

IMPACT: a strategic partnership for sustainable development in marine systems and robotics

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# Study Course Entrepreneurship

## Unit 3: University role in spin-off creation and development

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# Outline

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- Overview
- University spin-offs
- Success factors
- Support activities

*„Any new venture is based on the exploitation of a business opportunity”*

# University spin-offs (USOs)

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- New ventures initiated **within** a university setting and based on technology **derived** from university research
- One of mechanisms to **transfer** and **commercialise** the knowledge and technology developed inside university (no existing company to conduct a scientific breakthrough, or a certain scientific work has clear capabilities to create many products and applications)

# University spin-offs (USOs)

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- Attracting **talents**, providing jobs, heightening reputation, creating economic vitality, progress and growth of the region
- Even if many USOs stay small, are important in the innovation **ecosystem**
- A large share of university spin-offs do not involve **intellectual property** formally disclosed to the university

# University spin-offs (USOs)

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- Institutional **frameworks** (national and university) conducive to the creation of more spin-offs, but the increase in quantity is at the expense of the quality (measured by ability to attract VC)
- Academics comply with the new institutional norms of creating more spin-offs, without being more capable of doing so
- Creating a successful spin-off requires different **competencies** compared to the core academic missions of teaching and research

# University spin-offs (USOs)

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- **Individual** and **social** factors have a stronger impact on academics to be involved in entrepreneurial activities than institutional arrangements
- It is important that universities develop **capabilities** within their entire organization and ecosystem

# University spin-offs (USOs)

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- USOs mostly arise from institutions with narrow specialization or broad-based
- The probability of establishing spin-offs gradually grows with the **increasing share of Ph.D. students** up to a certain limit
- Spin-off activity is positively related to measures of **research productivity** and quality of the university (100 top ranked universities produce 45% USOs)

# University spin-offs (USOs)

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- Compared to other university outputs (education, dissemination of research, collaborations with existing firms), the creation and support of new ventures remains a **marginal activity**
- The creation of USOs is **resource demanding**
- Tensions at the level of the organization managing academic rigor and commercialization, and at the level of the **individual balancing** time between competing demands



# University spin-offs (USOs)

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- USOs are **different** from other technology firms, the type of technology (distance from the market) and the resources endowed at start-up
- Two basic paths: the “**growth**” seeks to capture a global market, the “**lifestyle**” seeks business to support a comfortable living or job creation
- Growth projects interesting for **investors**, lifestyle projects have long-term **technology transfer** potential

# University spin-offs (USOs)

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- USOs present around **15%** of all start-ups
- **75%** of the European USOs survive 6 years, surviving USOs tend to exhibit very limited activity and growth
- **One-third** of 429 ETH spin-offs have BA or VC financing, able to acquire **20 times more funding**

# Success of university spin-offs

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Depends on characteristics of

- The university
- The founders
- The surrounding environment
- The technology or the final product



# Spin-off programmes

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Most of the spin-off programmes in Europe follow either:

- the “**network model**”
  - privately funded university incubator
  - business support agency and financiers)
- The “**incremental model**”
  - local universities
  - spin-out programme components like incubators and funds are developed over time

# Spin-off programmes

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- Countries with **strong networks of investment** and business expertise have more successful programmes
- Most programmes need to be **sponsored** permanently through grants from their universities, regional governments, or local business interests
- Good practice for programme finance, not to become too dependent on private sector funding seeking a financial return, **avoid excessive dependence** on a single corporate or venture capital firm sponsor
- Universities that **interact strongly** with their local economies have a higher percentage of successful USOs

# Support to university spin-offs

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- **Infrastructural**, the provision of office and laboratory space, equipment, and shared services often in one building or in buildings in close proximity
- **Financial**, includes direct or indirect funding
- **Network**, includes access to a network of professional contacts (business people, industry, other start-ups, clients, and big companies)
- **Business**, includes activities such as mentoring, coaching and counselling, business plan development, and personal training
- **Legal**, includes activities such as developing clear rules and procedures governing the exploitation of university technology and providing access to professional business services for arranging and managing specific advice on IP regulation



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# Roles of levels within university

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- A supportive attitude at central university level is not likely to create many spin-offs unless this activity is prioritized **at all levels** within the university
- The central university level, responsible for policies and infrastructure, and will have an **indirect relation** to each spin-off firm
  - **Influence** in a long-term perspective, culture
  - **Procedures**, guidelines, payback rules
  - **Prioritizing** research excellence and developing competencies

# Roles of levels within university

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- Universities have established **TTOs** to increase the commercialization of research
  - Mainly dealing with **formal spin-offs** based on university owned IP
  - May play an important role in **gaining access** to initial resources (government soft funding and early stage investors)
  - **Ability** to assist spin-offs in growing beyond their initial creation, is **debatable**



# Roles of levels within university

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- The most important support for achieving growth is the **training** offered to USO promoters by the university
- Training must specifically **target areas** as seeking financing or advertising, and other aspects of management and marketing
- Training must be given in **all stages** of the USO and supplied as needed

# Roles of levels within university

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- Another support of the university for growth is in **bureaucratic areas**
- Simplifying bureaucratic procedures, maintaining and improving teams of people dedicated to **helping** with the regulations
- Universities should be oriented toward the international operation of USOs, and the promotion of their **long-term survival**

# Roles of levels within university

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- The department level, closer to where the spin-off activity takes place and controls **resources** for the entrepreneurship process
- **Experienced** academic entrepreneurs in a department may play an important mentoring role
- Most research is conducted in the context of a **research group or lab**

# Roles of levels within university

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- Most research is conducted in the context of a research group or lab
  - **Local work environment** is important for spin-off creation in terms of developing viable entrepreneurial opportunities and stimulating academics to support and pursue such opportunities
  - The stance of the **lead professor** may greatly influence the nature of encouragement and support for academic entrepreneurship
  - **Constrained** in terms of their life-cycle
  - Spin-offs may on one hand be a means of **generating income** to continue the research or on the other hand a **distraction** from core activities

# Roles of levels within university

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- **Individual level factors** is the most important determinant of whether academics engage in new business creation
- **Scientific excellence** and **industry experience** is important for the creation of business opportunities, and **prior entrepreneurial experience** and external networks important for exploiting the opportunity
- Given the variety of competencies needed to develop a spin-off firm, **diversified teams** appear well suited for this task

# Roles of levels within university

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- **Students** constitute an important resource within universities and are typically considered among the most important channels of knowledge transfer to industry
  - Can contribute to spin-off **development**
  - The **alumni** represent a strong industry network
- Lower levels appear crucial in promoting the entrepreneurial competencies of spin-offs

# Key competencies of USOs founders

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To successfully establish the USO, the support for these 3 key competencies is needed at the university:

- **Opportunity development**, develop viable business opportunities
- **Championing competence**, involve individuals in the business process and their subsequent expertise skills
- **Resource leveraging**, provide the resources needed to set up and develop an enterprise

# Opportunity development competency

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Areas important for university spin-offs to succeed in developing their opportunity development competency:

- **Industry and user connections** integrated in the research activity
- Active search for different possible **applications** of the technology being commercialized
- **Industry experience** included in the founding team
- **Interaction** with industry and users throughout the venture development process
- Maintaining **contact** with the **scientific community** during the development of the new venture

The knowledge needed to establish a spin-off is developed in the **interplay between academia and industry**





# Championing competency

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The areas important for university spin-off to succeed in developing their championing competency:

- **Entrepreneurial scientists** that are motivated to grow the new venture
- **Support** from colleagues and structures within the university
- **Structures and mechanisms** that assist universities and scientists to preserve a hybrid role identity preserving both academic and commercial values
- Include champions from **outside the university** to join the founding team

# Championing competency

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- The professors' beliefs of the proper role of universities in the dissemination of knowledge – the most significant factor influencing their entrepreneurial behaviour
- Balanced teams with both academic and non-academic entrepreneurs show superior performance in terms of firm growth

# Resource leveraging

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- Access to resources from within the university
  - **Time** and **physical resources** in the university
  - **Advice** from colleagues and research networks
  - **Networks** with industry and investors
  - **Infrastructure** such as advice and financing from **TTO**
- Access to resources from external actors
  - Team members with **industry and entrepreneurial experience**
  - Government **grants** and 'soft' funding
  - **External investors** such as business angels and venture capital
  - Industry **partners** and **customers**

**Successful creation of a new venture is dependent on both the ability to assemble and organize resources**

# To sum up

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- **Scientific excellence** and **industry experience** – creation of business opportunities
- **Entrepreneurial experience** and **external networks** – exploiting the opportunities
- Creation of USOs – **resource demanding**
- USOs are **different** from other technology firms
- **Lifestyle projects** are important as much as **growth projects**
- Universities **interacting** strongly with their surrounding have a higher percentage of successful USOs
- The most important support for achieving growth of USOs is the **training by the university**
- Increase in USOs **quantity** is at the expense of the **quality**

# Useful References

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# Questions ?

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