

# Rapid response: Monitoring health and safety with wearable technology



**The challenge:** Helping people to follow government guidelines on safe working and monitoring their health:

- Now, whilst we respond to the current COVID crisis
- During recovery, as restrictions change and are gradually lifted
- Post recovery, to allow us to adapt to a new 'normal' and thrive, benefitting from health and safety improvements for all users.

**Our solutions:**

We bring together the best of wearable technology to help operational teams maintain safe working distances and to monitor early bio-signs that the wearer of the technology may be becoming unwell (even before they start to exhibit symptoms).

● **Our proximity monitors** constantly advertise their presence relative to others wearing the same units. The devices use Bluetooth and Ultrawideband technologies for increased accuracy. If two or more monitors come within the defined distance (2m) they flash and vibrate, alerting the wearers to move apart until the alarm ceases.

They can be attached to lanyards and used in conjunction with bio-sign monitors. This solution can be developed to enable the recording of each alert to a central system. When the monitor is re-charged at the end of a shift, the data is held to provide full traceability of contact with someone who may have become infected.

After the social distancing requirements cease, these units can then be used for person / plant proximity

alerting simply by adding a larger version of the device to each plant vehicle.

**Benefits:**

- Provide real-time automatic alerts if safe distancing is breached
- Reassure operatives that safe distancing is being objectively monitored in real-time
- Can be developed to warn people if they enter new exclusion areas, including proximity to working plant
- Enable the creation of inclusion and exclusion zones that operatives need to work within, alerting operatives if they enter an exclusion zone
- Can be sanitised between users
- Will record data to provide full traceability of contact

● **Our bio-sign monitors** directly measure the bio-signs of the wearer in real-time and compare them with 'normal' readings to identify health issues. The monitor is worn on a light, adjustable harness around the chest.

Bio-signs that can be monitored include heart and respiratory rates; skin and core temperatures; body position; location; movement; fall detection and a manually activated panic alarm if enabled. This can improve the protection available to lone and more vulnerable workers because individuals with known medical conditions (such as diabetes) can be monitored more closely on site.

Data is sent via Bluetooth communication to the wearer's standard mobile communication device (e.g. mobile phone, TETRA radio). The mobile communication device then uses its standard communication method to connect to the Internet and upload the user's bio signs to the cloud. The data collated can be transformed into information that is accessible to the wearer (via a mobile app) and selected others via an intuitive web portal interface.

**Benefits:**

- Monitor vital signs in real-time, including body temperature, alerting operatives if signs exceed thresholds
- Are some of the most medically accurate and certified devices on the market
- Improve protection of 'lone workers' in remote areas or where legislation requires people to work alone
- Provide real-time tracking of wearers and accompanying data analysis facilities to identify movement patterns and safe routes
- Provide multi-level access control for data protection
- Are washable and issued for personal use
- ATEX rated thus allowing users to enter hazardous or potentially explosive environments such as confined spaces
- Can provide a more comprehensive geo-fencing service, supporting inclusion and exclusion zones, when a work site is split into zones shared between multiple contractors.

Costain will host the system within our Azure cloud and is able to offer this solution as a managed service. The proximity and bio-signs monitors can be used by an operative separately or together as part of an integrated offering.

For both monitors, information access is carefully controlled to comply with data protection regulations (GDPR). The monitoring and alerting system has multi-level access control, the basic level only being able to see locations of users and alerts not individual names etc, which would then require a higher-level login.

