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Israel-Florida Space Cooperation Agreement: A Hybrid Model of International Cooperation

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ISRAEL-FLORIDA SPACE COOPERATION AGREEMENT: A HYBRID MODEL OF INTERNATIONAL COOPERATION

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ABSTRACT

In 2014, Florida and Israel launched the Innovation Partnership Program under an agreement for international cooperation. This agreement and the hybrid cooperation model it uses is the subject of this paper. International cooperation is a mantra in the space community, a basic norm and a practical necessity. However, there are numerous constraints *en route* to international cooperation in space activities. At the same time, carefully crafted cooperation models assist in overcoming barriers to international cooperation and, therefore, analysis of the various possible models enables actors to employ feasible and efficient models of cooperation. Recognizing the importance of such an investigation, the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) has established a working group tasked with the review of international mechanisms for cooperation in space activities. A common cooperation model is cooperation between national space agencies for the execution of a common project, at times under the auspices of an intergovernmental organization such as the European Space Agency (ESA). Another common model is cooperation between commercial entities. This paper presents a hybrid model for international cooperation, one in which governments cooperate to support commercial, business-to-business cooperation. The model is presented using the case of the agreement between Florida and Israel, which has already successfully concluded four rounds of funding and the launch of 15 joint commercial projects. In the case study, Florida and Israel both support joint projects of Florida and Israeli

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corporations, resulting in a steadily growing number of corporations from each jurisdiction seeking to cooperate with corporations from the other. This paper presents the rationale, goals, means, and modes of this cooperation model, as well as the results of its implementation so far. The paper concludes that the success of the model calls for its adoption alongside the regular models of cooperation.

I. INTRODUCTION

International cooperation in space activities is a basic principle in space law and arguably a legal duty. The principle of international cooperation was introduced in the first instrument on space law - a 1958 United Nations General Assembly (UNGA) resolution¹ - and in practically every subsequent instrument, including the five UN space treaties,² the annual UNGA resolutions on space issues - most of which are titled "International Co-operation in the Peaceful Uses of Outer Space"³ - and the 1996 UNGA Declaration on International Cooperation⁴. Article I of the 1967 Outer Space Treaty⁵ provides that States shall facilitate and encourage international co-operation in scientific investigation in outer space, and as Wolfrum noted, it elevates the norm of international cooperation in space activities to a legal duty.⁶

International cooperation is also a practical need, due to the technological challenges and financial risks involved in space activities. Developing a space industrial base requires having, or having access to, technological capacity, development tools, infrastructure, advanced industrial base and significant financing. For most countries, this can be achieved only by pooling resources across national borders.

¹ U.N. GAOR, 13th Sess., 792 plen. mtg. at 1348 (XIII), U.N. Doc. A/13/PV. 792 (Dec. 13, 1958).

² *Space Law Treaties and Principles*, U.N. OFF. FOR OUTER SPACE AFF., <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html> (last visited Dec. 17, 2018).

³ *Space Law: Resolutions*, U.N. OFF. FOR OUTER SPACE AFFAIRS (Feb. 16, 2015), <http://www.unoosa.org/oosa/en/SpaceLaw/gares/index.html> (last visited Dec. 17, 2018).

⁴ G.A. Res. 51/122 (Dec. 13, 1996).

⁵ Treaty Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

⁶ See Rüdiger Wolfrum, *International Law of Cooperation*, in MAX PLANCK ENCYC. OF PUB. INT'L L. (Oxford Pub. Int'l L. ed. 2010) available at, <http://opil.ouplaw.com/home/epil>.

However, cooperation in a decentralized international society is not easily achieved. Moreover, international cooperation in space activities has its own unique difficulties, mainly involving the dual-use nature of most of the technologies and products. This makes export controls a serious barrier to cooperation. Carefully tailored cooperation agreements assist in overcoming numerous barriers to international cooperation.⁷ Considering the importance of international cooperation and the barriers to its achievement, it logically follows that research is necessary to determine how to best achieve cooperation under the current constraints. Within this research, the investigation of cooperation strategies is essential to the design of feasible and efficient models of cooperation. The investigation of various approaches to cooperation is the sole task of a special working group established in 2013 by the Legal Subcommittee of the United Nations Committee on Peaceful Uses of Outer Space (COPUOS).⁸

This paper contributes to the investigation of cooperation strategies and search for feasible and efficient models of cooperation by presenting a hybrid model of international cooperation as used in the Florida–Israel cooperation agreement. The first section introduces the hybrid model, the second and third sections review the Florida–Israel cooperation agreement, and the fourth describes the results of its implementation to date, including the completion of four rounds of funding and initiation of fifteen commercial projects, each a joint venture of corporations from Florida and Israel. The fifth section places the hybrid model in the wider context of promoting international cooperation and, based on Institutional Analysis, suggests that large-scale international cooperation can be achieved through numerous instances of small-scale cooperation.

II. THE HYBRID MODEL FOR INTERNATIONAL COOPERATION

A common model of international cooperation in space activities is cooperation between governments, often through their space agencies, and at times under the auspices of an intergovernmental organization such as the European Space Agency (ESA). Another

⁷ Yun Zhao, *The Role of Bilateral and Multilateral Agreements in International Space Cooperation*, 36 SPACE POLICY 12 (2016).

⁸ Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal Subcomm. on Its Fifty-Second Session, 23 U.N. Doc. A/AC.105/1045 (2013).

common model, especially in the satellite-based telecommunication sector, is an almost purely commercial cooperation between commercial entities. A hybrid model is one in which two or more governments support international business-to-business (B2B) cooperation on a joint project. Such joint projects may be initiated by the governments, which may include matching relevant corporations, or by the corporations themselves. Unlike in the case of national space activities, the goal of such joint projects is not necessarily national interest but more often profit—or even the realization of a personal vision, as is the case with certain billionaire entrepreneurs.⁹ In contrast to a purely commercial cooperation, under the hybrid model the States or nations within which the cooperating corporations are operating support the cooperation, notably by providing financial support. This hybrid model is exemplified by the case of the agreement between Florida and Israel.

III. THE FLORIDA–ISRAEL INNOVATION PARTNERSHIP PROGRAM

In October 2013, national authorities from the state of Florida and the State of Israel signed an agreement¹⁰ establishing the Florida–Israel Innovation Partnership Program. The program was formally launched in January 2014 at the occasion of the ninth Ilan Ramon Annual International Space Conference in Herzliya, Israel.¹¹

⁹ For example, Elon Musk's SpaceX, Jeff Bezos' Blue Origin, Sir Richard Branson's Virgin Galactic, and Robert T. Bigelow's Bigelow Aerospace.

¹⁰ Cooperation Agreement for Promotion of Industrial Research and Development, Space Florida and MATIMOP–Israeli Industry Center for R&D. (Oct. 22, 2013) (unpublished agreement) (on file with the Journal of Space Law) [hereinafter Space Florida–MATIMOP Agreement].

¹¹ *9th Ilan Ramon Annual International Space Conference*, Isr. Min. of Foreign Affairs (Oct. 1, 2014), <https://mfa.gov.il/MFA/InnovativeIsrael/Conferences/Pages/9th-Annual-International-Ilan-Ramon-Space-Conference-Jan-2014.aspx>; Frank Dibello, *Space Florida - A Model for Space Entrepreneurship and Collaboration of Industry and State*, Ilan Ramon Annual Int'l Space Conference (Jan. 29-30, 2014).

*A. The Contracting National Authorities**i. Space Florida*

Space Florida is the spaceport authority and aerospace economic development agency for the state of Florida.¹² Space Florida was established by a 2006 act of the Florida legislature¹³ (the “Space Florida Act”) with a view “to foster the growth and development of a sustainable and world-leading aerospace industry in [the] state.”¹⁴ Legally defined as “an independent special district, a body politic and corporate, and a subdivision of the state”¹⁵, Space Florida operates independently from the government of Florida with an independent board of directors.¹⁶ Besides providing independence, the special status bestows Space Florida with a wide range of special powers and tools, including tax benefits, to promote its stipulated goals.

The state of Florida is home to a significant portion of US space installations and activities. These include the Kennedy Space Center, which was used for the Apollo manned moon landing missions and all space shuttle launches; the Cape Canaveral Air Force Station, an installation of the United States Air Force Space Command’s 45th Space Wing; and the Center for the Advancement of Science in Space (CASIS) -the sole manager of the International Space Station U.S. National Laboratory.¹⁷ NASA’s retirement of the space shuttle program in 2011 after 30 years of service affected the jobs of 9,135 people.¹⁸ Space Florida was established after the cessation of the program, in recognition of the need to increase the role of the private sector in the space industry, in order to maintain, if not increase, the capacity of the space sector in Florida and provide new jobs to replace the lost ones. For this purpose, Space Florida is promoting the commercial space industry in the state of Florida by, among other things, consulting, granting access to infra-

¹² See SPACE FLORIDA, <http://www.spaceflorida.gov> (last visited Dec. 17, 2018).

¹³ Space Florida Act, Fla. Stat. § XXV.331.302 (2006).

¹⁴ See *id.* at § XXV.331.305.

¹⁵ See *id.*

¹⁶ Florida-Israel Innovation Program, *Information Day and Project Generation Workshop* (Feb. 2, 2014) (unpublished workshop) (on file with the Journal of Space Law).

¹⁷ See ISS – U.S. NAT’L LAB., <http://www.iss-casis.org> (last visited Dec. 17, 2018).

¹⁸ Dibello, *supra* note 11.

structure and resources, arranging financial incentives, and providing startup and relocation support for private companies in the space sector.¹⁹

ii. The Israel Innovation Authority

The Israel Innovation Authority (IIA)²⁰, formerly known as the Office of the Chief Scientist of the Israeli Ministry of Economy and Industry,²¹ promotes industrial research and development (R&D) under the Encouragement of Industrial Research and Development Act, 1984.²² The IIA “is Israel’s central agency to manage the country’s governmental support of the resource of innovation... created to maintain Israel’s position at the forefront of global innovation and to elevate the entire economy through technological innovation.”²³ The IIA strives to enhance the development of science-based industry in Israel by utilizing and expanding the country’s existing technological and academic infrastructure.²⁴ Israel has an established space program, having completed its first launch in 1988, and has recently put an emphasis on the commercial sector with regard to space. Under the new Israeli Civil Space Program of 2012, the IIA has started to support R&D in the space sector as well. In late 2013 the IIA introduced a framework program, to support space-related R&D in Israel²⁵ A framework program is a program established by a government, a governmental agency, or a consortium thereof to encourage and support industrial R&D by providing funding to R&D projects with the purpose of boosting economic

¹⁹ See SPACE FLORIDA, *supra* note 12.

²⁰ See ISR. INNOVATION AUTH., <https://innovationisrael.org.il/en/> (last visited Dec. 17, 2018).

²¹ *Israel Innovation Authority Announces Record Response to Call for Projects*, SPACE FLORIDA (Mar. 5, 2019), <https://www.spaceflorida.gov/news/space-florida-israel-innovation-authority-announce-record-response-to-call-for-projects/>.

²² See Encouragement of Industrial Research and Development Law, 5744-1984 (2005) (as amended) (Isr.), available at http://economy.gov.il/Legislation/Laws/Legislation_Links/T001.pdf.

²³ *Space Florida and Israel Innovation Authority Announce Fourth Round Winners of Innovation Partner Funding*, SPACE FLORIDA (July 13, 2017), <http://spaceflorida.com/news/viewpr.html?pid=51031>.

²⁴ Eytan Tepper, *New Israeli Civil Space Policy to Boost R&D and Commercial Space Industrial Base*, 2(1) NEW SPACE 1, 1-7 (2014).

²⁵ See *id.*

growth.²⁶ Framework programs implemented in Israel have two types: (i) a program that supports a domestic corporation to perform R&D domestically and (ii) a program that supports R&D performed in cooperation with foreign entities. The Florida-Israel program is the first framework program the IIA has introduced that emphasizes and promotes international cooperation in space-related R&D. The international department of the IIA, formerly known as the Israeli Industry Center for R&D (MATIMOP),²⁷ implements the Florida-Israel Innovation Partnership Program.

The Israeli experience over the last thirty years with such framework programs providing support for industrial R&D has been highly positive, as demonstrated by a 2008 study commissioned by the Israeli Ministry of Finance and the IIA.²⁸ The study showed that these framework programs have had positive economic effects for the participating corporations, the industry, and the Israeli economy as a whole; it found that the total return on government support for the Israeli economy as a whole ranged from 475% to 751%. This figure represents private investment that followed government investment and R&D spillover - the spread of knowledge in the industry.²⁹ There was a clear excess return to the economy as a whole that went far beyond the return for the researching firms.

²⁶ One famous such framework program is the EU's "Horizon 2020 Program." For more information on this program and the history of framework programs in the EU and their effects, see Ben Deighton, *The Scale of Horizon 2020 is a Vote of Confidence for Research*, HORIZON MAGAZINE (Mar. 2015) (on file with the Journal of Space Law).

²⁷ MATIMOP, the Israeli Industry Center for R&D, is the executive agency of the Office of the Chief Scientist. MATIMOP is responsible for promoting industrial R&D cooperation between Israeli and foreign corporations and implements international agreements between Israel and other States for industrial and technological cooperation. See ISR. INNOVATION AUTH., <https://innovationisrael.org.il/en/program/kird-karnataka-india-israel-industrial-rd-program> (last visited Dec. 17, 2018).

²⁸ Shaul Lach, Shlomi Prizat & Daniel Wertak, *The Effect of Government Support for Industrial R&D on the Israeli Economy*, translated by Eytan Tepper ISRAELI MIN. OF FIN. & THE OFF. OF CHIEF SCIENTIST IN THE MIN. OF INDUSTRY, TRADE & LABOR (June 2008).

²⁹ See Graziola Giancarlo, Cristini Annalisa, & Di Ciaccio Simona, *The Importance of the Technological Spillovers for the Returns to Space Investments, with an Empirical Application to the Italian High-Tech and Space Sectors*, 3 NEW SPACE Vol. 3, No. 3: 179-190 (Sept. 2015).

B. The Florida-Israel Cooperation Agreement

The Cooperation Agreement for Promotion of Industrial Research and Development was signed in Florida by Space Florida and MATIMOP on behalf of the governments of Florida and Israel, respectively.³⁰ The vision of the agreement is cooperation based on the principles of equality and reciprocity to encourage taking advantage of the opportunities generated by technical and scientific advances in industrial R&D to develop new products, applications, or processes that can be commercialized in the global market.

Each partner government has committed to provide US\$1 million a year for financial support of the partnership program.³¹ The agreement states that it is nonexclusive and that each party has the right to enter into similar agreements with other governments.

C. Scope of Cooperation

i. In General

Under the agreement, Space Florida and the IIA undertake to work together and to take the following actions:³²

- Identify areas of mutual interest;
- Identify existing national and international programs for supporting and facilitating access to financing opportunities for joint industrial R&D projects;
- Identify specific projects, partnerships, or collaborations that could lead to industrial R&D cooperation;

³⁰ Space Florida-MATIMOP Agreement, *supra* note 10.

³¹ The Florida legislature has allocated its contribution. Israel has not allocated a special budget for the program, but committed to allocate the same amount from the general budget of the IIA. See Florida-Israel Innovation Program, *supra* note 16; Space Florida-Israel Innovation Partnership Aerospace Track-Request for Proposals, RFP-SF-38-0-2014/BM, released Dec. 6, 2013 (on file with the Journal of Space Law) [hereinafter 1st Call for Projects]; Call for Projects for the Florida-Israel Innovation Partnership, Aerospace Track & R&D Aerospace Grant, released Oct. 29, 2014 (on file with the Journal of Space Law) [hereinafter 2nd Call for Projects]; Call for Projects 2016 for the Florida-Israel Innovation Partnership, Aerospace Track & R&D Aerospace Grant Application, released Oct. 29, 2014 (on file with the Journal of Space Law) [hereinafter 3rd Call for Projects].

³² See Florida-Israel Innovation Program, *supra* note 16.

- Stimulate contacts and facilitate the exchange of technical information and expertise;
- Identify and match corporations in Florida and Israel to cooperate in space-related industrial R&D;
- Organize workshops, seminars, and meetings for corporations from both sides to promote the knowledge and use of the framework program;
- Form a work plan and establish procedures for cooperation;
- Hold joint meetings and review the progress of the cooperation under the agreement.

The two important tools provided by the agreement to accomplish these goals are the matchmaking services and the financial support through periodic calls for projects, which provide the main support and incentive for private companies in each state to cooperate with companies from the other state.

ii. The Matchmaking Services

Both Space Florida and the IIA offer matchmaking service by which they assist corporations from Florida and Israel in finding potential corporate partners in the other state for cooperation on a joint project, including submission of a joint application for support under the program. Both Space Florida and the IIA hold or have access to a database of technology corporations in their respective jurisdictions. The IIA maintains a database of Israeli technology corporations, and it regularly provides matching services for both Israeli and foreign corporations seeking international partners. Space Florida has access to commercial databases that can assist in identifying potential partner corporations from Florida.³³

iii. The Annual Call for Projects

Space Florida and the IIA jointly release an annual call for projects inviting corporations from Florida and Israel to initiate and to apply for financial support of joint projects. The goal of a call for

³³ See *id.*

projects is to stimulate the generation and development of new or significantly improved products or processes for commercialization in the global marketplace,³⁴ particularly within specific technological subfields of the space industry. The available funds are an incentive for corporations from Florida and Israel to form partnerships to pursue such projects.

So far five calls for projects have been put out and resulted in financial awards. The next subsections present the common features of all the calls for projects released to date. Section 4 reviews the outcome of four calls for projects already concluded and evaluates the success of the program to date. The financial support mechanism, the heart of the Florida-Israel Innovation Partnership Program, will be discussed in the following two sections.

IV. THE FRAMEWORK FOR FINANCIAL SUPPORT

A. The Annual Call for Projects

The call for projects invite companies to form project-specific partnerships and submit joint applications for support. The incentive is clear and substantial: for approved projects, each authority will provide financial support to the partner corporation in its jurisdiction. Each of the five calls for projects issued so far have combined available funds of \$2,000,000.³⁵

B. Eligibility to Apply

i. Eligibility of Applicants

All four calls for projects have set general terms of eligibility:³⁶

³⁴ See Florida-Israel Innovation Program, *supra* note 16. See also Call for Projects for the Space Florida-Israel Innovation Partnership Aerospace Track & R&D Aerospace Grant Application Process, released Aug. 30, 2017 (on file with the Journal of Space Law) [hereinafter 5th Call for Projects]; Call for Projects for the Space Florida-Israel Innovation Partnership Aerospace Track & R&D Aerospace Grant Application, released Aug. 2, 2016 (on file with the Journal of Space Law) [hereinafter 4th Call For Projects]; 3rd Call for Projects, *supra* note 31; 2nd Call for Projects, *supra* note 31; 1st Call for Projects, *supra* note 31.

³⁵ See *id.*

³⁶ See *id.*

□ **Residency in Florida/Israel:** an application must be submitted jointly by a corporation from Florida and a corporation from Israel for the execution of a joint project. For a corporation to be considered a Florida company, it must be a for-profit corporation or limited liability company with three out of four of the following activities located in Florida: headquarters, R&D, sales and marketing, and manufacturing; for a corporation to be considered an eligible Israeli company it must be a company registered and operating in Israel.

□ **For-profit projects:** applications may be submitted only by partnerships consisting of at least one for-profit corporation from Florida and one for-profit Israeli corporation. This limitation renders the whole program a framework for commercial B2B cooperation. Space agencies, academic institutions, and other not-for-profit organizations are not eligible to apply. The promotion of commercial activities is the exclusive focus. Nevertheless, academia-industry cooperation is welcomed; an eligible pair of for-profit companies may involve research institutions and universities as subcontractors, in accordance with each jurisdiction's funding regulations. This enables the joint projects to benefit from academic resources such as knowledge, especially in basic research, and infrastructure.

□ **Collaboration of independent parties:** joint projects in which one of the partner corporations is a wholly owned subsidiary or joint venture of the other corporation are not eligible. Projects in which one of the applying partner corporations has a nominal equity position in or a contractual business relationship with the other corporation (for example, distributor in its jurisdiction of the products of the corporation from the other jurisdiction) will be considered so long as the relationship is fully disclosed in the application.

ii. Eligibility of Projects

In all five calls for projects, the technological fields in which participants were particularly encouraged to propose projects were:³⁷ satellite communications; small satellites and small launch vehicles; sensors for space research/applications including bio-sensors; biosensors for space research; nanomaterials and coatings for

³⁷ See *id.*

space applications; electric power resources and solutions for space applications; microgravity research related to human life sciences; unmanned aerial vehicles and systems; nanoelectronics, flex electronics, and low-power electronics; and micro- and nanorobotics technologies. Other aerospace-related research projects can, however, qualify for support.

C. Selection of Projects

i. Criteria for Selection

After submission, projects are evaluated according to the following criteria:³⁸

- **Technical merit:** the significance of the problem or opportunity, the degree of innovation or novelty of the technology, and the technical feasibility of the proposed application;
- **Commercial merit:** the size of the potential market for the product, the extent to which the need for the product or process can be validated, and the potential disruptiveness of the technology to be developed;
- **Ability to carry out the proposed research successfully:** the soundness of the approach and the work plan, the adequacy of the management plan, the qualifications of key members of the research team, and the strength of the partnership and compatibility between the corporations from Florida and Israel;
- **Ability of project participants to commercialize resulting technology successfully:** the current position of each partner in the market, the adequacy of the commercialization plan, and the ability to secure the needed financing.

In addition to the above criteria commonly used by Space Florida and the IIA, Space Florida also considers the “potential economic benefit” for the partners and for the Florida economy, including: the benefit to the corporations and organizations participating in the project, the expected number of jobs to be created or retained, the locations where the project’s work will be conducted, and the

³⁸ See *id.*

expected overall economic impact of the project. Each of the four common criteria and the one additional criterion will be evaluated by Space Florida with weights of 20% for each criterion.³⁹

In addition to the above common criteria, the IIA will also consider the added value of the international cooperation, including: access to expertise, the use of infrastructures and development tools not easily available in Israel, the use of outcomes of R&D made by the Florida partner, the business and commercial prospects of the technological cooperation, and sharing of the R&D risk. No weights are allocated to these criteria.⁴⁰

The IIA operates numerous framework programs for support of industrial R&D and has a long established, tested and mature set of selection criteria and procedure, which it regularly employs in its evaluation of projects applying for support. These criteria are used in conjunction with the above criteria, which share the same basic principles. These across-the-board criteria are: innovation, commercialization, team, financial stability and potential market.⁴¹

ii. Evaluation and Selection

In order for a project to be awarded financial support, it needs to be approved by both authorities. Each application undergoes an initial evaluation separately and independently by Space Florida and the IIA. Subsequently, both authorities mutually decide whether an application is accepted for an award. Notwithstanding the independent procedure in each state, Space Florida and the IIA work in close cooperation and constant interaction. Their decisions are coordinated in such a way that approval of a project by one government and rejection by the other, though possible, is unlikely.⁴²

³⁹ See *id.*

⁴⁰ See *id.*

⁴¹ See Florida-Israel Innovation Program, *supra* note 31; Interview with Israel Shamay, Executive Director, Strategic Initiatives, Head of the Americas Operations at MATIMOP, Israeli Industry Center for R&D (Aug. 24, 2015). The across-the-board criteria are available at *The Processing Stages of an Application Criteria for Evaluation of Applications* (Isr.), ISR. INNOVATION AUTH., (Mar. 6, 2019), <https://innovationisrael.org.il/programprocess/evaluationcriteria>.

⁴² Interview with Israel Shamay, *supra* note 41; Interview with Liron Eldar, Manager - North American Desk at MATIMOP, Israeli Industry Center for R&D (Dec. 29, 2014).

D. Scope of Support

Each selected project is awarded funds from both Space Florida and the IIA. Space Florida provides funding directly to the Florida corporation, and the IIA provides funding directly to the Israeli corporation, each working according to the laws and regulations applicable in its jurisdiction.

The framework program has an initial span of five years with a budget of \$1,000,000 a year from each government, meaning \$2,000,000 available funds annually.⁴³ The program was granted approval for a five-year recurring appropriation from the Florida legislature during the 2013 legislative session. Barring unforeseen circumstances, Space Florida will be appropriated US \$1,000,000 annually in fiscal years 2014–2018 to provide funding to eligible Florida corporations. The IIA has committed to make available a similar amount for funding Israeli corporations out of its regular budget.⁴⁴

i. Funding for Florida Corporations

The maximum grant to be provided by Space Florida for a single project over the lifetime of the project will not exceed \$500,000 and must constitute no more than half of the approved R&D expenditure for the project. The corporation's matching contribution to the budget may consist of any combination of equipment, services, or money.

ii. Funding for Israeli Corporations

The grant provided by the IIA will be at least 20% and no more than 50% of the approved R&D expenditure for the project. The support is given only for R&D costs and not for costs associated with production and marketing. The exact percentage of support (between 20% and 50%) is decided on a case-by-case basis. The same criteria used for the evaluation of a project are used for deciding the extent of the funding.⁴⁵ The better the project fits the general goals of the IIA, the greater the percentage.

⁴³ Interview with Israel Shamay, *supra* note 41.

⁴⁴ Florida-Israel Innovation Program, *supra* note 16; Interview with Liron Eldar, *supra* note 42.

⁴⁵ Interview with Liron Eldar, *supra* note 42.

iii. Duration of Support

Support is limited to projects with durations of up to two years. Whenever a project is planned to require more than one year, a progress review is held at the end of the first year. The review includes milestones and deliverables showing that significant progress has been made during the first year.

iv. Final Report

A final report is due at the end of the project, and it should provide an account of what was accomplished with the grant funds.⁴⁶

E. Intellectual Property Allocation

The issue of intellectual property (IP) rights is of interest to Space Florida and the IIA, each wishing to increase the local IP reservoir. For this reason, applications for support must include a draft of a cooperation agreement (an outline of which is provided in the appendices to the call for projects) that addresses R&D, IP rights, and commercialization strategy.⁴⁷ The allocation of IP rights, as specified in the cooperation agreement, is also evaluated by each authority.

Space Florida did not announce a specific policy regarding IP on technologies developed during supported projects, and cooperation agreements will be evaluated on a case-by-case basis.⁴⁸

The IIA has a structured policy on the issue of IP rights and usage. In a domestic framework program, transferring knowledge or production outside of Israel requires approval of the IIA and payment of extended royalties. A program involving international cooperation has different stipulations: transfer of knowledge is possible if the agreement between the Israeli corporation and the Florida corporation is balanced and fair. An agreement would be considered balanced and fair if it is based on the following principles:

⁴⁶ See 4th Call for Projects, *supra* note 34; 3rd Call for Projects, *supra* note 31; 2nd Call for Projects, *supra* note 31; 1st Call for Projects, *supra* note 31.

⁴⁷ *Id.*

⁴⁸ Interview with Liron Eldar, *supra* note 42.

- Knowledge developed by one of the parties will be exclusively owned by the developer, but the other party will have an unlimited license to use the knowledge;
- Knowledge developed jointly by both parties will be jointly owned by both, and both parties will have an unlimited license to use it;
- Division of markets, if decided, will be based on geographic considerations.

Cooperation agreements will be evaluated on a case-by-case basis, and it is possible that agreements that diverge from these principles will be approved if they are nonetheless considered balanced and fair, having adequate compensation for each diversion.

F. Export Controls

Space products are mostly dual-use,⁴⁹ and therefore export to third countries of products or technologies generated through the program is subject to export control regulations. Export of such products or technologies from the US must conform with the International Traffic in Arms Regulations (ITAR).⁵⁰ Export of space products from Israel requires approval of the Defense Export Controls Agency (DECA).⁵¹ The procedure for obtaining such an approval involves a committee in which the Israeli space industry is represented, along with representatives from the Ministry of Defense. The process of obtaining a license under ITAR takes, on average, less than two months⁵² and the process for obtaining DECA

⁴⁹ A good definition of dual-use items is given by the European Commission: "Dual-use items are goods, software and technology that can be used for both civilian and military applications. The EU controls the export, transit and brokering of dual-use items so the EU can contribute to international peace and security and prevent the proliferation of Weapons of Mass Destruction (WMD)." *Dual-use Trade Controls*, EUROPEAN COMM., <http://ec.europa.eu/trade/import-and-export-rules/export-from-eu/dual-use-controls/> (last visited Dec. 17, 2018).

⁵⁰ See *The International Traffic in Arms Regulations*, U.S. DEP'T OF STATE – DIRECTORATE OF DEF. TRADE CONTROLS, https://www.pmdtc.state.gov/?id=ddtc_kb_article_page&sys_id=%2024d528fddbfc930044f9ff621f961987 (last visited Dec. 17, 2018).

⁵¹ *About DECA*, ISRAELI MIN. OF DEFENCE, (July 26, 2017), <http://www.exportctrl.mod.gov.il/English/Pages/default.aspx>.

⁵² See U.S. DEP'T OF STATE, *supra* note 50.

approval normally takes three months, but may be expedited in certain cases.⁵³

G. Confidentiality

Submitted applications, including all information therein, will become part of the project file within Space Florida and the IIA and, consequently, become public records. Both Space Florida and the IIA are subject to broad national freedom of information laws that provide for the disclosure of public records; consequently, all files might be disclosed upon request by certain parties. These laws do provide statutory exemptions for confidential information, which may or may not apply. Accordingly, the calls for projects explicitly stipulate that "trade secrets and proprietary confidential business information are not solicited, nor desired, as information to be submitted by the Applicants."⁵⁴ If applicants wish to submit information and ask for confidentiality, they need to follow a specific stipulated procedure.

V. IMPLEMENTATION

The experience from the implementation of the framework program so far shows it achieves its goal of fostering international B2B cooperation in the space sector between Florida and Israel. The program has yielded cooperation and projects that would not otherwise have happened.

The first call for projects released in 2013⁵⁵ stated that "Israeli and Floridian companies are asked to present cooperative proposals, which will be jointly vetted for feasibility, and research funding will be awarded to the most promising partnerships" and that the total available funds were \$2,000,000. Five teams had applied,⁵⁶ two projects were selected for first-round awards and \$460,000 in funding was awarded. One project would attempt to

⁵³ See Florida-Israel Innovation Program, *supra* note 31.

⁵⁴ See 4th Call for Projects, *supra* note 34; 3rd Call for Projects, *supra* note 31; 2nd Call for Projects, *supra* note 31; 1st Call for Projects, *supra* note 31.

⁵⁵ The First Call for Projects had a different title: "Space Florida-Israel Innovation Partnership Aerospace Track-Request for Proposals." The call was released on December 6, 2013, with a deadline for submission of applications set for February 28, 2014, followed by an evaluation period of three months.

⁵⁶ Interview with Liron Eldar, *supra* note 42.

significantly improve an existing technology, while the other one would develop a new technology.⁵⁷ While only a quarter of the total funds available were used, it was nevertheless a satisfactory start for the program, considering it was a new program with insufficient awareness of the target audience and a short period for application.⁵⁸ Indeed, the following call for projects would be a better test of the long-term success of the program.

A second call for projects was released in 2015.⁵⁹ A total of seven teams had applied, six of them were found to have good proposals, but only four were selected, to allow sufficient funds for the selected projects.⁶⁰ Lockheed Martin Space Systems is the Florida partner in one of the winning projects.⁶¹ This time round, all available funds were allocated. The outcome of the second call demonstrated that after only one round, the program gained sufficient awareness in both Florida and Israel. Furthermore, the program seems to be attractive enough to draw more projects than available funds and to bring about new partnerships and projects that otherwise would probably not have been initiated.

A third call for projects was released in 2015⁶² and followed the lines of the second call. The number of submissions had risen again,

⁵⁷ On September 17, 2014, Space Florida and the IIA announced the projects that would be funded. See *Space Florida and Israel's Chief Scientist Announce Industry Awardees of Innovation Project Funding*, *Enterprise Florida*, SPACE FLORIDA (Oct. 8, 2014), <https://www.enterpriseflorida.com/news/space-florida-and-israels-chief-scientist-announce-industry-awardees-of-innovation-project-funding/>.

⁵⁸ The call was released just three months before the closing date. It takes time to raise awareness for the mere existence of the program. Moreover, it also takes time for companies to prepare for an application from identifying a suitable project, through finding a relevant partner in the other country, discussing the technological and technical issues, agreeing on the business model, negotiating the legal issues, and preparing the application.

⁵⁹ 2nd Call for Projects, *supra* note 31. The Second Call for Projects was released on October 29, 2014, with the application submission period starting that day and running through March 16, 2015. The evaluation period ranged from October 30, 2014, through June 15, 2015.

⁶⁰ Interview with Israel Shamay, *supra* note 42.

⁶¹ On July 20, 2015, Space Florida and the IIA announced the projects that would be funded. See *Space Florida and Israel's Chief Scientist Announce Industry Awardees for 2nd Round of Innovation Partner Funding*, *SPACE FLORIDA* (July 20, 2015), <https://www.spaceflorida.gov/news/space-florida-and-israels-chief-scientist-announce-industry-awardees-for-2nd-round-of-innovation-partner-funding/>.

⁶² See 3rd Call for Projects, *supra* note 31. The evaluation period ranged from February 2, 2016, through May 1, 2016.

to twelve (comparing to five in the first call and seven at the second call). The increase demonstrates growing awareness of the program and its appeal to companies in both Florida and Israel. Out of the twelve submissions, four teams were selected to be awarded financial support for their joint project.⁶³ Again, all available funds were allocated, and Lockheed Martin Space Systems was the Florida partner in one of the teams.

A fourth call for projects was released in 2016,⁶⁴ and followed the lines of the second and third calls. The number of submissions has risen yet again, to twenty-two (comparing to five in the first call, seven at the second call and twelve in the third). The sharp increase demonstrates a wide awareness of the program, a significant appeal to companies in both states and the success of the program and its implementation to date. Out of the twenty-two submissions, five teams were selected to be awarded financial support for their joint project and all available funds were allocated.⁶⁵ In addition to the five chosen projects, the IIA has approved funding, unilaterally but under the fourth round, for an Israeli corporation which continues to work in partnership with a Florida corporation on a joint project.⁶⁶

A fifth call for projects was released in 2017⁶⁷ and followed the lines of the previous calls.

The outcomes of the calls for projects so far demonstrates the success of the program as reflected in several factors: (i) popularity - the increasing awareness of the program and an increase in its popularity, which comes into effect in the growing number of applications; (ii) diversified research fields - the representation among applicants of a significant variety of fields of research, in accordance

⁶³ On June 8, 2016, Space Florida and the IIA announced the projects that would be funded. See *Space Florida and Israel's Chief Scientist Announce Third-Round Winners of Innovation Partner Funding*, SPACE FLORIDA (June 1, 2016) <https://www.spaceflorida.gov/news/space-florida-and-israels-chief-scientist-announce-third-round-winners-of-innovation-partner-funding/>.

⁶⁴ See 4th Call for Projects, *supra* note 34.

⁶⁵ On June 13, 2017, Space Florida and the IIA announced the projects that would be funded. See *Space Florida and Israel Innovation Authority Announce Fourth Round Winners of Innovation Partner Funding*, SPACE FLORIDA (July 5, 2017) <https://www.spaceflorida.gov/news/space-florida-and-israel-innovation-authority-announce-fourth-round-winners-of-innovation-partner-funding/>.

⁶⁶ *Id.*

⁶⁷ See 5th Call for Projects, *supra* note 34.

with the aims of the program; (iii) diversified actors - the program attracts both well-established corporations like Lockheed Martin Space Systems and smaller and younger companies, including start-ups; and (iv) small nations benefit - the program is advantageous especially to Israeli corporations, being provided access to resources and facilities they would otherwise find it much more difficult to get access, like the International Space Station (ISS).⁶⁸

The list of corporations that applied for funding shows corporations that have won previous rounds applying again in subsequent rounds, demonstrating satisfaction from the program by its participants.

VI. TOWARD A NETWORK OF COOPERATION MODULES

The cooperation agreement between Florida and Israel is important beyond its immediate effects. Once a government has a well-functioning cooperation agreement, it is in a position to collaborate with even more governments using a similar model, eventually fostering cooperation between a large number of governments. The proliferation of such small-scale cooperation modules will, as shown by the findings of Institutional Analysis, result in the promotion of large-scale international cooperation in space activities and promote the basic norm of international cooperation in space activities.

Institutional Analysis is a research field within the social sciences studying the creation and operation of institutions. Institutions include, by definition, cooperation modules.⁶⁹ A major contributor to modern institutional analysis was Elinor Ostrom, the 2009 Nobel laureate in economic sciences, who developed the neo-institutional approach. Ostrom studied diverse institutional arrangements for governing common-pool resources (CPRs) and public

⁶⁸ The joint projects of Micro-gRx and SpacePharma, approved in the fourth round, aims to develop better disease models of muscle-wasting associated with aging by using human muscle cells placed in a microgravity environment on board the ISS. The Israeli partner would otherwise find it much more difficult to get access to the ISS. See SPACE FLORIDA, *supra* note 66.

⁶⁹ Institutions are structures and mechanisms of social order and cooperation that govern human behavior and interaction. Institutions may take the form of sets of rules and established organizations, including rules deriving from agreements and international institutions.

goods; as the Nobel committee noted, her observations are important not only to the study of natural resource management, but also to the study of human cooperation more generally.⁷⁰

Building on a wide empirical database, supported by theoretical models and analysis, Ostrom demonstrated that collective action is feasible and that decentralized local institutions perform better than their counterparts.⁷¹ Moreover, and relevant to this discussion, Ostrom found that large-scale cooperation can be amassed gradually from below.⁷² This suggests that promoting international cooperation does not require either a strong, central, global institution or rules imposed from above. Instead, gradually expanding the number of cooperation modules and participants will have the aggregate effect of creating a network of cooperation modules and cooperative relations. Furthermore, the overlapping and crossing of cooperation modules is not a threat but an advantage, creating an ever-expanding network of cooperation and clusters of cooperation.⁷³

VII. CONCLUSION

The agreement between Florida and Israel serves numerous goals. To begin with, it connects corporations from Florida and Israel that would otherwise not cooperate and further enables the launch of joint projects, initiated by the private sector with funding from both governments. As the experience from similar framework program has shown, the spillover effects are expected to benefit the space sector in Florida and Israel and both economies overall. Furthermore, the agreement established a model that can be used by Florida, Israel, and other governments to enter into other similar partnerships. Lastly, it contributes to international cooperation in

⁷⁰ See The Econ. Scis. Prize Comm. of the Royal Swedish Acad. of Scis., *Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009: Economic Governance* 1, 2 (Jan. 15, 2014), http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/advanced.html [hereinafter Royal Swedish Acad.].

⁷¹ That is, better than both the market and the state, in cases of CPRs and public goods. See Elinor Ostrom, *Beyond Markets and States: Polycentric Governance of Complex Economic Systems*, 100 AM. ECON. REV. 641(2010).

⁷² See *id.* at 16-18; see also Eytan Tepper, *Applying Ostrom's Nobel Winning Study to International Cooperation in Space Activities*, 57 INT'L INST. OF SPACE L. 675 (2014); Royal Swedish Acad., *supra* note 70.

⁷³ Tepper, *supra* note 72.

space activities in general, by expanding the network of cooperation modules and introducing a model for even more such modules.

Both Florida and Israel have in recent years shifted more weight to commercial space activities. Florida, once home of the most advanced, complicated, and expensive US space projects (i.e., the Apollo missions and the space shuttles), has seen a significant downsizing of government activities, resulting in massive job loss. The state government has responded by promoting commercial initiatives. The new Israeli civil space policy, likewise, is focused on the promotion of commercial activities and international cooperation.

In the current age of New Space, with commercial activities and the private sector slowly taking the lead, promoting international cooperation in space activities means not just cooperation between States and space agencies but also commercial, business-to-business cooperation. The model reviewed in this paper relieves some of the obstacles to B2B cooperation and fosters such cooperation.

The Florida – Israel Innovation Partnership Program is based on well-tested and successful model of framework programs, with a focus on international cooperation. The program seems to be solid and includes all the necessary ingredients for success, most notably (i) identifying areas of mutual interest to both states; (ii) identifying specific projects and companies that will benefit from industrial R&D cooperation; (iii) matchmaking corporations from both countries suitable for cooperation; (iv) stimulating contacts and facilitating exchange of technical information and expertise; (v) providing business consultation; (vi) providing access to infrastructure and development tools; and (vii) providing financial support and sharing the financial risk of R&D.

The experience of the implementation of the program so far shows a steady and sharp increase in applications, indicating growing awareness and a significant appeal to companies in a variety of research fields in both states. The framework program attracts both well-established corporations like Lockheed Martin Space Systems and smaller and younger companies, even startups. The first four calls for projects already concluded have brought together companies from the two states that might not have cooperated otherwise.

Fifteen collaborative projects have been awarded financial support and are already underway.

Such cooperation agreements as that between Florida and Israel have important downstream effects, as the Israeli experience over the last thirty years with framework programs has demonstrated. A recent Israeli study has shown the significant positive economic effects of such framework programs for the applicants, the industry, and the economy, with a total return on government support for the economy as a whole ranging from 475% to 751%.

Moreover, once a State has a well-functioning cooperation agreement, it is in a position to collaborate with even more States using a similar model, and other governments wishing to establish similar programs can do so with few adjustments, eventually fostering cooperation between a large number of States (including agreements among more than two governments). Expanding the model to include more governments would increase the likelihood of synergy between projects, companies, and personnel and increase the dissemination of know-how, expertise, and experience.

Clearly, the more agreements of this sort are established, the wider the resulting network of cooperation becomes and the bigger the expected impact on the commercial space industries of the participating States. This network will facilitate and promote space-related R&D, commercial space activities, commercial utilization of outer space, and as Ostrom demonstrated, large-scale international cooperation in space activities.