Request for Proposal for

Reactive Vaccination Web Application

Document Control

Document Owner and Contributors

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1 Introduction

1.1 Purpose of the RFP

The purpose of this Request for Proposal (RFP) is to obtain proposals from vendors to help MSF OCBA to configure/develop DHIS2 for monitoring and reporting on reactive vaccination campaigns.

MSF is seeking a solution that offers integration with MSF OCBA´s Health Management Information System (HMIS) and provides the following capabilities:

- Rapid and simple configuration of campaign datasets including: sites, teams, antigens and vaccine-specific age groups
- Simplified interface for daily entry of vaccination and population data by site
- Automatic daily update of population data using last entry
- Easy data visualization: automated campaign dashboard linked to forms
- Offline functionality of data entry and visualization
- Option for post-campaign data entry
- Generation of exportable/printable daily registers and/or tally sheets
- Option to download data sets to Excel for local backup and/or more advanced analysis
- Additional quality and safety indicators to be phased in following a pilot of core indicators

The solution is envisioned as a single web application, but alternative proposals that build on the existing architecture and functionalities of HMIS may be considered.

The vendor will be responsible for the analysis, design and development of the proposed solution including training materials and documentation according to the functional parameters defined within this RFP. The vendor will also be responsible for liaising with technical focal points within MSF OCBA to ensure the transfer of capacity, knowledge and documentation so that MSF may incorporate the application within the 2018 HMIS Revision process[1] and independently manage piloting, revision and deployment.

1.2 MSF overview

MSF stands for Médecins sans Frontières (translated: Médicos sin Fronteras / Doctors without Borders) – an independent international medical humanitarian organisation providing aid to populations in distress, victims of natural and man-made disasters, and victims of armed conflict, regardless of race, religion or political beliefs.

MSF is a non-profit, self-governed, member-based organisation. MSF observes neutrality and impartiality in the name of universal medical ethics and the right to humanitarian assistance and claims full and unhindered freedom in the exercise of its functions. Members undertake to respect their professional code of ethics and maintain complete independence from all political, economic or religious powers.

MSF-OCBA is the operational centre of MSF Barcelona-Athens, managed from Barcelona. For more information about the structure of the organization it is recommended to visit: http://www.msf.es/conocenos/identidad/estructura/index.asp

[1] MSF OCBA conducts an annual review and update of HMIS. The release of the 2018 HMIS Review is scheduled for mid-January 2019 so the solution should be completed maximum by the beginning of November 2018

2 Project Overview

2.1 Background

HMIS is an information system adapted by MSF OCBA from DHIS2[2] in 2014 to manage medical data from MSF OCBA projects around the world. HMIS was designed as a comprehensive tool for data management and aggregation and is used by more than 60 MSF projects in 28 missions, however the current configuration of HMIS is not well adapted to capture data from vaccination campaigns. In particular, mass reactive campaigns that are implemented in response to an outbreak have data management needs that are not met in HMIS.

Limitations in HMIS functionality related to age-group reporting and population data used for coverage calculation, and the complexity of configuration, data entry, and visualization make the system impractical for use as a management tool in reactive campaigns. Field staff therefore use Excel-based tools to manage information during a campaign and may then transfer data manually into HMIS for reporting purposes after the campaign is finished. This extra layer of data entry poses an administrative burden on field teams without offering any direct benefits for the management of campaigns. Consequently, less than half of reactive vaccination campaigns were reported through HMIS in 2018.

This project aims to develop an easy-to-use tool for information management during reactive (and potentially preventive) vaccination campaigns that can be rapidly configured and is fully integrated with HMIS. Envisioned as a web application, this tool should be designed as a substitute for Excel tools currently used for campaign management and include the following basic features:

- Rapid and simple configuration of campaign datasets including: sites, teams, antigens and vaccine-specific age groups
- Simplified interface for daily entry of vaccination and population data by site
- Automatic daily update of population data using last entry
- Easy data visualization: automated campaign dashboard linked to forms
- Offline functionality (i.e. can work on our local servers) of data entry and visualization. Consideration should be given to the future possibility of mobile data collection and integration with Android DHIS2 developments.
- Option for post-campaign data entry
- Generation of exportable/printable daily registers and tally sheets
- Option to download data to Excel for local backup and/or more advanced analysis
- Additional quality and safety indicators to be phased in following a pilot of core indicators

The scope of work shall consist of the design and delivery of a solution with three modules: (1) customized campaign configuration; (2) data entry; (3) data analysis/visualization. The solution should offer field teams a user-friendly tool for campaign management while integration with HMIS should reduce human effort and time needed to enter data retrospectively in HMIS or extract and aggregate data from Excel spreadsheets. *The vendor is requested to present each module as a separate workstream with associated cost and time implications* as MSF OCBA is still considering the value of building on existing HMIS architecture for data entry and analysis functions.

The vendor is expected to transfer knowledge to MSF by working closely with staff in the Apps4OPS team during the project life cycle as well as through punctual training at the handover stage. MSF will own the finished system and should have the capacity to test, revise, deploy and fully maintain the web application without further support from the vendor.

[2] DHIS2 is an open source health management data platform developed by the Health Information Systems Program (HISP) and supported by the University of Oslo's Department of Informatics. It is used by national governments and NGOs around the world. More information is available here: https://www.dhis2.org/overview

2.2 Project Objectives

The overall objective of this project is to improve the availability of accurate real-time data and analysis from reactive vaccination campaigns to strengthen campaign management and operations support at field level, and to improve the quality and completeness of aggregate vaccination data in HMIS.

Specific objectives that are relevant to this RFP are defined below:

Specific Objective 1: To enable simple and rapid configuration of vaccination campaigns in HMIS including hierarchies, antigens and age groups through a web application integrated with HMIS.

Within this objective, we recognize that considerations of feasibility may determine who the user of the application should be and therefore influence its design. Understanding that HMIS hierarchies are currently configured centrally in MSF OCBA and that reliance on local servers in the field could make complete autonomy of the field in configuration challenging, we will consider alternative approaches described in SO1a and SO1b:

- SO1a: To enable field-based managers (i.e. non-expert users with limited familiarity with HMIS) to easily configure customized campaign data sets
- SO1b: To enable support technicians based in Barcelona to easily and rapidly configure customized campaign data sets. We will consider proposals for central configuration of the campaign, if the rationale against field-based configuration (Specific Objective 1a) is strong.

Specific Objective 2: To provide a user-friendly tool for reactive vaccination campaign management that provides real-time accurate analysis and visualization of campaign coverage using population data that may be updated daily.

Specific Objective 3: To increase the quality and quantity of aggregate vaccination campaign data available at all levels of the organization by offering an attractive campaign management tool which integrates with HMIS, thereby eliminating the need to enter and aggregate data manually.

2.3 Functional Requirements

Objective	Requirement
	Module 1: Configuration
	• Customized configuration of vaccination campaign hierarchies (sites) • Customized configuration of antigen(s) and age group categories • Integration with HMIS and storage of data values in HMIS database • Configuration of campaign teams • Option to monitor additional quality and safety indicators (to be phased in following a pilot of core indicators)
	Module 2: Data Entry
	• Daily entry/auto update of population data • User-friendly interface for daily entry of vaccination and population data by site • Offline functionality • Option for retrospective (post-campaign) data entry • Generation of exportable daily registers and/or tally sheets
	Module 3: Data analysis and visualization
	• Automatically generated campaign dashboards for visualization of core vaccination indicators • Offline functionality • Option to download data to Excel for local backup, use outside the application or printing

2.3.1 Data

The application should use a DHIS2 hierarchy:

- Country
  - Project
    - Campaign
      - Vaccination site

Vaccination sites could be grouped in areas (organization unit groups) not appearing in the hierarchy to generate area-based aggregations.

Vaccination Data

- The primary data value to be entered daily by users will be the number of persons vaccinated (receiving a vaccine) disaggregated by age group.
- Disaggregation might also include sex as an optional category.
- It should be possible to calculate coverage per day (the # of people vaccinated on a particular day / population figure for that day), or coverage over any selected period using the latest population figure available for that period.
- Aggregation or disaggregation of *vaccine doses* should be possible by organization unit, age range categories, and time periods. *Population* may be aggregated by organization units and age ranges but not within the time dimension. Population aggregations should always use the most recent value for the time dimension.

The core indicators that the application should (at a minimum) be able to calculate are:

Data element /Indicator	Definition	Disaggregation	Frequency
Total # doses of vaccine	Number of vaccine doses administered	Age group[3], site/area, campaign	Daily
Total # persons vaccinated	Total number of individuals vaccinated	Age group, site/area, campaign	Daily
Campaign coverage	Total number of people from the target population who have been vaccinated / Total target population[4]	Age group, site/area, campaign	Daily
Vaccine utilization rate	Total number of doses of vaccine used/Total number of people vaccinated	Site, team	Daily

Campaign management data

Users will also identify the Team reporting vaccination numbers (Team 1, Team 2, Team 3 …)

- Vaccination team name/ID

Quality and Safety Data

The application should be developed to anticipate inclusion of additional data elements for quality and safety indicators that would further strengthen the value of the app for daily campaign management.

[3] Age groupings are specific to each antigen and campaign

[4] The definition of a site may be determined by local parameters such as administrative zones or health area.

These elements will be part of the initial development but may be hidden during testing and deployed at a later time following a successful pilot and assessment of the application.

Data element/Indicator	Definition
Auto Disable Syringe (ADS) wastage rate	(Number of ADS used - number of people vaccinated) /Number of ADS used
Safety Boxes Ratio	Number of syringes : number of safety boxes
Dilution Syringes Ratio	Number of syringes for dilution : number of vials of vaccine
Adverse Exposure to Blood (AEB)	
Adverse Event Following Immunization	Minor (fever and injection site reactions) and Severe (leading to hospitalization, disability or death)

2.3.2 Disaggregation of vaccination data

Age ranges

The application must allow the selection of age range categories that could be different for each vaccine antigen within the same campaign. Age ranges will be understood to be of two types:

"Standard" (reporting) age ranges: a reduced set for general aggregation and reporting purposes (see table for ranges). These categories are fixed for every vaccine antigen and they are independent from a particular vaccination campaign. Their goal it to guarantee that the data needed for reporting can be aggregated between different campaigns.

"Additional" age ranges: A standard age range could be subdivided into smaller age ranges. If a standard age range is subdivided in this way, data will only need to be entered for the additional ranges in which it has been decomposed. The standard age range value would then be calculated as the sum of the values for each of the ranges in which it has been divided.

The goal of "additional" age ranges is to support coverage calculation within the campaign itself. The values are not valid for aggregation purposes beyond the scope of that campaign.

For example, standard age ranges for a measles vaccination campaign are: <9m, 9m-11m, 12m-59m, 5-14y and >14y. If necessary because the campaign is targeting children under 2 years or required for reporting to local health authorities, the range "12m-59m" could be subdivided into two groups: 12m-23m and 24m-59m. The final age range set for data entry will show the subdivisions rather than the standard age ranges. Subsets customized for a campaign could then be aggregated to conform to standard age ranges in HMIS. The table in **Annex A** shows possible age group subdivisions for several antigens.

Population

DHIS2 (HMIS) provides demographic functionality at country level (yearly), at project level (quarterly) and site level (quarterly). For reactive vaccination campaigns these population numbers are often not applicable for the calculation of daily coverage rates due to population fluctuations during large population displacements. Age or sex distribution could also be very different from the normal demographic figures, for example, in a refugee camp composed of mostly women and children.

The vaccination campaign app should allow entry of site-specific population data daily to calculate coverage indicators. These data will be entered as a denominator (absolute figure) and not as a percentage. Population distribution data should cover the same age range set as the vaccination campaign itself. Population data could be entered once at the beginning of a vaccination campaign or at irregular intervals (every time a new vaccination round is organized, for example). Population data must be entered separately from vaccination data but will be used together to estimate vaccination coverage ratios.

The application should allow population data to be defined daily, and if population data is not entered daily, the validity of a population figure for coverage calculation should span from the date at which it was entered until the date when new population data is provided.

2.3.3 Configuration

The application will include a module for easy configuration of a vaccination campaign. If feasible given the context and timelines, configuration should be designed for use by program managers without IT expertise. However, if as previously mentioned under Specific Objective 1, it is overly complicated or difficult to decentralize configuration, we are open to proposals that maintain the status quo for configuration by support technicians in Barcelona. Configuration must provide a method and administrator user interface to create a vaccination campaign and configure it. Configuration for each campaign should be accessible for viewing but only authorized users (with administrator rights) should be able to create or change configurations. The configuration module can reference an existing custom application in MSF OCBA HMIS for configuration that is not has not been deployed and should allow the user to define the following parameters:

- Site
- Teams
- Antigen(s)
- Age ranges (per antigen)

2.3.4 Data Visualization

The application should automatically generate a customized campaign dashboard from the configuration of each campaign that allows users to monitor overall campaign coverage and coverage by site, by antigen and age group through time. The specific contents of these dashboards will be fully defined before project start.

2.4 Non-functional requirements

- HMIS currently provides much of the functionality mentioned in this RFP (data entry, visualization, tally sheet generation, export, etc) however, our field users have historically had challenges navigating between these differing functionalities in HMIS. For this reason, we would prefer to consolidate the functionalities described in this RFP in one area of the system dedicated wholly to vaccination campaign monitoring (i.e. a single web application) designed for a user that may have limited familiarity with the wider HMIS system.

- The application has to run integrated within the HMIS system:
  - The application should be launched from the apps menu of HMIS.
  - Data generated by the application should be saved in the HMIS database
  - Data extraction mechanisms and display tools should be applicable to all vaccination campaign data

- The application developed will be delivered to the MSF eHealth team with documentation and training about the application structure to allow for further development and maintenance by the eHealth team. The cost of this should be isolated within the proposal.

- Building technical capacity in the MSF eHealth team is considered a secondary objective of this project and the inclusion of technical staff in development discussions is therefore a requirement.

- The application should provide multi-language translation feature: English, French and Spanish versions should be available.

2.5 Deliverables

MSF expects that the work described in this RFP will include, but not be limited to, the following deliverables:

1. **Project Management**
   - Detailed Project Work Plan
   - Project Status Reports
2. **Web application design and data architecture**
   - Web application design
   - Architecture Documentation
3. **Reactive vaccination campaign app meeting the requirement criteria**
   - App Code and/or DHIS2 metadata configuration
4. **Training**
   - Training for support technicians in the MSF OCBA Apps4OPS team
5. **Documentation and ongoing support**
   - Training materials and documentation for end users
   - Developer/Maintenance Documentation
   - Availability for ad hoc support during a period of 6 months following project closure

1. Project Management	
Deliverable	**Detailed Project Work Plan**
Purpose	To establish a mutually agreed-upon project baseline to identify the specific tasks and resource levels necessary for timely delivery of the elements in the RFP.
Content	The work breakdown structure, including task dependencies, schedules, deliverables, and the Contractor and MSF resource assignments broken down to a sufficient level of detail to allow effective project control. The status of tasks is updated on a weekly basis and shared with the Project Manager.
Deliverable	**Project Status Reports**
Purpose	To provide clear ongoing communications to stakeholders concerning the status of the implementation.
Content	A weekly report containing sufficiently detailed information to enable MSF to determine the status of the project and any variance from the detailed project plan, schedule, or budget. The status report will include, at a minimum: • Milestones or accomplishments achieved during the past week • Technical status of the project including status and forecast of deliverables • Schedule status for the project including task status, milestones completed, and schedule summary • Issues, risks, and resource constraints which are effecting or could affect progress including the proposed or actual resolution • Proposed changes to the project work plan, reasons for the changes, and approval/disapproval determination for any proposed changes • If changes are made: updated project work plan with approved changes highlighted

2. System Design and Data Architecture	
Deliverable	**System Design**
Purpose	To document how the overall system is to be designed to meet the functional and technical requirements.
Content	A document that effectively describes the entire system design, including decisions made and the logic behind those decisions.
Deliverable	**Architecture Documentation**
Purpose	To concisely document the data architecture
Content	A document that details the integration of the new functionality in the overall MSF OCBA HMIS

	implementation

3. Reactive vaccination campaign application	
Deliverable	**Code of the app and/or DHIS2 metadata configuration**
Purpose	To transfer the full package of solutions meeting the requirements described in this RFP to be imported in MSF OCBA HMIS and ready for implementation
Content	Metadata in json format, zipped code with coding explanations embedded, and installation instructions

4. Training	
Deliverable	**Training**
Purpose	To train MSF technicians on administration and configuration for completion of knowledge transfer.
Content	The delivery of user and technical systems operation training both remotely and in-person

5. Documentation and ongoing support	
Deliverable	**Developer/Maintenance Documentation**
Purpose	To guide MSF Apps4OPS members and allow for application evolution and maintenance internally
Content	Reference document that describes the application structures and provides guidance to MSF technicians for maintenance
Deliverable	**User Manual and training materials**
Purpose	To guide training of field-based users of the application and serve as reference documents
Content	Resources and training materials describing how to use the features of the application for campaign management
Deliverable	**Ad hoc technical support following handover**
Purpose	To provide technical support on an as needed basis following handover
Content	Ad hoc

3 Execution

3.1 Timeframe

Ideally, the web application must be available for piloting by the start of November 2018 so that it may be incorporated within the revision and upgrade of DHIS2 at the end of 2018. However, we understand that this is a tight time schedule, and we would not exclude proposals with extended timeframes should this not be within the capacity of your organization.

3.2 Location

The vendor will work from its office, but should be available to visit MSF OCBA HQ office in Barcelona for training of MSF Technicians and handover if necessary. Although not essential, our preference is for an on-site training. Training dates and times will be established with prior agreement with MSF. The vendor should incorporate any travel expenses within their cost proposal.

3.3 Working time

The vendor must be able to provide support during MSF OCBA working hours: **Barcelona** work calendar, Monday to Friday, and from **9:00** to **18:00** Central European Time. If the vendor is located in a different

time zone, reasonable working times will be established in agreement with MSF prior to signing of the contract.

3.4 Considerations: Proposed team

The provider will describe the proposed support team and their technical profile and ensure that they have the **relevant technical experience**.

The team must be able to communicate verbally and in writing in **English** with MSF users.

The vendor must have experience and expertise with aspects of building this kind of solution. It is preferred that the vendor has experience with and business knowledge of the DHIS2 platform generally and with MSF OCBA HMIS in particular.

MSF expects that technicians will be committed to build knowledge of MSF OCBA´s environment and processes. In case of any change in the team composition, the partner will have to communicate this circumstance to MSF ten working days before the planned replacement or leave date, offering an alternative profile with similar experience in replacement cases.

It will be the contractor´s responsibility to ensure the correct knowledge transfer takes place inside its internal team, as well as guaranteeing and ensuring that there is no consequence for the quality of the service. Replacements in the suppliers' team should not incur additional cost to MSF.

4 Contract and economic conditions

4.1 Price

The proposal should provide a price schedule for the development of a comprehensive web application that includes all three modules: (i) Configuration; (ii) Data entry; (iii) Data visualization. This is our strong preference.

Although our preference is for the above, if the vendor feels that DHIS2´s standard functionalities should be used for data entry, visualisation or other purposes, we are open to hearing a rationale for this and would consider an accompanying price schedule.

It is recommended that the cost proposal be broken down per deliverable (see section 2.5), and if the vendor proposes an alternative to the comprehensive web application solution (i.e. a combination of a web application with standard DHIS2 functionalities), a price breakdown should be provided for each module (see section 2.3).

Please include an hourly rate for ad hoc technical support for a period of six months following handover and project closure.

4.2 Follow-up and invoicing

The project will be invoiced according workstreams to be defined in agreement of MSF OCBA prior to contract signing.

4.3 Payment Terms and conditions

The payment will be done via bank transfer, to the account determined by the selected vendor.

Our payment conditions are: payment at 30 days, on 25th of the month to National (Spanish) companies and 10 days to International companies.

4.4 Intellectual Property of the solution

MSF OCBA will be the owner of all deliverables upon contract completion. However, without guarantee, MSF OCBA has a policy of sharing DHIS2-related developments with the DHIS2 community.

4.5 Privacy and data protection

The information contained in the RFP is confidential and must not without MSF's prior written consent be copied, reproduced, distributed or passed to any other party, other than as strictly required by Respondents in order to obtain appropriate professional advice or for the preparation of responses.

The selected Service Provider will keep strictly confidential the content of the contract, data or information they can access.

Upon termination of the relationship linking both parties, the Service Provider will either destroy or return, as instructed by MSF, any media or document holding any personal data supplied by MSF.

In accordance with the provisions established in GDPR General Data Protection Regulation (EU) 2016/679, of 27 April 2016, the Service Provider will implement High Level security measures for any media or document holding any personal data supplied by MSF.

The selected vendor will cover any compensation amount for MSF, derived from any consequential damages including reasonable costs of legal defence MSF for any damages, penalty or damage suffered by MSF as a result of the breach of this agreement or the main provision of the service relationship.

4.6 Use of the project or MSF as a reference

By committing to the execution of this service, the contractor will accept not to use the image or name of MSF for any purpose (internal or external activities), or reference to the development of this project, unless there is a written permission by MSF OCBA, specifying the purpose and limits of such use prior to the use of the logo, name or project reference

4.7 Subcontracting

Subcontracting is permitted only with the prior written consent of MSF OCBA.

5 Proposal submission

5.1 Key dates

Key task	Deadline - duration
RFP published	30/08/2018
Q&A period	Until 05/09/2018
RFP submissions	14/09/2018
MSF response to suppliers	19/09/2018
Contracting	25/09/2018
Service start	01/10/2018

5.2 Response to RFP

The proposal should include at least the following information:

- Objectives and scope of the proposal
- Methodology / Approach

- Responsibilities excluded from the offer
- Resources assigned, including professional profile of the project team describing relevant experience in similar areas and environments
- Detailed costs of the proposal as per specification in section 4.1 with associated timelines for delivery
- Description of quality control measures

The financial proposal for the tender must be provided in a separate document from the technical documentation.

Please submit all proposals to the following email address with the subject line “Response to Vaccination Data RFP”: abigail.holman@barcelona.msf.org

5.3 Contact in MSF

All questions, clarifications and documentation related to this RFP shall be submitted to:

Abigail Holman – Project Manager, Project Manager, eHealth & Operations Applications (´Apps4OPS´) – Abigail.Holman@barcelona.msf.org

Annex A. Age groups by antigen[5]

1	2	3	4	5	6	7	8	9
Measles		Meningitis_Polysacharide		Meningitis_Conjugate		Cholera		PCV
Age group	%	Age group	%	Age group	%	Age group	%	Age group
6 m - 29 y	70,56%	2-29 y	65,39%	1-29 y	68,79%	1-29 y	68,79%	6 weeks - 29 y
9 m - 29 y	69,67%	2 - 4 y (24-59m)	9,56%	12-23 m	3,40%	12-23 m	3,40%	6 weeks - 11 m
6-8 m	0,88%	5 - 14 y	30,75%	24-59m	9,56%	24-59m	9,56%	12-23 m
9-11 m	0,88%	15- 29 y	25,08%	12-59m	12,96%	12-59m	12,96%	24-59 m
12-59 m	12,96%		0,00%	5-14 y	30,75%	5-14 y	30,75%	
12-23 m	3,40%		0,00%	15-29 y	25,08%	15-29 y	25,08%	
24-59 m	9,56%				0,00%		0,00%	
9-59 m	13,84%							
5-14 y	30,75%							
15-29 y	25,08%							

10	11	12	13	14	15	16	17	18
	Pertussis_Penta		Yellow_Fever		Japanese_Encephalitis		Dengue	
%	Age group	%	Age group	%	Age group	%	Age group	%
15,16%	6 weeks - 29 y	45,92%	9 m - 29 y	69,67%	9 m - 29 y	69,67%	9 - 29 y	41,53%
2,20%	6 weeks - 11 m	2,20%	9-11 m	0,88%	9-11 m	0,88%	9 - 14 y	16,45%
3,40%	12 - 23 m	3,40%	12-23 m	3,40%	12-23 m	3,40%	15 - 29 y	25,08%
9,56%	24 - 59 m	9,56%	24-59 m	9,56%	24-59 m	9,56%		0,00%
	6 weeks - 59 m	15,16%	9 - 59 m	13,84%	9 - 59 m	13,84%		0,00%
	5 - 29 y	30,75%	5 - 14 y	30,75%	5 - 14 y	30,75%		
			15-29 y	25,08%	15-29 y	25,08%		
			5 - 29 y	55,83%	5 - 29 y	55,83%		
				0,00%		0,00%		

[5] Source: MSF OCBA Denominators Tool