

International trade aspects of outer space activities

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1. Introduction

International trade law regulates the movement of goods, services, and information across international boundaries and between persons of different nationalities. Participants in outer space activities – whether businesses, research centres, or space agencies – cannot operate effectively without understanding how international trade laws implemented and enforced by national governments can impact upon the execution of their missions. International trade law compliance is an essential element of planning research, development, production and operational activities.

International trade compliance requirements can be highly technical from a legal and engineering perspective. Appropriate resources must be allocated to analyse carefully and incorporate properly into planning, requirements and timelines in all facets of space industry activity, including design, development, production, launch, and pre- and post-launch activities. They require oversight and monitoring across different disciplines and functions within an organisation. Failure to do so can give rise to problems with partner governments and private actors, operational delays, and monetary, administrative and even criminal penalties. This chapter provides an introduction to several key international trade regulatory areas, focusing on the United States (US) and European Union (EU) legal regimes:

- export controls;
- sanctions; and
- import controls.

The chapter also touches on the trade-related aspects of international agreements relating to outer space activities and concludes by offering a number of best practices and compliance tips for trade practitioners.

2. Export controls

2.1 Overview

Export controls are the natural place to begin a review of relevant international trade laws because they represent some of the most significant restrictions on the free exchange of space-related hardware, technology, software and services between different countries. In general, export controls regulate the transfer of items from one

country to another or to the citizens of another country. Export controls on items relating to outer space activities most often arise out of international security and foreign policy concerns because space-related end items, such as launch vehicles and spacecraft, are dual-use items (ie, items that can serve both military and commercial purposes). The following describes the most relevant multilateral frameworks that form the foundation of national export control laws relevant to the space industry, followed by a discussion of relevant US and EU national laws.

2.2 Multilateral frameworks

Many countries participate in multilateral export control regimes to co-ordinate their national export control policies. In general, multilateral export control regimes are not legally binding arrangements under international law, but provide a forum for the co-ordination of member States' domestic export control policies. For the space community, the Missile Technology Control Regime (MTCR), which is concerned with the export of missiles capable of delivering weapons of mass destruction, and the Wassenaar Arrangement, which is concerned with conventional arms and dual-use items, are the most relevant. These two regimes directly influence the promulgation of export control laws at the national level for space-related items and technology.

(a) *Missile Technology Control Regime*

The MTCR seeks to monitor and limit the proliferation of missiles, rockets (including space launch vehicles and their major components), unmanned air vehicles and related technologies capable of delivering weapons of mass destruction.¹ Seven original members (Canada, France, Germany, Italy, Japan, the United Kingdom and the United States) established the MTCR in 1987; it now includes 35 members in total, including Russia, South Korea and Ukraine, and two non-member adherents. India most recently joined as a member in June 2016. A number of countries with advanced space capabilities, including the People's Republic of China (PRC), Iran, Israel, and North Korea, are not members. The MTCR achieves its objectives through plenary meetings, information exchanges and its members' adherence to common export policy guidelines.

The MTCR Equipment, Software and Technology Annex (MTCR Annex) serves as the control list for the regime and organises controlled items into two categories:

- Category I, which controls complete rocket systems capable of delivering a payload of at least 500 kg to a range of at least 300 km, including major subsystems, technology, and software thereof; and
- Category II, which controls related components of rocket systems and complete systems with a range of at least 300 km.

The participating members also maintain the MTCR Guidelines, which inform the national implementation of MTCR Annex controls. Additionally, the US

1 The government of Canada maintains all up-to-date information, control lists and related publications of the MTCR in co-ordination with and on behalf of the MTCR's participating States at www.mtcr.info.

maintains a separate public resource, the *MTCR Annex Handbook*, which serves as a useful technical reference and visual guide for practitioners who manage MTCR-oriented export controls.

(b) Wassenaar Arrangement

The Wassenaar Arrangement seeks to contribute to regional and international security and stability by prescribing export controls on conventional arms, dual-use items and related technologies through the publication of detailed lists of items that should be controlled by member governments.² For the space community, these controls extend to spacecraft and nearly all critical components of spacecraft and ground equipment, including certain antenna systems, attitude control systems, navigation systems, propulsion systems, and associated sensors and radiation-hardened electronics, among others. Additionally, the controls cover launch vehicle systems and related components using a broader approach than the MTCR. States participating in the Wassenaar Arrangement implement these controls through varying national procedures.

The Wassenaar Arrangement's control lists include:

- the List of Dual-Use Goods and Technologies, and
- the Munitions List.

The dual-use list also includes two subsections identifying 'Sensitive' and 'Very Sensitive' items from that list. The Criteria for the Selection of Dual-Use Items, in addition to guidelines and best practices issued by the participating States, inform the implementation of the controls.

The Wassenaar Arrangement came into effect in 1996 following the dissolution of a Cold War-era predecessor organisation, the Coordinating Committee on Multilateral Export Controls (COCOM). The arrangement currently has 41 member States. Membership among major spacefaring nations includes France, Italy, Japan, Russia, South Korea, Ukraine, the UK and the US. The PRC, India, Iran, Israel and North Korea are currently not members.

2.3 US export controls

(a) Overview

Export controls in the US primarily comprise two major regulatory regimes:

- the International Traffic in Arms Regulations (ITAR), and
- the Export Administration Regulations (EAR).

The ITAR is administered by the US Department of State through the Directorate of Defense Trade Controls (DDTC), while the EAR is administered by the US Department of Commerce through the Bureau of Industry and Security (BIS). The ITAR regulates the export of military commodities, technical data and services and

2 The Secretariat of the Wassenaar Arrangement maintains all up-to-date information, control lists, and related publications of the arrangement's participating States at www.wassenaar.org.

requires authorisation from DDTC for all exports either through an agreement, licence, or exemption. The EAR regulates the export of purely commercial items, dual-use items and certain munitions items that have been transferred from the ITAR to the EAR as a result of recent export control reforms. The EAR requires licensing based on the classification of an item under the EAR, its destination, intended end-use and the identified end-user.

US law makes clear that the launch or re-entry of a space launch vehicle, re-entry vehicle or payload is not deemed to be an export or import.³ Rather, with the exception of technology transfers that occur in outer space (eg, on the International Space Station), the significance of export controls to the space community pertains to terrestrial exchanges of hardware, services, software and information. For example:

- an 'export' under the ITAR or EAR can occur within a single country when technology is transferred to a person from another country; and
- intangible and electronic transfers, such as conversations, emails, and server access, fall within the regulatory definition of 'export'.

The ITAR and EAR also apply to US-origin items after they have left the US (eg, where they are re-exported or transferred to other parties). Moreover, these laws apply to non-US persons in their handling of US-origin items.

Violators of US export control regulations can face steep civil and criminal penalties. Under the ITAR, civil penalties can amount to \$1,111,908 per violation, in addition to other punitive or remedial measures.⁴ Under the EAR, civil penalties can reach the greater of \$250,000 per violation or twice the amount of the transaction that is the basis of a violation.⁵ Additionally, the US states may assess criminal penalties that can reach up to \$1,000,000 and 20 years' imprisonment per violation.⁶

The interplay of these two sets of regulations with regard to the space industry has been the subject of significant political and public scrutiny over the past 25 years following revelations in the late 1990s that sensitive satellite and launch vehicle technology was transferred without authorisation from the US to the PRC. These issues resulted in a major upheaval and restructuring of US export controls involving the space industry. The discussion of the ITAR and EAR below is followed by a review of the impact of those events on US export control regulations over the past two decades.

(b) *The Arms Export Control Act and the ITAR*

The underlying statutory basis for the ITAR comes from the Arms Export Control Act of 1976 (1976 Act). The 1976 Act provides the President with statutory authority for the control of 'defense articles' and 'defense services', including related 'technical data'.⁷ The 1976 Act sets out foreign and national policy objectives for international defence co-operation and military export controls. The US Department of State

3 51 USC, § 50919(f).

4 22 CFR, § 127.10.

5 International Emergency Economic Powers Act, Pub L 95-223, 91 Stat 1626 (1977); 15 CFR, § 764.3(a)(1).

6 22 USC § 2778(c).

7 Arms Export Control Act of 1976, Pub.L 94-329, 90 Stat 729, 22 USC, § 2751 *et seq.*

implements the 1976 Act through the ITAR,⁸ which sets out the licensing policy and rules for exports of defence articles and defence services identified in the US Munitions List (USML). The USML comprises 21 categories, each relating to a specific class of controlled commodities. In general, a particular article or service not currently on the USML may be designated a ‘defense article’ or ‘defense service’ if it provides a critical military or intelligence advantage such that control is necessary.⁹ Importantly, the intended use of the article or service after its export (ie, for a military or civilian purpose) is not, by itself, a factor in determining whether the article or service is subject to the ITAR.

USML categories IV and XV are most relevant to the space community.¹⁰ These two categories control space launch vehicles and certain spacecraft respectively, including many associated sub-systems, components, equipment and technical data of launch vehicles and spacecraft. Other USML categories can also have applicability to the space community, such as Category XI, which controls a variety of electronics capabilities, and Category V, which controls certain materials and substances, including propellants. As part of the export compliance process, exporters must determine how their commodities and technology are classified on the USML.

All items on the USML require authorisation prior to being exported, re-exported (ie, moving from one third country to another), re-transferred (ie, moving from one end-user to another within the same country), or shared with a non-US person. Authorisation to export commodities on the USML comes in the form of express approval by the DDTC of an ITAR agreement or licence, or through the use of an approved exemption.

(c) ***The Export Administration Act and the Export Administration Regulations***

The Export Administration Act of 1979 (1979 Act) provides underlying statutory authority for most other US export controls. This act technically expired in 2001, but the President continues to implement the export licensing system created under it by invoking the International Emergency Economic Powers Act (IEEPA).¹¹ Through these authorities, the President has the power to control exports for a variety of reasons, including national security and foreign policy purposes.

The US Department of Commerce implements the 1979 Act through the EAR,¹² which sets out licensing policy for commercial and dual-use goods and technology and identifies controlled items using the Commerce Control List (CCL).¹³ The CCL contains the list of specific commodities, technologies and software that are controlled by the EAR and also identifies the specific reason for control of each item or technology on the list (eg, national security, regional stability and missile technology). CCL Category 9 is most relevant to the space community because it includes a variety of spacecraft and related components that have recently moved

8 22 CFR, §§ 120-130.

9 *Ibid*, § 120.3.

10 *Ibid*, § 121.1.

11 82 Fed Reg 7641, Updated Statements of Legal Authority for the Export Administration Regulations (23 January 2017).

12 15 CFR, §§ 730-774.

13 *Ibid*, Supplement No 1 to § 774.

from the USML to the CCL. At the same time, the CCL as a whole is broadly applicable to the space community, particularly with regard to telecommunications applications and for manufacturers or suppliers of spacecraft components in general.

Unlike the ITAR, the EAR does not require export authorisation for all items on the CCL. Rather, the EAR requires an examination of a particular CCL item at issue, its reason for control, the country of destination, the intended end-use of the item and its intended end-user. Based on each of these factors, the exporter must determine whether export restrictions apply. Certain exports may not require any export authorisation, some may require an export licence and others may be eligible for certain licence exceptions.

(d) *Case studies and significant developments*

HSC and SS/L case study and the 1999 transition of commercial communications satellites to the ITAR: During the 1990s, the PRC was an active launch provider of US-manufactured communications satellites. From 1990 to 1999, the state-owned China Great Wall Industry Corporation (CGWIC) successfully marketed China's *Long March* rockets for a total of 19 international missions involving US contractors.¹⁴ To utilise Chinese launch services during this time period, US satellite manufacturers had to secure specific export licences from US authorities for the export of their satellites to the PRC, as well as for the export of technical data in support of these satellite launches. Notably, the US prohibited the export of any technical assistance that could help the PRC design, develop or enhance its launch vehicles or launch facilities.¹⁵ This prohibition on technical assistance generally extended to technical discussions with Chinese counterparts relating to launch failures, unless separately authorised.

Despite the specific restrictions on exporting technical assistance to the PRC, which often appeared as express provisos in US export licences, two US satellite manufacturers participated in *Long March* failure investigations. Specifically, Hughes Space and Communications Inc (HSC) participated with the PRC in two failure investigations following the loss of its *Optus B2* and *Apstar II* satellites in 1992 and 1995 respectively.¹⁶ Additionally, Space Systems/Loral Inc (SS/L) participated with the PRC in a failure investigation following the loss of its *Intelsat 708* satellite in 1996, with HSC volunteering its experience for this investigation as well.¹⁷

These events spurred immense political scrutiny within the US, due to their connection to a much broader investigation of the PRC's alleged campaign of espionage and theft of missile, space, and thermonuclear weapons technologies from

14 US-China Economic and Security Review Commission, *2015 Annual Report to Congress* (2015), section 2 (USCC Report), p 311.

15 *Report of the Select Committee on US National Security and Military/Commercial Concerns with the People's Republic of China* (1999), Vol II, chs 5-6 (the Cox Report).

16 US Department of State, *Re: Investigation of Hughes Electronics Corporation and Boeing Satellite Systems (formerly Hughes Space and Communications) Concerning the Long March 2E and Long March 3B failure investigations, and other satellite-related matters involving the People's Republic of China* (2002) (Hughes Charging Letter).

17 US Department of State, *Re: Investigation of Space Systems/Loral, Inc and the Long March 3B Independent Review Committee, and Other Satellite-Related Matters Involving China* (SSL Draft Charging Letter).

the US. The broader investigation culminated in the voluminous 1999 Cox Commission Report by the US Congress. Moreover, HSC and SS/L faced civil settlements in amounts of \$32,000,000 and \$20,000,000 respectively in respect of administrative charges of export violations brought by the US Department of State.¹⁸ The settlements also required multi-year, comprehensive remedial measures by the two companies at the direction of an official compliance monitor.¹⁹

The HSC and SS/L cases caused a complete shift in the US export control regime for communications satellites. In 1999, US-origin commercial communications satellites returned to the more restrictive jurisdiction of the US Department of State under the ITAR, following a period of control under the less restrictive jurisdiction of the US Department of Commerce.²⁰ This policy reversal meant that the United States was the only country treating satellites as munitions for export control purposes.

Export control reform and the 2014 return of commercial communications satellites to the EAR: Following the transition of commercial communications satellites to the ITAR, the US saw its share of global satellite manufacturing decrease by over 20%, due in part to the rise of ‘ITAR-free’ international market offerings.²¹ The language of the ITAR led to ambiguities in interpretation and inconsistencies in application with various sectors. The uncertainty led to business impediments that became more pronounced as technology advanced, and customer bases and supply chains globalised, over the past twenty years.

A now infamous ITAR anecdote from the era following the HSC and SS/L cases involves a metal stand used to support *Genesis I*, the experimental space habitat designed and manufactured by Bigelow Aerospace (Bigelow). As a former Bigelow representative wrote:

*If the Genesis I stand were placed upside down, covered with a nice checkered tablecloth, and you put a couple of plates on it, one would be hard pressed to distinguish the stand from any other table already commonly available at Moscow’s local IKEA outlet.*²²

Yet, because the stand had been designed for *Genesis I* (an ITAR-controlled spacecraft) the stand also fell under ITAR control. Accordingly, the US required Bigelow to keep the stand under watch at all times as a condition of its export to Russia in preparation for the *Genesis I* launch. It took Bigelow several months and considerable resources to receive and clarify fully the scope of a waiver to lift this restrictive proviso.²³

In 2009, President Obama announced the launch of a comprehensive review of the US export control system, known as the Export Control Reform Initiative (ECR),

18 US Department of State, *Order in the Matter of: Hughes Electronics Corporation and Boeing Satellite Systems, Inc* (2003) (Hughes Order); US Department of State, *Order in the Matter of: Space Systems/Loral Inc* (2002) (SSL Order).

19 *Ibid.*

20 64 Fed Reg 13679, Amendments to the International Traffic in Arms Regulations (ITAR): Control of Commercial Communications Satellites on the United States Munitions List (22 March 1999).

21 US Department of Commerce, *US Space Industry ‘Deep Dive’ Assessment: Impact of US Export Controls on the Space Industrial Base* (2014) p 15.

22 MN Gold, *Lost in Space: A Practitioner’s First-Hand Perspective on Reforming the US’s Obsolete, Arrogant, and Counterproductive Export Control Regime for Space-Related Systems and Technologies*, 34 J Space L 163–185, 172 (2008).

23 *Ibid.*

to bring additional clarity to export regulations and streamline the US export process. The four primary goals of ECR were described as:

- transitioning the US export control regime to a single licensing agency;
- establishing a single control list;
- creating a single enforcement structure; and
- implementing a single information technology (IT) system.

In recent years, the preliminary phases of ECR have resulted in certain items from the USML moving to the CCL; that is, certain items previously controlled under the ITAR are now controlled under the EAR.

Effectuating ECR for the satellite sector required specific action from the US Congress. By contrast with all other ITAR-controlled items, the President did not have statutory authority to move satellites and related items to the less restrictive EAR without a new mandate from Congress, due to the previous statutory requirements that emerged from the HSC and SS/L cases in 1999. It took over a decade of advocacy efforts by the US space industrial base to secure the necessary legislative authorisation. In 2010, Congress called for the secretaries of Defense and State to carry out an assessment of the risks associated with removing satellites and related items from the USML. This assessment (referred to as the 'Section 1248 Report' because it arose out of section 1248 of the National Defense Authorization Act 2010) was publicly released in April 2012 and concluded that certain communications satellites and remote sensing satellites with lower performance parameters were more appropriately controlled as dual-use items under the EAR.²⁴ These findings laid the groundwork for extending ECR efforts to the satellite sector. One year later, through section 1261 of the National Defense Authorization Act for Fiscal Year 2013, Congress effectively returned to the President the authority to determine which export control framework would govern satellites and related items.

Consistent with the findings of the Section 1248 Report, ECR has resulted in the transfer of most commercial communications satellites, lower-performance remote sensing satellites, as well as planetary rovers and planetary and interplanetary probes, from the USML to the CCL. Certain satellites and sub-systems with higher level performance capabilities, such as spacecraft with autonomous tracking capabilities, remain on the USML, as do human-rated spacecraft with integrated propulsion other than that required for attitude control.²⁵ The ban on US satellite exports to the PRC remains in place.²⁶

Recent NASA case study: Despite the progress in US export control policy for the space community, adherence to US export regulations remains one of the most

24 US departments of Defense and State, *Report to Congress, Section 1248 of the National Defense Authorization Act for Fiscal Year 2010 (Public Law 111 – 84)* (2012) (Section 1248 Report).

25 *Ibid.*

26 79 Fed Reg 27180, Amendment to the International Traffic in Arms Regulations: Revision of US Munitions List Category XV (13 May 2014); 79 Fed Reg 27418, Revisions to the Export Administration Regulations (EAR): Control of Spacecraft Systems and Related Items the President Determines No Longer Warrant Control under the United States Munitions List (USML) (13 May 2014).

complex and challenging endeavours for the community in international trade law compliance. The regulations remain highly technical, detailed and lengthy. These risks exist for both the commercial and civil sectors alike.

Government agencies are not immune: recent investigations into the export policies and practices of the National Aeronautics and Space Administration (NASA) have reinforced the imperative of export compliance for the space community. Specifically, two incidents from 2009 and 2013 triggered comprehensive investigations into NASA's export control programme and related policies. As reported by the NASA Office of Inspector General (OIG), US law enforcement agencies received complaints, beginning in 2009, that foreign nationals working as contractors at NASA's Ames Research Center had been given improper access to export-controlled information. Additionally, the OIG reported that questions arose in 2013 regarding a Chinese national's access to NASA data and IT systems at the Langley Research Center. These events led to investigations and reports by the OIG, the US Government Accountability Office (GAO) and the National Academy of Public Administration (NAPA).²⁷

Investigators concluded that weaknesses in NASA's implementation of export control, foreign national access, and scientific and technical information procedures had created export control vulnerabilities at some NASA centres. The reports indicated that some NASA centres did not comply with policies on foreign national access to NASA technologies and that some centres did not adhere to NASA procedures for export reviews of scientific and technical papers prior to public release. Moreover, the GAO highlighted that NASA lacked a comprehensive inventory of export-controlled technologies and that its headquarters had not fully utilised oversight tools with regard to export compliance at NASA centres. These reports and findings collectively led to 40 recommendations to improve NASA's export control and foreign national access processes and procedures.

Importantly, since NASA is a civil agency, this case was not managed directly by US export control regulatory authorities. Rather, it was handled as a matter of government oversight by the OIG, the GAO, and the NAPA. Had this fact pattern revolved around a commercial entity, it would likely have resulted in significant monetary penalties and remediation requirements. In short, the lessons learned from the NASA investigation are broadly applicable to anyone in the space community who is subject to US export controls.

2.4 European Union export controls

Within the European Union (EU), export controls are set at EU level and implemented at national level. Council Regulation 428/2009 of 5 May 2009 sets forth the regime for dual-use items.²⁸ Council Common Position 2008/944/CFSP of 8

27 US Government Accountability Office, *Export Controls – NASA Management Action and Improved Oversight Needed to Reduce the Risk of Unauthorized Access to Its Technologies* (April 2014); NASA Office of Inspector General, *NASA's Implementation of Export Control and Foreign National Access Management Recommendations*, Report No IG-16-022 (May 2016).

28 Council Regulation (EC) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items [2009] OJ L134/1.

December 2008 defines common rules for military items.²⁹ Member States take different approaches to the implementation of these general frameworks, with notable variance in the dual-use regulatory context. For example, export registration, reporting, and compliance requirements differ among EU Member States.³⁰

Member States adopt varying interpretations of EU control list entries.³¹ As evidenced in a recent Information Note on Member State conformity with Regulation 428/2009, no Member State implements all of the provisions of the regulation.³² Moreover, some Member States facilitate export activity through broad national authorisations, while others do not.

In short, there is no one single, harmonised EU export control regime. Rather, Member States have significant discretion when implementing EU frameworks. This creates an environment in which exporters should not expect uniform treatment even if exporting the same item from different EU Member States.³³

Despite differences to be expected at the national level, the EU frameworks have many commonalities with the multilateral and US regimes. The EU control lists for dual-use and military items conform to the multilateral export control regimes. Furthermore, the EU frameworks extend to intangible transfers of technology, much like the US export control regime. Similarly, whether an authorisation is required for any particular export generally depends on the export classification of the item or service, the destination, the end-user and the end-use.

(a) Regulation 428/2009 (dual-use items)

Among other things, Regulation 428/2009 sets forth the EU dual-use item control list, the conditions for controlling non-listed items, the types of export authorisation that can be issued by Member States and requirements for intra-EU transfers of dual-use items.³⁴

Annex I of Regulation 428/2009 contains the list of controlled dual-use items. Notably, Annex I takes a form and structure similar to the List of Dual-Use Goods and Technologies from the Wassenaar Arrangement and the Commerce Control List of the United States. The annex represents consolidated versions of the control lists from the four multilateral regimes. Items controlled in Annex I cannot be exported outside the EU customs territory without an export authorisation. All items included in Annex I can be exported within the EU without authorisation, except those items included in Annex IV (eg, MTCR-controlled technologies) and any items subject to special national controls. Export authorisations within the EU may take the form of EU-wide General Export Authorisations (GEAs), State-specific National General

29 Council Common Position 2008/944/CFSP of 8 December 2008 defining common rules governing the exports of military technology and equipment [2008] OJ L335/99.

30 European Commission, *The dual-use export control system of the European Union: ensuring security and competitiveness in a changing world* (2011 Green Paper), pp 5-6. See also European Commission, *Strategic export controls: ensuring security and competitiveness in a changing world – A report on the public consultation launched under the Green Paper COM (2011) 393* (2013).

31 *Ibid.*

32 European Commission, Information on measures adopted by Member States in conformity with Articles 5, 6, 8, 9, 10, 17 and 22 of Council Regulation (EC) No 428/2009 [2016] OJ C304/3.

33 See the European Commission documents referred to at note 30 above.

34 Council Regulation (EC) No 428/2009 (note 28 above).

Export Authorisations (NGEAs), and case-by-case global or individual exporter-specific authorisations.

Regulation 428/2009 provides four specific exemptions from the higher level controls placed on items cross-referenced in Annex IV.³⁵ In particular, space launch vehicles, propulsion systems and related MTCR-controlled technologies are exempt from Annex IV controls where they are transferred under any of the following conditions:

- on the basis of orders pursuant to a contractual relationship placed by the European Space Agency (ESA) or by ESA to accomplish its official tasks;
- on the basis of orders pursuant to a contractual relationship placed by a Member State's national space agency or by such agency to accomplish its official tasks;
- on the basis of orders pursuant to a contractual relationship placed in connection with an EU space launch development and production programme signed by two or more European governments; or
- to a State-controlled space launching site in the territory of an EU Member State, unless that Member State controls such transfers within the terms of Regulation 428/2009.

(b) Common Position 2008/944/CFSP (military items)

By contrast with the US export control regime, the EU's export control frameworks expressly differentiate between and delineate military and dual-use items. Whereas Regulation 428/2009 covers dual-use items, EU Common Position 2008/944/CFSP governs military arms exports and related transparency measures. This framework is relevant to the space community because it applies to rockets specially designed for military use, spacecraft specially designed or modified for military use, and spacecraft components specially designed for military use. The Common Military List of the EU is the control list that identifies items subject to Common Position 2008/944/CFSP, including these space-related military items.³⁶ Besides having to implement the EU Common Military List into national legislation, EU Member States are also permitted to add items to their national military lists.

All EU Member States have agreed to adhere to Common Position 2008/944/CFSP, and the EU Council has issued a *User's Guide* to it to help Member States and practitioners apply the governing framework.³⁷ The Common Position identifies eight criteria for the export of items on the Common Military List, including:

- respect for international obligations and commitments of Member States;
- respect for human rights in the country of final destination as well as respect by that country for international humanitarian law;

35 *Ibid.* The list below follows the precise language of the regulation.

36 Common Military List of the European Union adopted by the Council on 14 March 2016 (equipment covered by Council Common Position 2008/944/CFSP defining common rules governing the control of exports of military technology and equipment) [2016] OJ C 122/1.

37 EU Council, *User's Guide to Council Common Position 2008/944/CFSP defining common rules governing the control of exports of military technology and equipment* (2015).

- the internal situation in the country of final destination;
- preservation of regional peace, security and stability;
- the security of Member States and associated territories and friendly or allied countries;
- the behaviour of the buyer country with regard to the international community (eg, with regard to its stance on terrorism, the nature of its alliances, and respect for international law);
- the existence of a risk that the military technology or equipment will be diverted; and
- compatibility of the exports with the technical and economic capacity of the recipient country.³⁸

3. Sanctions and restricted parties

Sanctions are regulations intended to compel changes in the policies of targeted countries or mitigate the actions of targeted persons. Among other purposes, governments use sanctions as a foreign policy tool to exact compliance with international security or human rights norms, secure peace, condemn atrocities, prevent the proliferation of weapons of mass destruction or combat terrorism and other violations of international law. With regard to the conduct of outer space activities, sanctions may prohibit market access to targeted countries, prevent the export of space-related technologies to designated entities, restrict information sharing and international co-operation or indirectly affect supply chains.

Sanctions take many forms, including travel bans, asset freezes, embargoes, mandatory denials of export licences, or tailored prohibitions on transactions or other interactions with sanctioned entities. These types of measure may target a specific country, activity or person. In many jurisdictions, sanctions are maintained in part using restricted party lists, which designate specific persons who are subject to a sanctions programme at any given time. Sanctions and restricted party lists often overlap with export control regulations to the extent that sanctions against a restricted party include specific export licensing requirements or export prohibitions.

For practitioners, sanctions compliance requires due diligence (eg, third party screening and ‘know-your-customer’ best practices) to ensure that transactions do not involve prohibited persons or activities. Practitioners may also need to obtain authorisations or waivers for activities that would otherwise be prohibited by sanctions. Because sanctions are fundamentally a foreign policy mechanism, and tend to change dynamically based on specific political events, practitioners must also keep attuned to the political factors driving relevant sanctions programmes and maintain a strong advocacy position with the relevant authorities.

3.1 The United Nations framework

The United Nations (UN) Security Council establishes international sanctions for purposes such as non-proliferation, counter-terrorism, conflict resolution and protection of human rights. The Security Council may impose sanctions by resolution

38 Council Common Position 2008/944/CFSP (note 29 above).

pursuant to Chapter VII of the UN Charter, and UN member States are responsible for compliance and enforcement.³⁹ Typically, UN sanctions take the form of asset freezes, arms embargoes, travel bans, severance of diplomatic relations or commodity interdictions.⁴⁰ UN sanctions programmes are administered by Security Council Sanctions Committees, which co-ordinate the listing and delisting of targeted entities, manage exemptions, and monitor and report on each programme. Currently, the Security Council maintains thirteen active sanctions regimes and identifies sanctioned persons using the Consolidated United Nations Security Council Sanctions List.

3.2 The US framework

US sanctions laws and restricted parties lists are administered by the US Department of Treasury's Office of Foreign Assets Control (OFAC), the US Department of State and the US Department of Commerce. With regard to sanctions, the US generally utilises two different approaches:

- list-based sanctions, and
- country-based sanctions.⁴¹

List-based sanctions target specific individuals and entities. They generally prohibit US persons and, in some cases, non-US persons from engaging in certain transactions with listed parties. For example, the Specially Designated National (SDN) List is OFAC's primary restricted party list. US persons are prohibited from engaging in transactions with SDNs and must block or freeze SDN property interests. In addition, the Foreign Sanctions Evaders List identifies, among other things, non-US persons who have facilitated deceptive transactions for or on behalf of persons subject to US sanctions.

Country-based sanctions, on the other hand, are broader, comprehensive sanctions that the OFAC administers against a varying and dynamic list of countries that has included Cuba, Iran, and Syria (among others) in recent years.

US sanctions laws also impose restrictions on transactions that may occur primarily between non-US persons. For example, a non-US company may be subject to US penalties if it knowingly causes, aids, abets or conspires with a US person to violate an OFAC sanctions programme. Indeed, the US government has aggressively prosecuted non-US companies for causing violations of these laws in recent years. Moreover, violations of sanctions or engagement with restricted parties can lead to non-US persons being identified on restricted party lists.

The Entity List maintained by the US Department of Commerce is another restricted party list that comes from the export control domain.⁴² This list includes the names of certain non-US persons (businesses, research centres, public and private organisations, individuals, etc) that are subject to specific export licence requirements on the basis of the national security and/or foreign policy considerations associated

39 In particular, articles 39 and 41 of the UN Charter operate together to provide broad discretion on how the Security Council may take measures to restore international peace and security.

40 Security Council Report, *UN Sanctions Special Research Report* (2013), pp 10-11.

41 The various US sanctions regulations are maintained by OFAC in 31 CFR, ch V.

42 See Supplement No 4 to 15 CFR, § 744, for the Entity List.

with an entity's designation on the Entity List. The Department of Commerce reviews export licence applications that include listed entities according to an entity's role in the proposed transaction and the specific licence review policies set forth for the particular listed entity. Additionally, the Department of Commerce maintains the Unverified List for parties who are ineligible to receive items subject to the EAR by means of a licence exception and the Denied Persons List for parties who are entirely ineligible to receive items subject to the EAR.⁴³

3.3 The EU framework

The EU applies economic sanctions to further specific objectives of the EU Common Foreign and Security Policy (CFSP), which include preserving peace, strengthening the security of the EU and international security, and developing democracy, the rule of law, respect for human rights and fundamental freedoms. EU restrictive measures require unanimous consent of Member States to take effect. Once passed by the EU Council and published in the *Official Journal of the European Union*, regulations are directly binding on Member States. Each Member State is then individually responsible for determining the penalties it will impose for violations of EU sanctions, for granting exemptions, and for receiving information from and co-operating with financial institutions. EU Member States may also impose their own additional restrictions at the national level, over and above EU sanctions.⁴⁴

EU sanctions have consistently been issued as targeted restrictive measures and, in similar fashion to the US, often take the form of financial restrictive measures, including asset blocking/freezing requirements. The EU Consolidated List of Persons, Groups and Entities subject to EU Financial Sanctions (EU Consolidated List) identifies the entities and individuals that are subject to financial sanction provisions under any given sanctions programme. EU restrictive measures are generally binding on any person or entity physically present within the European Union, any entity incorporated under the law of an EU Member State, any national of an EU Member State (irrespective of his or her location), and in respect of any business activities done in whole or in part in the EU.

3.4 Sanctions and the space industry

(a) *US sanctions against China and the China Great Wall Industrial Corporation*

In the aftermath of the deadly Tiananmen Square protests of 1989, the US imposed economic and diplomatic sanctions against the PRC. These so-called 'Tiananmen

43 See Supplement No 6 to 15 CFR, § 744 for the Unverified List; see 15 CFR, § 764 for information on denied persons.

44 For a comprehensive listing of EU sanctions, the European Commission maintains a document entitled *Restrictive measures (sanctions) in force*. For further reference, the EU Council has published supporting documentation on the implementation of EU sanctions policy. The 2004 Basic Principles on the Use of Restrictive Measures explains how EU sanctions fit within the context of UN programmes and the international community broadly. The 2013 Guidelines on Implementation and Evaluation of Restrictive Measures offer definitions and instructions for the design of sanctions regimes and assessment of their effectiveness. The 2015 EU Best Practices for the Effective Implementation of Restrictive Measures describe how individuals and entities should be identified and provides related procedural guidance.

Square sanctions' included, among other provisions, a suspension of export licences for US-manufactured satellites contracted to be launched in China.⁴⁵ However, the sanctions also included a savings clause, brought about in part through effective satellite industry lobbying, which allowed the President to issue waivers of the export prohibition on the basis of either of two conditions: a favourable report by the President to Congress on China's political and human rights reform, or a determination by the President that issuance of an export licence would be in the national interest.⁴⁶ Throughout 1998, the US issued 12 national interest waivers to allow satellite launches to continue from China.⁴⁷

Separately, in 1991, the US issued targeted sanctions against Chinese entities involved in the transfer of missile technology to Pakistan. These sanctions, administered by OFAC through its list-based regime, prohibited certain transactions with China's *Long March* launch provider, China Great Wall Industrial Corporation (CGWIC). The sanctions remained in effect for less than a year, as the PRC took action to mitigate the sanctions by agreeing to adhere to the MTCR Guidelines and MTCR Annex.⁴⁸ Yet, similar sanctions took effect again in 1993 against CGWIC following another Chinese sale of missile technology to Pakistan. This round of sanctions affected seven planned launches of US commercial communications satellites in the PRC.⁴⁹ Again, the US lifted the sanctions just over a year later in 1994, having received renewed commitments from China that it would not export certain missile technology. A similar pattern of US sanctions against CGWIC recurred in 2004 and 2008, following instances of Chinese technology transfers to Iran in contravention of US non-proliferation policies, with each instance seeing the addition and subsequent removal of CGWIC from OFAC's SDN List.⁵⁰

(b) India's space sector on the US Entity List

In 1998, the US issued economic sanctions against India and Pakistan following the two countries' respective nuclear tests. Among a wide array of measures, the sanctions banned the export of certain items and technology to India and Pakistan and imposed a licensing policy of denial for exports of items controlled for nuclear non-proliferation and missile technology reasons.⁵¹ Moreover, the US Department of Commerce added several hundred governmental and private persons involved in nuclear or missile activities in India and Pakistan to the Entity List in order to supplement the sanctions. While the large bulk of sanctions against India and Pakistan were lifted in 2001, due in part to the co-operation of Pakistan following the 11 September, 2001 attacks on the US, the Entity List designations remained in effect.

45 Foreign Relations Authorization Act, Fiscal Years 1990 and 1991, Pub L 101-246, 104 Stat 85 (6 February 1990), section 902(a)(5).

46 *Ibid.*

47 Cox Report (note 15 above), p 50.

48 Shirley A Kan, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues* (US Congressional Research Service, 2015).

49 Cox Report (note 15 above), p 55.

50 Kan (note 48 above).

51 63 Fed Reg 64322, India and Pakistan Sanctions and Other Measures (19 November 1998).

Importantly, the Entity List designations extended to a large section of India's defence and space sector. Among others, the US added the following to the Entity List: Bharat Dynamics Ltd (BDL), a missile technology manufacturer; a number of subordinate entities of India's Defence Research and Development Organization (DRDO); and the Indian Space Research Organization (ISRO), including the Liquid Propulsion Systems Center, Solid Propellant Space Booster Plant, Sriharikota Space Center, and Vikram Sarabhai Space Center (VSSC).

Between 2002 and 2006, a US company, Cirrus Electronics LLC (Cirrus), with offices in the US, Singapore, and India, engaged in exports of US microprocessors and electronic components for space launch vehicles and ballistic missile programmes to India's VSSC and BDL without the required licences.⁵² Cirrus, through its president and others, provided its vendors with fraudulent end-use certificates and routed the exports through Cirrus's Singapore office to conceal the ultimate destination of the goods. Following investigations by the US Department of Commerce, in coordination with the Federal Bureau of Investigation (FBI), Cirrus's president was sentenced to 35 months in prison, two years of supervised release, and a \$60,000 criminal fine. The company also lost all of its export privileges for over a year.

The US has since removed India's defence and space sector entities from the Entity List. The de-listing occurred in 2010, following the a joint announcement by the US and India of their global strategic partnership, which included steps to transform bilateral export control regulations and policies and an expansion of US-India co-operation in civil space, defence and other high-technology sectors.⁵³

(c) ***Contemporary US and EU sanctions against Russia***

More recently, the US and EU initiated sanctions against Russia in 2014 following its military intervention in Ukraine. While broadly co-ordinated by the US and EU for purposes of international security, the new sanctions programmes raised particular concerns within the space community, due to Russia's predominant role as an international supplier of launch services, commodities and technologies. Advocacy efforts within the EU space community led the EU Council to amend its sanctions against Russia to make clear that the restrictive measures should not affect the European space industry.⁵⁴ In particular, launch operations requiring items on the EU's Common Military List were exempted from the restrictive measures to ensure that Europe's space agencies and commercial industry would not be negatively affected by the new sanctions regime against Russia.

The US reached a similar conclusion on its sanctions against Russia in 2014, but with more political wrangling. In particular, certain US sanctions against two Russian officials became a conspicuous political issue when Space Exploration Technologies Corp (SpaceX) questioned whether its rival and fellow US launch provider, United

52 US Department of Commerce, *Don't Let this Happen to You! Actual Investigations of Export Control and Antiboycott Violations* (September 2016), p 52.

53 76 Fed Reg 4228, *US-India Bilateral Understanding: Revisions to US Export and Reexport Controls Under the Export Administration Regulations* (25 January 2011).

54 Council Decision (CFSP) 2015/1764 of 1 October 2015 amending Decision 2014/512/CFSP concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine [2015] OJ L257/42.

Launch Alliance (ULA), could continue to purchase RD-180 engines from Russia.⁵⁵ The two sanctioned officials, Dmitry Rogozin (Russia's Deputy Prime Minister) and Sergei Chemezov (CEO of Rostec Corporation), held board memberships with the Roscosmos State Corporation (Roscosmos), the governing body of the Russian space industry.⁵⁶ Through their director-level positions with Roscosmos, Rogozin and Chemezov were indirectly affiliated with subsidiary NPO Energomash, the Russian manufacturer of the RD-180 and other engines marketed globally.

As argued by SpaceX and its allies, including Senator John McCain, ULA's purchases of RD-180 engines indirectly benefited Rogozin and Chemezov.⁵⁷ However, in determining whether certain interests held by sanctioned persons may be subject to US blocking orders, the US Treasury Department (through OFAC) generally applies a so-called '50 percent rule': any entity owned 50% or more in aggregate, directly or indirectly, by one or more blocked persons, is itself considered to be a blocked person.⁵⁸ By application of this rule, the Treasury Department effectively determined that the indirect interests of Rogozin and Chemezov did not render NPO Energomash or Roscosmos sanctioned parties, meaning that RD-180 purchases did not constitute a violation of US sanctions laws. Although Senator McCain continued to press US authorities for evidence or certification that no benefit accrued to sanctioned Russian parties from purchases of the engines, the outcome ultimately shaped a provisional legislative compromise to the issue in June 2016, resulting in limits on RD-180 purchases but not barring such purchases outright.⁵⁹

4. Import controls and customs-related trade issues

A chapter on international trade would be incomplete without mention of import controls and the broader context in which governments manage particular customs-related trade issues. The following sections provide select highlights of such areas of trade practice as are relevant to the space community.

4.1 Import controls

Import controls restrict the import of goods or services into a given jurisdiction or customs territory. They take the form of tariffs or duties, as well as non-tariff measures such as licensing requirements, quotas, subsidies, currency restrictions or prohibitions and embargoes. While export controls tend to dominate the attention of trade practitioners within the space community, import controls and related areas of customs law provide the fulcrum on which international trade occurs. Many

55 *Space Exploration Technologies Corp v United States and United Launch Services LLC*, Case 1:14-cv-000354-SGB, Amended Complaint of Plaintiff (19 May 2014).

56 See 79 Fed Reg 31181, *Additional Identifying Information Associated With Persons Whose Property and Interests in Property Are Blocked Pursuant to Executive Order 13661 of March 16, 2014, "Blocking Property of Additional Persons Contributing to the Situation in Ukraine."* (30 May 2014); 79 Fed Reg 46302, *Designation of Individuals and Entities Pursuant to Executive Order 13660 or Executive Order 13661* (7 August 2014).

57 Senator John McCain, letter to Secretary of the Air Force Deborah Lee James and Under Secretary of Defense Frank Kendall (10 February 2016).

58 US Department of Treasury, *Revised Guidance on Entities Owned by Persons Whose Property and Interests in Property are Blocked* (13 August 2014).

59 Mike Gruss, *Nelson shepherds RD-180 compromise through US Senate* (SpaceNews, 14 June 2016); Mike Gruss, *McCain wants proof RD-180 purchases don't violate U.S. sanctions* (SpaceNews, 7 June 2016).

companies often overlook the fundamental importance of accurate tariff classification and appraisal as sources of potential duty savings and necessary compliance for imported products. To maintain a competitive edge, practitioners must keep alert to the numerous preferential trade and tariff programmes available to importers. These are the ‘nuts and bolts’ of any sophisticated customs and import controls practice.

Although governments set import controls through a multitude of policy and regulatory mechanisms, including through unilateral, bilateral and multilateral approaches, the World Trade Organization (WTO) is the most common clearing house for the negotiation of trade agreements and the establishment of tariffs and non-tariff measures. The WTO came into force in 1995 as the successor to the post-World War II General Agreement on Tariffs and Trade (GATT).⁶⁰ Today, the WTO framework spans a multitude of agreements that set the trade rules for member countries’ trade in goods, services and intellectual property (IP).

The significance of WTO processes to the space sector comes to light through the way in which trade agreements impact market access, reduce technical barriers to trade, establish import licensing and customs requirements, and provide for trade-related investment measures, all of which impact upon global supply chains and the movement of goods. For example, 53 participants to the multilateral Information Technology Agreement (ITA) agreed in December 2015 to expand the products covered under the ITA’s zero-tariff policy – namely, to include telecommunications satellites and many related components, such as next generation semiconductors, navigation systems and optical lenses, among others.⁶¹ As participating States implement duty-free treatment for these items, the WTO anticipates benefits across the telecommunications industry, including monetary savings for IT companies, greater market access and predictability for traders and lower costs to consumers.⁶²

4.2 Trade remedies and disputes

Trade remedies are a common variation of standard import controls. Trade remedies include anti-dumping actions, countervailing duty measures and safeguard actions. Governments use each of these remedies when prevailed upon to do so by a domestic industry that has suffered material injury due to the trade practices of a foreign country or exporter. Specifically:

- anti-dumping actions are measures, often in the form of duties, taken to counteract the effects of an exporter who ‘dumps’ goods into a foreign market at prices below the domestic market value in the exporter’s country;
- countervailing duties counteract the effects of another country’s domestic subsidies; and
- safeguard actions are ‘emergency’ protective measures invoked when a sudden increase in imports significantly threatens domestic industry.

60 Within the WTO and trade community generally, ‘GATT 1947’ refers to the original international organisation and agreement (as supplemented and modified over time) that preceded the WTO; whereas ‘GATT 1994’, which derives from GATT 1947, sets forth the principal rules for trade in goods and falls within Annex I to the 1994 Marrakesh Agreement Establishing the World Trade Organization, 1867 UNTS 410.

61 WTO, *Briefing note: The Expansion of Trade in Information Technology Products (ITA Expansion)* (2015) p 1.
62 *Ibid* p 2.

The conditions under which governments may utilise these types of remedy are largely regulated through particular WTO agreements, with varying national regulations detailing the procedures for the initiation of such remedies.

The WTO also serves as a common forum for the resolution of trade disputes, which may encompass remedies cases in addition to a broad range of other topics, including trade in goods, IP and government procurement. Under the terms of the Understanding on Rules and Procedures Governing the Settlement of Disputes (the Dispute Settlement Understanding or DSU), which is Annex 2 to the WTO Agreement, WTO dispute settlement may include any number of four major phases:

- State-to-State consultations;
- panel hearings;
- appeals; and
- implementation of any recommendations of the panel or Appellate Body.

Importantly, dispute resolution through the WTO is a State-based process; non-State entities (eg, companies and trade associations) are not direct parties to any WTO dispute procedures but, in most instances, are practically represented through their State officials.

To date, only one case resolved through the WTO process has directly related to the space sector, though other cases have had tangential impact. In April 1997, the EU initiated consultations with Japan through the WTO process, contending that a procurement tender published by the Japanese Ministry of Transport for a multi-functional navigation satellite was not neutral but referred explicitly to US specifications, rendering European bidders unable to participate in the tender.⁶³ The EU alleged that Japan's tender violated provisions of the plurilateral Agreement on Government Procurement (GPA). Japan and the EU resolved the issue through the consultation process by establishing a co-operative framework for interoperability between European and Japanese global navigation services that would allow the EU to compete in future tenders.⁶⁴

5. International agreements

Underlying nearly all international activities relating to outer space are bilateral or multilateral agreements, which establish frameworks and terms for international space co-operation and, importantly, address specific issues to space-related trade. For example, a 1988 Memorandum of Agreement between the US and the PRC paved the way for Chinese launches of US commercial communications satellites during the 1990s. The US conditioned its authorisation of satellite exports to China upon two requirements particular to trade concerns:

- the two countries had to reach agreement on technology transfer safeguards; and
- China had to take steps to protect the US launch industry from anti-competitive pricing in the future.⁶⁵

63 *Japan – Procurement of a Navigation Satellite*, Dispute DS73 (31 July 1997).

64 *Ibid.*

65 Cox Report (note 15 above), p 47.

In a related example, India and the US have recently been at a crossroads over the signing of a bilateral agreement known as the Commercial Space Launch Agreement (CSLA). The proposed US-India CSLA includes similar safeguards to prevent anti-competitive pricing by India of US commercial satellite launches on India's Polar Satellite Launch Vehicle (PSLV). The two countries have yet to reach an accord, however. In the interim, the US has instituted an informal ban on the export of US satellite payloads to India, requiring US companies to solicit waivers from the departments of State or Commerce prior to proceeding with any launch arrangements with India. Since 2015, at least five US satellite companies have obtained waivers allowing them to launch their satellites aboard the PSLV.⁶⁶ These and other satellite producers have lobbied the US Trade Representative to change this policy, while US launch companies, seeking to maintain their competitive advantage, have campaigned to maintain the protective measures.⁶⁷

In many instances, like those above, the nexus between trade and outer space activities is readily apparent as the central policy issue. In other instances, trade-related provisions are embedded within broader programme- or mission-specific co-operation agreements. For example, articles 18 and 19 of the International Space Station Intergovernmental Agreement (IGA) address 'Customs and Immigration' and 'Exchange of Data and Goods' respectively.⁶⁸ Article 18(3) stipulates:

Each Partner State shall grant permission for duty-free importation and exportation to and from its territory of goods and software which are necessary for implementation of this Agreement and shall ensure their exemption from any other taxes and duties collected by the customs authorities.

Moreover, article 19 establishes a framework for the exchange of technology and goods in consideration of the export control requirements of each participating State. The details that follow these framework provisions are often provided for in implementing agreements or other memoranda of understanding between participating States.

As demonstrated by these examples, international agreements often stipulate or supplement the conditions under which trade can occur between international partners in space-related projects. They signal to industry that the respective signatory governments are opening avenues for trade and technology transfer between the participating countries, while possibly securing assurances for domestic industry at the same time.

6. Conclusion

International trade laws and regulations affect a wide range of outer space activities. Supply chain, sourcing, vendor and customer decisions cannot be made without

66 Peter B de Selding, *India's PSLV launches Cartosat-2C and 19 small satellites, including 13 commercial US spacecraft* (SpaceNews, 22 June 2016).

67 Peter B de Selding, *US Launch Companies Lobby to Maintain Ban on Use of Indian rockets* (SpaceNews, 29 March 2016).

68 Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station (Washington DC, 1998), TIAS 12927.

reference to the export control laws that regulate and sometimes restrict technology and hardware flows between companies, or customs duties, taxes, and requirements involving relevant countries. IT network structures and access controls, as well as employment decisions, must be made with export control considerations in mind. Parties must be screened against restricted lists to avoid inadvertent violations.

These are merely a few examples that highlight the need for integrating trade compliance considerations into business planning. As the US and the EU in particular continue to focus on international trade enforcement, companies that do not properly identify, and allocate resources to, international trade compliance before expanding into new activities – whether hiring foreign employees or building new international relationships – have been subject to massive business interruptions and penalties for poor planning that has resulted in systemic violations. Governmental and corporate leadership must be proactive to ensure that their personnel are equipped to make choices that reflect the realities and complexities of these laws.

Although compliance programmes must be tailored to the operations of the particular entity involved, regulators and enforcement agencies generally agree on a few core elements: management commitment, written policies and procedures, training, record keeping, monitoring, and auditing. As optimists, the authors of this chapter believe that the opportunities for international collaboration on outer space activities will only grow in the years ahead. At the same time, international trade laws are evolving, and growing more complex, at a remarkable pace. Participants in the space industry must reconcile these two dynamic environments to minimise financial, legal, and operational harm, promote efficiency, and catalyse innovation across borders and beyond.

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