Current and Emerging Topics

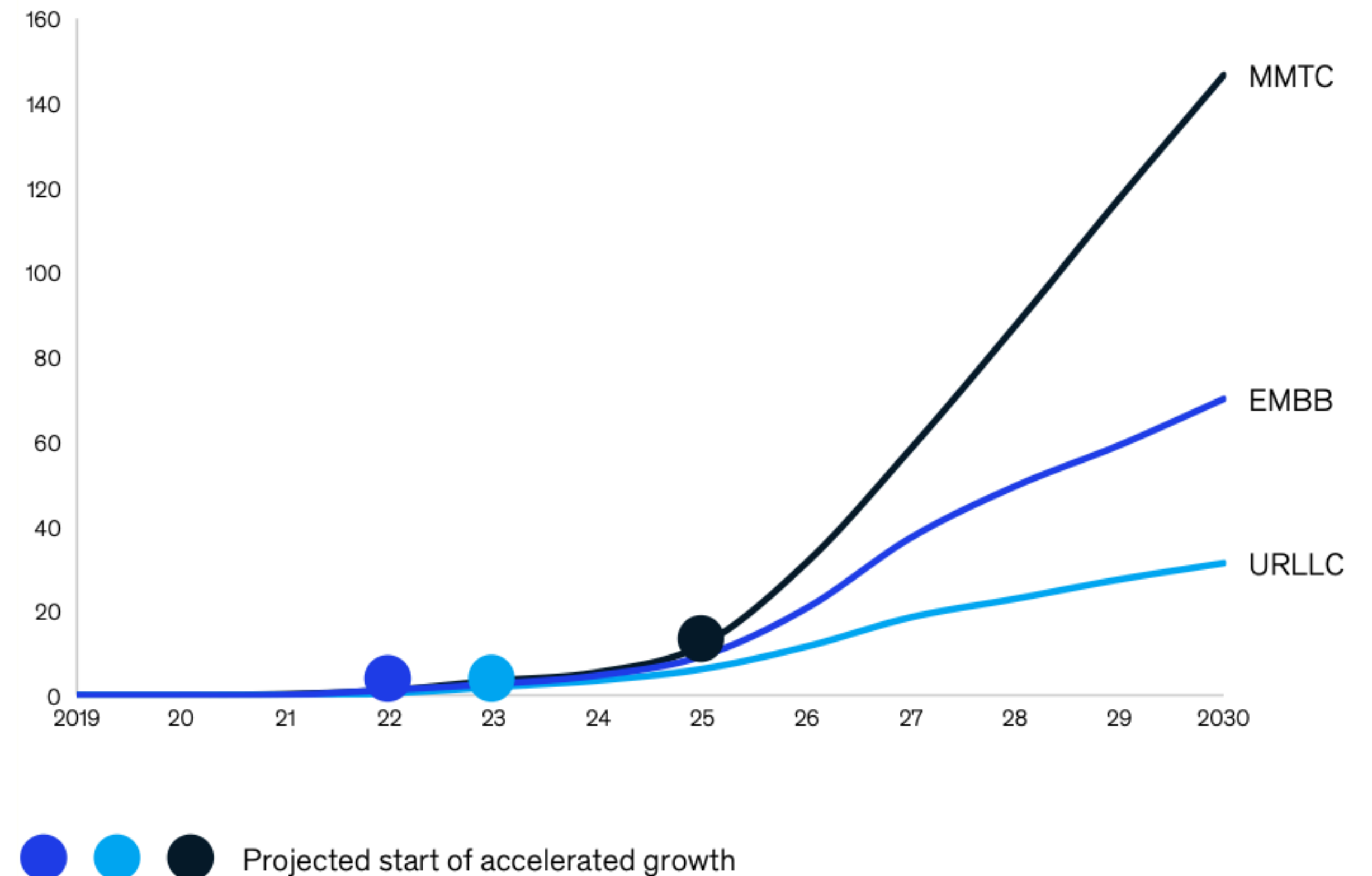## Matching the ITU CoE priority areas

Dr.Marco Zennaro, STI Unit, The Abdus Salam International Centre for Theoretical Physics

Applications of 5G

Current hot topic #1

- 5G IoT use cases: minimize power consumption and/or leverage energy harvesting solution to allow for several years of unattended operation for the end devices

- Smart cities, with applications such as HD cameras to monitor safety

- Smart energy, such as smart grid control

- Connected health, such as mobile medical monitoring.

Forecast 5G IoT unit sales, millions

Source: McKinsey expert interviews and analysis

Satellite connectivity

Current hot topic #2

- Connectivity for the next Billion

- Sensors from unconnected sites

- Policy (satellite + ground stations)

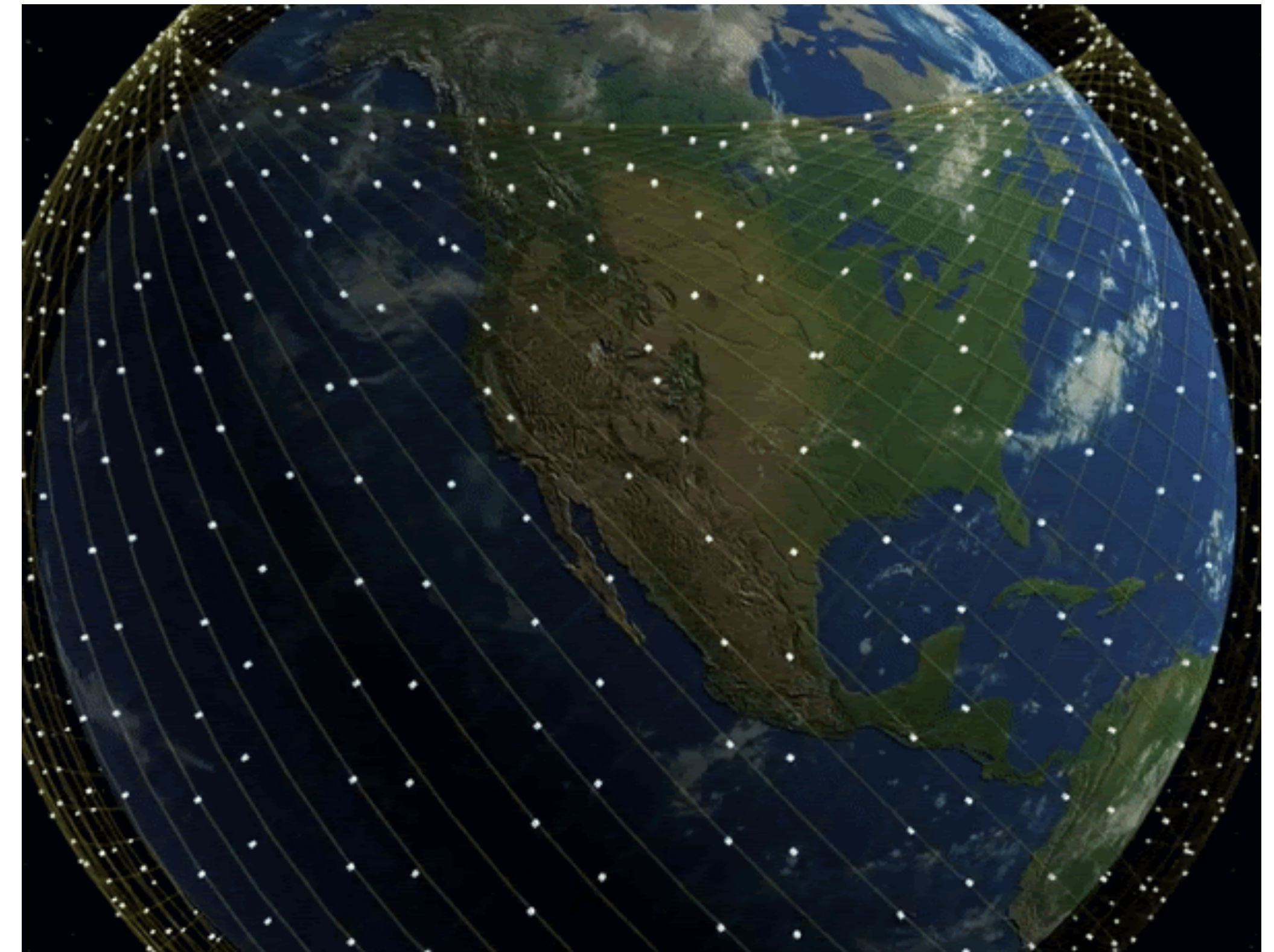- Debris/obfuscation of astronomical observations

Diagram of a possible orbital plan for Starlink
Source: https://bit.ly/3vH7JpQ

Applied AI
Emerging topic

- TinyML is ML on sub mW devices

- Applications with no network

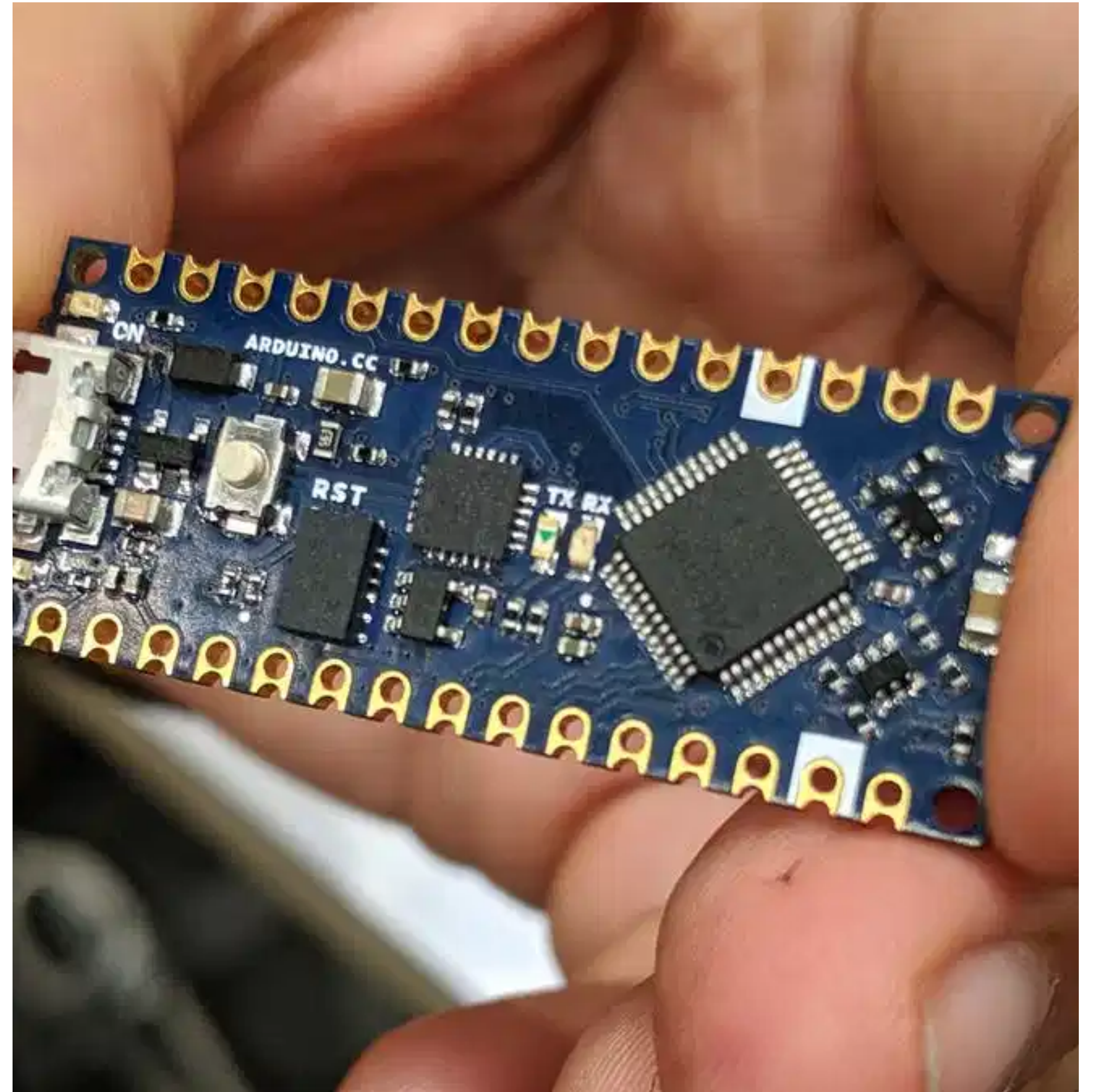- Very low carbon footprint

- Societal Impact

- Ethical Issues

- WEEE

Image Credits: hackster.io

ITU CoE priority areas
Matching new topics

5G apps {
- **Conformance & Interoperability**
- **Cybersecurity**
- **Digital Inclusion**
- **ICTs & the Environment**
- **Innovation & Entrepreneurship**
- **Internet Governance**
- **Internet of Things**
- **Smart Cities & Communities**
- **Spectrum Management**
- **Wireless and Fixed Broadband**

Legend: — 5G — 4G — Wi-Fi 6[1] — NB-IoT

Axes: Speed, Latency and reliability, Connections, Device energy consumption, Range

Source: McKinsey analysis

ITU CoE priority areas

Matching new topics

Satellite
{
Conformance & Interoperability

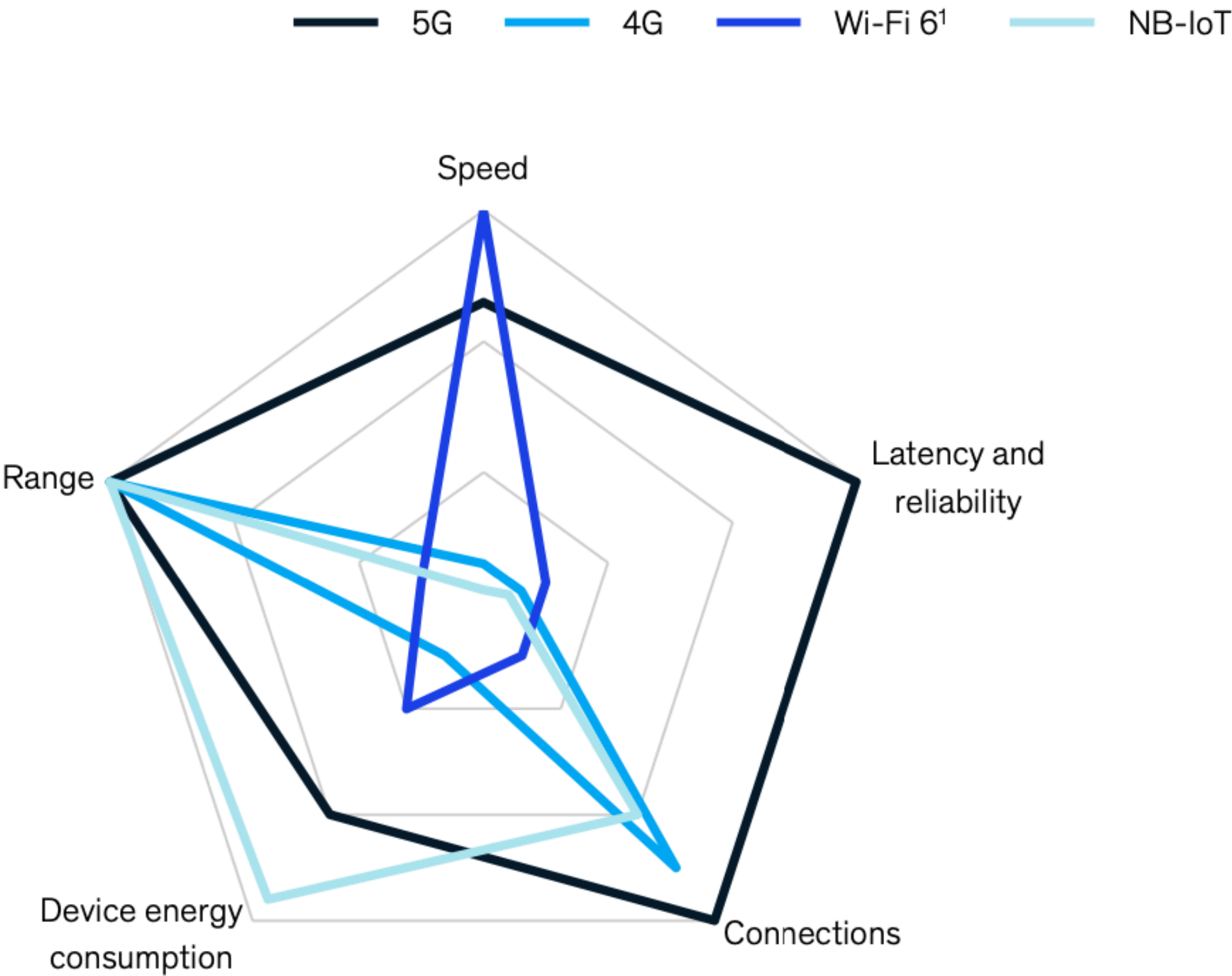Cybersecurity

Digital Inclusion

ICTs & the Environment

Internet Governance

Internet of Things

Spectrum Management

Wireless and Fixed Broadband

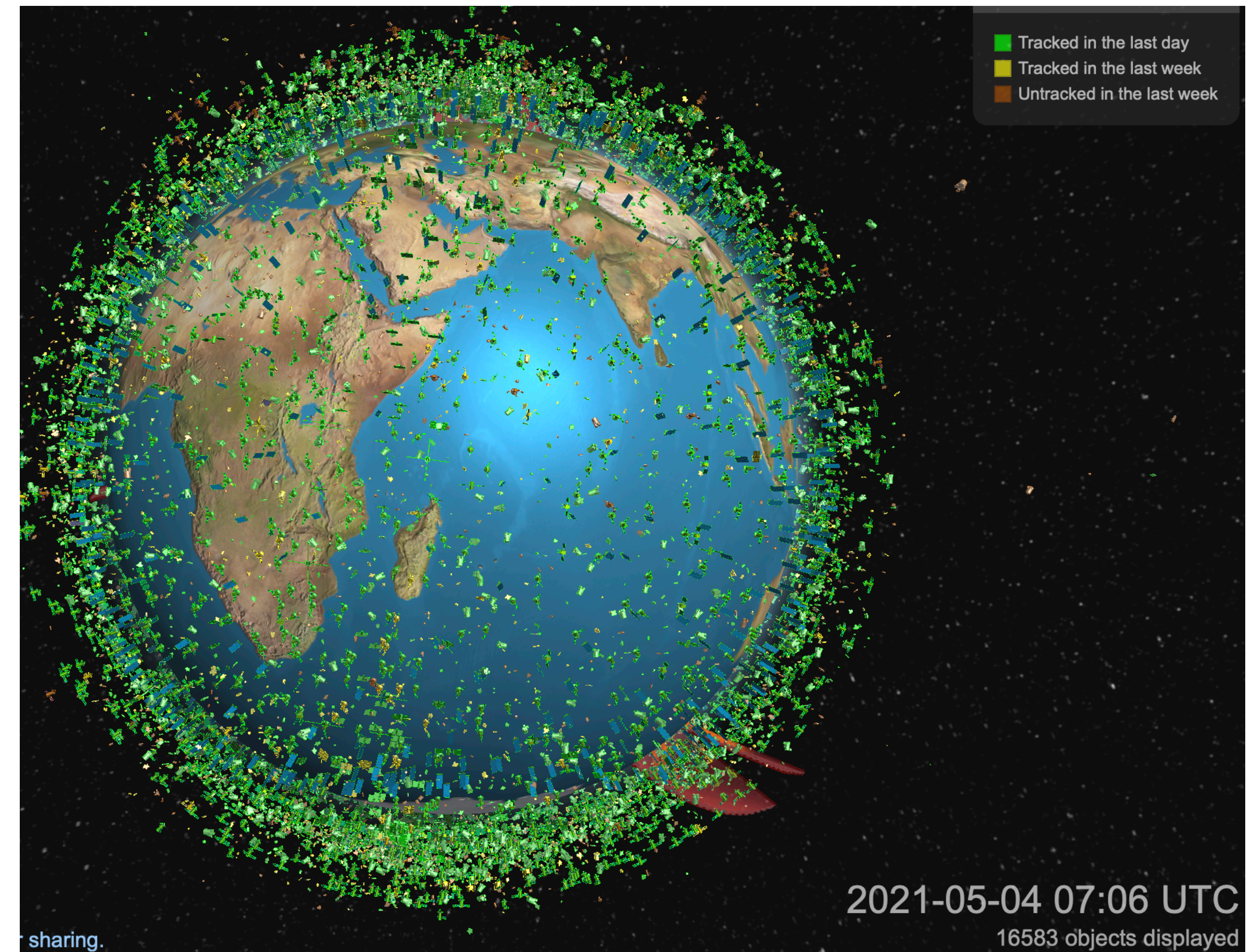Image Credits: https://platform.leolabs.space/visualization

ITU CoE priority areas

Matching new topics

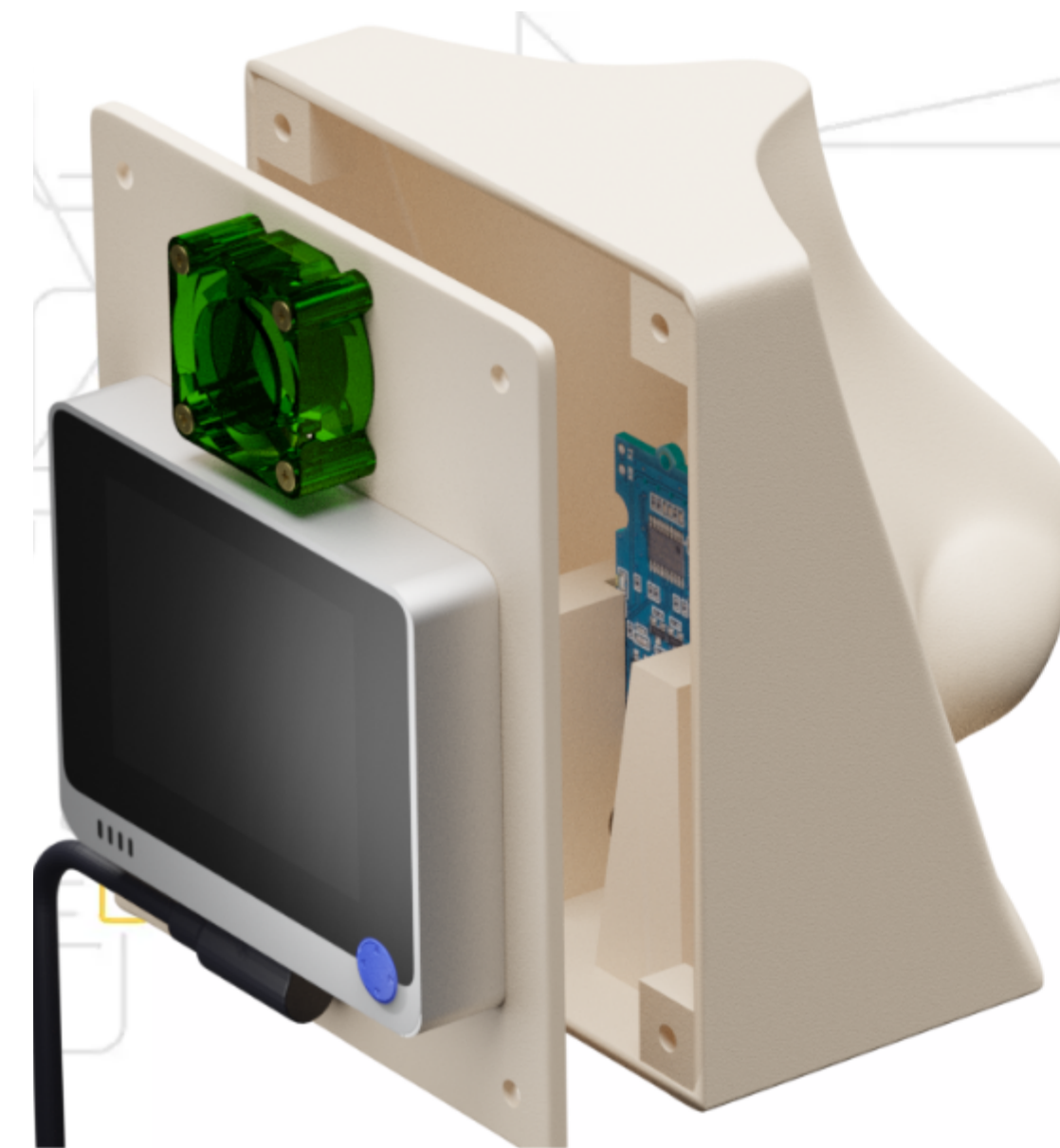AppliedAI {
- Big Data & Statistics
- Digital Economy
- ICT Applications
- ICTs & the Environment
- Innovation & Entrepreneurship
- Internet of Things
- Smart Cities & Communities
- ? (AI)

TinyML-powered artificial nose

kartben/artificial-nose

Aligning to new areas
Quicker process / Adding AI