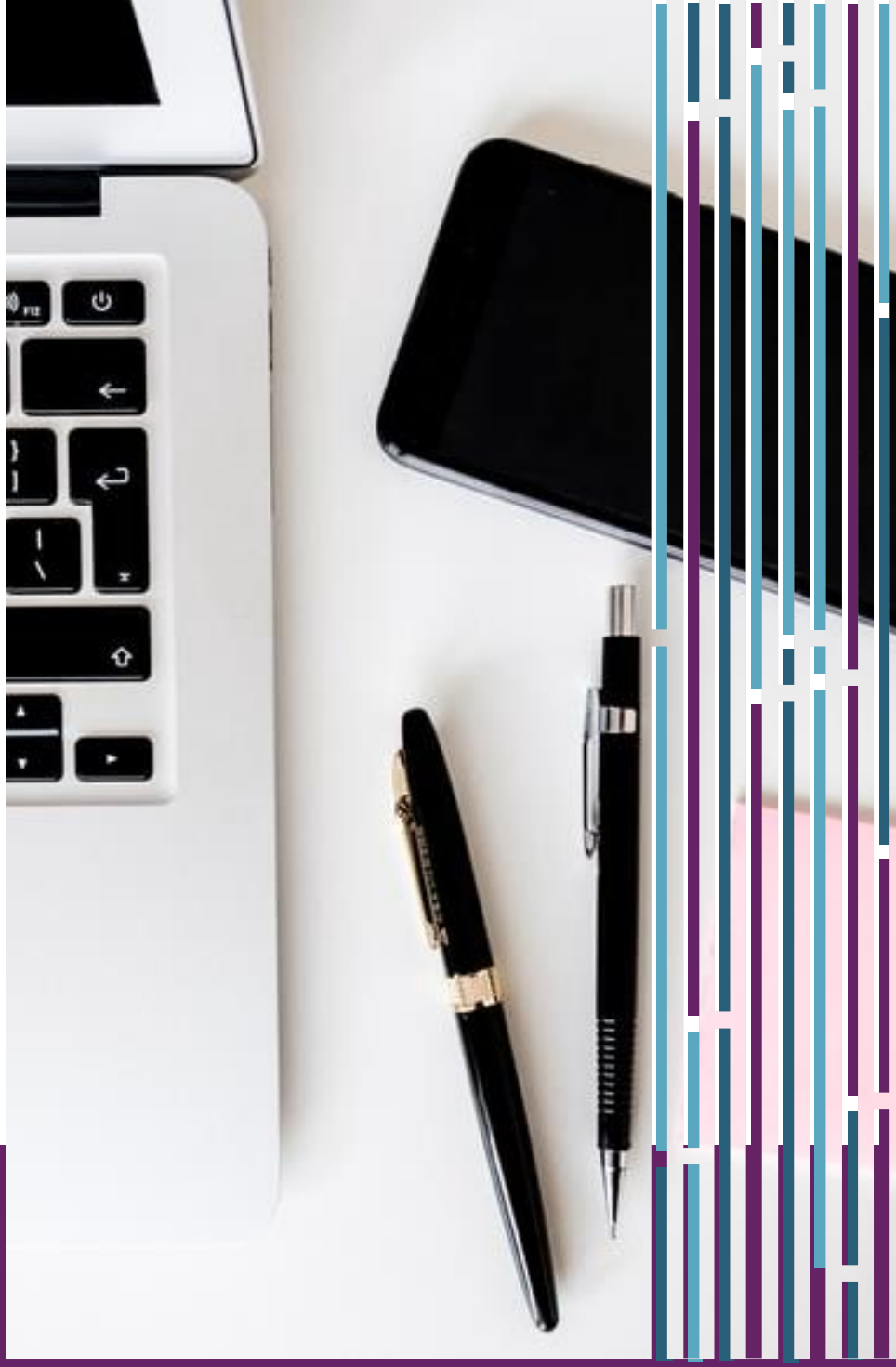
SME CLUSTER GROWTH

EMPOWERED ENGINEERING



# CASE STUDY REPORT

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# Project partners

*For more information about the SME Growth case study reports please contact Todd Davey at todd.davey@imt-bs.eu. The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. The SME Cluster Growth project is funded by the European Commission within the Erasmus+ programme.*

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# Executive Summary

This report is part of the 'Engineering SME's growth report' project granted within the framework of the Erasmus+ Program.

The aim of this report is to investigate good practices when it comes to successful SME Growth, the needs of the growing company and how higher education institutions can support this growth
The following steps were undertaken in the creation of the cases:

**I.** Case study collection and selection
**II.** Field work phase (pilot and full scale)
**III.** Case study writing
**IV.** Synthesis and analysis

All the cases represent SME managers, experts who have accompanied several companies in their growth, and managers of support structures such as incubators or accelerators. The objective of the diversity of profiles is to show the growth process from different angles, accounting for the specificities of each actor potentially involved in the growth process, both within and outside the company.

The cases were gathered by the SME Growth project consortium partners according to an analysis grid to discover general trends and the most striking insights of the growth challenges of engineering SMEs.

The cases allow us to draw a first conclusion: that growth is a concept that is more difficult to define than it appears at first glance. In fact, this concept of growth depends on the perception that the manager themselves have of it and poses such questions as "is it measured through the number of personnel, through revenue or profit growth?", "Is it internal or external?", "Is it continuous or intermittent?".

In order to anticipate growth, the manager must define and reflect on the way in which they want to grow and decide how to pursue it. Because the process of growth requires that the company take a risk, it is necessary to prepare for both the growth and post-growth phases, as well as how to prevent worst-cases scenarios. Growth causes the structure of the firm to transform, and it will not be successful if the resources available to support that growth, cannot ensure the company's sustainability.

Thus, the motivation of the manager to initiate, support and translate growth within this structure is the most important factor of success for a growth project. Only when this motivation is present can there be a more functional translation of the company's needs. As for the success factors, above all, they are linked to the internal structure so that its post-growth assets correspond to the optimal articulation of the activity.

In this context, the perspectives and expertise provided by external actors are major assets for looking at each phase of growth. Universities are part of these actors and can be close partners in the framework of a growth project thanks to their training missions, expertise and network, as well as in the framework of joint development of products or services.

For this collaboration to take place while bringing a certain added value to both business and universities, higher education institutions must imperatively take into consideration the specific timing of companies (which can be very different from their own), their language and the lack of time that entrepreneurial structures have meaning the very rarely have the ability to devote significant time to collaboration with universities.

# Introduction

Small and medium sized enterprises (SMEs) are the backbone of the European economy and improving the competitiveness of SMEs has been a main objective of European cohesion, R&D, Industrial and ICT policies, among others. Despite globalization and increasingly international competition, SMEs in Europe remain a dominant employer contracting around 94 million people (Clark, 2019) and generating around 56.4% of the total added value (EUR 4.4 trillion). However, SMEs face obstacles to growth, including a shortage of skilled staff and limited access to information amongst others (European Parliament, 2017) whilst the WEF's Future of Jobs report states that 54% of employees will require significant re-/upskilling by 2022, particularly among SMEs (World Economic Forum, 2018).

With human capital being the core of competitiveness and SMEs being the motor of the EU economy, SMEs need support to reach their full innovation potential. The UN assert that SMEs offer growth and provide a solid base for work, entrepreneurship, creativity and innovation with regards to the sustainable development goals. However, for SMEs one of the greatest inhibitors to innovation is human resources, specifically multi-skilled and cross-functional human capital and access to talent (OECD, 2018).

Particularly, SMEs need to develop more 'T-shaped skills' (Kos, 2021), such as relational intelligence, emotional intelligence, transversal skills, an ability to recognise future trends, etc. Initiatives such as the Knowledge and Innovation Communities by European Institute of Innovation & Technology (EIT) have aided innovation (EIT, 2022) however they are not specifically focused on SMEs, with the latter needing more localised networks and access to talent. Studies highlight the importance of regional knowledge clusters involving scientific organisations and universities, supplying both research and talent, in developing SME innovation excellence (Davey et al., 2018).

# Methodology

## *Aim*

The primary aims of the case study collection included:

**1.** To determine what are the SME needs for successful growth.
**2.** To discover good growth practices and general needs of Growth SMEs.
**3.** To determine how higher education institutions can support this growth

To write 65 case studies: 10 cases from each of the selected regions and 5 additional European cases (UIIN). 12-15 case candidates should be suggested in order to select the final 10.and how higher education institutions can support this growth.

## *Targeted group for cases*

The growth cases will feature the small and medium-sized enterprises that can share their growth stories and strategies that have helped them to scale up. Particular attention should be given to:

**1.** Engineering SMEs – the majority the cases should be focused on growth engineering companies. Non-engineering companies selected should important insight for engineering growth

**2.** University-business collaborators - Those that collaborate with universities as part of their growth story.

## *Process*

Good practices in SME Growth were collected with a focus on Europe.

The steps involved in the case study selection process included:

**i.** ***Case study collection and selection***

- a case study selection framework (see below) was created for the assessment of the case studies
- the cases found were collected, researched, and input to a large database, including the description of their main characteristics
- This list of candidate case studies was reduced to 65 (10 from UIIN, 5 from each partner), eliminating cases based upon lack of unique qualities or lack of information
- The project's Advisory Board evaluated the final 65 cases for a final quality assurance

**ii.** ***Field work phase (pilot and full scale)***

- Once the 65 case studies were approved, each partner had the task of writing 10 case studies in two rounds of five cases following the same guidelines
- The cases have been elaborately researched to gather good practices in SME growth including relationship with partners, clusters, and universities at a European level.
- These cases are based on the knowledge of a wide variety of stakeholders, such as:

  Higher education managers

  Knowledge transfer professionals,

  Business owners

  Cluster managers

  Policy makers

*i.* ***Case study writing***

- Case studies were written by members of the project consortium following a set methodology for development of the case study:

- Initial information and data search
- Contact made with the case study candidate
- Information requested to support the case in terms of evidence of case existence, its details, development and indicators of success
- Initiative stop-go review of case study quality to ensure it meets set standards
- Interviews organised and executed with key people involved in the case, ideally representing different stakeholders involved in the case
- Initial case draft and proofing
- Additional information and data requested

- Case studies were reviewed and edited by the work-package leaders and feedback provided to the case writer for further improvement

*i.* ***Synthesis and analysis***

- A synthesis and analysis of the cases were completed in order to generate an extensive list of case study insights, which were informative on the topic of SME growth and useful for the creation of training for SMEs
- Case study insights were summarised for the executive summary of this report

## *Scope of the report*

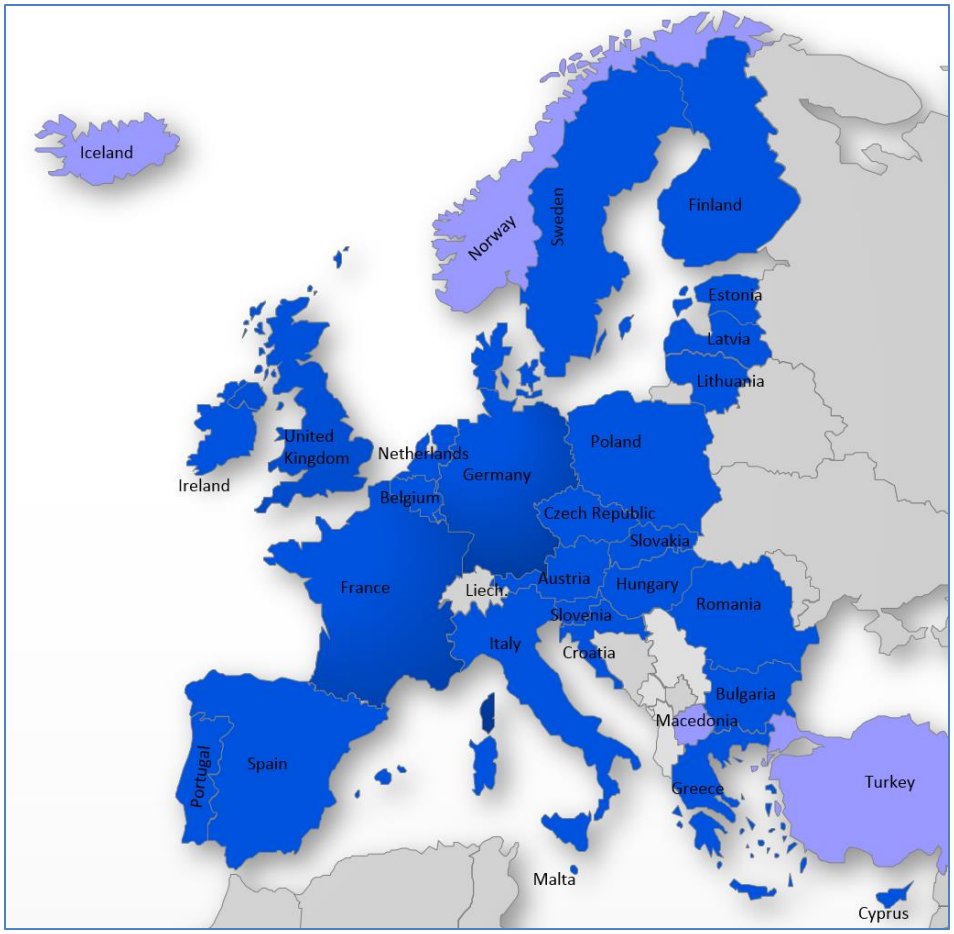
The following report includes 65 cases of European good practice in SME growth, including cases from 6 countries of the European Economic Area (EEA) and Turkey, Norway, Macedonia and Iceland.

The good practice case studies have been prepared by:

**Table 1:** Case study partners

| **Partner** | **Region** |
|---|---|
| Institut Mines-Telecom Business School | France |
| University of Bologna | Italy |
| Munster Technological University | Ireland |
| University Industry Innovation Network | Europe |
| University of Alcala | Spain |
| University of Malaga | Spain |
| Istanbul Technical University | Turkey |

**Figure 1:** Countries of European Economic Area and Iceland, Norway, North Macedonia and Turkey




## *Case Study reporting structure*

Partners were required to report on the key elements that constitute the structure used in the case studies This SME Growth case study reporting structure is both a map of the major elements of the SME Growth dynamics and a description of needs, success factors and collaboration universities during growth phases, including:

***Table 3:*** *SME Growth case study reporting structure*

| **" Name of the Case "** |
|---|
| **Executive summary** (in 200 words) of company's history |
| **Background of the growth company**<br><br>AIM - To specify a brief description of the growth trajectory of the company including an understanding of key growth milestones. |
| **Background of the growth leader**<br>AIM - To study if elements of the leader's specific background show informal abilities or experiences to be able to manage growth, whenever those abilities appeared during the academic, personal, or professional life of the growth leader |
| **Personal concept definition**<br>AIM - To study if the growth leader rationalised his practices or if his or her strategy are more related to intuition. |
| **Growth aims**<br>AIM - To study if growth has been planned from the beginning or not, and at which level strategy, tactics and operational ambitions of growth were formalised. |
| **About growth**<br>AIM - To study the type of growth, the maturity of middle management in terms of growth management, the weight of the operational team on the process, the ability to anticipate a long-term strategic view and to translate this view inside the structure on terms of concrete needs. |
| **Specific challenges**<br>AIM - To study:<br>• if challenges and difficulties raised by growth tend to be the same from one growing company to another.<br>• what does it mean to match the structure of the company before growth with the new post-growth company. |
| **HR challenges**<br>AIM - To study:<br>• the specific needs of a growing structure before, during and after growth phases.<br>• the specific HR abilities, challenges, need for personnel and challenges to hiring linked to the needs of a growing company. |
| **Specific needs**<br>AIM – To study:<br>• the gap between the already existing core competences and skills within the company before growth, the needs to start growing and what they need to manage that growth and how HEIs could answer those needs.<br>• how hard it could be to circumvent the prejudices about young students and young managers and how to teach to young students the concrete part of strategic decisions and business-owing challenges. |
| **"Dos and Don'ts"**<br>AIM - To study:<br>• good and "you'd better not" practices raised by real use cases of successful growth. This section is an opportunity to determine what comes to support and ensure a good growth process across all use cases<br>• in detail everything that has dragged down growth to determine the frequent mistakes that growing companies make and how to anticipate and avoid them. |
| **Support**<br>AIM - To study the importance of support, determine what typologies of support and good practices are the most efficient to support SME's Growth (regarding the company itself or the business owner himself). In this part, you can describe the kind of support specific to the use case and its impact (financial support, specific expertise e.g...) |

## *Characteristics of the cases selected*

A balance in the case studies was sought to provide good practice examples that considered a variety of foci and considering different topics:

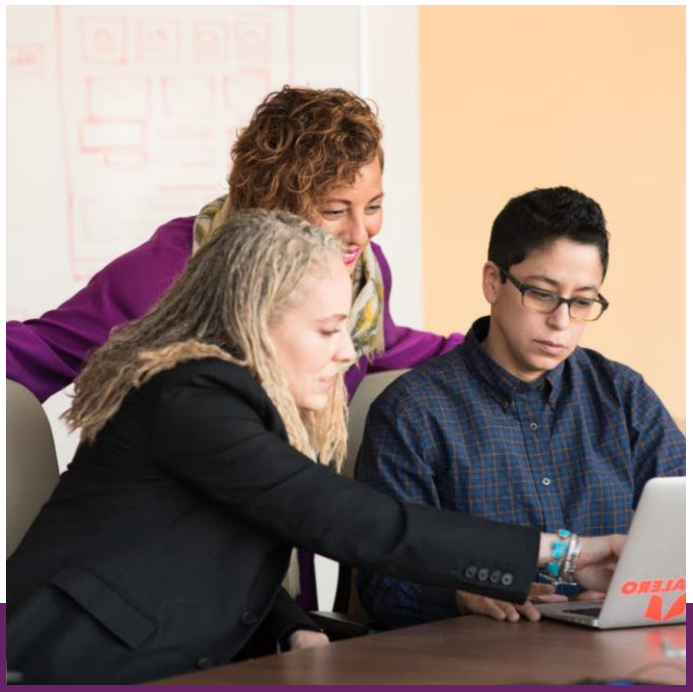
- Growth Management
- Structures that support SMEs
- SMEs within Clusters
- Policy and Financing ecosystem
- Go international
- Knowledge management
- Innovation management
- Business owners
- HEI Role

The final selection of the cases also covers different types of SMEs stakeholders involved in growth phases. Although there are cases that focus only on one activity, most cases include several.

***Table 4:*** *Stakeholders interviewed*

| Types of stakeholders | No. of cases |
|---|---|
| SMEs Owners | 32 |
| Members of SMEs involved in growth management | 17 |
| Expert in SME growth | 7 |
| Members of Universities | 9 |

# Selected Case Studies



| | |
|---|---|
| *1 -10* | *Alcala, Spain* |
| *11 – 20* | *Malaga, Spain* |
| *21- 30* | *Cork, Ireland* |
| *31 – 35* | *Netherlands* |
| *36 – 45* | *Istanbul, Turkey* |
| *46 - 57* | *Evry, France* |
| *58 – 65* | *Bologna, Italy* |

**Table 5:** Details on case studies

| Case | Region | Country | Organisation(s) name | Description | Types STAKEHOLDERS |
|---|---|---|---|---|---|
| 1 | Alcala | Spain | WhiteBox | Data and Analytics | SME owner |
| 2 | Alcala | Spain | Nabiax | Multinational data center service provider | Member of SME involved in growth management |
| 3 | Alcala | Spain | Yoda | Digital marketing services firm | Member of SME involved in growth management |
| 4 | Alcala | Spain | Strategy Big Data | Data analytics | SME Owner |
| 5 | Alcala | Spain | University of Alcala | University | Expert in SME Growth |
| 6 | Alcala | Spain | Camilo José Cela University | Training and consultancy programme development | Expert in SME growth |
| 7 | Alcala | Spain | In2AI | Artificial intelligence utilisation/digital transformation | SME Owner |
| 8 | Alcala | Spain | PROCYCLA | ENVIRONMENTAL SOLUTIONS | Executive Director |
| 9 | Alcala | Spain | SIROCCO ENERGY | ENERGY FORECASTING | CEO |
| 10 | Alaca | Spain | SOLIDA ENERGIAS RENOV ABLES | Consulting and energy projects | Managing partner |
| 11 | Malaga | Spain | Aertec | Aeronautical engineering and design | SME owner |
| 12 | Malaga | Spain | Lynka | Engineering consulting | SME Owner |
| 13 | Malaga | Spain | Tedial | Media management and business efficiency | SME Owner |
| 14 | Malaga | Spain | Aeorum | Surveillance tools engineering | SME Owner |
| 15 | Malaga | Spain | Tupl | Disability assistance technology development | SME Owner |
| 16 | Malaga | Spain | Premo | Electronic component development, manufacturing and sales | SME Owner |
| 17 | Malaga | Spain | Predictiva | AI, Language processing and data collection | SME Owner |
| 18 | Malaga | Spain | GreenGlobe | Environmental consulting agency | SME Owner |
| 19 | Malaga | Spain | Bioazul | Sustainable water management engineering and consulting | SME Owner |
| 20 | Malaga | Spain | Fiixit Orthotic Lab | Medical equipment 3D printing manufacturing | SME owner |

| | | | | | |
|---|---|---|---|---|---|
| **21** | Cork | Ireland | Takumi Precision Engineering | Precision engineering of machines, components, CNC milling, wire EDM and other specific technologies | SME Owner |
| **22** | Cork | Ireland | T&T Precision | Aerospace, injection moulding, electronics development, fabrication | SME owner |
| **23** | Cork | Ireland | Creamix Heating Solutions | Infrared heating product supplier | SME owner |
| **24** | Cork | Ireland | Torc Precision Engineering | General repairs and fabrication | SME Owner |
| **25** | Cork | Ireland | Aqua Designs | Service provider providing laser cutting, vaulted cutting, polishing, folding and welding | SME Owner |
| **26** | Cork | Ireland | Graeple Perforators and Weavers Ltd | Diverse product development and production | SME owners |
| **27** | Cork | Ireland | Mann Engineering | Engineering company specialising in grocery store equipment | SME Owner |
| **28** | Cork | Ireland | MTD Precision Engineer | Precision design and manufacturing | SME Owner |
| **29** | Cork | Ireland | Design Pro Automation | Systems integration, bespoke machine building, automation, robot programming mainly for MedTech | SME Member involved in growth management |
| **30** | Cork | Ireland | Samex Automation | Medical and pharmaceutical manufacturing | SME Owner |
| **31** | Netherlands | England | Coventry University Enterprises | HEI subsidiary for SME consulting/partnership | Member of University, Expert in SME growth |
| **32** | Netherlands | N/A | Geico Taikisha | Multinational, autobody paint shop construction | Member of SME involved in growth management |
| **33** | Netherlands | Ireland | Meath County Council | Local government agency for SME growth | Expert in SME growth |
| **34** | Netherlands | Spain | IDIP/IDESA | Engineering procurement and construction | Member of SME involved in growth management |
| **35** | Netherlands | Netherlands | Delmic | Microscopy system production | Member of SME involved in growth management |

| | | | | | |
|---|---|---|---|---|---|
| **36** | Istanbul | Turkey | VenueX | Real estate map digitalisation and integration | SME Owner |
| **37** | Istanbul | Turkey | ITU Arı Science Park | Business incubation and acceleration | Expert in SME growth |
| **38** | Istanbul | Turkey | Vivosens Technology | App development | Chief Operating Officer |
| **39** | Istanbul | Turkey | Sarıbekir Packaging | Multinational packaging production | Founding partner |
| **40** | Istanbul | Turkey | ITU Magnet | Start-up accelerator/incubator | Expert in SME growth |
| **41** | Istanbul | Turkey | VSight | Software platform | Director of business development |
| **42** | Istanbul | Turkey | EAE Electric Com | Multinational electrical product manufacturing | Manager |
| **43** | Istanbul | Turkey | Acrome Robotics | Automation and robotics solutions development | CEO and founder |
| **44** | Istanbul | Turkey | Lumnion | Data analytics for insurance | CEO |
| **45** | Istanbul | Turkey | Zaxe 3D Printing Technologies | Computers and Electronics Manufacturing | Managing partners |
| **46** | Evry | France | Scoping | Construction industry | Member of SME involved in growth management |
| **47** | Evry | France | Tech Eden | Materials engineering | SME owner |
| **48** | Evry | France | Saferail | Railway industry | Member in HEI involved in growth management |
| **49** | Evry | France | Institut Mines-Telecom Business School/IMT Starter | Engineering/Business HEI/ Start-Up incubator | Member in HEI, SME growth expert |
| **50** | Evry | France | Institut Mines-Telecom Business School | Engineering/Business HEI | Member in HEI |
| **51** | Evry | France | IDEA center HEC | Center from entrepreneurship - University | Member in HEI, SME growth expert |

| | | | | | |
|---|---|---|---|---|---|
| 52 | Evry | France | Altereo | Energy industry | SME Owner |
| 53 | Evry | France | HEC incubator | University Incubator | Member in HEI, SME growth expert |
| 54 | Evry | France | Syntec France | professional association | Member of SME involved in growth management |
| 55 | Evry | France | TDD | Diverse industrial engineering | Member of SME involved in growth management |
| 56 | Evry | France | BPI France | Entrepreneurship financing | SME growth expert |
| 57 | Evry | France | BenHR | Digital support and data collection | SME Owner |
| 58 | Bologna | Italy | Energica Motor | Motorcycle development and production | CEO |
| 59 | Bologna | Italy | Alma Automotive | Engine development and testing | CEO |
| 60 | Bologna | Italy | Engines Engineering | Engine development and testing | CEO |
| 61 | Bologna | Italy | HPE Coxa | Engineering Consulting and Production | Members of SMEs involved in growth management |
| 62 | Bologna | Italy | Danisi Engineering | Automotive engineering consulting | SME Owner |
| 63 | Bologna | Italy | BMC Air Filter | Multinational, automotive air filter production | SME Owner |
| 64 | Bologna | Italy | Eldor Corporation | Automotive industry | Program manager |
| 65 | Bologna | Italy | Metatron | Motor vehicle manufacturing | Program manager |

# Key Insights

In spite of the fact that all the cases are different in terms of their approach, geographical location as well as the activities and mechanisms involved, a series of insights can be deduced from its analysis. Some of the key insights from the case studies are summarised under the following headings:

**SME Growth**
**Growth Strategies**
**Transformation**
**Motivation for SME Growth**
**Challenges for SME Growth**
**Key Success Factors**
**Main Needs**
**Business Leader Importance**
**Cooperation for SME Growth**
**Opportunity for UBC**
**Training & Support for SME Growth**

## *SME Growth*

***Understanding of growth***

The definition of growth can sometimes be something relatively uniform, following the Ansoff matrix . Yet, growth is a much more complex phenomenon. And far from being mathematical, it is also linked to personal conceptions and practices inherited from a general mythology of entrepreneurship and rooted in consciousness. However, it is in the variety of these conceptions that richness is to be found when it comes to understanding growth.

If growth is seen through a very **commercial and revenue prism**, the key indicators are Monthly Recurring Revenue (MRR) growth. It is then a matter of creating monthly growth targets. However, SME growth for engineering companies is through new products, services, or clients, making processes and methods more efficient, or developing new technological advantages. Thus, when the full complexity of what is involved in growth is understood, several indicators are important, such as turnover and to a lesser extent, profitability as well as the efficiency of the organisation and its ability to get more with less.

On the other hand, similarly to other companies, the growth pattern of an engineering company **depends a lot on its operating environment**, rather than it being an engineering company or not. If the environment is active and financially stable, there will be more projects and companies in this environment are expected to grow. When there is stagnation, however, it is time to ask what is not working, where the barriers and mistakes may have occurred to rectify the situation (Vsights).

**Growth phases for SMEs are not constant** and a change in strategies is sometimes necessary to regain growth, because sometimes it is internally that the 'machine is jammed'. A strategy that can bring organic growth, especially when it is based on the development of new technologies that offer scale up capabilities, can be a solution to the need to raise finance in a sustainable way (Tabakoglu case). Alternatively, perhaps the issue is to access the necessary personnel for the next growth phase and so requires a strategic acquisition. These growth issues are linked more to the internal conditions of the company.

**Growth can be quite instinctive and responsive** to changing circumstances, opportunities and challenges outside the company (Geiko case). The added value of the company can be through a strict ethical conduct (IDIP case), safety compliance, respect for the environment or on a high-quality project execution.

The idea that growth is a prerequisite for the long-term sustainability of a company is a very strong one. However, here again, the variety of opinions regarding this point is interesting and valuable. For example, in the Scoping case, what interests the COO **is not growth per se, but developing new knowledge**. What motivates her is the team and having the ability to combine a collective development with an individual development. The consequences are ensuring sustainability more than growth itself. If you want to be able to adapt, stay solid and have fun, you need to be in contact with the external market. The first pillar is to ensure sustainability and for that, movement is needed.

To ensure a great collective and individual adventure, one of the things that drives it is people; and to think that there are 80 families and that they participate in the adventure (Scoping case). A company is an ecosystem that allows people to thrive, but it also has the responsibility to ensure its development to offer something to the employees. This naturally suggests growth, and the employees have very nice experiences. This is an economic model with a lot of added and deserved value (Scoping).

## *Growth strategies*

First, it should be considered that engineering companies' growth, like any other type of company, depend on the growth of the market sector they serve, as engineering SMEs cross industries and are not an industry in themselves. Engineering is a very particular sector because it is based on competence. The company can be difficult to scale, if for example, it is based mainly on human assets and capacities, which can be difficult to find. In the sense, to become bigger they may need to acquire collaborators who have the right competences (Danisi case).

In this context, collaborations are strategic to support growth. Especially in the case of rapid growth where it is necessary to increase the number of distribution channels to accelerate growth. Therefore, organic growth should always be coupled with an increase in strategic partnerships. In short, one does not grow alone.

These strategies can be the first to build on the assets already present within the company to reach new consumers, but also to multiply sales to existing consumers known to the company. The growth strategy can also be understood as capitalizing on internal best practices and on the company culture when it is a driving force (Geico case).

Strategies for diversification or penetration of new markets are more complex and it is important to establish this strategy by calibrating the products to the different market experiences, particularly by considering the international market. Non-organic growth will be perceived differently depending on the company. Some are only interested in growth by acquisition in regions where they already operate, while others see it as a good way to enter a market, they do not yet know well enough.

The growth strategy can also be understood as the ability to retain customers and avoid or virtually eliminate churn, thanks to a service or product with very high added value. Thus, the calculation of the lifetime customer value is in favour of the company and the commercial effort is not an unfathomable abyss aiming at compensating the departure of the consumers from the company (Yoda case).

Technological disruption is obviously an excellent way to capture market share by making a previously very expensive service more accessible to companies and thus improve how they are reached. This makes it possible to provide low budget access to high technology solutions and broaden the use of a technology by easing its use. Customers need to feel that they are using something familiar and that the product or service they have purchased does everything for them and provides results.

Each company is fundamentally different from another, and it is above all a question of finding the global coherence between the market, the strategy, the structure, and the concrete application of the strategy. Then comes the reality of the field once the strategy is applied.

In reality, growth strategies are always different when they are implemented from what has been strategised. One must **be ready to pivot and reinvent**, by listening to what customers have to say (WhiteBow ML case). Those who work in a service area must necessarily have a sensitivity and the ability to make fast changes. On the other hand, a change on the production has obviously different needs and timing. Changing a production process that was built over many years is more challenging and riskier for a company (HPE Case).

Strategic thinking is not a given, and sometimes it takes a little time to realize its value (Delmic Case). To achieve this and establish a good strategy, an external input is very useful.

Furthermore, steady and controlled growth is another key success factor. Through the years IDIP has not been trying to reach the 'next level' of business until growth has been consolidated (IDIP case), allowing the company to keep a standard of quality.

## *Transformation*

Growth brings many issues, especially about recruitment, both in finding new employees and talents corresponding to the new needs of the company, and in retaining the employees already within the structure while the transition linked to growth is a moment of strong uncertainty during which the company changes and adapts.

This transformation may call for new tools which must be mastered, such as the digitalization of the company, especially during the pandemic. All these changes, linked to growth and the context of growth, will impact the company and transform and infuse its value proposition as well as the entire structure.

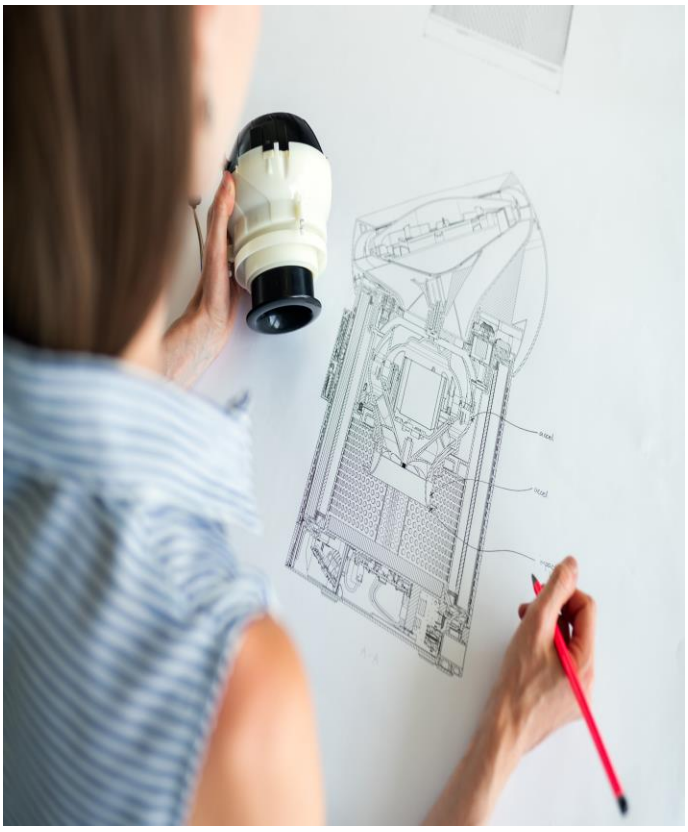
Transformation after growth:
- Need for clearer definition of roles and responsibilities of each company department
- Need for internal procedures and ERP systems
- Larger autonomy of country offices versus Head Quarter.

The issue with growth is that the company faces bigger challenges, such as managing a completely different and new team. CEOs need to change a lot but also think about the organisational structure, as they cannot be involved in every project and decision-making process anymore. Simultaneously, the financial pressure becomes bigger and requires additional investors. Hitting financial targets and other milestones become much more important as well.

Companies need to first look at their culture and their team to understand what they have and what they are lacking. The second step would be, then, identifying who of their stakeholders the company should involve, or rely on when trying to undertake its growth plan. Stakeholders will, of course, depend on the type of growth a company is trying to achieve. If the growth is intended to happen through Innovation and R&D, then the company needs to identify potential universities that could support it and maybe act as a network to find other relevant partners, clients, or projects.

In summary, it is important to understand the current situation of the company and to make sure, before undertaking a big project, for example, that there is capacity, skills, willingness, and vision to accomplish the goal. (Alvaro case)

In organizational terms, growth naturally entails the need to find an order and an organization to include new activities, new departments, and new staff (HPE case).
Clusters and free association help SMEs owner a lot, as when business grow up, they need to talk and create linkages with other SMEs owners, brought in experts etc... A hundred clubs of 20/25 people, non-competing business leaders from very varied interventions help SMEs Owners to create some prises de conscience in particular on the SHS, allowing personal growth and evolutions at the same time as the SME itself (Altereo case).



## *Motivation for SME growth*

The motivations for growth are numerous, oftentimes personal, and complex that it is impossible to list them all. However, throughout the case studies, the following motivations, were predominantly mentioned.

Determination, ambition for success, and drive to achieve something significant were motivations most often mentioned, beside income. Others highlighted their will for leadership, building the most successful company and not accepting failures. As an example, one of the main growth motivations for the manager in the T&T case study is to maintain what he calls 'Ireland Inc' and the ability of Ireland not just to compete with few countries but to be ranked positively globally.

Another key motivation for SMEs is to assist apprentices in the future. According to Sean Hayes from the BMC, the larger companies get heard when it comes to their training needs and capabilities. So, to have his voice heard 'at the table' continues growth of the company.

One of the main motivations for growth in several diverse sectors was the loss of some high-profile retail contracts to competitors. Ralf Fhurman from SMEC highlighted that this meant the most profitable part of their business became the least profitable. However, in the long run this led to diversification of product offerings and more substantial growth and sustainability.

A positive motivator that Michael Wall from MWall outlined is the nature of the project work they are involved so they can adapt to the customer needs, alongside security that comes with being as adaptable as they are.

Convincing customers and partners to the interest of SMEs is challenging because they do not have in-depth understanding of specialized sectors, such as some aspects in engineering and the environment. Although the environmental awareness is on the rise, and SMEs ideas are being translated into regulatory provisions and development of new devices. A good example is a revolutionary artificial intelligence system in France and abroad. For example, Altereo in France works on addressing the systems losses for water waste (50% of water is lost to leaks) and electricity treatment.

Other growth motivations for SME owners revolve around their appreciation and enjoyment of work they do, and particularly doing the cutting edge work related to the digital transformation and the social and environmental transition. New generations who joining SMEs, they are seeking real social transformation and sincere CSR commitment (Ats case).

In conclusion, SMEs owners have strong and intimate relationships with their company. Their ambition is to through their company to bring forth social transformation and well-being.

## *Challenges for SME growth*

First challenge is the human resources (HR) so it can meet SME growth requirements. A real problem with recruiting engineers exists since a shortage all over the world for these specialists is evident, not only in recruiting them but also to retain the best ones. In fact, one must fight a bit to get them. For small companies, it's even more complicated since they have to compete with big companies to recruit talent. Finding the right talent and assembling a strong team to carry that growth can be extremely complicated.

Another challenge is the growth itself. While growth in general is a positive outcome of company' business, the risk factor for the survival of the company in general increases when there is growth. The need for capital to finance such growth, if not satisfied, can close down the company when the company needs working capital and salaries cannot be paid from month to month (Acrome case). The search for financing can be a waste of time because it is very time consuming and challenging especially with domestic investors, both to find them and to establish contracts and to foresee exit clauses which are favourable to involved parties.

In addition, the legal context and regulations, especially when they are changing, present a particular challenge. The employment regulation can slow down the hiring processes, making any decision to hire a very important one. A company should have someone who has the good understanding of such regulations, which is not necessarily the case for all companies and entrepreneurs, especially in the case of start-ups.

Furthermore, the company must make sure that they can suddenly increase their production volume and capacity, and potentially increase their product quality. Technological research helps bridge gaps in globalized markets. Today companies no longer operate only within the European markets since internationalization bas become an important driver of growth (BMC case).

Challenges also come at a personal level, since owners need to ensure that they always try to make the best decision and that they can adapt to the needs of a changing organization. Fear can be a demotivator for a small company. It is important to get the SME's owner-managers out of their comfort zone to think of future possibilities (Joe English case).

## *Key success factors*

While risk-taking is inevitable for companies, taking calculated risks based solely on market factors is the best option. This requires an excellent knowledge of one's business environment. This market knowledge enables SMEs to make quick decisions when they understand their customers well that they can use their ideas to innovate in the right direction. Understanding the notion of barriers to entry and being able to create them to protect a company in relation to its market requires once again a good analysis of SME' business environment.

First, an analysis of the market is a prerequisite. It is important to understand what are the latest developments and diverse needs. This means that SME owners should be able to understand, even in advance, what the market needs in order to better guide their company's growth. Such analysis should be continuous and change should be mapped as well , which is complicated to do and to maintain over time (HPE case).

Having a clear method of evaluation, listening to consumers and integrating their feedback allows a company to allocate costs where they are really needed. Time management and prioritising helps the company to achieve customer satisfaction.

The key success factor to a company's lasting success lies in the attractiveness of its product. If the company wants long-term success, it cannot rely on product's cheap prices (Danisi case). An internal culture aligned with objectives and consistency of the structure is thus essential. Efficiency across the entire structure is essential to ensure profitability.

However, this is not enough and for these ambitions to work, the entire company structure must be brought into line. Especially in the context of the COVID pandemic, the interviewed companies found that the pre-existing culture of digitalization for teams was a success factor to maintain the activity in times of crisis. Digitalisation is clearly one of the key success factors. There are many digital tools that improve performance and provide knowledge for company operations, but not many of use those tools. Based on the European and national level funding, digitalisation-related initiatives are growing and gaining importance. This is particularly true in the case of engineering, where many of these tools can help a company to gain a competitive advantage in cost, productivity, etc. (Alvaro case).

Another success factor for companies is to be dynamic, able respond on time and to be prepared to forecast what the needs will be in 3 or 5 years. To do so, it is crucial to have a (founding) team that is very adaptable and willing to constantly challenge the status quo, that thinks about what needs to happen next, and what needs to improve. These observations must be translated into the ability to analyse mistakes but also success factors to capitalize on good practices. This means that companies must preserve reflectivity on one's practices through analysing them and not get stuck in a routine.

Innovation, of course, is another success factor for SMEs. Primarily, management should favour innovation.

This means that "the right to make mistakes" is part of company's culture. Different mechanisms can be used to drive this change to innovation. Rodolphe Roy, the CEO of ATS, decided to initiate internal company transformation though the Innovation Lab which was put in place as part of the accelerator to accompany this change management. These are physical spaces to embody innovation, to test and discuss the new technologies and design thinking spaces to communicate with customers, and to be able to co-innovate with schools, customers, and start-ups. In addition, they could test their solutions in very dynamic and fast setting. In fact, they created 4 labs as 4 different sites open not just for young entrepreneurs, but to everyone. They are spaces that inspire, change processes, ventilate, join, and share. These processes are animated. The innovation approach is carried out by managers continuously. It is a permanent reinventing machine aiming to bring balance between exploitation (the box that transforms A into B) and exploration. Rodolphe Roy finds that rarely we explore, or bosses explore alone in their corners. The actual organizational design of most SMEs translates in putting too much pressure on a few people in the company. In contrast, in ATS everyone should have the ability to be an explorer at all levels.

## *Main needs*

The company requires a skilled workforce with good mindsets beside industry collaboration. Training on market knowledge is also critical. This analysis of the business environment is too often underestimated although it should drive the coherence of the product on the market and the strategy adopted to meet the consumer. Innovation is essential, but also innovation concerning the business model, and above all awareness of what this can bring in terms of growth and change within the structure. Capital is critical, especially because companies do not necessarily get bankrupt because of losses, but because of a bad management of the working capital. The accessibility to enough liquidity is a big problem in the Netherlands (Delmic case).

Concerning internationalization, it is necessary to work on both internal capacities and prejudices against internationalization. This type of development requires special support because it requires knowledge of legislation, regulations, and specific access to capital.

SMEs also have a hard time accessing opportunities in the public sector, which is extremely regulated with proposals designed to have lots of barriers that only big companies can overcome. The same goes for the public money for innovation projects, which needs specialized professionals who know how to prepare the proposals in the required manner to be taken into consideration (WhiteBow ML case).

Courses can provide broader perspectives on scaling business and growth, particularly tailored to engineering, product/technology SMEs (and not software). Courses on finance help train the staff.

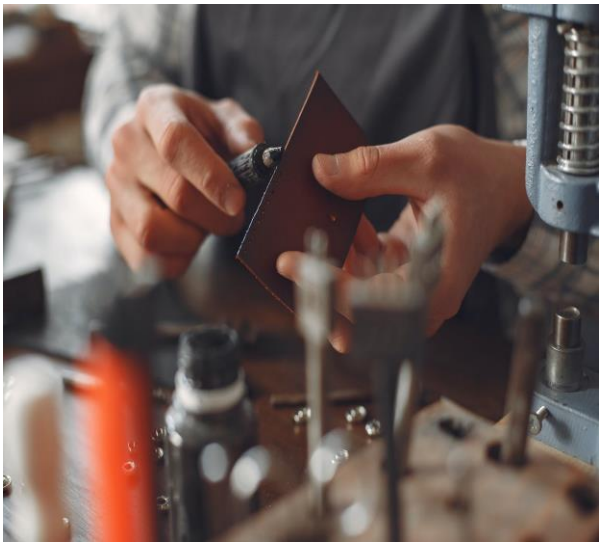
## *Business leader importance*

Leadership is essential both in terms of management and in terms of the network that allows to reach strategic partnerships to develop the company. Without it, a company will not be able to grow or find financing. In the context of the COVID pandemic, the role of leadership is even more essential because in physical terms, it is not complicated for employees to establish links. It is more complicated to lead remotely. As a business leader, you must be able to empathize, both internally and externally and establish good relationships with all the people involved in the company, and to motivate, support development of key skills and articulate them within the structure. Business leaders establish the confidence of their teams. It is the trust that inspires the leader that also allows to establish trust with investors and the network that will support growth. Knowledge of the market and the industry that will allow to establish the right opportunities and to recognize them to develop a relevant strategy on this basis. Thus, the work of the network and its permanent extension is essential.

The main abilities required for business growth are leadership, global vision, focus on customers focus and avoiding the panic. The leader is the role model showcasing that she or he is capable of initiative and adaptability making the company overcome periods of uncertainty and crisis, in which even bigger and older companies found their decay (Geico case).

Leaders can never stop, that's the trick. You can never say "I'm done" because you can always do more, do better. You must get there first, basically. When you find a possibility of development you are never the only one in the world, so if you are the first, you will be more ready (HPE case).

Leaders do not act alone. The role of the leader does not mean that if she or he is not around nothing happens. Leadership is the art of delegating, trusting, pulling employees up, and making herself or himself non-indispensable. Even when companies have historical leaders, they should remain more for branding purposes that represent companies' values. The importance of the leader is to embody their business values. This makes leadership natural (Saferail).



## *Cooperation for SME growth*

### *Cooperation with partners, technological centres and clusters*

The national, industrial or regional schemes are good support for the growth of SMEs. These schemes also help with the market analysis since knowledge of the BE as already explained earlier is a success factor and an essential prerequisite for strategy and growth. However, cooperation is not always possible on an industry-by-industry basis, especially when there are few people present in the market or the market is small. However, there are structures that can accompany companies at the level of the structure itself.

The contributions of cooperation partners are numerous in terms of network building, access to information, recruitment, knowledge and skills. These help to create internal capacities not yet present. An external viewpoint is very important and valuable for developing the company, and the cooperation can be very general which allows it to envelop the company (Vivo case on ITU).

The cooperation with actors from the sector itself allows us to obtain very sharp insights on the regulation and very specific trainings. Even when company is focused on collaboration, it can be difficult to keep long term partnerships due to the lack of time or staff in charge to coordinate them. Sometimes, precisely because of growth, the continuation of cooperation with a partner or cluster, is no longer possible because the company has changed its scale (Vivo case).

Cooperation within clusters sometimes lack vision. The cluster sometimes tries to direct all the companies involved or even worse, sometimes they have the deleterious attitude of going to large customers in automotive or some other big industry, and say, "We are many, we are clustered, we have a lot of staff, a lot of competences, tell us what you need and we will do it". This approach does not work, because a company must get on the market with a product proposal, a supply proposal. It is not a good strategy to tell the market "We have a lot of arms, so tell us what we have to do, and we will do it". The idea of offering oneself to become someone's slave is a not a strong added value helping companies to differentiate on a market (Danisi case).

### *Cooperation for growth with universities*

Collaboration between SMEs and universities should be considered in various aspects. Cooperating with universities allows to have a different point of view but in general, it remains marginal in its application. Even in cases where companies are open to such cooperation, it is difficult to envisage the asset that they can represent, they appear as another universe, very distant from the company.
It is a parallel world, which is not a problem for research in relation to the impact it potentially has. What makes the difference with conventional silos is that it is a living raw material, and it takes a basic understanding and respect to work there because it is the heart of the reactor.

So, in the end it's not really silos but a very valuable living first-hand material that makes the first value for two-thirds. They are rather different cultures that need firstly to understand each other. The more the research manages to work with others, the less disconnection is there.

For example, BenHR in collaboration with a university developed a first totem project based on extensive research in interaction design that enabled them to understand the interest and modalities of the scientific approach and realized a very strong business argument of legitimacy. BenHR appreciated researchers' accessibility and level of specialization, realizing that this type of collaboration could be a competitive advantage not so difficult to acquire and that could be a very important lever in their business (BenHR case).

On the reflexivity of research, it is necessary precisely what makes the particularity in any case what we try to do with the incubator is precisely to explain that the training has an importance. Each of the three centres has three missions: think, teach, act. There are many actions in entrepreneurship that allow someone to nourish the reflection to transmit new knowledge about entrepreneurship. We can teach entrepreneurship.

There are multiple forms of cooperation for growth from the university perspective, in no particular order. One of the ways is academic and research excellence. This is a very important element because it differs from many others as it's the raw material of everything we do. The development is very much driven by this because it is our foundation. The quality of teachers recruited is the second key to the quality of students for two reasons. First, it is the students who will make a relevant impact on society in the future. Second, it attracts the best teachers. Teachers have no chance of compete in terms of pay, so quality attracts because students have outstanding qualities.

Where it becomes crucial today is that the world tomorrow needs to reinvent itself on a lot of issues and it's going to be done a lot through entrepreneurship and partially by technology. If tomorrow is partly growing entrepreneurs, if we are not careful, tomorrow's economy is going to be ugly. The diversity part is essential. In start-ups it's horror. We are creating an economy of tomorrow that is worse than what we have been fighting about as a woman for years. For a few years on the part of students that is a real pressure expressed and demanded on diversity, on sustainability turning them into a bit of an activist, though. (HEC Case)

There is a DNA of solidarity that is very special. Solidarity in the network that also allows the school to grow the investment funds of alumni for start-ups among other things. Networking out in pairs is an asset for sure. And for universities, proximity to the companies, entrepreneurial DNA is a basic (HEC case).

The three bases that manage knowledge through UBC are:

**1.** Engaging more with the chair management linked to corporate initiative. Also, involving companies in research, teaching or a particular subject.
**2.** Developing corporate innovation to link the corporate part to the innovative start-up part and try to transform them from the integrator.
**3.** Case studies. A department has just been created to translate operational knowledges based on UBC collaboration into academic teachings.

To start, it is necessary to understand how a company functions, having concrete links with companies, and not seeing companies as something purely theoretical. Having links with research, introducing guests into the courses, sending students for recruitment, bring the companies to the campus and case studies. These all put the client at the heart of the discussion and the relationship or put the partner company in the middle of the device, which is rare in academic institutions. It often starts with an idea that universities and business schools will give to the company. There is little reverse input which hasn't changed much despites all the efforts. The partner needs to be put at the centre of the ecosystem (HEC case).

Some companies do not seek to extract value from universities but to provide their own, by showing how theoretical knowledge can be translated into practice (First case). Other companies see a completely different value, such as the contribution that this can have at a marketing level because it allows access to the market by proving the value proposition thanks to the scientific approach of universities. This is an asset that helps reassure consumers and investors about the quality of the product (BenHR case). Some profit from science or entrepreneur park networks associated with universities (ITU Sciencepark), as they can recommend start-ups to other companies and investors. Moreover, they benefited immensely from Sciencepark in terms of media and recognition, as well as from Sciencepark's mentorship (Cas Acrome).

In general, general, though, companies are waiting for universities. Some companies see an interest in having a direct presence on campus, as close as possible to universities and students, establishing prototypes, infrastructures.

Trainees' performances have been very good so far. The training period needs to be long enough to get some return after the trainee learning period in the company. However, the problem of different timeline for project development and opposing cultures can lead to incompatibility between the desire for growth of companies and the processes of universities. This is especially the case when it comes to developing a partnership that includes a company's client, the company, and a university.

The university can appear as a very theoretical organization and susceptible to paralysis by analysis and lacks execution skills. Universities are structured as boxes which are challenging to get into without knowing in advance who to contact and whether they would be interested in the same challenges as the company. Therefore, there is a need of building bridges and more open structures and mindsets for these collaborations to improve. An example is the Universidad Politécnica de Madrid. The Universidad Politécnica de Madrid is a network partner, allowing students to participate in real-world project experience which increases their employability and allows companies to effectively recruit new, well-trained talent at the end of their internship. Another example is at MTU. T&T tends to engage with recruits while they are still in MTU, bringing them in on evenings, nights, and weekends. It was stressed that it is always MTU he gets recruits from, very rarely UCC or other institutions (T&T case).

However, the relationship with the university brings some challenges, as Martina Malagoli points out. According to her, probably more than problems there is an element of diversity: the company works with a concrete goal of achievement, while perhaps the university has a more conceptual focus (HPE case). Collaboration with universities may also be too expensive for SMEs.

Through Innovate Ireland's Agile Innovation Fund, which provides funding and training assistance, many experts are brought to help SMEs. These experts are either in the technology transfer office, or academics themselves. Meath Local Enterprise Office make SMEs aware of the help that they can get from the university and refer the SMEs that need advice to the relevant university staff members (Joe English case). Delays and withdrawals occur in such a framework, even with the promise of public funds, putting these funds themselves and the whole project at high risk.

## *Opportunity for UBC*

Innovation and all the subjects they support are opportunities for collaboration. Especially when a company is having technical difficulties, universities can be of assistance. Such collaborations are very valuable if there is competence in the university, however it is sometimes difficult to identify the benefits of this collaboration.

Universities should aid SMEs, particularly in terms of patents and help them to improve their ecosystem. If the government gives incentives for example, it will be a win-win situation. There are currently not enough major projects going on between universities and business. The different timelines that universities and SMEs have, and the amount of funding required means that sometimes collaboration between the two can be difficult. Funds such as the Agile Innovation Fund can help bring necessary resources from the university to the company.

If universities were able to undertake that transformation and willing to have a commercial proposal to offer R&D services to SMEs, new generations of researchers would benefit greatly of having new incentives, maybe even economic rewards, or higher salaries. This would also create new Intellectual Property for the universities (Alvaro case).

Another opportunity for collaboration has to do with the fact that SMEs are less aware of how to best exploit their IP. To exploit their IP, one of the key steps would be understanding what is the current state-of-the-art of a certain technology. Companies usually do not possess this understanding and they could potentially collaborate with universities instead of hiring an IP attorney or a specialist in IP to get advice on the potential development of their own products. (Alvaro case)

Collaboration with research is a grey subject because the researchers are the teachers. There is the issue there on the turnover vis-à-vis companies through the executive education which can also be used to develop contract research.

## *Training and support for SME growth*

### *Growth training needs*

Needs according to the position within the company are different. The priority areas in the training of some companies' employees are on cutting-edge technologies in addition to digitalization at a deep level, i.e., cultural. As technology gets more complex, and as manufacturing and services become more automated, there is going to be a different relationship between service providers, product providers and customers, that it is more than likely going to be a longer-term relationship. There is a great opportunity for the service provider to have a recurring revenue stream (Joe English case).

Developing soft skills is critical for effective working. Motivation and healthy lifestyle training especially during the pandemic. Occasional trainings on more technical projects may be needed. Peer learning is extremely important, but it requires very specific knowledge management. corporate culture and its importance for growth.

Training can take place internally and some companies are very innovative in this respect, both in terms of content and form. Whether it is to improve the structure itself by organizing participative events concerning their strategic projects and unifying the vision of the company, but also via internal course programs addressing soft skills or knowledge related to the company. In this case, external trainers come to the company to lead these training sessions. They can also be digital so that employees can select the courses that interest them the most, following questionnaires via social networks to train (Geico case). There may be a need for training of SMEs to be able to identify other businesses' needs.

Sean highlighted favourable assistance that he received from the IDA when making the move to Cork City from Charleville. They were able to find him a site in Little Island to purchase that was suitable for his needs and would have the space to expand on if needed in the future. (Hayes BMC case).

### Specific training needs

The specific training needs identified through these use cases confirm that the needs of companies concerning the support of their growth can be grouped thematically:

1. Entrepreneurial mindset
2. Innovation management
3. Access to capital
4. Bplants Business model innovation
5. Internationalisation including awareness of opportunities on how to access finance and skilled workforce

The employee needs to be specialized in some subjects according to his/her work area. Furthermore, an entrepreneurial mindset is required, as is a collaborative culture. Rather than seeing people as competitors, it is necessary to see them as opportunities to do business together. Finally, analytical skills are needed.

Acceleration programmes offer the opportunity to learn about business model canvas, internationalization and mentoring during an incubation period. Leaders need to allow the following of a growth project by an external set eyes.

### *Support for SME growth*

Developing an entrepreneurial mindset is necessary to achieve the goals set by the company. This is done by setting milestones, making decisions, and identifying lessons learned. The firm, supported by capital to improve its own operations, should be self-sustaining. Chambers of industry and clusters could support SMEs in the growth stage by opening channels that will bring them to customers. The product's scalability and sale ability enable SMEs to conduct global business. Tax incentives are an easy way for governments to support SMEs.

Internationalisation, including awareness of opportunities on how to access finance and skilled workforce, is one of the most important factors in the growth of an SME. In most cases, growth is linked to broadening the action area of an SME and knowing the market you are entering, its legal framework, potential local partners or how to establish (or not) on that market are key factors to define the roadmap to that growth (IDIP case).
To access and be listened by Large Enterprises C-Level executives. Large Enterprises normally have well established suppliers and are reluctant to listen offering from new companies, specially from young SMEs. The benefits of collaborating with SMEs must be expressed to cluster top management.

# Appendix

## Case study selection

The following information was provided about a case study candidate by the partner in order to assess the worthiness of the case for final selection.

**Table 1:** Draft case study selection framework

| Data collection points being considered in the selection process |
|---|
| Organisation |
| Country(ies) |
| Nature of growth |
| Background |
| Objectives/ motivations |
| Story |
| Stakeholders involved |
| Barriers and drivers |
| Context |
| Key success factors |

Once the case study candidate had been assessed, the following information was requested in order to complete the entire case study.

**Table 2:** Additional case study research topics (post selection)

| Topics to address within the development of the case study |
|---|
| Growth Management |
| Structures that support SMEs |
| SMEs within Clusters |
| Policy and Financing ecosystem |
| Go international |
| Knowledge management |
| Innovation management |
| Business owners |
| HEI Role |

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