

Protocol from Workshop: Digital Platforms and Health Care for Development, April 1st, 2020

Participant list:

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10:15 Introduction to Platforms.

Prof. Dr. Helmut Krcmar, Technical University of Munich and Münchner Kreis

Part 1 Platform Economy:

- Competitors and cooperation: Arguably innovation happens in platforms. Various industries are linked together on platforms. Importance of governance to balance competition and cooperation. Governance has to be implemented by platform owner to facilitate interaction. Technicalities of the platform are only secondary to the most important question of governance mechanisms. Governance also directs value creation of the platform as platforms ideally are autonomous ecosystems of complementors and consumers governed by pre-set rules (platform governance).
- Key IT artefact is the platform itself and its interfaces to complementors: Importance of interfaces because this allows contribution of complementors.
- For a platform to be successful it has to balance stability (reliability and long living apps) in the platform and speed (innovation) on the platform. This is done by a linking layer connecting Components/services/infrastructure = Stability and Application = Speed.

- API economy is diversified by design: not a common API language to create boundaries between different API Ecosystems
- Socio Technical Perspective: Business model by the platform owner and interaction with business models of complementors. On a platform value creation is not linear but circular and platform connecting ecosystem of complementors and platform of users. Complementors can complement to different platforms -> network effect.
- Platform Governance: Cloud Foundry: decentralization. Apple: balancing openness and control. Open SAP: Sharing resources, open learning platforms. Pricing: i.e. Windows phone: transaction based vs. flatrate
- Multilayer Governance of platform companies: Governance of internal business units. Governance of core partners. Governance of peripheral partners. Importance of platform owner for governance: It often makes sense for a platform owner to be a consortium or peer-to-peer community.
- Summary: A Platform needs stability in the core (infrastructure) and speed in peripherals (apps and interfaces). Interoperability allows easy platform switching -> platform owners would like to take away interoperability vs. complementors would like all platforms to be interoperable. New challenges for regulators and platform owners.

Part 2 Platforms in Healthcare: Health care platform transform the interactions between key stakeholders in healthcare.

Transforming patterns:

- Transformation of Value prop
- Transformation of value capture
- Health data as sellable resource
- Transformation of the patient healthcare provider relationship
- Patients embedded in larger network of providers
- The platformistas

Q & A:

- What are the mechanisms for a distributed platform, e.g. edge platform (like in edge computing, edge cloud)?
 - Often a problem of network in developing economies. Challenge of national governments to govern data interoperability, define open data facilities and give different users and platforms data access to it -> This creates problems of competition and how to regulate competition between platforms.
- The regulatory power of the government to define the data ownership for health related data - example: Finland who has a genetics database in the cloud? -> Governments can govern competition by govern data ownership and availability.

11:00 Digital Health Platforms - Complexity and the Need for Policy

Prof. Dr. Josef Noll: Digital health and Public Goods, basicinternet.org

Health information platforms:

- Nordic model: Health information for all
- Health information platform:
 - Upstream (Health information platform)
 - Sensor on a chip (bio sensors, integrated analysis)
 - Big data (epidemiology, AI)
 - Downstream (digital health promotion, community health)
- National health portal in NO, DK Sweden: helsenorge.no
 - One portal for access to health: finances, illness diagnosis, health lifestyle, change doctors
 - United Nations High Level Panel on Digital Cooperation
 - Inclusiveness, **Digital Public Goods**
- Challenges:
 - Costs of Access
 - School connectivity
 - Digital health for primary health facilities

Challenges for LMIC: Bring internet access to rural villages

- Key lessons learned:
 - Focus on young generation, girls and women,
 - Include all stakeholders: governmental institutions, village chiefs and local authorities

National Knowledge Portal in LMIC:

- Repository for health data
- Trustworthy health information
- Regulatory framework
- Have local village server where videos etc. are stored. Global health media foundation: Yeboo.com
- Health platform, National Knowledge Portal, Suggestion of distributed platform with local installations of servers.

Q & A:

- Cost for installing the network:
 - In the beginning around 1000 USD, now down to 20 USD
- Maintenance of local hardware:
 - Maintenance done by local networks. Doing hackathons to improve knowledge sharing with local communities.

Felix Sukums: DHIS2 in Tanzania

- Tanzania fast expansion of internet and mobile phone ownership.
 - 50 % of mobile phone subscribers use internet
- Tanzania digital Health strategy: renewed July 2019 until 2024 and digital health investment until 2023.
- **Priority on information exchange and data use.** Digital health governance, resource management and financial resources. Integrated disease surveillance, tele health services in the rural areas
- **DHIS2:** open source flexible web base HMIS in over 88 countries
- Developed at the health information system program at university of Oslo and promoted as a **global public good.**
- **Functionalities:** aggregate (health data), events (facility assessments, clinical visits), tracking (patients, equipment, sample, village/household, drug)
- **Tanzania:** started with DHIS version 1 (not web based) in 2020 switch to DHIS2. 2014 integration with vertical programs data started. Now: data validation tools, tracing of events, created Scorecard to monitor provision of services. For TB: Case checking score cards.
- **Data entry and data access:** Dispensaries often enter data to transfer to district medical offices. All other stakeholders (hospitals and health centers etc.) enter directly to National DHIS2 and data can be accessed.
- **Problem auf data quality:** National data warehouse has improved completeness, timeliness and accuracy.
- **Problem of data entry:**
 - Established Health Information Mediator to connect 10 other systems mostly EMR Systems
 - Create Score cards for institution to incentivize Data entry.
 - Instances for National TB and Leprosy program for patient tracking.
 - Facility survey and results-based financing system
 - All different instances connected
- **General Problems:** fragmentation in business processes, some data still have to be recorded on paper. High burden of data entry at district and Health facility level, high fragmentation of processes and data systems.
 - Limited capacities in funding and skilled personnel.
- **DHIS2 uses to monitor covid-19 outbreak**
 - In Uganda
 - nCOV surveillance system in Sri Lanka
 - eCEBS: community level lookouts (SMS based, report cases on community level)

Q & A

- Andrea Winkler: Health information network and include platform to distribute research timely and in language the stakeholder understands
- Samuel Knauss: Results base financing-> Collect Data about how facility perform and how reliable they enter data. Exit interviews with patients integrated in the facility rating but not in the RBF at the moment.

- **Global Goods GIZ Health & Social Protection**: OpenIMIS and SORMAS
- Strategic Principals for Open IMIS and SORMAS:
 - History of software in global health over time:
 - No computer graveyards: put software in the public domain
 - OpenSource: Pilotitis -> donors install and no possibility to scale -> free the code -> to adapt to specific needs
 - Global Goods: open source are on the market but to get critical mass we need to co-create.
 - Digital Investment Principles endorsed by BMZ.
 - Principles for Digital Development: focused on the developers (endorsed by GIZ)
 - Global Good: rooting software in global communities
 - Digital Square definition of global goods: easy, scalable, interoperable
 - Maturity model for global goods by Digital Square
- **OpenHIE**: high level architecture definition, define reference software
 - Open up business opportunities to set up local implementation and make a business out of installing and adapting within the country.
- **OpenIMIS**
 - Managing health financing schemes, coordinated at a GIZ coordination desk, focused on government based financing schemes.
 - **Problem in Global health**:
 - Buying commercial software can be very expensive
 - Building own software difficult to maintain and takes time
 - Use open source to build a viable long-term software solution to provide to scheme operators for self maintenance.
 - Goal to improve sharing between different implementations
 - Supported flows:
 - Enrollment: work offline and online
 - Claims filing
 - Claim management: HL7 FHIR standard but no medical record system
 - Monitoring and reporting: DHIS2 integrated
 - Governance Structure:
 - Steering group
 - Technical advisor groups and regional hub (Asia and Africa)
 - Product group consisting of the coordination desk at GIT, a Developer committee (paid) and implementer committee
 - Partners and developers: Asian e-health Information network in Asia, Jembi in South Africa for Africa. FFW: German company doing the communication. Capacity Building: EPOS consulting and SwissTPH
 - Community Tools: Wiki, Homepage, Service Desk (to ask question and request features), Issue tracker, Code repository, Demo Server and documentation
 - Developers Committee: SolDevelo, BlueSquare and others

Q & A:

- Felix Sukums: Thanks Uwe and Sauvar for the nice presentation and work. I would like to know how are you addressing challenges of Unique identification, and pictures uploading in areas with weak internet connection.
- Saurav Bhattarai: openMIS manages a unique id for everyone registered in the schemes. For identifying people, the apps query the server using this unique number and return the picture and other details of the person. Now, for internet challenged locations, a one-time data download can be done from the server (at regular intervals of course) so that the phone will have offline access to this information. Not the most ideal situation, but that's the best we have so far.

13.30 Governing Digital Health Futures

Christian Franz: Platforms and the Governance of Data

- Conceptual and theoretical angles from the commission presented in an introduction of the commission and mandate. The technological transformation and a generational perspective emphasized; how do the generations adopt and what happens around in the digital sphere?
- The commission at a glance: The Triangle model was presented and several questions are raised;
 - Will it let young people flourish?
 - DH, AI, meet UHC. Will access be accelerated?
 - Will the digital needs be met?
 - Internet governance; will inequalities decrease?
 - Is this human rights based?
- DH platforms are important for the commission because of:
 - Governance
 - Young people
 - Geopolitics
- Economics of data as a perspective to understand policy options:
 - What are our governance's choices?
 - Non-rivalry or partially excludable?
 - The platforms need to be protected. Safety of the data is crucial. Negative privacy externalities – no boundaries of your data collection. This is an ongoing debate in health – which data can we see and not? Returns to scale / scope.
- Data characteristics for understanding governance choices. Example: An app where daily temperature is registered to understand the menstrual cycle. We need a debate on societal value. Can the data be shared as much as possible? We can only share if people feel comfortable to share. This is an ongoing and premature discussion. We need incentives for the actors.

- Macro perspective: Many things go bad when it comes to platforms. Much of the progress have been based on learning by doing. Any policies successfully developed from this work yet? It is an ongoing systemic risk with the clouds and private platforms. Adverse use, misuse etc. need to be considered.
 - Between countries – (AI superpowers), who is first will dominate the market.
 - Different perspective on data gov in India
 - Datafication children and trekking devices. Number of data points collected is tremendous. We need a debate on this.
 - Individual agency

Q & A

- Josef Noll: I'd like to be a bit provocative: The starting point is WRONG. 3.9 Billion people are NOT connected to Internet. Thus, are we just performing research for those being already connected? Or do we really address the needs for those not being connected? In rural areas in sub-saharan Africa, more than 90% of the population are not part of the digital society.
- Christian Franz: This is a real challenge for the commission. Acceptability varies dramatically. Relevant concepts are missing. To capture this as a global endeavor. It is so distinct, the problem setting. This is a massive issue within the commission.
- Nanjira Sambuli: This is a classic challenge. We see this across from the starting point to the ones connected, and over to unconnected societies.
- Josef Noll: The regulatory policies in place – by bringing money into the state from the companies.
- Mike Dowling: The need for companies to pay tax should be emphasized.
- Helmut Krcmar: The regulatory framework matters. Which legal authority decides? Regulatory decisions for the 3,9 bill unconnected. Openness of data is a crucial point, as connecting more users.
- Samuel Knauss: Different development taking place in south compared to the north. The technology is available, but people do not have internet.
- Josef Noll: 2G / not 3G or 4G.
- Samuel Knauss: Supporting people to get health care. Regulations: Goal is to bring access to people.

Samuel Knauss: A Digital Health Insurance Platform – TOMADY

- Financial barriers are one of the leading causes limiting access to essential healthcare in the global south. The fear of costs in everyday life blocks people from seeking professional care.
- Lack of access to financial programs for health care – insurance.
- Reach of existing financial protection programs by government and private payers is limited by often inefficient and pen-and-paper base processes.
- The solution is an end-to-end platform for secure payments and data exchange over the mobile phone. The platform is universally accessible to patient over simple feature phones without the need for a smart phone or internet access. This is the entry point for the patient to access health insurance, pay money and receive money exclusively for healthcare.
- Healthcare providers can access the platform over a tablet-based application – connected over the GSM network to allow for access in remote regions without constant internet connectivity. Healthcare workers can file claims and request payment directly over the platform.
- Starting point – platform implemented in Madagascar – currently largest payment provider for healthcare in Madagascar
- Relatively new, alpha phase Jan 19. Already over 8 mio USD (average household income adjusted) spent over the platform.
- Adhering to principals for digital development focusing on open data and interoperability. Not replacing medical records, but collaborating with other actors on linking the data.
- Deeply rooted in academic research to overcome Pilotitis – project is constantly evaluated scientifically. Currently policy randomized – 4MOTHERS -trial evaluating the impact on maternal care.
 - Primary outcomes. ANC, Institutional deliveries and health savings.

Nanjira Sambuli: COVID-19 and the Implications for Digital Health Platforms

- COVID 19: Moving epicenter, mobile phone is most important device for people. Radio and TVs are other important tools. The governments and the telecom business work together, i.e. by sending SMS' to people. The flip side of this relates to engaging on cellphone tracking and the normalization of such approaches.
- Internet: people are active on social media platforms, but WhatsApp is the most popular tool. We see much fake news. However, we also see creativity, local language and use of audio features. This is only applicable to 25 % of Africans, the ones being online.
- Examples of activities from the continent:
 - In South Africa it is a full lock down, and there have been undersea cable cuts slowing down internet, and projects such as Google's to provide WiFi in the

townships have been closing down/facing implementation challenges. Challenge to connect for everyone.

- In Kenya: deploying project gov / telecom/and Project Loon to avail universal 4G, to support working and learning from home, setting up telehealth features.
 - A telemedicine platform (Wellvis) that's developed a digital triage tool that can be used by anyone on the continent.
 - Nigerian telehealth startup Helium is launching features to support remote consultation between patients and health professionals. Its data collection platform is already in use in 150 hospital facilities in Nigeria and could serve as a data point for the Nigerian CDC.
 - Another (Lifebank) is curating a database of ventilators, respirators, ICU bed spaces to support covid-19 efforts in Nigeria.
 - More about all these startups here: <https://techcabal.com/2020/03/26/as-covid-19-hits-africa-tech-companies-brace-for-innovation-opportunities/>
- The trade-offs and narratives: The right to privacy versus right to health. Digital surveillance. Contract tracing.
 - This is not the time to pilot tools or engage in hackathon etc. introducing new tools. This will be counterproductive. Deploy resources, e.g. to support 3D printing, local production of testing kits, masks etc. e.g. Lab in Senegal producing test kits.
 - Appetite for global big data: mapping landscape against COVID 19, show operational impact, data sharing: Need to be cautious related to ethical and human rights.
 - The pandemic could create opportunities, is this the moment for DH going forward?
 - Platformisation: We have a different sets of factors – scalability is essentially, why platformisation? Is it envisioned, for digital health, for Africa, as a new, appropriate, demand-driven approach? Or is it 'copy and paste' from the digital platform economy (the Ubers and Facebooks) that have locked in users/benefits against a sector that could benefit from more openness, more sharing of data, resources, insights etc.
 - Focus on sustainability first, and scalability if appropriate, built upon interoperability layers of what's sustainable and appropriate for various and diverse communities to be served. There's no one size fits all, nor should there be.

15:00 Discussion:

- Josef Noll:
 - Platform economies drain away the income of a state. It thus removes the power of a government to provide the basic needs: Health, Education,... - thus, the need for regulatory framework
 - Thanks to Nanjira to address affordability, universal access, lack of devices. What triggered me is the question on why are we focusing on "symptoms", e.g. tools and measures that make a bad situation better - though we should revisit the basis: 1) how to influence governance to focus on digital health for all, 2) address an Internet for All

- Nanjira Sambuli: Indeed, Josef. And how all these seemingly disparate issues are addressed in a coherent manner. What good is it to make advances in digital health innovations when the internet infrastructure to enable it is still wanting (and in fact, slacking?)
- Helmut Krcmar:
 - Platformisation. Case of Korea – google maps, platform does not work. Very much contextual, both social, economic.
 - B2C tendency for monopolization, not in B2B platforms. Unequal power distribution.
 - First years of platformization. No perfect ways of come to grip, ensuring enough competition and avoiding monopolization. In this phase, we are more aware of what happen.
 - Different platforms according to geography? Hence, the whole idea of India
- Nanjira Sambuli: Nigeria local folks and health platforms. Platform for bloodbanks, feeding back to national systems - driven by appropriateness and understanding.
- Josef Noll: Looking at both the National and the International (e.g. EU H2020, Horizon Europe) "research" topics, there is a focus on "top-edge" research - leading to more technology and diversification, rather than research pointing towards inclusiveness++. - Examples: 6G vs 5GforAll, and Future Internet vs free access to information for all
- Christian Franz: political aspect HP Huawei → hypotheses about data localization and sovereignty driven by private advocates. Look into India, openness to data, no articles or studies commissioned by big tech data. Desperate step by governments, storage of data.
- Josef Noll: This is part of the discussion, bring the power back to the nation. Profit will then be going away and decreasing. Money is the horizon strongly driven by private companies.
- Andrea Winkler: With regards to diagnostic tools, etc., this is an overall problem that we are facing. What is rewarded by funds is innovation. We have a lot of innovation, and this needs to be applied. We also need to look into the problem of reversed innovation. Need to look towards the south, this is currently the breathing ground for digital health solutions and implementations.
- Josef Noll: Completely agree with Andrea: Applicability of "what we know" is more important. But then, results from a call from the Research Council in Norway on Health & Care: Only proposals on Health got funded. Gender aspect – workforce etc. are also important aspects.
- Nanjira Sambuli: There are so many aspects, for example the access and devices. People are advised to preform social distancing, but what about food vendors etc.? The guidelines are not tailored for a developing economy.
 - India, Kenya Uganda: social distancing for people, groups turning violet. Pregnant women are staying home to give birth, afraid of being infected at the hospitals.
- Felix Sukums: To Najira, thanks for the nice talk. I would like get your experience in building capacity (understanding?) of Government leaders on digital platforms so that they can invest and support adoption of digital platforms in the health care. Unlike other sectors, health seems to be bureaucratic to have rapid and large scale adoption

- Uwe Wahser: @Nanjira: do you have a document link to the deaths by violence through COVID measures?
- Nanjira Sambuli:
 - Campaigns to allow even abortion services to count as essential. There was a win on this in a US state. @Uwe, the Kenya case (and a 13 year old also died from a stray bullet the other day): <https://africasacountry.com/2020/03/the-people-vs-4g-internet-and-other-corona-stories-from-kenya/>
 - Felix, I worked hard (in my past job, and with support from Germany) to design policymaker engagements for capacity development (beyond conferences; more hands-on etc). We need so much of that! (In the ones I run, we brought together ICT, Education ministries and ICT sector regulators to bypass silos). The health sector does need a lot of attention; right from the professionals and in the policymaking circles, to address their resistances to going digital. Plus, in the workshops, we ensured they were gender-responsive (they came to discuss 'technical' stuff, they ended up seeing that there's a gender-dimension even to tech!)
 - See <https://webfoundation.org/2019/04/championing-gender-responsive-policies-in-the-digital-sector1/> and <https://webfoundation.org/2019/08/including-women-and-girls-in-the-digital-revolution-lessons-from-west-africas-eskills4policymakers-workshop/>
- Sylvia Van Ziegert: How is this really going to benefit? Digital principals are there as guidelines. Who is target group? Designing with the users, as co-creators are important.
 - How can you reach people in their daily lives and routines? Strengthen platforms, with behaviors.
- Uwe Wahser: DHIS2 has a covid component. Emphasize the importance on strengthening these infrastructures. Much money into wild activism right now. Old stuff coming up again.
 - How do we use the funds to make sense?
- Josef Noll: almost no money spent on health vs financial sector.
- Nanjira Sambuli: A challenge: do not build more apps; let us look into the building blocks that have worked out already.
- Josef Noll: We have moved from "open data" to "public goods" - and I'd like to see the "framework for health for all", with all the digital tools that are necessary
- Andrea Winkler: The mind set right now is that the science should be driven with non-stop innovation. To innovate is fine, but under those circumstances, it is hard. The funding of covid 19 projects rule 2020, but other health problems need attention and access to health systems too.
 - I.e. in DRC we find a large measles outbreak and ongoing Ebola outbreak with health systems kneeling.
- Nanjira Sambuli: How do we start busting the silos?
- Andrea Winkler: The One-health approach. Desperate need of multi-disciplinary approach also for Covid-19.

- Nanjira Sambuli: Last Ebola patient was released a week before DRC confirmed first coronavirus case. DRC swiftly declared State of Emergency and locked down borders

Summary comments

- Josef Noll: What do we want to get out: 1) Demand for Health Platform Framework, 2) Digital Health Information, 3) Community involvement
- Sylvia Van Ziegert: Some common themes: (1) Co-creation with target group / beneficiaries, customized platforms (2) Interoperability / technical design of platforms (3) Data privacy (4) Platformization for public good - Closed vs open sources
- Helmut Krcmar: Digital health eco systems – various actors can work together. We need architectures that allow innovation. Need to identify the needs of platform governance vs solution governance, and issue of data ownership.
- Uwe Wahser: Framework. Governments in Africa are getting aware of eHealth strategies, showing strong awareness. I.e. in Kenya; Migrated hospitals to an open source.
 - Frameworks; open HID. Information extension and catalogue on global goods. WHO offers a Policy course, one week training with all global digital goods for decision makers.
- Samuel Knauss: Common themes: 1) Research / Evidence based Solutions 2) User involvement / empowerment 3) Sustainability
- Felix Sukums: Common themes: 1. Policy, legal, regulatory frameworks for support adoption and use of digital platforms. 2. Training of decision makers/leaders on digital platforms 3. Digital health governance at all levels from community to national
- Josef Noll: The national obligation – part of curriculum. Should be a requirement. I want to see "impact", not yet another paper - thus, what kind of paper helps us to reach impact?
- Christian Franz: Common themes: (1) Governance metathemes do play a role: we have heard that there are a wide set factors in place globally that matter (economics of data in the current governance setting, lack of government ability to regulate large tech companies, digital divide as mentioned by Josef)
 - (2) Regional platform governance models (Helmut's and Nanjira's comments)
 - (3) Local necessities and experience from implementing projects.
 - (4) Technical frameworks we have heard of.
- Andrea Winkler: Target group for the policy paper:
 - Academics
 - International aid groups
 - Policy makers in partner countries (MoH)
 - Civil society
 - NGOs.
 - Companies and private partners