**INTRO**

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| P24 | <Patient24 Logo>  Next-generation remote patient monitoring. Seemless wearables that charge themselves. |
| Dementia | **Dementia:**  **1 in 4** UK hospital beds is occupied by a dementia patient  **20%** of dementia patients are hospitalized due to *easily preventable infections*  **1.1 million** people in the UK are projected to live with dementia in 2025  **£26 billion** is spent on the care and treatment of dementia patients annually.  Given these figures it is imperative that solutions are developed to allow for more effective, humane, but also efficient care for people with dementia. |
| TIHM | **TIHM:**   * TIHM (or Technology Integrated Health Management) is an award-winning study by the using cutting edge technology to improve the quality of life for people living with dementia at home. * Run by the University of Surrey and the NHS Surrey and Borders Partnership   Current Solution   * Network of 21 devices * Data Analysis & Machine Learning used to enable early interventions * Alerts followed up by Clinical Monitoring Team working with the NHS   Results   * Reduced visits to A&E and GP's * Provides reasurance to patients and carers alike * Provides GP with more information to advise better informed treatments * Nearly 80% of participants would immediately recommend TIHM     <Include Logos of NHS Surrey & Borders><Include University of Surrey Logo>    Case Study (*if space*)   * Unusual blood pressure reading for a 90-year-old lady triggered alert - she had taken an accidental overdos. Carer alerted and she was taken to A&E |
| Requirements | **Dr. Viral Thakerar**   * The client wishes to extend TIHM by making it simpler to use and deploying it across a wider range of patients. * Specifically the client requirements are:   + Simplify and streamline the gathering of the key vital signs, by putting "TIHM in a box"   + Heart Rate, Blood Oxygen, Blood Pressure, Skin Temperature, and Step Count should be transmitted   + Transmit sensor data to the GP systems   + Provide signal processing algorithms to analyse data and enable early interventions |
| Vision | **Vision & Future Work**   * Test the device in a clinical environment the TIHM Living Lab * Improve the quality of measurements to a level that will allow the device to pass rigorous clinical testing and become part of the TIHM suite of devices used for gathering patient data * Develop a robust and mass-producable casing for the sensor and power chips to introduce the device to the open market |

**WEARABLE**

* Include close-up labelled renderings of power chip and sensor chip

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| Physical design | **Ergonomics**  **3D-printed casings**   * Designed to allow direct skin contact of sensors and Peltier element * Designed to be comfortable and gentle on the patients skin * Designed to hide complexity from the patients   **Strap**   * Adjustable to maximize sensor-skin contact and patient comfort * <Material> is sturdy, stylish, yet soft to the touch   **Completely Buttonless** |
| Power | Our **energy-harvesting** peltier-element uses the temperature gradient between the patient's skin and ambient temperature to generate power, doubling the life-span of the battery.    The device consumes **abc watts** of power meaning the ***xyz mAh*** battery is sufficient to power the device for several days (?).    USB-C charging is supported |
| Sensors | Heart Rate  **Blood Oxygen (+battery?)**  Using a brand new sensor, first of it's kind.  Skin Temperature  Step Count  Blood Pressure peter will tell us algorithm names |
| Connectivity | **Connectivity**  The device communicates with the phone every 30 seconds via bluetooth low energy |
| Accessibility | **Accessibility**  There is absolutely no input required from the patient to make the device work, he or she might as well be wearing a bracelet! Lithium-polymer batteries are used to ensure safety of the patient. |
| Set-up | **Set-up** Set-up is as easy as downloading an app, sliding the device over the wrist, and tapping the smartphone against the device to launch the app and pair. |

**Base-Station**

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| Usability | **UI**   * **Main Dashboard** allows for use as a base-station * **History Dashboard** allows for in-depth analysis by patient or carer * **Settings Page** allows patient/carer to have control over the degree of alerting * **Design** is based on Google's Material Theme Style Guide |
| notify | **Alerting System** - P24 provides a fully customisable alerting mechanism that will keep a patients carers and/or loved ones up to date via regular and emergency SMS updates |
| Real-time health indicators | <show screenshot> The P24 apps give patients and carers real-time information about their vital signs. |
| FIHR Integration | **Data-Forwarding to NHS Systems**   * A primary function of the app is to forward data from the patient's home to the NHS's FHIR (Fast Healthcare Interoperability Resources) database |
| ML for anomaly detection | **Preventing Illness using Machine Learning**  Alerts are determined by using machine-learning for detecting anomalous patient sensor readings.  Additionally, the device provides valuable data for the TIHM backend. |

**P24 Consultants**

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**Simon Doc Facts**

43% of a doctors workday is spent on data entry

**Take-Home Message**

* **Selfcharge**
* **No buttons**
* **Blood oxygen**