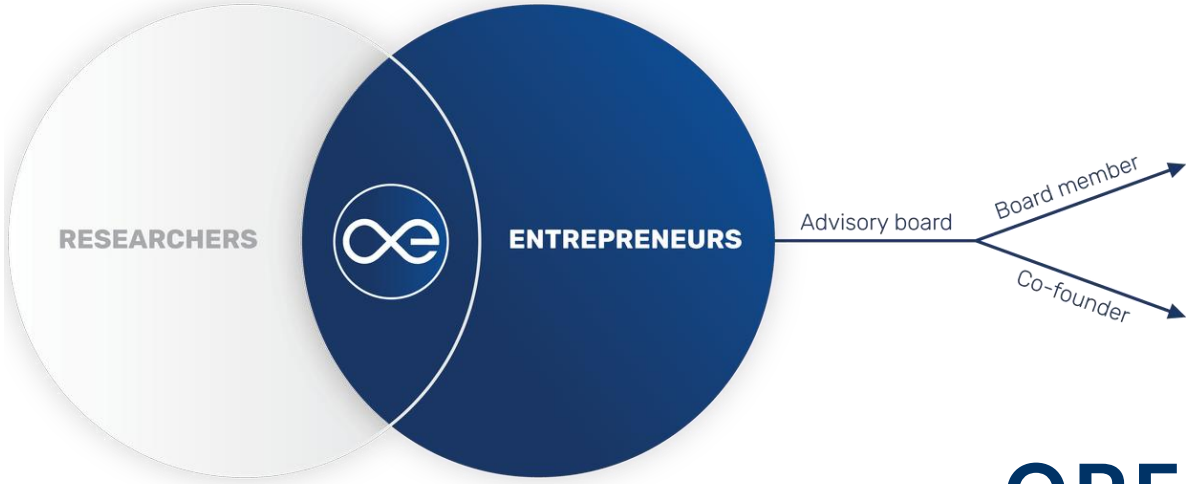

OPEN ENTREPRENEURSHIP
INTERNAL EVALUATION

EVALUATION REPORT, NOVEMBER 2023

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OPEN ENTREPRENEURSHIP

A PROJECT FUNDED BY

INDUSTRIENS FOND

Uddannelses- og Forskningsministeriet

ERHVERVSMINISTERIET

A COLLABORATION BETWEEN THE EIGHT DANISH UNIVERSITIES

AALBORG UNIVERSITY

AARHUS UNIVERSITY

CBS

DTU

IT UNIVERSITY OF CPH

RUC

UNIVERSITY OF COPENHAGEN

SDU University of Southern Denmark

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EXECUTIVE SUMMARY ▸ ABOUT OE

This summary presents key findings from an evaluation of the Open Entrepreneurship (OE) project (2017-2023) – a collaboration between the eight Danish universities. OE was established to strengthen the utilization of knowledge and technology from Danish universities by creating "open environments" for knowledge exchange and collaboration between universities, entrepreneurs, firms and investors. More specifically, the project seeks to connect experienced entrepreneurs and intrapreneurs (hereafter referred to jointly as "entrepreneurs") with academic researchers to explore and develop commercial opportunities.

OE was launched in 2017 by AAU, AU, DTU and ITU. In 2020, CBS, KU's Faculty of Health and Medical Sciences (HEALTH) and RUC joined OE. As of 2022, when SDU entered the project, it includes all eight Danish universities. In 2023, KU's Faculty of Science (SCIENCE) joined OE as well.

OE is funded primarily by the Danish Industry Foundation (48,5 million DKK) and by the participating universities (8 million DKK). It has also received funding from the Ministry of Higher Education and Science and the Ministry of Industry, Business, and Financial Affairs (7 million DKK).

OE is currently in its second phase, "Open Entrepreneurship 2.0" (2021-2023). This phase was originally scheduled to end in June 2023 but has been extended to and including December 2023.

The evaluation was conducted in the period March 2022 to October 2023. As such, focus has been on activities, results and lessons learned in the second, ongoing phase, Open Entrepreneurship 2.0.

The evaluation was undertaken as an internal evaluation as the evaluator is employed at the Centre for Technology Entrepreneurship at DTU, which hosts the OE central hub. Focus in the evaluation has been on deriving lessons learned for OE participants and other interested parties.

EXECUTIVE SUMMARY ▸ AIMS OF OE

Five overriding aims for OE have been determined, based on descriptions of the first (2017-2021) and second (2021-2023) phase of the project. These aims are presented below and will be the main focus of the evaluation report.

4 COLLABORATION

Promote exchanges of experiences and best practices among participating universities

2 CONCEPTS

Develop and test concepts and tools to support research commercialization in universities

3 CORPS

Establish a nationwide corps of experienced entrepreneurs, including developing a shared database of entrepreneurs (the “E-corps”)

1 CAPACITY

Strengthen participating universities’ long-term capacity to support research commercialization

5 COMMUNITY

Strengthen the ecosystem for research-based start-ups in Denmark, by capitalizing on the network established in OE, and by disseminating lessons learned and good practices from OE to the wider ecosystem

EXECUTIVE SUMMARY ▸ OVERVIEW OF KEY FINDINGS

Focus in the evaluation process has been on examining how OE has addressed its five overriding aims.
Key findings are outlined below and presented in more detail in the following.

AIM 1 **CAPACITY**	**1.1** OE has enhanced the commercialization capacity of universities, acting as a catalyst for either capacity enhancement or capacity building **1.2** OE has had a high degree of flexibility in terms of aims and activities, which has been crucial to its success **1.3** OE has been anchored differently in the participating universities, which has affected how efficiently OE interacts with the universities' wider research commercialization system
AIM 2 **CONCEPTS**	**2.1** Despite variation in how OE is deployed across universities, certain core principles characterize the OE approach **2.2** There is growing – and positive – focus on sharing of best practices and shared concepts **2.3** Changing plans led to substantial reorientation of OE objectives and activities
AIM 3 **CORPS**	**3.1** OE has strengthened ties between experienced entrepreneurs and university research commercialization efforts **3.2** Building a nationwide database of experienced entrepreneurs has been challenging but progress has been made
AIM 4 **COLLABORATION**	**4.1** OE has expanded networks, knowledge sharing and collaboration among universities **4.2** Supplementing the wider network with more focused collaborations suggests a promising path forward
AIM 5 **COMMUNITY**	**5.1** OE was an early mover in a wider evolution of research commercialization support in Danish universities **5.2** OE is a small but valuable gear in a larger, entrepreneurial engine

EXECUTIVE SUMMARY ▸ KEY FINDINGS

In the following, key findings on how the five aims for OE have been addressed are summarized.

AIM 1 CAPACITY ▸ Strengthen universities' capacity to support research commercialization

1.1 OE has enhanced the commercialization capacity of universities, acting as a catalyst for either capacity enhancement or capacity building. Universities that had well-developed existing systems for supporting research commercialization when they joined OE describe OE as *capacity enhancing*, providing them with a mandate and crucial resources to expand their competences and practices. Universities that did not have well-develop systems prior to joining the project describe OE as *capacity building*, that is, allowing them to build fundamental competences and practices necessary to support research commercialization.

1.2 OE has had a high degree of flexibility in terms of aims and activities, which has been crucial to its success. Rather than implementing OE uniformly across the participating universities, universities have been free to determine how to deploy OE, adapting it to fit local needs, research specializations and institutional priorities. This task has been led by "local hubs" established in each of the participating universities. Focus in the overall project has also been adapted over time, to build on learnings and developments in the project and the local hubs. This flexibility has enabled OE to retain its relevance and has also been key in the ability of OE to attract all 8 Danish universities as partners and maintain the universities' commitment to OE over time. However, the flexibility has come at a cost, by making it more difficult to communicate a clear, consistent picture of what OE is. It has also made it more difficult to track the results and impact of OE activities over time.

1.3 OE has been anchored differently in the participating universities, which has affected how efficiently OE interacts with the universities' wider research commercialization system. The participating universities have chosen different approaches to how OE has been anchored in their organization. While no "one best model" can be identified in the evaluation, these organizational choices affect how efficiently OE interacts with related units and initiatives. For instance, separating IP-centric technology transfer activities from business development-oriented activities increases the need for coordination and the risk of inefficiencies. It also makes it more challenging to ensure that OE principles and practices are embedded into the university's overall, long-term approach to supporting research commercialization.

AIM 2 CONCEPTS ▸ Develop and test concepts and tools to support research commercialization

2.1 Despite variation in how OE is deployed across universities, certain core principles characterize the OE approach. A key aim of OE was to develop and test concepts, or tools, for effectively supporting research commercialization. Despite differences in how OE was deployed across the participating universities, six *core principles* of the OE approach have been identified in the evaluation : *#1 Engagement of experienced entrepreneurs* as mentors, advisors, co-founders or the like; *#2 An "IP agnostic" approach,* i.e. working with cases regardless of whether they involve intellectual property (IP); *#3 Working with cases at all stages of maturity* and as early on as possible; *#4 No "one size fits all"* – support is adapted to each case; *#5 Connecting cases to other programs and funding*; and *#6 Building researchers' entrepreneurial capabilities.*

2.2 There is growing – and positive – focus on sharing of best practices and shared concepts. There has been a growing focus on systematic sharing of good practices among participating universities and, in some cases, the development of shared models and templates. This development appears promising in refining and communicating OE principles and practices that are more effective, transferable and scalable.

2.3 Changing plans led to substantial reorientation of OE objectives and activities. Some of the tools OE originally planned to use were abandoned or heavily reshaped during the course of the project. Much of the inspiration for OE was drawn from U.S. universities with more mature research commercialization systems and perhaps not sufficiently adapted to the Danish context and the level of development of the OE hubs at the time.

AIM 3 CORPS ▸ Establish a nationwide corps of experienced entrepreneurs, including developing a shared database of entrepreneurs (the "E-corps")

3.1 OE has strengthened ties between experienced entrepreneurs and university research commercialization efforts. OE has brought focus on the value added of bringing external entepreneurs into the research commercialization process, engaging them as mentors, co-founders, investors and the like. By experimenting with various tools for supporting early and ongoing engagement with experienced entrepreneurs, OE has helped to strengthen the entrepreneurial community around research commercialization support.

3.2 Building a nationwide database of experienced entrepreneurs has been challenging but progress has been made. OE aimed to establish a corps of experienced entrepreneurs to facilitate matchmaking between researchers and external entrepreneurs (the "E-corps"). The establishment of this database proved challenging, due to issues related to GDPR, to developing a suitable IT-platform for the database, and to finding good procedures for identifying, vetting, onboarding and engaging E-corps members. Substantial progress has however been made on the E-corps In Open Entrepreneurship 2.0 (2021-2023).

AIM 4 COLLABORATION ▸ Promote exchanges of experiences and best practices among participating universities

4.1 OE has expanded networks, knowledge sharing and collaboration among universities. A key contribution of OE has been to expand existing technology transfer networks among the Danish universities to include a broader range of professionals working with business development and research commercialization. This network includes OE staff recruited directly from the start-up ecosystem or industry. The OE network has also served as a strong foundation for other, subsequent cross-university programs and initiatives focused on research commercialization.

4.2 Supplementing the wider network with more focused collaborations suggests a promising path forward. To accommodate the growing size of the OE network – as more universities and people joined – and the aforementioned differences in the universities' focus areas and approaches, steps have been taken in Open Entrepreneurship 2.0 to explore more focused collaborations. This includes joint thematic network events and task forces. These steps have been positively received by the local hubs who see smaller, more focused collaborative forums as a value-adding supplement to the wider OE network.

AIM 5 COMMUNITY ▸ Strengthen the ecosystem for research-based start-ups in Denmark

5.1 OE was an early mover in a wider evolution of research commercialization support in Danish universities. Over the years, several of the core principles of the OE approach have become widely accepted and used, summing up to an evolution in how universities support research commercialization. This includes a focus on early contact with cases; supporting engagement with experienced external entrepreneurs; and working with cases regardless of whether or not they involve IP. Despite the limited scale of the project, respondents argue that OE has had a significant impact on this shift in practices, acting as "early mover" that helped place focus on, provide resources for, and develop tools for this evolution in research commercialization support.

5.2 OE is a small but valuable gear in a larger, entrepreneurial engine. OE is one of many internally and externally anchored initiatives that provide support for the commercialization of university research. These initiatives function, in theory, as interlocking gears. In practice, however, it can be difficult to discern the differences between them, and there are not always efficient connections between the gears. OE's increased focus on building bridges to other programs – as described under *Aim 2* as one of its core principles – enables it to address some of the lacking alignment between gears in the entrepreneurial engine at the Danish universities, thus contributing to a more efficient research commercialization support system overall.

N.B. In assessing the effect of OE on the overall ecosystem, the modest scale of the project should be kept in mind. A full-time equivalent (FTE) of 17 Business Unit Managers (BUMs) are affiliated with OE, or approx. 2 full-time BUMs per university. Given that the Danish universities currently employ more than 17,000 scientific staff members, there is one OE BUM for every 1,000 researchers. Moreover, OE represents but a small proportion of the total number of university staff that support research commercialization and innovation.

KPIs were determined for OE in dialogue with the Industry Foundation and are reported on in the evaluation report. Selected statistics are included here, including statistics on the active case portfolio and on start-ups supported by OE.

A *case* refers to an entity receiving support from an OE hub – this could be an individual researcher, a group of researchers, or a potential or established start-up. A *start-up supported by OE* refers to any registered company that has received or currently is receiving support from OE.

STATISTICS ON THE PORTFOLIO OF ACTIVE CASES

146 NO. OF ACTIVE CASES IN OE'S CURRENT PORTFOLIO *

29% % OF CURRENTLY ACTIVE OE CASES MATCHED WITH A MENTOR/ADVISOR †

8% % OF CURRENTLY ACTIVE OE CASES MATCHED WITH A CO-FOUNDER †

STATISTICS ON START-UPS SUPPORTED BY OE

122 NO. OF START-UPS THAT HAVE RECEIVED SUPPORT FROM OE *

90% % OF START-UPS SUPPORTED THAT ARE STILL ACTIVE COMPANIES *

61% % OF START-UPS MATCHED WITH A MENTOR/ADVISOR ‡

30% % OF START-UPS MATCHED WITH AN EXTERNAL CO-FOUNDER ‡

70% % OF START-UPS THAT RECEIVED HELP TO RAISE SOFT FUNDING ‡

23% % OF START-UPS THAT RECEIVED HELP TO RAISE HARD FUNDING ‡

* As of October 2023.

† Self-reported assessment of all active OE cases by BUMs (assessed June-August 2023). Based on data from all OE hubs. N = 154. The no. of active cases was slightly higher in this period than in October. Please note that cases are still active and the results therefore preliminary.

‡ Self-reported assessment of start-ups supported by OE, assessed by BUMs (October 2023). Based on data from AU, AAU, DTU, SDU. N = 108.

RECOMMENDATIONS

#1 Maintain vital infrastructure built up through OE – particularly the cross-university network

#2 Expand focused, thematic collaborations across universities

#3 From early mover to system connector

#4 Taking it to the next level: retain agility but develop a strong, scalable common “core”

#5 Set meaningful and measurable targets that support intended outcomes

As the second phase of OE comes to a close, this section presents the evaluator’s recommendations based on the findings of the evaluation.

#1 Maintain vital infrastructure built up through OE – particularly the cross-university network. Key outcomes of OE are the collaborative cross-university network and the development of the participating universities’ capacity to support research commercialization in line with the core OE principles identified in this evaluation. Some of the most distinctive principles are engaging experienced entrepreneurs, taking an IP-agnostic approach, and offering flexible, customized support for each case, regardless of its characteristics or stage of development. Through these outcomes, OE has helped catalyze and amplify the wider evolution seen in research commercialization support in recent years, as described under *Aim 5*, bolstering universities’ engagement with experienced entrepreneurs and ultimately strengthening the foundation for the development of new science-based companies. Given the substantial investment made in the establishment of OE, it would be sensible to maintain vital elements of the infrastructure – particularly the cross-university network which is most likely to be affected when the OE grant period runs out, as dedicated efforts are required to organize effective regular meetings and joint activities.

Any continuation of activities in OE should also consider how best to organize these activities to support synergies with IP-centric technology transfer practices and other internal activities to support research commercialization.

#2 Expand focused, thematic collaborations across universities. The thematic collaborations (e.g. joint events focused on particular technologies or sectors) and task forces established in the final years of OE offer a promising approach for expanding collaboration across universities and with stakeholders in the entrepreneurial ecosystem. Thematic collaborations supplement and mobilize the broad network established in OE to ensure support and matchmaking with external entrepreneurs and investors that is specialized to high-priority fields, technologies and industry sectors. The generic infrastructure established in OE lays a strong foundation for further thematic collaborations that can support high-impact engagement between universities and experienced entrepreneurs.

#3 From early mover to system connector? OE has focused on building participating universities' individual capacities to support research commercialization, while developing a strong cross-university network and the core OE principles. As these principles become increasingly common in other programs and internal research commercialization approaches at the Danish universities, this begs the question: what role should OE fill in the future, if funding for a continuation is obtained? Some of the original objectives of OE were suitable for a more mature university-based research commercialization system than the one that was in place at the outset of the project, and perhaps it is time to revisit some of these objectives. Certainly, any future role for OE should strive to address current gaps and untapped potential in the entrepreneurial ecosystem. One gap that has become clear during OE's lifetime, and which OE has already begun to fill, as described in this evaluation, is that of a flexible connector between other programs and initiatives aimed at supporting research commercialization. Thanks to its flexibility, OE has provided universities with the vital resources and mandate needed to support cases no matter their stage of maturity, IP-status or other characteristics. The ability of OE to provide assistance to cases throughout their development and while they prepare to qualify for other programs is important to ensure smooth transitions and efficiency in a wider ecosystem that consists of many loosely connected programs and initiatives.

#4 Taking it to the next level: Retain agility but develop a strong, scalable common "core". If funding is obtained for a continuation of activities in OE, it will be crucial to strike a balance between retaining enough of the flexibility that has characterized OE so far to maintain its relevance over time – and especially to retain partner universities' commitment – while strengthening and scaling a common "core". Now that the infrastructure and the collaborative network are in place, an appropriate next step could be to increase the scale and impact of OE's activities. This could include more systematic scouting and early engagement with cases, for instance building on good experiences in OE with embedding experienced entrepreneurs in specific research environments. It could also include further sharing of best practices and development of shared tools and templates, expanding the shared E-corps database, or revisiting the project's original aims of strengthening engagement of large corporations in the start-up community, e.g. as potential customers or investors. Regardless of the path chosen, key aims should be to make activities scalable, to allow for the increased dissemination and impact of OE principles and practices.

#5 Set meaningful and measurable targets that support intended outcomes. Any continuation of OE activities must consider how to set appropriate targets that reflect the intervention planned and provide ongoing insight into the progression and impact achieved. These targets should also consider the different starting points of the participating universities, although future, related activities should expect to see the capacity-building universities account for a larger share of measurable outputs than they have in OE, but keeping in mind that their outputs may differ in nature. For instance, fewer start-ups and IP-based cases are likely to emerge from SSH-dominant universities than from science and tech-intensive universities. Baselines should be established, and consistent and reliable data should be collected on a continuous basis to ensure transparency and support informed decision-making about adjustments to activities.

ABOUT THE EVALUATION

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ABOUT THE EVALUATION

- This reports presents key findings from an evaluation of the Open Entrepreneurship (OE) project, undertaken from March 2022 to October 2023.
- The evaluation was undertaken as an **internal evaluation** as the evaluator is employed at the Centre for Technology Entrepreneurship at DTU, which hosts the OE central hub.
- The aim of internal evaluation is **to support decision-making and learning** in a project or organization through deep insight into the activity being assessed. Focus in the evaluation has therefore been on understanding key features of OE and deriving lessons learned for OE participants and for other interested parties.
- The report is **structured** as follows. First, it presents five overriding aims of OE and assesses OE's fulfillment of these aims. Second, it examines the Key Performance Indicators (KPIs) for the project as determined by OE in dialogue with its main funder, the Danish Industry Foundation, and assesses OE's performance according to these KPIs.

INTERNAL EVALUATION

Aimed chiefly at supporting ongoing decision-making and learning through deep insight

AIMS
1 Describe the results and impact of OE and assess them against the aims of the project
2 Identify lessons learned that may inform future activities

For details on the evaluation and its data and methods, please refer to Appendix II

ABOUT THE EVALUATION

Main data sources are outlined on the right. For more information, please see Appendix II.

Document study on various documents describing OE aims, activities etc.

Data on **fulfillment of KPIs** provided by OE hubs via the central hub

Data on start-ups that OE hubs have provided support to, based on CVR-data reported by OE hubs and collected from virk.dk

Information on **the contribution of OE to start-ups** that OE hubs have provided support to, provided by the local hubs

Information on **the contribution of OE to active cases,** provided by the local hubs

On-site visits and **interviews** with all OE hubs (in spring/summer of 2022, and again in spring 2023)

Background interviews with selected university and ecosystem actors

Interviews with selected start-ups that OE hubs have provided support to

Ongoing meetings and dialogue with staff in the OE central hub

Participant observation of various meetings and events within the OE project held during the period of data collection

Feedback on presentations of preliminary findings at various internal meetings within OE

ABOUT OE

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ABOUT OE

- OE was established to strengthen the utilization of knowledge and technology from Danish universities.
- OE was launched in 2017 by AAU, AU, DTU and ITU. In 2020, CBS, KU's Faculty of Health and Medical Sciences (HEALTH) and RUC joined OE. As of 2022, when SDU entered the project, it includes all eight Danish universities. In 2023, KU's Faculty of Science (SCIENCE) joined OE as well.
- OE is funded primarily by the Danish Industry Foundation and by the participating universities. It has also received funding from the Danish Ministry of Higher Education and Science and the Ministry of Industry, Business, and Financial Affairs (in connection with the joint implementation of a national Strategy for Life Sciences launched in 2021).
- OE is currently in its second phase, "Open Entrepreneurship 2.0" (2021-2023). This phase was originally scheduled to end in June 2023 but has been extended to and including December 2023.
- OE's overall purpose is to create "open environments" for knowledge exchange and collaboration between universities on the one hand and entrepreneurs, firms and investors on the other. More specifically, the project seeks to connect experienced entrepreneurs and intrapreneurs (hereafter referred to jointly as "entrepreneurs") with academic researchers to explore and develop commercial opportunities.

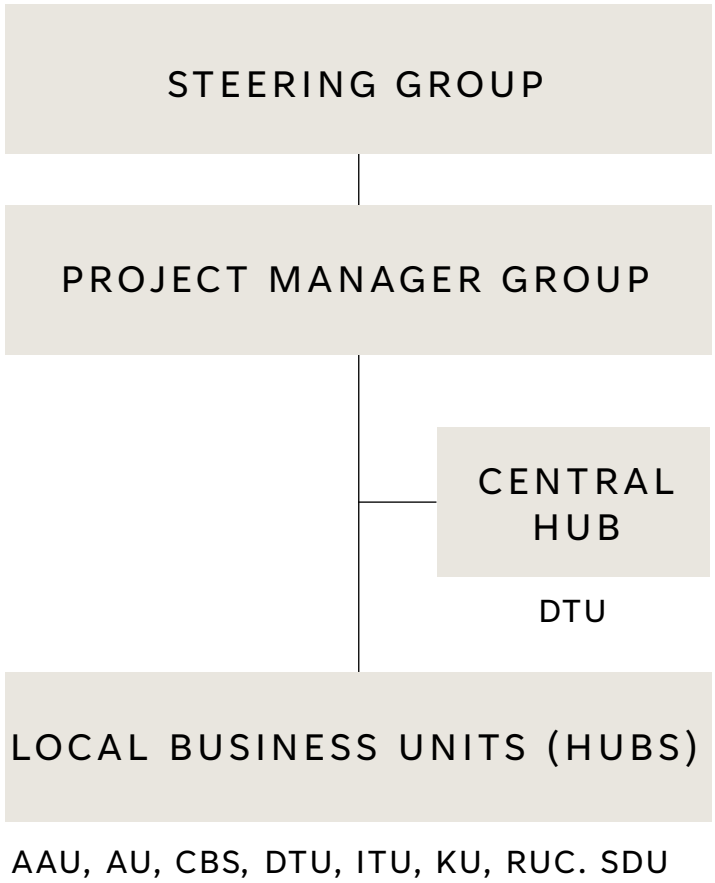
OE TIMELINE 2017-2023

FUNDING	35,5M DKK > Danish Industry Foundation	13M DKK > Danish Industry Foundation 8M DKK > university co-funding 7M DKK > Ministry of Higher Education and Science and Ministry of Industry, Business, and Financial Affairs (2022-2023)
OE PHASE	**Open Entrepreneurship 1.0**	**Open Entrepreneurship 2.0**

2017 2018 2019 2020 2021 2022 2023

UNIVERSITIES	AAU, AU, DTU, ITU	CBS, KU HEALTH, RUC	SDU	KU SCIENCE

ORGANIZATION



Consists of representatives from the upper management of each participating university and funder representatives. Sets guiding principles for OE and oversees the work of the project manager group and local hubs.

Consists of mid-level management representatives from the participating universities' local hubs. Responsible for recruitment and day-to-day management of the local hubs.

Located at the Centre for Technology Entrepreneurship at DTU. Develops, implements and supports the OE structure. Also responsible for planning and coordination of joint meetings and events, for scouting and onboarding of E-corps members, and for the joint OE "E-corps" database.

The "operational core" of OE, responsible for carrying out the bulk of the activities undertaken within the project. Consist mainly of Business Unit Managers (BUMs, aka. business developers) working with university cases. The local business units are also referred to as local hubs.

OE-AFFILIATED STAFF

Hub	**Project managers** #	**Project managers** FTE	**Staff** #	**Staff** FTE	**Total** #	**Total** FTE
AAU	1	0,20	2	2,00	3	2,20
AU	1	0,45	4	2,21	5	2,66
CBS	1	0,20	1	1,00	2	1,20
DTU	1	0,50	6	3,80	7	4,30
ITU	1	0,20	2	2,00	3	2,20
KU	1	0,20	5	2,30	6	2,50
RUC	1	0,20	3	3,00	4	3,20
SDU	1	0,05	2	1,00	3	1,05
Central hub	2	1,00	4	1,30	6	2,30
Total	**10**	**3,00**	**29**	**18,61**	**39**	**21,61**

As of June 2023. FTE = Full Time Equivalent

AIMS OF OE

Five aims have been identified for OE

4 COLLABORATION

Promote exchanges of experiences and best practices among participating universities

2 CONCEPTS

Develop and test concepts and tools to support research commercialization in universities

3 CORPS

Establish a nationwide corps of experienced entrepreneurs, including developing a shared database of entrepreneurs (the “E-corps”)

1 CAPACITY

Strengthen participating universities’ long-term capacity to support research commercialization

5 COMMUNITY

Strengthen the ecosystem for research-based start-ups in Denmark, by capitalizing on the network established in OE, and by disseminating lessons learned and good practices from OE to the wider ecosystem

AIM FULFILLMENT

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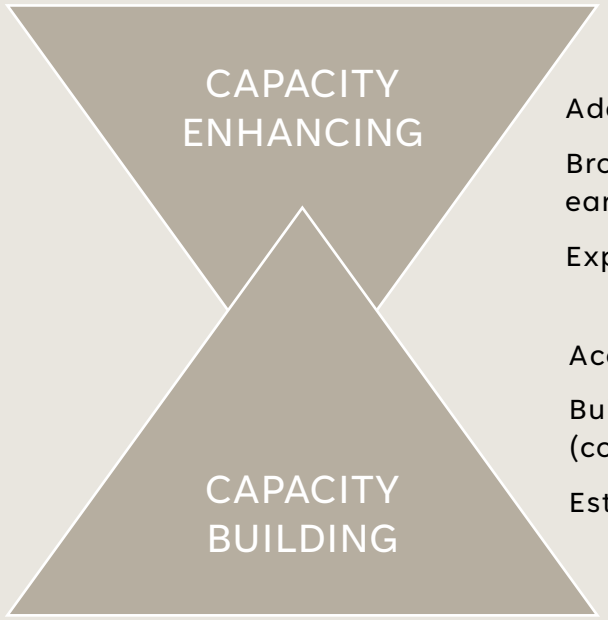
AIM 1 CAPACITY

TWO TYPES OF IMPACT ON COMMERCIALIZATION CAPACITY



Additional resources

Broaden scope of cases e.g. early and non-IP based cases

Expanding the ”toolbox”

Access resources

Build “basic infrastructure” (competences and practices)

Establish a “toolbox”

1.1. OE has enhanced the commercialization capacity of universities, acting as a catalyst for either capacity enhancement or for capacity building

The effect of that catalyst depends on the scale and maturity of a university’s pre-existing system for supporting research commercialization.

Universities with well-developed existing systems describe the effect of OE as **capacity enhancing**, providing them with the mandate and crucial resources to experiment with and extend existing competences and practices. The universities highlight three enhancements: (i) strengthening engagement with experienced entrepreneurs, (ii) supporting commercialization cases that do not involve IP, and (iii) working with cases regardless of their stage of maturity or development.

Universities with limited pre-existing systems describe the effect of OE as **capacity building**, that is, enabling them to establish competences and practices for supporting research commercialization. OE has allowed them to build a basic infrastructure, for instance by hiring staff with entrepreneurial and/or industry experience and developing research commercialization support tools.

Universities where OE has had a capacity-enhancing role: AAU, AU, DTU, SDU

"The main elements in OE were basically things we knew we wanted to do. But we were short on resources [...]. It was actually pretty easy to implement OE, because it gave us the capacity to support the kinds of things we wanted to do. So we were able to do things like starting to work on cases that were not based on IP, and to ramp up the really early stuff like scouting in research environments and being more active in the research grant application process. OE provided us with extra resources." (Local hub representative)

Universities where OE has had a capacity-building role: CBS, ITU, KU*, RUC

"I think the main difference for us [from being part of OE] has been being able to establish the organizational setup [that we have now], which enables us to "catch" the spin-out opportunities that we see." (Local hub representative)

* Unlike the other three universities in this group, KU has a long-established TTO responsible for centralized IP-based technology transfer and commercialization support. However, there have been limited decentralized mechanisms and resources to support business development and research commercialization in faculties and departments. As such, OE has had a capacity-building function in the participating faculties.

1.2. OE has had a high degree of flexibility in terms of aims and activities, which has been crucial to its success

Rather than implementing OE uniformly across the participating universities, universities have been free to determine how to deploy OE, adapting it to fit local needs, research specializations and institutional priorities. For instance, while several OE hubs focused on experimenting with approaches to scouting for cases in research environments, another hub that already had extensive scouting procedures in place focused instead on professionalizing their practices for connecting external mentors and advisors to cases. Another university that had a well-functioning mentoring program in place focused on connecting cases with co-founders.

Focus in the overall OE project has also been adapted over time based on ongoing learning and changing priorities, in dialogue with OE funders.

This flexibility appears to have been crucial in two respects.

First, it has enabled OE to retain its relevance, adapting focus and activities in the overall project according to changing circumstances and priorities. In particular, this allowed the project to adapt to the current stage of maturity of the participating universities' commercialization support systems. For instance, after some years of developing and testing tools for supporting research commercialization locally, OE has increasingly turned its attention to sharing best practices and exploring the potential for shared models or tools (see *Aim 2. Concepts* for details).

Second, the flexibility has, according to the participating universities, been key in the ability of OE to attract all 8 Danish universities as partners and in maintaining their commitment to OE over time.

Nonetheless, the flexibility has come at a cost, by making it more difficult to communicate a clear, consistent picture of what OE is and how it works. It has also made it more difficult to track performance and results of OE over time.

1.3. OE has been anchored differently in the participating universities, which has affected how efficiently OE interacts with the universities' wider research commercialization system

All the OE hubs must work with and supplement the TTO (or similar unit) at their university. The participating universities have however chosen very different approaches to how OE activities have been anchored in their organization.

Three universities (CBS, ITU and RUC) have limited IP-based technology transfer activities and no distinct TTO unit; OE is here integrated with other activities aimed at supporting knowledge exchange and research utilization, including e.g. student entrepreneurship initiatives and support for university-industry collaboration.

At AAU and SDU, the OE hub is integrated into the university's TTO.

At KU, local OE hubs have been established in the two participating faculties, distinct from the centralized TTO.

At the outset of the project, the AU OE hub was integrated into the TTO (similar to the AAU and SDU model), and DTU's OE activities were anchored in four departments (similar to the KU model). AU and DTU have both reorganized their research commercialization systems during the project period. In both universities, responsibility for activities related to IP-centric technology transfer and the legal issues associated herewith is assigned to the TTO, and main responsibility for business development-oriented commercialization support is allocated to a separate unit, which also hosts OE activities.

These (re)organizations illustrate how universities have experimented with different ways of organizing OE activities to maximize the impact of the OE project and of the total university innovation ecosystem in which OE is embedded.

Respondents highlighted both benefits and drawbacks of the various models in use, and no single "best model" can be identified based on this evaluation study.

It is however worth noting that separating IP-centric technology transfer activities from business development-oriented activities appears to increase the need for coordination. This model can also create internal incentives to accentuate differences in TTO and OE aims and approaches, which may result in tension and obstacles to efficient coordination and collaboration.

Separating IP-centric technology transfer from business development activities may also lead to inefficiencies or at the very least make it more difficult to reap potential synergies between the two closely related sets of activities, which often go hand-in-hand in successful commercialization. In addition, researchers sometimes have to work in parallel with both the TTO and the OE hub.

In contrast, integration of OE activities with TTO activities appears to allow for more seamless collaboration on commercialization cases as well as enabling the OE hub to pick “low hanging fruits”, for instance by taking over cases that the TTO does not deem well-suited for traditional IP-based commercialization efforts. Moreover, close day-to-day collaboration allows the OE hub to provide inputs to ongoing TTO cases based on the OE BUMs’ entrepreneurial experience. OE hubs working under the integrated model were also able to immediately tap into the TTO’s experience as well as its existing internal and external networks.

According to some respondents, this model may increase the likelihood that OE principles and practices are embedded into the university's overall set of principles and practices for research commercialization support.

However, respondents from universities where OE has been organized separately from IP-centric technology transfer activities argue that this has provided an agile environment unencumbered by ‘business as usual’ and therefore with greater degrees of freedom to experiment with new approaches to business development and research commercialization. Respondents also argue that not being associated with the TTO can offer an advantage in engaging with researchers, as OE is here seen as a distinct and novel offering.

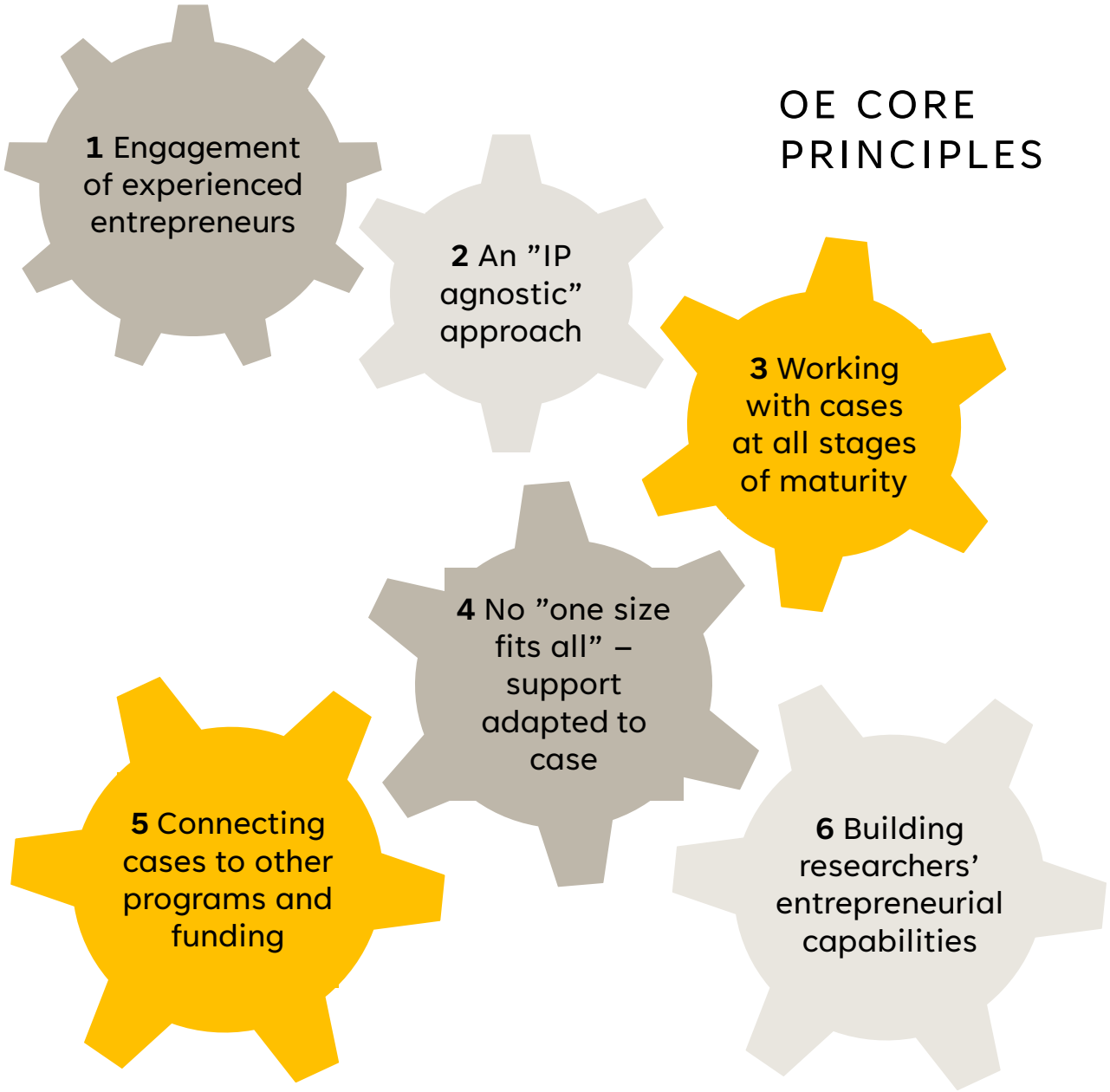
AIM 2 CONCEPTS

2.1. Despite variation in how OE is deployed across universities, certain core principles characterize the OE approach

A key aim of OE was to develop and test concepts, or tools, for effectively supporting research commercialization, with a particular focus on strengthening engagement with experienced entrepreneurs.

Although OE activities have, as previously described, been implemented differently across the eight participating universities, six core principles of the OE approach have been identified.

It should be noted that these principles are not unique to OE, as will be described further under *Aim 5. Community*.



#1 Engagement with experienced entrepreneurs

A cornerstone in OE is engaging experienced entrepreneurs as e.g. advisors or co-founders to benefit from their entrepreneurial competences, experience and networks, all of which are often in short supply in academia, but which can increase the likelihood and speed of commercial success.

The BUMs hired through OE are one of the ways in which external competences have been brought to bear on research commercialization efforts. Most of the BUMs have entrepreneurial and/or industry experience and connections, which they mobilize in the support they provide to university cases.

The hubs vary in how much they engage *external* entrepreneurs with their cases. The capacity-building universities, for instance, have relied heavily on the knowledge of their BUMs. Given their institutions' limited experience with research commercialization, many of the cases they worked with had limited maturity and were very early-stage and therefore often not deemed ready to engage efficiently with experienced external entrepreneurs. The support that could be provided by the universities' BUMs was therefore deemed sufficient and appropriate to support these cases.

As these universities' systems for supporting research commercialization as well as the maturity of their cases have matured, focus is increasingly turning towards fostering engagement with external entrepreneurs.

Meanwhile, the capacity-enhancing universities have experimented with various models for connecting external entrepreneurs with cases, ranging from one-off meetings where entrepreneurs provide advice or specialized insights to a case to more extensive models where an entrepreneur engages deeply with a case, for instance as a co-founder, board member or investor.

The universities have also experimented with different ways in which to facilitate successful matches with entrepreneurs. For instance, early on in OE, university cases from a variety of fields would be invited to pitch to external entrepreneurs; this model had limited success and has since been replaced with more focused thematic matchmaking events, limited to cases and external entrepreneurs within e.g. pharma, robotics or medtech.

61% % OF START-UPS SUPPORTED BY OE MATCHED WITH A MENTOR/ADVISOR *

29% % OF CURRENTLY ACTIVE OE CASES MATCHED WITH A MENTOR/ADVISOR **

30% % OF START-UPS SUPPORTED BY OE MATCHED WITH A CO-FOUNDER *

8% % OF CURRENTLY ACTIVE OE CASES MATCHED WITH A CO-FOUNDER **

* Self-reported assessment of start-ups supported by OE, assessed by BUMs (October 2023). Based on data from AU, AAU, DTU, SDU. N = 108.

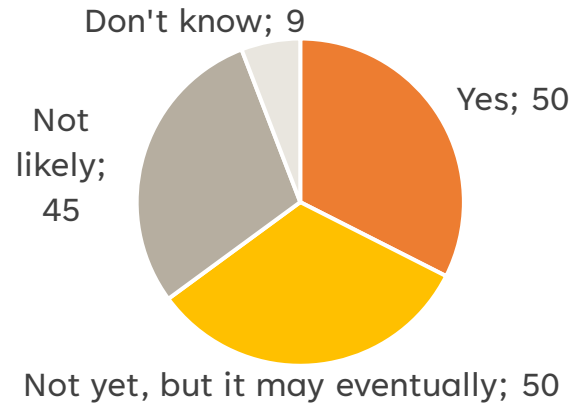
** Self-reported assessment of all active OE cases by BUMs (assessed during the period June-August 2023). Based on data from all OE hubs. N = 154. Please note that these cases are still active and these results therefore preliminary.

#2 An IP-agnostic approach

OE is open to all projects regardless of whether they involve Intellectual Property (IP). TTOs have traditionally focused on IP-based cases, given that the Danish Act on Inventions at Public Institutions (1999) gives universities a mandate and responsibility to pursue the commercialization of “patentable inventions”. Much research that holds commercial and societal value is however not relevant or well-suited for IP-based technology transfer. This is often the case in software, social sciences and humanities, when a case is based mostly on know-how, and in tech-based cases where there isn’t a strong patent but nonetheless a good business case.

For such cases, universities have lacked a clear mandate as well as good practices for supporting commercialization. By taking an IP-agnostic approach, working with cases regardless of their IP status, OE has helped expand the scope of cases that which universities can support and thus potentially increase the overall utilization of university research.

DOES THE CASE INVOLVE IP? FOR ALL ACTIVE OE CASES



- Roughly a third of the active cases in OE’s portfolio involve IP. Another third of the cases may, according to BUMs, eventually involve IP. A third are unlikely to ever include IP.
- % of cases that do not yet involve/will not involve IP, by university: CBS 95%, KU 88%, RUC 82%, ITU 76%, AU 74%, AAU 53%, DTU 9%.

Self-reported assessment of all active OE cases by BUMs (assessed during the period June-August 2023). Based on data from all OE hubs. N = 154

Given its IP-agnostic approach. OE is able to both support cases with no IP and to complement and extend research commercialization efforts by the TTOs. OE may for instance help researchers in maturing cases to a point where an invention can be disclosed, or university IP interests need to be addressed, at which time the TTO is involved. Sometimes a case is effectively handed over to the TTO, and other times, the OE hub and the TTO work in parallel on a case. Similarly, a case that is declared to not be well-suited for IP-based commercialization may be taken over by OE.

"There is a symbiosis between OE and tech transfer. We go back and forth between the two. It they weren't both there, we would have lost some cases. For example [...] when a case can fill a gap in the market or has a good product idea, but it's not patentable. IP may emerge along the way, or it may not. But if we hadn't had that commercial perspective and been able to pursue it, the case would have been lost. This kind of case has to be driven by someone who doesn't care whether the business idea will, ultimately, be based on something patentable." (Local hub representative)

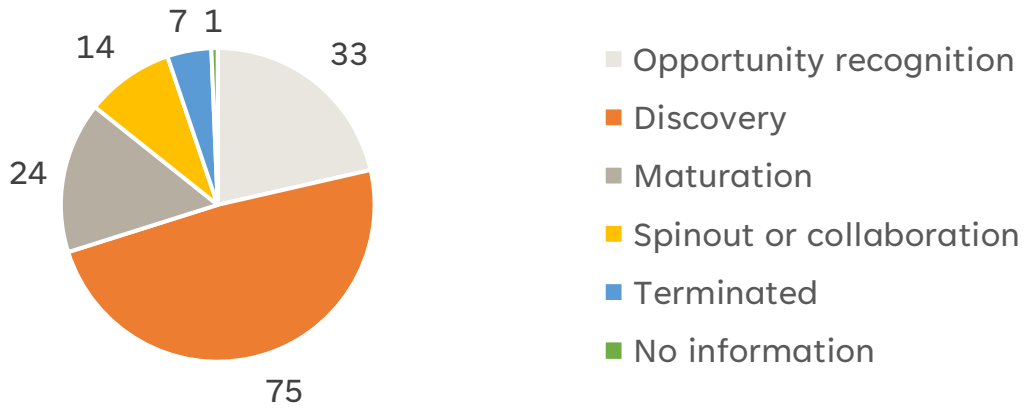
#3 Working with cases at all stages of maturity

A key principle in OE has been to supportt cases regardless of their stage of maturity, allowing hubs to engage with cases throughout the commercialization process, as the need for support arises and changes.

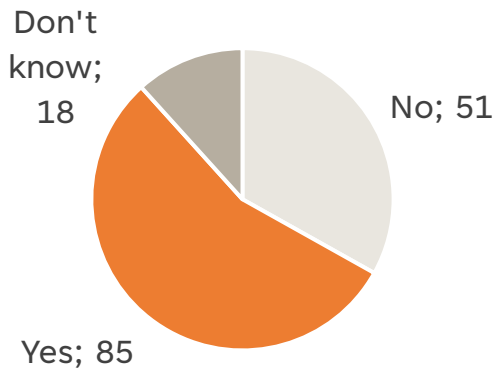
OE has had a particular focus on supporting early-stage cases in order to bring in commercial expertise as early as possible, to increase the commercial potential of the case and accelerate its development. This approach differs from conventional approaches where contact with a case is typically not initiated until a notification of invention is submitted to the TTO.

To identify early-stage cases, many of the universities have engaged in scouting for commercial opportunities through e.g. department visits and events for interested researchers. Some universities (DTU in particular, but also to some extent e.g. AU) have allocated BUMs to selected research departments, embedding them in the day-to-day research environment. Both OE BUMs and interviewed start-ups that have received support from OE have highlighted the value of this type of "embedded BUM" model in increasing opportunities for scouting and allowing for close, ongoing dialogue with researchers.

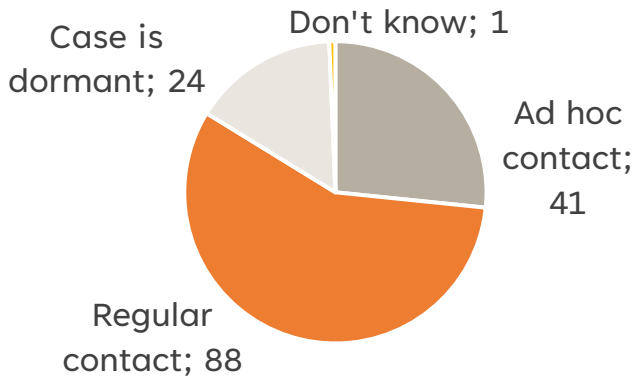
OE BUM ASSESSMENT OF THE CURRENT STAGE OF THEIR ACTIVE CASES



HAVE ACTIVE CASES PROGRESSED FROM ONE STAGE TO ANOTHER SINCE WORKING WITH OE BUM?



CURRENT DEGREE OF BUMS' CONTACT WITH THEIR ACTIVE CASES



According to BUMs, 21% (33) of active cases are in the opportunity recognition (incl. scouting) stage; almost half (75) are in the discovery phase (focused on finding a product-market fit); 16% (24) are in the maturation (investment ready) stage; 9% (14) are being spun out or moving into a collaboration; and 5% (7) are under termination.

55% (85) of cases have progressed from at least one stage to another while engaging with OE.

BUMs have regular contact to 57% (88) of the active cases, and ad hoc contact to an additional 16% (24).

Self-reported assessment of all active OE cases by BUMs (assessed during the period June-August 2023). Based on data from all OE hubs. N = 154

#4 No “one size fits all” – support adapted to case

Local hubs describe taking an agile, hand-held approach to cases, customizing the support to the needs of the case (rather than offering standard “packages” of services).

BUMs stressed that it takes time to gain researchers’ trust and to understand the particular features of a given case. They describe their interaction with cases as a highly iterative process. As cases progress, their needs change, and the contribution of the OE hub may change accordingly. The hubs engage intensely with some cases over a long period of time; other cases may have long pauses e.g. if the researchers have a teaching-intensive semester; and other cases may remerge after a dormant period.

OE hubs also take cases from all fields of research and technology. This is illustrated by the distribution of start-ups supported by OE as well as active OE cases, which span a broad range of industry sectors and fields.

START-UPS THAT HAVE RECEIVED SUPPORT FROM OE, BY SECTOR *

34% Manufacturing

13% Computer programming

9% R&D, biotech

9% R&D, natural/technical sciences

9% Consulting

26% Other

ACTIVE OE CASES, BY FIELD **

29% Healthcare/Life Sciences

21% ICT

12% Sustainable Tech./Clean Energy

11% Advanced Technology for Industry

10% Food, Agriculture, Precision Farming

17% Other

* All start-ups (N = 122). Based on CVR nos. reported by OE hubs and data from virk.dk
** Self-reported BUM assessment of active OE cases (June-August 2023). Based on data from all OE hubs. N = 154

#5 Connecting cases to other programs and funding

OE has become increasingly oriented towards building bridges to other programs that support research commercialization (incl. e.g. SPARK, Spin-Outs Denmark, various incubators and accelerators etc.) as well as to soft funding options (e.g. university-internal proof-of-concept grants or grants from the Innovation Fund Denmark or EIC). For instance, the AAU OE hub has focused on advising researchers on the development of proposals for the Innovation Fund Denmark and other funders. This has allowed them to discuss application perspectives with researchers at the outset of a research process, and then provide ongoing support for successful proposals, assisting the researchers in the development of commercially relevant aspects of the project.

Tapping into such programs and funding options often requires cases to meet specific criteria. A key value added of OE is its ability to offer support to any case, from any technological domain and at any stage of maturity (#3), and tailor the support provided to the case rather than offer a predefined set of activities (#4), effectively "filling gaps" in the support system and preparing cases for the next step in their journey.

"An advantage of OE is that we're accessible for everyone. Other programs [...] you usually have to apply to. [...] If you don't qualify for them, then that's just too bad. [...] We can provide support throughout the process [...] and we work closely with [other programs] to fill the gaps that arise between them. In that way, you can compare OE to silicone that can be used to fill the holes that emerge." (Local hub representative)

#6 Building researcher capacity and interest

Building entrepreneurial capacity and interest among researchers has been another common feature across the universities. This includes the **mentoring and coaching** provided to researchers by the OE hubs, aimed not only at helping researchers advance their commercialization cases but also at training them in basic entrepreneurial skills. Other initiatives include offering **training in research commercialization and entrepreneurship** (workshops, courses etc.) to researchers. Finally, some universities have experimented with facilitating **peer-to-peer interaction** for academic entrepreneurs (e.g. CBS) and establishing small-scale **industry colliders** to build researcher capabilities in engaging with industry and spotting commercial opportunities from their research (e.g. ITU).

2.2. There is growing – and positive – focus on sharing of best practices and shared concepts

In OE's first years, focus was on establishing or adapting the participating universities' capacity or infrastructure to support research commercialization than on systematic development and testing of specific concepts.

Instead, universities (particularly the capacity-enhancing ones) engaged in individual experiments with concepts focused on e.g. strengthening engagement with external entrepreneurs and scouting for cases.

While there have always been regular meetings within the OE team, there has been a growing focus on systematic sharing of good practices between OE hubs. In Open Entrepreneurship 2.0, for instance, the central hub has facilitated the sharing of best practices and, in some cases, the development of shared models (e.g. of the stages that OE cases go through) and templates (e.g. for different types of events).

A digital platform is used to share documents across universities, including e.g. templates for supporting venture building processes and planning of OE events. Focused workshops held in connection with the quarterly meetings of the OE hubs have facilitated more in-depth knowledge exchange within the project, resulting in new or adjusted practices being adopted in some of the participating universities.

The participating universities differ somewhat in their perception of the value of shared tools and approaches. Some fear it would reduce the scope for adaptation of OE activities to university-specific needs and priorities, which they see as crucial to their university's continued commitment to the program. Others see shared tools as a natural next step in the professionalization of OE activities, decreasing the dependence of successful activities on individual staff members and ensuring that knowledge and lessons learned in all universities are used to develop more effective and scalable activities.

The sharing of best practices and, where relevant, the development of shared concepts appear promising in communicating OE principles and translating them into practices that are both transferable and scalable.

2.3. Changing plans led to substantial reorientation of OE objectives and activities

Some of the concepts and tools OE originally planned to use were abandoned or heavily reshaped during the project. For instance, OE originally planned to have several ”Entrepreneurs-in-Residence” (EiRs), i.e. experienced entrepreneurs, business developers etc. who would spend time either at a local OE hub or in relevant research environments. Implementing an EiR model proved very ressource-demanding, and many cases were not deemed sufficiently mature to host an EiR. Focus in OE shifted towards a broader set of options for engaging external entrepreneurs in cases. Morever, the BUMs recruited to the OE local hubs functioned as de facto EiRs, providing general and sometimes specialized sparring and advice to local cases.

Another idea, ”Researchers-in-Residence,” would offer academic researchers the opportunity to spend part of their working time in a relevant company; this concept was never pursued.

Respondents explained that developing new tools is a ressource-intensive task, and that the lion’s share of OE resources were spent instead on the provision of flexible support for cases, for which the OE hubs experienced a high demand.

Initial plans for OE also had focus on corporate engagement. This included the establishment of industry colliders, which were largely abandoned, in part due to the resources required to develop effective mechanisms for corporate engagement. In addition, supporting university engagement with large corporations is typically the responsibility of other units in the participating universities and therefore deemed out of scope for the OE hubs. Several other initiatives moreover had similar objectives. The OE Steering Group therefore decided to refrain from corporate engagement in Open Entrepreneurship 2.0 and focus instead on scouting and support of cases. Similarly, original plans to establish an OE accelerator were abandoned as several other, suitable accelerators were accessible to OE cases.

Much of the inspiration for OE was drawn from U.S. universities with more mature research commercialization systems and perhaps not sufficiently adapted to the Danish context and the level of development of the OE hubs. Future extensions of OE should consider which of the original (or other potentially relevant) tools could be suitable in the further development of the scope and impact of OE activities.

AIM 3 CORPS

3.1. OE has strengthened ties between experienced entrepreneurs and university research commercialization efforts. OE has brought focus on the value added of bringing external entrepreneurs into the university-supported research commercialization process, engaging them as mentors, co-founders, investors and the like.

By experimenting with various tools for supporting early and ongoing engagement with experienced entrepreneurs, OE has helped to strengthen the entrepreneurial community around university cases. Examples of such tools include matchmaking events between university cases and experienced entrepreneurs, events targeted at investors, pitch days etc.

109 NUMBER OF MEMBERS IN THE E-CORPS DATABASE *

29% % OF CURRENTLY ACTIVE OE CASES MATCHED WITH A MENTOR/ADVISOR †

8% % OF CURRENTLY ACTIVE OE CASES MATCHED WITH A CO-FOUNDER †

61% % OF START-UPS MATCHED WITH A MENTOR OR ADVISOR ‡

30% % OF START-UPS MATCHED WITH AN EXTERNAL CO-FOUNDER ‡

* As of October 2023.

† Self-reported assessment of all active OE cases by BUMs (assessed during the period June-August 2023). Based on data from all OE hubs. N = 154. Please note that these cases are still active and these results therefore preliminary.

‡ Self-reported assessment of start-ups supported by OE, assessed by BUMs (October 2023). Based on data from AU, AAU, DTU, SDU. N = 108

3.2. Building a nationwide database of experienced entrepreneurs has been challenging but progress has been made

One of OE's original aims was to establish a nationwide corps of experienced entrepreneurs to facilitate matchmaking between academic entrepreneurs and external entrepreneurs. The "E-corps" was established as a shared database of external entrepreneurs.

The establishment of this joint database proved more challenging than expected. First, identifying suitable candidates required substantial vetting of potential E-corps members. An original list of entrepreneurs was vetted and heavily reduced to ensure the relevance of E-corps members and remove people with e.g. a main interest in providing consultancy services or in locating board positions. Vetting procedures have since been implemented by the central hub to assess all new members of the E-corps.

Second, for a long time, the list of E-corps members was not shared with the local hubs due to GDPR-related issues. These were finally resolved at the beginning of Open Entrepreneurship 2.0, and the list of E-corps members is now shared via a digital platform, which is maintained and curated by a staff member at the central hub, who is also responsible for vetting and onboarding of new E-corps members. The database was revamped in 2022 and is beginning to be used by some of the local hubs to recruit participants for OE events and identify suitable entrepreneurs to support their cases, particularly in technological domains where the hubs lack specialized expertise and personal networks.

Third, initially almost all E-corps members were identified by the central hub. There have been different opinions within OE as to the value added of a shared database. Some local hub staff also expressed prior concerns about contributing personal contacts established through years of relationship- and trust-building to a joint database. Recently, collaboration on the expansion and use of the database has however increased. This is motivated, according to respondents, by the improvements made to the database as well as the opportunity to use it as a value-adding supplement to limited personal networks that can be quickly depleted or overused and that do not always provide access to the types of specialized profiles that new cases need. Some respondents also point out that the joint database is key to being able to scale OE activities to accommodate a higher volume of cases.

AIM 4 COLLABORATION

4.1. OE has expanded networks, knowledge sharing and collaboration among universities

A key aim of OE has been to stimulate "open" exchanges of knowledge, practices and networks among the Danish universities.

Although the Danish universities had long-standing networks among technology transfer professionals in the TTOs, OE expanded this network to include a broader range of professionals working with business development and research commercialization, including BUMs recruited directly from the start-up ecosystem or industry.

It was always the ambition for OE to expand the collaboration to all Danish universities. This ambition was realized when CBS, KU HEALTH and RUC joined the original four partner universities AAU, AU, DTU and ITU in 2020, and when SDU joined in 2022.

"The collaboration with the other universities is one of the most rewarding things [in OE]. [...] We would never have gotten to where we are without OE. [...] We have exchanged experiences, connections, networks and so on. [...] 'Hey, we know a researcher working on something similar.' Or, 'do you know someone we could use on this advisory board?' There's always someone who knows someone. And we've used each other to give inputs to each other's cases." (Local hub representative)

The focus in OE on promoting knowledge exchange and collaboration across the participating universities is consistently described by interview respondents as one of the most important and value-adding elements of the project. According to respondents, the collaborative network within OE has been crucial in providing a forum for ongoing dialogue and knowledge exchange. This forum has also spurred bilateral collaboration among OE-affiliated staff on the development of practices for supporting research commercialization, on the development of training events and workshops, on joint events, on staff recruitment, and on concrete cases where one OE hub reaches out to another for specialized advice or for access to relevant external networks.

The network in OE has been particularly crucial for the capacity-building OE hubs:

“As a university with relatively modest experience in this area, being part of a national network like this is priceless. The inspiration it offers on how to build this type of [research commercialization support] infrastructure is hugely important. […] We don’t have to invent everything from the bottom up. We tap into a strong ecosystem.” (Local hub representative)

The network was also described as highly valuable for BUMs coming from outside of academia, as most of them do:

“I mean we don’t have a background in academia. We come with experience from industry, from the private sector. We have found the network to be really valuable in understanding how the whole ecosystem works […] and how the other universities work with people that we’re not used to working with, and for us to know who to contact when problems or opportunities emerge.” (Local hub representative)

Other respondents gave examples of how the interaction among universities within OE has contributed to a stronger overall network across the country, which has also laid a solid foundation for other cross-university programs and initiatives focused on fostering research commercialization, such as ESA BIC Denmark and Spin-Outs Denmark.

“Having those relationships with the other universities, and having OE as a common ground for us to meet on, has had a halo effect on some of the other relationships that we’ve started building. So that we can much more easily pick up the phone and ask them about co-partnering with us or about a new grant. We have better knowledge of who it makes sense for us to work with. For instance, with [another university], we've previously had very little to do with each other, and now we’re working together and we’ve also entered into another partnership. It [i.e. OE] has helped to open that channel of communication, by building a common ground.” (Local hub representative)

The role of the central hub in supporting the network and planning joint activities – including e.g. the quarterly team meetings and joint participation in relevant events such as Tech BBQ – was also highlighted, with respondents underlining the importance of ensuring that someone is tasked with scheduling and organizing such activities.

During the COVID-19 pandemic, meetings were held online, but physical quarterly team meetings were resumed as soon as possible to support the development of personal connections and unplanned interaction within the network.

Regular (typically online) meetings are also held among project managers and BUMs. Interviews however revealed that these meetings were seen as providing limited added value, often focused on listing ongoing activities in the participating universities or introducing new staff members.

4.2. Supplementing the wider network with more focused collaborations suggests a promising path forward

Some respondents noted that the complexity of the collaboration across universities had increased during the project period, as more universities and people joined OE. It takes longer for new people to get to know the rest of the group and establish the personal connections that make it easier to reach out to each other. This, according to respondents, only increases the importance of the quarterly meetings within the OE team.

Due to the growing size of the OE network and the aforementioned differences in the universities' degree of experience with research commercialization as well as focus areas and approaches, there has been a growing interest in exploring more focused collaborations. Steps have been taken in this direction in Open Entrepreneurship 2.0, in the form of joint thematic network events and taskforces. For instance, one taskforce focuses on commercialization of SSH research. These steps have been positively received by the local hubs. There was a general interest in preserving and expanding these more focused collaborative forums, as a supplement to the wider network's quarterly meetings, to support collaboration in smaller groups with shared interests and challenges as well as collaboration targeted at specific technology areas or industry sectors.

AIM 5 COMMUNITY

5.1. OE was an early mover in a wider evolution of research commercialization support in Danish universities

It was an ambition of OE to contribute to a strengthening of the overall Danish ecosystem for research-based start-ups. The main contribution of OE in this respect has been its effect on strengthening individual universities' capacity to support research commercialization and collaboration across the universities, as described under the previous four aims.

The effect of OE on the overall ecosystem is however difficult to ascertain, for three reasons.

First, it is difficult to reliably estimate the wider impact of OE given that data for use in this evaluation was only collected from March 2022 onwards. Consistent historical data is not available, nor were any baseline studies undertaken at the start of the project.

Second, the flexibility of OE – across universities and across the lifespan of the project – was identified as one of its strengths but also makes it difficult to assess its wider impact, as OE does not represent a consistent intervention across universities or even always across BUMs from the same university.

Moreover, OE does not exist in isolation but is closely interwoven with other functions and initiatives at the participating universities (e.g. the TTO, other business development-oriented activities, other externally funded research commercialization programs etc.). Several of the BUMs have multiple roles within their organization and the wider ecosystem. This has likely increased the relevance of OE and its interaction with other relevant activities and actors in the universities' entrepreneurial ecosystems, but it makes it difficult to disentangle the impact of OE from the impact of other, related initiatives.

Third, the wider effect of OE is moderated by the modest scale of the project. As shown in slide 22, a full-time equivalent (FTE) of 17 Business Unit Managers (BUMs) are affiliated with OE, or approx. 2 full-time BUMs per university. Given that the Danish universities currently employ more than 17,000 scientific staff members, this means that there is one OE BUM for every 1,000 researchers.

Moreover, particularly in the capacity-enhancing universities that already had well established innovation-oriented systems upon joining OE, OE represents but a small proportion of the total number of staff working to support research commercialization, entrepreneurship, technology transfer and innovation in the universities.

Given these challenges in assessing the wider impact of OE on the ecosystem, the evaluation relies on the assessment of the project managers and BUMs associated with OE as well as the additional stakeholders interviewed.

In recent years, several of the core principles of the OE approach have become widely accepted and used, summing up to an evolution in how universities support research commercialization. This includes the focus on early contact with cases; supporting engagement with experienced external entrepreneurs as mentors, co-founders and the like; and working with cases that do not involve IP. Despite the modest scale of the project, respondents argue that OE has had a significant impact on this shift in practices, acting as “early mover” that helped place focus on, provide resources for and develop tools for this evolution in research commercialization support.

“OE has created a community. It has helped accelerate and align a broader shift in technology transfer practices across universities – because of its focus on external entrepreneurs, on collaboration between the universities, because it can work with and without IP, because it builds bridges to other programmes. It’s brought additional resources and has helped promote a cultural revolution in the way we work.” (Local hub representative)

5.2. OE is a small but valuable gear in a larger, entrepreneurial engine

Within the wider ecosystem, OE is one of many internally and externally anchored initiatives that provide support for the commercialization of university research. These initiatives function, in theory, as interlocking gears. In practice, however, it can be difficult to discern the differences between them, and there are not always efficient connections between the gears.

"... these projects, they try to focus on different things. [...] Sometimes we find ourselves in a situation where we have a case that just... well, that just doesn't fit into any of these boxes. I think what I'm trying to say is that you sometimes miss that multi-purpose tool that can be used when other specialized tools don't fit. [...] We get these inventions in, and we have some researchers, and we have to find some way of moving things forward." (Local hub representative)

OE's increased focus on building bridges to other programs – as described under *Aim 2. Concepts* as the fifth core principle of OE – enables it to address some of the lacking alignment between gears in the entrepreneurial engine at the Danish universities, thus contributing to a more efficient research commercialization support system overall.

"OE is essentially a community than spans universities and different professional communities, with a focus on building networks to external entrepreneurs. [The other programmes] are really quite specific to cases that fit within the framework they work with. [...] It's useful to have OE as something that spans across, where we can work regardless of IP, and where we can access external mentors and consultants that we don't have in our existing networks. It's more about ensuring breadth than depth [in the support offered to cases]." (Local hub representative)

KPIs FOR OE

OPEN
ENTREPRENEURSHIP

KPIs

KPIs were determined for OE by the OE team, in dialogue with the Industry Foundation.

The KPIs addressed in this evaluation are the ones in current use, developed for the second phase of OE (2021-23).

The KPIs were translated from Danish by the evaluator.

The assessment presented is based on the most recent KPI status based on data from the local hubs, collected by the OE central hub (per October 2023).

Some KPIs concern targets for the entire project period (2017-2023). For yearly KPI targets, data are reported for 2023 and 2022.

REFLECTIONS ON THE KPIs

This evaluation takes stock of OE's performance according to the KPIs set for the project. However, the KPIs have several shortcomings, which should be kept in mind.

1. The KPIs provide only partial windows unto OE outcomes. For instance, one KPI concerns the number of new start-ups registered. However, the contribution of OE to start-ups is difficult to capture in one statistic, as argued by many respondents from the local hubs. First, many OE cases will not lead to a start-up but instead to e.g. a research collaboration with a company, further academic research, or a licensing agreement – depending on which path is deemed most appropriate to advance the commercialization of a given case. Moreover, For the cases that *do* involve or lead to a newly registered start-up, OE is often but one of several actors that have provided support to the start-up, and the ways in which and extent to which OE supports such start-ups varies greatly. As such, the nature of OE's contribution of OE differs from case to case and its impact is hard to disentangle from that of other ecosystem actors. It should therefore be kept in mind that a KPI on the number of start-ups that OE has provided support to provides only a partial window unto the outcomes of OE. Similar caveats apply to several other KPIs.

2. The overall set of KPIs have been adjusted, in dialogue with the main funder of OE, from the first to the second phase of OE, but also during the second phase. For instance, in 2022, a KPI to secure paying corporate partners was deleted, as was one about making a documentary about OE.

3. Several KPIs have been reinterpreted to better reflect actual activities in OE, thus differing sometimes substantially from the original intention. For instance, a KPI target that OE should have 150 Entrepreneurs-in-Residence hosted at universities in total over the project lifetime has been reinterpreted as any match (including e.g. a meeting) that has been arranged between an OE case and an external mentor or advisor or the like. While this is a relevant activity for OE to monitor, it says little about the outcome of the activity (e.g. whether that match led to prolonged or formal engagement between the case and the mentor), and it is substantially different from the original aim.

4. KPI data has not been collected on a consistent basis for all KPI targets. For instance, KPIs concerning whether start-ups supported have attracted Proof-of-Concept (PoC) or Venture Capital (VC) funding have not been reported on in a consistent, systematic manner by all universities.

5. There are no baseline data or studies to compare performance with, since no such data or studies were generated. Very few data dating back before 2020 were available for use in the evaluation, meaning there is limited information about historical performance or progression on targets.

The KPIs assessed in the following provide valuable windows unto activities and outcomes of OE, but the caveats mentioned above must be kept in mind.

IMPACT OF COVID-19

It is worth noting that OE, like everything else, was affected by the COVID-19 pandemic and associated lockdowns, which should be kept in mind in assessing performance on KPIs. Some activities related to e.g. scouting for new cases and matchmaking with external entrepreneurs were paused or at least moved online and significantly reduced.

Moreover, many of the researchers the hubs worked with were working to move their teaching online and addressing other implications of the pandemic lockdowns, leaving little time to pursue ideas for research commercialization. As a result, the OE second phase was extended by six months, until December 31, 2023.

Overall KPIs	Specified KPIs	Target	Intended impact
KPI 1. Creation of research-based start-ups	Start-ups (CVR registered) *in total*	120	A strengthened Danish innovation and entrepreneurial culture
	Start-ups have attracted VC and/or had external experts involved *in total*	50%	
KPI 2. Establishing research-based cases	New cases *per year*	100	Maturation of research with a view to boosting impact and commercial potential
	Cases have attracted PoC funding and/or company involvement *in total*	33%	
KPI 3. Collaboration with entre(intra)preneurs	Entre(intra)preneurs-in-Residence at universities *in total*	150	Strong engagement between the corporate sector and the start-up community in Denmark
	Members of the ”E-corps” database *in total*	150	
KPI 4. Collaboration with firms	Establish a model for industry colliders	Yes	Strengthen universities’ contribution to problem solving and value creation in firms
	Participating firms in colliders *in total*	100	
KPI 5. Learning and capacity building	Events disseminating knowledge about research-based business development *per year*	20	Expand universities’ capacity to support research utilization A strengthened entrepreneurial mindset among researchers
	Researchers that participate in OE events *in total*	500	
KPI 6. Outreach activities and visibility of OE	Articles/posts about OE PR-related activities Presentations at external conferences Meetings with politicians, industry organizations Participants in networking/knowledge-sharing events % of cases with international participants	120 12 50 50 1.000 15%	Awareness and recognition of OE, both at a national and international level

KPI 1 CREATION OF RESEARCH-BASED START-UPS

OPEN
ENTREPRENEURSHIP

KPI STATUS

KPIs	Target	Status (October 2023)
Start-ups (CVR registered) *in total*	120	122

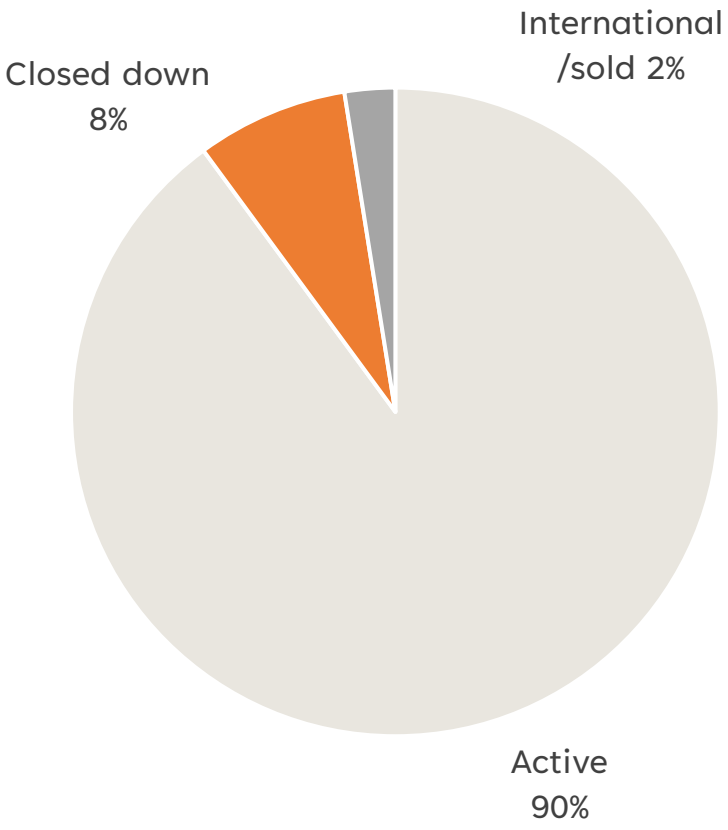
According to the latest KPI status provided by the OE central hub based on inputs from the local hubs, OE has provided support to a total of 122 start-ups since its inception, thus surpassing its KPI target.

AAU accounts for 34% of these start-ups, AU for 30%, and DTU for 24%. It should be noted that SDU only joined OE in 2022, and CBS, ITU, KU and RUC were identified as capacity-building universities, which goes towards explaining the difference in the number of start-ups supported. Moreover, the lion's share of cases at CBS, ITU and RUC are within the social sciences and humanities, which tend to produce fewer start-ups than the hard sciences.

For more detailed information on the contribution of OE to the establishment of start-ups, the hubs provided CVR numbers on all start-ups they had provided support to. Information on these CVR-registered companies was gathered from virk.dk. In addition, AAU, AU, DTU and SDU (who account for 89% of all the start-ups supported by OE) also assessed the nature of their contribution to these start-ups. Selected insights from these data are presented in the following slides.

University	# start-ups
AAU	41
AU	37
CBS	8
DTU	29
ITU	2
RUC	3
KU	1
SDU	1
Total	**122**

START-UPS THAT HAVE RECEIVED SUPPORT FROM OE



- 122 start-ups reported in total
- 4% were founded by 2017; 17% in 2018; 11% in 2019; 12% in 2020; 13% in 2021; 20% in 2022; and 24% in 2023
- 84% of the start-ups are ApS (5% are I/S; 2% are A/S, and the remainder are mostly sole proprietorships)
- Main sectors: Manufacturing (34%), R&D (18%), Computer programming (13%), and Consulting (9%)
- 90% of the start-ups remain active in 2023
- 9% of active companies have DKK 100.000 or more in registered capital
- 7% of active companies have reported 10+ employees

Based on CVR numbers reported by the local hubs in October 2023; N = 122; data on companies collected from virk.dk in May 2023 and October 2023

KPI STATUS

KPIs	Target	Status (October 2023)
Start-ups have attracted VC and/or had external experts involved *in total*	50%	> 61% of the start-ups that received support from OE were matched with an external mentor or advisor, and 30% with a co-founder * > 70% of the start-up cases received help to raise soft funding, and about 23% of them received help to raise hard funding *

Information on the fulfillment of this KPI was lacking in the data provided; some data was available, but not from all universities or in a consistent format. Instead we examine data on the contribution of OE to start-ups supported by AAU, AU, DTU and SDU – who together account for 89% of the start-ups reported by OE hubs.

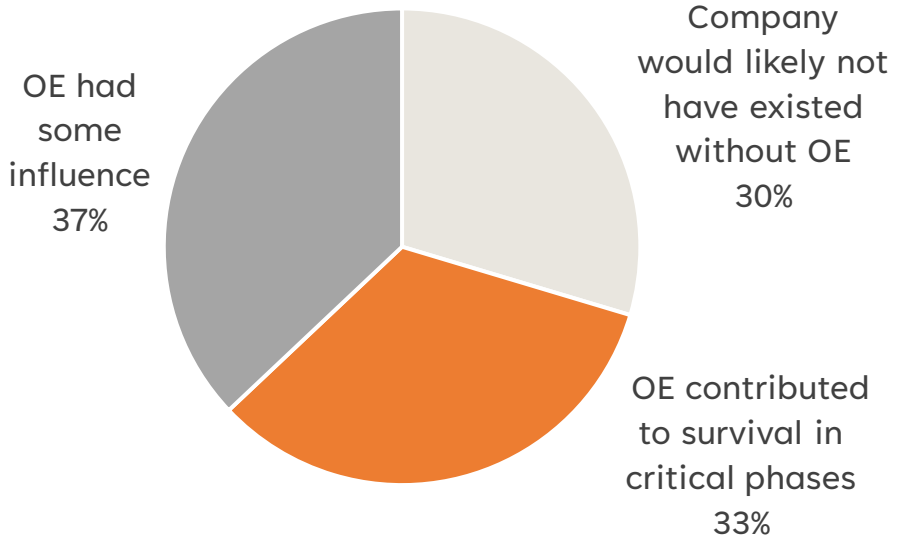
The self-reported data reveal that the target for the number of cases that have been matched with at least one external expert has been exceeded, as 61% of start-ups supported by AAU, AU, AU and DTU have been matched with at least one mentor or advisor. Moreover, 30% of these companies have been matched with a co-founder.

The same data also reveal that 70% of the companies have received help from OE to raise soft funding, and 25% have received help to raise hard funding. Though the aim of attracting venture capital (VC) for 50% of cases examined has not been met – in large part due to the early-stage nature of the cases supported by OE – these data do indicate that OE has assisted many start-ups in raising soft or hard funding.

* Self-reported assessment of start-ups supported by OE, assessed by BUMs (October 2023). Based on data from AU, AAU, DTU, SDU. N = 108.

DID OE PLAY A KEY ROLE IN IDENTIFYING THE IDEA BEHIND THE COMPANY?

OVERALL CONTRIBUTION OF OE TO THE START-UP



KEY TAKEAWAYS

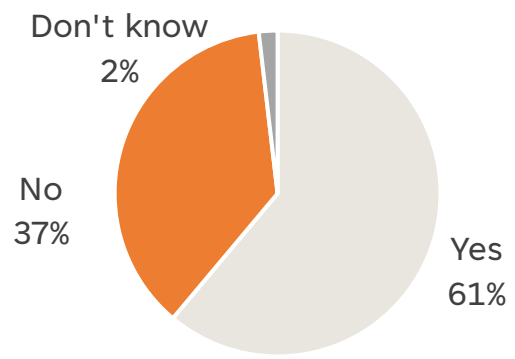
OE supports researchers in identifying or refining the idea behind their company and played a key role in the identification of the main idea behind 45% of the start-ups supported. Interviewed start-ups emphasized the value added of support provided by OE BUMs in refining their ideas and developing a business case.

OE played a key role in 30% of the start-ups supported. In 33%, it contributed to survival in critical phases (e.g. helping to access funding at key times). In the last 37% of cases, OE had limited impact on the survival or performance of the start-up.

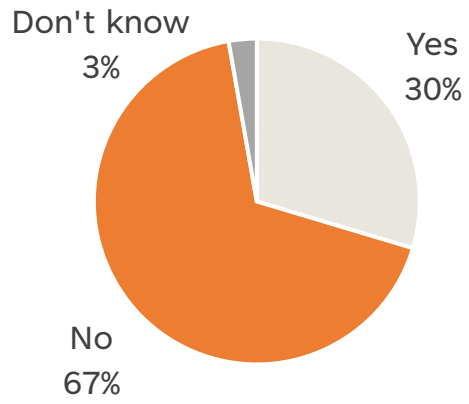
The self-reported assessments by the OE hubs were largely confirmed by company interviews.

Self-assessed. Based on data from OE hubs @ AU, AAU, DTU, SDU. N = 108

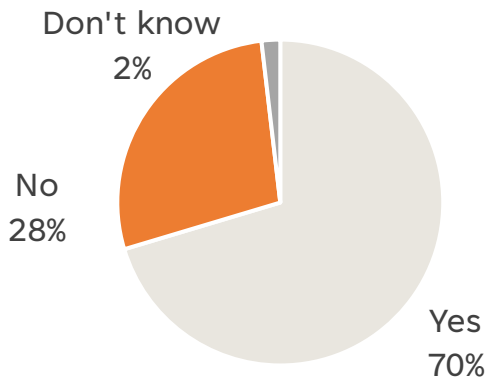
MATCH WITH MENTOR/ADVISOR?



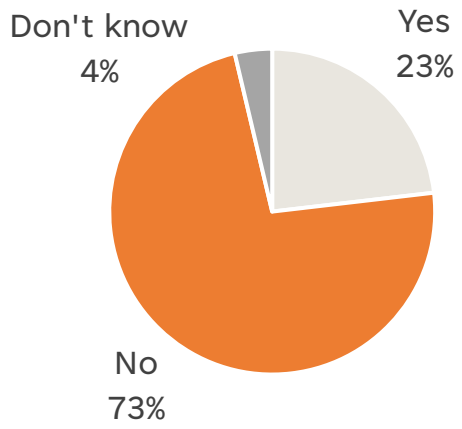
MATCH WITH CO-FOUNDER?



HELP RAISE SOFT FUNDING?



HELP RAISE HARD FUNDING?



KEY TAKEAWAYS

Just under two-thirds (61%) of the start-ups that received support from OE were matched with an external mentor or advisor, and just under one third (30%) were matched with a co-founder.

70% of the start-up cases received help to raise soft funding, and about 23% of them received help to raise hard funding.

Self-assessed. Based on data from OE hubs @ AU, AAU, DTU, SDU. N = 108

TAKE-AWAYS FROM INTERVIEWS WITH SELECTED START-UPS

Selected start-ups that had received support from OE (in this case from the hubs at AAU, AU or DTU) were interviewed. Start-ups described the value added they received from their interaction with OE as follows.

Hands-on advice based on specialized commercial experience. Respondents described support received through OE as 'hands-on' and highly actionable, emphasizing in particular the value of the specialized insight that BUMs held in technologies and markets relevant to the firm. This support contributed to the identification of promising use cases and the development of the commercial path and business models of the start-ups interviewed.

A trusted partner. A lot of actors provide support to budding and new start-ups, but OE was seen as an independent and trusted partner. Start-ups also stressed the value of being able to access support from OE when needed, for instance when they encountered new issues or challenges.

"Whenever we needed something, we would reach out to them. They were always there when we needed them." (Start-up representative)

Respondents also emphasized continuity: some had worked with the same BUM for years, which they felt enhanced the value of the support provided by OE.

Access to experienced external entrepreneurs. Several of the start-ups had been connected by OE to advisors, co-founders and/or board members, while others had relied on their personal networks or other entrepreneurial support programs/initiatives, some of which OE had facilitated access to.

Help with fundraising and financing. Respondents credited OE with help to navigate the funding landscape, identifying relevant funding options and providing guidance on funding applications. Soft funding thus accessed was credited with helping the companies move forward at critical stages. Some companies had received help to access investors, develop their pitch decks, and train investor pitches.

"I'm not sure we would have had a company without him [i.e. our OE contact]." (Start-up representative)

KPI 2 ESTABLISHING RESEARCH-BASED CASES

OPEN
ENTREPRENEURSHIP

KPI STATUS

KPIs	Target	Status (October 2023)
New cases *per year*	100	October 2023: 146 *active* cases in the current portfolio October 2022: 100 *active* cases in the current portfolio

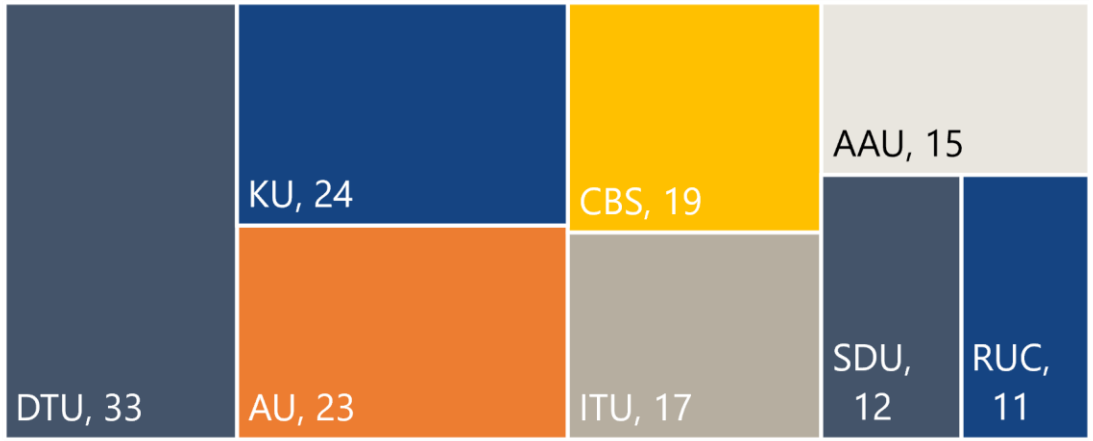
As of October 2023, OE hubs had 146 active cases. This exceeds the target of 100 new cases per year. It should be noted that the KPI specifies a target for the number of new cases established *per year*, while the data collected count the number of *active* cases. The number of active cases was however deemed a more informative indicator than the inflow of new cases. Cases may be be active for years, as they develop and mature. Cases may also be dormant for a period, or closed down if they are no longer deemed to have sufficient potential to develop into strong commercial activities. The number of active cases therefore reflects the current volume of OE activites.

To gain more insight into this active portfolio of cases, in the period June to August 2023, the local OE hubs provided an overview of their active portfolios of cases. At this time, the number of cases included (154) was slightly higher than in the KPI status in October. Key insights from these data are presented in the following slides.

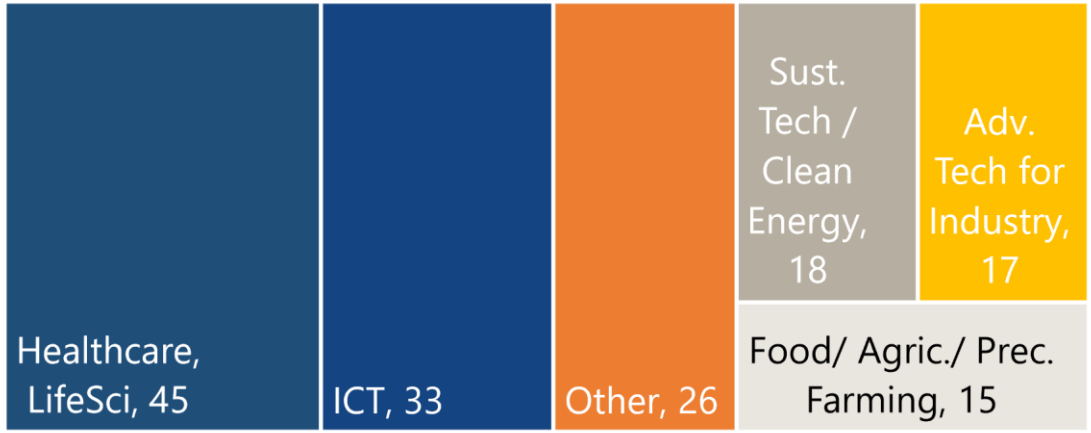
It is worth noting that while the support provided to start-up cases was disproportionately provided by AAU, AU and DTU (as described under *KPI 1*), the full portfolio of active cases paints a more balanced picture, as cases are distributed across all universities. This includes newcomers to OE such as SDU, but also KU whose portfolio has increased in size recently, as KU SCIENCE joined OE in 2023, alongside KU HEALTH which joined OE in 2020.

The data provided by the local OE hubs also indicate that cases are distributed across a wide range of fields, though 51% of all active cases focus on Healthcare and Life Sciences or ICT.

CASES, BY UNIVERSITY



CASES, BY MAIN FIELD



Field categories developed by the OE central hub. Healthcare, LifeSci = Healthcare and Life Sciences; ICT = Information and Communication Technology; Sust.Tech/Clean Energy = Sustainable Technology and Clean Energy; Adv. Tech for Industry = Advanced Technology for Industry; Food/Agric/Prec. Farming = Food, Agriculture and Precision Farming. Other includes: Education/EdTech; Creative Industries and Cultural Expression; Social Innovation and Communities; Smart Cities and Urban Development; and Energy.

KEY TAKEAWAYS

The portfolio of active cases is far less skewed than the portfolio of CVR-registered start-ups. For instance, KU has the second highest number of cases (stemming from both the HEALTH faculty, which joined OE in 2022, and the SCIENCE faculty, which joined in 2023).

Cases are distributed across a wide range of fields, both across and within university portfolios. Two fields however account for 51% of all active cases: Healthcare and Life Sciences and ICT.

Self-assessed. Based on data from all OE hubs. N = 154

KPI STATUS

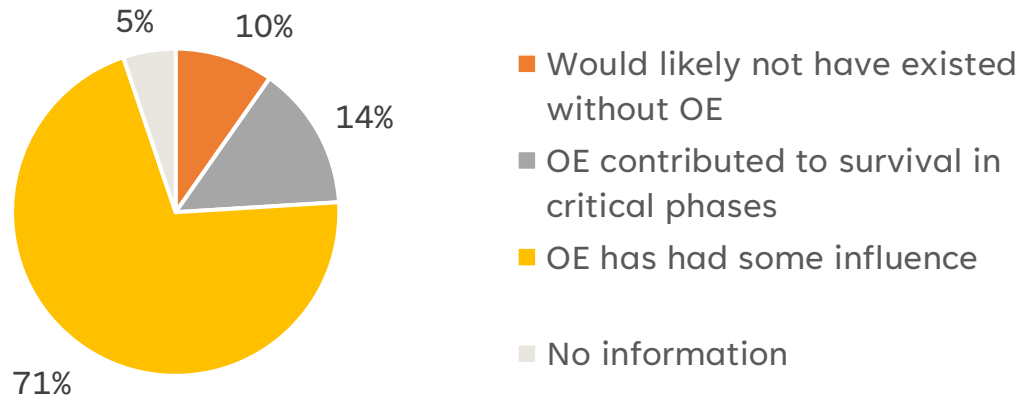
KPIs	Target	Status (October 2023)
Cases have attracted PoC funding and/or company involvement *in total*	33%	> 29% of currently active cases have been matched with an external mentor or advisor, and 8% with a co-founder > 40% of currently active cases received help to raise soft funding, and one active case has successfully raised hard funding

Information on the fulfillment of this KPI was lacking in the data provided; some data was available, but not from all universities or in a consistent format. Instead we examine data on the contribution of OE to active cases provided by all OE hubs collected in the period June-August 2023. To mirror KPI targets for start-up cases (see *KPI 1*), the data collected has focused on soft funding in general (and not specifically on PoC funding) and on engagement of cases with external advisors or the like (rather than involvement with companies, which has not been a focus in OE).

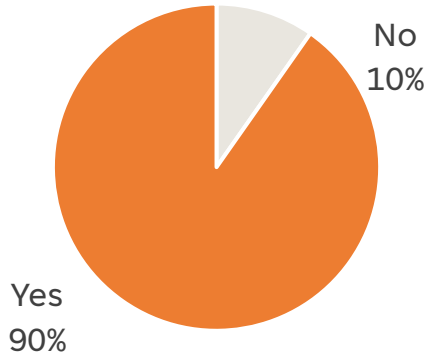
Given this interpretation of the KPI, and the data provided by the local OE hubs, the KPI is met in 2023, given that 40% of current, active cases have received help to raise soft funding, and just under a third have been matched with external advisors or the like. Since no historical data is available, conclusions cannot be drawn regarding the past performance of OE on this KPI.

The following slides provide additional information on the active cases in OE's portfolio, including their distribution across stages of maturity.

OE'S SIGNIFICANCE FOR THE CASE SO FAR



DID OE PLAY A CRUCIAL ROLE IN IDENTIFICATION OF THE IDEA BEHIND THE COMPANY?



KEY TAKEAWAYS

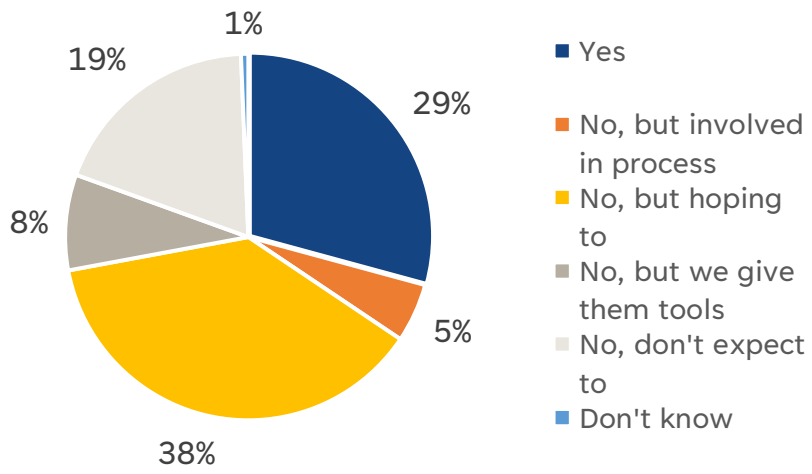
The self-assessed contribution of OE to active cases is more modest than for the reported start-ups, which likely reflects that the cases are still ongoing and at various stages of maturity.

According to the BUMs' own assessment, they have played a key role in the identification and development of the idea behind 90% of the active cases; this may reflect a growing focus on scouting in several of the universities during the course of the OE project.

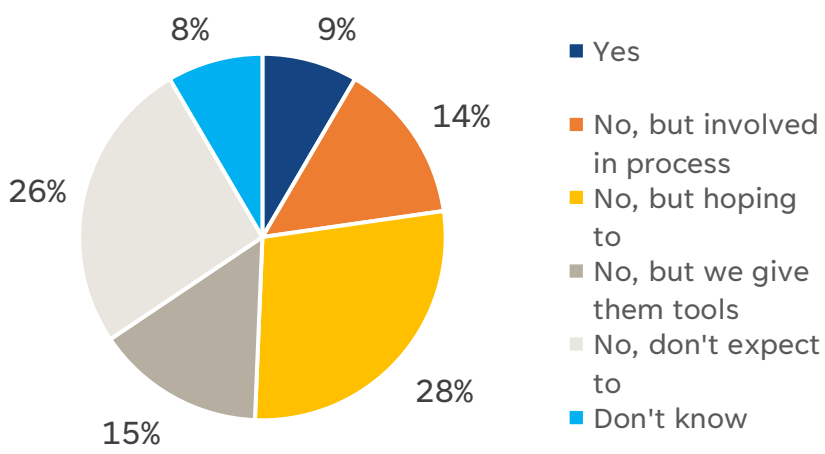
Self-assessed. Based on data from all OE hubs. N = 154

* Based on a stage model developed in OE in 2023

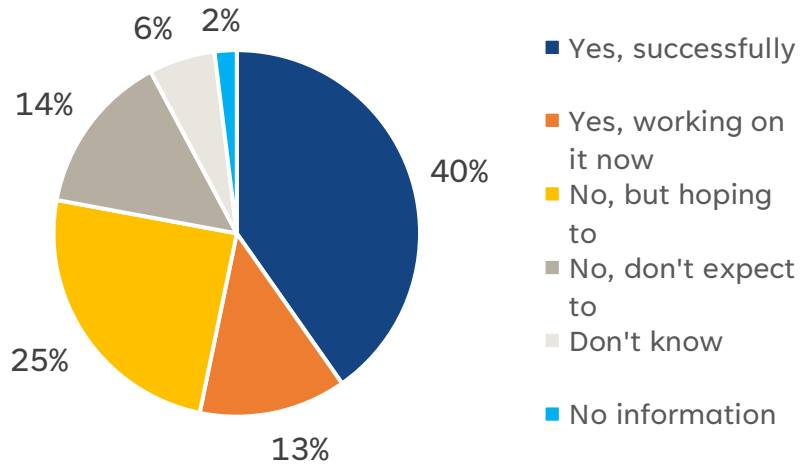
MATCH WITH MENTOR/ADVISOR?



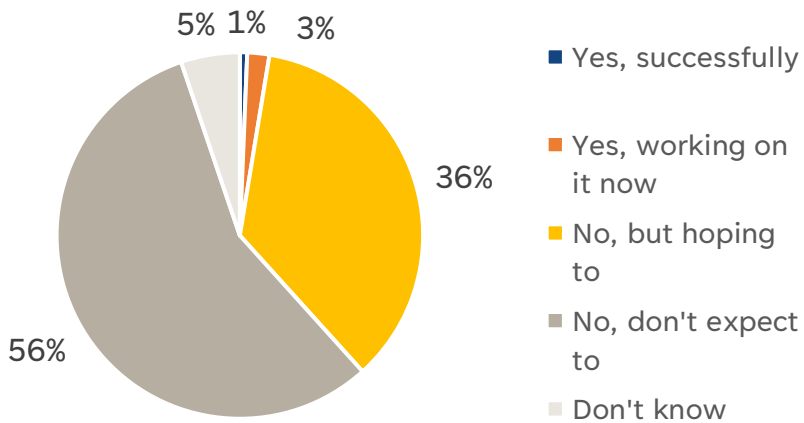
MATCH WITH CO-FOUNDER?



HELP RAISE SOFT FUNDING?



HELP RAISE HARD FUNDING?



KEY TAKEAWAYS

29% of active cases have already been matched with a mentor or advisor, and 9% have been matched with a co-founder.

40% of active cases have raised soft funding with help from OE, and one has raised hard funding with OE support.

Note that the cases are still active and these results therefore preliminary.

Self-assessed. Based on data from all OE hubs. N = 154

KPI 3 COLLABORATION WITH ENTRE(INTRA)PRENEURS

OPEN
ENTREPRENEURSHIP

KPI STATUS

KPIs	Target	Status (October 2023)
Entre(intra)preneurs-in-Residence at universities *in total*	150	Abandoned
Reinterpreted by OE as: Any match between an OE case and an external mentor or advisor or the like *in total*		204

When OE was established, one of the planned activities was having ”Entre(intra)preneurs-in-Residence” (EiRs) at the participating universities, who would be provided with a desk in an OE local hub or in a research environment, to foster knowledge exchange and interaction. As discussed under *Aim 2. Concepts* (section 2.3), however, this idea was abandoned. Given this development, this KPI was reinterpreted by OE as any match between an OE case and an external mentor or advisor. Based on the reported number of matches (204), this KPI has been fulfilled.

However, this figure does not provide information on the nature of these matches or the extent to which they were successful and/or led to prolonged or formal collaboration between the case and the external entrepreneur. More insight on this is provided under *KPI 1* and *KPI 2*, which report statistics on successful matches between external experts and start-ups supported and active cases, respectively.

KPI STATUS

KPIs	Target	Status (October 2023)
Members of the ”E-corps” database *in total*	150 (adjusted from 300)	109

As described under *Aim 3. Corps*, one of the key original aims in the OE project was to establish a nationwide ”E-corps” database of experienced entrepreneurs that could serve as mentors, advisors, co-founders etc. in the universities’ research commercialization cases. The idea was to supplement local and often person-specific networks, giving universities access to a wider set of entrepreneurs to draw on.

As detailed earlier (in section 3.2), initial efforts to develop the E-corps database met with difficulties. In 2022, the E-corps database was revamped. A staff member in the central hub was dedicated to the task, which also included vetting and onboarding of new members as well as ongoing addition of new members, in collaboration with the local OE hubs. GDPR issues were also resolved, allowing for the full OE team to access the database. Moreover, the database has been integrated into a digital collaboration platform where OE hubs can communicate, share good practices and collaborate on specific tasks.

As of October 2023, there are 109 members of the E-corps. This is below the adjusted target of 150 but new procedures are still being implemented, and the number of vetted, onboarded E-corps members is increasing steadily. For instance, in October 2022 there were 77 members in the revamped E-corps database, and in April 2023 there were 92 members. New members are being admitted by the central hub on an ongoing basis.

KPI 4 COLLABORATION WITH FIRMS

OPEN
ENTREPRENEURSHIP

KPI STATUS

KPIs	Target	Status (April 2023)
Establish a model for industry colliders	Yes	No (ITU exception)
Participating firms in colliders *in total*	100	Not applicable

Another of the original intentions in the OE project was to develop a model for industry colliders and establish specific colliders within the OE project.

As discussed under *Aim 2. Concepts* (section 2.3), however, this idea was abandoned. It is worth noting that at least one of the participating universities (ITU) has experimented with the industry collider model in the OE project, seeing it as a promising way forward to build researchers' capacity to engage with industry and, ultimately, develop ideas with commercial potential.

KPI 5 LEARNING AND CAPACITY-BUILDING

OPEN
ENTREPRENEURSHIP

KPI STATUS

KPIs	Target	Status (October 2023)
Events (organized by local hubs) disseminating knowledge about research-based business development *per year*	20	October 2023: 35 October 2022: 88
Researchers that participate in OE events (organized by local hubs) *in total (reinterpreted by OE as a yearly target instead)*	500	October 2023: 415 October 2022: 510

In addition to the broader aim of strengthening the participating universities' institutional capacity for research commercialization addressed under *Aim 1. Capacity*, OE has also had to address two KPIs focused on awareness-raising and capacity-building among researchers in the universities.

The first KPI concerns events targeted at researchers and is aimed at disseminating information about the commercialization of research. This has included a broad variety of activities across the universities, including for e.g. talks given to research departments, and courses on research commercialization and entrepreneurship offered to established or early career researchers. The KPI has been exceeded in both 2023 and 2022. Reported data in 2022 were significantly higher than in 2023 because of a series of smaller, related events organized in 2022 by two of the participating universities.

OE has also been measured upon the total number of researchers that have participated in OE events. Here the target has been greatly exceeded. The original target was to engage 500 researchers in total as participants in events organized by local hubs; but just in 2022 and 2023, 510 and 415 researchers, respectively, have participated in events organized by local hubs in OE.

KPI 6 OUTREACH ACTIVITIES AND VISIBILITY OF OE

OPEN
ENTREPRENEURSHIP

KPI STATUS

KPIs – *all are total targets (not yearly targets)*	**Target**	**Status (October 2023)**
Articles/posts about OE	120	84
PR-related activities (op-eds in media and the like)	12	12
Presentations at external conferences	50 (adjusted from 30)	36
Meetings with politicians, industry organizations	50 (adjusted from 20)	65
Participants in networking/knowledge-sharing events	1.000	877 (not incl. annual conference)
% of cases with international participants	15%	Not reported

OE has placed significant focus on creating awareness of the project and disseminating key principles of the OE approach to a wider audience; these efforts have in Open Entrepreneurship 2.0 (2021-2023) also focused on ensuring funding and support for the continuation of activities and lessons learned from OE. Outreach activities have mostly been the responsibility of the central hub, though often with inputs from or in collaboration with representatives from the local hubs.

With regards to the KPIs specified for these activities, OE has committed to generating 120 articles or Social Media posts about OE, which is substantially higher than the 84 achieved in April 2023. The target for PR-related activities (such as op-eds in online or print media) has however been met.

There has been a flurry of activity in 2022 and 2023 connected to efforts to secure funding for a continuation of activities in OE, focusing on presententations at external conferences and meetings with politicians, industry organizations and other stakeholder actors. This led to an increase in the targets for these KPIs. The target for meetings with ecosystem actors has been exceeded, while the adjusted target for presentations at external conferences has yet to be met.

Similarly, the target for the number of participants in networking and knowledge-sharing events organized by the central hub (incl. e.g. the annual OE conference and centrally organized matchmaking events) has yet to be met. This is to be expected, given that the annual OE conference in 2023 will not be held until December. Based on the typical number of participants at the annual conference, this event is likely to close much of the gap between the reported number of participants in October 2023 and the KPI target.

Finally, OE had a KPI concerning the percentage of cases that had international participants. This figure has not been reported. International participation has not been a focus area in OE.

APPENDICES

OPEN
ENTREPRENEURSHIP

APPENDIX I. ABBREVIATIONS

- OE: Open Entrepreneurship
- BUM: Business Unit Manager
- EIC: European Innovation Council

- AAU: Aalborg University
- AU: Aarhus University
- CBS: Copenhagen Business School
- DTU: Technical University of Denmark

- KU: University of Copenhagen
- KU HEALTH: KU Faculty of Health Sciences
- KU SCIENCE: KU Faculty of Sciences

- ITU: IT-University of Copenhagen
- SDU: University of Southern Denmark
- RUC: Roskilde University

APPENDIX II. DATA AND METHODS

This evaluation has focused on the aggregate project level. An assessment of the activities and results achieved at the individual, participating universities was beyond the scope of this evaluation.

The report draws on data collected between March 2022 and October 2023, as well as KPI data provided by the central hub. Given the lack of historical data, the evaluation focuses mostly on recent activities and results for which reliable data could be obtained. More precisely, focus has been on activities, results and lessons learned in the second, ongoing phase: Open Entrepreneurship 2.0 (2021-2023).

The study was undertaken as an internal evaluation, as the evaluator joined the Centre for Technology Entrepreneurship at DTU in March 2022, with a background in academic research and in policy consultancy. The study was designed to identify results and learning in OE to inform ongoing decisions about the project. The evaluator was free to choose the design and approach taken in the study. The evaluator has not been directly involved in the production of activities in OE but has conveyed reflections and insights from the study on a continuous basis to staff in the central hub as through presentations to the steering committee and other OE staff.

Given the internal nature of the evaluation, and the associated need for deep insight into OE, emphasis has been placed on OE-affiliated staff's experiences and perspectives on the project, and how they could both shed light on results and lessons learned achieved in OE as well as inform other initiatives with similar aims.

ON INTERNAL EVALUATIONS

Internal evaluations are defined as evaluations undertaken by project staff, even if the evaluator is external to the actual production of the project (Scriven 1991). The aim of internal evaluations is to support decision-making processes in a project or organization (Sonnichsen 2000, Vedung 2009, Volkov 2011) through the provision of information about activities, progress and results (Love 1983) and a fair representation of issues and perspectives unto the project or organization under evaluation (Torres 1991).

Advantages of internal evaluation include deeper and first-hand insight into the activity being assessed than external evaluators will typically be able to access, as well as sensitivity to the context in which the evaluation will be used, allowing it to be tailored to support e.g. ongoing learning and adjustment (Conley-Tyler 2005, Vedung 2009). Thus, internal evaluation is aimed at supporting organizational development and learning (Sonnichsen 2000, Love 2005), and the internal evaluator must balance the role of a detached, scientific researcher with a more participative role, informing the management of the project under evaluation (Weiss 1988). Internal evaluation requires that the evaluator ensures impartiality and objectivity (Schweigert 2011; Volkov and Baron 2011).

External peer feedback was provided on earlier drafts of the evaluation report by two independent academic researchers: Professor Ina Drejer, Aalborg University (in May 2023), and Professor Riccardo Fini, University of Bologna and guest professor at DTU in first half of 2023 (in July 2023).

DATA

DOCUMENT STUDY

- **Document study** of OE project descriptions and various other internal and external documents (see *Bibliography* later in Appendix III)
- Data on fulfillment of **KPIs**, provided by the local hubs via central hub
- Data on **start-ups that OE hubs have provided support to**, based on CVR-numbers reports by local hubs and collected from virk.dk (May 2023)

▸ Detailed CVR data available upon request

- Information on the **contribution of OE to start-ups** that OE hubs have provided support to, collected from local hubs at AU, AAU and DTU who together account for 87% of the CVR numbers reported by the eight OE local hubs (Apr.-May 2023)
- Information on the **contribution of OE to active cases** collected from OE hubs (Jun.-Aug. 2023)

INTERVIEWS

- **On-site visits and interviews** with all local hubs (in spring/summer of 2022, and in spring 2023). The first round of interviews focused on a broad range of topics; the second on updated information as well as specific issues uncovered in the evaluation.
- **Background interviews** with university and ecosystem actors including interviews with selected TTO managers in participating universities and with representatives of two other programs aimed at supporting the commercialization of university research (June 2023)
- **Interviews with 10 representatives from start-ups** that OE hubs have provided support to (registered in 2020 or later). Randomly selected by the evaluator from the data provided by AU, AAU and DTU

▸ Interview questionnaires available upon request

OTHER DATA

- **Ongoing meetings and dialogue** with staff in the OE central hub, aimed at collecting data on activities past and present in OE, as well as on the documented results of OE
- **Participant observation** of various meetings and events within the OE project held during the period of data collection. The evaluator recorded activities, observations and reflects from these meetings in a log
- **Feedback on presentations of preliminary findings** at various internal meetings in the OE steering group, project management group and at several quarterly team meetings with project managers and local hubs

▸ Details and log available upon request

INTERVIEW RESPONDENTS – OE LOCAL HUBS (2022)

AAU

- Peter Rasmussen, Project Manager, Interim member of the Steering Group (as of fall 2022)
- Gert Spender Andersen, Senior BUM, Interim member of the Project Manager Group (as of fall 2022)
- Trine Reinholt Andersen, BUM

AU 💻

- Jonas Brandt, Project Manager, Senior BUM
- Terese Kellenberger, BUM
- Lise Mejlvang Lindgaard, BUM

CBS

- Ashlea Wallington, Project Manager, Senior BUM
- Signe Bruskin, BUM

DTU Skylab

- Jens Friholm, Project Manager, DTU Skylab

DTU Compute

- Rasmus Stig Jensen, BUM, DTU Compute
- Mark Riis, Head of Innovation, DTU Compute
- Gitte Storm Hougaard Jørgensen, Project Assistant, DTU Compute

ITU

- Peter Ibsen, Senior BUM
- Nikolaj Oppermann, BUM

KU HEALTH

- Kamilla Rolsted, Senior BUM
- Trine Nygaard Jørgensen, BUM

KU SCIENCE

- Frederik Nygaard, BUM *

RUC

- Allan Grønbæk, Project Manager
- Rune Egedal Westergaard, Senior BUM
- Araceli Bjarklev, BUM

SDU

- Thomas Schmidt, Project Manager
- Jørgen Jakob Friis, BUM
- Thomas Klemmensen, BUM

💻 indicates interviews were held online; all other interviews were held as in-person interviews
* Informal interview. All other interviews were held as semi-structured interviews

INTERVIEW RESPONDENTS – OE LOCAL HUBS (2023)

AAU 💻

- Peter Rasmussen, Project Manager, Interim member of the Steering Group (as of fall 2022)
- Gert Spender Andersen, Senior BUM, Interim member of the Project Manager Group (as of fall 2022)

AU 💻

- Jonas Brandt, Project Manager, Senior BUM

CBS 💻

- Ashlea Wallington, Project Manager, Senior BUM
- Pola Weryzsko, BUM

DTU Skylab

- Jens Friholm, Project Manager

DTU Skylab

- Asger Trier Bing, BUM, Vertical Fintech

DTU Space, Photonics & Compute

- Michael Holbech, BUM

ITU 💻

- Lene Dahl Prahm, Project Manager
- Peter Ibsen, Senior BUM
- Nikolaj Oppermann, BUM

KU HEALTH 💻

- Kamilla Rolsted, Senior BUM

RUC 💻

- Rune Egedal Westergaard, Senior BUM

SDU 💻

- Thomas Schmidt, Project Manager
- Jørgen Jakob Friis, BUM
- Liv Thomsen, BUM

💻 indicates interviews were held online; all other interviews were held as in-person interviews

INTERVIEW RESPONDENTS – OTHER (2023)

JUNE 2023

AU TTO 💻

- Anette Miltoft Poulsen, Head of Technology Transfer Office, AU

KU TTO 💻

- Karen Laigaard, Head of Technology Transfer Office, KU

Other programs

- Rikke Lynge Storgaard, Program Manager, Spin-Outs Denmark (collaboration between all Danish universities, funded by the VILLUM Foundation), anchored at SDU 💻
- Lene Nørby Nielsen, Program Manager, SPARK (collaboration between AU, DTU, AAU, SDU and KU, funded by Novo Nordisk Foundation), anchored at KU 💻

AUGUST-OCTOBER 2023

Start-ups that have received support via OE, AAU

- Claus Bo Vöge Christensen, CEO, AUSCULTO 💻
- Henrik Tribler, CEO, Halorefine, and Chairman of the board, Haloderma 💻
- Jesper Schierbeck-Hansen, CFO and Chairman of the board, Myco4Food 💻

Start-ups that have received support via OE, AU 💻

- Jacob Elmose, CEO, Cystotech 💻
- Thue Bording, COO, Aarhus Geo Instruments 💻
- Andreas Brunsgaard Laursen, CEO, Danish Graphene 💻
- Maria Lund Paulsen, Founder, LakeAid 💻

Start-ups that have received support via OE, DTU

- Simon Jappe Lange, CEO, GLAZE Technologies 💻
- Hitesh Kumar Sahoo, CEO, Phanofi 💻
- Martin Carsten Nielsen, CEO, Alvenir 💻

💻 indicates interviews were held online; all other interviews were held as in-person interviews

APPENDIX III. BIBLIOGRAPHY

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AARHUS UNIVERSITY

CBS

DTU

IT UNIVERSITY OF CPH

RUC

UNIVERSITY OF COPENHAGEN

SDU University of Southern Denmark