

# Moonlight

Webinar  
9 March 2022

ESA UNCLASSIFIED - For Official Use



## We're going back to the Moon...and stay there

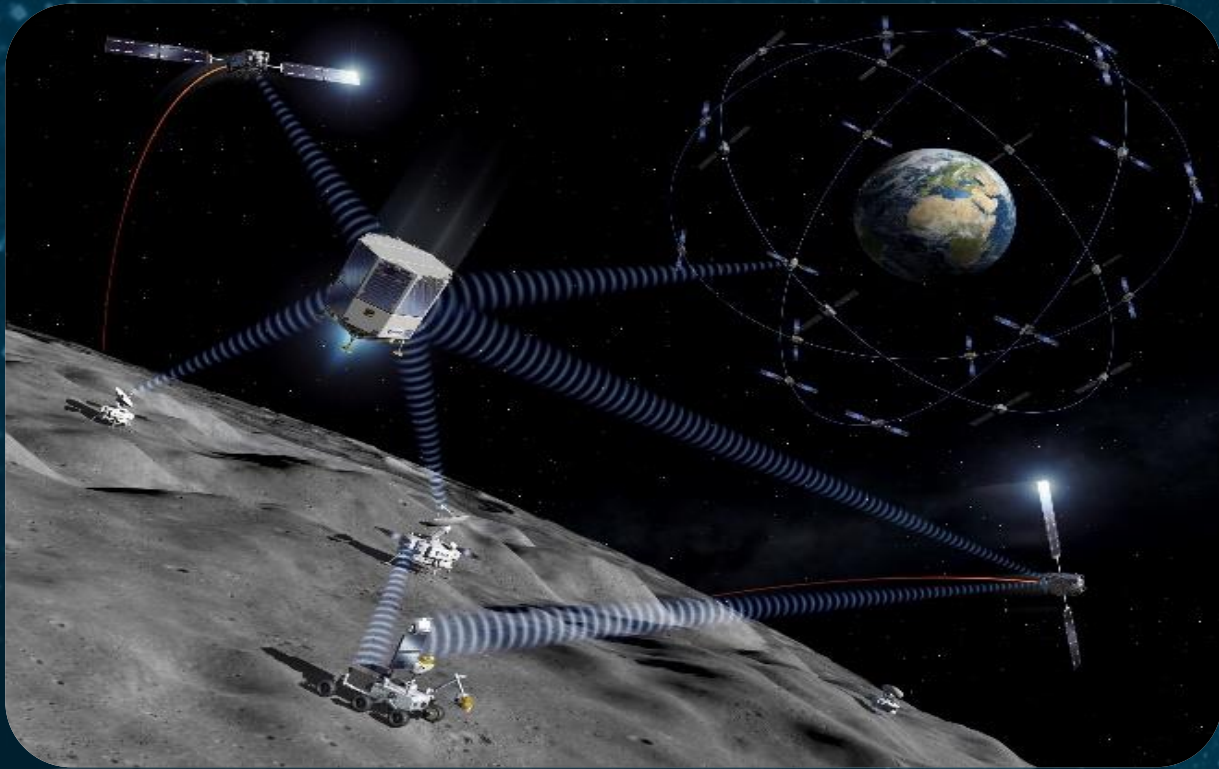


Credits: BBC Science Focus Magazine

Agencies transition towards service procurements ...  
and foster the emergence of a lunar economy



# Service Offering



Data transport

Absolute Position

Tele-operations

Absolute Velocity

Audio/Video streaming

Universal time

Alert & Information

Third-party payloads

Search and Rescue

Over-the-top Services

## LUNAR PATHFINDER

Low-rate satellite communications service + Moon GNSS Receiver



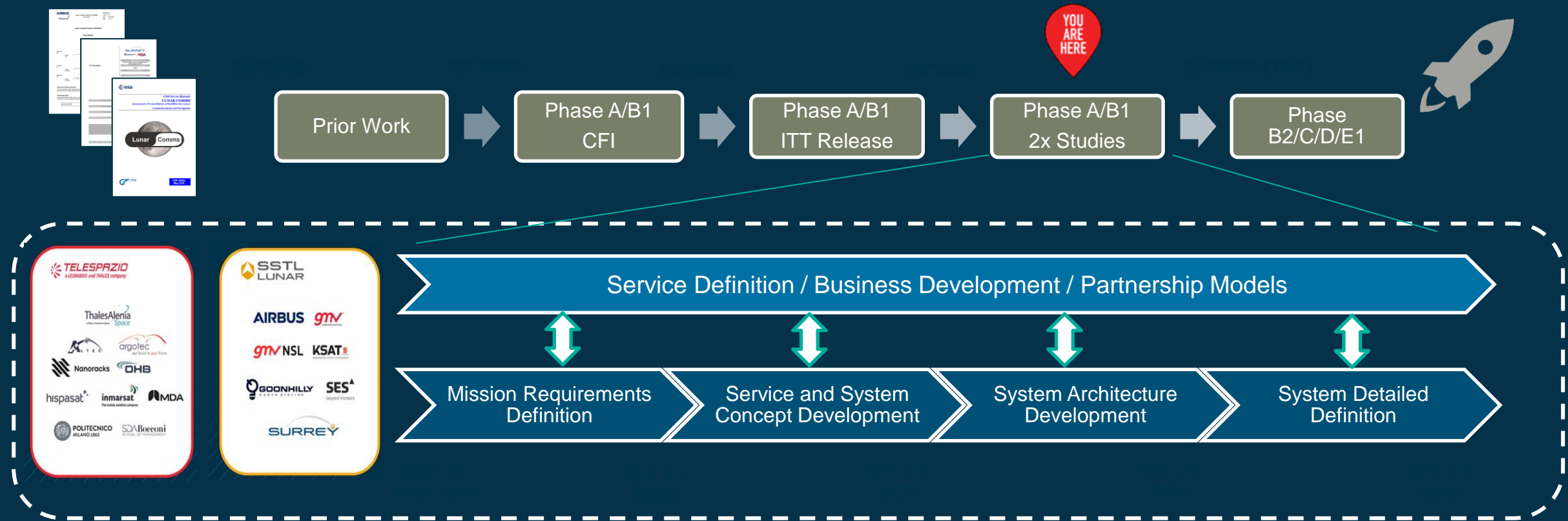
Q1 2025

## MOONLIGHT CONSTELLATION

High-data rate satellite communications and navigation service



# Service Development Plan



ESA plans to Commercial Operator for Service Provision in the frame of a Public Private Partnership

## Space Agencies



## Private Lunar Companies



and future end users  
with downstream application



# We Need More Space

Frank M Salzgeber  
Head of Innovation & Ventures Office

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# Last Millennium



A pair of hands, rendered in a grayscale, textured style, gently cradling a small, realistic globe of the Earth. The globe shows continents in green and yellow, oceans in blue, and white clouds. The background is dark and out of focus.

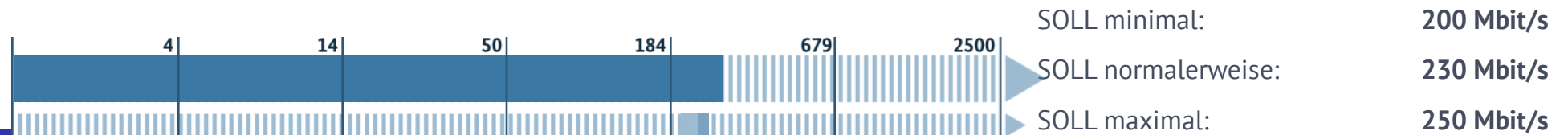
# The Decade of Space



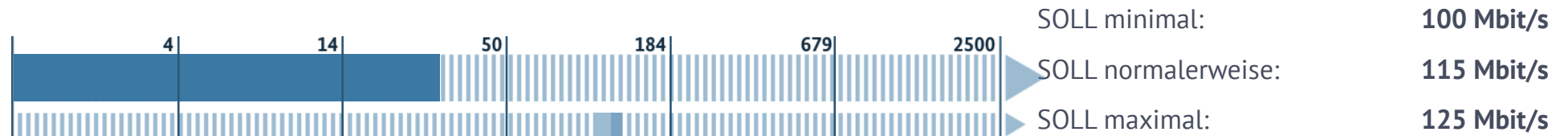
The space economy will grow from U\$ 340 billion to U\$ 3 trillion over the next 20 years.”

The text 'IoT' in white, bold, sans-serif font, centered on a solid blue rectangular background.

Download: **279,84 Mbit/s**



Upload: **29,42 Mbit/s**



Laufzeit: **35 ms**

## 2015 CNBC DISRUPTOR 50

[2015 CNBC DISRUPTOR 50](#) | [METHODOLOGY](#) | [2014 LIST](#) | [2013 LIST](#)

# How outer space is becoming the next Internet

Ari Levy | [@levynews](#)

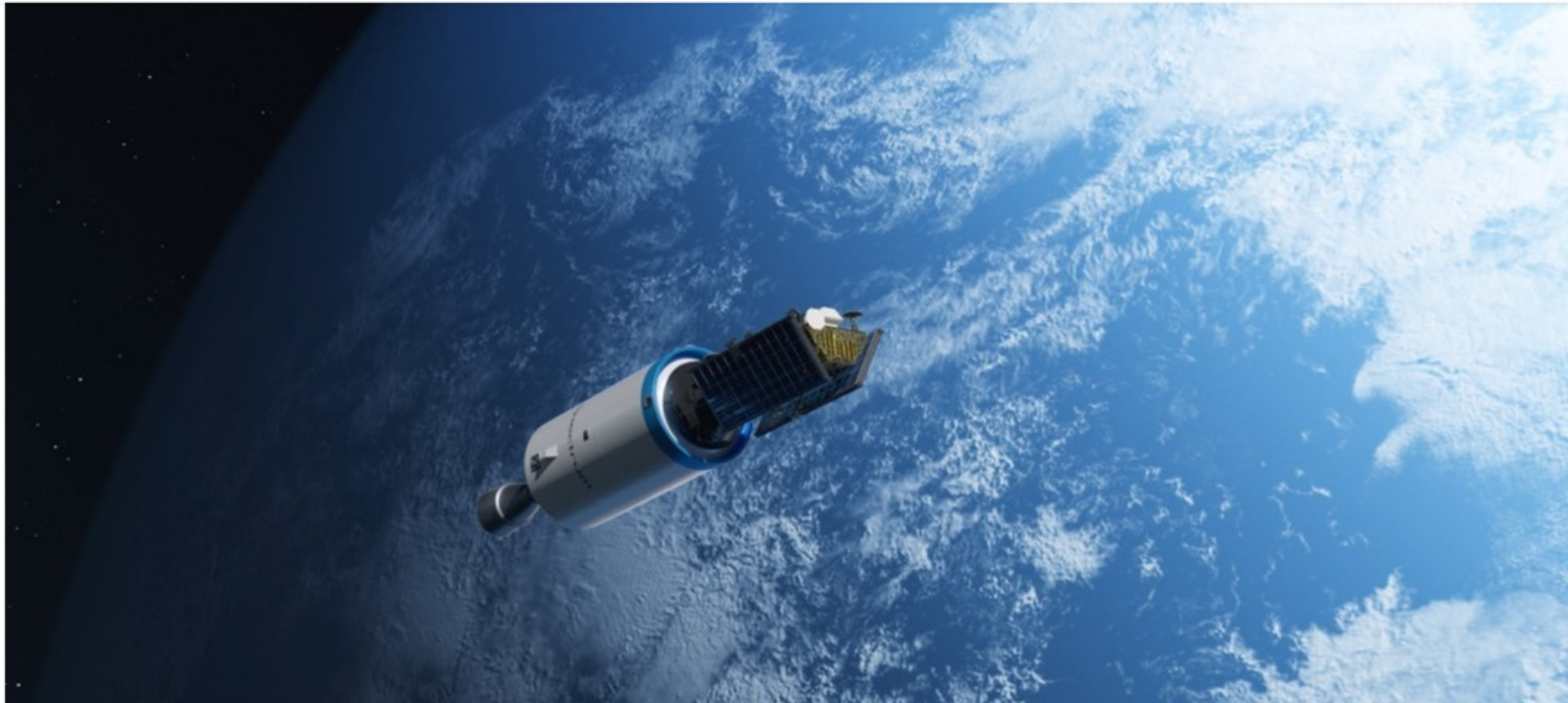
Wednesday, 22 Jul 2015 | 12:51 PM ET



Source: NASA

Planet Labs doves.

An hour after sunrise on June 28, [Mike Safyan](#) and nine co-workers from Planet Labs gathered in their San Francisco office for a pancake



Einstieg bei Isar Aerospace

## Was will Porsche im Weltall?

*Stand: 28.07.2021 13:25 Uhr*

**Die Porsche Holding SE steigt ins Weltraumgeschäft ein. Die Volkswagen-Mutter beteiligt sich am Münchner Raketenbauer Isar Aerospace. Dahinter steckt strategisches Kalkül.**

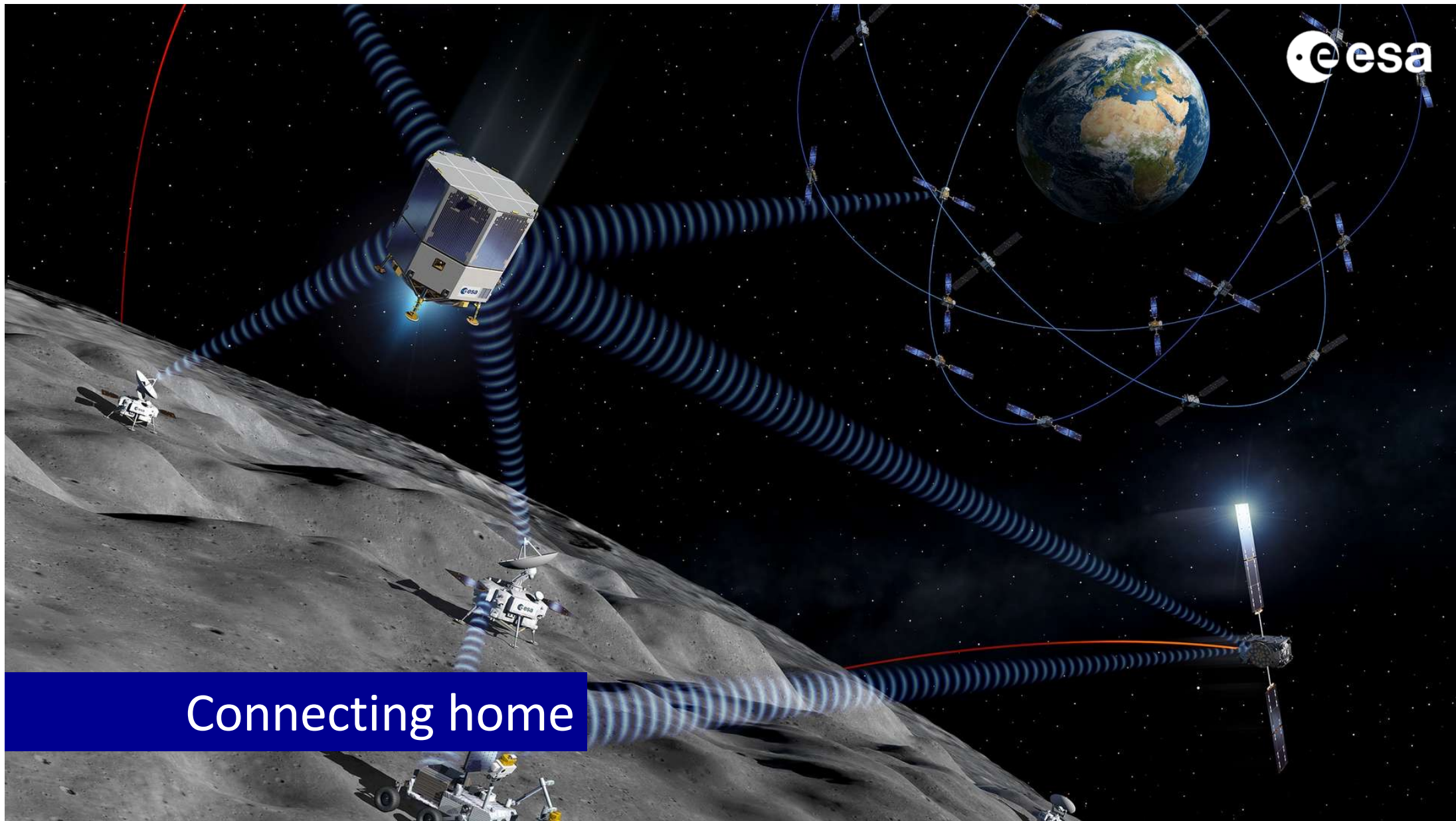
	1G (1980s)	2G (1990s)	3G (2000s)	4G (2010s)	5G (2020s)	6G (2030s)
Mobile Access	Analog $\Delta=30\text{kHz}$ 	GSM <2 GHz $\Delta=200\text{kHz}$ 	UMTS <2GHz $\Delta=5\text{MHz}$ 	LTE <6GHz $\Delta=n \times 20\text{MHz}$ 	5G <100GHz $\Delta=n \times 200\text{MHz}$ 	6G <THz $\Delta=10\text{GHz}$ 
Compute Platform						
Network Platform	Analog	Circuit (TDM)	Circuit/Packet (ATM)	Packet (IP)	Cloud	AI/ML
Copper Access	POTS 	ISDN $\Delta=20\text{kHz}$ 	ADSL $\Delta=1\text{MHz}$ 	VDSL $\Delta=30\text{MHz}$ 	G.(mg)fast $\Delta=200\text{MHz}$ 	FTTH / FWA $\Delta=10\text{GHz}$ 
Defining Application	Voice	Voice	WAP, Video	Web	IIoT	Digital – Physical Worlds
Unexpected App	Fax	SMS, ringtones	Web	Facebook YouTube	?	?
Defining EU Projects	NA	COST207	RACE 1043 (others, incl. FRAMES)	FP6: WINNER (WWI)	FP7: METIS (5GPPP)	HEXA-X (SN&S)





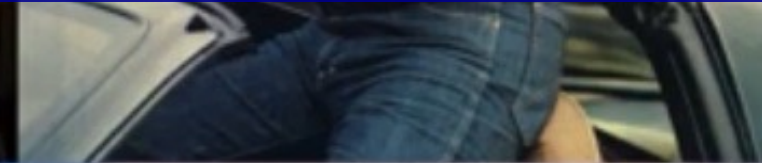
Application

Connecting home

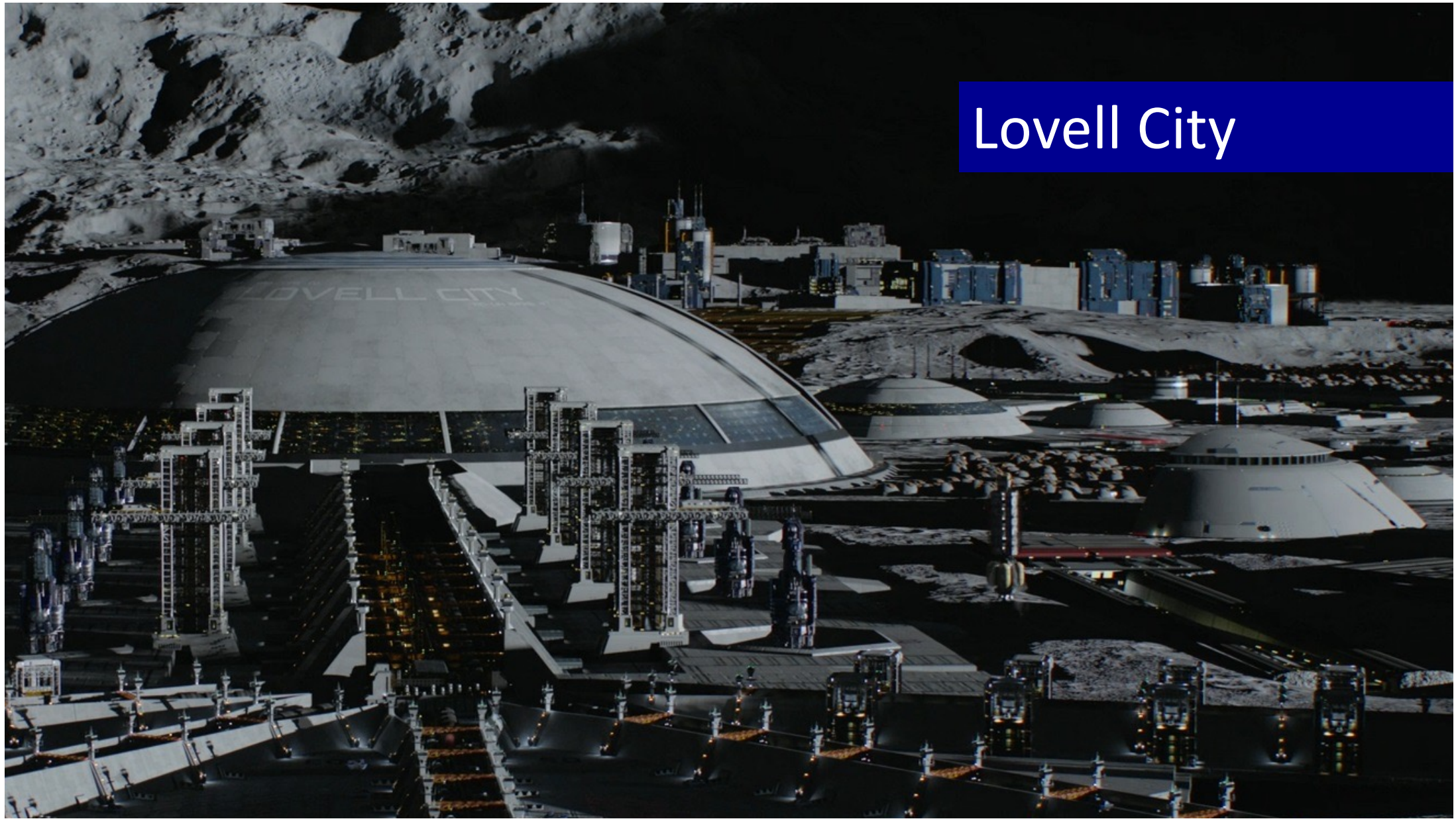




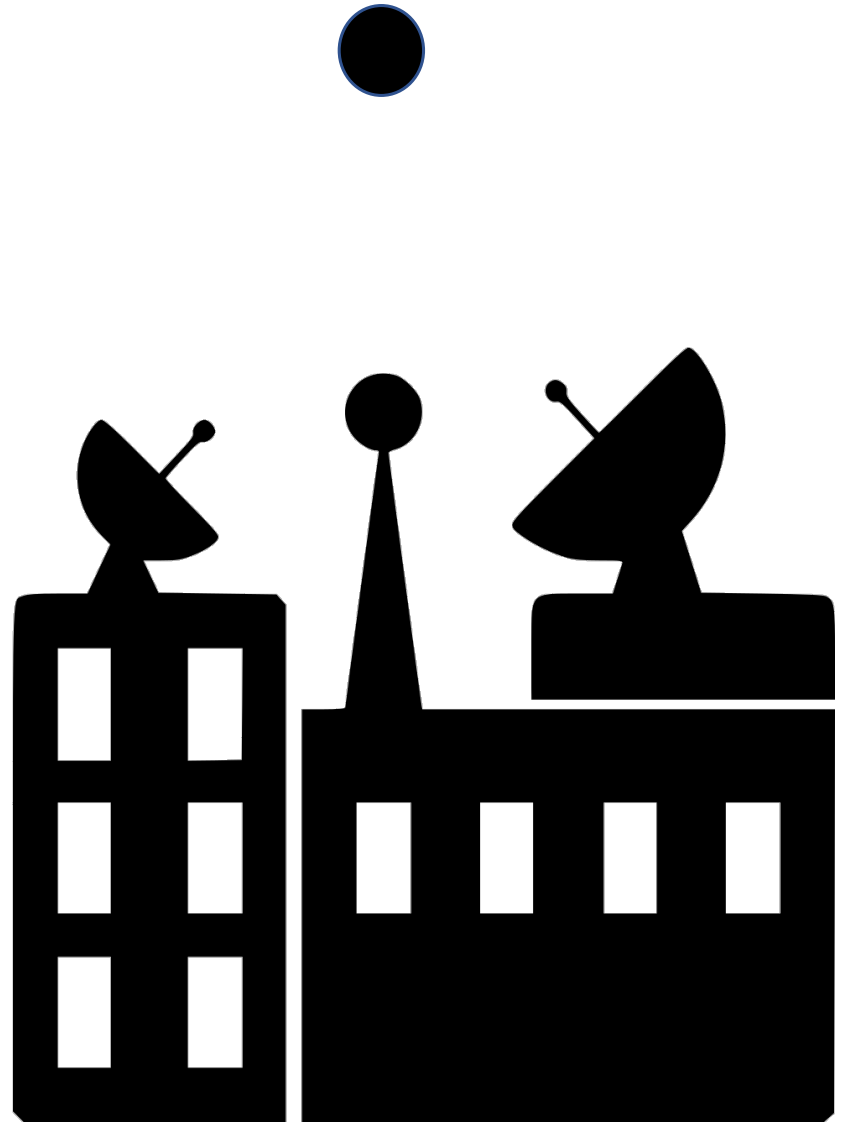
The power of vision



# Lovell City



Biz Model



A young child wearing a blue and green striped shirt, blue jeans, and a brown pilot's helmet with large headphones lies on their back on a grey asphalt surface. The child's arms are outstretched. Surrounding the child are various colorful chalk drawings: a large rocket ship with a grid pattern on its side, several yellow stars, a green ringed planet, and a red planet with a blue ring. The scene is set against a dark, textured background.

Everybody can reach the stars,  
you just add Space.

<https://spacesolutions.esa.int>

@franksalzgeber

Frank.salzgeber@esa.int

17:00 – Welcome and Introduction

17:05 – Key Note Speech Moonlight Initiative & presentation of the LCNS call (Bernhard Hufenbach)

17:15 – Expectations TIA use cases telecommunications (Frank Salzgeber)

17:25 – Expectations NAV use cases for navigation (Pietro Giordano)

**17:35 – Expectations HRE use cases for the future of lunar economy (Francesco Liucci)**

17:45 – Q&A session

# Moonlight Initiative: Lunar Communications and Navigation Services (LCNS) Call for Ideas and Use Cases

Webinar

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Francesco Liucci  
Innovation Manager  
Human and Robotic Exploration  
Commercialisation and Innovation (HRE-XI)

9/3/2022





**SHAPE THE FUTURE**

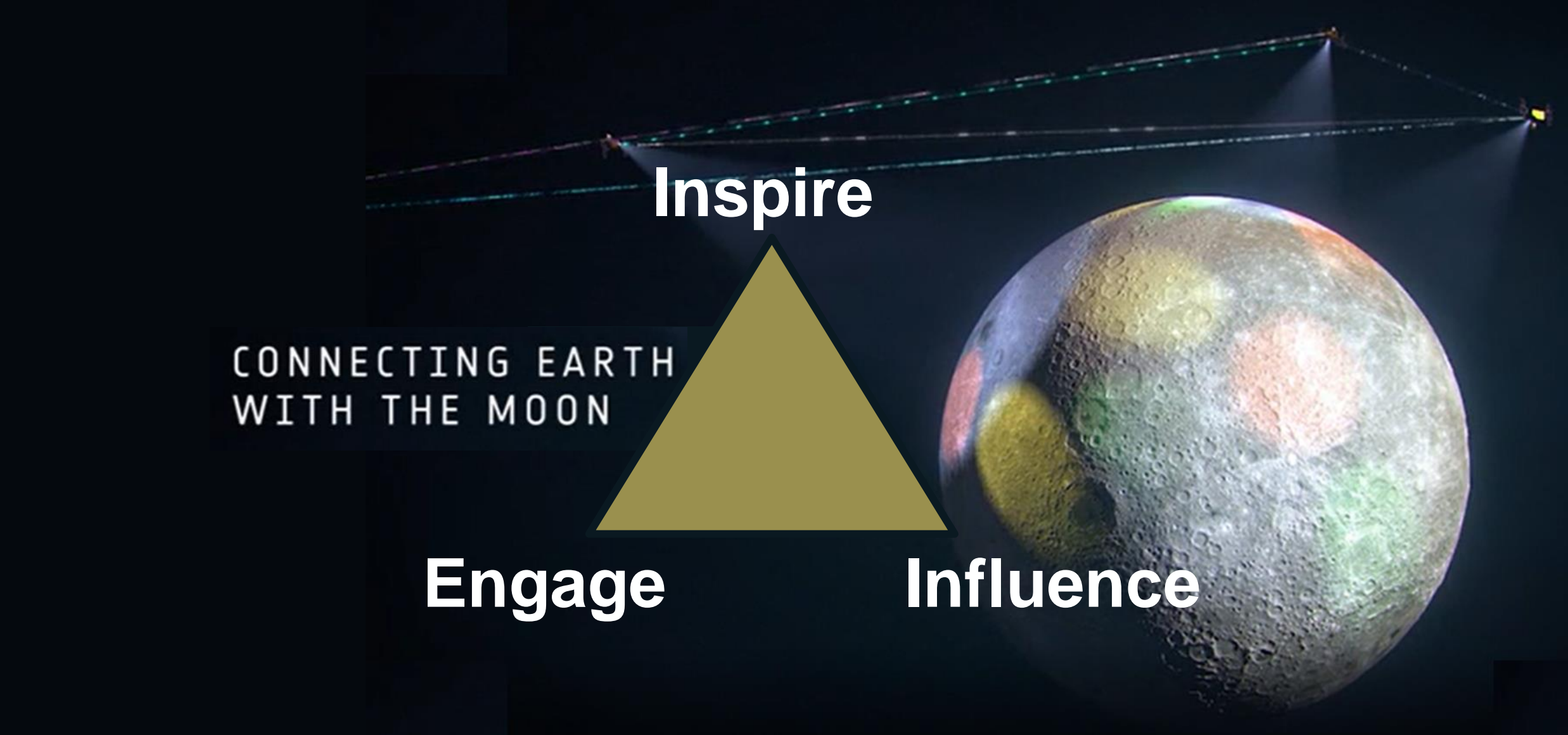
**OF MOON EXPLORATION**

*What would you do  
when Lunar Communications and Navigation Services  
(LCNS) will be available?*

**Moonlight Initiative  
Call for Ideas**

*Submit your idea before 30/04/2022*





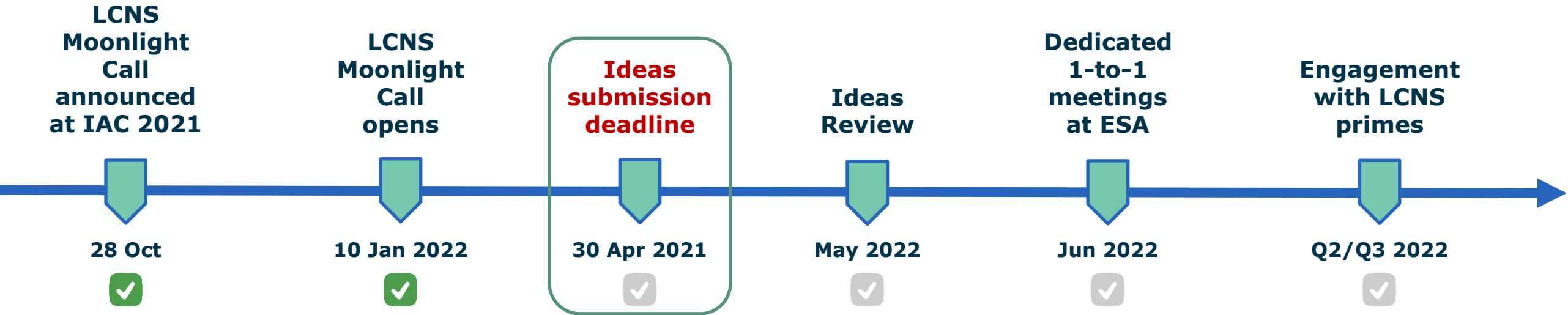
- 
- **Commercial users** (i.e. commercial service providers)
  - **Academic/scientific users** (i.e. universities, R&D dept.)
  - **Institutional users** (i.e. space agencies, governments)
  - **Anybody** who has an idea for use cases and applications for LCNS

- Implementation feasibility (30%)
- Innovation and novelty (30%)
- Best use of LCNS capabilities (20%)
- Socioeconomic impact (20%)

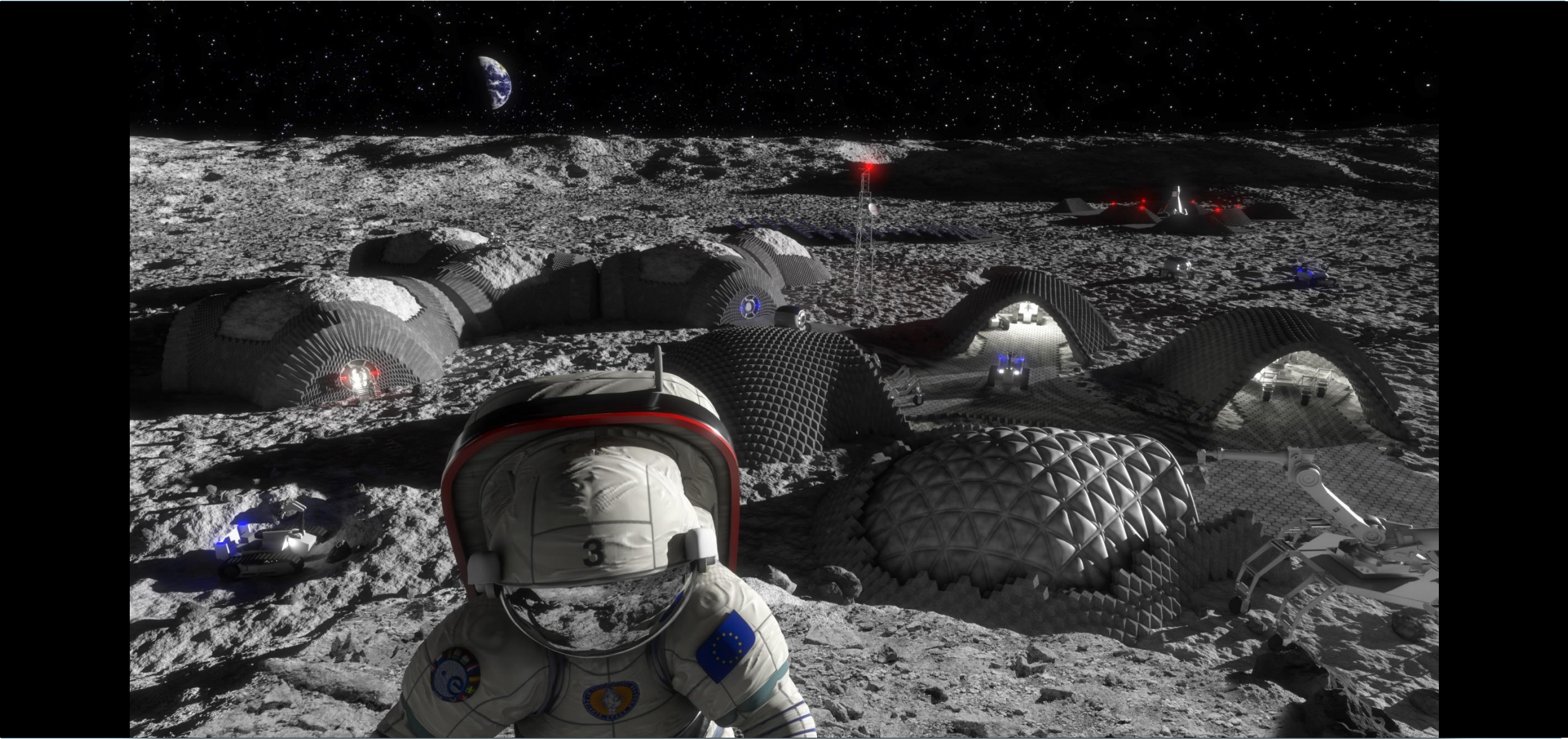


- Dedicated 1-to-1 meetings at ESA establishment
- Different ESA programmes to further develop the ideas and use cases (ESA BIC, GSTP, ESA Business Applications, co-funded studies)
- Connect with LCNS primes

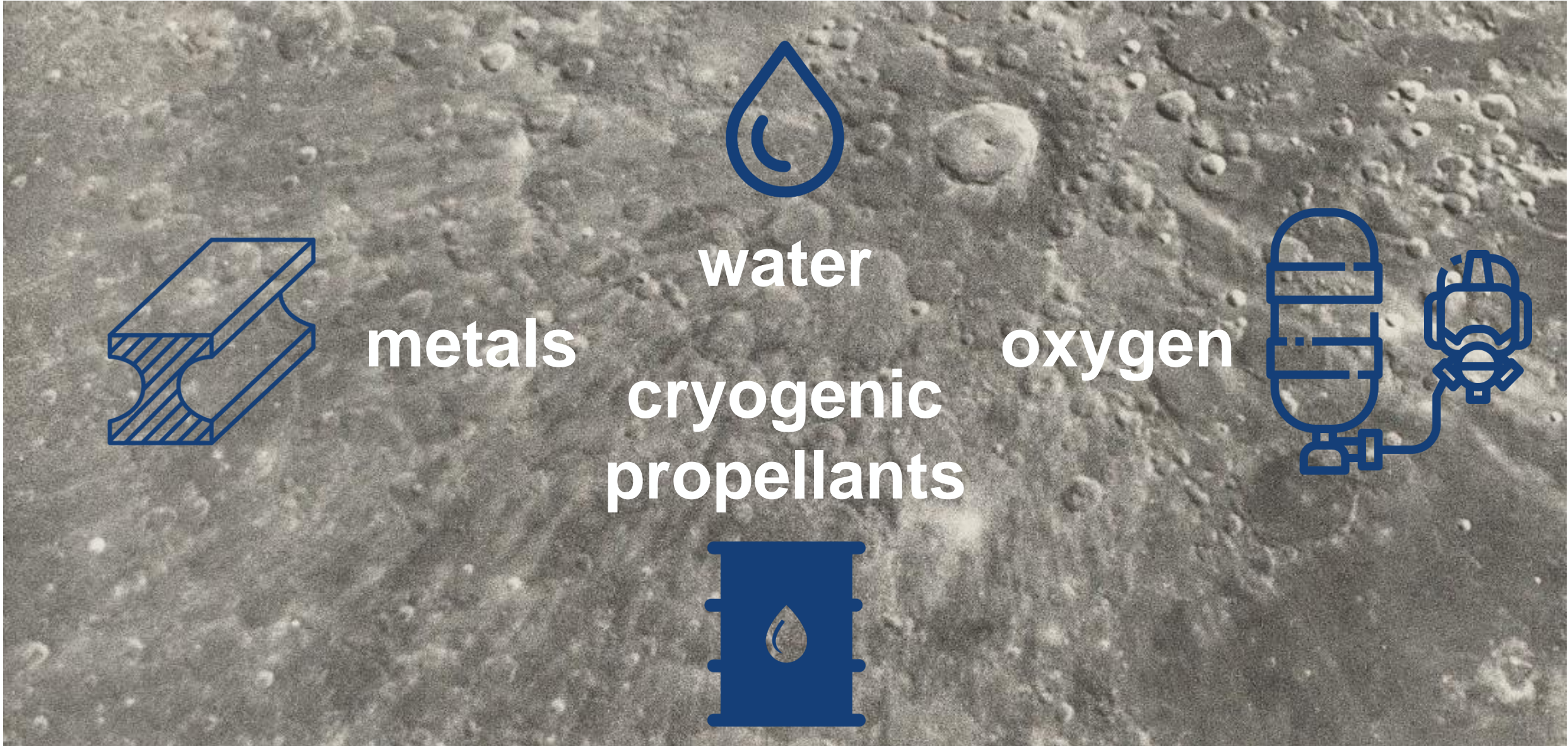
# Call Timeline



# Infrastructure construction and maintenance



# Space Resources Utilisation





# Energy: Rocket refueling, Life-support, Crops cultivation



# VR, AR and videogames





# What's Next?

