**SEOSAT-Ingenio soon to be launched**

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| Image | Text |
| 10:00:00:00 | **TITLE: SEOSAT-INGENIO SOON TO BE LAUNCHED** |
| 10:00:10:00* INT. SEOSAT-Ingenio packing in cleanroom, Airbus Defense & Space, Madrid, Spain – June 22, 2020 – Airbus Defense & Space (5 shots)
* INT. SEOSAT-Ingenio in cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA (3 shots)
 | **In an Airbus cleanroom in Madrid, the SEOSAT-Ingenio satellite is being prepared for shipment to Europe’s Spaceport in Kourou, French Guiana. By the end of 2020, this brand new Earth observation satellite will be launched into orbit on a Vega rocket.** **SEOSAT stands for Spanish Earth Observation Satellite and Ingenio is Spanish for ingenuity. It is a Spanish national satellite mission funded by CDTI, the Spanish Centre for the Development of Industrial Technology, developed by the European Space Agency in collaboration with Spanish industry.**  |
| 10:00:47:24* INT. SEOSAT-Ingenio in cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **Javier Ponce, Director General CDTI:** The mandate of CDTI, it's promoting the innovation and technological development of Spanish companies, which belongs to the Ministry of Science and Innovation. And we have a special mission, try to embed technological and scientific knowledge into competitive and sustainable growth in Spain.  |
| 10:01:12:20* Animation. SEOSAT-Ingenio in space – 2020 – ESA
* Aerial. Fields in spain – unknown date – VideoBlocks
* Animated map of Spain – unknown date – videoblocks
* Animated map of South america – unknown date – videoblocks
* INT. SEOSAT-Ingenio in cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
* INT. Cleanroom technicians working on SEOSAT optical payload – unknown data – SENER (2shots)
* Still. Artists impression SEOSAT optical payload – unknown data – SENER
* STILL. Sentinel-2 images – unknown data – contains modified Copernicus Sentinel data, processed by ESA, CC BY-SA 3.0 IGO (2shots)
* Still. Multispectral bands illustration – ESA
* Animation. SEOSAT-Ingenio in space – 2020 – ESA
* INT. Cleanroom SEOSAT optical payload – unknown data – SENER (2shots)
 | **SEOSAT-Ingenio is an optical Earth observation satellite which will provide high-resolution images of Earth’s land cover, with a primary focus on Europe and in particular Spain, North Africa and South America.** **SEOSAT-Ingenio carries a state-of-the-art dual camera that can image Earth’s land with a resolution of 2.5 metres.****It will capture images in the panchromatic band, meaning black and white, as well as in a four multi-spectral bands: red, blue, green and near-infrared, at a resolution of 10 metres. The satellite will be covering swaths of land 55 kilometres wide and also has the capability to look sideways – enabling it to access any point on Earth within 3 days. A challenging mission for engineers to develop.** |
| 10:02:05:17* INT. Private residence Alex Popescu – Den Haag, The Netherlands – June - ESA
 | **Alex Popescu, SEOSAT Project Manager, ESA:** Optical payloads are very challenging in terms of alignment and stability of their elements. The mirrors and the optical elements of SEOSAT have to be aligned with extremely high precision equivalent to or some one tenths of the diameter of human hair. and have to be very stable in spite of the very high vibration experienced by the satellite during launch and during the extremely large temperature variation in orbit. The final tests performed with the satellite has proven that the payload and the satellite comply with this requirement and maintain very well their performance.[00:06:58][66.0] |
| 10:03:02:10* INT. SEOSAT-Ingenio in cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
* Animated map – unknown date – Videoblocks
* Aerial. Fields at sunset – unknown date – VideoBlocks
* Aerial. forest – unknown date – VideoBlocks
* Aerial. Suburbs – unknown date – VideoBlocks
* Aerial. Water management, Texas, USA – unknown date – VideoBlocks
* Animation hurricane forming – unknown date – Videoblocks
* Aerial. Flooded village – unknown date – VideoBlocks
* EXT. Wild fire – unknown date – VideoBlocks
* EXT. Parched field in drought – unknown date – VideoBlocks
* Aerial. glacier – unknown date – VideoBlocks
* INT. SEOSAT-Ingenio in cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA (4 shots)
* STILL. Artist impression of PAZ Satellite – unknown date
 | **SEOSAT-Ingenio is aimed at civilian, institutional and government users and will provide information for a wide variety of applications. These include disciplines such as cartography, agriculture, forestry, urban development and water management. The data will also be used to help map natural disasters such as floods, wildfires and earthquakes – as well as provide information on one of humankind’s biggest challenges: climate change.** **The SEOSAT mission has been developed as part of the Spanish Earth Observation programme which is based on two complementary satellites Ingenio and Paz, which is a radar mission. But its scope goes beyond the national level.**  |
| 10:03:47:21* INT. J. Aschbacher Office, ESRIN, Frascatti, Italy – June 2020 – ESA
 | **Josef Aschbacher, Director of Earth Obeservatio programmes, ESA:**SEOSAT-Ingenio perfectly fits into the European landscape of satellite missions that are existing or planned in the near future. For example, we have the Copernicus programme with the Sentinels, with the Sentinels, which are delivering data for free and open to everyone, but at lower resolution. SEOSAT-Ingenio provides higher resolution at 2.5 metres in the panchromatic channel and therefore complements the Copernicus data, but also is a commercial satellite where this data will be offered on the commercial market. So it is a commercial enterprise as much as a societal enterprise because the information that is required is of value to Europe, is a value to Spain, and is therefore also filling a market segment that today is a very important one.  |
| 10:04:35:16* STILL. Sentinel-2 image of Barcelona – unknown data – contains modified Copernicus Sentinel data, processed by ESA, CC BY-SA 3.0 IGO
* STILL. Sentinel-2 image – unknown data – contains modified Copernicus Sentinel data, processed by ESA, CC BY-SA 3.0 IGO
* INT. SEOSAT-Ingenio in cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA (4 shots)
* Animation. SEOSAT-Ingenio in space – 2020 – ESA
 | **Today, high-resolution images of Earth are deemed an essential commodity for a wide range of scientific, commercial and governmental applications. With the development and launch of SEOSAT-Ingenio ESA and Spain are answering these needs. Once again, ESA and Europe are proving that they are at the forefront of Earth observation technology. Providing the data needed to monitor our planet while servicing and protecting the people living on it.**  |
| **10:05:05:22** | **B-ROLL** |
| * INT. SEOSAT-Ingenio cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **Javier Ponce, Director General CDTI – English**CDTI has a specific role in the space, the Spanish space sector. Anyway, we have horizontal structural activities in relation with technology. Our support can be applied to any technological areas and of course, into also into space. For the space due to the fact that we had speaking a specific domain, we devote a full department into the organization trying to manage all the programs and space projects. Additionally, we have the, we are retained, the head of delegations of the European Space Agency and manage the budgetary lines for this contribution to the European Space Agency. We have some other activities in relation to a space. CDTI is involved in more than 75 percent of the space, national space civilian programs. And all these kind of activities can be considered that for us we are often an office for the management of space programmes in spain. |
|  | I am very optimistic about industrial capabilities from Spain. During the last ministrial conference Space-19+, Spain was consolidated its fifth largerst contributor to the agency. The 852 million euros devoted to ESA for the next years. It's the largerst Spanish contribution to the ESA organisation. I must to highlight our specific support to the copernicus programme, because we have achieved the fourth position in this important programme. I have to say that we took this decision based on their industrial capabilities, we have developed in Ingenio programme. other areas witha specific support from Spain is exploration. We have doubled our contribution to this area because we consider this is important for the international collaboration for Spain. |
| 10:08:03:15* INT. SEOSAT-Ingenio cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **Javier Ponce, Director General CDTI – Spanish*** What does CDTI do?
* How does CDTI support the Spanish space industry
* Role of Spain in European space programmes
* Role of Spanish industry in SEOSAT?
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| 10:11:22:17* INT. Private residence Alex Popescu – Den Haag, The Netherlands – June - ESA
 | **Alex Popescu: SEOSAT Project Manager, ESA - English**SEOSAT is a high resolution land imaging mission designed for taking global imagery in black and white and four of spectral bands spaning the visible spectrum, as well as a near infrared band useful for the monitoring of the vegetation health. |
|  | So Seosat is flying on a polar orbit from the North poleto this south pole. While flying SEOSAT can orient itself left or right to the flight direction, so that it can access all the points visible from the altitude of 700 kilometers. From this altitude SEOSAT is capable all for imaging an area of 2.5 million square kilometers every day, which is equivalent to five times the surface of Spain. And it can access any point on the globe within a maximum of three days. |
|  | So the payload SEOSAT is an optical imaging payload. It consists of four two identical camera, which can image swaths of 55 kilometers. The image is taken in four bands, one wide black and white band and four color bands... Covering the visible spectrum as well as a near infrared band. The images taken are stored onboard. And every time the satellite is overflying a ground station, the images are downloaded to the ground. If a polar station is used for downloading these images out of downloaded every one and a half hours. |
|  | The images taken by SEOSAT are of high value for the society in general, since they can be used for environmental monitoring, for monitoring and management of disaster situation and crisis. And it also provides a lot of information which together with the information provided by other satellites, can be used for monitoring climate changes.  |
|  | Taking images at a distance of seven hundred kilometers from the altitude of SEOSAT poses an exceptional challenge to the pointing stability of the camera and the of the entire satellite. This stability is such that it is a equivalent of putting a thread through a needles at a distance of one kilometer. |
|  | This stability is achieved by having very low disturbance, moving parts on the satellite and the very high precision and high accuracy pointing control systems.  |
|  | SEOSAT is fitting in the class of High-Resolution satellite, a which offers wide swaths and fast global coverage. And compliments very High-Resolution satellites on one side, which go to a higher ground resolution but are more limited in terms of global coverage and also compliments lower resolution satellites. |
| 10:15:21:18* INT. Private residence Alex Popescu – Den Haag, The Netherlands – June - ESA
 | **Alex Popescu: SEOSAT Project Manager, ESA – Spanish*** What is SEOSAT?
* Orbit and flight of SEOSAT
* SEOSAT tech specs
* SEOSAT data applications
* SEOSAT Challenges
* How can SEOSAT be used to help observe climate change
* Current status of SEOSAT and launch
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| 10:19:34:01* INT. J. Aschbacher Office, ESRIN, Frascatti, Italy – June 2020 – ESA
 | **Josef Aschbacher: Director of Earth Observation Programmes, ESA – English**SEOSAT is a very versatile satellite and serves many domains of applications from agriculture to disaster management, also fisheries, forest fires are the many domains her where SEOSAT can be used. And it really is a very fantastic satellite with a number of applications and uses. |
|  | It is important to have a very high resolution satellite because this is what the users are asking for. We have two types of satellites. The lower resolution ones and the very high resolution ones. And SEOSAT is among the very high a solution satellite with a resolution panchromatic of 2.5 meters. And this is top technology and this is necessary for really the monitoring of country wide or larger scale applications. Agriculture is one good example, forestry, but also droughts, also production of agricultural crops and therefore food security, not only in Spain but worldwide. And this is one of the good characteristics of SEOSAT to have really this very good solution. |
|  | It is important to have these high resolution satellites because they combine very well with other satellites that are also used in combination. What we use today is not only data from one specific satellite. So then in combination with many others and there SEOSAT will complement other satellites like the Sentinels, from the Copernicus program, but also many other satellites that are existing. So SEOSAT has a very important function because it fills this niche or this segment of high resolution satellites, especially with this panchromatic sensor at 2.5, which is excellent. |
|  | The role of ESA in the development of SEOSAT-Incenio is that we have been, on behalf of the Spanish government, are developing the satellite. The Spanish government, and especially CDTI, the Spanish Center for the Development of Industrial Technology, has been in charge of developing the satellite, but they have contracted through an agreement ESA to really do it with them and on their behalf. So our job was really to make all the development, the design of the satellite, the development of the satellite. The procurement from industry of various components, but also to organize the data segment and to make it ready for operational life, including also buying on behalf for the Spanish government, the launcher. And this is, of course, a very important point and we very much rely here on the expertise across Europe. |
|  | SEOSAT-Ingenio is funded by the Spanish government and is contracted to ESA, the European Space Agency through CDTI, the Spanish Center for the Development of Industrial Technology. We have an agreement which was signed a couple of years ago and within this agreement ESA has been asked to design the satellite, to develop the satellite, to procure all the components that are required with mostly Spanish industry. But it also, in some cases, also with other industry and to make the satellite the ready for launch and procure a launcher on behalf of Spain again in order to get the satellite into orbit.  |
|  | The expected results of the SEOSAT-Ingenio mission are many. Typically, agriculture is one of the main applications, to monitor the growth of agricultural crops, but also to see whether the harvest of wheat or for different agricultural crops is to a higher or lower compared to last year or a few years ago. So therefore, food security is certainly a very important application. But also land use and land cover changes are very important. Forestry, desertification, drought, changes of vegetation area into urban area and their dynamics. These are very important information which you need. Of course, all of this feeds into climate change because, if you change the land cover, therefore you also change the way how this interacts with the climate and therefore climate parameters are being affected. So SEOSAT-Ingenio is a very important mission for many segments from resources management to disaster management, but also climate change and better understanding the earths system as it functions. |
|  | SEOSAT-Ingenio will help us to better understand climate change. For example, one important parameter in climate change is land use change, change from agricultural areas into urban areas or from forested areas into non forested areas. And there SEOSAT, through it's routine operation, routine monitoring of the of the land surface, certainly helps a lot to better understand a very important parameter of climate change. So yes, SEOSAT-Ingenio is monitoring the resources, but also a very important element of the earths system which impacts and influences climate change.  |
|  | Satellites in general are essential for monitoring climate change. Without satellites, you would not be able to monitor and detect climate change parameters as we see them today. From sea level rise to temperature increases to the melting of glaciers, melting of ice caps. These are all parameters measured from satellites. Today, they are very, very essential. To better understand the earths system, to better understand climate change and therefore do to see what happens, but also to help feeding models to predict what is the impact of humankind on our planet and therefore on climate change.  |
|  | SEOSAT-Ingenio will be launched at the end of August from Kourou, the European spacePort. The satellite is waiting to be launched there, everything is is ready. The technology is has been tested. The satellite has been really proven to be flight worthy. And we are just waiting for the launch here at the end of August. And we all hope that this is all going well because it is important to have this important mission, SEOSAT-Ingenio up in space in order to do its job, which is to monitor our planet and provide this data to the people. |
| 10:26:24:06* INT. J. Aschbacher Office, ESRIN, Frascatti, Italy – June 2020 – ESA
 | **Josef Aschbacher: Director of Earth Observation Programmes, ESA – German*** What is SEOSAT and what are tis applications?
* The role of ESA in the development of SEOSAT?
* How does SEOSAT fit into existing European Earth Observation programmes?
* How can SEOSAT help understand climate change?
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| 10:29:28:01* INT. SEOSAT-Ingenio cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **Juan Carlos Cortés : Director of European Programmes, Space and Technological Returns, CDTI - English**In 2007 Spain decided to develop an earth observation national program. This programme is composed of two components: one optical, Ingenio and one rader, Path.  |
|  | Ingenio is a high resolution satellite. On the panchromatic and multispectral band with a resolution of 2,5 meters. This program is carried out under a partnership of ESA and CDTI. The prime contractor of the mission is Airbus Defense and Space Spain flight segment and INTRA for the ground segment |
|  | Concerning the application. I have to say that the data provided by Ingenio will be oriented to both public and private about the users around the world, but with a special emphasis in the spanish administration. The data will be used for multiple uses, in particular for what has to do with climate change, with coastal monitoring, with border monitoring, with natural resources and so on. And it is important to say that Ingenio will be a contributing mission for Copernicus initiative. Copernicus's an initiative launched together by ESA and the European Commission. And it's also important to underline that Ingenio will be key for Spain to contribute to the achievement of this sustainable development goals. |
|  | In 2007, Spain decided to launch an earth observation national programme with two components. One is Ingenio in the optical domain and the other is Paz in the radar domain. Ingenio is a high resolution satellite, optical satellite, and has a spacial resolution of 2.5 meters. The program, the satellite is the result of a partnership between the European Space Agency and CDTI and the prime for the mission is Airbus defense and Space Spain. And is the result of close cooperation between Spain and the European Space Agency. The system could cover any point around the world, but has three main priority areas. One is Europe. The other is South America. And the other is the north of Africa. I have to underline the important role play by the IMAG. IMAG is the Ingenio Mission Advisory Group, who was key for the definition of the requirements of the program and was the forum where the users who meet together to try to define the high level objectives of the of mission. |
|  | The objectives of SEOAT are twofold. The first is to develop in Spain the capabilities for prime contractorship. And the second has to do with the operational capacity of the system. And one of their main objectives is precisely to develop in Spain the downstream sector with special emphasis in this Spanish administration. Concerning the second objective I have to say that the data stemming from Ingenio can be use d in a ...applications ranging from climate change, to border control, passing through natural resources, agriculture and so on. And with respect to the first objective, I have to say that thanks to Ingenio Spain is now able to embark on the leadership of the mission. In particular, I have to mention CHEOPS, I have to mention also […]. And I have to say that we have the ambition to become prime within the initiative, Copernicus. |
| 10:34:02:16* INT. SEOSAT-Ingenio cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **Juan Carlos Cortés : Director of European Programmes, Space and Technological Returns, CDTI – Spanish*** **What is the SEOSAT programme?**
* **Objectives of SEOSAT**
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| 10:36:48:01* INT. SEOSAT-Ingenio cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **Jorge Lomba Ferreras: Jefe del Departamento Programas Aeroespaciales, CDTI - English**Ingenio will be able to provide our society with very range, a large range of optical images for many applications such as land use, border control or climate change or security. The areas of observation would be primarily Spain. But the priority areas include also Europe and Latin America. To just put an example that nowadays would be interesting is that Ingenio could help our society fight against Covid19, for instance, taking images with a daily of coverage of our areas. just to have the idea of how we keep social distancing in public areas such as parks or swimming pools. |
|  | Ingenio has been the space programme where Spanish industry has had a major industrial involvement, as 80 percent of the satellite has been manufactured in Spain, while in previous to samples of space programmes leaded by Spain. Only 50 percent of this satellite has been manufactured here. |
|  | The cooperation of ESA and CDTI on Ingenio has been fantastic. A team of more than 50 engineers have worked together to develop a satellite according to the demanding technical requirements, defined by ESA. CDTI has been responsible for defining the mission requirements to fulfill the user needs and ESA has been able to do the more technical detail management of the industrial contracts and technical reviews. |
| 10:38:38:07* INT. SEOSAT-Ingenio cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **Jorge Lomba Ferreras: Jefe del Departamento Programas Aeroespaciales, CDTI - Spanish*** How will SEOSAT-Ingenio be used?
* Benefits of Ingenio for Spain and importance for Spanish industry
* The collaboration between ESA and CDTI
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| 10:40:55:19* INT. SEOSAT-Ingenio cleanroom, Airbus Defense & Space, Madrid, Spain – June 2020 – ESA
 | **SEOSAT-Ingenio in cleanroom****Airbus Defense & Space****Madrid, Spain****June 2020****ESA** |
| 10:44:38:04* INT. SEOSAT-Ingenio packing in cleanroom, Airbus Defense & Space, Madrid, Spain – June 22, 2020 – Airbus Defense & Space (5 shots)
 | **SEOSAT-Ingenio packing****Airbus Defense & Space****Madrid, Spain****22 June 2020****Airbus Defense & Space** |
| 10:48:05:19* Animation. SEOSAT-Ingenio in space – 2020 – ESA
 | **SEOSAT-Ingenio Animation****2020****ESA** |
| **10:48:40:20** | **ESA OUTRO** |
| **10:48:50:10** | **END OF PROGRAMME** |