epi**oVe**
WL

SD**N**
SensorDrops Networks

INNOVATION
FOR THE FUTURE CONNECT

#CONNECTIVITY FOR CONTINUITY

Motivation

The negligence in frequent health check-ups due to busy schedule results in overlooking of any health problem that might lead to a disease. The screening of health vitals helps in finding the problems early which leads to prevention or better chances of treatment to avoid any unfortunate consequences. Our product EpiOneNG aimed at bringing the remote health monitoring on a low-cost portable device. Regular check-ups of normal healthy people can help lead a healthy life and identify any abnormality on its onset. Hence we needed a device that can be used effortlessly by people during their normal daily routine. Our wearable wireless healthcare monitoring system is aimed at providing hassle-free remote health monitoring along with the facilities provided by its precursor EpiOneNG.

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Market Scenario

In the global context, there are companies such as Spacelabs healtcare, Shimmers, Omron, Philips, Terumo Cardiovascular Group, GE Healthcare, Honeywell and few others that aim to provide a multi-parameter patient monitoring system. The devices from these companies provide remote monitoring of patients' vitals as well as storing and sharing of data with the caregivers. Majority of them are addressed towards hospital usage with few providing remote in-home healthcare device. However, in Indian context there exists no such remote health monitoring solutions. For common Indian households affording the world-wide available monitoing device becomes cost inefficient. Keeping all the constraints in mind we offer to provide low cost integrated health monitoring device, EpiOneWL as an advanced and user friendly convenience along with the optional services for data storage, access, and online appointments to reduce hassle. Our wireless health monitoring units facilitate portability, freedom of movement, and is envisioned to be used in workplace, home, in-transit & hospitals.

Socio-Economical or Environmental Impact of EpiOneWL

Our tele-medicine product will impact the society in terms of patient self-assessment, self-efficacy, and self-management. It will follow its precursor's characteristics to offer health literacy and awareness to the people and bridge the gap between developing and underdeveloped regions. Additionally, it will provide its users a low-cost minimal version with high-end wireless features. Continuous monitoring helps in avoiding unexpected medical emergency which brings personal, financial and social burden. By offering remote diagnostics, our product will extend the reach of healthcare services to underprivileged and remote rural communities. Our products being low cost, can be utilized by the weaker section of the society thereby uplifting the societal standards. The use of non-invasive sensors makes our device environment-friendly. Further with the expansion of our business it will create jobs in the market and elevate the socio-economic status.

What is EpiOneWL?

EpiOneWL is a wireless remote health monitoring system. It is a successor to our system EpiOneNG. The system consists of wireless sensor adapters and a central processing unit. Each adapter has a sensor connected to it that collects the data from the body and transmits it to the central processing unit. The adapter requires no specific port for its connection to the system. Any new sensor adapter connects to an existing system without making any physical changes in the system. Unlike other health monitoing kit, which supports only one sensor of each type, EpiOneWL supports multiple sensor adapters of the same type. The data collected by the central processing unit forwards the data to our remote database, which can be accessed through our web services. Also, EpiOneWL supports over-the-air updates for system and sensor integration.

Sensors Used

1. Temperature sensor
   - ► Fingertip touching
   - ► No calibration required
   - ► No contamination with body fluids (sweat, saliva)

2. Pulse sensor
   - ► Finger clipping module
   - ► Measures pulse rate
   - ► No calibration required

3. 3-Lead ECG sensor
   - ► Easy-to-use sensor module
   - ► No contamination with body fluids
   - ► Use and throw electrode pads

4. Blood pressure sensor
   - ► Easy-to-use sensor module
   - ► No calibration required

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What's New in EpiOneWL?

- Wireless sensor modules for increased freedom of movement.

- No port or physical connection with the central unit.

- Any new sensor can be easily integrated into the existing system.

- Multiple sensors of the same type can be connected to the system.

- Over-the-air updates for central processing unit and sensor adapters to keep your system up-to-date

Competitors:

As of now we don't have any Indian competitors. However, the top 4 global competitors are listed below.

- Shimmer
- Spacelabs Healthcare
- Omron Healthcare, Inc
- Philips

These companies are into developing tele-monitoring systems. They use advanced technology to provide continuous information on important patient parameters. The range of devices from these companies supports quick and clear data visualization via wide touchscreens. The advanced physiological monitoring and clinical informatics based products by these companies provides basic screening as well as complex surveillance in critical care.

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Web Interface:

Select Your Sensor

-Select Edge Device IP-

-Select Sensor IP-

-Select Sensor Type-

Submit

Figure 2 Configuring the sensor

Figure 3 Dashboard

PROFILE

APPOINTED DOCTOR

DASHBOARD

LOGOUT

Threshold crossed

103.0
102.5
102.0
101.5
101.0

From Date mm/dd/yyyy
To Date mm/dd/yyyy
Submit

Temperature

1.0
0.5
0
-0.5
-1.0

Pulse   Threshold

85.0
84.5
84.0
83.5
83.0

Spo2   Threshold

85.0
84.5
84.0
83.5
83.0

Who is the End-Customer?

A regular clinical check-up is crucial for every individual

EpiOneWL is developed to meet the frequent need of tracking vitals which can be used by people (healthy or sick) at home, in offices, in ambulatory transit and by doctors or paramedics in hospitals. The wireless feature of the device makes it convenient for the users to use it without hampering their daily routine.

While India moves towards digitization, we made an effort to extend a low-cost integrated digitized solution to put self-care into practice regularly.

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Company

Sensordrops Networks Pvt. Ltd. A newfangled company dedicated to address basic societal needs by utilizing advanced Internet of Things (IoT)-based solutions. With IIT Kharagpur professionals and a team of bright and dedicated researchers at the reins, we design and deploy contemporary solutions to overcome domain-specific challenges using economical and sustainable means. The team has already won several awards including the recent Gandhian Young Technological Innovation Award for the system of Battery-less IoT sensing from the president of India in March 2018.

Objective

To provide continuous, real-time as well as remote monitoring of patients and individuals with easy-to-use wireless wearables.

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EpiOneWL

Product Overview and Features:

► Tele-health system with connected vitals

► Complete body vitals monitoring system—temperature, pulse, ECG, BP

► Fully mobile, portable and wireless system

► Wireless sensor adapters for smooth movement.

► Non-invasive reusable sensors.

► Web-based secured access to the data.

► Remote healthcare monitoring for the doctors.
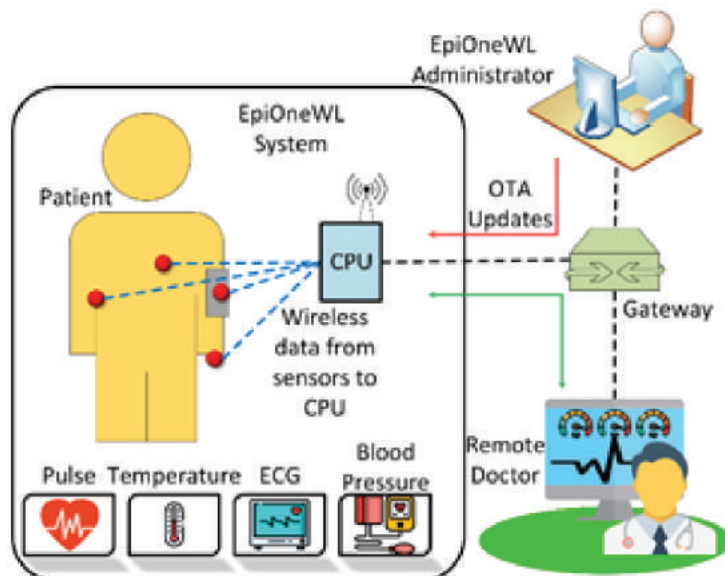
Figure 1 Functional overview of EpiOneWL

EpiOneWL in Education

The EpiOneWL is uniquely designed for use in different healthcare scenarios across the globe. Additionally, different educational Institutes can easily make use of the EpiOneWL system as a teaching aid as well as measuring the health parameters of students/subjects. The technological Institutes can also make use of the EpiOneWL to train its students about the usage and the integration of different IoT healthcare sensors with robust IoT platforms. On purchase of EpiOne-WL units, we provide a short-term on-site learning session on the following experimental topics.

■ Integration of a wireless health unit with a remote server and logging data onto the server in the medically standardized HL7 file format.

■ Integration of multiple health units to a remote server and log data onto the server in an HL7 format.

■ Data separation from multiple sources and visualization of each of the data individually.

■ Integration of a BP monitor with the wireless health adapter.

■ Integration of a temperature and SpO2 sensor with the health adapter.

■ Integration of an ECG module with the health adapter.

■ Changing data rates of sensors at the adapter and checking the performance of the data on the receiving server for delays, packet drops, and out-of-sequence data.

■ Checking the performance of the remotely received data against the distance of the transmitting wireless adapters from the remote server.

■ Plotting data from the remote servers in real-time in a PC-based application or on a browser.

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