WE HELP
EARTH BENEFIT
FROM SPACE

DEVELOPMENT OF ESRANGE

Philip Påhlsson

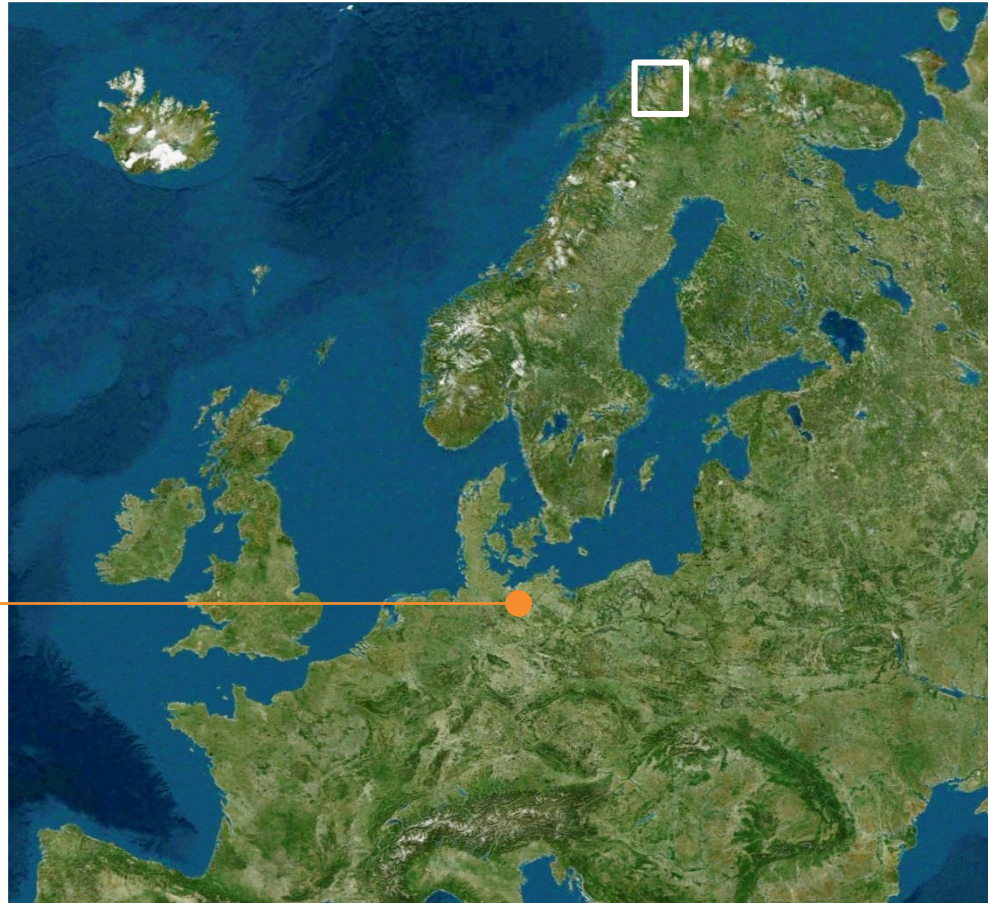
2020-03-10

ESRANGE

THE MOST VERSATILE SPACE CENTER IN THE WORLD

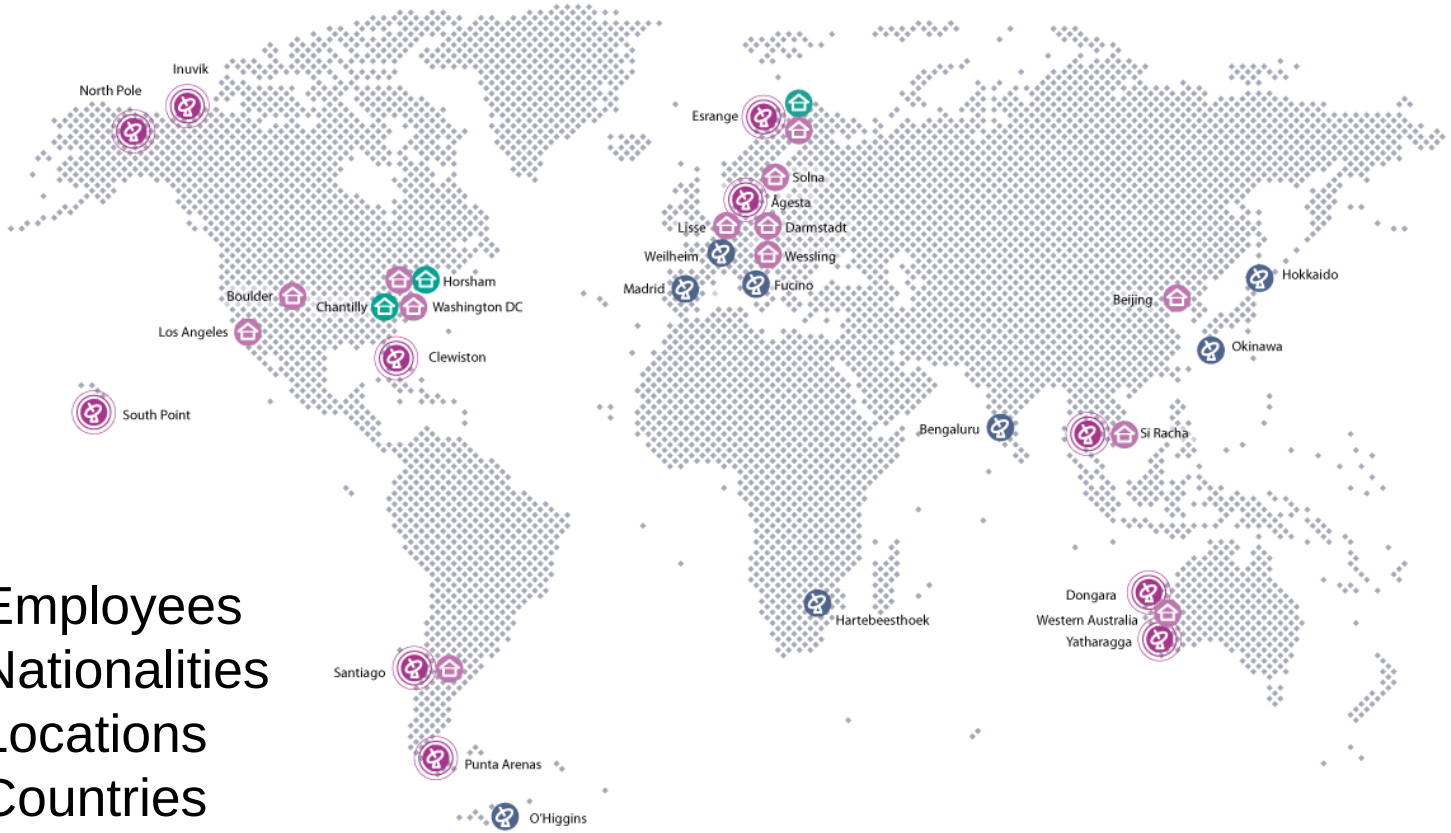
Twice the size
of Luxembourg
or Rhode Island

5200 **km²**
ground space



SSC WORLDWIDE

CUSTOMER PROXIMITY



550 Employees

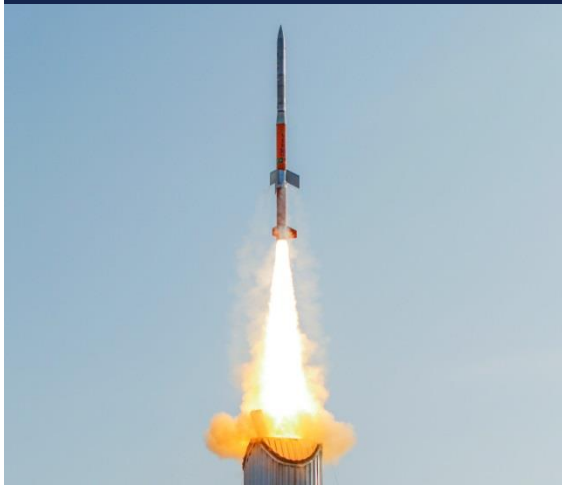
30 Nationalities

20 Locations

10 Countries

BUSINESS AREAS

Science & Launch Services

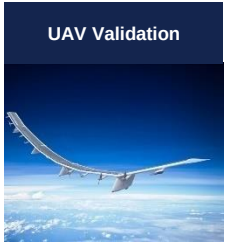


Satellite Ground Network Services

Spacecraft Operations & Engineering Services

ESRANGE SPACE CENTER

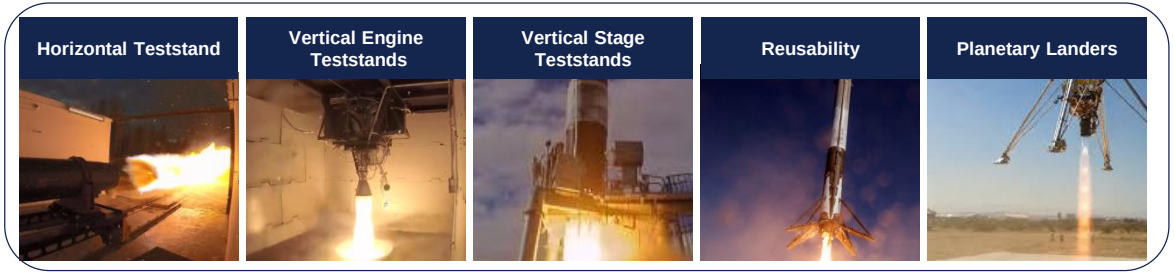
UAS



Sounding Rockets

Stratospheric Balloons

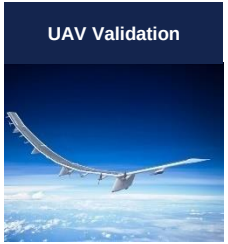
Testbed Esrange



SmallSat Express

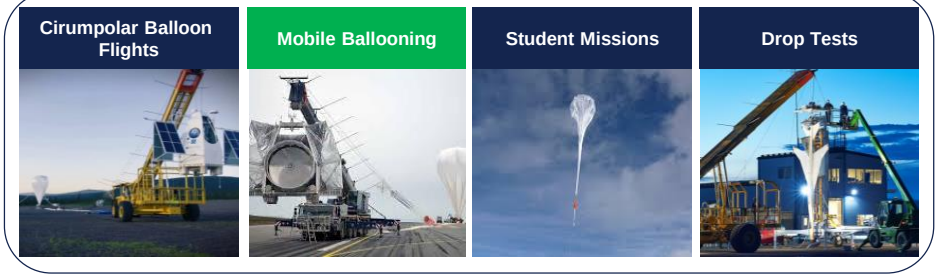
ESRANGE SPACE CENTER

UAS

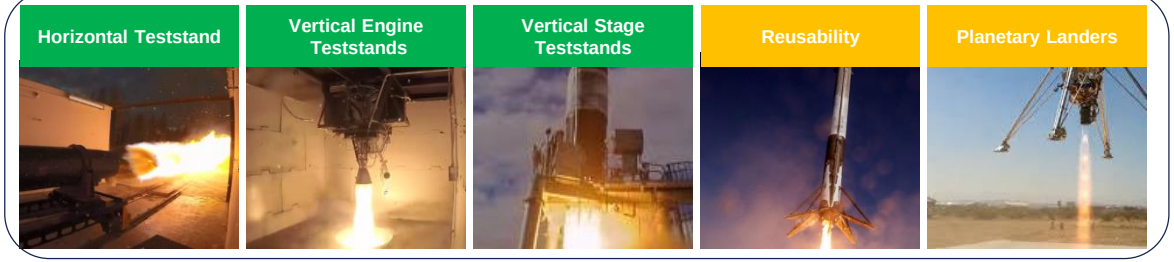


Sounding Rockets

Stratospheric Balloons



Testbed Esrange



SmallSat Express

LAUNCH SITES
EXISTING AND PLANNED

Existing launching states
French Guyana
India
Israel
Japan
China
New Zeeland
Russia
USA

Planned launching states
Australia
Norway
Portugal
Spain
UK
Sweden

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Existing launching states
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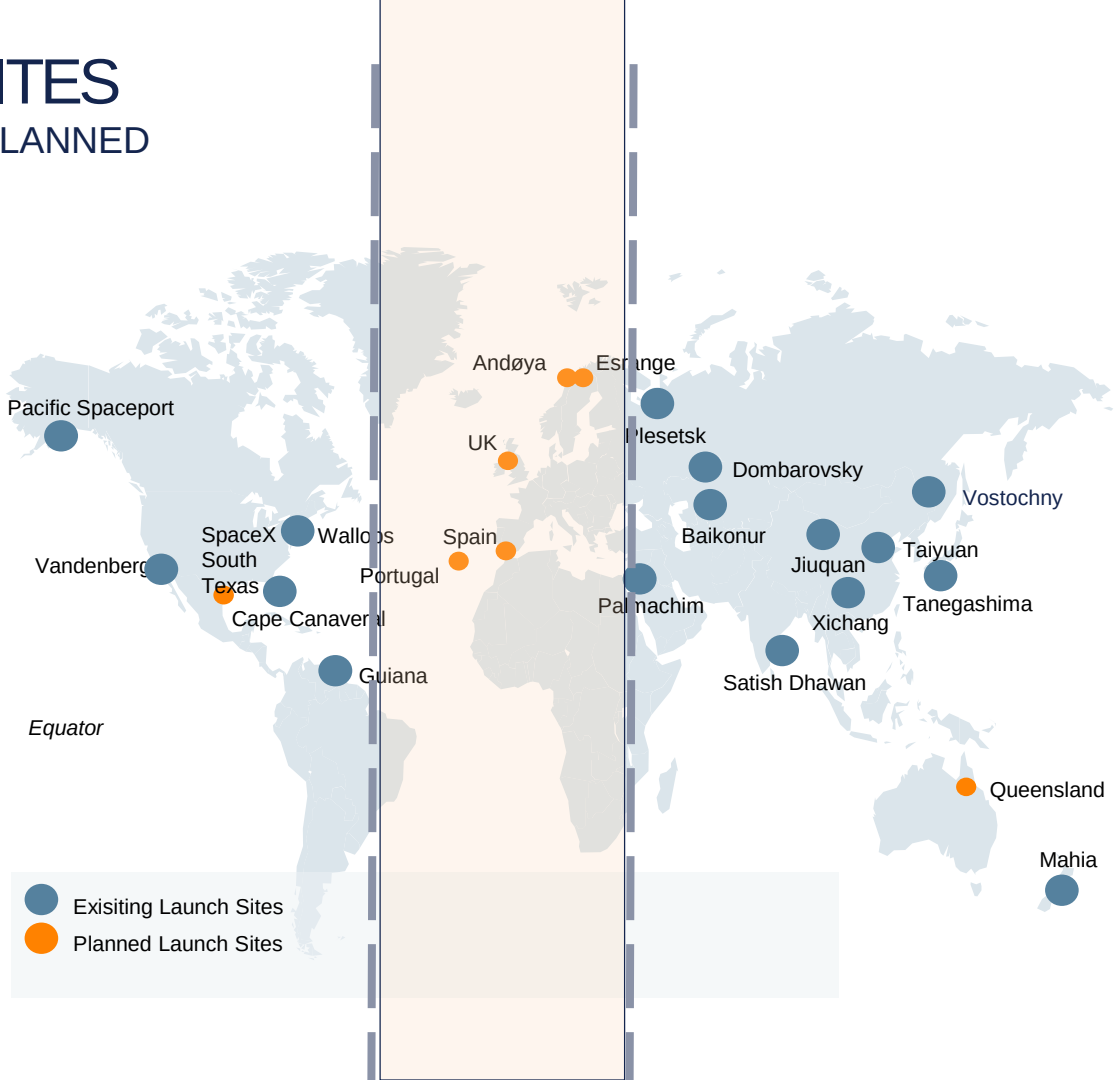
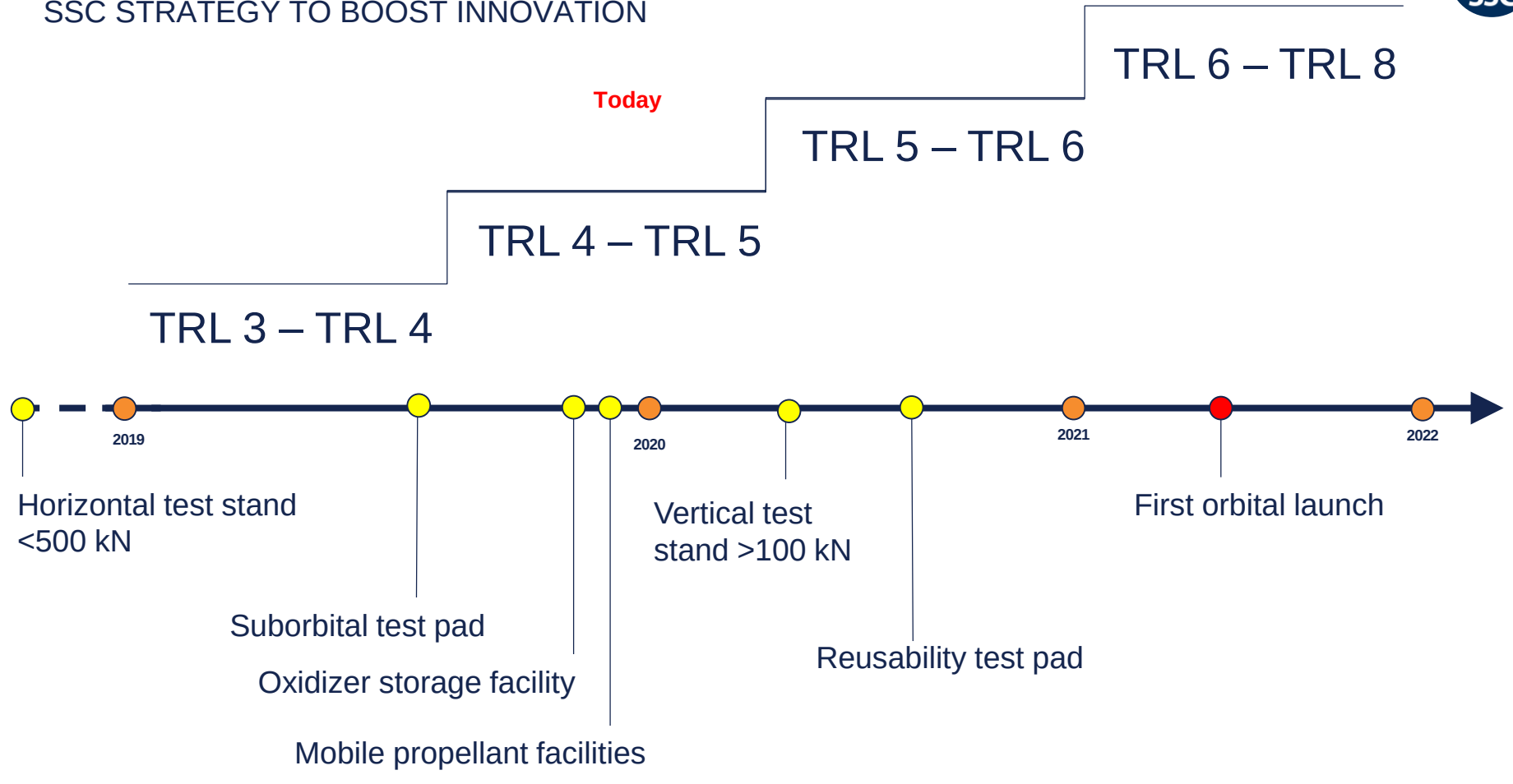


Planned launching states
Australia
Norway
Portugal
Spain
UK
Sweden

LAUNCHER DEVELOPMENT

SSC STRATEGY TO BOOST INNOVATION



HORIZONTAL ENGINE TEST STAND

VERTICAL ENGINE TEST STAND

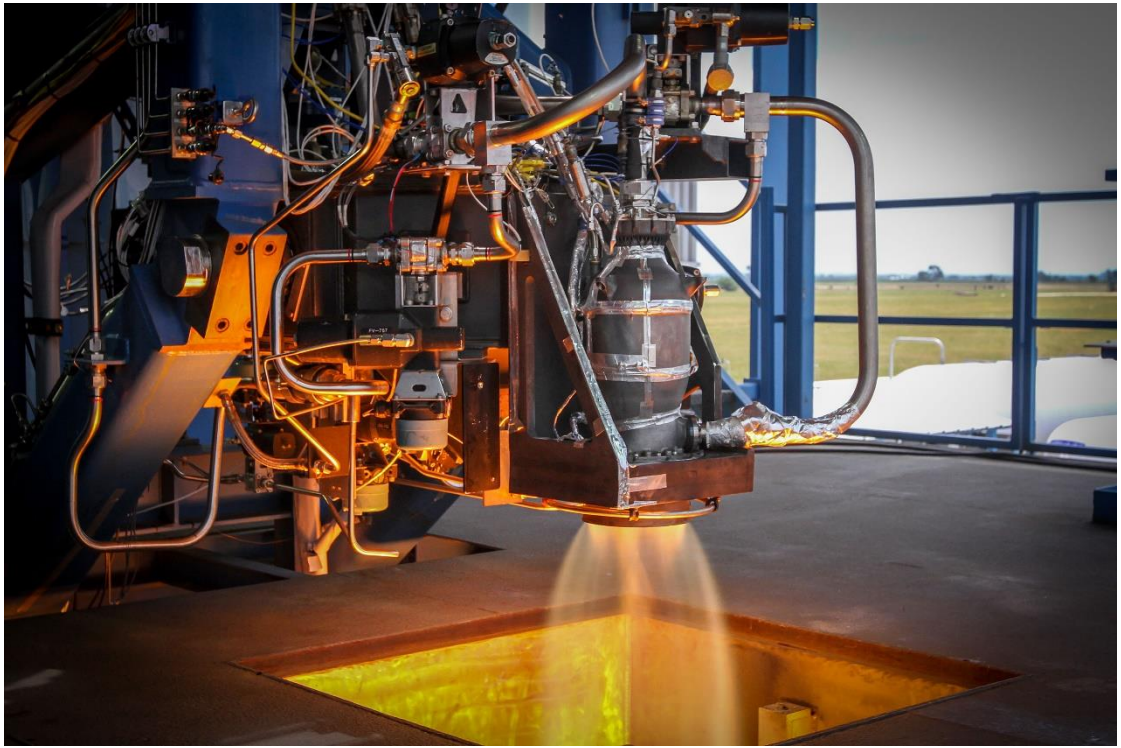


Image: SpaceX

VERTICAL STAGE TEST STAND

Image: SpaceX

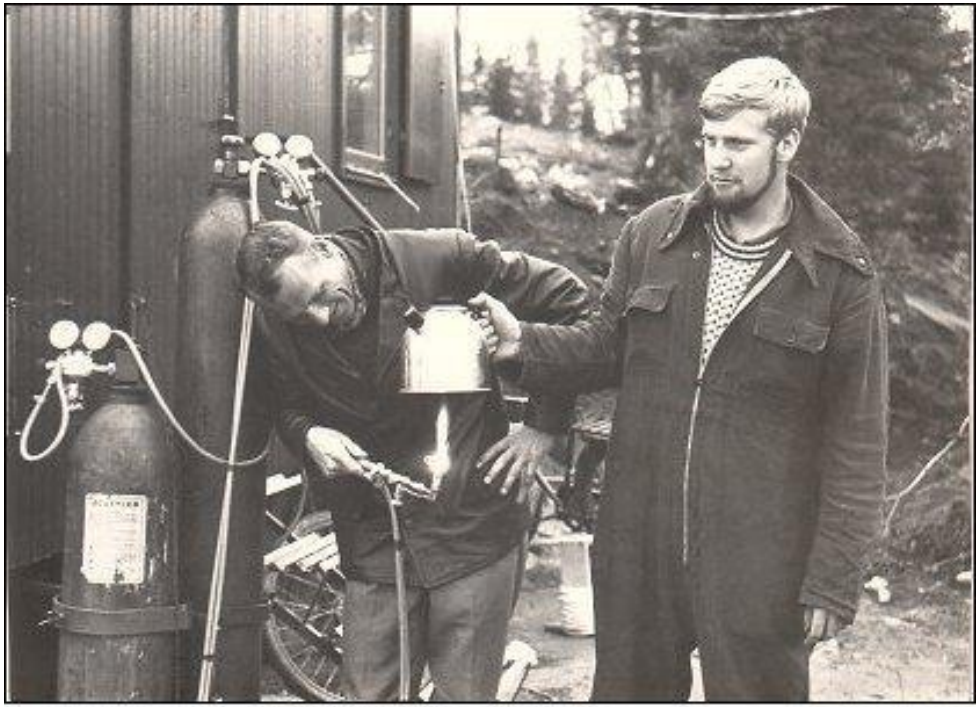

SMALLSAT EXPRESS

SMALLSAT EXPRESS

GOAL

SSC shall launch satellites into orbit from Esrange before the end of 2021, making Esrange the first spaceport in Europe launching small satellites.

MINDSET



Strömavbrott: Sune Moritz (t.v.) och Paul Annerud är kaffesugna
Vid raketgruppens rastvagn mellan de två startramperna.

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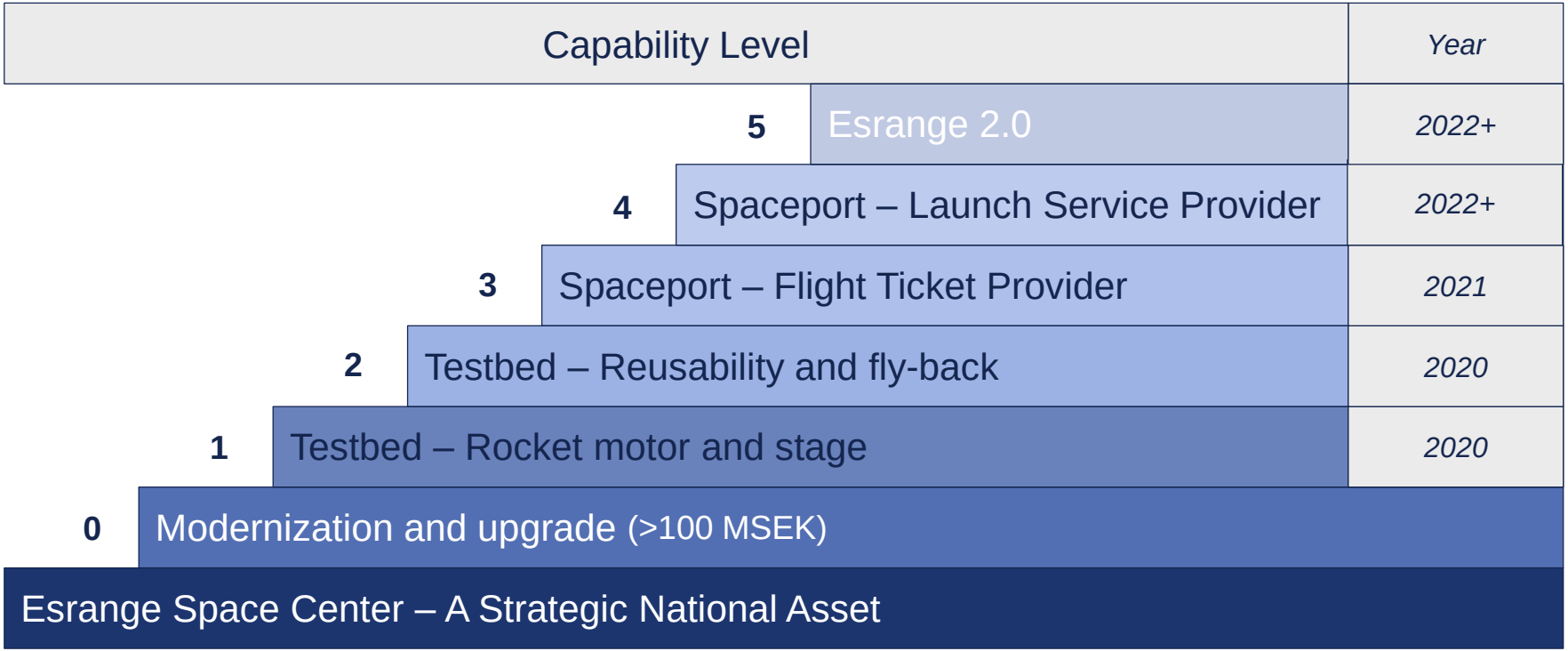
STEP-BY-STEP REALIZATION



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STEP-BY-STEP REALIZATION – LEVEL 0

Upgrades of basic infrastructure at Esrange

Upgrade of power system at Esrange

- 2x 2500 KVA Diesel generators
- 2x 0,4/22 KVA transformers
- New short-break high power net

Refurbishment

- ESS
- Launch Area
- Main building
- Hotel
- MCC

Construction of visitor center

Upgrade of communication network at Esrange

- Upgrade to fibre
- Security upgrades

Upgrades to launchers

- Skylark building
- Upgrade of mobile tower
- New balloon operations

New systems for balloons and rockets

Upgrades to the ESRAD system

Finished 2018

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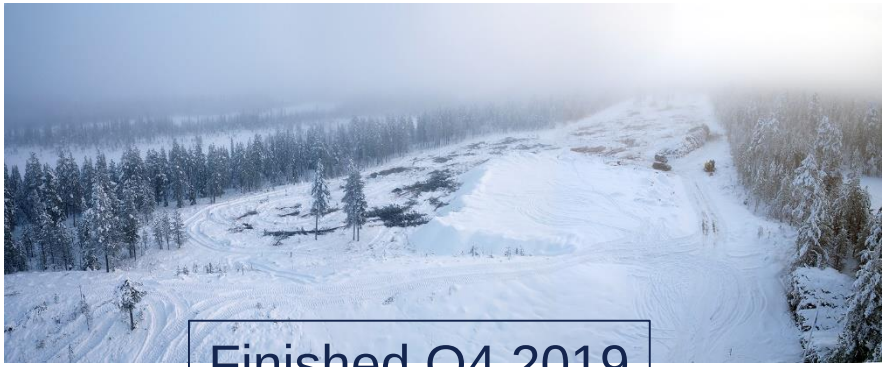
STEP-BY-STEP REALIZATION – LEVEL 1

New Site LC-3 for reusability and orbital launching

- Road 3.8 km
- Power
- Fiber
- Launch site 100m x 470m
- Basic Infrastructure

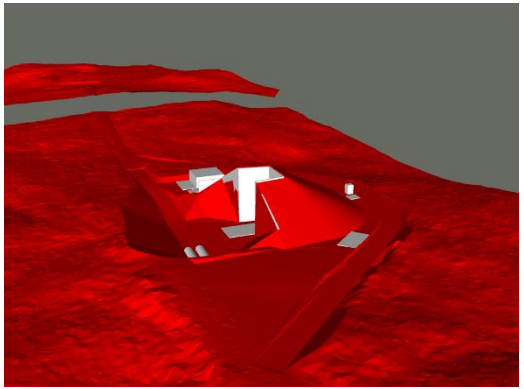


Finished Q4 2019

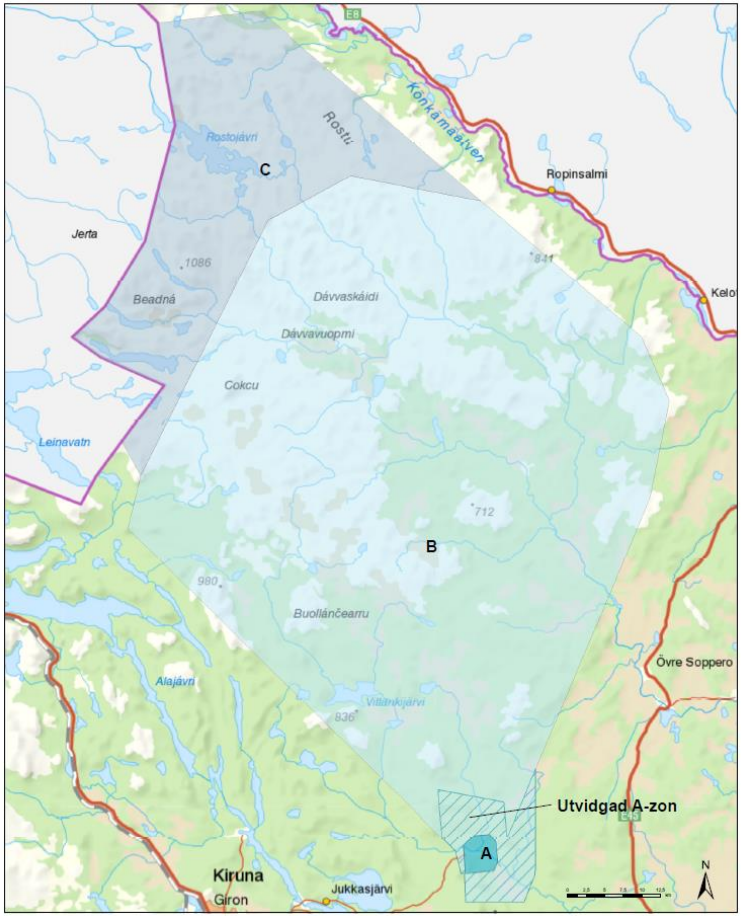
Two vertical test stands under construction

- Will allow for engine and stage testing at Esrange from April 2020

Image credit: Firefly



Finished before April 2020



ESRANGE
Zoner

Teckenförklaring
- A-zon
- Utvidgad A-zon
- B-zon
- C-zon


VTS-1
VTS-2
LC-1
LC-2
LC-3


CAT

Test sites : Vernon, Kiruna, Kourou

ARIANEWORKS

LC-3 launch site, #Esrange in Kiruna, Sweden *(credit : Swedish Space Corporation)*

PF20 test area, Vernon

Diamant launch zone, Kourou *(credit : CNES)*

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STEP-BY-STEP REALIZATION – LEVEL 2

First adaptation of LC-3 for Flyback booster and planetary lander tests (+orbital launch)

- Tent hall integration hall
- Construction of LC-3A pad
- Liquids and gases infrastructure
- Relocation of staff to Kiruna or Salmijärvi to free upminimum 20 Office seats
- Adaptation of existing offices at Esrange

Finished before end of 2020

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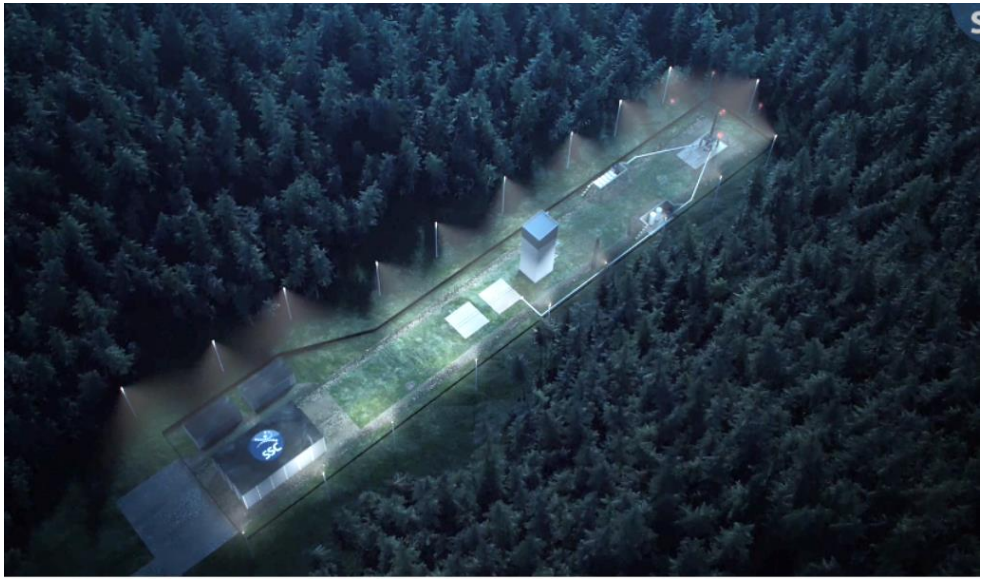
STEP-BY-STEP REALIZATION – LEVEL 3

First adaptation of LC-3 for Spaceport operations

- LC-3B launch pad
- LC-3B Flame duct
- Process water storage
- Process water pump
- Process water piping
- Concrete pads (fuel/oxidizers)
- Ground works
- Power, communication, lights and lightning protection
- Mobile gantry
- Payload integration building (Basic)
- Sewage system
- Potable water system



Finished before end of 2021

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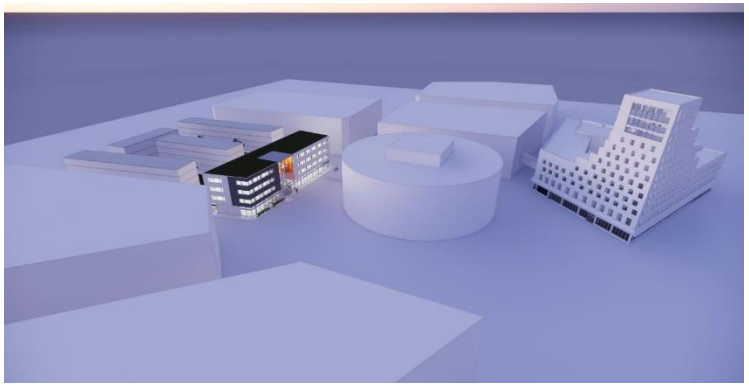
STEP-BY-STEP REALIZATION – LEVEL 4

Expansion of Esrange to support Launch Service provider role

- New launch operation centre
- Radar upgrade
- Down-range permanent establishment
- Payload integration building (High standard)
- Relocation of staff to Kiruna C to free minimum 20 office
- Relocation of NMC to Kiruna C to replace with launch operations center



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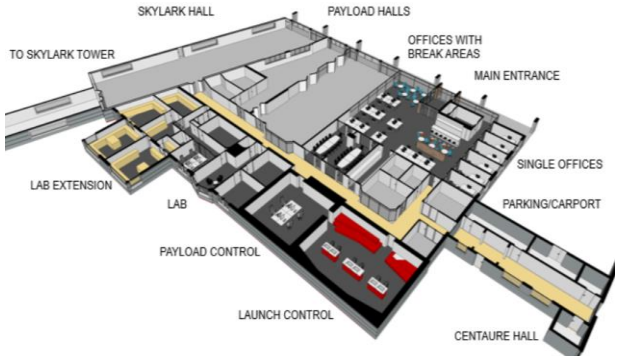
STEP-BY-STEP REALIZATION – LEVEL 5

Esrange 2.0

Expansion of Esrange support infrastructure

- Expansion of hotel
- Expansion of offices
- Redesign of Esrange entrance
- Refurbishment of main building
- Orbit building
- Upgrade of Sounding rocket launch area



SSC – A LAUNCH SERVICE PROVIDER

*Almost

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BENEFIT FROM SPACE

www.sscspace.com