



Working Package 1

Mapping 3M activities in partner universities

Deliverable 1.1

Good practices of 3M in Polytechnic University of Turin

Final report

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**U3M-AL PROJECT - DEVELOPING THIRD MISSION ACTIVITIES IN
ALBANIAN UNIVERSITIES**

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1 INTRODUCTION

The Politecnico di Torino was first established in 1859 as the Technical School for Engineers. In 1906 the Regio Politecnico di Torino was founded in its current form. The Politecnico is globally ranked amongst the top 100 universities in Engineering (57th place in the Shanghai Jiao Tong University ranking). The mission of the university focuses on five points: training, research, technological transfer, services for the local area and finance. The Politecnico has a long tradition of collaboration with the industry (particularly, in the past, with FIAT), which helps their graduates find a job quicker: 80% of graduates are employed within a year from graduation, compared to the 61% average for Italy.

1.1 Short profile university (type of university, size, special features)

The Politecnico is governed by a Rector, the Academic Senate and the Board of Governors. The Rector acts as the Chairman of the Academic Senate and the Board of Governors. It has three Vice Rectors in charge of the Third Mission of the Politecnico:

- Vice-Rector for support and Initiatives in Social Integration and Rights of Disabled People;
- Vice-Rector for Special Projects and Professionalizing Education;
- Vice-Rector for Cultural Initiatives.

The Politecnico consists of four Schools of Engineering, two Schools of Architecture and the Graduate School, which was set up in 1998 to overlook all aspects of graduate studies. The 18 Departments of the Politecnico organise research in a wide range of scientific sectors. Teaching is organised in such a way as to overcome departmental boundaries, allowing more flexibility. The Departments include:

- Control and Computer Engineering
- Electronics
- Electrical Engineering
- Energetics
- Aerospace Engineering
- Housing and City
- Physics
- Mathematics
- Mechanics

- Human Settlements Science and Technology
- Architectural and Industrial Design
- Building Engineering and Territorial Systems
- Materials Science and Chemical Engineering
- Production Systems and Business Economics
- Structural and Geotechnical Engineering
- Land, Environment and Geo-Engineering
- Inter-University Department for Territorial Studies and Planning
- Hydraulics, Transport and Civil Infrastructures

The Politecnico offers thus two main types of Interdepartmental Centres: those whose functions are crucial for the organisation of the whole university (Architecture Interdepartmental Teaching Services, Politecnico Library System, Centre for ICT Services and Centre for Distance Learning and Multimedia), and those relevant to the organisation of teaching and/or research in a specific geographical area or in one specific research field (Prototyping Centre and Politecnico Centre for Quality).

In 2010/2011, the Politecnico had 28,777 students (65% undergraduates and 35% graduates) and nearly 900 academic staff (32% Professors, 40% Assistant Professors and 28% Associate Professors). In 2010/11 it offered 53 educational programmes and 124 courses (2007/2008). Its budget for 2010 was 380 millions euro, of which approximately 60% comes from partnerships with public and private institutions. Currently there are approximately 3,500 international students studying at the Politecnico and 3,100 internships are offered to the students. In addition, the Politecnico has nearly 350 international cooperation agreements.

The main research areas include industrial engineering, information technologies, civil/architectural engineering, environmental engineering, management engineering, architecture and industrial design. Research activities focus especially on ICT, sustainable energy, automotive, nanotechnology, aerospace and aeronautics, environment, and management.

1.2 Regional context

The regional context is characterized since 20 years by a high industrial decline due to previous automotive “monoculture” (FIAT and its subcontracting system). Presently, there is an important effort by regional government towards the construction of a development based on advanced services and research.

2 INSTITUTIONAL PERSPECTIVE TO U3M ACTIVITIES

2.1 What are the main types of U3M developed in this university? What are the main characteristics of the partnerships involved in U3M activities? (E.g. What are their levels of formality? Who is the university's counterpart in the partnership? (e.g. individual academics, central level entities); Who is the external/enterprise's counterpart in the partnership? What is the number and type of staff involved in the partnerships? How much are the funds invested and revenues obtained? What are those funds' sources? What are the main types of activities developed? What are the main governance structures responsible for the U3M activities?)

The most important channel of technology and knowledge transfer at the Politecnico (as in the other Italian universities) is private consultancy carried out by individual professors. The consultancy is usually carried out in one of the following three ways: (a) full time professors can act as private consultants, but can only engage with companies approved by the Politecnico; (b) companies pay the Politecnico, which retains 30% of the money and devolves the remaining 70% to the professor; (c) part-time professors, whose salaries approximately correspond to 30% of the full time professors', can work with companies on an unpaid agreement (there are some time limitations imposed, but no authorisation is needed). The number of part-time professors is therefore a good indicator of the level of this type of activities.

As for *institutional activities*, the most important 3M activities are in the field of technology transfer, among which can be quoted the followings:

I3P Incubatore Imprese Innovative Politecnico, Torino. The I3P, founded in 2000, is the main Italian university-based incubator and one of the leaders at European level. It is a non-profit joint-stock consortium funded by the Politecnico of Torino, the Provincia di Torino, the Chamber of Commerce of Torino, Finpiemonte, the City of Torino and the Torino Wireless Foundation. Its mission is to promote the creation of new science-oriented firms with high-growth potential. The activity of I3P follows the global strategies of the Piedmont region, in order to sustain research, technology innovation and new entrepreneurship. Specifically it aims to:

- provide consulting services during the enterprise creation process (these services are free of charge);
- manage a network and a high profile marketplace involving entrepreneurs, managers and investors;
- provide a location for enterprises to create reciprocal synergies.

I3P is open to students, researchers, Politecnico faculty members and members of other research bodies, enterprises which plan to create spin—offs for the exploitation

of research results, and anyone else interested in the creation of a knowledge-based firm and which could benefit from being located at the Politecnico and Cittadella.

The companies located in I3P pay a monthly fee inclusive of all services (consulting, real estate, financial advisory, networking etc.). The fee is aligned to the market rate and it is increased with time according to the growth of the company. In some cases, I3P can ask for a percentage of the turnover in year 4 and 5 after the company leaves the incubator instead of the fee. In this way the incubator shares the risk with the company. The incubator offers the following services:

- tutoring on ideas and start-ups, and support in business plan development;
- technical, managerial, administrative, legal and intellectual property consultancy;
- team building;
- support in accessing public funding and R&D;
- special relationships with banks, helping securing loans at preferential conditions;
- links with equity investors (business angels, firms, Venture Capital funds);
- networking with local enterprises and employers' associations.

Up to 2009, I3P created 336 hi-tech start-ups; its companies generated over 78 million of aggregate revenues, employed 1,462 people and registered 134 patents. 80 out of 140 companies that went through the incubator survived in the world outside the incubator.

The Politecnico is one of the recognised Italian Patent Information Points. In 2004, I3P won the 3rd Edition of the “Best Science-Based Incubator Award”, in which more than 50 incubators participated.

The Cittadella Politecnica. The main project of the Cittadella Politecnica (Polytechnic City) endeavours to conceive a new role and a new strategy for the Politecnico on the regional territory and to provide spaces for productive and directional activities; at the same time, the project provides services for companies, universities and citizens, implemented by research and didactic activities. The main objectives include:

- become a top quality centre of research and education and encourage initiatives in favour of the social knowledge of science, technology and innovation;
- create a systematic and structured offer of long-term education;
- give space and encourage multidisciplinary initiatives of education;

- create a Torino Business School with the Athenaeums of Piedmont, the entrepreneurial associations, the Banking Foundations and the Region;
- offer integrated services.

The Cittadella Politecnica project is localised on the areas of the “Former Workshops Great Repairs” and owns 170,000sqm of space close to the main campus.

The Politecnico Business Research Centre. The centre, located in the Cittadella, offers modular spaces for offices, laboratories and factory facilities to create a common workspace to be shared with industries. It aims to develop permanent relations with companies which want to work with universities to foster innovation.

Istituto Superiore Mario Boella. The ISMB was founded in 2000 by the private-law foundation Compagnia di San Paolo and the Politecnico di Torino. Since 2001 several other corporations such as Motorola, SKF, STMicroelectronics and Telecom Italia Lab joined the partnership. The activities of the Institute are carried out mainly with the financial support of Compagnia di San Paolo, the membership fee paid by the four ordinary partners, and additional contributions made by the Ministry of University Education and major public and private, national and European organizations.

Main activities and outcomes: Technology transfer, joint applied research laboratories, spinoffs, programs on higher education, post-graduate and master programs, exchange of academics and human resources, creation of jobs. The main laboratories are: Antennas and Electromagnetic Compatibility, E-Security, Photonics, Materials and Microsystems, Galileo Satellite Navigation, Networking laboratory, Services and Applications laboratory, Radio Technologies for Multimedia Applications. In partnership with the Politecnico the ISMB runs higher education and postgraduate activities. At present the ISMB processes 20 national research projects, 40 projects in collaboration with industries and 20 projects financed by the European Union. Generation and development: The ISMB was created with the purpose of allowing researchers from the Politecnico and industrial partners to meet and work together in order to enable industry to take advantage of research results cutting the costs and reducing the times of trials and adjustments. The ISMB employs directly or indirectly 250 researchers and has a budget of 12M€.

Governance structure: The ISMB’s president, who is a former Rector of the Politecnico is mainly responsible for establishing and taking care of the relationship to the member enterprises, the university, the ministries, the local authorities and other potential, non funding external stakeholders. The managing director is responsible for all issues related to the internal functioning of the Institute. In addition ISMB has a Board of Directors, which includes seven representatives of both the university and private entities.

Key success factors:

1. The right combination of two main partners: the Compagnia San Paolo, an important foundation based on Turin with the mission of fostering regional development, and the Politecnico di Torino, a prestigious technological university with a strong scientific park.
2. The leadership of the former rector of the Politecnico able to connect different elements in one big project.
3. The research approach extremely cooperative with enterprises 114 and the flexible way of managing the ISMB.
4. The permanent financial support of the CSP (supporting the ISBM with 5M€ yearly).

The number of academics, laboratory technicians, Phd students and post-doc active in partnerships is around 500. There is a Technology Transfer Office, and there is a whole administrative department *SARTT – Support Area for Research and TT*. It involves the following activities: fund raising (from EU, national and international sources); patent management; spin-offs; coordination activities and Innovation Front End (marketing included), promotion and dissemination. The staff is dedicated to 3M activities can be estimated of 15 person. As for funds and revenues, the data are the following: in the three years 2009-2011, out of a total of 2376 research and technology transfer projects, there were 1860 projects developed for *third parts* (i.e. firms, other public or private institutions) and 211 *regionally funded* projects. The implied funds were respectively € 62 millions and € 21 millions, out of a sum of € 127 millions, that is more that 2/3 of the overall budget of external funded projects.

Activities encompass mostly technology transfer and cooperative research, but there are some also life-long learning activities (Masters Programmes designed specifically for industry, courses and short courses). There are also activities referred to organisation of events open to the public, students teaching computer skills to the patients of trauma departments, etc. For the time being there is no structure for Social Engagement activities at the Politecnico.

2.2 How have the number and intensity of the different types of U3M activities evolved at the institutional level? (e.g. which types of U3M activities have increased more? Which are the most important ones for universities?)

Technology transfer activities have been emerging in the bottom up process rather than being driven by the top down policy. There has been almost no open discussion about third mission at an institutional level – it seems as if the subject is avoided-while at the same time several people are involved in the activities that can be described as third mission. However, the individuals involved in these activities are not clear about their motivations for committing to them: perhaps it is because they

are interested in royalties, or perhaps because they want to manifest their capabilities, or alternatively because everyone does it. In some actors' opinion, there is no institutional political intentionality in most of these activities which mostly result upon private individuals initiative.

Certainly the technology transfer activities are the most important U3M activities for Politecnico and those which have more increased in the time, together with incubator and the Cittadella.

The factors of success identified are:

- campus location in the middle of the city, which facilitate good connections with the city and its institutions and companies;
- high levels of specialisation;
- long tradition of relationships with industry, such as FIAT and GM; for a long time FIAT had a strong influence on the city and the Polytechnic, which also had negative effects, such as Polytechnic being a school without Arts, Humanities and Business departments;
- culture of ownership and loyalty to the Politecnico, which can be linked to its military traditions.

2.3 University policy and strategy towards 3M activities

2.3.1 Are there any institutional policies to foster 3M activities? Who is in charge of developing them? Which are the main types of U3M activities encouraged? To what extent are policies contextualized in innovation or third mission institutional strategies?

Third mission activities are encompassed in the multi-year planning (Strategic Plan) of the Politecnico. As previously stated, the reference is mainly (a) for technology transfer, (b) the attraction of industrial research (Cittadella Politecnica) and spin-offs (I3P Incubator). It has been emphasised the importance of policy cycles and learning from failures in the implementation of policy in regard to Third Mission projects. Sometimes wrong policies, or right policies introduced at the wrong time, can refrain an institution from considering different options and developing a better understanding of the issues related to Third Mission projects. It has been evinced that an initial amateur phase may facilitates later professional development.

2.3.2 Are there policies to encourage U3M activities via human resources management incentives?

The main issue remains the lack of human resources, along with the disproportion between the expectations of the decision-makers and the resources employed to achieve them. Currently, Third Mission activities comply with several internal regulations, for example the authorisation of full time professors, but in Politecnico

there is quite a wider opening of the management towards the possibility to additional individual revenues coming from research and 3M activities. Through participating in 3M activities, in fact an academic can add up to the 100% to his own salary.

2.3.3 To what extent the U3M activities described above are a consequence of institutional policies? Have national/regional policies played a key role in their development? Have these activities been impelled by the involved enterprises?

Policy makers need time to develop an understanding of Third Mission activities. It can be given the example of the ‘fake incubator’, meaning that no companies failed in it and therefore didn’t virtually need the ‘incubation’ period. But if no companies fail it means that they are not innovative enough, which contradicts the purpose of an incubator. However, from a political and psychological perspective, the success of the incubator gave confidence to the decision-makers and made it easier to support those decisions, proving to be a positive experience for the development of TTO.

The national policy ambiguously promotes Third Mission. A first national push to Third Mission was introduced in 2001 by Berlusconi’s government and a first intentional effort was the setting up of the Patent Commission, whose purpose was the evaluation of patents. In 2006 there was an initiative for setting up TTOs at Italian universities. On paper, the importance of Third Mission projects is emphasised at all government levels, including national, regional and local. But it has been highlighted that the expectations placed on universities in regard to their role in social and economic development are often almost unrealistic, especially at the local level. Contradiction raise often. E.g. an agency for evaluation of universities in Italy has been set up in 2010 and the first foreseen activity was the measurement of Third Mission activities. Unfortunately, no sings of Third Mission evaluation have been given so far. At regional level, on the contrary, quite a wide financial support has been given to some (especially technology transfer) 3M activities.

3 CHARACTERISTICS OF U3M ACTIVITIES (OF THE ONE OR TWO CASES FROM EACH OF THE MAIN TYPES OF ACTIVITIES ASSESSED MORE IN DETAIL)

3.1 Qualitative aspects

3.1.1 Brief description of the U3M activity

3.1.2 Stakeholders involved (public authorities will be included in the reports only if relevant to the analysed cases)

3.1.3 Governance/ management

3.1.3.1 General governance structure

- 3.1.3.2 Decision- making procedures/ strategy development
- 3.1.3.3 Funding/ financial system
- 3.1.3.4 Internal and external accountability
- 3.1.3.5 Steering tools (e.g. customer- relation management)

3.2 Quantitative aspects

3.2.1 Funding/financial figures (e.g. revenues, budgets, financial incentives)

3.2.2 If available, figures on staff involved, results, valorisation, depending on particular aims

The Politecnico is highly committed to Third Mission activities in its Strategic Plan 2007. The plan, in the Strategic Line 6 states: “Strong ties with institutions, enterprises and professions” reflects the national and international policy drivers of Third Mission projects:

“Recent policy guidelines regarding development and innovation support, both on the national and international scale, emphasise the core role of academic institutions in local development processes. In particular, such guidelines affirm the need to define a model for involving universities in processes regarding the social, economic and cultural development of local systems, comprehensively structured to encompass the many and diverse occasions in which associations between the academic system, institutions, enterprises and professions translate into the transfer of knowledge, technology, values and behaviour and governance models.”

The Strategic Plan also states emphasises the Politecnico commitment to Third Mission and Technology Transfer:

“Enhancements of the quantity and quality of the relations with local institutions, as well as with the entrepreneurial and professional world, standing recognition of its own infeasible decisional autonomy, is therefore one of the University’s principal strategic axes and may be structured in a number of major lines. For this purpose, the University intends to affirm its commitment in support of technology transfer, and in particular of the human resource aspect, encouraging researcher mobility between the academic institution and the entrepreneurial world, the creation of joint laboratories, the enhancement of existing public and private laboratories and the joint definition of learning paths of mutual interest. (...) The University proposes to support intense modes of technology transfer implementing, alongside the process of spatial proximity between universities and the entrepreneurial world, which is in progress within the Cittadella Politecnica, advanced form of proximity, based on the consistency of specialisations, lexical and cultural homogenisation, and on the shared definition of abstraction plans and of positioning inside the research stream.”

The Strategy identifies four actions in order to achieve the Strategic Line 6:

- Promotion of cooperation between Politecnico and enterprises, also through spatial contiguity;
- Definition of learning path in conjunction with the entrepreneurial, professional and institutional world;
- Improvement of exchanges between the University and bridging institutions;
- Protection and valorisation of intellectual property.

Another aspect related to Third Mission activities covered by the Strategic Plan is the “Creation of University spaces open to the local community”. This initiative is related to the Politecnico’s plan to take part in a new territorial strategy in order to enhance its role as main actor in the development and economic growth of the Region and to support technological innovation of production processes and the creation of new professional expertise. As for the structures, it has been already quoted the Technology Transfer Office and the STARRT Department.