

BEAMS INFORMATION FOR TENDER

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Contents

1	Рι	urpose of document
2	D	efinitions4
3	0	verview
4	Н	osting5
5	Se	erver Specifications
6	Se	ecurity5
7	D	atabase5
8	In	tegration6
9	Μ	lethods of downloading data from the BHU and uploading to BEAMS
9).1	Manually downloading of data with a Booyco tablet6
9).2	Live Data Transmission with the IOT Beacon (Wi-Fi)6
9	.3	Live Data Transmission with the IOT Beacon (GSM)6
9	.4	Live Data Transmission with the IOT Beacon (RF)6
10		Dashboards
11		BEAMS Industry Standard Reports for Surface and Underground
12		Report Parameters and Exports
13		Vehicle Interactions
14		Activity Calendar
15		Activity Map10
16		Pedestrian Tracking11
17		Vehicle Tracking12
18		Additional BEAMS features with an IOT Beacon fitted13
1	.8.1	Live Map13
1	.8.2	Message Center13

Table of Figures

Figure 1: Toggle report parameters	8
Figure 2: Copy or export reports	8
Figure 3: Vehicle Interactions Overview sample	8
Figure 4: Device Proximity Sample	9
Figure 5: System Health Check Sample	9
Figure 6: Activity Calendar Main screen	10
Figure 7: Activity Calendar Month view	10
Figure 8: Activity Calendar Hour view	10
Figure 9: Heat map sample	11
Figure 10: Pedestrian Tracking Main View (Shaft Clearance)	11
Figure 11: Detailed whereabouts of pedestrians	12
Figure 12: Vehicle tracking Gates View	12
Figure 13: Vehicle tracking Vehicles View	13
Figure 14: dafdsa	13
Figure 15: Message center	14
Figure 16: Custom Message sent from BEAMS Sample	14
Figure 17: Message Center logs	15



Figure 18: BHU Task list (Messages sent from the BHU to BEAMS)	15
Figure 19: BHU message from Message Center	15

Table of Tables

Table 2: Definition Table	4
Table 3: Recommended requirements for BEAMS application	5
Table 4: Additional requirements for a BEAMS	5



1 Purpose of document

2 Definitions

Abbreviation	Definition
API	Application Programming Interface
BEAMS	Booyco Electronics Asset Management System
BHU	Booyco Host Unit
BHU	Booyco Host Unit
CXS	Collision Awareness System
GPS	Global Positioning System
GSM	The Global System for Mobile Communications
IoT	Internet Of Things
MQTT	Message Queuing Telemetry Transport
MSSQL	Microsoft Structured Query Language
PDS	Pedestrian Detection System
RF	Radio Frequency
VM	Virtual Machine
WI-FI	Wireless Fidelity

Table 1: Definition Table



3 Overview

BEAMS is a web-based system that gives Booyco employees and clients a way to view, interact with and report the information collected by Booyco PDS systems. Booyco administrators use this same system to configure and check the proper functioning of your PDS system. BEAMS require a secure login which is created by the BEAMS team. BEAMS is compatible with the following browsers: Chrome, Firefox, Edge and Safari.

4 Hosting

BEAMS can be hosted on a client supplied VM (Virtual machine), physical server or on the Booyco cloud servers.

5 Server Specifications

When installing BEAMS on a client supplied server the following would be required:

Recommended requirements for BEAMS application

- 3GHz processor or better (8 core)
- 32GB 2400MHz DDR4 memory
- 1TB SSD or more
- Windows server 2019 or newer
- 1Gbps Network interface card

Table 2: Recommended requirements for BEAMS application

All additional software will be installed by the Booyco software installation team.

Backups of the hard drives should be part of the client's backup schedule. It is recommended to do a monthly full backup and a weekly incremental backup.

Additional requirements for a BEAMS						
For user creation and password resets	SMTP account required for user account creation					
For Google maps and server updates	HTTP access is required. Port 80 and 8080					
For maintenance and troubleshooting	VPN access is required					
API's	Will be discussed in technical meeting if applicable					
Ports to be opened	For CWS equipment 1873, 20873 and 50000					
	For CXS equipment 48071 and 48073					
Domains to be whitelisted	www.booycobeams.com					
	data.rifin.co.za					
	https://www.google.com/maps					

Table 3: Additional requirements for a BEAMS

6 Security

To authenticate on the interface BEAMS utilizes full SSL with 2048bit keys and SHA512 bit cyphers. The data itself is encrypted with SHA256.

7 Database

BEAMS makes use of MariaDB. The reasons for using MariaDB are:

- The costs of MSSQL and Oracle compared to MariaDB
- MariaDB is compatible with Microsoft Windows and Linux based servers
- Superior support for Clustered and distributed data handling
- Superior speed of the database specifically for the type of data BEAMS deals with
- Compatibility with Microsoft reporting services

<u>Please Note</u> that BEAMS can run on MSSQL or Oracle databases should a Booyco client require this, but the speed of the data handling should be considered as mentioned above.



8 Integration

BEAMS can be integrated with various other systems like time and attendance systems, fleet management systems, lamp room management systems or 3rd party dashboards.

Integration is done by means of API's and MQTT.

9 Methods of downloading data from the BHU and uploading to BEAMS

There are xx different methods of downloading data from the BHU and uploading the data to BEAMS.

9.1 Manually downloading of data with a Booyco tablet

A Booyco technician will download the data manually from the BHU with a Booyco tablet. He will then connect the tablet to an internet source and upload the data to BEAMS.

9.2 Live Data Transmission with the IOT Beacon (Wi-Fi)

A vehicle fitted with a BHU, other sensors and an IOT beacon can be configured to connect to a clients Wi-Fi network to transmit data live to either the BEAMS cloud server or a client's onsite server. The IOT Beacon supports Wi-Fi A/B/G/N/AC.

9.3 Live Data Transmission with the IOT Beacon (GSM)

A vehicle fitted with a BHU, other sensors and an IOT beacon can be configured to connect to a GSM network to transmit data live to either the BEAMS cloud server or a client's onsite server. Provision has been made for 2 sim cards to connect to 2 different service providers for redundancy.

9.4 Live Data Transmission with the IOT Beacon (RF)

A vehicle fitted with a BHU, other sensors and an IOT beacon can be configured to connect to a RF network to transmit data live to either the BEAMS cloud server or a client's onsite server. The RF network is created by means of other IOT Beacons configured as repeaters connecting to Booyco's Data Base Stations, which then transmits the data to the BEAMS server via a network connection on the same network as the BEAMS server.

10 Dashboards

The BEAMS dashboard shows a quick overview of the status of the company's BEAMS environment, recent activity and personalised warnings. The dashboard is configurable by BEAMS administrators by means of widgets. Different widgets display different data sets to get a quick overview of the Booyco data for a specific client or site. Current widgets available are:

- Area Occupation
- Counter Details
- Counter Overview
- Counter with Target
- Pedestrian Tracking
- Vehicle tracking
- Site area Occupation
- Top Pedestrian Interactions
- Top Vehicle Interactions
- Message Center
- Live Map view for vehicles

11 BEAMS Industry Standard Reports for Surface and Underground Vehicle Interaction Reports Vehicle Interaction summary

Vehicle Interaction Details



Device activity overview between dates Device proximity warnings All States (System Health Report) Emergency override Interaction, Warning (Single Vehicle) Interaction, Slow (Single Vehicle) Interaction, Stop (Single Vehicle)

Pedestrian Interaction Reports

Pedestrian Tag Interaction Summary Pedestrian Tag Interaction Details

Pedestrian Tracking Reports

Pedestrian Walkway Movements Pedestrian Walkway Movements by Tag ID Number of Tags in SAFE areas Number of Tags in Above Ground areas Number of Tags in Underground areas Number of Tags in Emergency areas Tag assigned User / Personnel / Equipment Tag Last Seen at (Service-Point) Tag Last Seen Date-Time

Vehicle Tracking Reports

Vehicle Movements Vehicle Movements by Vehicle ID Vehicle Tip Counter Report

Upload (Vehicle Logs) Reports

Uploads Last Upload Report Uploads for Site or Device

Vehicle Check list

Vehicle Check list

Site License Checks

Site License Checks

Map Reports (Surface)

Live Map Reports (Speed, Interactions, BHU Screen, Displayed on Google Maps) Archived Data Reports (Speed, Interactions, BHU Screen, Displayed on Google Maps) Activity Map Report Critical (Heat map) Activity Map Report Proximity (Heat map) Activity Map Report Movements (Heat map) Activity Map Report Combined (Heat map)

Activity Calendar Reports Activity Calendar Reports

12 Report Parameters and Exports

Report parameters such as Start date, End date, Selected Device and other parameters can be changed by using the Toggle reports parameter section above any reporting section.



Report : Device proximity warr	nings	Boggle report parameters Finned	
Report details			
Name		Report Code	Active
Device proximity warnings		DEVICE_PROXIMITY_WARNINGS	Yes
Report parameters			
Device *		Start Date *	End Date *
LHD989		05-10-2020	05-10-2020

Figure 1: Toggle report parameters

Where applicable reports can be copied to your clipboard, exported to Excel or exported as a PDF document.



Figure 2: Copy or export reports

Reports can also be autogenerated and scheduled to be mailed to specific users at specific intervals. This is configurable according to the client's requirements.

13 Vehicle Interactions

Vehicle Interactions offers comprehensive information on vehicle operations. The main recorded interactions include physical direction, speed and position (where fitted), proximity warnings of encroaching pedestrians, other vehicles, and activated emergency states.

The System health state is also monitored and provides insight to the health of the system during operation of the BHU.

Report	s										🖋 Edit R	eport
< Previous	page < Rep	ort list										
Report : V	ehicle clien	t summa	y 🛛 Tog	gle report p	arameters	Pinned						
Сору Ехс	el PDF								Se	arch:		
Date 1	More details	Logic Stop	Ped. Stop	Ped. Slow 11	Veh. Warn 10	Veh. Stop	Veh. Slow	Veh. Warning	Bypess 11	Slam 1	Logic Slow	VDS Alert
01-09-2019	More details	1260	0	0	0	0	0	0	0	0	0	0
02-09-2019	More details	1653	0	0	0	0	0	0	0	0	Ó	0
03-09-2019	More details	2947	0	0	0	0	0	0	0	0	0	0
04-09-2019	More details	4180	0	0	0	0	ô	0	0	0	0	0
05-09-2019	More details	2466	0	0	0	0	0	0	0	0	0	0
06-09-2019	More details	4337	0	0	0	0	0	0	0	0	0	0
07-09-2019	More details	5931	0	0	0	0	0	0	0	0	0	0
08-09-2019	More details	5072	0	0	0	0	0	0	0	0	0	0
09-09-2019	More details	2808	0	0	0	0	0	0	0	0	0	0

Figure 3: Vehicle Interactions Overview sample



Reports

Previous page Report list

Report : Device proximity warnings @ loggle report parameters

Copy Excel PDF

							Search:	
start firm	and time	Duration	Security	Type of Tag	The ID	Proximity Directions	topland Log	
02-06-2021 (80.0631	52-06-2021 06:06:35	00.0004.000	Given - Warting	Versable	\$ 3356627747		162586	
02-06-2021-08/09:32	02-08-2021 08:08:37	00/00/05/000	Green + Warting	Versitile	\$3356628953		162504	
02-06-2021 08/06/25	02-06-2021 06:08:57	80.09.02.000	Green - Warring	Haul / Transport	• 3259468615		162586	
02-06-2521 08:06:37	02-06-2021 26/06:40	00:00:02:000	Oreen - Warning	Haul / Transport	• 3258466615		182386	
02-06-2021 08/06:40	02-06-2021 26:06:44	00:0004:000	Green - Warning	Haul / Transport	• 3250466015		182586	
62-06-2021 09-26-13	62-06-2023 29-26-19	00.00:04.000	Green - Werning	Haul / fransport	# 1314012201		162504	
62-06-2021 09:29:27	02-06-2021 06/29/34	000,000,000	Vefices - Show	Versable	\$ \$156843912		182300	
62-06-2021 09-29-42	02-06-2021 09:30:12	00:00:01.000	Red - Stop	Versatile	3355843912		182586	
02-06-2021 09:30:26	02-06-2021 09:30:28	00/00/02.000	Red - Stop	Versatile	. 31155643912		182306	
02-06-2021 09:59:29	02-06-2001 09:59:41	00:00:12:000	Gissen - Warning	Surface Forming	• 1014012365		182526	
02-06-2021 09:59:58	10-06-2021 10:00:01	00:00:05.000	Green - Warring	Surface Forming	• 1514812285		182586	
02-06-2021 10:00:33	02-00-2021 10:00.85	80.000.000	Vellow - Slow	Mersable	\$ 5356827747		182390	
52-06-2021 10:00:44	40-86-2021 10-01-25	00:00:51.000	Red - Stop	Surface Forming	• 1514872365		182386	
02-06-2021 10/01/45	62-06-2021 10:01:48	00.00.03.000	Velice - Slow	Surface Forming	• 1314012260		182300	
02-06-2021 10/01/48	62-06-2021 10:01:50	00:00:02:000	Green - Warning	Surface Renning	• 1014012200		152300	
02-06-2021 10:01:54	62-06-2021 10:01:57	00.00.03.000	Red - Stop	Surface Forming	• 1514612265		182306	

Figure 4: Device Proximity Sample

Reports										🖋 i dit Heport
C Previous page	¢	Report list								
Report - Intera	ctio	n Logic (All Ever	ats Single Veh	icle) Contractor	Concerning Concerning	6				
vepone : mitera	curo	in codic (ven cven	its, single ren	a logge lopo	parameters a minimed					
Course Downell Date										
Copy Exces PD										
									Search	
Shart Time		End Time	Durition	State Class	State Type	State Value	Upload Log	Show Parameters		
96-01-2022 17:34(9)		06-01-2022 17:34:09	00.00.00.000	Rower	Power,Switched	Power_Down	346506			
06-01-2022 18:58:48		06-01-2022 18:34:48	00:00:00.000	fouer	Rower, Switched	Rover, Lip	346305	Show 1 Parameters		
06-01-2022 18/25/11		06-01-2022 1835.11	000.000.000	P05	Distries, Signal	None	246506			
06-01-2022 18:35:17		06-01-2032 1839:17	000000000	101	PDS, Conditions, Change	DryRoad	246506			
06-01-2022 18:35:17		06-01-2022 10:25:17	00:00:00:000	Vehicle intervention	Estop_Monitoring	Off	346506			
06-01-2022 18:35:17		06-01-2022 18:35:17	000000200	Hardware Self Test	Device, Status	DK.	146506			
06-01-2022 18:35:17		06-01-2022 18:35:17	00.00.00.000	Hardware Self Test	Device_Status	fail	346506			
06-01-2022 18:35:17		06-01-3022 1835/17	00.00.00.000	marchingre Self Test	Device,Status	CK .	240506			
06-01-2022 1835 17		06-01-2022 1835:17	000000000	Hardware Self Test	Device,Status	OK.	346509			
06-01-2022 18:35:17		06-01-2022 18:35:17	00:00:00:000	Hardware Self Test	Onvice_Status	OK.	346500			
06-01-2022 18:35:17		06-01-2022 18:35:17	00.00.00.000	Hardware Self Test	Device, Italua	OK.	146306			
06-01-2022 18-35-17		06-01-2012 18:55:17	00/00/00/000	System Self Test	VTS_SNAU	Not, fested	240506			
06-01-2022 18:35:17		06-01-2032 18:55:17	000000000	Software	Software Countral	End	240506			
06-01-2022 18/35:17		08-01-2022 18:55:17	00.00.00.000	System Self Test	Selt,Frenezee	Dealthyeted	246506			
06-01-2022 18:35:17		06-01-2012 18:35:37	9000000000	Dyttem Salf Test	liysters, Status	Fail	240306			
06-01-2022 18/38/17		06-01-2022 18:35:17	30.00.00.005	System Self Sest	liystere_3tatus	OK .	246505			
06-01-2022 18:35:17		06-01-2032 1839.17	000000000	System Self Test	System, Status	OK.	346506			
08-07-2022 18:35:17		00-01-2032 1835-17	00/00/00/000	System	Escapeliequerca	trid	240500			
00-01-2022 18:55:17		00-01-2022 10:35:17	00/00/00/000	Vehicle Intervention	feegotiation	Incomplete	146506			
00-01-2022 18:55:17		00-01-2022 1835-17	00/00/00/000	Hardware Salt Test	Device_Status	OK.	346506			
00-01-2022 18:35:17		06-01-2022 1835-17	00.00.00.000	work Zone	Operational_mork_Zone	worktone, and	340504			
06-01-2022 18:35:23		06-01-2022 18:35:23	000000.000	Vehicle Intervention	Extop, Monitoring	Or:	140504			
06-01-2022 18:35:23		06-01-2022 18:35:23	00.00.00.000	Hardware Soft Test	Onvice_Status	CIK.	140500			
96-01-2022 18:55/28		06-01-2022 18:53-26	00:00:00.000	Power	Power, Switched	Power_Down	140500			
06-01-2022 10:12:04		06-01-2022 18-12-04	0000000.000	Power	Power Switched	Power Up	145505	Show 1 Parameters		

Figure 5: System Health Check Sample

14 Activity Calendar

The activity calendar shows all vehicles that had activity during the selected calendar month. It shows the vehicles in order of most to least number of interactions. The type of activity can also be selected. The different activity types are Average movement speed, Number of logged movements, Ped/Vehicle stops and Ped/ Vehicle Slows.





Calendar Activity	y				Site		
					All site	ş	. 4
Month		Device *		Activity *			
August	🛩 2021 🛩 🗲	Select a device		✓ Average	movement speed	1	
Most active devices (Th	is month) 😧						
CMA 016	CMA 013	CMGR002	KD 30 SM GP	Sector 2	dir.	CARDA CONCARD	
CMIL 001	10 24 KB OF	CMDE CO1	CMA 017	CARA C	NE .	DF OS WP OF	
CMA 020	CHOR 607	ADT 15	NOT 011	Se www.	001	m.ut	
ID 25 PY 0P	ADT ST	MUS BOT	CMA 019	China a	23	CMA 018	
CMA 022	B DB CLA 337	CO CLA 335	CINDR 011	CMTL	002	MEX 002	
MOT 009	CITE 032	MEX 001	WE CDIV 011		VW GP	DO TOA	
KEW 820 MP	MOT 007	HIN OD RY GP	SGW 540 MP	K-EX 0	0	FEL 001	ŝ
CMOR 009	🖡 K-EX 05	K-EX OI	K-EX 04	Ph HMAG	759 MP	10 23 ZX GF	
CITR 029	CMWB 001	CSG 1241	CMDR 004(D8)	ADT 8	8	HIN 00 VI GP	
ADT 89	B 10 24 3C GP	Grader CFT 002	MDT 612	Re MADIT O	10	6 10 25 RH GP	
CSG 1239	HIN OD RJ GP	CUT Skid /5 003	CMDR (03(D8)	CMDR	010	CMTL 003	
CMDR 012	FELL 15	HP 68 VM GP	HN 83 ZL GP	B EXC S	8	CSG 8658	
CITR O16	CSM 015	PS 36	IND 289 MP	Ph HT 36	FS GP	CITR 026	
MDT 006	HD 39 85 GP Port	CH 60 38 GP	CMDR 008	ID 24	DF GP	CMA 008	
SCIR.002	MEX 004	EXC 52	HR 97 RX GP	5 104211	X GP	MDT 002	
CEMEN 103	MDT 001	MDT 005	FILL U 18	R MDT 0	08	DH 60 TR GP	
Charlenge (B 84 2115 /08	. IDU 527 MR	Per 46 VLOP	- 10 A4	10.00	COM 013	

Figure 6: Activity Calendar Main screen

August 2021

Mon		Tue		Wed		Thu		Fri		Sat		Sun	
													1
												AM	<u>PM</u>
	2	2)		4		5		6	1	7	1	8
AM	<u>PM</u>	AM	<u>PM</u>	AM	<u>PM</u>	AM	PM	AM	<u>PM</u>	AM	<u>PM</u>	АМ	PM
	9	1	0	1	1	1	2	1	3	1	4	1	5
АМ	ВW	AM	<u>PM</u>	<u>AM</u>	PM	AM	<u>PM</u>	АМ	PM	<u>AM</u>	<u>PM</u>	AM	<u>PM</u>
1	16	1	7	1	8	1	9	2	0	2	1	2	2
AM	<u>PM</u>	AM	PM	AM	PM	AM	<u>PM</u>	AM	<u>PM</u>	AM	<u>PM</u>	AM	<u>PM</u>
2	3	2	4	2	5	2	6	2	7	2	8	2	9
AM	<u>PM</u>	AM	PM	AM	PM	AM	PM	AM	PM	AM	<u>PM</u>	ΔМ	<u>PM</u>
3	90	3	1										
АМ	PM	AM	PM										

Figure 7: Activity Calendar Month view

13 August 2021, AM



Figure 8: Activity Calendar Hour view

15 Activity Map

The Activity Map displays a heat map of the selected site for areas where the Critical Zones (Stop zones), proximity interaction and movements.



BEAMS Information for Tender - BE.EN.T.418 Revision: 01 Approval Date: (Printed copies are uncontrolled)



Figure 9: Heat map sample

16 Pedestrian Tracking

Pedestrian Tracking offers a view to where people are located within a Site and how they moved from area to area during the day (or selectable historic period). Pedestrian tracking is made possible by personal RF identification tags worn by pedestrians as part of their kit and picked up by RF loops or readers positioned in walkways, doors, gates, turnstiles or other measurement points.

Pedestrian Tracking

Generated: 19-11-2019 18:23:23

The summary below shows the most current pe	edestrian area information for the last 24 hours. 😧
TrueVolve Fake test site	
Jabulani Lamp Room click for details 5 Unsafe Area	

Figure 10: Pedestrian Tracking Main View (Shaft Clearance)

The area Detailed view includes specifics of the pedestrians and their whereabouts. Hovering the mouse over a person (or tapping on a mobile device) will pop up the movement progression detail indicating the person's movement as "seen" by the system.



abu	lani Lamp R	s in Un	safe Are	a				1 In Safe	Area	
A E	Below grour	nd 🔞				A A	bove Groun	d 🔞		
0	Person		Last seer	n	Location	0	Person	Last se	en Location	
0	Lamp-Tag 48	005	09:41:45		Lifts-Ops gate	0	Lamp-Tag 500	09:15:4	5 Lift entry/ex	it gate
0	Lamp-Tag 3		08:36:00		Lifts-Ops gate	0	Lamp-Tag 6	08:58:3	0 Lift entry/ex	it gate
•	🛢 Lamo-Tao 4		0853:00		Lifts-Ops gate					
- 1	n Safe Area	 2 								
•	Person	Last see	n L	Location						
	Lamp-Tag 1	09:49:00		amp-parka	ade doorway					
I A abu	reas and ga Jani Lamp Roc	tes connect	ted to	this la	mp room Left side Wal	kway		Right Parking	g Area	
Gate	loo		Area.		Gate	Loop	Area	Gate	Loop	Area
amp	-left- Jabo way door - Lo	u 1-Shaft reader op #1	Left side Walkway	e y	Lamp-left- walkway door	Jabu 1-Shaft reader - Loop #1	Jabulani Lamp Room	lamp-parkade doorway	Jabu 1-Shaft reader - Loop #2	Jabulani Lamp Roon
lamp doon	-parkade Jabo	u 1-Shaft reader op #2	Right Parking	Area	Walkway- Corridor Arch	Not set	Shaft Corridor	Blue gate	Not set	Shaft Vehic ramp

Figure 11: Detailed whereabouts of pedestrians

17 Vehicle Tracking

With Booyco's vehicle tracking, all vehicles fitted with the required hardware can be accurately tracked on its physical location list view and a vehicle list view based on where tracking panels are installed.

BOOYCO					👗 (heps Bergs *
Clear Knoyth Destruction Clear Respect Destruction Clear Statistication Clear Statistication Clear Statistication St	C Back to Ball Vehicle Tracking Booyce If Case	o Toets Wolkery to Mine Scher ym 1 - Go Jier 1 - Scher Smi 9 - Scher Jier 1 1 - Scher 1 - Sch	Decline with Total on-2014 Web227 Web Opprove faithaut Sprove faithaut Sprove faithaut	SVG Weekeloop para No muumment found	
de Arens 19 Mais 20 Cherta 19 Denite Genges					

Figure 12: Vehicle tracking Gates View





Figure 13: Vehicle tracking Vehicles View

18 Additional BEAMS features with an IOT Beacon fitted

The IoT (Internet of Things) Beacon was designed to bring IoT functionality to mining vehicles and equipment. The IoT Beacon is an integrated IoT gateway that interfaces with the Booyco CXS system to provide IoT functionality. Fitted to a vehicle it provides GRSM (On Surface) and WIFI coverage (Surface and underground), for live tracking (On Surface), live data log extraction (Surface and underground), remote configurations and remote updates. The unit is also supplied with battery back-up.

18.1 Live Map

The Timeline report displays historical or live movements and interactions of vehicles fitted with GPS systems. Map data will be transmitted live to BEAMS when the vehicle is fitted with an IoT Beacon. If the vehicle is not fitted with an IoT Beacon data can still be downloaded manually and uploaded to BEAMS for archived Map reporting.



Figure 14: dafdsa

18.2 Message Center

With the message Center and IoT beacons fitted you have the ability to send and receive messages between the BHU fitted in the cab of the vehicle and BEAMS. All messages are logged with Who sent the message, who it was sent to, when it was sent, was it received, when it was received and what response was given by the operator.



nd Message		Site*		Create new	
		Booyco 7	loets	Add Message	
Inread Messages 🔞	Mark all messages o	n this page Read			
Time	Туре	Device	Site	Text	
28-10-2021 11:12:19	A Received	BOOVCO DEMO	Booyco Toets	Breakdown - Mechanical	Mark Read
28-10-2021 11:10:02	A Received	CMBG CONCOLE T	Booyco Tnets	Emergency	Mark Red
28-10-2021 11:06:44	Acknowledge	BOOYCO DEMO	Bodyco Toets	Go To Tip 1	Mat feed
28-10-2021 10:14:17	A Received	BOOYCO HELIX	Booyco Toeta	Emergency	Mark Read
28-10-2021 10:13:42	A Received	BOOYCO HEUX	Booyco Toets	Emergency	D Mark Read
28-10-2021 00:58:08	A Received	BOOWCO HILLIN	Booyco Tuets	Breakdown - Mechanical	D Mark Read
28-10-2021 08:57:12	A Received	BOOVCO HEUX	Booyco Toeta	Breakdown - Mechanical	Mark Read
27-10-2021 19:27:22	2. Acknowledge	E BOOYCO DEMO	Booyco Toets	Go To Workshop	@ Mark Read
27-10-2021 19:25:58	A Received	WT I W26ISGP	Booyco Toets	Emergency	· Mark Read
27-10-2021 19:16:11	Received	ECONCO DEMO	Booyco Toeta	Emergency	Mark Read

Figure 15: Message center

Messages can be customized. This means from the sound that is played on the BHU, message types, alert pictures displayed on the BHU and responses given by the operator.

Site	Targeted d	devices.	Reached devices					
Booyco Toets	0		0					
Message Details								
Message Type	Audio to p	olay	Require Acknow	ledge Tim	e To Live	Display Seconds	(0 is indefinite)	
Message 🗸 🗘	Message	Alert 👻	Yes	v 3	hours	60	5	
Message *								
Go To Tip 1								6
Buttons 🕜		Button Text 7						
Delete Button 1	~	Yes						
Button Identifier *		Button Text *						
Delete Button 4	v	No						

Figure 16: Custom Message sent from BEAMS Sample



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	a		-	

IOCIVCO DEMO			interenge rent	
	Booyco Toets	2021-10-28 11:12:19	Ereakdown - Mechanical	
IOOVCO DEMO	Booyco Toets	2021-10-28 11:11:39	Emergency	
IOOYCO DEMO	Booyco Toets	2021-10-28 11:10:26	Emergency	
IOOVCO DEMO	Booyco Toeta	2021-10-28 11:10:02	Emergency	
K68GZ GP	Booyco Toets	2021-10-28 10:23:17	Emergency	
W26//SGP	Booyco Toets	2021-10-28 10:19:42	Emergency	
W26JSGP	Booyco Toets	2021-10-28 10:19:18	Emergency	
IOOVCO HILUX	Booyco Toets	2021-10-28 10:14:17	Emergency	
OOYCO HLUX	Booyco Toets	2021-10-28 10:13:42	Emergancy	
W26ISGP	Booyco Toets	2021-10-28 09:36:40	Emergency	
IOOYCO HIEUX	Booyco Toets	2021-10-28 09:09:12	Breakdown - Mechanical	
IOOYCO HILUX	Booyco Toets	2021-10-28 08:58:08	Breakdown - Mechanical	
OOVCO HILUX	Booyco Toets	2021-10-28 08:57:12	Breakdown - Mechanical	
DOVCO DEMO	Booyco Toets	2021-10-27 19:49:19	Emergency	
W26/5GP	Booyco Toets	2021-10-27 19:27:30	Emergency	
N26JSGP	Booyco Toets	2021-10-27 19:25-58	Emergency	
OOYCO DEMO	Booyco Toets	2021-10-27 19:16:11	Emergency	
N26/SGP	Booyco Toets	2021-10-27 16:53:11	Emergency	
N26/5GP	Booyco Toets	2021-10-27 16:52:08	Emergency	
K68GZ GP	Booyco Toets	2021-10-27 16:42:52	Breakdown - Mechanical	

M & Export Received Messages

Figure 17: Message Center logs



Figure 18: BHU Task list (Messages sent from the BHU to BEAMS)



Figure 19: BHU message from Message Center



BEAMS Information for Tender - BE.EN.T.418 Revision: 01 Approval Date: (Printed copies are uncontrolled)