Smart sensorized garments for personalised and precision antenatal care

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INTRODUCTION

Antenatal care is provided during pregnancy. Careful monitoring of vital signs and physical activities is essential for ensuring the mother's and fetus's health and safety during pregnancy. Smart textiles offer an innovative alternative by integrating biosensors directly into fabrics, enabling real-time physiological monitoring in daily life and advancing personalised antenatal healthcare.

Body shape changes during pregnancy progression

Source: https://www.shutterstock.com

Nemo Fetal Monitoring System

Electrocardiography
- Maternal
- Fetal

Electrohysterography
- Electrical Uterine Activity

Source: www.nemohealthcare.com

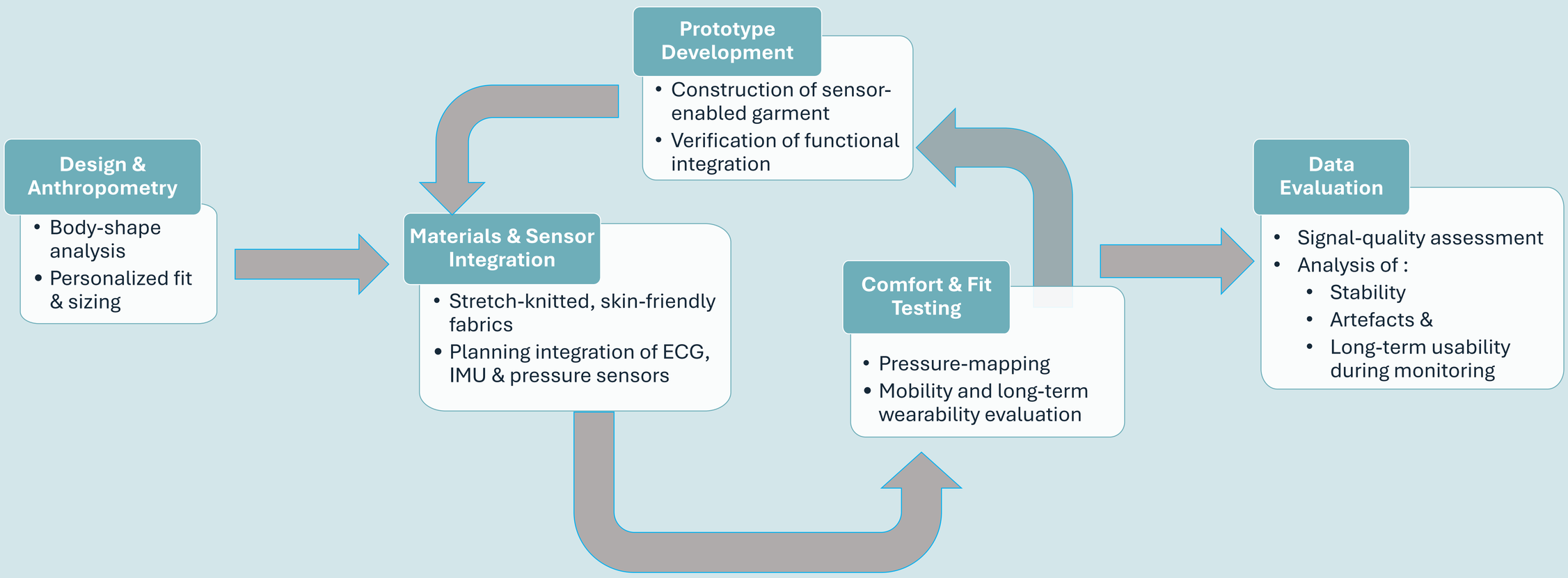
RESEARCH AIM

To develop sensor-enabled garments that provide continuous, reliable, and personalised antenatal monitoring while ensuring long-term comfort and secure skin contact.

CHALLENGES

- ❖ Signal quality and stability
- ❖ Motion artefacts
- ❖ Sensor placement & skin irritation
- ❖ Variations in body shape during pregnancy
- ❖ Loss of proper fit over time

METHODOLOGICAL APPROACH



EXPECTED OUTCOMES

- Good signal quality and user comfort
- Enhanced accuracy of continuous monitoring
- Defined design principles for personalised medical wearable

FUTURE WORK

- ➢ Improve textile sensor integration
- ➢ Prototype development and testing
- ➢ Signal quality and fabric performance evaluation

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