

# EXPRESSION OF INTEREST (EOI)

Development of Multi-Hazard Early Warning  
Communication System for Disaster Management

**DISASTER MANAGEMENT CENTRE**



## Contents

Section 1: EOI Schedule .....	6
Section 2: Introduction .....	7
2.1 About Disaster Management Centre .....	7
Section 3: Submission of Expression of Interest.....	8
Section 4: Scope of Work.....	9
Section 5: Specifications for Multi-Hazard Early Warning Communication System .....	11
5.1 Central Management Unit -DMC Colombo.....	11
5.2 Structural Design Base Unit – Remote Alarm Unit .....	13
5.3 Alarm dissemination module – Remote alarm Unit.....	13
5.4 Communication module – Remote alarm Unit.....	15
5.5 Technical Description .....	16
SECTION 6 – Additional information to be accompanied with the EOI.....	17
6.1 Information Pertaining to solution provider.....	17
6.2 Product and Product Support.....	18
6.3 List of Clients .....	18
6.4 Sites where a similar kind of project was developed/customized/implemented .....	19
6.5 Declaration regarding Clean Track by Solution provider.....	20

## Abbreviations

4G	-	Fourth Generation of Broadband Cellular Network
CSV	-	Comma-Separated Values
DMC	-	Disaster Management Centre
DR System	-	Disaster Recovery System
EOI	-	Expression of Interest
EOC	-	Emergency Operation Center
HTML	-	Hyper Text Markup Language
GIS	-	Geographic Information System
GSM	-	Global System for Mobile
GUI	-	Graphical User Interface
GB	-	Gigabyte
IPV6 / IPV4	-	Internet Protocol Version 6/4
ISP	-	Internet Services Provider
ICT	-	Information Communication Technology
IOT	-	Internet of Things
IP 54/65/66	-	Ingress Protection Rating 54/65/66
LL-ADSL	-	Leased Line / Asymmetric Digital Subscriber Line
LD	-	Liquidity Damage
LTE	-	Long Term Evolution
LPP	-	Limited Liability Partnership
LCD	-	Liquide Cristal Display
NCT	-	National Certificate of Technology
NDMC	-	National Disaster Management Council

OS	-	Operating System
PDF	-	Portable Document Format
SD	-	Secure Digital memory
USD	-	US Dollar
UHF	-	Ultra-High Frequency
VHF	-	Very High Frequency
VPN	-	Virtual Private Network
XML	-	Extensible Markup Language
XLS	-	Microsoft Excel file

## **Disclaimer**

Information contained in this Expression of Interest (EOI) document or information provided subsequently to applicants, whether verbally (Solution provider meeting) or documentary (hard copy) form by or on behalf of Disaster Management Centre of Sri Lanka (DMC), is on the basis of / subject to terms and conditions set out in this EOI document.

## SECTION 1: EOI SCHEDULE

S. No	Particulars	Description
1.	Name of the Project	Development of Multi-Hazard Early Warning Communication System for Disaster Management
2.	EOI Reference Number (Procurement Number)	DMC/FIN/2021(PROCU:06)
3.	Date of Publishing of EOI document	24 <sup>th</sup> of February 2021
4.	Last date and time of receiving applicants' queries in writing	10 <sup>th</sup> of February 2021
5.	Date and time for the Solution provider meeting	5 <sup>th</sup> of February 2021 at 2.00 p.m
6.	Last date and time for submission of EOI	16 <sup>th</sup> of February 2021 at 10.00 a.m
7.	Date and time of EOI opening	16 <sup>th</sup> of February 2021 at 10.30 a.m
8.	Place of EOI submission and opening of EOI	Disaster Management Center, Vidya Mawatha, Colombo 07
9.	Contact Details	I) Name : Major General S.Ranasinghe Position: Director General-DMC  Address:- Disaster Management Vidya Mawatha Colombo 07  Email- <a href="mailto:dg@dmc.gov.lk">dg@dmc.gov.lk</a>  II) Name : Thushitha Waidyarathna Position: Assistant Director- (Communication)-DMC Office :0112136236 Mob:- 0772129174

## **SECTION 2: INTRODUCTION**

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### **2.1 ABOUT DISASTER MANAGEMENT CENTRE**

Disaster Management Centre (DMC) is the lead agency for disaster management in Sri Lanka. It is mandated with the responsibility of implementing and coordinating national and sub-national level programs for reducing risk of disasters with the participation of all relevant stakeholders.

DMC was established as per the provisions of the Sri Lanka Disaster Management Act No. 13 of 2005 as the executing agency of the National Disaster Management Council (NDMC).

The main activities of the Disaster Management Centre (DMC) are Research and Development, Mitigation, Planning, Preparedness, Dissemination of Early Warning for the vulnerable communities, Emergency Response, Coordination of Relief and Post Disaster Activities in collaboration with other key agencies. DMC is the main focal point responsible for coordinating early warning, along with the relevant technical agencies and Technical Committees, its dissemination and for ensuring last mile dissemination of same. Public warning is a system, which must identify, detect, and assess the risk of a hazard, the accurate identification of the vulnerability of a population at risk, and finally the communication of information to the vulnerable communities about the threat in sufficient time and clarity so that they take action to avert negative consequences constitute the system of public warning. Warning induces people to act in order to prevent hazards from impending disasters. Effective public warning saves lives, reduces economic loss, reduces trauma and disruption in society and instils confidence and a sense of security in the public.

Multi Hazard Early warning communication is a major element of disaster risk reduction. It can prevent loss of life and reduce the economic and material impacts of hazardous events including disasters. To be effective, early warning communication systems need to actively involve the people and communities at risk from a range of hazards, facilitate public education and awareness of risks, disseminate messages and warnings efficiently and ensure that there is a constant state of preparedness and that early action is enabled.

### **SECTION 3: SUBMISSION OF EXPRESSION OF INTEREST**

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The applicant must fill in the Expression of Interest format as given. The applicant is required to provide the following information in addition to the filled EOI format:

- Company profile
- Scope of work for the proposed solution
- Design and architecture for the proposed solution
- Disaster recovery capability of the solution
- Experience (National and International) of installing and maintaining similar solution and island wide service stations and workshop facility should be located.
- Financial capabilities/ audited financial statements of the company
- Technical capabilities of the company/Staff Capacity.
- After sales service support /workshop capacity
- In case of a Joint Venture, the agreements among the parties local or foreign. (Main Solution Provider should be identified).
- Authorization letters. (to be provided if requested)
- Any other information that would support the applicant in context of the project in terms of credibility and suitability.

The applicant may also deliver a presentation on a date to be intimated in advance by DMC, Sri Lanka covering the above aspects.

Applicants will be short-listed based on the information provided in the EOI and the above aspects. DMC, Sri Lanka reserves all rights to accept or reject all or any EOI without assigning any reason.



## SECTION 4: SCOPE OF WORK

<b>Details of Employer</b>	Name: Director General, Disaster Management Centre  Address: No:120/2, Vidya Mawatha, Colombo 07, Sri Lanka
<b>Location(s)</b>	The central system stationed at DMC head office and Mobile Command vehicle.  Remote Units (refer the annex 01)
<b>The Work</b>	<b>Introduction</b>  After the 2004 Tsunami, 77 no's of warning towers were established to provide public warning in case of a tsunami to evacuate public from the coastal belt of Sri Lanka. The purpose of the new solution need to be upgraded the existing system and introduce new multi hazard early warning system. This solution is planned to be implemented in four phases,  Phase -I : Rehabilitation of existing 77 Early Warning Towers for the installation of new system. (expected implementation period within 90 days)  Phase - II: Additional 20 Early Warning Towers to be installed to cover the multi hazard in high vulnerable areas  Phase -III: Additional similar 100 Early Warning Towers to cover the other areas of Island-wide in batch wise.  Phase - IV: Similar 500 Early Warning Towers will be established Island-wide in future to improve the coverage of Early Warning.

## Work Requirement

The new proposed system must meet the required technical capabilities in reliability, efficiency, coverage, reporting and, all operational aspects while reducing the cost, complexity and maintenance over heads making it more sustainable to operate by DMC.

The system has two major components, the central system which will be stationed at DMC and the remote units which will be mounted on poles or walls to deliver the warning message in multiple modes (Sirens, sounds /lights and display screens. etc.)

The solution provider may utilize existing structures, equipment and introduce new multi hazard early warning system, including designing, supply and delivery, installation, commissioning and maintenance.

**The central system** must include a backup to assure continuously available system up-time. Disaster Recovery system must install in mobile command vehicle and Solution Provider must provide connectivity to the system using similar communication methods adopted to the Central System. The system must meet or exceed the specified technical requirements in the technical specifications given.

**The remote unit** must consist of following modules which would be field replaceable. Please refer to technical specifications given.

The power supply module (multiple sources with backup power system)

- The communication modules (Mode of communication: Satellite links, UHF/VHF, GSM/ 3G/4G /LTE - VPN with multiple SIM support and narrowband IOT)
- Core system (including flash-based memory module)
- Alarm dissemination module consisting loud sirens /loudspeakers /flashlights /LCD displays

	<p>The specifications of the above units must meet or exceed the given minimum specifications.</p> <p>The solution provider should have the capacity of providing technical support, training, comprehensive warranty for three (03) years and post warranty maintenance for 07 years.</p>
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## SECTION 5: SPECIFICATIONS FOR MULTI-HAZARD EARLY WARNING COMMUNICATION SYSTEM

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### 5.1 CENTRAL MANAGEMENT UNIT -DMC COLOMBO

No	Item	Description	Solution Provider Response
<b>5.1</b>			
Central Management Unit (DMC Emergency Operation Centre and Command Vehicle)			
1	Software	x86 Compatible OS (Opensource/ Licensed)	
		Language Support –English	
		User friendly with GUI	
		Customisable	
2	Message delivery time	Minimum 1 minute per 1000 Units	
3	Warning message	Multi-language voice (Sinhala, Tamil and English) – Clearly Audible sound	
4	Message Distribution	File should be distributing for internal memory of the individual devices from central location.	
5	Reporting	All activities could be logged	
		Printable report	
		Logs could be exported to XLS, PDF, CSV, XML, HTML formats	
6	Monitoring Dashboard	Display all device status in GIS based interface Multi-Screen support	

7	Alerts	Indicate all alarms and alerts	
8	Authentication level	Super user, user	
9	Remote alert triggering /control	Remote device should be operated individually, all, predefined groups, District-province-area wise and geospatially.	
10	Redundancy	Should be provided for guaranteed service availability of continuously available system. Central system functions could be executed form the remote location (Command vehicle)	
11	Testing	Test and report individual remote stations /regional based on GIS/group/entire system including the two central units	
12	Connectivity to alarm units	Satellite links, UHF/VHF, GSM/LTE/4G - VPN with multiple SIM support, Optical fiber and narrow-band IOT, support for IP based IPV6 / IPV4 networks. Dedicated LAN through cellular Data network (4G/3G) through multiple ISPs (multi SIM capability) Satellite link direct communication with DMC (without involvement of 3 <sup>rd</sup> party base stations) -Refer Section 5.4.	
13	Connectivity to district office	The system must be capable to connect 25 District Disaster Management EOC's in order to activate towers in that areas of responsibility with proper user level controls and authority over dedicated VPN. The national EOC must be able to monitor and take over control as required.	
14	User levels and Authentication	The system must use central authentication system capability to integrate to 3 <sup>rd</sup> party systems (LDAP/RADIUS/MS AD/etc ). It must maintain proper user levels based on geography, responsibility and operational capability which can be override by OIC of EOC operations at any time.	
15	DR System in Command Vehicle	Disaster Recovery system must be installed in mobile command vehicle and Solution Provider must provide connectivity to the system using similar communication methods adopted to the Central System as given in Section 5.4.	

## 5.2 STRUCTURAL DESIGN BASE UNIT – REMOTE ALARM UNIT

No	Item	Description	Solution Provider Response
5.2			
<b>Structural Design Base Unit – Remote Alarm Unit</b>			
1	Structure of the Unit	Pole or wall mounted, rust resistant powder coated indoor/outdoor housing (casing)	
2	Size of the unit	Dimension – W*H*L (Small Scale)	
		Weight (Light Weight)	
3	Power supply	Solar power	
		Battery backup operational time (24 hrs. in full operation mode)	
		Grid power 230 VAC Single Phase	
4	Protection	Indoor -(IP 54- Ingress Protection Rating) Outdoor-(IP 65-IP 66) Ingress Protection Rating)	
		Surge protection 50kA – SLS Standard 1472	
5	Physical security	Key lockable cabinet with door open alarm	

## 5.3 ALARM DISSEMINATION MODULE – REMOTE ALARM UNIT

No	Item	Description	Solution Provider Response
5.3			
<b>Technical Requirement Alarm dissemination module – Remote alarm Unit</b>			
1	Broadcasting Method	Siren + Pre-recorded voice	
		Color coded flash light indication	
		Message display-Connection support (optional)	
		Real time voice announcement	

2	Sound Travel Distance	750m or more (Solution Provider should specify the minimum and maximum distance with and without disturbance Sound performance certificate from government approved institute too should be provided. Proposed sound generation device must be purposely design for disaster communication.	
3	Device Capacity	Internal storage (minimum 4GB removable) configuration message could be stored in removable SD memory	
4	Message triggering method	Through the central management unit and manually.	
5	External sensor support	External Sensors should be supported (input/output/ Analog /Digital) e.g.-Wind speed/ water level/ rainfall info/ temperate / air pollution any other weather parameters / Door open alarm/ Sound and light	
6	Acknowledgement	Feedback on alarm / message triggering to the central management system. (auditable/ visible)	
7	Re-broadcast functionality (optional)	The device preferably capable of re-broadcast messages to localized devices.	

#### 5.4 COMMUNICATION MODULE – REMOTE ALARM UNIT

No 5.4	Item	Description	Solution Provider Response
Technical Requirement Communication module – Remote alarm Unit			
1	Communication Methods	VPN with Multiple SIM support GSM / 3G / 4G / LTE Radio (UHF/VHF) Satellite Optical Fiber LL-ADSL Narrowband IOT	
2	Combination communication modes (device should be supported to mention communication methods)	Combined communication including minimum two methods mentioned in Para 5.4.1 preferably with UHF/VHF as a redundancy method.	

## 5.5 TECHNICAL DESCRIPTION

No	Description
5.5	
1	<u>Central Management Unit</u> – A central control system where the controller is located at the DMC head office and able to manage all alarm systems in remote locations in an effective manner when it is needed.
2	<u>Message delivery time</u> – Minimum 1000 devices should receive early warning message within 1 minute.
3	<u>Monitoring Dashboard</u> – Dashboard should display all activities /alerts location wise.
4	<u>Communication</u> - Central control system should have dedicated local area network using GSM or ADSL/ILL to establish reliable communication mechanism.
5	<u>Broadcasting method of Remote Alarm Unit</u> – Alert Message should be broadcast as siren with pre-recorded voice. Flash light and message display supporting capability also should be available.
6	<u>Sound Travel Distance</u> - Alert message should be hear from minimum 750m radius away from the EW tower location.
7	<u>Continuous availability</u> - Guaranteed uptime of 99.999% and must be able to carry out maintenance without shutting down the system.

**Note:** Eligibility requirement and other criteria may be further clarified at the pre-solution provider meeting.



## SECTION 6 – ADDITIONAL INFORMATION TO BE ACCOMPANIED WITH THE EOI

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### 6.1 INFORMATION PERTAINING TO SOLUTION PROVIDER

No	General Data of the Company	Response
6.1		
1	Name of the Company	
2	Address of the Regd./Corp office	
3	Address of the works/Mfg. Unit/Plant	
4	Type of the Company (Proprietary/PrivateLtd./Public Ltd/Partnership/LPP etc)	
5	Name of the Contact Person	
6	Designation of the Contact Person	
7	Contact Detail (Landline, Mobile, Fax, E-Mail)	
8	Date of Incorporation/Establishment	
9	Nos. of Permanent Employees (Managerial, Technical - Development, Technical - Support, Others ( Pl. specify ))	
10	Nos. of Contractual Employees (Managerial, Technical - Development, Technical - Support, Others ( Pl. specify ))	
11	List of Branch Office/s	

6.2 PRODUCT AND PRODUCT SUPPORT

No 6.2	Description	Response
1	The vendor is authorized to market to DMC, in case an off the shelf third party equipment or software is being offered	
2	Availability of key project personnel with experience of similar project to be deployed in this project	
3	The off the shelf product if offered is audited and certified for security by third party auditor.	
4	Competency in giving end-to-end solution	
5	Evidence of reputed equipment used in the solution	
6	Evidence of adequate warranty of the equipment provided.	
7	Evidence of product support after the project is completed during and after the warranty period.	

6.3 LIST OF CLIENTS

No 6.3	Name of the Client	Location	Contract value	Project description	Contact information
1					
2					
3					
4					
5					

6.4 SITES WHERE A SIMILAR KIND OF PROJECT WAS DEVELOPED/CUSTOMIZED/IMPLEMENTED  
(Minimum 02)

No 6.4	Name of the Organization, Contact Person and Designation	Address and Contact details	Status of the Project (ongoing/implementation/ customization/completed)
1			
2			
3			

6.5 DECLARATION REGARDING CLEAN TRACK BY SOLUTION PROVIDER

(On Solution Provider Letterhead)

To:

Disaster Management Centre

No 120/2,

Vidya Mawatha

Colombo 07

Dear Sir,

EOI: Ref:

Dated .....

I have carefully gone through the Terms and Conditions contained in the above referred EOI. I hereby declare that my company/firm is not currently debarred/blacklisted by any Government / Semi Government organizations/ Institutions/ Private organization in Sri Lanka or abroad. I further certify that I am competent and authorized officer in my company/firm to make this declaration.

Yours faithfully,

(Signature of the Applicant)

Printed Name

Designation

Seal

Date: