



## Milestone 21

# Report on improved system for spin-off activities

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# Executive Summary

Even though research, development and innovation applied to the market are key actions to the industry growth, the results from the research sector need to be transferred effectively to commercial companies. Therefore research activities resulting in exploitable innovative products lead to the need of spin-offs, allowing both researchers and investors to match their needs.

This report aims to inform about the different steps to create a spin-off and lists the supports of various kinds provided by the research institutions and identified in the deliverable ID4.3 "Report of previous experiences of spin-off activity, and applicable conclusions" to support researchers in their business creation. It appears that the decisive elements are the economic value of the new idea, a solid business plan, and a good market prospection.

The first investment needed, even if significant for a single researcher, can be backed by a variety of loans and credits and finding them is not a bottleneck by itself. Administrative steps are also subjected to internal rules within each research institution and information and advice are also easily available by a dedicated office, an incubator, or as return on experience by previous spin-off creators.

The legal forms that can be taken by companies in each relevant country are presented.

In order to answer to the EU-SOLARIS request to provide an improved system for spin-off activities, suggestions such as creating an EU-SOLARIS transfer office, setting up a competition framework, supporting the outsider researcher in finding customers or creating a 'funding pot' for business innovation based on the SATT (Technology Transfer Acceleration Societies) model in France were submitted and discussions are expected among EU-SOLARIS members as to put them in place.

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# Introduction

This milestone MS21 follows the internal deliverable ID4.3 (*Report of previous experience of spin-off activity and applicable conclusion*) submitted in December 2014. This deliverable presents the experiences of research centres (partners of EU-SOLARIS or not) on their internal spin-off creation procedures. The key to success and the main trends of innovative business creation could be identified. The survey shows that most of the centres do have a similar approach regarding the supervision of the researcher in his secondment phase, and that transferring research innovation to market is globally very well supported.

In this milestone on improved system for spin-off activities, we try to identify the spin-off creation models that could fit with the EU-SOLARIS network, taking into account the governance aspects that were defined in WP1 (*Governance and financial issues*). Two configurations can be possible: either a spin-off created by one of the partner research centres, or a spin-off directly emanating from the EU-SOLARIS, that could gather researchers from different institutions, giving them the opportunity to exploit and commercialise their joint work.

Taking into account the results from ID4.3, a system to foster and valorise innovation within EU-SOLARIS will be put forward after having presented the challenges encountered in the creation of spin-offs, recalled the compulsory steps to open an innovative business and addressed the different funding possibilities.

# 1. Creation of spin-offs: the challenges

Spin-offs are companies created on the basis of technology or know-how developed by a research organisation. In this context it is important to consider the following parameters:

- The human dimension: the transfer of a technology is often reflected in the transfer of researchers, and entrepreneurs are needed to manage the new businesses.
- The form of the valorisation: spin-offs are another way of producing the proof of principle of inventions and to valorise the results of public research.

Technologies which can be exploited by existing businesses without changing their operating model do not call for the creation of spin-offs. This type of research result can be valorised faster and more easily through a licensing process. However, spin-offs are highly useful vectors for valorisation in at least two cases:

- to establish proof of principle for a new technology, if this requires substantial means;
- to explore a new exploitation model, which existing companies might hesitate to implement without proof of feasibility.

Creating and establishing an innovative business, i.e. a company that contributes to pushing forward the state of the art in its field, is a particular challenge. An innovative business sells new products or services, often based on new technologies or discoveries from scientific research.

As in many cases these products or services have not yet been finalised, and the company has to raise funds, in order to finance the developmental phase, before being able to launch its products or services. It faces a risk of technical failure as the product may not be able to be used as planned, as well as of commercial failure as there may not be any interest in the product, once it is on the market. A careful preparation is thus required.

The next chapters present the practical actions to overcome those barriers.

## 2. Compulsory steps to open an innovative business

### 2.1. Administrative steps

The researchers willing to create a spin-off from one or several of the research institutions of the EU-SOLARIS consortium will have to consider the following administrative steps:

#### 2.1.1. Legal form

Establishing a business requires certain administrative formalities and permits. It is also necessary to define the company's legal structure as well as its objectives, that is, the type of activity it will undertake. It is therefore ideal to address these issues as early as possible, since they will trigger the launch of the business and might also influence the granting of financial aid<sup>1</sup>.

In order to select the best option, the following questions have to be addressed:

- What will the activities of the company be?
- Which size of the company is expected?
- What kind of investors will the company have?
- What will the impact be on the entrepreneur's personal life and assets?

The possible legal forms for a spin-off company are the same as the ones from general companies:

##### 2.1.1.1. France

- Micro-enterprise: special framework for minute businesses, a recent addition to French business law with both revenue and pre-tax net income caps, out of which Auto-entrepreneur (below) represents a special case.
- Freelancers, individual independent contractors:
  - Auto-entrepreneur: ≈ self-employed (UK), independent contractor (US), a recent addition to French business law -with both a revenue cap and a specific set of derogatory income tax rates.

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<sup>1</sup> See chapter 3



- Profession libérale: ≈ sole proprietorship such as a medical practice, an enduring entity stemming from the protected status designed for "liberal professions" with unlimited personal liability.
- Sociétés d'exercice libéral: the incorporated equivalent of the latter, sole shareholder limited liability being key.
- EI (Entreprise individuelle/entreprise en nom personnel):
- EURL, SASU (U- unipersonnelle): limited liability, sole shareholder Ltd. company (UK) or single member close corporation.
- Investment funds/companies:
  - FCP (Fond commun de placement): unincorporated investment fund.
  - Société d'investissement à capital fixe: ≈ investment trust (UK); closed-end fund (CEF), closed-end company (US); listed investment company (LIC) (Au).
  - SICAV (Société d'investissement à capital variable): ≈ investment company with variable capital (ICVC), open-ended investment company (OEIC) (UK); mutual fund, open-end company (US).
- GIE (Groupement d'intérêt économique): economic interest grouping.
- Association: ≈ non-profit association
  - Association non-déclarée: ≈ unincorporated association (UK).
  - Association déclarée: ≈ incorporated association (Au).
- Partnerships (société de personnes):
  - SEP (Société en participation): ≈ equity partnership.
  - SNC (Société en nom collectif): ≈ general partnership (GP)
  - SCS (Société en commandite simple): ≈ limited partnership (LP).
  - SCA (Société en commandite par actions): ≈ publicly traded partnership (PTP) (US).
- Companies (société de capitaux):
  - SARL, SàRL (Société à responsabilité limitée): ≈ private limited company (Ltd.) (UK), limited liability company (US).
  - EURL (Entreprise unipersonnelle à responsabilité limitée): ≈ single shareholder limited company (SME Pvt) (UK).

- stock companies (société par actions).
- SA (Société anonyme): ≈ public limited company (plc) (UK), corporation (US/Can).
- SCOP (Société coopérative de production): ≈ cooperative corporation (Can).
- SEM (Société d'économie mixte): ≈ government-owned corporation.
- SAS (Société par actions simplifiée): ≈ unlisted public company (Au), close corporation (CC) (S.Africa), private corporation (Can); often used for subsidiaries; minimum of one director and two members/shareholders; no limit on share capital; liability can be restricted to director; no "one share - one vote" principle.

### 2.1.1.2. Germany

- Einzelunternehmen: individual entrepreneur ≈ sole trader (UK), sole proprietorship (US)
- e.K./e.Kfm./e.Kfr. (eingetragener Kaufmann/eingetragene Kauffrau): registered entrepreneur ≈ sole trader (UK), sole proprietorship (US)
- Partenreederei: A form of combined and continued ownership of a single merchant vessel.
- e.G. (eingetragene Genossenschaft): ≈ cooperative.
- e.V. (eingetragener Verein): ≈ association.
- Partnerships (Personengesellschaften).
  - GbR (Gesellschaft bürgerlichen Rechts): no minimum capital, unlimited liability of partners, non-business or small-business activities only.
  - Innengesellschaft: ≈ anonymous partnership (S.Africa)
  - registered business partnerships (Personenhandelsgesellschaften)
    - OHG (offene Handelsgesellschaft): ≈ general partnership; no minimum capital, unlimited liability of partners.
    - KG (Kommanditgesellschaft): ≈ limited partnership.
    - In case the general partner is a limited company, the legal form of the general partner must be included in the name of the company, resulting in combined legal forms such as:
      - GmbH & Co. KG: the general partner is a GmbH.
      - AG & Co. KG: the general partner is an AG.
      - GmbH & Co. OHG: each of the general partners are a GmbH.

- PartG (Partnerschaftsgesellschaft): ≈ professional (service) partnership.
- Limited Companies (Kapitalgesellschaften)
  - KGaA (Kommanditgesellschaft auf Aktien): ≈ publicly traded partnership (US).
    - Although it is a Kapitalgesellschaft ≈ limited company, the KGaA has at least one general partner whose liability is not limited.
    - As with the KG, the legal form of the general partner must be included if it is another limited company, resulting in combined legal forms such as:
      - GmbH & Co. KGaA: the general partner is a GmbH.
      - AG & Co. KGaA: the general partner is an AG.
  - GmbH (Gesellschaft mit beschränkter Haftung): ≈ private limited company (Ltd.) (UK), limited liability company (LLC) (US). Minimum capital 25 000 €.
    - If under the trade name "Unternehmergesellschaft (haftungsbeschränkt)", its minimum capital is 1 € (times the number of shares).
    - The "mit beschränkter Haftung (mbH)" ("with limited liability") is sometimes added to the name of a firm that already ends in "-gesellschaft" ("company"), e.g., "Mustermann Dental-Handelsgesellschaft mit beschränkter Haftung" ("dental trading company with limited liability"), which would be abbreviated as "Mustermann Dental-Handelsgesellschaft mbH".
  - AG (Aktiengesellschaft): ≈ public limited company (plc) (UK), corporation (US). Minimum capital 50 000 €.

### 2.1.1.3. Greece

- A.E. (Anónimi Etería / Ανώνυμη Εταιρεία, A.E.): ≈ plc (UK), minimum capital 24 000 €.
- A.V.E.E. (Anónimi Viomihanikí Emborikí Etería / Ανώνυμη Βιομηχανική Εμπορική Εταιρεία, A.B.E.E.).
- E.E. (Eterórithmi Etería / Ετερόρρυθμη Εταιρία, E.E.): limited partnership.
- E.P.E. (Etería Periorisménis Euthínis / Εταιρεία Περιορισμένης Ευθύνης, E.Π.Ε.): ≈ Ltd. (UK), minimum capital 4 500 €.<sup>2</sup>
- M.E.P.E. (Monoprósopi Etería Periorisménis Euthínis / Μονοπρόσωπη Ε.Π.Ε., M.E.Π.Ε.): type of E.P.E. with a single member.

<sup>2</sup> The requirements form minimum capital are already abolished by Law 4156/2013 (Art. 3 para. 9 and 10) according to which (a) the share capital is defined by the parties with no limitation regarding its amount and (b) there is no minimum requirement regarding the nominal value of each portion of participation

- O.E. (Omóritimi Etería / Ομόρρυθμη Εταιρεία, O.E.): general partnership.
  - O.V.E.E. (Omóritimi Viomihanikí Emborikí Etería / Ομόρρυθμη Βιομηχανική Εμπορική Εταιρεία, O.B.E.E.).
- I.K.E. (Idiotiki kefaleouhiki Eteria / Ιδιωτική Κεφαλαιουχική Εταιρεία) = Private Company, Paid in minimum capital requirement = 0 €. The shares consist not only in capital contributions (with monetary value) but also in non-capital contributions such as warranties, labor offer etc. The partners of the I.K.E. can freely decide and agree on any and all the terms and conditions relevant to any of the non-capital contributions and their worth and define all these in the Articles of Association.

#### 2.1.1.4. Italy

- Individual form:
  - Craftsman.
  - Independent worker.
  - Liberal professional.
  - Entrepreneur.
- Società di persone (Partnerships):
  - S.s. (Società semplice): ≈ general partnership (non commercial).
  - S.n.c. (Società in nome collettivo): ≈ general partnership (commercial).
  - S.a.s (Società in accomandita semplice): ≈ limited partnership.
- Società di capitali (Companies):
  - S.p.a. (Società per azioni): ≈ joint-stock company, plc (UK), corporation (US).
  - S.a.p.a (Società in accomandita per azioni): ≈ publicly traded partnership.
  - S.r.l. (Società a responsabilità limitata): ≈ Ltd. (UK), LLC (US).
- Cooperative:
  - S.c.r.l. (Società cooperativa a responsabilità limitata) cooperative limited (liability) company

### 2.1.1.5. Spain

- S.A. (Sociedad Anónima): ≈ plc (UK), minimum capital 60 101,21 €.
- S.A.D. (Sociedad Anónima Deportiva): a limited liability sports corporation.
- S.L. (Sociedad Limitada): ≈ Ltd. (UK), minimum capital 3 012 €.
- S.L.L. (Sociedad Limitada Laboral): a labour limited corporation.
- S.L.N.E. (Sociedad Limitada Nueva Empresa): similar to S.L., it was introduced in 2003 to speed up new company registration (registration can be completed in one day), minimum capital 3 012 €.
- S.C. (Sociedad Colectiva): roughly a general partnership.
- S.Cra. (Sociedad Comanditaria): roughly a limited partnership.
- S.Coop. (Sociedad Cooperativa): a cooperative that typically is owned and democratically controlled by its workers.
  - Other initialisations are used for cooperatives; Sociedad Anónima Laboral (SAL); some are region specific e.g. Sociedad Cooperativa Catalana Limitada (SCCL).
  - Sociedad unipersonal (SU).

### 2.1.1.6. Portugal

- Empresário em Nome Individual: individual entrepreneur ≈ sole trader (UK), sole proprietorship (US). There is no minimum capital and the owner bears unlimited liability.
- Estabelecimento Individual de Responsabilidade Limitada: individual entrepreneur ≈ sole trader (UK), sole proprietorship (US). Minimum capital of 5 000 €. Limited liability.
- Sociedade Unipessoal por Quotas (Unipessoal Lda): single member company (literally “Unipersonal Ltd. Company”). Minimum capital of 5 000 €.
- Sociedade por Quotas (Limitada). Similar to Unipessoal Lda. but have several partners Minimum capital of 5 000€.
- Sociedade em Nome Colectivo: roughly a general partnership
- Sociedade em Comandita: roughly a limited partnership
- CRL (Cooperativa de Responsabilidade Limitada): limited liability cooperative.
- S.A. (Sociedade Anónima): ≈ plc (UK), and these are further classified as:

- S.A., Sociedade Aberta: ≈ publicly traded corporation (literally "open company"). Minimum capital of 5 0000 €.
- S.F., Sociedade Fechada: ≈ privately held (closely held) corporation (literally "closed company"). Minimum capital of 50 000 €.
- SGPS (Sociedade Gestora de Participações Sociais): holding corporation (literally "shareholding management company").

### 2.1.1.7. Cyprus

- Public Companies: they require a minimum of seven founding members and they have the right to invite the public to subscribe for their shares.
- Limited Private Company: this is the most common and popular type of company.
- Company Limited by Guarantee: most commonly used for non-profit organisations.
- Branch of a Company Incorporated Abroad: a company registered abroad may establish a branch in Cyprus. This requires the translation in Greek of the basic corporate documents of the company.
- European Society: this is a public EU company. This form of company can be registered in any EU country and transfer to other member states.

## 2.1.2. Business permit

Before being able to start, any business, regardless of its nature, (i.e. commercial, skilled crafts, industrial or liberal professions) needs a business permit. This permit is personal and relates to the manager. The activities of the future business must be described in detail, as the legal requirements vary based on this. Applicants must also hold proof of their honest intentions.

## 2.1.3. Operating permit

In addition, any production company needs an operating permit. This corresponds and is subject to strict regulations and standards, such as environmental protection and the safety of workers, and requires the filing of an extensive application.

## 2.1.4. Supporting models schemes

In order to maximise his or her chances for success, the entrepreneur may also benefit from personalised support from experts in various areas: formal procedures, financing, business plans, etc.

Several initiatives are dedicated to the support of entrepreneurs. The aim is to help business creators to optimise the potential of their ideas and to increase the possibilities of success for their companies.

We can list in particular the following personalised support models from research institutions and universities:

- ENEA provides technical-administrative assistance in the launching phase of the spin-off company and makes available a series of services, including those of logistical nature, in order to support the first phase of its development.
- The Spanish National Research Council (CSIC) has a Business Creation Unit providing help to CSIC researchers or investors who want to start a NTBE.
- CIEMAT has a Technology Transfer Office proposing services such as business training courses, advising researchers in matters of industrial and intellectual property, management of protective actions, support to the validation and consolidation of the business ideas, training in matters of protection of results and their exploitation, assistance in negotiating related agreements.
- The University of Minho, the University of Porto and the Scientific and Technological park of Alentejo (PCTA) have similar services such as support to the validation and consolidation of innovative business ideas, testing of business ideas feasibility (pre-business plan), information on aspects of business creation, including incubation and funding, access to patent databases, market research and University facilities and equipment, advice on intellectual property, link to business mentors and potential investors, referral to training in entrepreneurship and business creation.
- Many national research institutions such as DLR in Germany, CEA and CNRS in France, have strong industrial valorisation policies with dedicated departments and all information and support available all along the spin-off creation process.

Those are a few examples<sup>3</sup> of possible features within the research institutions but it is of course not an exhaustive review. Also, national policies can sometimes propose support and references related to innovation, such as France for instance.

## 2.2. Setup of a business plan

Developing a business plan is a prerequisite condition. Such a document helps to clarify and structure the business ideas and facilitates the communication of these ideas to others. In addition, it may also be required for other purposes, i.e. when applying for financial aids or when raising funds:

The business plan is a key document for the creator of an innovative business. It specifies the business idea, the need that the company aims to fulfil, its strategy and the means needed for launching the activity.

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<sup>3</sup> In Greece, the new Law 4310/2014 “Research, Technological Development and Innovation and other provisions” recently passed by the Greek Parliament, includes a provision (Article 21 para. 7) for the establishment, under the General Secretariat for Research and Technology, of a Support Office for exploitation of research results produced by the national Research Centers in Greece and defines its role and objectives.

It also explains how the company is financed and what the expected results are. A clear and precise business plan helps entrepreneurs in presenting their ideas to financial, industrial, commercial and technological partners who might support them. The business plan is a useful tool for assessing the feasibility /viability of the entrepreneur's project. It also allows for the evaluation of the market potential and for a verification to be carried out, confirming the real demand for the firm's offer. The business plan defines the company's strategy. It is also an important tool for communicating with all potential partners of the future business.

A business plan usually covers the following points:

1- Executive summary
2- Idea, product and service
3- Market
4- Competition
5- Team
6- Marketing plan
7- Business model and organisation
8- Operational plan
9- Risks
10- Financing plan

It is not a static document but rather a dynamic document subject to continue modifications. Keeping the business plan updated is a way of always having a clear and precise vision of the company's strategy.

## 2.3. Find a hosting place

The new company needs to find accommodation suitable to its needs: a new business needs space in order to develop successfully. Large research centres usually have incubators located within their facilities while small organisations with less means for support and financing can share an incubator set up at regional level with the spin-offs from other organisations. Incubators are usually common to all spin-off companies' congregations. As we saw in ID4.3, almost all reviewed research institutions and universities have an incubator of reference.



## 2.4. Step into competition

Competition is the best way to uncover talent and foster the development of great ideas and engage with new customers, potential employees, and future innovation leaders. This is a manner to use resources and unveil ingenuity that would not have necessarily emerged in normal conditions. Indeed, the motivation of having a short term goal – be the first – and a concrete – financial – reward brings to call creative ideas, able to become bankable projects. It has been proven that competition is a very efficient vector to turn innovative ideas into a business.

In the STE research sector, only one competition model could be identified in the French CEA ('Challenge First Step'<sup>4</sup>). In other sectors, competitive calls are a regular practice and bring the business at the forefront of technology innovation. As an example among dozens, we can cite: **LeWeb – StartUp Competition**<sup>5</sup> or **Startup Cup**<sup>6</sup>.

Thus, it could be envisaged to set up a suitable framework to foster market innovation from research through competition for the EU-SOLARIS network. The details can be discussed further during the preparation phase of the project, depending on the partner's feedback and of the financing details. This issue is addressed again in paragraph 4.2.

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<sup>4</sup> See ID4.3.4 Section 3.2.5.2

<sup>5</sup> Source : <http://leweb.co/startup-competition/>

<sup>6</sup> Source: <http://startupcup.com/>

## 3. Financing the creation of a NTBE

For a new business, financing is a critical issue that will have a major impact on its development. The principal sources of capital are a business' own equity capital and borrowing. Businesses may also make use of specific financial aid.

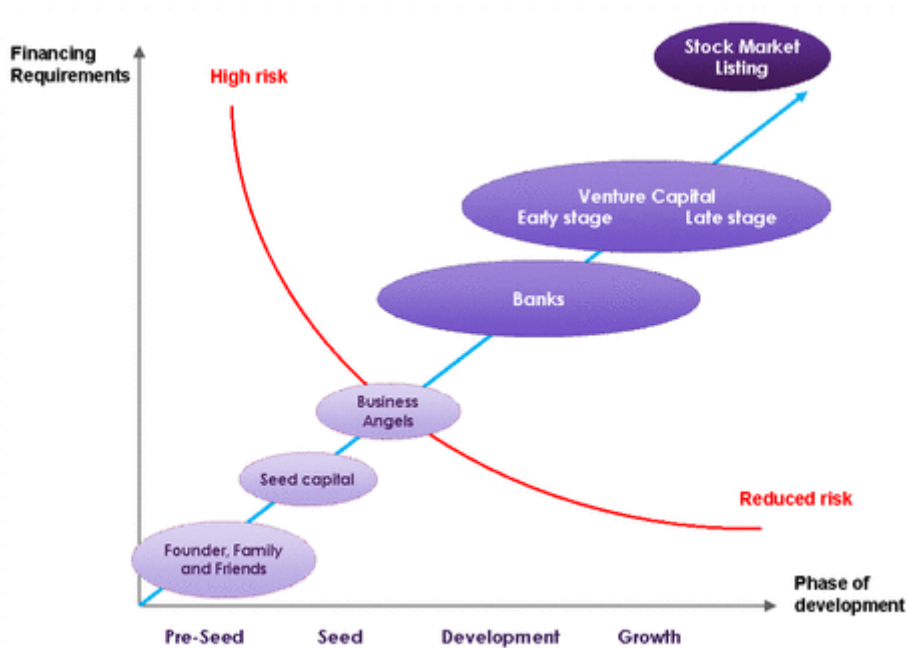
A model of financing for the start of such a business within EU-SOLARIS could be thought about and proposed here. Nevertheless, the standard formulas can be described in this chapter in order to assess which configuration would best fit our STE research centres:

### 3.1. Equity capital

Starting a business means taking risks: indeed, the initial equity capital often consists of the entrepreneur's personal resources. This is also a means of demonstrating genuine belief in the venture to other investors. Private investors can also contribute to the equity capital. There are many possibilities: personal networks, "business angels", venture capital funds, etc. An adequate level of equity capital is also important when applying for a bank loan.

The first level of financing for an innovative business is obtained according to the principle of the 3Fs (Founder, Family and Friends). This initial contribution is most important as it serves as a tangible indication to future investors that the entrepreneur believes in the project and is ready to stake his own resources. This capital may be increased by contributions from the family and friends of the business' founder, with the primary aim of helping to get the business up and running.

During the various phases of the business' development, the entrepreneur will probably need to call on different sources of financing, the most common of which are shown below:



**Figure 1:** Financing requirements for a spin-off development<sup>7</sup>

Any investment in a spin-off represents a risk for the investor, but this risk diminishes as the business develops. The higher the risk taken by the investor, the higher the return that this investor will require.

### 3.1.1. Private investors

Private investors can help to increase the entrepreneur's equity capital. Unlike a bank loan, an investment consists of a sum of money injected into a company in order to obtain a shareholding in its capital. This investment is normally of temporary nature, as the investor's objective is to obtain a capital gain by selling his or her shares. In general, this is carried out within a period of several years following the investment (on average 5 to 7 years in the case of venture capital funds).

Seed funds invest in innovative businesses when they have not yet completed the development of their product or have not yet embarked on the marketing thereof. These funds regularly collaborate on projects originating in public or university research laboratories.

Business angels (BAs) are natural persons who invest part of their personal wealth in new companies that they deem promising. BAs frequently invest in business sectors familiar to them and play an active part in the day-to-day management of the business, giving the entrepreneurs the benefit of their experience.

<sup>7</sup> Source : <http://www.innovation.public.lu/>

Venture capital companies are funds managed by teams of professionals investing in innovative companies displaying high growth potential. These funds often support quite specific sectors, such as renewable energy, information and communication technologies, etc. Venture capital companies usually participate in transactions of more than 1 M€ involving businesses with high growth potential.

### 3.1.2. Bank loans and credits

An adequate level of equity capital is necessary when applying for a bank loan. Unlike an investment, a bank loan does not entail a shareholding in the business. This method of financing consists of the provision of an amount of money to be used by the company to carry out a specific project, such as the purchase of production equipment. In return, the company undertakes to repay the amount received and to make interest payments.

Many innovative companies make use of bank debt to finance the business, from the purchase of fixed assets to the partial financing of working capital. A loan is a long-term debt that arises when a commercial bank lends a sum which is repayable over an agreed period. A credit is a short or medium-term borrowing.

Loans or credits are taken out by means of a commercial agreement between a bank and a legal entity. The agreement establishes an understanding with respect to the principal (the total sum borrowed), interest rate and repayment schedule. Generally speaking, banks do not wish to take part in the management of the business; rather, in return, they require guarantees to ensure the repayment of their debt. This method of financing is therefore most often granted to companies that are able to offer solid guarantees to the lending institution.

### 3.1.3. Funding formulas identified within the EU-SOLARIS partners

The internal deliverable ID4.3 (*Report on previous experience of spin-off activities and applicable conclusions*) identified the spin-off creation funding or financial arrangements opportunities within several STE-related research centres.

Some examples:

- The Spanish National Research Council (CSIC) gives the chance to set grace periods allowing the deferral of the payment during the first year of activity. The CSIC also allows as remuneration the possibility that the research centre directly or through an associated body, could participate in the capital of the spin-off.
- The Bruno Kessler Foundation (FBK) has two financial ways to support the creation of a spin-off: from an internal policy point of view, FBK can have a holding of up to 20 % of the spin-off, supporting it by this way for 3 years. From an external policy point of view, the researcher can submit an application to the Autonomous Province of Trento (PAT) and get an initial financing of up to 3 M€ in the 6 first months of the spin-off creation. This opportunity from the province of Trento

is covered by the provincial law on company incentives – LP 6/99<sup>8</sup> – and aims to finance research companies through a granting system. There are no deadlines for calls and applications can be submitted at any time.

- The University of Evora can beneficiate from regional funds.
- The CNRS benefits from the services of the SATT (Technology Transfer Acceleration Societies – see chapter 4.5 for details), offering financial support for innovative business creation.
- The CEA (Centre de l’Energie Atomique, France) allows the researcher to be paid normally by the CEA for 18 months during the preparation of the spin-off. Also, CEA created an investment fund called CEA investment in order to allow a rise on capital for new spin-offs.

Those examples do not constitute an exhaustive list but are few evidences that such formulas can be effectively implemented and greatly contribute to fostering the valorisation of innovation by financially supporting the researcher in his first steps into the business world.

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<sup>8</sup> [http://www.apiae.provincia.tn.it/incentivi\\_apiae/normative\\_apiae/LP6\\_99/-int\\_6\\_99/pagina2.html](http://www.apiae.provincia.tn.it/incentivi_apiae/normative_apiae/LP6_99/-int_6_99/pagina2.html)

## 4. Spin-off creation within EU-SOLARIS partner institutions

The DoW states: “A methodology will be established to spread widely the positive environmental conditions and proactive elements in order to foster spin-offs from the centres during the EU-SOLARIS operative phase. WP2 “Legal status and user access policies” will be informed of the analyses and main issues regarding these aspects in order for them to be taken into account in the legal establishment of the organism.”

To answer this and with regards to the content of this milestone and of ID4.3, the following ideas are submitted to the consortium:

### 4.1. Setup of an EU-SOLARIS Technology Transfer Office (TTO)

Technology transfer is the process of transferring skills, knowledge, technologies, methods of manufacturing, samples of manufacturing and facilities among governments or universities and other institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials or services.

We have seen in ID4.3.4 that TTOs are playing in many cases an essential role for spin-off creation. Indeed, many companies, universities and governmental organisations have nowadays a TTO dedicated to identifying research which has not only potential commercial interest but also strategies for how to exploit it. For instance, a research result may be of scientific and commercial interest, but patents are normally only issued for practical processes, so that someone — not necessarily the researchers — must come up with a specific practical process.

In the WP1 “Governance and financial issues”, the (Preliminary Draft: “EU-SOLARIS, Analysis and proposed forms of Governance”), the general governance structure has been defined as follows (quote from this Preliminary draft):

“In addition, and irrespective of the main decision-making bodies, it is also proposed the creation of other support, assistance and coordination bodies, which probably is necessary for the success of EU-SOLARIS, such as:

- Technical Committee
- Economic and Financial Committee
- Control Committee

- External Legal Advice
- Other auxiliary and support bodies.

Considering this configuration, another bullet point for “Technology Transfer Office” could be added. It would imply to consider the associated resources, and in particular to include them in the financial planning: one extra full-time staff equivalent could be counted to fulfil this task.

This position would be fully justified, since the person in charge of the EU-SOLARIS TTO would contribute in detecting, valorising and supporting innovative ideas that have a chance to become a commercial product. This person would be the point of reference for any researcher seeking information on how to create a spin-off from a research centre belonging to EU-SOLARIS. He would be aware of each specificity of EU-SOLARIS research institutions policy and he would try as much as possible to give the impulse needed to concretise researchers’ projects.

Also, this STE-specific TTO would work in close collaboration with the TTOs – covering broader fields – of each research institution – if existing.

Nevertheless, we can also consider a less ambition option that creating a position for this matter, since many partners are concerned about their limits to the financial support for EU-SOLARIS. As an alternative to a full-time EU-SOLARIS TTO staff we may just establish linkages with and leverage existing TTOs at all partner institutions.

## 4.2. Setup of a competition framework

As stated in paragraph 2.4, competition is extremely helpful to find new talents. A model within EU-SOLARIS could be set up in order to motivate researchers to push their activities towards commercial application.

First investments can vary depending on the nature of the activity, but an amount of 10 000 €<sup>9</sup> can be a good start point. Such an amount could be granted annually in a ‘common pot’ by the EU-SOLARIS partners, and under the “optimistic scenario” – according to WP1 definition – this sum divided by the number of partners is not a barrier.

A call for the best business idea would be launched every year among the partner institutions in order to identify the best project. The organiser (diffusion of the call, gathering applications) could be the Technology Transfer Officer, defined in section 4.1, and the jury could be the EU-SOLARIS technical committee, in case the members of this technical committee are not part of the EU-SOLARIS consortium.

Of course, a fair and transparent process would be mandatory, as well as clear rules and templates would need to be implemented. Those practical issues can be specified further on, after agreement between the partners.

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<sup>9</sup> Indicative amount to be discussed

## 4.3. Support in finding customers

The key to success in the setup of a spin-off is the upstream work related on the one hand to branding and advertising the future company (and even before finding customers) and on the other hand to the prospection of the existing market and the seeking of customers itself.

In order to secure good starting conditions and to foster interactions with the industrial world, the EU-SOLARIS research institutions could collect – non confidential – data on the types of industries using the research facilities, and especially on their field of activity. This data would be centralised (through the main TTO or the TTO of the partner which staff the entrepreneurs belong to) and researchers would have then an industrial database to prospect in informing about whom they could submit their product, facilitating thus the first market prospection.

## 4.4. Umbrella in case of failure

Considering the statistics on spin-off creations, it appears that the rate of failure within the 2 first years is greater than half so that we also have to consider this possibility.

Some of the research institutions analysed in ID4.3.4 have a withdrawal possibility within their internal rules:

- The Bruno Kessler Foundation (FBK) allows its researchers (long-term position) to come back in case of failure during the 2 first years of the spin-off. If the researcher has a limited contract in time (3 years normally), then, he can also come back within the limit of his contract duration and for two 3 year-periods.
- CNRS, through the SATT (Technology Transfer Acceleration Societies – see chapter 4.5) allows a period of non-active status for the researcher to prepare his project, and once the spin-off is created, the entrepreneur has 12 months to decide to return to his/her initial position and at least 3 years to go back within the CNRS but with a potentially different position, depending on staff availabilities.
- The CEA offers 18 months with a normal pay for the preparation of a spin-off and 3 years to come back to the research centre in case of failure.
- In Greece, the new Law 4310/2014 “Research, Technological Development and Innovation and other provisions” recently passed by the Greek Parliament, includes a provision for such withdrawal policy (Article 28 §6. Researchers are allowed to take an unpaid leave of absence from the Research Center they belong to, for a max. of 3 years, in order to exploit industrially and commercially their inventions. After the 3-year period the researcher is free to decide either to leave permanently from the Research Center or to return to his/her initial position). Even before the new Law 4310/2014, APTL CERTH had also a provision for such withdrawal policy in its Internal Rules and Regulations.
- Those are examples and again, more opportunities can be found elsewhere.



Nevertheless, we have to consider that the number of EU-SOLARIS partners will be dynamic in the future operational phase and that some new partners can jump in from one year to another. In order to allow the same access to spin-off creation to any researcher of the partner institutions (and by extension, to benefit from the competition framework described in paragraph 4.2), and by this way to have a similar 'exit way', it is essential to monitor this parameter.

Thus, since each research institution has its own policy on the matter, the person in charge of the TTO would have to ensure that all new members do have a withdrawal policy in case of failure of innovative business creation. In case this policy does not exist, some advising coming from the EU-SOLARIS consortium would be done to this member in order for him to define guidelines which are not penalizing the researcher candidate, with regards to the policy in place in the other institutions.

- ⇒ The intention is consequently to be able, after a few years of the EU-SOLARIS operational phase, to achieve an acceptable number of spin-offs from STE research field and then make available a strong network rich of valuable experience.

## 4.5. Creation of a consortium similar to the SATT model (France)

SATT stands for 'Technology Transfer Acceleration Societies' (SATT). It is a consortium of academic players– with a government provision – contributing to valorise innovation in France. CNRS is an active stakeholder of these societies. They belong to the framework of the Future Investment Programme (Programme d'Investissement d'Avenir – PIA), into which the French government invested 900 M Euro on a 10-year period. The stake for CNRS is to fully contribute via its researchers and thanks to this public amount to bring innovation projects to maturity and to foster technology transfer.

The SATT are non-thematic local tools and can encompass several regions depending on the projects. They are simplified limited companies (Sociétés par action simplifiées – SAS). The 'Caisse des Dépôts et Consignations' (CDC) bears the shareholding from the State while the other stakeholders are from the academic sector.

The SATT is the unique local interlocutor, mandated to deal with intellectual property and covering the whole chain from rising awareness, to license negotiation and patent detection, submission and maintenance.

All the units of the CNRS are encompassed by the SATT as CNRS is an operator of innovation valorisation. The goals of CNRS are indeed the following: to use technologic innovation from CNRS research labs to foster companies and jobs creation and to use the researchers' skills and the labs to help external entrepreneurs to solve the techno-scientific problems encountered during the setup of products or services before their commercialisation (research collaboration contracts etc).

Indeed, the development of multiple links between those young and innovative companies and the research led at CNRS allows to identify new research topics matching issues faced by the industrial sector and to take on a part or the whole costs of the research activities.

Such a model could be applicable in the EU-SOLARIS framework. It would imply an extra cost for each of the members but the resulting jobs creation and market innovation leverage could pay back. There are several configurations for such collaborations and this model can be further detailed if some interest is shown between the members.

Detailed information can be found in French on the website: <http://www.cnrs.fr/dire/>

# Conclusion

This milestone summarises the challenges of business creation and gives a few examples of supports of many kinds already existing in the research institutions under review. It shows that a lot of initiatives are already in place, most of the time within the institution themselves. Large research centres have a specific department while the smaller ones can share their innovation office with a broader entity, through a consortium, such as the SATT in France, or within a regional policy, such as FBK with the Province of Trento.

Taking into account the crucial importance of valorising innovation in the STE sector and via the EU-SOLARIS future infrastructure, models and ideas to foster spin-off creation are presented in the last chapter. The next step of the preparation phase of the EU-SOLARIS project regarding this task will be to discuss with all the partners the concrete implementation (or not) of the suggestions made in chapter 4.

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## List of abbreviations and definitions

A.E.	Anónimi Etería
AG	Aktiengesellschaft
Au	Australia
A.V.E.E.	Anónimi Viomihanikí Emborikí Etería
BAs	Business Angels
Can	Corporation
CC	Close Corporation
CDC	Caisse des Dépôts et Consignations
CEA	Atomic Energy Commission
CEF	Closed-End Fund
CIEMAT	Centre for Energy, Environment and Technology
CNRS	National Center for Scientific Research
CRL	Cooperativa de Responsabilidade Limitada
CSIC	Spanish National Research Council
DLR	The German Aerospace Center
DoW	Description of Work
EC	European Commission
E.E.	Eterórithmi Etería
e.G.	eingetragene Genossenschaft
EI	Entreprise individuelle
e.K./e.Kfm.	eingetragener Kaufmann
e.Kfr	eingetragene Kauffrau
ENEA	Italian National Agency for New Technologies, Energy and Sustainable Economic Development
E.P.E:	Etería Periorisménis Euthínis
EU	European Union

EURL	Entreprise Unipersonnelle à Responsabilité Limitée
e.V.	eingetragener Verein
FBK	Foundation Bruno Kessler
FCP	Fond Commun de Placement
FP	Framework Programme
FP7	Seven Framework Programme
GbR	Gesellschaft bürgerlichen Rechts
GIE	Groupement d'intérêt économique
GmbH	Gesellschaft mit beschränkter Haftung
ICVC	Investment Company with Variable Capital
I.K.E.	Idiotiki kefaleouhiki Eteria
IST	Information Society Technology
K.G.	Kommanditgesellschaft
KGaA	Kommanditgesellschaft auf Aktien
Lda.	Limitada
LIC	Listed Investment Company
LLC	Limited Liability Company
LP	Proncial Law
Ltd.	Limited
mbH	mit beschränkter Haftung
M.E.P.E.	Monoprósopi Etería Periorisménis Euthínis
NTBE	New Technology Based Enterprise
O.E.	Omóritimi Etería
OEIC	Open-Ended Investment Company
OHG	offene Handelsgesellschaft
O.V.E.E.	Omóritimi Viomihanikí Emborikí Etería
PAG	Policy Advisory Group

PartG	Partnerschaftsgesellschaft
Partnerships	Personengesellschaften
PAT	Autonomous Province of Trento
PCTA	Scientific and Technological park of Alentejo
plc	public limited company
RTD	Research and Technological Development
SA	Société anonyme
S.A.	Sociedad Anónima
S.A.	Sociedade Anónima
S.A.	Sociedade Aberta
S.A.D.	Sociedad Anónima Deportiva
S.F.	Sociedade Fechada
SAL	Sociedad Anónima Laboral
S.a.p.a.	Società in accomandita per azioni
SAS	Société par Actions Simplifiée
S.a.s.	Società in accomandita semplice
SASU	Société par Actions Simplifiée Unipersonnelle
SARL	Société À Responsabilité Limitée
SATT	Technology Transfer Acceleration Societies
S.C.	Sociedad Colectiva
SCA	Société en Commandite par Actions
SCCL	Sociedad Cooperativa Catalana Limitada
S.Coop.	Sociedad Cooperativa
SCOP	Société Coopérative de Production
S.Cra	Sociedad Comanditaria
S.c.r.l.	Società cooperativa a responsabilità limitata
SCS	Société en Commandite Simple

SEM	Société d'Économie Mixte
SEP	Société En Participation
SGPS	Sociedade Gestora de Participações Sociais
SICAV	Société d'Investissement à Capital Variable
S.L.	Sociedad Limitada
S.L.L.	Sociedad Limitada Laboral
S.L.N.E.	Sociedad Limitada Nueva Empresa
SME Pvt	Single Shareholder Limited Company
SNC	Société en Nom Collectif
S.n.c.	Società in nome collettivo
S.p.a.	Società per azioni
S.r.l.	Società a responsabilità limitata
S.s.	Società semplice
STE	Solar Thermal Energy
TTO	Technology Transfer Office
UK	United Kingdom
US	United States
WP	Work Package