FlexCLEC wearables pathfinder experiment

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Introduction

- During the project we will develop and validate in field trials (goal TRL7) a flexible wristband which can be used for personal monitoring.
- Because reliability and ease of use are of extreme importance for the key users as we learned from earlier projects we will:
  - Use cellular IoT (LTEm1 and NB IoT) for connectivity
  - Integrate the antenna into the flexible wristband
- Monitoring of vital signs, motion detection and the possibility of triggering an alarm are integrated.

Consortium - 3 partners

- **VNTU, located in the Vinnitsa region (Ukraine). The university has scientific know-how and FtO of its flexible antenna-technology. Besides that, VNTU has a well-established local network of partner companies for prototyping and demonstration.**
- **L-TEK, Slovenia, employs over 20 engineers and established intensive development partnerships with research institutions through ERDF-project Tigr4Smart, and commercial development centers in the field of electronics and information technology.**
- **Montr, SaaS provider from the Netherlands, and is also a former partner in the Technology Transfer project TETRAMAX, connected its Montr hardware (cellular IoT emergency buttons) to a real-time alarm response platform. These project results will be integrated to speed up deployment of flexible cellular IoT emergency messaging.**

Proposition

- **FlexCLEC is anticipated to result in a fully flexible, wearable sensor wristband that is always connected over cellular IoT via Montr's high-performance emergency response system.**
- **For 24/7 remote caretaking of sensitive social groups, rigid electronics are a primary bottleneck.**
- **Ease of use of cellular IoT (long battery life, no user interaction required) is one of the most important benefits.**
- **Fully European sourced hardware, with European sourced firmware is a unique proposition in the market.**
- **GDPR compliant**

The challenge

- During the implementation of the Experiment, a broadband flexible LTE antenna developed at VNTU will be used. The original design of this antenna and its optimal matching with the wearable device will allow:
  - To reduce the effect of capacitance and impedance in the antenna when putting the wristband on an arm.
  - To decrease a change in the spatial antenna pattern when the wristband bends.
  - To minimize an influence of ambient parameters on the broadband flexible LTE antenna characteristics.
  - To ensure a reliable communication of the wearable device in the LTEm1 (or NB IoT) network.
  - L-Tek will ensure that the flexible technology will be ready for low number automated production ensuring quick time to market.

Commercial viability

- **We will focus on two user groups:**
  - **Elderly people, living alone. Mostly in NW Europe**
  - **Health sector, remote monitoring of patients, and lifestyle interventions (people have to increase their daily activities)**
- **In 2019 elderly persons (aged 65 or over) had a 20.3 % share of of a total of 447 mln people living in the European Union.**
- **(Compound) annual growth rate of sensitive groups consisting of elderly and persons living alone expects to be 6.46% until 2027**
- **After finalizing the project trials in late 2021 Montr will contact it's business partners like healthcare organizations to cooperate in deployment of the then proven technology.**

Thanks for your attention

- **Questions or feedback: stefan@montr.nl**