Tampere University

HeAT – Health and Assistive Technology laboratory

“Welcome to HeAT: a network of health technology professionals and a testbed environment that provide expert research services for health technology products.”

Location: Tampere University, Hervanta Campus & Kauppi Campus

Korkeakoulunkatu 3, 33720 Tampere

Antti Vehkaoja, antti.vehkaoja@tuni.fi, +358407393181

Photos:
Jukka Lehtiniemi,
Hannu Nieminen,
Milla Juutinen

Tampere University

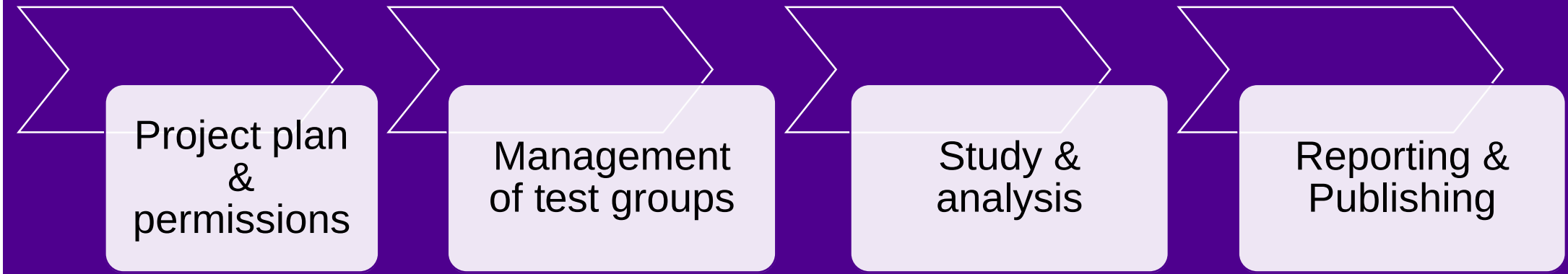
Our services are tailored to your needs

We provide service packages from very small projects to clinical studies and long-term innovation collaboration.

“First contact is dealt without delays and the right collaboration partner is found from the HeAT lab network. ”

Tampere University

We can provide it all: plan, execute, and analyze your project. Or we can innovate and work together with you!



Tampere University

HeAT networks with many research groups in Tampere University community and Tampere University Hospital

HeAT core groups:

- Mark van Gils - Decision Support for Health
- Antti Vehkaoja - Sensor Technology and Biomeasurements
- Jari Viik - Physiological Measurement Systems and Methods
- Jari Hyttinen - Computational Biophysics and Imaging Group

Examples of services

- Testing a company product against a reference devices or testing the effect of an intervention
  - With healthy participants or with patients in collaboration with TaUH
- Testing against medical device standard (not an ackredited lab)
  - E.g. ECG standards, SpO_2 standard, EMC (partially)
- Evaluation of an existing device design
- Development of full embedded prototype systems including algorithm and software development

Examples of references and interventions

Biopac MP160 Research System

- 7 wireless modules for different physiological measurements (ECG, EEG, EMG, EOG, NICO, RSP, PPG and EDA)

NOX A1

- Ambulatory polysomno-graphy system

Finapress Nova

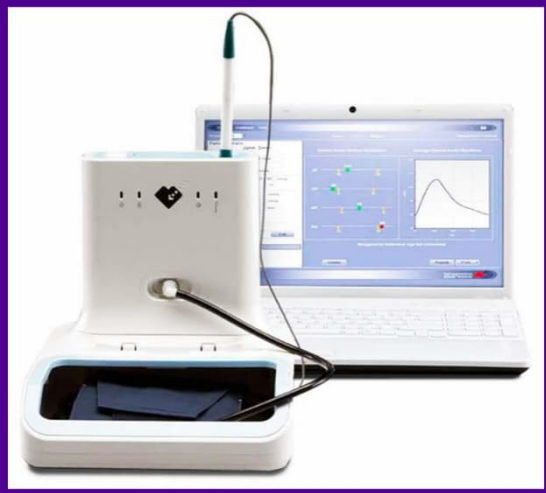
- Continuous non-invasive blood pressure

Hypoxico Everest Summit

- SpO_2 intervention
- High-grade reference devices

Types of collaboration

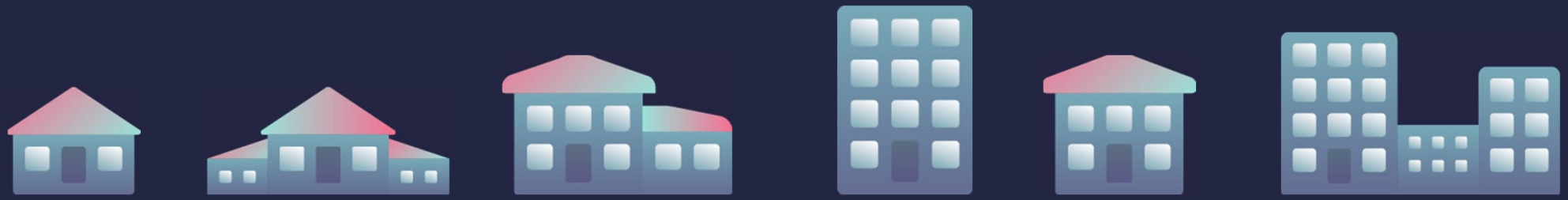
- Contract research
- Joint public funded research projects e.g. Business Finland, EU Horizon
- BSc and MSc thesis projects
- Smaller student projects



https://vitacam.health/

Vitacam®

NE DEVICE SW



Founded in 2014	IT consultancy	inDemand winner	Co-creation	Certification	Collaboration
Founded by mobile industry veterans	Working on medical devices & imaging	Winner of EU wide innovation challenge		EU regulatory compliance	Collaboration across Finland and UK

NOKIA

Microsoft

GE Healthcare

ZEISS

inDemand

OYS OULU UNIVERSITY HOSPITAL

CE

ISO 13485
MEDICAL DEVICES

South West Academic Health Science Network

UNIVERSITY OF PLYMOUTH

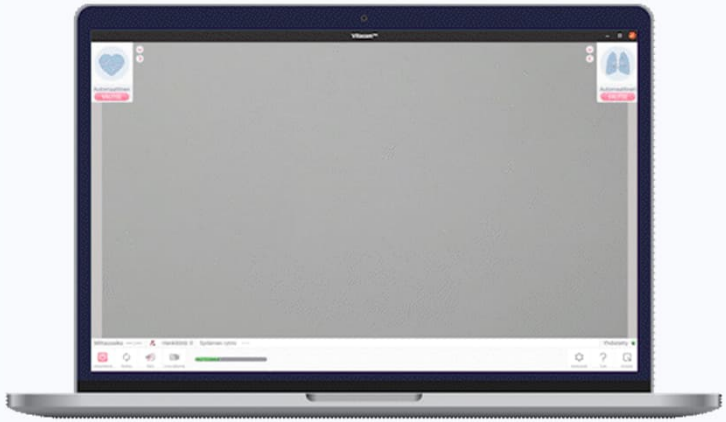
Tampere University

POHJOIS-POHJANMAA
Council of Oulu Region

FUNDED BY NIHR | National Institute for Health and Care Research

Yorkshire & Humber AHSN

Anglia Ruskin University

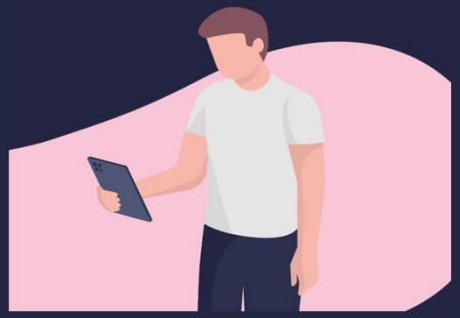


VITACAM TRIAGE: MEASURE RESP RATE, HEART RATE & RHYTHM IN REAL TIME

EMERGENCY DEPARTMENT TRIAGE

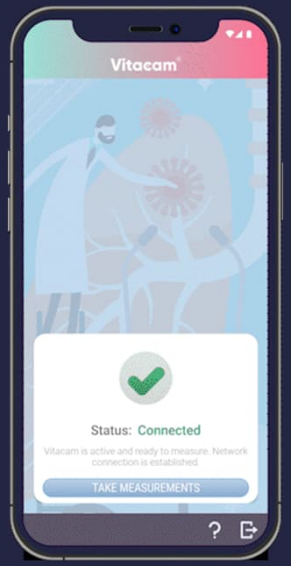
CLINICS

VITACAM MOBILE: MEASURE & TRACK PERIODICALLY



VIRTUAL WARDS / REMOTE MONITORING

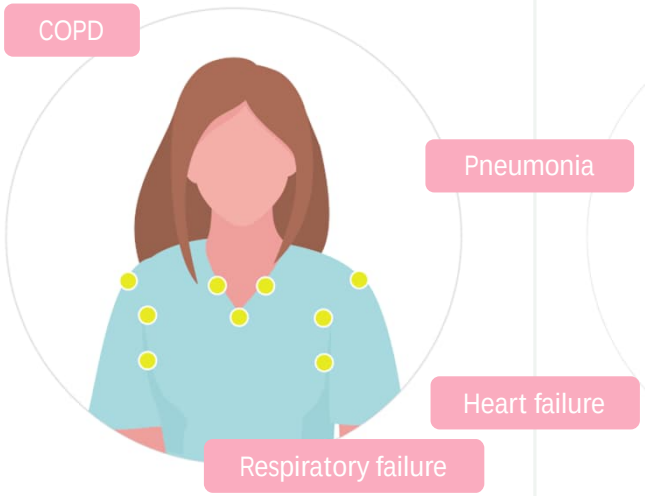
ELDERLY CARE



VITACAM: FOR BOTH CLINICAL AND HOME SETTINGS

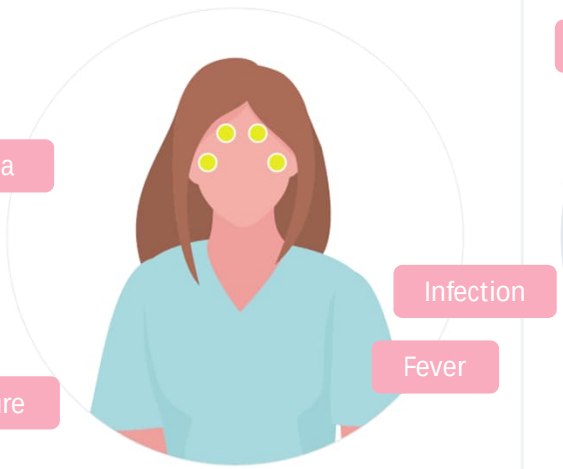
AIMING TO BE FIRST TO MARKET WITH OXYGEN SATURATION THROUGH VIDEO

Respiratory rate



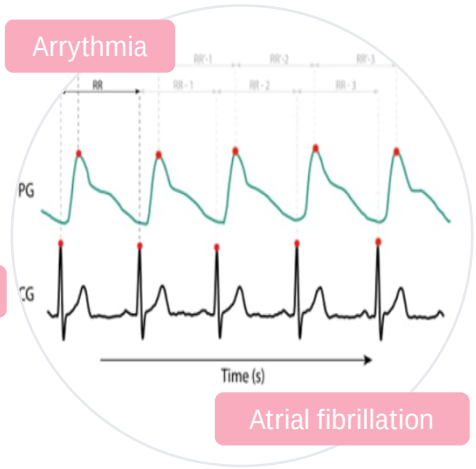
- Available now
- Derived from motion analysis of chest
- Mean Absolute Error: 2 breaths per minute (vs gold standard)

Heart rate pulse



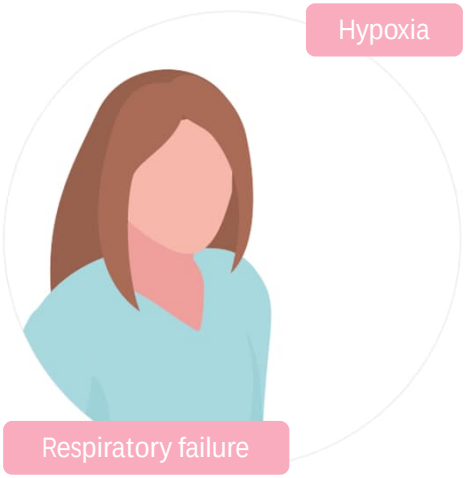
- Available now
- Algorithms detect subtle colour changes of the face from pulsatile blood
- Mean Absolute Error: 3 beats per minute (vs gold standard)

Heart rhythm & variability



- UNIQUE SELLING POINT
- Based on statistical analysis of inter-beat intervals.
- Clinical investigation ongoing – Tampere

Oxygen saturation



- UNIQUE SELLING POINT
- Clinical investigation ongoing - Tampere

BENEFITS OF COLLABORATION WITH TAMPERE UNIVERSITY

1) EFFICIENT TEAMWORK TO PLAN THE RESEARCH

- Site visits & insights to develop the initial plan, budget and protocol
- Developing and improving the protocol as per ISO 14155:2020 and ISO 80601-2-61:2017, ensuring acceptance by Notified Body

2) ETHICS & REGULATORY APPROVAL

- Fast & high quality preparation for deliverables to Ethics committee and Fimea
- Timely & comprehensive responses to complex questions including data protection and clinical safety

3) CONDUCTING THE INVESTIGATION

- Effective & efficient recruitment and co-ordination
- Smooth sessions for data collection
- Always ensuring Good Clinical Practice & Safety protocols

GET IN TOUCH

Try out the app:

Apple App Store

Google Play:

Request credentials by email to info@vitacam.health

NE Device SW Ltd.

Teknologiantie 7b
90590 Oulu
Finland

www.vitacam.health

MOYEEN AHMAD | CEO

Ex-Nokia product management

Broad experience both in software and hardware product management, portfolio management and marketing.

Email: moyeen.ahmad@nedevicesw.com

Phone: +358 50 4868749

MIIKKA KIRVESKOSKI | CTO

Ex-Nokia software architect

Extensive experience in runtimes, connectivity, service frameworks, operator customisation and firmware updates. Holds several patents in mobile technology.

Email: miikka.kirveskoski@nedevicesw.com

Phone: +358 40 7284089

PULSE ON Tools for Doctors

PULSEON ARRHYTHMIA MONITOR SYSTEM

THE NEW FRONTLINE OF ATRIAL FIBRILLATION DETECTION

USEFUL TOOL FOR DOCTORS

PulseOn's solution is designed in collaboration with cardiologists to help diagnose, screen for and monitor cardiac arrhythmias. It originated from requests from cardiologists to develop a device that could also be used to diagnose asymptomatic arrhythmias.

SYSTEM USE

- To detect possible cardiac arrhythmias, particularly atrial fibrillation, that are even asymptomatic.
- To verify possible arrhythmias observed by the patient such as shortness of breath or palpitations.
- Follow-up the effectiveness of treatment given to arrhythmia symptoms.
- Screening of atrial fibrillation e.g. in population.

EASY AND RELIABLE ARRHYTHMIA DETECTION

PulseOn Arrhythmia Monitor System continuously analyzes the patient's heartbeat for possible cardiac arrhythmias and records heart rate intervals 24/7.

When the device detects an arrhythmia, it vibrates and prompts the patient to take an ECG by placing the other hand on the device.

The device can also be timed to ask the patient to take an ECG at a specific time, or the ECG can be taken by oneself if suspecting an arrhythmia.

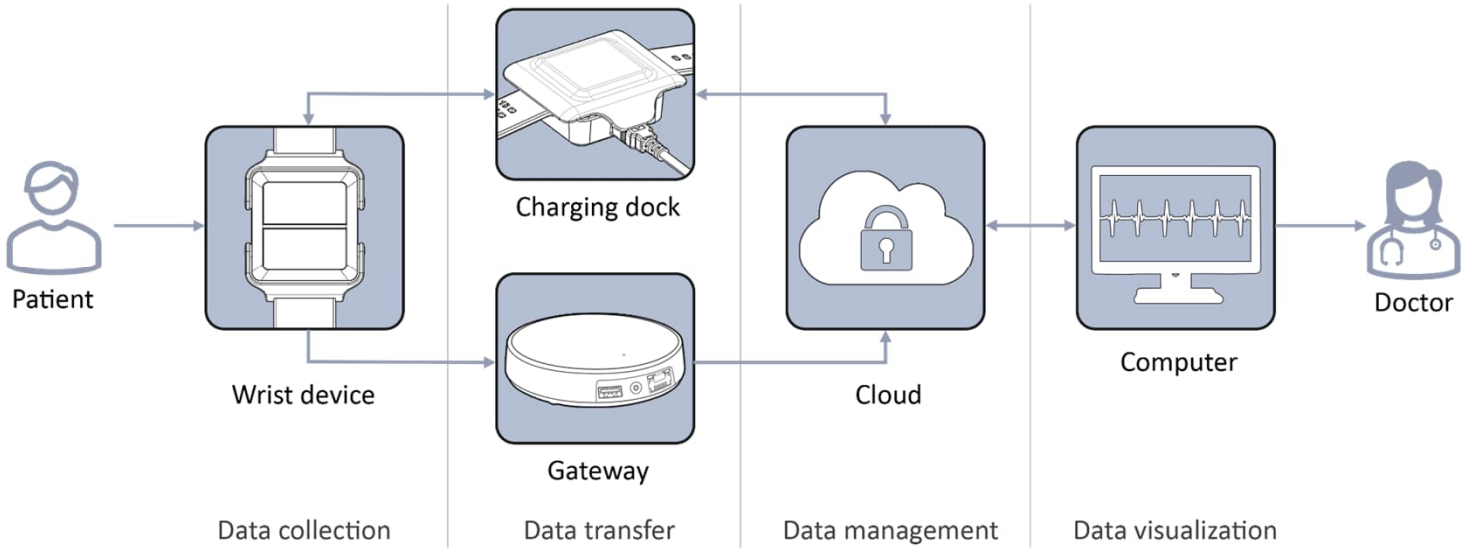
The device has an adjustable silent time. If the patient has a long-lasting episode, the device can be set up to request an ECG measurement only every 4 hours at night and every 2 hours during the day.

WHAT THE SOLUTION CONSISTS OF?

Data collection is based on the optical measurement method photoplethysmography (PPG) and electrocardiography (ECG).

The measurement data is sent to a secure cloud service, where the algorithms parse the data into an easy-to-read format. Data can be transferred from the wrist unit to the cloud service using either a separate gateway or data transfer software.

Physicians can read the data from their own computer using a web browser. Cloud service tools allow doctors to make a diagnosis faster and more reliably.



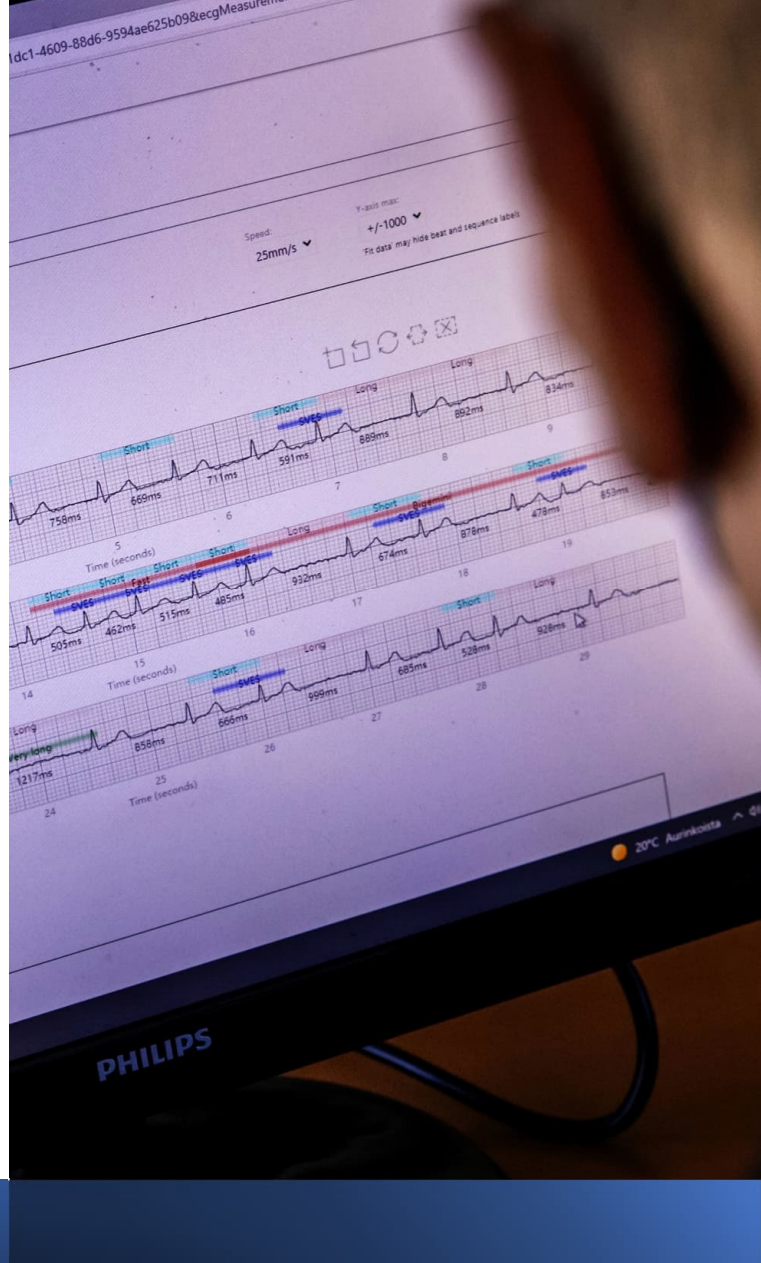
DATA MANAGEMENT SERVICE - DOCTOR'S UI

BENEFITS FOR PATIENTS

- Easy to put on, use and take off.
- Suitable for patients of all ages and abilities.
- Does not disturb normal life.
- ECG electrodes are on the device and immediately available.
- Notifies the patient to measure the ECG as soon as the device detects an irregular pulse.
- Reminds to take scheduled ECG measurements daily.
- Stylish design.

BENEFITS FOR HEALTHCARE PROVIDERS

- Allows long-term (even several weeks) continuous monitoring of cardiac rhythm.
- Detects and records also asymptomatic arrhythmias and even short periods of arrhythmia.
- Allows accurate monitoring of the heart regardless of the location of the patient or physician.
- Automated pre-analyzed data for faster and more reliable diagnosis.
- Easy to put on and quick to tell how to use the device.



ECONOMICAL

Does not require initial investment. The solution is sold as a service, based on the amount of usage and number of performed investigations.

ECOLOGICAL

All parts are easy to clean and can be reused by patients up to 5 years. The battery lasts for at least a week on a single charge.

CE 0537

PulseOn AMS-1 is one of the first CE marked arrhythmia monitors in the EU that meets the new MDR Class IIa requirements.

Designed and manufactured in Finland.