Republic of South Sudan
Ministry of Health

Collecting and using data in a resource constrained & fragile setting to aid prompt decision making

Lessons learnt from Covid-19 Vaccinations

…..Leveraging Innovation to Solve Complex Problems…..

World Health Organization

Presentation Layout

- Covid-19 Vaccination Roll-out
- Introduction
- What is ODK, What is PowerBI
- Why ODK/PowerBI
- Design of the System/How it works
- How the Information is used
- Planned Improvements
- Future Plans
- Acknowledgement
- References

COVID-19 VACCINATION ROLL-OUT

- 132,000 COVID-19 Vaccines deployed to South Sudan
- A fixed modality vaccination delivery was adopted by the MoH.
- Initially 3 centres operating in the capital Juba only 6th April, 2021 till end of May.

  Juba Teaching, Juba Police and Juba Military Hospital- 10,100 doses.

- Expansion via HPF and UNICEF IP's in all the 10 States and 3 Administrative Areas.
- 35 out of 80 Counties with 93 centres Country-wide by end of June-42, 588 in 5 weeks.

Successes

- 86% vaccine consumption
- Community participation & ownership
- Low serious AEFI (1/51,792)
- Availability of AEFI kits
- Training of vaccination teams
- Training 672 community leaders
- Coordination and support from partners and stakeholders for increasing access to States
- Mobile outreach implemented in most HTR areas

Challenges

- Limited access for optimal uptake by the general public leading to;
- 72000 doses returned to the COVAX Facility.
- Inadequate funding to rollout to all facilities-leading to delays
- Requirement of two nurses as vaccinators at each Vaccination centre.
- Logistics in terms of shipping vaccines to the different States.
- Limited supportive supervision
- Difficulty in countering misinformation
- Low demand creation

Introduction

- Data is critical for decision making to all program managers, implementers and funders
- Collecting data on paper from over 1,000 health facilities in a country could be very involving, time consuming, has delays, errors introduced as it passes through various **stages-what if we can access data at source electronically????**
- South Sudan MoH sought a cost effective, but robust system to overcome this challenge during its implementation of the covid-19 vaccinations to monitor utilization of vaccines before expiry across all health facilities **(Data in front of the Manager)**
- We decided to use **ODK**-for data collection & **PowerBI** for Visualizations

What is ODK?

- ODK Collect is an open source Android app that replaces paper forms used to collect data in resource constrained environments. It supports a myriad of question and answer types, and it allows for offline data collection. Data collected can be transmitted when internet connectivity is available.
- ODK Collect supports location, audio, images, video, barcodes, signatures, multiple-choice, free text, and numeric answers. It can even accept answers from other apps on your device

What is PowerBI

- Power BI which is part of the Microsoft Power Platform is a business analytics service by Microsoft. It is developed to provide interactive visualizations and business intelligence capabilities with a very user-friendly interface.
- Power BI provides cloud-based BI (business intelligence) services, known as "Power BI Services", along with a desktop based interface, called "Power BI Desktop". It offers data warehouse capabilities including data preparation, data discovery and interactive dashboards

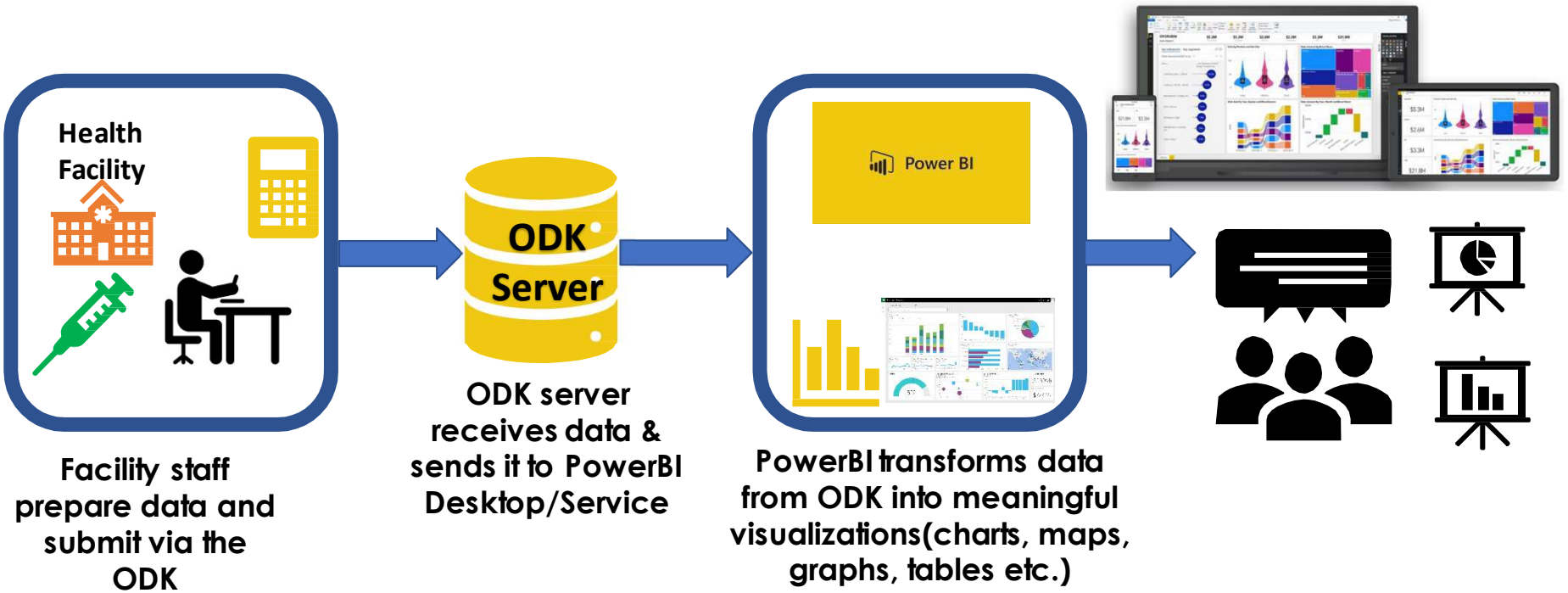
Why ODK/PowerBI

- Country context and the need for quick decision-making using data
  - ODK already in use (ISS visits, Reporting polio campaigns, AVADAR) with skill set in country to integrate into PowerBI (Business Intelligence) Application
  - Minimal implementation cost, minimal training and infrastructure requirements but delivers results seamlessly
  - Ability to collect data from all sites in real-time and use it for decision making to make sure vaccines do not expire at any site
  - Information collected can guide mobilization messages and activities, AEFI management, training needs, supervision needs, logistics needs etc.
  - It is dynamic and can be adapted to include additional critical information during implementation
- PowerBI service (Cloud Based) allows visualizations to be shared via a web link without need for login credentials and updates seen by everyone increasing accountability and transparency to partners and donors

Design of the System

- Collect data into a paper register
- Tally onto a tally sheet
- Aggregate facility summary onto a facility daily report
- Transfer the facility daily report on to the ODK form and send immediately
- The data is received at the ODK server and PowerBI refreshes at pre-determined times to update the new values reported from the facilities
- PowerBI generates different kinds of visualizations including maps, charts, tables and graphs that can display data at all levels starting with the facility all the way up to the National level (Has ability to drill down)

Design of the System & How it works



How the information is used

- The data generated is instantly available to Senior management in MoH, partner organizations, donor organizations, used at media briefings to provide updates, reprogram (i.e Redistributing vaccines from facilities with low consumption to facilities with high consumption) and used for future planning as well as knowing where to direct attention, based on issues identified.
- Realtime reporting of (Adverse Events Following Immunization)AEFIs, and other datasets
- Reporting of who is being vaccinated, where, and what is needed for targeted interventions
- Tracking progress depending on context (By facility, County, State, Country, Supporting Partner, type of vaccine/dose, period etc.)

Planned Improvements

- Add a view that shows the total doses the country has received from each of the different sources
- Display volumes left, daily absorption rates and the doses at risk at the current rate.
- Track daily, weekly and monthly absorption rates to enable the country monitor consumption and take measures like redistribution to facilities with high consumption rates
- Set target absorption rates at any given time which if maintained facilities will finish their current vaccine stocks before they expire
- Provide a mechanism to validate and clean data before display to the dashboard-most of this to be implemented at ODK form.
- Track wastage rate with data being captured in the vaccine management form

Planned Improvements

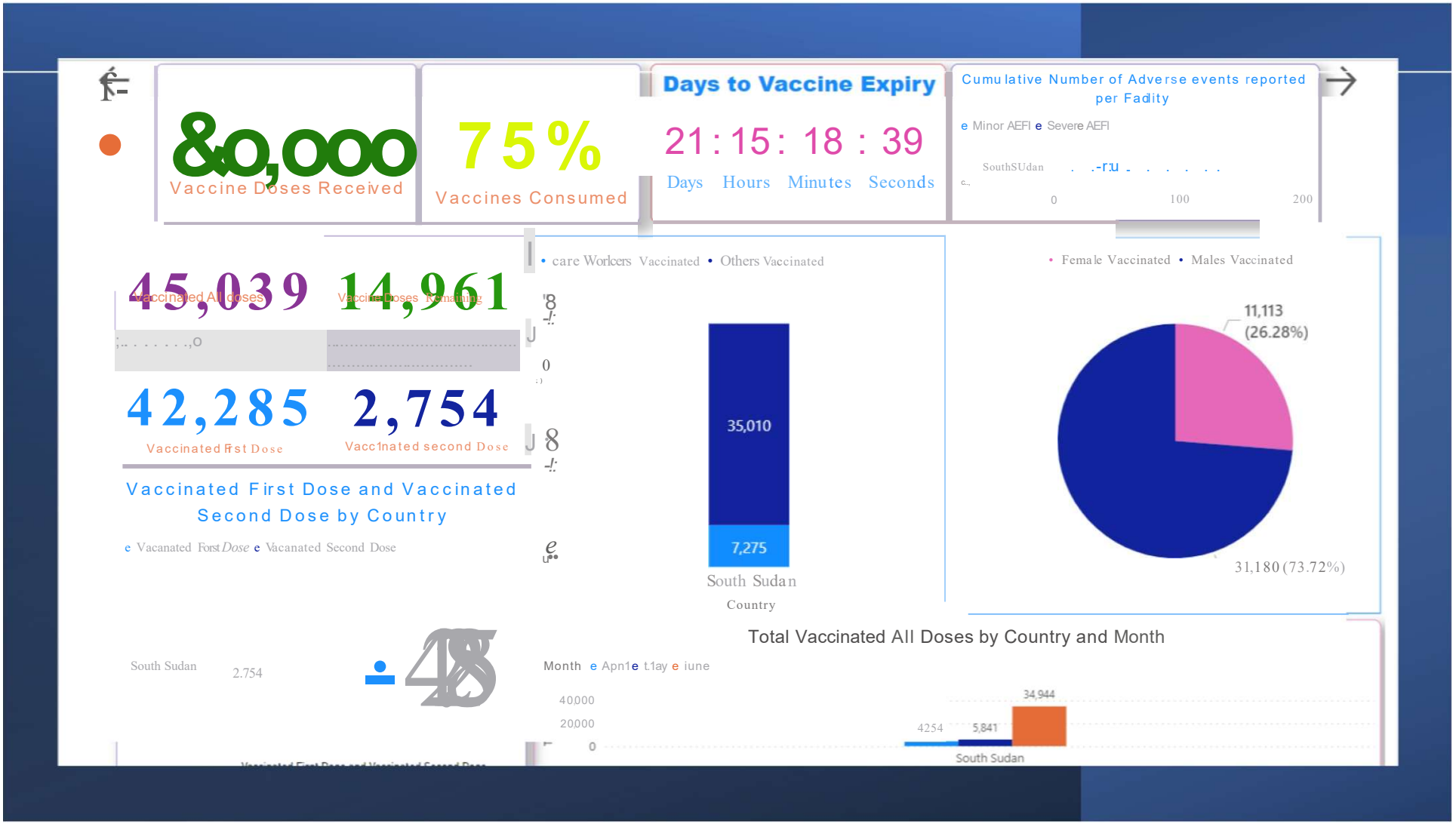
- Include question and answer visuals which allows a user to interact and interrogate the data using natural language
- Show locations of facilities using geo-location (currently showing County/State map)

Future plans

- Integrate the dashboard to the DHIS2 for monitoring COVID-19 cases, availability of case management equipment and infrastructure, etc
- Tailor and use the system for Supplementary Routine Immunization Activities (SIAs) and monitor vaccination progress in real time from all sites and identify issues that need attention in the field.
- Develop similar dashboards and link with other existing databases for analysis.
- Develop a dashboard for the Accountability Framework- Plans under way
- With one standard set, can monitor progress across different locations and systems

Acknowledgement

- MoH South Sudan wishes to acknowledge WHO, GAVI, UNICEF and all supporting & implementing partners for collaboration and support in implementing the tracking tool.


&0,000
Vaccine Doses Received
75%
Vaccines Consumed
Days to Vaccine Expiry
21 : 15 : 18 : 39
Days Hours Minutes Seconds
Cumulative Number of Adverse events reported per Facility
Minor AEFI
Severe AEFI
SouthSUdan
0
100
200
45,039
Vaccinated All doses
14,961
Vaccine Doses Remaining
42,285
Vaccinated first Dose
2,754
Vaccinated second Dose
Vaccinated First Dose and Vaccinated Second Dose by Country
Vacanated Forst Dose
Vacanated Second Dose
care Workers Vaccinated
Others Vaccinated
35,010
7,275
South Sudan
Country
Female Vaccinated
Males Vaccinated
11,113
(26.28%)
31,180 (73.72%)
South Sudan
2.754
Total Vaccinated All Doses by Country and Month
Month
Apn1
t.1ay
iune
40,000
20,000
0
34,944
4254
5,841
South Sudan

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Organization Unit

All

Supporting Partner

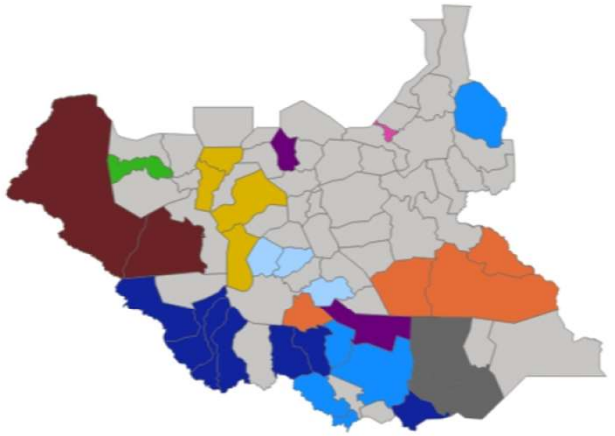
All

Number of States	Number of Counties	Number of Facilities
10	34	81

States Started Vaccinations

State
- central Equatona
- western Equaloria
- Eastem Equatoria
- warrap
- Jonglei
- Lakes
- UpperN,le
- western Bahr El Ghazal
- unrty
- Northern Bahr El Ghazal

Counties Started Vaccinations



County
- JUBA
- YAMBIO
- RUBKONA
- NZARA
- PIBOR
- YEI
- BORSOUTH
- AWEIL WEST
- TONJSOUTH
- wAu
- TWJC
- EZO
- IKOTOS
- MALAI(AI
- RUMBEK CENTRE
- TORJT
- CUEIBET

Please report any inaccuracies and suggestions for improvements to mukombol@who.int

Facility Feedback

ate of Reporting	State	County	Facility	Comments
26 June. 2021	Western Equatoria	MVOLO	Mvolo	Good
26 June 2021	Central Equatoria	MOROBO	Rodoba	Good team work but community turn up was low though there is high demand at other sites of the county
26 June,2021	Jonglei	BORSOUTH	Bor State Hospital	Only bor civil hospital is reporting,the other two sites are not reporting!
26 June, 2021	Northern Bahr El Ghazal	AWEILWEST	Aweil Hospital	Vials in the fridge: 14 are not true as the fridge was closed and there is no report from the responsible per
25 June, 2021	Central Equatoria	YEI	Yei State Hospital	All vials have been used up in Yei hospital.
25 June. 2021	Western Bahr El Ghazal	WAU	Wau Teaching Hospital	Four/4 AEFI Cases reported
25 June, 2021	Western Equatoria	MARJDI	Maridi County Hospital	Good
25 June, 2021	Western Equatoria	YAMBIO	Yambio State Hospital	Good
25 June,2021	Central Equatoria	JUBA	Juba Teaching Hospital	Hews were very few than others
25 June,2021	Central Equatoria	MOROBO	Kaya	High population few vaccines hence target population may not be covered all.
25 June, 2021	Northern Bahr El Ghazal	AWEILWEST	Aweil Hospital	Low turn up due to heavy rains. activity is in last days of completion of the vials provided for this phase
25 June, 2021	Western Equatoria	EZO	Ezo Hospital	More vaccines needed
25 June,2021	Western Equatoria	EZO	NAANDI PHCC	Naandi phcc has no network and I received the report today Poor
25 June, 2021	Jonglei	PIBOR	Boma Hospital	down up and hesitancy by healthcare workers
25 June,2021	Eastern Equatoria	MAGWI	Nimule County	Sharing of contacts for further inquiry of issues and immidiate challenges and finding out solutions for. The daily
25 June 2021	Upper Nile	MABAN	COUNTY HOSPITAL	summary is incomplete up to the end.
25 June,2021	Upper Nile	MABAN	BUNJ	The form is incomplete. The number of vials issued to the team hasn't been filed that sometimes led to rejev

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Organization Unit: All

Supporting Partner: All

Summary of Doses Issued per Facility, Number Vaccinated & Doses Remaining

Country	Vaccine Doses Issued	Total Vaccinated Dose1	Total Vaccinated Dose2	Total Persons Vaccinated_All doses	Doses Remaining
South Sudan	57,800	46,035	3,552	49,587	8,213
Central Equatoria	33,200	23,401	3,467	26,868	6,332
Jonglei	2,000	1,622	24	1,646	354
Warrap	4,000	3,987	14	4,001	-1
Lakes	4,700	2,909	11	2,920	1,780
Northern Bahr El Ghazal	2,500	2,717	11	2,728	-228
Total	60,000	46,035	3,552	49,587	10,413

State	County	Facility	Supporting Partner	Start date	Vaccine Doses Issued	Total Vaccinated Dose1	Total Vaccinated Dose2	Total Persons Vaccinated All doses	Doses Remaining
Central Equatoria	JUBA	Juba Teaching Hospital	MoH	06-Apr-21	10,216	6,528	1,599	8,127	2,089
Central Equatoria	JUBA	Jubli	Mall				115		1,112
Central Equatoria	JUBA	Juba Police Hospital	MoH	06-Apr-21	7,716	5,234	839	6,073	1,643
Lakes	RUMIEIC CENIRE	R m n l l l l t S - .	•••,	14-Jun-21	2,500	15		1158	742
Unity	RUBKONA	Bentiu Hospital	HPF	14-Jun-21	1,500	881	5	886	614
Warrap	GOGRIAL W151'		•••,	11	,JOO	7S1		119	531
Lakes	YIROL WEST	Yirol County Hospital	HPF	16-Jun-21	1,000	470	2	472	528
Lakes	cumEJ'	Olllmt.....	•••,		,200			•••,	510
Total					60,000	46,035	3,552	49,587	10,413

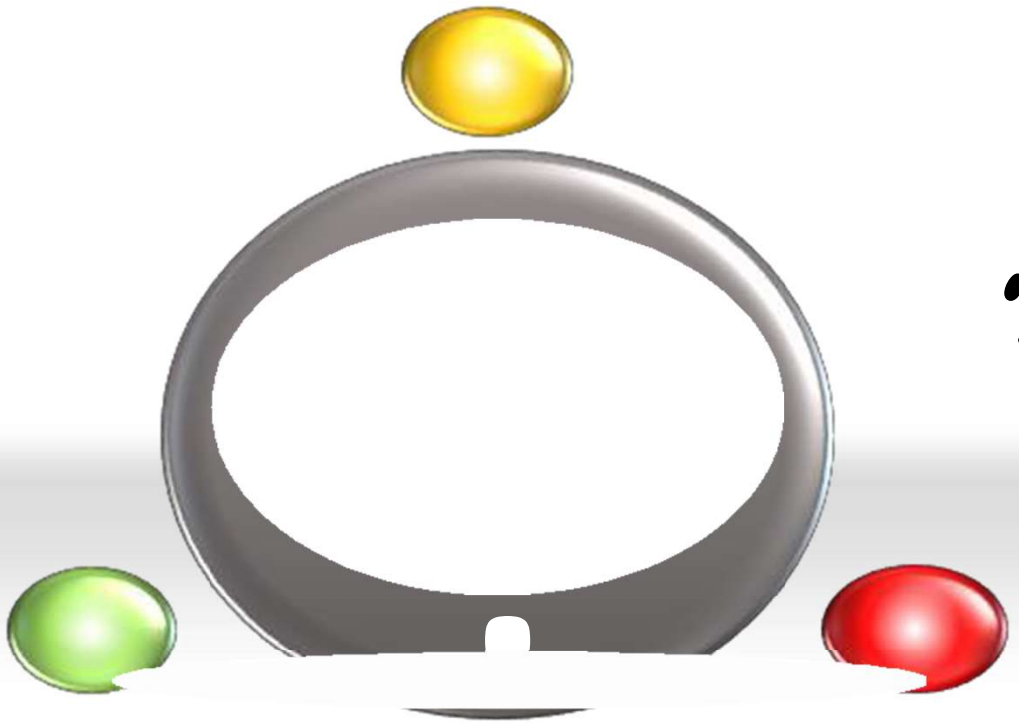
References

What is Power BI? - Power BI | Microsoft Docs

ODK Collect — ODK Docs (getodk.org)

South Sudan Dashboard Link

Microsoft Power BI



Thank You!!