

An International Registry and Registrar for Priority Rights to Extract Resources on Celestial Bodies

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Abstract

The Hague International Space Resources Governance Working Group has been developing the conceptual “building blocks” for the future development of an international framework for regulating the extraction of natural resources from celestial bodies. One of these building blocks contemplates the potential creation of an international registry for determining the priority rights of an entity to engage in resource extraction on a celestial body (or on a particular part of a celestial body). The purpose of this registry would be both (1) to ensure that such entities can operate without interference and (2) to ensure that such entities operate with due regard for the interests of other operators. This paper proposes a structure for such a registry as well as a process for granting priority rights to a particular entity. The proposed structure and process draws from three existing international registries of different types: (1) the United Nations Register of Objects Launched into Outer Space, (2) the ITU Master International Frequency Register, and (3) the International Registry of Mobile Assets created by the Cape Town Convention on International Interests in Mobile Equipment. Each of these registries serve as helpful examples of how to create an international registry for resource extraction. The UN Register provides an example of how to describe the location and nature of the resource extraction activities. The procedure used when updating the ITU Master Register could be transferred, with some alterations, to maintaining the resource extraction registry. Finally, the Cape Town Convention registry operates in conjunction with priority rules that would work equally well for resource extraction. In addition to ensuring the priority of the right to engage in resource extraction, the Cape Town Convention registry also gives guidance regarding how the registry could be used to protect scientific, historical, and cultural sites on celestial bodies. Eventually, this registry could be expanded to

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govern the use of land on celestial bodies regardless of the nature of such use, including other commercial operations or even residential housing.

I. INTRODUCTION: THE REGISTRY

This article is inspired by, and builds upon, the work of the Hague International Space Resources Governance Working Group. Over the past four years, the Working Group has crafted *Building Blocks for the Development of an International Framework on Space Resource Activities*. The purpose of the International Framework is stated in the first Building Block (hereinafter BB):¹

The international framework should create an enabling environment for space resource activities that takes into account all interests and benefits all countries and humankind.

To paraphrase, the framework should be designed to (1) enable space resource activity, (2) ensure space actors take into account the interests of other countries, and (sd3) benefit all countries (and humankind, in general). The first requirement to “take into account” the interests of all countries is rooted in Article IX of the Outer Space Treaty which requires that states act “with due regard to the corresponding interests” of other states – which will, as we will see, turn out to be the legal principle that is most critical to the peaceful and orderly extraction of space resources.

The core mechanism in the Building Blocks for achieving these goals is the creation of “a publicly available international registry for registering priority rights of an operator.”² The nature and operation of this registry is further described in BB 7:³

The international framework should enable the attribution of priority rights to an operator to search for and/or recover space resources for a maximum period of time and a maximum area upon registration in an international registry, and provide for the international recognition of such priority rights. The attribution, duration, and the area of the priority right should be determined on the basis of the specific circumstances of a proposed space resource activity.

Finally, Building Block 14 calls for a system that will encourage (or compel) states to “register priority rights of an operator to search and recover space resources.” Convincing space agencies and private actors to register their

1 Hague International Space Resources Governance Working Group. *Building Blocks for the Development of an International Framework on Space Resource Activities*, 1.1. available at www.universiteitleiden.nl/en/law/institute-of-public-law/institute-of-air-space-law/the-hague-space-resources-governance-working-group [hereinafter BB].

2 BB 18.

3 BB 7. This is reiterated in BB 14 which calls for “[the registration of] priority rights of an operator to search and/or recover space resources in accordance with the international framework.” Similarly, BB 18 calls for the creation of “a publicly available international registry for registering priority rights of an operator.”

activities is one of the primary challenges to the success of the Building Blocks. One way to convince is by enacting binding law. Another may be to convince operators that the use of the registry will benefit them. This method will be the only method available if no hard law is adopted.

The Building Blocks make clear that the “priority rights” arise upon registration. The exact nature of these priority rights is not articulated except to say that the parameters of priority rights will vary. The area subject to priority rights will vary from project to project – as will the length of time that such priority rights can be enforced. For example, the priority rights granted over scarce and highly valuable patches of lunar ice may tend to be smaller in size depending on the number of operators that are seeking to harvest the ice. In another example, the length of a priority right to mine a particular near-Earth asteroid may be a hundred years long if the given asteroid has a highly elliptical orbit that only occasionally brings the asteroid sufficiently close to the Earth for mining to occur.

It should be mentioned here that Building Block 7 also asserts the necessity for the international recognition of priority rights so that an international system of governance with respect to resource activity can take root. If a treaty-based system were developed, such recognition of priority rights by all parties to the treaty would be one of the treaty obligations. In the absence of a treaty, the mutual recognition of priority rights granted under the domestic law of another state could be established in the domestic laws of space-faring countries.

II. THE INTERNATIONAL DATABASE

In addition to the registry, the Building Blocks also call for the creation of an “international database” that would make the following information about space resource activities available to the public:⁴

- *Advance notifications of space resource activities, including any area-based safety measures;*
- *Information and best practices;*
- *The list of designated and internationally endorsed outer space natural and cultural heritage sites;*
- *The list of designated and internationally endorsed sites of scientific interest;*
- *Information and best practices on the prior authorization and continuing supervision of space resource activities for which States and international organizations are responsible; and*
- *Notifications of the termination of space resource activities for which States and international organizations are responsible.*

4 BB 18(b).

I will argue below that much of this information destined for the database should instead be included in the registry. In particular, the registry should carry information regarding (1) planned space resource activities, (2) the termination of such activities and (3) the location of sites of scientific interest and cultural (or historical) value. All of this information will be of critical importance to a prospective actor who is searching the registry in order to understand the nature of existing or planned activity and to be informed of any sites of scientific or historical value that may be in the vicinity of such actor's planned activities.

III. IS AN EXPLICIT GRANT OF PRIORITY NECESSARY?

The purpose of the registry is to put the world on notice of already existing, or soon to be coming, space resource activities (as well as of sites of significant scientific or historical interest). But let us take that a step further. Does the act of registration result in something more than just the provision of notice? In other words, what is the legal effect of registration? The answer to this question is clear in the Building Blocks: "priority rights" arise upon registration.

In contrast to the approach of the Building Blocks, my proposal argues that the creation of a new priority right is not necessary for the operation of the registry. Even without the explicit grant of a priority right, the operation of the registry, in conjunction with the existing duty to operate "with due regard of the corresponding interests" of other states and to undertake "appropriate international consultations" if there is the potential for harmful interference, will lead to the same result as an explicit grant of priority.⁵ The world will be put on notice of the existing activity and that existing activity will be protected from interference under existing international space law.⁶

Even in light of the foregoing, new law likely *would* be necessary in order to create any novel rights or obligations that spring from the operation of the registry. For example, the placing of time and area limitations on the right to operate, the grant of future priority rights that would come into force upon the expiration of the previous priority rights, and the grant of a formal priority right in the first place.

5 OST art. IX.

6 Some commentators point out that harmful interference is not prohibited by the OST – the only obligation being to commence consultations if such interference is likely. They may be right about this, depending on your interpretation of the treaty, but even if the OST does not prohibit harmful interference, general international law surely does.

IV. A PROPOSAL

My proposal for the nature of a registry builds on the Building Blocks (although my proposal does diverge from the Building Blocks in certain respects). I also draw from three existing examples of space-related registries provide helpful precedents for the creation of a registry of space resource activity: the United Nations Register of Objects Launched into Outer Space (UN Register), the registry created by the Convention on International Interests in Mobile Equipment (Cape Town Convention or CTC Registry), and the ITU Master International Frequency Register (ITU Register). The following bullet points describe the main features of my proposed registry:

- The registry would be available to the public online.⁷
- Each filing would contain the following information:⁸
 - Name and nationality of operator
 - Name of authorizing state
 - Location of the activity
 - Nature of the activity⁹
 - Duration of the activity
- The registry would be indexed and searchable by location (by latitude/longitude or other appropriate cartographical parameters). A search would produce any filings made in proximity to the location searched.
- Sites of significant historical and scientific interest could be filed in order to protect such sites.¹⁰

7 This is in accordance with BB 17 and also follows the examples of the UN Register, the CTC Registry, and the ITU Master Register (by way of the Space Network System Database).

8 In this sense, the registry would resemble the UN Register which provides information about the location and function of the registered space objects.

9 Generic descriptions of activity such as “government activity” would not be sufficient. Enough information is required to enable other actors to avoid interference and avoid their own injury.

10 Pursuant to the Building Blocks, information about natural and cultural heritage sites as well as sites of scientific interest would be made available to the public through an online repository that is separate from the registry. I believe that these sites must be placed on the registry just as space resource activity so that prospective operators will be made aware of any such protected sites when planning operations. An example of such “public interest” filings can be found in the Cape Town Convention Registry, which, under Article 40, allows states to make a declaration listing categories of non-consensual rights and interests that can be registered just like an international interest and, as a registered interest, can take advantage of the priority rules as if it were an international interest. An international process for identifying such heritage and scientific sites would have to be developed.

As I mention above, under the Building Blocks, some of these items of information are to be included in the database, rather than in the registry. However, my proposal moves these items to the registry because they are critical for the successful operation of the registry, which is explored in following section.

V. HOW THE REGISTRY WORKS

The operation of the registry would be similar to the coordination process used in the operation of the ITU Master Register.

When the space resource registry opens, those companies that are already operating on the Moon (or other celestial bodies) would register their activity. The Apollo landing sites will be among the first sites of cultural heritage to be registered. The first sites of natural heritage and scientific interest will also be registered.

After some time, other operators will develop plans to operate on celestial bodies. When a potential extraction site has been identified, these new operators will search the registry by inputting the location of the potential site. The result of the search would be a map of the location and the surrounding area. The user could zoom in or out of the map. On the map, the user will see any sites that have already been registered. If there is an existing operator in the vicinity of the potential location, the new operator would have to make a decision. Can the new company operate without harmfully interfering with the existing operator? In order to make this decision, the new operator will have to consider the nature of the existing operations in relation to the new operator's prospective activities. To learn about the existing operations, the new operator would simply click on the location of the existing operator – opening up a window containing information about the nature of the existing operations.

In light of this information about the existing operation in the vicinity, the new operator can make one of three choices: (1) if interference was certain, choose a new location, (2) if interference is highly unlikely, file a prospective application, or (3) if there is a possibility of interference, but also a possibility that the two operations could coexist (perhaps with some modification to either party's operations), consult with the existing operator and make necessary adjustments. After consultations, the new operator will decide whether it should (1) file under existing circumstances, (2) make adjustments to the planned operations and then file, or (3) choose a new location and start the process over.

When the new operator files its registration application, a notice will go out to all operators in the vicinity of the proposed activities. Any existing operators would have a right to object to the proposed activities in the filing. Any objections would trigger consultations. The parties would either come to

an agreement and make any necessary adjustments to their operations or they would fail to reach an agreement.

If there is a failure to reach agreement, then the new operator could choose to withdraw its application – or else risk liability for damage under existing space law, i.e. the Liability Convention.¹¹

Once a new operator has been registered, it will have the security that licensees on the ITU Master Register have: a guarantee that future operators will not be permitted to interfere with their operations. This could be achieved merely through the existing principle of due regard and the duty to consult. Alternatively, this new legal landscape could take the form of a new treaty, new domestic laws, new soft law – or, most likely, a combination of all three.

At a bare minimum, even a voluntary registry administered by a nonprofit could provide the necessary framework to facilitate the operation of existing law. The broad adoption of the voluntary registry is the most important goal. As its use becomes customary, the registry eventually serve as the de facto framework for resolving conflicts between space resource operations.

But why stop there? Why create a land use registry only for mining? As the first permanent human settlement on the Moon takes shape, the use of land will be varied. Some parcels will be used for mining and the processing of resources. Other parcels will be residential, others scientific, and yet others will be commercial in nature – including stores and services of all types.

Let us not go through the great effort of creating a registry merely for mining. Let us create a *general* land use registry that gives regulatory certainty to space agencies and private actors as they lay plans to settle the Moon and Mars.

A roadmap for creating a general land use registry for the solar system can be found in *Set the Controls for the Heart of the Moon* (forthcoming in the Georgia Journal of International and Comparative Law).¹²

References

Hague International Space Resources Governance Working Group. Building Blocks for the Development of an International Framework on Space Resource Activities, available at www.universiteitleiden.nl/en/law/institute-of-public-law/institute-of-air-space-law/the-hague-space-resources-governance-working-group.

Agreement Governing Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979, 1363 U.N.T.S. 3.

11 Alternatively, if the proper administrative structure were put in place, the registrar could make an adjudication to either accept or reject the application.

12 Mark J. Sundahl & Jeffrey Murphy, *Set the Controls for the Heart of the Moon*, Georgia J. of Int'l & Comp. Law (forthcoming 2020).

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