THE SPACE LAW REVIEW

Editor
Joanne Wheeler MBE

THE LAWREVIEWS

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PREFACE

I am honoured to introduce the first edition of *The Space Law Review*.

It seems appropriate to be writing this introduction in 2019, the 50th anniversary of the first human landing on the Moon on 20 July 1969 as part of NASA's Apollo 11 lunar mission. This anniversary has further raised awareness of the value of space activities, whether from a scientific perspective, in a commercial context or simply to inspire the next generations.

I am hugely appreciative of the time and dedication of the lawyers who have contributed to this first edition, and more importantly for embracing space law as a practice area. The importance of *The Space Law Review* will grow each year as the value of space activities increases, further applications of satellite technology are brought into use and the commercial revenues from the industry are recognised. Lawyers will be required to understand the international treaties, how they are enforced and applied in national law and apply such laws, regulations and policies, potentially creatively, to new technologies and business models.

The economic benefits from the space sector are beginning to be recognised by states. The global space economy is expected to be worth £40 billion by 2030. The productivity of the space sector tends to be much larger than national averages.

New and innovative technologies increasingly derive from private commercial activities rather than the more traditional government-funded missions. States are responsible for national activities in outer space and therefore seek to supervise and authorise such activities through national legislation and licensing mechanisms.

New technology such as CubeSats, constellations of thousands of satellites, in-orbit servicing, high-resolution Earth observation data and new small-launcher technology are testing regulatory and insurance frameworks, and offer challenges to regulators that must work very closely with industry, using ideally anticipatory and outcome-focused regulation, to govern such activities. We are seeing new insurance models and financial security concepts being considered by regulators in the granting of launch and operations licences.

Efficient national regulation, which enables innovation effectively, is an increasingly important source of competitive advantage globally. We are witnessing more regulatory forum shopping than ever before in the space industry.

Regulators are required to achieve a balance between:

a managing government risk and liability, compliance with international obligations, safety, security and the sustainable use of and access to space; and

b encouraging commercialisation, innovation and growth, the benefits to society of new technology and attractiveness to foreign investment.

What is being recognised is that effective national regulation is an enabler to new and innovative satellite technology and the ability to raise finance.

On a personal note, this industry has been my passion for over 27 years. In that time, it has evolved from government-led telecommunications cooperatives to a competitive commercial innovative market, with applications that I would not have imagined in my lifetime. We are now seeing a paradigm shift in technology and opportunities in an industry that is growing with drive and determination; lawyers and regulators need to fully engage with the industry to keep up with it. It is a fascinating industry to engage with.

I thank my professor of space law, the lawyers and clients who supported me over the years, and most of all the contributors again, and hope that readers enjoy this edition and recognise the unique value that the international space industry can bring us on Earth.

Joanne Wheeler MBE
Alden Legal Limited
London
November 2019

Chapter 9

PORTUGAL

Magda Cocco, Helena Correia Mendonça and Cristina Melo Miranda[1]

I INTRODUCTION TO THE NATIONAL LEGAL, REGULATORY AND POLICY FRAMEWORK

Portugal has been taking important steps in the space sector in recent years. In addition to the approval of its space strategy in 2018 (Portugal Space 2030), Portugal also became part of the European Space Surveillance and Tracking programme (EUSST); launched the Atlantic International Research Centre (the AIR Centre); launched the Azores International Satellite Launch Programme; and approved its own National Space Act and Regional Space Act. Moreover, it reinforced its contribution to the European Space Agency (ESA), appointed a national space authority (the Space Authority) and set up a space agency (Portugal Space).

i Portugal Space 2030

Resolution of the Council of Ministers No. 30/2018 of 12 March 2018 approved Portugal Space 2030. Its strategic goals include:

a promoting economic growth and the creation of skilled employment through space-related markets;

b promoting the generation of satellite data through new space technologies and infrastructures;

c contributing to the development of Portugal and scientific international cooperation, taking into consideration the geostrategic positioning of Portugal; and

d guaranteeing the development and evolution of legal, financial, institutional, and cultural and educational frameworks aimed at developing the space sector in Portugal.

The strategy contains three axes. The first relates to the exploration of space data and signals through space services and applications, or as enabled by space technologies. In this respect, the strategy refers to the need to bring the space sector and other sectors together, and to find the means of exploring multiple data sources (big data). The integration of communication networks (including 5G), energy networks and mobility infrastructures, and the development of autonomous cars, drones, smart agriculture and the internet of things, are referred to as elements that will promote space technologies and services. The second axis relates to the development, construction and operation of space equipment, systems, infrastructures and services for space data generation, with an emphasis on mini-, micro- and nanosatellites. As part of the second axis, the development of a programme for access to space is mentioned,

1 Magda Cocco is a partner, Helena Correia Mendonça is a principal consultant and Cristina Melo Miranda is an associate at Vieira de Almeida.

which has the following goals, among others: decreasing the costs of access to space through innovative launching technologies, which are also environmentally sound and promote the growth of small satellites; developing the next generation of satellites; and implementing constellations of satellites in areas such as Earth observation, satellite navigation and satcom. This axis also makes reference to Portugal's participation in the EUSST. The third axis focuses on the development of national capability and skills in the space sector through scientific research, innovation, education and scientific culture. In this area, reference is made to increasing Portugal's participation in ESA and EU programmes, as well as reinforcing the cooperation of the Portuguese scientific community with international partners and industry.

To achieve the aforementioned three axes, the strategy sets out a framework of five courses of action: (1) legal; (2) financial; (3) institutional; (4) internationalisation; and (5) scientific culture. The first aims to create a competitive space law. The second addresses the investment strategy for the sector. The third indicates that the institutional framework will cover a regulatory entity for licensing space activities, and a promoting agent – Portugal Space. The fourth covers the AIR Centre initiative, and also makes reference to cooperation and international partnerships with other countries. Finally, the fifth aims to develop education and scientific culture in the space sector, as well as facilitating access to information about space by the public. The development of a specialised consortium in the space sector in the form of a collaborative laboratory and continuing to promote the incubation of new companies in close cooperation with ESA (e.g., through the ESA Business Incubation Centre (ESA-BIC) in Portugal) are also referred to.

The core institutional framework for space in Portugal comprises the Space Authority, which is tasked with supervising and licensing space activities, and Portugal Space. The Space Authority is, provisionally, the National Communications Authority.

ii Portugal Space

Portugal Space was set up in March 2019 under Resolution of the Council of Ministers No. 55/2019. It is a private non-profit association comprised only of members from the public sector. Initial members are the Foundation for Science and Technology; the National Agency for Innovation; the General Directorate for National Defence Resources, designated by the Ministry of Defence; and the government of the Azores, designated by the Autonomous Region of the Azores. Portugal Space may integrate other public entities whose activity is related to its purposes. It is the entity responsible for executing Portugal Space 2030 and is tasked with developing the national space sector. All national programmes relating to space are integrated within the agency, and they shall be executed in close connection with the national SST programme. In addition, Portugal Space is tasked with providing technical assistance for the implementation of the Azores spaceport. It also serves as an ESA Hub.

The participation of Portugal in the EUSST is addressed in Resolution of the Council of Ministers No. 116/2017 of 24 August 2017, which created, under the Ministry of Defence, a temporary body called the Space Surveillance and Tracking Project Group (GPSST). The GPSST was tasked with preparing and implementing national space surveillance and tracking (SST) capabilities, as well as preparing the national application for the EUSST (under Decision No. 541/2014/EU of 16 April 2014 establishing a Framework for Space Surveillance and Tracking Support). The Commission Implementing Decision of 12 April 2014 established the procedure for participation of Member States in the EUSST and the Commission Implementing Decision of 19 December 2016 established a coordination plan for the SST framework and for the procedure for the participation of

Member States. The GPSST was further tasked with approving the general terms of the governance model for the national SST programme and was indicated as the designated national entity in the EUSST consortium. The Portuguese application to the EUSST was approved in mid 2018 by the European Commission. The GPSST was originally set up for one year, but Resolution of the Council of Ministers No. 113/2018 of 31 August 2018 extended its mandate until 31 December 2018. This Resolution further clarified that the General-Directorate for National Defence Resources would be responsible for managing the national SST programme (and be the designated national entity in the EUSST) after expiry of the GPSST and up until the new governance model was defined. The process for acquisition, installation, operation and exploitation of the national SST system was launched under a public tender[2] published in the Official Journal on 5 April 2019.

iii AIR Centre

The AIR Centre is an intergovernmental initiative that aims to explore the Atlantic region (the Atlantic) in a sustainable way. In July 2017, the AIR Centre White Paper 'Atlantic Interactions' established an integrative approach to outer space, climate energy and ocean science in the Atlantic, together with emerging methods of data science management. With regard to outer space, the White Paper stresses the importance of space systems and applications. Among other things, it highlights:

a the use of mega constellations and small satellites to closely study and monitor the ocean and the atmosphere;

b the importance of fostering affordable access to space, especially with regard to the launch of small satellites to collect information on the Atlantic;

c the use of space data to improve safety in the Atlantic; and

d the use of the Atlantic islands for the implementation of ground facilities for SST.

Following the issuance of the White Paper, several Declarations have been signed under High-Level Industry-Science-Government Dialogues, which have been held in several countries. Under the Florionópolis Declaration, which was signed in November 2017, it was agreed that the AIR Centre should be established as an intergovernmental organisation with headquarters in the Azores and with a network of centres on the Atlantic islands, together with mainland research centres in India, Nigeria, Angola and South Africa, and in Europe and the Americas. By 2020, it is expected that full institutional autonomy, with an appropriate institutional, legal and financial structure, together with full scientific autonomy, will be achieved. In the meantime, a non-profit association to promote the AIR Centre (the Association for the Development of the AIR Centre) was registered in Portugal, to develop initial activities and promote Atlantic Interactions. Resolution of the Council of Ministers No. 29/2018 of 12 March 2018 addresses the AIR Centre, including tasking the Ministry of Science, Technology and Higher Education, through the Foundation for Science and Technology, to launch initiatives and support national programmes related to the Atlantic. The AIR Centre has eight founding members covering three continents (Portugal, Brazil, Spain, Angola, Cape Verde, Nigeria, Uruguay and São Tomé e Príncipe), with Portugal, Spain,

2 Public Tender No. 029/DGRDN/2019 – Procedure Announcement No. 3545/2019.

Brazil and South Africa currently leading the implementation through their participation in the Centre's Executive Committee. The United Kingdom, Argentina and India are observers. Several research and technology organisations are also part of the initiative.

iv Azores International Satellite Launch Programme

The Azores International Satellite Launch Programme (ISLP) is the national initiative for the establishment of a spaceport in the Azores. The ISLP aims to install an open spaceport whereby more than one type of launcher may be launched from the port. The purpose is to guarantee low-cost, frequent and regular access to space for small satellites. Under the ISLP, companies were called upon to submit expressions of interest (with a deadline of 31 October 2018) and a total of 14 were submitted. In accordance with information provided by the Ministry of Science, Technology and Higher Education, interested companies included ArianeGroup, Virgin Orbit, Roscosmos, Sierra Nevada, Rocket Factory Augsburg, Elecnor Deimos, Avio and PLD Space. In total, the expressions of interest included 11 companies from the European Union, two from the United States and one from Russia. The purpose of this international call for interest was to encourage and invite enterprises and public organisations from around the world to collaborate with Portuguese enterprises and research laboratories to design, install and operate a spaceport in the Azores. The process for setting up the spaceport is under way and a formal open tender was launched in March 2019.[3] The tender documents state that space activities from the spaceport are to start in 2021. In accordance with the latest news published at the time of writing, three consortia were qualified for submission of their proposed solutions for the spaceport.

v Legal framework

The National Space Act was approved by Decree-Law No. 16/2019 of 22 January 2019. The Act sets out a number of provisions and measures aimed at facilitating and encouraging space private activity in Portugal. The Azores has also enacted the Azores Regional Space Act (approved by Regional Legislative Decree No. 9/2019/A), which regulates space activities taking place in the Azores and establishes the economic and financial regime for these activities. In addition, the Space Authority also issued the Regulation on Access and Exercise of Space Activities (Regulation No. 697/2019) (the Space Authority Regulation), which sets up the procedures for obtaining licences and pre-qualifications, as well as for registering space objects and transferring ownership of space objects.

vi International regimes

Portugal became a party to the UN Registration Convention[4] in 2018 and to the Liability Convention in 2019.[5] It had previously acceded to the Outer Space Treaty and the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space. It is also a signatory to the Treaty Banning Nuclear Weapon Tests in the

3 The tender for construction, operation and exploitation of a spaceport enabling a new generation of launch services, located on the island of Santa Maria, Azores (Procedure Announcement No. 3074/2019 as published in the national Official Journal).

4 By means of Decree 24/2018 of 4 October. The Convention became binding for Portugal from 2 November 2018, in accordance with Notice No. 143/2018 of 28 November 2018.

5 By means of Decree 14/2019 of 16 April 2019.

Atmosphere, in Outer Space and under Water; the Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite; and the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations.

II REGULATION IN PRACTICE

i National Space Act

The National Space Act sets out the national framework for accessing and performing space activities, which include space operations and launch-site operations. Space operations comprise the following:

a Launch and return operations: the activity whereby space objects are intended to be sent or launched into space, notably to be placed in or beyond orbit, and then returned to the Earth's surface. The launch and return operator performs launch and return operations.

b Command and control operations: the activity consisting in exercising effective control over a space object. The command and control operator performs command and control operations of space objects in outer space, whether temporarily or in transit. Where the space object cannot be controlled or guided, the command and control operator will be deemed the natural or corporate person who hired the launch or exploits the space object, as notified to the Space Authority.

Launch-site operations relate to the management, administration or direction of a launch site, the definition of which includes facilities intended for the return of space objects. The launch site operator manages, administers and directs a launch site.

The National Space Act applies to space activities performed both in the national territory irrespective of the nationality of the operator and outside the national territory by Portuguese operators or operators established in the national territory.

Space activities are subject to (1) a mandatory licence for launch or return operations and for command and control operations and (2) registration of space objects. The National Space Act further created a voluntary pre-qualification system. Under this system, operators, systems, processes, and features and specifications can be certified in a set of elements, which may include the technical, economic and financial capacity of operators, the compliance of systems and processes with applicable laws and regulations, and the features and specifications of space objects. Pre-qualification aims at streamlining the licensing procedure by waiving the need to submit information set out in the pre-qualification certificate in the licensing procedure.

There are two types of licence: the individual licence, which is applicable to each type of space operation; and the blanket licence, which is applicable to a series of space operations of the same type. In addition, there are joint licences, which are those applicable to space operations of the same type or a different type that comprise one or more launch or return operations and the corresponding operations of command and control of space objects launched, even if performed by more than one operator. Under the joint licensing procedure, the same or different types of space operations may, even if carried out by more than one operator, be licensed to a single operator for itself and on behalf of other operators.

The licences are granted if the Space Authority is satisfied that a set of conditions have been met, including:

a the applicant has the technical, economic and financial capacity for the space operations it intends to carry out;

b the space operation duly safeguards against damage to the Earth's surface, airspace and outer space, in accordance with applicable national and international commitments;

c the space operation ensures the minimisation of space debris as much as possible, in accordance with international principles and commitments;

d the space operation is compatible with applicable public security provisions, including on public health and citizens' physical safety;

e the space operation does not jeopardise domestic security or the strategic interests of Portugal, nor does it breach Portugal's international commitments;

f all other authorisations and certificates required for the purpose of the space operation have been issued by the relevant entities; and

g the applicant carries mandatory civil liability insurance as required under the National Space Act.

In addition, the licence may stipulate other requirements, including in connection with environmental matters.

The decision to grant or withhold the licence must be issued by the Space Authority within 90 days of receipt of a complete application. The National Space Act also provides that a special licensing framework, which may consist of shorter deadlines or streamlined procedures, may be defined by the Space Authority for certain circumstances, such as: (1) if the applicant is a public entity or an international organisation acting under international agreements concluded with Portugal; or (2) if the intended space operation is performed exclusively for scientific, research and development (R&D), educational or training purposes, or consists of activities with experimental purposes with demonstrable low risk for the Earth's surface, airspace and outer space, including for public health and citizens' physical safety.

The National Space Act also addresses circumstances whereby a licence for space operations has been obtained in another country. First, and in general, the special licensing procedure referred to above can be established for cases where the applicant secured authorisation for the performance of the space activity from another state whose legal framework ensures compliance with applicable international commitments. Secondly, space operations performed abroad but subject to the National Space Act may be exempted from mandatory licensing if the operator is able to demonstrate to the Space Authority's satisfaction that it secured the proper authorisations and that it abides by the law of a state with which Portugal has an agreement in place to ensure compliance with its international commitments.

In relation to registration, the National Space Act establishes that space objects for which Portugal is the launching state are subject to registration with the Space Authority, in accordance with Portugal's international commitments. The elements to be registered broadly correspond to those of the UN Registration Convention. In addition, the National Space Act also provides that the following must be registered with the Space Authority:

a space objects whose launch, return or command and control are performed by operators licensed in Portugal;

b the transfer of ownership of any space objects whose launch, return or command and control is carried out by operators licensed under the National Space Act;

c the end of the useful life of a space object operated and controlled by a command and control operator licensed in Portugal; and
d any incident or serious accident suffered by the space object.

As regards liability, the National Space Act indicates that operators are liable for damage caused in the performance of the space activity, as follows: (1) strict liability for damage caused by the space object to the surface of the Earth or to aircraft in flight; and (2) liability in the event of fault for damage falling outside the scope of point (1). There is also a mechanism of redress by means of which, if Portugal is held liable, pursuant to its international commitments, for any damage caused by a space object, the state has a right of recourse against the operator that, under the National Space Act, is responsible for that space object. The right of redress will be capped at the amounts to be defined by an order of the members of government responsible for finance, and science and technology. However, the cap will not apply in certain circumstances, including in the event of liability for damage due to wilful misconduct or gross negligence, or if the operator fails to comply with its licensing obligations.

Licensed operators are also under the obligation to take out civil liability insurance, with minimum capital to be defined by an order of the members of government responsible for finance, science and technology and the sea, which may also regulate other minimum requirements for the insurance agreement. By means of this order, the insurance obligation may also be waived or the insured amount reduced in the following circumstances:

a operations of launch, return, and command and control of space objects of small dimensions, as defined by the Space Authority;
b space operations conducted exclusively for scientific, R&D or educational and training purposes;
c if the operator submits another financial guarantee as permitted under the order and this is accepted by the Space Authority; and
d operations that demonstrably entail reduced risks, as defined by the Space Authority.

The National Space Act contains a set of provisions for incident and accident reporting, which also include the obligation to notify any manoeuvre, malfunction or anomaly of the space object, or other circumstances arising from or in connection with the space activity, that may result in an incident or serious accident. Operators are also subject to obligations relating to the Space Authority's supervision and inspection powers, including the following: allowing and facilitating free access to the facilities and their annexes, as well as to their devices and instruments; providing all the information and assistance required for the performance of the supervision and inspection; and maintaining in their facilities in Portugal a duly organised and updated file containing all relevant documents and records relating to the space activities they perform and to the licensing and pre-qualification procedures.

In addition to its powers relating to licensing, registration, pre-qualification, supervision and inspection, the Space Authority is tasked with assessing and deciding on requests or claims by the operators and resolving disputes in connection with the obligations arising from the National Space Act, between entities subject to these obligations, and without prejudice to the possibility of resorting to courts. The Space Authority is also tasked with initiating and dealing with administrative offence proceedings and applying the penalties. In this respect, infringements of the Act are administrative offences that may lead to the application of penalties of between €250 and €44,891.81, depending on whether the operator is a

natural or corporate person and the gravity of the offence. There are also ancillary penalties, consisting of the prohibition to perform space activities for a certain period of time and the suspension of licences.

Three additional points are worth mentioning. First, the National Space Act contains provisions on the transfer of a licence and on the transfer of ownership of space objects. The first is subject to authorisation by the Space Authority (which shall only be approved if all legal requirements for its issue are met), and the second is subject to notification to the Space Authority.

Secondly, there are regulations and orders that complement the National Space Act. These include (1) the regulation by the Space Authority for licensing, registration, pre-qualification and transfer of ownership of space objects, and (2) orders on liability (for caps) and insurance (minimum capital and other minimum requirements, waiver and reduction of insured amounts as permitted by the Act).

The Space Authority Regulation was approved in July 2019. The Regulation aims to create simple and effective procedures with a view to promoting private activity. However, some points may create challenges, such as the following:

a The Regulation does not create a special licensing procedure for the cases foreseen in the National Space Act, but instead establishes that it is the applicant that must require a simplified procedure and the Space Authority, within 10 days, must communicate the ad hoc specific procedures to be followed. This could create uncertainty for the industry regarding the licensing requirements and the process to be taken.

b The Regulation does not seem to be fully aligned with the National Space Act regarding who can obtain a launch licence (as it seems to limit this licence to the launch operator, while the National Space Act extends it to whoever intends to launch a space object, thus also covering payloads). This may raise doubts as to the types of licences operators must obtain.

c The Regulation seems to limit the possibilities of joint licences for different types of operations, thus preventing these licences being used for operations of the same type performed by different operators – an option expressly envisaged by the National Space Act.

d The Regulation requires a level of information from the applicant that may be too burdensome, especially detailed information relating to the spaceport from which a space object will be launched.

The National Space Act also addresses the economic and financial regime applicable to space activities by indicating that it shall promote the economic and financial sustainability of the activities carried out by the Space Authority, notably by means of the collection of fees and levies from the companies and other entities subject to its supervisory powers.

Lastly, the National Space Act establishes that the procedures for the license, pre-qualification, registration and transfer of space objects in connection with activities to be developed in the autonomous regions of the Azores and Madeira, and the corresponding economic and financial framework, are to be established by means of a regional legislative decree.

ii Azores Regional Space Act

As mentioned in Section I.v, the Azores Regional Space Act was enacted in 2019 and contains the legal framework for licensing, pre-qualification, registration and transfer of space objects relating to activities developed in the Azores (defined as those activities based on both offshore and onshore infrastructures or platforms, including, in this instance, the maritime areas adjoining the archipelago). The Azores Regional Space Act duplicates the provisions of the National Space Act, with some new features, notably the following:

a it creates a regional space authority (EER) responsible for the licensing, pre-qualification, registration and transfer of space objects, and the supervision of space activities in the Azores;

b it indicates that the procedures for licensing, pre-qualification, registration and transfer of space objects are subject to the prior technical review of the Space Authority;

c it indicates that the EER must communicate to the Space Authority all required information so that the Space Authority can comply with the applicable international obligations (especially those relating to registration of space objects);

d it clarifies that the EER and the Space Authority shall cooperate in the above procedures, as well as in the supervision of space activities; and

e it introduces a fee for the use of space, the legal framework of which is unclear and has no parallel in other jurisdictions.

By replicating the conditions of the National Space Act and creating the EER, the Azores Regional Space Act may lead to the duplication of processes that private operators will have to comply with for pursuing space activities in the Azores. For instance, it seems that operators will have to obtain two licences: one from the Space Authority and one from the EER. In addition, it seems that the breach of either Act will lead to fines, meaning that operators may be subject to fines twice. It is hoped that the coordination between the Space Authority and the EER, as expressly addressed in the Azores Regional Space Act, will be sufficient to overcome these limitations.

In addition, the Azores Regional Space Act indicates that regional regulations will be approved for the procedures to license, pre-qualify, register and transfer space objects. This Act also indicates that a regional order will be approved with relation to insurance, which may lead to incompatibilities or duplicated obligations given that a national order on insurance under the National Space Act is also envisaged.

Despite duplicating most of the provisions of the National Space Act, some wordings of the Azores Regional Space Act are placed in a different section or seem to be more similar to prior versions of the National Space Act, which may indicate that the Azores Regional Space Act was based on an old version of the National Space Bill. This situation further complicates the coordination and interpretation of the Azores Regional Space Act in relation to the National Space Act.

From a strictly legal perspective, the National Space Act only indicates that the procedures for the licensing of space activities, and the pre-qualification, registration and transfer of space objects, in connection with activities to be developed in the autonomous regions of the Azores and Madeira, are to be defined by a regional legislative decree. However, the Azores Regional Space Act appears, in practice, to duplicate the national regime.

III DISTINCTIVE CHARACTERISTICS OF THE NATIONAL FRAMEWORK

The Portuguese space framework contains a set of distinctive features resulting from the National Space Act and the approach taken with regard to the future spaceport of the Azores.

The National Space Act does not cover the operation of spaceports except for the purposes of pre-qualification (and supervision). This means that the licensing regime applies only to the launch, operation and return of space objects, and not to terrestrial activities consisting of building and operating a spaceport. Hence, instead of a licensing regime whereby any stakeholder could install a spaceport in the country provided certain requirements are met, the approach has been to select a general location (the island of Santa Maria in the Azores) and open that location to a public tender for the selection of an operator.

Another distinctive characteristic is that the National Space Act indicates that the procedures for licensing, pre-qualification, register and transfer of space objects relating to activities taking place in the Azores and Madeira are defined by regional acts. This is especially important for operators that intend to carry out space operations in the future Azores spaceport because the Azores has already enacted the Azores Regional Space Act.

It is clear that there are several points in the Regional Space Act that must be harmonised with the National Space Act. In turn, certain procedures in both Acts must be harmonised with the procedure for the spaceport, to avoid differing, incompatible or burdensome obligations for operators. The exact details of how this coordination will be achieved are yet to be determined, as they depend upon the approval of the regional regulations by the Azores and the practical approach that the Space Authority and the regional space entity will take in their relationship.

The National Space Act contains a number of innovative solutions aimed at encouraging private activity in Portugal, which are outlined below.

a In addition to an individual licence for each space operation, an operator can obtain a blanket licence covering a set of operations, which will facilitate the launching of constellations of satellites. A joint licence for several space operations, even if performed by different operators, can also be obtained, which will simplify the licensing of related space operations.

b A simplified licensing procedure may be implemented in certain situations, as indicated above, such as for operations that are carried out exclusively for scientific, R&D, educational or training purposes, or for experimental operations with low risk.

c In the event of space operations carried out by Portuguese nationals abroad, the requirement for a licence can be waived provided certain other requirements are met. In addition, if the operator obtained a licence abroad it may also obtain the Portuguese licence under a simplified licensing procedure.

d A pre-qualification regime has been created to expedite the licensing process, removing the need to resubmit the same information for future licences.

e A liability cap in favour of operators in cases where Portugal is internationally liable for space activities has also been established. At the time of writing, the amount of the cap is to be determined in a future order. It will be possible to establish different caps in accordance, for example, with the risk of the operation.

f There is mandatory civil liability insurance, but the insurance may be waived or the insured amount reduced in certain cases, such as for small satellites, space operations carried out exclusively for scientific, R&D, educational or training purposes, or

operations with low risk. Insurance may also be waived or reduced if the operator submits another financial guarantee as permitted by the future order (see above) and if accepted by the Space Authority.

g Breach of the Act carries fines only, which cannot exceed €44,891.81. Ancillary sanctions prohibiting the carrying out of space activities or suspension of licences are established for certain cases.

The Space Authority is a one-stop shop, meaning that it may also assume responsibility for communicating with all other competent authorities whose authorisation may be required for a space operation, thus avoiding the need for operators to deal directly with the authorities.

To ensure that the solutions listed above are effective, careful coordination with the Azores Regional Space Act is required, as this Act duplicates the conditions for licensing, pre-qualification, registration and transfer of space objects and may, as a result, create unexpected burdens for operators. Clarification of the procedures established in the Space Authority Regulation and the harmonisation of these procedures with the National Space Act may also have to be evaluated to guarantee a clear, simple and predictable legal framework.

IV CURRENT DEVELOPMENTS

Portugal has been quite active in recent years when it comes to space activities, as indicated above. The National Space Act and the Azores Regional Space Act have been enacted and the process for installing a spaceport in the country is under way. The National Space Act was drafted with due attention to the need to respond to the advent of small satellites and constellations of satellites, and aims to create solutions that will facilitate these activities. The spaceport seems to be focused on the vertical launch of small satellites through a solution available to more than one type of launcher, but the Satellite Launch Programme also indicates that the use of air-based launching solutions may be considered, given that there are airport facilities that could be used. There is, in addition, concern regarding the environmental sustainability of the spaceport. However, at the time of writing, the complete framework is still under construction: in addition to regional regulations (as required by the Azores Regional Space Act), the orders on liability and insurance also need to be approved, and the fees for licences have not yet been determined.

The AIR Centre is also making progress and is expected to be formally incorporated by 2020. The process for acquiring the infrastructure for the national SST system, which will enable Portugal to participate in the EUSST, has also been launched, and Portugal Space has been set up.

ESA-BIC has led to the creation of at least 30 companies and 240 new jobs. Moreover, there is also an express reference in Portugal Space 2030 to the need to promote the suitability of structural funds and of public funding for development and capacity building in the space sector, as well as to the diversification of investment sources, including access to the European Investment Bank.

V OUTLOOK AND CONCLUSIONS

The National Space Act contains a set of innovative solutions for Portuguese and foreign operators in the country. Together with Portugal Space 2030 and the spaceport in the Azores, it is paving the way for increasing space activities and furthering the development of the

private sector and of R&D in Portugal. The increasing contributions to ESA, as well as the strengthening of international cooperation (including with the European Maritime Safety Agency and the European Global Navigation Satellite Systems Agency (the future EU Agency for the Space Programme)), as indicated in Portugal Space 2030, are also relevant incentives for encouraging space activities in Portugal.

The Portuguese market will thus greatly benefit from these investments and innovations. The current market – which Portugal Space 2030 indicates has had an economic return above 120 per cent in the past decade, involves a workforce of more than 1,400 people, including 300 highly qualified engineers, and generated a turnover of approximately €890 million between 2006 and 2015 – is thus expected to continue to grow. Several projects in this area are already under way, such as Project Infante, developed by a Portuguese consortium, which aims to deploy a constellation of small satellites for maritime surveillance, Earth observation and communications between satellites and ground stations. In parallel, public initiatives will continue to develop, such as the envisaged installation of a new tracking antenna in the Azores, the possibility of installing a Copernicus data centre in Portugal and deploying infrastructures for Galileo, Europe's global satellite-based navigation system (as indicated in Portugal Space 2030).

The possibility of a framework for Earth observation data, space mining, human space flight or suborbital flights has not been discussed (with the National Space Act open to be interpreted in a manner whereby suborbital flights of space objects are included in the Act – although this view may require clarification from the Space Authority). However, the expected growth in space activities and the increased visibility the current initiatives will inevitably bring to the country may lead to greater awareness in these areas and contribute to the approval of relevant regimes. The work of both the Space Authority and Portugal Space will also play an important role in clarifying, detailing and encouraging initiatives and activities in the sector.

Appendix 1

ABOUT THE AUTHORS

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Magda Cocco is head of the information, communication and technology practice group at VdA, and head of the firm's aerospace sector. Magda has been involved in various space-sector projects, including the negotiation of contracts for satellite construction and launch and for the installation of ground stations, and assisted governments in connection with the definition and drafting of space-related strategies and legislation.

Magda has in-depth knowledge and experience in advising clients in the field of information, communication and technology across several jurisdictions, particularly Portugal and Portuguese-speaking countries.

Magda has also provided expert advice to companies and public entities across different industries on data protection and cybersecurity, assisted several entities in connection with governance matters and data-related strategies, coordinated compliance programmes and assisted public and private entities in connection with cybersecurity threats.

She is VdA's representative at the International Astronautical Federation and is responsible for liaising with the Alliance for Affordable Internet. She participates in several space sector-related forums, namely the United Nations Office for Outer Space Affairs.

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Helena Correia Mendonça is the principal consultant in the information, communication and technology practice group at VdA, as well as in the aviation, space and defence sector of the firm, and regularly works on space matters.

She has drafted space policies and strategies, particularly for African countries, and space laws, and advised on satellite contracts (including of construction and lease capacity), installation of ground stations and partnership agreements in the sector. She also advises on cybersecurity in the space sector. In addition, she actively works with drones and provides advice on this subject.

Helena has been involved in major operations in the information, communication and technology sector, including outsourcing projects for major banks, cooperation and technology transfer projects, set-up of media services and online platforms, and drafting laws on electronic commerce, digital signatures, protection of software and cybercrime.

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