Sustainable Development Goals, Digital Humanism, and challenges in the Global South

Anna Bon

Lecture @DIGHUM Summerschool

8 September 2023

About today's lecture

- Discuss the digital society in the Global South, using two frameworks: of Sustainable Development Goals (SDGs) and Digital Humanism.

- Discuss the various faces of the Digital Divide and review theories to mitigate it.

- Discuss examples from ongoing educational/research projects on ICT4D in the field.

And do this in an interactive, workshop-like setting

W4RA

How inclusive, sustainable, fair is the Digital Society ?
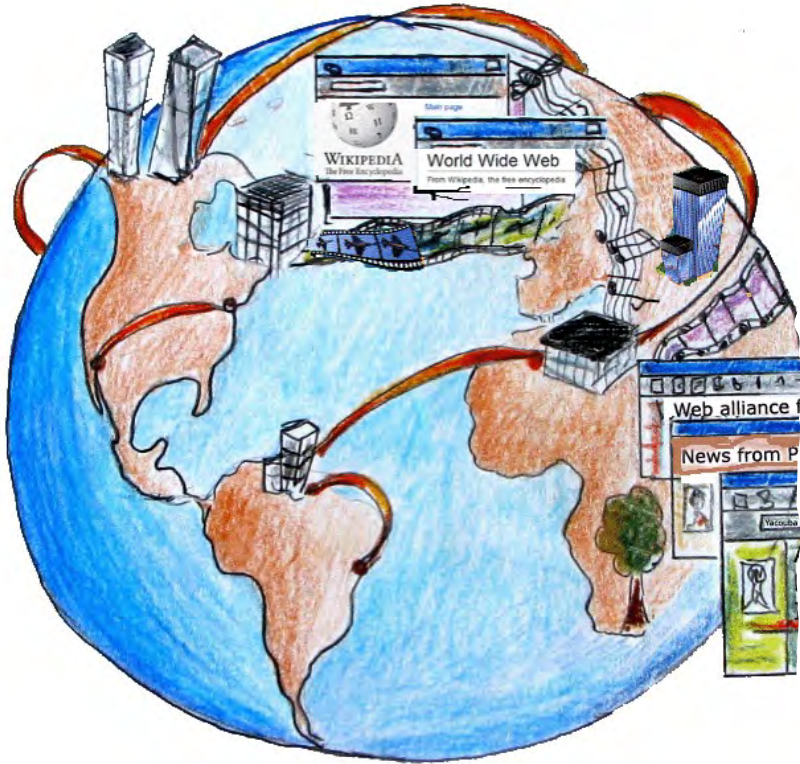
- A few questions before we start:
- Where are **we** from?
- Who is familiar with the SDGs ?
- Which Grand Challenges do they address?

Sustainable Development Goals

- Sustainable Development Goals launched in 2015 by UN; endorsed by all member countries
- Goals and targets for People Planet and Prosperity
- Follow up on the MDGs Millennium Development Goals Address Grand Global Challenges -
- Are they up to date?
- Are they internally consistent – are there trade-offs?
- How is the state of the achievements in 2023 ?
- Is'n something missing?
- …… ?

Digital Humanism and SDGs: similarities and differences

The **Sustainable Development Goals** are a *"shared blueprint for peace and prosperity for people and the planet, now and into the future".* [1]

Digital Humanism is *"a mindset, a philosophy, a political driving force, a scientific approach, and most of all – a promise to society. That we are determined to build, regulate and develop technology for people, for a better future."* [2]

W4RA

2023: SDGs are not on track

"Four years have passed since the 2019 Global Sustainable Development Report (GSDR) was published and even then, the world was not on track to achieving the Sustainable Development Goals (SDGs)..[..]..

Since 2019, challenges have multiplied and intensified..[..]..

Progress has been halted in many areas partly as a consequence of a confluence of crises. [..]

As a result, overall progress towards the 2030 Agenda and the SDGs has been severely disrupted in the last three years, yet every inch of progress matters and counts. "

Source: Global Sustainable Development Report Advance, Unedited Version 10, 14.06.2023

2023 SDGs not on track

Source: Global Sustainable Development Report Advance, Unedited Version 10, 14.06.2023

- Since 2019 the SDGs are moving backward

- Peace & partnerships vs armed conflicts

- Health and Wellbeing vs pandemics

- Climate action vs global temperature rising

- Food security vs zero hunger

- Biodiversity vs on land and in the ocean

- Inclusion vs global and national wealth distribution

How about the Digital Society in the Global South?

Let's set some targets for this new goal, e.g.

- International Governance of AI
- Regulation of social media - globally
- Breaking Big Tech monopolies
- GDPR, DSA, MSA, implemented beyond Europe
- Protect digital identity of citizens
- Protection of children for digital
- Regulation of cryptocurrency, fintech
- Prohibition of autonomous weapons
- AI and Good Global Governance (UNDP)

How about these goals Global South?


18 FAIR AND INCLUSIVE DIGITAL SOCIETY

What about AI and decision-making. Who decides ? Who is in charge about the future of the Digital Society?

Despite the huge impact of digital technologies on the lives of *all* people on the planet, *many (peoples, communities, countries) are not included* in the debates about the future of the Digital Society.
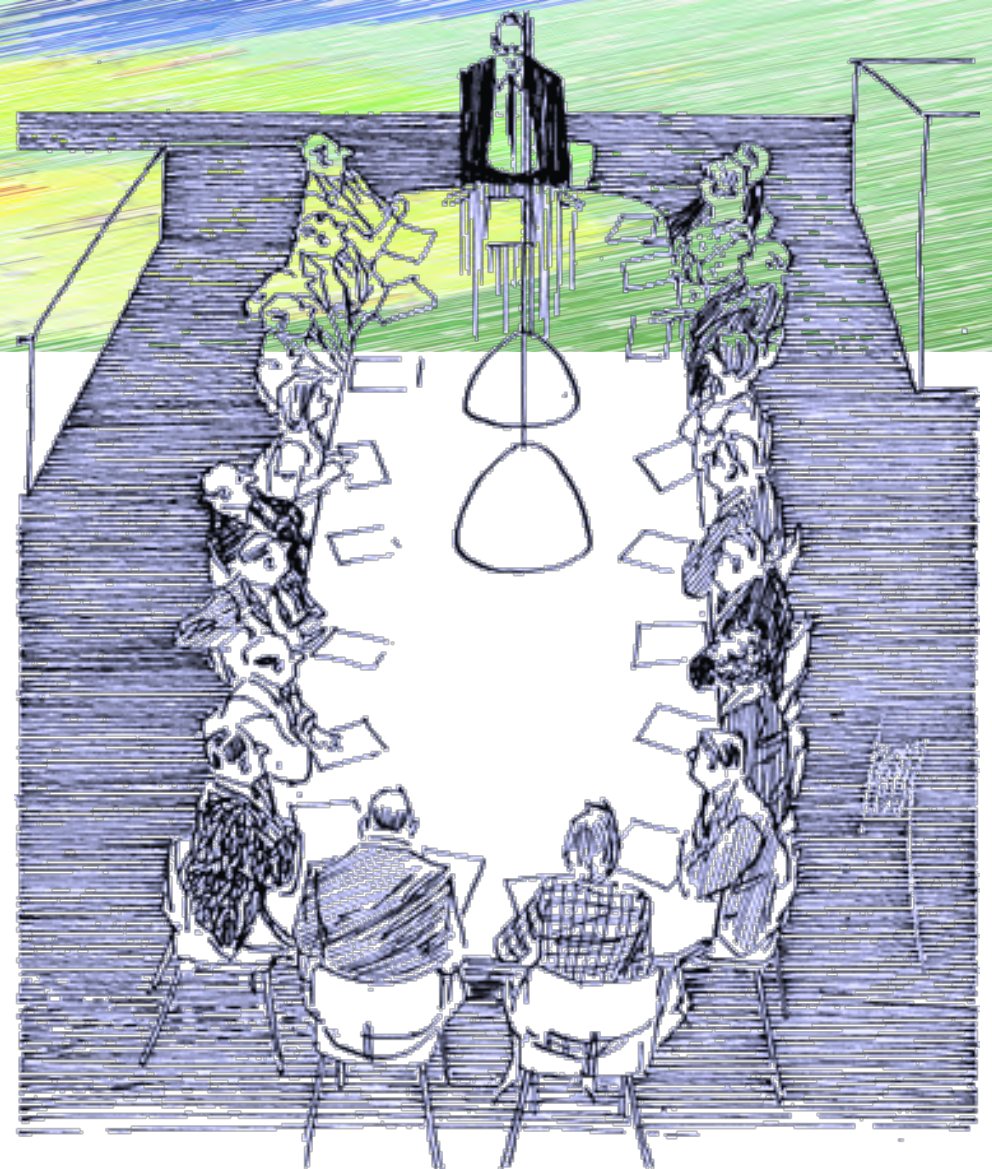

"WE ZOUDEN EEN HOOP TIJD KUNNEN WINNEN ALS JULLIE GEWOON ALLES AAN MIJ OVERLIETEN"

W4RA

*) Cartoon by the late Dutch cartoonist Peter van Straaten
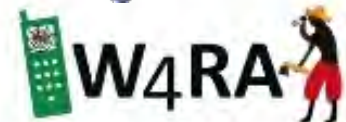
Who are "we" in the Digital Society?

- "…are *we* humans defining technology or is technology defining *us*?" – Edward A. Lee

- "*We* humans have great influence over the outcome – influence that we exerted when we created the AI" – Max Tegmark

- "Perhaps, most important, AI, unlike aliens is something over which *we* have some say" – Stuart Russell

- When will the machines get this power and will they get with *our* compliance? – James Barrat

- In principle we could build a kind of superintelligence that would protect human values. We would have certainly strong reasons to do so. – Nick Boström
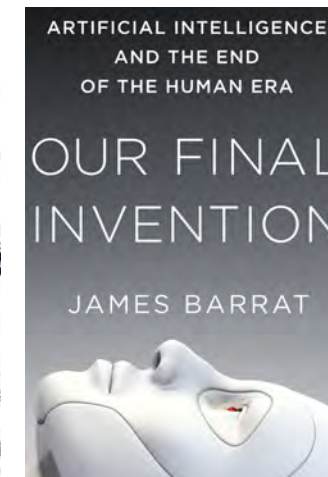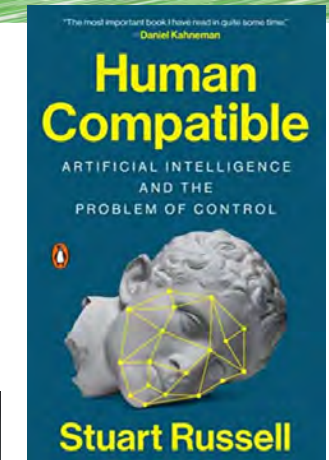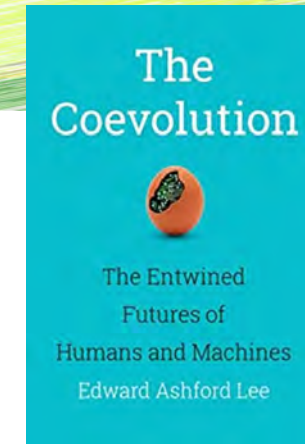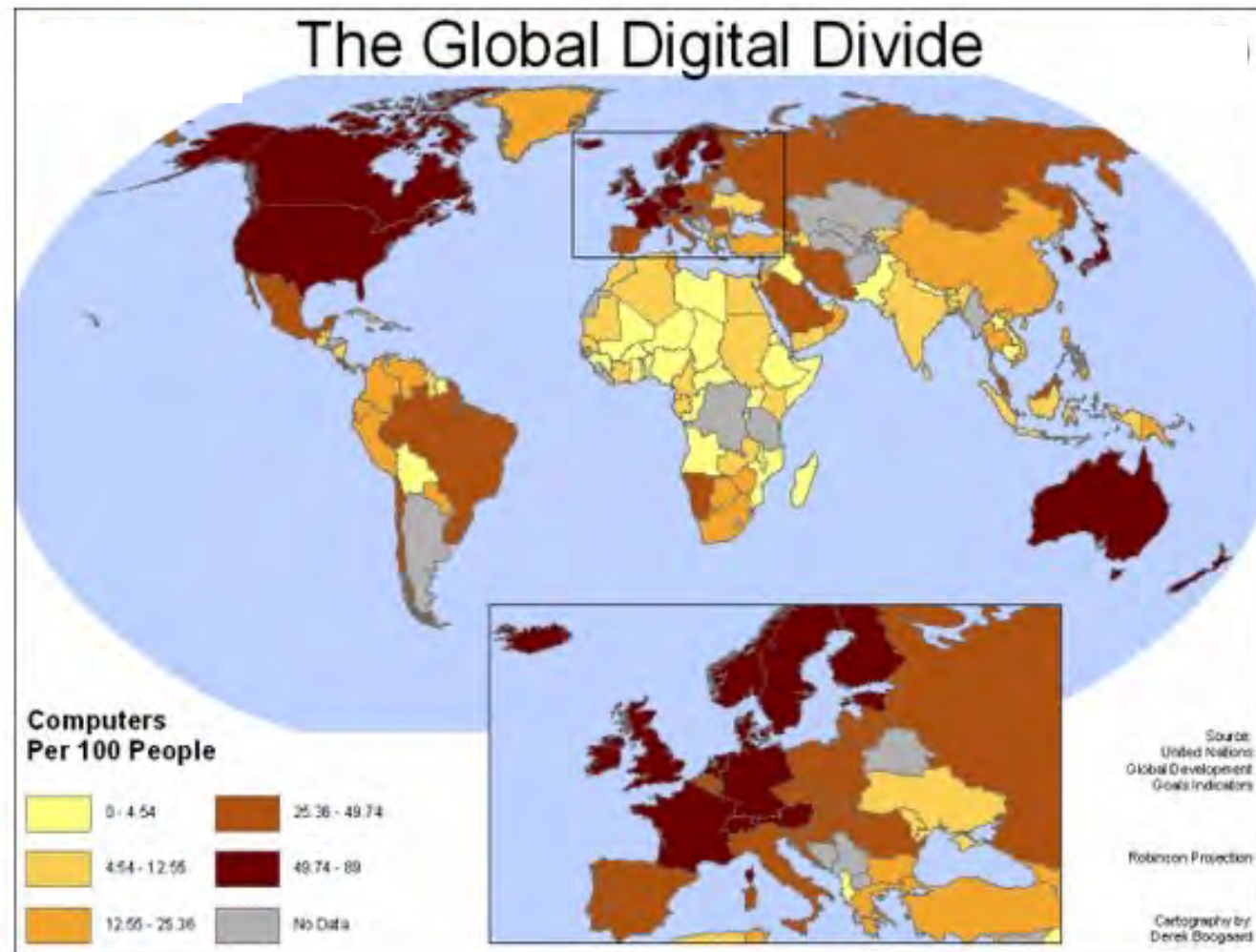
Grand global challenges and vulnerability: people in low resource environments

The concept of the "*Digital Divide*"

– originally referred to the gaps in access to information and communication technology (ICT), threating the ICT - "have-nots", whether individuals, groups or entire countries.
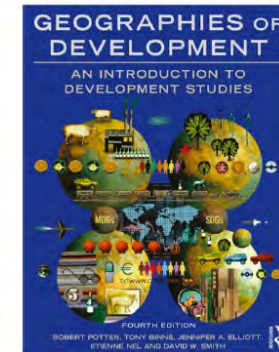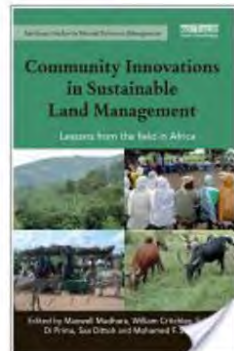
ICT4D and paradigms in International Development
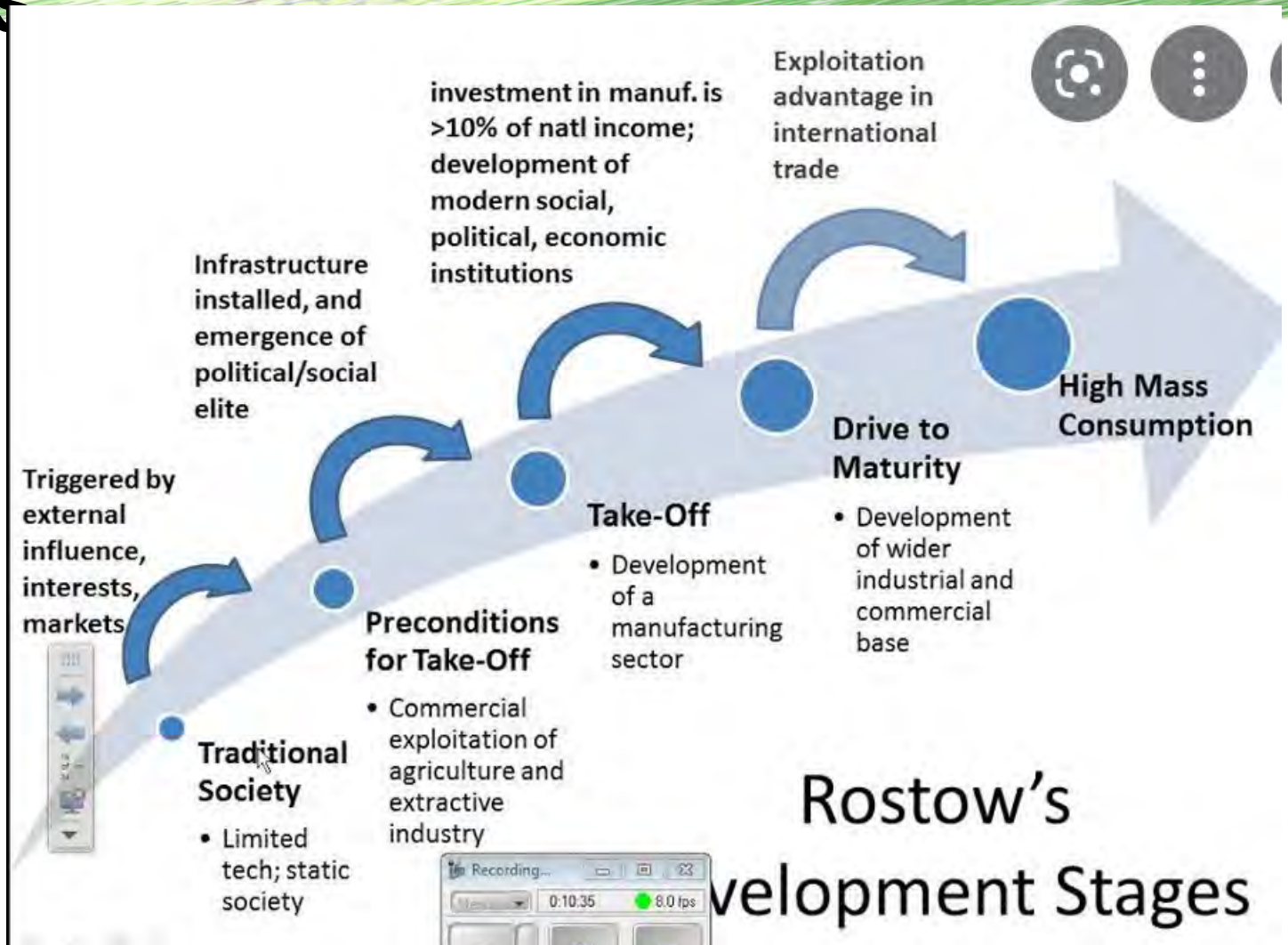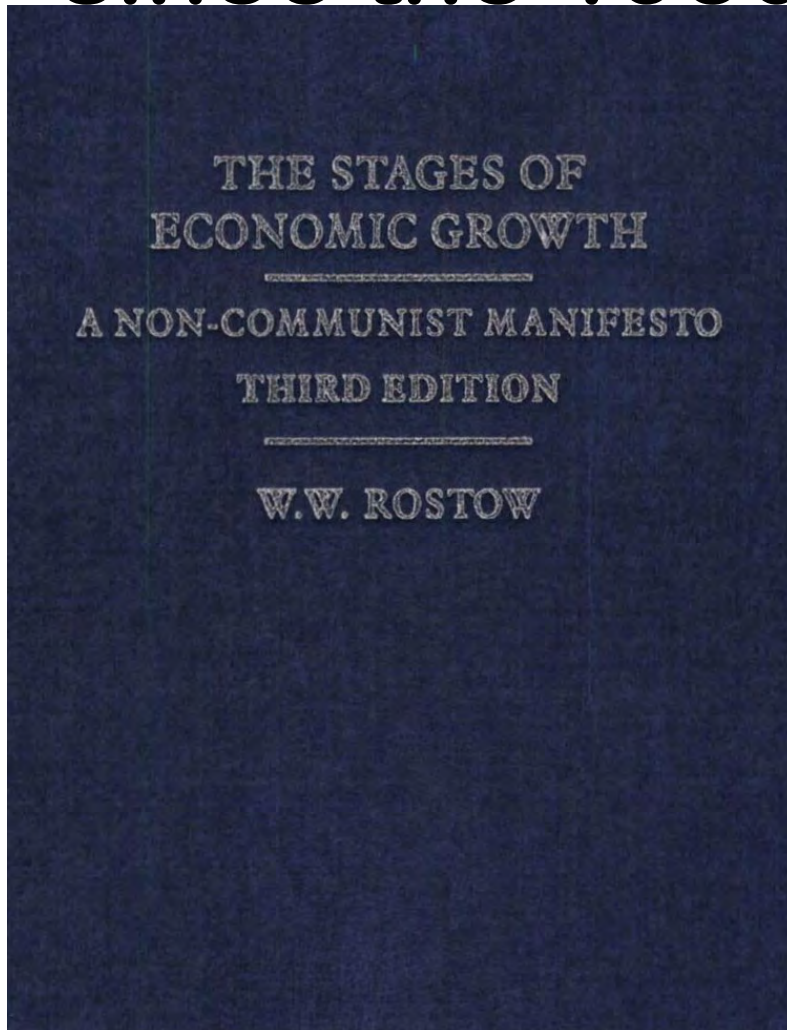
- **Conventional development**
- *Modernity, neoliberalisation, economic growth as a goal*
- *Project management approaches*

- **Post-development/anti development** (many angles)
- Criticism at development
- Decolonial thinking
- Development as "Freedom"
- ....
- Practical approaches
  - Farmer innovation, PRA
  - System's thinking, sustainable lifelihoods, Participatory approaches

A. Conventional development theory: incumbent in international development since the 1950s

THE STAGES OF ECONOMIC GROWTH
A NON-COMMUNIST MANIFESTO
THIRD EDITION
W.W. ROSTOW

Rostow's Development Stages

Triggered by external influence, interests, markets

Traditional Society
- Limited tech; static society

Infrastructure installed, and emergence of political/social elite

Preconditions for Take-Off
- Commercial exploitation of agriculture and extractive industry

investment in manuf. is >10% of natl income; development of modern social, political, economic institutions

Take-Off
- Development of a manufacturing sector

Exploitation advantage in international trade

Drive to Maturity
- Development of wider industrial and commercial base

High Mass Consumption

B. Neoliberal, free market theory
Free Internet and Africa's data as the new "gold",
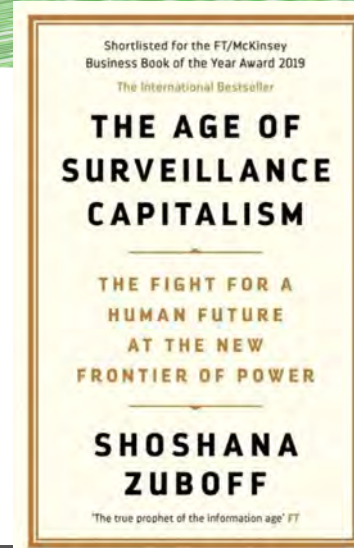

BIG data for development

challenge D4D ○

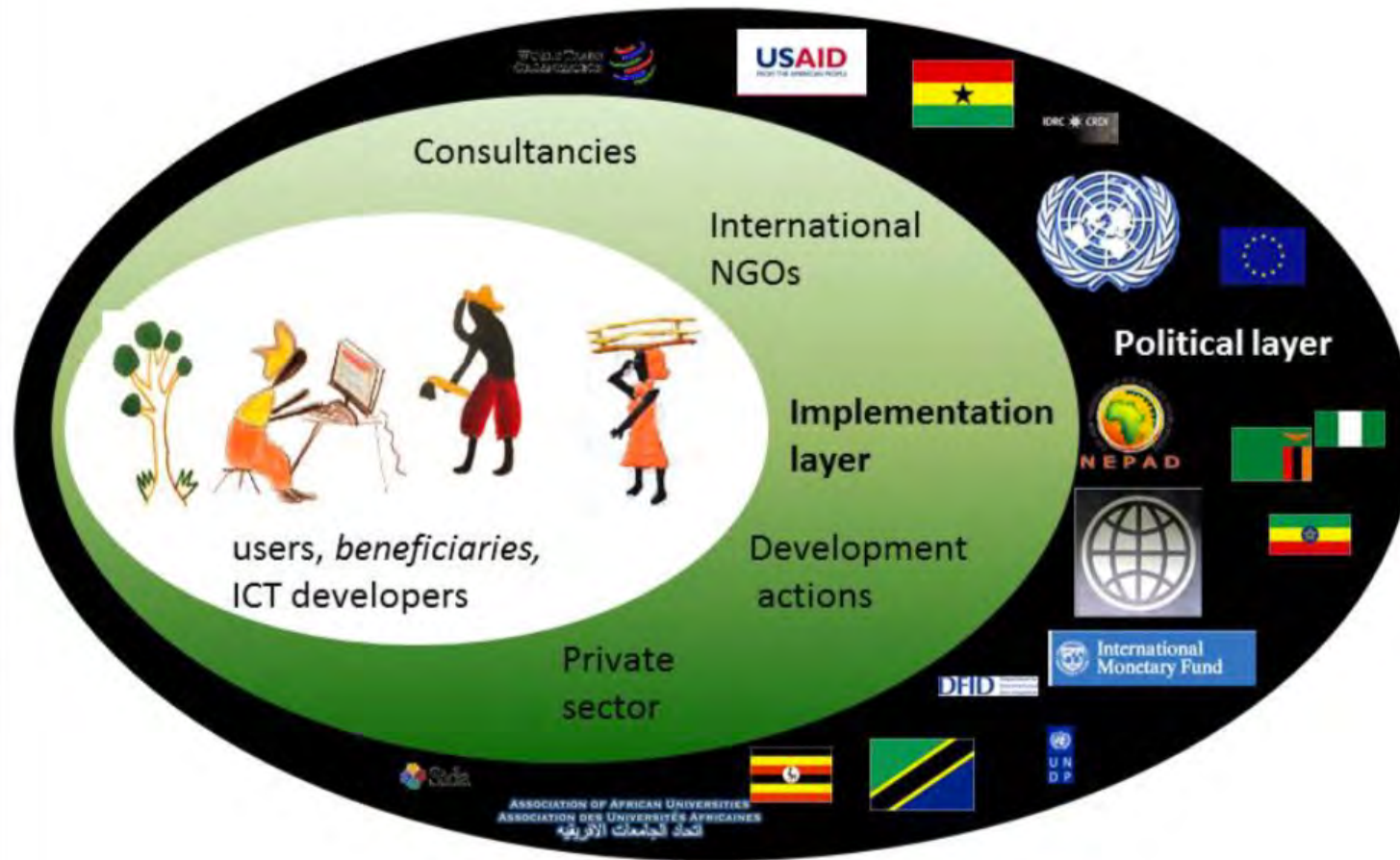Orange lets big data serve people's needs

Although corporate ownership of the data seems a challenge in terms of unrestricted access, gaining the relevant qualitative information to inform the research is an even greater one. The convenience of conducting data analysis on a huge scale in the comfort of the offices of international institutions may be outweighed by the damage which can be done by underinformed quantitative research a resulting policy interventions. The human toll of policies such as structural adjustment or forced displacement in Africa (Scott 1998) illustrates that this problem is neither new nor confined to bi data.

From: Taylor, Linnet, and Ralph Schroeder. "Is big international development policy." *GeoJournal* 8

ByteDance

Microsoft

Shortlisted for the FT/McKinsey
Business Book of the Year Award 2019
The International Bestseller
THE AGE OF SURVEILLANCE CAPITALISM
THE FIGHT FOR A HUMAN FUTURE AT THE NEW FRONTIER OF POWER
SHOSHANA ZUBOFF
'The true prophet of the information age' FT

amazon

Polyp.org.uk
'GOLD DIGGERS'

Two models combined: (A. and B.)

Onion model of the ICT4D ecosystem

- If possible: leave it to the private sector (telecom sector, currently "Big Five")

- If not solved my the market: *Intervention* by the International Community (because of market failure)

C. Decolonial theory
## Historical patterns in the Digital Society

- Digital Society is a space of human interaction, the digital *Agora,* but not older than about two decades.

- It has inherited historical patterns of the "real" social world, while also introducing new ones.

- These are many positive social aspects but also bias, power structures and painful historical patterns such as discrimination and colonialism.
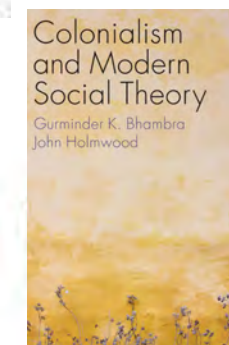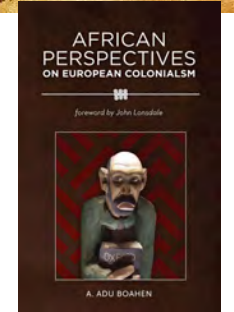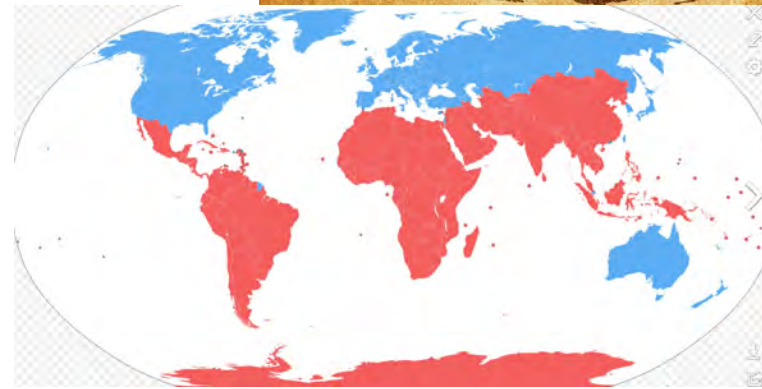
Let's now analyze the Digital Society through a decolonial lense

D. Alternative models for ICT4D, inspired by participatory action research

- User-centered design, collaboration, adaptation, iteration
  - Living labs, Agile development methods
- Action research/design science
- Local innovation, Participatory Technology Development
- Transdisciplinary action research (e.g. working with local communities, farmers, women groups etc). E.g: Robert Chambers, Saa Dittoh, Mathieu Ouedraogo, Chris Reij and others.
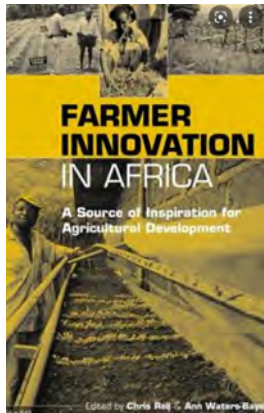
Theories to bridge the Digital Divide: lead to different approaches

A. International Development programs/actions – **interventions (**1990-2005)
   - **Embrace modernity, increase GDP, roll out infrastructure,**
   - **transfer of technology, capacity building, public investments**

B. Market ideology – private sector-led innovation
   - **International trade, open market development, private investment, free fl**
   - **of information, goods (**2005- present day)

C. Decolonial, anti-development approaches

D. Alternatives e.g., participatory – grassroot/bottom up initiatives; open source movements, Regreening Initiatives, community-based innovation

W4RA
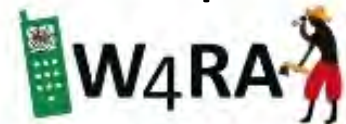
Transfer of technology (usually A.)

*"Given that the **Internet** has become an indispensable tool for realizing a range of human rights, combating inequality, and accelerating development and human progress, **ensuring universal access to the Internet** should be a priority for all States."*
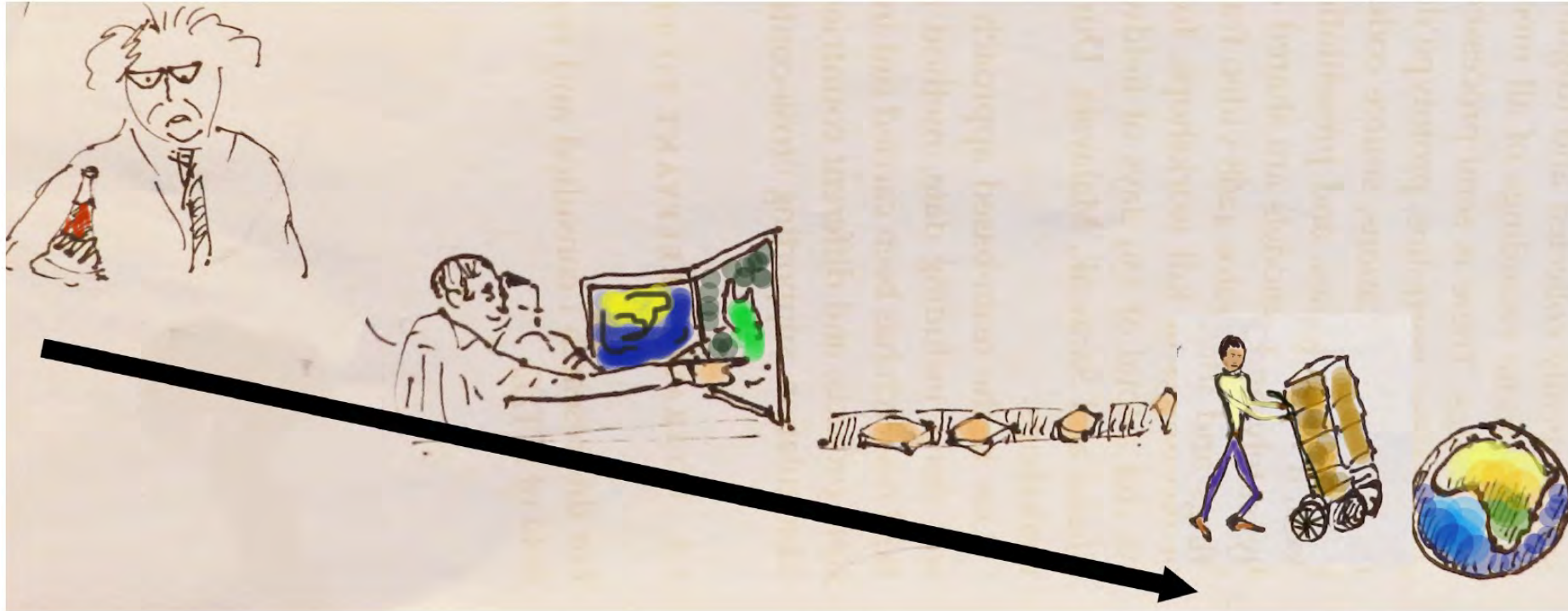
Frank La Rue, 2011

UN Special Rapporteur

Development through *modernization:* industrialization, automation (A.)

Linear model of innovation (A.)

See Linear Innovation: Schumpeter 1911, Usher 1954

More linear models in international development (A.)

LOGICAL FRAMEWORK MATRIX

| Narrative Summary	Verifiable Indicators (OVI)	Means of Verification (MOV)	Important Assumptions
GOAL Improve food security in Mali	# of people Improved diet	Large scale survey before/after intervention	Access to seeds will Lead to improved food security
PURPOSE Farmers have Access to high quality seeds	# of farmers use quality seeds	Survey among Group & controll group	IS will provide Better access to seed system
OUTPUTS Farmers use IS to trade seeds	Farmers use IS to trade seeds	Logfiles of Access to IS	Farmers use IS to trade seeds
ACTIVITIES Install information system for farmers	Inputs (The budget that you need	IS installed Installation	Technical support locally available

W4RA

(C. and D.) Alternative ideas

Nora Mckeon (2015)
Food Security Governance

Chris Reij and Ann Waters-Bayer. Farmer
innovation in Africa: a source of inspiration
for agricultural development. Earthscan, 2001.

Mudhara, M., et al. (2016).
Community Innovations in Sustainable Land Management
Lessons from the Field in Africa. Routledge.
Yaneer Bar-Yam, Making Things Work ,
solving complex problems in a complex world.
Knowledge Industry. 2003

Rogers, E. M. (2010).
Diffusion of innovations.
Simon and Schuster.

Ben Ramalingam (2013)
Aid at the Edge of Chaos
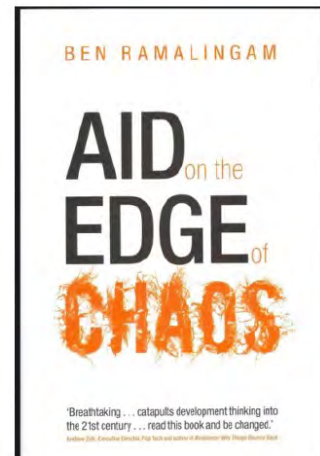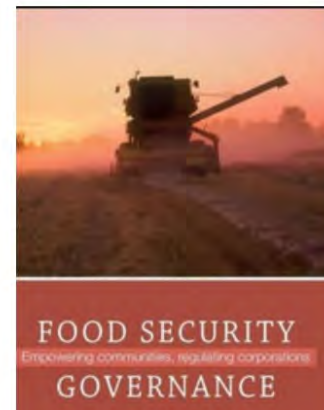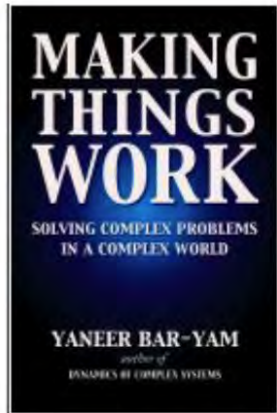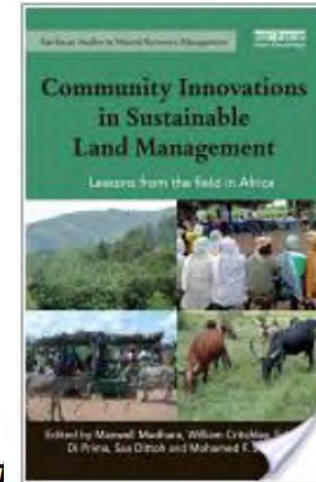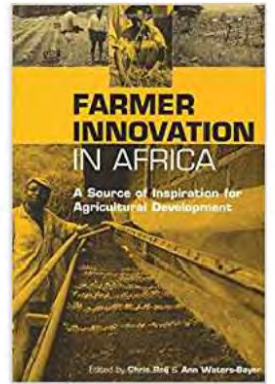
Development theories and Digital Divide
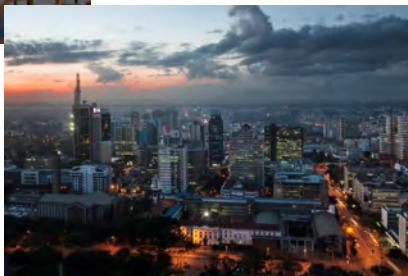
"north" – "south"

urban – rural digital divide

high tech – low resource

financial capacity

access to energy

literacy – low literacy

- ICTs and energy grid access, price
- Relevance of content – language, literacy
- ICT market producer-dominated: international private sector - ICT consumption as market segment – only entertainment
- Data privacy, no legislation protection of citizens – predatory fintech, filter bubbles, fake news, social media consumption, mobile phone addiction, cyber criminality, AI etc etc.
- New problems of the Digital Divide, from access problems to "junk- ICT consumption".

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

W4RA

How does this apply to the Digital Society?
Internet World Stats changing rapidly

Internet Users Distribution in the World - 2021
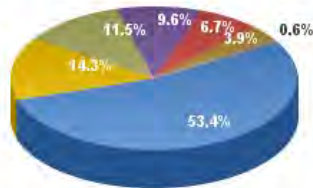
- Asia 53.4%
- Europe 14.3%
- Africa. 11.5%
- Lat Am / Carib. 9.6
- North America 6.7
- Middle East 3.9%
- Oceania / Australia

Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 5,168,780,607 Internet users in March 31, 2021
Copyright © 2021, Miniwatts Marketing Group

INTERNET USAGE STATISTICS
The Internet Big Picture
World Internet Users and 2021 Population

WORLD INTERNET USAGE AND POPULATION STATISTICS
2023 Year Estimates

World Regions	Population (2022 Est.)	Population % of World	Internet Users 31 Dec 2021	Penetration Rate (% Pop.)	Growth 2000-2023	Internet World %
Africa	1,394,588,547	17.6 %	601,940,784	43.2 %	13,233 %	11.2 %
Asia	4,352,169,960	54.9 %	2,916,890,209	67.0 %	2,452 %	54.2 %
Europe	837,472,045	10.6 %	747,214,734	89.2 %	611 %	13.9 %
Latin America / Carib.	664,099,841	8.4 %	534,526,057	80.5 %	2,858 %	9.9 %
North America	372,555,585	4.7 %	347,916,694	93.4 %	222 %	6.5 %
Middle East	268,302,801	3.4 %	206,760,743	77.1 %	6,194 %	3.8 %
Oceania / Australia	43,602,955	0.5 %	30,549,185	70.1 %	301 %	0.6 %
WORLD TOTAL	7,932,791,734	100.0 %	5,385,798,406	67.9 %	1,392 %	100.0 %

NOTES: (1) Internet Usage and World Population Statistics estimates are for June 30, 2022. (2) CLICK on each world region name for detailed regional usage information. (3) Demographic (Population) numbers are based on data from the United Nations Population Division. (4) Internet usage information comes from data published by Nielsen Online, by the International Telecommunications Union, by GfK, by local ICT Regulators and other reliable sources. (5) For definitions, navigation help and disclaimers, please refer to the Website Surfing Guide. (6) The information from this website may be cited, giving the due credit to www.internetworldstats.com. Copyright © 2022, Miniwatts Marketing Group. All rights reserved worldwide.

The Internet as a hegemonic system

Omnipresent Internet is seen as the solution for the Digital Divide (See SDGs. SDG-9)

The networked, omnipresent nature of Internet and Web hold a number of characteristics which [...] it into a hegemonic system.

Hegemonic in the sense: joining it becomes unavoidable
As a successful innovation it expands exponentially
After a certain tipping point is reached it becomes a standard
There is no alternative
You cannot avoid it, if you try to avoid it you become excluded.

Other types of hegemonic systems: language (e.g. English), monetary system, network standards, software systems, communication systems, fashion, etc.

See also: David Singh Grewal 2009. Network Power, The Social Dynamics of Globalization.
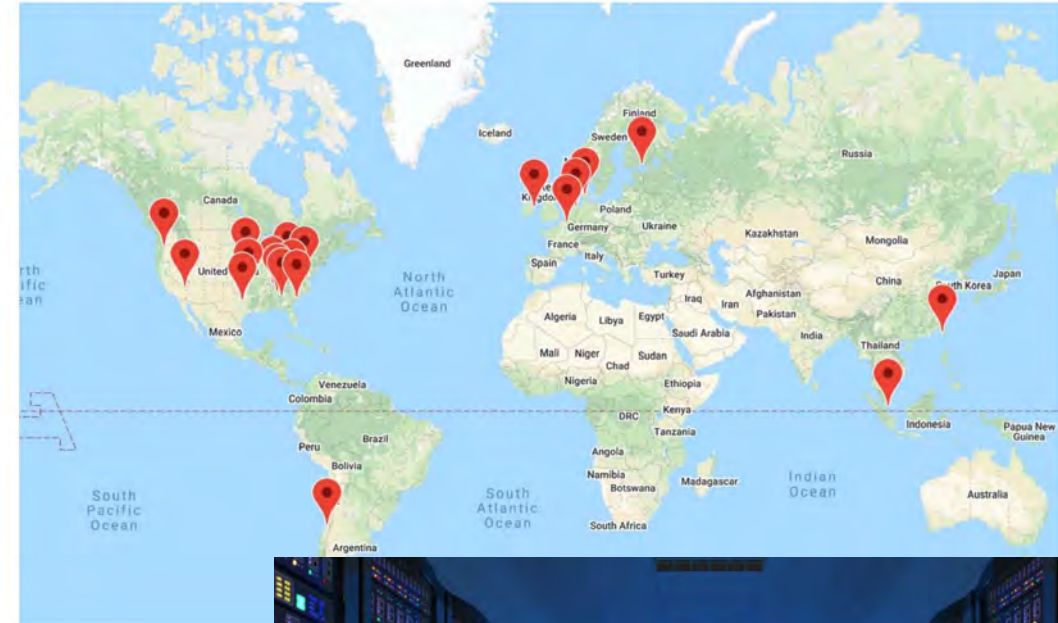Yale University Press.
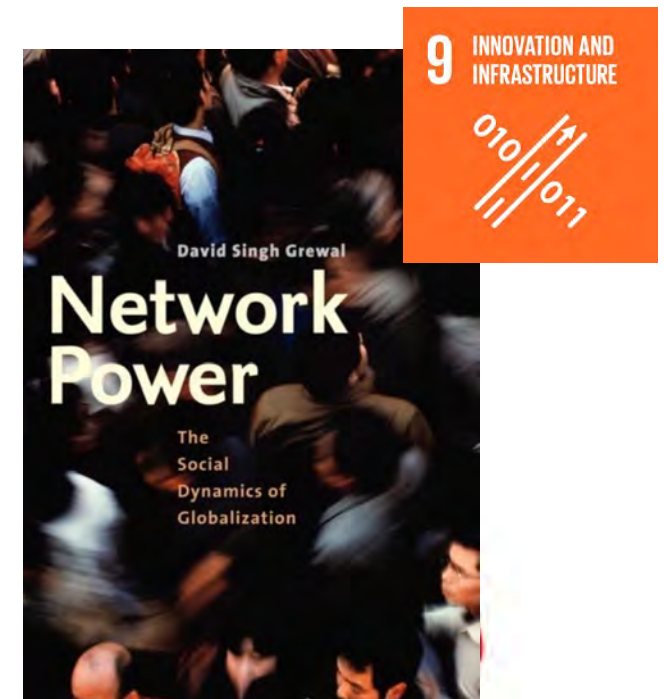
Digital "production – consumption" divide

Regulation, legal frameworks for Digital

Share in the economy - production , local innovation

Decision-making, policy

Competition

Decent work – ICT related

Protection of citizens, citizenship

Institutions able to regulate ICTs

Quality education (incl. in ICTS)

Cultural expression

Own infrastructure

Google Data Center Locations Map

Here is the map overview of locations of Google Data Centers spread across the world:

Which Countries Have The Most Data Centers?

Number of data centers per country as of February 09,

Country	Number
United States	
United Kingdom	451
Germany	442
Canada	279
Netherlands	274
Australia	272
France	248
Japan	199

Source: Cloudscene

https://datacenterlocations.com/google/

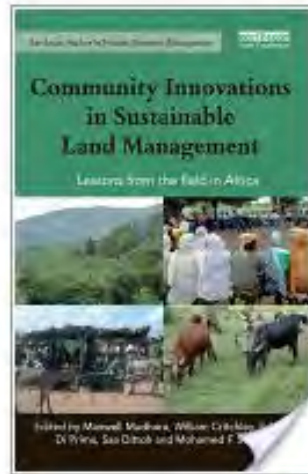- https://www.statista.com/chart/24149/data-centers-per-country/

D. Alternative 2006 – present: a narrative of ICT4D research

ICT4D research and education in West Africa, Latin America, SE Asia
2006 - 2022

W4RA

# Analogy between digital technologies and agricultural technologies

New trends (e.g. Via Campesina)
Large-scale agriculture versus Community-based agriculture

Food Security versus Food Sovereignty

Climate-resilience, local production, Farmer innovation, African Regreening Initiatives

W4RA

ICT4D: 3.0: collaborative, iterative adaptive approach to digital development in the field
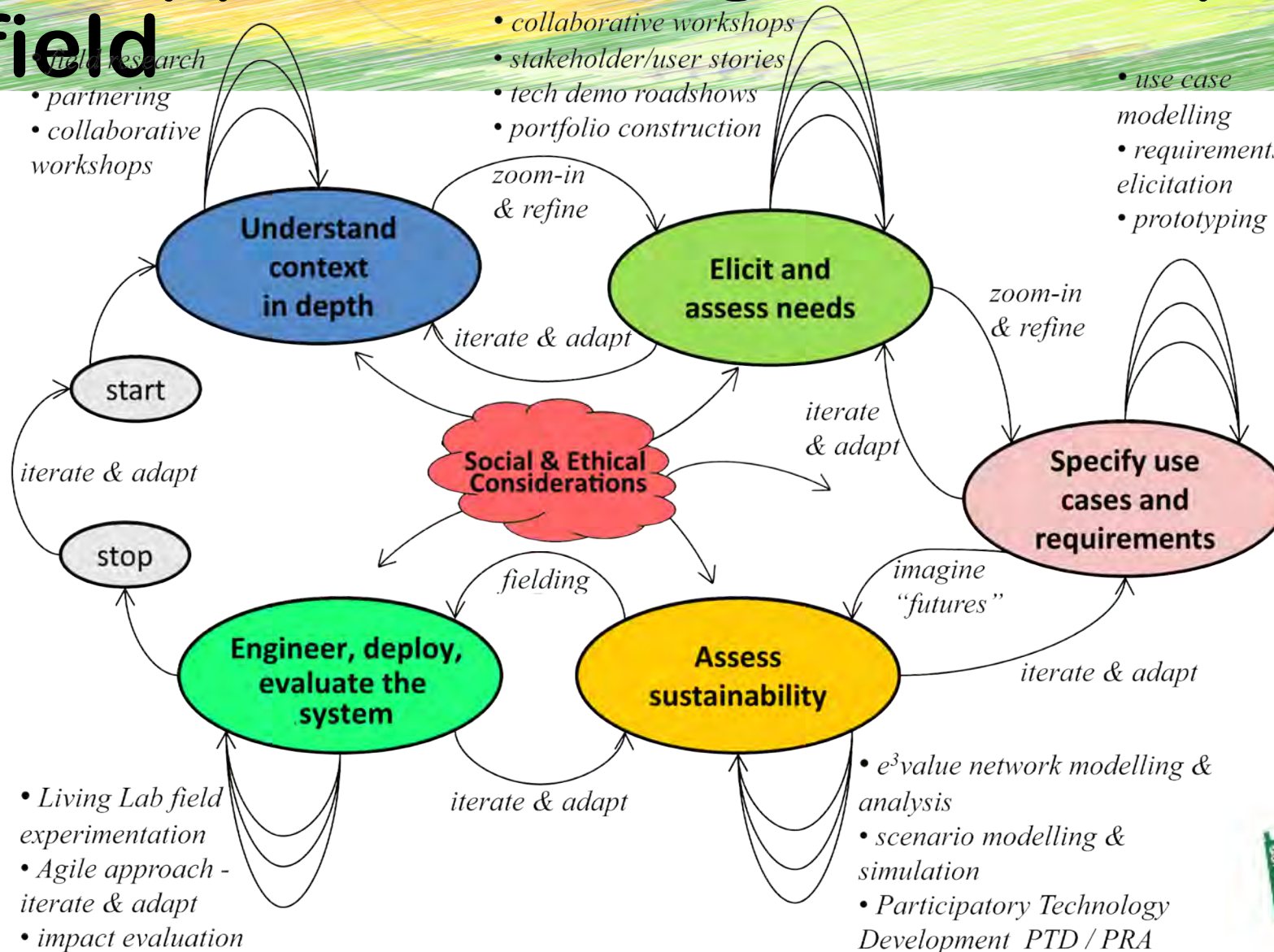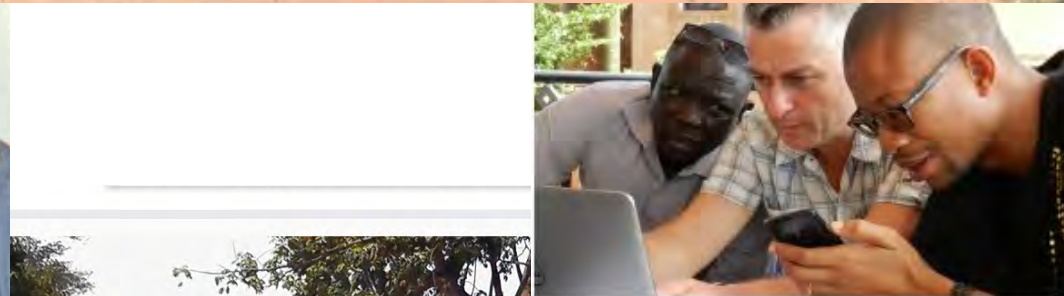
Since 2009 W4RA program – inspired by African Regreening Initiatives

W4RA team and researchers from the University for Development Studies, Ghana held a Living Lab workshop in the rural community of Guabuliga, Northern Ghana

read more...

Web alliance for regreening in Africa

rvices, especially mobile ones, e potential to play a major role in ng social and rural development in ping economies. Market penetration ral community adoption of basic telephony and services have been

Apps for Food Security in Mali – W4RA and AOPP team up

From 9 to 14 October 2015, W4RA team visited Mali, to kick-start a new research project to support farmers to improve resilience and food security. This project,
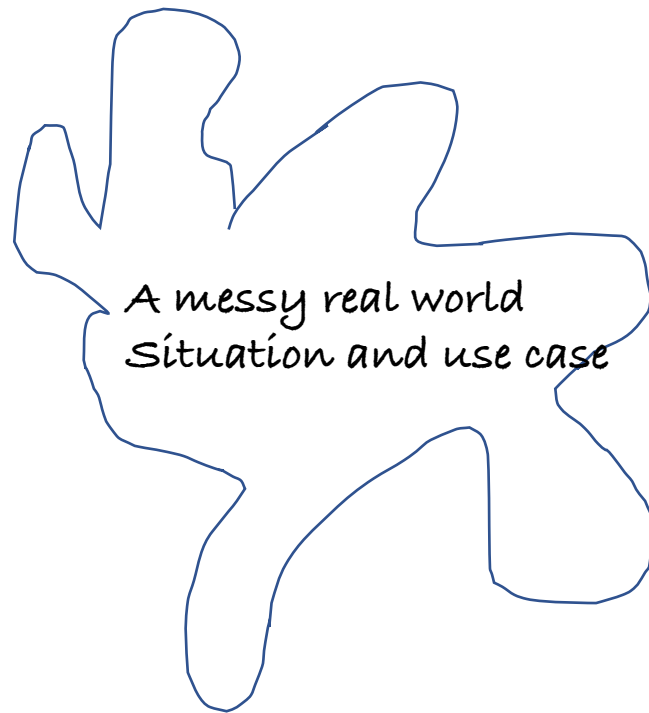
Read more

Living Lab workshop in Guabuliga, Ghana, by W4RA and UDS researchers

How does it work? ICT4D in a community approach (From real world use case to ICT4D artefact)

A messy real world
Situation and use case

Iterative process
In which collaboration
and context analysis
Take place in a space of
Interaction, debate,
co-design.

Relationhip is very
 important for the successful
Deployment of ICT4D.

A structured
ICT
Artefact
Adapted to context

W4RA
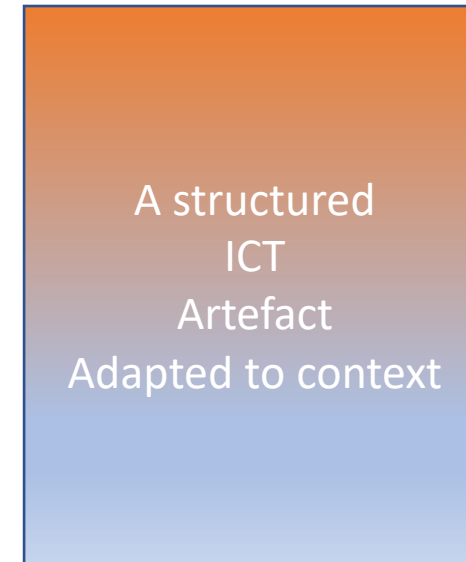
Needs assessment and *collaborative* goal construction, with the users

- Who are the users? What are their operational goals?
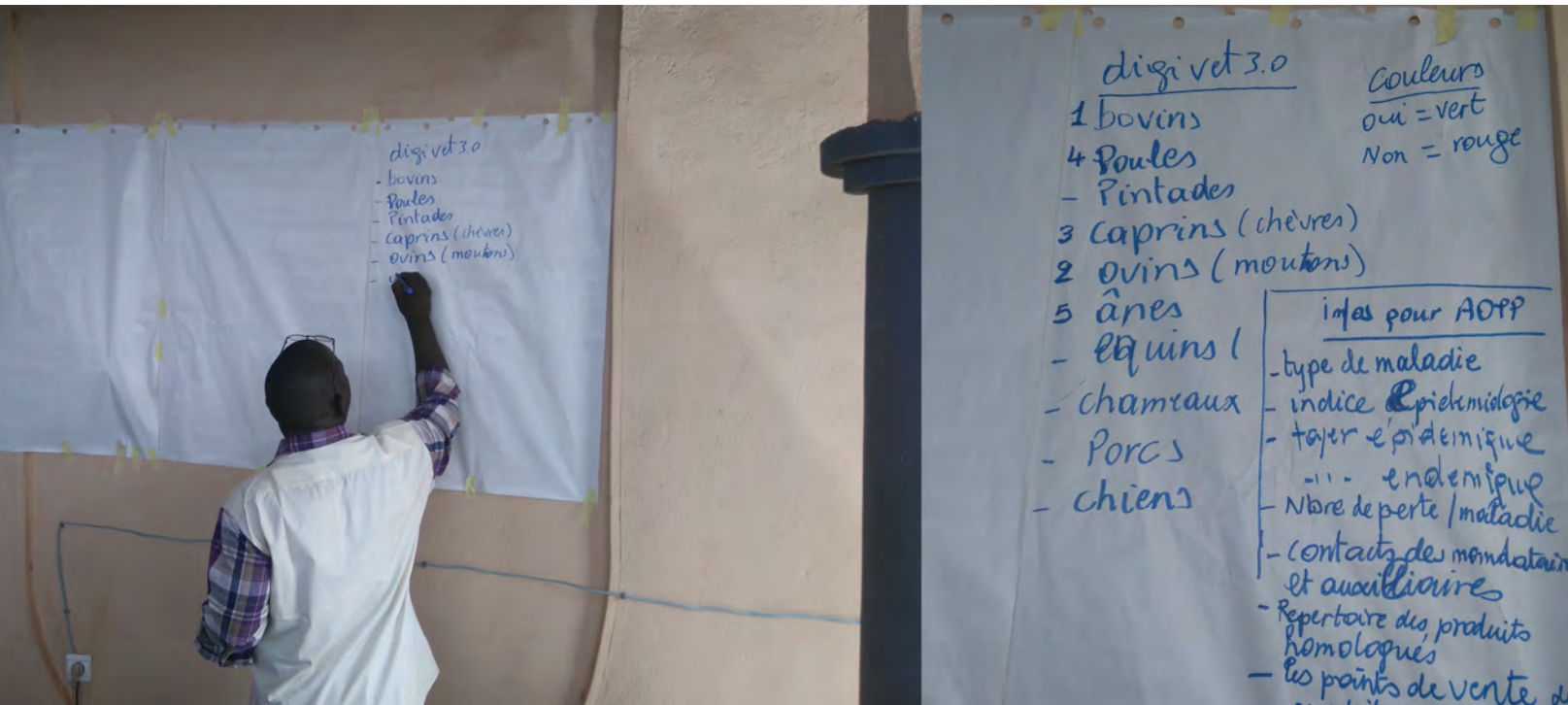
Example of collaborative workshop in Guabuliga, Ghana, exploring user goals for voice-based app

Example of collaborative workshop in Bamako, AOPP office, Mali, 2016, designing animal health application for farmers.

W4RA

ICT4D is genuinely collaborative and respective of local agency

Example of student research project, Ghana – Netherlands 2015

Examples of a collaborative workshop with seed cooperatives in Siby, rural Mali, April 2019.

Kofi logs into the system and his language of choice is recognized. The voice guides him through the different questions.

"Welcome farmer Kofi, please select the species of your sick animal"
Cow

"Now enter whether the symptoms can be seen on the body or not. Red means no, green means yes"

Yes

...etc

An example of ICT4D and AI4D

About Tiballi project

- Tiballi is about designing/making AI work for rural communities in Ghana – lead researcher Francis Saa-Dittoh
- Using the ICT4D 3.0 framework
- Designing AI4D solutions: small data, small energy consumption
- Resourcing Indigenous languages in the field

Building Automatic Speech Recognition

Using a local platform Kasadaka

Using AI for rain data collection

Tiballi and indigenous language dagbanli

Context analysis and needs assessment: workshop + Field visit (ICT4D 3.0)

Antria Panayiotou. Overcoming Complex Speech Scenarios in Audio-Cleaning for Voice-to-Text. Short research project, as part of the Tiballi Project. Master Thesis Computer Science, Vrije Universiteit Amsterdam, June 2023.

Source: https://dagbani-speak.web.app/

Fig. 1. Use case scenarios for the personas.
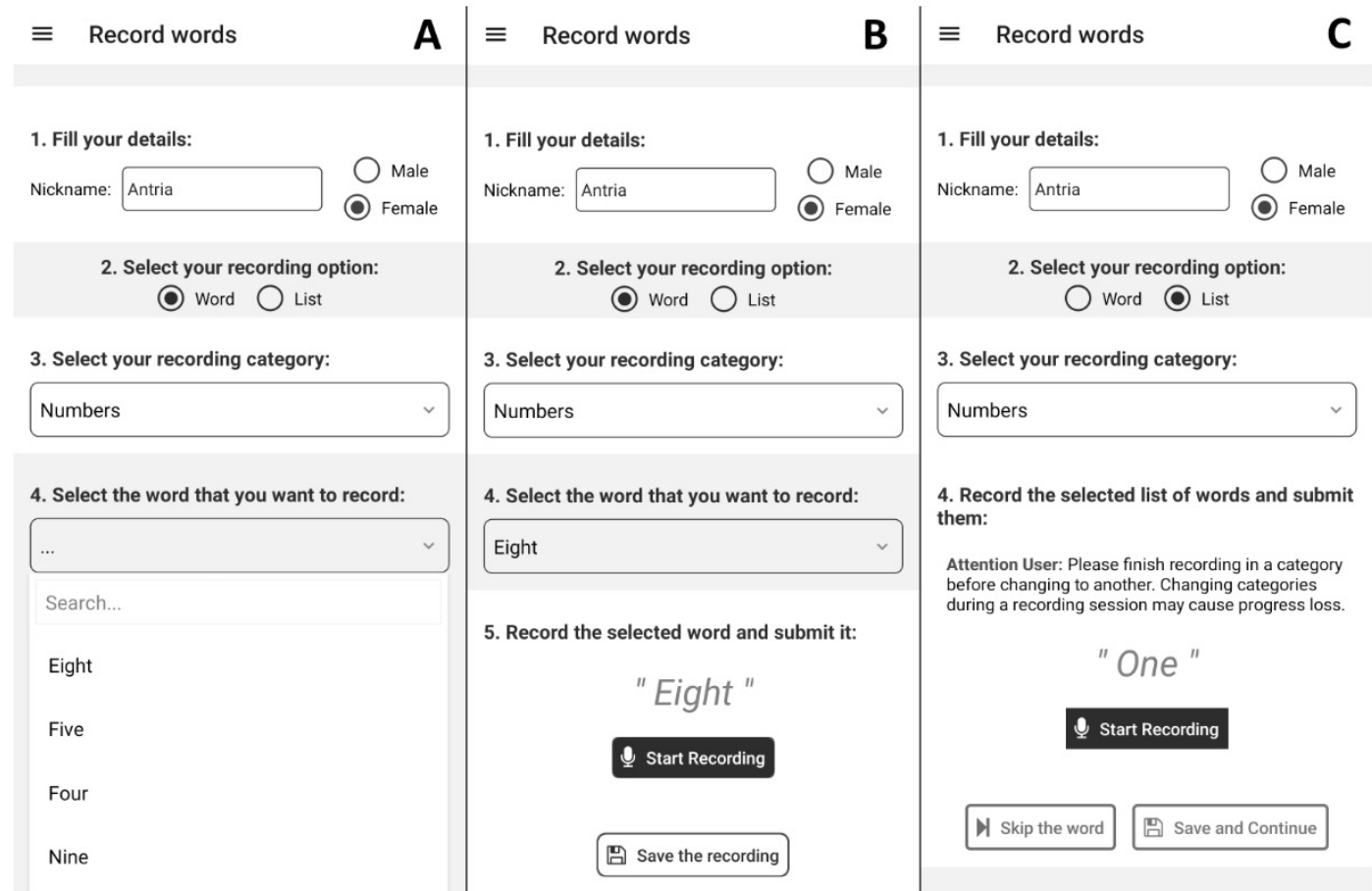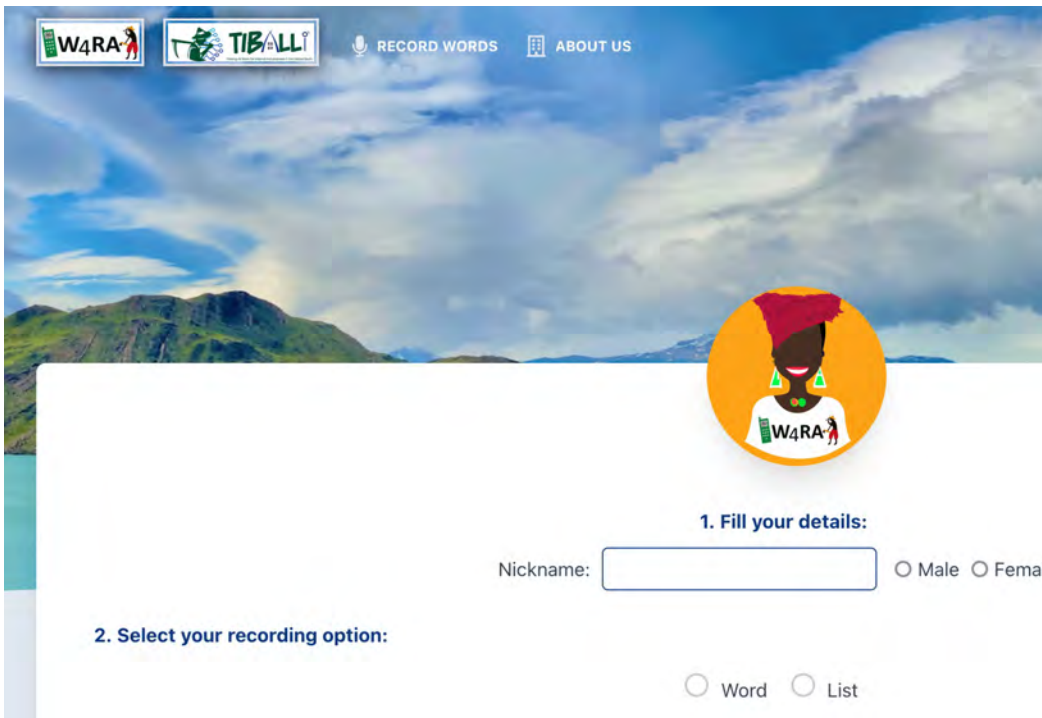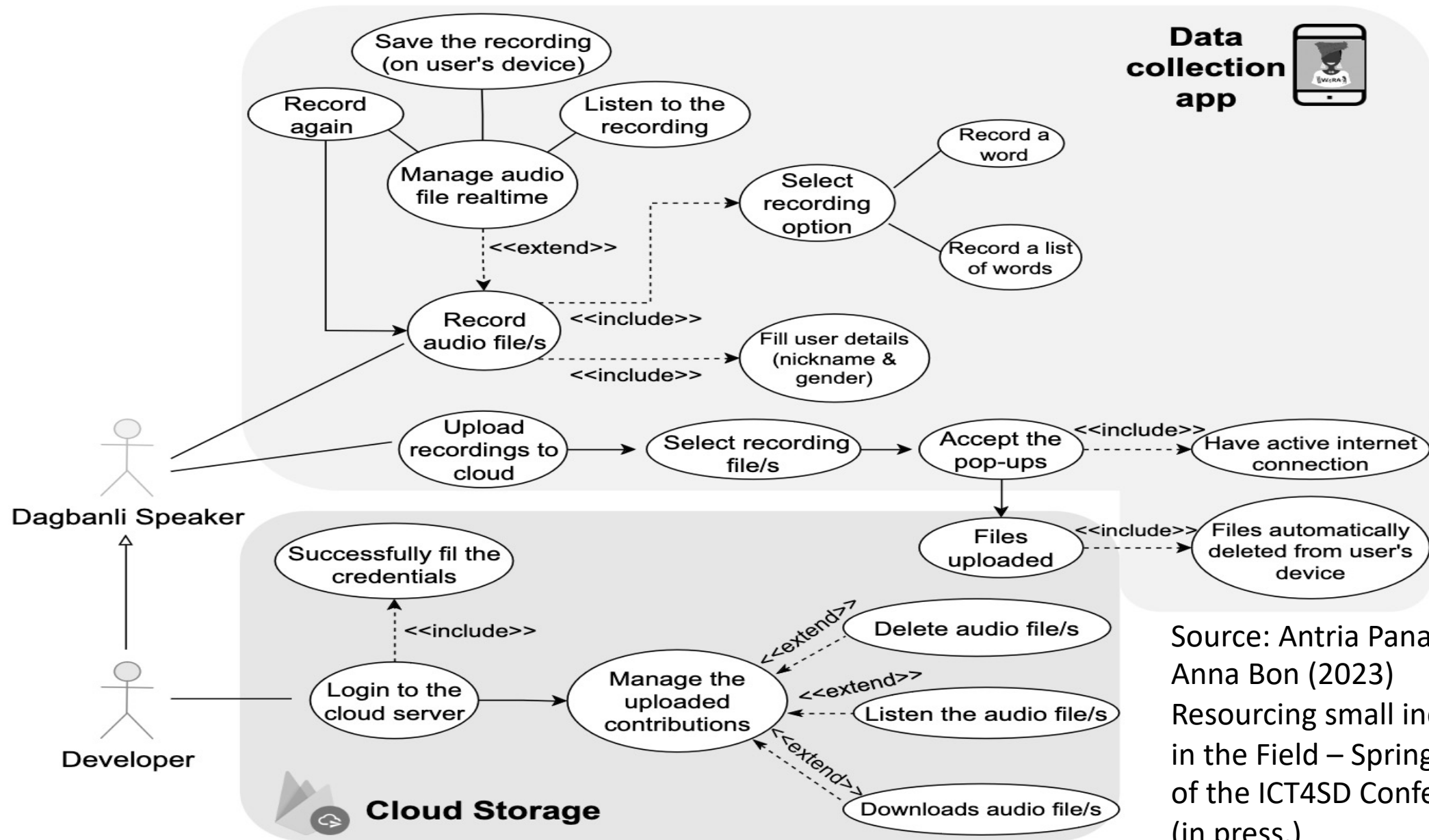
Source: Antria Panayiotou, Francis Dittoh, Anna Bon (2023)
Resourcing small indigenous languages in the Field – Springer Proceedings of the ICT4SD Conference Aug 2023 (in press.)

Result of the first iteration feeds the second

- Farmers in Tingoli, Nyankpala want to know the aggregated rainfall, and a cropping calendar for

a few crops (Maize, Sorghum, Groundnuts,

Soya beans).

- It is necessary to install rain gauges for data

Collection -> second cycle, install unexpensive

Rain gauges in the villages

From Raindrops to Insights: AI Empowers Hyperlocal rain Tracking in Ghana (June 2023 – ICT4D in the Field group project)

By Parissa Akefi, Laurens Beck, Alexander Edin, Ruthu Rooparaghunath, Krasen Todorov, Kairui Wang
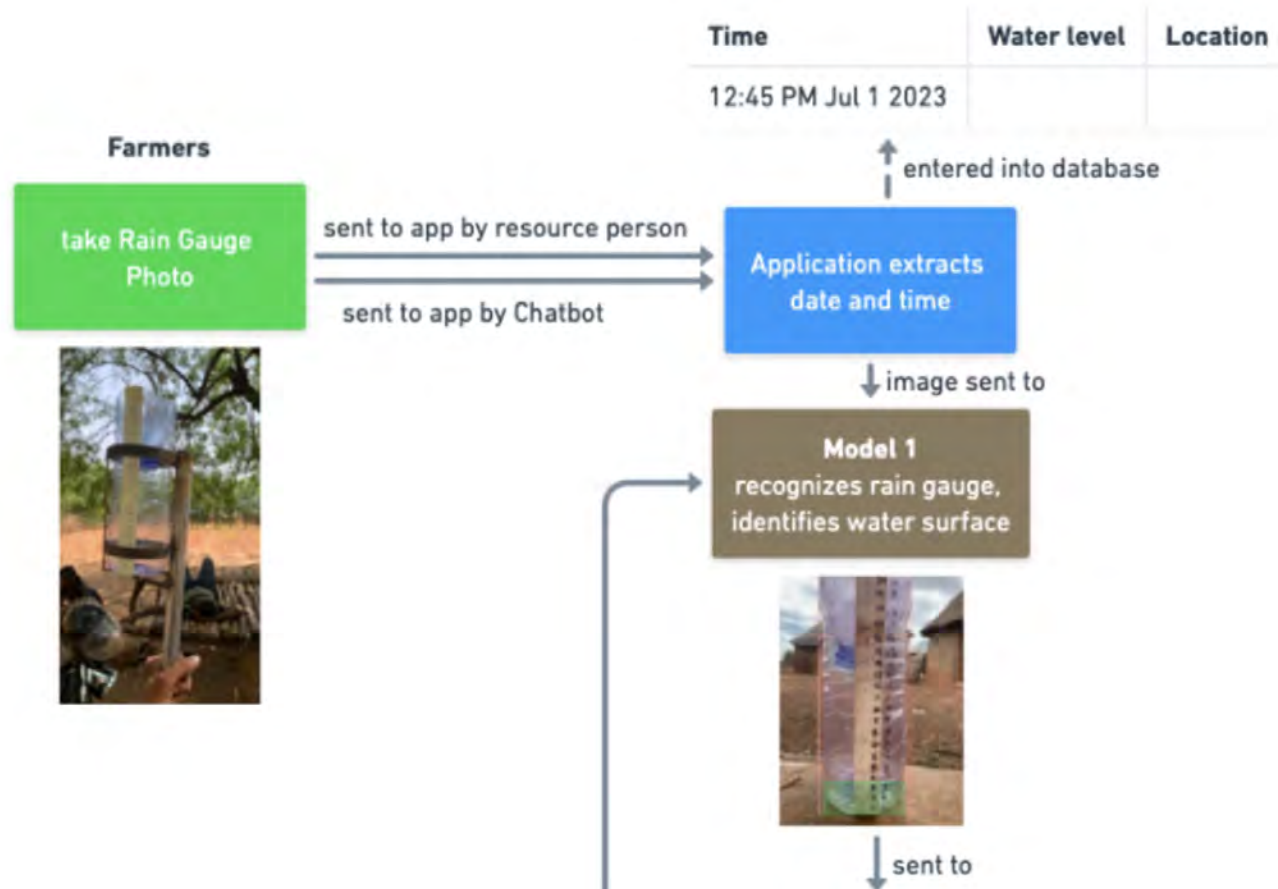
Traiing set for Machine Learning

From Raindrops to Insights: AI Empowers Hyperlocal rain Tracking in Ghana
Parissa Akefi et al. 2023 ICT4D research project

sent to

Algorithm 2
isolates water surface

sent to

add to training

Model 3
detects handwritten numbers

— entered into database — →

Time	Water level	Location
12:45 PM Jul 1 2023	3cm	Tingoli

ID on rain gauge sent to

Model 4
identifies letters, matches ID to location

— entered into database — →

Check
is accuracy anywhere < 90%?

— No →

Available to view
for researchers, resource persons and others to create trends, graphs and further analyze

↓ Yes

Researcher/Resource person
verifies data manually, if model was wrong, image is added to model training

Time	Water level	Location
12:45 PM Jul 1 2023	3cm	Tingoli
2:00 PM Jul 2 2023	1cm	Tingoli
10:00 AM Jul 2 2023	5cm	Nyankapala

W4RA

Voice platform Kasadaka

Fig. 3. Overview of the Kasadaka system architecture.
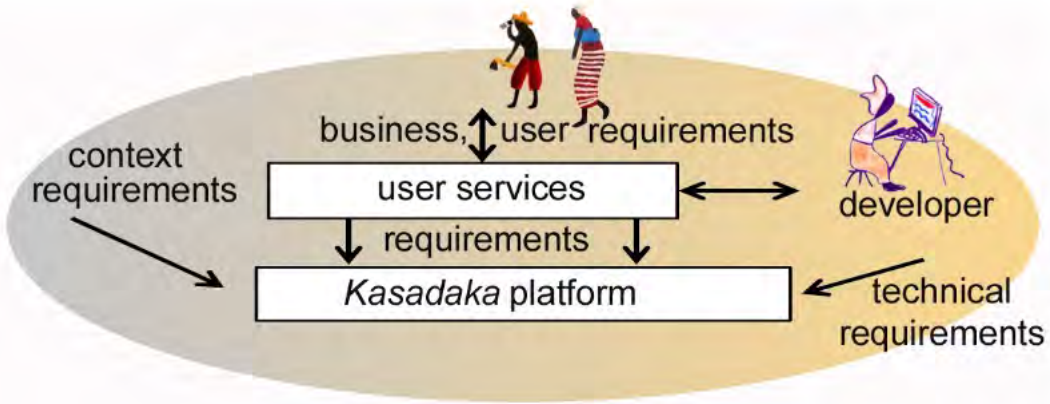
Source:

Ney Yibeogo - Hello World: A Voice Service Development Platform to Bridge the Web's Digital Divide

André Baart[1], Anna Bon[2], Victor de Boer[3], Wendelien Tuijp[4] and Hans Akkermans[5]

Voice platform Kasadaka, implemented in Mali at Radio Sikidolo, February 2018
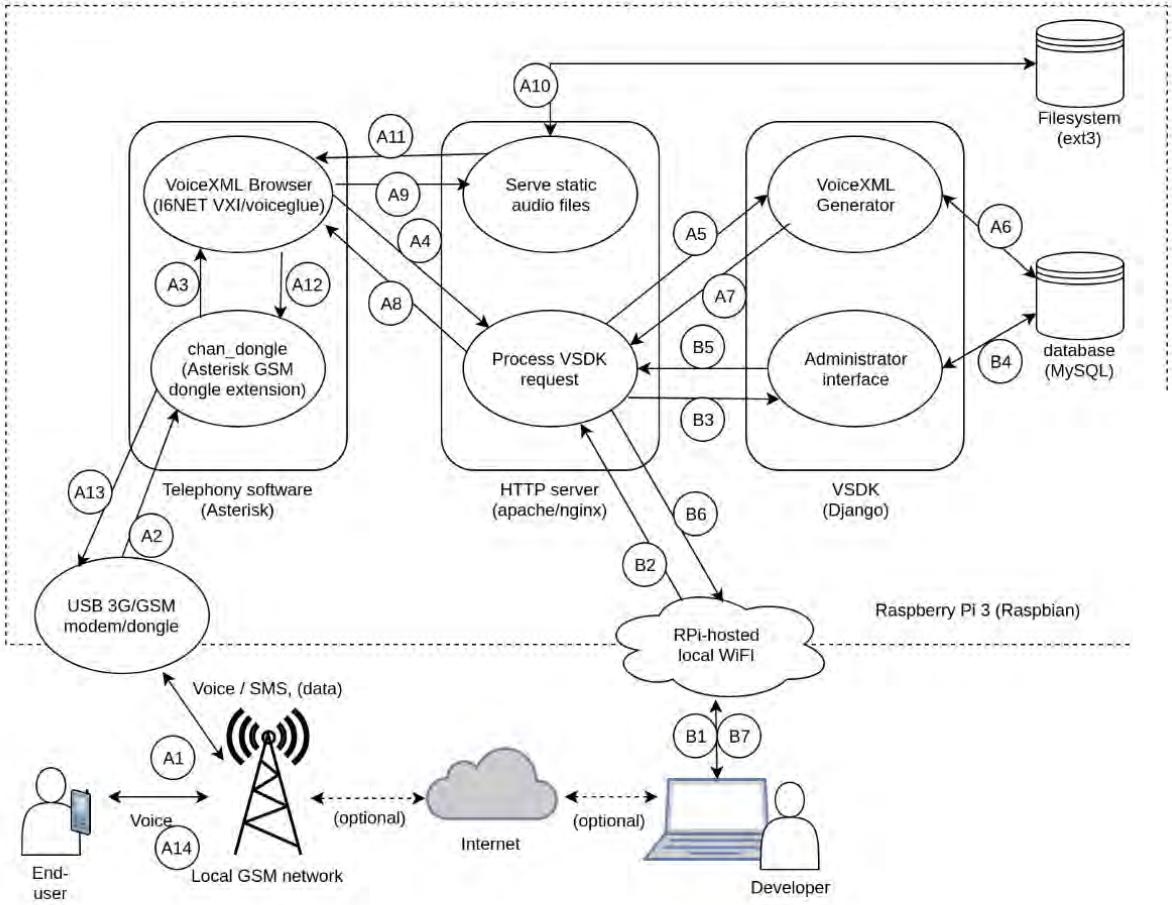

Figure 4: Adama Tessougué of Radio Sikidolo shows the Kasadaka on which the Foroba Blon voice service now runs with its Bambara language interface.

Figure 5: André Baart and Adama Tessougué evaluating the VSDK running on the Kasadaka platform, at Radio Sikidolo in Mali.

https://radiosikidolo.com/
https://w4ra.org

W4RA

Bottom line Digital Society asks for a new type of education

JOIN US FOR THE COLLABORATIVE ONLINE INTERNATIONAL MASTER COURSE

"ICT FOR DEVELOPMENT IN THE FIELD 2022"

"Artificial Intelligence in and for the Global South"

Jointly given by : Vrije Universiteit Amsterdam, Universiti Malaysia Sarawak, University for Development Studies, Ghana. Open for selected master students with a bachelor-level background in one of the digital fields (IS, CS, AI, Digital Humanities, Computational Social Sciences etc. ...).

Course period: June 2022
period 6 - a 6 ECTS master course

this course is part of the new European Master

"Digital Society and Global Citizenship"

Contact Dr. Anna Bon - a.bon@vu.nl

Education in the Global Digital Society

- Teaching the new generation of Digital Society/ICT4D Professionals – interdisciplinary approaches

- Building awareness of the complexity of the challenges in the Digital Society with special focus on the Global South

- Working with HEs in the Global South in education and research

- Co-designing curricula, co-teaching

- Bringing students together in joint ICT4D/ Digital Society programs

- Doing Community-oriented, practical education & research

W4RA

Examples of master student projects

- Alina Saddiqui. **ICT for Women in Pakistan. Designing a safe haven platform for women in rural Pakistan.** Master thesis Information Science 2022. Vrije Universiteit Amsterdam. July 2022. [Thesis].

- Sohan Bhagwat. **Designing an Inclusive Digital Currency for Sub-Saharan Africa.** Master thesis Computer Science 2022. Vrije Universiteit Amsterdam. July 2022. [Thesis].

- Angel Lokasa. **Can crowdsourcing be a mechanism for decentralised governance? A case study in the conflict mineral supply chain in the Democratic Republic of Congo.** Master thesis Information Science 2022. Vrije Universiteit Amsterdam. June 2022. [Thesis] .

- George Vlad Stan. **"Small" language limited-vocabulary automatic speech recognition using Machine Learning**. Master thesis Computer Science 2021. Vrije Universiteit Amsterdam. August 2021. [Thesis]

W4RA

Example: EURIDICE education on the Digital Society & Global Citizenship

- Funded by the EU Digital Europe Porgramme. (budget 9.6 M EUR)

- 24 partners from EU, HEs from all over EU, Africa and Asia

- Collaborating on Global Challenge: Digital Society

- Inclusive, collaborative, design-oriented, innovative education, covering Grand Challenges: Digital Society in all its aspects

- Global Citizenship: buikding the new generation of professionals

- Goal: innovative interdisciplinary education at various levels:
  - Master level, teacher training, professional life-long training
  - Topics: intergrate different disciplines, AI, CS, Digital law, Philosophy, Ethics, Social Sciences, Economics, Educational Sciences etc.

W4RA

The final Digital Humanism question
Is it possible to build a fair and inclusive Digital Society… ?

- Debate & policy: Involve more people, diverse perspectives, in the debate/design. Concerns about the Digital Society are global and must be addressed collaboratively (cf. Global Climate Debate, IPCC report)

- Research: alternative models to *ICT in and for the Global South* should be further explored.

- Education in digital society subjects (e.g. north-south cooperation in HE)

- *General awareness, discuss, influence policy and take action*

   We believe/hope that the future is not carved in stone

18 FAIR AND INCLUSIVE DIGITAL SOCIETY

# Thank you !

Towards Digital Sovereignty & the Global South

- **Inviting people** from low resource environment to participate in the debate about the future of the Digital Society

- **Support/collaborate with HE institutions**/researchers in the Global South – ICT4D curriculum development in and for the Global South

- **Open Source**, independence of Big Tech, initiatives to give autonomy back to the user

- **Community-centered** ICT4D – focus on small data solutions, contextual solutions, local entrepreneurship, local solutions to local problems, work what is already there.

- *Digital Sovereignty* – small scale initiatives with small data, using what is already there.

W4RA

Development aid post WW-II

- Harry Truman's speech in 1949

  "More than half the people of the world are living in conditions approaching misery. Their food is inadequate. They are victims of disease. Their economic life is primitive and stagnant. Their poverty is a handicap and a threat both to them and to more prosperous areas. For the first time in history, humanity posesses the knowledge and skill to relieve suffering of these people. The United States is pre-eminent among nations in the development of industrial and scientific techniques. The material resources which we can afford to use for assistance of other peoples are limited. But our imponderable resources in technical knowledge are constantly growing and are inexhaustible.I believe that we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life. And, in cooperation with other nations, we should foster capital investment in areas needing development. Our aim should be to help the free peoples of the world, through their own efforts, to produce more food, more clothing, more materials for housing, and more mechanical power to lighten their burdens."
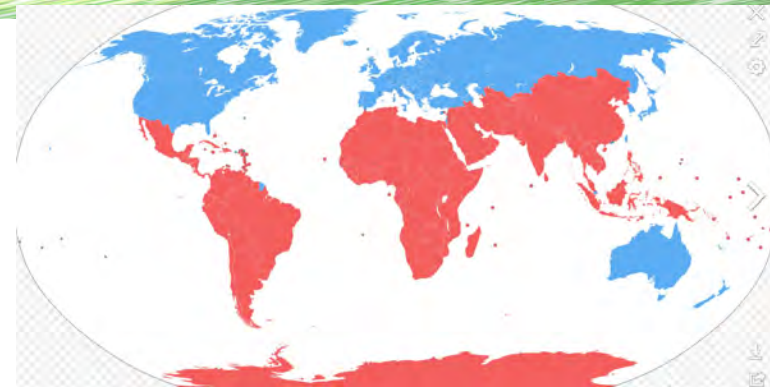
BEN RAMALINGAM

AID on the EDGE of CHAOS

'Breathtaking . . . catapults development thinking into the 21st century . . . read this book and be changed.'

W4RA