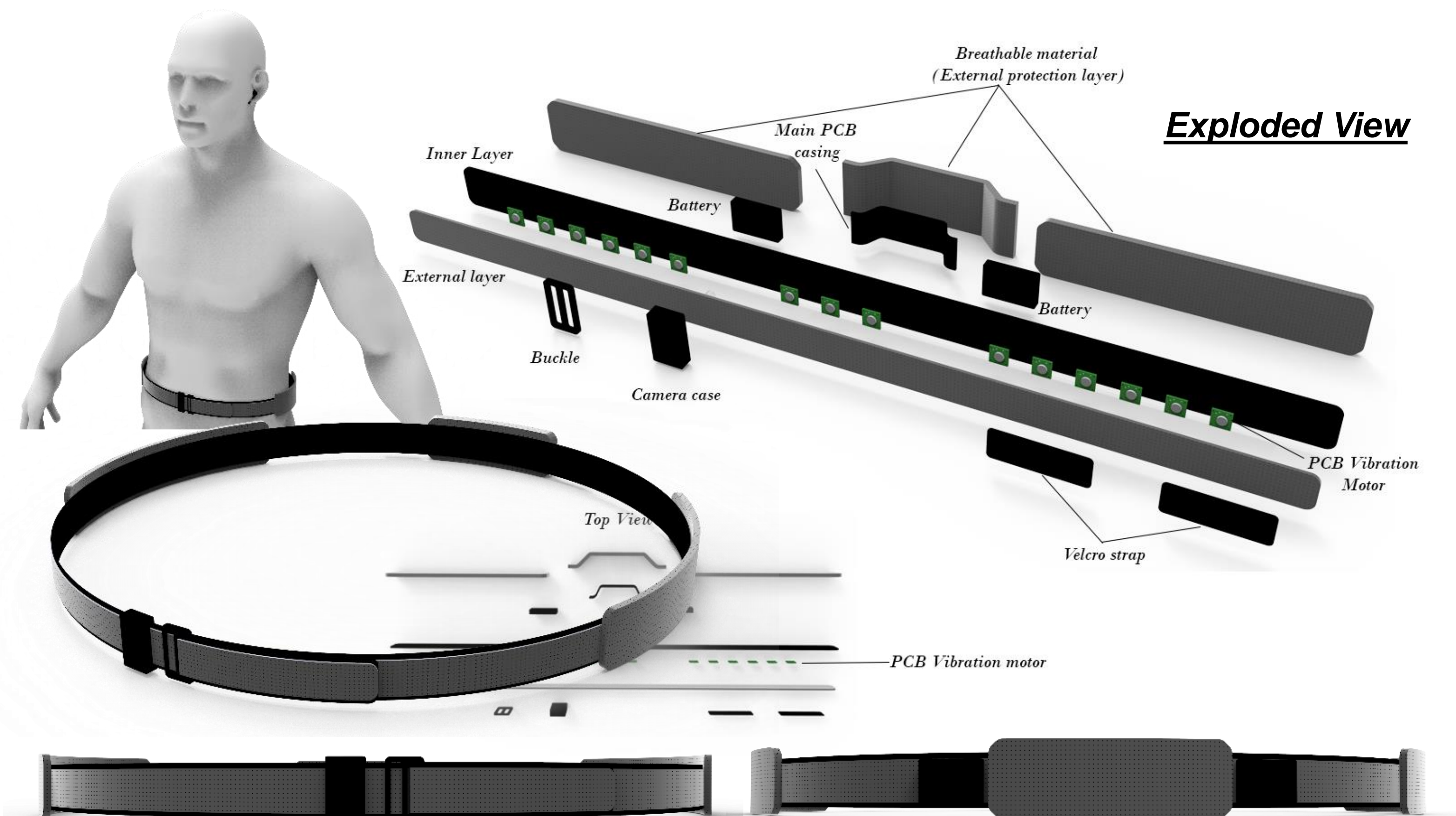
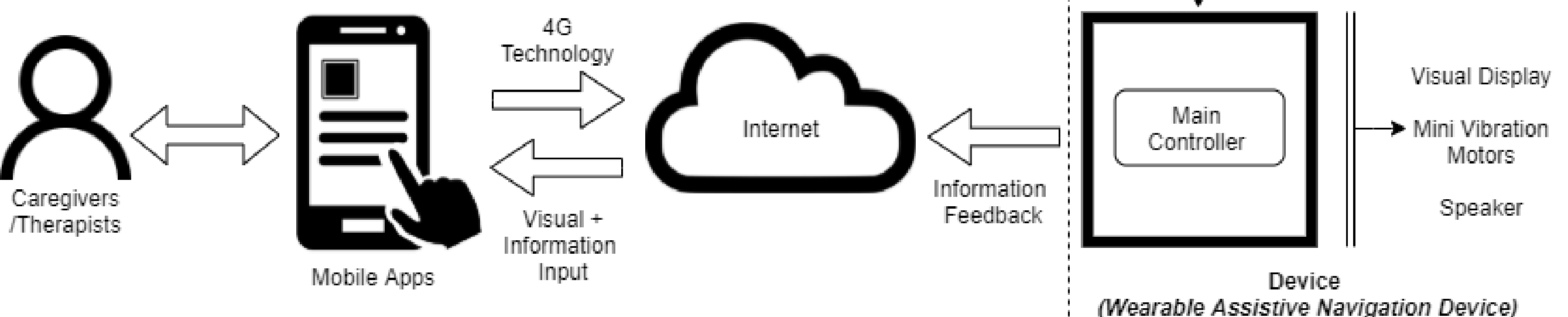




# Wearable Haptic -feedback Assistive Navigation Device

PATENT NO. PI2021007268



## BRIEF TECHNOLOGY

The wearable haptic-feedback assistive navigational device integrates haptic stimuli as the signals for directions – to go left, right and go forward. The haptic-feedback in waveform are created by the series of mini vibration motors that gives the ‘sense of drive’ to the users. The device is designed to be wearable and it comes with the integrated mobile application for monitoring purpose. The integration of sound cue using voice command adds to the efficiency. The whole system is practical for the main target users i.e. people with cognitive impairment like dementia and visually impaired or blind people.

## PROBLEM STATEMENT & CURRENT ISSUES

Visual instruction such as reading a map display is quite common for wayfinding or navigational assistance. However, this technique is not always suitable, especially in the situation where vision is limited. For elderly with or without cognitive impairment and visually impaired people, vision is the most effected sensory. Thus, there is a need to design an unconventional assistive navigation device that does not rely on these users’ functional incapability.

Besides, there are not many inventions explored the use of haptic-feedback as an alternative for wayfinding or navigation. Moreover, there are less inventions on wearable technology designed for this purpose.

## INVENTIVENESS & NOVELTY

The haptic-feedback as the directional signals is activated with time intervals to create the waveform haptic signal. The device provides the simplest navigational instruction - left or right and go forward direction to avoid unnecessary confusion to the users. The device is designed to be in wearable form, worn like a belt around the waistline to increase the haptic practicality.

## USEFULNESS & APPLICATION

The wearable haptic-feedback assistive navigational device is useful in the situations where the visual display is not appropriate. This device is also designed to enable the monitoring and supervision of the users through the integration of mobile application. The real-time location information when the device is in use can be viewed and monitored through the developed apps.

## IMPACT OF THE PRODUCT

- Alternative towards conventional navigations or wayfinding techniques
- Not relying on visual instruction or reading a map display
- Reduce the dependency of users
- A good form of therapy
- Easy to be used and user-friendly
- Wearable, lightweight and practical

## MARKET POTENTIAL

The technology is intended to be used as an assistive navigation device, suitable for therapy session as well as to increase independency of the users. The main industries for this invention are telerehabilitation, medical services and Information and Communications Technology (ICT).

The device is useful for:

- Individuals with cognitive impairment
- Blind or Visually Impaired People
- Normal Pedestrian
- Situations where visual display or instruction is not suitable, such as in military or extreme condition or weather.

TRL : 5 -Validation in real environment



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