



Using emerging technologies for improving NTDs diagnostics

Open Science principles applied to AI and local manufacturing for medical labs in Africa

How to build a health commons approach to pandemic preparedness and response

16 January 2023 - Geneva

co-hosted by DNDi, UCL Institute for Innovation and Public Purpose, & Friends of the Independent Panel

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Plan

- **About the Mboalab and emerging technologies used;**
- Our principles: Open science and responsible use of technologies;
- Our Open Science practices
- Applications in NtDs diagnostics

**About the Mboalab and
emerging technologies
used**

Cameroon Based
Community
Innovation Hub
founded in 2017



**Catalyse Local Sustainable
Development Through Open Science**

Workshop
&
Capacity
Building

Open
Hardware
Design

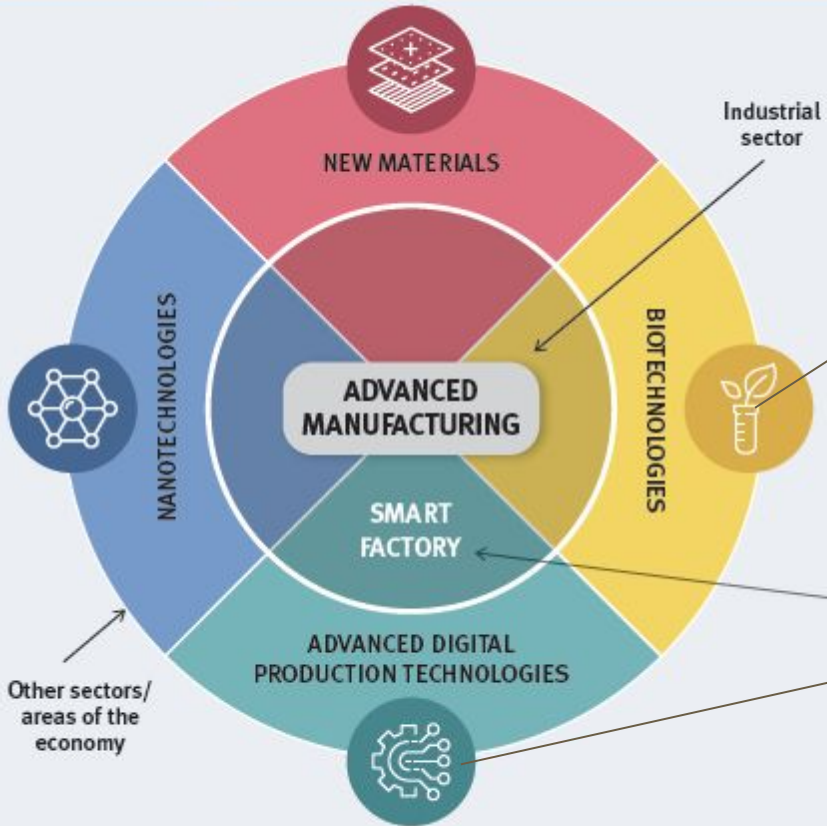
Research
Projects

Activities

Open Enzyme
Biomanufacturing



Figure 2
Broad technological domains of the fourth industrial revolution



Synthetic Biology

- IDR 2020 will focus on advanced digital production (ADP) technologies applied to manufacturing:
- INDUSTRIAL INTERNET OF THINGS
 - BIG DATA ANALYTICS
 - ADVANCED ROBOTICS
 - ARTIFICIAL INTELLIGENCE/ MACHINE LEARNING
 - CLOUD COMPUTING
 - ADDITIVE MANUFACTURING

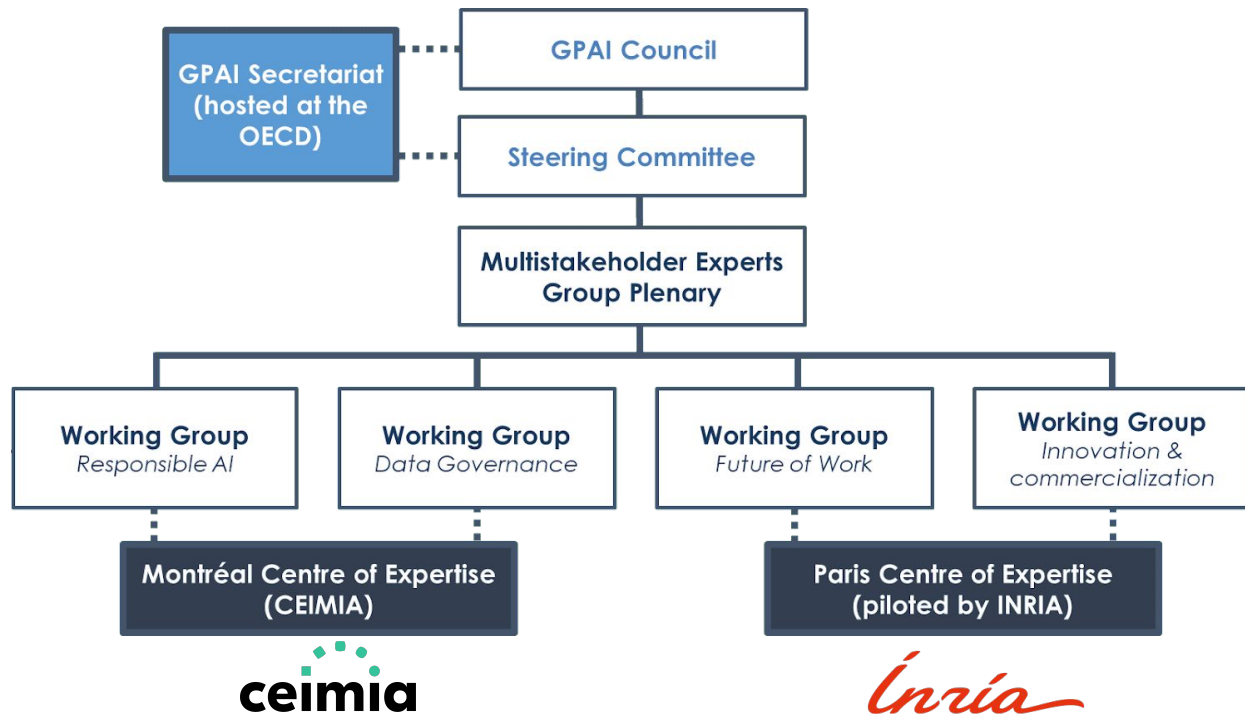
Source: UNIDO elaboration based on OECD (2017), Schwab (2016), UNCTAD (2018), UNESCAP (2018) and UNIDO (2017).

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**Our principles: Open science
and responsible use of
technologies**

Global, Multistakeholder, Expert-based

- ❖ Founded in 2020 with **15 Members**
today GPAI has **29 Members**
- ❖ 189 Experts, 22 Observers
 - Multi stakeholder and multidisciplinary
 - Bridge the gap between theory and practice
 - Diversity



From GPAI/CEIMIA

The role of data in AI

Framework paper for GPAI's work on data governance

2020

2021

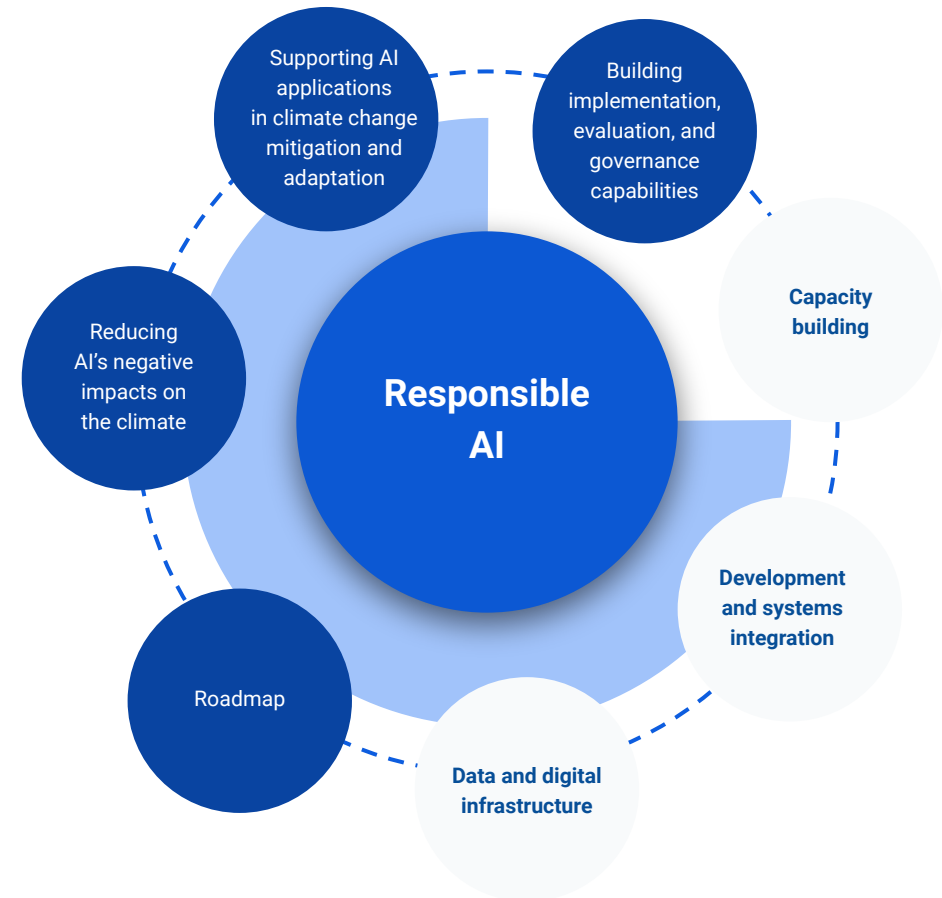
Advancing Data Justice Research and Practice

2022

Advancing Data Justice Research and Practice: An Interim Guides (Policymakers, developers, communities)

Enabling Data Sharing for Social Benefit through Data Trusts: Data Trusts in Climate





UNESCO Recommendation on Open Science



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Our Open science practices

Open Source Technologies for faster and more equitable innovation

Building a globally inclusive
biomanufacturing value chain



universal access

e.g. availability of specific molecular tools
unencumbered by intellectual property;



universal participation

e.g. greater involvement of stakeholders in shaping
projects using those tools;



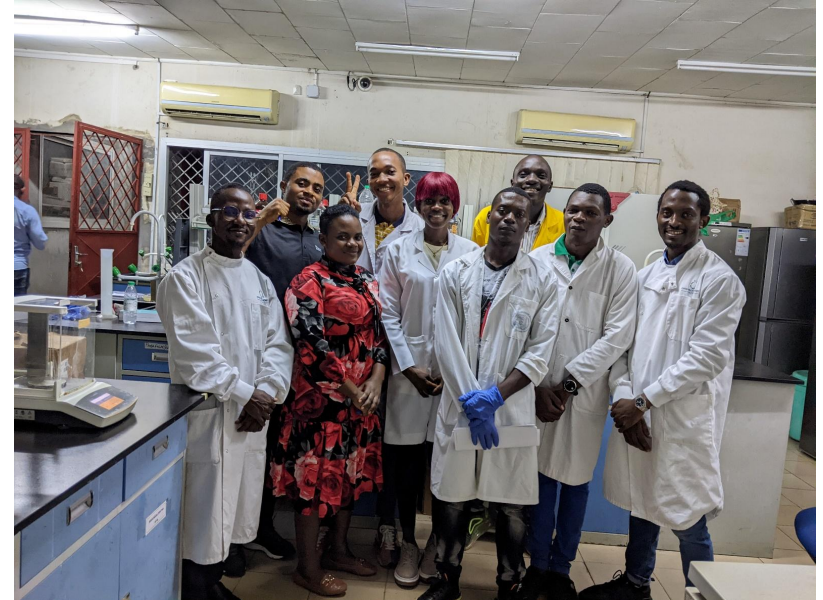
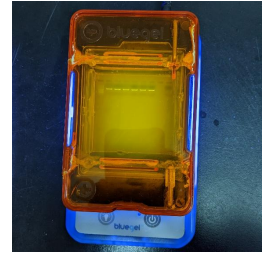
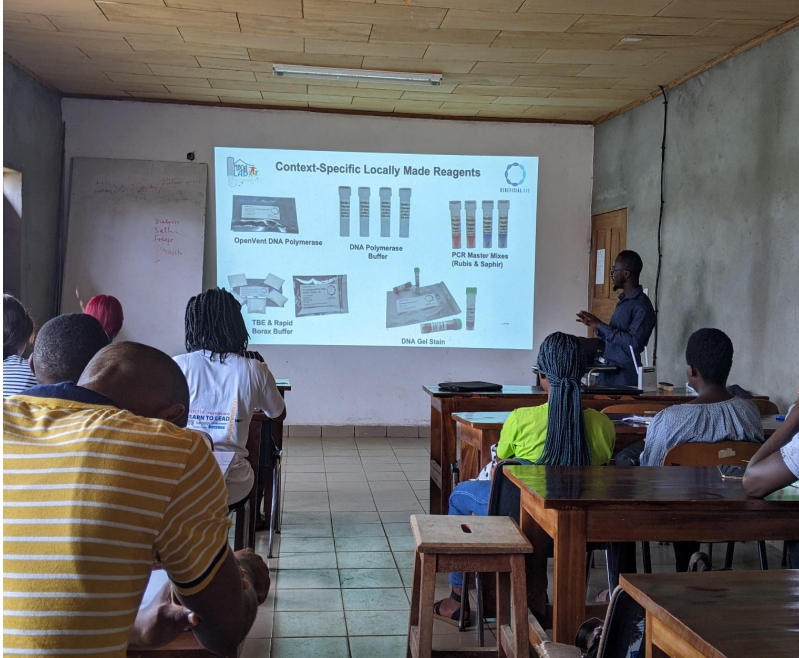
collaborative production

e.g. multiple partners working together for a common
goal

Capacity building

Advanced Molecular Diagnostics Workshop: 28/10/2022

- >40 Postgraduates students (20 during practical sessions)



Promoting New modes of Institutional collaboration

- States Universities (Buea, Yaoundé I...);
- Catholic University of Central Africa (ESS-UCAC);
- Scientific Center for Health (SCH).
- Government



IFYAR Dec, 2020



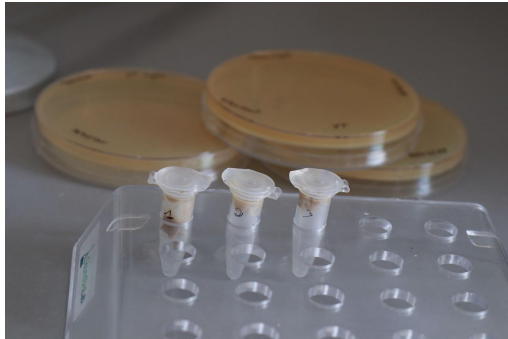
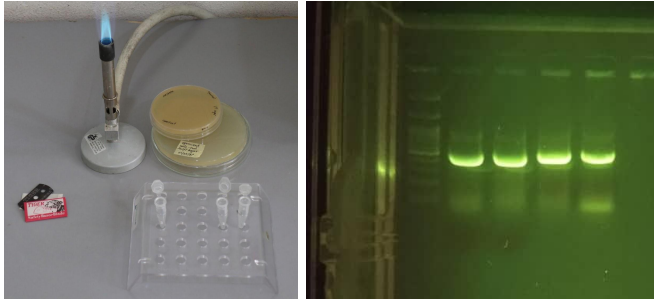
MboaLab-SCH, June 2020

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Applications in NtDs diagnostics

Developing Products using Low-cost Production Methods

1. Plate protein Expression



Lactose instead of IPTG

- Commercial Lactose
- Boiled Milk
- Fresh Milk
- Whey (Home Made)

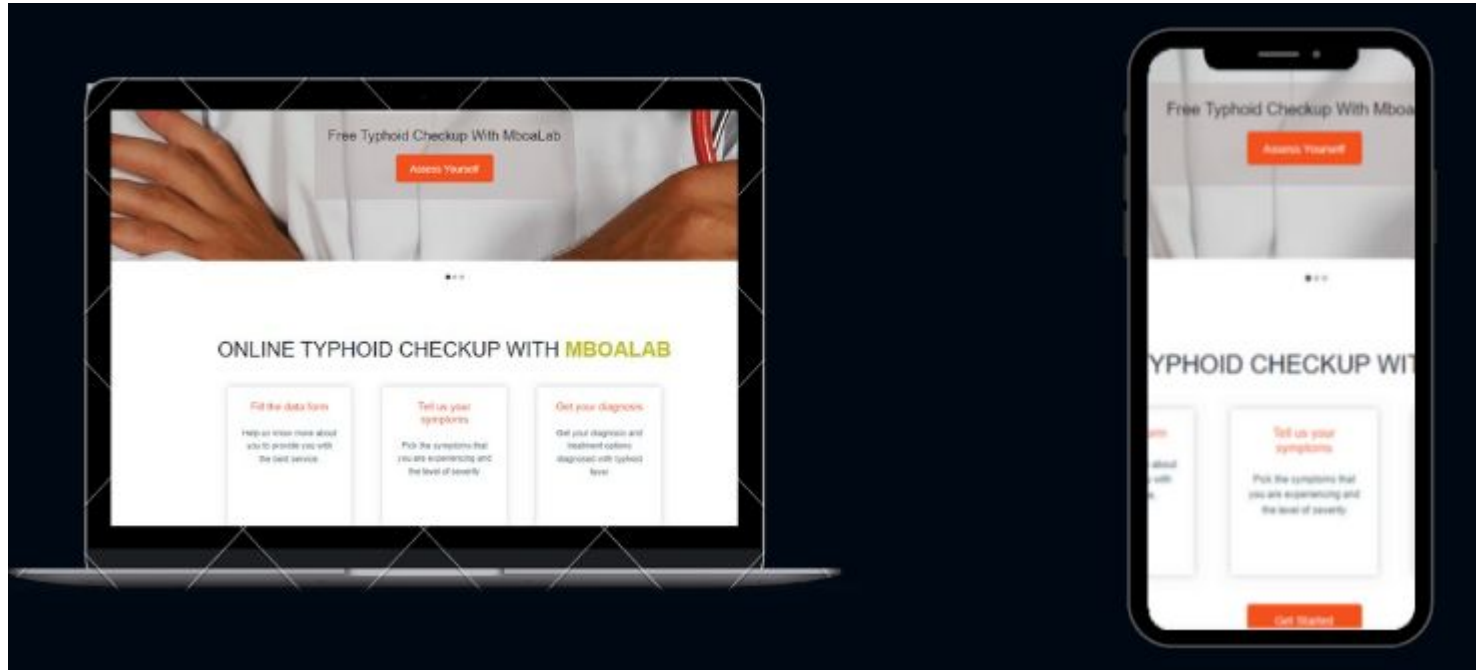


3. Locally Made Instruments



Typhoid Screener

Accelerating typhoid diagnostics Augmented AI-powered solution



Open and Inclusive Projects

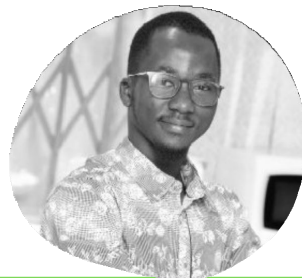
- ❑ Research funding from the Shuttleworth Foundation and Beneficial Bio Ltd. **Open Enzyme Biomanufacturing Project.**
- ❑ The UK Global Challenges Research Fund (GCRF): **CRISPR-TyphoidDx Project:** to develop a low-cost and highly sensitive and specific molecular test for typhoid fever, with the goal of making this locally manufacturable in Cameroon.
- ❑ Open Society Foundations: **Local manufacturing of open-source devices for medical labs in Africa: prototyping stage in Cameroon.**
- ❑ and the Volkswagen Stiftung: **COVID TESTS FOR ALL project (Open RT- LAMP Testing for Africa)**

Team



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