

# Mangologic Resources Development

Submitted by Tom Routen (Things Prime) on January 19, 2018 - 5:59am

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**Proposal Status:** [Withdrawn](#)

## Mangologic

Supporting the community and ecosystem of resources (improved documentation, tutorials, etc.) needed to facilitate the adoption and use of a powerful digital health software tool.

### Executive summary

Mangologic is a platform for the development, maintenance and deployment of complex digital health systems. Platforms in the global digital health space come largely from a common root: the XForms/JavaRosa activity of nearly a decade ago spawned CommCare and ODK. Ona, OpenSRP and MedicMobile all inherit important characteristics from this common root. This homogeneity means the space of possible solutions is not well-represented, and if the common root embodies certain limitations organisations looking to understand what is possible are not well-served. Mangologic has an entirely different point of origin and is constructed with more expressive formalisms. The results are evident: it enables organisations to address problems of greater (real-world) complexity with far greater ease, at much lower cost.

Consequently, organisations which use this platform value it greatly. But it has barely been marketed and lacks good documentation. As a consequence, it is not widely known. This funding proposal seeks funding to help broaden the documentation and resources available about Mangologic in order to make it widely available and accessible to the global digital health community. We request funding to develop communications activities, including reference and training materials.

The expected outcomes from this project are:

- A comprehensive Mangologic website with extensive documentation and training materials
- A well-developed Mangologic training course offering
- Better documented interfaces to systems such as DHIS2
- A series of Mangologic webinars
- Greater community awareness of Mangologic, wider use, and the establishment of a broad user group.

### Consortium team

The consortium comprises two organisations, Mangologic and D-tree International. These organisations have been working in a strong partnership for several years and represent together a very experienced digital health team.

Mangologic is a “background” software company which focuses on the development of the core software, which remains entirely generic. It is of great relevance for digital health, but can be used equally well in other domains.

D-tree International is a specialized digital health organization which address health system problems with the synergy of both deep public health expertise and technical software fluency. D-tree uses the Mangologic platform because it regards it as a platform flexible enough to cope with real-world complexity and yet which permits straightforward maintenance and so yields a very low Total Cost of Ownership (TCO). It is a combination which D-tree regards as important for its partners.

Organisational Contacts will be:

- Tom Routen, Mangologic CEO (Point of contact for this project)

## Project description

Mangologic is a platform for the development, maintenance and deployment of complex digital health systems. It is uniquely powerful because uniquely expressive. The system with which it is most comparable is CommCare. Both facilitate the development, maintenance and deployment of mobile digital systems by non-programmers.

But it is very different from CommCare and most other software platforms (MedicMobile, OpenSRP, ODK) in our space which all use XForms as the basis formalism for their logic, and therefore offers a genuine alternative both in terms of functionality, but also in terms of origin and scope. Such diversity is of value to the digital health community and yields significant advantages.

Several differences between Mangologic and other platforms include:

1. Process Logic: XForms is a formal language for the task of designing web forms (which naturally consist of a single state), which has to be interpreted in non-standard way in order to simulate a true multi-state process of the kind which is necessary for complex clinical decision logic. When the logic gets complex, the ability of users to maintain the logic without programming skills breaks down, and only expert programmers can effectively help. Mangologic instead uses a multi-state logical framework natively. This means that no matter how complex the logic gets, at no point does the challenge of maintaining it increase exponentially. This is why doctors (non-programmers) at MSF are able to develop, maintain, comprehend and verify their very complex eCARE paediatric care algorithm, built using Mangologic.
1. App Structure. Other platforms in this space may embody app “models” to which all apps must conform. Processes, data structures and app structures are tied together. One cannot add structure to an App incrementally. In Mangologic, there is no fixed App model. Apps are simply amalgamations of building blocks called Activities. As a result, Apps can be of indefinite size and shape. There are no bounds on this and this too is something always configurable without programming.
1. Data. The tight coupling of Processes (forms) and Data within the XForm-based systems can lead to challenges with regard to data. Changes to forms affect data structures and in real-world situations, this leads to a complexity in data which paralyses efforts to create useful dashboards. In Mangologic, data structures and processes are decoupled. Major changes can occur to logic without there being any change to data structures. The result is clear comprehensible data structures which yield easily to analysis. Mangologic takes a direct, inclusive and pragmatic approach to problem-solving in order to find the shortest path to goal for its users. It has recently been integrated with Google Firebase, yielding the ability to scale almost effortlessly beyond the imagination of need.

Mangologic is already a proven technology. It is software which D-tree International uses to deliver effective digital health projects, including more traditional systems which support case management and care delivery by frontline health workers to provide maternal and child health services. In these systems, health workers use software to register families (often supporting pregnant women and children), identify risk factors and manage referrals, develop tailored birth plans for pregnant women, track childhood vaccinations, integrate with stock management systems, and view performance data, leading to coordinated care for clients and simplified work flows for the health worker. In addition to these traditional systems supporting frontline health workers, D-tree has developed systems which require different app structures such as emergency transport systems with a call center to triage emergencies, coordinate transport and pay drivers via mobile money. Working with more than 20 partners including international NGOs and Ministries of Health, D-tree has supported the deployment of a national-level community health program in Zanzibar, large-scale programs in Tanzania and Malawi, and projects in Ethiopia, Mali, Rwanda and India with planned deployments in Liberia, Zambia and Sudan in 2018. It is also with Mangologic software which paediatricians at MSF Suisse develop and maintain their eCARE paediatric care system functioning now in four countries (Niger, Nigeria, Tanzania, Mali).

The use of Mangologic has been concentrated in a small number of organisations, with, to date, relatively little active efforts made by the developers to propagate its use. It is now clearly accepted by all users and by the developers that the time has come to rectify this situation. We intend to make this system much more widely known and accessible through the development of documentation, reference materials and dissemination efforts. We want to enable and empower organisations globally to exploit its great potential as a global good.

The two organisations in the Consortium seek funds to collaborate in this effort. The core developers, Mangologic, ask for funds to support the development of a website which can well reflect the system itself, incorporating the development of extensive reference and training materials.

D-tree International, through a long history of collaboration, has a unique partnership with Mangologic which includes an agreement that D-tree International will offer support services such as training and consulting to health organisations looking to achieve their goals using Mangologic. To that end D-tree asks for funds to help with the development and professionalization of a training course and certification program for users of Mangologic.

Finally, together these two organisations look for support to develop and deliver a series of webinars to inform the community about Mangologic and to illustrate how digital systems may be developed and managed without the need for highly expert programmers.

The expected outcomes would be:

- A Mangologic website with extensive documentation and training materials
- A well-developed Mangologic training course offering
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