



Satellite Applications for Smart Mobility

New Opportunities for Scotland

The Lighthouse, Glasgow
6 March 2019, 09:30 - 15:30

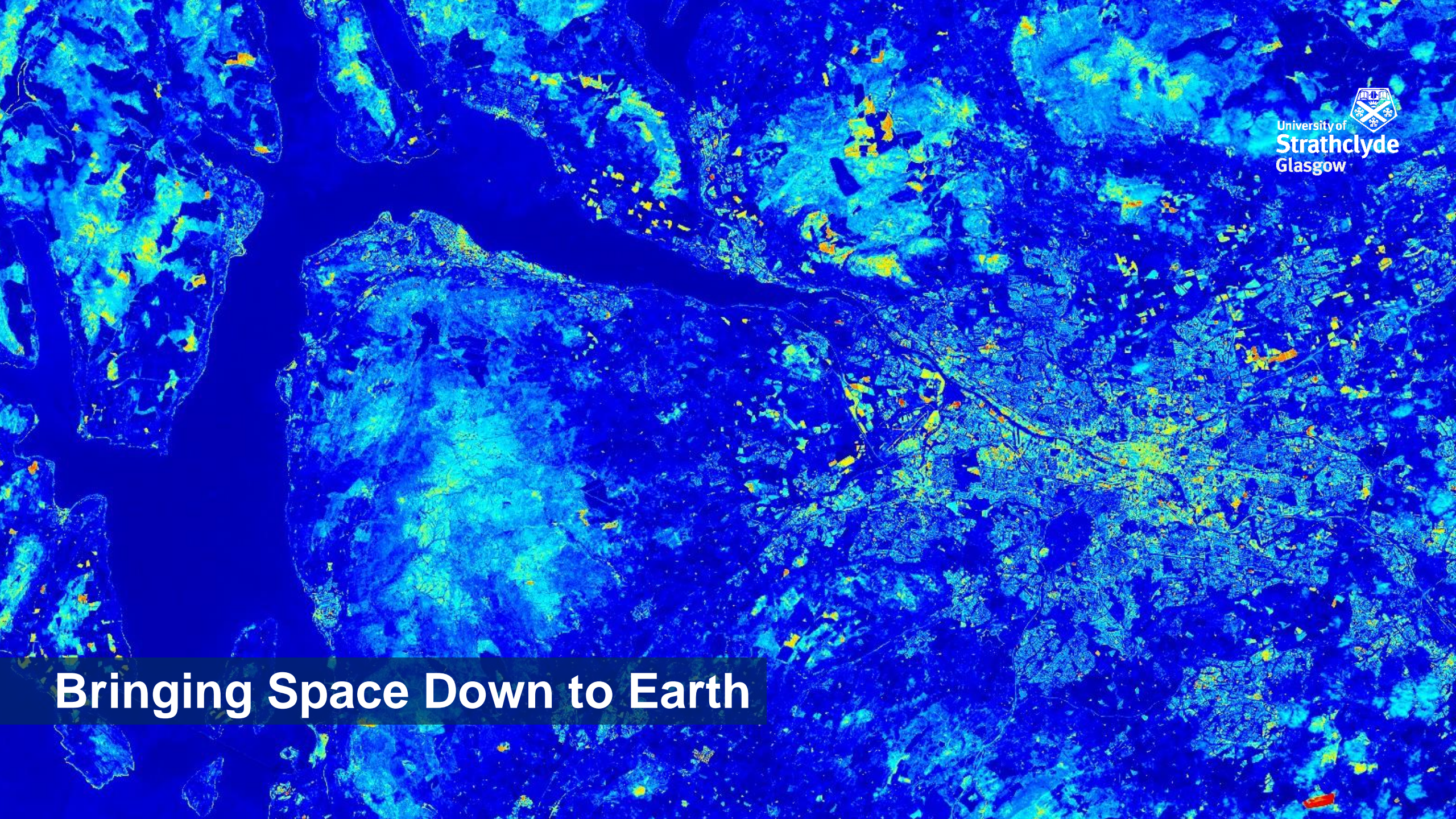
With speakers including:

MaaS Scotland
Scottish Centre of Excellence in Satellite Applications
European Space Agency
UK Space Agency



WELCOME

0930	Arrival and Coffee
1000	Welcome <i>Sue Kee, SoXSa</i> <i>Ally McInroy, MaaS Scotland</i>
1020	Why PNT (Position, Navigation and Timing) is important to the UK and the role of NAVISP within it <i>Andy Proctor, UK Space Agency</i>
1040	NAVISP overview #1 <i>Pierluigi Mancini, European Space Agency</i>
1115	Coffee Break
1135	NAVISP (Navigation, Innovation and Support Programme) Overview #2 <i>Alessandra Fiumara, European Space Agency</i>
1150	Case Study: IMPACARS <i>Rajesh Tiwari, Nottingham Scientific Limited</i>
1210	Case Study: Galileo for Mobility <i>Djibril Kaba, Transport Systems Catapult</i> <i>Ally McInroy, MaaS Scotland</i>
1235	Lunch
1325	Roundtable Discussions
1455	Review of ideas and summary
1505	Close



University of
Strathclyde
Glasgow

Bringing Space Down to Earth

https://www.bbc.co.uk/news/uk-scotland-highlands-islands-46472998

Rocket firm

Business inter ES/ sought

nal 7 December 2018

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> 130 organisations in Scotland engaged in space-related activity (+27% since 2016).
0.29% of Scottish workforce employed by space organisations – highest in UK.

Scotland's space industry plans to grow its value to £4 billion by 2030.

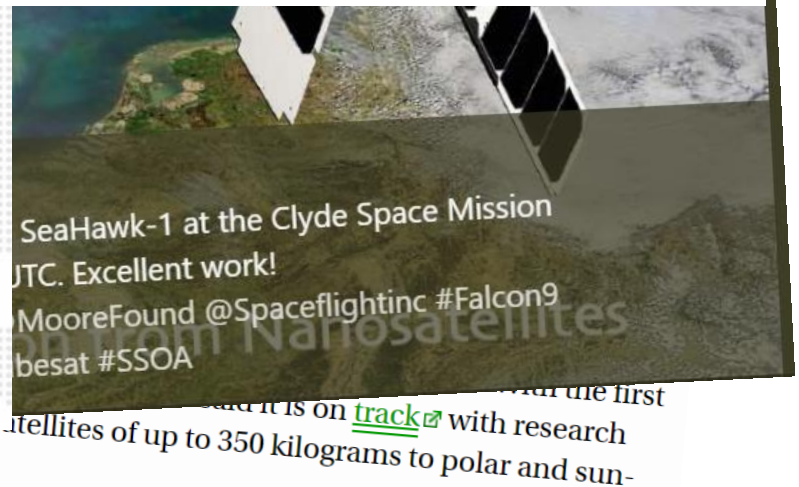


Lockheed Martin is one of the companies already

Occultation (GNSS-RO)



January 2019





SO WHAT?!



SoXSA: *Scotland's Place in Space*

Innovating in satellite applications to deliver global solutions

- Focus on end-to-end supply chain
- Establish projects that answer challenges
- On-the-ground conversation with, and direct access to research & innovation centres
- Three theme areas:
 - Blue Economy
 - Energy Systems
 - Resilience and Sustainability

The SoXSA team

Prof Malcolm Macdonald
Director



Sue Kee
Business Development
Manager



Dr Steve Owens
Knowledge Exchange Fellow



Sarah Burns
Centre Manager



Jimmy Slaughter
Aquasens Project
Manager



Dr Chris Lowe
Research Fellow

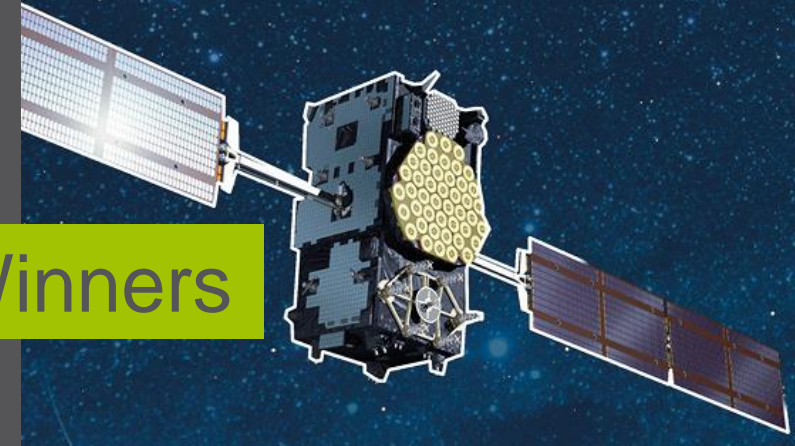


Dr Pam Anderson
ESA Business
Applications RAP-
SCOTNI

ESNC Overall Winners

GUAPO

GNSS based UAV monitoring system for Airfields using Passive radar Observations



EUROPEAN
SATELLITE NAVIGATION
COMPETITION 2016



special prize partners



- NORWAY 🇳🇴 SWEDEN 🇸🇪
- IRELAND 🇮🇪 UK 🇬🇧 LITHUANIA 🇱🇹
- THE NETHERLANDS 🇳🇱 POLAND 🇵🇱
- FLANDERS 🇧🇪 HESSE 🇩🇪
- BADEN-WÜRTTEMBERG 🇩🇪 BAVARIA 🇩🇪 CZECH REPUBLIC 🇨🇪
- FRANCE 🇫🇷 SWITZERLAND 🇨🇭 AUSTRIA 🇦🇹
- GALICIA 🇪🇸 BASQUE COUNTRY 🇪🇸 ROMANIA 🇷🇴
- MADRID 🇪🇸 VALENCIAN COMMUNITY 🇪🇸
- ANDALUCIA 🇪🇸 CATALONIA 🇪🇸
- ISRAEL 🇮🇱 ASIA 🌏



Wind Turbine Yaw Measurement

CATAPULT
Offshore Renewable Energy



- Need to validate telemetry data
- Accurate pointing critical to energy yield forecasts
- Help yaw misalignment identification
- Explored a range of data sets, developed range of solution options over a range of costs
- Investigating differential GNSS for additional benefits e.g. wave height for maintenance access

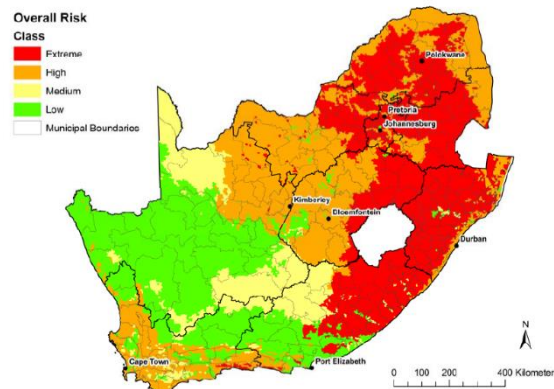


Scottish

Centre of Excellence in Satellite Applications // Ionad de Sàr-mhathas ann an Goireasan Saideal na h-Alba

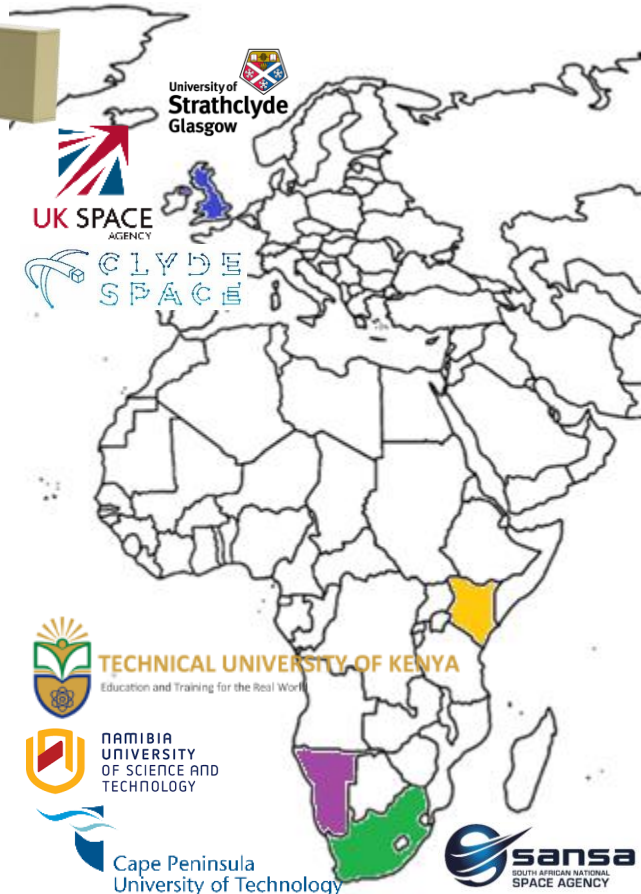
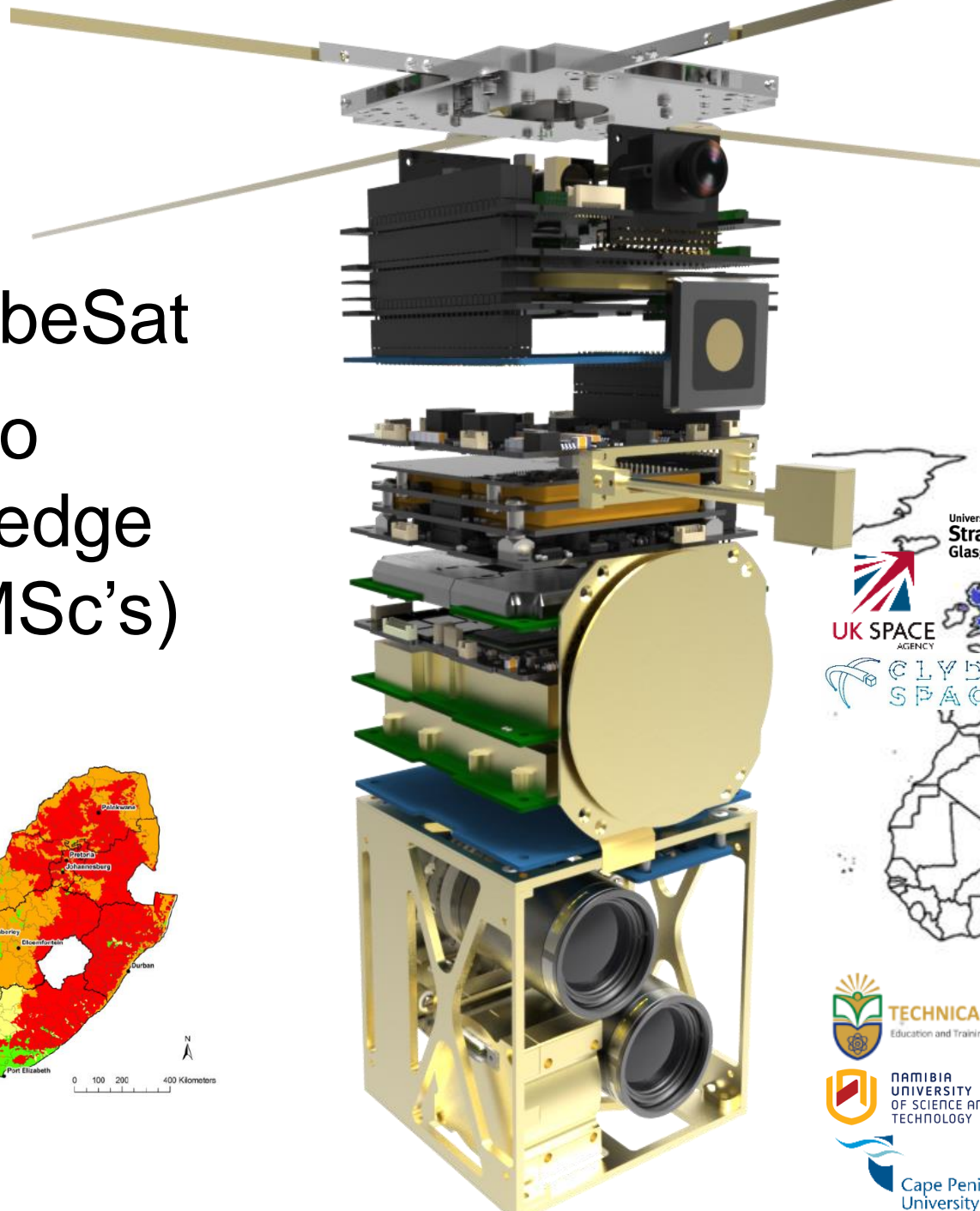
FireSat

- K-band sensor on CubeSat
- Supporting scale-up to constellation & knowledge transfer (PhD's and MSc's)



**30.6% South Africa
at Extreme risk**

**31.3% South Africa
at High risk**



Missions Laboratory

University of
Strathclyde
Glasgow



- Rapid development cycles of new technologies & concepts
- Nanosatellite hardware- in-the-loop environment
- Co-located with Spacecraft Tracking & Command Station

NANOBED

partnership with



CATAPULT
Satellite Applications

bright
ascension

MXSPACE
INICIATIVA ESPACIAL



Deployed NANOBED in support of educational & commercial development in Mexico

- Provided training and on-going support
- Groundwork for AztechSat1 collaboration between Mexican Space Agency (AEM) & NASA, (launch slated for October 2019 – 100 day mission)
- Core of new Satellite Innovation Centre in Puebla

Sue Kee
Business Development Manager
sue.kee@strath.ac.uk

Tontine space incubator info:
<https://www.tontineglasgow.co.uk/Blogs/ViewBlog/54>

Bringing Space Down to Earth