Philips Foundation

COVID-19 Response

Empowering Digital Health
Leverage and coordinated approach:
VODAN-Africa / Training of Trainers (ToT)

Prof. Dr. Mirjam van Reisen

28 April 2020, BDVA

#VODAN

Outline

Philips Foundation

Covid-19 Response

Virus Outbreak data Network (VODAN)

Training of Trainers

Next steps

Philips Foundation – supporting the fight against COVID-19

More than ever, the Philips Foundation is striving to help provide access to critical care for those most in need, by leveraging Philips' expertise, innovative products and solutions.

Check out our interactive map* to find out where and how the Foundation is addressing the COVID-19 pandemic. A grasp of the many initiatives the Foundation is currently working on:

**Map updated April 16, 2020*

Netherlands: Philips Foundation has provided a loan to the Refugee Company in Amsterdam, enabling the organization to start producing large quantities of high-quality facemasks made from filter material used in Philips vacuum cleaner bags (among other materials. The masks fully comply to the RIVM requirements).

India: As the onset of the COVID-19 outbreak and resulting lockdown have dried up all sources of income for India's rural population, the Philips Foundation will be providing welfare support to those most in need, as well as frontline healthcare workers.

Netherlands: Philips Foundation provides a grant and Philips' procurement expertise to support AidInnov Foundation in scaling their open platform for humanitarian procurement and tendering, adding modules for the coronavirus pandemic response. The platform aims at making procurement and innovation in the aid sector more efficient by translating response scenarios into concrete product- or solution specifications, including service and maintenance. By our early step-in, the initiative has attracted co-funders, including the Dutch Development Bank FMO.

Turkey & Lebanon: To alleviate the rising pressure on hospitals and health professionals in Turkey and Lebanon in the face of the COVID-19 crisis, the Philips Foundation is supporting the Lebanese Red Cross and the Turkish Society of Intensive Care by donating crucially needed medical equipment for diagnosis and patient monitoring.

Romania: Through the Philips Foundation, local humanitarian organization Children's Heart Association can provide Romanian hospitals with medical equipment to treat people with COVID-19 and supply essential tools to prevent people from being infected.

Europe: Mobile Isolation Care Units: To alleviate overburdened hospitals in European countries most impacted by COVID-19, the Philips Foundation has procured and put at disposal five temporary 20-bed mobile hospital units.

Spain: In response to one of the greatest mobilization of resources and capabilities in the history of Spain and Portugal triggered by the COVID-19 crisis, the Philips Foundation is supporting the Red Cross to build hospital infrastructure and purchase protective equipment.

United States: To support marginalized groups in the United States during the COVID-19 crisis, Philips Foundation has teamed up with MedShare to help set up and equip local primary care clinics, shelters and hospitals with the necessary protective supplies.

Kenya: The Philips Foundation has supported the roll out of a WHO chatbot in Africa that provides reliable information on COVID-19, by adapting it to audiences with different levels of literacy and with respect for local cultural sensitivity.

Italy: Philips Foundation supported the purchase of personal protective equipment (PPE), medical equipment and ventilators for intensive care units, through Italy's national Civil Protection organization and humanitarian organization Cesvi.

Virus Outbreak Data Network: To enable early detection of COVID-19 outbreaks in Africa, Philips Foundation has contributed to the establishment of the Virus Outbreak Data Network (VODAN), which facilitates the findability, accessibility, interoperability and reuse of crucial data across the continent.

Kenya: : In an attempt to slow the spread of the novel coronavirus pandemic on the African continent, the Philips Foundation has provided an immediate loan to social enterprise Sagitarix, enabling rapid testing of travelers on coronavirus near the international airport of Kenya.

China: Philips Foundation donated health equipment and supplies in January to an emergency hospital in Wuhan, leveraging critically important Philips expertise in the field of respiratory diseases and health technology.

Enormity of the crisis in Africa:

Undetected infection and spread

Food shortage and threath of famine

Serious economic down-turn and collapse

Underinvestment in health care

Lack of disposable income

Opportunities

- Window of opportunity for the digital connect
- Large youth population
- Entrepreneurial
- Health at the centre

Virus Outbreak Data Network (VODAN):
VODAN is a GO FAIR Implementation Network set up to help fight the COVID-19 Corona virus, that is causing a worldwide epidemic.

VODAN-Africa – coordinating group:

Kampala International University (KIU) – Uganda (coordination)
Tangaza University College – Kenya
Great Zimbabwe University – Zimbabwe
Addis Ababa University and Mekelle University – Ethiopia
Olabasi Onabanjo University - Nigeria
Université de Sousse – Tunisia

Expansion in discussion with:
South Africa
Rwanda

Support from RavelWorks, Kenya
San Diego Centre for SuperComputing, US

In collaboration with: Philips Foundation
Leiden University, Tilburg University

I. Objectives

CORONAVIRUS

Coronavirus exposes lack of common data approach

"One of the main problems is the duplication of data and lack of coordination between countries", said Mirjam van Reisen, who is part of the Virus Outbreak Data Network (VODAN) at the University of Leiden.

PRIVACY POLICY
CORRECTIONS
ADVERTISING

Some experts believe that the EU's current approach to data collection may be missing an opportunity to fight the coronavirus outbreak (Photo: Christiaan Colen)

By ELENA SÁNCHEZ NICOLÁS

BRUSSELS, TODAY, 07:21

The enormous differences between coronavirus cases reported worldwide raises questions on how countries are tracking their coronavirus outbreaks - or deliberately underreporting them.

NEWS IN BRIEF

TODAY, 17:41
Polish deputy PM resigns over May election date

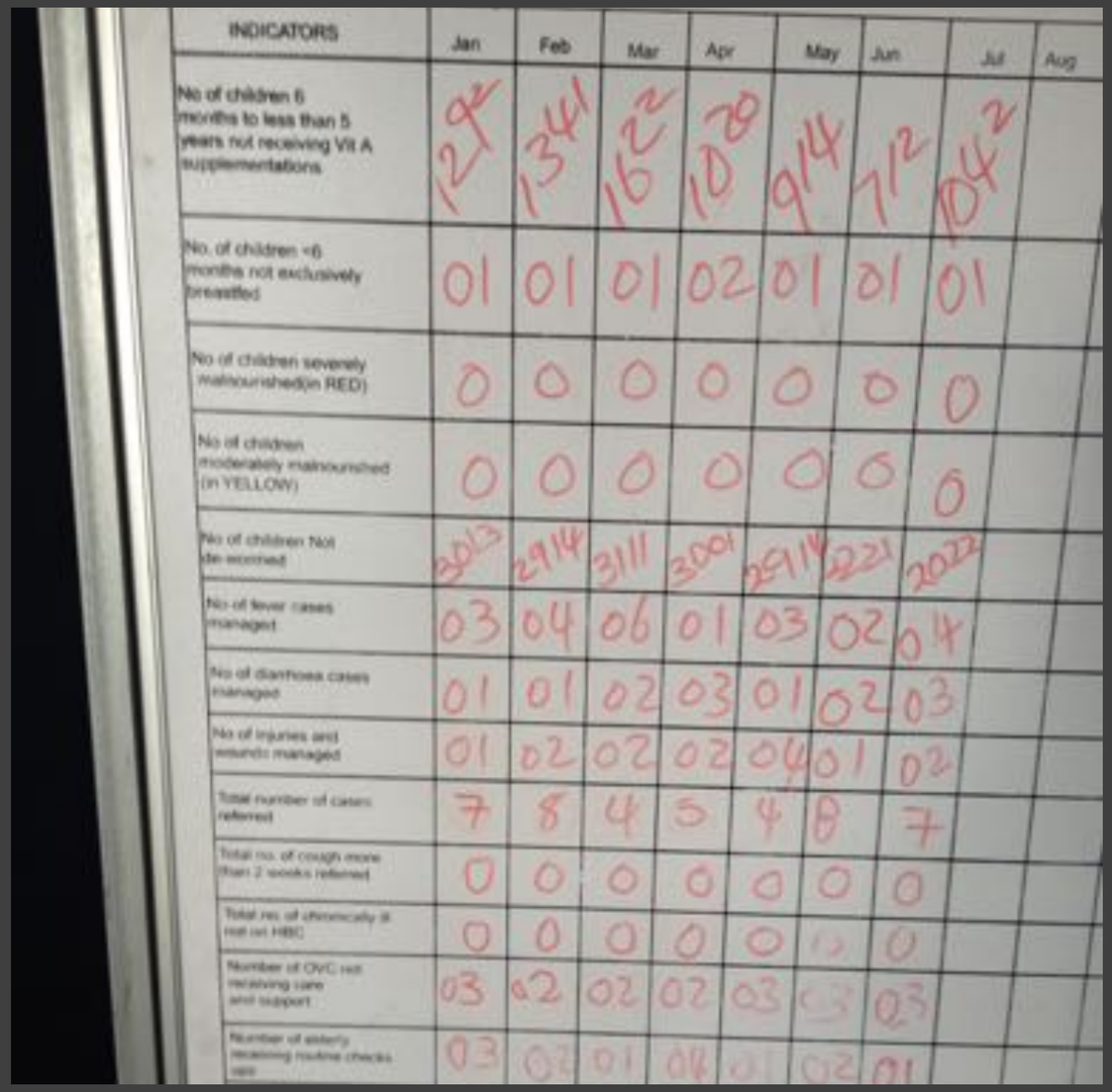
TODAY, 15:21
Spain plans to introduce universal basic income

TODAY, 12:13
EPP calls for EU data centre for pandemic response

TODAY, 07:27
Three arrested in deadly French 'terror' attack

TODAY, 07:26

3 APR, 17:04
EU waives customs duties, VAT on vital medical imports

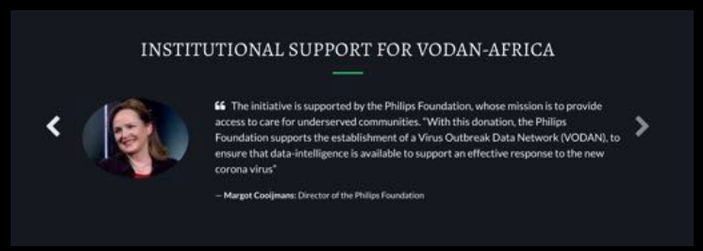


INDICATORS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
No of children 6 months to less than 5 years not receiving Vit A supplementations	129	1341	162	1020	914	712	1042	
No. of children <6 months not exclusively breastfed	01	01	01	02	01	01	01	
No of children severely malnourished(in RED)	0	0	0	0	0	0	0	
No of children moderately malnourished (in YELLOW)	0	0	0	0	0	0	0	
No of children Not de-wormed	2013	2914	3111	3001	2911	2221	2022	
No of fever cases managed	03	04	06	01	03	02	04	
No of diarrhoea cases managed	01	01	02	03	01	02	03	
No of injuries and wounds managed	01	02	02	02	04	01	02	
Total number of cases referred	7	8	4	5	4	8	7	
Total no. of cough more than 2 weeks referred	0	0	0	0	0	0	0	
Total no. of chronically ill not on HBC	0	0	0	0	0	1	0	
Number of OVC not receiving care and support	03	02	02	02	03	03	03	
Number of elderly receiving routine checks	03	02	01	04	01	02	01	

COVID-19

How to use data?

Vodan Training of Trainers



Lack of common data approach: defining the problem

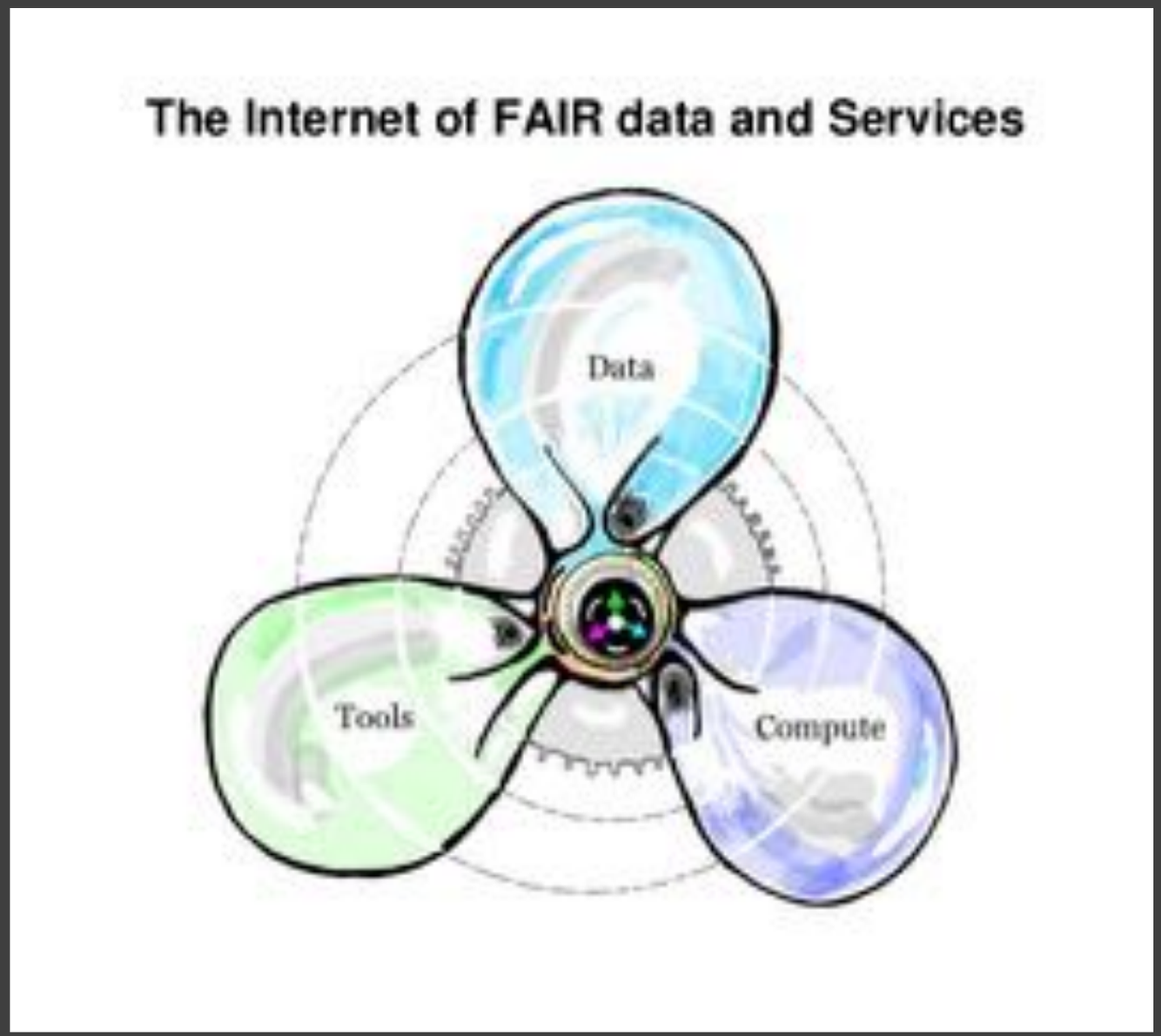
- Increasing (unconnected) digital health data:
  - Patient data
  - Research data
  - Published articles
- CORD-19 is a resource of over 47,000 scholarly articles, including over 36,000 with full text, about COVID-19, SARS-CoV-2, and related coronaviruses
- Too much for manual handling, but current internet not equiped for *machine*-readability of data
- Data need to be prepared for human- and machine-readable Findability, Accessibility, Interoperability, Re-usability (FAIR)
- This constitutes the basis for the Internet of FAIR Data And Services

Australian Research Data Commons

Internet of FAIR Data and Services - Connecting Principles

Data Science meets AI:

Quality data for Federated AI Ready (FAIR) solutions



- Distributed data
- Data remain in their place of origin
- Data are managed and stewarded in their place of origin
- Allows contextualized data analytics
- Fake data are detectable and traceable
- Allows Data sovereignty within legal and policy framework of the location where data is produced
- Connects fragmented data depositories
- Algorithms (tools) visit the data
- Computes and analytics on the basis of data visiting

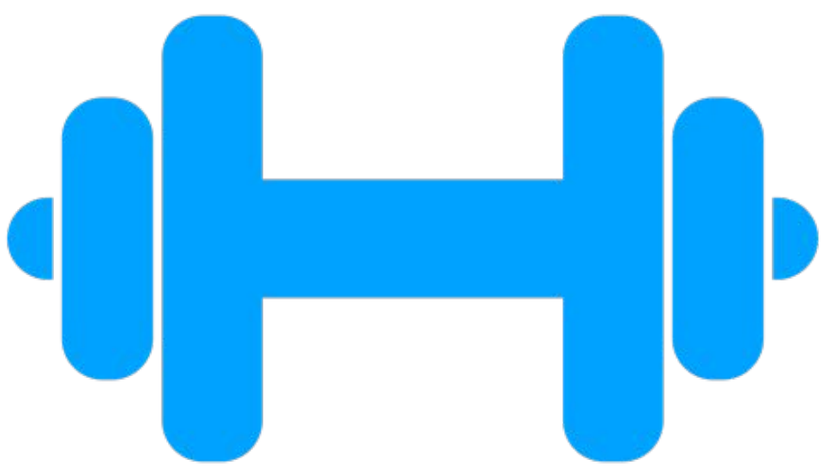
Specific benefits of VODAN for Africa

Avoid digital data removal to warehouses elsewhere

Strengthen data-informed Health Systems

Ensure data ownership and handling

Strenghten digital data stewardship and tooling



II. Training for Trainers:

Building a Community fit for purpose

VODAN:
Establishing a solid network of trust and purpose

Step 1	**Decide** •countries for FDPs: Uganda, Ethiopia, Zimbabwe, Tunisia and Nigeria
Step 2	**Identify** •Training of Trainers' hubs
Step 3	**Inform** •Bureau of Health and or Ministry of Information and build a contact with them
Step 4	**Contact** •the hospital/clinic to work with in your environment
Step 5	**Explain** •What the project is about
Step 6	**Establish** •A working relation with the hospital/clinic

Set up information channel with MoH / Bureau of Health

Approach	the MoH / Bureau of Health
Provide	information on VODAN and who are involved
Arrange	how you will communicate progress
Ask	their feedback
Request	endorsement

Determining the governance & regulatory framework

Identify	the relevant policy documents and regulations on medical data handling;
Categorise	categorise the do's and don'ts of the medical data regulatory framework;
Involve	involve relevant people who understand laws and regulations on medical data handling;
Explain	the purpose of the task to the experts in MoH and hospital/clinic;
Ask	ask colleagues in MoH & hospital & clinics to review the document and improve it;
Check	if you have all the right people on board to determine the regulatory framework;
Involve	any senior people if necessary to do final check;
Present	a regulatory framework

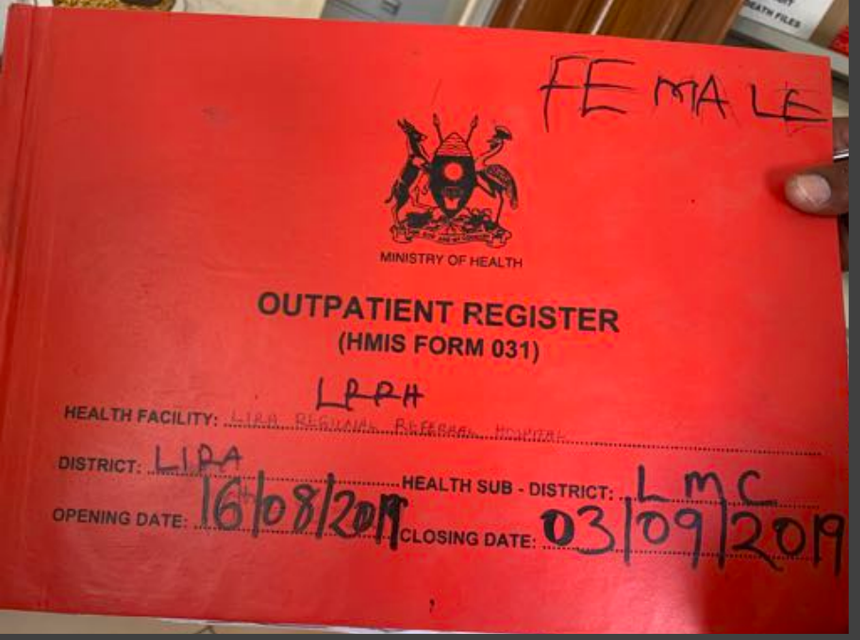
Training of Trainers:

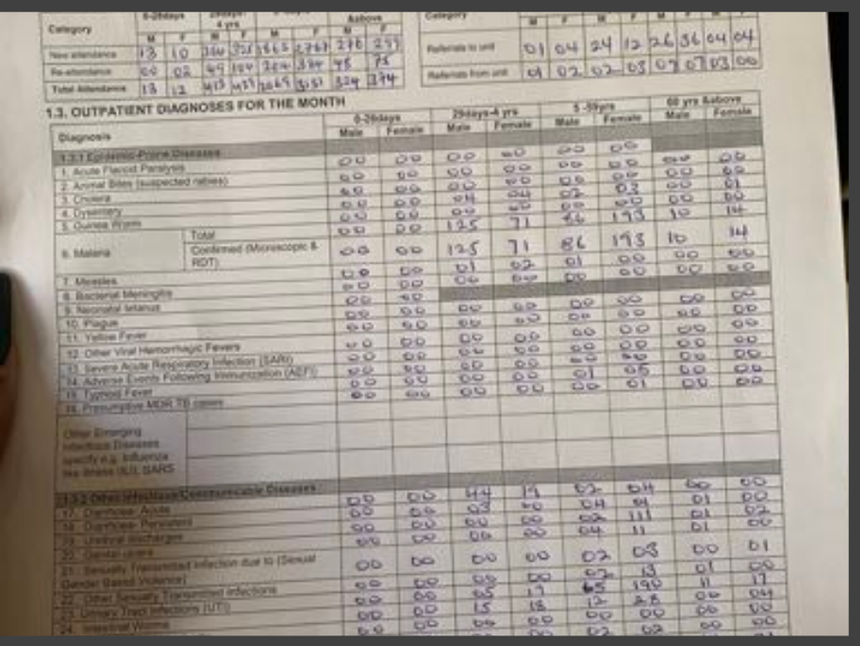
Questions to consider for identification of the hospital or clinic (health data producer)

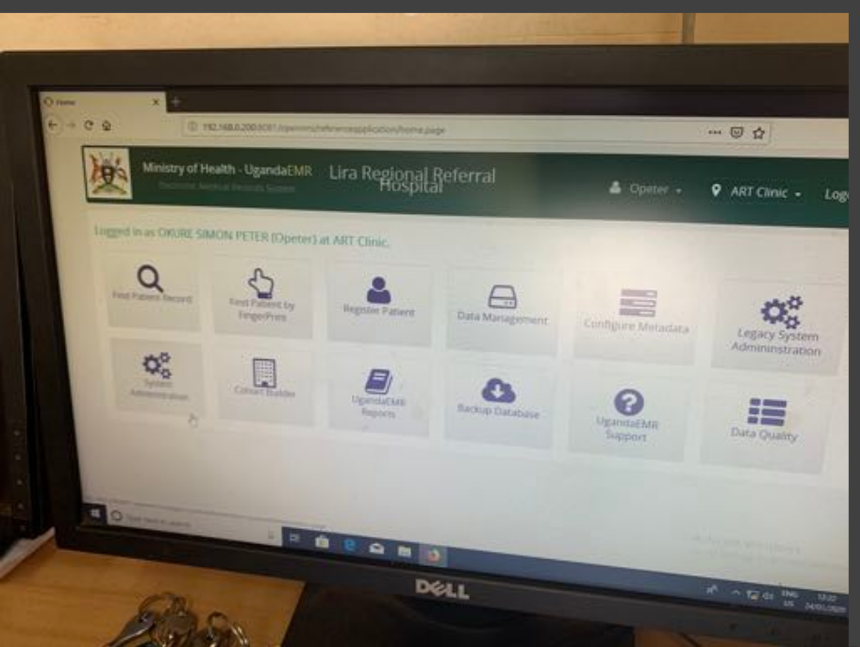
- What is the hospital/clinic you will work with?
  - Preferably there is a working relationship and trust with the hospital management
  - Ensure clear communication on the reason for the involvement of the hospital
  - The data-manager of the hospital/clinic is invited to the training so that knowledge is transferred
  - Alternatively follow up training is arranged with the data-manager of the hospital/clinic
  - Multiple hospitals/clinics can participate, but for the first step it should be a manageable number of participating outfits – expansion will happen after the first successful steps are implemented

Compilation of information flow charts

Ask	permission from hospital/clinic to compile an information flow chart on clinical data (written permission would be best)
Explain	that you do not need to have access to the data itself (only the forms)
Request	access to key resource persons handling information in the hospital/clinic
Interview	the key resource persons (this can be by phone) and ask how information is compiled
Identify	the different forms/templates for information
Understand	where the repository of the information is







Understanding the information flow

Training of a COVID-19 Data Community

1. To establish the basics of the FAIR Data Point:	Officials in health administration (governance, regulatory framework) Health professionals (to work with the information flow and data handling in hospitals and clincs) Data scientists, semantic data modelers, interdisciplinary data stewards (to define and model the data in human and machine-readable ontologies and determine informatical models)
2. In subsequent phase:	Experts in Machine Learning and Articificial Intelligence, text mining tooling Experts in Algorithm auditing Experts with Legal knowledge for regulatory embedding of the use of the FAIR Data Point Clinicians and health analysts for health data analytics Researchers, experts for the formulation of hypotheses and judging cardinal assertions derived from data analytics

III. Next Steps: implementation

Decision-making in FAIRification of the COVID-19 Data Community

- Application of FAIR Principles based on:

- Technical specifics (infrastructure)
  – code red

- local authorities (governance and regulations) and domain specialists (doctors, virologists, researchers)
  – code blue

Technical infrastructure (generic operations)
Data (domain-specific content)

Box 2 | The FAIR Guiding Principles

To be Findable:
F1. (meta)data are assigned a globally unique and persistent identifier
F2. data are described with rich metadata (defined by R1 below)
F3. metadata clearly and explicitly include the identifier of the data it describes
F4. (meta)data are registered or indexed in a searchable resource

To be Accessible:
A1. (meta)data are retrievable by their identifier using a standardized communications protocol
A1.1 the protocol is open, free, and universally implementable
A1.2 the protocol allows for an authentication and authorization procedure, where necessary
A2. metadata are accessible, even when the data are no longer available

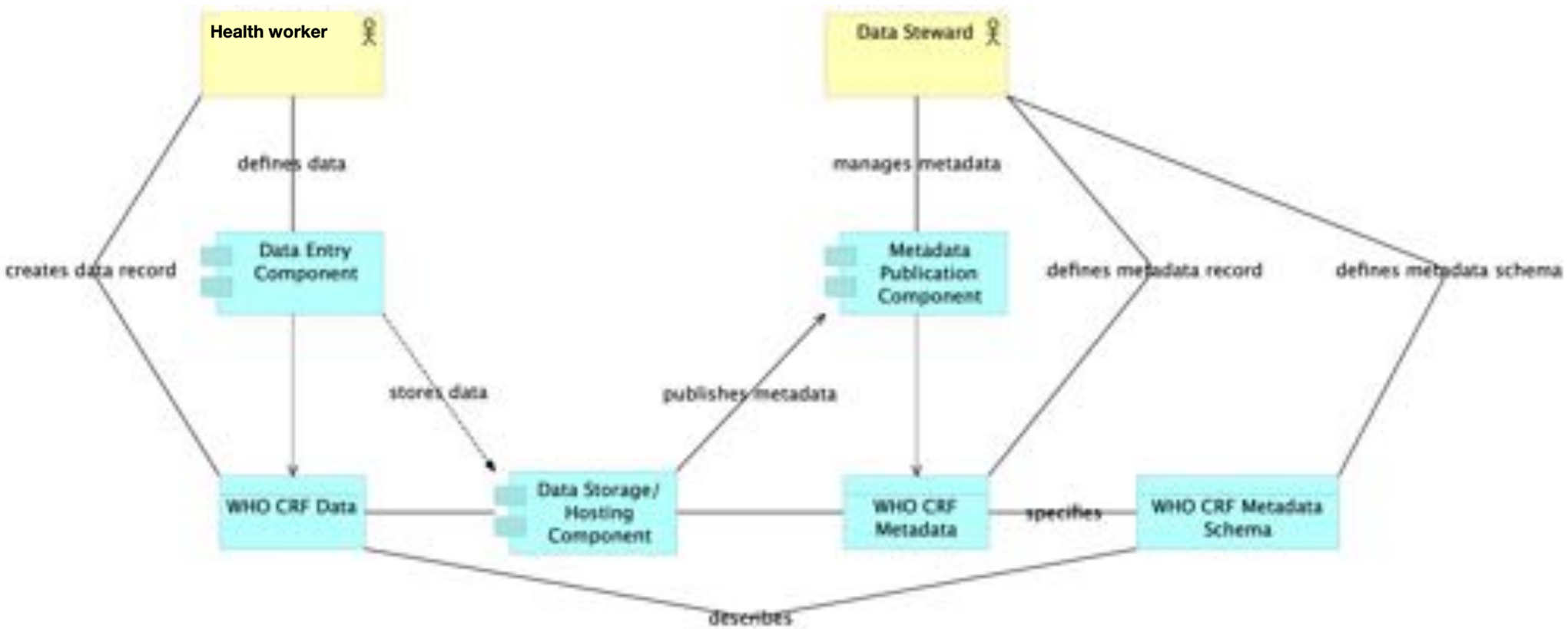
To be Interoperable:
I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
I2. (meta)data use vocabularies that follow FAIR principles
I3. (meta)data include qualified references to other (meta)data

To be Reusable:
R1. meta(data) are richly described with a plurality of accurate and relevant attributes
R1.1. (meta)data are released with a clear and accessible data usage license
R1.2. (meta)data are associated with detailed provenance
R1.3. (meta)data meet domain-relevant community standards

The COVID-19 Data Community determines:
Data as Open as Possible and as Closed as Necessary
As Distributed as Possible, as Centralised as Necessary

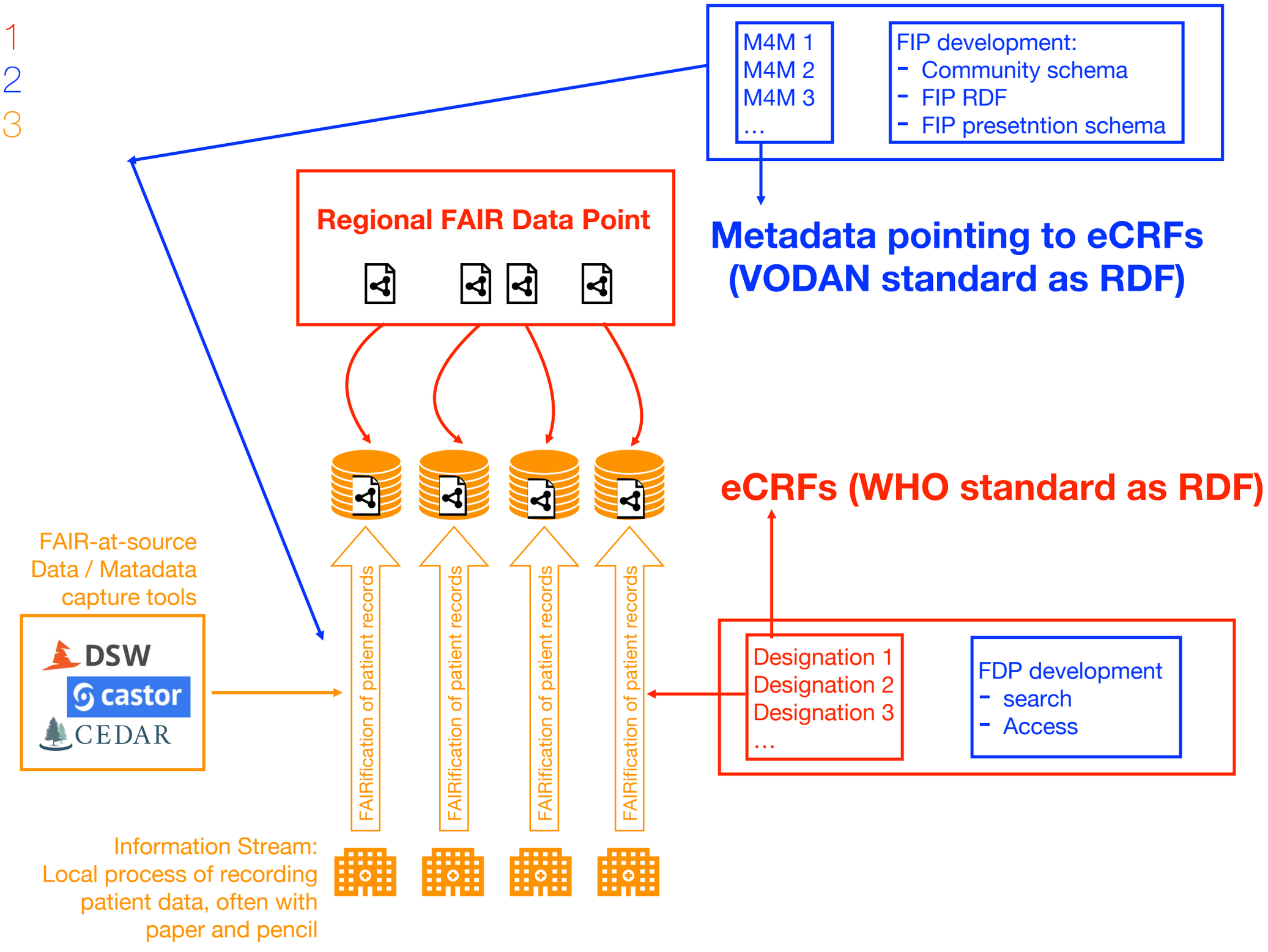
Information structure of COVID-19 semantic model of patient data:

1. Digital Data Entry at hospital/clinic
2. Machine Readable interoperability of existing digital entries (ensuring interoperability and reusability)
3. Defining metadata (ensuring findability and establishes conditions for accessibility)



VODAN Project: Social-Technical Specification

Phase 1
Phase 2
Phase 3



OUR SPEAKER: LUIZ BONINO
Luiz Bonino, International Technology Coordinator at the GO FAIR International Support and Coordination Office will lead a technical webinar guiding interested VODAN Africa participants in the installation of a FAIR Data Point. This is a technical discussion, and will result in a locally running FAIR Data Point that hosts machine-actionable metadata pointing to electronic Case Report Forms (eCRF) that will likely be stored elsewhere (perhaps even the clinical facility that collected the patient data). Over the coming weeks, ongoing effort will be devoted to "loading" the FAIR Data Point with relevant data and metadata content (for example, names of participating organisations, getting patient data into the eCRF, local governance and regulations, etc).
APRIL 30TH
2:00PM – 4:00PM CET
FAIR DATA POINT INSTALLATION
HOSTED BY VODAN AFRICA
GO FAIR

There is no FAIR Data without Machine-actionable Metadata

OUR SPEAKER: ERIK SCHULTES
There is no FAIR data, without machine-actionable Metadata. Erik Schultes, International Science Coordinator at the GO FAIR International Support and Coordination Office will lead a series of weekly webinars to guide stakeholders from each of the participating VODAN Africa jurisdictions in the creation of machine-actionable metadata describing the FAIR Data Point and its resources (such as the electronic Case Report Forms generated in local clinical facilities).
APRIL 28TH
2:00 – 3:00 PM CET
METADATA FOR MACHINES (M4M)
HOSTED BY VODAN AFRICA
GO FAIR

Metadata for Machines Workshops

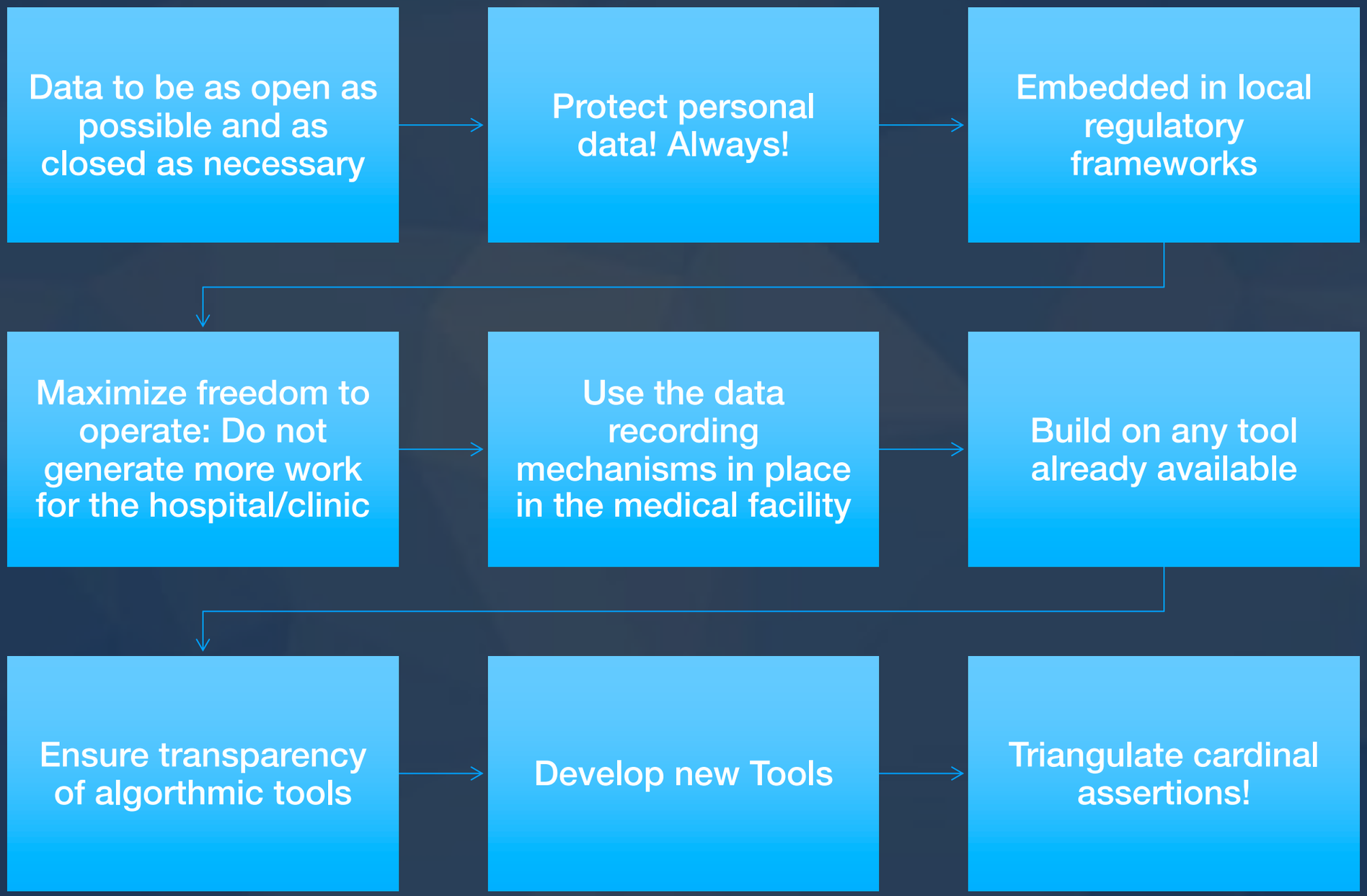
Domain Experts + Metadata Experts = Machine-actionable Metadata

The creation of community specified, reusable metadata templates that prevent the reinvention of the wheel and drive convergence and interoperability.

Metadata for Machines Workshops

Question	FAIR Principle	Metadata decisions	National	Regional	Hospital
1	F1	What is the persistence policy for identifier systems used for data elements?			
2	F2	What are the minimal data elements needed to ensure Findability?			
3	A2	What is the persistence policy for the metadata?			
4	R1.1	What usage license(s) will be used?			
5	R1.2	What are the minimal provenance metadata needed to ensure reuse?			
6	R1.3	Give a machine-actionable FIP.			

Key Aims of the FAIR Principles



Important links

- https://www.philips-foundation.com/
- https://www.philips-foundation.com/a-w/articles/virus-outbreak-data-network.html
- https://www.vodan-totafrica.info/

Virus Outbreak Data Network – Africa and Ambassadors

- PI: Mirjam van Reisen, Leiden University mirjamvanreisen@gmail.com
- Coordinator: Francisca Oladipo, Kampala International University francisca.oladipo@kiu.ac.ug
- Technical Support Group lead: Mariam Basajja, Leiden University/Kampala International University mariam.basajja@gmail.com
- Support ambassadors Implementation Network: Aliya Aktau, Leiden University Aliya Aktau aleka.aktau@gmail.com
- GO FAIR International Support and Coordination Office: Erik Schultes

Thank you!

VODAN Africa
Virus Outbreak Data Africa Network

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