



The portable LifeBot 5 : The most advanced mobile integrated healthcare telemedicine system in the world.

Primary Features and Benefits:

- **Fully Integrated** – only telemedicine system fully integrated – eliminates costly separate devices or gadgets training and confusion
- **Quality Remote Care** – expedites access to patient data and eliminates geographic and logistical barriers to prompt quality care
- **Multifunction All-In-One** – ability to scale routine care to effectively handle unexpected emergencies
- **Less Errors = Less Risks** – more complete information means more accurate assessments and reduced risks
- **Situational Awareness** – know precisely what you are dealing with real-time live before patient arrival
- **Accountable Care** – provides ideal infrastructure for ACOs to expedite meaningful use and reimbursement
- **Saves Lives** – more timely more accurate decisions reduce morbidity, mortality and improves outcomes
- **Award Winning** – Best Portable Telemedicine Award 2014. Winner twice of General Maxwell Thurman Award by James "Red" Duke, Jr. M.D. and former U.S. Assistant Secretary of Defense (military affairs) S. Ward Cassells, M.D. at American Telemedicine Association. Best ems1.com product of 2013.

overview:

The LifeBot 5 is a unique modular integration of hardware and software that may be upgraded as technology advances. It is the only fully mobile portable system designed to contain all the critical features required to deliver and communicate advanced healthcare both on-site and remotely to a hospital, clinic, physician, or medical specialist.

The system is based upon the DREAMS Project, a \$14 million research and development effort funded by U.S. Army Medical Research and Materiel Command (UCMC) and the Telemedicine and Technology Research Center (TATRC) as the premier telemedicine system for military use, now available commercially worldwide exclusively through LifeBot and its authorized agents.

exclusive general features:

1. **LifeBot DREAMS:** Only system with military project DREAMS software and hardware adaptations. (see specifications below)
2. **Dynamic Design:** Fully modular and upgradable as mobile and healthcare technologies advance. Only system upgradable to exclusive patented and patent pending LifeBot technologies. This allows a process of miniaturization.
3. **On-Board Communications;** Intelligent audio, video, and data communications managed and aggregated using cellular 3G, 4G LTE, data radio, and satellite. Cellular compatibility 200+ modems, 100+ carriers, 50+ countries worldwide.
4. **LifeBot CONNECT:** Secure data management to send and receive patient call records to Central Database Repository for Health Information Exchange (HIE).
5. **Field Portable Display:** 10.1 inch display adequate to manage run and patient records, display higher resolution videos and images; view and support applications such as ultrasound and examination cameras.
6. **Proven Component Structure:** Design utilizes select components with proven record of regulatory compliance, reliability and availability.
7. **Protection:** All components are housed in a rigid protective aluminum alloy space-frame with rigid protective soft pouches that provide for additional durability and protection against weather not inherent in most field portable equipment today.
8. **Pre-Connection:** All patient to monitor and hardware interfaces are connected before use to accelerate care with isolation from environmental elements.
9. **Convection Air-Cooled:** System cooling is accomplished without the use of fans to reduce cross contamination and susceptibility to weather and use elements.
10. **Environment and Power Ratings:** Most components, both external and internal, are IEC IP rated and listed as compliant with all power systems ratings for both line and vehicular operation and use in both domestic and international systems.
11. **Serviceability:** Design offers significantly reduced down-time because individual components may be readily serviced, replaced or upgraded as needed.

general characteristics and compliance:

- Class I FDA MDDS Compliant (medical components 510(k) compliant)
- All major components are CE certified and FCC Part 15 compliant for acquisition of flight operations and aviation use conformance.
- Dimensions: 20" width x 12" height x 12" depth (51cm x 30.5cm x 30.5cm)
- Height without 1.5" diameter carrying handle 9 inches (23cm)
- Weight (Nominal as equipped): 15-25 lbs. (6.8kg – 11.4kg)



rugged industrial keyboard:

- IP-65 , FCC Part 15 Class B Listed, CE Compliant
- NEMA 4X and
- Tactile Keys with Mechanical Snap Feedback
- Red LED Backlighting for Nighttime or Ambient Light Use
- Operating Temperatures -4F to +140F (-20C to +60C)
- 100% Humidity Resistant
- Dimensions: 10.04" x 7.41" x .71" (255 mm x 188.2 mm x 18 mm)
- Weight: 1.0 lbs. (0.45 kg)

tablet options:

Tablet Options:

- Military Package
- NATO Green Color with Ground Army (includes additional RFI and EMI shielding)

Tablet Display Options:

- Night Vision Filter Detachable Overlay

Tablet Communications Options:

- Intel® Centrino Advanced N-6235 Wireless 802.11 a/g/n/BT 4.0
- GPS Ublox Neo-M8N
- Modem MDC card or Mini PCI

optical barcode scanner-reader:

(Industrial Grade - FDA Compliance)

- Dimensions: 1.15in x 2.3in x 2.44in (3cm x 5.9cm x 6.2cm)
- 1D and 2D Barcodes compatible plus parsing of driver's licenses and other ID documents.
- IP54 Environment sealing
- Drop Specs: 30in/176 cm drops to concrete
- Electrical Safety: ETL, VDE, CETL, EN60950, Ctick, VCCI
- Laser Class: FDA CDRH Class II/ IEC 825 Class 1 Devices
- Humidity: Operating 95% RH, non-condensing at 50 degrees C
- Sensor Resolution: 752(H) x 480(V) gray scale
- Aiming Element: 655 +/- 10nm (VLD)
- Illumination Element: 625 +/- 5nm (LED)
- Field of View: 39.6 degrees horizontal 25.9 degrees vertical
- EMI/RFI Compliant: FCC Part 15 Class B, ICES-003 Class B,
- CISPR22 Class B
- Operating temp: -4 degrees to 122 degrees F (-20 to 50 C)

rugged tablet specification:

Most popular ruggedized tablet system for U.S. Army field drone control and used in battlefield robotics control: Custom configuration for LifeBot 5:

General Processor and Interfaces:

- Intel® Core™ i7-3537U 2GHz Processor (Turbo Boost up to 3.1 GHz), 4MB Intel® Smart Cache
- 4GB RAM DDR3 1600 MHz
- Intel® HD Graphics 4000
- Mini Display Port x1, USB 3.0 x2; option to upgrade to GLAN x1/Mini Display Port x1/USB 3.0 x1 Optional Fischer I/O
- HD audio and mono speakers embedded digital mic
- Genuine Microsoft Windows 10 Professional
- 11.1V, 4200mAh Lithium-Ion
- 128 GB mSATA II SSD, upgradable to 256 or 512 GB mSATA III SSD
- Front Panel Keys: Power and Membrane Function Keys with LED Backlight
- Weight 3.06 lbs. (1.39 kg)
- Dimensions: 11.02 in x 7.32 in x 0.79 in (280 mm x 186 mm x 20 mm) (without bumpers)
- Black (optional NATO Green)
- Magnesium (separate internal heating system and cooling)
- Special installed shielded interfaces for LifeBot

Display:

- 10.1-inch Display WUXGA (16:10 1920 x 1200) Backlit LED
- Sunlight readable, anti-reflective treatment 1000 NIT Brightness
- Touch screen upgradable to invisible mode and night vision

Operating Requirements:

- Operating Temperatures: -4°F to 122°F / -20°C to 50°C
- AC Input: 100V~240V/50-60Hz; 90 W max
- DC input: 12~32 V with BVA (Fischer 3-pin)
- Complies with Military Power Source

Compliance Standards:

- MIL-STD 810G Certified
 - Shock: 516.6, Procedure I
 - Vibration: 514.6, Procedure I, Category 20
 - Rain: 506.5, Procedure II
 - Humidity: 507.5, Procedure II (aggravated)
 - Salt Fog: 509.5
 - Altitude: Method 501.5, Procedure I and II; Operating: 15,000 ft (4,572 m); Storage: 40,000 ft (12,180 m)
 - High/Low Temperature: Method 501.5, Procedure I and II; Method 502.5, Procedure I and II, Operating: -4°F to 131°F / -20°C to 55°C; Storage: -40°F to 158°F / -40°C to 70°C; Optional Upgrade
 - Temperature Shock: : 503.5, Procedure I-A; Operating: -4°F to 140°F/-20°C to 60°C
- IEC IP-65 Certified
 - Dust-tight; water jet
- Mil-STD 461F (Mil Package only)
- FCC Part 15 Compliant Tested
- CE Certified

Security HIPAA Compliance:

- Local Full Disk Encryption to Set Standards to protect patient and call data

Local Security:

- Password Security (supervisor and user)
- Kensington Cable Lock Slot

cellular and systems compatibility:

- Certified compatibility with 200+ commercial cellular modems using 100+ multiple carriers in 50+ countries internationally worldwide
- Certified ViaSAT Compatible.
- Certified SpearNet Military Data Radio Compatible
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ICM options:

- 24 hour batteries run time
- Certified ViaSAT Compatible.
- Certified SpearNet Military Data Radio Compatible

Lifebot interceptor[™] options:

- 12 Lead ECG
- Temp
- NIBP
- Invasive BP
- SpO2 Pulse Ox
- etCO2 – Capnography

intelligent communications manager (ICM) module:

Manages connectivity and live bandwidth aggregation and integration: Cellular Data, 3G, 4G, LTE, Digital Radio, Satellite, Ethernet and Wi-Fi

CUSTOM Sub-Components (where supplied):

- CE , RoHS, and FCC Part 15 Compliant
- FCC ID# N7NMC770 and ID# U8G-P1710
- 802.11b/g/n Wi-Fi as WAN and/or AP
- On-Board GPS and Antenna (2-3db gain)
- 100MPS Based Ethernet Interface
- Stateful Firewall, DoS Prevention
- 256-bit AES Encryption
- Outdoor IP-55 All-weather compliant.
- Mobile vehicular power protection.
- RF Port Lighting Immunity – ITU-T K.20 (+/- 1.5 kV)
- Shock and Vibration Resistance: EN 61373:1999 IEC 61373:1999
- EN 50155: Railway applications - Equipment on Rolling Stock.
- EN 61000: Electromagnetic Compatibility
- Automatic Hot-Failover to viable wireless resources, (less than 1 second nominal)
- 5-port micro-processor controlled USB Hub
- Ports: WAN, Dual –LAN, Cellular and GPS antennas
- Dimensions: 10" x 6" x 3.5" (25.5cm x 15.3cm x 8.9cm)
- Weight: (varies according to individual custom configurations)
- Battery: Lithium-Ion (typical 5 hours run time)
- Special hardwired shielded and sealed interfaces for mobile telemedicine communications applications.

Lifebot connect[™] services specifications

Manages Connectivity Security and Central Data Repository Servers:

Cloud Based Communications and Data Management Services by LifeBot:

1. **Persistent:** Cellular interfaces connection Quality of Service management.
2. **Hard Disconnect Restore:** Reinitializes data connection after 1 minute or less of complete hard disconnect.
3. **Critical Disaster Recovery Over-Ride :** Hot-Failover Protection using World-Wide Regionalized Network for low routing hops
4. **Health Information Exchange (HIE) :** Capabilities for Patient Call Data Collection to Central Repository Server to and from multiple LifeBot 5 systems.
5. **Remote Windows User Policy :** Administration to Manage conventional PC Monitoring and Abuse
6. **Secure HIPAA Connectivity:** 256-bit AES encryption over secure VPN

Lifebot interceptor[™] module specifications

Medical Patient Data Acquisition Module:

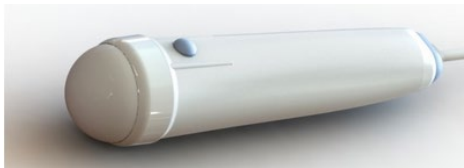
- FDA 510(k) Compliant - CE Certified
- IP44 Environmental Protection
- MASIMO[™] SET Technologies acquiring: ECG Single Lead, 12-lead ECG, SPo2, ETo2, NIBP, Dual temperatures, Respiration, Dual Non-Invasive BP, with Central USB Interface
- CE Compliant: TUV No. U8 06 05 41505 043
- Medical Device Class IIb EC Directive 93/42/EEC compliance.
- Conforms to : IEC 60601-1, 60601-1-2, 60601-1-1, 6061-2-27, 60601-2-30, 60601-2-34, 60601-2-49, EN 865, EN 1060-1, 1060-3, 12470-4, 475, CISPR 11 class B
- Operating temperatures: (32 degrees to 104 degrees F (0 C to 40 C)
- Atmosphere: 700 to 1060 HPa
- Dimensions: (8.5in w x 2 in h x 4.25 in d) (22.6 x 5.9 x 10.8cm)
- Weight: 2.32 lbs. (1.1 kg)

Lifebot interceptor™ module specifications		
ECG		
Leads	Simultaneous, synchronous recording of all 9 active electrodes giving 12 leads	
Filters		
Mains	• 50 Hz / 60 Hz / off	
Baseline	• 0.05 Hz / 0.15 Hz / 0.30 Hz / 0.60 Hz	
Myogram	• 25 Hz / 35 Hz / 150 Hz (off)	
Artefact Suppression	On / Off	
Patient cable	3-lead, 5-lead, 10-lead cable	
Heart rate	15 – 300 beats/min	
Lead display	Selection of 1 or 3 simultaneous leads	
Sensitivity	10/25 mm/mV	
ECG amplifier		
Sampling frequency	• 1000 Hz	
Pacemaker detection	• $\geq \pm 2$ mV / ≥ 0.1 ms	
Protection	• Fully isolated, defibrillation protected >5kV	
Line frequency filter	• Distortion-free suppression of superimposed 50 or 60 Hz sinusoidal interferences by means of adaptive digital filtering.	
Temperature		
Sensor	YSI 401, rectal, skin or ear	
Amplifier	Fully isolated, defibrillation protected >5kV	
Sampling Frequency	125 Hz	
Measurement interval	1x per second	
Measurement range	15 °C to 45 °C	
Resolution	0.1 °C	
Accuracy	+ 0.1° C	
NIBP - Non-invasive Blood Pressure		
Measurement	Automatic or manual	
Measuring intervals	2 to 240 minutes	
Measuring method	Oscillometric	
Measurement range	15 to 300 mmHg	
Deflation rate	3 to 9 mmHg	
Cuff	Adult, Child and Neonates	
IBP - Invasive Blood Pressure		
Measurement range...	400 mmHg	
Accuracy	1 mmHg or $\pm 1\%$ (the greater value is assumed)	
Sampling Frequency	500 Hz	
Amplifier	Fully isolated, defibrillation protected >5kV	
Calibration	Manual or automatic	
SpO2 – Pulse oximetry		
Module	Masimo™	Nellcor Nell-2
Sensor	Various sensors	Various sensors
Amplifier	Fully isolated, defibrillation protected >5kV	Fully isolated, defibrillation protected >5kV
Sampling Frequency	62.5 Hz	62.5 Hz
Operation	Normal and high	-
Accuracy		
SpO2	•Adults 70 to 100% ± 2 digits	•Adults 70 to 100% ± 2 digits
PP	•30 to 199/min ± 4 digits	•20 to 250/min ± 3 digits
Calibration range	70 to 100% (calibration is fixed, no calibration required)	70 to 100% (calibration is fixed, no calibration required)
Measurement range		
SpO2	•1 to 100%	•1 to 100%
PP	•25 to 240/min	•20 to 300/min
PP Calculation	Averaged over 4 / 8 / 16 beats	Averaged over 4 / 8 / 16 beats



Lifebot interceptor™ module specifications		
etCO2 - Capnography Compact infrared mainstream and side stream gas analyzer		
Trademarks	PHASEIN IRMATM, PHASEIN ISATM, NomolineTM	
PHASEIN AB patents	SE519766; SE519779; SE523461; SE524086	
Standards	EN 60601-1; EN/ISO 21647; EN 864; EN 6060-1-6; EN 60601-1-8, EN 19; EN 980; 60601-1-4; EN 60601-1-2; EN 13014; ISO 594-1; ISO 594-2; EN 1041; ISO 5356-1; IEC 60529; EN ISO 10993-1	
Module	Phasein IRMA mainstream	Phasein ISA side stream
Measuring range	0...15 % (± 0.2 vol % + 2 % of reading)	0...15 % (±0.2 vol % + 2 % of reading)
Accuracy	15... 25 % (unspecified)	15... 25 % (unspecified)
Respiration rate	0-150 /min	0-150 /min
Rise time	CO2 <90 ms	CO2 <200 ms
Total system response time	< 1 seconds	< 3 seconds (with 2 m sampling line)
Sampling flow rate	-	50 (±10) ml/min

Ultrasound Options:



Abdominal†

Applications

- OB GYN - Position, Date, IUD position
- Liver, Kidney, Aorta, Heart
- Urology - Bladder PVR, POUR
- Trauma – FAST Exam, IVC

Specifications

Depth Range: 4 cm – 24 cm
 Focal Zone: 4 cm – 15 cm
 Pulse Frequency: 2.5 – 5.0 MHz
 Focal Point: 7.5 cm
 Scan Angle: 90 degrees
 Patient Contact: 35 mm
 Frame Rate: 12 fps
 Size: 17.3 cm by 4.1 cm
 Weight: 250 g

†All Ultrasound options are compliant with FDA 510(k) clearance, CE mark in the European Union, ISO certified, and medical device license from Health Canada.

Stethoscope Options:



Digital Stethoscope

Applications

- Diagnostic aid for the amplification of heart, lung and other body sounds
- Hardware is FDA compliant

Specifications

Filter ranges: 30Hz – 500Hz, 60Hz - 500Hz, 80Hz - 500Hz, 100Hz - 1000Hz, 200Hz - 2000Hz +/-3dB
 Lithium Ion battery with USB charger (4 hrs. listening or 100 patients)
 3.5 mm headphone/charger port

Examination Cameras:



Dermatoscope Exam Camera

The Digital Dermatoscope (Dermascope) is a special purpose digital camera combined with a high magnification polarizing lens and multiple ultra-bright LEDs. FDA and CE Compliant.

Technical Details

Resolution: True 2.0 Megapixels (1600x1200)
 Capture: snapshot button to capture images
 Magnification: Native Optical 15x – 50x Digital 15x 0 150x
 Lens: Dual lenses 2-layer glass , 650nm cutoff
 Lighting: 8 ultra-bright LEDs fully adjustable
 Interface: USB 2.0
 Warranty: 1 year limited



Otoscope Exam Camera

The Digital Video Otoscope is a special purpose digital video camera combined with a high magnification lens and multiple ultra-bright LEDs. FDA and CE compliant.

Technical Details

Resolution: True 1.3 Megapixels (1280x1024)
 Capture: snapshot button to capture images
 Magnification: Native Optical: 15x-50x Digital 15x-150x
 Lens: Dual Lenses 3-layer glass 650nm cutoff
 Lighting: Ultrabright LEDs fully adjustable
 Interface: USB 2.0
 Warranty: 1 year limited



Iris-Scope Examination Camera

The Digital Video Iris scope is a special purpose digital video camera combined with a high magnification lens and multiple ultra-bright LEDs. FDA and CE compliant.

Technical Details

Resolution: True 1.3 Megapixels (1280x1024)
 Capture: snapshot button to capture images
 Magnification: Native Optical: 15x-50x Digital 15x-150x
 Lens: Dual Lenses 3-layer glass 650nm cutoff
 Lighting: Ultrabright LEDs fully adjustable
 Interface: USB 2.0
 Warranty: 1 year limited

<p>Primary Benefits:</p> <p>LifeBot[®] DREAMS[™] is the most advanced telemedicine system in the world for day-to-day care and for emergencies or disasters.</p> <p>Quality Care – expedites access to patient data and eliminates geographic and logistical barriers to care</p> <p>Reduced Costs – substantially reduces healthcare costs in almost every category</p> <p>Community Paramedicine – Deliver EMS pre-hospital primary care</p> <p>Less Errors = Less Risks – more complete information means more accurate assessments</p> <p>Care Coordination – matches level of care required at the outset</p> <p>Accelerated Care – documentation assessment support for faster safer and more accurate diagnoses</p> <p>Tested Proven – the most proven system used for six years and in major disasters</p> <p>Reimbursement - Improve reimbursement under value-based purchasing</p> <p>Accountable Care - Provides ideal infrastructure for ACOs to expedite meaningful use</p> <p>Saves lives – more timely more accurate decisions reduce morbidity, mortality and improves outcomes</p> <p>Situational Awareness – know precisely what you are dealing with real-time live before arrival</p> <p>Lower Personnel Risks – video monitoring makes patients more compliant and protects staff</p> <p>Transportable Data – can be ported to any EHR, ePCR, or call record system</p> <p>Syndromic Surveillance – early detection of outbreaks and bioterrorism through documentation assessment support data</p> <p>Multifunction All-In-One – ability to scale routine care to effectively handle unexpected emergencies</p> <p>Mobile Portability – take it into the home, business, and the battlefield</p> <p>Deployable – wearable back-pack and portable systems take the fight for lives to the battlefield and the home</p> <p>Defense Military – especially designed by the military for the battlefield</p>	<p>LifeBot[®] DREAMS[™] Standard System Features:</p> <p>Real-Time Live Usable Data - video, voice, data appears at both physician and patient ends real-time with live information displays</p> <p>Multi-Function – may be utilized for day to day use but may handle emergencies or disasters</p> <p>Hands-Free Automatic - transparent so focus is on patient and quality of care instead of verbal communications</p> <p>Automatic Mobile Connectivity – exclusive Intelligent Communications Manager (ICM) transparently enables reliable cellular, Wi-Fi , LTE, WiMAX connections and aggregates bandwidth. (Not required or furnished with cart or client systems with dedicated high-capacity fixed Internet connectivity.)</p> <p>All Physiological Data – live clinical waveforms, single, 12 and 15 lead ECG, HR, NIBP, dual invasive BP, SpO² with plethysmogram, etCO² with capnogram, tpCO², dual temperatures</p> <p>Multi-Camera Handling – handles up to five separate cameras including individual pan zoom tilt and transmission speeds and resolutions</p> <p>Preset Camera Positions – to rapidly view select patient locations</p> <p>Standardized User Interface – enables cost savings through uniform interactive design in both pre-hospital and clinical use</p> <p>Instant Data Usability – real-time data shared automatically without separate parties or costly third-party servers assures timely critical patient assessments</p> <p>Saves Data – No Connectivity – if connectivity is compromised select data may be stored in local system database</p> <p>Important Data First – if data connection is restored most important life-saving data is sent first with priority status</p> <p>Region of Interest – Remote physician or intensivist may screen draw frame area of video increasing focus while reducing bandwidth used</p> <p>Tele-Stration – physician or intensivist may instruct through play-by-play screen drawing in multiple colors for critical real-time guidance in procedures</p> <p>Selective Recording – may selectively record physiological data</p> <p>Real-Time Live ePCR EHR - live transmission of patient medical record, medical and call reporting proceeds communicated from both ends with update indicators</p> <p>Export e-Mail Print EHR – call records and physiological information may be printed, exported to Adobe PDF and e-mailed</p> <p>Tagged Patient Data – all data call tagged to prevent e-PCR EHR record data mix-up</p> <p>Data Parity – ePCR EHR and physiological data may be stored automatically at both ends</p> <p>Inventory Management – on-board scanner allows scanning of supplies for inventory management and resupply of ambulances</p> <p>Driver's License ID Scanner – allows scanning directly into EHR or ePCR of critical contact information speeding care</p> <p>Portable Data – standard SQL database storage allows export of all data to standard EHR ePCR systems</p> <p>AES Encryption – all data transmissions encrypted for HIPAA compliance and safer more secure voice video transmissions</p> <p>Maps and AVL – real-time GPS maps location and optional automatic vehicle tracking complete with estimated time of arrival – may also be used to optimize fast transport to nearest facility</p> <p>Text Messaging – each user can send silent or highly specific text messages during critical or sensitive procedures</p>	<p>Optional Features:</p> <p>Lifebot Surface Pro 4 Tablet – physician or intensivist may utilize 1.73 pound tablet for full remote access</p> <p>LifeBot Desktop - physician or intensivist may utilize high-resolution all-in-one PC for full remote real-time access</p> <p>Proven Documentation Support – most proven decision assistance software to substantially reduce assessment times, risks and associated costs</p> <p>Remote Ultrasound – may utilize mobile ultrasound with enhanced display on tablet or all-in-one PC with remote transmission and annotation</p> <p>Instruments Compatibility – may support field monitor defibrillators, exam cameras, electronic stethoscopes, video laryngoscopes</p> <p>Satellite and Data Radio – wireless connectivity via satellite or data radio links</p> <p>Radio and Telephone – voice communications via radio or telephone</p> <p>Port to Popular EHR ePCR Systems – Utilities may be developed to port data collected to popular patient record systems</p> <p>Patents – integration of future critical patented technologies only available from LifeBot</p> <p>Important Notes:</p> <p>Utilized during the hurricane crises of Katrina, Rita, and Ike, LifeBot DREAMS systems are the only telemedicine systems in the world proven in use during major disasters.</p> <p>Features presented in this documentation are dependent upon use of both compatible specified hardware and adequate network bandwidth or connectivity. Specifications subject to change without notice.</p>
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