relevant, etc.; users benefit from capacity building activities
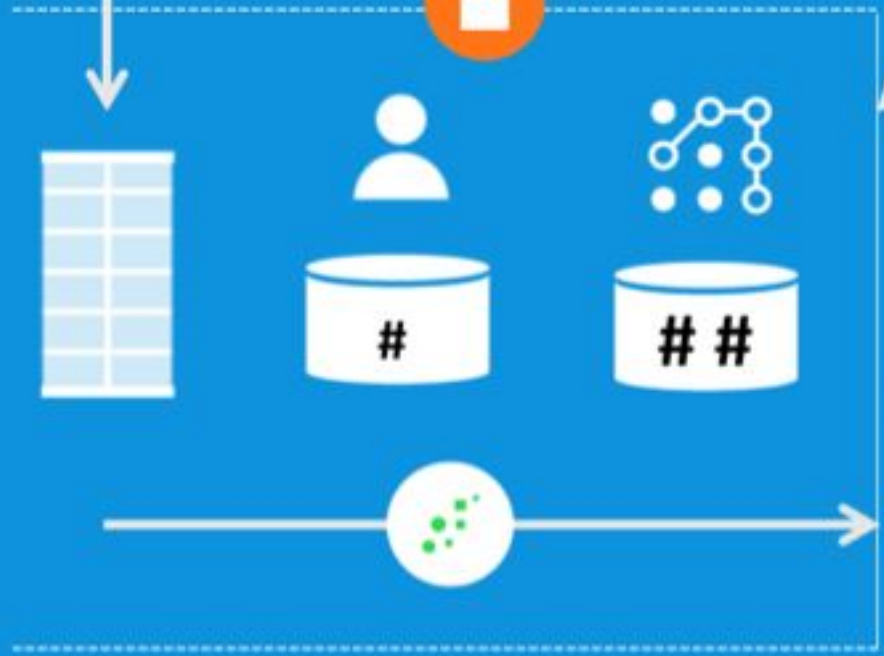
3 **Key indicators** derived from private sector data such as population density, poverty levels, or mobility patterns, feed into use cases in various public policy and economic domains

Local C.O.D.E.

USERS

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OPAL is a bold new paradigm

Tariq Khokhar @tkb · 2h

Shoutout to the OPAL project - "bring the algorithm to the data" - more at: opalproject.org #UNDataForum

Open algorithms: A new paradigm for using private data for social good

By Thomas Roca, Emmanuel Letouzé | 18 July 2016

The Open Algorithm project: Developing indicators, capacity and trust

To address the complex challenge of data access, Orange, MIT Media Lab, Data-Pop Alliance, Imperial College London and the World Economic Forum — supported by Agence Française de Développement and the World Bank — are developing a platform to unleash the power of "big data" held by private companies for public good in a privacy preserving, commercially sensible, stable, scalable and sustainable manner.

BigData UN Global Working Group

UN Big Data for Official Statistics Conference Bogotá, Nov. 8 2017

MONDE

Mettre le Big Data privé au service du bien public

BENOÎT GEORGES - LES ECHOS | LE 06/12/2016

Le projet Open Algorithm vise à utiliser les données d'entreprises privées pour des actions de développement.

Our Mission: Open Algorithms for Better Decisions

OPAL aims to serve as a **trusted enabler** to unlock the potential of data collected by private organizations by bringing the code to the data **through open algorithms and safe and fair technological and governance systems** for better decisions in support of the **sustainable development goals** around the globe.

Our Vision : A Dream with a Deadline

Unlock the potential of **trustworthy and accountable data** to foster **local development through concrete use cases**

Develop and deploy and **open-source secured platform (software and UI)** to *"bring the code to the data"* to extract key indicators and insights

Curate a library of **open-source algorithms** to grow **a community of users and developers**

Build on the "**Digital Development Principles**" to become a label used across multiple industries

Develop a self-sustaining local and **global network of experts** and practitioners for analytics and services

Operate in **10+ emerging economies** and **2+ industries** by 2025, with wider adoption by 2030

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1 OPAL's vision: Open Algorithms for Better decisions

2 **Pilots in Colombia and Senegal (2017-18)**

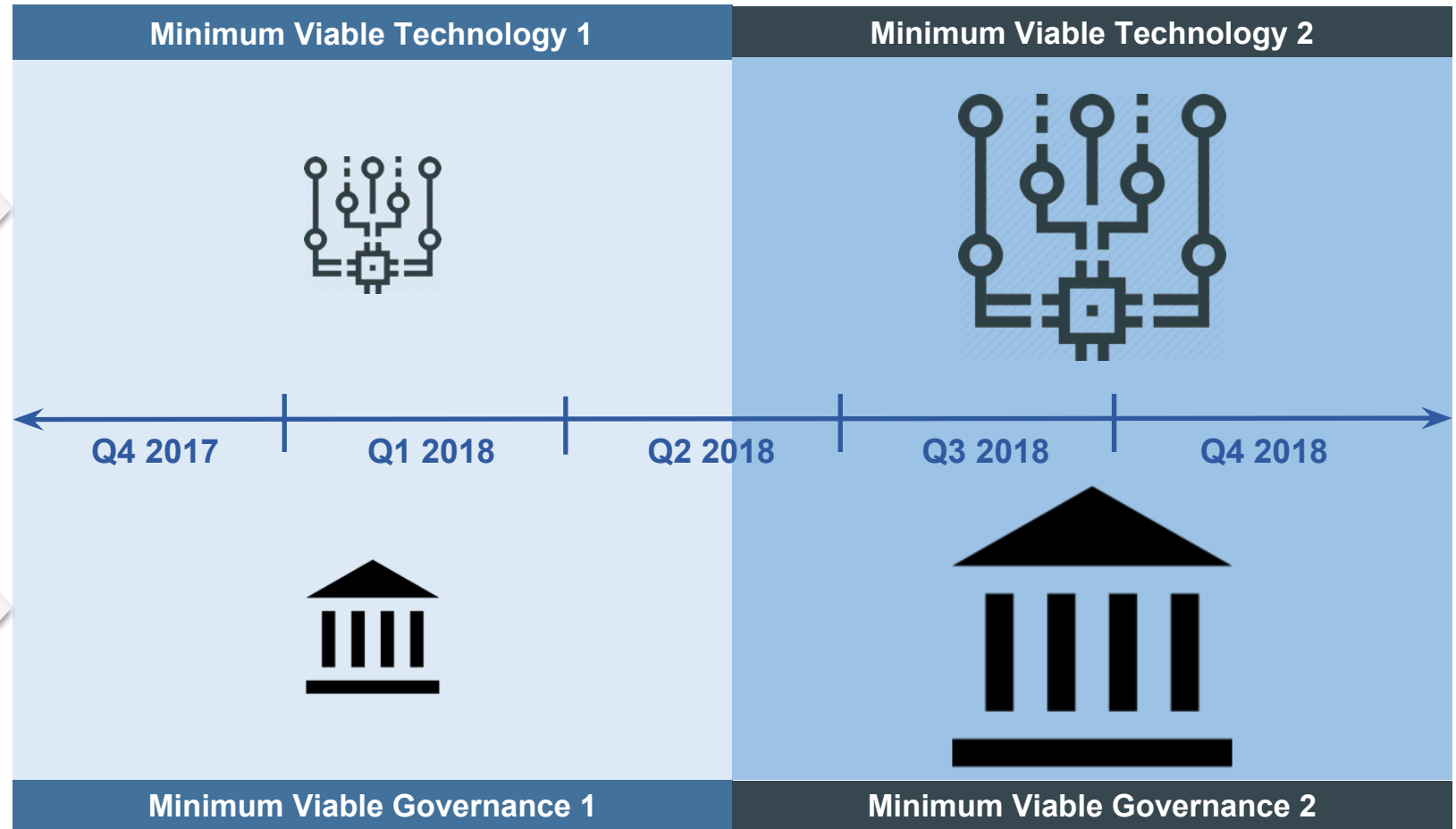3 Expansion options and needs (2019-22)
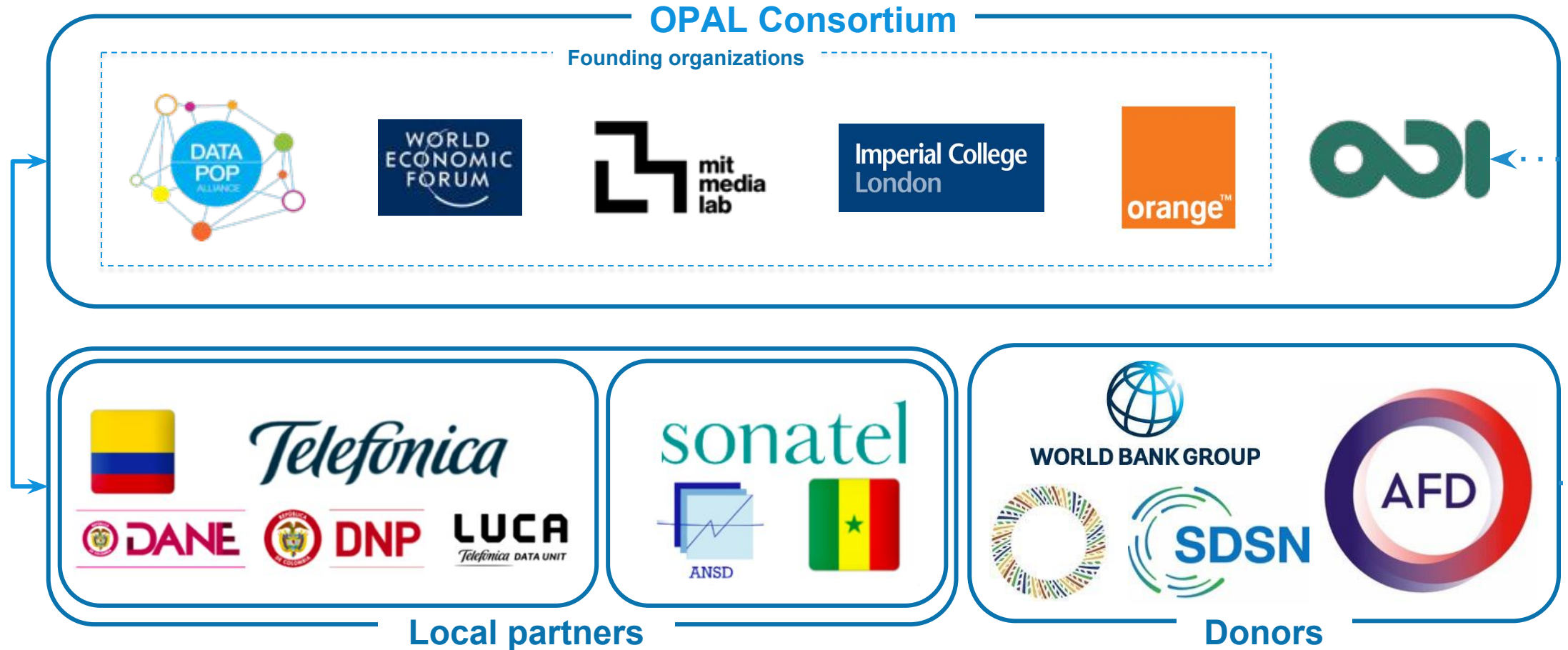
AFD-funded pilots:

Building a €1.5M *Minimum Viable Product* with 2 tracks, in 2 phases, in 2 countries

Technology track :

An open platform and open algorithms running on telecom operators' data that never leave the companies' servers

Governance track :

A participatory design (FUTs), an orientation and ethics committee (CODE), and capacity building

Minimum Viable Technology 1	Minimum Viable Technology 2
Q4 2017 Q1 2018 Q2 2018	Q3 2018 Q4 2018
Minimum Viable Governance 1	Minimum Viable Governance 2

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A Public-Private-People-Partnership
on data for development

OPAL Consortium

Founding organizations

Local partners
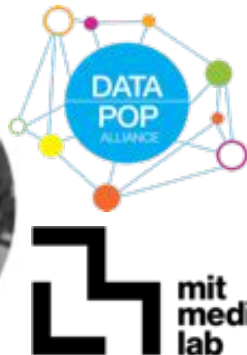
Donors

Executive Committee Members

NICOLAS DE CORDES
Orange Group

YVES-ALEXANDRE DE MONTJOYE
Imperial College London

BILL HOFFMAN
World Economic Forum

EMMANUEL LETOUZÉ
Data-Pop Alliance
& MIT Media Lab

ALEX 'SANDY' PENTLAND
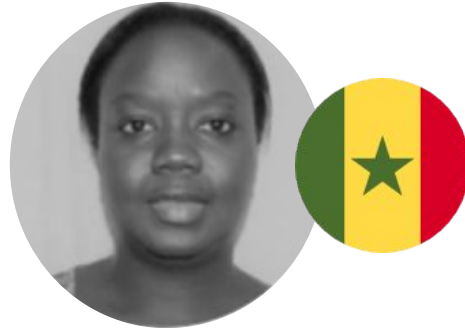Massachusetts Institute of
Technology

ELIZABETH STUART
Overseas Development Institute

Our global team

EMMANUEL LETOUZÉ
Program Director

ANTA DIENA
Coordinator for Senegal

NICOLAS DE LIGNY
Coordinator for Colombia

NATALIE GROVER
Operations and Outreach Manager

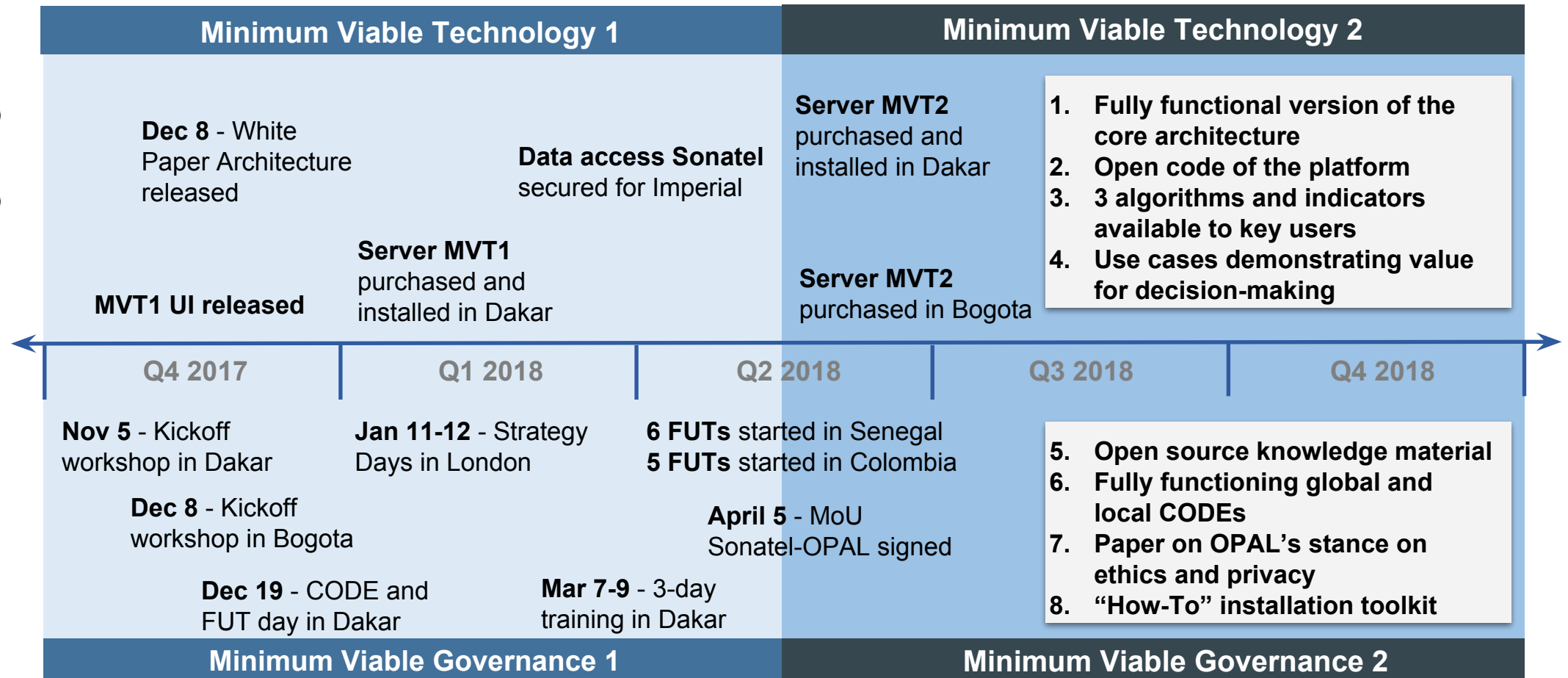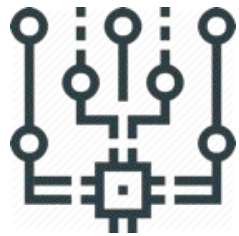**CARLOS MAZARIEGOS**
Technical Programme Manager

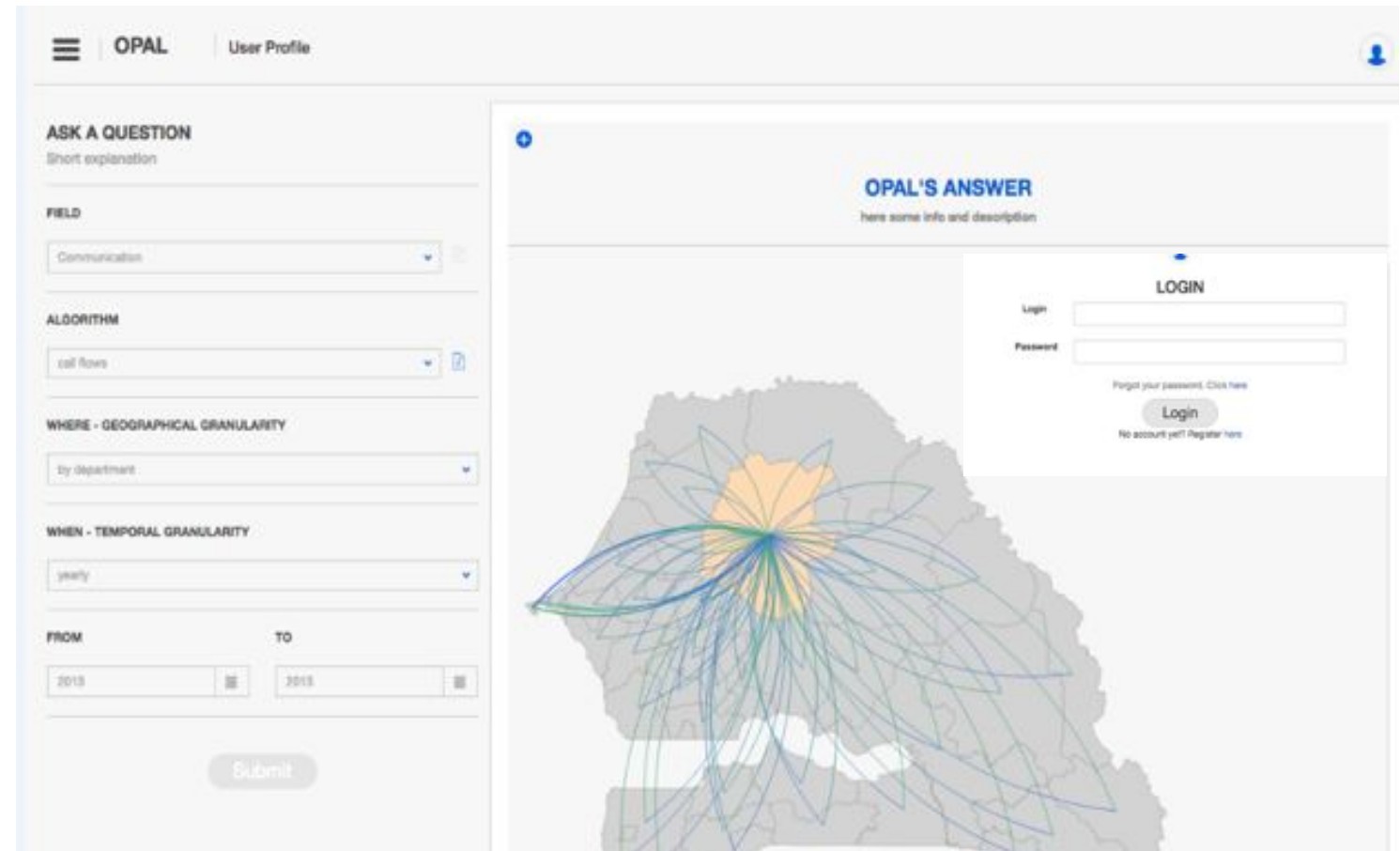**IVY ECHEBIMA**
Programme Administrator at ODI

- 3 full–time **Developers** at Imperial College College London

- 1 **Training Manager** at Harvard University

AFD pilots in Colombia and Senegal have shown steady progress

Minimum Viable Technology 1	Minimum Viable Technology 2

Dec 8 - White Paper Architecture released

Data access Sonatel secured for Imperial

Server MVT2 purchased and installed in Dakar

1. **Fully functional version of the core architecture**
2. **Open code of the platform**
3. **3 algorithms and indicators available to key users**
4. **Use cases demonstrating value for decision-making**

Server MVT1 purchased and installed in Dakar

MVT1 UI released

Server MVT2 purchased in Bogota

Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018

Nov 5 - Kickoff workshop in Dakar

Jan 11-12 - Strategy Days in London

6 FUTs started in Senegal
5 FUTs started in Colombia

5. **Open source knowledge material**
6. **Fully functioning global and local CODEs**
7. **Paper on OPAL's stance on ethics and privacy**
8. **"How-To" installation toolkit**

Dec 8 - Kickoff workshop in Bogota

April 5 - MoU Sonatel-OPAL signed

Dec 19 - CODE and FUT day in Dakar

Mar 7-9 - 3-day training in Dakar

Minimum Viable Governance 1	Minimum Viable Governance 2

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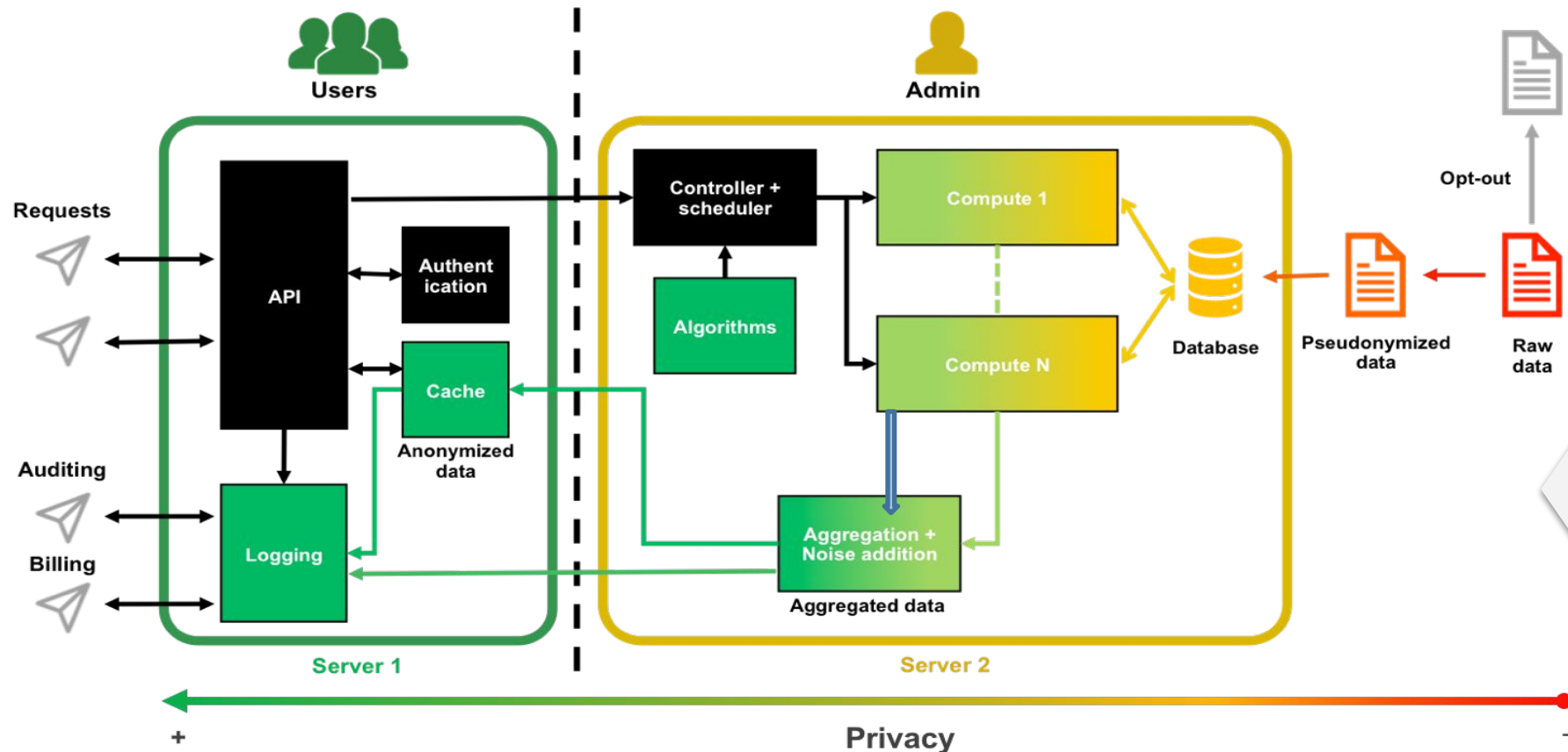open algorithms for better decisions

The MVT1 (here, in Senegal) is a temporary solution to allow Friendly User Testing (FUT)

1. Simple **User Interface (UI) developed by Orange Labs**

2. Isolated **server installed within the premises of the telco partner**—same for Telefónica

3. Visualize only the **precalculated indicators** based on 2013 CDRs:

   i. Population densities
   ii. Call volume
   iii. Migrations

MVT2: a technological architecture providing safe and useful indicators and insights from secured data

Certified open algorithms (e.g. estimating population density) are sent to and run on the data collected by **partner private companies**, on their servers and **behind their firewalls**; the **data never leave the servers** and only the results are provided.

Development ensured by Imperial College London and MIT, in partnership with the operators.
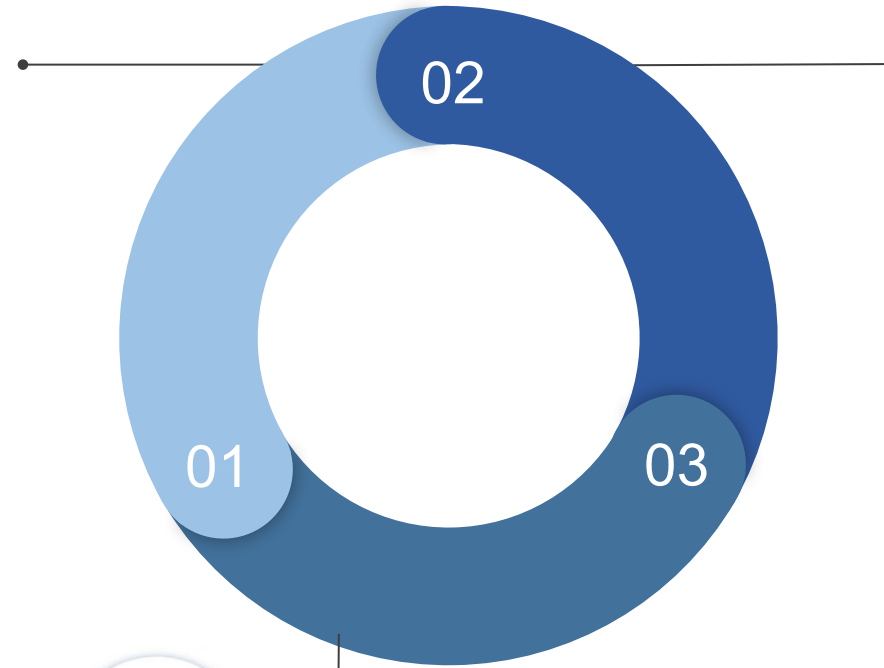
Inclusive governance is at the core of OPAL

Participatory design and development to ensure local relevance, transparency and trust

→

A Development and Ethics Orientation Council (**CODE**) to integrate and implement ethical practices

→

Capacity-building activities and resources to ensure local ownership and sustainability

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bring the code to the data
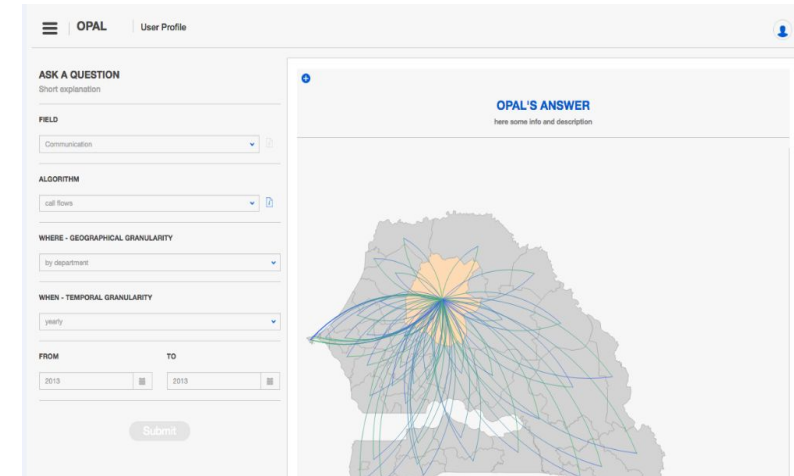
Participatory design and development

User Needs Assessment
Workshops and studies were conducted in Colombia and Senegal in 2017

Preliminary Design (MVT1)
Interface of the MVT1 platform in Senegal with 3 families of algorithms on population densities, call flows, and migrations.

02

01

03

NATIONAL STATISTICAL INSTITUTIONS
DANE INFORMACIÓN ESTRATÉGICA
DNP Departamento Nacional de Planeación

AGRICULTURE
BANCA DE LAS OPORTUNIDADES

PEACE BUILDING
FiP FUNDACIÓN IDEAS PARA LA PAZ

MOBILITY
Universidad del Rosario
TRANSMILENIO
MINTIC

VULNERABLE POPULATION
FUNDACIÓN SALDARRIAGA CONCHA

POPULATION DENSITY
BANCA DE LAS OPORTUNIDADES
econometría
Universidad del Rosario

Friendly User Testers (FUTs)
in different sectors (public health, education, peacebuilding, transportation) use the platform to develop initial projects and provide feedback for the MVT2 and next versions

The CODE: role and functions

Support the **platform** setup

Act as the driving force of the creation, the function, and the application of the legal conditions of service governing the OPAL platforms and their users

Advise institutions using OPAL on sensitive uses cases and risks to intended communities

Function as a forum for dispute resolution or community complaints in the use of data

Shared features
- Tenure: 1 year
- Quarterly local meetings and 1 global meeting
- 10-12 organizations / 1 representative per organization
- No remuneration
- Supporting documents: TORs + NDA

Provide input and counsel on privacy related issues addressing items such as the legitimate purpose in the use of algorithms, bias, legal compliance, authorization of output users and community engagement

Advise on OPAL platform management in the development of a balanced and inclusive local data ecosystem

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Capacity Building

1. No development activity is sustainable nor transformative without **strong capacity building as well as connections** within the local ecosystems
2. The capacity building activities and resources will include **training workshops, as well as dedicated online resources** on CLANED.com

UNSSC/Data-Pop Alliance Big Data & Sustainable Development Open Learning Hub

6TH OCT 2017

Welcome to the Big Data & Sustainable Development Learning Hub! This is **an open and free social learning environment created by the United Nations System Staff College (UNSSC) Knowledge Centre for Sustainable Development and Data-Pop Alliance** to facilitate knowledge exchange and capacity building on Big Data and Sustainable Development.

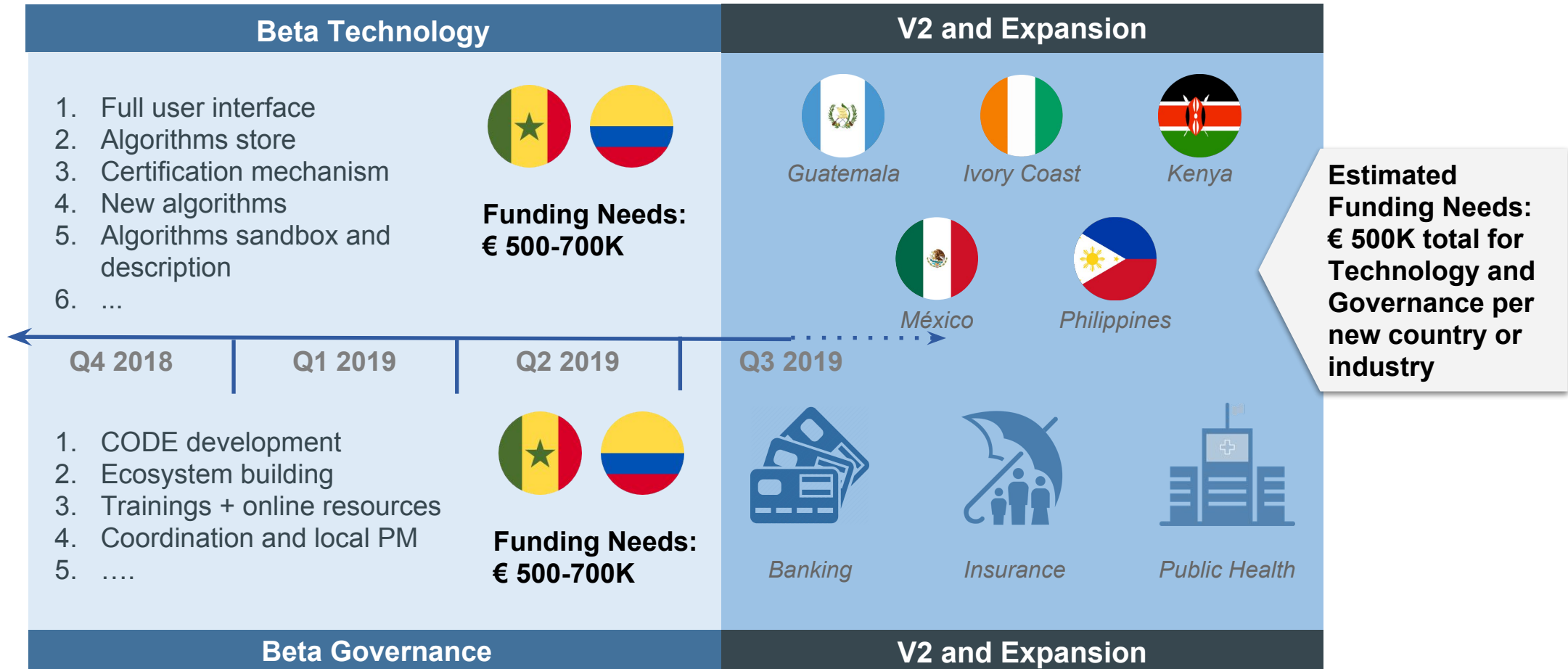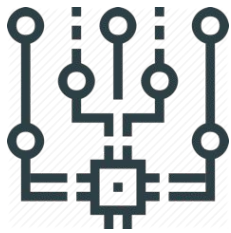Participants of 3-day training workshop on "Big Data and Sustainable Development" in Dakar, March 2018.

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Beta version:

From an MVP to the fully operational version

Beta Technology	V2 and Expansion

Beta Technology

1. Full user interface
2. Algorithms store
3. Certification mechanism
4. New algorithms
5. Algorithms sandbox and description
6. ...

Funding Needs: € 500-700K

Guatemala   Ivory Coast   Kenya

México   Philippines

Q4 2018 | Q1 2019 | Q2 2019 | Q3 2019

1. CODE development
2. Ecosystem building
3. Trainings + online resources
4. Coordination and local PM
5. ….

Funding Needs: € 500-700K

Banking   Insurance   Public Health

Estimated Funding Needs: € 500K total for Technology and Governance per new country or industry

Beta Governance   **V2 and Expansion**

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Examples of Beta and future features

	Features	MVP2	New releases			Interest			
		AFD	Beta	Gamma	Delta	Research	Use Cases	Usability	Ecosystem
26	TMForum integration				x	medium	low	low	high
27	Bank algorithm module		x			high	low	high	low
28	Partners certification				x	low	low	low	high
29	Support services (help desk)			x		low	low	high	medium
30	Sustainable business model			x		low	low	low	high
31	Dataset labelling (survey+deep learning)				x	high	medium	low	low
32	Training video & documentation			x		low	low	high	high
33	Use cases documentation					low	high	low	high
34	Algorithm challenges				x	high	high	low	medium
35	Local dialogues & strategies				x	low	low	low	high

OPAL could support the implementation of many use cases and applications including donor-funded projects

- 2 year IDB-funded project to understand and mitigate crime in 6 Colombian cities with Data-Pop Alliance (HHI, MIT Media Lab….) and network partners
- ➔ Creating a safe and trustworthy way to access private data could facilitate future data-driven initiatives and policies by simplifying and securing the procedures for access and analysis

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