

BHIMA

in the Democratic Republic of Congo
ASSP and ASSR - 2013 to 2022

OPEN-SOURCE HOSPITAL INFORMATION SYSTEM

A SOFTWARE TOOL

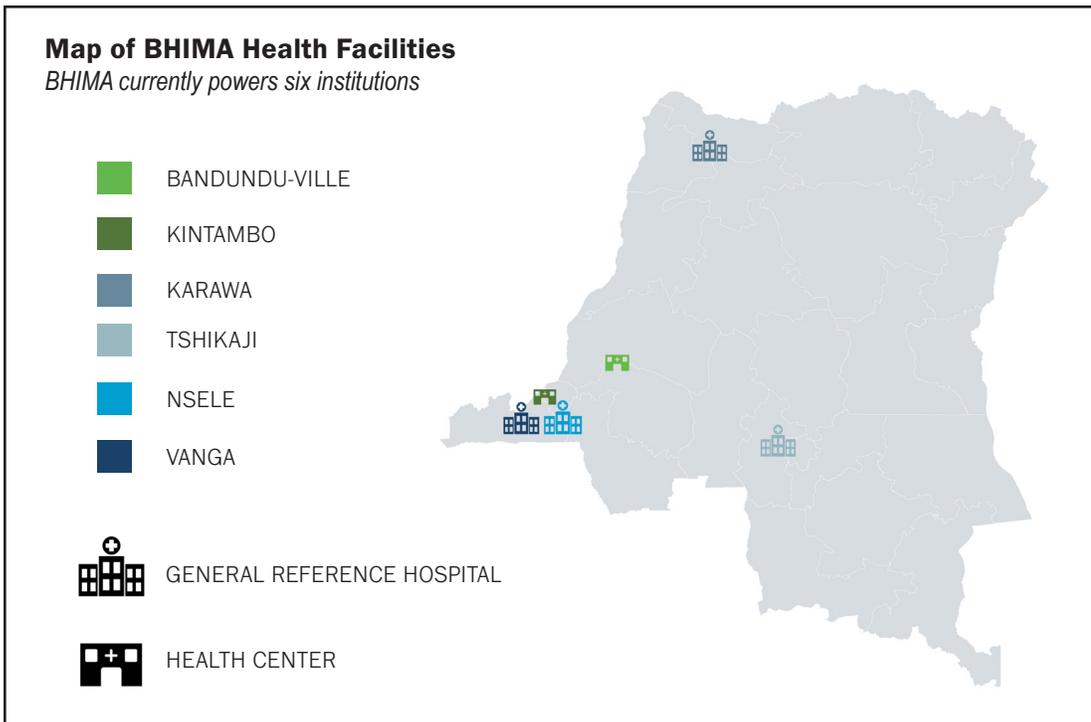
The BHIMA project is a software tool developed by IMA during the ASSP project and subsequent extensions. The project's objective is to provide a free and open-source hospital information system tailored to the DRC's infrastructural, regulatory, and financial context. Some key elements that separate BHIMA from other software are OHADA compliance, scalability, low total cost of ownership, and DRC-specific reporting tools aimed at ease of adoption in rural medical institutions. Since initial development, the tool has also been deployed to manage the supply chain of health zones.

BHIMA was born out of a search for a low-cost information management application that IMA could recommend to rural hospitals to aid in financial reporting and decision-making. After piloting several solutions, including the Care2X system used successfully in Kenya, it became evident that existing solutions were either costly, cumbersome, or inappropriate for the use-case of a typical rural hospital in Congo. As part of IMA's better governance support, a team of Congolese developers built and deployed the BHIMA software to respond to

the needs of these institutions. The software has been actively developed since 2014 and currently powers six institutions: HGR Karawa, HGR Tshikaji, HGR Vanga, HGR Nsele, CSR Bandundu-Ville, CSR Kintambo.

The BHIMA software provides accounting tools for OHADA-based accounting, stock and inventory management, human resource management, and basic patient hospital stay management. Each of these functionalities are designed with a rural administrator in mind – for example, BHIMA automatically produces the RUMER stock report used by all pharmacies in Congo to track daily medication consumption. Similarly, the payroll management provides the flexibility for either fixed or floating salaries, while still accurately calculating the CNSS, IPR, and other required national taxes or benefits. Finally, like most accounting software, the periodic profit and loss statements, general ledger, balance sheet, and income and expense reports are all automated. By automating these labor-intensive procedures, administrators of institutions of any size can focus on managerial decision-making, rather than rote report production.

From a value for money standpoint, the project has met or exceeded FDCO's framework for evaluating the project's impact using the "4E" criteria: economy, efficiency, effectiveness, and equity.



ECONOMY

BHIMA was developed by a team of Congolese programmers working to support the Ministry of Health's digital vision. By keeping the development process local, the training and experience gained in this project has strengthened the MoH's capabilities in the digital space. The resources not only produced software, but local expertise in managing health information systems.

EFFICIENCY

The BHIMA team improved efficiency (maximizing outputs for given inputs) during ASSR by creating detailed documentation; staggering the hardware and software installation teams; pre-loading an institution's chart of accounts, debtor group lists, and inventory articles before on-site installation; and provide focused administrative training during installation. By doing so, the team cut installation times from three months to one month in ASSR.

EFFECTIVENESS

The project was successful and effective at providing tools and assistance to administrators to manage their institutions. One indicator of effectiveness is the more than doubling of locally generated cash flow at Karawa HGR during the ASSR life cycle. Another measure is the number of third-party installations being undertaken in non-ASSR institutions by administrations who heard about BHIMA through word of mouth or saw it demonstrated and transplanted it to their institutions. In several cases, BHIMA was also effective at detecting and triangulating fraudulent behavior due to the

increased visibility the administration had into user behavior, each time resulting in corrective actions that regained lost revenue.

EQUITY

The BHIMA project is free and open source, meaning everyone has the right to contribute, copy, and deploy their own instance. Within the hospital setting, the only requirement for using BHIMA is basic computer skills, in which the BHIMA team provides training to all employees equitably.

FUTURE

The next steps for the BHIMA project are to expand the installation base, integrate the data collection with national information systems such as iHRIS and the SNIS, and implement advanced analysis features such as break-even analysis into the main installation. There are many elements collected automatically by the day-to-day usage of BHIMA that are re-collected by the SNIS through an error-prone process of manual transcription to paper, then re-encoding into the national DHIS2 instance. However, institutions with an internet connection could directly upload many national health indicators, including the medicine consumption, cash flow, patient load, and statistics on medical personnel. Similarly, the iHRIS human resources software could be supplemented with data from each hospital running BHIMA. In such a fashion, BHIMA would form the foundation of the DRC's extensive health information system, improving local decision-making capacity while also providing a tightly integrated health information system through the national level.