



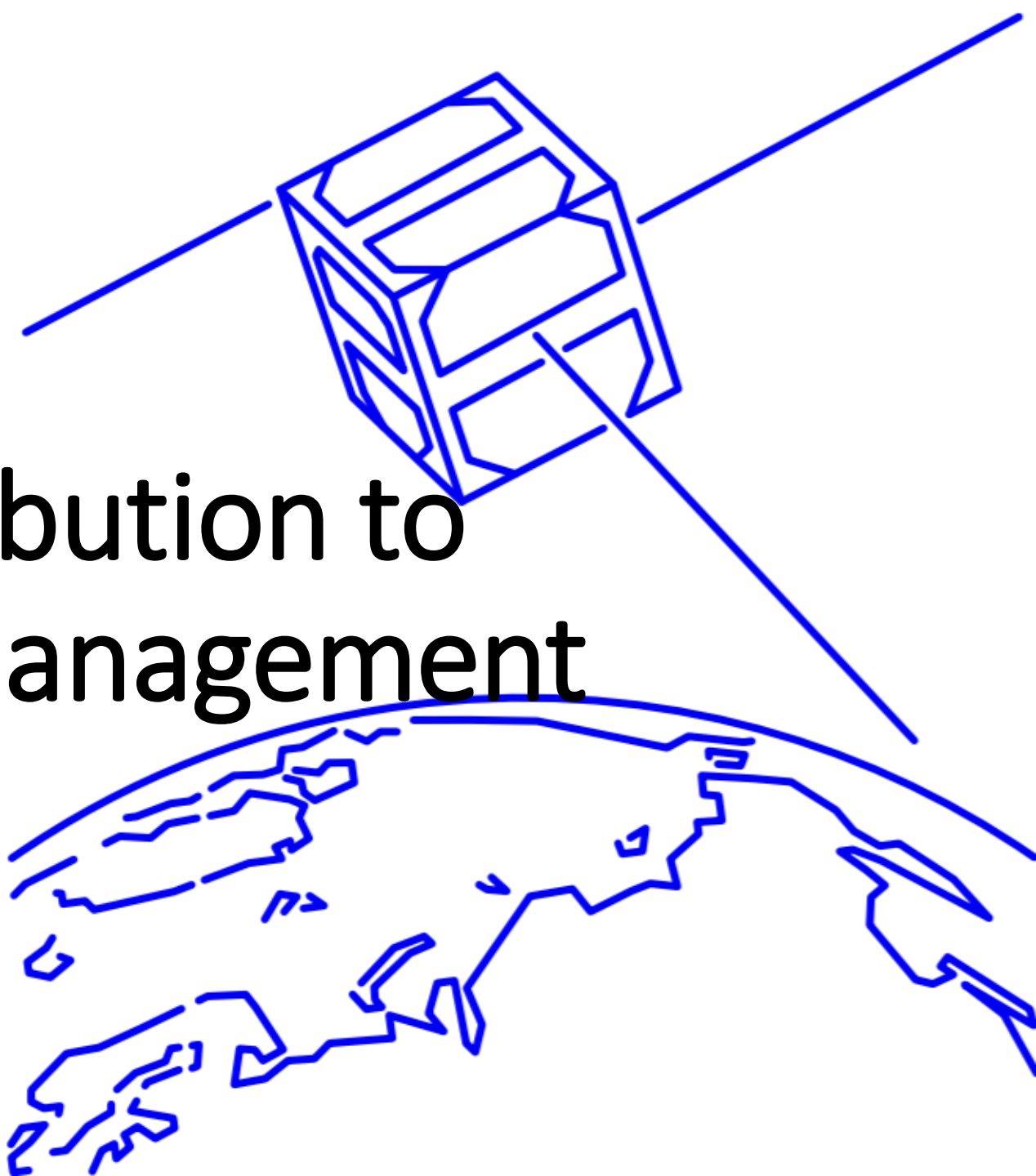
REPUBLIC OF ESTONIA
MINISTRY OF ECONOMIC AFFAIRS
AND COMMUNICATIONS

Estonian contribution to Space Traffic Management

Paul Liias

Head of Space

paul.liias@mkm.ee





digital state services

70%

Estonians who use ID-card
regularly

99%

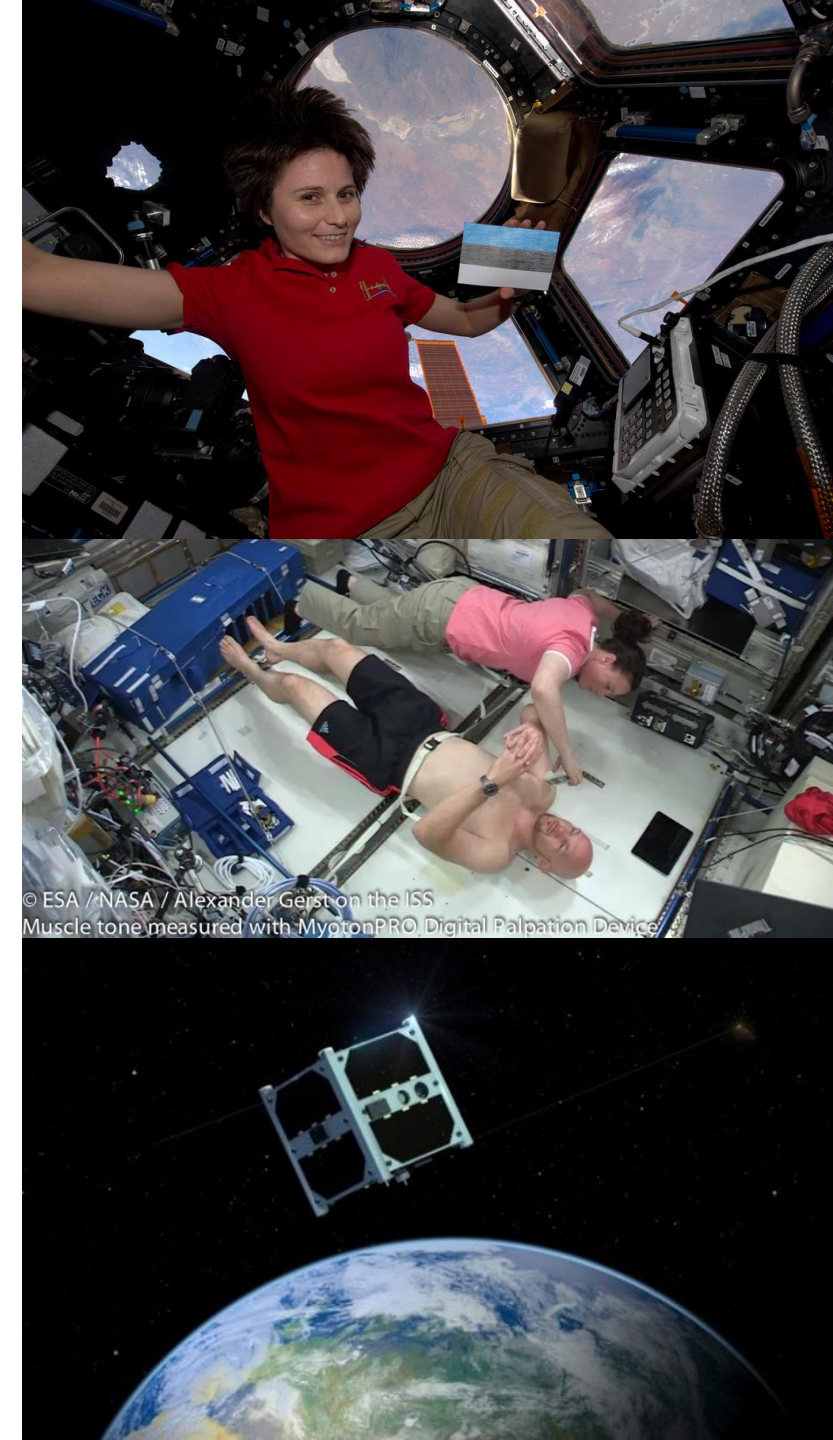
State services that are online

2,600+

Services that can be used via
X-road

Estonia in Space

- 1810 space research started in Tartu Observatory
- 2010 signature of ESA Cooperating State agreement
- 2010 signature of Outer Space Treaty
- 2013 launch of the first Estonian satellite ESTCube-1
- 2015 Estonia became ESA Member State
- 2020 Estonian Space Policy and Program 2020-2027
- 2020 work started on national space law
- 2021 Estonia increased investment in space by 2.5x



© ESA / NASA / Alexander Gerst on the ISS
Muscle tone measured with MyotonPRO Digital Palpation Device

Estonian Space Policy



European Space Agency (ESA) is our procurement agency



Every year one satellite or payload will fly to space



Double the number of Estonian companies who have signed ESA contracts



Four times more users of space tech based applications



Estonia participates in ESA science missions



Spin-in of Estonian experience in cyber security



Estonia will develop a national space law

Estonian industry and technology policy for space



Cyber security

- flight software
- cyber ex
- e-gov



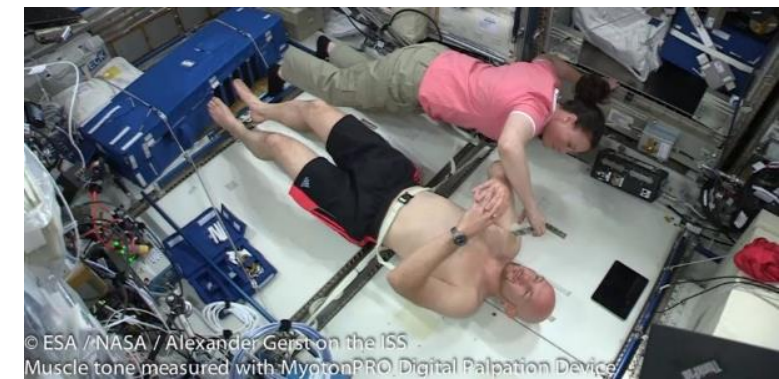
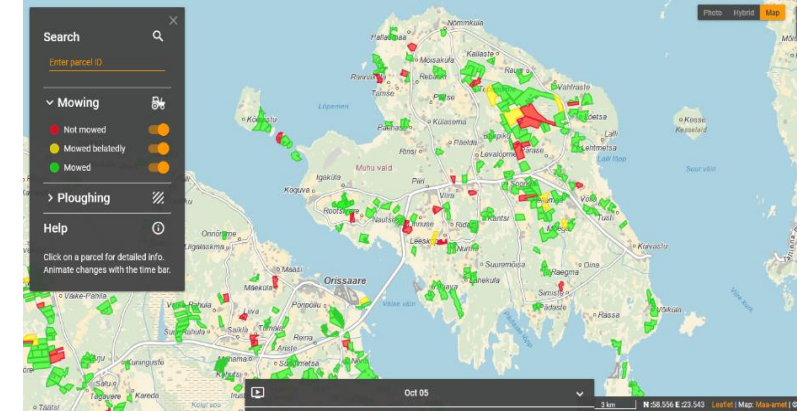
Artificial intelligence

- remote sensing
- autonomous robots



Innovation

- optical devices
- material science



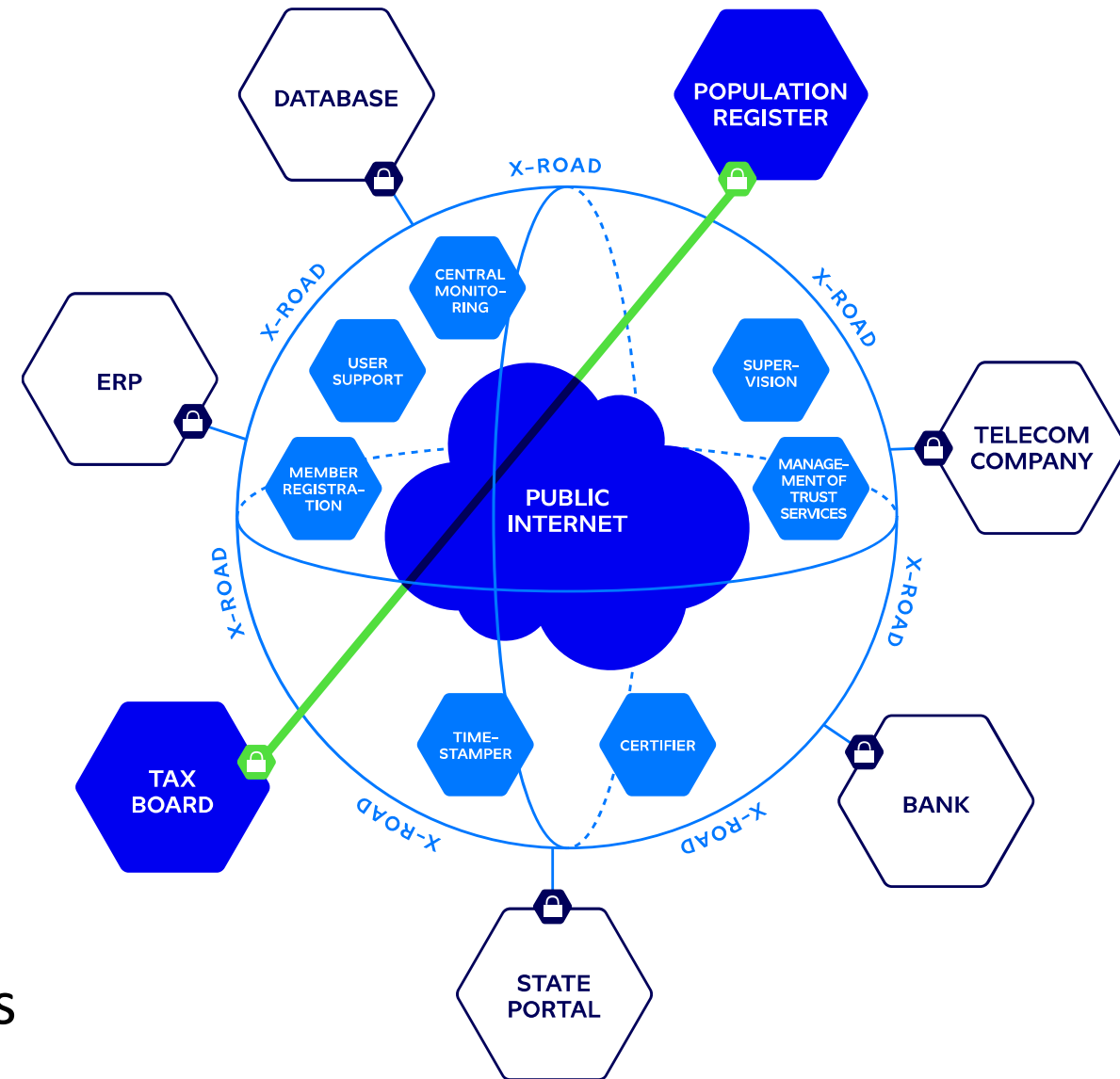
© ESA / NASA / Alexander Gerst on the ISS
Muscle tone measured with MyotonPRO Digital Palpation Device

Estonia & Space Law

- **2018 preparations started**
 - Why should Estonia have a space law?
 - How to improve our conduct in space?
 - How could Estonia contribute?
- **2020 the intention to develop a national space law bill was accepted with the aim to:**
 - Compose Estonian national space law
 - Develop an e-service for satellite registration and operation
 - Join the Registration Convention
 - Join the Liability Convention
 - Join UN COPUOS
- **2021 writing the national space law continues**
 - Focus on e-governance for space
 - Creating Estonian position on space resources

What is e-Estonia?

- The busiest highway of e-Estonia – X-Road since 2001.
- saving 1407 years annually
- over 1000 institutions and enterprises
- 150 public sector institutions
- 2735 different services
- over 900 million transactions per year
- technology exported to other countries



e-Estonia is secure

The safest combination.

confidentiality

ID-card, Mobile-ID
Smart ID, e-Residency

availability

X-Road

integrity

KSI Blockchain

Estonian view on Space Traffic Management

- Space Traffic Management (STM) is a global challenge.
 - all about trust and communication
- Similarities with e-government that Estonia has developed in the past decades.
- e-service would make satellite registration easier and enable streamlined communication among all parties.
- e-service should contain two layers:
 1. registration of space objects – pre-launch notifications
 2. operation and end of life – pre-maneuver notification

STM activities – how we will contribute

- Estonia has established a STM & e-governance working group.
 - cooperation between government, RD institutions and industry
 - with the aim to create follow-up activities and programmes
- Estonian national space law will enable a e-service for STM
- Estonia is interested to lead the digitalization of global STM
 - EE is leading similar developments:
 - developing e-state standards
 - development of COVID-19 vaccine passport
 - advising other countries on e-government



REPUBLIC OF ESTONIA
MINISTRY OF ECONOMIC AFFAIRS
AND COMMUNICATIONS

Thank you!

Paul Liias

paul.liias@mkkm.ee