

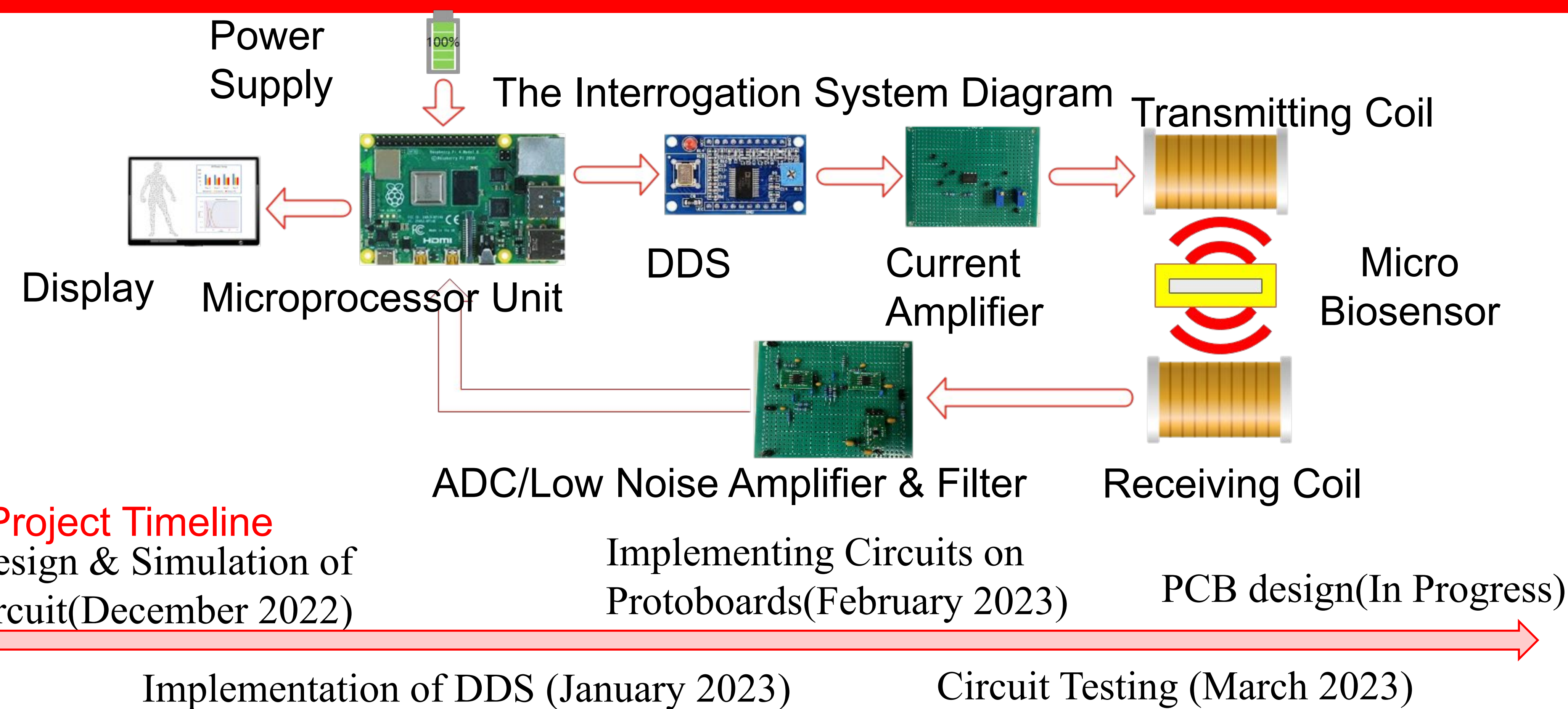
Wireless Sensor Interrogation System for Wireless Magnetoelastic Sensors

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Background/Aims

- In recent years, **magnetoelastic sensors (MES)** made of amorphous metallic glass ribbons have been widely used in various fields, particularly in biomedical engineering. Their **wireless** and **passive** nature, without the need for a battery or antenna, makes them ideal for implantable devices, reducing complexity, size, and cost. They are used to detect biomarkers and bacteria in biomedical applications.
- A wireless ME sensor has been developed. However, an **interrogation system** is also required to **amplify the excitation signal** and **process the received signal**.
- To address these issues, a **current amplifier** will be designed for amplifying the excitation signal, a **low-noise amplifier** for processing the received signal, and a **Raspberry Pi with ADC and DDS modules** to generate and receive the signal.

Methods



Embedded System

- Embedded System Development**
Embedded Systems include the Raspberry PI model, and DDS for generating signals to current amplifier circuits and receiving signals from ADC.
- Current Amplifier**
The current amplifier, designed to amplify DDS current, excites the transmitting coil with a sweeping frequency signal.

