



# SPACEUP

Assisting European Space  
Start-ups in Scaling Up

# Assisting European Space start-ups in scaling Up



This publication reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.  
The SpaceUp project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 776356.

IAC-21.E6.1.11.64175

ASSISTING EUROPEAN SPACE STARTUPS IN SCALING UP

**Barbara Cembella<sup>a\*</sup>, Jannis Balke<sup>b</sup>, Carolina Gomez Rodriguez<sup>c</sup>, Emanuele Blasi<sup>d</sup>, Katrin Singer<sup>e</sup>, Marco Buttolo<sup>f</sup>, Lorenzo Scatena<sup>g</sup>, Alicia Shelley<sup>h</sup>, Stefan Caliman<sup>i</sup>, Roberto Giuliani<sup>j</sup>, Rosario Pavone<sup>k</sup>, Matteo Masserdotti<sup>l</sup>**

<sup>a</sup> *Clustermanager Ministry of Economic Affairs, Labour and Europe, Bremen, Germany, [barbara.cembella@aviaspace-bremen.de](mailto:barbara.cembella@aviaspace-bremen.de)*

<sup>b</sup> *Project Manager, AVIASPACE BREMEN, Bremen, Germany, [jannis.balke@aviaspace-bremen.de](mailto:jannis.balke@aviaspace-bremen.de)*

<sup>c</sup> *Support Manager, AVIASPACE BREMEN, Bremen, Germany, [carolina.gomez@aviaspace-bremen.de](mailto:carolina.gomez@aviaspace-bremen.de)*

<sup>d</sup> *Project Manager, European Business Angel Network, Brussels, Belgium, [emanuele@eban.org](mailto:emanuele@eban.org)*

<sup>e</sup> *Research Associate, Fraunhofer IPK, Berlin, Germany, [katrin.singer@ipk.fraunhofer.de](mailto:katrin.singer@ipk.fraunhofer.de)*

<sup>f</sup> *International Sales Manager, GiGroup, Milan, Italy, [Marco.Buttolo@gigroup.com](mailto:Marco.Buttolo@gigroup.com)*

<sup>g</sup> *Director General, Research consortium Hypatia c/o Italian Space Agency, Rome, Italy, [direttore@consorzioipazia.it](mailto:direttore@consorzioipazia.it)*

<sup>h</sup> *Director Knowledge Management & Partnerships, IASP, Malaga, Spain, [shelley@iasp.ws](mailto:shelley@iasp.ws)*

<sup>i</sup> *EU Project Consultant, IBS Consulting, Brussels, Belgium, [s.caliman@ibs-consulting.it](mailto:s.caliman@ibs-consulting.it)*

<sup>j</sup> *Business Innovation Manager, Lazio Innova, Rome, Italy, [r.giuliani@lazioinnova.it](mailto:r.giuliani@lazioinnova.it)*

<sup>k</sup> *Secretary, SME4Space, Brussels Belgium, [rosario.pavone@sme4space.org](mailto:rosario.pavone@sme4space.org)*

<sup>l</sup> *Founder, 200 Crowd, Milan, Italy, [matteo@200crowd.com](mailto:matteo@200crowd.com)*

\* Corresponding Author

**Abstract**

Most early-stage companies which exit incubation centres have difficulties to scale their business case. The SpaceUp project aims to overcome this challenge via dedicated activities gathered under Space Academies. The objective of the Space Academies is to ease the transition from a startup with a valid product or service to a mature company by offering solutions through customized coaching services, one-to-one meetings with experts from various sectors, networking and matchmaking events with industry representatives and investors, providing information on the most suitable European Union (EU) funding & financing opportunities as well as recruiting employees.

In practice, all companies, coming from EU and associated countries, in any industry and entrepreneurs willing to use satellite data or space technologies got the opportunity to apply with their business case via six periodic calls for proposals. All coaching efforts were channelled into six Space Academies (Two digital Space Academies were merged into one, with 20 finalists): two-day events organized in conjunction with other international events. Ten space-tech companies were selected at each call and invited to attend the event as a conclusion of the services received.

We received overall 180 applications and around 600 participants to the Space Academies. 65 % came from European Space Agency Business Incubation Centres (ESA BIC) in 27 EU member states and from various industry sectors. The consortium extended their network with 11 MoU/LoS which also helped to promote the Space Academies to a wider range of potential applicants – mainly through social media outreach.

The finalists hired 111 persons following the Space Academy and raised 1.2 million public funding as well as €23.2 million in venture capital (plus one single acquisition of €200 million). 79 % finalists were fully to mostly satisfied with the program with largest gain through one-to-one meetings and feasibility studies.

Covid-19 impacted the iterative improvement process of the Space Academies, both in format and time plan as well as the acquisition process. Even so the impact on the individual applicant's business case through Covid-19 was high; revising the original format to a virtual Space Academy helped the applicants during this challenging period and was regarded by 65% as satisfactory.

This paper presents the analysis of the approach proposed by SpaceUp and reports on the results of the organization of six Space Academies and benefits to the participants. Potential scenarios for the future use of the Space Academy are presented.

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

## 1. Introduction

Most early-stage companies which leave incubation centres are often not able to scale their businesses. They either lack of knowledge in scouting and accessing funding resources or have unsolved weaknesses such as asset or strategic planning. The SpaceUp project aimed to cover these gaps via dedicated activities gathered under the format Space Academies. Space Academies were set up to offer solutions to the startups' needs through customized coaching services, one-to-one meetings with experts from various sectors, networking and matchmaking events with industry representatives and investors. They also provided information on the most suitable European Union (EU) funding opportunities and addressed the topic of recruiting employees with the right skills.

The SpaceUp approach is threefold: financial/commercial, entrepreneurial and technological needs for scaling up were served by the project consortium, which comprises a relevant critical mass of EU-wide experts. Viable business cases were supported after assessing the business and innovation potential of the company regarding user needs. In practice, all companies, coming from EU and associated countries, in any industry and entrepreneurs willing to use satellite data and space technology got the opportunity to apply with their business via six periodic calls for proposals and all coaching efforts were channelled into six Space Academies: two-day events organized in conjunction with other international space or non-space events. Ten space-tech companies were selected at each call and invited to attend the event as a conclusion of the services received. The added value of the SpaceUp project was to:

- bring investors, business partners, technologies etc. to the space sector
- spin-out applications developed in the context of Galileo, European Geostationary Navigation Overlay Service (EGNOS) and Copernicus
- spin-in technologies to the space sector
- enable access to public and private funding to promising early-stage companies and small and medium size enterprises (SME)

The overall objective of SpaceUp was to ease the transition of a startup with a valid product or service to a mature company by supporting them in the following areas:

- connecting with the right partners (e.g. investors, business partners, universities, research centers)
- accessing commercial opportunities (especially procurement contracts)

- recruiting employees with the right skills, including from outside the European Union (EU)
- improving team's skills via identifying weaknesses and strengths or lack of expertise
- fine-tuning the business model and the financial plan

Viable business cases were supported after assessing the business case and innovation potential of the applicant. In practice, all startups coming from EU and associated countries of the space and non-space sectors including aspiring entrepreneurs willing to use satellite data, space technology or to initiate a space project were able to apply.

This paper presents the analysis of the approach proposed by SpaceUp and reports on the results of the six Space Academies. The project started in June 2018 and was supposed to end in June 2021, but Covid-19 changed the plans of the project substantially. The project progressed in a then fully virtual format and was extended until December 2021.

## 2. SpaceUp Approach

### 2.1 European Space Sector Cluster Analysis

In order to gain a better overview of regional space clusters within the EU and identify cooperation opportunities to extend the range and impact of the Space Academies an analysis of European space clusters was conducted.

A questionnaire was developed based on the Overview of Cluster Benchmarking Indicators from the European Secretariat for Cluster Analysis (ESCA) [1]. Relevant space clusters were identified using cluster databases of the European Cluster Collaboration Platform (ECCP), the European Aerospace Cluster Partnership (EACP), Network of European Regions Using Space Technologies (NEREUS), ESCA as well as a general web search. The identified clusters of every region/country were then assigned to a local/regional partner.

Finally, cross-sectoral networking aspects of the clusters were researched with some additional data related to regional clusters in other sectors. These data was collected in order to identify possible collaborations between sectors. Sectors were identified through the Regional Innovation Monitor Plus (RIM Plus) and the Smart Specialisation Platform (S3 Platform) by the European Commission according to innovation priorities and regional Smart Specialisation Strategies. Innovation priorities enable the comparison between the



sectors as well as the identification of potential collaboration partners.

## 2.2 Positioning and Scouting

The positioning strategy has been basically defined and characterized on four key elements of differentiation in terms of scopes and direction for the positioning activities.

Positioning of the SpaceUp Value Proposition (what), to introduce the aims of the Space Academies (not so much as single event but rather than add value to the participants)

Positioning vs target startups (to whom): to scout, select and support the startups facing a more advanced phase than a business idea, (business model validation phase and scale-up)

Positioning vs incubators, clusters and acceleration programmes in the European space sector (with whom): to address key institutional partners in Space Economy startups.

Positioning of the Space Academy in the frame of the main European startups, technology and investors event (where): to be close and embedded in the frame of the main European space technology events

The SpaceUp project scouted space-related startups and incubator alumni companies within the EU using active partnerships with relevant networks such as European Space Agency Business Incubation Centers (ESA BIC), EEN Sector Group Aeronautics, Space and Dual-Use Technologies (ASDUT), European Business and Innovation Centre Network (EBN), as well as with regional initiatives related to innovation, technology transfer and entrepreneurship.

The idea was not to provide overlapping of activities but to support existing European space-related businesses incubators in providing further and different services after the incubation period to the alumni companies and startups with more advanced Technology Readiness Levels (TRL). In addition, a lot of effort was put into building new formal relationships with potential partners that had been identified by the European space cluster analysis.

This approach helped to multiply the awareness about existing initiatives and integrate promising companies already encountered by the ESA-BICs and other incubators within in the consortium and their networking partners.

Moreover, the consortium identified over 300 companies from 33 countries, that were potential clients for the SpaceUp Project. Those companies were directly approached to make them aware of the offerings.

In order to reach out to an even wider community a website was built and newsletter as well as social media

channels (Facebook, twitter, LinkedIn). The communication was shared intensively by the consortium partners.

## 2.3 Space Academies

The programme of the Space Academy was divided in two days:

Day 1: During the first day, workshops, one-to-one and roundtables meetings took place (see Fig. 1). On this day all entrepreneurs could improve their skills and get insights from experts on various topics. During the workshops, the entrepreneurs got an extensive class on investment readiness, business modelling, IPR (applicable to all kind of sectors), while the one-to-one meetings and roundtables meetings focused on the individual business case.

Day 2: The second day was organized following the format of a small congress with panels, keynotes and pitching sessions from the ten selected startups (see Fig. 2). This format was integrated in the joint conference. The pitching session was split into two or three sessions. Keynotes and panels with experts provided the opportunity for all attendees to learn more about the latest trends. This event involved speakers from corporations and other stakeholders outside of the regular network of the consortium and therefore provided a perfect opportunity to multiply the networking and business opportunities.

SPACE ACADEMY Day 1						
Welcome and Registration						
MODULE 1 Business Angels	MODULE 2 EU funds	MODULE 3 Crowd- funders	MODULE 4 Business Model	MODULE 5 SPIN-IN	MODULE 6 European Space Ecosystem	2h
One-to-one Meetings and Meeting Tables						1.5h
Networking Lunch						
MODULE 1 Business Angels	MODULE 2 EU funds	MODULE 3 Crowd- funders	MODULE 4 Business Model	MODULE 5 SPIN-IN	MODULE 6 European Space Ecosystem	2h
One-to-one Meetings and Meeting Tables						1.5h
Networking Dinner						

Fig. 1 Space Academy programme day 1

<b>SPACE ACADEMY Day 2</b>	
Welcome and Registration	-
Panel with Experts	1.5h
First Round of pitching (3-4 Companies)	1h
Networking Lunch	1h
Keynote Speech	1h
Panel with Experts	1.5h
Second Round of pitching (3-4 Companies)	1h
Networking Break	0.5h
Panel with Experts	1.5h
Third Round of pitching (3-4 Companies)	1 h
Closing session	0.5h
Networking, One-to-Ones, Cocktail reception	-

Fig. 2 Space Academy programme day 2

In preparation of the Space Academy an evaluation committee rated all proposals after every call for proposals on the basis of an application form on their business case and a pitch deck. The online form was based on previous respective experiences by Fraunhofer Institute with intramural grants, EBAN with Business Angels interests, IBS Consulting the EC SME Instrument Evaluation Table, and TIP VENTURE through crowdfunding campaigns. Particular emphasis was put on relevance of the business case on the use of Galileo, EGNOS and Copernicus, space technologies as well as international market potential.

The evaluation committee used the following criteria to score the applications:

1. Value proposition / business idea
2. Market positioning and market potential
3. Business scalability
4. Financial status & business planning
5. Investment approach
6. Strategic relationships and partnerships
7. Team
8. Technical expertise

Then the ten most viable cases were selected and received a feasibility study (see Fig. 3). In preparation for the feasibility study, the finalists had to answer an in-depth questionnaire. The questionnaire was divided into seven different sections, each of them representing a key point for company (self-)assessment:

1. Company profile: main data of the applicant and short summary of its core business;

2. Business objectives: description of the vision, mission, core values, short- to medium-term financial and non-financial objectives, as well as the strategy pursued and the measures currently being implemented in this regard
3. Resources: description and self-assessment of the financial, manufactured, natural, human, organisational and relational capital
4. Internal value chain: description and self-assessment of the primary and supporting activities according to Porter [2].
5. Value proposition: description and self-assessment of the most relevant value factors from a customer perspective (e.g., price, durability, ease of use, expandability, recyclability etc.) when making use of an offer of the startup or its competitors considering the buying process and the respective life-cycle.
6. Profit equation: description and self-assessment of the profit equation focused on the structure and mechanisms of revenues and costs
7. Business model design: assessment of the startups' knowledge with regard to business models and their practical experience regarding business model development.

This information was the basis for the feasibility studies, which were provided to the companies two weeks prior to the Space Academy. During the Space Academy itself the finalists had 30 minutes with each expert covering one of the topics mentioned (one-to-one module).

In addition to the feasibility studies, an optional financial assessment service has been offered to those companies that were interested in receiving the so-called Credit Passport, internationally recognised certification that assess credit risk exposure. The assessments were performed by subcontracting Credit Data Research using technology provided by Moody's Analytics.

All applicants were invited to attend Days 1 and 2 of the event including workshop modules and networking opportunities. Networking and spin-in/spin-out opportunities were available through the link to existing events in the space, technology and investment sectors.

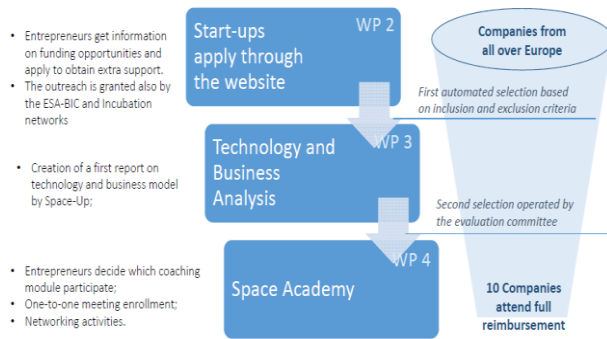


Fig. 3 Selection process of finalists for the Space Academy

### 2.4 Survey of Finalists

The format of the Space Academies was improved on the bases of surveys after every academy. At the beginning all startups that applied for the Space Academy had to answer 25 questions about a variety of topics that helped the committee to understand the current status of their company and business case. Later these data were updated by some additional questions which were addressed to the finalists only regarding the impact of the Space Academy on the business case of the finalist.

Those questions were:

- Have you received funding because of the Space Academy? If so, how much? (please note that this figure will only be shown as an aggregate amount over all the selected companies and shall not be shared publicly)
- Were the services provided by the Space Academy useful for your actual business development? Response options: Disagree/partly agree/mostly agree/ fully agree
- Have you hired more people since the Space Academy? If so, how many?
- Which Space Academy services were the most useful for you?
- Did the Space Academy lead to partnerships that are relevant to your business? (e.g. with investors, business partners, universities, research centres). If yes, how many partnerships have been developed?

The consortium completed the information that was given by the companies during the survey with extensive manual research in the company communications, especially in respect to investment that they received and their participation in an accelerator or incubator program.

### 3. Final outcomes

A total of six Space Academies were completed. More than 600 persons participated in the Space Academies. Overall 180 were evaluated resulting in a preselection of 82 and 60 finalists. Out of the six Space Academies two were held as physical events in Helsinki and Bremen and the remaining three were transformed into virtual events (Table 1.) because of Covid-19 restrictions.

Table 2. Space Academy temporal overview

Space Academy	Year	Format	Finalists	Side Event
Helsinki	2019	Physical	10	EBAN Annual Congress
Bremen	2019	Physical	10	Space Tech Expo
Rome	2020	Digital	10	New Space Economy Expo Forum
Paris/Sevilla	2021	Digital	20	Paris Space Week
Europe	2021	Digital	10	EBAN Annual Congress

#### 3.1 Space Clusters within the EU

The consortium was already well connected to relevant actors supporting the European startup ecosystem. The following partners helped to advertise the offerings of the SpaceUp project to relevant startups. Enterprise Europe Network (EEN), Sector Group Aeronautics, Space and Dual-Use Technologies (ASDUT), ESA Business Incubator Centers (ESA-BICs), several relevant clusters, European Aerospace Cluster Programme (EACP), Network of European Regions Using Space Technologies (Nereus), science parks, accelerators and further European Union (EU)-level organizations and services such as the European Institute of Innovation and Technology (EIT). The analyses of European space clusters meant to increase the outreach within Europe.

The analysis of space clusters identified 68 entities from 25 European Union countries and the United Kingdom (UK) (see Fig. 4). While all studied clusters list research & development, human resource & business development and internationalization as objectives, only a few of them already achieved international cooperation. Furthermore, not all of them provide services for startups, entrepreneurs and SMEs. The

study shows great potential for European clusters to increase their international cooperation and achieving synergies.



Fig. 4 68 identified entities from 25 European Union countries and the United Kingdom (UK)

The consortium increased the size and scope of the existing network through 10 Memoranda of Understanding (MoU) and one Letter of Support (LoS). These partners helped to enlarge the outreach of the project and align it with other existing initiatives.

- Instituto Pedro Nunes-Astropreneurs (MoU)
- EEN ASDUT SG (MoU)
- Primomiglio sgr (MoU)
- VERHAERT NEW PRODUCTS AND SERVICES (MoU)
- High-Tech Gründerfonds Management GmbH (MoU)
- European Business and Innovation Centre Network (MoU)
- Seraphim Space Camp (MoU)
- Baltic Sea & Space Cluster (MoU)
- E. Amaldi Foundation (MoU)
- Finnish Business Angels Network (MoU)
- Centre national d'études spatiales (LoS)

The SpaceUp project collaborated actively with the project Astropreneurs, which was also funded under

Horizon 2020 (Grant Agreement ID 776258). It was strategically agreed to participate in each other's board meetings / events and also to communicate the joint mission publicly. An event calendar was developed for both projects and two webinars were held together.

Applicants for the Space Academies were resourced from the entire "European space map" mentioned above. More details are provided in the following sections: Marketing, Participants regional share, Participant satisfaction, Incubator/ Accelerator, and Impact.

### 3.2 Marketing

The Space Academy format, companion events and webinars were widely communicated. In total the consortium partners sent 25 messages to 109,000 contacts via email and distribution lists. Also 60 news pieces were published on websites or via newsletters. In addition, the already existing personal relationships with contacts in EU space clusters were addressed.

In social media the SpaceUp project was active at Twitter (<https://twitter.com/spaceupproject>) with 603 followers, YouTube (<https://www.youtube.com/channel/UCBwfHUYJEJSfy1JFokv4Gcg/>) with 830 views and 1.131 LinkedIn (<https://www.linkedin.com/company/spaceupeu/>) follower (See Fig. 5). The social media messages had a total audience of more than 970,000 persons.

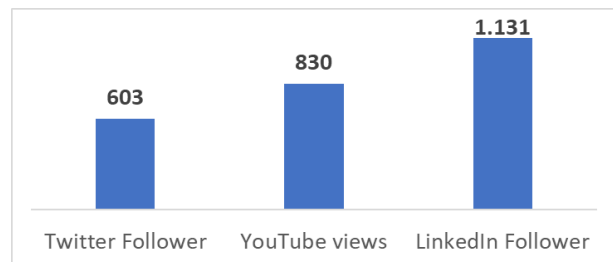


Fig. 5 Social Media outreach

During the Covid-19 pandemic the consortium started to offer webinars in addition to virtual Space Academies, which were well received and had about 300 participants in total (see Fig. 6).

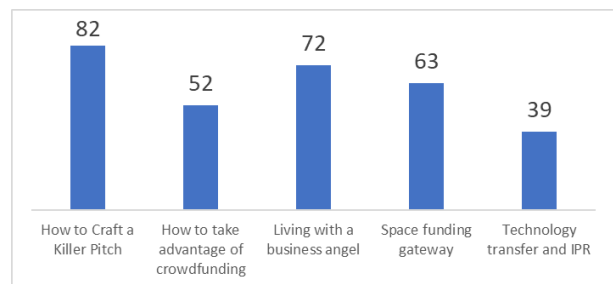


Fig. 6 Participation to SpaceUp Webinars

### 3.3 Participants to the Space Academies

A total of 206 applications for the six Space Academies arrived. Out of these 180 application passed the minimum criteria and were pre-selected. They came from 22 different EU-Countries and 16 Non-EU Countries. Most of them arrived from Germany with 38, followed by Italy with 27 applications. 10 to 14 applications arrived from France, Spain, and Estonia. Between five and nine applications arrived from UK, Czech Republic, Ireland, Sweden, Latvia, and Greece followed by applications from 11 countries with less than 5 applications per country. In total about 55% of the applications came from Germany, Italy, Spain and UK. The countries Estonia, Czech Republic, Latvia, Romania, Serbia, Lithuania and Slovakia made up about 16% of the total applicants (Fig. 7 Pre-selected: 180 applications by country).

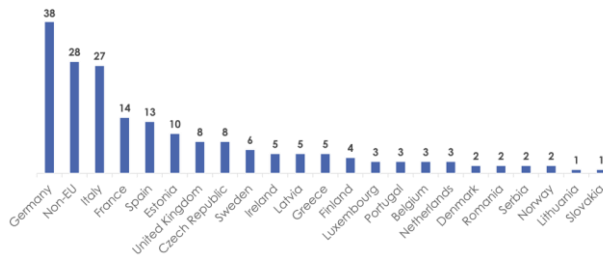


Fig. 7 Pre-selected: 180 applications by country

The evaluation committee chose 60 finalists out of the pre-selected applications. Fourteen finalists came from Germany and Italy, each, followed by UK, Spain, Estonia and France with 5-4 finalists. All other finalist originated from nine different EU and two non-EU countries. In total, finalists from 17 countries participated in the event. In total about 63% of the finalists came from Germany, Italy, Spain and UK. The countries Estonia, Latvia, Lithuania and Slovakia made up about 15% of the total applicants (see Fig. 8).

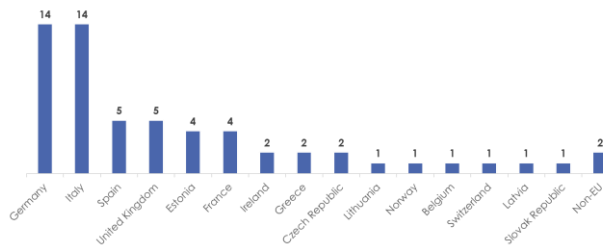


Fig. 8 Finalists: Participants by country

The offer of the Space Academies attracted finalists from a variety of industries. In total applications from 14 different industry sectors participated. As expected, the space sector represents the largest share with 1/3 of all finalists. The remaining 2/3 are divided between environmental monitoring, manufacturing,

cybersecurity, agriculture, precision navigation, air quality management, electronics, asset management, energy, tracking, healthcare, customer analytics and edge computing (Fig. 9 Finalists: Participants by Industry sector).

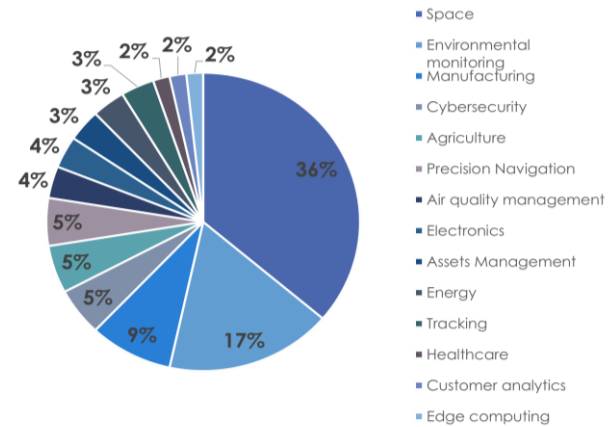


Fig. 9 Participants by Industry sector

### 3.4 Participant satisfaction

The feedback regarding the most useful aspect of the Space Academy was very clear. 43% of the finalists saw the individual feasibility study as the most useful aspect of the project and followed by the one-to-one meetings with 24%, in which the content of the feasibility report is discussed in depth with the startups. This shows, the individual services offered only to the finalists of the Space Academy were seen as the most useful part of the project offerings. The workshops and the pitches were seen as the most useful part by about 10% each and the networking during the Space Academy by 5% (See Fig. 10 Which SpaceUp services were the most useful for you?).

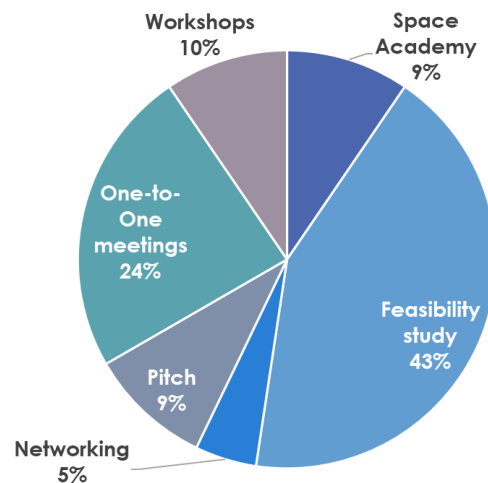


Fig. 10 Which SpaceUp services were the most useful for you?



### 3.5 Incubator/Accelerator

Most of the finalists (2/3) were at the time of their application still involved in or just left an incubator or accelerator program. Only 1/3 never had an affiliation with such organization (Fig. 11 Finalists: Are you part of an accelerator/incubator program?).

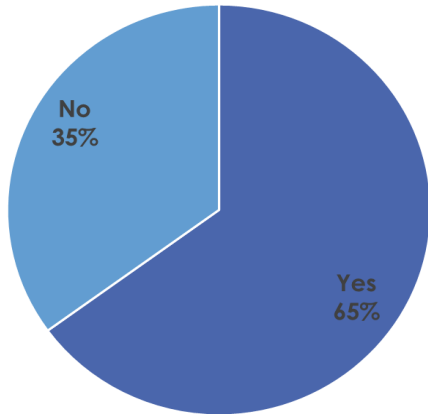


Fig. 11 Finalists: Are you part of an accelerator/incubator program?

Figure 12 shows that that 65% of the finalists that were at some point affiliated with an incubator / accelerator program, were part of an ESA Business Incubation Centre. Finally, 35% participated in other kinds of Incubator or accelerator program.

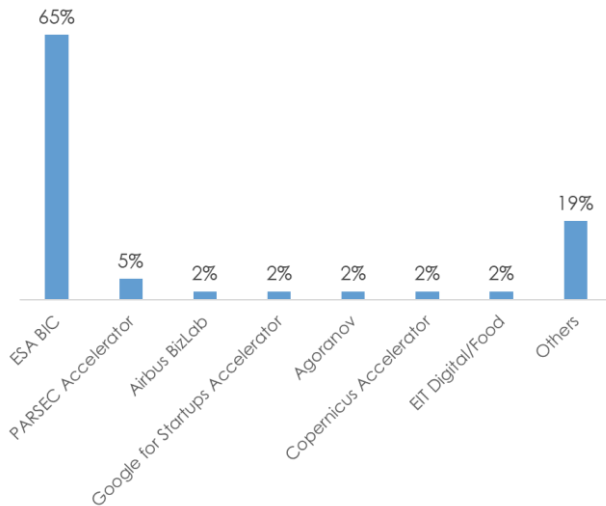


Fig. 12 Finalists: Which accelerators/incubators were mentioned?

### 3.6 Impact

More than half of the finalists developed valuable new partnerships e.g. with investors, business partners,

universities, and research centres during the Space Academy (see Fig. 13)

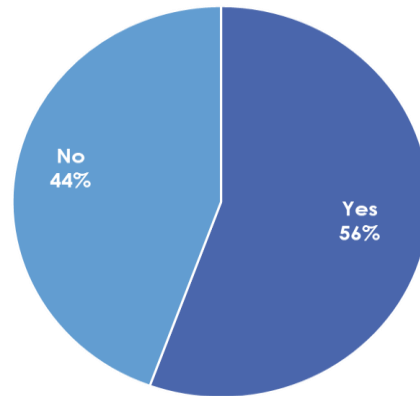


Fig. 13 Finalists: Did the Space Academy lead to partnerships that are relevant to your business? (e.g. with investors, business partners, universities, research centres)

The results of the final survey also show in Figure 14 that almost 70% of the finalists hired a total of 111 new employees after participating to the Space Academy.

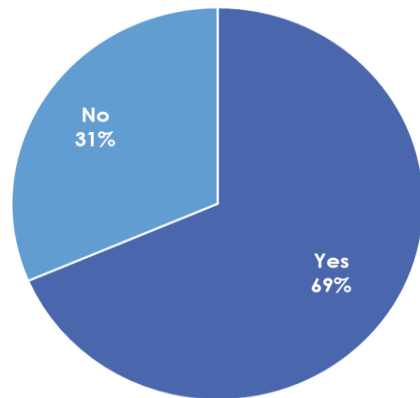
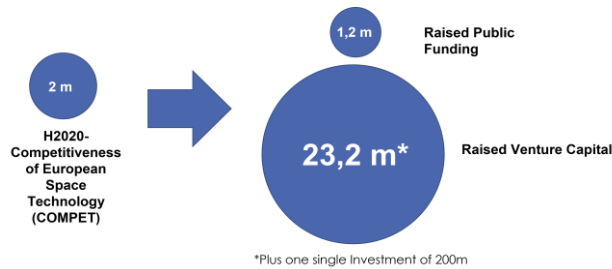


Fig. 14 Finalists: Have you hired more people since the Space Academy? If so, how many?

Feedback to the question on the financial gain by the finalists was not given by all finalists. Figure 9 shows the public funding and venture capital that was received by the finalists that responded to the survey. They received €23.2 million venture capital in total and about €1.2 million in public funding. There was also an individual investment of venture capital of €200 million. (See Fig. 15).



**Fig. 15 Finalists: Funding and venture capital raised by finalists after Space Academy**

#### 4. Discussion and the way forward

For a long period of time the European space sector was a "closed" agency-driven shop and was lacking public attention due to missing marketing activities for many decades. Questions like: what leads to the weather forecast or how does communication by cell phone operate, can today already be answered by the non-space public. In Europe, startups have always taken up a niche with the touches of "let's see where this will go" and "failure is not an option", especially in the European space sector. Accessing the potential for new product and service ideas through education and marketing of space products and their potential for non-space sectors and vice versa has not only a great potential for innovation in various industry sectors, but will also increase the success rate of space startups. As a result, more space-related innovations will enter the market successfully and provide the basis for a viable future spin-in/spin-out space sector.

Different startup support systems have been developed within the EU:

- ESA Space Solutions Program which focuses on business application, business incubation and technology transfer since 1990
- ESA Artes: enable European industry to develop innovative products, services, applications and even whole systems that give them a leading edge in a highly competitive global market
- Enterprise Europe Network (EEN) as a b2b facilitator during trade fairs, with Trade missions to new markets all around the world and Conferences and workshops
- National and regional incubator and accelerator programs

All this support aims at early stage companies and very often those companies don't yet have the needed maturity, when they leave those incubation centers. This is where the Space Academies stepped in and offered support to develop into mature companies.

#### 4.1 Clients for the Space Academy

The space cluster analysis compared the overall structure and objectives of the different clusters. All clusters show comparable structures independent of nationality or focus areas. While most of the clusters list internationalization as a core objective, not all of them stated that they already work in international projects and/or cooperations. Less than half of the analyzed clusters have their strategies aligned with the regional policies and strategies.

Potential synergies can be obtained between clusters aligned with the regional policies, since they are based upon national policies, which in return are aligned with policies from the European Union and thus leading to an implicit, transnational alignment between individual cluster strategies. Compiling a comprehensive comparison of cluster strategies might therefore be beneficial and be used as a starting point for a strategic transnational, cross-cluster cooperation. While some clusters already maintain transnational cross-cluster cooperation, some other clusters still yield great potential.

Important for the scope of Project SpaceUp was that 17 of the analyzed clusters did not (yet) include specific support for SMEs/Startups. However, when considering cross-cluster cooperation these clusters were able to include potential partners or customers to startups from other clusters. Also they were able to learn from other clusters about advantages of supporting startups, using their facilities or autodidactically.

The SpaceUp consortium partners in charge of organizing a Space Academy used the newly established regional contacts in addition to existing structures to collaborate with the cluster managers in promoting the project and the Space Academies to startups and regional industries, with the goal to ensure future sustainability of startup support within or related to the space sector, including cross-fertilization.

The success of this strategy was confirmed by a clear focus on the five well-known space nations (Germany, Italy, Spain, France and UK) and applications from 22 other EU-countries resulting in pre-selected applications from almost every nation within the EU. The outreach and marketing activities also attracted two applications from Romania which does not have a space cluster yet. The collaboration with the Astropreneurs project was also beneficial for the acquisition of applicants to the Space Academies.

Since a large number of SpaceUp finalists had been part of different accelerators or incubators the level of maturity of the business case was elevated enough in order to be accepted for a Space Academy. It is obvious, that the transfer from ESA BICs to the Space Academy worked well, because about 2/3 of the finalists have been part of an ESA BIC. There is a large demand

between those startups for further support during the maturing process and also for access to venture capital.

#### 4.2 Impact on startups

The Space Academies led to impacting relationships with investors, business partners, universities, and research centres for the applicants. This was one of the main goals of the Space Academy, because the idea was to increase exposure of startups to networking partners like investors and business partners during their maturity phase. However, part of the program was heavily impacted by the Covid-19 pandemic. Since in-person meetings were no longer possible, b2b matchmaking opportunities were offered at every digital Space Academy. Moreover, the project took place in the transition phase between two Multiannual Financial Framework which had influenced the project in terms of access to funding by the companies, due to the closure of many calls of the Horizon 2020 programme, in particular SME Instrument, and the non-approval yet of Horizon Europe.

The Space Academies also helped the startups to tackle their human resource demands. They analyzed their needs and attracted and hired staff. The direct impact of the Space Academy itself on the company development cannot be shown. However € 23.2 million were raised in venture capital as well as € 1.2 million in public funding after the participation in the Space Academies. This indicates that there is a positive development of companies after participating to the program.

In general, the exposure of space related startups in Europe to private investors must be heavily increased, because compared to other markets like the US there is very little venture capital for these type of companies.

#### 4.3 Covid-19 effects

The project was heavily affected by the covid-19 pandemic, because only the first two Space Academies were held as physical events. After covid-19 all planned Space Academies had to be rescheduled. As an immediate answer the project offered five different webinars on various topics to keep interacting with startups. Because of the time-delay two Space Academies were merged and resulting into five Space Academies with still 60 finalists in total.

Data of the effects of Covid-19 on space startups are difficult to obtain. In general, startups were often not eligible for government support due to the lack of financial history. The project encountered startups that were already at home in the virtual world and not much bothered by the new ways of communicating their business. Others, like space-related startups in the

aeronautics and aviation sector, took a considerable backlash. Some startups rely on physical presence, travelling etc. and had to adapt to new formats within their business models. Startups with considerable research funding in software development fared well. There are many examples and no numbers to show general trends. Overall, the startup scene in this high-tech space and space-related sector showed a high variety of challenges and solutions.

Covid-19 forced to adapt an in-person networking and interactive Space Academy format for the virtual world. Even so this proved to be challenging per se, the advantage of the virtual Space Academy is that this format lowers the barriers for participation by saving time and travel costs. Both formats, virtual and in-person) did work and can be recommended.

### 5. Future of the Space Academies

Since the Space Academy provides a support format for maturing space-related startups to bring their business model to the next level and a gap in support, public funding and venture capital exists for these startups within the EU in general, the consortium suggests in the following business models and Space Academy formats.

Various business models are available in order to continue the Space Academy format:

1. Franchising  
General definition: The franchisor owns the brand name, products, and corporate identity, and these are licensed to independent franchisees who carry the risk of local operations. Revenue is generated as part of the franchisees' revenue and orders. The franchisees benefit from the usage of well known brands, know-how, and support.
2. License  
Efforts are focused on developing intellectual property that can be licensed to other manufacturers. This model, therefore, relies not on the realization and utilization of knowledge in the form of products, but attempts to transform these intangible goods into money. This allows a company to focus on research and development. It also allows the provision of knowledge, which would otherwise be left unused and potentially be valuable to third parties.
3. Freemium  
The basic version of an offering is given away for free in the hope of eventually persuading the customers to pay for the premium version. The free offering is able to attract the highest

volume of customers possible for the company. The generally smaller volume of paying 'premium customers' generate the revenue, which also cross-finances the free offering.

4. Revenue Sharing  
Revenue sharing refers to firms' practice of sharing revenues with their stakeholders, such as complementors or even rivals. Thus, in this business model, advantageous properties are merged to create symbiotic effects in which additional profits are shared with partners participating in the extended value creation. One party is able to obtain a share of revenue from another that benefits from increased value for its customer base.
5. Crowdfunding  
A product, project or entire startup is financed by a crowd of investors who wish to support the underlying idea, typically via the internet. If the critical mass is achieved, the idea will be realized and investors receive special benefits, usually proportionate to the amount of money they provided.
6. Crowdsourcing  
General definition: The solution of a task or problem is adopted by an anonymous crowd, typically via the Internet. Contributors receive a small reward or have the chance to win a prize if their solution is chosen for production or sale. Customer interaction and inclusion can foster a positive relationship with a company, and subsequently increase sales and revenue.

One or a combination of business models can be used in the future in each of the potential formats of the Space Academy:

1. Local Space Academies in conjunction with other events  
During the SpaceUp project the different Space Academies have been always organized in conjunction with other large, space and non-space, events such as EBAN Annual Congress Helsinki and Europe, New Space Economy Expo Forum Rome, Paris Space Week, SpaceTech Expo Bremen. This way, in spite of the obvious constraints that the organization of the other events imposes, each Space Academy participant is able to benefit either of a larger audience, either a greater network opportunity even with non-space sector startups, entrepreneurs and investors.
2. Online Space Academy  
Due to the Covid-19 pandemic SpaceUp partners decided to convert the Space Academy in an online event. This was of course a major disruption as all the b2b meetings, workshops

and other networking activities during the proposal phase were foreseen always in person. Nevertheless, it was a good exercise and it allowed to understand the major issues to tackle when a Space Academy is organized online, to lower the barriers for participation (especially for those not supported by the project) and to save travel costs. However, we had to purchase an online platform for hosting the Space Academy.

Therefore, it is considered possible to continue to organize or at least to alternate the Space Academy between in person and online editions.

3. Space Academy format to be "sold"  
Using the Franchising and Licensing business model patterns, it is possible to sell the Space Academy format to third parties for allowing them to organizing their own Space Academy. The SpaceUp partners will offer the full package of best practices and solutions as well as the possibility to use the Space Academy "brand".

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement number 776356


## References


- [1] ESCA, Overview of cluster benchmarking indicators, <https://www.cluster-analysis.org/benchmarking-in-a-nutshell/Overviewofclusterbenchmarkingindicators.pdf>
- [2] Porter, M. E. (2014) *Wettbewerbsvorteile. Spitzenleistungen erreichen und behaupten*. 8. Auflage. Frankfurt Main: Campus.





[www.space-academy.eu](http://www.space-academy.eu)

 @SpaceUpProject

 [www.linkedin.com/company/spaceupeu/](http://www.linkedin.com/company/spaceupeu/)

