



Boosting innovation between space and non-space sectors:

# The business case of SpaceUp project



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The SpaceUp project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 776356.

## BOOSTING INNOVATION BETWEEN SPACE AND NON-SPACE SECTORS: THE BUSINESS CASE OF SPACEUP PROJECT

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### Abstract

The European society and economy can benefit from the integration of space technologies and applications that provide effective solutions to big societal challenges and strengthen synergies between public and private activities. Therefore, a strong business ecosystem able to cover all the phases of a successful space venture value chain is needed. In this light, ten European partners, with different backgrounds but a common interest in opening the traditional space sector into the “new space”, have joined forces. Their objective is to assist space-related start-ups in scaling up and becoming leaders in enabling and industrial technologies. The SpaceUp project fits into the European Union strategy to reinforce the space sector and related industries and is part of the EU Framework Programme for Research and Innovation Horizon 2020 under work programme COMPET 7 - Technology transfer and business generators. This is where SpaceUp comes from: a project that aims at fostering the European space sector, by supporting research, innovation, entrepreneurship across all Member States, and enabling start-ups to seize larger shares of global market. Indeed, the SpaceUp approach is twofold. Firstly, it wants to create a model for a stronger, competitive and ambitious space start-ups ecosystem, also supporting the transfer of space technologies to other sectors. Secondly, it will test a replicable methodology to boost the growth of space ventures based on the organisation of 6 Space Academies over the full duration of the project. Space Academies are a two days event of support activities where start-ups receive customised and extensive services (incl. training, networking, investors meeting etc.). This paper presents the preliminary analysis of the approach proposed by SpaceUp and it will report on the first set of results coming from the organisation of the first Space Academy, including best practices to be further developed and possible problems encountered.

**Keywords:** space economy, business applications, satellite data, scaleups, upstream, downstream.

### 1. Introduction

*A European space funding overview.*

It is well known that Europe has a strong industrial space sector, but it is equally well known, as shown by a multiplicity of reports and analyses annually issued (*e.g.* Bryce Space and Technology, European Investment Bank, Pitchbook) that the sector is essentially based on direct public investments. In fact, the role of private finance in the European space sector cannot even be remotely compared with its role in the United States and this represents a serious shortcoming for the European ecosystem. This is largely the legacy of a rather out-dated conception of the role and objectives of space activities and technologies. On the one hand, national strategies have been successful in terms of technological advancements in many sectors, also thanks to the

coordination of international organizations such as the European Space Agency (ESA) and the interest of the European Commission (EC). On the other, they have marginalized the role of private finance in a sector that, from launchers to the exploitation of satellite data, remains primarily based on public intervention and support. Furthermore, on a global scale, national actors entering the sector with less rigid funding schemes than the consolidated European one and are eager to quickly fill the technological and industrial gaps. These actors together with the United States opening towards new business models in which private finance plays a fundamental role (if not substituting the public one) are producing an unprecedented transformation and development of the space sector, in which Europe is proving unprepared. Important technological advances, possible only thanks to a new entrepreneurial spirit and a significant contribution of risk capital, have thus put the

space sector and its relationship with private finance in the spotlight of political agendas in many European countries and of the European Commission.

What we are entering now is the so-called "New Space Economy", represented by a series of technological innovations and business models that have led to a significant reduction in the costs of construction, launch and maintenance of space infrastructures and to the supply of new products, and services that have expanded the existing customer base for space companies.

Dating back to 2011, when the US started a review of its space policy and NASA developed a mechanism to involve private companies in the funding and maintenance of integrated space transportation services in order to replace its failed one, the New Space Economy started with generating interest of investors for the space sector [1]. This new way of conceiving the space sector as a business based on a new public-private partnership model has gone far beyond its initial premises, including all existing upstream (*e.g.* cubesat, launchers) and downstream space technologies (*i.e.* Earth observation, satellite navigation and telecommunications) but also human space flight technologies and their application for future lunar and Mars missions (*e.g.* human flight, space infrastructures and asteroid mining) [2]. While space technologies contribute to enhancing the value data chain, providing new competitive services and products, the technological progress coming from the miniaturization of satellites and the lowering of launcher prices are reducing costs and production timing, being both key appealing factors for private investments.

This rapid transformation, which could easily turn from an opportunity into a loss, calls for a revolution inspired by the US model and for a new space organization in Europe for being competitive on a global scale. Indeed, a renewed approach to financing and supporting space initiatives, taking into account the contribution that private finance can make is required.

The space sector is strongly attractive for private capital: with projections of a turnover equal to 370 billion dollars for 2018 according to Morgan Stanley estimates, a growth factor of 80% compared to the previous decade and of 3-4% on an annual basis, about 200 space companies supported by angel and venture capital investors from 2000 to today and estimated revenues of a trillion dollars in 2040, it proves to be a vertical of a certain interest [3].

The global space economy is certainly strongly dominated by public funds and public sector intervention instruments which often represent either the only source of accessible capital or the preliminary condition to access private risk capital. In Europe there are different instruments that support start-ups and companies according to their technology readiness level or investment phase. Indeed, the support mechanisms for

the initial phase of a business life comprise successful programs such as the incubation and acceleration centres of the European Space Agency (*i.e.* ESA BIC), the Copernicus startup program for companies working with the exploitation of satellite data, the accelerator of the European Global Navigation Satellite System, as well as programs focused on the initial phase of market access and technology transfer such as the SME Instruments (1 and 2) of the European Commission, the ESA Business Applications programme or the ESA Space Solution Brokers. However, the total volume of the private investments in the scale-up phase of companies is small and rather fragmented, only targeting specific space segments (*e.g.* telecommunications and Earth observation) that are adequately funded. In addition to the national and ESA programs, there are European Commission programmes, such as Horizon 2020 (ending soon), Horizon Europe (the new programme for 2021-2027), InvestEU and InnovFin Space Equity Pilot programs. These programmes of the European Commission, while are being more flexible and oriented towards commercial development, are combining grants with other financial instruments and act as a catalyst for private financing. In fact, beyond national and European industrial policies, access to finance remains a fundamental challenge for the sector and its lack hinders and will hinder the growth of promising European companies and technologies. The problem is already well known and, in this sense, numerous actions have been implemented at EU level [4]. Increasing the volume of private venture capital in the space sector represents an opportunity to scale up business models that are growing within the New Space Economy and that need to be enforced and implemented.

To do this, a "smart" public finance, capable of attracting private co-investments through its market orientation and marketing, is not enough; the European space sector requires new approaches and models to fill existing financial and information gaps.

## **2. Context analysis of key trends in space financing in Europe**

*An analysis of the current investment landscape of the space industry in Europe, its main gaps and the improvement to be made in the existing conditions.*

The number of private investors within the European space ecosystem is very limited and the resources that could be used are not sufficient due to the absence of two main elements. On the investors' side, the lack of space background and on the companies' side, the lack of fundamental insights on how to navigate through the private finance world and market themselves as the right candidate for an investment.



Talking about investments in space is obviously a complicated issue for many reasons, regardless of whether a space activity is of a commercial, scientific or military nature.

First of all, it is the responsibility of every investor to invest only in those sectors that are adequately understood, while the acquisition of skills and specific knowledge of the space sector is certainly lacking in the space investment field today. This problem applies not only to the "traditional space", with its consolidated technological and commercial models such as payloads, launchers, satellite communication, satellite navigation and earth observation, but also to the New Space economy activities. Indeed, they face a plethora of new business concepts, some of which are simply an evolutionary improvement of traditional concepts while others are completely new approaches to the space industry including new business services and products. The need to gain specialized knowledge to correctly set up, manage, produce and understand a space technology is a "must have", both for the space entrepreneurs seeking to start a space business and for the investors wanting to support the financial effort aiming at making a profit from the investment.

Secondly, the bulk of space experts in Europe, having a holistic understanding of all the political, financial, technological and managerial factors that make up a space activity, usually comprises staff of space agencies and large space industries that dominate the European market having the role of system integrators. So far, only a handful of these individuals have ventured into the role of start-uppers or investors or partners of venture capital or private equity funds. Even more inadequate is the number of subjects who, coming from finance or other traditional industrial sectors, have ventured into entrepreneurial adventures in the space sector at a certain level (for example concerning public quotations). The ability of professionals to launch into companies that are far from their original business sector and the personal mobility within the triangle of corporate, entrepreneurial and investment roles is one of the greatest strengths in the United States, while its absence is one of the major problems in the European landscape.

A sector of comparison could be the deeptech sector that is the set of cutting-edge and disruptive technologies based on scientific discoveries, engineering, mathematics, physics and medicine; it includes, among others, the use of artificial intelligence, deep learning and machine learning. Indeed, similar to what happened with the deep tech sector, the immaturity of the European space start-up ecosystem could take decades before the professionals' mobility in the space sector starts running adequately in Europe, thus preventing the fast growth of national industries.

The reasons for this resistance to change are clear: first, the space sector is a delicate matter at European

institutional level, secondly it is fragmented at the level of governance between ESA and EU and different national realities, in addition there is a strong resistance to change in order to protect strategic interests.

Given the abovementioned space landscape, the comparison with the deep tech sector could provide a key to understand and solve the problem. Indeed, relying on the successful experiences in the deep tech sector, the United States, and in particular California, was the cradle of the New Space Economy where entrepreneurs (deep tech experts) started their space companies. They were provided of huge personal investments, as well as undisputed public support. This type of support made them able to accelerate the mobility triangle (corporate, entrepreneurial and investment roles) and successfully reproducing and standardising some of the technological processes of other industrial sectors. The names of Allen, Bezos, Branson (the latter a British citizen) and Musk are known to the most and thanks to their work the gap between the US and Europe, limiting the success of European space companies, has been finally felt and understood.

This situation could be solved relying on other sources of private investment, held by multiple financial institutions. However, this will not happen as long as the space agencies, jointly with the European space companies will lack of personal mobility and the investors and lenders will deeply understand the market potential, the technological risk and the business models linked to the space matter. The European space industry has certainly undergone significant changes in recent years, with a competitive space industry that paves the way to large reductions in the costs of access to space and related technologies, but it does not seem that the paradigm of private finance is tackled by the industry (although with due distinctions based on the different national realities).

This stagnation on established paths, based mainly on public subsidy, is translated into a frustration of the small European space entrepreneurs who perceive the risk aversion (imponderable) of European investors. As revealed by recent analyses on the venture financing sector, the European space entrepreneurs consider the United States a privileged destination for raising the needed capital [5]. Indeed, the US (and Asian) investments in space companies have increased year by year because American investors like new technologies and new sectors with high growth potential. Conversely, European investors feel comfortable only in regulated sectors and with proven technologies and, even when they invest, they do so proportionately less than their overseas colleagues. The latter, regardless of the sector in which they operate (venture capital or private equity), want to see a clear path towards revenues, especially in markets such as the space sector that is considered a niche

sector compared to the deep tech, fintech and artificial intelligence sectors.

A misalignment of positions is therefore evident: on the one hand, European space entrepreneurs have had little opportunity to raise funds on the private market, while on the other hand European investors and lenders do not have investment experience in the sector, still considering the space industry as a niche sector, directed at governmental level and drugged by public finance.

### **3. The added-value of Consortia in the space environment**

What could be the solution to the abovementioned problems of private financing in the space sector?

The establishment of multidisciplinary consortia can certainly have an important role in stimulating the public legislator for promoting more favourable policies and regulatory frameworks for the space ecosystem. They could be a driver of sharing, training and aligning competences in the space sector. Indeed, they could improve the situation in Europe, in the medium term, through the creation of more stable networks of mobility between companies, technological experts and investors. This type of activity will help space entrepreneurs in overcoming the limits of the national and regional space networks, providing wider expertise.

Indeed, the Consortia can combine the right mix of technological, financial, technology transfer and business analysis skills. In doing so, they fill a good number of gaps that traditionally afflict the space sector, such as the poor understanding of technology by investors, the difficulties in assessing the reliability of the business and the assessment of company metrics in favour of investors. Consortia can thus provide full-access mentoring activities for space companies to make them able and ready to receive risk capital financing, including but not limited to equity, and helping entrepreneurs and investors in aligning interests and expectations.

If the information gap between the space sector and the financial sector is mutual, these consortia could be prodromal and anticipatory with respect to those physiological changes, providing a set of comprehensive skills and knowledge. To remain globally competitive, the market of the new European space economy has to provide technical expertise to investors and intermediaries to raise awareness of real risks and to understand the potential of the space market, supporting space companies in identifying specific financing needs and innovatively discussing and developing new co-financing models tailored to the different technological solutions they develop.

The SpaceUp Consortium moves within this context. This is where SpaceUp comes from: a project that aims to promote the European space sector, by supporting research, innovation, entrepreneurship across the

European Union Member States (but not only), and enabling start-ups to seize larger shares of a global market. Indeed, the SpaceUp approach is twofold. Firstly, it wants to create a model for a stronger, more competitive, and more ambitious space start-up ecosystem. Secondly, it will test a replicable methodology to boost the growth of space ventures based on the organization of 6 Space Academies over the full duration of the project [6].

### **4. SpaceUp Approach**

*The methodology of SpaceUp project.*

In line with the Horizon 2020 funded programme “Boost innovation between the space and non-space sectors”, the overall objective of the SpaceUp project is to contribute to the safeguarding and further development of a competitive and entrepreneurial space industry at a European level. More specifically, SpaceUp aims at supporting start-ups with the following characteristics:

- not older than five years;
- work in the upstream and downstream space sector or implement a business model with space technologies;
- adopt a space technology and use Copernicus, Galileo or EGNOS data;
- have successfully passed the seed capital stage;
- offer a marketable product/service;
- bear extraordinary growth potential.

The SpaceUp consortium provides them with opportunities to scale up and become world leading companies. For this purpose, the SpaceUp consortium consist of 10 complementary partners, namely:

- Aviaspace Bremen
- European Business Angel Network - EBAN
- Fraunhofer IPK
- Asociacion Internacional de Parques Tecnologicos - IASP
- GI Group
- IBS Consulting
- SME4SPACE
- 200 Crowd
- Consorzio di ricerca Hypatia
- Lazio Innova

They have jointly proposed, developed and implemented a dedicated approach. This approach builds upon and takes into account the members’ diverse complementary competences and experiences to the benefit of start-ups with the above-stated characteristics.

The core of the SpaceUp approach consists of a defined set of support services tailored to the needs of the targeted start-ups provided by the consortium in conjunction with the so-called Space Academies. These two-day events are carried out six times throughout the SpaceUp project’s lifetime in predefined cities across

Europe in 2019, 2020 and 2021. In order to align these events to the efforts of the international community, European Union and the European Space Agency, each Space Academy is linked to existing events related to space, technology and investment sectors. In the following, the standardised and therefore replicable procedure that is followed for each space academy is outlined.

Since the capacities of the SpaceUp consortium for providing support services in the frame of each Space Academy are limited, the selection of potentially beneficiary start-ups is organised in the form of a competition. Therefore, start-ups interested in attending a Space Academy and benefiting from related services have to apply through the project website *space-academy.eu* in a first step. In this context, start-ups are provided with two options. Firstly, start-ups have the opportunity to apply for receiving the complete set of support services, benefits and the reimbursement of travel expenses and secondly, they can solely apply for taking part in a Space Academy whereas they only receive a limited set of services and benefits at their own expense. In any case, interested start-ups have to fill in a short questionnaire provided on the project's website.

Start-ups aiming at receiving the comprehensive services and benefits are additionally requested to provide a current version of their business plan and investor deck. Once the application phase for the respective Space Academy closes, a two-step evaluation process commences. In a first pre-selection step, all applicants aiming at receiving comprehensive support are checked regarding the compliance with the before mentioned characteristics of the start-ups in focus by four experts from EBAN, Hypatia and 200 Crowd. Afterwards the compliant start-ups are screened with particular emphasis on company status, stage of products and/or services and market strategy in order to pre-select the 30 most promising applications. In the second step of the evaluation process, a committee consisting of experts from EBAN, Fraunhofer IPK, Hypatia, IBS Consulting BIC Lazio and Aviaspace Bremen evaluate the pre-selected applications. The evaluation is carried out on the basis of a set of eight criteria, namely:

- value proposition/business idea
- market positioning and market potential
- business scalability
- financial status and business planning
- investment approach
- strategic relationships and partnerships
- team composition
- technical expertise.

As a result of the evaluation, the ten most promising start-ups among all applicants are identified. These receive the opportunity to participate in the respective Space Academy are provided with all related support services and benefits as well as the reimbursement of

their travel expenses. Both, start-ups that did not make it beyond the pre-selection step and start-ups that did not pass the final evaluation still receive the chance to participate in the Space Academy, but do not receive all support services, benefits and reimbursement of their travel expenses.

In subsequence to the evaluation, the selected start-ups are provided with an in-depth questionnaire. The questionnaire is specifically designed to capture all elements of the start-ups business model, namely material and immaterial resources, primary and supporting activities, offerings, target customers and price as well as revenue and costs. In this context each of the selected start-ups is requested to provide detailed information on each of the elements and their sub-elements and to carry out a self-assessment with regard to the development level as well as with regard to the importance of each element. In addition, the start-ups are asked to describe their corporate environment and to return the filled-in questionnaire for further processing to the SpaceUp consortium.

Based on the filled in questionnaire, the partners of the SpaceUp consortium create individualised reports for each of the ten selected start-ups. These feasibility reports cover diverse topics, *i.e.* public funding (IBS Consulting), business model development (Fraunhofer IPK), human resources (GI Group), intellectual property rights (Hypatia) and provide them with an overview on their individual development level regarding each topic and potential for further development in this regard. The four customized reports are provided to each start-up prior to the respective Space Academy to give them enough time making themselves familiar with the respective content and preparing themselves for the one-to-one meetings at the event, where details can be further elaborated on.

During the two-day Space Academies, all start-ups can join the six frontal modules on investment readiness and relationships, crowdfunding, technology trends, business models, European funds and the space ecosystem. Here the participants gain insights and receive coaching on each of the mentioned topics. The ten selected start-ups additionally get the chance to attend one-to-one modules on creditworthiness (IBS Consulting), cross-fertilization and finance for innovation (Hypatia), human resources (GI Group) and business models (Fraunhofer IPK) and receive the opportunity to pitch their business in front of investors with a focus on space-tech as well as downstream applications.

Further benefits for the selected start-ups comprise unlimited access to the respective event each Space Academy is linked to, access to Enterprise Europe Network brokerage, an international creditworthiness certificate issued by Moody's, networking possibilities with investors, experts and peers as well as enhanced

visibility through SpaceUp newsletters, bulletins, the Space Academy programme and videos before and after the event.

As mentioned before, the core of the SpaceUp approach comprises the support services and benefits that the SpaceUp consortium directly provides to start-ups in conjunction with six Space Academies outlined above. This core of the SpaceUp approach is flanked by further measures of the SpaceUp consortium that aim at increasing the impact of the project and support the achievement of its objectives.

One of these measures is the positioning of SpaceUp in the European space-ecosystem. Having mapped related projects, programmes and initiatives on the regional, national and European level within and beyond the space-ecosystem in the frame of a cluster analysis allows SpaceUp to establish a clear demarcation and to raise awareness regarding SpaceUp through collaboration with identified players in this field. Thereby, the scouting of suitable start-ups, for which SpaceUp already closely cooperates with different business incubators of the European Space Agency (ESA BIC), the Enterprise Europe Network (EEN) and the European Business Network (EBN) amongst others is enhanced.

Additionally, the insights gained through the cluster analysis will be used by SpaceUp to provide interested space-related start-ups with a recommendation report on the most significant initiatives in Europe in accordance with their respective space technologies, business domains and territorial areas enabling them to make use of available opportunities.

Complementary to the positioning of the SpaceUp project, dedicated activities focussing on networking, communication and dissemination support the implementation of the positioning on an operational level and foster awareness of the project and of the six Space Academies at an overall level. Specific actions in this context include, among many others, the creation of a dissemination and communication strategy as well as the provision of a communication kit, promotional videos, newsletters, a project website and publications.

A further supporting measure is the evaluation of the SpaceUp project on four levels, which provides valuable insights for improvement. On the first level the satisfaction of start-ups, investors and industry representatives after each Space Academy are assessed. This assessment provides valuable feedback that can be used to optimise aspects related to the provision of the core of the SpaceUp approach. On the second level, the consortium carries out a self-assessment regarding internal procedures and project outcomes to derive measures for internal efficiency and effectiveness after the second and the fourth academy. The third level comprises the quantitative assessment of indicators related to communication and dissemination, start-up

applications and established partnerships with networks, institutions, industry organizations among others. The overview of the status of these different aspects allows prioritizing shortcomings and assessing specific actions regarding their success in post. On the last level, the key stakeholders are interviewed at the end of the project to conduct a final impact assessment providing insights for the final decision regarding the continuation of SpaceUp after the project's termination.

Lastly, to foster continuity of the approach after the project has come to an end, it is foreseen to define possible scenarios and conditions for assessing the sustainability of SpaceUp and develop potentially viable business models in order to further utilize the developed results of the project. This measure completes the approach of the SpaceUp project in its entirety.

## **5. First set of outcomes and the way forward**

The Space Academy held in Helsinki, Finland, on 3-4 June 2019 was the first of six Space Academies throughout the SpaceUp project. In the following paragraphs some qualitative observations in conjunction with selected results from the quantitative evaluation and the satisfaction survey among participating start-ups, investors and industry representatives are outlined before an outlook is provided.

For the first Space Academy, 35 start-ups applied in total of which 23 applied to receive comprehensive support and benefits as well as the reimbursement of travel expenses. Of the latter, fourteen start-ups passed the pre-selection stage and were evaluated by the dedicated SpaceUp committee. The ten selected start-ups comprise: PlanBlue (planblue, 2019), Agricolus (Agricolus, 2019), Orora Technologies (Orora Technologies, 2019), Smart Structure Solutions (Smart Structure Solutions), SPiN (SPiN, 2019), Worldfrom (World from Space, 2019), HIVE (HIVE, 2019), Surveylab – iModi (SurveyLab, 2019), Alba Orbital (Alba Orbital, 2019) and SpaceEXE (Spaceexe, 2019) [7].

These start-ups received all support services, further benefits and the reimbursement of their travel expenses. In subsequence to their selection, the start-ups received the aforementioned questionnaire to capture sufficient input for the creation of four feasibility reports. The filled in questionnaire that was returned to the SpaceUp consortium by the start-ups showed that a few issues in the questionnaire required some explanations before they could complete these. Based on the information provided, the feasibility reports were elaborated by the respective partners and provided to the start-ups prior to the Space Academy.

The two-day academy in Helsinki was carried out in collaboration with the EBAN Annual Congress, which is one of Europe's largest and most international business

angel events. Over the duration of the event, the selected start-ups received the support services and benefits outlined in chapter 4. Additionally, of the ten start-ups that pitched their business to investors during the Space Academy the three most promising ones from the investors' point of view were provided with the opportunity to pitch in front of the audience at the EBAN Annual Congress. These were Planblue, Orora Technologies and Alba Orbital.

To gain some insights on the perception of the event flyers were handed out to all participants requesting them to fill in an online satisfaction survey. In addition, at the event a set of devices were provided to fill in the questionnaire on-site. The questionnaire contained different questions for the group of start-ups and the group of investors and industry representatives. In the following a selection of the results obtained through the questionnaire is provided.

In the case of the start-ups that filled in the questionnaire, it showed that most of them got to know the project through colleagues and partners followed by other sources such as specific organisations and lastly, emails and newsletters. Being asked for the reason for their application half of the start-ups stated that they aimed at networking with investors and a quarter applied in order to receive individual and customised services. The training offered in the frame of frontal modules and the possibility to pitch in front of investors received the remaining votes. The time that the start-ups required for filling in the application ranged from less than one hour to more than 5 hours whereas the majority required less than three hours. Being asked if they found it easy to apply, half of the start-ups stated that they fully and mostly agree and the other half stated that they partly agree and disagree. Some suggestions provided by the start-ups to make the application and evaluation process more efficient include the provision of more details on the process such as a description of all the steps and a related timeline.

Another block of the questionnaire focused on the perception of the different support services provided during the event. Here it showed that the topics of the frontal modules provided to all participants were consistently perceived as being highly relevant to relevant with minimal deviations. Participants' answers with regard to the question if the workshops have led to a deeper understanding regarding the topic showed a similar picture. Regarding the time provided for questions and answers, the materials and handouts, the catering and the duration of the event, the participants were highly satisfied to satisfied. The highest potential for improvement from the point of view in this regard were the venue and the organisation of the event. To sum the overall satisfaction of the participants with the first Space Academy up, 80 percent of the start-ups agreed

that they would recommend to participate in a Space Academy and 20 percent fully agreed here.

In addition to the above issues, the ten selected start-ups were questioned regarding the four feasibility reports that were provided to them and the one-to-one modules as well as the pitching session they took part in. Concerning the reports, the majority fully and mostly agreed that these helped them to gain a deeper understanding of the topics and to derive new ideas with small deviations between the different reports. Being asked if the one-to-one modules helped the start-ups to gain a deeper understanding of the reports and if all of their questions were answered showed more diverse results. The majority fully and mostly agreed here for the different modules whereas a minority also partly agreed and disagreed. Improvements raised by single start-ups with regard to the above points concerned the provision of more specific details as to how and for what purpose the feasibility questionnaire should be filled in and to dedicate more time for the one-to-one modules as well as the frontal modules. Furthermore, establishing a matchmaking session with corporates was proposed.

Regarding the pitching session, all start-ups affirmed that it was a good way of promoting their business idea. The majority of start-ups fully and mostly agreed to the adequacy of the timeframe for the session and a minority only partly agreed. It was raised here that the pitching session should be anticipated to leave more time for comments of the investors after each pitch and that after the whole session more room should be made for networking.

For the investors and industry representatives the main reason to attending the Space Academy was the networking with start-ups and all of them got to know about the event through colleagues and partners. All respondents of this group mostly agreed that they had good networking possibilities throughout the event. The majority of the investors and industry participants perceived the quality of the selected start-ups as excellent, whereas a minority only partly agreed here. To sum their overall satisfaction with the event up, all of them broadly agreed that it was worth attending the Space Academy for them.

## 6. Conclusions

The European space sector can claim a full and comprehensive value chain that makes it a great producer of innovation in the sector. However, to make it even more competitive and up to date at global level, it requires a stronger financial, economic and knowledge ecosystem able to boost the entrepreneurial spirit. Indeed, investments in space are a key resource to maximise the unexpressed profits so far of the New Space as well as vertical knowledge of both entrepreneurs and investors.



Within this context, SpaceUp wants to be the cradle for competitive space scaleups providing them with the right skills, understanding and instruments to be successful business cases at global level. Although the short lifetime, with only one year of activity, SpaceUp is proving to be an effective instrument able to answer the needs and provide solutions to the scaleups thanks to its vertical approach and multi-sectorial services tailored for every start-up's cases. The next Space Academies will provide further material to enhance the SpaceUp methodology and outcomes.

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