

Development Strategy of Early Warning System for Disasters in Mexico

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Process for the creation of the AEM

30 July 2010

- ▣ Approval of the Law that creates the Mexican Space Agency

7 September 2010

- ▣ Board of Government first meeting

16 November 2010
11 April 2011

- ▣ National consultation forums

13 July 2011

- ▣ National Space Policy Publications

1 November 2011

- ▣ Start of operations

Board of Government

FEDERAL GOVERNMENT

- ▣ **PRESIDENT**
Minister of SCT
- ▣ **6 Deputy Ministries**
SEGOB
SRE
SEP
SHCP
SEDENA
SEMAR

PUBLIC ENTITIES

- ▣ **CONACYT**
- ▣ **ANUIES**
- ▣ **INEGI**

ACADEMIC

- ▣ **UNAM**
- ▣ **IPN**
- ▣ **Mexican Academy of Sciences**
- ▣ **Engineering Academy**
- ▣ **National Academy of Medicine**

National Space policy

1. The State as authority and responsible

2. Autonomy of the Country

3. Sovereignty and Security Protection

4. Protection of Mexicans

5. Environment sustainability

6. Scientific research, technology and innovation development

7. Productive sector development

8. Human capital

9. Coordination, regulation and certification

10. International cooperation

11. Space activities public awareness

12. Funding

13. Organization and management

Priorities for the AEM

Help to solve national problems and needs

- Using the capabilities that offer the space

Jobs creation

- Using the capabilities that offer the space

First Year Activities

Development of
the operative
structure

Collaboration
Links

Space Industry
Roadmap

National
Inventory of
Space Capacities

Space Outreach
Activities

Collaboration Agreements and MoU's

Internationals

- Signed
 - DLR
 - State Space Agency of Ukraine.
 - Italian Space Agency
- On process
 - NASA
 - ROSCOSMOS
 - Space Agency of Azerbaijan

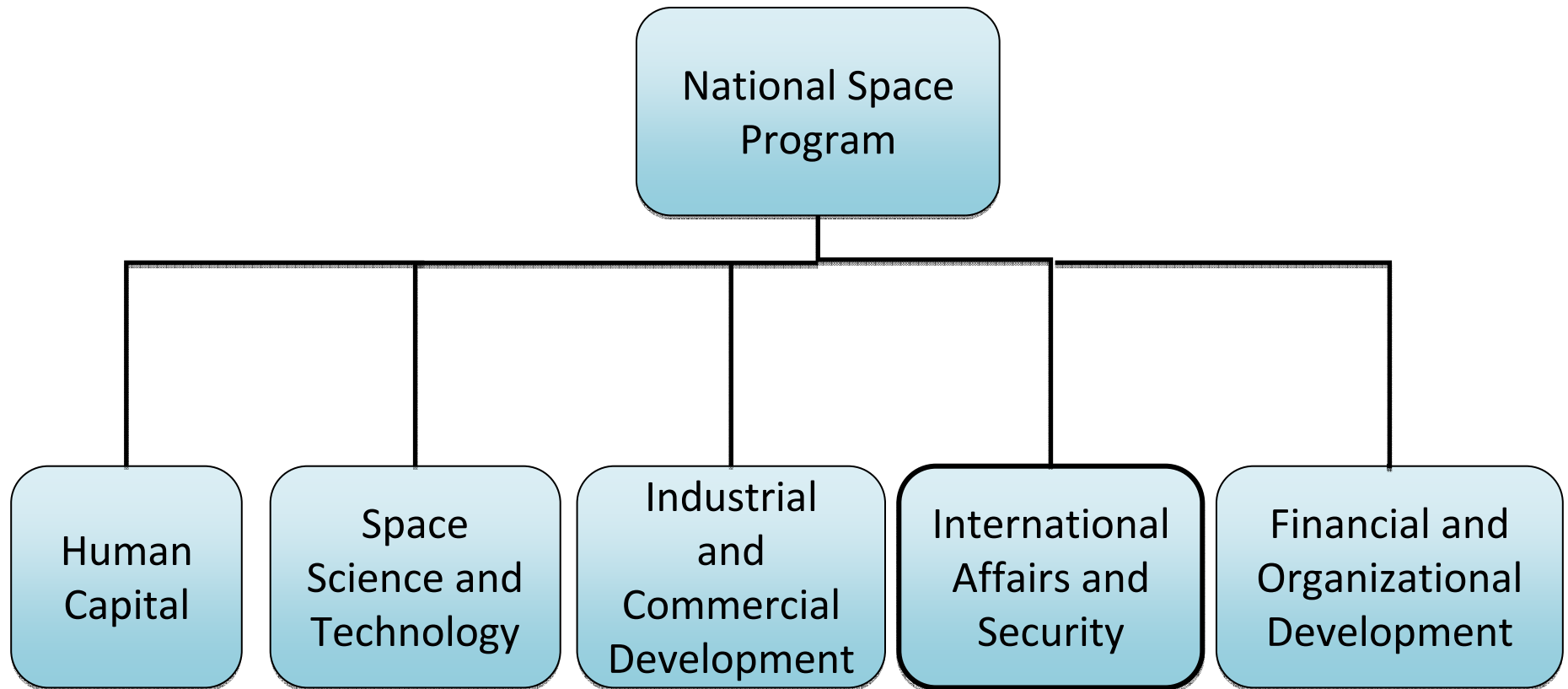
States

- Signed
 - Jalisco
 - Querétaro
 - Hidalgo
 - Yucatán
 - Puebla
- On process
 - Baja California
 - Colima
 - Baja California Sur
 - Zacatecas
 - Quintana Roo

Institutions

- Signed
 - IPN
 - Telecomm
 - CICESE
 - UABC
 - SENER
 - GMV
 - Colima
- On process
 - UNAM
 - INAOE
 - Academies of Engineering, Medicine and Sciences

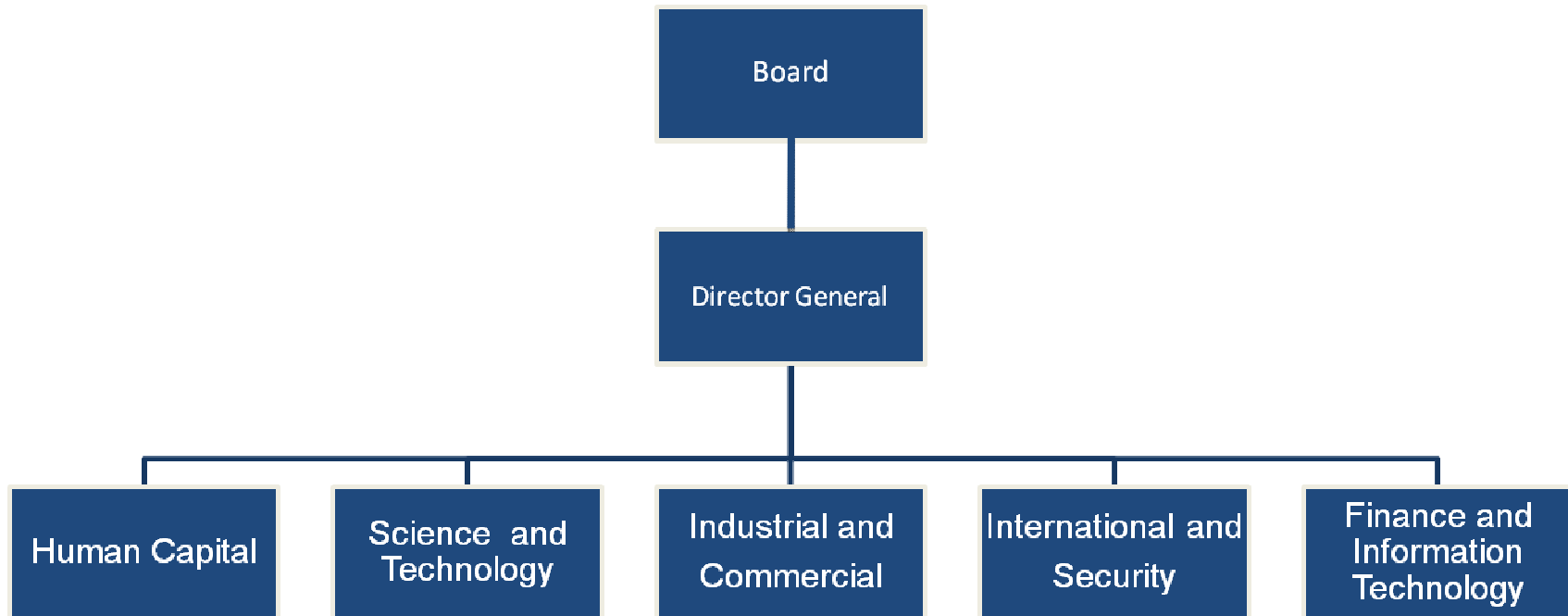
Structure of the National Space Program



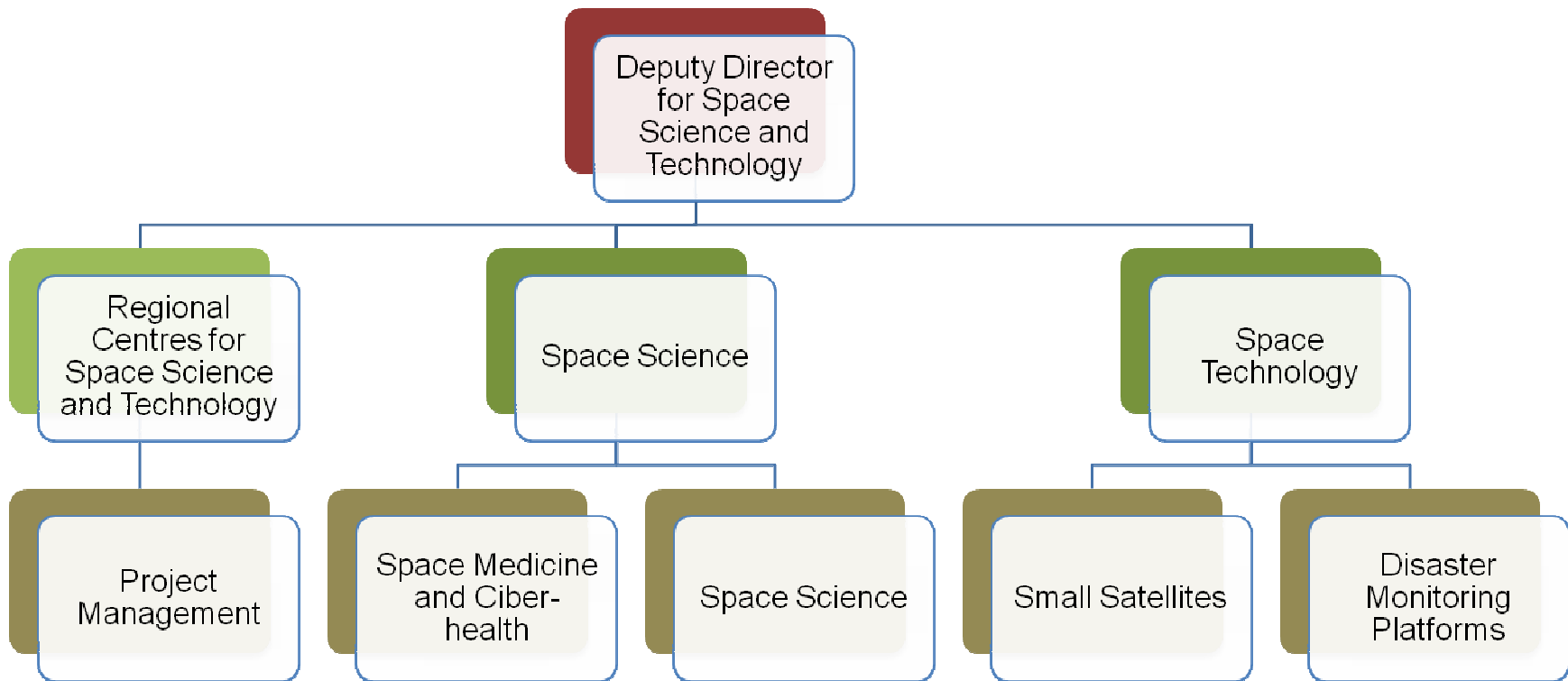
Vision and Mision

Vision	Mision
<p>That AEM will be an enabler to allow that Mexico could be a leader nation in the development and use of space science and technology to improve the quality of life of all the Mexicans.</p>	<p>Transform México into a country with scientific activities and world class space technology developments, focused on social needs and articulated to leading edge industrialization programs, contributing to the country's competitiveness.</p>

Organization



Space Science and technology Coordination



Strategies on the PNAE for Science and Technology

Objective

Support research and innovation on the field of space science and technology for attention of national needs under a sustainability point of view that promotes the creation of added value for the society

Strategies on the PNAE for Science and Technology

2.1 Support the research and innovation in space science and technology to help to solve national needs, that promote the generation of technology that increase the creation of added value chains on the Country and support international collaboration, all under a sustainability perspective

- Capacities Inventory.
- Promote the networking between specialists
- Promote the creation of laboratories and research facilities in space science
- National program in small satellites
- International projects
- Capacities development for satellite platform design and construction for remote sensing and telecommunications
- Coordinate national efforts to GNSS applications and specialists

Strategies on the PNAE for Science and Technology

2.2 Coordinate the regional efforts to support the creation of Regional Centres that helps to increase the capabilities on the states and considering the local strengths to support the space science and technology development

- Promote on the Mexican States the generation of Regional Centres for Space Science and Technology to promote the local technology innovation
- **Development of a early warning system for management of natural and man-made disasters**

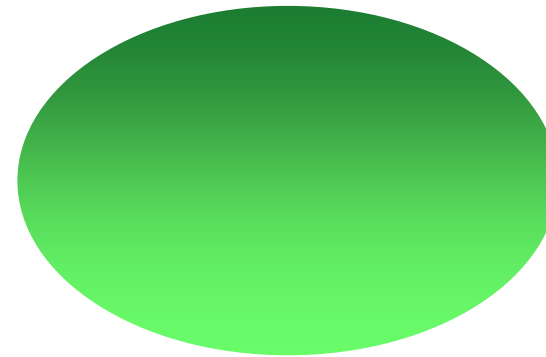
Challenges for a Developing Country

Economic

**Time and Cost of
Projects**

**Government as sole
source of funding**

**Necessities and short
time vision**



Management

Technical Knowledge

Long Term policies

Social impact perception

Space Infraestructure

Space infrastructure is the backbone that supports and connects satellite space systems and national security applications, disaster management and early warning, connectivity, social benefits, environmental sustainability and scientific and technological research

Space Infraestructure

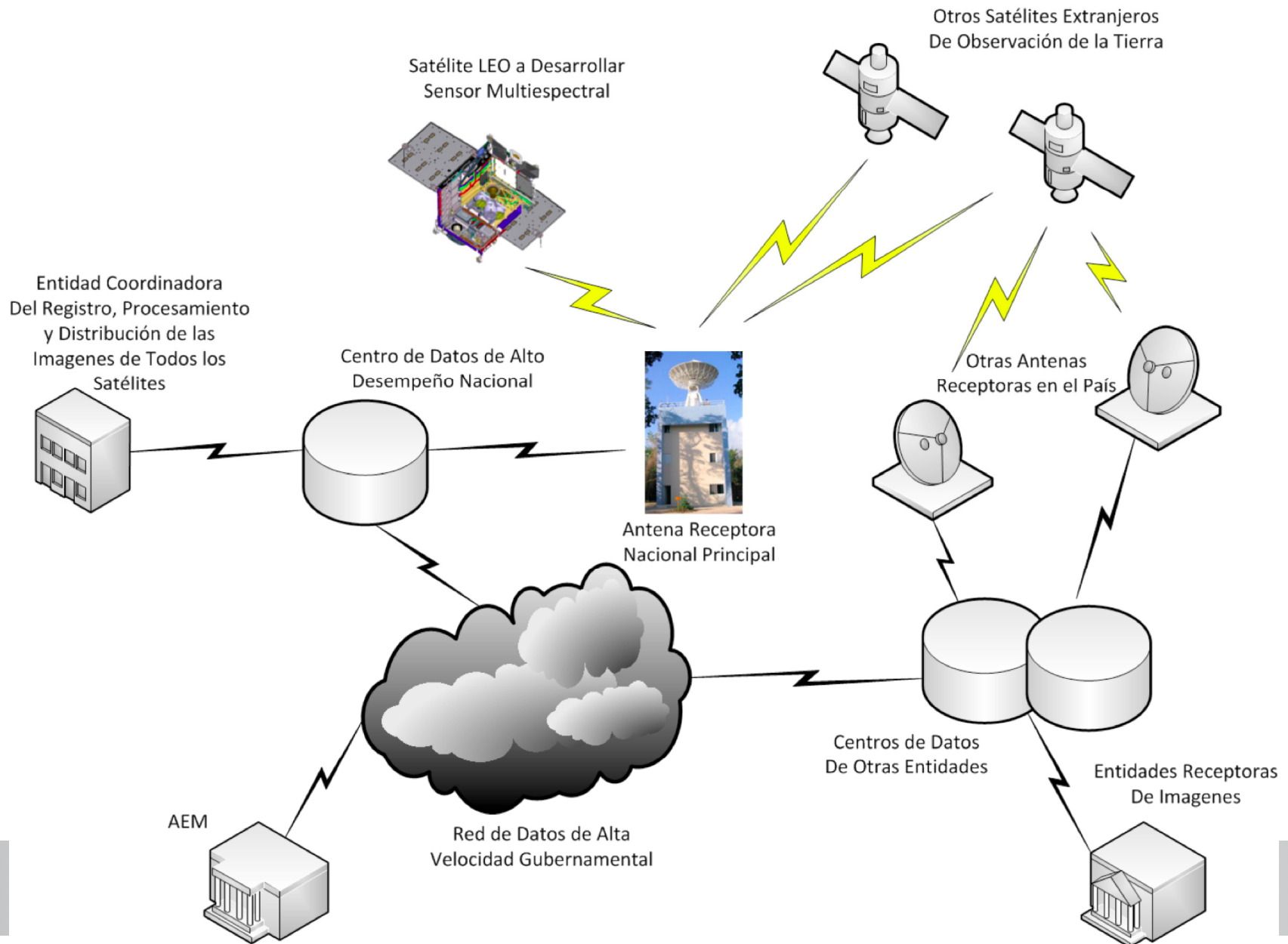
The set of tangible and intangible assets needed for the study, access, exploration, use and exploitation of space

- Tangible assets include rockets, launch platforms and systems, suborbital vehicles, satellites and other spacecraft, instrumentation, payloads, ground stations, teleports, receiving antennas, user terminals and other devices for link control.
- Intangibles assets include orbital positions and frequencies associated, laws, regulations, technologies, patents, licenses, concessions, trademarks and "know-how".

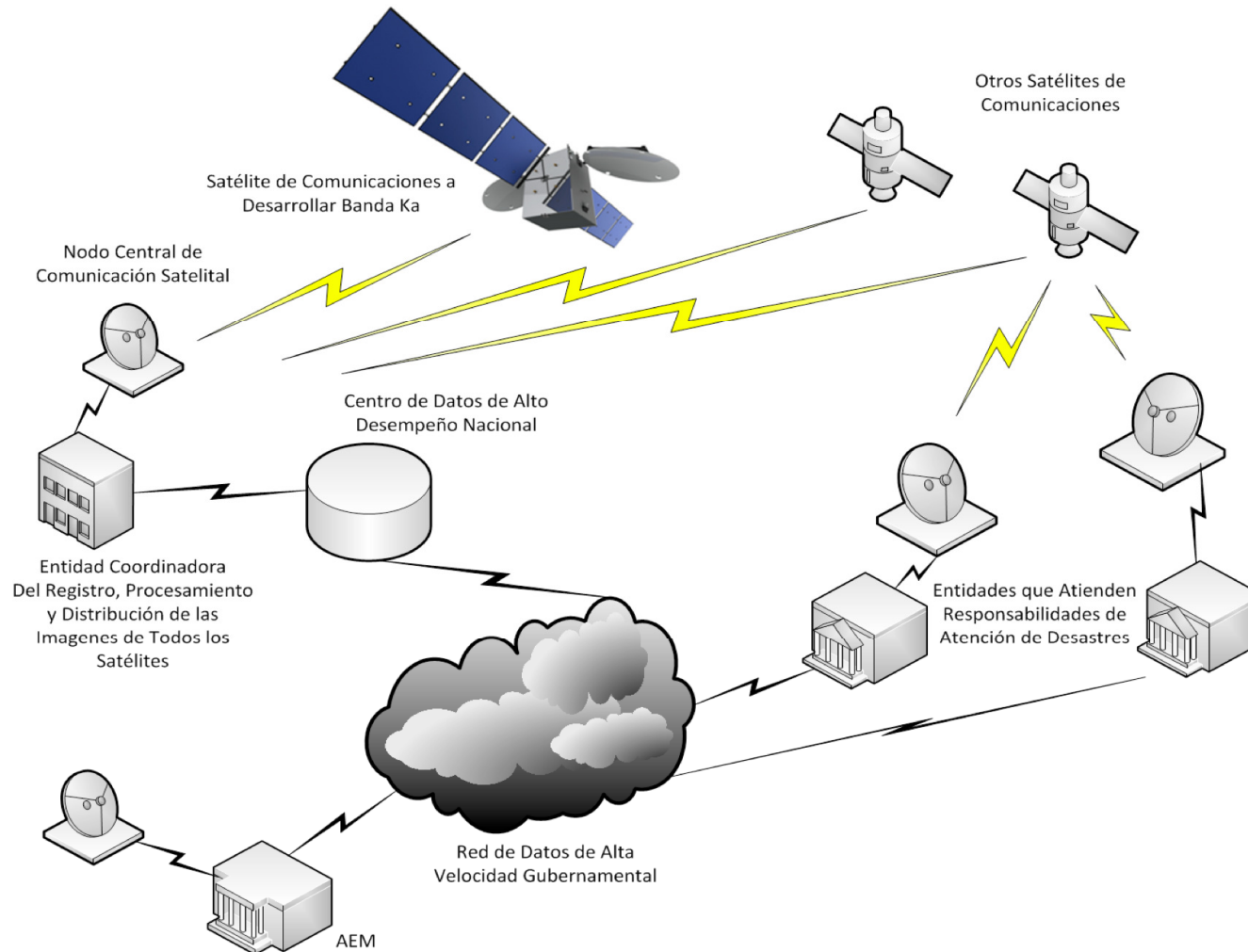
Strategy

- a) National Development Plan**
- b) National Infrastructure Plan**
- c) Proposal of a Early Warning System as part of the space infrastructure for protection of the Mexicans and the natural resources and other public infrastructure.**

Space infrastructure for Earth Observation



Space infrastructure for Satellite Communications



Additional Actions

- Trust CONACYT-AEM as dedicated funding for space projects.
- Regional development supported by States
- International collaboration

Strategies

1. Stratospheric Ballons	Technology demonstrator, human capital development
2. CanSats	Technology demonstrator, human capital development
3. Cubesats (SENSAT/SATEDU)	Technology demonstrator, capacity building
4. CONDOR Project	Seismic sensor, multispectral camera
5. Proyecto Quetzal	Atmospheric observation
6. SATEX 2 Project	Capacity building, multimission platform
Imaging national needs	Less than a 1m resolution

Strategies

7. MIROS-DLR	Early warning system for fire detection and thermal mapping
8. GEO sat for comuncations	System Validation and use of Ka band
9. Early Warning System	MIROS+GEO + Ground Infrastructure
10. SAR	Technological options analysis
10. International Collaboration	Ukraine, Russia, DLR, ASI, UK, NASA, China, APSCO!

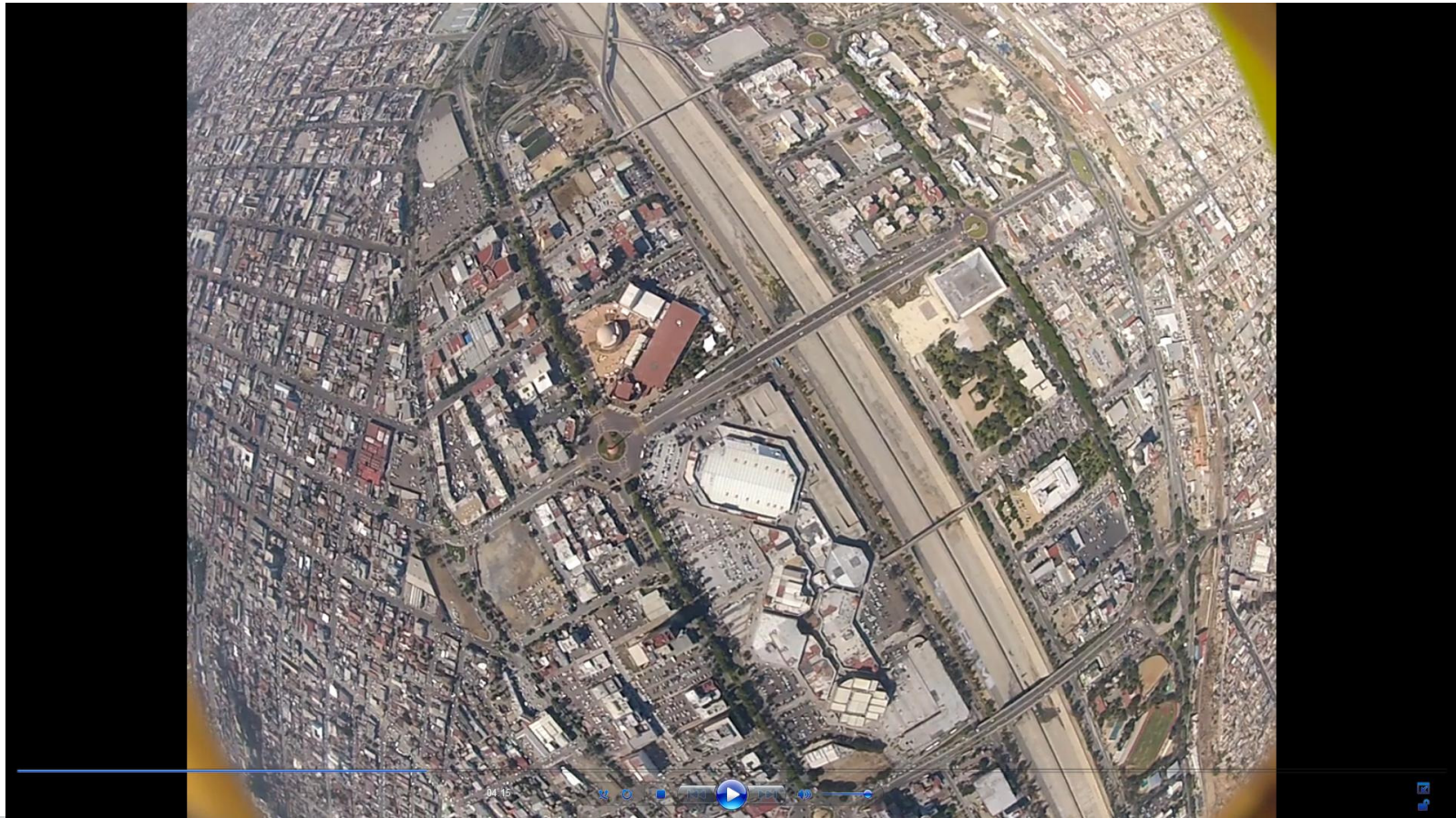
Stratospheric Ballons



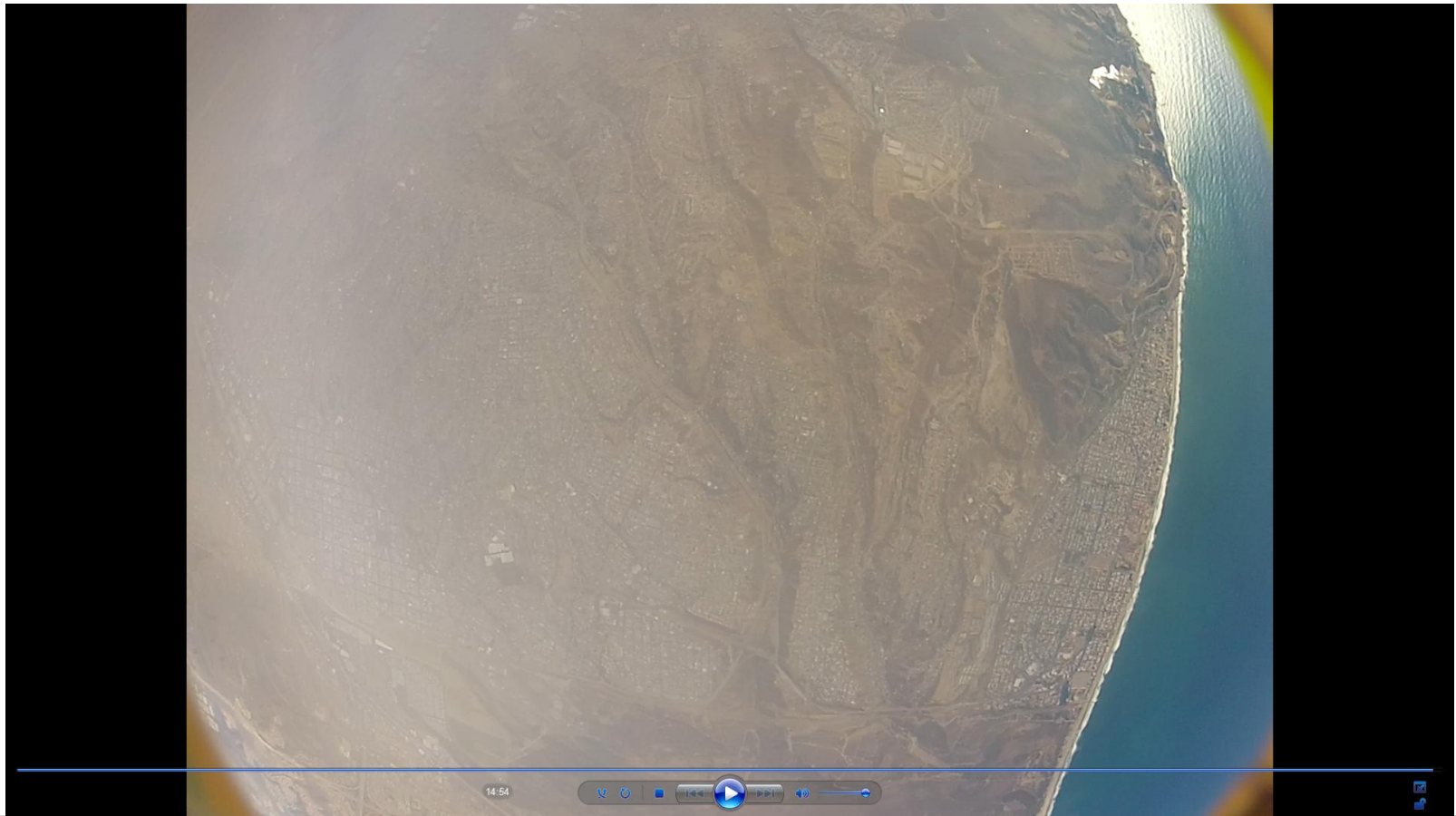
Stratospheric Ballons



Stratospheric Ballons



Stratospheric Ballons



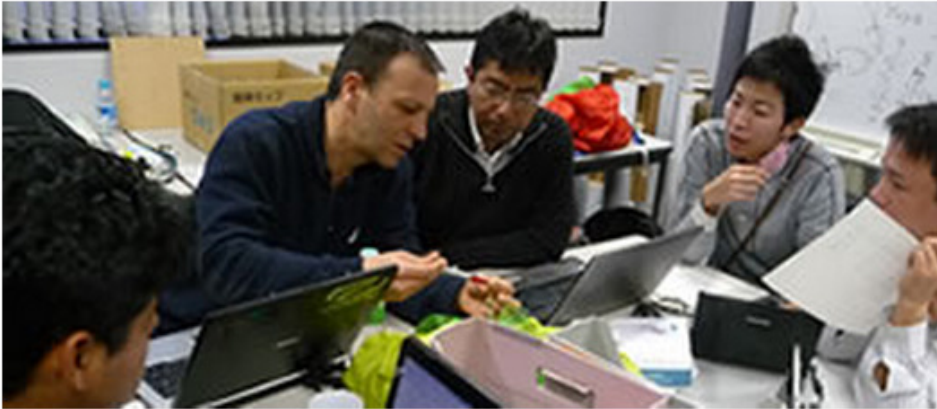
Stratospheric Ballons



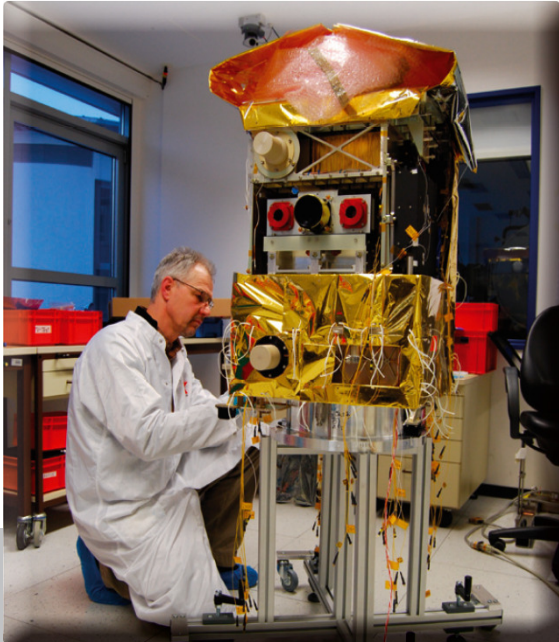
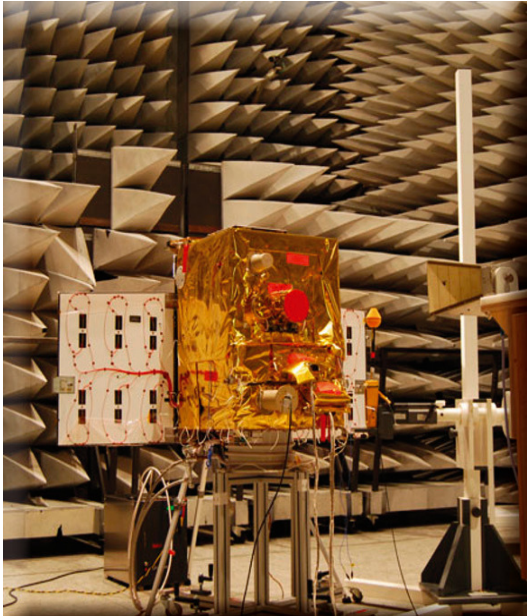
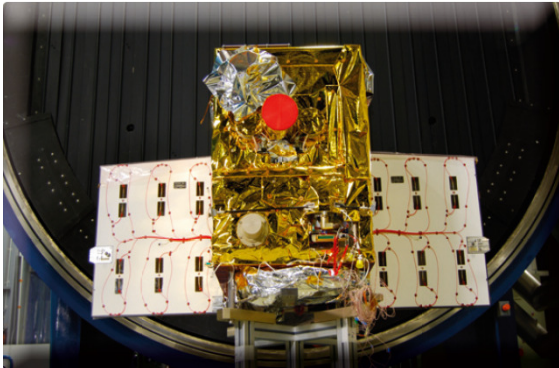
Stratospheric Balloons



CANSAT



MIROS-DLR

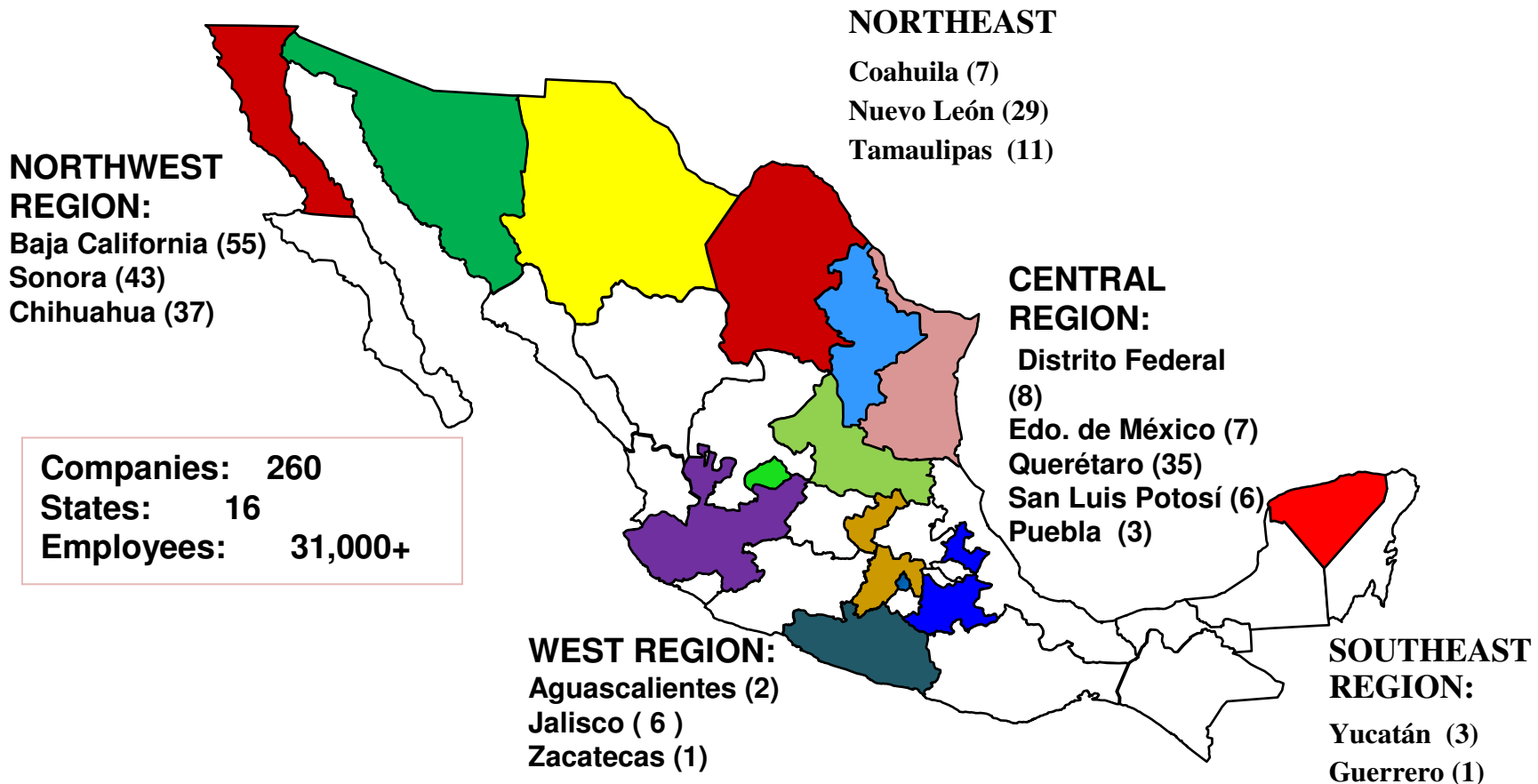


courtesy DLR

Summary

- **Human Capital the Key for success**
- **Strong program for capacities building**
- **Early warning and disaster management a key priority.**
- **Space infrastructure a change of vision**
- **Commitment and support to have a sustainable development**

Aerospace Industry in Mexico



Source: Dirección General de Industrias Pesadas y de Alta Tecnología, SCT, ProMéxico y FEMIA



AEM

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