

The Space Protocol of the Cape Town Convention: An International Secured Transactions Regime for Space Assets

*Anna Veneziano, Hamza Hameed**

1. The Space Industry

The space industry can be defined as the economic and financial activities relating to the manufacturing, production, or provision of products and/or services that operate in, or beyond the Earth's orbit, or the activities related to delivering these products or services to space and/or communicating with them.¹

By its very nature, this is a highly capital-intensive industry which has traditionally only been open to large corporations or space programs of highly developed economies. The global space sector is a high-technology niche with a complex ecosystem, which employed at least 900 000 individuals around the world in 2013. The space economy represented circa USD 256.2 billion in revenue in 2013, divided between the space manufacturing supply chain (33%), satellite operators (8.4%) and consumer services (58%).² The institutional budgets for space activities amounted to circa USD 64.3 billion for 40 economies in 2013.³

* Prof. Anna Veneziano, Deputy Secretary-General, International Institute for the Unification of Private Law (Unidroit). Mr. Hamza Hameed, Legal Consultant, International Institute for the Unification of Private Law (Unidroit).

1 Kai-Uwe Schrogl (2 August 2010). *Yearbook on Space Policy 2008/2009: Setting New Trends*. Springer. p. 49. ISBN 978-3-7091-0317-3.

2 Henry R Hertzfeld, 'The Space Economy' (Space Policy Institute, George Washington University, 2009) in A.C Charania, 'Newspace: The Future of Commercial Activity In Outer Space?' (SpaceWorks Commercica, 2009).

3 OECD Publishing, 'The Space Economy At A Glance' 2014 (OECD Publishing 2014).

1.1 Recent changes in the industry

Access to space has been desirable and has been an aspiration for most States, and in the recent past, primarily due to advancements in technology, the cost of access to space, the capital investment needed and the resources required to become part of the space industry have substantially decreased.⁴ This has led to the rise of what has been termed the NewSpace industry. This is defined by the Tauri group as: *'NewSpace includes companies that are likely to be flatter, flexible organisations that are consumer focused, innovative, willing to take risks, and focused on new technology solutions. In comparison to NewSpace companies, Traditional space companies on the other hand are more likely to be highly structured and focused on established lines of business, often with the government. They are also more likely to be established in sectors with high value offerings, low sales volume, and low growth.'*⁵

The rise of NewSpace has seen the entry of many private, and small-scale players into the space industry which has amplified the need for finance for this sector. The number of States with functional objects in space is currently over 60 and is increasing every year.⁶ The next sections of this paper will look at the models of space financing presently relied upon by the space industry, the financing mechanism which the Space Protocol of the Cape Town Convention seeks to introduce, and how this mechanism may be beneficial for the space industry in its new formation.

2. Space Financing

Besides receiving government funding and grants, or relying upon the financial capacity of their founders, private entities within the space industry typically rely upon the following mechanisms of attracting investment for their operations:

- i. Equity Finance, mostly through venture capitalists or angel investors;
- ii. Unsecured lending, based usually on the creditworthiness of the entity;
- iii. Project Finance, primarily through debt financing, hence creating a situation whereby lenders buy the debt, or the cost of a project and then are paid off using revenue generated from the project.⁷

4 NASA, 'Emerging Space, the Evolving Landscape of 21st Century American Spaceflight.' 2014.

5 Jason Hay and others, 'Global Space Industry: Refining the Definition of New Space', AIAA SPACE 2009 Conference & Exposition (American Institute of Aeronautics and Astronautics 2009).

6 As of 31st July 2016, Satellites by Countries and Organizations.

7 Mark J.Sundahl, 'The Cape Town Convention, its application to space assets and relation to the law of Outer Space', Martinus Nijhoff Publishers (2013).

Traditionally, the space industry was comprised of triple-A rated companies which have relatively easy access to capital due to their financial stability and creditworthiness.⁸ These companies have relied on obtaining either equity or project finance from lenders at an acceptable rate keeping their balance-sheets or on-ground assets as collateral. They have also very often been heavily financed by governments who deal with them favourably considering their importance to the States to which they belong or to the governments themselves.⁹

The Cape Town Convention and its Space Protocol do not aim at replacing these existing methods of attaining finance, rather they seek to add another opportunity, taking into account the needs of developing and emerging economies, and the likely decrease or unavailability of governmental financing. This is done by introducing the practice of asset-based financing through an international system of secured transactions law into the space industry. The next section of this paper will discuss the regime being introduced by the Cape Town Convention and its Space Protocol and how this can augment the availability of finance for the space industry, with a strong focus on how entities within the NewSpace industry would benefit from the new regime.

3. The Cape Town Convention and its Protocols

The Cape Town Convention on International Interests in Mobile Equipment¹⁰ is one of the flagship instruments of UNIDROIT.¹¹ Adopted in 2001, it is an international treaty system created to streamline and facilitate financing of, and transactions related to, high value, mobile and uniquely identifiable assets. It provides a high level of security and certainty to parties involved in a particular transaction and grants to all parties a greater amount of confidence in the legal transactional environment.

The Cape Town Convention system operates by reducing a creditor's risk and by enhancing legal predictability in the transactions covered under it. This goal is achieved by allowing parties to a security agreement, a

8 Mark J. Sundahl in 'Handbook of Space Law; Financing Space Ventures', UK: Edward Elgar Publishing. (2015) pg 876.

9 For an overview of the government funding of space activities see I.H.P. Diederiks-Verschoor, The Development of Financing of Spacecraft, in Proceedings of the Fortieth Colloquium on the Law of Outer Space (1998), 212.

10 The Cape Town Convention on International Interests in Mobile Equipment adopted in Cape Town on 16th November 2001 (referred to hereinafter as the CTC or the Convention).

11 UNIDROIT is an intergovernmental organisation with 63-member States representing all continents. Its aim is to develop globally uniform laws and modern standards in private and commercial law for the benefit of developing and developed countries across the world. See www.unidroit.org for more details.

conditional sale, or a leasing agreement to create autonomous interests which are internationally enforceable in States party to the Convention and its relevant Protocol. These various Protocols have also been adopted within UNIDROIT and presently cover three broad categories: aircraft¹², railway rolling stock¹³, and space assets.¹⁴ The CTC system is such that States must be party to the Convention and the Protocol under which the asset in question falls, for the international regime to apply to that asset.

The relationship between the Convention and its various Protocols is a unique structure in international law: the Convention acts as an umbrella agreement for which subsequent Protocols are created to cater to different types of assets. The Convention and its various Protocols seek to establish international registries for recording international interests. These international registries allow potential creditors to search for third party pre-existing interests in an asset with ease as opposed to having to go through national registers in many different jurisdictions. The registration of an interest ensures the perfection and preservation of the creditor's priority as all third parties looking to register an interest consequently in the same asset are given adequate notice.¹⁵ This gives greater confidence and security to creditors and investors and hence reduces the cost of borrowing, leasing or lending finance for an asset.¹⁶

Thus, the primary objectives of the Cape Town Convention and its Protocols are:

- i. To facilitate the acquisition and financing of economically important items of uniquely identifiable mobile equipment by providing for the creation and publicity of an international interest which will be recognised and enforceable in all Contracting States;
- ii. To provide the creditor with a range of basic default and insolvency-related remedies and, where there is evidence of default, a means of obtaining speedy relief pending final determination of its claim on the merits;

12 Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Aircraft Equipment (Cape Town, 2001), in force from 1 March 2006, (referred to hereinafter as the Aircraft Protocol).

13 Luxembourg Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Railway Rolling Stock (Luxembourg, 2007), not yet in force, (referred to hereinafter as the Rail Protocol).

14 Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets (Berlin, 2012), not yet in force. (Referred to hereinafter as the Space Protocol).

15 R. Goode, *Convention on International Interests in Mobile Equipment and Protocol Thereto on Matters Specific to Space Assets: Official Commentary* (2013). 4.

16 Paul B. Larsen, "Berlin Space Protocol: Update", in *Zeitschrift für Luft- und Weltraumrecht*, 2015/2, at 362, 365.

- iii. To establish an electronic international registry for the registration of international interests which will give notice of their existence to third parties and enable the creditor to preserve its priority against subsequently registered interests and against unregistered interests and creditors in the debtor's insolvency;
- iv. To ensure through the relevant Protocol that the particular needs of the industry sector concerned are met;
- v. To grant Contracting States a degree of flexibility in adhering to the international regime, by allowing, to a well-defined and limited extent, policy choices through declarations, while preserving the basic uniformity of the legal regime;
- vi. By these means to give intending creditors greater confidence in the decision to grant credit, enhance the credit rating of equipment receivables and reduce borrowing costs and credit insurance premiums to the advantage of all interested parties.¹⁷

3.1. The Space Protocol of the Cape Town Convention

Adopted at a Diplomatic Conference attended by over 40 States and several intergovernmental organisations in Berlin in 2012, the Space Protocol extends the application of the CTC and its rules to the space industry. It defines the term 'space asset' as:

Any man-made uniquely identifiable asset in space or designed to be launched into space, and comprising:

- (i) *a spacecraft, such as a satellite, space station, space module, space capsule, space vehicle or reusable launch vehicle, whether or not including a space asset falling within (ii) or (iii) below;*
- (ii) *a payload (whether telecommunications, navigation, observation, scientific or otherwise) in respect of which a separate registration may be effected in accordance with regulations; or*
- (iii) *a part of a spacecraft or payload such as a transponder, in respect of which a separate registration may be effected in accordance with the regulations, together with all installed, incorporated or attached*

¹⁷ See Stanford, M.J, Completion of a first draft of UNIDROIT's planned future Convention on International Interests in Mobile Equipment [in English and French], in: Uniform Law Review / Revue de droit uniforme, NS 1 (1996), 274-283; Sundahl, M.J, The "Cape Town Approach": A new method of making international law, in: Columbia Journal of Transnational Law, 44 (2006), No. 2, 339- 376.

*accessories, parts and equipment and all data, manuals and records relating thereto.*¹⁸

The system established under the CTC and its Space Protocol seek to create a regime whereby interests in assets that fall under the aforementioned definition can be registered in an international registry. This type of application is premised on the importance of asset-based financing for space assets and allows for the creation of a regulatory environment which facilitates the same.

The Convention allows for registration of international interests, prospective international interests, sales, and prospective sales of assets that fall under a particular Protocol; these are all defined within the CTC and ensure the applicability of the CTC and its Protocols to most typical financing arrangements found within the relevant industries, where in the case the financiers and/or the financee are interested in relying upon its provisions.¹⁹

The creation of an international interest entails three requirements: an agreement in writing; the power of the debtor to dispose of the asset; and proper identification of the asset in the agreement. A security interest also dictates that the security agreement 'enables the secured obligations to be determined, but without the need to state a sum or maximum sum secured'.²⁰

One important element of the CTC system is that it limits the impact of the application of different sets of national laws to a particular financing arrangement through the application of a uniform international regime. Furthermore, it establishes a set of rules that companies, and their creditors can rely on to govern their secured transactions – this is especially helpful as it reduces the impact of conflict of laws issues when parties enter into litigation.²¹ Additionally, rights and interests registered in the international registry take priority over rights present elsewhere; priority is fundamentally

18 See Article II of the Space Protocol; For a detailed discussion on the definition of a Space Asset under the Space Protocol see: Mark J. Sunahl, *The Cape Town Convention: Its Application to Space Assets and Relation to the Law of Outer Space* (2013), at 35.; Pai Zheng, 'Space Asset under the Space Protocol of the Cape Town Convention' *Haiser Global Law School* (2014); For a discussion of the early evolution of the term Space Asset in the Cape Town Convention, see S. Ospina, *The Concepts of Assets and Property: Similarities and Differences, and Their Applicability to Undertakings in Outer Space*, *Proceedings of the Forty-Fifth Colloquium on the Law of Outer Space* (2003), vol. 12; O. M. Ribbelink, *The Protocol on Matters Specific to Space Assets*, 12 *European Rev. Private L.* 37, 39 (2004).

19 Zhao Yun, *Revisiting Selected Issues in the Draft Protocol to the Cape Town Convention on Matters Specific to Space Assets*, 76 *Journal of Air Law and Commerce* 805, 814-815 (2011).

20 See Article 1 and 7 of the Cape Town Convention.

21 R. Goode, *Convention on International Interests in Mobile Equipment and Protocol Thereto on Matters Specific to Space Assets: Official Commentary* (2013); M.J. Sundahl, *The Cape Town Convention: Its Application to Space Assets and Relation to the Law of Outer Space* (2013).

dependent on registration and is irrespective of knowledge of pre-existing unregistered interests.²² This ensures the legal supremacy of the register and gives a high degree of security to creditors. The registration also serves as formal notice of a right to all subsequent creditors and hence also allows for transaction in good faith.²³

There are also provisions in the Convention and the Space Protocol which address the assignment of rights associated with an international interest as well as for the determination of priority amongst competing assignments.

The Space Protocol, like the CTC system in general, establishes a regime which is creditor friendly and encourages creditors to provide finance to entities within the space industry. This is done by allowing the creditor to exercise certain remedies available to it in cases where the debtor defaults on the agreement or must declare insolvency. There are two alternative insolvency remedies available under the Space Protocol and States adopt either one of them while acceding to it.²⁴ Both these alternatives give rights to creditors to either take control of, or demand control of all rights associated to the space asset in question, with certain safeguards in place (as will be discussed in the subsequent sections), in case the debtor becomes insolvent.²⁵

3.2. Space Industry Specific Nature of the Space Protocol

As it was drafted specifically to cater to the space industry, the Space Protocol incorporates several important concepts that are critical for the operation of a financial system within the space sector:

3.2.1. Public Service Exemption

Noting that space assets are often used for the provision of important public services, the drafters of the Space Protocol ensured that such services are not unexpectedly terminated in the case of a default on part of the debtors to a financial agreement. As such, Article XXVII of the Space Protocol contains a provision restricting the remedies available to a creditor with respect to a space asset that provides a public service.

The underlying concept is that the State has a natural interest in ensuring that a creditor exercising its rights does not cause the abrupt termination of a

22 For a full discussion on rules of priority within the Cape Town Convention system see Roy Goode (2012) *The priority rules under the Cape Town Convention and Protocols*, Cape Town Convention Journal, 1:1, 95-108; Michel Deschamps (2013) *The perfection and priority rules of the Cape Town Convention and the Aircraft Protocol A comparative law analysis*, Cape Town Convention Journal, 2:1, 51-64.

23 Non-consensual rights/interests may be an exception. For a detailed discussion see: John Pritchard and David Lloyd, 'Analysis of NonConsensual Rights and Interests under Article 39 of the Cape Town Convention', Cape Town Convention Journal, September 2013.

24 See Article XXI of the Space Protocol.

25 Alexia Russell And Charles Viggers, 'Cape Town Convention Space Protocol', Watson Farley Williams (2016).

service of public importance (e.g. a satellite system monitoring weather conditions or providing GPS public services). Article XXVII is triggered by the registration of a ‘public service notice’, which can be done on agreement of the parties to the public service contract and the Contracting State.

The creditor’s consent is not required to register a public service notice, however, since the debtor will be party to the public service contract, the creditor will be able to make a contractual provision restricting the debtor’s right to consent to the registration of a public service notice.

Upon the registration of a public service notice, a creditor may not exercise remedies which would make the space asset unavailable during the ‘suspension period’, which begins with the registration by the creditor of a default notice which states that it will or may exercise default remedies of the debtor does not cure its default within the registration period.

The length of the ‘suspension period’ is confirmed by Contracting States through a mandatory declaration under Article XXVII(4), but it must be between 3-6 months.

Article XXVII(9) provides an exception to suspension of remedies under a public service notice, in the unusual circumstances that (1) the international interest is registered before the public service notice, (2) the creditor has no knowledge of the public service contract or the public service notice and (3) the public service notice is not registered within 6 months after the initial launch of the space asset.²⁶

3.2.2. Identification Criteria for Space Assets

As seen above, the International Registry is at the core of the Cape Town Convention system. Since it is an asset-based registry, it requires identification of the asset that is to be used as collateral. Besides providing for a broad definition of what may comprise as a Space Asset, the Space Protocol also addresses the identifiers for Space Assets that allow entering an object into the Registry. For this, the Space Protocol refers to the Regulations which the Registry will adopt upon its establishment. The present version of the Regulations requires all assets to be associated to a ‘unique identification number’. The process for the issuance of this number is detailed in Annex 2 of these Regulations. The owner of a space asset may request issuance of a unique identification number by providing the Registrar with (a) the name of the owner, (b) the name of the manufacturer, (c) the manufacturer’s contract reference number and (d) the category of space asset. If it appears that a unique identification number already exists for a particular asset then the Registrar must use this. Furthermore, The Registrar shall then create a

26 See Cakir, T, The Public Service Exemption in the Space Protocol in light of that found in the Luxembourg Protocol, IAC-16,E7,1,9,x33965 (2016); Rosen, H, Public service and the Cape Town Convention, in: Cape Town Convention Journal, 2013, pp. 131-147.

‘unique identification file’ for each space asset for which the unique identification number is issued and record the unique identification number in the file. It is in this file that an international interest, when effecting its registration, is recorded. Additional information to be used for reference, though not for determining priority, is also recorded in the same file.²⁷

Additional information such as the UTC time of the launch of the object, the frequency allotted to it, or any other COSPAR unique identifier associated to it may also be entered into the file.

3.2.3. Salvage

‘Salvage’ is a legal or contractual right or interest in, relating to, or derived from a space asset that vests in the insurer upon the payment of a loss relating to the space asset.

Insurance is an important consideration in the financing of space assets and the Space Protocol seeks to ensure that this aspect of the industry is not significantly impacted by the Protocol. Article IV(3) provides that nothing in the Convention or Protocol can affect any legal or contractual rights of an insurer to salvage in accordance with the applicable law.

As such, salvage rights, including rights by subrogation, are not affected by the Convention or Protocol, so that any priority dispute between salvage rights and creditor rights will be resolved by the applicable law.²⁸

3.2.4. TT & C Enforcement Mechanism

The Space Protocol was drafted specifically keeping in mind the logistical impossibility of physical repossession of space assets. Hence, the drafters sought to address this by focusing on the Tracking, Telemetry and Control (TT&C) of space assets which can be found within the command codes associated to it. Satellite command codes are encryption keys which give control over the satellites. Article XIX allows the parties to an agreement to specifically agree to the placement of command codes and related data and materials with a third party to afford the creditor an opportunity to establish control over or operate the space asset to efficiently exercise its rights, as granted under the Space Protocol.²⁹

27 For the Regulations see Appendix III of the Report of the Fourth Session of the Preparatory Commission for the Establishment of the International Registry for Space Assets Pursuant to the Space Protocol at: <https://www.unidroit.org/english/documents/2015/depositary/ctc-sp/pcs-04-07rev-e.pdf>; See also See McPhillips, R, Rosen, H, Kozuka, S & Kennedy, S, Comparative analysis of aircraft, rail and space international registries and their regulatory provisions, Cape Town Convention Journal, 5:1, 29- 67, (2017) DOI: 10.1080/2049761X.2016.1252258.

28 For more on salvage rights see: Hughes, N, HFW Briefings, UNIDROIT Draft Space Assets Protocol at <http://www.hfw.com/UNIDROIT-DraftSpace-Assets-Protocol>.

29 For more on the enforcement mechanism under the Space Protocol see: Stanford, M, and Porras, D, Transfer of Possession and Control under the Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to

However, Article XXVI(2)(c) restricts Article XIX in that laws and regulations of Contracting States can prohibit, restrict, or attach conditions to the placement of command codes with third parties.

3.2.5. Physically Linked Assets

Spacecraft can often be comprised of different modules that are physically linked together (e.g. the International Space Station). Article XVII(3) prescribes a significant restriction on the exercise of remedies related to physically linked assets. A creditor may not enforce an international interest in a space asset that is physically linked with another space asset so as to impair or interfere with the operation of the other space asset.

However, there are two limitations on the Article XVII(3) rule:

- A creditor or buyer of the physically linked space asset must have registered its interest in the space asset before the interest of the enforcing creditor was registered.
- Article XVII(3) only takes effect subject to any agreement to the contrary between the two parties concerned (i.e. it is not a mandatory provision).

This rule is not strictly a priority issue, as the two interests relate to different space assets which are physically linked, rather than two interests in the same asset.

3.3. Asset Financing in the Space Industry

Asset-based financing allows for actors within the space industry to create a ‘new level of risk for financiers’³⁰ and the Space Protocol greatly facilitates this. It creates ‘a uniform regulatory regime for the recognition and protection of security interests in space assets,’ – this ensures that issues such as those of conflict of laws or differing insolvency remedies, that are normally encountered in asset-based financing, are surpassed.³¹

Asset financing allows companies to leverage their assets and attain finance by giving creditors’ rights in those assets. The benefit of asset backed financing is that, in the case where the debtor cannot repay its debt to the creditor, the asset itself, or interests in the asset, may come under the

Space Assets, in Corinne M. Jorgenson (ed), Proceedings of the International Institute of Space Law 2012 (Utrecht: Eleven international Publishing, 2013), p 801-810; Gerhard, M, Transfer of Operation and Control with Respect to Space Objects; Problems of Responsibility and Liability of States” (2002) German Journal of Air and Space Law, p 571-581.

30 Dunk, F. G. von der, and Fabio Tronchetti, Handbook Of Space Law. Cheltenham, UK: Edward Elgar Publishing. (2015).

31 See Yun in Sterns, Patricia Margaret, and Leslie I Tennen. Private Law, Public Law, Metalaw And Public Policy In Space (2016).

ownership and/or control of the creditor. In this manner, the creditor will be paid back some of the credit they have extended to the debtor. This is more desirable to a creditor as compared to offering the profits of the enterprise, especially when the enterprise fails and the creditor would therefore receive little or no return on their investment.³²

The Space Protocol facilitates these types of transactions such that it reduces the riskiness of the extension of credit, by making it more likely that the amount loaned will be repaid if the debtor becomes insolvent; and that the creditor reduces their burden of monitoring the debtor absconding with the credit, because the creditor now only has to monitor the asset securing the loan, and not the overall business and profitability of the debtor's enterprise. By creating an international registry where interests in space assets can be recorded and perfected, the Space Protocol offers increased security and confidence to lenders to invest in the space industry. The fact that the Space Protocol additionally introduces a strong set of remedies in the case of a default further secures the investment and allows the creditors from across the world to invest capital in space assets.³³

The Space Protocol ensures that a standard set of international rules apply to such secured transactions. This ensures that the creditors do not have to be vary of a multiplicity of rules when internationally investing in space industry projects. Moreover, this also ensures that the presence of the asset in space has no substantial legal bearing on the financing contract.

The primacy and safety of their interests in space assets, alongside the application of a strong system of remedies makes asset financing an attractive option for investors looking to contribute capital to the space industry. Moreover, the provisions also ensure that future creditors within the same asset can also easily search the online registry to ensure that their investments are free of already existing third party interests.³⁴

3.4. Usefulness to NewSpace Financing

The Aircraft Protocol of the CTC is a great example of how a financing instrument can allow for the growth and expansion of an entire industry³⁵; the coming into force of the Aircraft Protocol has reduced the cost of financing

32 Linetsky, V, *Economic Benefits of the Cape Town Treaty*, (2009) at: <http://www.awg.aero/assets/docs/economicbenefitsofCapeTown.pdf>.

33 Kozuka, S, Taniguchi, F, *An economic assessment of the space assets protocol to the Cape Town convention*, in: *Uniform Law Review / Revue de droit uniforme*, 2011, 16 (2010) 4, pp. 927-941.

34 For more details on the text of the Space Protocol see *Official Commentary on the Convention on International Interests in Mobile Equipment and the Protocol thereto on Matters specific to Space Assets* by Professor Sir Roy Goode CBE, QC, UNIDROIT 2013, ISBN 88-86449-21-6 at <https://www.unidroit.org/space-protocol-officialcommentary>.

35 UNIDROIT Secretariat, 'Depositary Update' (2015) 4 CTCJ 1, 2.

aircraft equipment by at least 30%.³⁶ Moreover, one study showed that the adoption of the Aircraft Protocol by an average country could save it between \$7.6 Billion and \$11.1 Billion over a twenty-year period.³⁷ Presently there are over 161,000 international interests created, and over 571,000 registrations in the International Registry against more than 207,000 aircraft objects.³⁸

The aforementioned statistics show that the CTC is very beneficial in the facilitation of financing for high value assets. The NewSpace industry is growing at an exponential rate; this cannot be maintained without access to finance as all space missions require large sums of investment which are often not available to the private entities who do not have very strong backing.³⁹ A harmonised and uniform system of secured transactions law that is creditor friendly and is based on principles of transparency, and economic development facilitates the growth of the industry and augments progress for all the players within it.⁴⁰

With many NewSpace companies being unable to get access to the typical forms of space financing, especially at later stages in their development, the ability to leverage assets in exchange for favourable lending terms may prove to be very important to allow companies within the NewSpace sector to get access to capital. Furthermore, as most start-ups only have their idea or asset to leverage, and set as collateral, it allows companies to rely upon their work and technology to secure financing as opposed to divesting their stocks or securing loans with very high interest rates. This offers many benefits to NewSpace companies, and entrants into the space industry from developing countries who have trouble accessing the traditional types of funding available for space related ventures.

The use of new technologies within NewSpace results in the production of innovative products meant for use in outer space, most of which may fall within the broad definition of 'space asset' noted in the Space Protocol, this allows these innovative technologies to be the sole basis for attaining finance as opposed to having to rely upon creditworthiness which at times may not be present due to the volatile and high-risk nature of spatial projects and the inherent characteristics of new business entrants within any industry.

36 HG Bollweg & S Schutleiss, 'Das Berliner Weltraumprotokoll' (2012) 61 ZLW 389, 390.

37 Saunders, Anthony and Srinivasan, Anand and Walter, Ingo, *Innovation in International Law and Global Finance: Estimating the Financial Impact of the Cape Town Convention* NYU Working Paper No. FIN-06-037. (2006).

38 These figures were calculated by adding the number of registrations made per year and the number of objects against which interests were registered per year as stated in the 'Ninth Annual Statistical Report: 1 January 2014 – 31 December 2014' published by the International Registry of International Interests in Aircraft Equipment.

39 Messier, Doug, 'Swiss Space Systems Declares Bankruptcy', *Parabolic Arc* (2016);

40 Mark J. Sundahl in 'Handbook of Space Law; Financing Space Ventures', UK: Edward Elgar Publishing. (2015) pg 908.

4. Conclusion

The space industry has seen tremendous growth which is expected to multiply in the near future, Morgan Stanley estimates that the revenue generated by the global space industry will increase to \$1.1 trillion or more in 2040, up from \$350 billion in 2016.⁴¹

To facilitate this growth and allow for access to space to be open to all sorts of companies from developing and developed States, it is important to allow access to finance to companies of all sizes and capacities. The Space Protocol seeks to do this by allowing for capital to be injected into a company based primarily upon its work.

Prior to the Space Protocol, there existed no international legal framework providing for asset-based financing within the space industry. To assist in the development of the space industry, an efficient international regime needed to be developed and this is exactly what the Space Protocol provides.⁴² The Space Protocol provides a stable and secure legal environment for transactions in space assets based on the tried and tested mechanism of asset-based financing. At present, UNIDROIT is working towards finalisation of the framework for the operation of the International Registry. Ratification by States will allow the Space Protocol to start benefitting the space industry as it was originally drafted to do so.

41 "Space: Investing In The Final Frontier". Morgan Stanley, 2017: <https://www.morganstanley.com/ideas/investing-inspace>.

42 T. Aganaba, *Assessing the Support for the Space Assets Protocol to the UNIDROIT Cape Town Convention*, International Institute of Space Commerce.