

디지털 헬스케어

Digital Healthcare System



# SMB Digital CareGiver system

[ State-of-the-Art smart medical environment ]

Digital bedside caregiver that prioritizes customer-oriented treatment



ITI Technology

improving patient care  
**SMB**

# Digital SMT CareGiver System

Good for patient Healthcare and BedTable  
Patient Customized medical service and Infotainment

SMT-1017M



- Display: 17.3" FHD Screen
- Viewing angle adjustable
- Pneumatic springs Height lift of 79 to 114cm

P-Cap 10 Points Touch Tech.  
Android OS 11.1  
Wi-Fi/Ethernet support  
Bluetooth 5.2  
Camera, Digital microphone(op.)  
Smart card reader (option)

SMT-1015



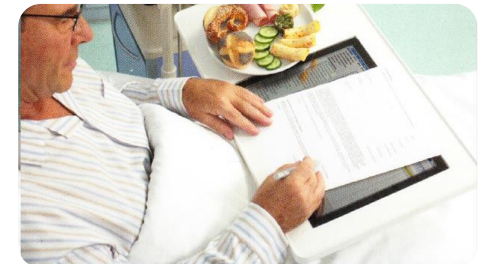
- Bedside Caregiver system
- Display: 15.6" (18.5")FHD Screen
- Mounting ARM viewing angle Controllable

- Medical Health Grade
- Waterproof on front
- Infection control mechanism
- Antimicrobial surfaces
- Tempered Glass, Scratch Free
- IP65 compatible

SMB-PS2



- Wired Remote (optional)
- Speaker, Microphone built-in
- TV, Android control
- Bar Code Reader (option)
- Smart Sensor (option)



# SMB UI /UX Solution [ex.]



## Hospitalization and Education

Guidance /  
Education

## Hospital Life

Today's  
schedule

Billing

Chart

Medication

Discharge  
medicine

Doctor Health  
Vital Sensing

## Application (Request)

Meal

Cleaning

Nurse call

Certificate

Medical  
explanation

## Nursing Information (Entering)

Food

Weight and  
excretion

Memo

## Psychological Quarantine

Self-diagnosis  
for dipression



Steve Kim  
33063072

Ward1, 10-112



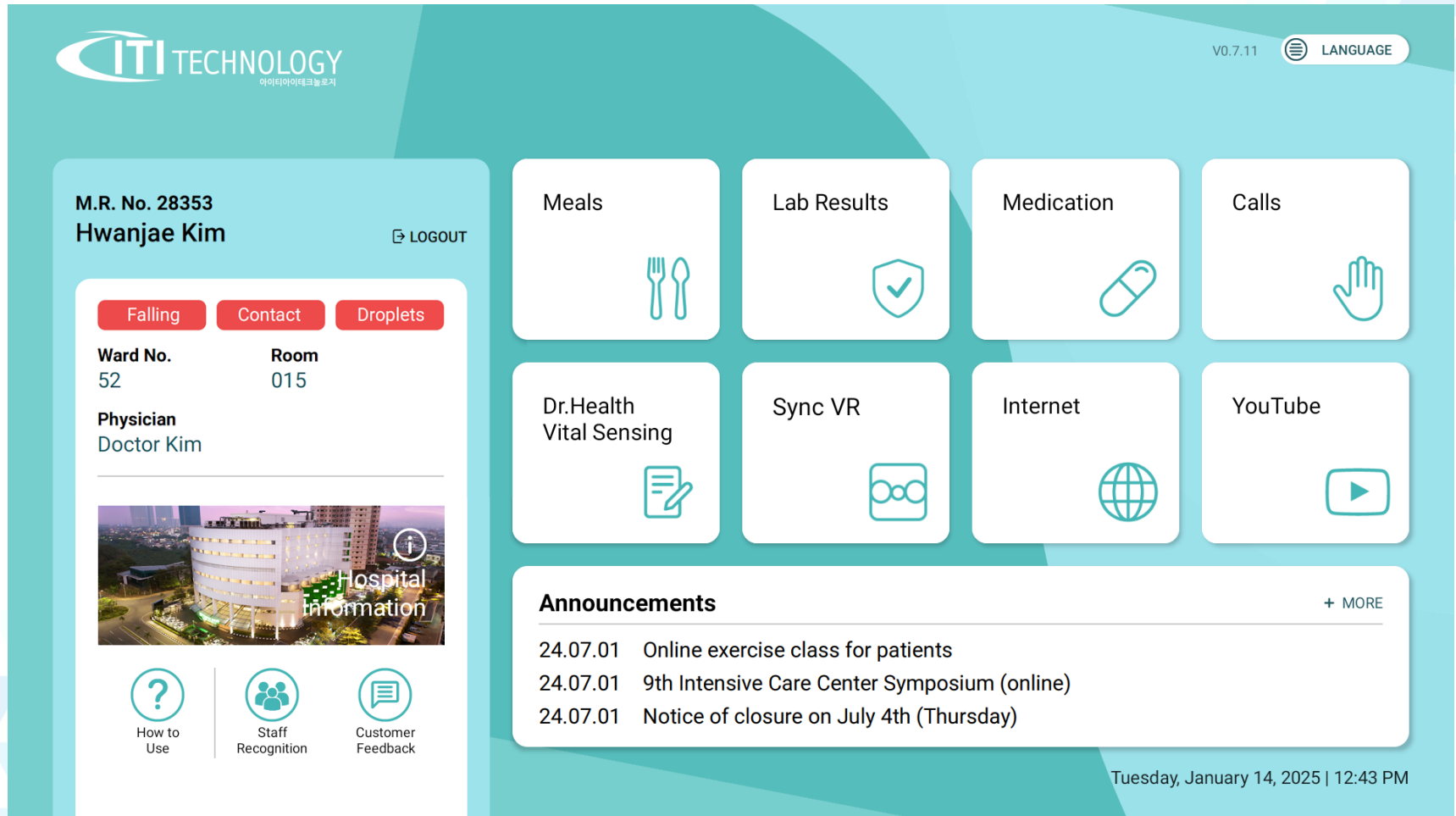
Falling risk : Low



Bedsore risk : High

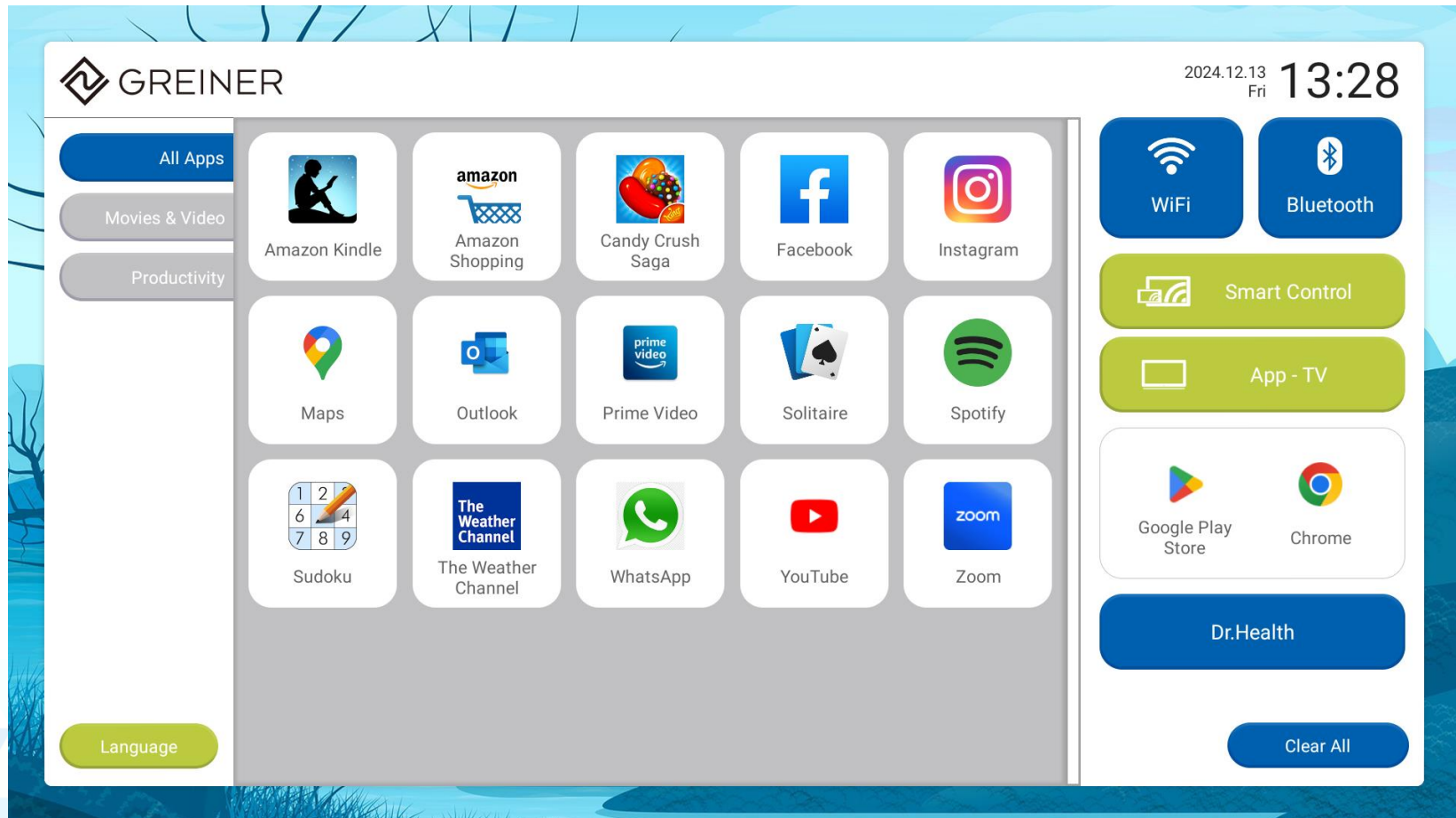
Logout

# SMB UI /UX Solution [ex.]





# SMB UI /UX Solution [ex.]



# Use Cases

Digital communication with the SMT Smart CareGiver System can make a noticeable positive contribution to patient recovery.



Nursing & Care Ward



Children Ward



Over Bed



Negative pressure Room



Clinic



Wall & Ceiling Mounting



## Smart Phone remote control

- Smartphone screen display on the screen
- Use and control smartphone from the screen



# OPERATION S/W : SMB SERVICE SOLUTION

## SMB Management Solution

- Terminal information management
- Content (educational materials, images, videos) management
- Call management
- Nursing information
- Usage statistics
- Administrator account management
- Advertisement (facility, tour, shops....)
- Video Conference

## Medical Service (interface HIS system)

- Patient login
- Today's schedule
- Lab Results
- **DrHealth Vital Monitoring**
- Falling, Droplets... Risk
- Medication inquiry
- Discharge medication
- Billing inquiry
- Educational materials
- Meal Selection
- inquiryCall and video consultation

## Infotainment Service

- TV, Internet, YouTube
- Movie, Games, Books
- Convenient & Facility Shop



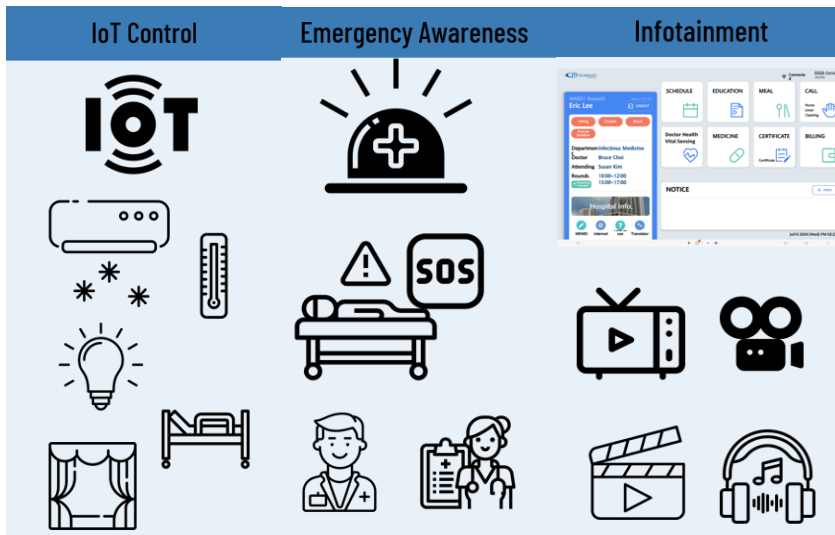
## Patient and Staff Convenience

- **Patient Convenience**  
TV, Internet, YouTube, Game, Movie, Music  
Message call (emergency, infusion, ..nurse call..)  
Health/medical contents (education, exercise, dementia, gout..)  
In-hospital broadcasting (auditorium medical seminars, events, Religious...)
- **Patient schedule** (treatment/examination, surgery and progress status)
- **Patient's hospital experience** (distraction from stress and discomfort of being in hospital and helping to alleviate boredom during long hospital stays)
- **Patient Recovery** (positive contribution: Streamline processes, meal ordering and medication reminders, improve efficiency)
- **Reduce Staff workload** (patient engagement, communication between patient and staff)
- **Additional revenue** (pay-per-view, in hospital purchasing and advertising options)
- **Hospital information and promotional**

# AI Voice Control System

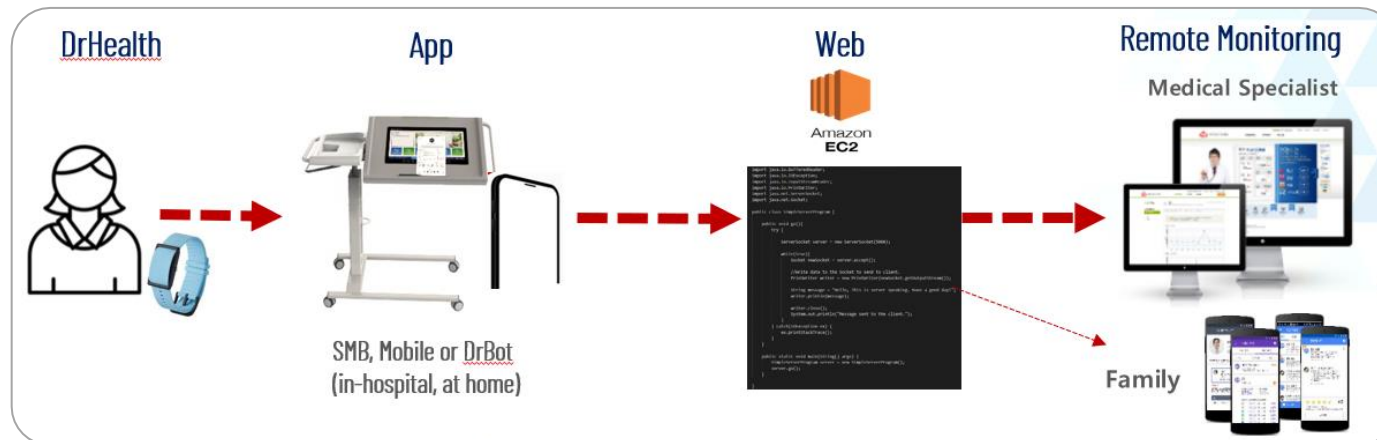
## Smart Room Automation

- 1) IoT control service : air-conditioning temperature, lighting, curtain control, smart bed
- 2) Emergency service : Emergency rescue sound, Medical staff call, Awareness.
- 3) Infotainment service : TV, internet, movies, music, weather and news.





# Digitized bio signal monitoring-based healthcare intelligent management system



# Certified Wearable Vital Sensor device [DrHealth]

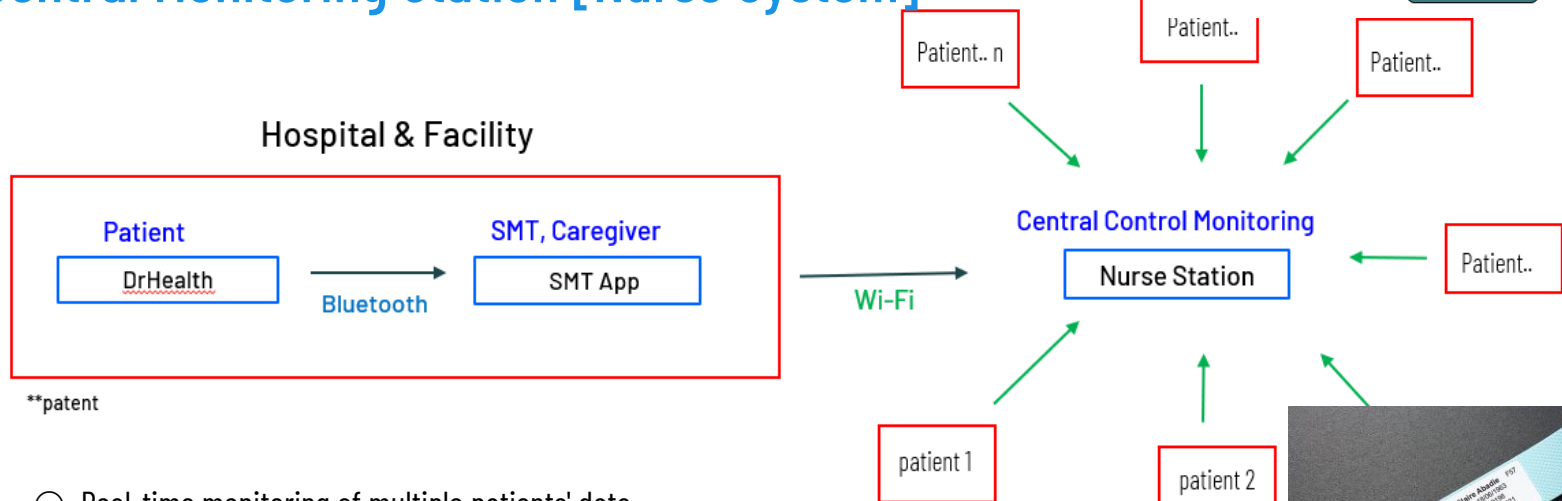
✓ 8 parameters [Heart Rate, RR Interval, Respiration, A-Fib, SpO2, Blood Pressure, Temperature, ECG, Activity and Sleep]

- Core Body Temperature with Fever Algorithm on wrist
- SpO2 on wrist
- Synch and access of raw PPG, ECG, ACC and BIOZ data
  - o 2 Diodes, Green/Red/IR LED
  - o 1 lead ECG, GSR-EDA, Heatflux sensor
- Smart analytics produce relevant data for timely detection of heart rhythm anomalies, CVS

✓ Medically EU-MDR certified and US FDA 510K Clearance



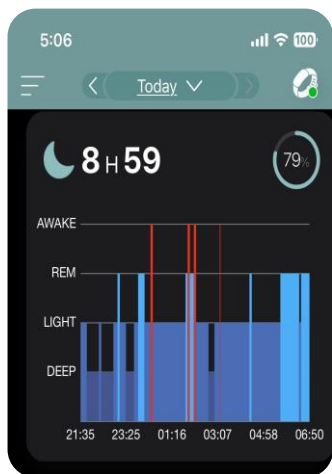
## Central Monitoring Station [Nurse System]



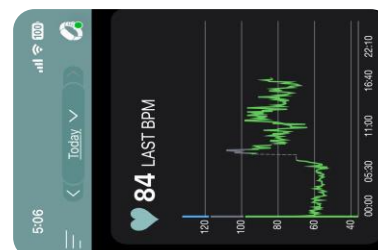
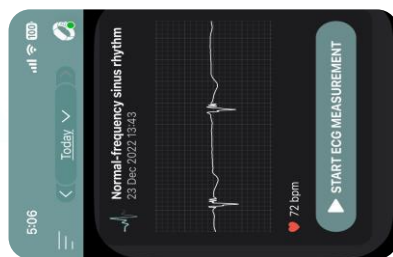
\*\*patent

- Real-time monitoring of multiple patients' data
- Amount of real-time data (collection/reception frequency) be set (per sec/min)
- Alarm threshold for each patient (blood pressure, oxygen saturation falls below a standard)
- AI algorithm to predict crisis situations (myocardial infarction, arrhythmia, decreased oxygen saturation, abnormal blood pressure, breathing difficulties, etc.).....extended service

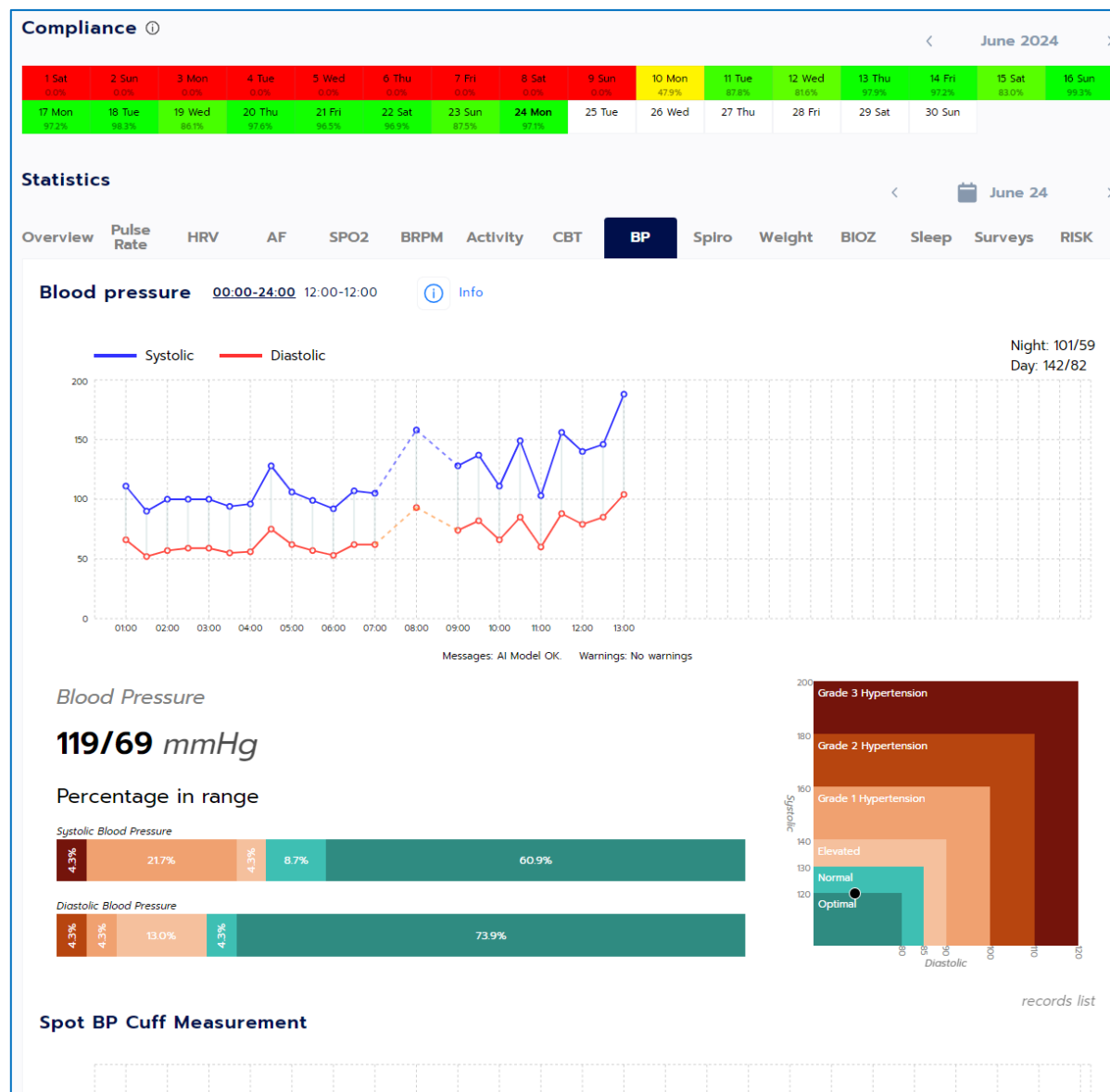
# DrHealth Bio Signal Monitoring App.



1. 심박: 심박수 Heart Rate (beats/minute (bpm), 30-220bpm, 5~10 sec. interval measurement)  
 심장박동사이 시간 RR Interval (elapsed time between 2 consecutive heart beats, 300~2000ms, 5~10 sec)  
 심박수 변화 Heart Rate Variability (beat to beat, 0~200ms, 5~10 sec. interval measurement)  
 심방세동 Atrial Fibrillation (발작성 Paroxysmal atrial fibrillation, AF event, 0~120/h, 30 sec.)
2. 호흡: 호흡수 Respiration Rate (들숨-날숨 박동수 beats/ inhalation - exhalation cycles/min. 5~45 brpm, 20~30 sec.)
3. 산소포화도: SpO2 (동맥혈 산소포화도 Oxygen saturation level in the arterial blood, 0~100%, 20~30 sec.)
4. 혈압: Blood Pressure (Cuffless 비침습적 수축기/확장기 혈압 Non-Invasive Systolic and diastolic bp, mmHg, 100~200 (systolic), 50~120 (diastolic), based on arterial line 동맥 and ABOM data, 5~10 min.)
5. 체온: 심부체온 Core body temperature (15~45C, 60~110F, 5~10 sec.)
6. 활동: 움직임 수 Activity Count (level of movement, number(integer) 0~65535, 1 sec.)  
 활동 타입 Activity type (detection of activities, resting, walking, running, cycling, other 24 category, 10 sec. )  
 속도 Speed (Rate of change of position, 0.1m/sec, 0~54km/h, 10 sec.),  
 흐름/패턴 Cadence (# of periotic events in cyclical activities/min. strides/min 20~120, 10 sec.)  
 점수 Activity Score (active minutes/ minutes with % > 100 steps for the day, 0~100%, 10 sec.)  
 에너지 소비량 Activity-Energy Expenditure (energy spent by the body, due kcal/h to physical activity, 0~1200, 5~10 sec.)  
 최대산소섭취량 V02Max (max.rate of oxygen consumption, ml/kg/min, 10~100, 20~30min, walking>3km/h, running>6km/h)
7. 수면: 수면상태 Sleep stages (detection of sleep stages & HR, awake/light/deep/REM, sleep stage  
 수면 점수 Sleep score (sleep performance and % consistency with equal weight, 0~100% 10sec)



# 웹 플랫폼 & 앱 [BP ex.]





# DoctorBot [CareRobot]

## Digitized Video. Biosignal-based Intelligent DoctorBot

- AI Machine Learning-based ChatBot
- Emotional Conversation Assistant
- Data-driven daily task Assistance
- Care content service  
(educational, clinic data, TV, internet...  
patient self-enter nursing info. & Infotainment)
- Video Conference

- High performance CPU
- PTZ camera
  - facial expression
  - auto tracking to user voice sound
- 6ea microphone array and Respeaker
  - echo and noise canceling
  - voice/sound recognition
- BioSignal smart wrist band
  - vital signals (8 bio signals)
- 17.3" display touch screen
- Friendly designed



## Emotional Conversation Agent

### Doctor Bot (CareRobot)

- Collects data of images, voices and biometric signals, continuously 24 hours 7 days,
- Data integrated and analyzed into SMT cloud system,
- While talking with an emotional conversation agent (ChatBot),
- Detects any abnormal signs and provides to medical staff & family members

**\*\* A Care Robot equipped with the function of Monitoring changes in cognitive function and memory through patient monitoring,  
If necessary, manage them through conversational cognitive games and puzzles(ChatBot)**

[VIDEO]



height adjustable 79cm ~ 114cm

# THANK YOU

- some screen images are simulated
- dimension and weights are approximate
- design specification and features are subject to change without notice

## Monitoring

- √ Autonomous, non-invasive, continuous monitoring, activity tracking and sleep status (vaginal, apnea)
- √ Measure important parameters of heart rate, blood pressure, oxygen level, respiration and body fat
  - √ Detect and prevent situations that are potentially dangerous to patients after heart surgery or during high-risk periods such as cardiac arrest

## Medical Support

- √ Remote medium and high risk monitoring for early detection of CVD status
- √ Chronic condition monitoring can prevent worsening and hospitalization
  - Maintaining a walking condition -
  - √ Home care: Non-face-to-face reassurance services
    - Support for discharged patients, independent living of the elderly
- √ Initial medical (intermediate care) needs on behalf of/assisting medical staff
  - √ Analyze on one's own and utilize it in medical service decision-making



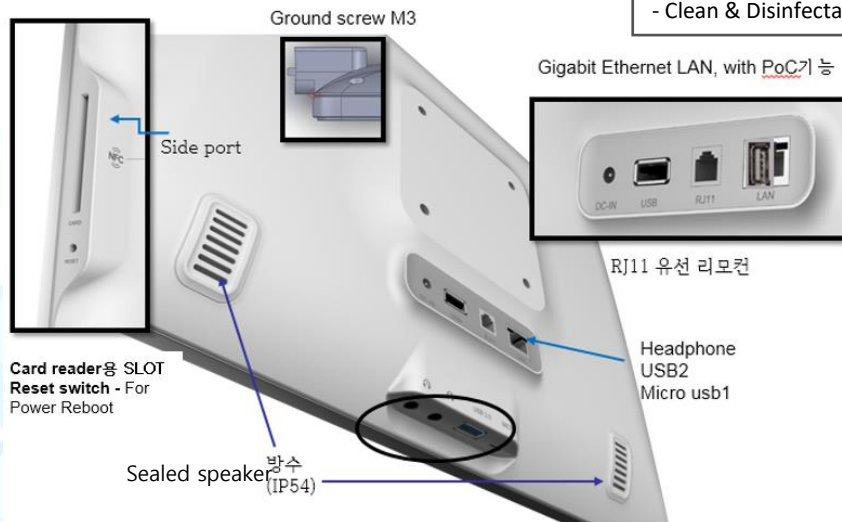
# SMB Digital Bedside Terminal Healthcare System [SMB1015]



**Touch keypad :** Channel up/down, Home, Power on/off, Back, Volume up/down

**Multi-touch screen**  
Capacitive 10-point  
Tempered glass

**Power(low)**  
- PoE IEEE 802.3af-2003 compliant  
**Infection Control Mechanism**  
- 99.9%anti-bacterial material  
- Tempered Glass  
- Clean & Disinfectant



## SMB915, SMB1015 HARDWARE Specification

- Display: 15.6"/18.3" Full HD (1920 x 1080) Screen
- User Interface: P-Cap 10 Points Touch Tech.
- Computing Platform:
  - Android OS
  - ARM Octa Core
- Wired Remote Speaker (optional)
- Bar Code Reader on Hand Unit (optional)
- Anti-bacterial (99.9%) material
- IP-65 compatible
- Tempered Glass protected
- Medical Health Grade

### ○ reliability

- Vibration: IEC 68 2-64
- Shock: IEC 68 2-27
- Drop: ISTA 2A STD STD60068-2-32

### ○ environment

- Operating temp.: 0~43°C
- Storage temp.: -20°C~65°C
- Pressure: 50~106 kPa