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Deliverable 3.7

Best practices of regional financial supports & instruments for SMEs and a Memorandum for photonics cluster managers as a service provider to high-tech SMEs

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Deliverable Author	Fiona Gerente, Jonathan Baine, Paul Stefanut with contribution from all partners

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1. Introduction

The objective of the task 3.4 is to identify and highlight exemplary instruments in the consortium partners' regional territories and beyond, particularly the ones that enable/reinforce the innovative capacity of Photonics SMEs.

The consortium partners have shared their regional/national public supported instruments (innovation vouchers, educational training supports, R&D supports, tax-credits for R&D and/or the hiring of skilled workers....).

In the second part of the deliverable, OV has gathered the financial resources from EU programmes (Horizon 2020, COSME, Interreg ...) that can be used by photonics SMEs. The list of opportunities gives an overview of the EU funds that are available at the day of the current deliverable; the information will change in the future as the call for proposals are a lively process.

Finally, the third part of the deliverable gives an overview of private financing schemes (Business angels, VC investments...), that can be used in any country. For each of them, we tried to provide "tips and advice" on how to use them.

The conclusion of the deliverable can be used as a memorandum for photonics cluster managers, who are service providers and counsel their cluster's SME members on the way to mobilize financial resources.

2. Regional / National public supported instruments and private funding organizations

In all the partners' countries of the project, there are practically no programmes specifically developed for photonics companies, but rather made for any type of SMEs. All the financing opportunities described below can be mobilised by photonics SMEs.

Austria

A. Financial Instruments

Public Funding

In Austria a few organisations exist to support SMEs and all funding platforms can be found in the research support database Förderkompass: <http://www.foerderkompass.at> (available in German only). In terms of high tech, research and start-up, services are providing thanks to the different organisations that will be presented hereafter.



National:

Austria has one of the highest public funding rates for the business sector: 560 M€ (growth 12,2% in comparison to 2007)¹. Strong growth over the last years; by now less than 300 M€ of direct funding and approximately 400 M€ of tax benefits.

• **Österreichische Forschungsgesellschaft (FFG)**

The Austrian Research Promotion Agency (FFG) is the national funding agency for industrial research and development in Austria. As a "one-stop shop" offering a diversified and targeted programme portfolio, the FFG gives Austrian businesses and research facilities quick and easy access to research funding.

Nearly 80% of all companies in FFG projects are SMEs (1.609 SMEs, with around 46% of all cash value of company funding; 103 M€), 131 M€ total SME funding. FFG provides Innovation Vouchers that are an incentive for an Austrian SME to cooperate with a public research institute for the first time (HEI, PRO). <https://www.ffg.at/en/content/about-ffg>

• **Austria Wirtschaftsservice (AWS)**

Seedfinancing Start-up Programme is targeting young, innovative and technology intensive firms (not projects); aims at:

- Reducing risks involved in getting started.
- Providing targeted support (financial, coaching).
- Filling the finance gap which stems from the insufficiently working venture capital market in Austria.
- Supporting the creation of new and original ideas (SME should be highly R&D intensive; >15% of total R&D expenditures).

Special type of mezzanine loan pre-funding exists up to 730 k€ risk capital and 26,9 M€ have been approved between 1999 and 2009 for 50 companies. Moreover, AWS has recently started a "Fund of Funds" (Venture Capital initiative) and FFG also provides a start-up funding initiative.

The *WKO – Wirtschaftskammer Österreich* offers different programmes just for SMEs to support **Human Resources activities**. In Addition, the government offers **special funding for women** like the programme *FEMtech* or the *Firnberg* programme. <https://www.euraxess.at/austria/research-austria/women-and-science>

Examples of regional instruments in two federal states:

1. Styria:

- Amt der Steiermärkischen Landesregierung : <http://www.verwaltung.steiermark.at>
- Außeninstitut der Montanuniversität Leoben : <http://www.ausseninstitut-leoben.at>
- Steirische Wirtschaftsförderung (SFG) : <https://www.sfg.at>

¹ http://www.cobik.si/assets/files/COBIK_konf/2012/Public%20support%20measures%20for%20SME%20innovation_Some%20lessons%20from%20Austria.pdf



- Science Park Graz GmbH: <http://sciencepark.at>
- 2. Upper Austria:
 - Amt der Oberösterreichischen Landesregierung: <https://www.land-oberoesterreich.gv.at/12735.htm>
 - Business Upper Austria – OÖ Wirtschaftsagentur GmbH : <https://www.biz-up.at/en>
 - Oberösterreichische Technologie- und Marketinggesellschaft m.b.H. (TMG) : <https://www.biz-up.at/en>
 - OÖ Energiesparverband : <http://www.energiesparverband.at/english/home.html>
 - Tech2b Gründerzentrum GmbH : <http://www.tech2b.at>

In addition to these organisations, there are **special programmes for SMEs** in Austria like *feasibility studies*, *'Innovationsscheck'*, *'Markt.Start'*, *'Patent.Scheck'*, *'Projekt.Start'* or *Talente – Ausschreibung FEMtech Karriere Check für KMU*. More information is available at : <https://www.austrianstartups.com/public-grants>

In Austria there are 3 organisations which offer **educational programmes for adults**. These are *wifi – WirtschaftsförderungsInstitut*, *bfi – Berufsförderungs Institut* and *Volkshochschule*. All federal states offer financial benefits for off-the job training. Furthermore, there is a programme called *Bildungskarenz* where employees can take a year off to finish education or start further education. More information is available at:

<https://www.oesterreich.com/en/bildung/institutionen-ausserhalb-des-schulsystems/wirtschaftsfoerderungsinstitut-wifi>

Private Funding

• Business Angel Funds EAF Austria

European Angels Fund S.C.A. SICAR - **aws Business Angel Fonds** (Austria) (“EAF Austria”) is an EUR 32.5 M€ initiative funded by EIF and Austria Wirtschaftsservice GmbH (aws) - the Austrian government promotional bank financing companies based in the country - on behalf of both the Austrian Federal Ministry of Economy, Family and Youth and the Federal Ministry of Finance. EAF Austria was established in December 2013 with a fund size of EUR 22.5 M€ as one of the first compartments under the regulated European Angels Fund umbrella structure focusing on investment activity in Austria. The fund size was increased to EUR 32.5 M€ in December 2016.

EAF Austria aims at providing equity to Business Angels and other non-institutional investors to finance innovative companies in the form of co-investments. The initiative has initially been launched in March 2013 and it is advised by EIF in cooperation with aws as a sub-advisor. More information is available at: <https://www.aws.at/foerderungen/aws-i2-business-angels>



B. Public organisations

Incubators and accelerators

- **Wissenschaftsfonds (FWF)**

The Austrian Science Fund (FWF) is Austria's central funding organization for basic research. The purpose of the FWF is to support the ongoing development of Austrian science and basic research at a high international level. In this way, the FWF makes a significant contribution to cultural development, to the advancement of our knowledge-based society, and thus to the creation of value and wealth in Austria. More information is available at : <https://www.fwf.ac.at/en>

Clusters

- **The National Cluster Platform of the Republic of Austria**

The National Cluster Platform (NCP) was established in 2008 on initiative of the Federal Ministry of Science, Research and Economy of the Republic of Austria, Centre 1, Dr. Maria Bendl, for information and cooperation purposes of the Austrian cluster players at national and regional level. More information is available at: <http://www.clusterplattform.at/index.php?id=1&L=1>

A list of funding programs for cluster cooperation of companies/businesses is accessible through the following link: <http://www.clusterplattform.at/index.php?id=33&L=1>

A list of clusters and networks in the Austrian provinces and supra-regional initiatives is accessible through the following link: <http://www.clusterplattform.at/index.php?id=27&L=1>

Chambers of Commerce

- **ICC Austria**

ICC Austria advises enterprises, banks, lawyers and traders in their daily international business and represents Austria's international operating companies within the ICC. More information is available at: <https://www.icc-austria.org/en/Home.htm>



C. RTOs and Technology Transfer

• COMET²: Competence Centres

Competence Centres for Excellent Technologies (COMET) is the competence centre program established in 2007, which aims to intensify and concentrate cooperation between science and industry. By establishing and exploiting joint research expertise, Austrian companies will be able to expand and secure their technological leadership, strengthening Austria as a research location. The program's most ambitious task is to support research programs of international excellence and to encourage the involvement of companies and scientists operating world-wide.

The program consists of the three lines "K1-Centres", "K2-Centres" and "K-Projects". The lines differ according to their international visibility, volume of project and duration.

- K1 centres implement top-level research with a focus on scientific and technological developments to qualify for the markets of the future. There are 18 K1 Centres, each around 3-5 M€ per year, incorporated, 7 years.
- K2 centres are characterized by a very ambitious research program and are therefore particularly high risk in the development and implementation. They are linked to a particularly high extent internationally visible and internationally. They are five K2 competence centres, each around 10 M€ per year, incorporated, 10 years.
- K-line projects are the newcomers of the COMET program and provide space for new ideas in the area of collaborative research, with future development potential. There must be at least three companies represented in the consortia. Their strategic objective is the sustainable profile development in the medium term. The projects can be designed as preparation for an application for a K1 centre. This program line promotes cooperation between science and industry with "multi-firm" character. Projects, both the preparation of new initiatives (such as future centres of excellence) and the cross-border cooperation centres serve.

Share up to 60% public, 40% industry; Structural Funds are:

- Industry requested to provide payments and in-kind contributions (~40%)
- 35% by FFG, 20% regional governments, 5% HRI/PRO

The selection is a bottom up competitive process, through structured process with international jury.

591 COMET partners exist which represents 364 companies (including 216 SMEs) for a FFG-Budget spending of 48 M€ (~150 M€ in total in 2010). On average 26 partners from industry and 9 partners from academia with an SME participation concentrated in medium-high tech manufacturing sector and KIBS (Knowledge Intensive Business Services):

- Knowledge hub within the region + international component.
- Low barriers for cooperative R&D endeavours secured by high level of funding.
- Easy access to well qualified human resources.

² <https://ec.europa.eu/growth/tools-databases/kets-tools/policy/policy-profiles-kets-austria/initiative/comet-%E2%80%93-competence-centres-excellent-technologies>



- **"Innovation Vouchers" (FFG)**

The main goals of the programme are:

- Stimulation of knowledge transfer between research institutions and SMEs.
- Reduction of SME's "inhibition threshold" to R&D.
- Closing of the knowledge gap and broadening the industrial R&D base by stimulating more SMEs to innovate.
- Simple application procedure; spending it in a contract with a public R&D institution or a university that do e.g. studies, feasibility analysis, concepts.

France

A. Financial Instruments

Public Funding

National:

- **Public Investment Bank, BPI France**

Bpifrance finances and supports businesses, with a particular focus on innovative projects. To appreciate more fully the existing scope of innovative potential, Bpifrance has joined forces with the Next Generation Internet Foundation (Fing), and assembled a group of entrepreneurs and key innovation stakeholders. Different structures are involved and collaborate with Bpifrance: clusters, entrepreneurial networks, administrative regions, researchers, investors, and a dozen start-ups. More information is available at : <http://www.bpifrance.fr>

- **The French National research Agency (ANR)**

ANR provides funding for project-based research in all fields of science - for both basic and applied research - to public research organisations and universities, as well as to private companies (including SMEs). Employing a method based on competitive peer reviews compliant with international standards, ANR provides the scientific community with instruments and programmes promoting creativity and openness, and stimulate new ideas and partnerships, particularly between academia and industry. Its activity also contributes to enhancing the competitiveness and the influence of French research in Europe and across the world.

Since 2010, ANR has also been the lead manager of the Investments for the Future programme in the field of higher education and research, in charge of project selection, funding and monitoring. More information is available at : <http://www.agence-nationale-recherche.fr/en/about-anr/about-the-french-national-research-agency/>

- **The French environment and energy management agency - ADEME**

The French environment and energy management agency (ADEME) is active in the implementation of public policy in the areas of the environment, energy and sustainable



development. The Agency provides expertise and advisory services to businesses, local authorities and communities, government bodies and the public at large, to enable them to establish and consolidate their environmental action. As part of this work ADEME helps finance projects, from research to implementation. More information is available at : <http://www.ademe.fr/en>

• **Inter-Ministry Unique Funds - FUI**

Between 2005 and 2013, 1,313 collaborative R&D projects received public financing of 2.37 Bn€, including more than 1.45 Bn€ granted by the French State through the dedicated FUI fund. These projects, amounting to nearly 6 Bn€ in R&D expenditure, involved close to 15,000 researchers. More information is available at : <http://competitivite.gouv.fr/policy-of-the-clusters-906.html>

The Paris Area case:

In terms of regional public supported instruments aiming to help high-tech photonics SMEs to access finances & financial support instruments, the Paris Region is highly supportive. The presentation is based on five levels: Paris region local authority, Paris photonics cluster, chambers of commerce and industry, technology transfer agencies and regional & local agencies for economic development.

It is worth noting that all these organisations collaborate and provide support to all photonics SMEs regardless their field of activity (optics & photonics, mobility, health, digital, software...).

- The **Paris region local authority** offers multiple programmes dedicated to SMEs. One of them is the « PM³up » program focused on helping SMEs develop their activities. This programme helps SMEs reinforce their competitiveness, by benefiting from a grant covering up to 50% of expenses for studies, support services, international exhibitions and recruitment, with a maximum amount of 250 k€. Another part of the programme, called « Innov³up », aims to support innovative companies in the transition from idea to marketing, through 4 financial supports:
 - Financial support for feasibility (up to 30 k€), to validate the opportunity of its innovation project.
 - Financial support for development, to carry out its innovation project.
 - A prototyping financial support (up to 100 k€) to make a prototype and to exhibit it.
 - Financial support for experimentation (up to 100 k€), to test its innovation and to confront the usages before the placing on the market.

Opticsvalley is the Paris area photonics cluster. Among its programmes dedicated to SMEs, we focus here on HR programmes and the « Défi Photonique » programme. The HR programmes offered by Opticsvalley refer to two actions. The first one



concerns the organization of training courses on « management of innovation » and « accounting » for SME managers. The second one concerns the management of a job board (only technical jobs) to facilitate recruitment of high-tech companies. This platform, called « Job High Tech » is shared by all the high-tech clusters in the Paris region. *Défi Photonique* is a national programme, developed by the National Committee of Optics and Photonics (CNOP) in collaboration with the French Association of Industry Optics and Photonics and with support from the all the representative photonic organizations at the national level, that provides financial support (50% of the total cost) for high-tech SMEs to be accompanied by consulting companies to promote their internationalization, diversification or fund raising (notably thanks to marketing studies). This programme is funded by the French « Programme d'investissement d'Avenir ».

Finally, **regional & local agencies for economic development**, aim primarily to help companies in looking for premises.

Private Funding

An exhaustive list of the French Business Angels networks can be found on the following link: <http://www.franceangels.org>. We provide below some examples of VC funds particularly focused on high-tech hardware companies and thus more appropriated for photonic SMEs:

- **CEA-Investissement**

Key player in the financing of venture capital in high technologies, CEA Investissement, the investment branch of the French Alternative Energies and Atomic Energy Commission (CEA), has a significant investment capacity of 65M€ with a dedicated team of experts and two different funds: the ATI (Amorçage Technologique Investissement) seed capital investment fund and the CEA's strategic fund. CEA Investissement invested and promoted more than 50 start-up since 1999 and takes part in all the fields addressed by CEA's researchers: biology, energy, microelectronics, manufacturing etc. More information is available at : <http://www.cea-investissement.com/>

- **Safran Corporate Ventures**

Established in 2015, Safran Corporate Ventures is the Group's corporate venture capital arm. It funds start-ups that have developed breakthrough or disruptive technologies or business models which will help Safran to address the challenges of the aerospace, defence or security markets. This new entity clearly reflects Safran's corporate strategy based on innovation and transformation. More information is available at : <https://www.safran-group.com/company/safran-corporate-ventures>



- **Robert Bosch Venture Capital GmbH**

RBVC invests in seed, early-, and late-stage Venture Capital rounds and participates in the follow-on investments in privately held companies. Depending on the stage of the company the initial amount of investment ranges from below EUR 500k for a seed funding to more than 5 M€ in an early- to late-stage funding round. Their typical aggregate investment allocation per portfolio-company ranges, including follow-on investments, typically between 6 and 15 M€ for usually a 10 to 25% equity position in each company. They prefer to syndicate their investments with existing or new investors in the company and can take the lead as necessary. In addition, RBVC invests in select regional or industry-specific independent VC funds. More information is available at : http://www.rbvc.com/en/rbvc/investment_strategy/investment_strategy_page.html

B. Public organisations

Incubators and accelerators

In total, 25 business incubators in France receive support from the Ministry of National Education, and they are all members of the RETIS network. These business incubators were created in response to government call for tenders set out in the Act of July 1999 on Research and Innovation (Allègre Act, which also gave rise to the term Allègre incubators). There are about 30 of these incubators in France, the primary role of these business incubators is to encourage the transfer of technology developed by governmental research laboratories to the private sector through company start-ups. We will provide a few examples hereafter. A detailed list of them can be found on the following link: <http://en.incubateurpacaest.org/Incubator/Business-incubators-in-France>

- **Allianz Accelerator**

At the heart of the Allianz Riviera stadium in Nice, the Allianz accelerator supports the growth of innovative, promising start-ups by offering them an intensive 5-month acceleration programme. Start-ups are offered the benefit of a network of mentors and experts, backers and major investors such as Bpifrance and Idinvest Partners, and given structured assistance in their development. The start-ups may also be offered a strategic partnership with Allianz or an opportunity to test their solution on the international stage thanks to the group's global presence in more than 70 countries. More information is available at : <https://www.allianz.fr/accelerateur/en/index.html>

- **PwC's Accelerator**

Based in Paris, PwC's Accelerator in France is a unique network initiative designed to detect and assist the leading companies of tomorrow's economy go global faster and smarter. More information is available at : <https://www.pwcaccelerator.com/pwccaccelerator/index.html>



- **EuraTechnologies**

Created in 2009, EuraTechnologies is one of the top 10 European accelerators according to Fundacity and the top 1 in France. With 150 companies, 100 projects launched each year and 500 events; EuraTechnologies has become the cutting edge of the French digital economy. More information is available at: <https://www.euratechnologies.com>

Clusters

- **National Committee for Optics and Photonics CNOP**

The CNOP is an association gathering regional clusters and national associations supporting the photonic research and industry. The CNOP gathered more than 1000 companies which represents 45 000 employees (>55% within SME 's) and intense public research activities (>13 000 researchers). More information is available at : <http://www.cnop-france.org>

- **AFOP**

Founded in 1986, the AFOP - the French Association of Industry Optics and Photonics brings together all key players in the French industry with common aims to advance adoption of photonic technologies on the French and International stage. The AFOP's primary missions are to assist in the economic development of its companies and to promote the optics field: technological and economic intelligence, educational and diplomatic liaising, international development, normative work, networking, etc. Today, the AFOP represents more than 80 companies with cumulative annual sales of 2 Bn€ and that employ about 15000 people. More information is available at : <http://www.afoptique.org>

- **Competitiveness clusters in France**

A competitiveness cluster brings together large and small firms, research laboratories and educational establishments, all working together in a specific region to develop synergies and cooperative efforts. Other partners may be brought in, such as public authorities, either local or national, as well as firms providing business services. An exhaustive list of the French competitiveness clusters can be found here: <http://competitivite.gouv.fr/home-903.html>

- **Réseau Entreprendre**

Réseau Entreprendre offers project owners a mentoring tailored to the maturity of their business (startup, takeover, relaunch, development) provided by battle-hardened business leaders. To finance business startups and business growth, Réseau Entreprendre grants honour-loans to the entrepreneurs that it supports and has a network of major partners (banks and crowd funding/crowd lending arrangements). More information is available at : <http://www.reseau-entreprendre.org/en/>



- **RETIS**

For nearly 20 years, RETIS has been accompanying and mobilizing its members as they develop and build innovative projects in France. RETIS began by creating a unique network of French techno poles, BICs, and public incubators. Since 2008, it has extended its network to include school incubators and competitiveness clusters—geographic concentrations of interconnected companies. Today, the RETIS network is again open to new members and continues to be an active ecosystem for regional and national innovation.

The network is made-up of over 800 individuals and 100 organizations that currently support more than 13,000 innovative companies. More information is available at: <http://en.retis-innovation.fr>

Commerce Chambers

- **Chambers of Commerce and Industry (CCI)**

They offer many support actions, but none of them are especially dedicated to high-tech companies, nor photonics SMEs. Nevertheless, these companies can benefit from all these programmes: networking programmes (local and regional events, some dedicated to technologies: *Techinnov* business meetings, RH programmes (recruiting, structuring an HR unit...), internalization (prospection, strengthen skills...), digitalization, visibility (internet...), but also an open innovation event dedicated to energy transition (« Drim'in Saclay »).

C. RTOs and Technology Transfer

- **Technology transfer agencies**

The *Société d'Accélération du Transfert Technologique* (SATT) in France offer « *innovation vouchers* » to build links between public knowledge providers (i.e. higher education institutes, public research bodies) and small businesses. Innovation Vouchers is indeed available to assist companies to explore a business opportunity or problem with a registered knowledge. <http://www.satt.fr/>

There are 3 **Technology transfer agencies** in the Paris region (IDF Innov, Lutech, Paris Saclay). The national research agency and council (CNRS and ANR) also have dedicated funding opportunities for collaborations between public research bodies and SMEs. Also the French Defence Agency has a research programme, and thus dedicated funding opportunities, focusing on the development of dual technologies (i.e. for public and military use) in collaboration with SME.



Germany

A. Financial Instruments

Public Funding

National:

Most support for (photonics) SMEs is given by the Federal Ministry of Education and Research (**BMBF**) and the Federal Ministry for Economic Affairs and Energy (BMWi). Both of the ministries have their own funding programmes with a broad variety of measures. Most important for photonic SMEs are in case of

- **Federal Ministry of Education and Research (BMBF):**
 - support of innovative projects and ideas in research through targeted funding programmes (e.g. “photonics research” www.photonikforschung.de).
 - funding is provided for projects in a wide spectrum of research areas; the range covers everything from basic research in natural sciences, environmentally friendly sustainable development, new technologies, information and communication technologies, the life sciences, work design, structural research funding at institutions of higher education to innovation support and technology transfer.
 - *KMU-Innovativ*: Priority for Cutting-Edge Research in SMEs www.kmu-innovativ.de

The BMBF has opened a number of its specialized programmes of research funding especially for projects of cutting-edge research in SMEs; these industrial research and pre-competitive development projects are funded to strengthen the innovation capability of SMEs in Germany.

- **Federal Ministry for Economic Affairs and Energy (BMWi):**
 - Central Innovation Programme SMEs (ZIM) is the basic programme from the BMWi for market-oriented technology funding innovative SMEs. Funding is provided for financing cooperation, network projects and individual projects; within ZIM there are manifold possibilities to cooperate with transnational partners. More information is available at : <http://www.zim-bmwi.de>.
- **Unternehmen Region**
 - special program for the new states of Germany (former states of East Germany): dedicated to support SMEs and RTOs in their region with joint projects up to 15 million Euro funding each in “regional growing cores”, forming big consortia (up to 70 partners) in “Zwanzig20” projects. More information is available at : : <http://www.unternehmen-region.de>



Regional (Länder level):

A broad variety of partners with special funding programmes for SMEs exist. Because the German project partners are based in Baden-Württemberg and Thuringia, we mainly concentrate on those 2 regions:

- **Baden-Wurttemberg:**
 - State Ministries (e.g. Ministerium für Wirtschaft, Arbeit und Wohnungsbau).
 - State Agencies: Umwelttechnik BW, eMobil BW GmbH, BIOPRO Baden-Württemberg GmbH, Agentur für Leichtbau BW, Hessen-Agentur, Hessen Trade und Invest).
 - Chambers of Commerce in Hessen und Rheinland-Pfalz.
 - Steinbeis-Europa-Zentren:
<https://www.steinbeis-europa.de/en/sectors-projects/photonics/respicesme.html>
 - Networks: Allianz Industrie 4.0, microTEC, Photonics BW.

- **Hesse and Rhineland-Palatinate**
 - State Ministries
 - State Agencies (Hessen-Agentur, Hessen Trade und Invest)
 - Funding Establishments (Investitions- und Strukturbank Rheinland-Pfalz)
 - Enterprise Europe Network

- **Thuringia:**
 - State Ministries (e.g. Thuringian Ministry for Economy, Research and Digital Society).
 - State Agencies: Thüringer Landesentwicklungsgesellschaft.
 - Funding establishments (Türinger Aufbaubank).
 - Chambers of Commerce.

Moreover, special programmes for the new states of Germany (former states of East Germany) are available, e.g. programme “*Unternehmen Region*” www.unternehmen-region.de:

- Dedicated to support SMEs and RTOs in their region with joint projects up to 15 M€ funding each in “regional growing cores”.
- Forming big consortia (up to 70 partners) in “Zwanzig20” projects.

More or less equivalent structures exist in the different states (Länder) of Germany, also influenced by different regional smart specialization strategies.

Furthermore, several programmes exist to support the innovation activities of SMEs by supporting measures in the field of **development of Human Resources and internationalization** activities. Coaching programmes and Management trainings are thus also funded.



On the educational level, a variety of programmes for education and training is available. Most of the German states offer **employment grants**. For example in Thuringia: Thüringen Stipendium (Thuringian scholarship), Innovatives Personal (Innovative staff) and Forschergruppen (Research teams).

Currently, there is any R&D funding through tax credits. Policy makers are still discussing the launch of a tax credit support for the next years. Most probably the level of the tax credit will be proportional to the level of R&D personal costs. Even businesses with no income-tax liability (e.g. start-ups) could benefit from such a system.

Private Funding

- **Innovation Angels zur Förderung von KMU Forschungsverbänden**
<http://www.foerderdatenbank.de/Foerder->
- **Investitions- und Strukturbank Rheinland-Pfalz**

The ISB and the KFW Mittelstandsbank (bank for small and medium-sized businesses) support business start-ups with a range of programs. Investments concerning either the start-up phase or the so-called "Existenzsicherungsphase", which is defined as the term of the 5 years following the foundation and ensuring the continuation of the business, are eligible for support. More information is available at : <http://isb.rlp.de/home.html>
- **Aufbaubank**

More information is available at : <https://www.aufbaubank.de/en/About-us/Portrait>
- **Business Angels Netzwerk Deutschland** - <http://www.business-angels.de> :
 - Association of Business Angels and their networks.
 - Promoter of the German Business Angels Culture.
 - Central point of contact for innovative seeking capital start-ups.
 - Experts and training network for early-stage financing.
- **Business Angels Region Stuttgart e.V.** - <https://www.business-angels-region-stuttgart.de> :
 - Provide contacts between selected innovative start-ups and private investors.
 - Experienced business angels participate with their own private capital in the early stages of promising companies and receive company shares.
 - Support young knowledge-based companies with their entrepreneurial experience, their management and leadership skills and their network contacts.



- **IFB Innovationsstarter** - <http://innovationsstarter.com> :
 - Support of innovative start-ups and SMEs in Hamburg.
 - Subsidies and venture capital for start-ups.

- **Venture Capital Networks**
 - there are more than 100 active Venture Capital Networks in Germany, most of them are member in the Bundesverband Deutscher Kapitalgesellschaften - German Private Equity and Venture Capital Association e.V.
 - some examples:
 - b-to-v Partners AG : <https://btov.vc>
 - eCapital - entrepreneurial Partners AG : <http://ecapital.de>
 - Evonik Corporate Venturing : <http://venturing.evonik.com/sites/venturing/en>
 - HV Holtzbrinck Ventures : <http://www.holtzbrinck-ventures.com>
 - Kizoo Technology Ventures AG : <https://www.kizoo.com>
 - Media Ventures GmbH : <https://mediaventures.de>
 - Point Nine Capital : <http://www.pointninecap.com>
 - Sirius Venture Partners : <http://www.sirius-venture.com>
 - Deutsche Börse Venture Network : <http://www.venture-network.com/dbvn-en>

- **Crowdfunding Platform Startnext** : <http://www.startnext.de>
 - Capital is raised by various private sponsors using the online portal.
 - Support for founders, start-ups and freelancers.

B. Public organisations

Incubators and accelerators

A detailed list of German accelerators can be found at: <https://www.fuer-gruender.de/kapital/eigenkapital/accelerator/programme>

- **German Accelerator Tech**

It supports high-potential German technology start-ups and emerging companies to successfully enter the U.S. market and scale their business globally. More information is available at: www.germanaccelerator.com/tech

- **Allianz Industrie 4.0 Baden-Württemberg**

Allianz Industrie 4.0 Baden-Württemberg is a network founded and sponsored by Germany's federal state of Baden-Württemberg. Our aim is to pool technological expertise in production



as well as IT and communications to provide support for medium-sized industrial companies in their shift towards Industrie 4.0. More information is available at: <http://www.i40-bw.de/en/about-us>

- **Rocket Internet GmbH** - <https://www.rocket-internet.com> :
 - Support of start-ups with venture capital, founders experience and professional know-how.
 - Incubates and invests in technology companies with proven business models.
 - Provides deep operational support to entrepreneurs and helps them build market-leading companies.
- **hub:raum** - <https://www.hubraum.com> :
 - Incubator of Deutsche Telekom.
 - Supporting early stage start-ups.
 - Investing in and mentoring start-ups with innovative business ideas.
 - Runs business development programs, hackathons and prototyping formats.
- **Main incubator GmbH** - <https://www.main-incubator.com/en> :
 - Subsidiary of Commerzbank.
 - Leading early stage investor in FinTechs.
 - Company builder in the banking sector.
- **Project A Ventures** - <https://www.project-a.com/en> :
 - International venture capital firm based in Berlin.
 - Investing in passionate early-stage entrepreneurs.
 - Providing exclusive access to our team of 100 operational experts.

Clusters

- **OptecNet**

The membership of OptecNet Deutschland e.V. consists of seven regional innovation networks with more than 500 members bringing together industry, science, education, consulting and financing bodies to promote the key technology of photonics in their region. OptecNet Deutschland e.V. is partially funded by membership fees, which make up 50 % of the network's total funding. Several federal funding programmes of relevance for optics and photonics science and technology exist. In addition there are other funding programmes dedicated to optical technologies sponsored by regions. Regional innovation networks: Optence, PhotonicNet, bayern photonics, optonet, ObTecbb, Hanse Photonic and Photonics BW. <http://optecnet.de/en/>



- **Optence**

In the field of optical technologies Germany has numerous small and medium-sized companies, global players with first-rate innovative potential and high-profile research institutes. To boost innovative capacity and international competitiveness, networking and pooling of resources are becoming increasingly important. For 15 years Optence e.V. has been active as a regional innovation network for optical technologies. It forms a link between industry and research and promotes the interests of its 84 members, regionally and nationwide. More information is available at: <http://optence.de/en>

- **Clusterportal BW zur Förderung**

The network Photonics Baden-Wuerttemberg takes on a key role with regard to networking activities within the industry. The network aims to promote the research and development of optical technologies and to strengthen the dialogue between stakeholders from economy, science and politics. More information is available at: <https://www.clusterportal-bw.de/en/cluster-data/technology-fields/technology-fields-detail/photonik/clusterdb/Innovationsfeld/show/>

- **Munich-Centre for Advanced Photonics (MAP)**

The mission of MAP is to create an unparalleled infrastructure in photonics, on the long run sustained by the Centre for Advanced Laser Applications - CALA, and a lasting bridge between physical and biomedical sciences. This allows for the pursuit of challenging scientific, technological and societal endeavours just as training young scientists and promoting their careers in a uniquely inter-disciplinary environment. More information is available at: <https://www.munich-photonics.de/>

Global information about support and sponsorship of clusters and networks is available via the Cluster portal Baden-Wuerttemberg : <https://www.clusterportal-bw.de>

Chambers of commerce

The Association of German Chambers of Commerce and Industry (Deutscher Industrie- und Handelskammertag, DIHK) is the central organisation for 79 Chambers of Commerce and Industry, CCI (Industrie- und Handelskammern, IHKs) in Germany. All German companies registered in Germany, with the exception of handicraft businesses, the free professions and farms, are required by law to join a chamber.

Thus, the DIHK speaks for more than 3 million entrepreneurs. They include not only big companies but also retailers and innkeepers. This gives the association considerable political influence. It does not represent any specific corporate group but all commercial enterprises in Germany. More information is available at: <https://www.dihk.de/en>



Other useful information about the chamber of industry and commerce and other associations of business development can be found at:

- Chamber of Industry and Commerce: <https://www.ihk.de>
- Association for business development in Eastern Baden-Wuerttemberg: <http://www.ostwuerttemberg.de>
- Federal association of business development: <http://www.bwa-deutschland.com>

C. RTOs and Technology Transfer

- **The Technology Division of Hessen Agentur**

The Technology Division of Hessen Agentur GmbH (HA), an agency promoting Hessen's strategic advantages worldwide, serves as the state's Centre of Excellence to support cluster and network building processes between industry and science. Focusing on technologically advanced sectors, the establishment of close cooperation between companies, universities and supporting institutions along the value creation chain, it strengthens the competitiveness of companies, especially small and medium-sized enterprises (SMEs). It increases Hessen's positive image and contributes to Hessen continuing to be a prime location for technology and innovation. Hessen promotes the advancement of its strong networks and remains internationally competitive. Also initiated by HA, is the TechnologyTransferNetwork Hessen (TTN Hessen), a collaborative network of all Hessian universities and polytechnics, leading industry associations and local chambers of commerce. More information is available at : <http://germaninnovation.org/research-and-innovation/centres-of-innovation/centre-of-innovation?id=4148bde2-07df-e011-8c7d-000c29e5517f>

- **Forschungsportal Sachsen-Anhalt**

The research portal of Saxony-Anhalt, which includes 51 research institutions with 10,553 projects, and over 61,552 publications, is the most important platform for research, scientific innovations, and technology transfer in the German state of Saxony-Anhalt. The portal includes methods of solutions, descriptions of various topics, co-operations, service supplies, and available research techniques. Financial support programs can be found in a special search engine on the website. Key contacts are experts in the fields of life sciences, information- and communication technology, engineering and renewable resources, natural science, and chemistry who provide qualified help and information upon request. More information is available at: <http://germaninnovation.org/research-and-innovation/centres-of-innovation/centre-of-innovation?id=1d7457df-b024-e011-9adf-000c29e5517f>

- **Fraunhofer-Institute for industrial engineering and organisation**

More information is available at: <https://www.iao.fraunhofer.de/lang-de>



Greece

A. Financial Instruments

Public Funding

National:

Financial instruments that exist in Greece to support SMEs are briefly described hereafter; an indicative list of the funded actions includes:

- Research and Development by SMEs to promote innovation.
 - SME collaboration with RTOs for transfer of scientific knowledge and innovation.
 - Promotion of research at the next TRL, building on results produced in previous research projects.
 - Development of start-ups based on the scientific work and potential of regional research institutions.
 - Development of robust and competitive clusters with an effective administration that would coordinate SMEs and encourage further networking.
 - Issuing of patents.
 - Support for participation to exhibitions.
 - Consulting costs.
- **Operational Programme Competitiveness, Entrepreneurship and Innovation 2014-2020 (EPAnEK):**

Under the Operational Programme Competitiveness, Entrepreneurship and Innovation 2014-2020 (EPAnEK) funding calls open periodically addressing specific needs of SMEs according to the national development plan. Currently or recently available calls include:

- ***“Research - Create - Innovate”*** aiming to link research and innovation with entrepreneurship and enhance competitiveness, productivity and internationalization of enterprises. More information is available at : <http://www.antagonistikotita.gr/epanek/prokirixeis.asp?id=26&cs>
- ***“Industrial and Advanced Functional Materials” & “Culture, Heritage, Science and Technology” & “Aquaculture”*** that seek to encourage and support innovative actions in the relevant fields. More information is available at : <http://www.antagonistikotita.gr/epanek/prokirixeis.asp?id=29&cs>
- ***“Bilateral and multilateral cooperation projects between Greece and selected countries such as Germany, China, Russia, Israel”*** aiming to promote business investment in research and innovation and develop links and synergies between companies in the respective countries. More information is available at : <http://www.antagonistikotita.gr/epanek/prokirixeis.asp?id=25&cs>



- “*Upgrading micro & small enterprises to develop their skills to new markets*” aiming to improve existing product/service quality or to create new products / services to meet specific market needs. More information is available at : <http://www.antagonistikotita.gr/epanek/prokirixeis.asp?id=16&cs>
- “*Startups Entrepreneurship*” for starting up new innovative companies More information is available at : <http://www.antagonistikotita.gr/epanek/prokirixeis.asp?id=15&cs>

- **Innovation and /or entrepreneurship competitions**

Through innovation and /or entrepreneurship competitions organized by societies and private bodies e.g. banks, awards for innovative SMEs are available that can lead to financial support for the companies through targeted lending schemes and investments. Examples include:

- Excellence in Innovation and entrepreneurship <http://awards.eie.gr/>
- Hellenic entrepreneurship award <https://www.hellenicaward.com/gr/>
- Innovation and Technology Contest <https://www.nbg.gr/el/nbgseeds/competition>
- Greece innovates <http://www.kainotomeis.gr/>

- **Employment and Training**

The Greek Employment Organization (O.A.E.D.) <http://www.oaed.gr/>, the main instrument for implementation of Government Policy on Employment, periodically publishes calls that support SMEs in the employment of personnel. The support entails full or partial coverage of the employee’s salary or reduction of social security contributions.

SME personnel can receive subsidy for training courses through public organizations such as the Greek Employment Organization (O.A.E.D.) and the State Scholarships Foundation (IKY). Additionally, new, advanced training opportunities are also available as for example by the Union of Hellenic Chambers that offers to its members the opportunity of distant e-learning to support businesses and assist their growth <http://elearning.uhc.gr/?lang=en>.

Regional:

- **Research and Innovation Strategies for Smart Specialization - RIS3**

The 13 administrative regions (peripheries) of Greece contribute to national planning, and implement policies for economic, social and cultural development tailored to the specific needs and characteristics of their territory. Indicatively, through RIS3, the administrative regions aim to support SMEs in their collaboration with RTOs for the transfer of scientific knowledge and innovation in order to boost the international competitiveness of Greek SMEs.



- **EquiFund**

The newly established EquiFund <https://www.espa.gr/el/Pages/EquiFund.aspx> aims to boost entrepreneurship and create a lasting impact on local businesses, by attracting private funding to all investment stages of the Greek equity market, ranging from entrepreneurship steps even before the early stage start-ups up to mature expansion companies.

Private Funding

- **Hellenic Angels**

A Business Angels Network operated by the Hellenic Start-up Association : <http://www.hellenicangels.gr/> and <http://www.businessangelsgreece.gr/>

- **Attica Ventures**

Attica Ventures aims to invest in innovative small and medium enterprises (SMEs) that are in their development phase, hold a distinctive competitive advantage and have excellent potential for equity appreciation and international competitiveness and presence, regardless of the industry they compete. Our target size of investment is between 3-7 M€, but we are able to accommodate any size of investment in cooperation to strategic partners and/or co-investors. In most of the cases we intend to take minority stakes, supporting the management achieving their goals.

Since 2004 Attica Ventures is managing Zatech Fund a 40 M€ fund (investors Attica Bank, TANEQ). We have already invested and reserved more than 32 M€ since 2005 in 10 innovative companies that are active in various sectors (renewable energy, telecoms, industrial innovation, food & beverages, healthcare, logistics, retail and real estate). Our investments have already achieved remarkable growth, positive results, market awards and recognition. Four of our investments are now listed in the Athens Stock Exchange. More information is available at: <http://www.attica-ventures.com/>

- **Piraeus Bank**

The Group Venture Capital and Private Equity with the subsidiary Piraeus Equity Partners, is Piraeus Bank Group's investment arm for investment activities in the fields of Private Equity and Venture Capital. Piraeus Bank Group has invested, through its subsidiary companies, in the following fields:

- in 8 newly-founded technology companies through OF Investments and in collaboration with Openfund thus reinforcing new entrepreneurship,
- in 7 companies in the fields of Technology, Renewable Energy/ the Environment and other specialised fields of the Greek economy with a purely exporting character through Piraeus - TANEQ Capital Fund and the management company of Piraeus Capital Management,
- in 2 RES projects through Piraeus Clean Energy LP,



- Finally, in 7 newly-founded innovative companies in Information Technology Communications (ICT) in Greece through Piraeus JEREMIE Technology Catalyst Fund thus strengthening new entrepreneurship in a strategic sector for Greece.

More information is available at: <http://www.piraeusbankgroup.com/en/group-profile/groups-presence/greece/venture-capital-and-private-equity>

- **Capital Connect**

Capital Connect Venture Partners is a Private Equity Fund investing in innovative Greek Small Medium Enterprises in sectors of the new economy and companies whose competitive advantage arises from innovation. More information is available at : <http://www.capitalconnect.gr/index1.htm>

B. Public organizations

Incubators and accelerators

A number of business incubators/technology parks exist in Greece that provide assistance to SMEs to deal with basic needs and address problems such as insufficient market information and technical information (know-how), inability to manage and organize their business, inability to maintain and expand any competitive advantages, lack of risk assessment and difficulty in accessing new technology.

The incubators can be Non-profit Incubators /Technology parks e.g. state owned or associated with a University / Institute or Profit Incubators such as privately owned, inner-company or virtual incubators. A limited number of examples of incubators/ Industrial parks active in Greece are given below:

- **STEP-C**, the Science and Technology Park of Crete supports business development of companies and develops various projects in order to promote Regional Innovation and entrepreneurial activity in the region. More information is available at : <http://www.stepc.gr/>
- **Egg**, the innovative youth entrepreneurship programme enter-grow-go is a Corporate Social Responsibility initiative which aims at boosting innovative youth entrepreneurship and improving employment opportunities. More information is available at : <https://www.theegg.gr/>
- **ACEin**, the Athens Centre for Entrepreneurship and Innovation is the incubation centre of Athens University of Economics and Business offering support to researchers and potential young entrepreneurs in order to develop innovative business ideas and bring them to the market. More information is available at : <https://acein.aueb.gr/en/>
- **The Athens Incubator**, an Athens Chamber of Commerce and Industry Initiative offer consulting and training services, networking and investment opportunities



aiming to boost technological entrepreneurship. More information is available at :

<http://www.theathensincube.gr/>

- **Science Park Patra**, technology park and incubation infrastructure

<http://www.psp.org.gr>

Additional incubator/ parks are listed in <http://startupnation.gr/category/incubators>.

Clusters

Networking opportunities for Greek SMEs are offered through the Hellenic Photonics cluster (HPhos). HPhos aims to cluster all Greek entrepreneurial, industrial and academic players in order to create a hotbed for the development of new ideas and innovative products. Additionally, it aims to act as a support infrastructure to new entrepreneurship and extroversion of Greek enterprises active in Photonics. More information is available at :

<http://hphos.gr>

Additionally the PRAXI Network <http://praxinetwork.gr> offers Information, mediation and support to SMEs and research institutions in innovation, technology transfer, research collaboration, internationalization and extroversion, and the exploitation and integration of research results into the production process.

Moreover, innovative SMEs are supported through tax reduction under specific schemes. For example the cost of equipment utilized for R&D actions is deducted from the gross revenue of the company <https://www.espa.gr/el/Pages/NewsFS.aspx?item=942>

Chambers of commerce

- **Greece Regional Chamber**

The Greece Chamber Charitable Foundation (GCCF) was created in 2002 to encourage further economic development in Greece. Over the last 15 years, the Foundation has funded a variety of businesses and individuals who have ties to the Greece Community. More information is available at: <https://greecechamber.org>

C. RTOs and Technology Transfer

- **Hellenic technology Transfer Centre**

The Hellenic Technology Transfer Centre S.A. provides a "one-stop shop" solution to SMEs and/or public companies with licensing in / licensing out, technology search and evaluation, and technology auditing and matching. HTTC also provides assistance in Venture Capital funding, Innovation and New Product Development Financing, Strategic Partnerships and



Joint Ventures with companies in Europe and beyond. In addition to this, HTTC seeks to set-up and manage RTD and public technology transfer programmes at the regional level.

HTTC has established a network of associates in a variety of disciplines from Greece and throughout Europe who bring together unparalleled expertise in the area of technology transfer. <http://www.urenio.org/newventuretools/partner5.html>

Ireland

Small, Medium and Large Enterprises in Ireland can apply for funding to over 80 different sources of government finance & support. Over 2 Bn€ of government aid, grants and loans are available. These business funding initiatives are managed through 29 government departments, state agencies and joint ventures with third parties.

A. Financial Instruments

Public Funding

National:

There is a comprehensive site of available grants and support available in Ireland and a few key schemes are described below. More information is available at : <https://www.fundsme.ie/gov-and-grants>

- **Enterprise Ireland (EI)**

The government organization responsible for the development and growth of Irish enterprises in world markets. EI works in partnership with Irish enterprises to help them start, grow, innovate and win export sales on global markets to sustain economic growth, regional development and secure employment. Substantial financial Grants & Vouchers for Start Ups, established SMEs and large companies is available. More information is available at : <https://www.enterprise-ireland.com/en/>

- **Strategic Banking Corporation of Ireland (SBCI)**

A new strategic SME funding company, the SBCI, aims to ensure access to flexible funding for Irish SMEs by facilitating the provision of: Flexible products with longer maturity and capital repayment flexibility, subject to credit approval; Lower cost funding to financial institutions which is passed on to SMEs; Market access for new entrants to the SME lending market, creating real competition. More information is available at: <http://sbc.gov.ie>

- **MicroFinance Ireland Ltd**

Like a bank, MFI offers interest-bearing loans but, unlike a bank, they operate on a not-for-profit basis. Helping to create or sustain a job is at the heart of MFI business. SMEs may have difficulty in accessing credit from banks – due to economic difficulties or for reasons such as lack of security, current level of bank debt, difficulty with existing borrowings, or lack of a track record. Microfinance Ireland has been initiated by the Government to provide another



funding avenue to assist people who are finding it difficult to access credit, which in turn will help to create and sustain employment. Irish based SMEs can apply to MicroFinance Ireland for unsecured business loans from 2 k€ up to 25 k€. More information is available at: <http://www.microfinanceireland.ie>

- **National Pension Reserve Fund**

The National Pensions Reserve Fund (NPRF) has made investment commitments of 375 M€ to three new long-term funds which will provide equity, credit and restructuring / recovery investment for Irish small and medium sized businesses (SMEs) and mid-sized corporates. In June 2013, the Government announced its decision to establish the Ireland Strategic Investment Fund (ISIF) and make the NPRF's 6.4 Bn€ of resources available for investment on a commercial basis to support economic activity and employment in Ireland.

The BlueBay fund, to which the NPRF has committed 200 M€, is a 450 M€ credit fund that will provide loans to larger SMEs and mid-sized businesses in Ireland. BlueBay is a wholly-owned subsidiary of Royal Bank of Canada and is a specialist asset manager of fixed income credit, corporate loans and alternative products.

Loan amounts are expected to range in size from 5 M€ to 45 M€ and BlueBay is able to access additional capital for situations that require larger amounts. The loans can be used by borrowers for a variety of purposes such as refinancing existing liabilities, acquisition finance or investment expenditure. Pure real estate finance is not intended to be included. More information is available at: <http://www.irishstatutebook.ie/eli/2000/act/33/enacted/en/html>

- **R&D Tax Credit**

The Research and Development Tax Credit is a valuable tax-based incentive that is designed to encourage investment in R&D by companies in Ireland. A 25% tax credit for qualifying Research and Development expenditure exists for companies engaged in in-house qualifying research and development undertaken within the European Economic Area. This credit may be set against a company's Corporation Tax liability. The first 100 k€ of all qualifying R&D expenditure will benefit from the full 25% R&D tax credit from 2012. This is of particular benefit to SMEs. For larger R&D expenditure, the tax credit will continue to apply only to the amount by which expenditure in 2012 exceeds that incurred in the base year 2003. More information is available at: <https://www.enterprise-ireland.com/en/start-a-business-in-ireland/food-investment-from-outside-ireland/why-ireland/food-research-and-innovation/r-d-tax-credit.html>

- **Seed Capital Scheme**

If you start up and work full-time in your own company, you can claim back the income tax you paid in the previous six years to invest equity into a company (subscribed as shares) engaged in a qualifying trade. The amount of relief is restricted to the amount of the investment. Since November 2011, the scheme is open to a much wider range of sectors and the ceiling on recoverable tax can now be up to 100 k€ in each of the six look back years.



More information is available at : <https://www.enterprise-ireland.com/en/Invest-in-Emerging-Companies/Seed-and-Venture-Capital-Scheme>

- **Three Year Corporate Tax Exemption**

The scheme provides relief from corporation tax on the trading income and certain gains of new start-up companies in the first 3 years of trading. There will be full relief on income and gains relating to the trade where total corporation tax liability in any of the first 3 accounting periods does not exceed 40 k€. There will be marginal relief where the tax liability falls between 40 k€ and 60 k€. You can earn 320 k€ tax free per year for the first 3 years. The relief available is now based on the amount of employers' PRSI paid by an employer in respect of their employees. More information is available at : <http://www.idaireland.com/docs/publications/Taxation in Ireland 2015.pdf>

Regional:

Over 31 **Local Enterprise Offices** provide a range of financial supports designed to assist with the establishment and/or growth of local businesses employing up to ten people. LEOs also have an excellent SME online tool that helps narrow down your search for information on aid and supports for business.

- **Dublin Business Innovation Centre**

Raising finance to fund growth strategies is essential for most businesses in development phase. Drawing on the extensive and hands-on experience of our consultants, Dublin BIC enables clients become investor ready and then assists them through the fundraising process. Dublin BIC's has one of the most successful track records in the market for securing funding for developing companies. Over two decades, Dublin BIC has assisted 167 businesses raise over 70 M€. Dublin BIC is fund manager of the AIB Seed Capital Fund which has a current total of 53 M€ under management, Halo Business Angel Partnership, also managed by Dublin BIC, has invested over 40 M€. More information is available at: <http://dublinbic.ie/contact-us>

- **South East Business Innovation Centre**

Funding a new business is one of the greatest challenges facing entrepreneurs. South East BIC, can assist you in identifying the most appropriate funding methods for your business and help you prepare your business plan to access the most appropriate finance for your stage of development. More information is available at: <http://www.southeastbic.ie>

- **West Business Innovation Centre**

WestBIC is a support partner to drive and deliver high quality start-ups. Established in 1997, WestBIC is the Official EU Business and Innovation Centre for Irelands Border, Midlands and Western Region. On a Public Private Partnership basis, WestBIC has already invested in making the global standard of innovation support available in the Region to start ups, early-



stage SMEs and to wider stakeholder networks. More information is available at : <http://www.westbic.ie>

- **Western Development Commission**

The WDC Investment Fund (WDCIF) is a WDC managed fund providing risk capital to micro, small and medium sized, and social enterprises in the Western region covering the counties of Clare, Donegal, Galway, Leitrim, Mayo, Sligo, and Roscommon. More information is available at: <http://www.wdc.ie>

Private Funding

- **EI & Business Angels**

Enterprise Ireland's Growth Capital department can facilitate access to Business Angels who have an ongoing relationship with the agency. Enterprise Ireland, in conjunction with InterTradeIreland, supports the *Halo Business Angel Network*. Halo facilitates access to a network of registered Business Angels. More information is available at : <http://www.hban.org>

- **Employment and Investment Incentive (EII)**

The scheme allows an individual investor to obtain income tax relief on investments up to a maximum of 150 k€ per annum in each tax year up to 2020. Relief is initially available to an individual at up to 30%. Up to a further 11% if investment is made before 1 January 2015, or up to a further 10% if investment is made on or after 1 January 2015, will be available where it has been proven that employment levels have increased at the company at the end of a period of 3 years from investment or where evidence is provided that the company used the capital raised for expenditure on research and development. More information is available at : <https://enterprise-ireland.com/en/Invest-in-Emerging-Companies/Source-of-Private-Capital/Revenue-Employment-Incentive-and-Investment-Scheme.pdf>

The *Revenue Employment Incentive and Investment Scheme* allow individual investors to obtain income tax relief on investments made, in each tax year, into Employment and Investment Incentive (EII) Scheme certified qualifying companies. There is no tax advantage for the company in receipt of the EII, but securing EII status may enhance their ability to attract other external funding. Certification for EII is a matter for the Revenue.

- **Venture Capital Funds in Ireland**

Over 800 M€ in funding is available in Ireland through networks of angel investors, seed and venture capital and development capital firms. A total of 685 M€ is under management in EI-supported SVC funds. The funds currently open for new applicants include :

- AIB Seed Capital Fund - 53 M€.



- AIB Start-up Accelerator Fund - 22 M€.
- Atlantic Bridge Venture Fund – 67 M€.
- Atlantic Bridge Venture Fund II – 75 M€.
- Bank of Ireland Early Stage Equity Fund – 32 M€.
- Bank of Ireland Kernel Capital Partners – 51 M€.
- Bank of Ireland Start-up and Emerging Sectors Equity Fund – 17 M€.
- Delta Partners – 105 M€.
- Fountain Healthcare Partners – 73 M€.
- Seroba Kernel Lifesciences – 75 M€.
- NCB Ulster Bank Diageo Fund – 75 M€.
- The Frontline Ventures Fund – 20 M€.
- SOS Ventures Ireland Fund – 20 M€.

- **Cork Business Innovation Centre**

CorkBIC is a private-sector led organization, specifically set up to identify and build knowledge intensive companies based on promising technology and capable innovative people.

It plays a hands-on role helping entrepreneurs navigate the minefield of raising finance, sorting out business propositions, arranging agreements with shareholders and investors, and, perhaps most important of all, finding customers. More information is available at : <http://www.corkbic.com>

B. Public organisations

Incubators and accelerators

A list of incubation centres can be found here: <https://enterprise-ireland.com/en/Researchers/Spin-Outs/Incubation-Centres-Maps-and-Contacts.html>

- **NDRC**

The National Design Research Centre is the leading Irish IT incubator and is considered one of the best of its kind in the world. Its offices are based in the Digital Hub on Crane St. in Dublin, and it currently has four programmes – Catalyser, LaunchPad, VentureLab and Female Founders, each offering different packages to entrepreneurs. More information is available at: <http://www.ndrc.ie>

- **SouthEast BIC**

Based in Waterford, the SouthEast BIC is a public-private partnership that supports new enterprises through project evaluation, business planning and sourcing finance. Its team works right across Waterford, Wexford, Carlow, Kilkenny and Tipperary, and has good European



links, previously serving as the Irish partner in the SmartAgriFood European Project. More information is available at: <http://www.southeastbic.ie/%20f>

- **NovaUCD**

Operating out of its state-of-the-art facility on UCD's Belfield campus NovaUCD offers mentoring and workspaces to start-ups from a range of disciplines. Participants must be less than three years old, be prepared to work with UCD and they should be operating in a knowledge intensive area. More information is available at: <http://www.ucd.ie/innovation>

- **Propeller Venture Accelerator**

The Ryan Academy is a collaboration between Dublin City University and the family of Ryanair founder Tony Ryan. Privately funded, the Academy currently offers a range of accelerator programmes, including the award-winning Propeller Venture Accelerator, which provides mentors, development plans and 45 k€ in exchange for 7.5% equity. Aimed at early-stage technology firms, this accelerator is currently ranked seventh in Europe. More information is available at: <http://www.ryanacademy.ie/%20f>

- **Sprint**

Cork's Sprint Accelerator is the newest addition to Ireland's accelerator scene, starting in 2016. Set up by University College Cork's innovation centre GatewayUCC, the programme is aimed at early-stage firms, entrepreneurs and UCC-based researchers. The programme already has its first participants, coming from a diverse range of fields including MedTech, eHealth, nutrition, IT and more. More information is available at: <https://www.ucc.ie/en/gateway/>

For a more detailed list of start-up and accelerator supports go to [StartUp Ireland's interactive map](#).

Clusters

- **The EMD Technology Gateway Cluster**

The EMD Cluster is a consortium of six of Enterprise Ireland's Technology Gateways operating within the engineering, materials and design sector. The cluster provides a range of expertise for companies who are looking to access research and development within these areas.

The cluster can connect with over 300 industry researchers in areas such as precision engineering, biotechnology, polymers, protective coatings, prototype design, medical imaging technologies and 3D metal additive manufacturing. More information is available at : <https://www.technologygateway.ie/network/emd-cluster>



- **The A-IoT Technology Gateway Cluster**

The A-IoT Cluster is a consortium of five of Enterprise Ireland's Technology Gateways, providing a single point of contact for companies looking to access technical capabilities for Internet of Things (IoT) research and development.

Via the cluster, industry can connect with 300 research professionals in software, hardware, communications/networks, data analytics, control, UI/UX and trialling. The A-IoT Cluster is open to all companies, of any size, nationally and internationally. More information is available at: <https://www.technologygateway.ie/network/applied-iot-cluster>

An exhaustive list of the existing clusters/networks in Ireland is available on the following link: <https://www.technologygateway.ie/network/>

Chambers of commerce

- **Chambers Ireland**

We provide, principally through our agencies, a range of tailored supports for enterprise of all sizes in Ireland. Supports include access to finance, management development, mentoring supports, business development programmes, market supports and trade promotion. We hold structured dialogue with key stakeholders and we advocate across Government to ensure the needs of SMEs are taken into account in the execution of national policy. <http://www.chambers.ie/>

An online tool, Supporting SMEs, has been developed by the Irish Government's Supporting SMEs campaign, to increase awareness of the range of Government supports for start-ups and small businesses. Answer the following eight questions to find out which supports could possibly fit your business. <https://www.localenterprise.ie/Discover-Business-Supports/Supporting-SMEs-Online-Tool/>

C. RTOs and Technology Transfer

- **The National Technology Transfer System**

The National Technology Transfer system enables the transfer of commercially valuable research outputs into industry. With funding from various sources including Enterprise Ireland, the Higher Education Authority, Science Foundation Ireland and others, researchers in higher education institutes are inventing new technologies and developing solutions to challenges in areas like healthcare, transport, energy, engineering, food, software and telecommunications. More information is available at : <https://enterprise-ireland.com/en/Researchers/Technology-Transfer-Support-System>



Lithuania

Photonic and laser technologies are one of the RDI Priority Areas approved by the Government as part of the obligations of the EU Member States to formulate Research and Innovation Strategies for Smart Specialization (RIS3) which will guide further R&D and innovation system development support during the Multiannual Financial Framework (2014-2020). The Action Plan for the Priority “*Photonic and Laser Technologies*” specified actions and measures to be implemented in pursued of this plan. The measures that are targeting SMEs or provide opportunities for photonics SMEs to seek public funding are described below.

A. Financial Instruments

Public Funding

National:

- “***Intellect. Joint science and business projects***” aimed at supporting business-driven R&D projects (139 M€ of the total planned public funding, of which 19,79 M€ are allocated to the projects corresponding to the Priority Area “*Photonic and Laser Technologies*”).
- “***SmartInvest LT+***” aimed at supporting business-driven R&D projects by SMEs founded by foreign entities or investors (43,4 M€ of the total planned public funding, of which 5,79 M€ are allocated to the projects corresponding to the Priority Area “*Photonic and Laser Technologies*”).
- “***Inoklaster LT***” aimed at supporting the cluster building measures (26,1 M€ of the total planned public funding, of which 2,75 M€ are allocated to the projects corresponding to the Priority Area “*Photonic and Laser Technologies*”).
- “***Pre-commercial procurement LT***” aimed at supporting the pre-commercial R&D activities and development of new high-tech products (29,4 M€ of the total planned public funding; no separate allocations made for the Priority Area “*Photonic and Laser Technologies*”).
- “***Innovation vouchers***” aimed at supporting the small-scale individual contract research tasks to be performed by the RTOs and HEIs on behalf and for the benefit of SMEs (10,1 M€ of the total planned public funding; no separate allocations made for the Priority Area “*Photonic and Laser Technologies*”).



- The funding instrument “*InoPatentas*” aimed at support the patenting activities of SMEs (3 M€ of the total planned public funding; no separate allocations made for the Priority Area “*Photonic and Laser Technologies*”).
- “*Inosertifikavimas*” aimed at supporting the certification activities of SMEs.
- “*Inoconnect*” aimed at supporting the participation in networking events and project preparatory meetings internationally (1,48 M€ of the total planned public funding; no separate allocations made for the Priority Area “*Photonic and Laser Technologies*”).

More information about Lithuania’s “Smart Specialisation” is available at: <http://sumani2020.lt/en/>

Action Plan for the Priority “Photonic and Laser Technologies” of the Priority Area of Research and (Socio-Cultural) Development and Innovation (Smart Specialisation) and Their Priorities "New Production Processes, Materials and Technologies". Available to download from: <http://ukmin.lrv.lt/uploads/ukmin/documents/files/imported/lt/inovacijos/Smart%20specialization/4.1.doc>

“Smart Specialization Strategy Progress: First Report”. Research and Higher Education Monitoring and Analysis Centre (MOSTA), Vilnius, 2017. Available to download from: <http://www.mosta.lt/images/leidiniai/SMART-01-ENGL.pdf>

Regional:

- **LITEK**

Laser & Engineering technologies cluster LITEK was established in 2011 but cooperation between science and SMEs continues for more than 20 years already. It all started when manufacturers of laser systems in cooperation with scientific institutions began to develop unique products in the field of photonics. More information is available at : <http://litek.lt/?lang=en>

- **Sunrise Valley Science and Technology Park (STP)**

Sunrise Valley development is centred on 156 hectares of the Sunrise academic campus in Vilnius, located 5 km from the city centre and 12 km from the airport. The territory of 2.4 ha designated for Sunrise Valley constitutes university campus reserve (in total 62 hectares) in the immediate neighbourhood to the laboratories, research centres, institutes and auditoriums of Vilnius University and Vilnius Gediminas Technical University. In 2006 Sunrise Valley started the development of new business support infrastructure and office space for domestic companies and foreign investors (building potential of up to 50 000 m²).

The Sunrise Valley Science and Technology Park (STP) project received over 3 M€ in EU structural assistance under Measure 3.2 "Improvement of Business Environment" of the Single Programming Document for Lithuania 2004–2006. The project is worth over 8.1 M€. It is co-financed by the Municipality of Vilnius (1.74 M€) and bank credit (up to 3.47 M€).



More information is available at:
http://ec.europa.eu/regional_policy/en/projects/lithuania/sunrise-valley-transforms-vilnius-into-a-knowledge-city

Private Funding

- **Verslo Angelu Fondas (Business Angels Fund)**

With Business Angels Fund I, MesInvest invests in equal proportion together with Business Angel, i.e. the Fund invests 50% (including 5% invested by Fund Manager) and Business Angel invests 50% of total investment amount. After acquisition of shares all shareholders sign the Shareholders Agreement disclosing general principles on management, formation of strategic plan, profit sharing and other issues that are essential to shareholders. The targets are small and middle size companies with annual turnover up to 4.3 M€, sales oriented to export markets, having strong and successful management team. Potential investment target has to be active in the market for at least 1.5 – 2 years. More information is available at : <http://www.mesinvest.lt/index.php/business-angels-fund-i/82>

- **LitCapital**

Established in 2010, they are a Lithuanian fund that invests 2-10.4 M€ with a funding period of three to six years. They were established under JEREMIE initiative and have a fund size of 25 M€. More information is available at : <http://www.litcapital.lt>

- **Practica Capital**

Venture capital fund were established under the JEREMIE agreement and focusing on early stage development of high growth start-ups. Their range is from 3 k€ to 3 M€. They are also establishing a start-up accelerator / Startup.lt and have a convertible note deal with StartupHighway. From our interviews we found out that they have also given out a few large valued convertible notes. The fund size is 6 M€ and they have invested into six start-ups in 2012. More information is available at : <http://practica.lt/en>

- **S2**

S2 Partners is also an early-stage investor in Lithuania with offices in New York, San Francisco and Vilnius. More information is available at : <http://www.linkedin.com/company/2612730?trk=prof-exp-company-name>



B. Public organisations

Incubators and accelerators

- **StartupHighway**

StartupHighway is an accelerator in Lithuania. They provide 14 k€ in seed funding – 2 k€ for the idea and 3 k€ for each founder up to 4. They take a fixed 7.5% in equity. In addition the startups can opt-in for 30 k€ convertible note from Practica Capital. StartupHighway has 7 individual investors from Lithuania, Latvia and Estonia who provide pre-seed funding for portfolio companies. Also recent deal with Practica Capital broadens the funding alternatives. From their very first batch, Sellfy has gotten worldwide recognition and recently Dragdis performed very well after we published a story on them. Here is a complete list of their portfolio companies. More information is available at : <http://startuphighway.com>

- **L.I.G.H.T. WING**

BOD Group High Technology Centre L.I.G.H.T. WING (Lithuanian incubator of green and high technologies) is one of the most ecological industrial plants in Europe where work the latest generation solar cells and modules production lines, research laboratories, the fastest video conference and internet media centre in Europe, as well as the incubator of new innovative companies. It combines several high-tech production plants, R&D laboratories, offices, and the fastest video conference and internet media centre in Europe. <http://www.balticdisc.ee/eng/news/bod-group-opened-light-wi>

Clusters

- **Baltic Photonics Cluster (BPC)**

Baltic Photonics Cluster (BPC), founded in April 2011 by 6 Estonian and 2 Lithuanian companies, Physics Institute of University of Tartu and Department of Materials Science of Tallinn University of Technology, consists presently of 25 members from all Baltic States. The objectives of BPC are facilitation of photonics research and industrial activities in Baltic countries through the development and coordination of relationships with European Photonics Industry Consortium (EPIC), European Technology Platforms, European Industrial companies, as well as with local, national, European and international organizations; and promoting photonics through related basic research, applied research and development. More information is available at: <http://bpc.edicypages.com/en>

- **SMARTTA**

Smart Technology Association (SMARTTA) is the umbrella organization of smart technology companies, universities and associate members involved in smart technology activities. More information is available at: <https://www.smartta.eu/en/node/8>



Chambers of commerce

The Association of Lithuanian Chambers of Commerce, Industry and Crafts (ALCCIC) is a voluntary business self-governing organization which unites five regional Chambers of Commerce, Industry and Crafts in Vilnius, Kaunas, Klaipėda, Šiauliai and Panevėžys. More information is available at: <http://chambers.lt/en/about-us>

C. RTOs and Technology Transfer

- **SunriseValley Science and Technology Park**

Sunrise Valley Science and Technology Park is a non-profit organization, founded in 2003. The Park features long-standing traditions in development of entrepreneurship, promotion of business and science collaboration, provision of infrastructure and other innovation support services to young, innovative enterprises as well as to other knowledge-intensive business. <http://ssmtp.lt/en/about-us/>

Spain

In Spain the Ministry of Economy, Industry and Competitiveness as well as the Ministry of Energy, Tourism and Digital Agenda provide support to SME at the National level.

Within the Ministry of Economy, Industry and Competitiveness there is a secretary for SMEs that provides support in the creation, financing and management of companies.

A. Financial Instruments

Public Funding

National:

The second Ministry developed a programme called *AEI* (in Spanish *Innovative Business Clusters*) to support innovative and competitive business strategies from clusters by using public funding.

CDTI is another public National organization from Spanish ministry which economically contributes to the technological development for new processes, products and services of SMEs.

National support programmes are:

- “*EMPLEA*” for hiring and training new professionals in management of R&D.
- “*EQUIPA*” for acquiring equipment dedicated to R&D in scientific and technologic centres and institutions.



- “**EUROPA CENTROS**” for increasing the participation and leadership of technological centres supporting innovative technologies within European H2020.
- “**RETOS-COLABORACIÓN**” for developing technologies, new ideas, products and services, all in cooperation between companies and research entities.
- Reindustrialization and foster of industrial competitiveness.
- “**FTPYME**” provides loans to SMEs.
- “**AEP**” for business innovative clusters-like organizations.

The Catalonia region example:

In Catalonia Region, ACCIÓ is the public supporting organization. It is part of the Catalan government. ACCIÓ provides support to start-ups, clusters and companies. It is focused in innovation, R&D, financing and internalization. Their support instruments are:

- “**Cupons**” for company first steps in the internationalization.
- “**Esprint**” for well-established start-ups first steps in internationalization.
- “**Embarca**” for those start-ups found in their early life.
- IFEM loans for entrepreneurship.
- Funding to find innovation from start-ups in big companies (incubation, acceleration).
- ERA-net MANUNET II for European collaboration in R&D within companies.
- “**i+i**” loans for innovation, industrialization and internationalization.
- **Competitive Reinforcement Initiatives (IRC)** funding for entities that support companies, is special for cluster-like organizations.

Private Funding

- **AEBAN**

Association formed in 2008 representing 28 Spanish Business Angels Networks, 2800 angels from all the regions. In 2013, 140 deals have been closed, for a total of 50 M€ of direct investment. Since 2014, AEBAN reunites, in working groups, individual and relevant business angels and other instructions active in the early-stage market. More information is available at: <http://aeban.es>

- **Active Venture Partners**



Based in Barcelona and founded in 2004 by Philipp Schroedere, Christopher Pommerening and Ricard Söderberg, the firm raised its second fund of 54 M\$ in late 2012. At the time of the announcement Active Venture Partners claimed that 80% of the amount raised would be invested in Spanish start-ups, allocating the rest to European and Latam companies. More information is available at: <http://www.active-vp.com>

- **Bonsai Venture Capital**

Bonsai is one of the oldest VC firms in Spain. Founded in 1999, it invests in early stage companies and its current portfolio includes promising start-ups such as Wallapop, From the Bench or Akamon. It was also one of the first backers of idealists, who has become the main real state directory in Spain, and Softonic, who received a growth equity investment from Partners Group in 2012, valuing the company at 275 M€. More information is available at : <http://www.bonsaiventurecapital.com/portfolio.html>

- **Cabiedes & Partners**

Also founded in the late 90s, Cabiedes is probably the most well-known investment firm in Spain, having backed almost 40 companies in the country. Led by the Cabiedes brothers (Luis and José), the firm raised its second fund in 2014, of 30 M€. More information is available at : <https://www.linkedin.com/company/cabiedes-&-partners>

- **Kibo Ventures**

Kibo, as well as Active Venture Partners, was one of the firms chosen by Telefónica to manage part of its Amerigo fund aimed at Spanish and Latam start-ups. Founded in 2011 and headquartered in Madrid, it's led by Aquilino Peña, Javier Torremocha and José María Amusatégui. More information is available at: <http://www.kiboventures.com/en>

B. Public organisations

Incubators and accelerators

A list of both incubators and accelerators can be found on the following link: <http://catalonia.com/en/startups-in-catalonia/startup-services/accelerators-incubators.jsp>

Clusters

A list of some of the Spanish clusters can be found at : http://www.tci-network.org/about_us/organization/list

- **Fotonica21**

The Spanish technology platform on photonics, FOTÓNICA21, was set up in March 2007. Launched by the industry and supported by the Spanish Ministry of Industry, Tourism and Trade, it aims to coordinate activities in photonics at national level. It has now more than 130 members from academia, research, and from industry, mainly SMEs. FOTÓNICA21 is a mirror of ETP Photonics21. Its mission is the development of a national vision for photonics



providing the following key economic sectors for national research priorities in Spain: information and communications, industrial manufacturing and quality, life sciences and health, lighting and displays, security and energy through creating the required critical mass, increasing efforts and effectiveness of photonics RD projects and their impact on society and economy. <http://www.fotonica21.org/en>

Chambers of commerce

A list of the Commerce Chambers can be found at: <http://www.chamber-commerce.net/country.php?c=Spain>

C. RTOs and Technology Transfer

- **The Barcelona Science Park (PCB)**

We offer scientific and technological services of high added-value to the companies located within the Park and also, through our Technological Platforms, to the entire research community that request these services.

The Barcelona Science Park (PCB) has been recognised as a supplier for the 2017 Innovation Coupons. The programme is an ACCIÓ initiative for companies with 5–100 employees that want to carry out an innovative project, be it an improvement in a production process or a new service, product or business model. More information is available at : <http://www.pcb.ub.edu/portal/en/serveis>

Sweden

A. Financial Instruments

Public Funding

National:

The most important support organisations are the following and can be found on the platform Verksam.se which is the most important website (also in English) describing the support landscape for SMEs but does not give a complete information.

- **Almi**

Almi Företagspartner AB is owned by the Swedish government and is the parent company of a group consisting of 16 regional subsidiaries, Almi Invest AB and IFS Rådgivning AB. Almi has 40 offices across Sweden. More information is available at : www.almi.se/English

- Almi invest AB is a daughter company (for earlier phases) and is the Group's venture capital company (see below).



- IFS Rådgivning AB (rådgivning means advising); IFS stands for "Internationella Företags Stiftelse" or International companies foundation): This service is for entrepreneurs with foreign background. Advisers speaking many different languages and having themselves a foreign background are available for foreign entrepreneurs.

- **Vinnova**

Vinnova is the Sweden's innovation agency. The mission is to promote sustainable growth by improving the conditions for innovation, as well as funding needs-driven research. Every year Vinnova invests about 2.7 BnSEK in various initiatives. Vinnova is a Swedish government agency working under the Ministry of Enterprise and Innovation and acts as the national contact agency for H2020. More information is available at: <http://www.vinnova.se/en>

Vinnova financing programs specifically targeting SMEs:

- *Forska och Väx (Research and grow!)*: This program was strongly inspired from the American Financing programme Small Business Innovation Research (SBIR). Most often SMEs were using the service of an RTO or other companies to realise the projects. The programme is being renewed and replaced by the next one described "Innovationsprojekt i företag".
- Innovationsprojekt i företag: (företag = company).

The following actions are supported: prepare a larger application for a R&D project (financed 50% of budget), develop new knowledge (50%) or a first working prototype (50%), demonstration (25-45%) or test and validation (25-45%), assessment of market (50%), development of IPR (50%) and Innovationscheckar (Innovation checks/vouchers).

The management of this programme apparently moved to other national organisations (ALMI, IUC, Coompanion) in the form of projects. The main principles are the same whatever the source of financing. Checks (vouchers) of 100 kSEK may be used for innovation projects in the early stages of development, or to the development of a business strategy for the management of the company's IPRs. There are quite many conditions to obtaining of these checks:

- Company has at least 3 employees.
- Company has been active since at least a year.
- Revenues from net sales amounting to at least 1,5 MSEK.
- Company should have a potential of growth.
- Company should not have got more than 50'000 SEK the last 5 years from Vinnova.



So, obviously, these checks are not targeting start-ups, rather already somewhat established companies. The goal seems to be to push the company to come to another level of development. The granted amount, about 11 k€ seems very small though.

Complement to H2020 SME Instrument: SMEs which have obtained a score of at least 13 but could not be financed by the EC are getting almost automatically the requested financing from Vinnova. This is an excellent manner of encouraging companies to apply to this programme in spite of the low success rate usually expected.

- **Tillväxtverket**

The Swedish Agency for Economical and Regional Growth is a government agency under the Ministry of Enterprise and Innovation. Their biggest single task is helping to ensure that EU funds are invested in projects that promote regional growth and employment. Based on their knowledge of the needs of companies and of Swedish regions, they build networks to facilitate cooperation and finance efforts to boost economic growth. Tillväxtverket coordinates e.g. Enterprise Europe Network (EEN) in Sweden.

Tillväxtverket's programmes specifically targeting SMEs:

- *The national European Regional Development Fund* programme gives support to SMEs in two different programmes: Priority 2 - Improving SMEs' competitiveness: this concerns mostly access to VC and Priority 3 - To support the transition to low-carbon economy in all sectors: One of the ideas is to allow a participation in the ownership of SMEs that actively work for reducing greenhouse gases.
- *Horizon 2020 – Fast Track to Innovation:* Projects involving at least 3 partners from 3 EU countries (and max 5). Outside the scope of this listing.
- *Affärsjuridik kompetens (Business legal Expertise):* for business development in internationalization and digitization. Mostly for small-size companies (up to 50 employees) ready for internationalization. 5-6 projects per call with a budget of 600-1000 kSEK. 50 to 70 % financing.
- *Affärsutvecklingscheckar (Business Checks):* Looks very similar to the previous one.
- *EU SME Support 2020* is a virtual organisation to help SMEs access to EU research financing, mostly Horizon 2020 (especially SME Instruments) but not only (even Eureka, especially Eurostars). It regroups experts from different organisations, mostly institutes and branch organisations. It provides free advises



and is a project financed by Vinnova and Tillväxtverket. More information is available at : <http://eusme.se>

- **EKN - Exportkreditnämnden**

EKN has been commissioned by the government to promote Swedish exports and the internationalisation of Swedish companies. They do so by insuring export companies and banks against the risk of non-payment in export transactions, thereby enabling them to conduct more secure export transactions. Their activities are financed by the guarantee holders' premiums.

Note that EKN has an alternative definition of SMEs (up to 500 employees and up to 1 BnSEK turnover)... More information is available at: <http://www.ekn.se/en>

- **Svenskt Näringsliv ("The Confederation")**

The Confederation's mandate is to continuously heighten public and political awareness of the importance of Swedish enterprise. Our goal is to advance Sweden's position in the OECD prosperity benchmark.

The Confederation is Sweden's leading business advocate and they aggressively promote free enterprise in order to obtain the best business environment for all Swedish companies. At the top of the Confederation's domestic agenda are issues such as:

- Strengthening the value and importance of enterprise.
- Ensuring fair and open competition.
- Liberalizing the Swedish economy and lowering taxes.
- Creating a growing and flexible labor market.

The Confederation of Swedish Enterprise also supports the goal of making Europe the most competitive and dynamic economy in the world.

There are no clear direct supports to SMEs as we can see. The activities are more high-level and general. More information is available at: <https://www.svensktnaringsliv.se/english>

Regional:

- **Regionala företagstöd (regional company support)**

Accessible to SMEs with a business extending outside the region and providing financial support up to 10 to 35% of the total costs. The applications are sent to the county government. Different types of support: investment support (material and even salaries), consulting vouchers (product development, R&D, Market studies, etc.), micro-support (to start an innovation activity), collaborative project (between several companies) and innovation support or loan (R&D activity).



- **Handelskammaren**

Sweden's Chambers of commerce consist of eleven regional Chambers of commerce located around the country that work to create a business-friendly environment. The Chamber of commerce network is a force to be reckoned with in questions relating to economic growth, both nationally and internationally. Sweden's Chambers of commerce primarily promote infrastructure projects in which Sweden's Chambers of commerce wishes to see more interaction between the state and private enterprise. Other issues that they are concerned with are: energy policies, the supply of talent and raising the level of service provided to corporations by municipalities

Networking and the work related to skills supply can be therefore useful for SMEs. More information is available at: <https://english.chamber.se>

The example of Stockholm:

PhotonicSweden has only a limited knowledge about the financing programmes of other regions of Sweden. We would like to mention that some Swedish regions have a much larger financing than the Stockholm region. In Stockholm a lot of things happen anyway with a lower support public support... The region around Gothenburg, Västra Götaland, is e.g. granting about 100 M€ every year to companies for R&D activities.

As a matter of fact, most of the regional support to SMEs is provided by regional subsidiaries of some national organisations described above, especially Almi and Tillväxtverket. But there are of course some smaller regional players specific of the region considered.

- **The Stockholm Chamber of Commerce**

Its core business is to develop policy and to influence decision-makers on major issues affecting businesses. Together with its 2 000 members, and through close contact with politicians and leading business experts across industries, the Chamber advocates for pro-business political decisions in the region. The Chamber takes stands on a number of important issues ranging from investments in infrastructure and a better functioning housing market, to innovation and education. It is also an important meeting point for its member companies and organizes over 300 business events annually.

- **Almi Företagspartner Stockholm Sörmland AB (Almi SS):**

This is one of the 16 subsidiaries of Almi (see above). It acts for the counties of Stockholm and Sörmland (south-west of Stockholm). It has presently 53 employees (40 in Stockholm and 13 in Sörmland).

Counselling is probably more limited in the Stockholm region because there are many consulting companies and Almi cannot be competing with them while having a public support. For what regards loans, 650 MSEK have been loaned to about 500 companies out of the 1200 companies that Almi SS has been helping (there are 18 000 companies registered every



year in that region). The criteria to select the companies is that they should be scalable, have an international scope and be innovative.

- **City of Stockholm**

Stockholm has a programme to support small companies, especially start-ups. “Invest Stockholm” offers qualified and free of charge help to companies to grow and establish themselves in Stockholm. It helps companies to find locals, a ground to build an office or fabric and helps with permits, networks and skills supply. Finding a place to work is not the easiest task in Stockholm since the number of inhabitant increases with over 40,000 every year... More information is available at: <http://www.stockholm.se>

Private Funding

- **Almi**

Almi’s programmes related to financing (nearly all are for SMEs):

- Almi’s role is to take a bit more risk and it supplements the market by offering **risk-takers loans**. The viability of the idea, the company's ability to develop and exploit the idea or investment and its potential for the future are more important than real assets. To compensate for the higher risk, and to not compete with the private market, Almi’s loan rates are above the average bank interest (typ. 8%). Credit is often done in conjunction with other lenders and banks are an important partner. Almi Business loans are for SMEs in all industries. The special feature is that the loans can be erased if the business does not work (i.e. not only in case of bankruptcy). This happens in about 50% of the cases. Obtaining a loan from Almi greatly helps to get other private loans.
- Almi Invest is the Group's **venture capital** company. The role of Almi invest AB is to be complementary to the market and invest where the risk is high and access to capital is scarce. Almi Invest invests in companies with scalable business ideas and opportunities for long-term growth. The companies should have the ability to compete both nationally and internationally, and there must be a clear customer need. Investments are made from the seed stage to the expansion phase. With the seed stage, we mean startups and new companies in the very early stages. With Expansion we mean companies that are already on the market and are in the early stages of an expansion or growth.

- **Industrifonden**

This is an independent evergreen venture capital fund (incremental payments). In the beginning, the focus was largely on industrial companies – hence the name – but over the years, it has changed into being a pure venture capital investor. The fund has more than



doubled in size since its inception, following profitable exits in both technology and life science companies. Founded in 1979 / 4 BnSEK assets / 1000 companies financed. In their portfolio we found the following Photonics companies: BoMill, Heliospectra, poLight and Sol Voltaics. CellaVision which got PhotonicSweden's prize of the best photonics company of the year 2013 is described as a success story.

B. Public organisations

Incubators and accelerators

- **Swedish Energy Agency**

Energimyndigheten, EM works for a sustainable energy system, combining ecological sustainability, competitiveness and security of supply. For a more efficient energy use, the Agency supports the development and dissemination of knowledge targeted at households, industry, and the public sector. The Agency finances research for new and renewable energy technologies, smart grids, and vehicles and transport fuels of the future. The Agency supports commercialization and growth of energy related cleantech. EM is subordinate to the Ministry of the Environment and Energy.

During the programme "Support for business development (stöd till affärsutveckling)", EM has supported about 80 companies with 600 MSEK for their business development, commercialisation and diffusion of energy technologies during the last 10 years (and attracted additionally 800 MSEK from the private sector). The company can get at most 45% of the project budget but the co-financing can come from other public financing organisations (e.g. Almi Företagspartner).

- **Stockholm Innovation and Growth, STING**

STING is one of the numerous incubators in Sweden and is part of the Swedish organisation of incubators "Swedish Incubators and Science Parks, SISP" (<http://www.sisp.se/?language=en>). It is probably the most famous one in Sweden...

STING enables talented people to turn their ideas into sustainable businesses. The support offered includes qualified coaching in business development, a business angel network, a venture capital fund, a recruitment service, and an international network of investors, business contacts and experts. STING contributes to the success of Sweden's future technology companies by helping them to grow and compete internationally, and by generating export revenues for Stockholm. STING supports promising Stockholm-based start-ups, primarily within ICT, internet/media, cleantech and life science. We evaluate 150-200 projects annually, but based on a tough screening process we accept only 20 companies per year to our incubator and accelerator programmes. Approximately 70% of the companies accepted come from industry, and 30% are connected to universities and research institutes.



STING started in 2002 and has provided business development supports to over 100 innovative start-ups. More information is available at : <http://www.stockholminnovation.com/en>

Clusters

- **Connect**

Connect is a non-profit organisation existing in Sweden since 1999, following an idea originating from UCSD. It provides companies with useful contacts to expand, test ideas and get financing. In that sense it is mostly a networking platform. <http://connectsverige.se>

- **Business Sweden**

Business Sweden's purpose is to help Swedish companies reach their full international potential and foreign companies to invest and expand in Sweden. We offer our customers strategic advice and hands-on support. BS is owned by the Swedish Government and the industry, a partnership that provides access to contacts and networks at all levels. BS was founded on the first of January, 2013, by a merger of the Swedish Trade Council (Exportrådet) and Invest Sweden. BS has offices with both Swedish and native consultants in nearly 50 of the world's most interesting markets. BS works with national networks of companies, authorities and industry associations in order to make it easier for Swedish companies to grow internationally.

BS offers services in all phases of a company's internationalisation. From strategic advice to establishment support on a new market.

BS provides a number of services tailored for SMEs:

- Steps to export: export readiness, export strategy.
- Market selection analysis: subsidized for SMEs.
- Business opportunity: package containing 3 services, market check, meeting programme and action plan.
- Connect: BS act as an entry point in a foreign market.

More information is available at: www.business-sweden.se/en/Inves

Chambers of commerce

Sweden's Chambers of commerce consist of eleven regional Chambers of commerce located around the country working to create a business-friendly environment. The Chamber of commerce network is a force to be reckoned with in questions relating to economic growth, both nationally and internationally.



Sweden's Chambers of commerce primarily promote infrastructure projects in which Sweden's Chambers of commerce wishes to see more interaction between the state and private enterprise. Other issues that we are concerned with are: energy policies, the supply of talent and raising the level of service provided to corporations by municipalities. More information is available at: <https://www.swedishchambers.se>

C. RTOs and Technology Transfer

- **Swedish Network for Innovation and Technology Transfer Support**

SNITTS is the Swedish association for individuals and organisations that work, both strategic and hands on with knowledge exchange and dissemination of research. SNITTS provides professional development for its members through monitoring the outer world, creating awareness and development of their skills. You find members of SNITTS throughout the Swedish innovation support system; within academia, institutes, industry and the public sector.

SNITTS focus on to increase awareness and knowledge of the important role that those who works in the intersection between academia, industry and society has. In some cases also called Technology Transfer Managers. We increase the efficiency of the system by providing a national platform for mapping of actors and activities, exchange of processes and methods and also professional development. Through SNITTS study trips and international collaborations the members are offered a broader outlook for a more competitive Sweden. More information is available at : <http://www.snitts.se/om-snitts/about-snitts>

United Kingdom

There are many European and UK-wide government business grant schemes available to SMEs in the UK; there are also local business funding schemes provided through Local Enterprise Partnerships (LEPs) or through local authorities and organisations such as the Chambers of Commerce.

UK Government lists a comprehensive source of funding opportunities available in the UK and businesses are able to filter this to their needs. The website is focussed strongly towards SMEs. <https://www.gov.uk/business-finance-support>



A. Financial Instruments

Public Funding

UK WIDE

- **Business Finance Partnerships**

Government have invested 1.2 Bn£ in the Business Finance Partnership which is designed to diversify the sources of funding available to small and medium-sized businesses via non-bank lenders. Loan terms will vary, but businesses can directly apply for finance with a number of non-traditional fund managers and lenders

- **Innovate UK Grants**

Innovate UK, offers support and funding to help businesses develop new products and services and bring them closer to market, this may be to bring people together to share ideas, tackle challenges and make new technological advances. The funding is targeted towards technologies and areas with the greatest scope to improve business, the economy and society. Funding levels vary depending on the type of businesses involved in projects and are favoured most highly towards SMEs and SMEs must lead on projects.

Since 2007 Innovate UK have committed over 1.8 Bn£ to innovation, matched by a similar amount in partner and business funding. We have helped more than 7,600 organisations with projects estimated to add more than 11.5 Bn£ to the UK economy and create 55,000 extra new jobs.

Innovate UK publishes an annual delivery plan which shows the types of projects they will be funding each year and also has a website for businesses to be able to search for current and upcoming competitions. More information is available at : <https://apply-for-innovation-funding.service.gov.uk/competition/search>

England only

- **Local Enterprise Partnership (LEP)**

One of the main functions of the LEPs is to generate economic growth and so many have their own grant programmes. In addition, most provide some form of business support and advice with regards to funding, skills needs etc. As part of the business advice service they collate information on local and national grants and will signpost business owners to the relevant organisations. LEPs support to SMEs is generally focused on the smart specialization of the region. <http://www.lepnetwork.net/the-network-of-leps/>



Welsh Government

Wales offers Welsh SMEs access to additional funding and many businesses prefer to apply for Welsh Government funding as the completion for funding isn't as high as it is with UK wide funding programmes.

- **SMART** provides a suite of integrated programmes to provide support to Welsh businesses and research organisations to commercialise new products, processes and services developed through research, development and innovation processes.
- **SMART Expertise** offers financial support to innovative collaboration projects that require a range of expertise to solve industry problems.

The aim of the call is to support collaborative projects, between industry and Welsh research organisations, which address strategic industrial technical challenge/s with a clear focus on commercialisation and exploitation of new products, processes or services and growth in capacity and capability in key areas of Smart Specialisation.

There are no restrictions on size or location of industrial partners, however, the project must demonstrate it is an effective collaboration and will deliver positive Welsh economic impacts.

Funding will support 100% of the research organisations eligible project costs which shall equate to a maximum of 50% of the total eligible project costs. The industrial partners shall provide the remaining balance of the total eligible projects costs. The funding will be awarded to the research organisation. Duration of projects: up to 36 months

Scottish Government

The Scottish Government has recently been in engagement with its stakeholders to register new schemes under the GBER regulation: <http://www.gov.scot/Topics/Government/State-Aid/if-its-aid/Approved-schemes>.

- **The SME Holding Fund Strategic Interventions (SI)**

Allocated £40m from the European Regional Development Fund and is managed by the Scottish Government's Innovation, Investment and Industries Division.

This is expected to be matched by the Scottish Government to create an investment of up to 100 M£ for Scotland's business sector.

The SME Holding Fund is designed to address gaps in Scotland's finance sector for those SMEs with a high growth potential but, due to their risk level, have difficulties accessing finance. The SI will develop Financial Instruments (FI) more accessible to SMEs and provide tools for SMEs to enhance their business competitiveness and innovation.

The SME Holding Fund will operate over a three-year period and funding applications will be through a fair and open competition and full procurement process.



The SME Holding Fund will be divided into two separate Financial Instrument types:

The **Business Competitiveness** FIs will provide access to financing for SMEs looking to enhance business competitiveness and grow in regional, national and international markets;

The **Innovation** FI will enable SMEs to access finance for research and development and provide finance to innovative start-ups other lenders would consider too high risk.

Private Funding

- **UK Export Finance (UKEF)**

UK Export Finance helps UK exporters by ‘underwriting’ bank loans offered to overseas buyers of UK products and services. This means it takes on the risk of the loan from the bank, so that the bank is more likely to offer it.

It can also help UK exporters to raise tender and contract bonds and access working capital finance. To be eligible for export insurance, your business must be based in the UK and the buyer must be overseas.

- **The UK Angel Investment Network**

The UK Angel Investment Network is an online platform that connects entrepreneurs and angel investors in the UK and internationally. With over 120,000 members worldwide, it is one of the largest angel investment communities in the world, and has successfully managed to bring together thousands of entrepreneurs and angel investors for mutually beneficial purposes.

Starting off with the UK, the UK Angel Investment Network has since then managed to expand rapidly, having 30 networks worldwide that cover more than 80 countries across Europe, North America, South America, Africa, Asia and Australasia. More information is available at: <http://www.businessangelsuk.com/business-angel-networks.php>

A list of 10 venture capital funds for UK tech start-ups can be found here: <https://www.techworld.com/news/startups/venture-capital-funds-uk-tech-startup-should-be-aware-of-3624927/>



B. Public organizations

Incubators and accelerators

A list of incubators UK wide can be found on the following link:
<https://www.etondigital.com/the-best-tech-accelerators-and-incubators-uk/>

Clusters

- **The Scottish Optoelectronics Association**

It is one of the largest and oldest technology communities in Scotland and a founding member of both Technology Scotland and the International Optoelectronics Association. As of 2016, the SOA is managed by Technology Scotland, the leading cluster organisation in Scotland. More information is available at: <http://optoelectronics.org.uk>

- **South East Photonics Network (SEPNET)**

SEPNET, the South East Photonics Network, is a group of businesses, research institutes, universities and support organisations in South East England. More information is available at: <https://photonicsuk.org>

- **Photonics Cluster UK**
- **Northwest Photonics Association**
- **Welsh Opto-Electronics Forum**
- **Yorkshire Photonics Network**
- **Eastern Regional Photonics Association**

These clusters began with the objectives of: increasing awareness of local photonics capability; stimulating economic growth at regional level through the knowledge, manufacture and application of Optoelectronics/Photonics; providing service and support for RDI to their members; encouraging the interaction of industry, academia and research organisations in the region; and, promoting photonics in education and training programmes. These clusters are members of the UK Consortium for Photonics and Optics (UKCPO).

Chambers of commerce

- **British Chamber of Commerce BCC**

The British Chambers of Commerce (BCC) is the national voice of local business. It sits at the heart of a nationwide network of 52 local Accredited Chambers of Commerce, serving tens of thousands of business members across the UK. The BCC is a strong campaigning voice for the interests of business, delivers services that help business grow, and is the premier private sector source of advice and support for international trade. More information is available at: <http://www.britishchambers.org.uk>



- **South and Mid Wales Chamber of Commerce**

Since 1846, we have been an integral part of the business landscape in the UK. We represent businesses by driving change and providing a progressive extension of our members businesses. That does not mean we are facing backwards – it shows we have adapted and remained relevant over time. Affiliated to the British Chambers of Commerce (BCC), we are part of the 52 UK chamber network, the 28 International Chamber of Trade and its overseas members. More information is available at: <https://southwaleschamber.co.uk>

- **Scottish Chambers of Commerce**

As the umbrella organisation for 26 local Chambers of Commerce - representing more than 50 percent of private sector jobs in Scotland - Scottish Chambers of Commerce has built a reputation as Scotland’s premier voice for business at national and international level. More information is available at: <http://www.scottishchambers.org.uk>

C. RTOs and Technology Transfer

- **PPEKTN**

The Photonics and Plastic Electronics Knowledge Transfer Network (PPEKTN) officially started operating in September 2009 following the merger of the Photonics KTN and Displays and Lighting KTN. PPEKTN can be considered as the UK national platform for photonics and plastic electronics. It is currently funded by the Technology Strategy Board, an executive non-departmental public body sponsored by UK government.

The Knowledge Transfer Network (KTN), a partner in the RESPICESME project, is commissioned by Innovate UK to assist in helping businesses to form collaborations and links. The KTN has experts working across every key sector of economic importance in the UK and works with Innovate UK to deliver briefing events for funding calls to help foster collaboration. The KTN also runs its own events to help identify new innovation and link businesses together. The KTN managers support SMEs individually too by signposting to funding or finance, reading proposals, linking to collaborators or finding trade opportunities.

The PPEKTN is the “network of Networks” for UK photonics and collaborates with the photonics regional clusters in organising events and initiatives. <https://ktn-uk.co.uk/interests/electronics-sensors-photonics>



SUMMARY OF EXISTING INSTRUMENTS IN THE 9 PARTNER COUNTRIES:

Type of funds / funded activity	R&D	Specific programme for venture capital	Innovation	Patents	International activities / Export	Coaching & training	Tax credit for R&D
Austria			X	X		X	
France							
Germany	X		X		X	X	no
Greece	X		X	X	X	X	X
Ireland							
Lithuania	X	X	X	X	X		
Spain							
Sweden	X	X	X		X	X	
UK							

3. European programmes

During the RespiceSME project, the consortium members analysed relevant ongoing calls with respect to the photonics technologies and their applications to the 3 targeted domains : manufacturing, transportation and energy/environment. These calls were presented by the members of the consortium to the SMEs in their network, these SMEs being encouraged to propose ideas stimulating cross-European collaborations. The table below summarizes the main H2020 calls related to the scope of the RespiceSME project and opening innovation or/and R&D collaboration opportunities for the SMEs represented by the members of the consortium.

Identifier: H2020-IND-CE-2016-17 - FOF-06-2017

Topic: [New product functionalities through advanced surface manufacturing processes for mass production](#)

Description: The proposal should address surface-modifying methods which do not alter the chemical composition of the surface or add an extra layer of a different material, for example: micro-machining, texturing, photon-based technologies, laser, mechanical treatments, etc. These methods should be used to create new manufacturing processes that can be applied on mass production lines.

Submission deadline: 19/01/2017.

RespiceSME Domain: Manufacturing.

Identifier: H2020-IND-CE-2016-17 - FOF-07-2017



Topic: [Integration of unconventional technologies for multi-material processing into manufacturing systems](#)

Description: The proposal should use one or more of the following unconventional manufacturing technologies (water jet, ultrasonic and micro-wave, electron beam welding and/or electro discharge machining, laser and photopolymerisation) to create new manufacturing systems for multi-material products.

Submission deadline: 19/01/2017.

RespiceSME domain: Manufacturing.

Identifier: H2020-IND-CE-2016-17 - FOF-08-2017

Topic: [In-line measurement and control for micro-/nano-enabled high-volume manufacturing for enhanced reliability](#)

Description: Proposals should include a systems-level strategy for integrating measurement and control throughout the production line for micro-/(nano-)enabled high volume manufacturing.

Submission deadline: 19/01/2017.

RespiceSME Domain: Manufacturing.

Identifier: H2020-IND-CE-2016-17 - FOF-10-2017

Topic: [New technologies and life cycle management for reconfigurable and reusable customised products](#)

Description: To face sustainability and flexibility challenges customised products need to be conceived, designed and manufactured in a modular way, and their single components have to be developed so as to be interoperable with one another during the product/service lifetime, so as to be exchangeable and updateable whenever necessary. This influences both the hard and soft requirements and calls for new production technologies that enable the fast manufacturing, assembly and configuration of complex products, as well as the products updatability and disassembly for re-use and end of life management.

Submission deadline: 19/01/2017.

RespiceSME domain: Manufacturing.

Identifier: H2020-INFRAINNOV-2016-2017 - INFRAINNOV-01-2017

Topic: [Fostering co-innovation for future detection and imaging technologies](#)



Description: The aim is the establishment of an open initiative oriented towards a novel research and innovation collaborative framework engaging both the research communities in Europe using Research Infrastructures and the industry (including SMEs), for the mutual benefit of these stakeholders and the European society at large. As a pilot initiative, the proposals should mainly address the development of future detection and imaging technologies, which have applications in the fields of medicine, manufacturing industry, aerospace, ICT, engineering, environmental sciences and beyond, and should constitute a driver enabling the transfer of fundamental research towards industrial application.

Submission deadline: 29/03/2017.

RespiceSME domain: Manufacturing, Energy/Environment, Transport.

Identifier: H2020-ICT-2016-2017 - ICT-25-2016-2017

Topic: [Advanced robot capabilities research and take-up](#)

Description: The specific challenge here is to develop robots that respond more flexibly, robustly and efficiently to the everyday needs of workers and citizens in professional or domestic environments, and which will also maintain Europe at the forefront of global research and development. The actions will address the whole research value chain, whether generic technology, developing RAS (Robotics and Autonomous Systems) building blocks in the form of key technical capabilities, or market-led prototypes directly involving end users.

Submission deadline: 25/04/2017.

RespiceSME domain: Manufacturing; Transport.

Identifier: H2020-ICT-2016-2017 - ICT-30-2017

Topic: [Photonics KET 2017](#)

Description: Investments in R&D&I are essential for reinforcing Europe's industrial competitiveness and leadership in photonic market sectors where Europe is strong (e.g. in communications, medical photonics, sensing) and to seize new opportunities. Europe also needs to strengthen its manufacturing base in photonics to safeguard the further potential for innovation and value creation and for job creation. We must better exploit the large enabling potential of photonics in many industrial sectors and in solutions addressing major societal challenges such as health and well-being, energy efficiency or safety.

Submission deadline: 25/04/2017.

RespiceSME domain: Photonics, Manufacturing.

Identifier: H2020-ICT-2016-2017 6 ICT-27-2017



Topic: [System abilities, SME & benchmarking actions, safety certification](#)

Description: Technology capabilities alone are not sufficient to enable future markets development. Robotic technology and systems must be designed, integrated and deployed along functional lines and match much more closely to SME and to general market needs.

Submission deadline: 25/04/2017.

RespiceSME domain: Manufacturing; Transport.

Identifier: H2020-ART-2016-2017 - ART-01-2017

Topic: [ICT infrastructure to enable the transition towards road transport automation](#)

Description: The focus will be on the development, testing and real-life validation of ICT infrastructure architectures, integrating state-of-the-art ICT technologies, systems and functions to enable the transition towards road vehicle automation (up to automation levels 3[1] and 4[2]). Proposals should bring together actors from automotive, IT and telecommunication industries as necessary to address one or several of the following areas:

Submission deadline: 26/01/2017.

RespiceSME domain: Transport.

Identifier: H2020-ART-2016-2018 - ART-03-2017

Topic: [Multi-Brand platooning in real traffic conditions](#)

Description: Multi-Brand platooning (platooning of heavy duty vehicles of different brands and sizes) and automated heavy duty vehicles for long-distance transport are effective technologies to improve the energy efficiency, safety and management of European road traffic. In the past years, there have been significant efforts to develop the required technologies for platooning. However, substantial challenges remain on the path to a Europe wide deployment of platooning, such as platooning with different types of vehicles in real, mixed traffic conditions, better understanding the requirements with regard to logistics, data exchange, sharing of cost savings or the perception and behaviour of other road users in presence of road trains and automated heavy duty vehicles, for instance at motorway exits.

Submission deadline: 26/01/2017.

RespiceSME domain: Transport.

Identifier: H2020-ART-2016-2019 - ART-07-2017

Topic: [Full-scale demonstration of urban road transport automation](#)



Description: Proposals should demonstrate fully automated road transport systems which should be complementary to mass transit to reach low to medium demand areas with high quality transport services. A fleet of automated road transport vehicles (e.g. light weight vehicles, cyber cars, small buses) should be implemented at pan-European level in urban and/or sub-urban areas. The demonstrated systems should be fully integrated into existing public transport systems and should provide evidence of their safety, reliability and fault tolerance in complex traffic scenarios (with automated and non-automated vehicles, pedestrians, cyclists, powered two-wheelers, etc.) as well as on potential benefits in terms of impact on climate-change and the environment.

Submission deadline: 26/01/2017.

RespiceSME domain: Transport.

Identifier: H2020-INNOSUP-2016-2017 - INNOSUP-01-2016-2017

Topic: [Cluster facilitated projects for new industrial value chains](#)

Description: 04/04/2017.

Submission deadline: To develop new cross-sectoral industrial value chains across the EU, by building upon the innovation potential of SMEs. The EU needs to support the development of emerging industries, which will provide the growth and employment of the future. The reindustrialisation of the EU's industrial base has to focus on the development of long-term internationally competitive goods and services that require combining different competences and innovative solutions. The development of new industrial value chains calls for the collaboration and integration of different innovation actors, including large enterprises and especially SMEs, across different sectors towards the implementation of a joint vision.

RespiceSME domain: Transverse.

Identifier: H2020-GALILEO-GSA-2017 - GALILEO-1-2017

Topic: [EGNSS Transport applications](#)

Description: The specific challenge of this topic is to develop innovative EGNSS based applications in aviation, road, maritime and rail that will make EGNOS and Galileo more available to transport users and enable new end-to-end solutions that require accurate and resilient positioning and navigation.

Submission deadline: 01/03/2017.

RespiceSME domain: Transport.

Identifier: H2020 - LCE-Prize-PhotovoltaicsHistory-01-2016



Topic: [Horizon prize for Integrated Photovoltaic System in European Protected Historic Urban districts](#)

Description: In Europe, architectural and planning rules for protected historic buildings lead to major technical constraints in integrating renewable energy such as photovoltaic. These problems call for innovative and creative solutions for building integrated photovoltaic that must combine aesthetic and photovoltaic technology applied in historical buildings that represent the artistic and cultural heritage of a city. This inducement prize will reward a European protected historic urban district that has perfectly integrated in its buildings a photovoltaic system to generate and supply electricity for its own consumption. In this context the photovoltaic system includes all the necessary components to supply power within a district.

Submission deadline: 26/09/2018.

RespiceSME domain: Energy/Environment.

Identifier: H2020 - LCE-Prize-RenewableHospital-01-2016

Topic: [Horizon prize for a Combined Heat and Power \(CHP\) Installation in a hospital using 100% Renewable Energy Sources](#)

Description: The integration and use of renewable energy in buildings for heat and power generation still encounter unsolved technological problems linked to the security and reliability of energy supply and related costs. Partly, it is due to unpredictable fluctuation of some renewable energy sources, such as solar or wind. The difficulty is even greater in cases where a 100% security of energy supply is essential such as for hospitals and especially when several renewable energy sources are used. This inducement prize will reward a hospital that has an innovative and within its premises perfectly integrated combined heat and power (CHP) installation. This installation has to use at least three different European renewable energy technologies, include energy storage component(s) and be able to provide 100% of hospital's annual needs for energy consumption. In this context any renewable energy source is allowed.

Submission deadline: 03/04/2019.

RespiceSME domain: Energy/Environment.

Identifier: H2020-MSCA-RISE-2017

Topic: [Research and Innovation Staff Exchange](#)

Description: The RISE scheme will promote international and inter-sector collaboration through research and innovation staff exchanges, and sharing of knowledge and ideas from research to market (and vice-versa). The scheme fosters a shared culture of research and innovation that welcomes and rewards creativity and entrepreneurship and helps to turn



creative ideas into innovative products, services or processes. RISE involves organisations from the academic and non-academic sectors (in particular SMEs), based in Europe (EU Member States and Associated Countries) and outside Europe (third countries).

Submission deadline: 05/04/2017.

RespiceSME domain: Transverse

Identifier: H2020-SMEInst-2016-2017 - SMEInst-02-2016-2017

Topic: [Accelerating the uptake of nanotechnologies advanced materials or advanced manufacturing and processing technologies by SMEs](#)

Description: Research results should be taken up by industry, harvesting the hitherto untapped potential of nanotechnologies, advanced materials and advanced manufacturing and processing technologies. The goal is to create added value by creatively combining existing research results with other necessary elements, to transfer results across sectors where applicable, to accelerate innovation and eventually create profit or other benefits. The research should bring the technology and production to industrial readiness and maturity for commercialisation after the project.

Submission deadlines: Phase I: 07/09/2016; 09/11/2016; 15/02/2017; 03/05/2017; 06/09/2017; 08/11/2017. Phase II: 13/10/2016; 18/01/2017; 06/04/2017; 01/06/2017; 18/10/2017.

RespiceSME domain: Manufacturing.

Identifier: H2020-SMEInst-2016-2017 - SMEInst-11-2016-2017

Topic: [Boosting the potential of small businesses in the areas of climate action, environment, resource efficiency and raw materials](#)

Description: Innovative SMEs should be supported and guided to reach and accelerate their full green growth potential. This topic is targeted at all types of eco-innovative[1] SMEs in all areas addressing the climate action, environment, resource efficiency and raw materials challenge – including but not restricted to the 2016-2017 strategic priorities of systemic eco-innovation and circular economy, nature-based solutions, climate services, sustainable supply of raw materials, harnessing GEOSS Earth observation data, cultural heritage for sustainable growth, and water – focusing on SMEs showing a strong ambition to develop, grow and internationalise. All kinds of promising ideas, products, processes, services and business models, notably across sectors and disciplines, for commercialisation both in a business-to-business (B2B) and a business-to-customer (B2C) context, are welcome.

Submission deadline: Phase I: 07/09/2016; 09/11/2016; 15/02/2017; 03/05/2017; 06/09/2017; 08/11/2017. Phase II: 13/10/2016; 18/01/2017; 06/04/2017; 01/06/2017; 18/10/2017.



RespiceSME domain: Energy/Environment, Manufacturing.

Identifier: H2020-BG-2016-2017 - BG-14-2017

Topic: [Monitoring and assessing fish stocks, other pelagic species and habitats with an automated, non-invasive, opto-acoustic system.](#)

Description: Proposals should develop a non-invasive, opto-acoustic system which can simultaneously quantify fish abundance, biomass, and diversity (at least 4 species) as well as other MFSD-relevant parameters through a further set of environmental instrumentation which can be linked to these data. The optical part should use low light levels. Mechanisms should be developed that translate information from the near field and far field and to effectively blend the data. The complete system should work autonomously, continuously and non-invasively over extended periods of time to enable the collation of representative data sets. The system should be tested in at least two underwater observatories and comparable data should be used for validation and calibration. The system should be developed to a pre commercial stage (TRL6).

Submission deadline: 14/02/2017.

RespiceSME domain: Energy/Environment.

Identifier: H2020-LCE-2016-2017 - LCE-01-2016-2017

Topic: [Next generation innovative technologies enabling smart grids, storage and energy system integration with increasing share of renewables: distribution network](#)

Description: Proposals must target technologies, tools and/or services in one of the following areas:

- Demand-response: tools and technology validation for demand response forecast, profiling, segmentation, load forecasting, innovative and user-friendly services for customers based on smart metering; inclusion of Virtual Power Plant and microgrid as active balancing assets; associated innovative market and business models; secure data handling;
- Intelligent electricity distribution grid: tools for the optimisation of the distribution grid, technologies for autonomous and self-healing grids, energy management and control systems, technologies for advanced power electronics, for enhanced observability, e.g. real-time system awareness; secured communications in the smart grid in particular cyber security and big data analytics.

Submission deadline: 14/02/2017.

RespiceSME domain: Energy/Environment.



Identifier: H2020-LCE-2016-2017 - LCE-04-2017

Topic: [Demonstration of system integration with smart transmission grid and storage technologies with increasing share of renewables](#)

Description: Proposals will target the transmission grid and demonstrate a combination of at least 2 of the following aspects:

- Power transmission technologies and management of large scale generation in the context of a significantly increased share of variable renewables and interactions with the distribution grid;
- Large scale storage relevant to the transmission network (up to GWh scale), potentially including several storage technologies addressing different time scale (e.g. daily, seasonal), ramping rates and volumes, managed centrally or in a distributed way;
- Communication / ICT technologies / control tools to enhance real-time awareness, to introduce more flexibility in the transmission grid, to integrate storage facilities, more flexible generation, demand-response mechanism and its interface with the distribution grid; solutions to enhance cross-border collaboration;
- New approaches to the wholesale market facilitating the participation of variable renewable energy sources, remunerating adequately new flexibility services to the grid such as offered by storage, active participation of demand and new players such as aggregators and reducing the cost of operations.

Submission deadline: 14/02/2017.

RespiceSME domain: Energy/Environment.

Identifier: H2020-LCE-2016-2017 - LCE-10-2017

Topic: [Reducing the cost of PV electricity](#)

Description: Proposals are requested to address the reduction of the cost of PV electricity by optimising the PV system energy yield and lifetime and decreasing cost at module (encapsulation materials, glass, and antireflective layers, anti-soiling layers, module architecture, etc.), balance-of-system component (electronics, inverters, tracking systems, etc.) or system configuration levels.

Submission deadline: 07/09/2017.

RespiceSME domain: Energy/Environment.

List of project opportunities for 2018

Identifier: H2020-ICT-2018-2020 - ICT-03-2018-2019

Topic: [Photonics Manufacturing Pilot Lines for Photonic Components and Devices](#)



Description: Photonics is driving innovation in many different application areas. The challenge is to help European companies become more competitive by improving their business/production processes as well as products and services by means of photonics technology. The aim is to accelerate the design, development and uptake of photonics technology, by a wide range of industrial players, in particular SMEs by providing low-barrier access to volume production of advanced photonics components available to a wide range of industrial players, in particular SMEs which would otherwise not have easy access. Photonics Manufacturing Pilot Lines should form the basis for future Photonics Digital Innovation Hubs. The focus is on Manufacturing Pilot Lines: actions should provide open access to manufacturing of advanced photonics components and systems and offer related services including design and characterization. They should cover all stages of manufacturing through to testing, provide a low entry barrier access to low and medium production volumes and the processes used should be scalable to high production volumes. Actions should include a validation of the pilot line offer with involvement of external users in pre-commercial production runs. Activities should aim at long-term sustainability, including development of or integration into photonics innovation hubs.

Submission deadline: 17/04/2018.

RespiceSME domain: Photonics, Manufacturing.

Identifier: H2020-ICT-2018-2020 - ICT-04-2018

Topic: [Photonics based manufacturing, access to photonics, datacom photonics and connected lighting](#)

Description: Photonics research in Europe is widely recognized for its excellence; researchers however experience difficulties in demonstrating their conceptual breakthroughs. The challenge is to reinforce the innovation ecosystem by providing access to advanced photonics technology to researchers and thereby accelerating the deployment of the next generation of disruptive photonics technologies. Photonic integration combined with cost-effective assembly and packaging processes enables a drastic level of miniaturization, reducing the costs of implementation and energy consumption. The challenge is to build capabilities for automated mass manufacturing of datacom photonics in Europe.

Submission deadline: 17/04/2018.

RespiceSME domain: Photonics, Manufacturing.

Identifier: H2020-SC5-2018-2019-2020 - CE-SC5-03-2018

Topic: [Demonstrating systemic urban development for circular and regenerative cities](#)

Description: Cities struggle in their transition to implement a full circular economy model incorporating regenerative practices. There is a clear need for cities to become circular in



order to alter urban consumption patterns and value chains, and to stimulate innovation, business opportunities, and job creation in both established and newly created sectors. New, more flexible systemic urban planning instruments enabling the design and implementation of circular urban processes would make urban and peri-urban areas regenerative and facilitate their adaptation to emerging economic, social and environmental challenges. Actions should develop and implement innovative urban planning approaches and instruments (e.g. dynamic and semantic 3D real time flexible geospatial data and planning tools, innovative governance and legislation enabling new practices, design approaches, business models, etc.) to support and guide the transition towards circular and regenerative cities in terms of their built environment, public space, urban spatial use and programming. They should demonstrate innovative solutions for closing the loop of urban material and resource flows within the nexus of water, energy, food, air, ecosystem services, soil, biomass, waste/wastewater, recyclables and materials and for supporting an increase in the regenerative capacity of the city while limiting pollution of the environment, for example by reducing the emissions of air pollutants.

Submission deadline: two-stage - 27/02/2018 + 04/09/2018.

RespiceSME domain: Energy/ Environment.

Identifier: H2020-EIC-SMEINST-2018-2020

Topic: [Boosting innovative, high-flying small or medium-sized business with European and global ambitions](#)

Description: The SME Instrument supports high-risk, high-potential small and medium-sized enterprises to develop and bring to market new products, services and business models that could drive economic growth. The SME Instrument is for innovators with ground-breaking concepts that could shape new markets or disrupt existing ones in Europe and worldwide.

Submission deadline: Phase I: 08/02/2018 ; 03/05/2018 ; 05/09/2018 ; 07/11/2018 ; 13/02//2019 ; 07/05/2019 ; 05/09/2019 ; 06/11/2019 ; 12/02/2020 ; 06/05/2020 ; 02/09/2020 ; 04/11/2020. Phase II: 10/01/2018 ; 14/03/2018 ; 23/05/2018 ; 10/10/2018 ; 09/01/2019 ; 03/04/2019 ; 05/06/2019 ; 09/10/2019 ; 08/01/2020 ; 18/03/2020 ; 19/05/2020 ; 07/10/2020.

RespiceSME domain: Transverse.

Identifier: H2020-DT-2018-2020 - DT-ICT-02-2018

Topic: [Robotics - Digital Innovation Hubs \(DIH\)](#)

Description: Proposals should address the provision of a network of robotics Digital Innovation Hubs (DIH) in the four prioritised application areas (PAA) of Healthcare, Infrastructure Inspection and Maintenance, Agri-Food and Agile Production. Proposals are expected to: develop a network of DIHs, address the delivery of services (technical and non-



technical); provide access to best practice and research results in robotics relevant to the chosen application area; contribute to common system platforms, engaging in the development of industry-led standards and developing and disseminating standards demonstrators; facilitate access to pilots and collaborate with all the robotics actions funded in the WP and beyond, as appropriate. Proposals are expected to use financial support to third parties (FSTP) to support industry, in particular SMEs, in their digital transformation, through for instance, demonstrators and platforms development, technology transfer experiments, or other services (technical or non-technical), as appropriate. Proposals are expected to use financial support to third parties (FSTP) to support industry, in particular SMEs, in their digital transformation, through for instance, demonstrators and platforms development, technology transfer experiments, or other services (technical or non-technical), as appropriate.

Submission deadline: 17/04/2018.

RespiceSME domain: Manufacturing.

Identifier: H2020-DT-2018-2020 - DT-ICT-07-2018-2019

Topic: [Digital Manufacturing Platforms for Connected Smart Factories](#)

Description: Develop and establish platforms for the connected smart production facilities of the future including their supply chains, driven by EU actors and safeguarding European interest in an area of key importance for the European economy. Proposals need to address at least two industrial sectors with several different use cases, especially in their piloting activities.

Submission deadline: 17/04/2018.

RespiceSME domain: Manufacturing.

Identifier: H2020-LC-GV-2018-2019-2020 - LC-GV-02-2018

Topic: [Virtual product development and production of all types of electrified vehicles and components](#)

Description: Significant advances in digitization offer new opportunities for the automotive industry in terms of virtual product development and production, reducing the time-to-market of all types of electrified vehicles at lower costs. The increasing hybridisation and electrifications (i.e. multi-energy powertrains including for instance, BEVs, PHEVs and FCEVs on the same platform) leads to significant increased number of vehicle variants and increased system complexity requiring a massive front loading of development activities by means of digitalization in order to keep development times at comparable levels as today. The challenge will be that next generation virtual product engineering and manufacturing tools become fully integrated and adaptable across the entire value chain of electrified vehicles



including production, operation and maintenance in accordance with the principles of Industry 4.0.

Submission deadline: 04/04/2018.

RespiceSME domain: Manufacturing.

Identifier: H2020-NMBP-TO-IND-2018-2020 - DT-NMBP-01-2018

Topic: [Open Innovation Test Beds for Lightweight, nano-enabled multifunctional composite materials and components \(IA\)](#)

Description: The field of new smart lightweight nano-enabled materials has made remarkable progress in recent years. Many different types of materials, with radically enhanced properties and functionalities, are today available for a wide range of industrial applications; e.g. lightweight solutions for transportation and construction, enhanced properties for packaging materials and processes, incorporating smart interacting sensors or indicators, and materials offering enhanced electrical performance and reliability, high-performance thermal and/or electrical conductivity, and UV shielding. The challenge is to scale up and enable industry and users, in a cost-effective and sustainable way, to develop, test, and adopt new lightweight, high performance, multifunctional, and environmentally friendly materials for high-value composite components and structures.

Submission deadline: 2 step - 23/01/18 + 28/06/2018.

RespiceSME domain: Manufacturing.

Identifier: H2020-NMBP-TO-IND-2018-2020 - DT-NMBP-07-2018

Topic: [Open Innovation Test Beds for Characterisation \(IA\)](#)

Description: Efficiency of materials up-scaling and use in new products in European manufacturing industries depends on advances in characterisation and testing. Essential industry competencies comprise technologies, know-how and proficiency in interpretation of results, data, and characterisation standards in order to help bring new materials into products. The challenge is to establish open user-driven characterisation test beds including all aspects of novel multi-scale and multi-modal characterisation solutions management, analytics and mining of the resulting data (Materials Informatics). Interaction is required between the stakeholders regarding the latest technological solutions, such as non-destructive characterisation approaches. Proposals should establish an open innovation characterisation test beds that will create, sustain and drive the use of novel materials characterisation techniques to support industrial innovation and will network materials characterisation stakeholders and concretely implement an integrated approach.

Submission deadline: 2 step - 23/01/18 + 28/06/2018.



RespiceSME domain: Manufacturing.

Identifier: H2020-DT-ART-2018-2019-2020 - DT-ART-01-2018

Topic: [Testing, validation and certification procedures for highly automated driving functions under various traffic scenarios based on pilot test data](#)

Description: The automotive industry commits significant efforts and resources to test and validate advanced driver assistance functions. For systems with high levels of automation, the need for testing and validation will drastically increase as a comprehensive range of driving situations and scenarios have to be considered. Current available procedures do not provide an efficient and cost-effective solution. There is a great need for a comprehensive approach to develop common procedures for testing, validation and certification for highly automated driving functions in various traffic scenarios. Research should focus on the development of testing and validation procedures of highly automated driving functions for different use cases in various traffic scenarios, including cross-border travelling. Proposed solutions shall seek broad consensus and agreement among involved stakeholders across the value chain. Therefore, a large participation of stakeholders from industry and Member States is crucial. Data and knowledge gathered from on-going and future pilot tests across Europe should provide a sound scientific basis to define comprehensive validation procedures for highly automated driving. Data obtained by proposed actions should be made available for all manufacturers and stakeholders.

Submission deadline: 04/04/2018.

RespiceSME domain: Transport.

Identifier: H2020-DT-ART-2018-2019-2020 - DT-ART-02-2018

Topic: Support for networking activities and impact assessment for road automation

Description: Besides technological progress in developing new automated driving functions, there are still many challenges and uncertainties related to the deployment of connected and automated vehicles. Many of these challenges can be better addressed when European partners work together and cooperate with international partners. Therefore, a coordinated and harmonised approach to support the deployment of automated driving systems at European and international level is needed. More cooperation is also necessary to assess the impacts of connected and automated driving systems. Several methodologies to assess impacts of connected and automated transport systems have already been developed and applied. However, a commonly agreed methodology to assess the impacts of connected and automated driving systems that would allow for informed decision making does not exist. Subtopic 1) Research and innovation action: Assessment of impacts, benefits and costs of connected, cooperative and automated driving systems; Subtopic 2) Coordination and support action: Networking activities to support connected, cooperative and automated driving



Submission deadline: 04/04/2018.

RespiceSME domain: Transport.

Identifier: H2020-FETPROACT-2018-2020 - FETPROACT-01-2018

Topic: [FET Proactive: emerging paradigms and communities](#)

Description: Explore and consolidate a new technological direction in order to put it firmly on the map as a viable paradigm for future technology. To foster the interdisciplinary communities that are able to drive this forward, extending from the participating consortia to a wider European pool of expertise. To stimulate the emergence of a European innovation eco-system around a new technological paradigm, well beyond the world of research alone. Scope: proposals are sought for cutting-edge high-risk / high-reward research and innovation projects that aim to demonstrate a new technological paradigm within the scope of one of the following sub-topics:e. Disruptive micro-energy and storage technologies. This initiative seeks radically new approaches to energy for embedded, personal or local use (including bio-mimicking, the use of soft or intelligent materials to generate, capture or store energy or the development of new types of batteries). Proposals could target in particular the lower end (i.e., micro-energy or nano-scale energy transfer, dissipation and conversion) and/or new technologies for optimal local (close to where-needed) energy storage/release and their smart integration within hybrid/distributed energy systems. Proposals should also address aspects of sustainability and environmental impact.

Submission deadline: 22/03/2018

RespiceSME domain: Energy/Environnement.

Identifier: H2020-NMBP-TR-IND-2018-2020 - DT-FOF-02-2018

Topic: [Effective Industrial Human-Robot Collaboration \(RIA\)](#)

Description: Human-Robot Collaboration (HRC) on the factory floor has a high potential economic impact for European industry. Past research to implement HRC in an industrial setting concentrated largely on safety of humans, allowing workers and robots to share working space without fences. Most of the developments started from existing industrial robotic arms, augmenting it with technologies to make it safe for humans to interact with the robot. This has already led to production environments with safe interaction between humans and robots. However genuine collaboration between humans and robots require more holistic solutions encompassing smart mechatronic systems designed to improve the quality of the job performed and to increase flexible production. Such systems have not yet been demonstrated for manufacturing purposes. In order to move from a structured factory floor where robots work behind closed fences to an open environment with smart mechatronic systems and humans collaborating closely, interdisciplinary research in the fields of robotics, cognitive



sciences and psychology is required, also taking into account regulatory aspects. More attention has to be paid to develop novel inherently-safe robotic concepts where collaboration with humans is taken up already in the design phase. In order for effective HRC to be taken up by industry, beyond safety aspects, including ergonomics, adaptability, liability issues, inclusiveness of vulnerable workers, acceptability and feedback from users need to be considered in a holistic way.

Submission deadline: 22/02/2018.

RespiceSME domain: Manufacturing.

Identifier: H2020-NMBP-TR-IND-2018-2020 - DT-FOF-03-2018

Topic: [Innovative manufacturing of opto-electrical parts \(RIA\)](#)

Description: Optoelectronics and opto-electrical components involve the interactions of photons and electrons. They are used in parts such as lasers, photodiodes, image sensors, optical amplifiers, modulators, solar cells, embedded optics and light-emitting diodes. Proposals need to present a variety of new processes applicable to the production of opto-electrical components, for instance material handling, material strain engineering, patterning, material deposition, assembly, joining and bonding. Furthermore, quality needs to be ensured by reliable sensors throughout the production line. The processes need to include a level of sustainability that allows the final products to be recycled and reintroduced into the value chain.

Submission deadline: 22/02/2018.

RespiceSME domain: Manufacturing.

Identifier: H2020-NMBP-TR-IND-2018-2020 - DT-FOF-04-2018

Topic: [Pilot lines for metal Additive Manufacturing \(IA 50%\)](#)

Description: Costs and unpredictable defects in final parts and products are preventing complete deployment and adoption of Additive Manufacturing (AM) in the metalworking industries. The industrial demonstration in a pilot line will show the full potential of metal AM in real manufacturing conditions and it will serve as a flagship example for other stakeholders. Quality aspects to be significantly improved include robustness, stability, repeatability, speed and right-first-time manufacturing.

Submission deadline: 22/02/2018.

RespiceSME domain: Manufacturing.

Identifier: H2020-MG-2018-2019-2020 - LC-MG-1-1-2018



Topic: [InCo flagship on reduction of transport impact on air quality](#)

Description: The air quality situation in Europe has not sufficiently improved for some pollutants and significant exceedances are still found, for example, for particles, ozone and nitrogen oxides, particularly in areas affected by specific environmental or industrial conditions.. Similar situations occur in many cities around the world, and this is the reason for designing this international cooperation flagship. High hopes are pinned on zero tailpipe emission technologies that might solve the problem in the longer term, particularly in the road sector. However, fleet renewal is too slow to just wait for all vehicles on the road to be replaced by electrified ones in order to solve the air quality issue. Also, emissions from other sectors, such as ships and aircraft in ports, internal waterways and airports, can contribute significantly to the problem, and zero emission technologies are not often available. It is therefore urgent to address in as many ways as possible the reduction of the impact of the existing internal combustion transport fleets and support local authorities and other regulatory bodies with the provision of appropriate/advanced tools. Monitoring of the car fleet, for instance, can detect high emitters, allowing to provide information to authorities for possible cases of defeat devices, tampering, poor durability of depollution systems.

Submission deadline: 30/01/2018; 19/09/2018.

RespiceSME domain: Energy/Environnement ; Transport.

Identifier: H2020-NMBP-ST-IND-2018-2020 - CE-SPIRE-03-2018

Topic: [Energy and resource flexibility in highly energy intensive industries \(IA 50%\)](#)

Description: Energy intensive industries should adapt their production processes and unit operations to increasingly sustainable, but highly fluctuating energy supply. To this end, energy and resource flexibility in the European process industry can be improved through the development of novel processes utilising more efficiently energy streams, heat recovery and raw materials flows with variable properties (including new or modified materials as well as secondary raw materials and by-products). The challenge is to establish synergistic integration at a regional level among different production sectors leading to optimisation of production system as a whole and logistics, especially in terms of the supply of energy and raw materials. This should reduce emissions and environmental impact, while maintaining competitiveness and job security.

Submission deadline: 22/02/2018.

RespiceSME domain: Energy/Environment.

Identifier: H2020-NMBP-ST-IND-2018-2020 - LC-EEB-02-2018

Topic: [Building information modelling adapted to efficient renovation](#)



Description: The Building Information Modelling (BIM) tools developed so far are adapted mainly to new buildings (all types). In order to offer easy, practical, operational tools for all stakeholders, including constructing companies, designers, architects and service companies, we need to deploy attractive tool kits also for existing buildings. A particular important challenge will be to produce compatible tools that would allow collecting of data from existing buildings (e.g. geometric data) and exploit data from different sources. This will also contribute to more accurate knowledge of the existing building stock by providing methods and tools to generate data for existing buildings. Such BIM tools will be exploited first and foremost in existing residential buildings.

Submission deadline: 22/02/2018.

RespiceSME domain: Energy/Environment.

Identifier: H2020-NMBP-ST-IND-2018-2020 - LC-EEB-06-2018-20

Topic: [ICT enabled, sustainable and affordable residential building construction, design to end of life \(IA 50%\)](#)

Description: The poor energy performance features that buildings may exhibit can be due not only to the characteristics of the building materials used, but also to the use of traditional or unsuitable construction processes. Therefore, the building process needs to benefit from an increased level of industrialisation, including for instance lean construction and higher degree of prefabrication. This is especially true in the case of building retrofitting where the traditional construction methods are not able to plan in advance all the problems to be solved in the variety of renovation sites. Using ICT as an enabler in the building process and operation is a way to meet the challenges. ICT solutions need to incorporate the design, manufacturing, construction, material choice (including reusability, environmental performance and cost aspects), operation and end of life phases affecting the overall building lifecycle. The closer integration of ICT based-building construction tools into the manufacturing, construction and operation phases has a strong impact on the overall building lifecycle, and it will also help reducing the performance gap.

Submission deadline: 22/02/2018.

RespiceSME domain: Manufacturing, Energy/Environment.



4. Overview of private funding schemes

The following list provides an overview of private funding opportunities allowing SMEs and cluster managers to have a map and select the most appropriate source of funding according to their current situation and development strategy:

- **Crowdfunding:** Raise funds from a community of investors or from individual donors.
 - Reward-based crowdfunding
 - Presale crowdfunding
 - Equity crowdfunding
 - Crowdlending / peer-to-peer lending

Amounts of Investment: Average < 10 k€ can go up to 500 k€

- **Honour loan:** The honour loan is a loan that aims to help entrepreneurs who do not have enough personal financial contributions to finance the creation of their business. A loan without interest rate, nor guarantee or personal deposit from the entrepreneur. It is usually awarded by local or national (networking) organizations / associations of entrepreneurs.

Amounts of Investment: Mainly < 10 k€ can go up to 100 k€

- **Incubator fund / accelerator:** Funds that come from incubators and accelerators (or related national R&D fund, such as French Tech in France), that is to say public, mix or private structures that support companies in many fields of the business maturation. Funds that come from incubators and accelerators offset by acquiring a stake in the capital of the company, or by repayable advance.

Amounts of Investment: Mainly < 50 k€ can go up to 300 k€

- **Business Angel:** A Business Angel is a physical person who invests a part of his assets in an innovative company (start-up) and who, in addition to his money, offers his skills, experience, network and part of their time to the benefit of entrepreneurs. Equity stake.

Amounts of Investment: Mainly 20 – 50 k€ can go up to M€

- **Venture Capital:** Venture capital is a financial activity for an investor to invest in the capital of unlisted companies that require equity. Equity stake.

Amounts of Investment: 150 k€ - 10 M€

- **Family Office:** A Family Office is an organization of persons in the service of one or more families, offering advice to families in the exclusive service of their patrimonial interests. Equity Stake.

Amounts of Investment: 150 k€ - XXX M€



- **Bond Financing:** A bond is a debt investment in which an investor loans money to an entity (such as an SME) which borrows the funds for a defined period of time at a variable or fixed interest rate.

Amounts of Investment: 150 k€ - XXX M€

- **European Investment Fund:** It supports Europe’s SMEs by improving their access to finance through a wide range of selected financial intermediaries. To this end, it design, promote and implement equity and debt financial instruments which specifically target SMEs. Can be a mix of the previous cases.

The following tables provide further information related to the investments presented above in terms of company type and stage of development, actions funded, range and impact, as well as some tips and advices associated to each private funding category.

Private financing opportunities	Kinds of investment			Type of actions funded					Type of companies	
	Seed	Post-creation	Development	Equipment, accommodation	R&D	Commercialization international	Recruitment	Day to day	Early stage SMEs	Other SMEs
Crowdfunding	✓	✓			✓	✓			✓	
Honour loan	✓			✓	✓				✓	
Incubator fund / accelerator	✓	✓			✓	✓	✓		✓	
	✓	✓	✓	✓	✓	✓	✓		✓	✓
Venture capital	✓	✓	✓		✓	✓	✓		✓	✓
Corporate venture capital	✓	✓	✓		✓	✓	✓		✓	✓
Family Office			✓					✓		✓
Bond financing			✓					✓		✓

Private financing opportunities	Cumulativity	Leverage	Temporality		Network impact	Tips & Advices
	Cumulativity with other private financing opportunities	This funding attracts other kinds of private financing	(Exit strategy) Short term (< 3 years)	(Exit strategy) Long term (> 3 years)	The investor is able to connect the company to its ecosystem (access to skills, address book, ...)	
Crowdfunding	Perfect cumulativity with other types of private financing, excluding investments in capital (BA, VC,...) for "Equity crowdfunding"	Crowdfunding provides leverage (positive signal about the existence of a market) for raising funds from business angels or venture capitalists			Crowdfunding investors do not take an active part in the company's strategy	Crowdfunding is mainly adapted to BtoC companies and reward-based crowdfunding is interesting if there is an environmental or health care added value proposition
Honour loan	Perfect cumulativity with other types of private financing	Obtaining a honour loan entails leverage to obtain additional bank financing, as well as a credibility effect by convincing a jury composed of professionals			Organization that give honour loans believe in the project and may take an active part in the company's strategy	It is important for companies to be well aware of the opportunities offered by the organizations / association of entrepreneurs, or even cluster
Incubator fund / accelerator	Contestable cumulativity with other types of private financing in case of equity financing	Good credibility effect, but rather low incentive for other kind of private financing because of equity financing		✓	The business of incubators is to accompany companies towards the maturation of their business and technology by "opening doors"	It is important to rely on network effects
	Contestable cumulativity with other types of private financing in case of equity financing	Good credibility effect, but rather low incentive for other kind of private financing because of equity financing	✓	✓	A business angel typically helps to connect companies to its business ecosystem	It is important to choose business angels that know very well the industrial sector the company belongs to
Venture capital	Contestable cumulativity with other types of private financing in case of equity financing	Good credibility effect, but rather low incentive for other kind of private financing because of equity financing		✓	Venture capitalists help to connect startups to its business ecosystem	Vcs are generally specialized in one or several industrial sectors, but also in terms of level of maturation of the companies they invest in. It is important to choose one that fits with company's fundamentals
Corporate venture capital	Contestable cumulativity with other types of private financing in case of equity financing	Good credibility effect, but rather low incentive for other kind of private financing because of equity financing		✓	Corporate venture capitalists help to connect startups to the business of its own company(ies)	Such investment brings credibility to the startup project
Family Office	Good cumulativity with other types of private financing	No use	✓	✓	No use	Family Office do not invest regarding the project, but regarding the financial leverage
Bond financing	Good cumulativity with other types of private financing	No use		✓	No use	



5. Conclusions

The regional financial funding mechanisms for photonics companies are very different from one another from country to country, so a thorough comparison is difficult to make. Some general guidelines appear nevertheless and can be used by the photonic SMEs and the managers of the photonic clusters supporting them to adjust their strategy. Despite photonics being recognized as a key enabling technology, in most countries there are no dedicated financial measures for the SMEs in the field, the exceptions being represented by Germany and Lithuania. Nevertheless generic funding schemes for R&D and innovation or indirect measures, through cluster support, exist in every country and are thus open to photonic SME. Generally speaking, we notice a lot of measures and public funding schemes that can be, despite the general selection criteria and conditions to which they are subjected, easily mobilized by SMEs and which are a good opportunity. The areas covered by the existing support measures or direct financial funding mechanisms, open but not dedicated to photonic SMEs, are very exhaustive. Some are structured according to geographical coverage ranging from local to regional and national level, in some cases enhancing the existing European measures.

Programmes dedicated to R&D and innovation are the most numerous and also the most adequate to the photonic SMEs. Indeed, the SMEs in the field of photonics have a high-tech/hardware core that requires continuous R&D to make their products evolve and create new ones. These programmes are commonly structured by application domains, each one generally being associated to current societal challenges (sustainable development, health, smart mobility ...) and to the strengths/priorities at the regional/national level, according to the RIS3. Beside financial measures for R&D projects, there are also different measures to transfer technologies from RTOs and public institutions to SMEs and generally to enhance the collaborations between the SMEs and public research organizations. Tax credits, even though surprisingly enough not yet implemented in countries like Germany, also represent a complementary measure to incite SMEs to involve in R&D and innovation activities, and to collaborate with RTOs.

Support measures and public funding to reinforce the SME competitiveness are more generic, also open to non-technological companies but come as a reinforcement to the R&D and innovation instruments to help the companies to optimize their productivity, commercialise their products, export them and generally speaking to internationalize. Different forms of funding or support through consulting are offered. The case is very similar for measures and funding to reinforce employment and ensure job training (coaching programmes and management trainings). A particular focus is placed on start-up and entrepreneurship, since every region and country has numerous measures to stimulate their development: incubators, accelerators, private loans, support to access Venture Capital...

Regarding EU funds, depending on the financing rules these funds are more or less interesting for SMEs, but in general we can say that they are indeed a good financing opportunity for





R&D. The well-known difficulty is to manage to obtain such financing: submitting a proposal is not easy for a SMEs (how to create a consortium, find the right partners, write the proposal etc.), and the success rate is rather low. Nevertheless, if a photonics company decides to invest on such calls (support by a consultant, recruitment...), this can really be a good opportunity. The Swedish “Complement to H2020 SME Instrument” initiative, seems very interesting and thus a good practice to generalize, since it encourages the SMEs, despite the high level of competition, to apply for the SME Instrument by financing the ones which have obtained a score of at least 13 but could not be financed by the EC.

Most countries also have different measures to provide SMEs help to access private funding. The various private funds a photonics SMEs can use depend on the size and development of the companies, each one having its disadvantages and benefits. Within the scope of the project, we have analysed the different private funding schemes according to several criteria and elaborated a “map”, having, beside the general information with respect to the private funding sources, some tips and advices for helping the SME or the cluster managers supporting them to select the most adequate solution.

As a general conclusion we can state that the private or public fund to mobilize for a photonics SME will mostly depend on its business plan, financial situation, means to work on the subject, and the mission of cluster managers is exactly to support them on this activity. Several measures exist throughout all the lifecycle of a SME and the current report draws a map that can be used by the SMEs or the cluster managers to find the most adequate resource to its strategy, its development plan and maturity level.