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Software Architecture Implications on Development Productivity: A Case of Malawi Point of Care Electronic Medical Records

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Abstract : Software platform architecture includes system components, their relationships, and design, as well as evolution principles. Software architecture and documentation affect a platform's customizability and openness to external innovators, thus affecting developer productivity. Malawi Point of Care (POC) Electronic Medical Records System (EMRS) follows some architectural design standards, but it lacks third-party innovators and is difficult to customize as compared to CommCare and District Health Information System 2 (DHIS2). Improving software architecture and documentation for the Malawi POC will increase productivity and third-party contributions. A conceptual framework based on Generativity and Boundary Resource Model (BRM) was used to compare the three platforms. Interviews, observations, and document analysis were used to collect primary and secondary data. Themes were found by analyzing qualitative and quantitative data, which led to the following results. Configurable, flexible, and cross-platform software platforms and the availability of interfaces (Boundary Resources) that let internal and external developers interact with the platform's core functionality, hence boosting developer productivity. Furthermore, documentation increases developer productivity, while its absence inhibits the use of resources. The study suggests that the architecture and openness of the Malawi POC EMR software platform will be improved by standardizing web application program interfaces (APIs) and making interfaces that can be changed by the user. In addition, increasing the availability of documentation and training will improve the use of boundary resources, thus improving internal and third-party development productivity.

Keywords : health systems, configurable platforms, software architecture, software documentation, software development productivity
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