

**Bloomberg
Philanthropies**

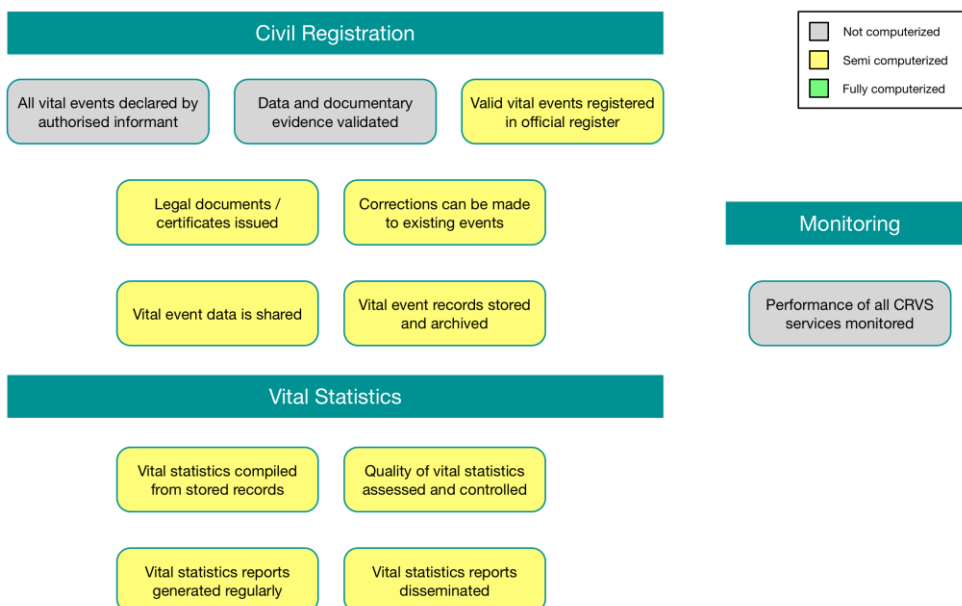


**DATA FOR
HEALTH INITIATIVE**

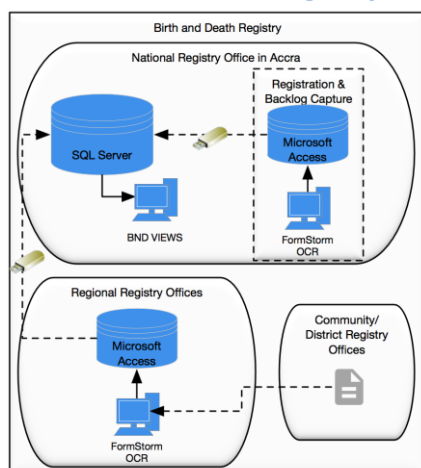
Ghana CRVS Digitisation Project

System Landscape Assessment

Ghana System Landscape Assessment



Births and Deaths Registry



The BDR system comprises paper-based data capture with digitisation of records through scanning and processing of the records using optical character recognition (OCR). The system at the community and district levels is purely paper-based. At the regional offices the paper records are scanned and processed by FormStorm, an OCR system developed by CharacTell. Clerks validate the scanned records via the FormStorm interface and correct any OCR errors. The processed records are stored in a Microsoft Access database.

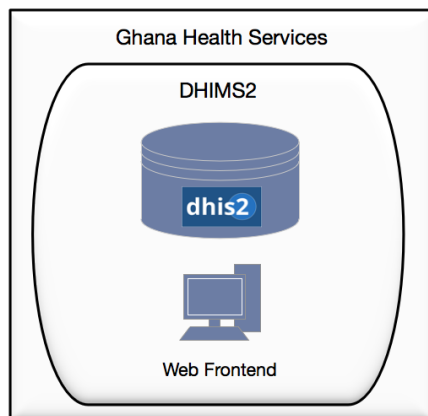
From the regional offices the Access databases are copied via USB sticks weekly or fortnightly to the national BDR office in Accra. The data is not encrypted however and this poses a security risk as a potential breach of confidentiality. BDR have however piloted the use of encryption, and it was concluded that extensive staff training would be required in order to make effective use of such technologies. At

the national office the Access databases are imported into a SQL Server instance. Potential duplicates can be picked up at this import stage and investigated. A standalone desktop system (BND VIEWS developed by 3c Technology in Ghana) provides staff with a view of the data and allows for further validation and certificate generation functionality.

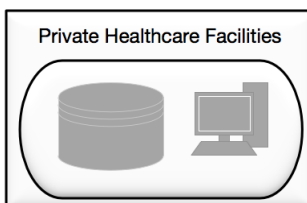
Vital statistics data is usually compiled or exported on an ad-hoc basis to other institutions, most importantly GSS. These exports are normally compiled with SQL queries on the databases and exports, typically into Excel.

The national office has a newly renovated server room with security gate access, new hardware and utilities such as UPS and is well managed. The servers are running Microsoft Windows Server 2012. The database servers are setup with clustering for failover and alerts for service monitoring. There are servers for hosting backups (however there is no offsite backup currently).

Ghana Health Services

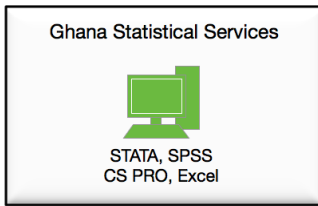


GHS are hosting a national level DHIS2 instance for handling aggregate data (branded as DHIMS2 for the Ghanaian context). DHIS2 is an open-source tool developed by the University of Oslo, Norway for aggregate data management and analytics. Its web-based frontend allows online access and in Ghana both national users and healthcare facilities use this instance.



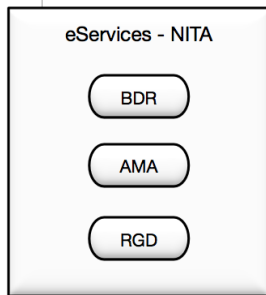
Private healthcare facilities may choose to use proprietary EMR systems for their own use. Health Administration Management System (HAMS), a legacy Windows-based desktop system developed by InfoTech Systems, is commonly used. There is currently no integration between this system and DHIMS2.

Ghana Statistical Services



Vital statistics data is usually only shared on an ad-hoc basis between GSS, BDR and GHS and there are no automatic electronic exchange systems in place. GSS commonly use STATA, SPSS, CS Pro and MS Excel for processing and compiling statistics for dissemination.

eServices

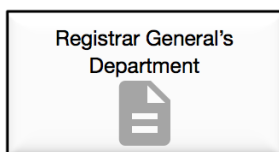


The Government of Ghana eServices platform offers a one-stop window for Ghanaians to access government agency services. CRVS relevant services that are offered are:

- Birth and Death Registry (BDR)
 - Verification of Birth
 - Verification of Death
 - General Search for Birth Certificate
- Registrar General's Department
 - Marriage booking
- Accra Metropolitan Assembly
 - Authentication of Marriage
 - Certified Copy of Marriage Certificate
 - Marriage Certificate Search

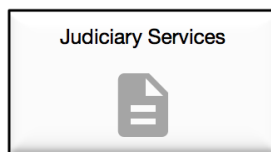
Processing of these requests is not automatic however and BDR, for example, manually process the incoming requests by checking for records against the national SQL Server database, or the paper archive.

Registrar General's Department



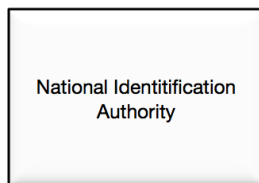
Marriage registration is currently a paper-based system. However some eServices mentioned above are available.

Judiciary



The divorce process is currently paper-based.

National Identification Authority



The NIA pilot has currently been put on hold but the intention is for the NIA to provide all Ghanaian citizens with a National ID Number. NIA will host a national database and provide identity validation services.

Identified Systems As-Is Issues

Criteria	Impact
Timeliness	<ul style="list-style-type: none">The distributed nature of the system databases means not all information is readily available to all stakeholders. In particular data is not routinely and automatically shared between GSS, BDR and GHS.
Performance	<ul style="list-style-type: none">The link with paper-based systems has intrinsic drawback in terms of performance, however on a systems level there were no reports from BDR and GHS of slow performance. The BDR systems central database is handling several million records.
Security	<ul style="list-style-type: none">Copying of data via USB is unencrypted. This poses a potential breach of confidentiality. There is also the additional risk of having USB drives misplaced or lost.Having distributed databases means that security management is distributed as well.
Legality	<ul style="list-style-type: none">BDR are legally required to submit a formal request to GHS in order to access data.
Human Resources	<ul style="list-style-type: none">An inadequate staffing level, both technical and nontechnical, is often reported as a prohibitive problem. Having distributed systems exacerbates the need for skilled IT technicians, especially in regional centres.