CLAIMS

1. A data logging system (100) for monitoring work activity, the data logging system (100) comprises:

a plurality of sensors (101) for collecting sensor data; and

a data logging device (200) comprising

a geographical positioning sensing component (201) for collecting location data of the data logging device (200);

a processing module (202) for processing the sensor data and the location data; and

a transceiver (203) configured to receive the sensor data and transmit the processed data, from the processing module (202), over a wireless network communication at a predetermined time interval, a random time interval, or a combination thereof, and

a server (300) configured to receive the processed data from the transceiver over the wireless network communication and analyse the processed data,

wherein the data logging device (200) further comprises a device management module (209) configured to determine a current operating condition of the data logging device and switch the data logging device between a plurality of communication modules (204) to optimize power consumption and data transceiving efficiency of the data logging device (200) based on the current operating condition, and

wherein the device management module (209) switches the data logging device (200) between a high power communication module for high frequency transmission of the sensor data and high power consumption when the data logging device (200) is receiving power from a power source and/or a travel speed of the data logging device (200) is higher than a predetermined travel speed, and a low power communication module for low frequency transmission of the sensor data and low power consumption when the data logging device (200) is not receiving power from the power source and/or the travel speed of the data logging device (200) is lower

than the predetermined travel speed.

2. The data logging system (100) according to claim 1, wherein the sensors (101) include a set of environmental sensors, a set of work activity sensors, or a combination thereof.

3. The data logging system (100) according to claim 2, wherein the environmental sensors include a temperature sensor, a soil moisture sensor, a soil pH sensor, a soil nutrient sensor, a rain sensor, an air humidity sensor, a weather sensor, or any combination thereof.

4. The data logging system (100) according to claim 2, wherein the work activity sensors include an accelerometer, a gyroscope, a mechanical actuator, or any combination thereof.

5. The data logging system (100) according to claim 1, wherein the processing module (202) is configured to encrypt and/or compress the processed data for storage or transmission to the server (300).

6. The data logging system (100) according to claim 1, wherein the server (300) is configured to analyse the processed data using one or more algorithms to determine a pathway travelled by the worker and information of the work activity performed by the worker along the pathway.

7. The data logging system (100) according to claim 6, wherein the server (300) is further configured to predict missing sensor data, missing location data, or a combination thereof of the data logging device (200) along the pathway when receiving the sensor data between previously collected location data points.

8. The data logging system (100) according to claim 1, wherein the wireless network communication is a long-range wireless network communication which comprises a plurality of gateways (400, 500) that are connected to one another via a long-range wireless protocol.

9. The data logging system (100) according to claim 1, wherein the gateways (400, 500) comprises a plurality of primary gateways (500), secondary gateways (400), and mobile gateways.

10. The data logging system (100) according to claim 8, wherein the server (300) is further configured to establish a coverage of a predefined operational area that bounds the data logging device (200) therewithin such that the sensor data and the location data are not collected by the data logging device (200) when the data logging device (200) is not within the coverage of the predefined operational area.

11. The data logging system (100) according to claim 1, wherein the device management module (209) configured to switch the data logging device (200) between sleep mode after a predetermined period of inactivity and active mode when the data logging device (200) is in use.

12. The data logging system (100) according to claim 1, further comprising a wireless charging platform (600) for charging the data logging device (200).

13. The data logging system (100) according to claim 12, wherein the processing module (202) is further configured to synchronise the sensor data and/or the processed data with the server (300) via a data synchronisation algorithm by transmitting the sensor data and/or the processed data to the server (300) when the data logging device (200) is being charged at the wireless charging platform (600), when the data logging device (200) is in the sleep mode, or a combination thereof.

14. The data logging system (100) according to claim 12, wherein the processing module (202) is further configured to initiate a new data logging session when the data logging device (200) is removed from the wireless charging platform (600).

15. The data logging system (100) according to claim 1, wherein the data logging device (200) further comprises a display module for displaying a power status of the data logging device (200), a battery level of the data logging device (200), a location of the data logging device (200), or any combination thereof.

16. The data logging system (100) according to claim 1, further comprising a mobile device (102) in communication with the data logging device (200) for storing the sensor data received from the data logging device (200) and transmitting the sensor data to the server (300) over the wireless network communication.

17. A method for determining a current operating condition and switching communication modules (204) of the data logging device (200) as claimed in claim 15, the method comprising the steps of:

determining, by the device management module (209), the power status of the data logging device (200);

computing, by the device management module (209), the travel speed of the data logging device (200) based on location data at an interval of time;

comparing, by the device management module (209), the travel speed with the predetermined travel speed;

switching, by the device management module (209), the data logging device (200) between the plurality of communication modules (204) based on the power status and/or the travel speed of the data logging device (200),

wherein the device management module (209) switches the data logging device (200) between the high power communication module for high frequency transmission of

the sensor data and high power consumption when the data logging device (200) is receiving power from the power source and/or the travel speed is higher than the predetermined travel speed, and the low power communication module for low frequency transmission of the sensor data and low power consumption when the data logging device (200) is not receiving power from the power source and/or the travel speed is lower than the predetermined travel speed.