



CHILE – US SPACE SEMINAR

OCTOBER 22, 2019

Unclassified

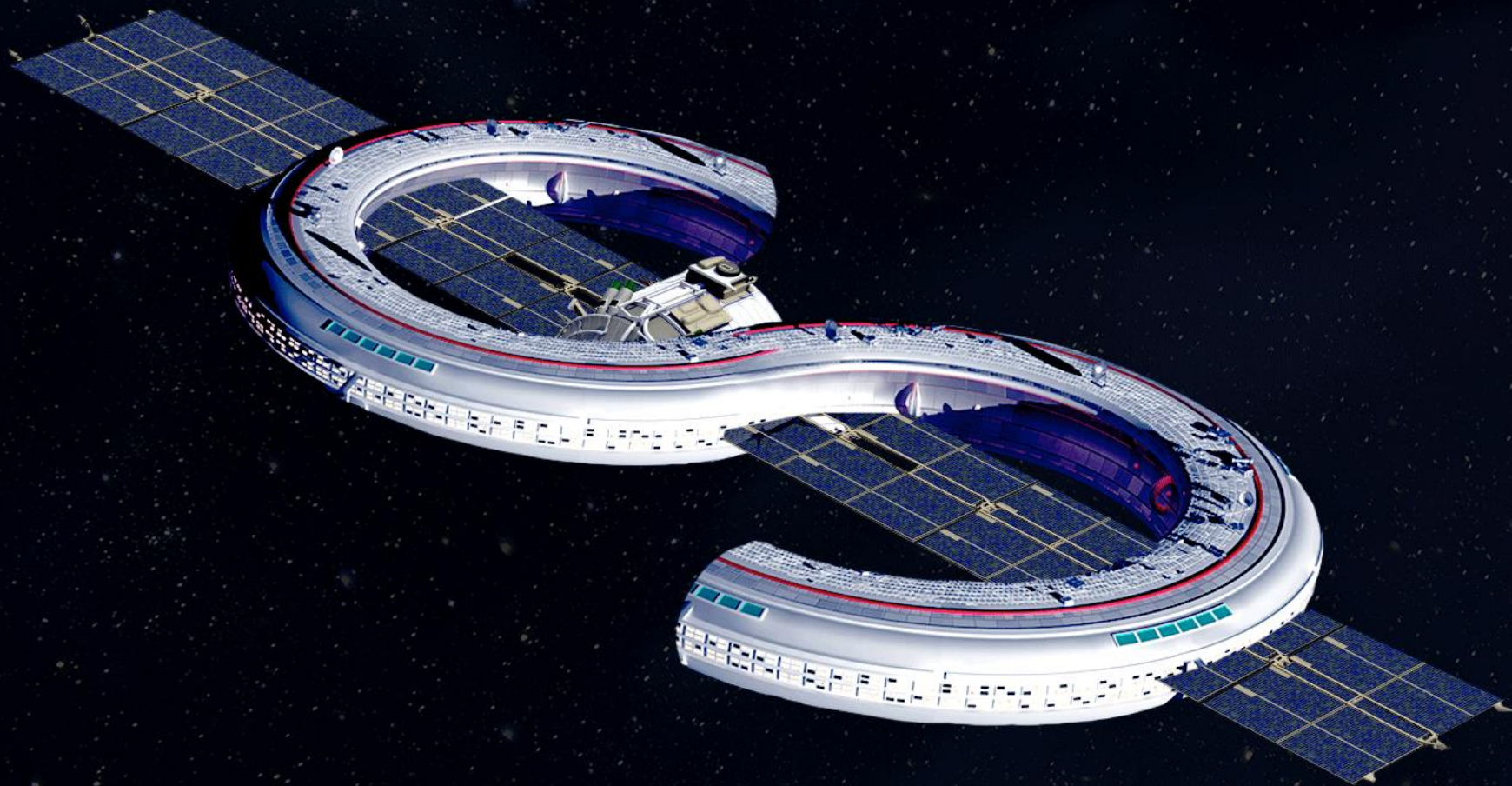


CHILEAN AIR FORCE

SPACE CAPABILITIES & OPORTUNITIES

OCTOBER 22, 2019

Unclassified





SPACE ECONOMY



- Commercial Infraestructure and support Industries.
- Commercial Space Products and Services.
- Government Space Budgets.
- Non-Government Space Budgets.





KEY ISSUE



- What could be the value of Space sector to the chilean economy.
- And its political and social value?
- How to create the conditions to be perceived by the authorities and economic agents as a relevant factor for the national development?
- How can it be exploited and customized according whit the current context?

Unclassified



**Aerial Image
Moon Valley
Atacama Desert. Chile**

**VISION AND SPACE STRUCTURE OF
CHILEAN AIR FORCE**



VISION ABOUT SPACE CAPABILITIES



- National Space Policy considers active presence of the State in the space domain:
 - Short-term activities oriented to improve capabilities of remote sensing, particularly through low earth orbit satellites and UAV. As well, the use of geospatial information among the stakeholders.
 - Long-term efforts focus to development of national satcom capabilities, increase autonomy in the space and ground segment. Also, promote space services activities.



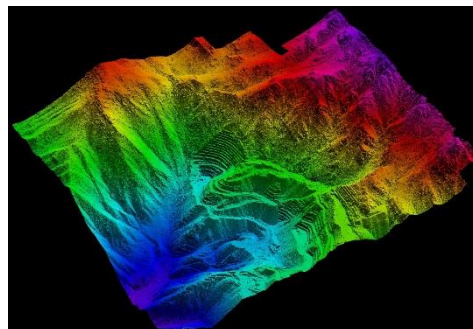
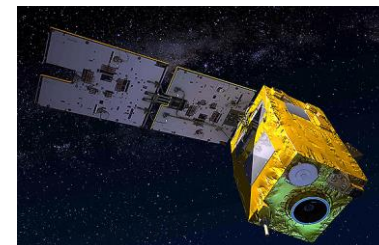
VISION ABOUT SPACE CAPABILITIES



- Future Vision: Develop and exploit space capabilities to fulfill the following national requirements:
 - Efficient and secure operations of national & third party satellites and payloads.
 - Promote national, regional and international cooperation agreements
 - Integration of space capabilities with the national industry, astronomic and R&D system.
 - Increase Space Situational Awareness (SSA) capabilities.
 - Develop of satellites and payloads .
 - Improve of SATCOM & SAR capabilities.



FACH GEOSPATIAL CAPABILITIES



HONOR

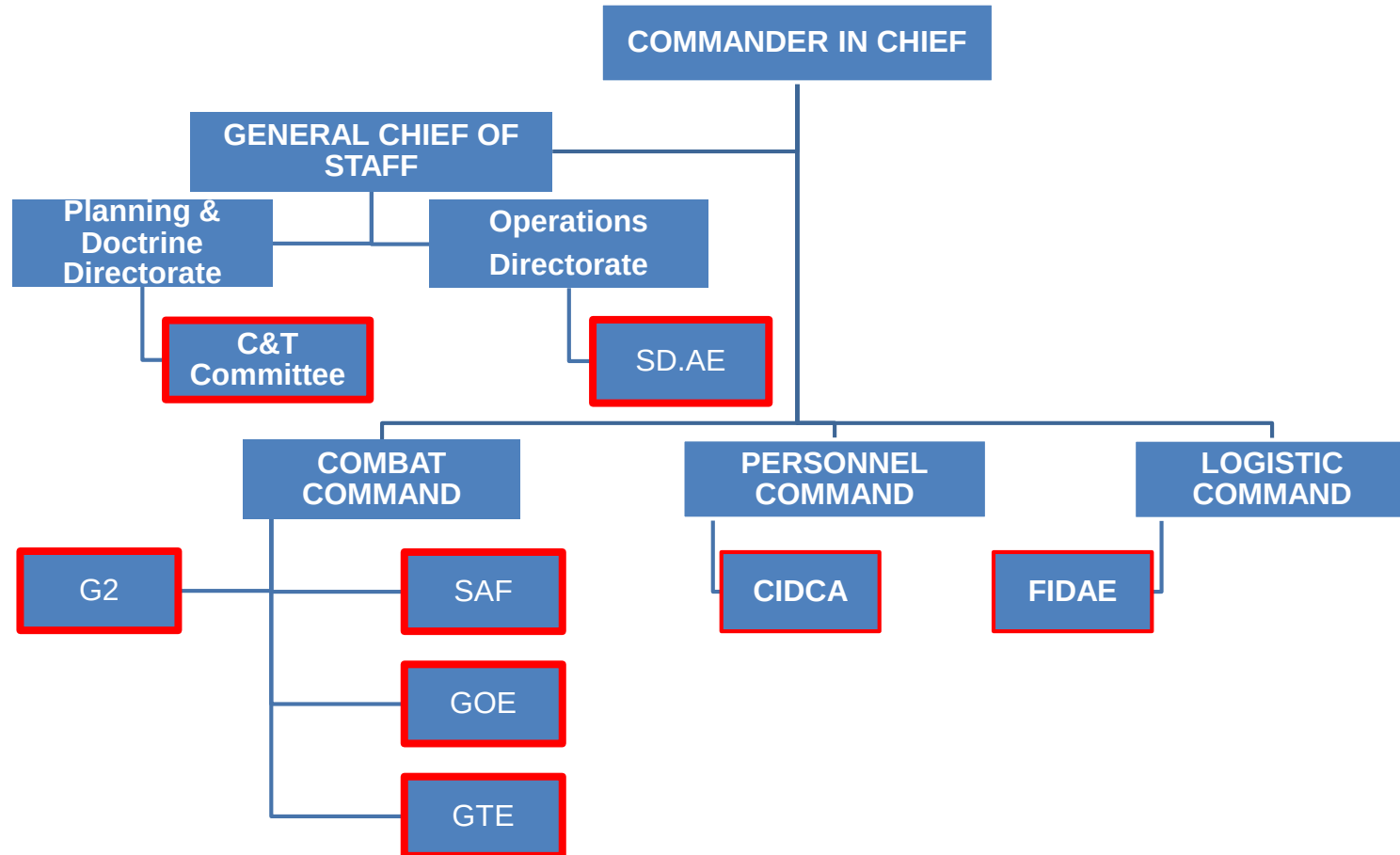
LEALTAD

CUMPLIMIENTO DEL DEBER

EXCELENCIA EN EL SERVICIO



FACH SPACE ORGANIZATIONAL CHART



Unclassified

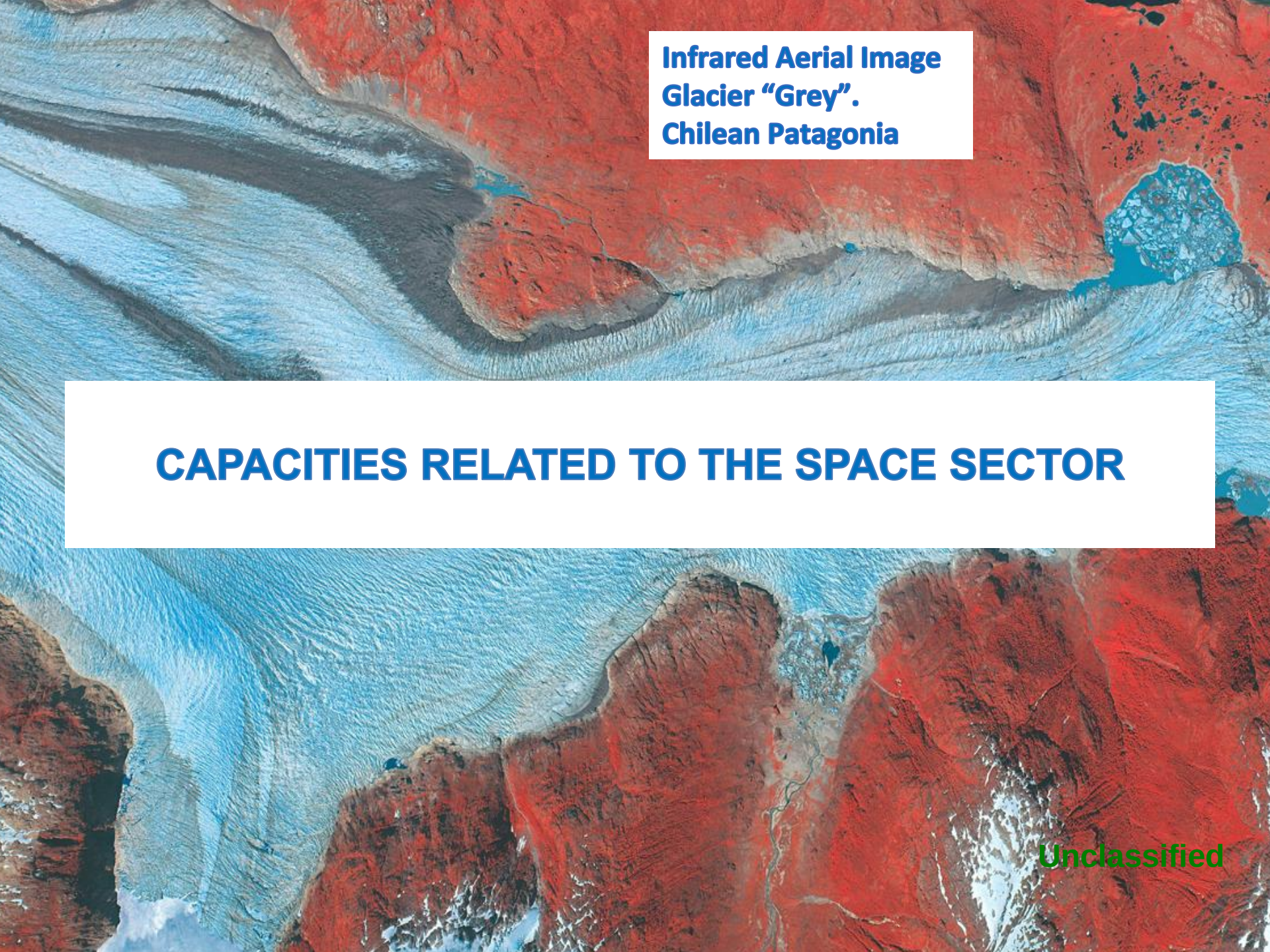


FACH SPACE AFFAIRS SUB DIRECTORATE



- Guide the Spatial Development of the FACH
- Contribute to strengthen the National Space System
- Strengthen National and International Space Networking
- Contribute to Increase National Space Domain Awareness

Unclassified

An infrared aerial photograph of a glacier in Chilean Patagonia. The glacier is a large, light blue-grey mass with visible longitudinal flow lines and some darker, sediment-laden areas. It is surrounded by rugged, reddish-brown terrain. A small, bright blue lake is visible on the right side of the glacier. The overall image has a high-contrast, textured appearance typical of infrared satellite imagery.

**Infrared Aerial Image
Glacier “Grey”.
Chilean Patagonia**

CAPACITIES RELATED TO THE SPACE SECTOR

Unclassified



FIDAE 2020



INTERNATIONAL AIR & SPACE FAIR AEROSPACE - DEFENCE - SECURITY

March 31 – April 5
Arturo Merino Benitez Airport, Santiago Chile
www.fidae.cl



SUPPORTED BY THE CHILEAN GOVERNMENT



ORGANIZED BY THE CHILEAN AIR FORCE



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HONOR

LEALTAD

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EXCELENCIA EN EL SERVICIO



FIDAE



International exhibition of Air,
Space, Security and Defense
technologies.

Since 1980

Latin America's biggest Air &
Space fair.

120,000+ visitors

A relevant platform to promote
space awareness and
collaboration in Aerospace-related
matters.





FIDAE



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EXCELENCIA EN EL SERVICIO

FIELDS OF FIDAE



**CIVIL-COMMERCIAL
AVIATION**



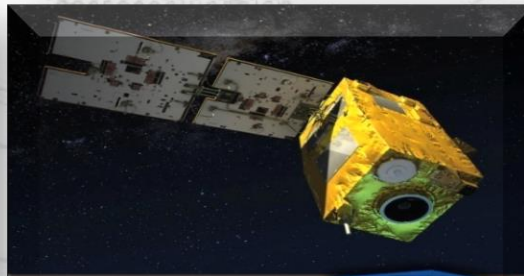
DEFENSE



**AIRCRAFT
MAINTENANCE**



**AIRPORT
EQUIPMENT &
SERVICES**



**SPACE
TECHNOLOGY**



**HOMELAND
SECURITY**



Unclassified

Unlimited Opportunities

FIDAE SPACE SUMMIT April 1st- 3rd, 2020



Space Conference

Promote the value of space technologies to improve the quality of life and security of people.

Latin America Remote Sensing Week

Promote the use of geospatial information in territorial management and the definition of public policies.

LARS



- ✓ 3-day event
- ✓ Unique event in this category in Latin America
- ✓ A regional meeting point for the space community, authorities and decision makers.



Plenary Sessions

Contribute to strengthening national space system of developing countries.

Unclassified



CAPACITIES RELATED TO THE SPACE INDUSTRY



Unclassified

HONOR

LEALTAD

CUMPLIMIENTO DEL DEBER

EXCELENCIA EN EL SERVICIO



CAPACITIES RELATED TO THE SPACE INDUSTRY



Maintenance and Systems Support

R+D+i

Maintenance & Systems Support



Systems, Equipment and Instruments Calibration



Defense Systems Development



Certifications



Unclassified



CAPACITIES RELATED TO THE SPACE INDUSTRY

EN LA RUTA DE LOS
100 AÑOS



SIEMPRE VOLAR MÁS ALTO

Defense Systems Development

R + D + i



SIMULATION

COMMAND & CONTROL

- ### SERVICES
- SYSTEMS SUPPORT
 - TRAINING
 - TECHNICAL DOCS
 - MID-LIFE UPDATE (MLU)



- ### PRODUCTS
- ELECTRONIC WARFARE
 - ☐ ESM
 - ☐ ELINT
 - ☐ RWR
 - ☐ ECM
 - ☐ SIMULATORS
 - COMMAND AND CONTROL
 - ☐ GCI CONSOLE
 - ☐ C2 ZEUS
 - ☐ C4I - CCN
 - ☐ CBT - TACMAPS
 - FLIGHT TRAINERS

Certifications

ISO 9001:2015

TRACE INTERMEDIARY MEMBER

FAA

DGAC CHILE

IPC Certified IPC-A-610 Application Specialist

IPC Certified IPC/WHMA-A-620 Application Specialist

SISTEMA NACIONAL DE ACREDITACION INN - CHILE

Unclassified

HONOR

LEALTAD

CUMPLIMIENTO DEL DEBER

EXCELENCIA EN EL SERVICIO

An aerial photograph of a high-altitude mountain landscape. The foreground is a vast, snow-covered slope with some rocky patches. In the middle ground, a small, dark, calm lake is nestled in a valley. The background features jagged, snow-capped mountain peaks under a clear, bright blue sky.

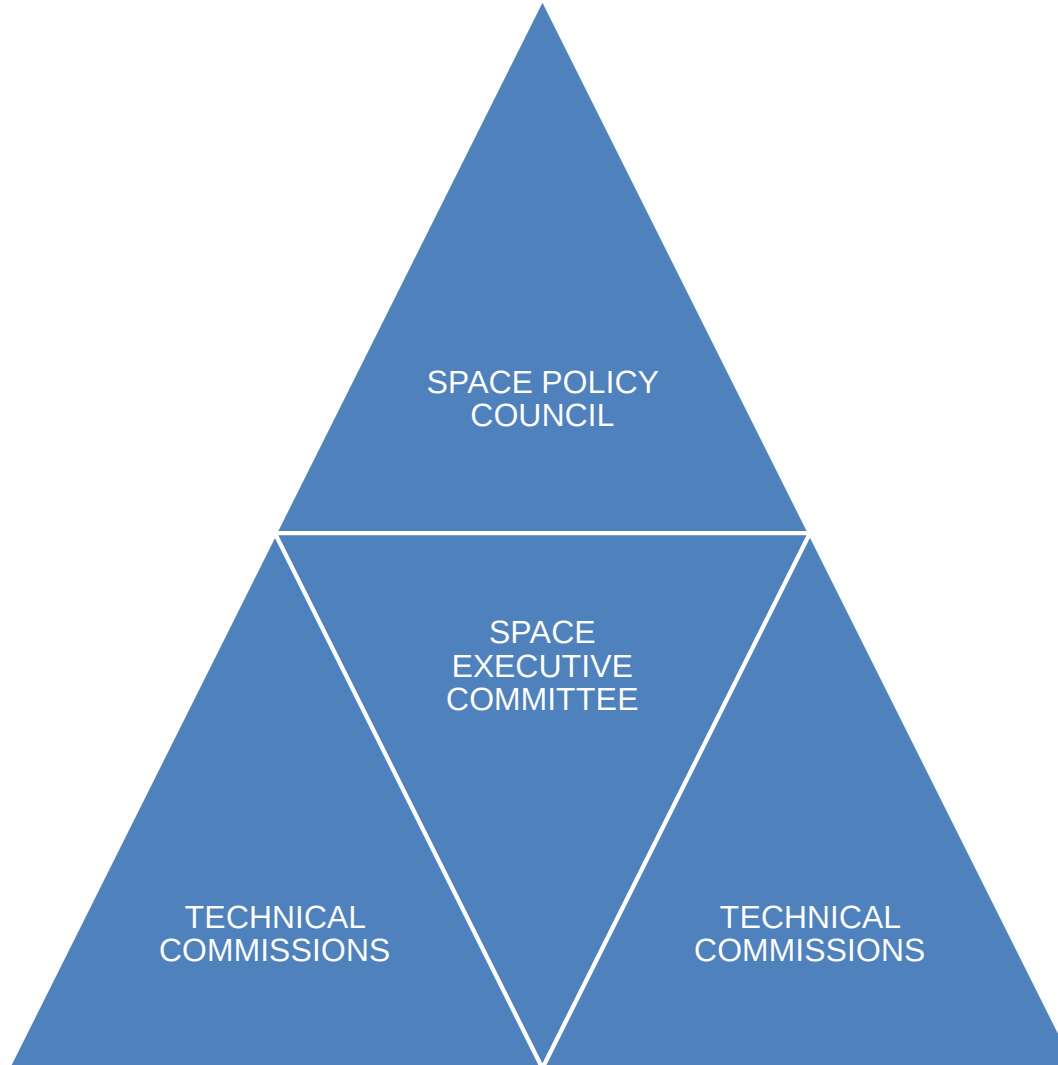
BUILDING A NATIONAL SPACE SYSTEM

Unclassified

**Aerial Image
Lagoon “El Yeso”
Andes Mountain. Chile**



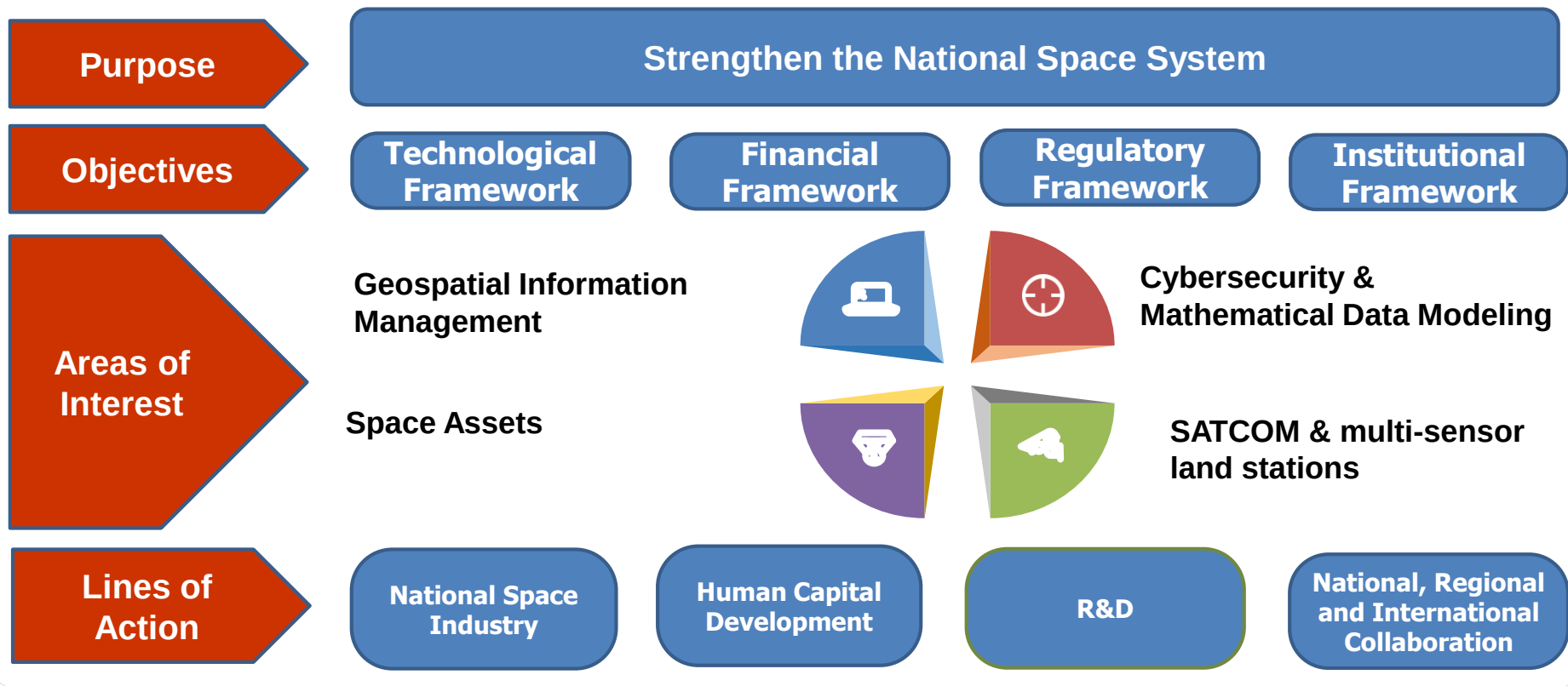
NATIONAL SPACE INSTITUTIONALITY



Unclassified



SPACE DEVELOPMENT STRATEGY



Unclassified



BUILDING A NATIONAL SPACE SYSTEM



SUBSYSTEM 1 (National geospatial information management system)

SUBSYSTEM 2 (Development of national space capabilities)

SUBSYSTEM 3 (National satellite earth observation system)

SUBSYSTEM 4 (National satellite telecommunications system)

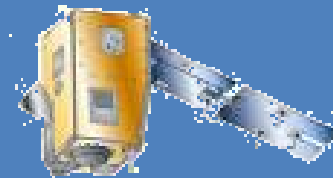
- Satellite ground stations.
- Satellite imaging service contracts.
- Geoportal.
- Mobile app.



- National laboratory for local manufacturing of nano and micro satellites:
- Design.
- Integration.
- Testing.
- Certification



- Optical satellite remote sensing in replacement of FASat Charlie.



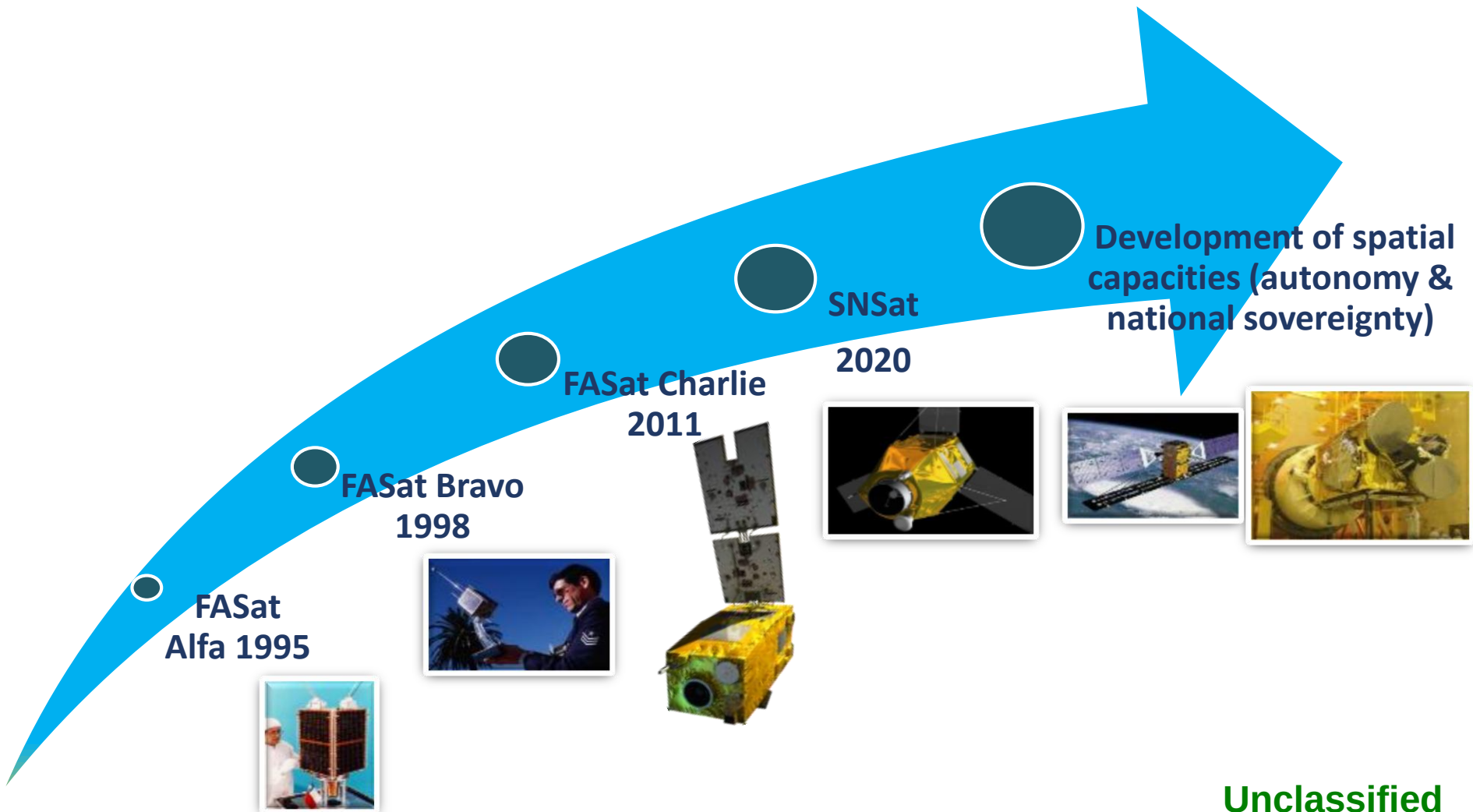
- Satellite Communications Service.



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BUILDING A NATIONAL SPACE SYSTEM





CHALLENGES TO THE SPACE INDUSTRY



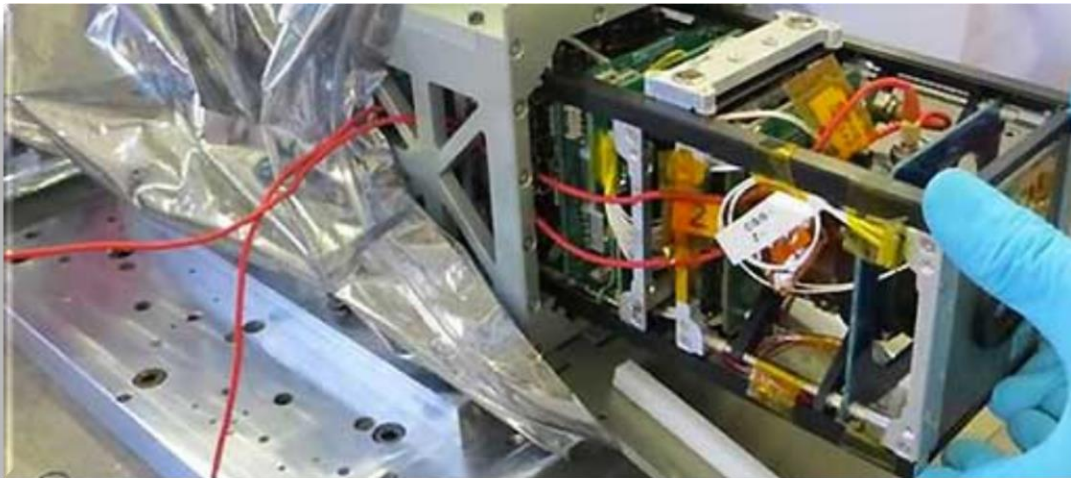
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AREAS OF INTEREST & COLLABORATION



DEVELOPMENT SPACE TECHNOLOGIES



- LABORATORY FOR THE DEVELOPMENT OF NANO AND MICRO SATELLITES
- NATIONAL CENTER OF EXCELLENCE FOR DEVELOPMENT OF SPACE TECHNOLOGIES.

Unclassified



AREAS OF INTEREST & COLLABORATION



DEVELOPMENT SPACE TECHNOLOGIES

R & D



Security & Defense



Innovation & Entrepreneurship



National Space Industry



Unclassified



AREAS OF INTEREST & COLLABORATION



COMPLEMENTING WITH NATIONAL R&D PROGRAMS



Universidad
de Concepción



UNIVERSIDAD TECNICA
FEDERICO SANTA MARIA



COLEGIO
DE INGENIEROS
DE CHILE A.G.



UNIVERSIDAD
BERNARDO
O'HIGGINS



Universidad
de Magallanes



UNIVERSIDAD
DE SANTIAGO
DE CHILE



Unclassified



AREAS OF INTEREST & COLLABORATION



HUMAN CAPITAL DEVELOPMENT



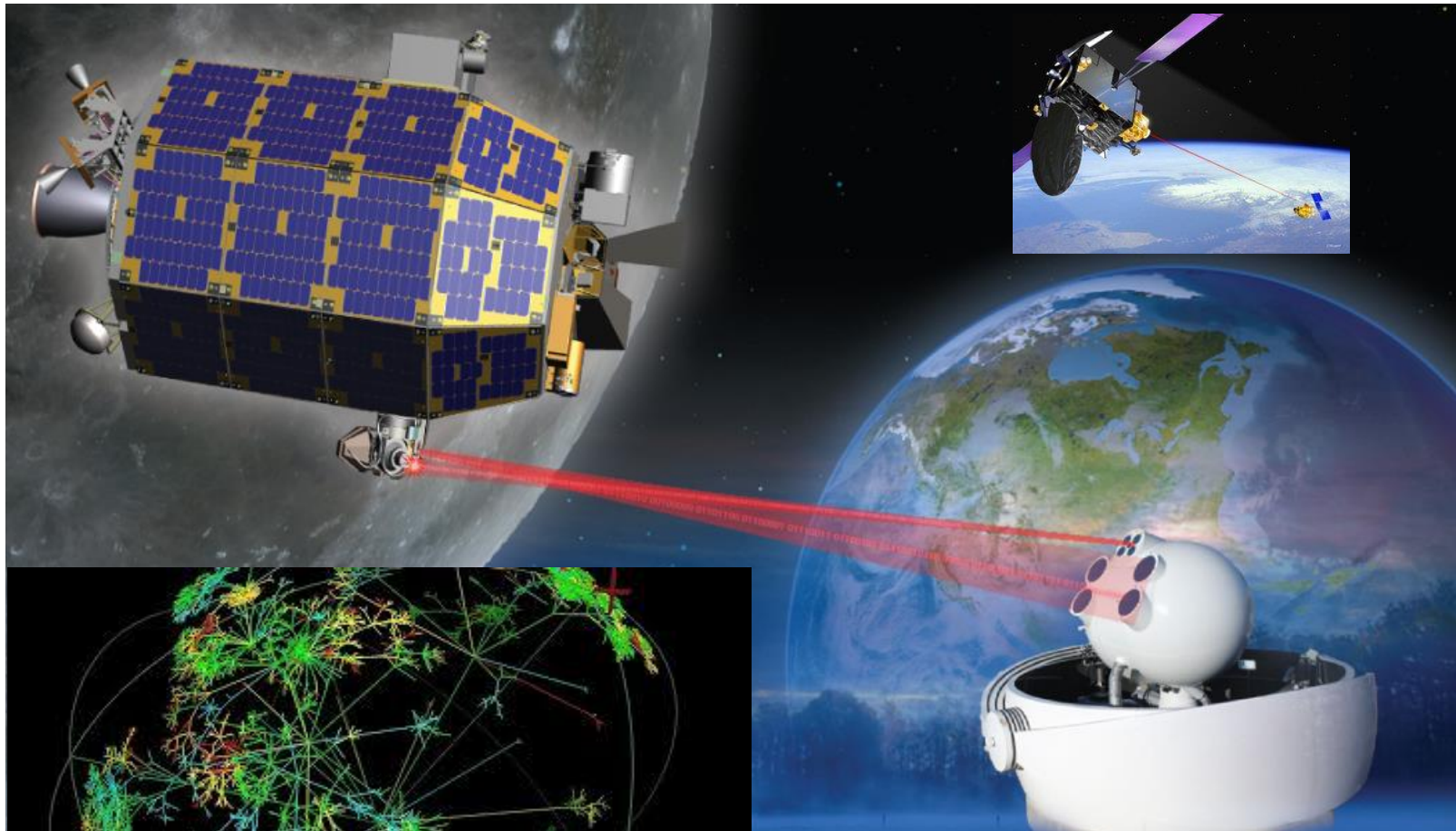
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AREAS OF INTEREST & COLLABORATION



LASER SATCOM



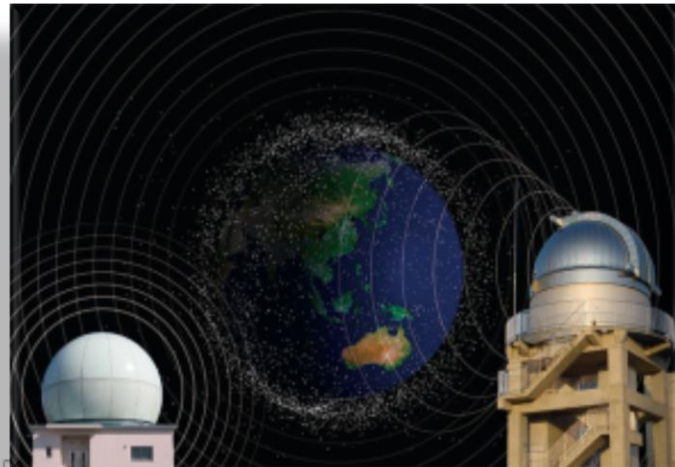
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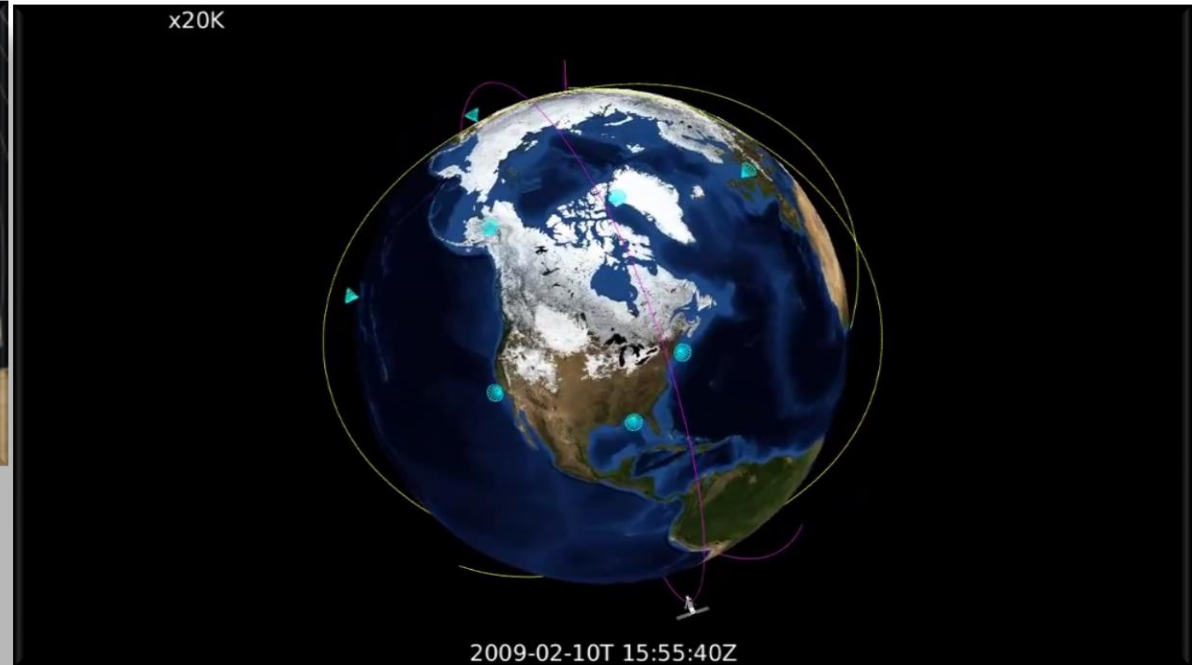
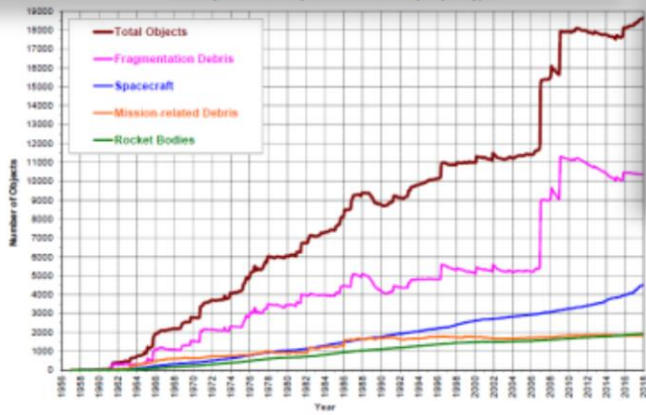
AREAS OF INTEREST & COLLABORATION



SPACE SITUATIONAL AWARENESS (SSA)



Monthly Number of Objects in Earth Orbit by Object Type

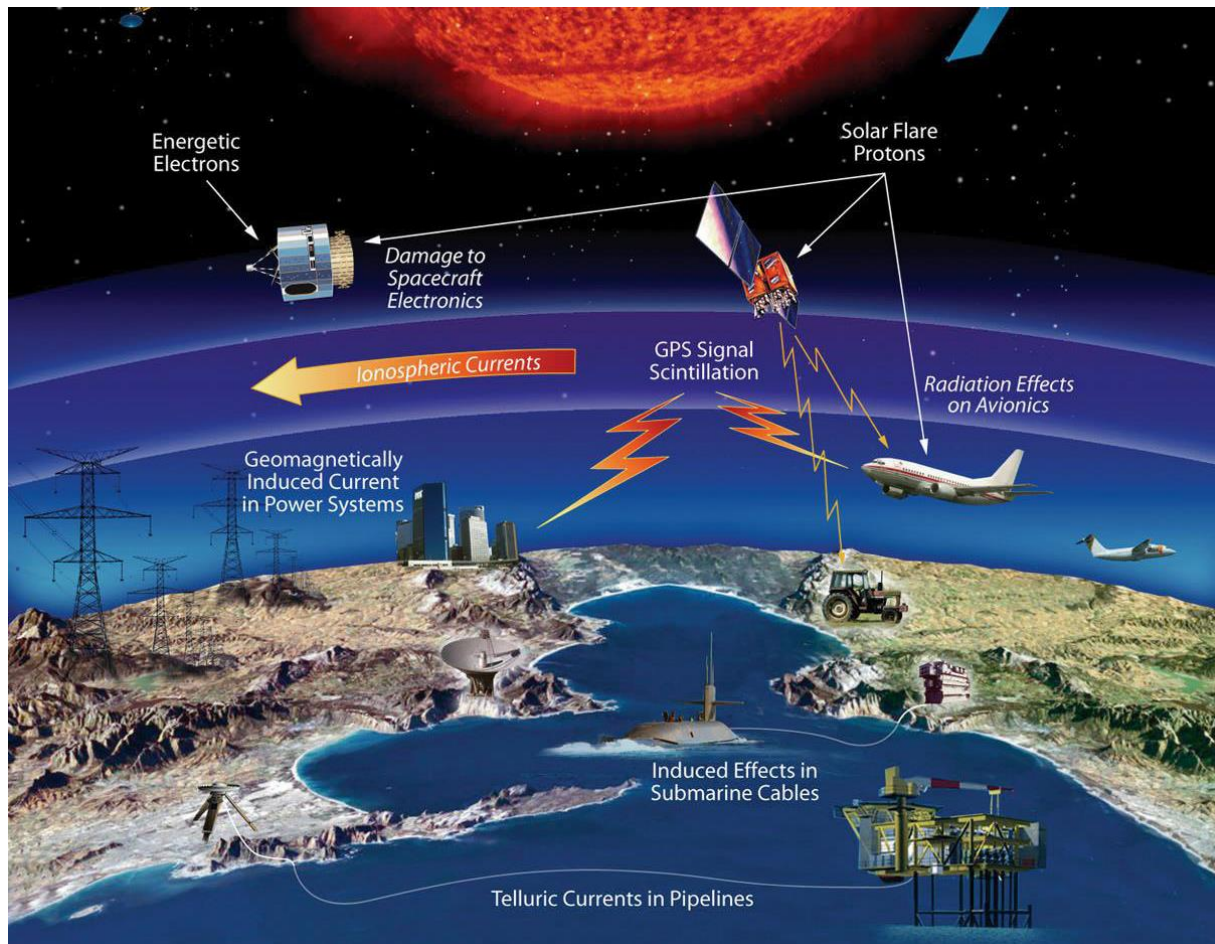


**CHILE: PRIVILEGED GEOGRAPHICAL LOCATION.
ASTRONOMIC FACILITIES.
CLEAN SKIES.**

Unclassified

AREAS OF INTEREST & COLLABORATION

SPACE WEATHER



- Study of the weather conditions within the solar system
- Solar wind.
- Conditions in the magnetosphere, the ionosphere, the thermosphere and the exosphere.
- Effects on life on earth
- Scientific Collaboration
- Multidisciplinary approach.

Unclassified



AREAS OF INTEREST & COLLABORATION



LAUNCH SYSTEMS AND PLACES



Unclassified



FINAL REMARKS

- National spatial development needs to be considered as a challenge of a political nature and strategic scope, feasible to be addressed through diverse alternatives of a technical nature. It is not a technical problem.
- The space can be a strategic development pole of the country (similar to Antarctic and Astronomy), essential for national development and the well-being of its population (Economy of space / services).

Unclassified



FINAL REMARKS

- The challenge is to establish a strategy that allows space to be incorporated into the national development equation as a relevant variable to make Chile a developed country.
- The development of national space capabilities requires a collaborative vision among national / international actors that allows creating value, developing technologies and solving problems with sovereignty and autonomy.

Unclassified

A large red suspension bridge spans a river, with mountains in the background and lush greenery in the foreground. The bridge's structure is a complex lattice of red steel, and its reflection is clearly visible in the calm water below. The surrounding landscape is verdant, with trees and bushes framing the scene.

SPACE ECONOMY

**A BRIDGE THAT CREATES VALUE BETWEEN PEOPLE
AND TERRITORY AND THEIR RESOURCES**

Yelcho River Bridge. South of Chile



SPACE INDUSTRY



A SPACE ECONOMY APPROACH TO NATIONAL DEVELOPMENT

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