



Fair Technologies for and in the **Global South**

Redesigning the Digital Society
from a
decolonial perspective

Anna Bon

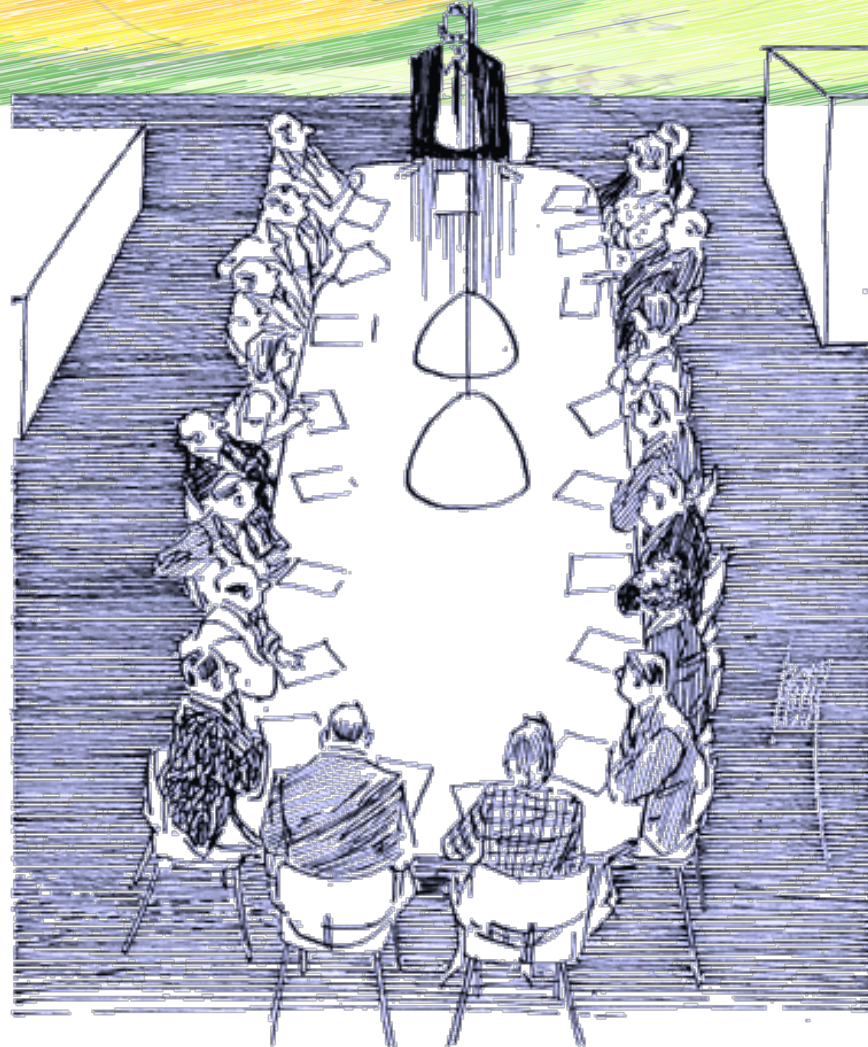
Lecture @DIGHUM Summerschool

21 September 2022



The Digital Society:

It is all about decision-making...



◊ WE Zouden een hoop tijd kunnen winnen
als jullie gewoon alles aan mij overlieten ◊

*) Cartoon by the late Dutch cartoonist Peter van Straaten



Problem statement

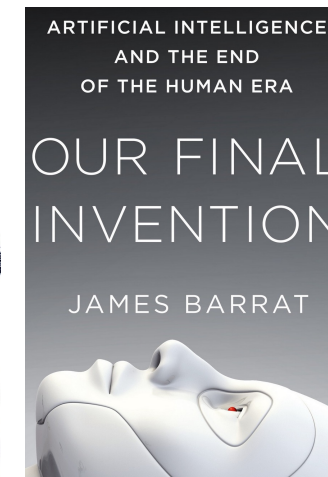
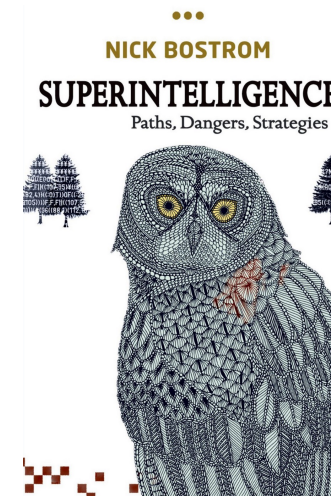
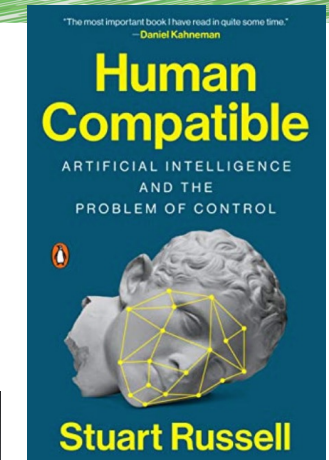
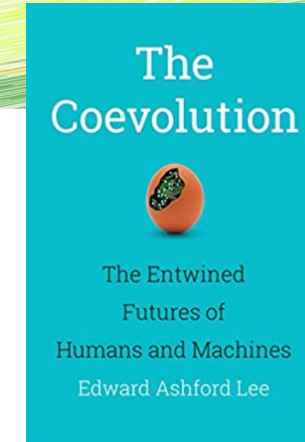
A blind spot in the Digital Society debates

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



Who are “we” in the Digital Society?

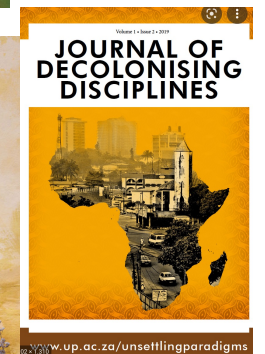
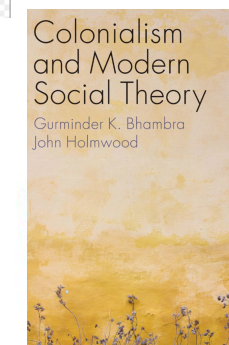
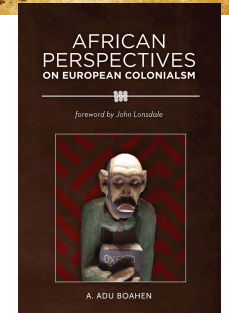
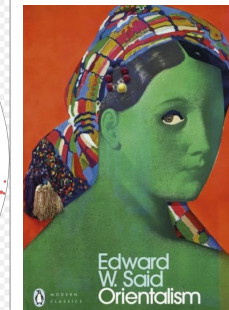
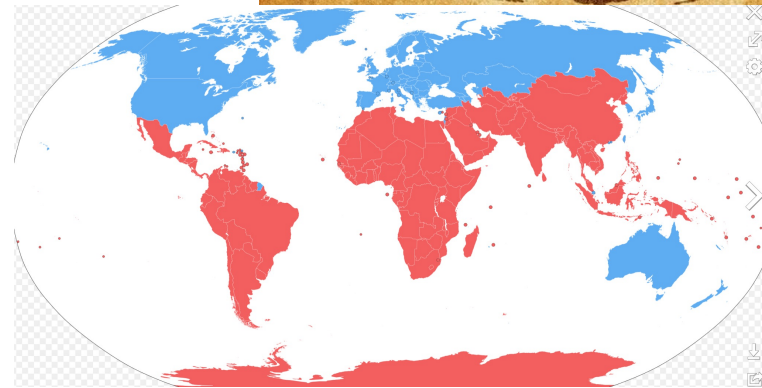
- “...are we humans defining technology or is technology defining *us*?” – Edward A. Lee
- “We humans have great influence over the outcome – influence that we exerted when we created the AI” – Max Tegmark
- “Perhaps, most important, AI, unlike aliens is something over which *we* have some say” – Stuart 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



What is decolonial theory and why do we use it?

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

ICTs and the Digital Society – bridging the *Digital Divide*

"Digital Divide" – refers to the gaps in access to information and communication technology (ICT), threatening the ICT - "have-nots", whether individuals, groups or entire countries.

The decolonial lense shows how the Digital Divide consists of relationships of dominance:

Urban – rural digital divide

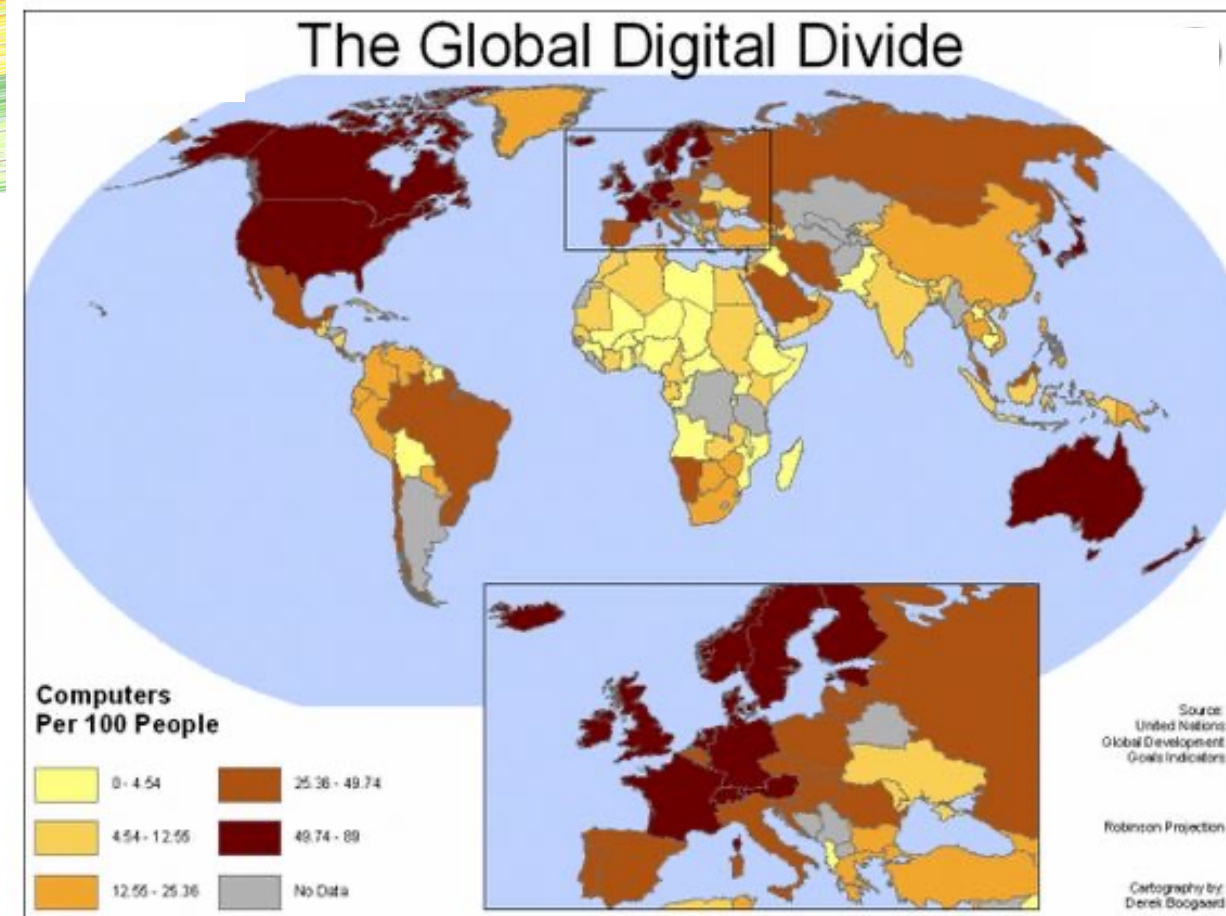
North – South

Wealthy – poor

Education – no education

Modern – traditional

Scientific - indigenous



The Digital Society through a decolonial lense: a hegemonic system

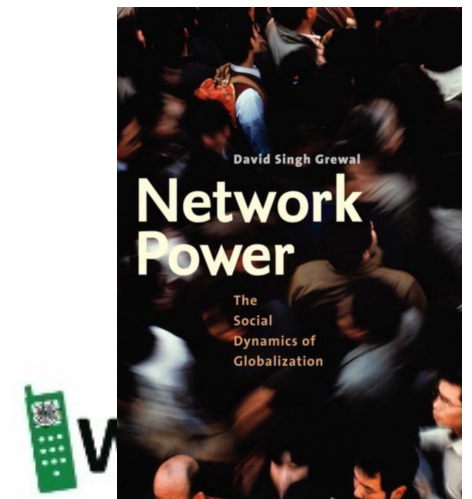
Omnipresent Internet is seen as the solution for the Digital Divide (See SDGs. SDG-9)

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.



2006 – present: a short (personal) narrative of ICT4D research



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

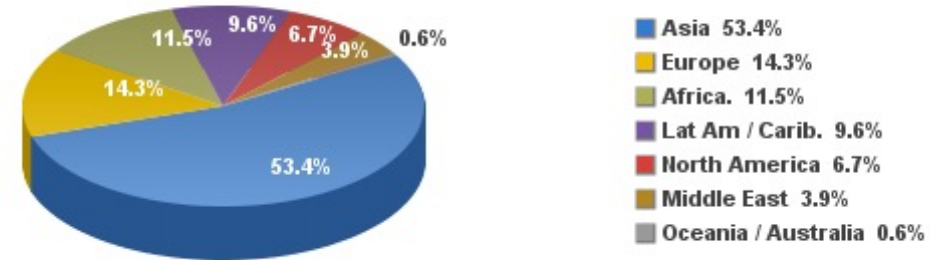


Internet World Stats presently

WORLD INTERNET USAGE AND POPULATION STATISTICS 2021 Year-Q1 Estimates						
World Regions	Population (2021 Est.)	Population % of World	Internet Users 31 Mar 2021	Penetration Rate (% Pop.)	Growth 2000-2021	Internet World %
Asia	4,327,333,821	54.9 %	2,762,187,516	63.8 %	2,316.5 %	53.4 %
Europe	835,817,920	10.6 %	736,995,638	88.2 %	601.3 %	14.3 %
Africa	1,373,486,514	17.4 %	594,008,009	43.2 %	13,058 %	11.5 %
Latin America / Carib.	659,743,522	8.4 %	498,437,116	75.6 %	2,658.5 %	9.6 %
North America	370,322,393	4.7 %	347,916,627	93.9 %	221.9 %	6.7 %
Middle East	265,587,661	3.4 %	198,850,130	74.9 %	5,953.6 %	3.9 %
Oceania / Australia	43,473,756	0.6 %	30,385,571	69.9 %	298.7 %	0.6 %
WORLD TOTAL	7,875,765,587	100.0 %	5,168,780,607	65.6 %	1,331.9 %	100.0 %

NOTES: (1) Internet Usage and World Population Statistics estimates are for March 31, 2021. (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 and placing a link back to [www.internetworldstats.com](#). Copyright © 2021, Miniwatts Marketing Group. All rights reserved worldwide.

Internet Users Distribution in the World - 2021



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

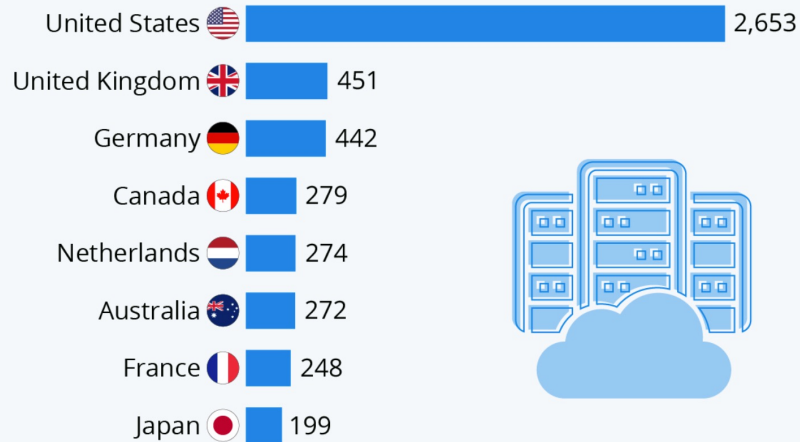
INTERNET USAGE STATISTICS The Internet Big Picture World Internet Users and 2021 Population Stats



However, location of datacenters reveal the centers of digital power

Which Countries Have The Most Data Centers?

Number of data centers per country as of February 09, 2021



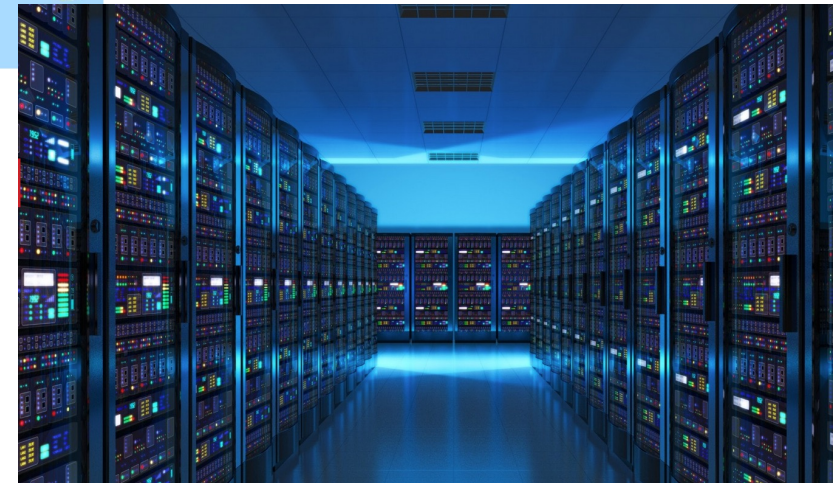
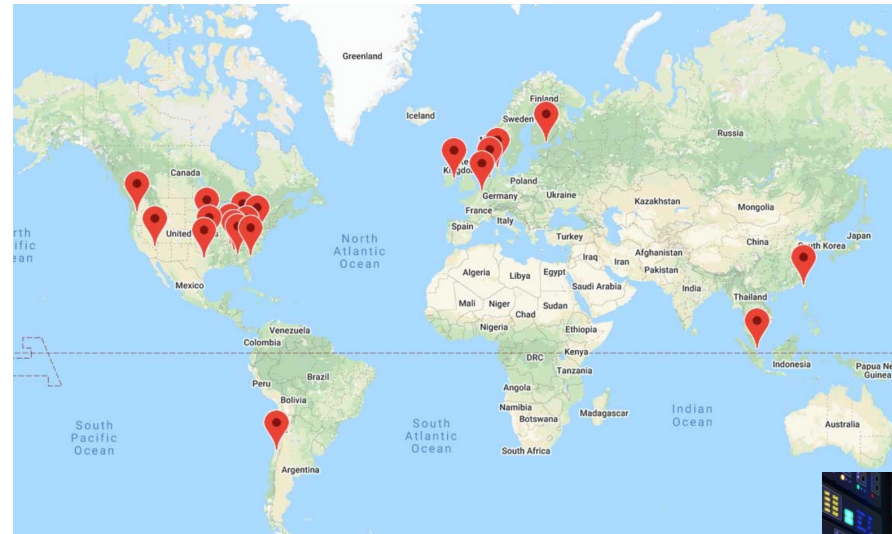
Source: Cloudscene



statista

Google Data Center Locations Map

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



<https://datacenterlocations.com/google/>

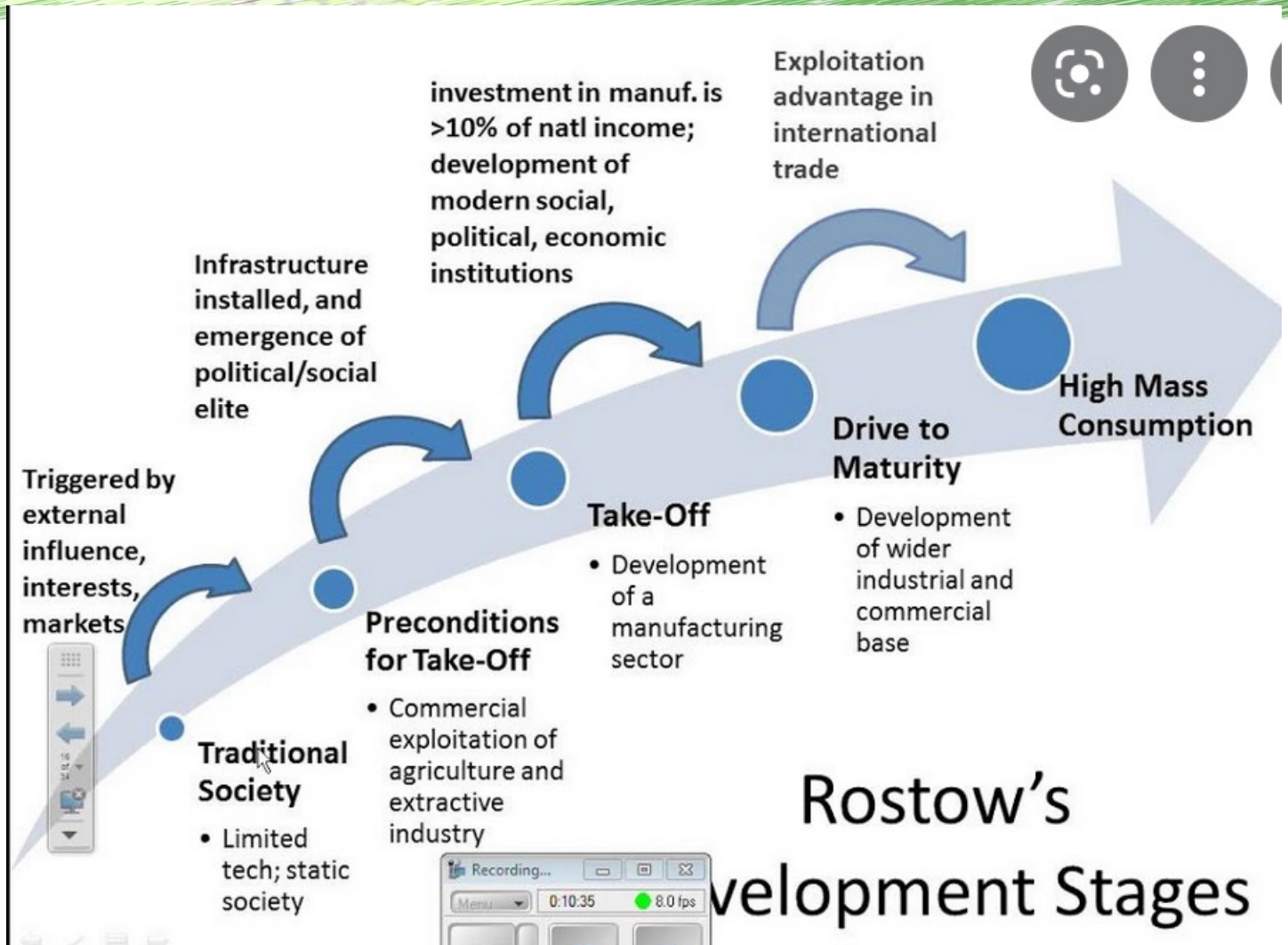
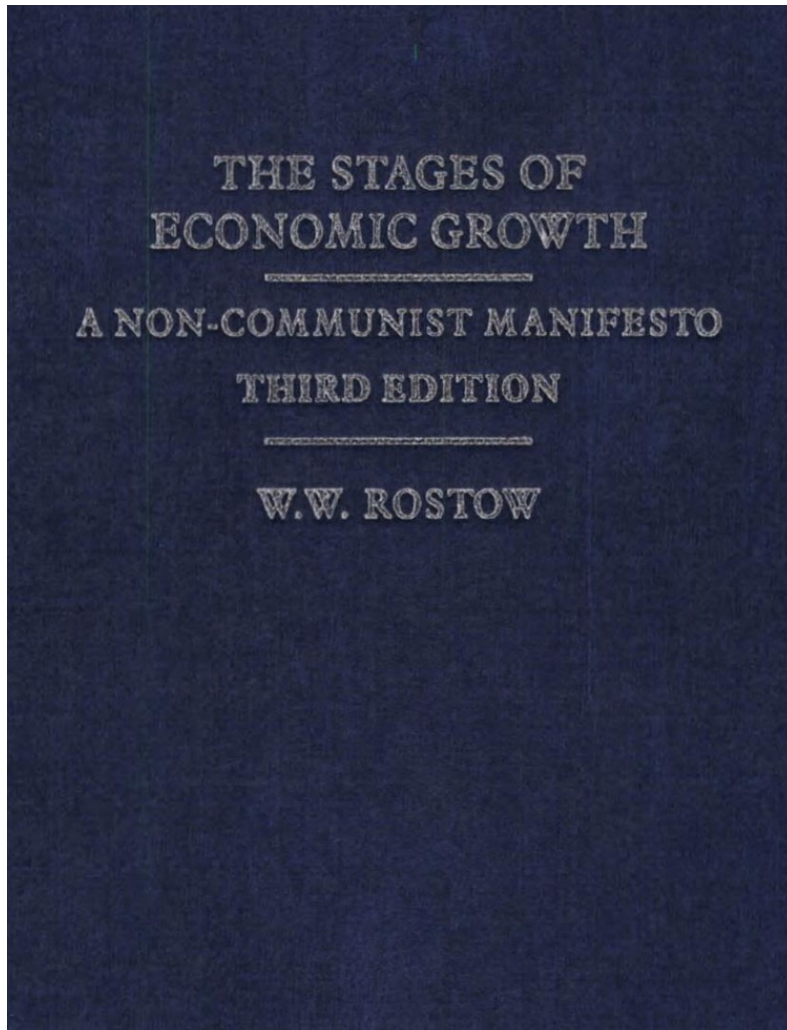
- <https://www.statista.com/chart/24149/data-centers-per-country/>

How to bridge the Digital Divide: different models

- In International Development programs/actions - **interventions**
- Free market ideology – private sector led **market development**
- Participatory – grassroot/**bottom up initiatives**; open source movements



The dominant theory in international development since the 1950s

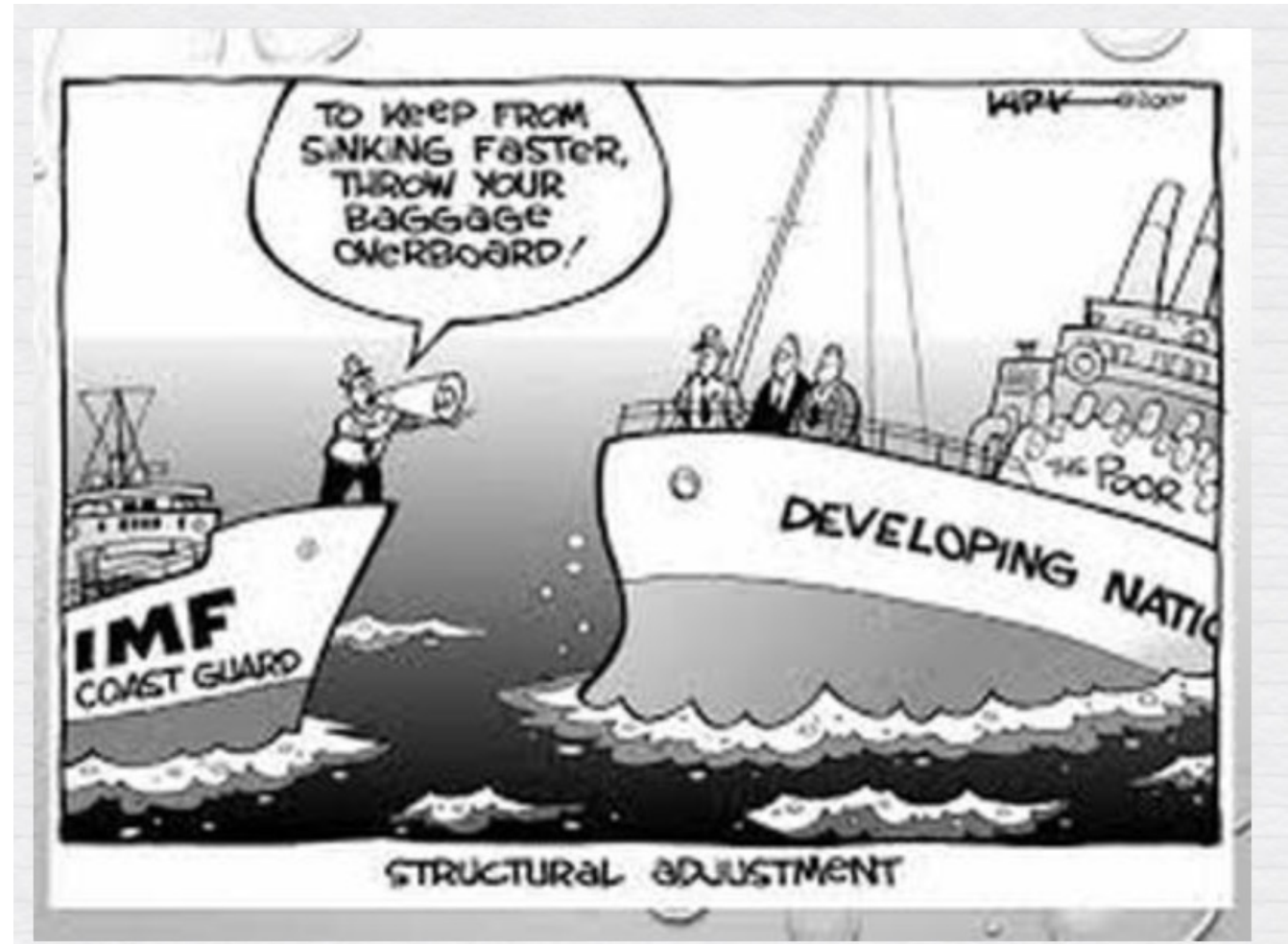


Development through *modernization*: industrialization, automation



The dominant theory in international development since the 1980s

- Free trade
- Free flow of information, goods
- Privatization
- World Bank
- Structural adjustment Programs (SAP)
- Trickle down effect



Neoliberal *laissez-faire* approach: Leave it to the market



BIG data for development

challenge

D4D

Orange lets big data serve people's needs

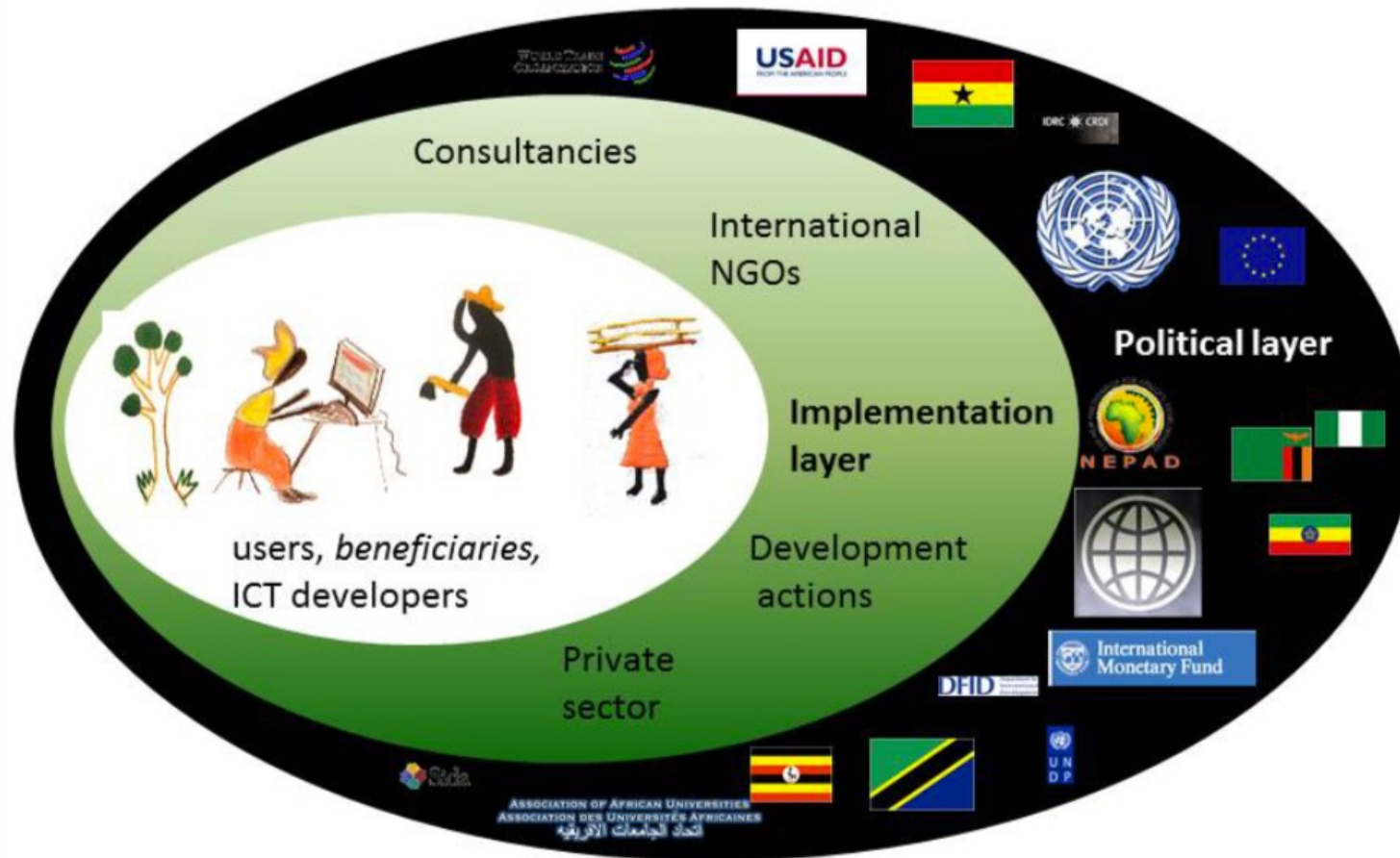


Although corporate ownership of the data seems a challenge in terms of unrestricted access, gaining the relevant qualitative information to inform the research is an even greater one. The convenience of conducting data analysis on a huge scale in the comfort of the offices of international institutions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

From: Taylor, Linnet, and Ralph Schroeder. "Is bigger better? The emergence of big data as a tool for



Contemporary International Development combines the two models



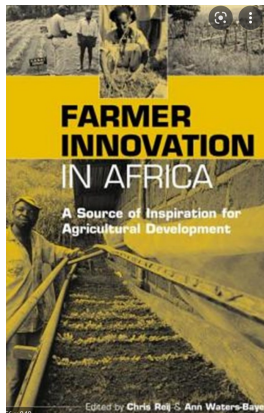
- If possible: leave it to the private sector (telecom sector, currently “Big Five”)
- If not solved by the market: *Intervention* by the International Community (because of market failure)

Onion model of the ICT4D ecosystem

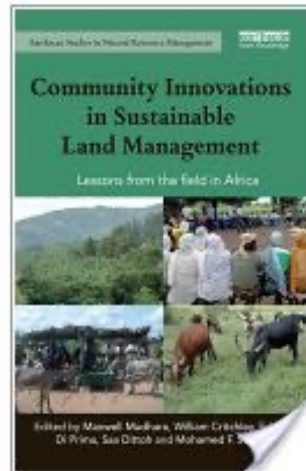


Alternative models for ICT4D, inspired by participatory action research

- 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.



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



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

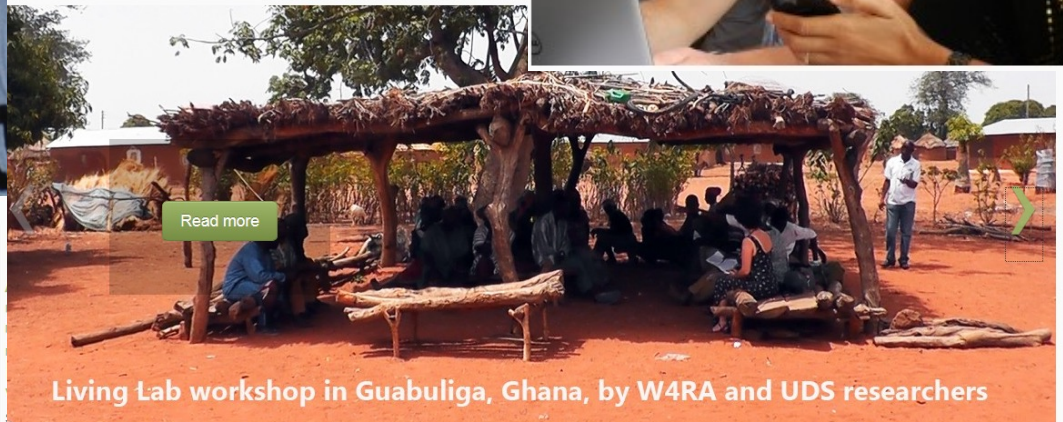
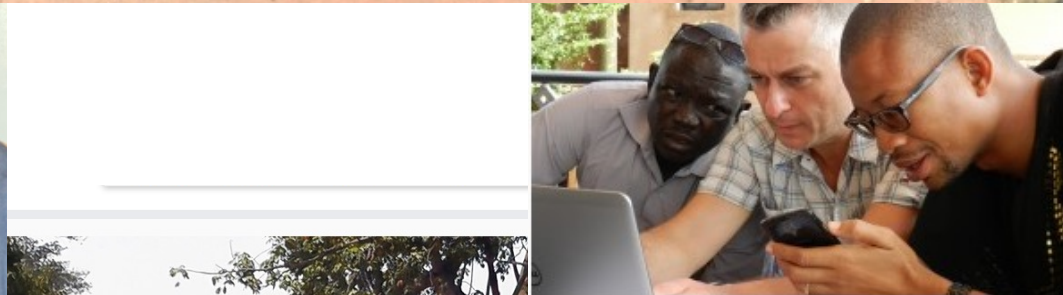


Web alliance for regreening in Africa

Services, especially mobile ones, have the potential to play a major role in driving social and rural development in emerging economies. Market penetration of mobile services has led to widespread adoption of basic telephony and services have been

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

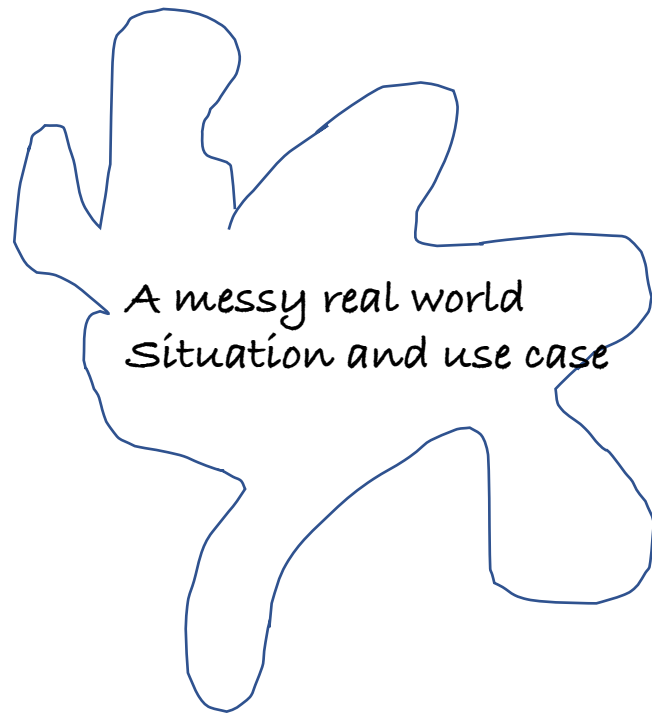
From 9 to 14 October 2015, W4RA team visited Mali, to kick-start a new research project to support farmers to improve resilience and food security. This project,



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

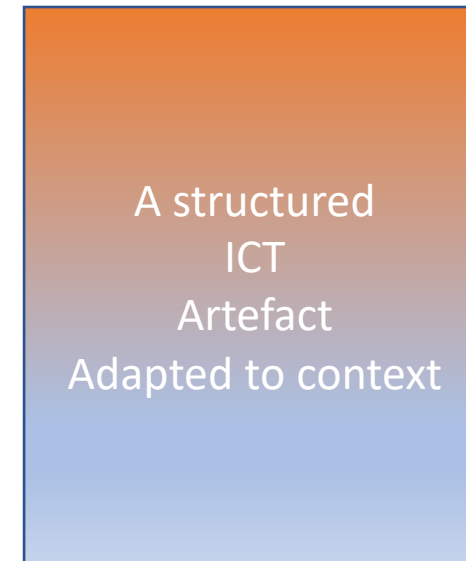


How does it work? ICT4D in a community approach (From real world use case to ICT4D artefact)



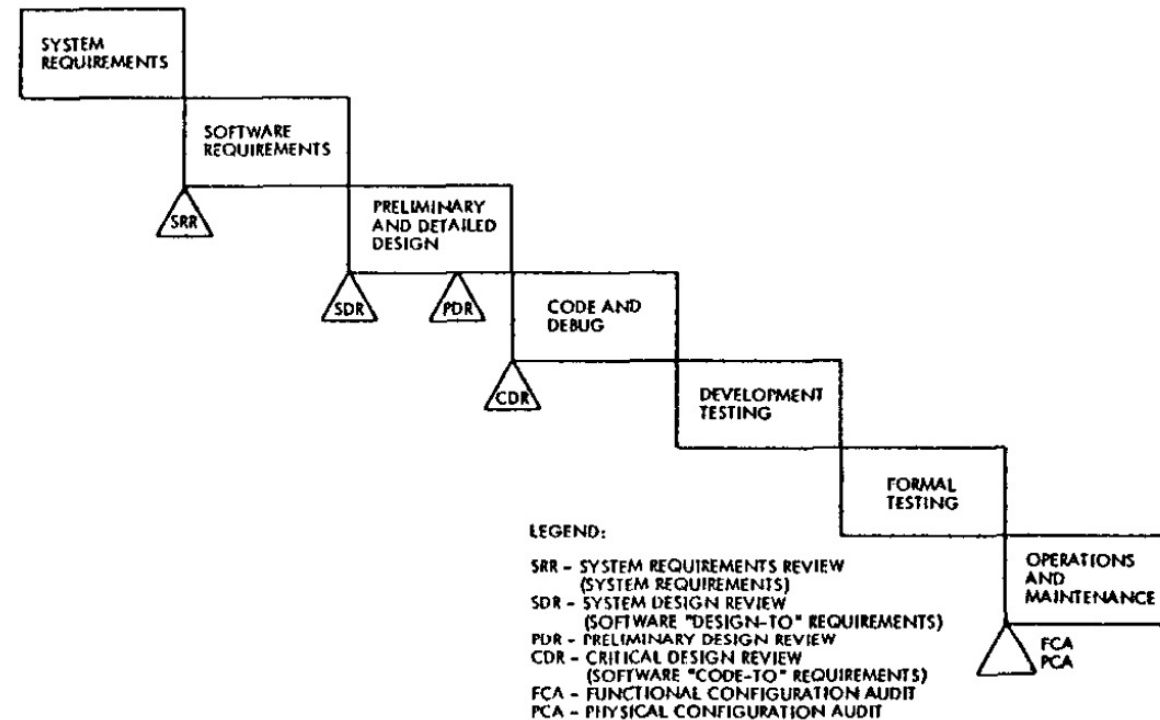
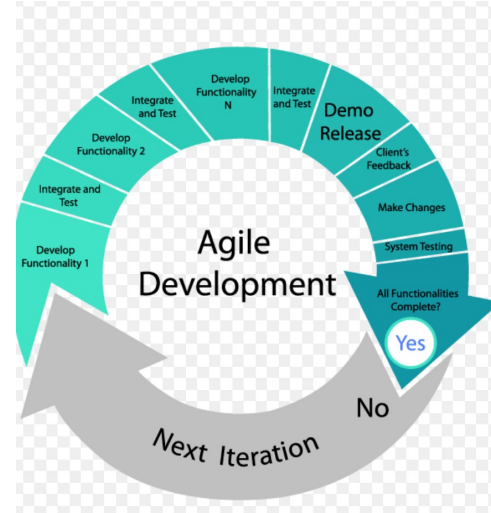
Iterative process
In which collaboration
and context analysis
Take place in a space of
Interaction, debate,
co-design.

Relationship is very
important for the successful
Deployment of ICT4D.



What did we learn from all these ICT4D projects in the field?

- Waterfall model (1)
- Agile model

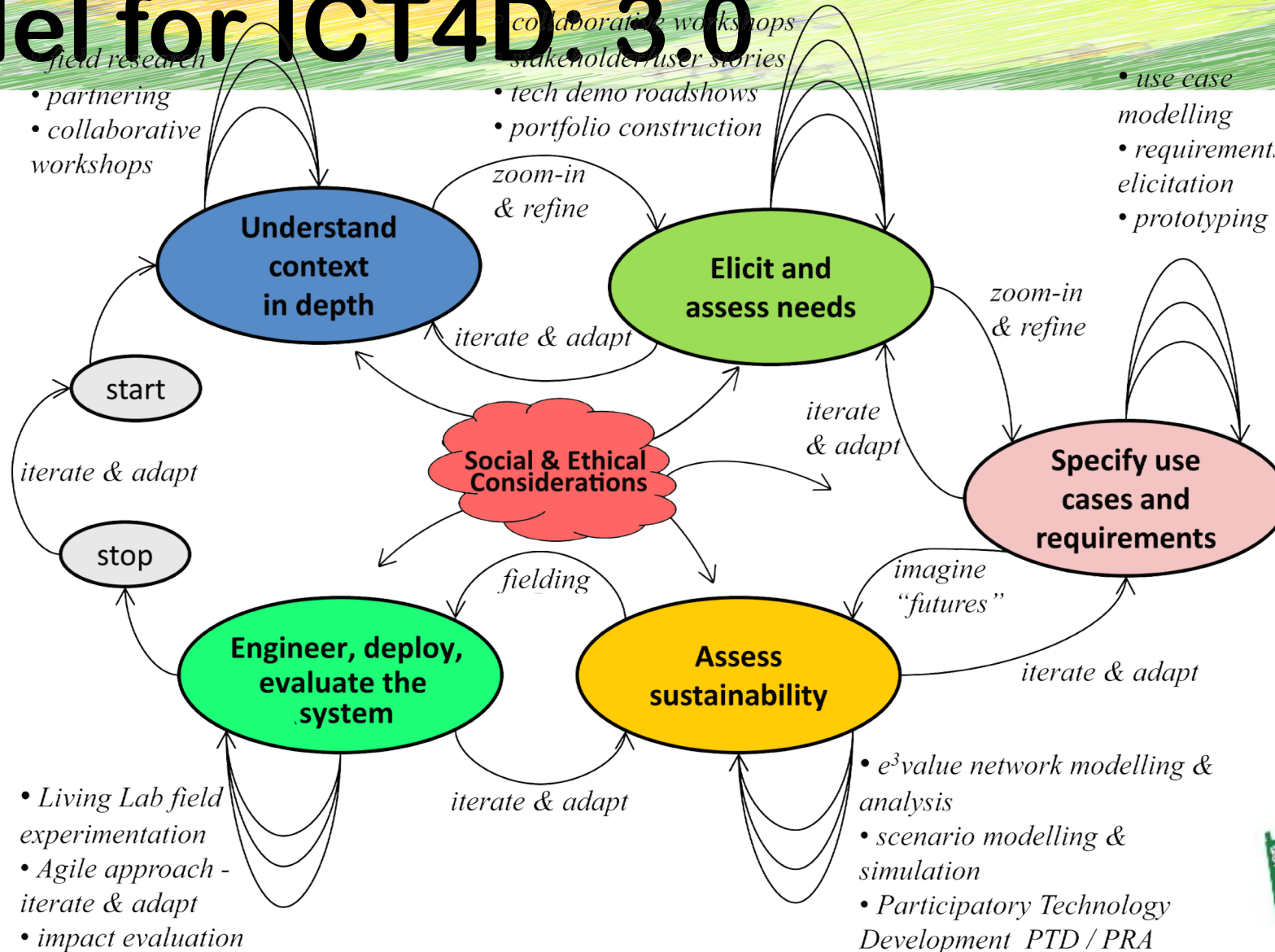


(1) From: Bell, Thomas E., and T. A. Thayer. [Software requirements: Are they really a problem?](#) *Proceedings of the 2nd international conference on Software engineering*. IEEE Computer Society Press, 1976.

(2) From: <https://github-wiki-see.page/m/younasgithub/UTMAGileRep/wiki/UTM-AGILE-PAGE>



Agile/collaborative development model for ICT4D: 3.0



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.



Collect use cases, define user needs & requirements, collaboratively



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



Example of student research project, Ghana – Netherlands 2015

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



The importance of education

- Teaching the new generation of Digital Society/ICT4D Professionals – interdisciplinary approaches
- Making them aware of the problems of the Digital Society and 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



Example of collaborative 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



Examples of master student projects

- Alina Saddiqui. **ICT for Women in Pakistan. Designing a safe haven platform for women in rural Pakistan.** Master thesis Computer 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](#)]



Towards Digital Sovereignty

- **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.



Conclusion: Towards a more fair and inclusive Digital Society...

what to do?

- Alternative models to *ICT in and for the Global South* should be further explored.
- Involve more people, diverse perspectives, in the debate/design.
- Education is extremely important (e.g. north-south cooperation in HE)
- Concerns about the Digital Society are truly global and must be addressed collaboratively (cf. Global Climate Debate, IPCC report)
- General awareness, policy and action needed

Fortunately, the future is not carved in stone





Thank you !