health
Department:
Health
REPUBLIC OF SOUTH AFRICA

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webDHIS (DHIS2) Technical Stack Overview

1. Core Platform

Platform

- **Application Platform:** DHIS2 (webDHIS), using a stable production release.
- **Primary Function:** National health information management platform supporting aggregate reporting, indicator management, programme monitoring, dashboards, analytics, and Tracker-based use cases.

Architecture

The platform follows a standard three-tier architecture:

Presentation Layer

- Browser-based web user interface.
- HTML5, CSS, and JavaScript technologies.
- Responsive design supporting desktop and mobile access.

Application Layer

- Java-based DHIS2 application stack.
- Web API services.
- Apache Tomcat application server.
- Support for custom applications and extensions using approved DHIS2 frameworks and APIs.

Data Layer

- PostgreSQL database platform.
- Storage of metadata, transactional data, analytics tables, system configuration, and audit information.

Deployment Model

- Centrally hosted and managed.
- Multi-instance deployments.
- Physical, virtualised, cloud-hosted.

2. Client Access and Security

Supported Clients

- DHIS2 Capture.
- Data Entry applications.
- Dashboard and Analytics applications.
- Pivot Tables.
- Maps and GIS tools.
- Event and Tracker applications.
- Custom DHIS2 applications developed using approved DHIS2 development frameworks.

Browser Support

- Google Chrome.
- Microsoft Edge.
- Mozilla Firefox.

Mobile and Offline Capability

- DHIS2 Android Capture application.
- Browser-based offline caching and synchronisation features.
- Support for low-bandwidth and intermittent-connectivity environments.

Identity and Access Management

- Role-Based Access Control.
- Organisation-unit-based data access controls.
- User groups and programme-specific permissions.
- Integration with enterprise identity services such as:
    - Active Directory (AD)
    - LDAP
    - Single Sign-On (SSO)
    - Other approved authentication mechanisms

3. Data and Metadata Management

Metadata Standards

The platform maintains nationally approved metadata including:

- Organisation Units
- Data Elements
- Indicators
- Data Sets
- Category Combinations

- Programmes
- Tracked Entity Types
- Validation Rules
-

All metadata changes are subject to established NDoH governance processes in line with approved National Indicator Data Set (NIDS).

Data Domains

The platform supports:

- Aggregate routine health information.
- Tracker-based individual records.
- Disease and programme monitoring.

This includes, but is not limited to:

- HIV and AIDS
- Tuberculosis (TB)
- Maternal, Child and Women's Health (MCWH)
- Non-Communicable Diseases (NCDs)
- Emergency Medical Services (EMS)

4. Integration and Interoperability

API Framework

The primary integration mechanism is the DHIS2 REST Web API.

Supported exchange formats may include:

- JSON
- CSV
- XML
- ADX
- FHIR-based payloads

5. Infrastructure, Operations and Security

Hosting Environment

The production environment conforms to:

- High availability
- Redundancy
- Backup and recovery
- Disaster recovery capabilities
- Secure network architecture

Monitoring and Support

The operational environment includes:

- Application monitoring.
- Database monitoring.
- Infrastructure monitoring.
- Performance management.
- Incident and problem management processes.

NDOH Instances

Server name	URL	GB Ram	GB Storage	CPU	DB Server
za-nat-db-1	N/A	128	5448	8	N/A
national-db-server	N/A	192	3836	8	N/A
national-upgrade-db-server	N/A	192	2485	8	N/A
za-stack5-lb-1-vm	N/A	2	100	8	N/A
zandoh-db	N/A	256	4200	48	N/A
prod-lb-1-vm	N/A	8	200	8	N/A
za-nhc-dhis-1-vm	https://nhc-portal.dhis.dhmis.org	12	100	16	zandoh-db-01
za-nqpr-dhis-1-vm	https://nqpr.dhis.dhmis.org	18	100	16	zandoh-db-01
za-ripda-dhis-1-vm	https://ripda.dhis.dhmis.org	18	100	16	zandoh-db-01
za-sarms-dhis-1-vm	https://sarms.dhis.dhmis.org	18	100	16	zandoh-db-01
za-idsr-dhis-1-vm	https://za-idsr.dhis.dhmis.org	24	100	16	zandoh-db-01
za-schoolhealth-dhis-1-vm	https://schoolhealth.dhis.dhmis.org	18	100	16	zandoh-db-01
za-dd-dhis-1-vm	https://dd.dhmis.org	24	100	16	zandoh-db-01
za-art-dhis-1-vm	https://art.dhis.dhmis.org	24	100	16	zandoh-db-01
za-pec-dhis-2-vm	https://pec.dhis.dhmis.org	18	200	16	zandoh-db-01
za-nat-dhis-1-vm	https://za.dhis.dhmis.org	32	200	8	za-nat-db-1
non-prod-db	N/A	256	4200	48	N/A
non-prod-lb-vm	N/A	2	100	8	N/A
za-nat-staging-dhis-1-vm	https://staging.dhis.dhmis.org/za	32	200	8	national-db-server
za-stage-ishp-1-vm	https://staging.dhis.dhmis.org/schoolhealth	8	100	8	non-prod-db
za-pec240-1-vm	https://staging.dhis.dhmis.org/pec240	8	100	8	non-prod-db
za-ripda240-1-vm	https://staging.dhis.dhmis.org/ripda240	8	100	8	non-prod-db
za-zaidsr240-1-vm	https://staging.dhis.dhmis.org/zaidsr240	8	100	8	non-prod-db
za-nqpr240-1-vm	https://staging.dhis.dhmis.org/nqpr240	8	100	8	non-prod-db
za-ripda-training-1-vm	https://training.dhis.dhmis.org/ripda	8	100	8	non-prod-db
za-ndd-stage-1-vm	https://staging.dhis.dhmis.org/nidsintegrated	8	100	8	non-prod-db
za-prov-db	N/A	256	4200	48	N/A
prod-lb-1-vm	N/A	8	200	8	N/A

Prov Instances

za-ec-dhisweb-1-vm	https://ec.dhis.dhmis.org	18	100	16	za-prov-db
za-lp-dhisweb-1-vm	https://lp.dhis.dhmis.org	18	100	16	za-prov-db
za-gp-dhisweb-1-vm	https://gp.dhis.dhmis.org	18	100	16	za-prov-db
za-mp-dhisweb-1-vm	https://mp.dhis.dhmis.org	18	100	16	za-prov-db
za-nw-dhisweb-1-vm	https://nw.dhis.dhmis.org	18	100	16	za-prov-db
za-fs-dhisweb-1-vm	https://fs.dhis.dhmis.org	18	100	16	za-prov-db
za-wc-dhisweb-1-vm	https://wc.dhis.dhmis.org	12	100	16	za-prov-db
za-nc-dhisweb-1-vm	https://nc.dhis.dhmis.org	18	100	16	za-prov-db
za-kz-dbserv-1	N/A	192	2500	8	N/A
za-int1-lb-1-vm	N/A	2	100	8	N/A
za-kz-dhisweb-1-vm	https://kz.dhis.dhmis.org/	40	500	8	za-kz-dbserv-1
za-kz-dhisweb-2-vm	https://kz.dhis.dhmis.org/	16	500	8	za-kz-dbserv-1
za-kz-dhisweb-3-vm	https://kz.dhis.dhmis.org/	16	500	8	za-kz-dbserv-1
dbserver kzstaging	N/A	128	2500	8	N/A
za-kz-stage-1-vm	https://staging.dhis.dhmis.org/kz	8	100	8	dbserver kzstaging
za-kz-dev-1-vm	https://reporting.dhis.dhmis.org	16	100	8	national-upgrade-db-server
za-kz-stage-2-vm		8	100	8	
non-prod-db	N/A	256	4200	48	N/A
non-prod-lb-vm	N/A	2	100	8	N/A
gp-stage-web-1-vm	https://staging.dhis.dhmis.org/gp	12	100	8	non-prod-db
lp-stage-web-1-vm	https://staging.dhis.dhmis.org/lp	10	100	8	non-prod-db
mp-stage-web-1-vm	https://staging.dhis.dhmis.org/mp	10	100	8	non-prod-db
nc-stage-web-1-vm	https://staging.dhis.dhmis.org/nc	10	100	8	non-prod-db
ec-stage-web-1-vm	https://staging.dhis.dhmis.org/ec	10	100	8	non-prod-db
wc-stage-web-1-vm	https://staging.dhis.dhmis.org/wc	8	100	8	non-prod-db
kz-stage-web-1-vm		12	100	8	non-prod-db
fs-stage-web-1-vm	https://staging.dhis.dhmis.org/fs	10	100	8	non-prod-db
nw-stage-web-1-vm	https://staging.dhis.dhmis.org/nw	10	100	8	non-prod-db

hisp-hispland-vm	https://playground.hisp.org/hispland	8	100	8	non-prod-db
za-train-hispland-dhis-1-vm	https://training.dhis.dhmis.org/hispland	8	100	8	non-prod-db
za-fs240-1-vm	https://staging.dhis.dhmis.org/fs240	8	100	8	non-prod-db

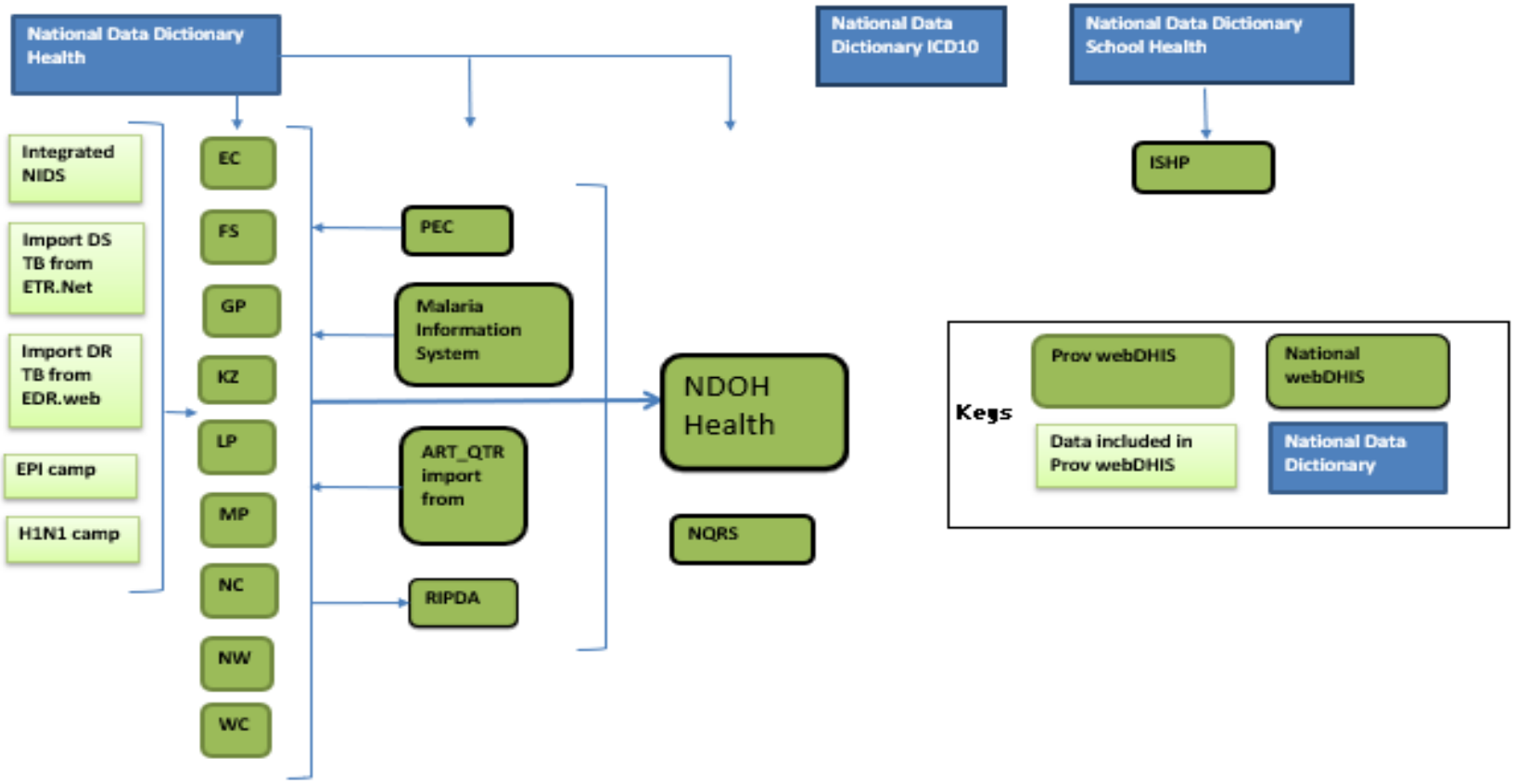
webDHIS

- DHIS2 is an open source, web-based platform most commonly used as a health management information system (HMIS). In this regard, the NDoH has a non-exclusive license to use the DHIS software modules. The District Health Management Information System Policy serves as an overarching policy for the use of DHIS together with the relevant Standard Operating Procedures (SOPs).

- The webDHIS system used in South Africa has multiple instances, and each has an organisation hierarchy where the names of all public health facilities are captured according to the following hierarchy: province, district, sub-district, health facility, and reporting unit within or under a health facility. The hierarchy is continually aligned with the Master Health Facility List (MHFL). A DHIS instance consists of the DHIS database, a PostgreSQL database, and the webDHIS application front-end which is web-based. Each instance is hosted on a server with the database server and one or more web servers accessible through a URL.

webDHIS

webDHIS Database Structure



ACTIVE DHIS USERS

8476

The number of active DHIS2 users in SA has steadily increased by 58% since Sep 2019

DHIS2 RECORDS NDOH

493 205 144

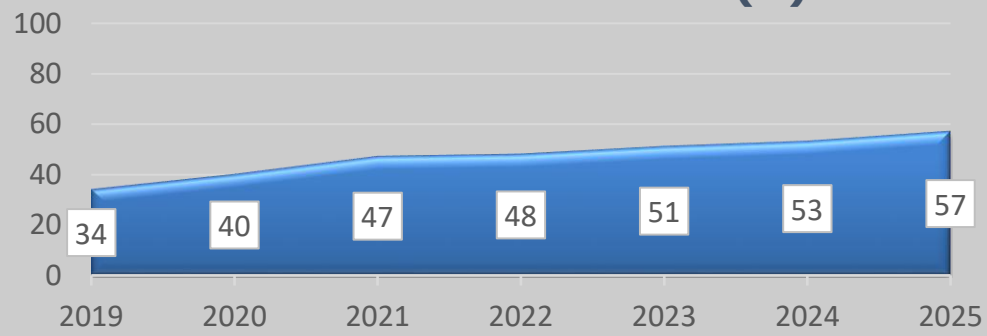
Current number of DHIS2 records

TRAINED DHIS EXPERTS

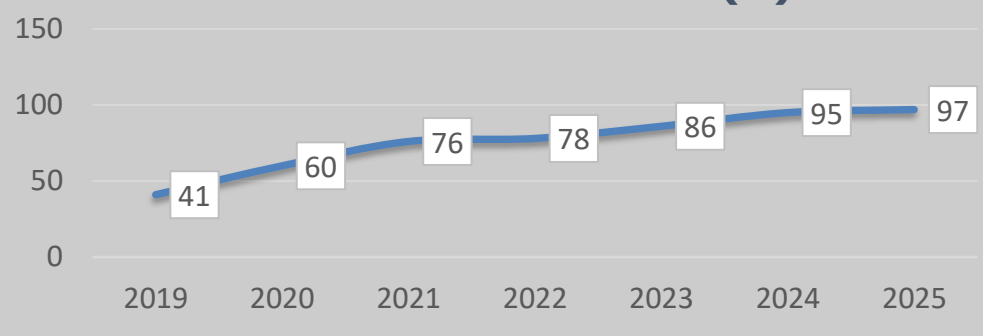
46

Over the last 2 years HISP has trained experts in Provinces and the National level on DHIS2 administration

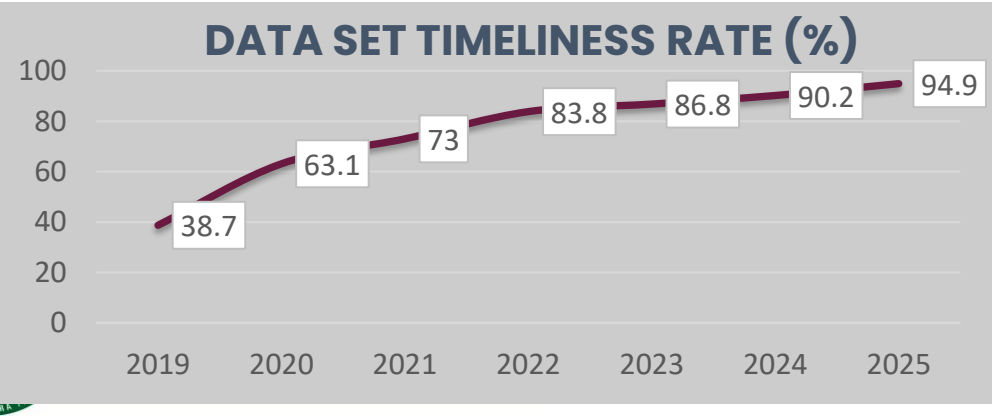
DAILY DATA CAPTURING (%)



FACILITY CAPTURING (%)



DATA SET TIMELINESS RATE (%)



DATA ENTRY TIMELINESS RATE (%)