SYSTEM REQUIREMENT SPECIFICATION FOR THE VENUE OPERATIONS CENTRE (VOC) FOR THE GAUTENG PROVINCIAL DISASTER MANAGEMENT CENTRE

Contract number : COGTA 4/2/2 – 2016/13

10804-00000-112002

ISSUE 1A

TITLE PAGE

TITLE	:	SYSTEM REQUIREMENT SPECIFICATION FOR THE VENUE OPERATIONS CENTRE (VOC) FOR THE GAUTENG PROVINCIAL DISASTER MANAGEMENT CENTRE
DOCUMENT NUMBER	:	10804-00000-112002 ISSUE 1A
CLASSIFICATION	:	RESTRICTED
SYNOPSIS	:	This System Requirement Specification (SyRS) contains the foundation of the system definition and forms the basis for the architecture, design, procurement, integration and verification of the VOC used by the Gauteng Provincial Disaster Management Centre.
DISTRIBUTION	:	Refer to distribution page.
PREPARED BY	:	I Stone
DATE	:	February 2018
APPROVED BY	:	Refer to approval page.

A Myburgh: Configuration Manager

APPROVAL PAGE

DESIGNATION	NAME	SIGNATURE	DATE
Approved: Denel Sovereign Security Solutions (Denel S3)			
Programme Manager	A. Hadwa		26/2/18.
Chief Systems Engineer	I. Stone		26/2/2018

AMENDMENT HISTORY

ISSUE	DATE	CHANGE SUMMARY	ECP NO.	UPDATED BY
1	November 2017	New Document	2057380	M Velayadum / I Stone
1A	February 2018	Small syntax corrections / adding info regarding acceptance	2057380	I Stone

DOCUMENT SOFTWARE

	PACKAGE	VERSION	FILENAME
Word Processor	MSWord	Word 2010	10804-00000-112002-1 System Requirement Specification for the VOC for th GP PDMC.docx

DISTRIBUTION:

Dr E Sithole (COGTA – Head: Gauteng PDMC)
Ms L Ngubane (COGTA – Project Manager: Gauteng PDMC)
A Kadwa (Denel S3 - Commercial Manager)
I Stone (Denel S3 – Chief Systems Engineer)

Master: Denel Sovereign Security Solutions SAP/PDM

CONTENTS

FIGURES

TABLES

NO TABLE OF FIGURES ENTRIES FOUND.

APPENDICES

No table of figures entries found.

1. INTRODUCTION AND SCOPE

1.1 IDENTIFICATION

Document title	SYSTEM REQUIREMENT SPECIFICATION FOR THE VENUE OPERATIONS CENTRE (VOC) FOR THE GAUTENG PROVINCIAL DISASTER MANAGEMENT CENTRE
Master record index	10804-00000
System Description	Venue Operations Centre
Abbreviation	VOC
Prime Contractor	Denel S3
Customer	COGTA
User	Gauteng Provincial Disaster Management Centre
Project	Gauteng Provincial Disaster Management C4 System and Mobile Unit
Contract Reference	COGTA 4/2/2 – 2016/13
Contract Reference - System description	COGTA 4/2/2 – 2016/13 • Technical Specification

1.2 INTENDED USE

This System Requirement Specification (SyRS) contains the output of the System Requirements Definition process. As stated in ISO/IEC 15288 (reference [17]), the purpose of the process is to transform the stakeholder, user orientated view of the desired capabilities (captured in the User Requirement Specification, reference [10] into technical requirements / view of a solution that meets the operation needs of the user.

The requirements specify the characteristics, attributes, functions and performance that will meet the user / stakeholder requirements.

This SyRS is produced by Denel Sovereign Security Solutions (S3) as per the scope of supply in the Statement of Work (SOW) to the Gauteng Province (GP) Provincial Disaster Management Centre (PDMC) (refer to [8]).

The intended audience to use this document is the technical acquisition and project team of the client and system designers and manufacturers.

1.3 BACKGROUND

Gauteng Provincial Disaster Management is in the process of constructing and renovating a new Provincial Disaster Management Centre (PDMC). For the PDMC to be operational and utilised efficiently it requires certain functionality. One of the requirements to perform the function of disaster management is a Venue Operations Centre (VOC). The VOC is used to facilitate the disaster management function at a disaster site. Communication with the PDMC and or MDMC's is required for continuous and real time updates to the DMIS or the information management function.

This document details the functional requirements which the Gauteng Province (GP) PDMC requires from a Venue Operations Centre.

1.4 SYSTEM OVERVIEW

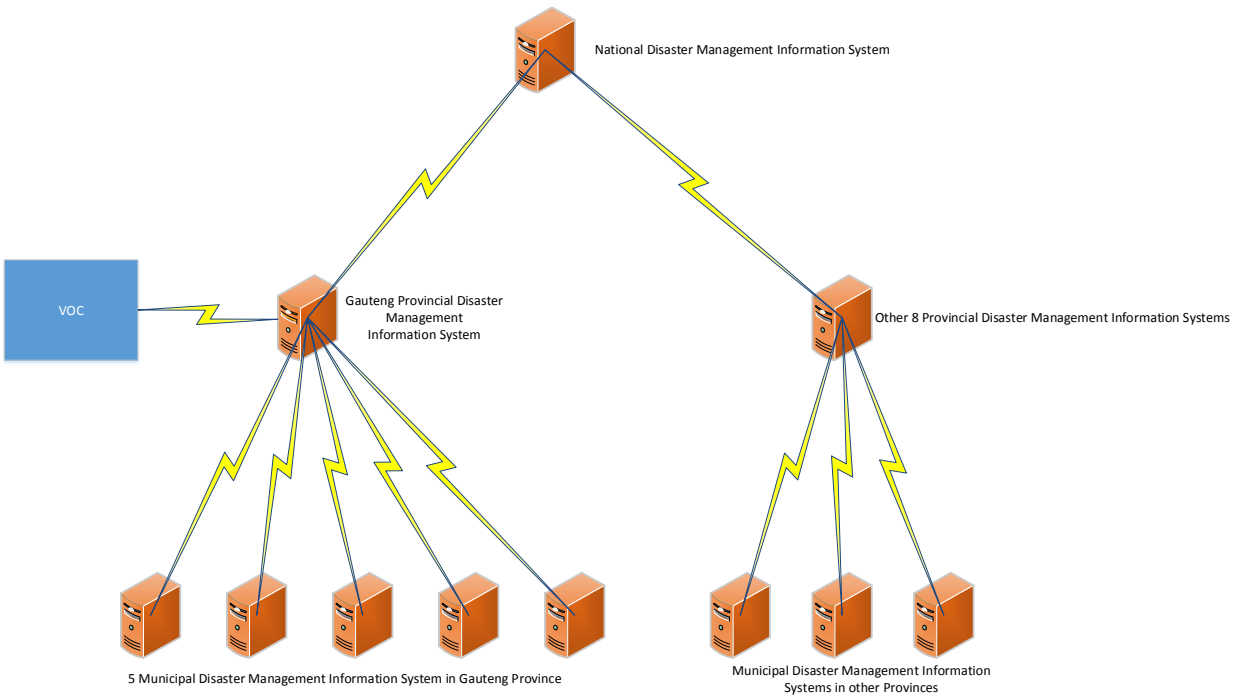


Figure 1 - Levels of Disaster Management Information Systems

Figure 1 shows the different levels of DMIS systems from a national perspective. At each level, the relevant system will interface to different role players. For example as shown in Figure 2, due to the responsibility of ESKOM as the national electricity supplier, ESKOM will interface on a national level to the national DMIS only. Issues like coal supply that may influence ESKOM to provide electricity will have a small impact on a municipality since ESKOM manages the power grid and can route electricity through the power grid from any power station to a particular municipality. However, a disaster / hazard may influence the supply of resources to an ESKOM power station. Most likely the information of that disaster / hazard will be supplied from a municipality or provincial DMIS system to the national system to share to ESKOM to plan and manage the primary role.

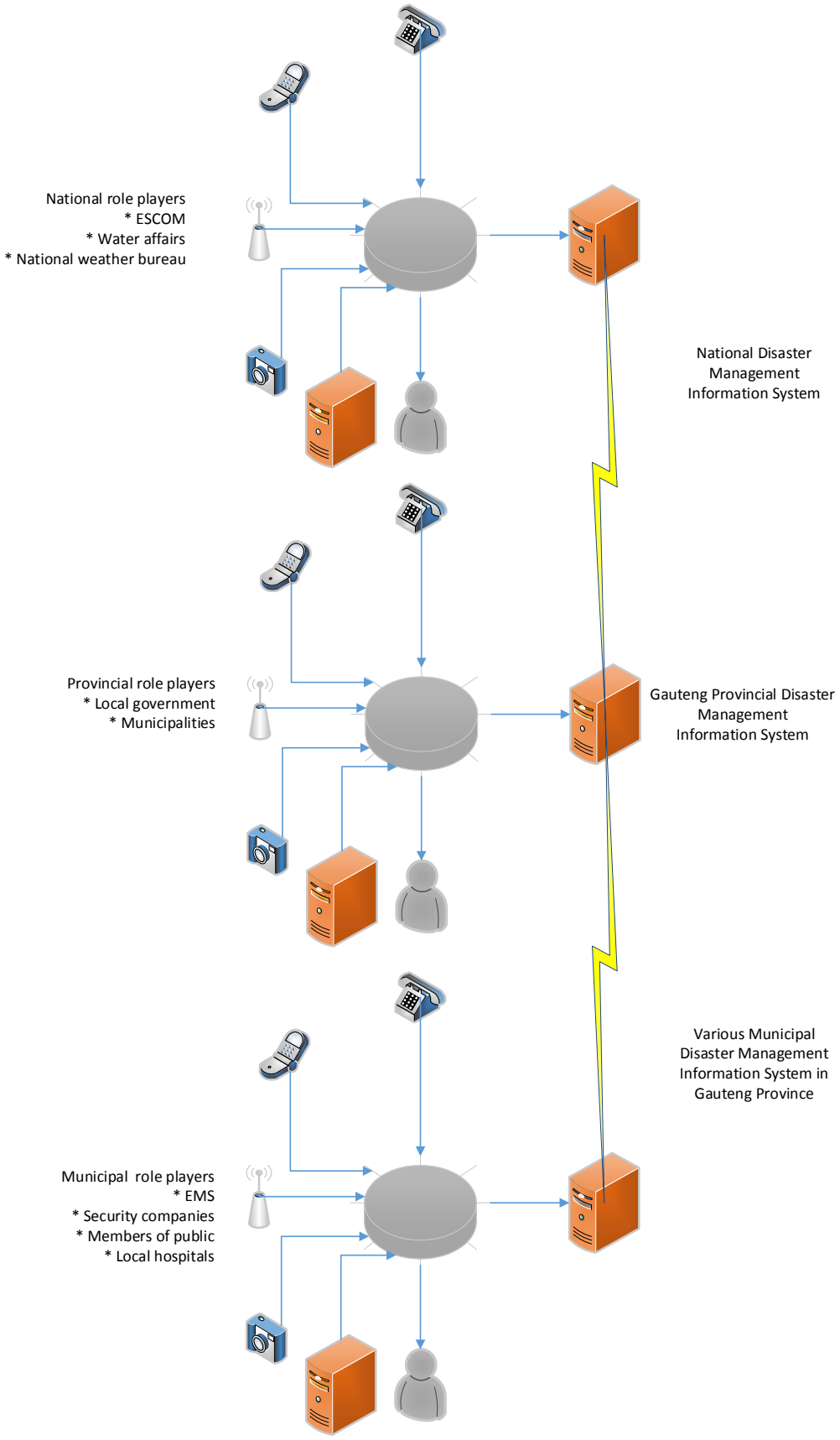


Figure 2 – Typical Interfaces to the GP DMIS

The provincial DMIS will get various data from municipal systems. There are currently various disparate systems in use by the different municipalities with different levels of functionality. Many of the systems are Call Taking and Dispatching systems, concentrating on managing the local police, fire and emergency sectors. In short, the primary function is a reactive type of system, and not preventative and predictive type of systems to limit potential disasters. The GP DMIS will still need to interface to these systems to share relevant data.

For a more detail description on the Concept of Use of the VOC, refer to § 6.1

1.5 DOCUMENT OVERVIEW AND USE

This document is structured using the Systems and software engineering – System life cycle processes, ISO/IEC 15288:2015 [17]

This document is structured as follows:

a. Section 1 – Introduction and Scope.

b. Section 2 – Reference Documents.

c. Section 3 – Meanings, Abbreviations and Definitions.

d. Section 4 - Requirements.

e. Section 5 – Verification.

f. Section 6 – Notes.

2. REFERENCE DOCUMENTS

In the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 APPLICABLE DOCUMENTS

[1] Act No. 85 of 1993, Occupational Health and Safety Act

[2] Act No. 57 of 2002: Disaster Management Act

[3] Act No. 4 of 2013, Protection of Personal Information Act

[4] Act No. 16 of 2015: Disaster Management Amendment Act, 2015

[5] Act No. 93 of 1996: National Road Traffic

[6] Disaster Management Act: Policy Framework for Disaster Risk Management in South Africa, April 2005

[7] South African Road Classification and Access Management Manual, document

[8] Statement of Work for the Disaster Management ICT Systems Study for the Gauteng Provincial Disaster Management Centre, document number 10478-30318-701002, Issue 3

[9] Gauteng Provincial Disaster Management Centre and Denel ISM Service Level Agreement, document number 10804-00502-517001, Issue 1

[10] User Requirement Specification for the Integrated Disaster Management Information System for the Gauteng Provincial Disaster Management Centre, 10804-00000-501001, Issue 1

[11] Minutes of meeting for the VOC User requirements, 10804-00501-953012 Issue 1

[12] User Requirement Specification for the Venue Operations Centre (VOC) for the Gauteng Provincial Disaster Management Centre, document number 10804-00000-501002, Issue 1

[13] System Requirement Specification for the Disaster Management System of The Gauteng Province Integrated Disaster Management Centre, document number 10804-00000-112001, Issue 1

2.2 REFERENCE DOCUMENTS

[14] Guide for writing requirements, INCOSE-TP-2010-006-02

[15] Systems Engineering Handbook, INCOSE-TP-2003-002-04 2015 Fourth Edition

[16] Ergonomic Design: Anthropometry and Environment, RSA-MIL-STD-127, Volume 1, Issue 4, dated 18 May 1994

[17] Systems and software engineering – System life cycle processes, ISO/IEC 15288:2015

3. MEANINGS, ABBREVIATIONS AND DEFINITIONS

3.1 MEANINGS

3.1.1 Words

The use of the following words within this document has meaning as follows:

a. **Shall** expresses a characteristic which is to be present in the item which is the subject of the specification, i.e. "shall" expresses a binding requirement.

b. **Should** expresses a target or goal to be pursued, but not necessarily achieved.

c. **May** expresses permissive guidance.

d. **Will** expresses a declaration of intent on the part of a party, usually the sponsoring or acquiring organization. "Will" does not express a binding requirement. "Will" may also be used in cases where the simple future tense is required.

3.1.2 Criticality

Each requirement in §4 includes a criticality indicator to be used for the implementation schedule for the requirement. The development of the DMIS will follow an iterative approach, meaning that not all functionality will be added to the initial deployment of the system. The reason can be:

a. System's to be interfaced to are not available yet.

b. The requirement for a certain VOC functionality is not clear in user terms yet, and will be expanded / changed as the user gains more experience using the VOC system.

c. Cost constraints.

The following indicators will be used to show the urgency to implement the function as follows;

a. **C1** – Function is important to be implemented and included in the first release of the VOC system under the current contract.

b. **C2** – Function to be preferred to be implemented and included in the first release of the VOC system under the current contract, if possible.

c. **C3** – Function to be designed for, but will not be required to be implemented and included in the first release of the VOC system under the current contract. Example: equipment that can be fitted later, but not supplied during this phase.

3.2 ABBREVIATIONS

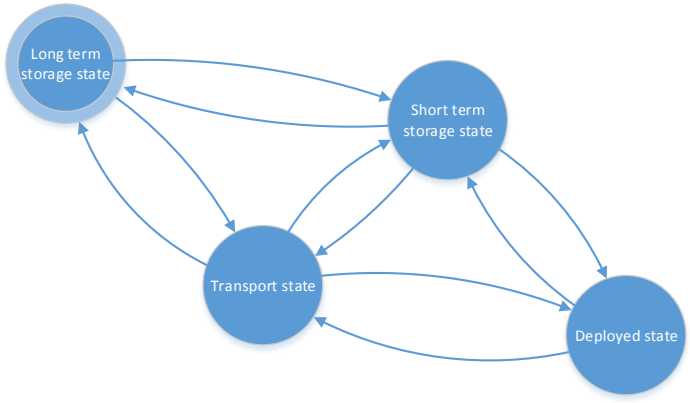
ABBREVIATION	DESCRIPTION
COGTA	Co-Operative Governance and Traditional Affairs
COTS	Commercial Off the Shelf
Denel S3	Denel Sovereign Security Solutions
DID	Data Item Description
DM	Disaster Management
DMIS	Disaster Management Information System
DOC	Disaster Operation Centre
FAT	Factory Acceptance Test
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Standard Organisation
JOC	Joint Operation Centre
kg	kilogram
KPA	Key Performance Area
m	meter
MDMC	Municipal Disaster Management Centre
mm	millimeter
NDMF	National Disaster Management Framework
OT&E	Operational Test and Evaluation
OT&Q	Operational Test and Qualification
PDMC	Provincial Disaster Management Centre
MDMC	Municipality Disaster Management Centre
NDMC	National Disaster Management Centre
SOW	Statement of Work
SysRS	System Requirement Specification
URS	User Requirement Specification
VCRM	Verification Cross Reference Matrix
VAC	Volts Alternating Current
VOC	Venue Operations Centre
W	Watt
Wi-Fi	Trademark term meaning IEEE 802.11x
WPA2	Wi-Fi Protected Access version 2

4. REQUIREMENTS

ID	REQUIREMENT DESCRIPTION	URS REQ #	CRITICALITY § 3.1.2)	VERIFICATION (§ 5.3 and 5.4)
	4.1 IDENTIFICATION OF EXTERNAL INTERFACES The VOC has the following interfaces:			
SyRS_1	a. Towing vehicle (IF1-1);	3.1.c 3.3.a 3.3.b 3.4.d	C1	
SyRS_2	b. Communication Interface (IF1-2).	3.1.a 3.1.b 3.5.c 3.5.d 3.6.a	C1/C3	
SyRS_3	c. Operator Interface (IF1-4)	3.2.b 3.2.c 3.2.g 3.2.h 3.2.i 3.3.c 3.5.a 3.5.f 3.5.g 3.5.h	C1	
SyRS_4	d. Electricity Interface (IF1-5)	3.5.b	C1	
SyRS_5	e. Physical Security Interface (IF1-6)	3.6.a 3.6.b	C1	
	4.2 IDENTIFICATION OF STATES AND MODES The VOC will be operated in the following states:			
SyRS_6	a. Long term storage state – In this state:			
SyRS_7	(1) The VOC shall be stored at the PDMC for long periods of time;			
SyRS_8	(2) All stabilizer feet shall be lowered as prescribed by the Original Equipment Manufacturer (OEM), if applicable.			
SyRS_9	(3) All containers containing perishable items (like water, food etc.) shall be empty.	3.7.b		
SyRS_10	(4) All corrosive materials / liquids shall be removed if prescribed by the OEM. This may include petrol in generators tanks, batteries in electronic equipment.	3.7.b		
SyRS_11	(5) Any equipment running of backup power shall be	3.7.d		

	disconnected.			
SyRS_12	(6) Communication equipment will be removed and stored in the PDMC.	3.7.c		
SyRS_13	(7) Be connected to the PDMC building electricity for equipment that requires power, example if the fridge cannot be shut down for extended periods of time.	3.7.d		
	Note: The required tasks will be determined according to the final design of the VOC and will be captured in the maintenance and operating manuals.	3.7.a 3.7.d 3.7.e		
SyRS_14	b. Transport state – In this state, the VOC shall:			
SyRS_15	(1) Be moved to the designated disaster management or short term storage site.			
SyRS_16	(2) Power any electronic equipment.			
SyRS_17	(3) Make use of power generator.			
	Note: The required tasks will be determined according to the final design of the VOC and will be captured in the maintenance and operating manuals.	3.7.a 3.7.d 3.7.e		
SyRS_18	c. Deployed state – In this state, the VOC shall:			
SyRS_19	(1) Be setup according to OEM guidelines, example stabiliser feet lowered.			
SyRS_20	(2) Be disconnected from the towing vehicle.			
SyRS_21	(3) Operate from an externally connected electricity source, or from its self-contained generator.			
SyRS_22	(4) Provide a workspace for DM personnel protecting them from the elements.	3.2.b 3.2.c		
	Note: The required tasks will be determined according to the final design of the VOC and will be captured in the maintenance and operating manuals.	3.7.a 3.7.d 3.7.e		
SyRS_23	d. Short term storage state. In this state:			
SyRS_24	(1) The VOC shall be stored for secure location for less than 24 hours.	3.2.f		
SyRS_25	(2) The communication equipment shall be powered down.			
SyRS_26	(3) The generator shall not be operated.			
	Note: The required tasks will be determined according to the final design of the VOC and will be captured in the maintenance and operating manuals.	3.7.a 3.7.d 3.7.e		

	4.3	**SYSTEM FUNCTION AND PERFORMANCE REQUIREMENTS**			
	4.3.1	**Electricity Power**			
		a. The VOC shall generate its own 230VAC power if a nearby power source is not available. Note: The VOC is can be performed by fitting an Uninterruptable Power Supply (UPS). This UPS will not supply power to the external lightning, kettle, fridges and microwaves.			
		b. The VOC shall be able to supply 5000W continuous power under all environmental conditions.			
		c. The VOC shall protect all ICT equipment by means of inline power filtering and surge protection. Note: This can be performed by fitting an Uninterruptable Power Supply (UPS). This UPS will not supply power to the equipment like kettles, fridges, microwaves and external lighting. It is foreseen that the ICT equipment will be less than 2000W.			
	4.3.2	**Food**			
		a. The VOC shall have the capability for users to warm up food. Note: A 700W or higher power microwave oven is recommended.			
		b. The VOC shall store sufficient fresh water for the daily human consumption of a minimum of 6 operators. Note: A 20 litre minimum water tank is recommended.			
		c. The water storage shall be able to be refilled with ease without using tools.			
		d. The water storage shall be able be to drained completely in preparation for storage.			
		e. The VOC shall have the capability to keep food cold. Note: An 80 litre minimum capacity fridge is recommended.			
		f. The VOC shall have the capability to boil water. Note: A small kettle is recommended, less than 1000W for one or two cups.			
		g. The VOC shall have a secure storage facility for consumables like tea and coffee. Note: A lockable draw or cabinet is sufficient.			
	4.3.3	**Stationery**			
		a. The VOC shall have secure storage facility for the			

		following stationery. (1) 2 x 500 page reams of A4 paper. (2) 1 x 500 page ream of A3 paper. (3) 1 x set of printer cartridges. Note: A lockable draw or cabinet is sufficient.			
	4.3.4	**Presentations**			
		a. The VOC shall have a retractable awning on the outside to be used for presentations.			
		b. The awning shall have the capability to cover 10 seated delegates minimum.			
		c. The delegates shall be able to monitor / view a 32 inch display while seated under the awning. Note: The display must either be mounted internally to the VOC, visible through a clear window. Or the VOC must have a lockable hatch opening through which the display can swing out.			
	4.3.5	**External lighting**			
		a. The VOC shall have external lighting fitted all around it to light up the area around the VOC during the night.			
SyRS_27	**4.4**	**RELATIONSHIP BETWEEN STATES AND MODES** The DMIS shall transition between the states as shown in Figure 3.			
SyRS_28		 Figure 3 – State Transitions and Relationships			
SyRS_29		a. Out of Long term storage state - The VOC shall not take longer than 30 minutes to be prepared from the long term storage state to any applicable state.			
SyRS_30		b. Into Long term storage state - The VOC shall not take longer than 30 minutes to be prepared for long term			

		storage state from any applicable state.			
SyRS_31		c. Out of Short term storage state - The VOC shall not take longer than 15 minutes to be prepared from the short term storage state to any applicable state.			
SyRS_32		d. Into Short term storage state - The VOC shall not take longer than 15 minutes to be prepared for short term storage state from any applicable state.			
SyRS_33		e. Out of Deployed state - The VOC shall not take longer than 30 minutes to be prepared from full operational state to any applicable state.			
SyRS_34		f. Into Deployed state - The VOC shall not take longer than 30 minutes to be prepared for full operation state.			
	4.5	**SYSTEM EXTERNAL INTERFACE REQUIREMENTS**			
	4.5.1	**Towing vehicle (IF1-1)**			
		a. The VOC shall be towable by a vehicle fitted with a ISO standard 50mm tow ball.	3.1.c 3.3.a 3.3.b 3.4.d	C1	
		b. The VOC shall be able to connect to the towing vehicle with a Ring 12S automotive connector.	3.1.c 3.3.a 3.3.b 3.4.d	C1	
	4.5.2	**Communication Interface (IF1-2).**			
		a. The VOC shall provide a Wi-Fi Access Point (AP) for DM users to connect their laptops / mobile devices to, to get access to the multifunction device and DMIS.	3.5.b	C1	
		b. The VOC shall secure all communication between the VOC and the DMIS using an Encryption Algorithm comparable to AES256 minimum.	3.5.b	C1	
		c. The VOC shall only allow communication between the VOC and the DMIS.	3.5.b	C1	
		d. The VOC shall make use of the LTE/GSM cellular network as primary communication.	3.5.b	C1	
		e. The VOC shall make provision to install IP capable tetra radios as backup communication in the future. Note: No details regarding radio types etc. is finalised for phase 1. The design will allow for additional power points, cabling, antenna mounting plates etc.	3.5.b	C3	
		f. The VOC should make provision to fit satellite communication equipment in the future.	3.5.b	C3	

	4.5.3	**Operator Interface (IF1-4)**			
		a. The VOC shall provide seating for 4 DM operators minimum.	3.2.a		
		b. Each seating shall allow for:			
		(1) A work area.			
		(2) Power.			
		c. The VOC shall optimise the floor area if less than 4 operators are present in the VOC. Note: this can be achieved by moveable / foldable chairs and collapsible work areas.	3.2.b 3.2.c		
		d. The VOC shall provide the capability to print A3 colour.	3.2.f		
		e. The VOC shall provide the capability to scan A3 colour.	3.2.f	C1	
		f. The VOC shall have a stow able shelter to house 10 standing people for briefing purposes. Note: An awning mounted to the side of the VOC, with detachable side panels will be sufficient.	3.5.g	C1	
		g. The VOC shall have a display screen used for presentation purposes.	3.5.g		
		h. The VOC shall provide light round the VOC during night time to a radius of 25 meters.	3.5.h	C1	
	4.5.4	**Electricity Interface (IF1-5)**	3.5.b	C1	
		a. The VOC shall be able to operate from South African 230VAC, 50Hz power as a minimum.	3.5.b	C1	
		b. The VOC shall provide a combination of following power points types:	3.5.b		
		(1) Type M.	3.5.b		
		(2) Type N (also compatible with plug type C).			
		c. The VOC shall be able to connect to a nearby building during the long term storage, short term storage and deployment states using:			
		(1) The VOC not further than 25m away from the building / power source.		C1	D-I
		(2) The power source has a Type M power socket.		C1	D-I
	4.5.5	**Physical Security Interface (IF1-6)**	3.6.a 3.6.b	C1	
		a. The VOC shall have the capability to lock all doors and	3.6.a		

		windows.			
		b. The VOC shall provide Kensington locks or similar to secure the operator's laptops (one per working area).	3.6.b		
	4.6	**SYSTEM ENVIRONMENTAL REQUIREMENTS**			
		a. Cooling - The VOC shall be able to control the inside temperature to 25°C maximum, while the outside ambient temperature is 45°C maximum.			
		b. Heating - The VOC should not make provision to control the inside temperature if the outside ambient temperature is below 20°C (No heating required).			
	4.7	**EXTERNAL RESOURCE UTILIZATION**			
		No additional resource requirements.			
	4.8	**SYSTEM PHYSICAL REQUIREMENTS**			
		a. The VOC shall comply to all South African traffic ordinances and regulations as specified in [5].			
		b. The VOC shall not exceed a tare of 1750 kg.	3.2e 3.4a		
		c. The VOC shall have a braking system if its fully loaded weight is above 750kg.	3.2e 3.4a		
		d. The interior height of the VOC should cater for the standing height of an average South African male.			
	4.9	**OTHER SYSTEM QUALITIES**			
	4.9.1	**Reliability** No additional requirements exist for the VOC.			
	4.9.2	**Maintainability**			
		a. The VOC shall have at least one spare tyre.			
		b. The VOC shall have all required tools to replace a tyre.			
		c. The VOC shall have all tools required during the different states without needing tools from support vehicles etc.			
	4.9.3	**Availability**			
SyRS_35		a. Preparation for deployment state – In this state, the identified personnel shall:			
SyRS_36		(1) Perform any maintenance tasks to prepare the VOC for transportation and/or deployment. This is includes, but not limited to checking tyre pressure, checking for valid license, check for road worthiness.	3.2.d		

SyRS_37		(2) Refuel of fuel tanks.	3.2.d		
SyRS_38		(3) Fill of water tanks.	3.2.d		
SyRS_39		(4) Refit the of communication equipment.	3.2.d		
SyRS_40		(5) Retract of the stabiliser feet.	3.2.d		
SyRS_41		(6) Connect to tow vehicle.	3.2.d		
SyRS_42		(7) Perform final checks.	3.2.d		
SyRS_43		b. Preparation for long term storage state. In this state:			
SyRS_44		(1) The Identified personnel shall empty all water containers.	3.7.a 3.7.b		
SyRS_45		(2) Remove all corrosive material / liquids from the VOC. This includes all leakage prone batteries etc.	3.7.a		
SyRS_46		(3) Remove all communication equipment for safe storage in the PDMC.	3.7.a 3.7.c		
SyRS_47		(4) Stabilise the VOC using the stabilising feet. (If applicable).	3.7.a		
		Note: The required tasks will be determined according to the final design of the VOC and will be captured in the maintenance and operating manuals.	3.7.a 3.7.d 3.7.e		
	4.9.4	**Reusability** The communication equipment, example LTE Wi-Fi router will be removed from the VOC during long term storage and will be reused in the PDMC.		C1	
	4.9.5	**Testability** All equipment shall be able to be tested functionaly without any specialised tools or test equipment.		C1	
	4.9.6	**Usability**			
		a. Each seating position shall cater for operators falling between the 5 and 95% percentile of the South African population according to the anthropometry data, refer to reference [16].	3.2i	C1	
	4.9.7	**Interchangeability**			
		a. The VOC design shall make use of Commercial Off the Shelf (COTS) parts and / or equipment where possible.			
	4.9.8	**Transportability**			
		a. The VOC shall adhere to South African towing laws and regulations as stipulated in ref [5].			
		b. The VOC design and manufacture shall conform to all		C1	

		South African Safety regulations (Ref [1]).			
	c.	The VOC shall be towable by a DM operator with a code EB license.		C1	
	d.	The VOC shall be transportable on all public urban and rural roads up to class 5 roads (Refer to [6]).	3.4.a	C1	
	e.	The VOC shall be transportable on informal gravel roads such as those in informal settlements.	3.4.a	C1	
	f.	The VOC should be transportable across off road terrain for short distances. (Classification still TBD, but axial rating, wheel size and profile specifications must be typically for offroad conditions. Example, 2 ton axial, 16 inch wheels).	3.4.a	C1	
	g.	The VOC shall stow the portable seating securely during transport.			
	4.9.9	**Ease of setup**			
	a.	The VOC shall be ready for transportation in less than 30 minutes when required at a disaster site.			
	b.	The VOC shall be fully operational in less than 30 minutes, after arriving at a deployment site.			
	4.9.10	**Expandability** The design of the VOC should cater for all the requirements listed as C3 as criticality.		C1	
	4.9.11	**Flexibility** The VOC shall be able to be used by Municipality Disaster Management Centre (MDMC) with minimum configuration. Note: It is foreseen than only the VPN needs to be reconfigured to connect to a specific MDMC.		C1	U-D
	4.9.12	**Interoperability**			
	a.	The communication equipment in the VOC shall interconnect using Transmission Control Protocol (TCP) / Internet Protocol (IP) interfaces.		C1	C-I
	b.	The VOC shall provide a Wi-Fi Access Point (AP) for DM users to connect their laptops / mobile devices to, to get access to the multifunction device and DMIS.			
	c.	The VOC Wi-Fi access point shall support 802.11ac as a minimum.		C1	C-I
	d.	The VOC Wi-Fi access point shall support Wi-Fi Protected Access version 2 (WPAv2) security protocols.		C1	C-I
	e.	The VOC Wi-Fi access point shall support Pre-Shared		C1	C-I

	Key (PSK) authentication methods.			
	4.9.13 Durability No additional requirements exist for the VOC.			
	4.10 DESIGN AND CONSTRUCTION REQUIREMENTS			
	4.10.1 Customer Furnished Property / Equipment Denel S3 shall specify the following equipment to be used in the VOC. The supplier of the VOC shall supply the equipment:			
	a. Communication equipment – It includes the make and model of :			
	(1) Wi-Fi access point (plus antenna and power supply). Preferred device will be Asus RT-AC53 AC750 or similar.			
	(2) Virtual Private Network (VPN) equipment. Preferred device will be a TBD, a small enclosed computer with dual Ethernet ports.	3.5.d		
	(3) GSM / LTE communication device (plus antenna and power supply). Preferred device will be Huawei B315.	3.5.d		
	(4) A3 printer / scanner plus power supply. Preferred device will be HP Pagewide Enterprise color 765dn or equivalent.	3.5.f		
	4.10.2 Standardisation			
	a. The VOC shall be a COTS unit capable of off-road capabilities, supplied by an Original Equipment Manufacturer (OEM), with minimum modification for purpose of Disaster Management.			
	4.11 PRECEDENCE OF REQUIREMENTS The following order of precedence shall apply;			
	a. Law	3.8.a	C1	
	b. Safety	3.8.e	C1	
	c. Cost	3.8.b	C1	
	d. Timescales	3.8.c	C1	
	e. Functional	3.8.d	C1	
	f. Ergonomics	3.8.e	C1	
	Note: The document attempts to list all requirements for the VOC, but the implementation may be influence by the available contract funds and timescales. The Criticality column of this table indicates what requirements are needed, but will only be implemented at a later stage during a follow up contract.			

5. VERIFICATION

5.1 VERIFICATION OBJECTIVE

The objective of the verification programme shall be to verify the VOC against the performance requirements specified in this VOC SyRS.

5.2 VERIFICATION PHILOSOPHY

A progressive, bottom-up verification approach shall be adopted based on the following principles and guidelines:

a. Requirements verification shall be conducted systematically and progressively, commencing at modular level and culminating at VOC User System interface level.

b. Integration testing, Factory Acceptance Tests (FATs), OT&E and OT&Q shall be used as the primary vehicles for verification testing.

c. Instructor and operator training material shall be evaluated and verified during operator and technician instructor training.

d. Trained user personnel shall be used during OT&E (where feasible) and during OT&Q.

5.3 LEVELS OF VERIFICATION

The DMIS shall be verified at four levels;

a. Component level (C) - These tests shall verify the functional characteristics of VOC components (e.g. Power requirements, storage requirements), and shall be conducted during Component acceptance testing and Component Factory Acceptance Tests (FATs).

b. Product System Level (P). These tests shall verify the functional characteristics of VOC as a Product System, including inter-component interfaces, and shall be conducted during system-level FATS and during OT&E under representative operational conditions using trained DM personnel.

c. User System Interface Level (U). These tests shall verify functional interfaces between the VOC and the operational environment and the DMIS, and shall be conducted during OT&Q (system commissioning).

5.4 VERIFICATION CATEGORIES

Four methods of verification shall be used;

d. Inspection (I). This method of verification is used to determine system characteristics by examination and comparison with drawings, flow diagrams, block diagrams and product specifications. Inspection is non-destructive and consists of visual examinations and simple tests.

e. Test (T). Testing is used to verify conformance of functional characteristics with operational and technical requirements. The test process will generate data that is normally recorded by precision measurement equipment.

f. Demonstration (D). Demonstration is used to verify conformance of functional characteristics with specified requirements by means of Go/No Go criteria without the use of elaborate measurement equipment.

g. Analysis (A). The analysis method of qualification involves the analysis or review of measured or simulated data and using the resultant data to verify conformance of characteristics with specified requirements. For proven products, certificates supported by suitable qualification results and reports may suffice. M&S is regarded as an analysis technique.

h. Certification (C). A declaration by a designated stakeholder, usually the supplier or developer.

6. NOTES

6.1 CONCEPT OF USE

a. The aim and function of the VOC for the GP PDMC is to temporarily facilitate the disaster management operators at a disaster site.

b. The VOC will allow the operators to perform similar functions at the disaster site as usually performed at the PDMC.

c. When an incident is declared a disaster, the PDMC will decide if the VOC needs to be deployed.

d. The VOC is used to facilitate post disaster assessments at a disaster site.

e. The VOC shall also be loaned to municipal disaster management centres that do not have access to a VOC.

f. The capabilities of the VOC when used by the MDMC's will be the same as those of the PDMC.

g. The ICT equipment will be removed from the VOC during long term storage at the PDMC.

h. The VOC may be connected to a nearby building with a power cord to supply power to the VOC during long term storage, short term storage and deployment. If no nearby building power is available, then the VOC will be self-sufficient by generating its own power for use.

i. In preparing for deployment, the ICT equipment will be fitted to the VOC, water tanks filled, tyres checked etc.

j. The VOC will be towed to a short term storage site closer to the disaster, or directly to the disaster site for deployment.

k. The purpose of the short term storage site is to secure the VOC for short periods when unoccupied, example a close by police station for overnight parking.

l. At the deployment site, the operators will use their own mobile device and laptop's to perform their duties. The operators will connect their devices wirelessly to the VOC Wi-Fi hotspot, that will allow them to connect securely to the DMIS over the internet. The communication link will not allow any other connections except to the DMIS, thus a virtual private network.

m. The operators will only work normal shifts and operators will rotate, therefor the VOC does not need to supply sleeping / housing facilities for operators for extended periods of time.

n. At the discretion of the PDMC head, the VOC will be moved to a secure location every night for short term storage.

o. At the beginning of every shift, the operators will bring with their own food and sufficient water for the day. The VOC only supplies capability to keep food cold, heat up food, and boil water for hot beverages. Also moving the VOC from the short term facility to the deployment site.

p. The DM operators will temporary sit in the VOC and fill in reports, add information to the DMIS system.

q. From time to time, it may be required to use the VOC as a briefing site. Therefor the VOC will have an awning / shelter that can be erected for this purpose. The VOC will have a large screen display, viewable by persons in the enclosed awning, for briefings.

6.2 CONCEPTUAL LAYOUT