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D5.2 Establishing EDSI

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1. Executive Summary

In this Deliverable, we have looked at how the project has established the European Data Science Academy (EDSA) to fulfil demand for Data Science training including how European Data Science Institute (EDSI) will operate and evolve over time.

This deliverable looks to explain the various methods of research that has been conducted to determine the needs of the Data Science community. These needs have been assessed from a number of stakeholder groups, representing both private and public sector organisations. With supporting analytics from the [Dashboard](#), the services EDSA will provide are as follows:

- A tool offering a snapshot of demand in the field of Data Science
- A practical tool helping to build Data Science curriculum
- A set of High-quality Data Science courses developed by the project partners, in addition to directing users towards equivalent courses from other institutions
- Tools to monitor and analyse learner progress (learning analytics)

This Deliverable also explores how EDSA will evolve over time to become a self-sustaining entity. The original intention was for EDSA to become a self-revenue generating model, however following testing the proposed pricing strategy with market and industry representatives, it has been determined that the most suitable option for the continuation of EDSA's outputs is perfectly aligned with what the training providers in the consortium are already doing, resulting in the Academy being sustained via partner agreed in-kind contributions.

These contributions have been outlined within a Memorandum of Understanding (MoU), which state that the online services 'Academy' will be maintained and promoted for at least one year beyond the end of the project by the relevant and voluntary partners. However, the Academy cannot be run by the project partners in the long term, resulting in a partner evaluation at the end of year 1 of the agreement to determine the next steps for the Academy.

2. Introduction

The following deliverable examines the steps taken by the EDSA partners to establish the EDSI - referred to as the 'Academy'. The deliverable will highlight how the online services provided through EDSA will provide Data Science training across Europe beyond the life of the project. The following pages will explain the various methods of market research conducted, to derive the most viable option for the online Academy to continue its existence beyond initial funding. Furthermore, it will explore the stakeholders identified, and the various assumptions that have been tested within the community, including evaluating the most suitable option for EDSA to deliver and develop future training capability.



3. Discovery Phase

As outlined in the [Grant Agreement](#), the objective of EDSA is to reduce the data literacy skills gap by improving Data Science training. For the project to understand the needs of this community, the consortium partners had to collect data to make valid recommendations in line with the goals of EDSA¹. This phase of work resulted in the partners deploying a mixed methods approach, guided by the collection of qualitative data, which was initially outlined in D1.4.

To gain a true understanding of the problem EDSA is trying to overcome and to ensure the services provided by the Academy meet these needs, the consortium focused on the collection of both primary research data i.e. survey results and interviews, as well as already existing secondary data. This was essential to our outcomes and aims for the Academy².

The partners initially pursued a pilot study (M1-M6), by conducting an extended evaluation to improve our data collection. This decision was influenced by the initial feedback and practical lessons learnt during this first collection of data. Consultation with the project partners then lead to the decision to concentrate on three different domains:

1. Increasing study reach
2. Improving the question design
3. Consolidating the key areas of Data Science

Following this initial domain study, the focus of the consortium was to understand whether there is a market fit for the Academy, what services would meet the needs of this market, and to identify opportunities to achieve its long-term vision of becoming self-sustainable.

4. Research

The partners have continually validated their findings over the duration of the project by engaging with relevant market professionals and the demand trends via the Dashboard results.

This method was to understand the services EDSA should provide to meet the underlying training needs of the Data Science community. By conducting [industry relevant surveys and interviews with hiring managers](#), the consortium was able to understand the gaps within the market. Below detail the various assumptions derived from the primary and secondary

¹ European Data Science Academy Grant Agreement:

<https://drive.google.com/drive/search?q=EDSA%20grant%20agreement>

² D1.4 Final Report – Methodology: <http://edsa-project.eu/edsa-data/uploads/2015/02/EDSA-2016-P-D14-FINAL-withouthPrivateAppendix.pdf>

research conducted, including; the various stakeholders and streams that have contributed to underpinning EDSA's offer.

4.1 Primary Research

Corporates (and SMEs) needing a workforce upskilled - insights from more than 690 Data Science professionals and managers across the EU suggested the need to have a focus on soft skills and basic data literacy training, as outlined in D1.4. Additionally, the consortium conducted four focus group workshops to test training demand patterns with practitioners³.

Advisory board members are seeking improvements within their industry - The project partners constantly validated their results and outputs with the Advisory board. The board members underwent interviews to test and receive feedback on EDSA's intended services. The feedback received enabled the partners to make better informed decisions around what EDSA's business model and strategy should look like to improve Data Science training.

Dashboard results highlight trends in demand - Skill trends that are extracted from the user searches outline the skill demand within this community. This in turn validates the curriculum we are creating - and shows that EDSA's services will support this community.

4.2 Secondary Research

Academia want to promote courses and networks - Universities and academic institutions use promotion to build interest around the courses they curate and create. They undertake this form of promotion to increase the number of course participants, and then iteratively improve the quality of these courses through student feedback.

Individuals & students want to find curricula and courses - Individuals and students identify their needs in terms of Data Science. For them to maximise their learning experience, they will seek out the most relevant and beneficial curricula and courses to meet these needs.

Institutions want to monitor Data Science - Institutions look to use research and results to assess impact within this industry community. This in turn helps to improve job creation and skilled workers to serve the wider economy.

Data Science companies want to promote solutions and services - For companies working in the Data Science community to grow and provide continual services, they need a skilled

³ D1.4 Final Report - Conclusions & Potential Future Work: <http://edsa-project.eu/edsa-data/uploads/2015/02/EDSA-2016-P-D14-FINAL-withouthPrivateAppendix.pdf>



workforce to undertake the work. This creates the need within the market for current and continual learning resources.

5. Service Needs Assessment

Based on insights gathered, the intention for the Academy was to build on a number of crucial resources developed during the EDSA project. Together, these will form the framework of excellence for the sustained offer and will provide an impact beyond the project in line with its goal.

To ensure the relevance of EDSA's offer in line with its goal, a survey was conducted of major European competitors to EDSA. The survey focused on a variety of European based organisations that were working on improving the accessibility to Data Science skills. Additionally, consultation with industry experts revealed the main service characteristics considered most important for clients. By understanding these needs, the online Academy should be able to provide the most relevant and widely used online training services. The analysis of the results lead to 10 different service categories, these were defined as:

Service Characteristic	Description
1. Courses & Training	This category assesses whether the entity offers its own or third party Data Science courses or training (online, face-to-face or blended).
2. Online Portal	This category explores whether the entity offers a portal function which collects, edits and represents information from diverse sources, in this case on Data Science.
3. Dashboard	Dashboards are easily understandable, real-time user interfaces which visualize current and historical information relating to Data Science skills and their development.
4. Tools & Solutions	This category evaluates whether entities offer structured, regularly updated information on specific Data Science tools and solutions, e.g. through a newsletter or blog.
5. Certification	For entities that provide courses and training, this category analyses whether participants can receive certificates for completed training.
6. Learning Analytics	This category indicates whether the entity collects detailed analytics on course interaction and completion from participants. This data allows training providers to gather feedback on the effectiveness of their courses and training to develop best practice approaches to training.

7. Research	This category marks whether an entity conducts its own research into Data Science and skills development.
8. Jobs	This category shows whether an entity offers users help to find Data Science jobs, e.g. through a job board.
9. Consulting	This category evaluates whether the entity offers consulting, advisory or professional services relating to Data Science skills development. (e.g. advice on the development of in-house Data Science training)
10. Networking	This category explores whether entities offer networking opportunities for interested learners and Data Science professionals, e.g. through online communities or a membership network.

Table 1: Service Characteristics⁴

From understanding these service characteristics, EDSA was able to construct its initial offer. To validate the relevance of this offer, it had to be further tested by market representatives. The responsiveness to its offer would determine the level of appetite for this kind of service, and would impact the eventual sustainability option for the Academy.

9. Testing EDSA Sustainability Streams

The feedback received has provided valuable input into determining the most suitable option for an EDSA offer that could be sustained, along with ways that EDSA's offer may evolve.

To maximize the opportunities for the online Academy after funding ends, partners categorised stakeholders into sustainability streams. To understand the most suitable option, the partners committed to evaluating these workstreams. These consisted of:

- 1) Partnerships with existing initiatives
- 2) Product sales with private and public sector clients
- 3) Additional funding opportunities
- 4) Partner continuation of EDSA

From testing demand for the services within these streams, EDSA was able to determine how well received these services were, and what option for sustainability is most suitable for EDSA.

⁴ D5.1 the EDSI Charter: <http://edsa-project.eu/edsa-data/uploads/2015/02/EDSA-2016-P-D51-FINAL.pdf>



Partnerships with existing initiatives

The project partners looked at the opportunity to enter into partnerships with existing initiatives, as an Initiative with a shared vision could be advantageous to the rapid growth of the Academy. By allowing other initiatives to take on parts of the service, the Academy could benefit from specific expertise within all aspects of the product.

By referring to the results of the survey conducted on the major European organisations providing accessibility to Data Science skills, the partners were able to assess and approach the most reliable organisations. However, the results from the analysis showed there is no single entity that provided a full coverage of the wide range of products, which limits the level of expertise within these organisations, but also strengthens EDSA market positioning.

Product sales with private and public sector clients

To validate EDSA becoming a revenue generating model, a number of assumptions needed to be tested. These included:

1. Number of subscriptions
2. Pricing levels of the subscriptions
3. Cost levels - these cost levels can be varied depending on the willingness of the EDSA project partners to commit in-kind contributions, in particular during year 1
4. Badges for courses in the pipeline (during 2018-2019)

From discussions within the consortium, it was agreed that partners would initially leverage their own professional networks to discuss and test the response to the proposed services. The Academy offered partners a membership subscription, which was based on a yearly renewable basis. By offering partners this service, they will be able to exploit the outputs from EDSA, including features such as the use of online courses created by EDSA (including curated content) and the ability to view the supply and demand of Data Science skills within Europe via the Dashboard tool. Furthermore, based on the type of organisation, EDSA would be able to offer a varying pricing level to subscribers to incentivise SMEs and public organisations to join (see table 2).

Membership Subscription	Type of Entity	Price (€)
Annual	Corporations	20K
Annual	Public Sector Organisations	5k
Annual	Small and Medium Enterprises (SMEs)	5k

Table 2: Membership pricing levels

The conversations were primarily held with Corporates (and SMEs) who need workforce upskilling and who have previously shown an interest in EDSA's services. These interviews were conducted by the Open Data Institute (ODI) and ideXlab.

Based on the feedback we received, these organisations stated the services are of interest to both their organisations and the Data Science community, although a wider offer than just a Data Science focus would be more appetizing. Additionally, these organisations suggested there is a lack of interest in committing to one course provider for the membership subscription cost EDSA is advertising.

Additional funding opportunities

We previously recognised that further development of specific services that benefit Europe may warrant further funding, and the partners intended to seek opportunities for feature-specific funding. Following this, individual partners have recognised a number of opportunities which will help partners continue lines of work initiated in EDSA. These include:

Data Innovation Academy: This Academy comes directly from the [Data Pitch programme](#), which aims at exploring critical factors which impact the way organisations create value from sharing data. The aim of the Academy will be to develop a curriculum for data-driven innovation for a number of audience typologies, including; industry in general, open innovation researchers and practitioners. The curriculum will focus on Web-based training built upon a rich collection of learning materials available at Southampton University around Data Science topics, complemented by ODI's programme around data-driven innovation.

The institute of coding; Partners including the Open University and the University of Southampton have recently been announced as partners of the UK governments new £40 million initiative 'Institute of Coding'. The initiative is looking to train the next generation of digital specialists, including improving the employability of graduates in the fields of Computer Science and Data Science⁵.

Strong Links with other European Initiatives: Partners have begun experimenting with micro accreditation, badging and certification in the Data Science space and have agreed to co-design a set of open badges for Data Science with an established initiative. The badges will take an input from our courses/curricula and the Dashboard.

[European Association for Data Science](#) - Partners have strong links with this association, including paid memberships. Based on these strong links, Southampton have been invited to keynote at their yearly conference in July. This will allow for further dissemination of the project outputs and can help develop potential partnerships within the community.

⁵ Prime Minister announces £20 million Institute of Coding:

<https://www.google.com/url?hl=en-GB&q=https://www.gov.uk/government/news/prime-minister-announces-20-million-institute-of-coding&source=gmail&ust=1517387871985000&usg=AFQjCNFNqExQbE92wygENgsbZD-llwqOBg>



The lines of work outlined above, represent future partner activities. These activities are aligned with EDSA, and due to this, partner continuation has appeared to be the most suitable option for sustainability.

Partner continuation of EDSA

To ensure sustainability, and in the event of the online Academy not achieving a revenue-generating model, the partners had to commit to a continuation strategy - this came in the form of the EDSI Charter.

The goal of the EDSI Charter was to describe the structures and relationships required to maintain EDSA's valuable offering beyond 2017. Early research, consultation with the market and industry input have suggested options for a minimum EDSA offer that could be sustained, along with ways that EDSA may evolve. The initial offer, or minimum viable product (MVP), the consortium should seek to maintain is the EDSA web presence, course portal and curriculum. This would then provide an opportunity for EDSA to evolve over time from an MVP to provide further services such as certifying skills and ongoing demand analysis.

This continuation would come from a partner agreement, and would be resourced by in-kind contributions from all partners. This would then create the potential to make a long-term impact on EU economies by building skills and capacity in Data Science.

This cooperation between EDSA partners would act as a secondary aim to the initial revenue-generating model. Partners would commit to using relevant milestones by which to meet and discuss the strategic direction of the Academy. The results below offer an insight into the responses received, which has informed the consortium's decision for long-term continuation.

10. Results and Recommendations

This section outlines the results and recommendations that have been derived from the assumptions the partners have tested. The comments and responses from the relevant community members have been the basis for determining the most viable recommendation for sustainability.

From testing initial cost assumptions with the above channels and work streams, it has been established that there is indeed an appetite for an EDSI-like organization from (in particular) large companies needing to upskill some of their employees in Data Science. That organization would in particular be expected to:

- Help them identify relevant courses in Data Science among thousands of offers,
- Inform them about market trends, relevant tools and companies, etc.

In order to leverage the outcomes of the project, it has been determined from the feedback and testing phase that a revenue-generating model for EDSA is not the most suitable.

Although there is indeed an appetite for an online service, industry representatives feel the space is quite crowded with competitors and with this choice, comes the ability to seek alternative training providers who offer multiple course topics, rather than specialising in one theme.

That being said, the most suitable option for online Academy is for partner continuation. This is the most suitable option, as EDSA is perfectly aligned with what the training providers in the consortium are already doing. The outputs can look to be preserved through the funding opportunities that the partners have identified.

Therefore, the online services will be maintained and promoted by partners following the end of the project, in order to create market opportunities for the EDSA project partners as well as for other interested parties. In-kind contributions from partners will ensure the maintenance and promotion of the tool (Dashboard) for at least one year beyond the end of the project. Partners will then commit to meeting to determine the success of this model (post project). During this meeting the strategic next steps for the online Academy will be decided. We describe below in detail EDSA's service offer.

11. EDSI Online Offer

Based on the results, recommendations, and decision by the partners to run the online service via in-kind contributions, this section defines the services that will be run by the partners. These services have been based on the outputs of the projects, as well understanding the needs within the Data Science community. This enables EDSA to provide the community with direct benefits such as learning resources, and utilising other project outputs, including the Dashboard to develop a fuller service based on the demand and trends of future needs. These services will comprise:

- A Dashboard offering a snapshot of demand in the field of Data Science,
- A practical tool helping to build Data Science curriculum
- A set of high-quality Data Science courses developed by the project partners as well as directing users toward equivalent courses from other institutions
- Tools to monitor and analyse learner progress (learning analytics)

Research suggested that no other European initiatives were offering these as a blended service. EDSA identified the opportunity to differentiate from competitors by extending the work on the project Dashboard to link data on Data Science jobs (demand), and available Data Science training (supply) to provide a unique service for industry. Validating EDSA's outputs and establishing where those services can be most impactful results in the points above identified as the defined services.



12. EDSA Sustainability Stream

To ensure that each partner commits to their in-kind contributions, and to ensure a valid sustainability plan is discussed, a Memorandum of Understanding (MoU) has been drafted. This has been agreed and signed by all partners. In addition to the MoU, to ensure there is enough market representation and buy-in from corporates, the consortium have devised a Letter of Intent (LoI) for early service adopters. This agreement is aimed at corporate sponsors who are looking to utilise the services of the Academy. The agreement has been created to attain organisational users prior to the launch of the Academy on a conditional basis. By recruiting corporate sponsors, we ensure utilisation of the services provided, and in turn provide value to sponsors through promotion of the partnership. This will create brand awareness and affiliation with recognised organisations, further incentivising other organisations to use the same service. This will allow for EDSA's customer base to develop and grow.

We highlight below the key activities that will need to be managed within the consortium, the partner(s) responsible for each and details of the commitment expected from corporate sponsors, which will include details of how EDSA can be further promoted within peer networks.

12.1 Memorandum of Understanding (MoU)

The MoU explains that in order to leverage the outcomes of the EDSA project and maximise its impact, the project partners have agreed to create and manage the online services. The Academy will be maintained and promoted for at least one year beyond the end of the project by the relevant and voluntary partners. From our discussions, the partners agreed that the following contribution will be required:

- A. website hosting
- B. Dashboard updates and maintenance
- C. New course development
- D. External courses' automated curation
- E. Learning analytics maintenance
- F. Community management / communication
- G. Promotion of the Online Academy via social networks, etc.
- H. Recruitment of sponsors (Letter of Intent signature)
- I. Coordination of partners

Based on the contributions that have been highlighted, each partner intends to contribute to the following tasks (based on the list above):

	A	B	C	D	E	F	G	H	I
Open University	✓	✓		✓			✓		✓
Southampton			✓			✓	✓		
JSI		✓		✓			✓		
Fraunhofer			✓	✓			✓	✓	
KTH			✓				✓	✓	
IDEXLAB							✓	✓	
Persontyle Limited			✓				✓		
TU/e		✓			✓		✓	✓	
ODI			✓				✓		

Table 3: Partner contributions to running the online services

To ensure that partners' activities are aligned to these commitments, it has been agreed that partners meet on a scheduled basis via online calls, as well as attending a virtual meeting to review success/outcome of year 1. This will allow for a discussion and decision on the strategic direction of the online Academy beyond the partner agreement. The duration of the partner commitment has yet to be agreed (this will be agreed once the project has finished).

12.2 Letter of Intent for Corporate Sponsors (LoI)

We have explored the commitment from consortium partners to ensure the long-term continuation of the online Academy, in order to support continuation EDSA requires customers/sponsors of its services. To ensure there is substantial representation from corporations, a Letter of Intent (LoI) has been drafted. The letter of intent will provide EDSA with pre-existing sponsors prior to launch who will support the promotion of the Academy. These sponsors will benefit from the services on offer, as explained in the EDSA online offer.

In order to benefit from these services, corporate sponsors must agree to a number of light commitments. These commitments are to ensure that the online Academy is promoted within its peer network, including receiving feedback to ensure the services are maintained and are relevant to the community. These light commitments include:

- Encourage employees to visit
- Promote EDSA through internal communication channels
- Appear as early joiner on EDSA website
- Authorise public communication about support / sponsorship
- Provide feedback after one year



By implementing these commitments from corporate sponsors, we ensure further exposure for the EDSA brand, including strengthening our market position through sponsor association.

Although we are yet to secure any commitments with corporate sponsors, efforts will continue to pursue these partnerships, including following up on promising conversations with both public and private organisations.