

# ANNEXES TO EVALUATION OF

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## MSF REACTION ASSESSMENT COLLABORATION HUB

### The REACH Project

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MARCH 2021

This publication was produced at the request of MSF-OCB under the management of the Stockholm Evaluation Unit.

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**DISCLAIMER:** The authors' views expressed in this publication do not necessarily reflect the views of Médecins sans Frontières and the Stockholm Evaluation Unit.

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## ANNEX 1: PHASES, BUDGET AND OBJECTIVES OF THE REACH PROJECT

**Phase 1: 01 March 2017 – 25 August 2017**

**Budget: 71,662.50 USD**

**Donor: MSF Hong Kong**

**Objective:** To contribute to a timely and efficient MSF response by supporting decision-making after receiving emergency alerts and by streamlining our data sharing activities.

**Phase 2: November 2017 – August 2018**

**Budget: 250,000.00 EUR**

**Donor: TIC**

**Objective:** to combine institutional data effectively and efficiently with crowd-sourced information (including social media and relevant RSS feeds) in real-time, equipping MSF with virtual eyes on the ground.

**Phase 2 extension: September 2018 – March 2021.**

**Budget: 250,000 EUR**

**Donor: TIC**

**Objectives:** a platform designed to support MSF's needs for improved information management in emergencies and more efficient decision-making during disasters:

- a. Scale-up and extend the use of the platform for disasters occurring in SEA
- b. Extend the scope of use outside of SEA, adapting REACH to other operational and thematic environments.
- c. Finalise development, focusing on User Interface improvements and extending the AI to support better data searching for operational planning and automated alert-notification, in addition to improvement and development for further integration into existing MSF tools and systems
- d. Evaluate REACH based on users' feedback and pilots' outcomes to prepare and adapt the strategy and the project to enter phase 3 of deployment of REACH worldwide next June 2019

## ANNEX 2: TERMS OF REFERENCE

REACH · Terms of Reference · Stockholm Evaluation Unit



### TERMS OF REFERENCE

*Doctors without Borders/Médecins Sans Frontières (MSF) is an international medical humanitarian organization determined to bring quality medical care to people in crises around the world, when and where they need regardless of religion, ethnical background, or political view. Our fundamental principles are neutrality, impartiality, independence, medical ethics, bearing witness and accountability.*

*The Stockholm Evaluation Unit (SEU), based in Sweden, is one of three MSF units tasked to manage and guide evaluations of MSF's operational projects. For more information see: [evaluation.msf.org](http://evaluation.msf.org).*

<b>Subject/Mission:</b>	REACH - REaction Assessment Collaboration Hub
<b>Starting date:</b>	December 2020
<b>Duration:</b>	Final report to be submitted by latest 1 <sup>st</sup> February 2021
<b>Requirements:</b>	Interested applicants should submit: 1) A proposal describing how to carry out this evaluation (including budget in a separate file), 2) CV(s), and 3) a written sample from previous work
<b>Deadline to apply:</b>	16 <sup>th</sup> November 2020, 23:59 CET
<b>Send application to:</b>	evaluations@stockholm.msf.org
<b>Special considerations:</b>	<b>Due to the ongoing Covid-19 pandemic the evaluation will be entirely remote and not involve any travel. The research phase will likely involve interviews with people across multiple time zones (Asia, Africa, Europe, North America) and evaluators will be expected to adapt to different schedules. Some interviews might need to take place in French and proposals should address how they facilitate this requirement.</b>

### PROJECT BACKGROUND

In August 2017, the independent medical humanitarian organisation, Médecins Sans Frontières (MSF) Hong Kong section launched a project to address the challenges of information management in disaster prone settings. The project was based on the significant experience gained in the region through the Emergency Response Support Unit (ERSU) in Hong Kong. The REaction Assessment Collaboration Hub (REACH) project set out to develop an innovative online tool that would support

operational decision-making during emergencies with the objective to achieve better and faster response.

REACH aimed to achieve this objective by centralising and mapping regional contacts, archiving, and managing operational histories, sharing information, monitoring emergencies and by applying artificial intelligence (AI) to external channels. The project was piloted in Indonesia and managed by MSF Hong Kong and the ERSU.

Following the successful completion of the pilot and some adaptations to the project objectives, the second phase of the project was launched in November 2017 and sought to roll-out the platform in the South-East Asia region while simultaneously preparing the platform for worldwide roll-out in the third and final phase. Funding of the second phase was provided by MSF's internal Transformative investment Capacity (TIC), a fund designed to invest in innovative or transformative projects and administered by MSF Canada, on behalf of the MSF movement. Funding of phase two was approved by the TIC in November 2017 as well as in September 2018.

During the project period, there were no major emergencies in the SEA region, making it difficult to test the tool in a real-life setting. Also, although sites were identified, the project was not able to launch the pilot projects needed for testing the platform in other contexts. User feedback also highlighted some important areas for improved development.

With the phase two extension coming to end in March 2021, as well as some significant doubts about ongoing funding, the project has requested an evaluation in order to capitalise on the investment and experience so far and to support the team to identify various scenarios moving forward.

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## PURPOSE(S) AND INTENDED USE(S)

The primary purpose of the evaluation is to assess the value or significance<sup>1</sup> of the REACH platform when considering the needs, context, quality, comparison, cost-effectiveness, and exportability. The information will be used to inform decisions on the future of the REACH project and platform. Another somewhat related purpose is to support learning around the conditions of the project, its design and implementation, and make recommendations for similar projects in the future.

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<sup>1</sup> Definition based on Davidson (2007).

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## EVALUATION QUESTIONS

**Evaluation question 1:** What functional value does the REACH platform have when considering both the operational needs and the use of the platform?

- What were the operational needs the platform aimed to address, and how do they remain relevant to the organisation?
- What is the user experience and how useful is the information generated?
- What alternative ways are available to the organisation to meet the identified needs and how do they compare in terms of efficiency, effectiveness, reliability, cost effectiveness?

**Evaluation question 2:** What is the structural value of the REACH platform when considering reliability, efficiency, security, and maintainability?<sup>2</sup> Examples of questions to address:

- What threats to the structural value have been identified and how have they been addressed?
- What opportunities can be identified for ongoing maintenance and development of the platform?

**Evaluation question 3:** Considering the answers to the above questions, what were the main determinants of success for the REACH project and how could they be taken into consideration in the future?

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## EXPECTED DELIVERABLES

### 1. Inception Report

As per SEU standards, after conducting initial document review and preliminary interviews. It will include a detailed evaluation proposal, including methodology.

### 2. Draft Evaluation Report

As per SEU standards. It will answer to the evaluation questions and will include conclusions, lessons learned, recommendations and scenarios as appropriate.

### 3. Working Session

With the attendance of commissioner and consultation group members. As part of the report writing process, the evaluator will present the findings, collect attendances' feedbacks and will facilitate discussion on lessons learned.

### 4. Final Evaluation Report

After addressing feedbacks received during the working session and written inputs.

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<sup>2</sup> Based on external evaluation which is due October 2020.

## ANNEX 3: EVALUATION MATRIX

	Evaluation issue	Evaluation question	Link to TOR EQs	Data sources
<b>INSTITUTIONAL</b>	<b>Governance</b>	Does the project have good governance?	Instrumental Variable; critical cross cutting issues of the development or evaluation of EWS, IKM, and DRR	Desk reviews Stakeholders' interviews and FGDs
	<b>Resources</b>	How sufficient were resources (funding and human) allocation in REACH project?		
		How could the REACH project source sufficient resources (funding and human) in the future?		
	<b>Sustainability</b>	How can the project be replicated/continued/modified?		
		Where could the REACH platform be hosted permanently in the future?		
<b>BUSINESS PROCESS</b>	<b>Hazards and Relevant Information, Analysis, Dissemination and Communication</b>	How does the REACH platform gather hazards and relevant information, analyse, disseminate, and communicate it to stakeholders?	Key elements of the development or evaluation of EWS and IKM	Desk reviews Stakeholders' interviews and FGDs
		How easy is it for REACH users to access the platform during an emergency situation or in a remote area (where the electricity and internet connections are not reliable)?		
		How real time is information available on the REACH platform?		
	<b>Relevance</b>	Do the objectives of the REACH project correspond with identified needs?	EQ1a and EQ1c	
		Are there any alternative ways for MSF to meet the identified needs?		
	<b>Effectiveness</b>	To what extent did REACH meet its objectives?		

	Evaluation issue	Evaluation question	Link to TOR EQs	Data sources
		Has information available on the REACH platform been used for efficient decision-making during disasters? Which information/part of the platform is most useful?		
	<b>Efficiency</b>	Were activities/strategies implemented with the best use of available financial resources and time?		
	<b>Gender &amp; Diversity Mainstreaming/Inclusiveness</b>	How were gender & diversity inclusiveness mainstreamed in the REACH platform?	Critical cross cutting issues of the development or evaluation of EWS, DRR	
	<b>Unintended consequences</b>	To what extent has the REACH project influenced changes in MSF or the environment where REACH is operational	EQ1C, EQ3	
<b>TECHNOLOGY</b>	<b>Reliability</b>	Is the REACH platform reliable?	EQ2	Desk reviews  Stakeholders' interviews and FGDs Code/Documentation Scanning
	<b>Efficiency</b>	Is the REACH platform flexible and effective when catering for user requirements?		
	<b>Security</b>	Are the appropriate security measures implemented to ensure the security of the REACH platform?		
	<b>User Interface and User Experience</b>	<b>Data Accessibility:</b> Does REACH support effective user accessibility of data/information?	EQ1b, EQ2	
<b>Data Management:</b> Does REACH provide an effective approach to data management?				



	Evaluation issue	Evaluation question	Link to TOR EQs	Data sources
		<b>User and Platform Accessibility:</b> Does the user interface design of REACH support easy access from a wide range of system users?		Desk reviews Stakeholders' interviews and FGDs Stakeholder survey
		<b>Data Usability:</b> Does REACH provide information that can be useful during disasters?		
		<b>Visibility of the system:</b> Is REACH designed to ensure visibility to its users?		Stakeholders' interviews and FGDs
		<b>Match between system and the real world:</b> Does the design of REACH match real-world standards?		
		<b>User control and freedom:</b> Does the design of the REACH platform provide user control and freedom for the user to perform various operations?		
		<b>Error Prevention:</b> Is the prevention approach for errors implemented for the REACH platform?		
		<b>Recognition rather than recall:</b> Does the user interface design of REACH support recognition rather than recall concept?		
		<b>Aesthetic and minimalist design:</b> Does the REACH user interface support aesthetic and minimalist design?		
	<b>Maintainability</b>	Does the REACH management support effective maintainability for its evaluators and developers?	EQ2, EQ2a, EQ2b	Desk reviews Stakeholders' interviews and FGDs
	<b>Threats</b>	Has the REACH platform faced threats in the past?		
<b>Opportunities</b>	Is the REACH platform flexible for future enhancement?			

	Evaluation issue	Evaluation question	Link to TOR EQs	Data sources
<b>LESSONS LEARNT</b>	<b>Challenges</b>	What has been the challenges in the implementation of REACH?	EQ3	Desk reviews Stakeholders' interviews and FGDs
		How were these challenges managed?		
	<b>Determinants of success of the project</b>	What were the determinants of success of the project in the past?		
		What are the determinants of success of the project in the future?		

## ANNEX 4: LIST OF INFORMANTS

No.	Name of informant (In Alphabetical Order)	Position (current)
1.	Alain Poljack	DPO OCB
2.	Allen Cheng	IT Manager - MSF HK /Technical lead for MSF REACH Project
3.	Chandra	Former MSF staff in Jakarta, Indonesia
4.	Daniel Von Rège	Former HoM Indonesia
5.	David Moeneclae	OCB GIS advisor – first line support for end users
6.	Elvina Motard	Ehealth Manager - Sherlog - OCB
7.	Eric Pujo	Ops director of MSF Japan
8.	Fiona Chuah	Medical Research Officer - MSF HK (Singapore)
9.	Florence Millerand	Research - Academic - Professor UQAM LabCMO and CIRST
10.	François Claveau	Research - Academic - University of Sherbrook
11.	Guillaume Dandurand	Research - Academic / Evaluator Coordinator
12.	Guillaume Gagnon	Research - Academic / Technical Evaluator of REACH
13.	Jean-François Dubé	Research - Academic - University of Sherbrook
14.	Jean-Guy Audeoud	GIS Business Analyst – responsible of user requirements GeoApps
15.	Jesper Brix	Current HoM Indonesia
16.	Juan Jose Arevalo	OCBA GIS advisor – first line support for end users
17.	Kathy Kalafatides	TIC Transformation Manager (TIC Secrétariat)
18.	Ken Xue	Operational support Manager - MSF HK
19.	Leo Trembley	MACA Project Manager - MSF Canada
20.	Lucie Gueuning	REACH Project Manager - Evaluation focal point
21.	Marc Biot	Operations Director Médecins Sans Frontières - OCB
22.	Marie Christine Ferir	Former Emergency Pool Coordinator OCB
23.	Natasha Reyes	Former Operational Support Unit Director of MSF Hong Kong
24.	Paul McPhun	South East and East Asia-Pacific (SEEAP) Head of Project
25.	Rosario Martinez	Medical Support Operations, OCBA
26.	Sartini Saman	Association member - Indonesia representative
27.	Simon Eccleshall	MSF Australia - Head of the Program Unit
28.	Unni Karunakara	TIC Selected Committee

## ANNEX 5: THEMES AND CODING USED FOR THE THEMATIC ANALYSIS

Themes/Criteria	Coding
Reliability	Not sure Features/functions Operation Issues Trustworthy/concerns Time
Efficiency	Workload Time Communication Updates Search results User operation
Security	Risk IT team Security specialist/knowledge User Acceptance Testing Encryption Time
Maintainability	Code Documentation Process Satisfaction Time Development process Monitoring of errors, development progress
Data Accessibility	Upload View Access Download
Data Management	Data breach/ Data protection Data Storage
User and Platform Accessibility	Information availability Access platform
Data Usability	Project or event information

	Map view visualisation
Visibility of the System	Feedback
Match between system and the real world	User Interface Design Familiarity Language
User Control and Freedom	Easy Exit Easy undo/redo
Error Prevention	Feedback about errors
Recognition rather than recall	Help
Aesthetic and Minimalist Design	Easy Search
Threats	Data breach Future threats
Opportunities	AI Similar applications

## ANNEX 6. GOVERNANCE OF THE REACH PROJECT

No	Date of Submission	Document	Submitter	Sponsor board/name	Others
1	10 July 2017	Project Charter		Remi CARRIER - Executive Director Natasha REYES - ERSU Manager	Lucie GUEUNING - Project Manager, OSU
2	09 October 2017	Concept Note / Application Form	Natasha REYES	MSF Hong Kong/Chiels Liu	
3	31 January 2018	Project Charter - PHASE 2		Thomas LAHOUSSE - Executive Director Natasha REYES - ERSU Manager	REACH Project Adviser: Remi CARRIER REACH Project Manager: Lucie GUEUNING
4	10 August 2018	Change Request / Application Form	Remi Carrier	MSF Hong Kong	
5	September 2018	MSF OCB Quarterly HQ Project Status Report		Natasha Reyes	Project Manager: Lucie Gueuning Project Advisor: Remi Carrier
6	30 May 2019	Change request form	Lucie Gueuning, REACH Project Officer (MSF Hong Kong)		
7	01 July 2020	Change request form	Lucie Gueuning	MSF Hong Kong	
8	11 March 2020	MSF OCB HQ PROJECT STATUS		Sam Taylor, MSF HK	Steering committee: Sam Taylor, Ken Xue, Allen Cheung, Emmanuel Guillaud, Kathy Kalafatides, Unni Karunakara Project manager: Lucie Gueuning
9	30 June 2020	MSF OCB HQ PROJECT STATUS		Jenny Tung (interim ED – replacing Sam Taylor), MSF Hong Kong	Steering committee: Jenny Tung (replacement Sam Taylor), Ken Xue, Allen Cheung, Emmanuel Guillaud, Kathy Kalafatides, Unni Karunakara Project Manager: Lucie Gueuning
10	02 October 2020	Change Request Form	Lucie Gueuning	MSF Hong Kong	

## ANNEX 7: OVERVIEW OF MAIN SECURITY FINDINGS AND RECOMMENDATIONS FROM THE EVALUATION CONDUCTED BY GUILLAUME GAGNON

Issues	Recommendations
<b>Information Security</b>	<ul style="list-style-type: none"> <li>• The platform should return only the relevant information.</li> <li>• The need to encrypt columns that may contain personal information in them e.g., user notes, event description, etc.</li> <li>• Fix the broken access control that enabled access to confidential documents and information that should have only been possible when someone is logged in.</li> </ul>
<b>Privacy by Design<sup>1</sup></b>	<ul style="list-style-type: none"> <li>• Privacy by design should be enforced when planning the addition of new functionalities.</li> <li>• Provide training on Privacy by Design for the MSF IT team.</li> </ul>
<b>Encryption</b>	<ul style="list-style-type: none"> <li>• Configuration of the REACH platform database to allow only connections via a secured communication mechanism.</li> </ul>
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>• Database access should restrict access to only known stakeholders.</li> <li>• Have someone assigned from the MSF IT team to track and ensure that infrastructural<sup>2</sup> updates are applied or promptly implemented if the skillset to do so is not within the MSF IT team.</li> <li>• Ensure that the implementation team provides automated testing in place so that when there is an update or a patch to the code, it would be easy to track if some key components are no longer working.</li> <li>• Address all pending AWS security recommendations.</li> <li>• Have a disaster recovery plan that covers a wide range of emergencies and train the MSF staff on how to handle the recovery procedures. Also, review these plans frequently to ensure that they are still relevant and up to date.</li> <li>• Have the system backup retention set for longer than 7 days; AWS offers a 30-day backup retention period.</li> <li>• Conduct daily backups not only in Singapore but in other AWS regions, especially where MSF offices are located.</li> <li>• Backup should not just be code but everything that will be needed if there is a need to deploy the whole application after a security breach or an attack.</li> </ul>

<sup>1</sup> This means ensuring that privacy is part of the major consideration when designing a system and not an afterthought.

<sup>2</sup> It refers to everything that is needed to make any platform work. It includes the database, the platform code, the hosting provider, and every other internal or external file that the platform needs to make it work.

Issues	Recommendations
<p><b>Security &amp; Monitoring</b></p>	<ul style="list-style-type: none"> <li>• Implement a policy that ensures that API<sup>3</sup> keys, passwords and secrets are changed frequently.</li> <li>• Restriction of access to all API and other services as well as monitoring their usage to detect anomalies.</li> <li>• At least one instance of API keys, passwords, and other secrets were found to be embedded in the code, this practice should not be encouraged.</li> <li>• Office 356 already has a tried and tested password policy. This should be replicated for the other options to log on to the system using a local account. Still, it might be a better idea to disable this local account option.</li> <li>• The database was found to contain a test account with a weak password. This should be discouraged because using “test” or any other weak or easy-to-guess password makes the system more susceptible to brute force<sup>4</sup> or dictionary attacks.</li> <li>• Cookies and sessions were found to take several hours before they expired. What this means is that if you were logged in and you forgot to logout, the system should automatically log you out after a few minutes. However, this is not the case.</li> <li>• Implement a policy to lock out accounts after some predefined number of failed login attempts.</li> <li>• Automatically ban IP addresses that try to perform a brute force attack.</li> <li>• Centralized logging of user activity needs to be put in place with active monitoring and alert system to detect suspicious activities.</li> <li>• Activate and use the security features available on AWS and MSF IT teams should be trained on how to use them.</li> <li>• A bug was found that erroneously stores the last time the user logs in to the field that tracks when a user makes a change to their account details. It needs fixing.</li> <li>• The MSF IT team should perform periodic security scans using penetration testing tools.</li> <li>• The data received from public APIs should be validated to allow only what is needed.</li> <li>• Protect sensitive API with authentication.</li> <li>• Public APIs should not modify or delete existing data.</li> <li>• Educate users on social engineering attacks.</li> </ul>
<p><b>Source Code</b></p>	<ul style="list-style-type: none"> <li>• All npm<sup>5</sup> audit tool reported vulnerability should be fixed and this audit should be done from time to time by assigning someone to maintain code security probably from the MSF IT team.</li> <li>• Delete unnecessary code left as comments.</li> <li>• Proper documentation of the API used in the project needs to be done.</li> <li>• Automated code testing should be done to eliminate common programming bugs.</li> </ul>
<p><b>Deployment</b></p>	<ul style="list-style-type: none"> <li>• Better documentation of deployment of the platform needs to be done and tested to ensure that they are complete.</li> </ul>

<sup>3</sup> It is a way of accessing data or features from the same platform or from an external platform.

<sup>4</sup> A way of trying combinations of different characters, numbers, and special characters or some common words from the English dictionary e.g., test to try and guess someone’s username and password.

<sup>5</sup> The default package manager for the Node.js JavaScript runtime environment.



## ANNEX 8: INTERVIEW AND FGD QUESTION GUIDES

Good Morning/Afternoon/Evening, I am (XXX, your name), and my colleague(s) is/are (mention his/her name). We are the evaluation team from Savica, a consulting company based in Jakarta. Savica is supporting the evaluation of MSF REACH project. This evaluation aims to:

- (i) assess the value or significance of the REACH platform according to the needs, context, quality, comparison, cost-effectiveness, and exportability;
- (ii) support learning around the conditions of the project as well as design and implementation;
- (iii) provide some appropriate recommendations based on the findings to inform the decisions on the future of the REACH project and platform.

We would like to collect your thoughts on MSF REACH project. Your experience is very valuable, and your feedback, including the negative ones, will help MSF to improve the project such as this in the future. None of your feedback will bear any negative consequences to yourself.

The interview/FGD will last about 1-2 hours. Your participation is voluntary, you can refuse to join, or you can withdraw after it has begun at any moment without any penalty.

The process will be recorded and noted. Savica will uphold the confidentiality of all information you provide with utmost care throughout data collection, processing and analysis. With this regard, participant names will be included in the questionnaires only for traceability. Study data will only be accessible to the researcher and the staff identified by the researcher to assist with data management and analysis.

Are you willing to be part of this discussion? *(verbal response only requested)*

<b>QUESTIONS</b>	
Notes:	
<ol style="list-style-type: none"> <li>1) The interviewers or facilitators need to understand the background of the informants and tailor the questions to each informant. Some questions will be asked to some informants only.</li> <li>2) Informed consent will be sought from each informant prior to the start of the interview. Special care will be taken to ensure informants understand that their participation is voluntary and anonymous and that they can discontinue the interview at any point without providing a reason for doing so.</li> <li>3) The interviewers or facilitators are free to create an informal conversational environment and follow the flow i.e., ask the questions from the most related or relevant to the ones being discussed by informants at the time.</li> </ol>	
1.	<ul style="list-style-type: none"> <li>• First, can you tell me a little about your role or experience in REACH project?</li> <li>• What was your first involvement, and when?</li> </ul>
<b>INSTITUTIONAL</b>	
2.	<p><b>Governance</b></p> <p>Does REACH have established steering committee/board who are committed to the project development?</p>
3.	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• How sufficient were resources (funding, human) allocation in REACH project?</li> <li>• How REACH project could source sufficient resources (funding, human) in the future?</li> </ul>

4.	<p><b>Sustainability</b></p> <ul style="list-style-type: none"> <li>• How can the project be replicated/continued/ modified?</li> <li>• Who could be the permanent home for REACH, which has the willingness to ensure its future implementation and development, in the future?</li> </ul>
<b>BUSINESS PROCESS</b>	
5.	<p><b>Hazards Information, Analysis, Dissemination and Communication</b></p> <ul style="list-style-type: none"> <li>• How does REACH gather hazards and relevant information, analyse, disseminate, and communicate it to stakeholders?</li> <li>• How easy it is for REACH user to access the platform during an emergency or in a remote area (where the electricity and internet connections are not reliable)?</li> <li>• How real time is information available on REACH platform?</li> </ul>
6.	<p><b>Relevance</b></p> <ul style="list-style-type: none"> <li>• Do you know what the objectives of REACH are?</li> <li>• Do the objectives of the project correspond with identified needs?</li> <li>• How relevant is REACH to MSF or the environment where MSF works?</li> <li>• Are there any alternative ways for MSF to meet the identified needs?</li> </ul>
7.	<p><b>Effectiveness</b></p> <ul style="list-style-type: none"> <li>• Has REACH met all its objectives?</li> <li>• Have information available on the REACH platform been used for efficient decision-making during disaster?</li> <li>• Which information/part of the platform that is the most useful?</li> </ul> <p><b>REACH objectives<sup>6</sup>:</b>  <i>a platform designed to support MSF's needs for improved information management in emergencies and more efficient decision-making during disasters:</i></p> <ol style="list-style-type: none"> <li><i>Scale-up and extend the use of the platform for disasters occurring in SEA</i></li> <li><i>Extend the scope of use outside of SEA, adapting REACH to other operational and thematic environments</i></li> <li><i>Finalise development, focusing on User Interface improvements and extending the AI3 to support better data searching for operational planning and automated alert-notification, in addition to improvement and development for further integration into existing MSF tools and systems</i></li> <li><i>Evaluate REACH based on users' feedback and pilots' outcomes to prepare and adapt the strategy and the project to enter a phase 3 of deployment of REACH worldwide next June 2019.</i></li> </ol>
8.	<p><b>Efficiency</b></p> <ul style="list-style-type: none"> <li>• How efficient are the resources spent on REACH development and operation as compared to its achievements as of now?</li> <li>• Were activities/strategies implemented with the best use of available financial resources and time?</li> </ul>
9.	<p><b>Gender Mainstreaming</b></p> <p>Does REACH platform accommodate gender and other cross-cutting issues?</p>
10.	<p><b>Impact</b></p> <ul style="list-style-type: none"> <li>• Do you see or observe any significant changes, positive and/or negative, that happened in MSF or the environment where REACH was operating, as a result of the platform implementation?</li> <li>• Please tell us more about these changes and what happened?</li> </ul>
<b>LESSONS LEARNT</b>	
11.	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• What have been the challenges in REACH implementation?</li> <li>• How were the challenges managed?</li> </ul>
12.	<p><b>Determinants of success</b></p> <ul style="list-style-type: none"> <li>• What were the determinants of success of the project in the past?</li> </ul>

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<sup>6</sup> MSF REACH Project Charter Phase 2 Extension

	<ul style="list-style-type: none"> <li>• What are the determinant of success of the project in the future?</li> </ul>
<b>TECHNOLOGY</b>	
13.	<p><b>Reliability</b></p> <ul style="list-style-type: none"> <li>• Can you comment on the system uptime and service level agreement of the REACH platform?</li> <li>• Do you think the current version of REACH is tolerant to various user inputs?</li> <li>• How does the developers detect and fix a specific issue on the REACH platform?</li> <li>• What type of testing are performed to ensure that the platform is reliable?</li> </ul>
14.	<p><b>Efficiency</b></p> <ul style="list-style-type: none"> <li>• Do you classify yourself as an experienced user or new user?</li> <li>• Do you think the platform can be effectively used by the experienced as well as new users?</li> <li>• If experienced user, how many years you have been using the system and how frequently?</li> <li>• Did you ever provide feedback or review or recommendation input to a REACH platform project or event? If yes, how?</li> <li>• Do you think REACH platform encourages and support users to review or provide feedbacks and recommendations?</li> </ul>
15.	<p><b>Security</b></p> <ul style="list-style-type: none"> <li>• As a technical expert do you think the REACH platform implementation comply with standard security practices of a portal?</li> <li>• Do you think the data inserted into the platform is secured?</li> <li>• What are the standard protocols followed when security measures are decided and implemented on the REACH platform?</li> <li>• How frequently are the security of the system updated and how?</li> <li>• Do you have internal and external ethical hackers working to continuously exploits the system to identify possible vulnerabilities and threats?</li> <li>• As at now, what are the tools used to ensure that the platform is secured?</li> <li>• Does the REACH platform allow users to store data/information outside of SharePoint?</li> <li>• Is there an effective access control matrix implemented to allow secure data accessibility?</li> <li>• What is the format for data storage by the platform, e.g., when a user uploads a document?</li> </ul>
16.	<p><b>User Experience and Interface</b></p> <p><u><b>Data Accessibility</b></u></p> <ul style="list-style-type: none"> <li>• Does REACH support users to key-in the event/project information or upload documents related to the project?</li> <li>• Does REACH support users upload of documents in different formats? What are they?</li> <li>• Is the data/ information displayed on the REACH platform easily understandable?</li> <li>• Do you think the map view of the disaster locations are effective and understandable?</li> <li>• Does REACH support downloading of data from the portal in different formats?</li> </ul> <p><u><b>Data Management</b></u></p> <ul style="list-style-type: none"> <li>• Does REACH support sending data/information to other MSF platforms within the intranet?</li> <li>• Did you ever send data/information to other MSF platform from reach? If yes, what are the data/information and platforms?</li> <li>• Does REACH support getting information from other platforms using feeds and APIs? If yes, from what external platforms is the data pulled into REACH?</li> <li>• How does REACH support various formats of data from other external platforms?</li> </ul> <p><u><b>User Accessibility</b></u></p> <ul style="list-style-type: none"> <li>• Do you think REACH platform user interface design support disable users e.g. colour-blind people?</li> <li>• Do you think REACH platform support voice recognition or other techniques to support people with site disabilities?</li> <li>• What are the techniques implemented by the REACH platform and others that are currently in the pipeline to support people with disabilities?</li> <li>• Do you think the REACH platform search function is smart e.g. does it support Auto completion and prediction to ease the user from typing the entire search string?</li> </ul>

	<ul style="list-style-type: none"> <li>• What additional features do you think REACH should implement to make the search more effective e.g. to find existing events and projects?</li> </ul> <p><b><u>Visibility of the system</u></b></p> <ul style="list-style-type: none"> <li>• Do you think REACH platform continuously provides information to the user about the status of the system when a user initiates an operation?</li> <li>• Do you think REACH displays the feedback or response within a reasonable time?</li> <li>• Do you think the feedback messages displayed by the REACH platform are easily understood?</li> <li>• Do you think there is a language barrier in understanding the system responses?</li> </ul> <p><b><u>Match between system and the real world</u></b></p> <ul style="list-style-type: none"> <li>• Do you think it is easy to understand the commands and information provided by the REACH platforms within a short timeframe?</li> <li>• How familiar are you with the icons used by the REACH platform?</li> <li>• Did you notice any new icons used by the REACH platform that you are not familiar with?</li> </ul> <p><b><u>User control and freedom</u></b></p> <ul style="list-style-type: none"> <li>• Do you think REACH allows you to exit the application or go to homepage easily without going through several dialogues?</li> <li>• Does the REACH platform request you to store your operation status when closing the application?</li> <li>• Do you think REACH platform support easy operations for data entry such as redo and undo?</li> <li>• Do you think redo and undo operations are necessary? If yes where in the application should it be implemented?</li> </ul> <p><b><u>Error Prevention</u></b></p> <ul style="list-style-type: none"> <li>• Do you think front end validations are included on the REACH platform to avoid data entry issues?</li> <li>• How does the REACH platform react when a user uploads a file format that is not supported by the platform?</li> </ul> <p><b><u>Recognition rather than recall</u></b></p> <ul style="list-style-type: none"> <li>• Do you find the help function for the REACH platform useful?</li> <li>• Do you think new user will be able to use REACH platform with minimal or no training?</li> <li>• Do you try to remember the steps involved or the meaning of the icons used by the REACH platform when you are using it?</li> <li>• Do you think new user will be able to explore the features of the platform to find what they need without necessarily trying to remember instructions from previous pages of the platform?</li> </ul> <p><b><u>Aesthetic and minimalist design</u></b></p> <ul style="list-style-type: none"> <li>• Do you think only the required information are provided on each page of the REACH platform?</li> <li>• Do you think the system features implemented by some pages of the REACH platform rather verbose or difficult to locate?</li> </ul>
17.	<p><b><u>Maintainability</u></b></p> <ul style="list-style-type: none"> <li>• What techniques and resources are in place to ensure that services are provided without interruption?</li> <li>• Does the REACH platform support offline access?</li> <li>• Will the system automatically upload the information to SharePoint once the system is connected to the internet or does the user need to give explicit instruction to do so?</li> </ul>
18.	<p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>• Did the REACH platform face any types of threats? If yes what are they and how were they resolved?</li> <li>• Does the REACH platform project have a risk assessment and mitigation plan? If yes, how frequently is the risk assessment conducted?</li> <li>• Does the REACH platform have a standard documentation process to record the process, incidence and other activities conducted?</li> </ul>
19.	<p><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>• Has external and internal research been conducted on what technological aspects that can be incorporated to enhance the functionalities of REACH? If yes, what are they?</li> <li>• Do you think the coding framework used by the REACH platform support adaptation of new technologies and approaches?</li> <li>• Does REACH have standard secured APIs to interface with new internal and external platforms?</li> </ul>

## ANNEX 9: ONLINE SURVEY QUESTIONNAIRE

Email of survey invitation shared to targeted respondents by the manager of SEU:

### **Evaluation of REACH - Please share your perspectives by Jan 29**

Dear colleague,

As you may know, an evaluation of MSF REACH (REaction Assessment Collaboration Hub) is currently ongoing, managed by the MSF Stockholm Evaluation Unit. The aim is to assess the value of REACH, to inform upcoming decisions on the future of REACH as well as to gather lessons learnt.

Besides interviews with stakeholders, the evaluators wish to reach out to as many (potential) users as possible, through this survey. Whether or not you have used REACH, and whether or not you have contributed to the evaluation another way, you can answer this survey and your input is valuable to us. It should take you about 10 minutes. The survey will close on Jan 29.

Your participation is of course voluntary, but your perspective is precious to us.

Here is a link to the survey: <https://ee.kobotoolbox.org/x/jFWJDnc9>

Thank you in advance for your time and contribution!

On behalf of the evaluation team: Arie, Yos, Aisvarya

### **Survey on REaction Assessment Collaboration Hub (REACH) Platform**

Thank you for taking the time to answer this survey.

All responses are confidential and will only be seen in its raw form by members of the evaluation team.

If you wish to discuss further, please get in touch with lead evaluator Arie ([arie.agustien@gmail.com](mailto:arie.agustien@gmail.com)) or Evaluation Manager from the Stockholm Evaluation Unit, Kristen ([kristen.begue@stockholm.msf.org](mailto:kristen.begue@stockholm.msf.org)).

The evaluation report will be made available to all once finalized, in February/March 2021. Please provide your email address at the end of the survey so that we can share it with you.

## Section A: General Information

No.	Questions	Responses
1.	Are you currently a MSF staff member?  <i>If answer c 'never been a MSF staff member', then skip questions 2 and 3</i>	a. Yes b. No, but I used to be MSF staff member. c. No, I have never been a MSF staff member
2.	Where are you based?  <i>Instruction: Choose one answer</i>	a. Field, where:..... b. Partner Section, which one:..... c. OC, which one:..... d. MSF International, location:..... e. Other, please mention
3.	When was the first time you worked with MSF?  <i>Instruction: Please mention the year</i>	1971      1972      1973      1974 1981      1982      1983      1984 1991      1992      1993      1994 2001      2002      2003      2004 2011      2012      2013      2014 2021
4.	Have you used the REACH platform?	a. Yes b. No. why? .....
5.	What was your role/position when you used REACH platform?  <i>Skip if the answer is 'No' in A4 (Never used REACH)</i>	a. Head of mission b. Project coordinator (regular mission) c. Emergency Coordinator d. Medical team a. Field b. HQ e. Logistics team a. Field b. HQ f. Health Promotion team a. Field b. HQ g. ICT team a. Field b. HQ h. Other: please mention.....
6.	Have you used the REACH platform during emergency response?  <i>Skip if the answer is 'No' in A4 (Never used REACH)</i>	a. Yes b. No

1975  
1985  
1995  
2005  
2015

No.	Questions	Responses
7.	<p><i>What was your role during the emergency response</i></p> <p><b>Skip if the answer is 'No' in A6</b></p>	<p>a. Head of mission</p> <p>b. Project coordinator (regular mission)</p> <p>c. Emergency Coordinator</p> <p>d. Medical team</p> <p style="padding-left: 20px;">a. Field</p> <p style="padding-left: 20px;">b. HQ</p> <p>e. Logistics team</p> <p style="padding-left: 20px;">a. Field</p> <p style="padding-left: 20px;">b. HQ</p> <p>f. Health Promotion team</p> <p style="padding-left: 20px;">a. Field</p> <p style="padding-left: 20px;">b. HQ</p> <p>g. ICT team</p> <p style="padding-left: 20px;">a. Field</p> <p style="padding-left: 20px;">b. HQ</p> <p>h. Other: please mention.....</p>
8.	<p><i>Please mention the name/location and year of the emergency response operation</i></p> <p><b>Skip if the answer is 'No' in A6</b></p>	

*Section B: Business Process*

No.	Questions	Responses
<b>Hazards and Relevant Information, Analysis, Dissemination, and Communication</b>		
1.	<p>The main objective of REACH is to support MSF's needs for improved information management in emergencies and more efficient decision-making.</p> <p>I find this objective relevant to MSF and the environment where MSF works.</p>	<p>a. Yes</p> <p>b. No</p> <p>c. No opinion</p> <p>d. Please add any comment:</p>
2.	<p><i>The information provided on the REACH platform is relevant.</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Strongly agree.</p> <p>b. Agree</p> <p>c. Disagree</p> <p>d. Strongly disagree</p> <p>e. Please explain further your choice....</p> <p>f. No opinion</p>
3.	<p><i>Information available on the REACH platform <b>has contributed to</b> improved information management in emergencies.</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Strongly agree.</p> <p>b. Agree</p> <p>c. Disagree</p> <p>d. Strongly disagree</p> <p>e. Please explain further your choice....</p> <p>f. No opinion</p>

No.	Questions	Responses
4.	<p><i>Information available on the REACH platform has contributed to more efficient decision-making during emergencies.</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Strongly agree.</p> <p>b. Agree</p> <p>c. Disagree</p> <p>d. Strongly disagree</p> <p>e. Please explain further your choice....</p> <p>f. No opinion</p>
5.	<p><i>How satisfactory does REACH platform gather hazard and other relevant information?</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Very Satisfactory</p> <p>b. Satisfactory</p> <p>c. unsatisfactory</p> <p>d. Very unsatisfactory</p> <p>e. Please explain further your choice....</p> <p>f. No opinion.</p>
6.	<p><i>How satisfactory does REACH platform analyse this information?</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Very Satisfactory</p> <p>b. Satisfactory</p> <p>c. unsatisfactory</p> <p>d. Very unsatisfactory</p> <p>e. Please explain further your choice.....</p> <p>f. No opinion.</p>
7.	<p><i>How satisfactory does REACH platform communicate this information?</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Very Satisfactory</p> <p>b. Satisfactory</p> <p>c. unsatisfactory</p> <p>d. Very unsatisfactory</p> <p>e. Please explain further your choice....</p> <p>f. No opinion</p>
8.	<p><i>I find that the most useful information/part of the REACH platform is:</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Disaster monitoring &amp; alert</p> <p>b. Contact repository</p> <p>c. Mission history repository</p> <p>d. Other: please mention.....</p> <p>g. No opinion</p>
9.	<p><i>The REACH platform helped me to assess the different needs of men, women, children, elderly, and other vulnerable groups appropriately.</i></p> <p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p>	<p>a. Strongly agree.</p> <p>b. Agree</p> <p>c. Disagree</p> <p>d. Strongly disagree</p> <p>e. Please explain further your choice....</p> <p>f. No opinion</p>
10.	<p><i>When using the REACH platform, I experienced the following challenges:</i></p>	<p>a. Information provided was limited in term of geography, demography, topics, and/or timeline.</p> <p>b. Information was not real-time</p> <p>c. REACH was not widely accessible.</p>



No.	Questions	Responses
	<p><b>Skip if the answer is 'No' in A4 (Never used REACH)</b></p> <p><b>You can choose more than one answer</b></p>	<p>d. I did not feel safe using REACH</p> <p>e. Internet connection and electricity network were not stable enough to use REACH</p> <p>f. Other: please mention....</p> <p>g. No opinion</p>
11.	<p>I use(d) other platform(s) than REACH to obtain information in emergencies</p> <p><b>You can choose more than one answer.</b></p>	<p>a. IFRC Go Platform</p> <p>b. Digger</p> <p>c. Oops</p> <p>d. ReliefWeb</p> <p>e. UN-VOSOCC</p> <p>f. Humanitarian ID</p> <p>g. GeoMSF</p> <p>h. Other: please mention....</p> <p>i. No, I do not use any other platform.</p>
12.	<p>Compared to REACH, I find the alternative platform(s) I use:</p> <p><b>Skip if the answer is 'No, I do not use any other platform' on the question before.</b></p> <p><b>You can choose more than one answer.</b></p>	<p>a. is/are easier to use</p> <p>b. provide better information in term of geography, demography, topics, and timeline.</p> <p>c. provide more real-time information.</p> <p>d. is/are safer to use.</p> <p>e. is/are more accessible from anywhere in the world.</p> <p>f. I am just more familiar with those platforms</p> <p>g. Other: please mention....</p> <p>h. No opinion</p>
13.	<p>In the future, REACH platform needs to be:</p>	<p>a. Easier to access from the areas where internet connection and electricity network are not stable.</p> <p>b. Providing information through social media, e.g. WhatsApp, Instagram, etc.</p> <p>c. Send disaster alert notification to the users</p> <p>d. Available as an app in mobile phone.</p> <p>e. Other, please mention....</p> <p>f. No opinion</p>

## Section C: Technology

No	REACH platform	Rating Scale 1 ('Strongly agree') to 5 ('No option')				
		Strongly agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)	No opinion (5)
1.	It is easy to upload data/information to the platform in different formats.					
2.	It is easy to access data/information from the platform in different formats.					
3.	It is easy to view data/information from the platform in different formats					
4.	It is easy to download data/information from the platform in different formats					
5.	It is easy to access the platform during an emergency situation or in a remote area (where the electricity and internet connections are not reliable)					
6.	Information available on the REACH platform is in real-time or near real-time (time difference between the disaster and platform indication is almost negligible)					
7.	The REACH platform provides appropriate and effective feedback within reasonable time					
8.	The REACH platform provides feedback that is easy to understand					
9.	It is easy for users to provide inputs/feedbacks through the REACH platform.					
10.	The REACH platform uses familiar language (phrases and concepts)					
11.	Icons (images, colours, designs) used by the REACH platform are mostly familiar and relatable to other widely used platforms. Intuitive perhaps instead?					
12.	It is easy to exit the REACH platform at any time					
13.	It is easy to redo and undo operations when filling the forms within the REACH platform.					
14.	It is easy to find instructions to use the platform.					
15.	The REACH platform provides an easy search function.					
16.	The REACH platform can be easily navigated by both experienced and new users.					

*Thank you very much for allocating your valuable time to participate in this survey!*

If you would like to receive the report of this evaluation, and or willing to be contacted further, please provide your email address below:

## ANNEX 10: GLOBAL STRUCTURE OF MSF



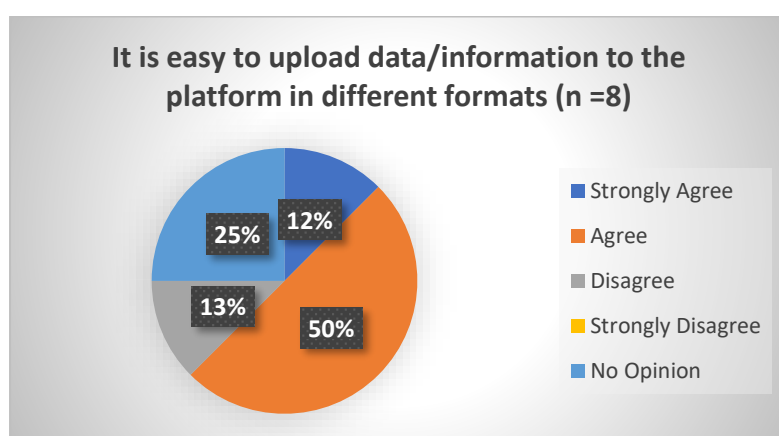
## ANNEX 11: DETAILED FINDINGS USER INTERFACE AND USER EXPERIENCE

### Data Accessibility

Data Accessibility refers to the ease to retrieve or store data in a central location usually a database of a repository.

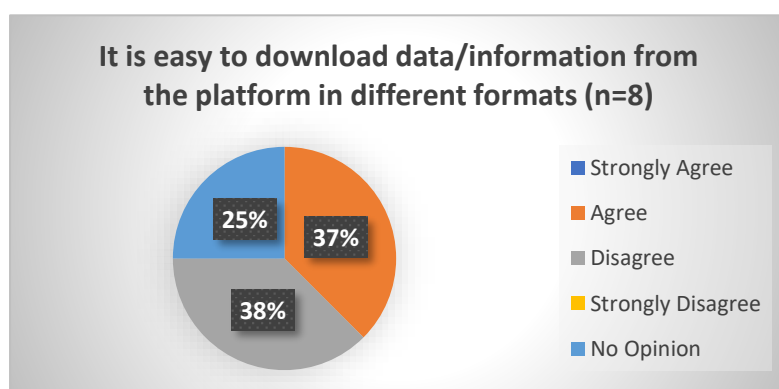
From the desk review, it appears that the initial need that triggered the concept of the REACH project was to have a central portal that could provide valuable information with minimal efforts (i.e., no searching through multiple databases).

During the interview and FGD, informants who tried to access the REACH platform for specific information were disappointed when they could not be found. However, this should be expected because the REACH platform is still only in the pilot stage and not yet a fully functional platform. Also, some of the informants expressed optimism about the REACH platform performance when it is ready to go live.



**Figure 1: Flexibility of the REACH platform with respect to upload data/information.**

From the survey, respondent find it easy to **upload data/information** on the REACH platform in different formats.



**Figure 2: Flexibility of the REACH platform with respect to download data/information.**

However, it was impossible to conclude if the respondents find it **easy to download data/information** from the REACH platform.

### Data Management

Data management is the process through which data and information are being managed and secured by an organisation or an individual to ensure organised accessibility and safekeeping.

During the data collection, Informants gave high priority to data management within the REACH platform as there will be several users from different regions who input information within the platform regarding their projects or events. Also, the informants stated that different regions have their own data protection regulations and wondered how the REACH platform is incorporating them.

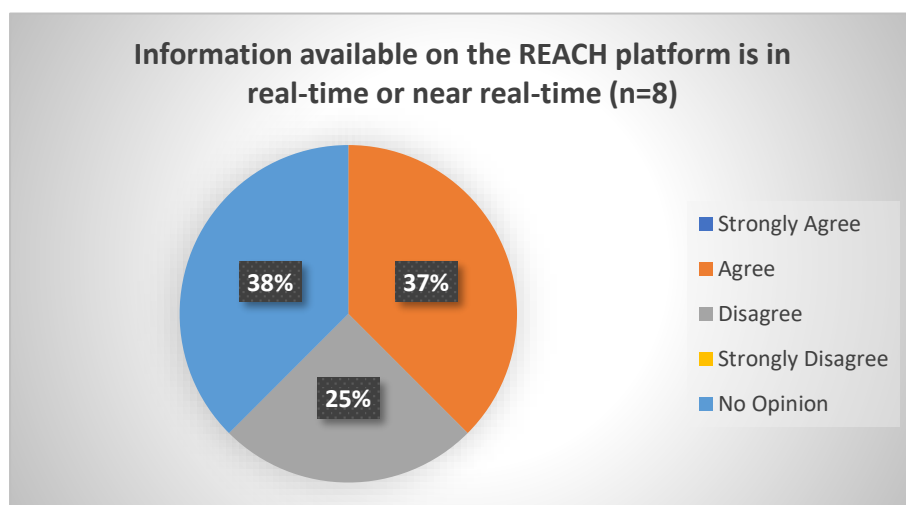
In addition, Guillaume Gagnon stated that an assessment conducted by Deloitte to access the REACH platform compliance with the General Data Protection Regulation (GDPR) found several cases of GDPR violations which is yet to be fixed as at the time of our interview with him.

No specialist in data protection and privacy has been involved throughout the project to ensure the long-term sustainability of the security of the REACH platform.

### User and Platform Accessibility

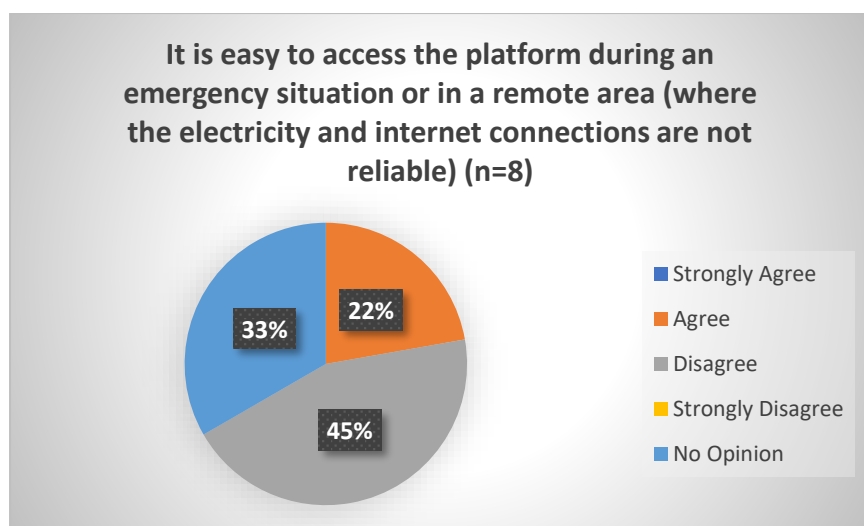
Accessibility refers to the ability of a group of people with different capacities and methods of access to effectively make use of a platform or interface.

During the interview and FGD, pilot users never had any issues accessing the REACH platform. However, it was also mentioned that the REACH platform had not been active on the general URL. Informants received an email explaining that the platform had to be put offline.



**Figure 3: Information availability of the REACH platform**

Also, from the survey, the respondents had either a “no opinion” or are inconclusive on if the information on the REACH platform is real time or not.



**Figure 4: Accessibility of the REACH platform under an emergency situation or in a remote area with limited resources**

Almost half of the respondents did not find the REACH platform as being easy to access during emergencies or in a remote area. One third had no opinion.

### Data Usability

Data usability refers to the degree to which a product can effectively and efficiently accomplish the goals of the user, in terms of quality and methods of usage. It also implies that the quality of data generated should address the desired needs of the users. The usability is ensured through proper accessibility, integrity, consistency, and accuracy.

### Creating an Event

Data collection confirmed that the REACH platform captures all the compulsory information concerning the specific event. However, the pilot users believed that allowing them to uploading existing documents into the system could simplify the process.

### Viewing an Event

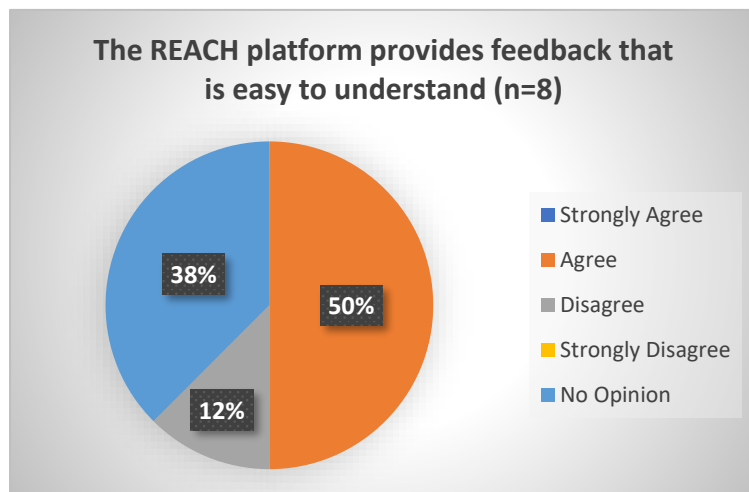
Users who viewed information about a specific event were content with the map view and the information displayed on the REACH platform. However, some of the informants identified that the map view had so many graphical icons that it became confusing. Also, several informants mentioned that the contact card is a very helpful and useful feature that they enjoy using on the platform. They expect that the REACH platform would incorporate more data into the contact card for wider usage.

### Neilson Heuristic Principles for User Interface Assessment

There are 10 principles introduced by Jakob Nielsen for the interface design assessment of platforms (Semiawan, 2019). We collected data from the survey to study some of these principles.

#### Principle 1: Visibility of the system

This principle states that understandable feedback should be given to the user to inform them of what the platform is doing within a reasonable period. e.g., when I submit a form, it should confirm that the form submission is successful within a reasonable time.

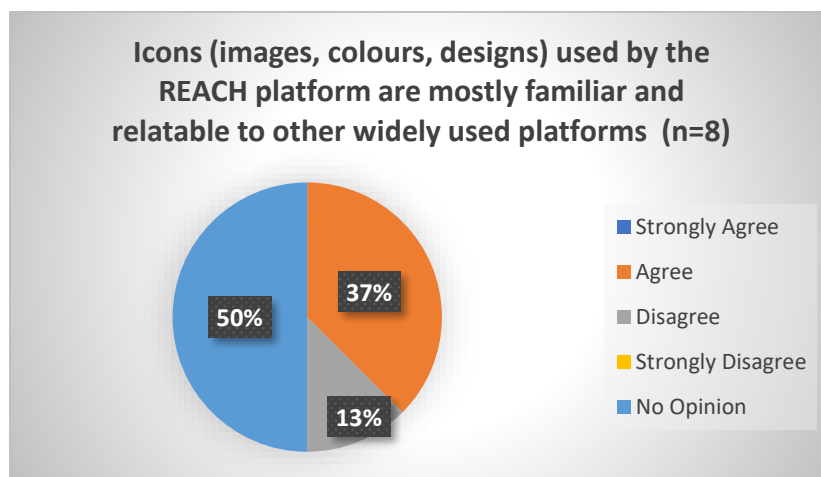


**Figure 5: Effectiveness of the REACH platform with respect to providing feedback to the user.**

From the survey respondents, we can conclude that the participants were able to understand the feedback and messages provided by the REACH platform.

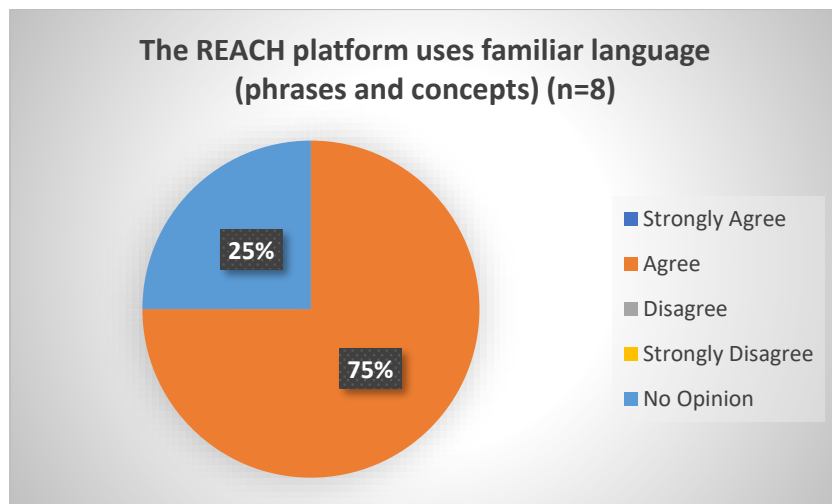
#### **Principle 2: Match between system and the real world**

This principle states that systems should communicate in a simple language that the user can understand rather than technical terms. The system should also align with real-world conventions to make information more natural and logical.



**Figure 6: Familiarity of the interface design of the REACH platform**

From the survey respondents, we can conclude that the participants feel that the icons used by the REACH platform are mostly familiar and easy to understand.

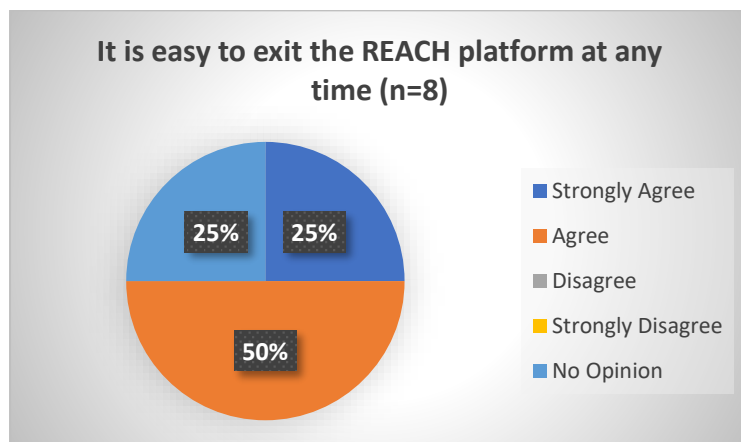


**Figure 7: Use of familiar language in the REACH platform.**

The survey response shows that all the survey participants found that the REACH platform uses familiar language.

### **Principle 3: User Control and Freedom**

This principle states that the user should be able to exit from the system at any point in time rather than going through an extended process.



**Figure 8: Ease of exiting from the REACH platform.**

Majority of the survey respondents believe that it is easy for them to exit from the REACH platform at any point in time.



#### Principle 4: Recognition rather than Recall

This principle states that there should be no need to remember information by heart, rather, the system should provide relevant help to use it.

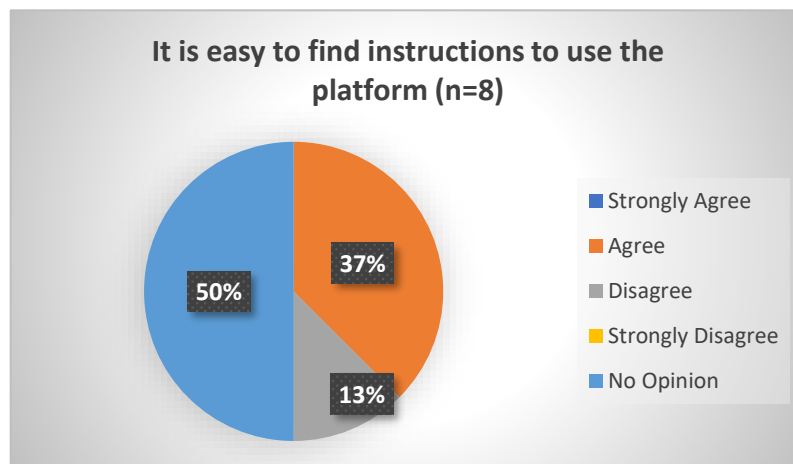


Figure 9: Easy to find help/instructions to use the REACH platform.

Half of the survey participants had no idea and only 37% participants agreed that it was easy to find instruction to use the REACH platform where else 13% of the participants confirmed that it is not easy to find instruction to use the REACH platform.

#### Principle 5: Aesthetic and Minimalist Design

This principle states that the system information should not be crowded with unnecessary details, rather, they should be minimal to what the page does.

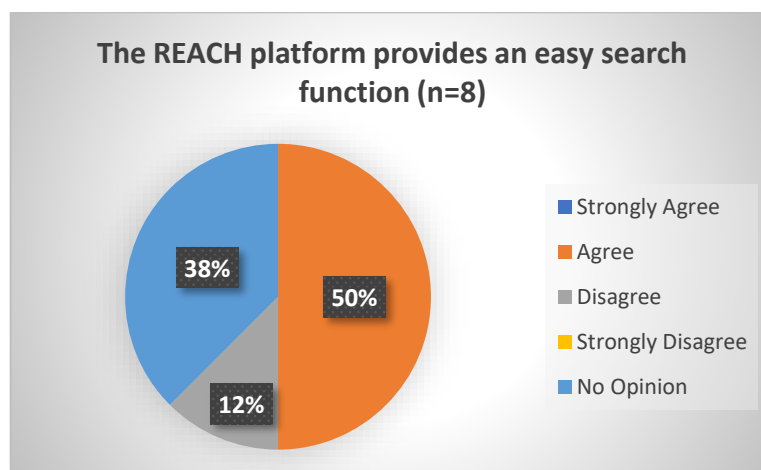


Figure 10: Easy functional search feature of the REACH platform

Eventhough, 50% of the survey participants believe that the the search function in the REACH platform is easy to use but significant percentage (38%) hold no opinion on that.

## ANNEX 12: DETAILED TECHNICAL RECOMMENDATIONS

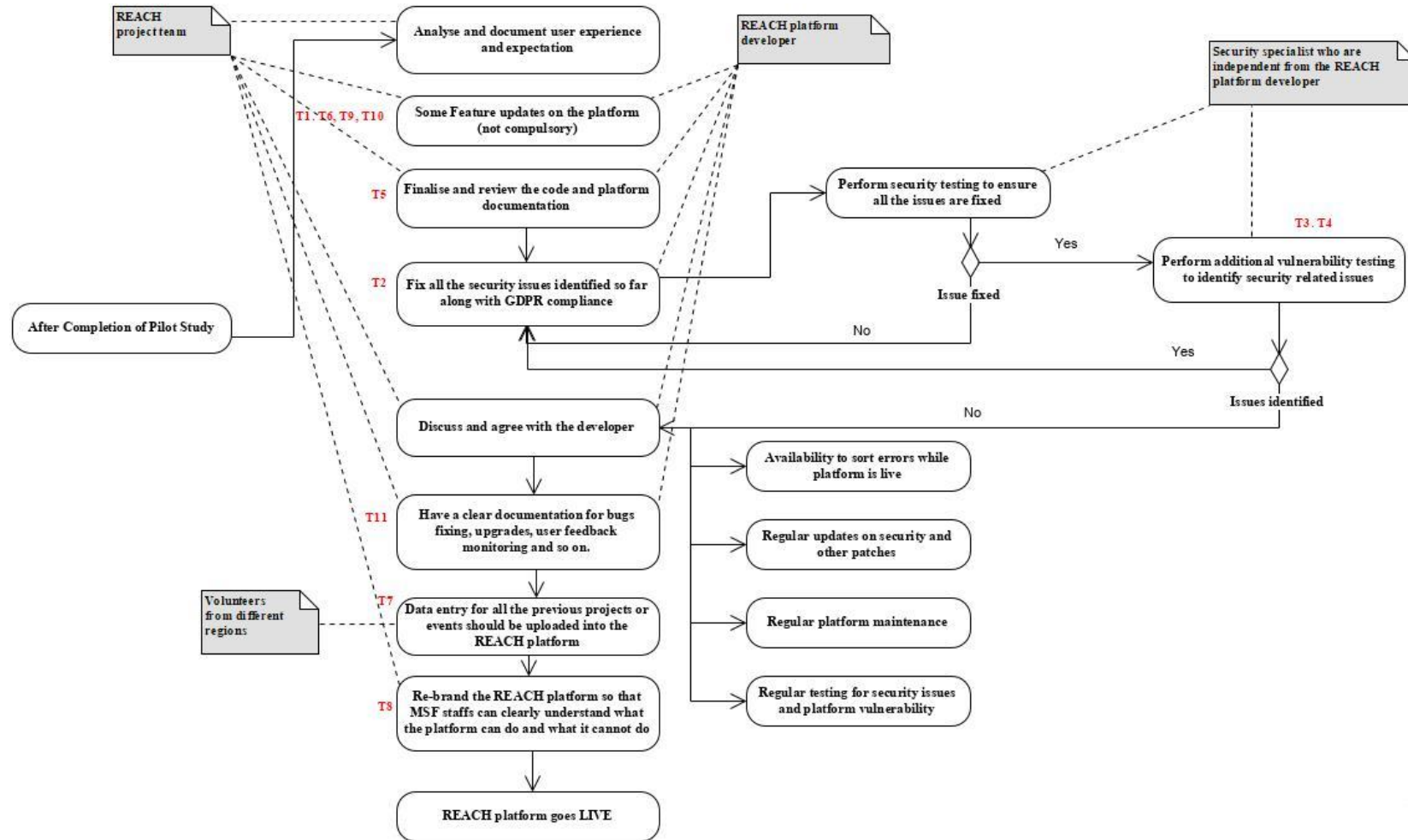
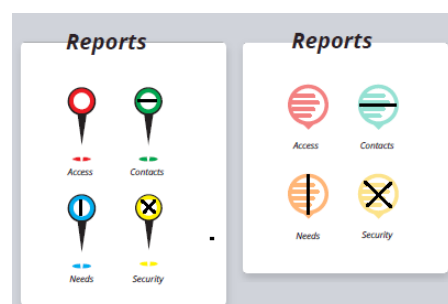


Figure 11. Action plan of the technical recommendation

**Technology 1: The REACH platform interface design should support people with colour vision deficiency (CVD).**

In designing a platform, colour plays a very crucial role. A well-designed platform takes into consideration user differences to improve user experience. People with CVD usually find platform readability difficult due to the different colour combinations that are often difficult to differentiate. Most platforms are also inaccessible by users with CVD except for platforms that are designed with accessibility in mind. Designers can employ the use of text labels, patterns and textures to enable such users to easily differentiate between segments rather than just colours. Underlined links and symbols can also be used to make the platform more readable for users with CVD. A sample of how the current REACH platform icons can be modified to assist people with CVD in using the platform is provided below:



**Figure 12: Colour Blind Suggestion for the REACH Platform**

**Technology 2: The REACH platform should enable all the AWS security features to enhance the infrastructural security.**

Amazon Web Services (AWS) is one of the most secure cloud service providers. AWS Security consists of a wide range of resources, tools, features and qualities that make a service provision more secure. This security model provides the flexibility and agility needed to implement the security controls for the platform. The implementation of AWS security on the platform will make data storage and accessibility easier. It is also a useful tool that can help reduce human configuration errors, ensure data security while helping to meet global compliance requirements such as confidentiality and data privacy through its third-party validation system.

**Technology 3: Perform penetration testing to ensure that the platform does not have any known vulnerabilities.**

Penetration testing or pen test refers to breaching attempts or a simulated attack on the platform to assess the system vulnerabilities or its susceptibility to covert attacks. It is mostly used to enhance the web application firewall (WAF). The results obtained from the penetration test can then be used to modify the WAF security, its system, and policies and to develop effective security to guard against the vulnerabilities identified. Penetration testing methods include external testing, internal testing, blind testing, double-blind testing, and targeted testing. Some of the free penetration testing tools that could be used are Netsparker

Penetration Scanner<sup>7</sup>, Acunetix Scanner<sup>8</sup>, Aircrack<sup>9</sup>, Network mapper (NMAP)<sup>10</sup>, among others.

**Technology 4: Source code analysis need to be completed.**

Source code or static analysis is an automated system or security process for testing source codes. Source code is one of the most important parts of the system, hence the need for it to be secure. Source code analysis tools are therefore used for source code verifications and would help to identify flaws and detect vulnerabilities in platforms. They are useful tools that can be used to debug the system/platform of malicious codes before they are used or deployed. Some free source code analysis tools are Bandit<sup>11</sup>, Findbugs<sup>12</sup>, Coverity Scan<sup>13</sup>, Synopsys<sup>14</sup>, VisualCodeGrepper<sup>15</sup>, Brakeman<sup>16</sup>, Pmd<sup>17</sup>, Flawfinder<sup>18</sup>, Sync<sup>19</sup> among others.

**Technology 5: Ensure to have detailed documentation for the current version of the REACH platform.**

A platform documentation is a reference material for designers to maintain the platform for future development. It helps to keep track of the platform and to improve the system quality. Documentation can be internal or external. Internal documentation is included in the platform design as comments while external documentation is written separately to be accessed by users when needed. Documentations are mostly in form of texts, daily reports, time records, and should be readable and user-friendly with logical structures and illustrations. It accompanies the platform and explains how the platform operates, its functionality as well as its method of use.

**Technology 6: The REACH platform should support direct upload of documents** which can reduce the workload of its users when they are inserting information regarding a specific event.

**Technology 7: Information regarding the previous projects and events within the MSF should be uploaded into the REACH platform before it goes live for use.** We recommend using volunteers from different operational units of MSF to achieve this.

**Technology 8: The REACH project requires a technical expert who has knowledge of web development and security concepts.** This technical expert can be an MSF staff or an external consultant but should be independent from the developer so that an unbiased assessment, validation, and evaluation of the security features implemented by the REACH platform is done.

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<sup>7</sup> <https://www.netsparker.com/penetration-testing-software/>

<sup>8</sup> <https://www.acunetix.com/>

<sup>9</sup> <https://www.aircrack-ng.org/>

<sup>10</sup> <https://nmap.org/>

<sup>11</sup> <https://pypi.org/project/bandit/>

<sup>12</sup> <http://findbugs.sourceforge.net/>

<sup>13</sup> <https://scan.coverity.com/>

<sup>14</sup> <https://www.synopsys.com/>

<sup>15</sup> <https://github.com/nccgroup/VCG>

<sup>16</sup> <https://github.com/presidentbeef/brakeman>

<sup>17</sup> <https://pmd.github.io/>

<sup>18</sup> <https://dwheeler.com/flawfinder/>

<sup>19</sup> <https://snyk.io/>

Nowadays, systems are more vulnerable to attacks with over 30,000 websites hacked every day, hence the need for a technical expert with security knowledge cannot be over emphasised. The basic principle for developers is that a secure code is a good code. Hence, security of the web applications at every stage of the development and design is important.

**Technology 9: Integrate WhatsApp extension on the REACH platform for ease of communication.**

WhatsApp extensions are modules that add additional features to the standard WhatsApp application. An example of this is the WhatsApp API to integrate the click-to-chat link on the platform, personalized and added to an image or button for users to gain access. The WhatsApp chat widget or Callbell<sup>20</sup> can also be activated through the WhatsApp Business page for instant communication.

**Technology 10: External APIs can be linked to the REACH platform to get real time or near real time alert on disasters to ensure that the platform function as an early warning system.**

Early warning systems are important to minimise disaster effects because adequate action can be taken immediately. Some of the APIs that can be integrated are ReliefWeb API<sup>21</sup>, Twitter API, and Facebook emergency API. Moreover, crowdsourcing technique is also an important way to get early warnings.

**Technology 11: It is important to make use of Bug tracking tool to track all the changes and bug fixes.**

For a well-developed platform, proper tracking, management and solving of bug issues are needed. Bug tracking tools are used to keep track of software bugs in the software development process. Some of these tools have unique features such as time-tracking, access control, multiple languages, email notifications, mobile integration. Most of the tools do not only track the issues but also manage them. BugZilla<sup>22</sup> is one of the free and popular bugs tracking tools with awesome reporting features. Jira is another effective tool used to track and manage software bugs. Other effective open-source bug tracking tools include Redmine<sup>23</sup>, Trac<sup>24</sup>, Mantis<sup>25</sup>, among others.

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<sup>20</sup> <https://www.callbell.eu/en/>

<sup>21</sup> <https://reliefweb.int/help/api>

<sup>22</sup> <https://www.bugzilla.org/>

<sup>23</sup> <https://www.redmine.org/>

<sup>24</sup> <https://trac.edgewall.org/>

<sup>25</sup> <https://www.mantisbt.org/>

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