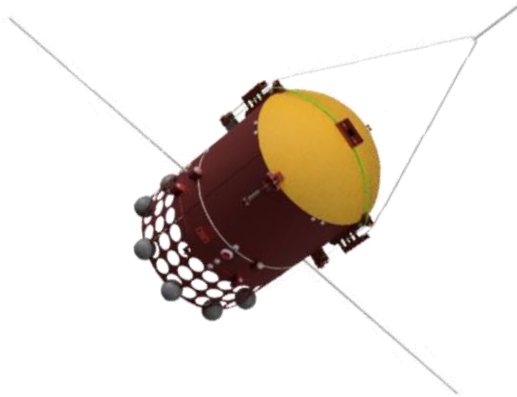**GOSPACE**

Eurisy online conference
21st October 2022

Solutions for connecting in-situ
measurements and sattelites

Space activities formed company DNA

Stratospheric Landing System

High-altitude balloons equipped with
autonomous gliders, developed for the
European Space Agency within the slovak PECS
programme

CubeSats
Design, development & testing

We gained unique experience
with space projects and hardware:
miniaturization, data transmission capable of withstanding
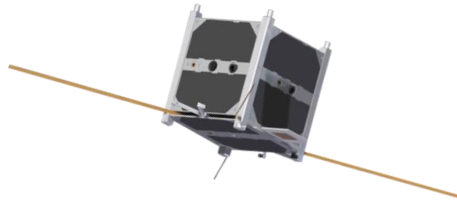extreme environmental conditions.

- The story of the company begins in a non-governmental organization - the Slovak Organization for Space Activities

- **The company has developed its own stratospheric probe** (already the 4th generation). It has been flying with scientific experiments on a regular basis

- Our company has received a certificate from the European Space Agency, recognizing us to be **among the first teams in the world to receive timing signals from the first four Galileo satellites**

- The company developed components for the **first Slovak satellite, a CubeSat named skCUBE – launched into space in summer 2017** - gaining several certifications and recognitions

- The company has developed **a unique stratospheric method to test the overall performance of IoT-networks.** A tailor-made stratospheric probe can climb up to 40 km of altitude, communicating over a distance about 700 km

With this legacy we have decided to
bring rocket science into urban challenges

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From space to the IoT market
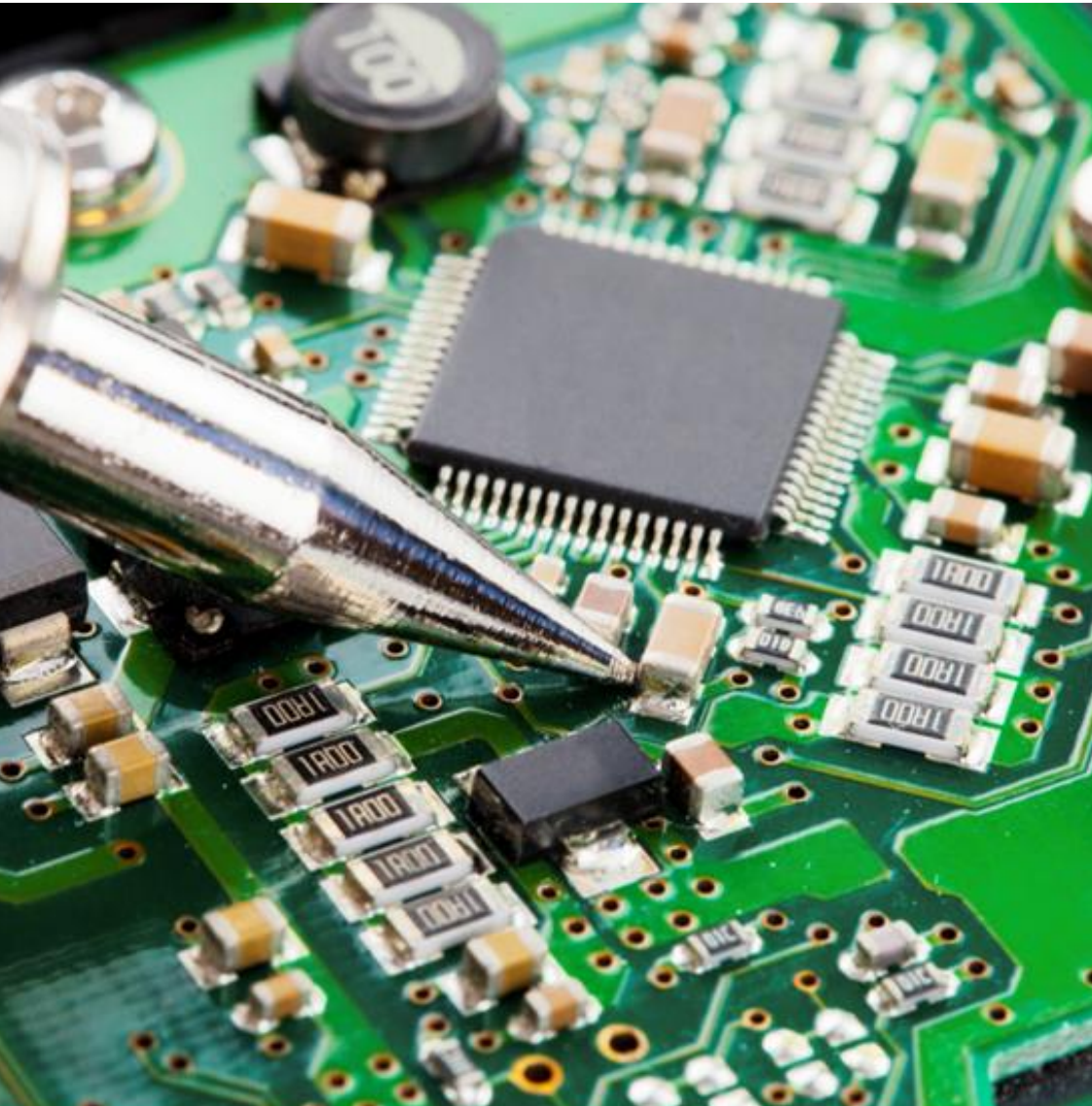
- GOSPACE gained a unique experience with space hardware projects including cooperation with ESA and continues its journey with IoT based on a virtue like **miniaturization, long-distance communication, space-qualified electronics, and telecommunication technologies**

- From 2016 - 2017, the company decided to focus its efforts and resources to **the emerging trend of IoT.** It strategically aims towards operating in the area of **Smart Cities, IoT, Industry 4.0**

- Besides **R&D services** GOSPACE develops also **own products:**

  - In 2016-2017 we enter the market of **smart parking solutions**

  - Last year we enter market with **smart hydrometrological stations**

- Our **flagship IoT smart sensor is universal for any kind of IoT network** (LoRaWAN, SigFox, NB-IoT, LTE-M...)

- -

Based on extensive experience and endless trials and errors from developing/testing our Fleximodo IoT smart sensors **we are ready to address various, complex IoT development challenges**
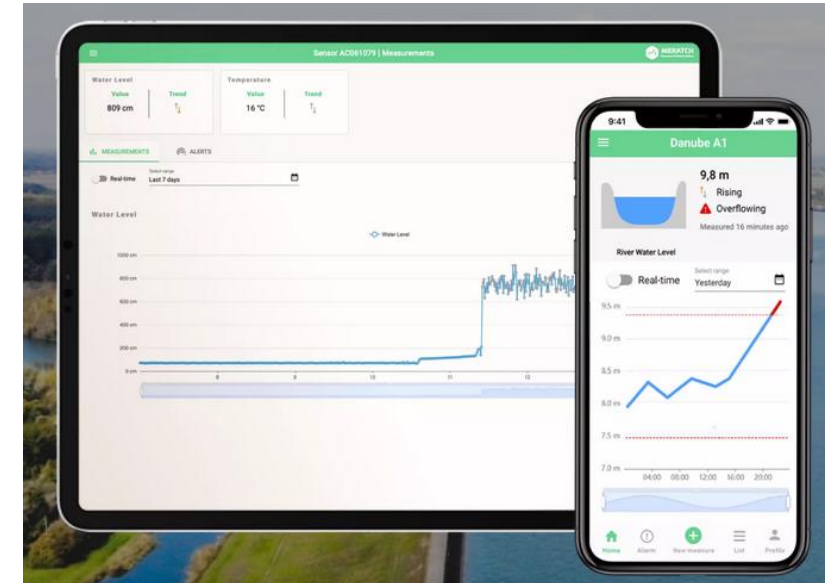
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The motivation

- We see that the Danube river in Bratislava can **rise quickly**

- We aim to **monitor water levels cheaper, faster** and fully **automatic**

- We create a mobile app to **alert authorities and citizens** via email and **SMS**

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Our in-situ measurement product

MERATCH
Measure & Watch Online

meratch.com

- wireless IoT sensor
- long-life battery (5-8 years)

- Super easy installation
- Magnetic or mechanical

- Live data
- Automatic alerts

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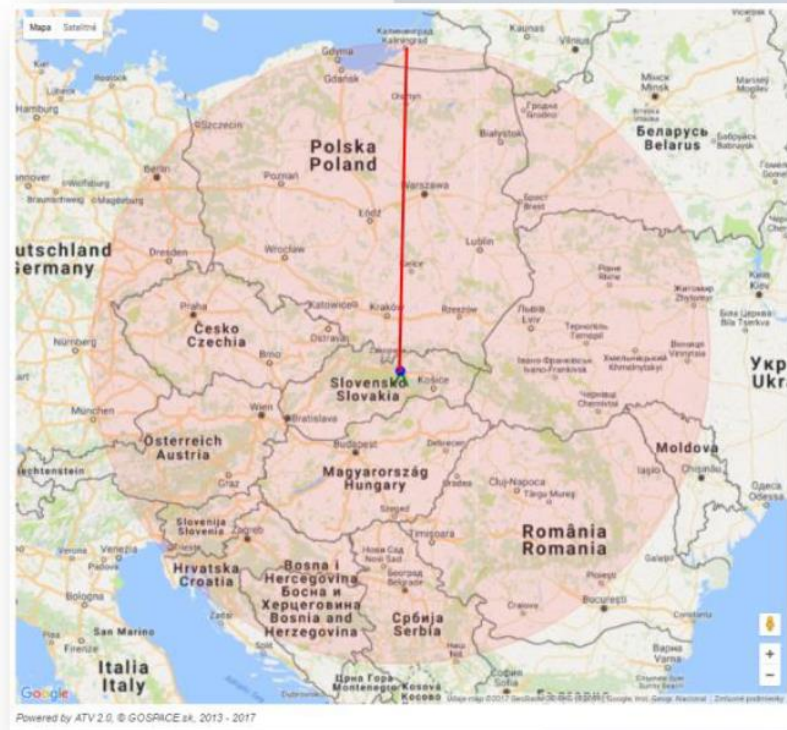# Terrestrial IoT Communication used

LoRaWAN communication – open standard, low-cost gateways, unregulated frequencies – **quick and cheap connectivity**

NB IoT communication – GSM network upgrade, regulated frequencies – **guaranteed, corporate connectivity**
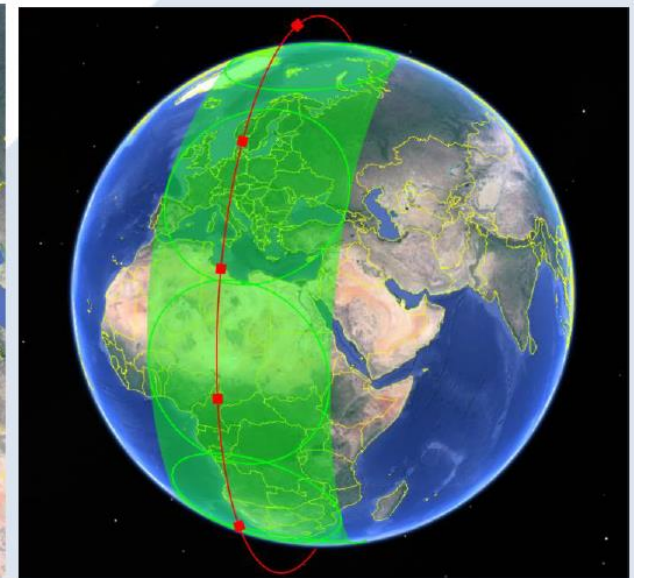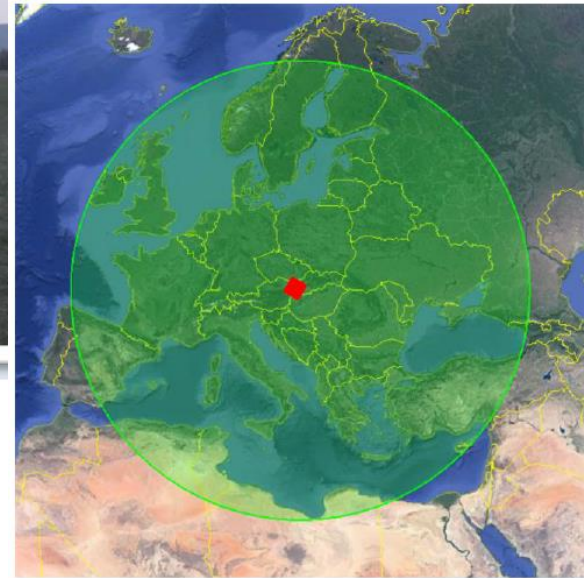
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Our way to satellite communication

GOSPACE balloons communicating about 700 km range from 40 km altitude (2016)

- Our stratospheric LoRaWAN communication record brought us to an idea of the "IoT SAT" back in 2017

GOSPACE concept of orbital LoRaWAN satellite constellation (2017)

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Current orbital IoT services used

- **Long-range Low-power Low-bandwidth** radio protocols enable us to produce **long-life battery-powered wireless sensors**

- **Satellite-based** IoT enables us to install our sensors practically **anywhere** (very remote woods, swamps, lakes, rivers, …)
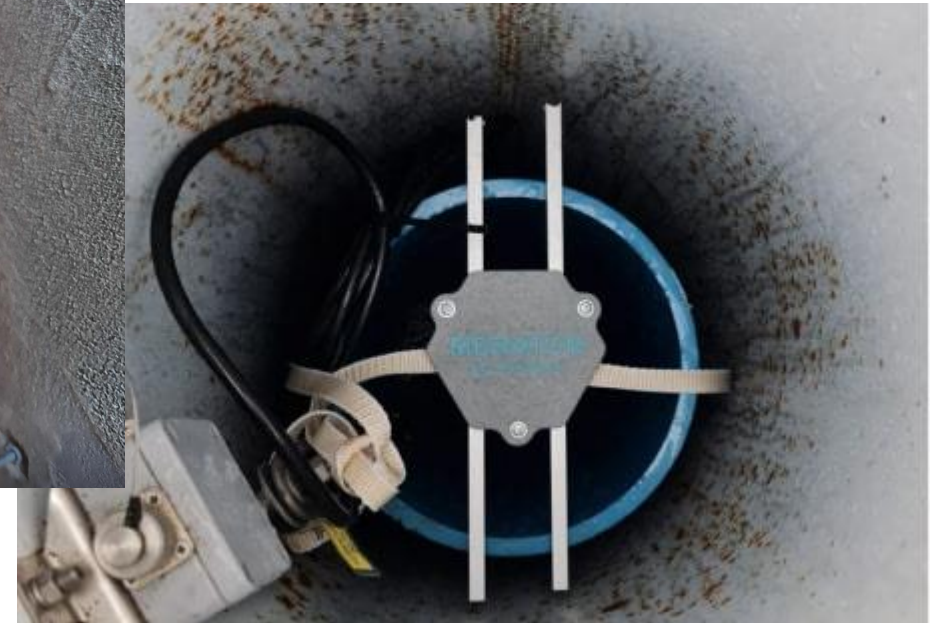

Orbital LoRaWAN
(UK)

Proprietary protocol
(Switzerland)

Orbital NB-IoT
(Spain)

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Remote hydrological monitoring

▪ **Underground water levels**

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Remote hydrological monitoring

- **City reservoirs**

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Remote hydrological monitoring

- Remote river levels

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References

Thank you for your attention