

New York, April, 2011

RESEARCH IN ITALY

Land of « Hidden gems »

**How and Where to Invest in Italian Scientific
and Technological Excellence**

second edition



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FOREWORD

New York, April 2011

Dear friends,

I am pleased to present the second edition of “Research in Italy - Land of Hidden Gems”, which offers an overview of the Italian research and innovation ecosystem and its main actors, including a focus on early stage companies.

The report shows that Italy has registered a gradual but significant increase in R&D expenditures, and currently ranks favorably in global classifications of scientific publications and citations. Most importantly, readers will discover that the country is also displaying strong signs of acceleration in number of new enterprises, as universities and research centers are spinning out a growing number of companies, which have started to gain the attention and backing of investors. In this second edition of the report, we are pleased to provide an expanded selection of Italian early stage companies with emerging technologies, as well as a list of current Italian investors and relevant associations, which can serve as valuable partners to US counterparts.

The Italian Trade Commission is the government agency responsible for the promotion of trade, business opportunities, and industrial cooperation between Italian and foreign companies, and is also involved in the attraction of foreign direct investment into Italy. Our offices in the US are deeply committed toward tighter economic partnership between Italy and the US and one of our goals is to encourage US companies to intensify their activities in Italy.

To that end, and within the framework of the mission to promote business cooperation between Italy and the US, the New York and Los Angeles offices have Investments Desks, which specifically carry out various programs aimed at positioning Italy as a desirable destination for American investment, and provide first assistance to US companies wanting to locate, invest or expand their operations in Italy.

Over the past few years, our Investments Desks have also been active in raising foreign investors’ awareness of, and involvement in, the scientific and technological innovations of Italian research centers and universities, and of the increasing number of spin-offs and entrepreneurial enterprises stemming from these infrastructures. Moreover, as part of the Desks’ activities, our representatives are always present at major yearly technology-focused events in the US, such as the BIO International Convention and Techconnect, to share prospects for collaborations and insights on how to engage and invest in the Italian technology world.

I hope the information in this report will serve as a useful primer on Italian Research and Innovation, and that it will spur you to further explore the activities and products of Italian researchers and entrepreneurs.

I encourage you to contact us at investments.desk@italtrade.com / +1 212 848 0327 if you wish to get in touch with a representative from any of the entities mentioned in this report, or to further learn what Italy has to offer in terms of products and services, and investment and collaboration opportunities.



Aniello Musella
Italian Trade Commissioner
Executive Director for the USA

EXECUTIVE SUMMARY

As the Italian landscape for research and innovation thrives, generating an increasing number of scientific entrepreneurial ventures, foreign companies and investors can find myriad opportunities.

The responsible factors for the economic success, growth and competitiveness of a nation in the international panorama are numerous, and among them, a key driver for a nation's long-term growth is the ability of universities, research centers and private companies to generate innovation through knowledge and research inputs.

In the last few years, Italy has made huge strides towards improving the R&D sector, with the ultimate goal of increasing the country's competitiveness worldwide. Although there is still considerable room for improvements and the Italian innovation performance remains below the EU average, the **high quality of research** occurring in the Italian infrastructures as well as the **strength of Italy's scientific community** and the gradual but **constant increase in the number of patents** are interesting features that emerge by the most accredited reports on innovation¹.

This report, which includes updated and expanded content with respect to the first edition released in February of 2010, will provide a broad spectrum of information on the following topics:

– **An overview of the Italian R&D system:** innovation performance indicators will guide the investors through some of the most significant innovation indexes such as scientific publications, patent trends and technology balance of payments (TBP). These parameters are respectively considered necessary measurement

for: the quality and the scientific relevance of new findings, the inventive activity and the technological competitiveness of an economic system within the international panorama.

– **Main Italian innovation and research “incubators”:** technology parks, research centers and universities. They host researchers and therefore ideas, functioning as innovation accelerators and fostering the formation of spin offs and start-ups. In this section, special attention will be given to Technology Parks and Business Incubators, able to create a dynamic interaction among companies, research, finance and the authorities, thus contributing to the creation of a growth oriented business environment.

– **Spin offs and Start ups:** a growing number of spin offs and start-ups are being created in Italy- a sign that entrepreneurship among scientists and researchers is increasing. In the last few years more than 800 university spin-offs were created. This report provides VCs and investors willing to explore this “hidden treasure” with a list of 90 among the most innovative Italian companies.

– **A selected list of Italian venture capitalists** and a discussion on Fiscal and Legal issues pertaining to VC investments in Italy: although the country is still lagging behind several European neighbors in VC activity,

This report aims to draw a clear picture of the Italian R&D landscape, providing VCs and Corporate VCs with tangible opportunities of investing in spin-offs and start-ups.

¹ Scientific publication data (1999-2009) are derived from: *Essential Science Indicators, Thomson Reuters, 2009* Patents information are derived from: *Main Science and Technology Indicators 2010/1, OECD, 2010*

«In the last few years, over 800 university spinoffs were created»

there are several active VC funds, both private and public or a combination of the two. The listed VCs could support prospective foreign players by co-investing in early stage companies, or serve as a source of more mature companies presently in their portfolio needing later stage growth capital.

– **Examples of additional sources of funding:** banking foundations, a traditional source of funding for education and science in Italy, have started to actively support the high-tech industry through several initiatives and a list of associations that work to foster economic development through innovation is also provided.

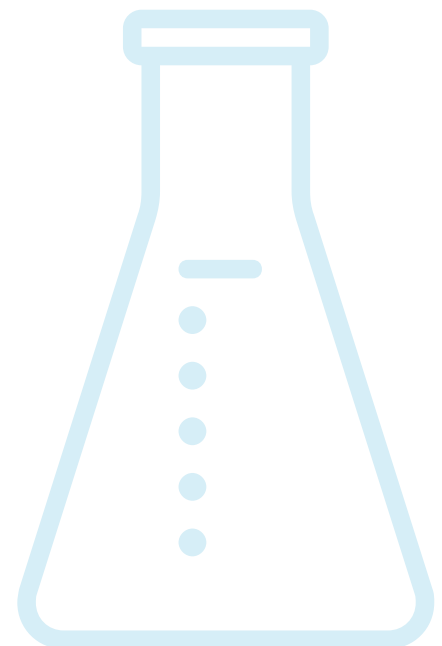
– A section focusing on **Italian Government Strategies, Policies and Investment:** Italian institutions, both at regional and national level, are increasingly becoming aware of the importance of supporting innovation and research. Fiscal incentives and programs such as INDUSTRIA 2015 are among the numerous

possibilities of co-financing. Here, we try to give a comprehensive picture on the available funding programs for a foreign company-entity willing to invest and co-invest in Italy in R&D activities.

– **Information on the current regime concerning Intellectual Property rights:** as a founder member of the European Union, Italy is at the forefront of European IP Rights developments and has some of the most modern and up-to-date IP practices in the world.

– **A brief list of success stories:** a selection of the most recent and relevant examples of alliances, collaboration agreements and investments between Italian companies or Universities and American counterparts.

– **A list of upcoming events of interest for R&D companies, start-ups and spin offs:** this information highlights the most important opportunities to meet Italian researchers and entrepreneurs, as well as current investors.





RESEARCH AND DEVELOPMENT IN ITALY: AN OVERVIEW

Italy has registered a gradual but significant increase in R&D expenditures, and currently ranks favorably in global classifications of scientific publications and citations.

Science and technology innovation indicators are used widely to measure the progress of national innovation strategies. Even though, according to the European Innovation Scoreboard, Italy positions itself in the group of “Moderate Innovators” and the country is still facing major challenges in order to catch up with the OECD leaders, since 2006 Italy has shown important signs of positive growth in R&D sectors.

This section analyzes key indicators, such as Italian R&D expenditures, investments, TBP and research results, publications and patents, to highlight the measurable and important progress Italy has made on the difficult path of becoming a leader in innovation. It will then focus on the tangible results of this improvement, giving a thorough description of the Italian R&D excellence.

1.1. Evolution of Italian investment in R&D: public and private sectors expenditures²

In the past years, Italy registered a gradual but important increase in R&D expenditure³, confirming the strong commitment the country is undertaking in order to align Italy with other European leaders. In fact, from 2004 to 2008, the cumulative R&D investments - performed by private companies, public administration entities, non for profit private institutions and universities all together - increased from €15,252 million to €19,304 million: a 26% growth in real terms. These numbers suggest

that the Italian progress is only second to that registered by Germany and Spain, which in the last years has registered a very pronounced expansion of its R&D investments.

In 2008, the most significant contribution to the total expenditures in R&D activities came from the private sector with a share of 52.7% of the total national amount spent (€ 10,173 million in 2008, vs. € 9,455 million in 2007), followed by universities with 31.6%, public institutions with 12.5% and non profit private institutions with 3.2%. The last available data - referred to year 2008 - indicate a positive trend in the growth of R&D expenditures when compared to the previous year's statistics in the private sector, which spent 7.6% more in R&D and universities, which registered an increase of +11%; while non profit private institutions decreased R&D investments by 3.3% and public institutions also registered a decrease of 8.6%. The number of employees working in R&D in Italy in 2008 was 239,015 (45% of which work in the private sector; 36.4% in universities and 15.7% in the public sector), an increase of 14.3% from 2007.

However, investments in Italy are unevenly distributed. The Piemonte, Lombardia and Lazio regions contribute 49.1% of Italy's R&D

² Some of the data reported in this paragraph were derived from the Annual Report on Innovation 2009, COTEC

³ ISTAT: Italian National Statistics Institute, “La Ricerca e Sviluppo in Italia”, December, 2010

expenditure over GDP⁴, while the combined R&D expenditures of the Northern Italian regions, together with those of the Emilia Romagna and Lazio regions, account for 85.2% of the all national expenditures. The rest of regions (Valle D'Aosta, Umbria, Molise, Basilicata, Calabria) cover less than 1% of Italy's expenditure in R&D. This polarization emphasizes the substantial differences that exist in the Italian innovation system between northern-central and southern regions; it also highlights the autonomous role played by each region in embracing and developing specific innovation measures.

Next to its neighbors, Italy is still far behind in R&D investing. In 2008, the first 10 European companies that invested more in R&D were either from Germany (Volkswagen, Daimler, Robert Bosch, Siemens), UK (GlaxoSmith-Kline), Finland (Nokia), France (Sanofi-Aventis, Alcatel-Lucent) or Sweden (Ericsson).

The first Italian company appearing in the EU investment scoreboard is Fiat ranked 17th, followed by Finmeccanica. The companies that invest more in R&D in Italy are manufacturing companies with € 7 million spent in 2008, 6% more than the previous year.

In 2008, Italy invested 1.18% of its GDP in R&D activities, a percentage which remained the same as 2007 but has been steadily inching upwards since 2004⁵.

1.2. Private equity and venture capital investments

Italy is still experiencing a significant lack of venture capital activity and the industry is not as developed compared to ones of other European countries. However, **venture capital in Italy is starting to grow.**

The OECD Science Technology & Industry Scoreboard of 2009 (referring to 2008 figures) ranked Italy in 13th position in terms of availability of venture capital funds as a percentage of GDP, which were equivalent to 0.025% of GDP. Although the size of the market in absolute value is rather small, the years 2006, 2007 and 2008 have registered the highest values over the past five years. However, according to the Italian Private Equity and Venture Capital Association (AIFI)⁶, the effects of the international financial crisis reached the Italian private equity and venture capital market which, after hitting record levels in 2008, saw a decrease in activity in 2009, registering 283 new deals that year, for a total value of € 2,615 million (a 52% drop from the previous year).

Specifically, AIFI reports that in 2009, 26% of the total amount invested went to transactions in the high technology sector. Compared to the previous years the number of investments in the high tech sector slightly decreased (from 89 deals in 2008 - to 74 in 2009) while the amount invested registered a high increase (in 2008 it was 4%, equal to € 218,320, while in 2009 it was 21%, equivalent to € 549,150).

⁴ The R&D expenditure over GDP ratio represents the size of investment in science over the wealth generated by a country

⁵ Main Science and Technology Indicators 2010/1, OECD (2010)

⁶ AIFI statistics: "The Italian Private Equity and Venture Capital market in 2009"

«Italy is 8th in the global scientific publication ranking and 7th in number of citations»

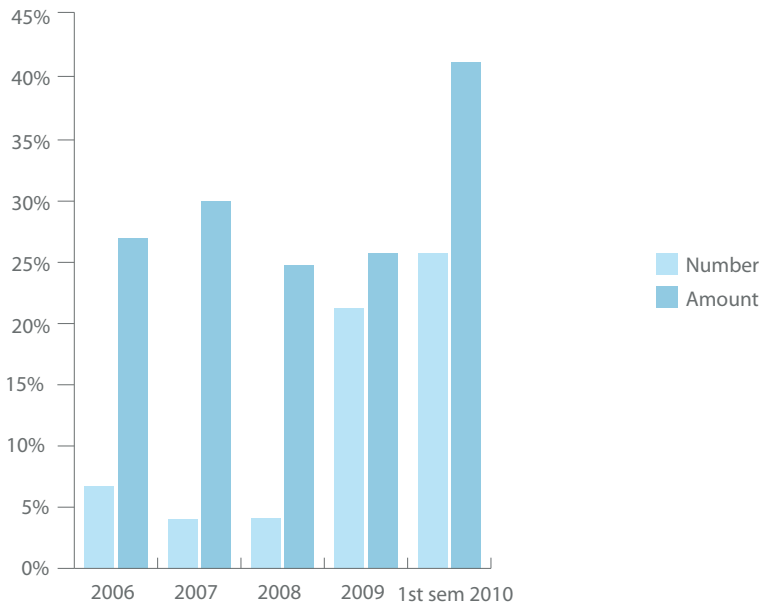


FIGURE 1: Share of PE/VC Investments in Italy going to high tech companies

Of the 283 deals in 2009, 79 were done in the early stage segment (as opposed to 112 in expansion, 71 buyout and 20 turnaround/replacement), which maintained its status as one of the most active areas of investment of the PE / VC market - an encouraging sign for young companies. This trend was confirmed during the first semester of 2010: out of the 129 deals in the first six months, 51 were in the early stage space.

1.3. Research results: publications, patents and Technology Balance of Payments **Scientific Publication**

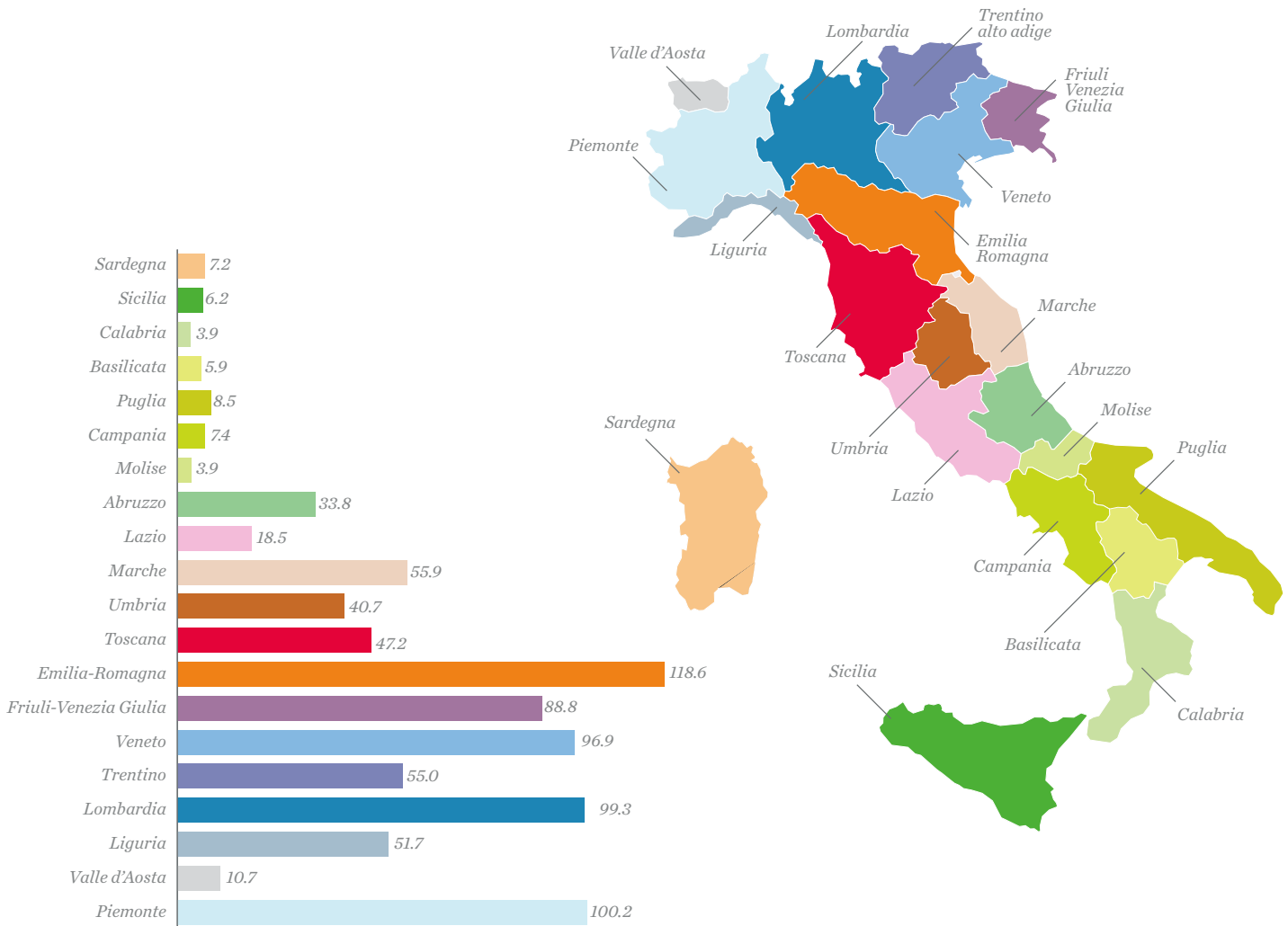
The analysis of a nation's research production allows to clearly evaluate not only the ability to generate new scientific findings - in other words, to evaluate how brilliant scientists are - but it also gives more complex information such as the overall level of innovation of research labs, universities, and research centers, in which the research is performed.

It is well known that in order to translate great ideas into great scientific results and ultimately into great applications, scientists need to have the right support and environment - in terms of equipment, funding, human resources etc. - to finalize their research. It is therefore important to understand how Italy performs when compared to other countries.

With reference to the years 1999-2009, Italy ranks 8th in the global classification of scientific publication, with a total number of 403,000 articles⁷. This number is significantly higher compared to the Spanish scientific production (305,000 publications) and it is not far from Canada (424,000) and France (548,000). Other European countries such as the UK and Germany reach higher levels in the number of publications produced. As expected, the US leads the ranking with over 3 million publications.

⁷ Essential Science Indicators, Thomson Reuters, 2009.





Another important criteria to be taken into consideration when evaluating scientific publications is the number of citations an article receives. This index correlates with quality, novelty, and scientific relevance. The US ranks 1st for number of citations (over 42 million), while Italy positions itself in 7th place, after France and Canada.

These results indicate how Italy represents one of the most relevant contributors to the worldwide scientific production.

Patents

Among the most interesting indicators relating to innovation, patents deserve a special attention since they reflect not only the creativity of a nation but also its entrepreneurial mindset. Statistics referring to the time period 2001-2006 suggest that for Italy the number of

triadic patents filed⁸ increased by 21% (the data are normalized on 1 million inhabitants). Also, a comparison between the three-year periods, 2001-2003 and 2006-2008, shows a dramatic increase of 40% in the number of patents Italy has filed under Patent Co-operation Treaty (PCT) in collaboration with international partners. This index is particularly important because it gives an indication of how much a country is open to international collaboration.

As already reported for R&D expenditures, the number of patents filed at the EPO dramatically varies among Italian regions⁹. As shown in Fig. 2, in 2007, Emilia Romagna leads with 118

FIGURE 2: Regional Distribution of Patents filed at the EPO (data are normalized on 1 million inhabitants)

⁸ Patents filed at the three larger patent offices: the European Patent Office (EPO), the United States Patent and Trademark Office (USPTO) and the Japan Patent Office (JPO)

⁹ StatExtract, Patents by region database, OCSE 2008



patents per million of inhabitants, followed by Piemonte (100), Lombardia (99), Veneto (96), Friuli Venezia Giulia (88.8). Italian southern regions such as, Molise, Sardegna, Basilicata and Calabria, each filed less than 10 patents per million inhabitants.

Together, all the analyzed results indicate a positive trend of growth for the country and this is particularly true for certain Italian regions in which an outstanding research population, the proximity of good universities and creative companies are coming together to form smart clusters that are indeed serving as innovation forges.

Technology balance of payments

The technology balance of payments measures international transfers of technology, such as: patents; inventions; license fees; purchases and royalties paid; trademarks; know-how; patterns and designs; and services with technological content, such as technical assistance, engineering, training of personnel, R&D services and technology exchange. Unlike R&D expenditures, these are payments for production-ready technologies.

The outbound flow indicates a country's ability to commercialize its technological competences and know-how in the international market, while the inbound flow indicates the ability to use and integrate foreign technologies in its system. **In the last years, Italy showed an increase in both the inbound and outbound flows** and the balance has a positive value in Italy, likewise in almost all European countries.

TECHNOLOGY PARKS & RESEARCH INFRASTRUCTURES

A large network of science parks, business incubators, and public and private research infrastructures underpin Italy's research activities.

As outlined in the executive summary, in Italy, research is conducted through a network of **Science Parks, Business Incubators, several Private Research Institutes and Public Research Organizations (PRO)**. These “entities/organizations” can work autonomously or come together to develop research and business ideas within public-private consortia.

2.1 Research Institutes and Universities

In Italy the *Ministry for Education University and Research (MiUR)* coordinates national and international scientific activities, allocates funding to universities and research centers, and establishes the guidelines for the support of public and private research and technological development funding. Furthermore, MiUR coordinates the preparation of the triennial National Research Programme (NRP), the main governmental document for R&D planning that sets the strategic lines for the national system.

Universities - Research activity in Italy is mainly carried out by universities- in 2008 universities spent 31.6% of total R&D national expenditure as discussed in the previous paragraph. There are **95** universities in Italy, the majority of which – over 70% - is public (67

State universities)¹⁰; however, Public Research Organizations (PROs) play an extremely important role in the Italian research panorama.

TABLE 1: Italian University Ranking

| Italian University Ranking Public Universities | |
|--|--|
| 1 | Politecnico di Milano |
| 2 | Università degli Studi di Modena e Reggio Emilia |
| 3 | Università degli Studi di Trieste |
| 4 | Politecnico di Torino |
| 5 | Università di Pavia |
| 6 | Università degli Studi di Ferrara |
| 7 | Università degli Studi di Trento |
| 8 | Università degli Studi del Piemonte Orientale |
| 9 | Università degli Studi di Padova |
| 10 | Università Politecnica delle Marche |
| Italian University Ranking Private Universities | |
| 1 | Università Commerciale Luigi Bocconi- Milano |
| 2 | Università San Raffaele- Milano |
| 3 | Libera Università Internazionale degli Studi Sociali (LUISS)- Roma |
| 4 | Università Cattolica del Sacro Cuore (Milano) |
| 5 | Università Carlo Cattaneo (LIUC) (Castellanza -Varese) |

¹⁰ Web Portal “Italian Research”: http://www.ricercaitaliana.it/universita_chifaricerca.html

«Italian universities spend 31% of the country's total R&D expenditures»

Italian Universities - public and private - have been ranked by one of the most influential economic newspapers in Italy¹¹ taking into consideration 10 main criteria: number of students scoring in top 90% percentile in high school final exams; ability to attract students from outside the Region; students retention/drop out rate; failure to obtain any credits in one year; number of students that are able to graduate within the standard time; student/teacher ratio; percentage of faculty obtaining positive feedback on government funded research projects of national interest (PRIN); amount of research funding; amount of external research funding; post graduation employment rate. Table 1 lists the top 10 Public Universities and the top 5 Private Universities, ranking the highest according to the above criteria.

• **Public Research Organizations:** Italian PROs are numerous and internationally recognized for their commitment to the advancement of science, research and technology. In collaboration with universities, they play a key role in fostering innovation in Italy. The following are some of the most significant organizations, while the National Research Council (CNR) being one of the most relevant for the purpose of the present report, will be extensively described in Table 2¹².

-The National Research Council (CNR), the main national research organization working in all scientific disciplines, which acts both as research performer and financial supporter.

-The National Agency for New Technologies, Energy and Environment (ENEA), operating

in the fields of energy, environment and new technologies to support national competitiveness and sustainable development.

TABLE 2: National Research Council Description

THE NATIONAL RESEARCH COUNCIL (CNR)

The Italian National research Council (CNR) is the largest public research institution in Italy. CNR's Mission is to:

- Perform research in its own Institutes;
- Promote innovation, national industrial system's competitiveness, and national research system internationalization;
- Provide technologies and solutions to emerging public and private needs;
- Advice Government and other public bodies;
- Insure the best training to the human force the institution employs

CNR Organization: CNR integrates its activities through an interdisciplinary structure of 11 National Departments. The 108 Institutes, coordinated by the Departments, are located throughout Italy and they function grouping together technical and scientific areas of expertise. CNR employs more than 8,000 people, of whom more than half are researchers and technologists.

From a **financial** point of view, the main resources come from the Government - 552 Million € of Institutional Funds in 2007. The remaining part - 309 Million € - is derived from the market: as much as 30% of CNR's revenues come from external services - e.g. technological due; private agreements diligence; external contracts with governmental international organizations, etc.

CNR's financial strategy identifies the following 3 main funded activities:

1. curiosity driven research (allocated funds: 15%);
2. development of new research capabilities (allocated funds: 15%);
3. R&D activities performed in cooperation with universities, other research institutions and industrial companies (allocated funds: 70%).

CNR Technology Transfer: in order to encourage innovation and stimulate the competitiveness of businesses through market oriented Technology Transfer activities; disseminate know-how and finalize partnership agreements with external parties to foster cooperation, CNR has created an agile Tech Transfer machinery structured as follows:

- A central **Business Development Unit** that evaluates and implements new spin-off enterprises;
- Rete Ventures, a Technology Transfer enterprise, 90% - owned by CNR, whose task is to provide the scientific network with professional services and entrepreneurial skills to protect, valorize and commercialize new technologies;
- **Quantica SGR**, an Asset Management Company, whose aim is to invest in high-tech spin offs and to promote the development of venture capital.

The activities performed by the "Technology Transfer Unit" include the set up of **spin-offs (42 operating in 2009)** and the protection and enhancement of CNR scientific results (**340 Patents** in the entire CNR intellectual property right portfolio).

Furthermore:

- As of 31 Dec. 2008, CNR participated in **93 joint ventures**, both Italian and foreign. The joint ventures cover the entire spectrum of legal structures: companies, consortia, associations, foundations, and European Economic Interest Groupings;
- CNR **partners** with large hi-tech companies; government departments and local authorities; associations designed to enhance the competitiveness of the manufacturing system; dissemination and know-how transfer specialized entities.

¹¹ Italian Universities Ranking -Published in "Il Sole 24 Ore", July 24th, 2009

¹² The present data are derived from a Publication by Ufficio Pubblicazioni e Informazioni Scientifiche - CNR

«44 science and technology parks operate throughout the country, bringing together VCs, companies, universities, and research centers»

-The National Institute for Nuclear Physics (**INFN**) dedicated to the study of the fundamental constituents of matter and conducting theoretical and experimental research in the fields of subnuclear, nuclear, and astroparticle physics. It manages large scale equipments and participates in CERN activities

-The Italian Space Agency (**ASI**) in charge of coordinating all national efforts and investments in the space sector.

2.2 Technology Parks

Technology parks bring together companies, venture capitalists, universities, laboratories and research centers, increasing the wealth of the local communities by fostering a culture of innovation and the competitiveness of private companies, creating a fertile and collaborative working environment and offering a wide range of services. The first science park was set up in Trieste in 1982; in the 1990s a national program extended the creation of technology parks to the whole nation, favoring the less developed areas. According to RIDITT¹³, 44 Science and Technology Parks operate in Italy, most of which are shown in Figure 3¹⁴.

FIGURE 3. Map of the Italian Technology Parks



¹³ RIDITT: Italian Network for Innovation and Technology Transfer to SMEs - <http://www.riditt.it>

¹⁴ Adapted from APSTI website: <http://www.apsti.it>

TABLE 3: List of Technology Parks in Italy¹⁵

| Name | Location | Number of private companies/ organizations | Areas of interest |
|---------------------------------------|-------------|--|--|
| Area Science Park | TRIESTE | 90 | Environment; Energy; Physics; ICT; Nanotechnology; Biological Sciences; Services; Telecommunications |
| Bio Industry Park Del Canavese | TORINO | 40 | Biotech; Diagnostics; Pharmaceutical; Technology Transfer |
| Centuria- Rit | CESENA - ER | 70 | Agro-food; Innovative Material; Mechanic; Technology Transfer |
| Citta' Della Scienza | NAPOLI | 22 | Environment; Cultural Heritage; Communications; Energy; ICT; Mechanics; Nanotechnology; R&D; Biological Sciences; Services; Technology Transfer |
| Comonext | COMO | 4 organizations | Environment; Energy; Technology Transfer |
| Consorzio Pst/Kr | CROTONE | 39 public organizations | Agro-Food; Technology Transfer; Cultural Heritage; Energy |
| Environment Park | TORINO | 70 | Environment; Bio-Architecture; Energy; Nanotechnology; R&D; Technology Transfer |
| Friuli Innovazione | UDINE | 25 | Environment; Biotech; Energy; ICT; Innovative Materials; Metallurgic |
| Kilometro Rosso | BERGAMO | 20 | Aereospace; Agro-Food; Environment; Bioarchitecture; Biotech; Biomedical; Communications; Industrial Design; Diagnostics; Construction; Elettronics-Microelettronics; Energy; Pharmaceuticals; ICT; Management; Manufacturing; Innovative Materials; Mechanics; Nanotechnology; Bio-Sciences; Telecommunications; Transportation Technology Transfer |
| Molise Innovazione | CAMPOBASSO | 25 | Agro-Food; Environment; Energy; R&D; Bio-Sciences; Technology Transfer |
| Palmer | FROSINONE | Consortium | Agro-Food; Environment; Electronics- Microelectronics; Energy; ICT; Innovative Materials; Technology Transfer |
| Parco Scientifico Romano | ROMA | Not available | Environment; Agro-Food; Biomedical; Energy; ICT; Mechanics |
| Parco Tecnologico Padano | LODI | 12 | Agro-Food; Environment; Biotech; Diagnostics; Agro-Food; Environment; Biotech; Diagnostics; Pharmaceuticals; R&D; Bio-Sciences; Services; Technology Transfer |
| Parma Tecninnova | PARMA | Not available | Agro-Food; Electronics - Microelectronics Innovative Materials; Technology Transfer |
| Polo Tecnologico Navacchio | PISA | 14 | Environment; Energy; ICT; Technology Transfer |
| Polo Tecnologico Mi-Bicocca | MILANO | Not available | Technology Transfer |
| Pont-Tech | PONTERA | 22 | Environment; Biomedical; Industrial Design; Energy; Mechanics; R&D; Technology Transfer |
| Pst Della Sicilia | PALERMO | 25 | Agro-Food; Environment; Cultural Heritage; Biotech; Diagnostics; Energy; ICT; Innovative Materials; Nanotechnology; R&D; Services; Technology Transfer |

¹⁵ Data derived and elaborated from APSTI website: <http://www.apsti.it>


TABLE 3: List of Technology Parks in Italy (CONTINUED)

| Name | Location | Number of private companies/ organizations | Areas of interest |
|---|------------------|--|---|
| Pst Galileo | PADOVA | Not available | <i>Biomedical; Industrial Design; Innovative Materials; Tecnology Transfer</i> |
| Pst Tecnomarche | ASCOLI PICENO | 65 | <i>Agro-food; Energy; ICT; Tecnology Transfer</i> |
| Sardegna Ricerche | CAGLIARI | 48 | <i>Biotech; Biomedical; ICT; Tecnology Transfer</i> |
| Science Park Raf | MILANO | Research centers and 2 start-ups | <i>Biotech; Biomedical; Tecnology Transfer</i> |
| Servitec Srl | BERGAMO | 23 companies and 6 organizations | <i>Agro-food; Environment; Cultural Heritage; Bio-Architecture; Biotech; Biomedical; Diagnostics; Constructions; Electronics – Microelectronics; Energy; ICT; Manufacturing; Innovative Materials; Metallurgic; Nanotechnology; Services; Transpotations Tecnology Transfer</i> |
| STAR-Parco Scientifico di Verona | VERONA | Not available | <i>Agro-food; Electronics-Micro-Electronics; ICT; Tecnology Transfer</i> |
| Tech Napoli | NAPOLI | Not available | <i>Aerospace; Cultural Heritage; Biotech; Innovative Material; Transportation; Tecnology Transfer;</i> |
| Tecnopolis | BARI | 26 | <i>ICT; Telecommunications; Tecnology Transfer</i> |
| Tecnopolo Spa | ROMA | Tecnopolo Tiburtino: 60 Parco di Castel Romano | <i>Aereospace; Environment; Biotech; Electronics – Microelectronics; ICT; Tecnology Transfer</i> |
| Toscana Life Sciences Park | SIENA | 17 | <i>Biotech; Biomedical; Diagnostics; Phamaceutical; R&D; Biosciences; Tecnology Transfer</i> |
| Umbria Innovazione | TERNI | Not available | <i>Tecnology Transfer</i> |
| Vega PST di Venezia | Marghera Venezia | 200 | <i>Aereospace; Environment; Cultural Heritage Biotech; Communications; Energy; ICT; Innovative Materials; Nanotechnology; R&D; Bio-Sciences; Services; Telecommunications; Tecnology Transfer;</i> |
| Veneto Innovazione | Marghera Venezia | Not available | <i>ICT; Tecnology Transfer</i> |



«Private research centers play a major role in research and development activities in Italy»

2.3 Private research institutes

Private research organizations, investing heavily in R&D, play a major role in research and innovation in Italy.

Some of the most important industrial research centers are:

- **ENI Tecnologie:** Eni is an integrated energy company, committed to developing its activities in research, production, transport, transformation and marketing of oil and natural gas. Eni is active in 70 countries with a staff of about 79,000 employees.
- **Centro Ricerche Fiat:** C.R.F. was established in 1978 as the Fiat Group's centre of expertise in innovation, research and development. Now an internationally recognized centre of excellence, C.R.F.'s work constitutes a strategic lever for the Group's businesses, enhancing performance through development and transfer of innovative content which makes the Group's products both competitive and distinctive. With over 850 employees, C.R.F. draws on a broad array of technical skills, in addition to a series of cutting-edge laboratories for power train systems testing, electromagnetic compatibility investigations, NVH analyses, driving simulations, materials and process development, optoelectronics and micro-technologies. C.R.F. achieved significant results for the year, as demonstrated by the 51 new patent applications it filed in 2008, bringing the total number of patents it holds to over 2,300. A further 600 patents are currently pending. C.R.F. has also developed a global network of more than 150 universities and research centers and 1,000 industrial partners around the world.
- **Finmeccanica:** Finmeccanica is the leading manufacturer in the high technology sector and ranks among the top ten global players in aerospace, defence and security. It allocates significant resources and investments to research and development, ranging from the number of specialised personnel involved in R&D activities and an annual investment equal to 1.982 billion EUR in 2009 (up 10% from 2008) to active working relationships with Italian and foreign research institutes and universities. Finmeccanica today is the main Italian investor in the technology sector and ranks third worldwide among companies in the sector.
- **Telecom Italia Lab:** TIL is the Telecom Italia Group's company entrusted to scout, evaluate, develop and manage innovative business opportunities. To achieve these goals, the company focuses on R&D, corporate venture capital, incubation and the development ICT skills. The corporate venture capital and incubation activities address all phases of the development of new companies: by making investments and offering business and technological consulting it creates industrial synergies both with its internal R&D and with Telecom Italia Group businesses.
- **Centro Sviluppo Materiali:** CSM is a private research company founded in 1963 at the initiative of the most important Italian steel making and mechanical industries. CSM main assets are in research and development applied to metals (steel, aluminum, titanium, special alloys and metal matrix composites), ceramics and coated products.

«Italy's technological meta districts support areas of excellence and foster the creation of new ones»

Among the most prestigious private science institutions:

- **Mario Negri Institute:** is a non-for-profit biomedical research organization. It was founded in 1961, and started work in Milan on February 1, 1963. There are now research units at Ranica – near Bergamo – and at Santa Maria Imbaro - near Chieti. The Institute's main aim is to help defend human health and life.
- **San Raffaele Institute:** is a private Scientific Institute, belonging to the San Raffaele del Monte Tabor Foundation, recognized by the Italian Ministry of Health as a Scientific Institute carrying out biomedical research and clinical activities of relevant national interest (IRCCS). San Raffaele Institute is relentlessly pursuing its three interrelated lines of clinics, research and education since 1971 when it was established.
- **The Italian Institute of Technology:** (IIT) is a foundation established jointly by the Italian Ministry of Education, Universities and Research and the Ministry of Economy and Finance to promote excellence in basic and applied research and to contribute to the economic development of Italy. The primary goals of the IIT are the creation and dissemination of scientific knowledge as well as the strengthening of Italy's technological competitiveness. To achieve these two goals, the IIT will cooperate with both academic institutions and private organizations, fostering through these partnerships scientific development, technological advances and training in high technology.

2.4 The technological meta-districts

Technological meta-districts are initiatives aimed at reproducing the positive results derived by industrial districts. They focus on high technological services and products and are promoted at the central and regional levels.

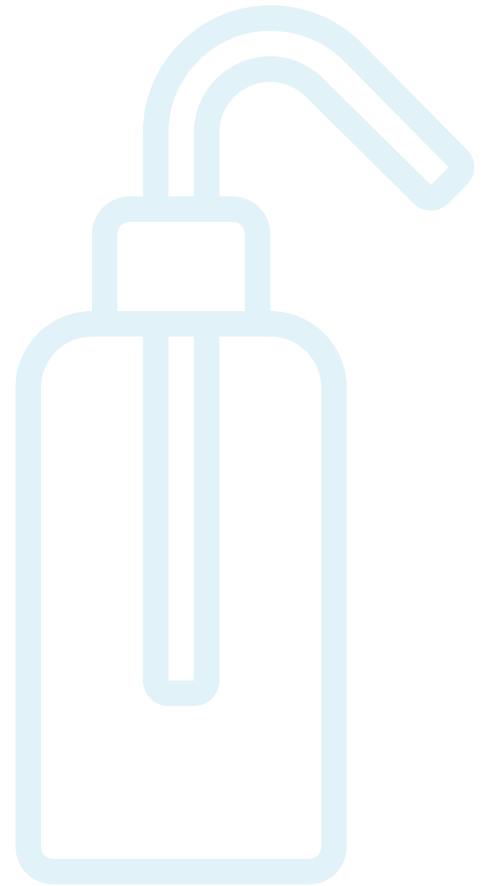


TABLE 4: List of the Main Meta Districts in Italy

| META-DISTRICTS IN ITALY | |
|--|--|
| Torino Wireless (North-western Italy) | A foundation financed with public and private funds which groups some of the key players in the geographical area of Turin operating in the field of advanced telecommunications technology such as the Mario Boella Institute, T-Lab (Telecom Italia), Alenia, Motorola and CRF (Fiat). |
| Veneto Nanotech (North-eastern Italy) | A district financed by national and regional funds aimed at creating an area of excellence on nanotechnology in Veneto. The district includes private companies and local scientific institutions. |
| Biotech in Lombardia (Northern Italy) | An initiative aimed at facilitating the development of a biotech district in an key area where this industry in Italy is already growing |
| Hi mech Emilia Romagna (Central-northern Italy) | A district for mechatronics, which brings together 130 private companies operating in the region (including Ferrari and Lamborghini) along with the most important local university departments and research bodies working on this subject. |
| Aerospace Technology District (Central Italy) | A pole for the development of a high tech productive system in cooperation with some of the major Italian players in the sector, such as Centro Sviluppo Materiali, Alenia, Avio and ASI (Italian Space Agency). |
| IMAST in Campania (Southern Italy) | A district on the engineering of polymeric and compound materials, with the direct involvement of national and regional institutions, universities and research centers such as CIRA (Italian Aerospace Research Centre), Elasis (Fiat), Cetena (research for naval ship building) and companies such as Fincantieri and Esaote. |
| Etna Valley | An initiative for the promotion of the high tech cluster in the area of Catania (Sicily Region) around ST Microelectronics, Nokia, Marconi Mobile. |



SPIN-OFFS AND START-UPS IN ITALY

Italy is displaying strong signs of acceleration in number of new enterprises, as universities and research centers are spinning out a growing number of companies.

3.1 Universities spin offs

As documented by the most important R&D innovation reports, in Italy, all main universities and research centers are now spinning out a growing number of innovative companies. These companies represent the hidden gems that can become a great business opportunity for VCs and/or Business Angels willing to support them.

Among the organizations monitoring this development, one of the most active is **NETVAL - the Italian Network for the Valorization of the University Research**- the association of Italian public universities whose goal is to enhance the value of its members' research activities by working with tech-transfer offices and developing collaborations with the private sector. NETVAL's platform include all the Italian most important Universities (46) and, thanks to this large network, the association is able to monitor universities' productivity in terms of spin offs and patents produced.

According to NETVAL¹⁶, since 2000, Italy continues to display signs of a strong acceleration in the number of new born spin-offs. The report, which is based on the results of a survey to which 56 public universities (representing 63% of all Italian universities and 80% of all students) took part, highlights that among the **806 spin-offs** currently operating in Italy, more than 90% were born in the last 8 years and over 80% are located in the northern-central Italian regions, co-located with the most active Italian universities. Among the most represented sectors are: ICT (33.1%),

energy and environment (16.4%), life sciences (14.9%), electronics (10%) and biomedical (7.2%). In 2008 alone, Italian universities generated 110 new spin-offs, which means 1,6 spin-off per university (45.5% more than 2004). The total budget of Italian universities in 2008 was €10.9 billion, of these, € 25.6 million were for R&D.

In order to facilitate the transition from bench to market and with the aim of providing brilliant academic scientists with the necessary instruments to best use their innovative ideas and translate them in commercial technologies, 90.7% of the Italian universities are now flanked by a Technology Transfer Office (TTO), each staffed with an average of 4 people (an increase of one employee from 2003). TTOs' main objective is to accelerate the creation of entrepreneurial activities, by offering assistance and valuable instruments to spin-offs.

NETVAL's website provides a **directory of Italian spin-offs organized by university**. The online list is yet to be completed. However, a customized selection of university spin-offs by sector can be requested by contacting the Italian Trade Commission in New York (newyork@ice.it) - or segreteria@netval.it.

In order to provide the reader with a **selection of some of the most interesting and established Italian spin-offs** that might be of interest for VCs and/or a corporate VCs, the author of the present report used a

¹⁶ Sixth NETVAL Report, Jan. 2009 " Patents and Private companies: the universities' contributions"

«Of the 806 spin-offs currently operating in Italy, 33% belong to the ICT sector and 16% to Energy and Environment »

screening methodology able to guarantee objective and homogeneous selection criteria. A logic assumption is to think that the most established and successful spin-offs are the direct result of a fruitful, cooperative and challenging scientific environment. With this theory in mind, it was decided to use the top 10 Italian Universities listed in Table 1 - page 11 - as the source from which the most promising spin-offs could be derived.

When analyzing for instance the spin-offs born by Politecnico di Milano, the 10 spin-offs described in Table 5 were selected by using the following criteria: year of establishment

and information availability. It is in fact well known that the first three years of establishment are, for newly born companies, the most difficult and challenging; therefore in order to properly evaluate a company's success, it was necessary to look at companies that were able to overcome this critical threshold.

The 10 Italian Universities listed in Table 1 were analyzed by using the above described criteria with the exception of Politecnico di Torino, which in Table 1 ranked 4th, given the absence in the NETVAL website of information regarding their spin-offs.

TABLE 5: Selection of 44 among the Most Established Italian Spin-offs

| ITALIAN SPIN-OFFS: A SELECTION (complete list can be found on www.netval.it) | | | |
|--|-------------|------------------------------|---|
| Company | Established | Spin-Offs of | Company Description |
| Aresys | 2003 | <i>Politecnico di Milano</i> | Aresys SRL offers ad-hoc innovative solutions to space-borne, air-borne and ground based remote-sensing problems, exploiting state-of-the-art technologies and the latest academic research achievements in the field. http://www.aresys.it/ |
| Binary Core | 2006 | <i>Politecnico di Milano</i> | Binary Core offers FPGA embedded solutions for digital high-speed telecommunications, and has specific expertise on digital systems and algorithms for point to point microwave radio links and terrestrial digital video broadcasting. Binary Core derives its knowledge from the cooperation, between the DEI Modem Lab and several leading telecom companies, and from the knowledge of the market of its co-founder, Compel Group. |
| ISS - Innovative Security Solutions | 2006 | <i>Politecnico di Milano</i> | ISS - Innovative Security Solutions develops videosurveillance and verification of identity solutions. www.issweb.it |
| MCM Energy Lab | 2006 | <i>Politecnico di Milano</i> | MCM exploits the computing power of microcontrollers and the versatility of static power converters to design "Power Trains" with the highest efficiency. www.mcmenergylab.com |
| Micro Photon Devices | 2004 | <i>Politecnico di Milano</i> | The mission of Micro Photon Devices is the production of photon counting devices based on the technologies developed at Politecnico di Milano. Product engineering and production take advantage of the experience gained over the years by Microgate (the industrial partner of Micro Photon Devices). Micro Photon Devices also develops custom designs and specific applications related to photon counting detection technology. www.micro-photon-devices.com |
| Nanosurfaces | 2003 | <i>Politecnico di Milano</i> | Nanosurfaces was created with the aim of transferring and promoting the research in the field of surface modification treatments of materials. The target is to improve mechanical, aesthetic, environmental and biocompatible properties of materials, with applications in the fields of mechanical engineering, biomedicine, architecture, design, textile. www.nanosurfaces.com |

«90% of Italian universities can rely on the support of tech transfer offices»

TABLE 5: Selection of 44 among the Most Established Italian Spin-offs (CONTINUED)

| | | | |
|---------------------------------------|------|---|--|
| SxT - Sistemi per Telemedicina | 2006 | <i>Politecnico di Milano</i> | The scientific know-how with an innovative propulsion, typical of the research world, meets the expertise and the marketing skill "acquired" by the industrial partner. SXT leading-edge solutions and technologies range from wearable high-end polygraphs to complete solutions for home-care. www.sxt-telemet.it |
| Web Models. | 2001 | <i>Politecnico di Milano</i> | The company covers the activities that can contribute to the implementation and industrial exploitation of advanced technologies for the design and production of web applications. The core business is the development and commercialization of WebRatio software based on model-driven development, designed for the design and production of Web applications. www.webratio.com |
| T.R.E. | 2000 | <i>Politecnico di Milano</i> | TRE - the first spin-off company of the Politecnico di Milano - has developed and patented the PSInSAR™ technique, a unique tool that detects measures and monitors different geophysical phenomena (e.g. subsidence, uplift, landslides, seismic faults, etc.) and verifies the stability of individual structures, providing precise measurements of displacements. www.treuropa.com |
| Wisytch | 2006 | <i>Politecnico di Milano</i> | Wisytch aims to develop hardware and software products for advanced wireless communication systems. Based on the Software Defined Radio paradigm that guarantees the reconfigurability of DSP/FPGA architectures for 3G/4G baseband processing design, WiSyTech has developed FPGA IP cores and software IP products for testing fixed and mobile WIMAX, software generators for virtual instruments for GPS satellite navigation systems and for broadcasting (AM/FM/RDS, DAB/DAB+/DMB). www.wisytch.com |
| Embit | 2004 | <i>Università degli Studi di Modena e Reggio Emilia</i> | Embit develops ad hoc embedded and wireless solutions. www.embit.eu |
| Genemore Italy | 2004 | <i>Università degli Studi di Modena e Reggio Emilia</i> | The main focus of GeneMoRe are diagnostic tests for the precise and rapid quantification of genes or gene products in a relatively simple and extremely precise manner, mainly using the real time Polymerase Chain Reaction (PCR) approach. GeneMoRe has developed quantitative assays for monitoring the toxicity of HIV antiretroviral treatment at the mitochondrial level (mtDNA and mtRNA), presence of HIV in infected cells (HIV-DNA), presence of Herpes simplex type 1 and 2 in infected cells, and T cell recovery after antiretroviral therapy, bone marrow or stem cell transplantation. www.genemore.com |
| Mimesis | 2005 | <i>Università degli Studi di Modena e Reggio Emilia</i> | Mimesis is a consulting company focused on the photovoltaic market. www.mimesis.eu |
| Nirox | 2005 | <i>Università degli Studi di Modena e Reggio Emilia</i> | Nirox main activities consist of the design, creation and development of optoelectronic measuring systems for biomedical and industrial applications. www.nirox.it |
| Re-lab | 2005 | <i>Università degli Studi di Modena e Reggio Emilia</i> | Re-Lab's aim is to improve the relationship between people and technologies in order to make the products and services of its customers reach higher levels of quality and competitiveness. In order to achieve such goals, Re-Lab has created a mix of ergonomics, usability and technical knowledge called Interaction Engineering. www.re-lab.it |
| Tydockpharma | 2004 | <i>Università degli Studi di Modena e Reggio Emilia</i> | Tydockpharma is a chemistry-driven research-intensive company discovering new drugs targeting major infection diseases. Research products are mainly hit, lead and drug candidate with anti-infective activities based on an innovative mechanism of action that involves an unexplored biological target (ThyX). www.tydockpharma.com |
| ES.TEC.O. | 1999 | <i>Università degli Studi di Trieste</i> | ES.TE.CO develops multi-objective optimization and design environment software. www.esteco.com |


TABLE 5: Selection of 44 among the Most Established Italian Spin-offs (CONTINUED)

| | | | |
|--|------|--|--|
| EU-RA | 2003 | <i>Università degli Studi di Trieste</i> | EU-Ra is an Italian credit rating agency, and its employees are experts in credit rating analysis and fundamental analysis. EU-RA represents a company in which modern finance know-how studied and developed at University is transferred to financial markets. www.eu-ra.com |
| Genefinity | 2006 | <i>Università degli Studi di Trieste</i> | Genefinity develops new processes and products for the industry of biosensors, bio-medical devices and all other applications requiring high technology vacuum deposition processes www.genefinity.com |
| CREST | 2004 | <i>Università degli Studi di Trieste</i> | CREST aims to deal with innovative organization and supply of met-ocean forecast and hindcast products and to develop services in hydrology and marine hydrodynamics. www.crest.trieste.it |
| Aequotech | 2005 | <i>Università degli Studi di Ferrara</i> | Aequotech engages in Biotechnology research both basic and applied for identification, development and use of direct methods to the analysis and selection of molecules of interest in chemical, environmental, medical, pharmaceutical, cosmetics and food industries. www.aequotech.com |
| Ambrosialab | 2003 | <i>Università degli Studi di Ferrara</i> | Aembrosialab S.r.l. transforms recent scientific discoveries into innovative solutions and creates new products and applications in drugs, nutrition and cosmetics. www.ambrosialab.com |
| e-Hearth | 2004 | <i>Università degli Studi di Ferrara</i> | e-Hearth performs applied research in the design of hardware and software systems for the transmission, processing, storing data and information relating to laboratory tests, imaging examinations, diagnoses, prescriptions and therapies in medicine. www.e-heart.it |
| MateriAcustica | 2004 | <i>Università degli Studi di Ferrara</i> | MateriAcustica develops innovative analysis and measurement methods in the field of Acoustics and Vibrations. www.materiacustica.it |
| MEC- Microwave Electronics for Communications | 2004 | <i>Università degli Studi di Ferrara</i> | MEC main activity is to design, fabricate and characterize of hybrid integrated circuits and radio frequency, microwave and millimeter wave for terrestrial and satellite telecommunications equipment. www.mec-mmic.com |
| PharmEste | 2003 | <i>Università degli Studi di Ferrara</i> | PharmEste is a private biopharmaceutical company focused on the discovery and development of Transient Receptor Potential (TRP) channel therapeutics for the treatment of neuropathic pain, overactive bladder and other TRP-mediated diseases. http://www.pharmeste.com/ |
| UFPeptides | 2003 | <i>Università degli Studi di Ferrara</i> | UFPeprides produces custom synthesized bioactive peptides. www.ufpeptides.com |
| Mountain-eering | 2008 | <i>Università degli Studi di Trento</i> | Mountain-eering offers environmental consulting services to personalize GEOtop, a distributed model of the mass and energy balance of the hydrological cycle, which is applicable to simulations in continuum in small catchments. www.mountain-eering.com |
| Detech | 2004 | <i>Università degli Studi del Piemonte Orientale "Amedeo Avogadro"</i> | Detech offers consulting services to companies working with polymeric materials. www.detech.it |
| OZ FuelCells | 2006 | <i>Università degli Studi del Piemonte Orientale "Amedeo Avogadro"</i> | OZ Fuel Cells develops portable, fuels cells-based units that generate electricity (1 to 1000 W). http://www.ozfuelcells.eu |
| 3Deverywhere | 2004 | <i>Università degli Studi di Padova</i> | 3Deverywhere is a spin-off of the Department of Information Engineering of the University of Padova that researches and develops innovative solutions for 3D modelling and reconstruction, for cross-media 3D visualization (i.e., also on PDAs and mobile phones), for multimedia databases and for image and video analysis and transmission. www.3deverywhere.com |


TABLE 5: Selection of 44 among the Most Established Italian Spin-offs (CONTINUED)

| | | | |
|-------------------------|------|--|--|
| Aitia | 2004 | <i>Università degli Studi di Padova</i> | Aitia designs and develops mechanical and fluid-dynamic complex systems, as well as measurement and automated systems. http://www.aitia.it/scripts/home/index.php |
| BioSiLab | 2004 | <i>Università degli Studi di Padova</i> | BioSiLab is engaged in the production of Biochips which function as micro-laboratory for screening experiments on the action of substances on cells in culture www.biosilab.com |
| Cap Research | 2003 | <i>Università degli Studi di Padova</i> | Cap is the technology partner for solutions hardware, software, applications and management for companies and web marketing strategy. www.cap.it |
| Inova | 2004 | <i>Università degli Studi di Padova</i> | Inova is a consulting company, offering tech-transfer services to companies which produce electrotechnical devices or use electroheat processes in the production. Inova promotes the use of software for the design of electromagnetic devices. www.inovasrl.it |
| IT+Robotics | 2005 | <i>Università degli Studi di Padova</i> | The IT+Robotics team is able to provide advanced solutions to the problems in the field of autonomous robotics: real-time operating systems, artificial vision systems, software agents management, and highly realistic simulations. http://www.it-robotics.it/ |
| UNILAB | 2003 | <i>Università degli Studi di Padova</i> | UNILAB specializes in dimensional metrology and geometric, in particular the geometric precision measurement products and tools, advice and training in the field of metrology. www.unigroup.it |
| Think Laser | 2005 | <i>Università degli Studi di Padova</i> | The mission of Think Laser S.r.l is the invention of new applications in the industry of advanced solid state lasers and of advanced optics, and the technology transfer focusing on its prototyping and production http://www.thinklasersrl.com |
| Artemis | 2003 | <i>Università Politecnica delle Marche</i> | Artemis provides many diagnostic services in construction, civil structures and cultural heritage. It detains the exclusivity of a diagnostic technique for the safety of curtain walls with laser-Doppler vibrometer. www.artemis-srl.it |
| EcoTechSystems | 2003 | <i>Università Politecnica delle Marche</i> | EcoTechSystems assists companies in the development and implementation of Environmental Management Systems (EMS) performing all kinds of Environmental Impact Assessment (EIA). It develops new technologies for environmental recovery and offers services for the characterization and monitoring of soils, groundwaters, inland waters and coastal marine environment. www.ecotechsystems.it |
| Ocean Soc coop. | 2003 | <i>Università Politecnica delle Marche</i> | OceAN produces tropical fish bred and kits for all micro-algae's aquarium. It also offers services for the conduct of projects in fisheries and environmental monitoring, proposing their scientific expertise in molecular biology. www.ocean.univpm.it |
| S.TRA.TE.G.I.E. | 2005 | <i>Università Politecnica delle Marche</i> | S.tr.a.t.e.g.i.e. focuses its activities in industrial research and pre-competitive development in energy field. |
| Nautes | 2001 | <i>Università Politecnica delle Marche</i> | This ICT company offers enterprise solutions and software in the fields Knowledge Management and BPM. www.nautes.com |
| Bright Solutions | 1998 | <i>Università di Pavia</i> | Bright Solutions is a leading provider of innovative industrial laser solutions thanks to its ten years experience in development and manufacture of solid state lasers. It offers a range of state-of-the-art high brightness diode lasers and diode pumped solid state lasers for industrial, medical and scientific applications. http://www.brightsolutions.it/ |
| MicroGenomics | | <i>Università di Pavia</i> | MicroGenomics provides services for genetic investigations, performing genomic investigation by using several array platforms which differ for the number of features fixed onto the chip. http://www.microgenomics.it/ |

3.2 More Start-ups: latest events

Another important information source regarding young innovative companies in Italy comes from **PNICube - the Italian Association for the University Incubators & Business Plan Competition**. PNICube, which today consists of 42 members between universities and academic incubators, organizes and sponsors two important initiatives:

> the **National Prize for Innovation**, which selects every year the best ideas among innovative start-ups. The 2010 edition was held in Palermo on December 3 and a list of the 59 competitive ideas can be found on the PNI cube website.

> the **Start-Up of the Year**, which rewards young hi-tech companies that have achieved the greatest success in the market. The aim of the initiatives is to positively contribute to the growth of innovative entrepreneurship. The 3rd edition was held in May 2009 in Padova and the companies Electro Power System, Waymedia and Khamsa won respectively the first, second and third place in the competition. A detailed description of the competition can be found in PNI cube website. The 4th edition took place in May 2010 in Naples and was won by Genefity

Table 6 and 7 offers a list of the finalists of the **Start-up of the Year** competitions of 2009 and 2010, which were chosen respectively among companies who were formed in 2005 and 2006 (and have thus passed the start-up phase) and had participated in one of the business plan competition associated with PNI Cube. The finalists were selected by a jury composed of professionals in international funding and entrepreneurs, taking into considerations criteria such as best performance and technical development.

TABLE 6: Selection of Innovative Italian Start-ups

| ITALIAN START-UPS Start-up Of the Year Finalists 2009 | | |
|---|---|---|
| Name | Area | Profile |
| Electro Power Systems | Clean-tech | <i>Electro Power Systems is engaged in a cell fuel system through the development and commercialization of the first hydrogen-powered system for business continuity with multiple output voltages.</i> |
| Waymedia | ICT | <i>Waymedia is a leading provider of Bluetooth Proximity Marketing systems since 2005 supplying its products to over 60 countries.</i> |
| Khamsa | ICT | <i>Working in the field of Information and Communication Security, KHAMSA offers market professionals and small to medium sized businesses a means of confidential communication (email and mobile encryption). Specifically, it offers PrivateGSM, a software installed on mobile phones that can be used to make secure calls; and PrivateMAIL, an electronic mail system equipped with a web part and a safe client that is downloaded onto a computer and operational within moments.</i> |
| Actua | ICT, Energy Efficiency | <i>ACTUA is a holding company for Energy Efficiency Technology development, transforming cluster technologies into real products.</i> |
| Biotrack | Biotech | <i>Biotrack develops innovative molecular approach to the study of proteins through the splitting, profiling and biomarker discovery through a platform of integrated proteomics (SELDI-ToF HPLC).</i> |
| Delta R & S | Biomechanics, Ergonomics, Safety in sport, Mechatronics, Robotics | <i>The company makes physical personal protection products, such as its digitizers (Foot-o-graph, Bust-o-graph).</i> |
| Evs | ICT, Electronics | <i>EVS designs machine vision systems on embedded architectures for industrial automation, security and monitoring.</i> |
| Fluidmesh | ICT | <i>The company is focused on developing wireless products for security, video surveillance and transmission of data over large areas at risk.</i> |
| Garrisonpop | ICT Services | <i>Garrisonpop aims to provide the markets with innovative instruments to compensate for areas of uncertainty in the chains of production, distribution and marketing.</i> |
| Lachesi | Monitoring, Environment, ICT | <i>LACHESI is a company that develops and markets products for the monitoring architecture - control of operating conditions and safety of bridges, tunnels, dams and marine structures- especially compared to the interactions between those structures and the environment in extraordinary conditions, for example in relation to floods or earthquakes.</i> |
| Minteos | ICT- Environmental Monitoring | <i>Minteos develops innovative products for Environment Monitoring and Natural Hazards detection, relying on Wireless Sensor Network.</i> |



In addition, we provide a list of the start-ups that were chosen to pitch at the “Investment Forum” in **Research to Business 2010**, a trade show and conference that was held in Bologna focusing on emerging technologies.

Moreover, the Italian bank Intesa San Paolo has launched in 2009 its “Start-up Initiative”, which aims at providing a platform for pre-screened Italian start-ups and investors. Qualified Italian start-ups are mentored and subsequently given the opportunity to pitch to investors. Table 9 and 10 include start-ups selected to present at the latest 2 rounds presentations (IT and Cleantech).

Finally, we include the list of finalists of the Mind the Bridge 2011 annual business competition. Mind the Bridge, a non-profit foundation of Italian entrepreneurs in the USA, runs an **annual business plan competition** with the purpose of selecting the best innovative business ideas among all the potential Italians talents. This year’s finalists will pitch their projects to investors in March 2011 in Silicon Valley, where a mentoring and coaching program will take place in the days before their presentations and in New York in May 2011.

Please note that the lists of spin offs and start-ups of Tables 5 through 11 of the present report represent only a selection of the numerous ideas and business plans born in Italy by young and innovative companies. More examples can be found by participating to the events listed in the last paragraph of this report or by contacting the Italian Trade Commission in New York at newyork@ice.it.

TABLE 7: Selection of Innovative Italian Start-ups: Start-up Of the Year Finalists 2010

| ITALIAN START-UPS Start-up Of the Year Finalists 2010 | | |
|---|--------------------------|--|
| Name | Area | Profile |
| Genefinity | Biotech | <i>Genefinity develops new processes and products for the industry of biosensors, biomedic devices and all other applications requiring high technology vacuum deposition processes</i> |
| Econoetica | ICT | <i>Econoetica Srl is a company operating in the ICT sector, focusing on multimedia guides for mobile phones (Arianna), installation of WiFi hotspot at public access facilities (Noody), and web consulting.</i> |
| Eolpower | Cleantech | <i>An academic spin off, EolPower develops, produces and promotes innovative small size wind turbines and offers services in the field of renewable energies (wind and hydro generators).</i> |
| Exemplar | Chemical and biochemical | <i>Exemplar operates in the field of innovative services to companies through the sale of products for the CAE and the PIDO of the major international software companies, providing high value-added services such as training on these tools and methodologies developed exclusively on specific customer needs.</i> |
| Flexcon | ICT, Services | <i>Flexcon provides companies with advice, products and application solutions for the valuation performance, the optimization and management of production processes and distribution of goods, through consultancy services with high added value.</i> |
| Microla | Biotech | <i>Microla develops opto-electronic systems and processes with high expertise in both optical and material characterization.</i> |
| P.A.N. | Water Purification | <i>P.A.N. is active in the field of natural water purification systems (constructed wetlands), including through the development and application of innovative solutions. It also designs and manufactures renaturalization, nature trails and educational initiatives to support environmental monitoring activities</i> |
| Sedicidodici | Health IT | <i>SediciDodici developed the Smart Clot, a device able to monitor and prevent the formation of thrombi, the blood clot, occluding the vessel, preventing blood flow, and the subsequent heart attack.</i> |
| Sir-To | Engineering Services | <i>Sir-To deals with laser scanner surveys for civil engineering and environment; Creates 3D environments for the ad management and delivery of information; has developed proprietary software solutions for the treatment and visualization of three-dimensional data; creates platforms for monitoring, planning and managing of engineering work</i> |
| Trilogis | ICT, Services | <i>Trilogis is a full services consulting firm with interests in geospatial Geographic Information Systems (GIS).</i> |

**TABLE 8:** Selection of Innovative Italian Start-ups: Research to Business Investment Forum Finalists 2010

| ITALIAN START-UPS Research To Business 2010 Finalists | | |
|---|------------------|---|
| Name | Area | Profile |
| Spreaker (winner) | Web 2.0 | <i>Spreaker is a Social Online Radio where all the shows and radio stations are created by the audience itself, shifting the paradigm from creating a complete radio stream to producing a single show.</i> |
| Archimede | Environment | <i>Archimede is a Research and Development Company in the chemistry and environmental field, offering consultancy in regulatory affairs, and assisting companies in R&D activities.</i> |
| BMooble | ICT, Electronics | <i>Bmooble develops enabling technologies for the deployment of a variety of mobile services in the areas of B2B, B2C and Government2Citizen (G2C) on any mobile device connecting over IP to a central source of information.</i> |
| Cryptolab | ICT, Electronics | <i>Cryptolab has developed a (market-ready) encrypted computer system valid for exchanging money in total security and privacy through the use of mobile phones.</i> |
| ESAE | Environment | <i>ESAE uses bio-fertilization and irrigation systems able to reduce the amount of chemically active component, in order to obtain from the fields a depuratory rather than a polluting action. It validates productive systems aimed at specific farms, in order to obtain a full utilization of their resources and by products.</i> |
| Hicare research | ICT | <i>Hicare Research developed Lilith Enterprise, a Decision Support System tool, that allows the analysis of company data that are normally redundant. Lilith, with its multidimensional engine, is also able to store and quickly browse information of all kinds: this makes the product especially efficient in the areas of banking and insurance, as well as of engineering.</i> |
| Nethical | Medical Care | <i>Nethical allows Medical Organizations to reduce up to 90% of hospitalization cost by running distributed hospitals for home-based patients</i> |
| RELOC | ICT, Electronics | <i>The activity of RELOC is based on design and creation of wireless systems that allow localization, low-cost radio-frequency identification and distributed sensing. RELOC combines many wireless technologies with various sensors in order to recognize position and location conditions of goods and people, in real time.</i> |
| VIS4 | ICT | <i>VIS4 is an Information technology company providing design, consulting, and development of information systems based on Visualization technologies with applications in different areas, such as Information systems, Data warehousing, Business intelligence systems, Information retrieval & documents classification system. The idea behind VIS4 is to offer services to organizations that work in different areas and need applications to handle large amount of data in order to get information from them quickly and efficiently</i> |
| WISPES | ICT, Electronics | <i>Wispes designs and sells hardware and software. It also makes products based on WSN technologies, and offers custom services such as design, development prototyping, and production of electronic devices, radio systems and sensors.</i> |

TABLE 9: Selection of Innovative Italian Start-ups: INTESA START-UP INITIATIVE IT Companies 2010

| ITALIAN IT START-UPS Intesa Start-up Initiative - 2010 Roadshow | | |
|---|------------------------------|--|
| Name | Area | Profile |
| Glossom | ICT | <i>Glossom is an innovative visual platform for creative professionals and visual addicts who work in Fashion, Design, Photography, Illustration, and other creative media. It allows users to visually create their work on Glossom's application and promote it throughout the web.</i> |
| Spreaker | Web 2.0 | <i>Spreaker is a Social Online Radio where all the shows and radio stations are created by the audience itself, shifting the paradigm from creating a complete radio stream to producing a single show.</i> |
| Illusionet-work | Gaming | <i>ILLUSIONNETWORK is a Videogame and 3D Graphic Technology development company, it was founded in 2005 by veteran developers and managers coming from digital entertainment segment, Architectural-Set Design and Web-Based/Stand-Alone Application Development. Its aim is to produce AAA titles for PC and Consoles, Cutting edge RealTime 3D rendering technologies for Handheld Devices, Web Engineering, 2D-3D Graphic Design and Virtual Architecture</i> |
| Porcovino | Social E-commerce | <i>Porcovino is a revolutionary new concept in e-commerce, a social e-commerce platform that brings the best of 10,000 Italian villages to the worldwide stage. Porcovino is a virtual village, where each location ins a shop with a shop-owner, in which the focus is on discovery of new products and the narratives of the products and producers.</i> |
| SmartRM | ICT | <i>SmartRM offers an open solution to protect your confidential files and decide any time who can access them.</i> |
| Nuzoo | Electronics, micro-mechanics | <i>Nuzoo creates prototypes in the field of electronics and micro-mechanics, developing the firmware and software necessary to realize the products. The company also has several working prototypes of humanoids robots.</i> |
| Visual Sport | ICT | <i>VisualSport.com is a revolution in the sports experience. It helps people self-track & analyze their sports data, with an initial focus on amateur soccer.</i> |


TABLE 10: Selection of Innovative Italian Start-ups: INTESA START-UP INITIATIVE Cleantech Companies 2011

| ITALIAN CLEANTECH START-UPS Intesa Start-up Initiative - 2011 Roadshow | | |
|--|-----------|--|
| Name | Area | Profile |
| Enatek | Cleantech | <i>Enatek develops horizontal micro wind turbines for urban contexts</i> |
| Skipso | Cleantech | <i>Skipso is an online platform and business to business marketplace entirely focused on sustainable innovation</i> |
| KITEnrg | Cleantech | <i>KITEnrg offers an innovative technology to convert high-altitude wind energy into electricity, by exploiting the flight of automatically controlled tethered airfoils (like power kites used for surfing or sailing).</i> |
| Siena Solar Nanotech | Cleantech | <i>Siena Solar Nanotech developed a new thin film deposition technology for the production of flexible solar cells. The innovative design of the pv cell produced can be build only by a special thin film deposition technique called the Pulsed Plasma Deposition (PPD).</i> |
| Agroils | Cleantech | <i>Agroils is the first Italian biofuels consulting and developing company assisting private investors, social entrepreneurs, governments, NGOs and businesses with analysing and implementing innovative and sustainable biofuels production chains. Agroils is able to provide integrated agro-engineering tailored solutions covering the entire biofuels project chain: from site analysis to biofuels production and commercialization.</i> |

TABLE 11: Selection of Innovative Italian Start-Ups: Mind the Bridge finalist 2011

| ITALIAN START-UPS Mind The Bridge 2011 Finalists | | |
|--|------------------------------|--|
| Name | Area | Profile |
| Xapio | IT | <i>Xapio is a cloud service that organizes information scattered around apps and devices, making it easy to find and reuse, including by a third party.</i> |
| Minteos | ICT-environmental monitoring | <i>Minteos develops innovative products for Environment Monitoring and Natural Hazards detection, relying on Wireless Sensor Network.</i> |
| Smania | Health IT | <i>SMANIA specializes in the research, design and development of innovative neural interfaces for a bidirectional communication between the peripheral nervous system and an artificial device to intimately connect an amputee with his/her prosthesis.</i> |
| Risparmio Super | Web 2.0 | <i>Risparmiosuper.it is the first website that gathers and compares supermarket offline in-store product prices.</i> |
| Mopapp | ICT | <i>Mopapp allows mobile application developers to track and analyze sales for their apps. Mopapp integrates with most major stores (Apple iTunes, Google Android Market, RIM App World, Handango, MobiHand and counting) and it exposes an API to track sales from 3rd party stores or custom ecommerce scripts.</i> |
| Eralos3 | cleantech | <i>Seeks to produce innovative polymer-based PV cells, characterized by flexibility, lightness and low cost, to be integrated in clothes, giving them an aesthetic value. It also wants to satisfy the energy needs of small portable electronic devices (Cell phones, Mp3 players, PDAs, etc.) in a simple, autonomous and cheap way, using portable photovoltaic (PV) solar cells able to convert sun energy into electricity.</i> |
| Porco Vino | Social E-commerce | <i>Porcovino is a revolutionary new concept in e-commerce, a social e-commerce platform that brings the best of 10,000 Italian villages to the worldwide stage. Porcovino is a virtual village, where each location ins a shop with a shop-owner, in which the focus is on discovery of new products and the narratives of the products and producers.</i> |
| Fubles | Web 2.0 | <i>Fubles in an online sport sharing platform that makes it easy to find pitches, matches and players.</i> |

VENTURE CAPITAL

Domestic venture capital activities are slowly starting to take off, as the relatively small VC market registers the highest values in the years 2006 through 2009 over the past 6 years.

As already reported VC investments in Italy are far less than the US's, but are growing. According to AIFI, the Italian Private Equity and Venture Capital Association¹⁷, in the first six months of 2010 early stage investments accounted for 51 deals (€41 million), on par to surpass the number of deals registered in 2009.

4.1 Italian VC Funds

Listed on the right, are some of the more active Italian VC funds, both private and public. It is advisable for a US venture capitalist willing to invest in Italian early stage companies to consider syndicated investments with a local VC, which would help foreign investors overcome legal and bureaucratic issues and access future dealflow¹⁸.

TABLE 12: Selection of Venture Capital Firms in Italy

| FUND | DESCRIPTION |
|------------------------------------|---|
| 360° Capital Partners | It is a Venture Capital firm, investing in Innovation at full scale, in Europe and more particularly in France and Italy. The new 360 Capital fund Sicar has reached a total capital commitment of over €100 million. http://www.360capitalpartners.com |
| Atlante Ventures | With the goal of investing in high technology start-ups and university spin-offs, Italian bank Intesa San Paolo launched this fund in May 2009. The initial funding amount to €25 million and have a planned duration of 12 years. In its current portfolio: Igea Spa, a biomedical company based in Modena. http://www.group.intesasanpaolo.com/script/sir0/si09/contentData/view/content-ref?id=CNT-04-00000003F8A4 |
| Atlante Venture Mezzogiorno | Intesa San Paolo set up this parallel fund to its Atlante Venture fund to specifically invest in companies in the southern regions of Italy. The funding amount to €25 million, with a planned duration of 10 years. http://www.group.intesasanpaolo.com/script/sir0/si09/contentData/view/content-ref?id=CNT-04-00000003F8A4 |
| **dpixel | Dpixel, venture capital firm specializes in start-ups in their "seed" and "early" stage. In its portfolio: Charta; Seolab; Sounday; Kiver; Glomera; SmartRM Crowdfunding. http://www.dpixel.it |
| Eporgen Venture | Eporgen is the first Italian company specialized in seed financing of early stage biotech initiatives and R&D projects. Eporgen is entirely funded by private non-institutional investors. Currently in its portfolio: Noto Pharm, Bionucleon, Biopaint, Genovax, Narvalus, Spider Biotech, Target Heart and Apavadis. http://www.eporgen.com |
| Ingenium | Launched in 2005, Ingenium is the first public-private venture capital fund for financing innovative enterprises based in the Region of Emilia Romagna. It is managed by Zernike Meta Ventures, a joint venture between the Italian META Group and the Dutch Zernike Group, and it currently has €7 million under management, of which €5,3 are regional public funds and €1.7 are provided by the managing companies. http://www.meta-group.com/ingenium/ilfondo.html |
| Innogest Capital | Innogest Capital, with its €80 million, is currently the largest Italian Venture Capital fund in the Seed and Early Stage segment. Set up in 2005, it is recognized as a reference investor for young, high-potential companies that intend to raise capital in order to sustain their growth plans. The goal of Innogest is to invest in and encourage the success of about twenty highly entrepreneurial and young companies with very strong technology and a distinctive and unique approach to the market. Among biotech and healthcare companies in its portfolio: Silicon Biosystems, Adriacell, Erydel and Igea. http://www.innogest.it/ |
| Piemon-tech | Piemon-tech, the holding company of the Torino Wireless Cluster, is a VC investor providing capital to the most promising Piedmont-based companies in the biotechnologies and biomedical sectors as well as ICT, energy and advanced mechanics. Promoted by the Torino Wireless Foundation and co-founded with I3P , Eurofidi and the Employers' Industrial Association of Turin , Piemon-tech supports the creation of new enterprises by acquiring Equity shares with Angel Investments, typically between €20,000 and €200,000. http://www.piemontech.it |
| Quantica | Quantica SGR is an Asset Management Company specialized in closed-end funds for venture capital activities, investing in high-tech spin-offs and start-up stemming from scientific research, as well as early-stage financing. Quantica's Principia Fund is the first Italian venture fund promoted by experienced managers and prestigious research and university institutions. At present, in its portfolio: Kee Square, Pharmeste, Green-Fluff, Dialectica and NewCorTec. http://www.quanticasgr.it/ |

¹⁷ AIFI statistics: "The Italian Private Equity and Venture Capital market- 1st Semester 2010"

¹⁸ As an example, Meta Group, the Venture Capital firm who manages the Ingenium Fund, partners with the Dutch VC Zernicke Meta.

4.2 Fiscal and Legal issues: how to get involved and cooperate with an Italian VC

The Italian Venture Capital closed-end funds regulation

The Bank of Italy regulation of 14 April 2005, in compliance with the EU Directives no. 2001/107/CE and 2001/108/CE, represents an important successful effort of rationalizing and collecting different regulations related to the same subject.

Specific provisions consider:

- the possibility, with respect to the activities allowed to management companies, to carry out advisory services for target companies;
- the possibility for management companies to borrow and to fall into debt;
- the flexibility in the investment strategy for funds reserved to qualified investors;
- the forecasting, concerning the approval of information memorandum for management companies, of standard schemes that, if adopted, speed up the approval iter.

On November 1, 2007, the Legislative Decree No. 164 entered into force, implementing MIFID in Italy. On the regulatory side, in compliance with the legislation that has implemented MIFID, the Commissione Nazionale per le Società e la Borsa (“Consob”) and the Bank of Italy issued (inter alia) the following main regulations:

- resolution no. 16190 issued by Consob the 29 October 2007, that amended the rules on intermediaries;
- regulation issued jointly by Consob and the Bank of Italy that provides for the rules concerning the organization and the procedures applicable to intermediaries authorised to provide for investment services and collective portfolio management.

TABLE 12: Selection of Venture Capital Firms in Italy (CONTINUED)

| | |
|---------------------------------------|--|
| TT Venture | <i>TT Venture is the first Italian closed-end fund dedicated to Technology Transfer. The fund supports the development of high-potential entrepreneurial projects within the sectors of Biomedicine, New Materials, Agro-food and Energy/Environmental Technologies. TT Venture invests in all phases of an entrepreneurial project – seed, start-up, and development – through the selection of investment opportunities offering a high development potential, capable entrepreneurs and a varied disinvestment strategy. The fund will also invest in international venture capital funds in order to strengthen its network and to gain access to the latest R&D developments overseas.</i> http://www.ttventure.it/ |
| Z Cube | <i>Z-Cube was founded in 2003 to support young life-science start-up and spin-off companies with novel therapeutics to address significant unmet medical needs. Z-Cube has achieved the launch of 3 start-ups based on projects with the goal to develop highly innovative medicine: PharmEste, SuppreMol GmbH and ProtAffin Biotechnologie AG.</i> http://www.z-cube.it |
| Vertis Venture | <i>Vertis SGR, a Neapolitan entity, manages Vertis Venture, a 25 mln fund dedicated to investments in early stage companies.</i> http://www.vertissgr.it/vertis_venture.php |
| Sviluppo Imprese Centro Italia | <i>Sviluppo Imprese Centro Italia manages 3 funds totaling €135 mln: Toscana Venture, Toscana Innovazione, Centroinvest, which invest in start-ups in Tuscany active in sectors such as ICT, Biotech and Renewable Energies.</i> http://www.fondisici.it/it/home |
| Annapurna Ventures | <i>Annapurna Ventures was launched in 2009 and makes seed and early stage investments in areas such as Consumer internet, Enterprise software and services, Mobile. Currently in its portfolio are Paperlit and Money360.it.</i> http://www.annapurnaventures.com |
| Italian Venture Capital Hub | <i>Italian Venture Capital Hub constituted under the coordination of Torino Wireless foundation with the cooperation of Polytechnic University of Turin, the Italian Venture Capital Hub groups together sixteen venture capital funds, covering every segment of activity, from Angel Investing to Late Stage. The hub is hosted inside I3P, the incubator for innovative start-up companies, located next to the Polytechnic University of Turin. For further information:</i> http://www.centroestero.org/invest/index.php?lang=eng&cat=68-about-piemonte&page=412-venture-capital |
| Life Sciences Capital | <i>A venture capital firm, seeking investment opportunities in Italian Life Science companies that have a close synergy with previous investment made. The ideal split of its investments is as follows: 10% seed money, 25% early stage, 25% growth stage, 40% mature stage or pre-IPO.</i> http://www.lscap.it/chi-siamo.html |



The tax treatment of Italian Venture Capital closed-end funds in a nutshell

Tax regime of the fund – Italian closed-end funds are not subject to ordinary income taxes (IRPEF, IRES or IRAP). However, an annual substitutive tax applies on the yearly yield at a rate of 12.5%¹⁹. The substitutive tax does not apply, and therefore the fund is fully exempt, if all the investors are “qualified”. For these purposes an investor is “qualified” if he resides in a country that allows an adequate exchange of information with Italy (countries included in the White List). Moreover, the following categories are in any case deemed to be “qualified” investors: (i) entities and international bodies established according to international treaties implemented in Italy; (ii) institutional investors, even if not subject to tax, established in one of the above mentioned “qualifying” countries; and (iii) central banks and bodies that manage the official reserves of a country.

Withholding taxes applied at source on financial proceeds received by the fund are not recoverable. However, it should be noted that most of the profits received by the Fund are not subject to the Italian withholding tax. For example, the withholding tax does not apply to (i) dividends, (ii) interest from bonds issued by banks or listed companies, (iii) interest from bank accounts under certain conditions, (iv) interest from non-Italian entities, and (v) interest from certain stock exchange dealings.

Should the yearly yield be negative, the loss can be either carried forward for the same fund or used to offset the operating profits of other funds managed by the same manage-

ment company. It should be noted that it is under the examination of the Italian Parliament a bill of law (drafted also on the basis of AIFI proposals) envisaging, inter alia, the shift from taxation upon accrual to taxation upon realisation.

Tax regime of the investors – The applicable tax regime varies depending on the type of the investor. In particular:

- profits from the fund received by Italian resident individuals not holding the investment in the capacity of entrepreneur are fully exempt from tax. Capital gains from the sale of fund units are subject to a 12.5% substitutive tax.
- profits from the fund received by Italian resident individuals holding the investment in their capacity of entrepreneur by Italian resident corporate entities and non-resident corporate entities with a permanent establishment in Italy are taxed as ordinary income. In such case a 15% tax credit is granted. Capital gains from the sale of fund units are taxed as ordinary income.
- all non-Italian resident investors (individuals, corporations, partnerships, etc.) are fully exempt from Italian taxation on profits distributed from the fund provided that a permanent establishment is not maintained in Italy. In particular, it should be remarked that no withholding tax applies on profits distributed by the fund to non-Italian investors. In addition, “qualified” investors (as defined supra) are entitled to a refund of the substitutive tax for an amount equal to the 15% of the profits received. Such refund is paid by the management company (and not by the Italian tax authorities), granting simplicity and quickness to the refund procedure. Capital gains from the sale of fund units are subject to a 12.5% substitutive tax; “qualified” investors are exempt from such substitutive tax.

¹⁹ Either a 5% rate or a 27% rate may apply under certain circumstances. It should be noted that, following an infringement procedure against Italy, the Court of First Instance of the EU held that the 5% rate constitutes a state aid (cases T-424/05 and T-445/05).

«over 40% of total Italian Private Equity and VC investments went to high technology companies in the first half of 2010»

The AIFI Code of Conduct for Italian Management Companies

In 2007 AIFI issued a Code of Conduct that is adopted by its members. The Code in force is focused mainly on duties of confidentiality and on matters of conflict of interest.

The arranged text is the most adhering to private equity management companies' needs, listing in particular the description of all the duties related to subjects with whom they have any direct contact.

Having regard to the increasing number of management companies performing in the market, the principal need was to characterize a "minimum content" to be specified and personalized by every player. The publication and future adoption of the code is a signal of operators' transparency and responsibility.

When adopting the code, every company should add to the text every integration in respect of the current law and principles.

Incentives for Venture Capital funds

An hi-tech Fund of Funds of € 86 millions promoted by the Ministry of Innovation and Technologies has been launched in the early 2009. The Fund is aimed at investing in venture capital funds managed by Italian management companies and focused on investments in SME based in the South Italy regions (including Abruzzo and Molise) and operating in digital technologies industries.

Target funds have been selected through a competitive bidding.

Moreover, the "Fondo per l'Innovazione" – which aims to support innovative projects – has been approved at the end of 2009, promoted by the Ministry for the Economic De-

velopment (Patent Office). The initiative will make available €20 million for venture capital funds investing in enterprises holding licenses and patents, in order to develop their industrial exploitation.

The competitive bidding is still open.

Another measure that is expected to be launched in the next months is the "Fondo per la Finanza d'Impresa" that is a Fund of Funds scheme aimed to invest in newly promoted funds dedicated to Italian companies in the whole of Italy and operating in innovative or high tech sectors. The estimated amount of capital that is expected to be allocated to this measure is about € 100 million.

In the Law Decree No. 185/2008 in Article 3, a tax deduction was introduced for the capital gains of individuals generated by the divestment of participations in young companies. It is requested that the capital gains must be reinvested within 2 years in other young companies. There are some conditions that must be respected in order to take advantage of the provision.

Finally, the Treasury Ministry, "Cassa Depositi e Prestiti", "Confindustria", "ABI", "Banca Unicredit", "Banca Intesasanpaolo" and "Banca Montepaschi" have signed a preliminary agreement for the establishment of a private equity fund to support the recapitalization of Italian small and medium companies. The fund will have the size of about €3 billion and will be addressed only to qualified investors.

BANKING FOUNDATIONS AND ASSOCIATIONS THAT SUPPORT INVESTMENTS AND ENTREPRENEURSHIP

The 2nd most funded area by Banking Foundations, which have been a traditional source of funding for education and science in Italy, is "Research", accounting for 14% of the €1,386 million approved in 2008.

5.1 Banking Foundations

The Italian Banking Foundations are non-profit, private and autonomous entities that originated in the early 1990s to continue with the socially-oriented activities that the former Savings Banks and Pledge Banks had conducted together with their lending business. At the moment, there are 88 Banking Foundations, which engage solely in socially-oriented and economic development undertakings. According to data for the system as a whole²⁰, in 2009 the Italian Banking Foundations approved funding requests for a total of € 1,386 million, showing a decrease of 17% on 2008 (€1,621 million). After the sector "Art, cultural activities and heritage" the second most funded sector in 2009 was the "Research" sector, receiving 14.2% of total funding (€196.7 million). The sub-sector for "Research and experimental developments in the field of Natural and Technological Science" received 26,1% of the funds al-

TABLE 13: Italian Banking Foundations - A selection

Fondazione Monte dei Paschi di Siena (Toscana) – Scientific research is the sector in which the Monte dei Paschi di Siena Foundation - MPS - is most directly involved. In addition to providing support to various universities and earmarking almost €12 Million in 2007 for specific third-party projects in this field, the Foundation also supports Siena Biotech, an operational arm of the MPS Foundation. Furthermore, the MPS Foundation is part of "Toscana Life Sciences," the science and technology park taking shape in Siena, having established an operational arm BioFund, a seed-capital company, to provide support for companies in their start-up phase. <http://www.fondazionemps.it/eng/default.asp>

The Compagnia di San Paolo (Piemonte) is one of the most important foundations in Europe, which devotes one third of its budget - €150 million in 2007- to the research and education sectors. In the biomedical field Compagnia focuses on projects linked to diseases with important social impact, like cardiology and oncology. One of the main biotechnology projects spearheaded by the Compagnia was the establishment in Turin in 2007 of the Human Genetics Foundation, together with the University of Turin and Politecnico of Turin, which covers activities in advanced training and cutting edge research in genomics and proteomics. <http://www.compagnia.torino.it/>

NEXT Fund (Lombardia) is a closed-ended "fund of funds", subscribed by institutional investors, created by Regione Lombardia with the aim of developing on the territory a venture capital market focused on innovation and development of new technologies. NEXT can invest both in other closed-ended venture capital funds and directly in companies in partnerships with other investors. NEXT's direct investments focus on start-up or early stage SMEs located in the Lombardy region, and belonging to innovative and technological sectors. <http://www.finlombardasgr.it/on-multi/en/Home/Funds/Next.html>

Intesa Sanpaolo Eurodesk - Part of the Intesa San Paolo bank, the EuroDesk offers technical support to companies engaged in research and innovation. Its services are designed to inform companies about the content and operation of EU funding programs and assist them in the application process. Companies making use of the Intesa Sanpaolo Eurodesk can also benefit from the banking and financial services offered by Intesa Sanpaolo, in view of their participation to the calls for proposals at the European level. <http://www.intesasanpaoloeurodesk.com/tiki-index.php>

Fondazione CRT - Cassa di Risparmio di Torino - Fondazione CRT is a private non-profit organization established in 1991 by the Cassa di Risparmio di Torino. The organization runs its activity for the development of the Piemonte and Valle D'Aosta regions. Projects range from conservation and valorization of artistic heritage and cultural activities to scientific research; from education and training to health and assistance to aiding the socially needy; from public safety to environmental protection to innovation in local organizations. <http://www.fondazionecrt.it/fondazioneEng>

Fondazione Cariplo - Fondazione Cariplo, one of the world's main philanthropic organizations manages the assets gathered over 180 years by Cassa di Risparmio delle Provincie Lombarde to carry on its long-standing philanthropic tradition. Since its establishment in 1991 Fondazione Cariplo has funded about 20.000 projects of nonprofit organizations, making grants in excess of €1.2 billion. Specifically 36% of grants were made in the Social Services area, about 36% in the Arts and Culture area, about 9% in the Scientific Research area, 2% in the Environment area, 14% in philanthropy and volunteer work, plus grants made in other areas. At present, the Foundation finances about one thousand projects or initiatives annually. <http://www.fondazionecariplo.it/portal/page/148a.do?link=oln643a.redirect&seu311a.oid.set=272>

²⁰ Associazioni di Fondazioni e Casse di risparmio S.p.A, 15th Annual Report: <http://www.acri.it/files/default.asp>



located to this sector while “Medical Research and Development” received 21,4% and “Research in Social Sciences” was given 3.3%. The third funded sector was “Education, learning and training”, secured €162 million, or 11.7% of total funding. The main sub-sectors were: “Primary and secondary education” (56.3%); “Higher learning”, i.e. university or equivalent education (28.9%); “Adult training” (10.4%); and “Youth development and training” (9.7%). Table 13 reports some of the most representative examples of Italian Foundations.

TABLE 14: A selection of non-banking foundations and initiatives that support research and entrepreneurship in Italy

Fondazione Bruno Kessler (FBK) is located in Trentino, where more than 350 researchers, conduct studies in the areas of Information Technology, Materials and Microsystems, Italo-Germanic studies, and religious sciences. Thanks to a close network of alliances and collaborations, FBK also performs research in theoretical nuclear physics, networking and telecommunications, and social sciences (studies of public policy effectiveness). The objectives of the foundation are to:

- Conduct internationally recognized research;
- Carry out applied research of strategic importance to the province;
- Advertise scientific results and promote economic development;
- Encourage innovation throughout the province.

<http://www.fbk.eu/>

Fondazione Filarete - In order to leverage the relevant intellectual and financial resources present in Lombardy and Italy, University of Milan, Cariplo Foundation and Intesa San Paolo have joined to establish the Filarete Foundation with the mission of creating, hosting and nurturing high-tech entrepreneurial initiatives in the fields of bio-pharmacology and biomedicine. The Chamber of Commerce of Milan has joined as Co-founding Member. Fondazione Filarete manages a 6000 m² Business Accelerator Infrastructure strategically located in the southern part of Milan, which hosts a mix of state-of-the-art technological platforms and companies; and offers scientific, financial and management support services. Through this combination the Filarete Foundation evaluates, assists and accelerates new entrepreneurial initiatives for the design, pharmacological characterization and delivery of innovative drugs. <http://www.fondazionefilarete.com/>

Fondazione Cotec - Fondazione per l’Innovazione Tecnologica is a non profit foundation under the Honorary Presidency of the President of the Italian Republic. COTEC operates with the ambitious goal of fostering Italian technological competitiveness, mainly by representing a platform through which the Innovation stakeholders can cooperate and share technology and knowledge. Among its structural activities, the COTEC foundation publishes every year the Italian Innovation Report, a detailed picture of the strengths and weaknesses of the Italian Research and Innovation system. <http://www.cotec.it/it/>

Fondazione Rosselli - The Rosselli Foundation was created in Turin in 1988. Its main objective is fundamental research applied to the economic, social and political fields, especially dealing with public policy at both the national and European levels. In addition to its purely academic activities, over the years, the Foundation has become one of the most important think tanks for the main Italian and European governmental bodies, with whom it shares its knowledge and analyses. http://www.fondazionerosselli.it/User.it/index.php?PAGE=Sito_en/Home

Telethon - Telethon Italy is one of the biggest biomedical charities in Italy, whose mission is to advance biomedical research towards the diagnosis, cure and prevention of muscular dystrophies and other human genetic diseases. Telethon focuses on scientific research and does not offer healthcare, material assistance to patients and families or advocacy. The research portfolio includes intramural research and extramural research through grants to universities, public and non for profits research institutes in Italy. Telethon primarily depends on a solidarity marathon that takes place in December. Last year the Telethon marathon raised over €30 million. <http://www.telethon.it/english/default.aspx>

Associazione Italiana per la Ricerca sul Cancro (AIRC) - The Italian Association for Cancer Research (AIRC) has been committed to fostering cancer research in Italy, and has gradually expanded to include 17 Regional Committees and nearly two million members. AIRC raises funds, gives out grants for cancer research, and informs the public on the latest news in oncology. Fundraising takes place in two forms: 50% through national and local events designed for the general public and the business community, and 50% through letters requesting support. Each year, the funds raised are allocated to research projects and study grants deemed particularly worthwhile by AIRC’s Scientific Committee made up of oncology experts throughout Italy, who review and select applications with the help of more than 250 European and American researchers. <http://www.airc.it/english/home.asp>

«Existing associations representing Italian VCs, business angels and science parks, serve as an important point of entry for investors »

5.2 Italian Agencies that support innovation

Other important point of entry in Italy for investors is represented by the numerous associations and agencies that work to support economic development through innovation. In particular, the Business Angels association (IBAN) as well as AIFI (the Italian Venture Capital and Private Equity association) are becoming very active in Italy.

TABLE 15: Selection of Italian Associations that support Innovation

Associazione dei Parchi Scientifici e Tecnologici in Italia (APSTI) is the national network of scientific and technological parks. The objective of the Association is to work as an integrator between the companies' need for innovative growth, especially small- and very small-sized businesses, and the wealth of knowledge embodied by the Centers of Technological and Scientific Excellence, Universities and Research Centers. For further information: <http://www.apsti.it/index.php?id=14&L=1>

Agenzia per l'Attrazione degli Investimenti Esteri in Italia (INVITALIA) is the government agency for inward investment promotion and enterprise development dedicated to assist companies in all stages of the investment process, to support new business ventures and to enhance local development. For further information: <http://www.invitalia.it/on-line/eng/Home.html>

Italian Business Angel Network Association (IBAN) is the association that groups an extensive network of more than 200 Italian business angels, investing in early stage companies. For further information: <http://www.iban.it>

Italian Angels for Growth Association is a non profit organization whose purpose is to promote entrepreneurship as an engine for economic growth. Its members are entrepreneurs, managers and professionals who provide financing to early stage companies and support their development. For further information: <http://www.italianangels.net>

Italian Venture Capital and Private Equity Association (AIFI) was created in 1986, in order to promote, develop and represent institutionally the venture capital and private equity activity in Italy. The Association is an organization composed of different entities which, throughout direct investment of their own funds or through the management and advisory of independent funds (closed-end funds) are private equity and venture capital investors with the objective of purchasing, managing and divesting in unquoted companies. Associated members are Italian and foreign associations as well as institutions and companies interested in the development of the venture capital industry in Italy. For further information: <http://www.aifi.it>

Italian Association for Industrial Research (AIRI) represents an important point of reference for organizations involved in industrial research activities. The Association was set up in 1974 and sustains an intense dialogue with enterprises, public bodies and universities, with a view to supporting industrial research as a decisive factor for the country's technological and productive development. For further information: <http://www.airi.it>

GOVERNMENT STRATEGIES, POLICIES, PROGRAMS & INVESTMENT

Increasingly aware of the importance of shoring up research activities, Italian government institutions, both regional and national, have been implementing a series of programs aimed at supporting innovation.

6.1 Introduction

When analyzing two of the most important documents available today on Innovation Policy in Italy ^{21 22}, it is clear that the Italian government is working to face and solve three main challenges:

1. Shortage of innovation financing — especially venture capital;
2. Talents-researchers, scientists, high-skilled human capital-brain-drain;
3. Improvement of technology transfer mechanisms.

Regarding the challenges concerning innovation, R&D policy objectives at national level are formally outlined in a “National Research Plan” (NRP). The NRP sets scientific research and technological innovation together with reinforcement of education and training as major priorities. In particular, the NRP highlights the importance of technology transfer and the need for strengthening networks and cooperation between public and private sectors - consortia of universities, laboratories and enterprises - as the main tools for achieving a long term economic growth. The new NRP (2010-2012)²³ has been drafted and will be approved by the Ministry of Education, University and Research. Its main actions, include: supporting creativity and excellence across all fields of knowledge by providing support for basic research projects; funding basic research for the

development of enabling technologies, to spur the processes of interaction between universities, research institutions, ministries, industries and regions; supporting research for the development of innovative industrial sectors; backing the creation of new high-tech companies and national technology platforms; enhancing existing technology districts; strengthening the national scientific level, attention to excellence, meritocracy, internationalization, economic growth and valorization of the human capital.

6.2 Action lines

The main action-lines implemented by the current Italian government can be summarized as follows:

Modernization and digitalization of the public administration, implemented through e-gov 2012.

“e-government 2012” was launched in January 2009 with the objective to recover the accumulated delay in the implementation of

²¹ INNO-Policy Trend Chart – Innovation Policy Progress Report Italy, 2009: http://www.innova-eu.net/docs/Country_Report_Italy_2009-1.pdf

²² ERAWATCH Country Report 2009: An assessment of research system and policies, Italy

²³ Summary of National Research Plan (2010-2012), http://www.miur.it/0003Ricerca/0477Docume/8095Pragra_cf3.htm

«Through the program Industria 2015, the Italian government is seeking to re-launch Italy's competitiveness, by focusing on increasing public-private partnerships, among other actions »

the Lisbon strategy through the modernization of the public administration. This plan is expected to generate important savings – a round €40 billion in the next 4-5 years - by increasing productivity in the public sector; to reduce the P.A.'s administrative burden; and to have a booster effect on growth.

Creation of public-private partnerships: Industria 2015.

The Italian government's flagship program to increase the competitiveness of the industrial system is Industria 2015, promoted by the Ministry of Economic Development, and launched in 2006. The strategy seeks: to take advantage of the opportunities arising from the growth of private demand of highly innovative goods; to improve the capacity of the productive system to effectively meet the new needs of an advanced society; to improve the competitiveness of traditional sectors by developing new synergies between technology producers and consumer goods producers. Among the main actions planned are the Industrial Innovation Projects – IIPs -, which aim to stimulate and promote the development of innovative products and services in five strategic areas, namely Energy Efficiency, Sustainable Mobility, Life Sciences and Biotechnology, New Technologies for SME's Development, and Innovative Technologies for the Enhancement of Cultural Heritage. Once a strategic plan is devised for each IIP and priority areas of funding are clearly defined, the Ministry will issue requests for bids through which entities can submit project proposals and be considered for funding. Proposals must: be detailed and represent innovative and technical scientific progress, while matching the technological objectives established in the strategic plan of the relevant IIP; lead to the concrete implementation of an innovative product or service prototype that has a positive

impact on the industry; be the result of cooperation between research organizations and entrepreneurial companies; and be competitive in economic terms. Although the program is aimed at financing Italian companies and research centers, foreign entities are eligible to obtain funds when submitting proposals in partnership with Italian counterparts. Nonetheless, if the project is eligible to obtain funds, the amount the foreign entity will receive cannot exceed 15% of the total project amount.

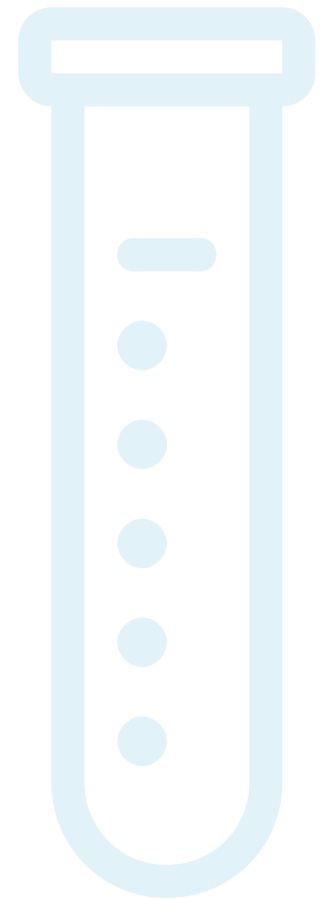
Creation of clusters in order to reach critical mass, specially at regional level, taking advantage of the existing regional competences and "excellences" (e.g. technological districts, high technology poles, centres of competence).

Re-launching of R&D investments in the energy sector. Research Plan in the energy sector (2009- 2011).

The plan launched by the Ministry of Economic Development in March 2009 foresees the allocation of funds - €210 million- to boost research and innovation in the energy sector. The resources will be allocated to research centers and universities in order to strengthen research in the fields of production, electricity consumption optimization, nuclear energy and environment protection.

6.3 National support measures recently implemented

Data from the annual report on "Instruments for the support of economic and productive activities" carried out by the Ministry of Economic Development²⁴ shows that the amount allocated to R&D and innovation for national and regional measures during the period 2003-2008 was €14 billion. The year by year analysis of the funding shows that the budget allocated for R&D almost triple from 2007 -



from €1.16 billion- to 2008 - €3.32 billion in 2008. Listed below, some of the most important measures implemented by the Italian government to favor innovation and financially support research projects.

Research Incentive Fund (FAC) – Among the most important funding programs administered by the Ministry for University and Research is the Research Incentive Fund, which was created with Legislative Decree 297/99 and supports applied research programs for the development of new products, production processes and services and to promote existing technologies.

Fondo per gli Investimenti della Ricerca di Base (FIRB) – The FIRB, administered by MiUR, is the main instrument for funding of basic research. The funding includes activities which aim to widen the scope of scientific and technical knowledge not linked to immediate and specific commercial and industrial objectives, with the aim of enhancing Italy's global competitiveness.

Fund for Scientific and Technological Research (FIRST) – Since its establishment in 2007, MiUR allocated €500 million for research in high innovation industrial fields, including biotech.

Technological Innovation Fund – Established by Law 46/82, the Fund seeks to finance programs in high to medium-high tech sectors, including Life Sciences, supporting industrial

TABLE 16: Support Measures for Innovation

| Support initiatives introduced during the period July 2008 - July 2009 | | |
|--|---|--|
| IT 100 | Tax exemption on capital gains from start-ups | <i>This measure is oriented to reinforce the role of the private investors, especially the one of business angels. The measure establishes that capital gains are exempted from personal income taxes in compliance with the following: (i) shares are from young companies (no older than seven years), (ii) they have been owned by at least three years and (iii) the capital gains obtained are re-invested in the next two years on young start-ups that operate in the same sector as the first company.</i> |
| IT 101 | National Fund for Innovation | <i>The National Fund for Innovation - €60 million - has been created by the Ministry of Economic Development with the objective to promote innovative projects based on the exploitation of the industrial property. The Fund's main goal is to support SMEs and to reinforce Italian patents. It will act as an instrument to reduce investment risk for banks and financial intermediaries that participate in the funding/ financing of innovative projects based in the valorisation and use of patents.</i> |
| IT 102 | Incentives for the elimination or reduction of substances of very high concern | <i>The Ministry for Economic Development will finance experimental development projects, regarding product or process innovation with the objective to reduce or eliminate the chemical products/substances that have been defined by the EC as "of very high concern" - CE 1907/2006 (REACH). Resources amount to €120 million.</i> |
| IT 99 | Risk capital fund for SMEs | <i>The Ministry for the Public Administration and Innovation has launched the fund for risk capital for the SMEs located in the South of Italy. This is one of the measures included in the e-government 2012 Plan and its objective is to favor the influx of risk capital in southern Italy, as well as in Abruzzo and Molise regions. The fund - €160 million- will support the creation and development of SMEs involved in investment programmes related with product and process innovation through the use of digital technologies.</i> |
| IT 108 | Strengthening patents and intellectual property | <i>The Italian Patents and Trademarks Office coordinates a project for the re-qualification of national patents.</i> |
| | "Brain-return" measure | <i>The "anti-crisis decree" launched by the Italian government last November 2008 foresees the introduction of fiscal incentives to attract Italian researchers living abroad. This measure will try to counteract the brain-drain phenomenon, which is posing a serious threat in the Italian R&D system. The measure consists of a tax incentive - 10% tax applied to personal income - during the first five years of fiscal residence in Italy as from 10 January 2009.</i> |
| | Funds for research and innovation in the energy sector: | <i>The new plan for the research in the energy sector - 2009-2011 - launched by the Italian Ministry of Economic Development has allocated €210 million to research centers and universities to strengthen research in the fields of production, rationalization and savings of electricity, nuclear energy and environment protection.</i> |
| IT 109 | Funds for innovation projects in start-ups | <i>The Ministry for Economic Development finances innovation projects proposed by start-up firms operating in medium and medium-high sectors in the following areas: biotech, ICT, materials, robotics and energy. The funding allocated amounts to €55 million.</i> |

²⁴ Ministero dello Sviluppo Economico: Relazione sugli incentivi di sostegno alle attività economiche e produttive (Giugno 2009)

«The amount allocated to R&D and innovation by national and regional programs during the 2003-2008 period was €14 billion »

research projects and the establishment of research centers or conversion and/or renovation of existing ones. A tender procedure has opened in July of 2009 to award €55 million - €35 from this Fund and €20 million from the PON Research and Competitiveness- which have been specifically allocated to finance R&D activities and projects carried out by start-ups with less than 5 years of operations.

Fondo per le Agevolazioni alla Ricerca (FAR) – Established by Decree 593/00, the Fund aims to finance research projects submitted by companies, research centers, science parks and consortia. It covers up to 25% of the budget with a grant and 70% with a soft loan for a sum not exceeding Euro 7,5 million.

Progetti di Ricerca di Interesse Nazionale (PRIN) – These projects are promoted by the MiUR and are aimed at supporting projects of relevant interest to the country and being submitted by universities.

Italian Industry Association, Confindustria is strongly supporting a tax exemption measure for all companies investing in R&D. The lobbying conducted by Confindustria will hopefully lead to such an important fiscal measure in the near future.

The table below lists some of the most relevant and recent initiatives introduced in support of innovation in the last year.

6.4 Regional support measures

In Italy, both central and regional authorities can legislate, however a series of interventions are the exclusive right of the central State. As a result of a change in the Italian Republic's Basic Law - L. 3/2003, regions have acquired more responsibility, enabling them, along with the State, to adopt autonomous Science, Technology and Innovation (STI) policies.

Regional policies at the national level, which include those pertaining to R/D activities, are in addition to the ordinary budget and consist of co-funding of structural funds-national and regional operational programs, **PONs** and **PORs** - and a fund for under-exploited areas, **FAS** - recently included by the 2007 Financial Law within a new larger "Fund for competitiveness and development".

The National Strategic framework for the regional policy (**QSN 2007-2013**), which has been approved by CIPE²⁵ in December 2006, includes actions of strategic coordination between State and Regions and activities of monitoring, evaluation and strategic reporting. The QSN regional policy is promoted through "projects", where a combination of policy measures (incentives, regulations, infrastructures) contributes to the realization of sustainable processes of innovation. This model of intervention, different from a simply "incentive based" one, has been followed by the 2007 Financial Law also when tracing the lines of a new industrial policy for innovation (Industria 2015).

Regions directly manage three types of policy instruments, all including R&D activity support, even if with different weight: the co-funded instruments (PORs see above), the regional based measures and the transferred

²⁵ CIPE: Inter-Ministry Committee for the Economic Planning



«Regions within Italy are now adopting autonomous Science, Technology and Innovation policies »

from the State measures (established by national laws, such as the case for the R/D fiscal credit, L. 140/ '97) with State attribution of financial resources. The three types of measures are mainly oriented towards generally sustaining the local industrial system consolidation and have a diversified range of instruments (promotion of new entrepreneurs, access to bank credit, infrastructures) but with a low amount of funding.

6.5 European measures

European 7th Framework Programme (FP7)

The Seventh European Research Framework Programme (FP7) provides funding of more than € 54 billion over 7 years (2007-2013) to increase Europe's Research Area and its global competitiveness. FP7 consists of four specific programmes: COOPERATION - to fund collaborative projects between research teams; CAPACITIES - to enhance research and innovation capacities throughout Europe; PEOPLE - to fund training, mobility and career development of researchers; and IDEAS - to fund excellent individual investigators in cutting-edge frontier research through European-level competition.

The European Research Council (ERC) is the first European funding body set up to support investigator-driven frontier research, and is responsible of distributing these funds.

In 2007 the ERC had a budget of € 335 million. That year, 25 Italian new researchers (with less than 10 years of experiences) were given a total grant of € 23.15 million.

The following year, the budget was € 553 million for Advanced grant (for researchers with at least 10 years of experience). 282 grants were given, and 18 of these were for Italian researchers.

In 2009, 244 grants were given to both starting and advanced researchers. 16 Italian new

researchers and 15 advanced researchers received grant funds.

EuroTransBio is a joint initiative of 12 European countries and regions including Italy- working to support trans-national R&D private/private and private/public co-operations between companies, especially small and medium-sized enterprises (SMEs), and academic labs by coordinating their national or regional public funding programs. The goal is to allow economic and academic biotech players to share risks, costs and skills related to innovation in order to develop more efficiently new products and technologies that could reach the market in the short to medium term. Consortiums consisting of at least two SME partners from two different ETB member countries can bid for the joint calls for industry-driven trans-national R&D projects launched by the countries and regions involved. From 2004 to 2009 ETB has launched four calls and the next will open in October 2009 and close in February 2010. An entity from a non-member country can participate in the bidding consortium -at its own costs- as long as it is offering a significant technical scientific contribution and there are already at least 2 participating entities from 2 member countries; In some case it could also be included as a subcontractor and managed under the national/regional financing regulations of the eligible participant.

In the last 3 editions of ETB (Italy didn't participate at the first call), 19 of the 81 funded projects were of Italian companies. The number of Italian entities totally involved in these 19 projects is 32, of which 23 SMEs and 9 RTOs. www.eurotransbio.net



INTELLECTUAL PROPERTY

As a founding member of the EU, Italy boasts some of the most modern IP practices in the world.

Italy is at the forefront of European IPR developments and has some of the most modern and up-to-date intellectual property practices in the world. Foreign companies investing in the Italian market can rely on the same legal protection of Intellectual Property Rights (IPR) granted to Italian companies.

Under the Italian system, it is possible to patent new products or processes in any technological field. However, it is not allowed to patent methods for human or animal therapy, plant varieties or essentially biological methods for producing plants or breeding animals. The filing of an Italian patent can represent the basis for a claim in any member country of the Paris Convention within a year from the date of filing.

The technical solutions of product, process or use may be protected by a patent for industrial invention, which gives the inventor the right to prohibit third competing parties from using the invention. The invention can not be made, marketed, used or distributed

if not by the patent holder or with permission. The right is granted by the Italian Patent and Trademark Office (UIBM) for a period of twenty years from the date of the application, at the end of which the invention becomes public. The collections of data or information, under certain conditions, such as databases and new plant varieties as well as biotechnological inventions which have been accepted in our country, can also be protected.

As for University Intellectual Property rights, **in Italy the ownership of the patent belongs to the researchers and not to the University**, with some exceptions, such as when the research is funded by private parties or certain public entities. Under those circumstances, the parties must establish the ownership of the patent contractually with ad hoc agreements. In the United States universities cannot automatically claim ownership of a researcher's federally funded invention. However, the university on the other hand has the right to ask the researcher to assign ownership of the invention to the university per agreement signed between the two parties.

SUCCESS STORIES

ITALY-USA

American companies are establishing numerous collaborations and partnership agreements with Italian counterparts, research centers and universities.

Italy has attracted the interest of many among the most important multinational firms such as Microsoft, IBM, Pfizer, General Motors, Procter & Gamble, Eli Lilly. These companies have established throughout the country major research centers, tapping into the enormous scientific and technological talent of the Italian researchers:

- **IBM** carries out applied software research at its Rome Tivoli Laboratories as well as in five other Competence Centers on advanced solutions located in Bari (2), Naples, Cagliari and Catania. With a team of 400 researchers, Rome Tivoli's Lab, the only one of its kind in Europe, develops and manages IBM Tivoli Software. It is charged with planning, developing and providing global support on the main Tivoli product line, which includes advanced software for the secure and intelligent management information system and networks.
- **IBM**, again, in cooperation with the prestigious Scuola Normale Superiore di Pisa, has established the Quantum Information Competence Center, the first Italian research center devoted to the quantum informatics with the goal of exploring the potentialities as well as the impact of quantum computing and the most advanced frontiers of software development.
- **Microsoft**, in collaboration with the Italian Government, the University of Trento and the Province of Trento created the Centre for Computational and Systems Biology at the University of Trento, a cutting edge Science and Technology centre in Trento seeking to increase the understanding of fundamental biological processes at system level by using programming language theory to design new conceptual tools.
- **Micron Technology**, a US firm with the leadership on high-quality semiconductors has further enhanced its existing research center in Avezzano (Abruzzo) for an investment of 4.3 million dollars, and making this small town one of its main R&D centers. Micron Technology is present in Avezzano since many years now with a high tech wafer production plant.
- **Boeing** has an aerospace research center near Portici (Naples) located within the Imast district, an excellence point for the research and development of polymers.
- In 2007 **General Motors** has moved its European diesel engine laboratories from Germany to Turin within the Politecnico city campus.
- **Genentech**, signed an agreement with Nerviano Medical Sciences, the largest pharmaceutical R&D facility in Italy and one of the leading oncology-focused and integrated discovery companies in Europe. The collaboration agreement focused on small molecule inhibitors, promising anticancer agents.
- **Bristol-Myers Squibb Company** announced in 2006 an agreement with Nerviano Medical Sciences according to which Nerviano will identify and conduct early stage development of active compounds against new oncology targets provided by Bristol-Myers Squibb. Terms of this collaboration include the potential for up to \$150 million in clinical and regulatory milestones in addition to royalty payments for each successful research program.

«Major multinationals have set up research centers in Italy, tapping into the country's rich scientific human capital»

- **Schering-Plough Research Institute** (SPRI), the human pharmaceutical research unit of Schering-Plough Corporation, established a research center within the San Raffaele Science Park in Milan.

- **Amgen** and **Dompè Biotech** signed an agreement for a € 10 million investment aimed at the creation of a biotech research center.

- In 2008 **Cisco Systems** –the US multinational corporation leader in the web- solution sector – already present in Italy with a research center that employs over 200 scientists and focuses on photonics research (centro italiano di fotonica) - the only Cisco research center outside Silicon Valley that coordinates photonics research globally - has opened a new Center for Business Collaboration in Vimercate, near Milano. The center will focus on new technology development in Business Collaboration.

- **GE Transportation** announced in 2011 it will open an R&D center in Tuscany that will focus on railway signaling systems, investing \$15 million. In addition to these R&D Investments done by US companies in Italy, there are also examples of alliances and collaboration agreements between Italian companies or Universities and American counterparts.

Last but not least, a clear example of the Italian talent and entrepreneurial spirit which developed and grew in the US. Summarized below are some examples of **Italian scientists and researchers** who not only have been extremely productive in terms of scientific research but were also enthusiast entrepreneurs having created high-tech start-ups and spin offs, both in Italy and in the US:

- **Alberto Sangiovanni Vincentelli** has a multifaceted career: a scientist, engineer, entrepreneur and inspiring teacher. He received his PhD in Engineering from Politecnico di Milano, Italy, in 1971. He is currently the Edgar L. and Harold H. Buttner Chair of Electrical Engineering and Computer Sciences at the University of California at Berkeley. He has been on the Faculty since 1976. He was a co-founder of Cadence and Synopsys, the two leading companies in the area of Electronic Design Automation. He is the Chief Technology Adviser of Cadence and a member of the Board of Directors of Cadence and the Chair of its Technology Committee, UPEK, a company he helped spinning off from ST Microelectronics, Sonics, and Accent, an ST Microelectronics-Cadence joint venture he helped founding.

***GALILEO ONCOLOGICS**, a company established in 2008 and originating from Abiogen Pharma S.p.A, with anti-neoplastic projects at different stages of development, has existing research partnerships with the University of Texas Southwestern Medical School and the Wistar Institute in Philadelphia.*

*The science park **Insubrias Biopark** in **Gerenzano** (in the region of Lombardy) signed an agreement in 2009 with **Texas University** to study possible cures of tuberculosis and malaria, diseases that have registered an increase in resistance cases. Texas University has acquired a copy of all of the 166.000 biological extracts of Insubrias Park's Foundation.*

*A team led by Professor Saverio Minucci of the **Institute of Molecular Oncology/European Institute of Oncology in Milan**, in collaboration with **J Craig Venture Institute** in Maryland and **Sangamo Biosciences** in Virginia, has developed a new epigenetic screening technology that improves molecular-based disease diagnosis. The technology employs high-throughput DNA sequencing that enables doctor to determine patient's epigenetic profile in 3-4 days.*

*The **Area Science Park** in Trieste and the **Case Western Reserve University** of Cleveland have entered a partnership agreement in 2008 aimed at identifying common research activities capable of stimulating the development of both institutions; supporting and facilitating opportunities for technology transfer on the respective markets; promoting the program which allows Italian and American researchers to work in both institutions; sharing skills and experiences relating to the creation, development and management of scientific parks.*

*The **University of Pittsburgh Medical Center (UPMC)** will create a \$398 million **Biomedical Research and Biotechnology Center near Palermo** by 2010, in partnership with the Italian government, the region of Sicily and Italy's National Research Council. The UPMC is also creating a new medical simulation center in Palermo, Italy, at UPMC's transplant facility there, to be based at the **Mediterranean Institute for Transplant and High Specialization Therapies -Istituto Mediterraneo per i Trapianti e Terapie ad Alta Specializzazione**.*



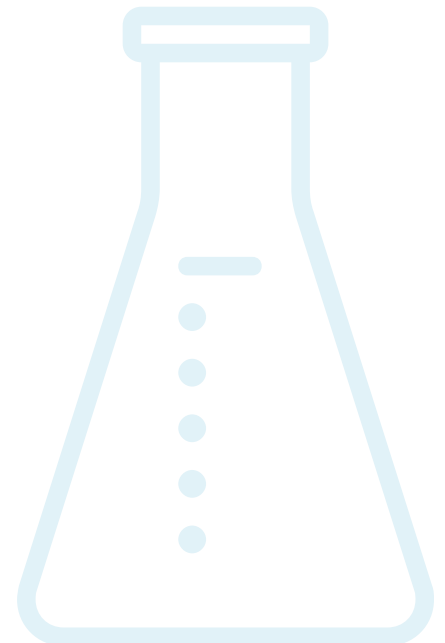
«Italian scientific talent is active academically and entrepreneurially both in Italy and in the US »

He was a member of the HP Strategic Technology Advisory Board, and is a member of the Science and Technology Advisory Board of General Motors and of the Scientific Council of the Tronchetti Provera foundation and of the Snaidero Foundation. He consulted for many companies including Bell Labs, IBM, Intel, United Technologies Corporation, COMAU, Magneti Marelli, Pirelli, BMW, Daimler-Chrysler, Fujitsu, Kawasaki Steel, Sony, ST, United Technologies Corporation and Hitachi. He was an advisor to the Singapore Government for microelectronics and new ventures. He consulted for Greylock Ventures and for Vertex Investment Venture Capital funds. He is a member of the Advisory Board of Walden International, Sofinnova and Innogest Venture Capital funds and a member of the Investment Committee of Atlante Ventures, by Banca Intesa/San Paolo. Dr. Sangiovanni-Vincentelli has been a Fellow of the IEEE since 1982 and a Member of the National Academy of Engineering, the highest honor bestowed upon a US engineer, since 1998.

- **Mauro Ferrari** is a well known scientist: Professor and Chairman, Department of Nanomedicine and Biomedical Engineering (nBME) and Professor of Internal Medicine, Division of Cardiology at The University of Texas Health Science Center, he is internationally recognized expert in the development, refinement and application of biomedical nanotechnology. He was trained in mathematics, engineering and medicine at the University of Padua (Italy). He has published approximately 200 peer-reviewed articles and received many national and international awards. Dr Ferrari was also the first recipient of a Research Superiority Award of the Emerging Technology Fund of the State of Texas. From 2003 to 2005, he served as Special Expert on Nanotechnology

and Eminent Scholar at The National Cancer Institute, where he led in the development of the NCI's program in Nanotechnology, which remains the largest program in NanoMedicine in the world. Dr. Ferrari has more than 30 U.S. and International patents awarded to his credit and has founded several startup companies. Furthermore, he is the scientific founder of NanoMedical Systems (NMS) in Austin, Texas and Leonardo Biosystems. He also currently serves as the Director of Scientific Strategy at the Arrowhead Research Corporation (NASDAQ:ARWR).

- **Francesco Stellacci** a former researcher in engineering and materials science at the MIT in Boston and the only Italian winner of the Emerging Technologies EMTECH35 prize for young innovators, has founded his own startup company in Italy, in which MIT holds 10% of the shares. Molecular Stamping is based upon a patent that allows a new method to produce microarrays, nanotechnological tools used for the DNA analysis, mostly to study diseases like Alzheimer and certain types of cancer.





EVENTS

Conference, trade shows and other initiatives relating to research and innovation are growing in number and present an ideal opportunity to meet researchers, entrepreneurs, and local investors.

The following list of events in Italy provides an excellent opportunity to learn about latest developments of Italian companies and research institutes and meet their representatives. It also includes some novel and interesting events for inventors.

Forum Ricerca Innovazione e Imprenditorialità

March 17-19, 2011, Padua

Recognizing the value of scientific research for social and economic development and the virtuous link between universities and companies, the Forum aims at discussing and enhancing entrepreneurship, creation of new businesses, innovation based on research, models for innovation.

www.rieforum.org

Italia Innovation Day Mind the Bridge/ Intesa San Paolo

March 31, 2011, Silicon Valley and May 5, 2011, New York

An event sponsored by Mind the Bridge, Intesa San Paolo and Booz&Co., Italian Innovation Day will feature a showcase of the best Italian technology startups and SMEs ready to scale up and is designed to stimulate partnership opportunities, attracting entrepreneurs, investors, business leaders and mentors from Italy and the US. Mind The Bridge is a non-profit foundation of Italian entrepreneurs in the USA willing to boost ideas and innovations born in Italy. Every year it runs an annual business plan competition with the purpose of selecting the best innovative business ideas among all the potential Italians talents. This year's finalist startups, who will pitch their projects at Italian Innovation Day, will also benefit from a mentoring and coaching program taking place in the days before their pre-

sentations in Silicon Valley. At the Innovation Day, they will be joined by Intesa San Paolo's start-ups, mentioned hereunder.

www.mindthebridge.com;

<http://italianinnovationday.com/>

Intesa San Paolo start-up initiative

April, June, September, November, 2011,

Milan

The Intesa Sanpaolo Start-up Initiative seeks to discover new, highly innovative entrepreneurial businesses, to prepare them to confront the market and to give them the opportunity to present themselves to potential investors and industrial partners. These events represent a moment in which start-ups and investors get together to evaluate the best business plans selected by the Innovation Team of the Corporate & Investment Banking Division of Intesa SanPaolo, merging deal-flow screening with coaching and network building. After a first "pilot" event which took place in Milan in October 2009, and that generated the closing of two deals, 5 more events were held in 2010, including one in London, and more are planned for 2011, including Italian Innovation Day in collaboration with Mind the Bridge, mentioned above.

www.startupbusiness.it

Biointaly Investment Forum 2011 &

Intesa San Paolo start-up initiative

April 4-5, 2011, Milan

This event will bring together national and international venture capital and Italian companies from all sectors of the biotechnology industry, providing a unique opportunity for investors to monitor the pulse of the dynamic biotech sector in Italy. Investors will have an opportunity to discover some of the exciting developments in the Italian biotech sector in a single meeting. Italian companies, ranging



from start-ups and spin-offs to established companies, will present their new business ideas and projects in the fields of biotech and nano-biotech.

<http://assobiotec.federchimica.it/home-eng.aspx>

Bip Research

May 18-20, 2011, Bologna

BIP Research, which brings together university researchers (departments and spin offs) and R&D managers of companies to foster technology transfer, is in its first edition and is one of the initiatives of Borsa dell'Innovazione e del Placement (Placement and Innovation Exchange), an innovative idea providing a concrete meeting point carried out by means of complementary initiatives addressed to training and business experts.

<http://www.biponline.it/>

National Award for Innovation

June 2011, Roma

On a yearly basis, the President of the Italian Republic grants an Award to the Italian firms and entrepreneurs that distinguished themselves for the results achieved in the field of innovation. The event is hosted and organized by Cotec, the National Foundation for Technology and Competitiveness. The National Award for Innovation encompasses several branches, such as Industry, High-tech start-ups, Services, Design and Public Administration.

<http://www.convegnonazionaleinnovazione.it/il-premio/>

Researchtobusiness (R2B)

June 2011, Bologna

R2B - at its fifth edition - is the first initiative in Italy aimed at fostering collaboration between advanced research and industry on a national and international level. R2B is the venue where

the research key players have the opportunity to present new ideas for technological innovation, research results, prototypes and applications to be marketed for businesses, R&D managers and sponsors interested in supporting technology transfer operations.

<http://www.r2bdays.it>

Business Day

October 2011, Trieste

Business Day is an event dedicated to entrepreneurs and managers interested in the results, technology and products from the top cutting-edge companies in the AREA Science Park, the first multi-sector Science and Technology Park in Italy and one of the largest in Europe. The catalogue containing information on the participating companies is accessible online and it is possible to request meetings before the event on the show's website.

<http://www.area.trieste.it/opencms/opencms/area/it/BDay/index.html>

Mifaccioimpresa

October 2011, Milan

MifaccioImpresa is a two days initiative open to new potential entrepreneurs willing to develop innovative ideas. The initiative is aimed at providing the new inventors with the necessary instruments – personalized consulting services, the exposure to the right audience etc- to make a new idea into a successful business.

<http://www.mifaccioimpresa.it/>

Innovation Circus

October 2011, Milan

The fifth edition of Innovation Circus will be held in fall 2011. The competition is open to inventors in the four categories: energy and environmental sustainability, food and health, ICT, arts and design. The proposals are evaluated by a committee of experts, which is responsible



for selecting the 3 best ideas for each category. Only one innovative idea is then chosen as the winning one and awarded with a prize consisting of consulting services - evaluation and due diligence of the innovative idea and support for the initial step of starting a company.

<http://www.innovationcircus.it>

SMAU Percorsi per l'Innovazione - Innovation Pathways-From Business Idea to Business Start-up

October 2011, Milan

SMAU is one of the major ICT trade shows taking place in Italy at Fiera Milano City. It is within this major event that "Innovation Pathways" has been organized. Innovation Pathways is addressed to start-up, spin-off, research institutions, University, Business Incubators, Scientific Parks, Technological Districts. The 2011 edition of SMAU will take place in Milan in October 2011.

http://www.smau.it/html/pdf/2009/milano09/smau09_percorsi_en.pdf

Global Entrepreneurship Week in Italy

November 2011, Pisa

For the second time the Global Entrepreneurship Week (GEW) will have an Italian edition. The event will take place in Pisa, at the prestigious Scuola Superiore Sant'Anna. The topic of this event will be Research in Italy, the new Italian entrepreneurship spirit spinning out from all the major universities and research centers.

<http://www.sssup.it/gew>

Premio Nazionale per l'Innovazione

December 2011

The "PNI - Premio Nazionale per l'Innovazione" (National Prize for Innovation) - is the competition that every year gathers the winners of the Italian "Start Cups" - the business plan competitions organized by the universities taking part to the "PNI Cube". The PNI is the grand final among the winners of the seventeen local contests for the best high-tech entrepreneurial ideas.

<http://www.pni.it/>



ADDITIONAL LINKS

A range of additional organizations and resources relating to Italy's research and innovation are useful to connect with Italian players.

Below some additional links to useful sources related to the Italian R&D system available on line.

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| www.ricercaitaliana.it | <i>A resourceful and comprehensive web portal, offering detailed information on research programs, institutes and government policies in Italy. Searchable by keywords, research area, region. It can be translated in English by using the Google Toolbar.</i> |
| www.riditt.it | <i>The Italian Network for Innovation and Technology Transfer to SMEs offers a database on technologies developed by Italian universities and research centers, and another on research centers, science parks and incubators, both searchable by technology type or by geographical area.</i> |
| www.aginnovazione.gov.it | <i>Agenzia Nazionale dell'Innovazione was established by the Italian Government to promote technology transfer from University to Industry and accelerate the competitiveness of Italian SMEs.</i> |
| www.netval.it | <i>A list of all University spin-offs (soon available by sector) and links to Universities' web pages listing patents are available on the website of the Italian Technology Transfer Offices Association -English translation through Google toolbar).</i> |
| www.ditt.de/atlas/it/ | <i>A directory of Italian Science and Technology Parks and Technology Districts, available by sector and services. It is managed by the Italian Trade Commission of Berlin.</i> |
| www.reteventures.com | <i>ReteVentures is the technology transfer and industrial development company operating in the fields of innovative materials and advanced technologies of the CNR, the National Research Council. The shareholders include three National Institutes with 10,000 researchers working in Italian and international Universities and Laboratories in the fields of Science and Engineering of Materials, Devices, Nano- and Micro-technologies and Computational Sciences.</i> |
| www.associazionericerca.it | <i>AIR is a non profit organization born with the aim of promoting the Italian R&D sector.</i> |
| www.italianapplications.com | <i>A private company, based in Milan that helps selecting and transferring innovations and research from the lab to the market. With an extended network of scientists, universities, research centers both in Italy and abroad, Italianapplications is also able to provide assistance in searching for suitable sources of funding.</i> |
| www.innovello.it | <i>A new website aimed at organizing the existing resources available for innovation in Italy and enabling the creation of a business community that seeks an effective collaboration and networking among companies, research institutions, and financial players in Italy.</i> |
| www.StartupBusiness.it | <i>The Startupbusiness network is a web platform aimed at stimulating and supporting relationships, matching, deals, the sharing of information among the main actors of the Italian innovation ecosystem, such as startups and spin-offs, investors, universities, institutions, incubators, research centers, science and technological parks, companies</i> |



The **Italian Trade Commission** is the government agency responsible for the promotion of trade, business opportunities, and industrial cooperation between Italian and foreign companies, as well as the attraction of foreign direct investment into Italy. Its promotional activities are financed both by government funds, provided by the Italian Ministry for Economic Development, and by private contributions by companies that benefit from its activities and services. These include the exchange of information, assistance in marketing planning, promotion, multilateral cooperation, and training.

The Italian Trade Commission operates through 115 branch offices in 86 countries. In the United States the Italian Trade Commission is present in New York, Los Angeles, Chicago, Atlanta, Houston and Miami. The Trade Commission offices in the US are deeply committed toward tighter economic partnership between Italy and the US and one of the goals is to encourage US companies to intensify their activities in Italy. To that end, and within the framework of its mission to promote business cooperation between Italy and the US, the New York and Los Angeles offices have Investment Desks, which specifically carry out various programs aimed at positioning Italy as a desirable destination for American investment and provide first assistance to US companies wanting to locate, invest or expand their operations in Italy.

Moreover, the Trade Commission is also active in raising foreign investors' awareness of, and involvement in, the scientific and technological innovations of Italian research centers, universities and of the increasing number of spin offs and entrepreneurial enterprises stemming from these infrastructures.

U.S. technology companies and investors are encouraged to contact the Italian Trade Commission to learn what Italy has to offer in terms of products, services and investment and collaboration opportunities.

ITALIAN TRADE COMMISSION
Investments Desk, New York
33 East 67th Street
New York, NY 10065
T: +1 212 980 1500
newyork@ice.it
www.italtrade.com

Investments Desk, Los Angeles
1801 Avenue of the Stars, Suite 700
Los Angeles, CA 90067
T: +1 323 879 0950
losangeles@ice.it

Intellectual Property Rights Desk
33 East 67th Street
New York, NY 10065
T: +1 212 980 1500
iprdesk.newyork@ice.it

Clean Technology Desk
33 East 67th Street
New York, NY 10065
T: +1 212 980 1500
USA@ItalianCleanTechnology.com

This document has been prepared by the Italian Trade Commission in New York. For more information please contact Richard Fishler at rfishler@italtrade.com / +1 212 980 1500.

The organizations herewith portrayed were selected by the Italian Trade Commission in New York and do not intend to be an exhaustive list of entities in Italy. Moreover, whilst every effort has been made to ensure that the information contained in this document is accurate, the Italian Trade Commission is not liable for any errors contained in any part of this report, or any omissions.

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