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D4.7 Recommendations "How innovation textile centers' are useful for the economic development of the region"

WP4: DISSEMINATION & EXPLOITATION

ATCTex
MFCPole
CEDECS
AEI Tèxtils

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[1] **Nature of Deliverable**: **P**= Prototype, **R**= Report, **S**= Specification, **T**= Tool, **O**= Other.

[2] **Dissemination level**: **PU** = Public, **RE** = Restricted to a group of the specified Consortium, **PP** = Restricted to other program participants (including Commission Services), **CO**= Confidential, only for members of the Consortium (including the Commission Services)

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1. Description of the deliverable

The document will be available both in an electronic and paper format and will contain general recommendation as well as specific ones addressed to a particular target group. This will be made from the different outcomes of the roundtables (deliverable 4.6), recommendation reports (Deliverable 1.4), and also based on the first months of operation of the innovation textiles' centers. Recommendations will be spread among relevant stakeholders both through mails, regular meeting and will be presented at the final conference.

The deliverable will be drafted by ATCTex, MFCPole with support from CEDECS and AEI Tèxtils and will be printed once it is finished.

2. The training needs of the textile innovation centers

The WINTEX project aims to fill the gap in specialized services in the Tunisian textile sector with the creation of three textile innovation centers located in the participating universities in Tunisia: the University of Sfax, the University of Monastir and the Higher Institute of Technological Studies of Ksar-Hellal (ISET). These centers will be equipped with high-tech equipment to promote innovation in close collaboration with textile companies in the framework of university-industry collaboration and strengthening technology transfer. They will offer the opportunity to provide new services to textile companies such as prototyping of innovative textiles and optimization of their performance, advanced quality control, certification, specific training, workshops and seminars, project support, organization of events to encourage innovation, support for participation in exhibitions, promotion of entrepreneurship and integration of innovative ideas in the textile industry.

In addition, new services will be developed, such as quality testing, product certification, training, information seminars on fashion trends, new ways of organizing production, etc.

Indeed, the three centers will be equipped with complimentary facilities covering various technical textile specialties, but always with a smart and circular economy dynamic:

- Pilot lines for the development of nonwovens by dry process and melt-blown spinning for medical, industrial, automotive, etc. applications
- Machines to develop eco-designed products with high added value.
- Computer-aided simulation and design tools and software.
- Design and fashion 4.0 equipment.
- Advanced metrology and analysis devices.

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The preliminary list of equipment for the textile innovation centers to be created under the EU-funded WINTEX project is quoted below:

▪ **ISET Ksar-Hellal Center**: electrospinning unit, extrusion and melt-blowing die assembly, web forming, edge cutting and winding unit, vacuum oven and ultrasonic bath, laboratory calendering machine, manual hot press, manual tufting equipment and warping machine.

▪ **IS2M Center**: scanning electron microscope (MEB).

▪ **ISAMS Center**: 3D body scanner booth, transfer printing machine, digital printing machine, automatic laboratory knitting machine, 3D printing + design software + 3D scanner, laser engraving head cutting machine, digital embroidery machine with software and 3D simulation textile design software.

The three textile innovation hubs will aim to respond to societal challenges related to sustainable development to transform the entire sector by making smart technologies accessible, integrating digital transformation into businesses and minimizing its environmental footprint, developing value ecosystems and deploying new business models (functional economy, circular economy).

To achieve these goals, these centers must:

▪ Organize training sessions for industrialists, academics and textile researchers on the different mechanisms for valorizing and adding value to research results, on the circular economy and eco-processes, on the respect of intellectual property and the fight against unfair competition.

▪ Meet certain needs of industrialists in terms of training based on cultures of innovation and mastery of value chains and development and prototyping of innovative products.

▪ Develop virtual platforms for research and innovation.

▪ Strengthen the mobility of researchers to companies.

▪ Strengthen the promotion of scientific research, technology transfer and knowledge dissemination.

▪ Improve the internal governance system and quality assurance of research structures.

▪ Offer eco-built training courses adapted to the needs of the sectors.

▪ Prospecting for sources of evaluation and funding for research and innovation in the textile-clothing sector.

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▪ Strengthen interactions between institutional and industrial actors (interfacing, interaction and synergy).

3. Output of the first roundtable

▪ Define and fix the main activity of the Textile Innovation Centers based on the equipment acquired by each one.

▪ Define the business model and business plan of the Textile Innovation Centers being created, taking into account European experience best practices and aligning with Tunisian legislation.

▪ Develop a cooperation model between the three innovation centers being created

▪ Define the status of the innovation centers (legal status, remuneration of employees and service providers, etc.) to guarantee their sustainability.

▪ Formalize the cooperation and/or position of the innovation center being created in relation to other structures that are part of the T&C ecosystem (academic and research structures, technical centers, etc.) to avoid redundancy.

▪ Initiate promotional actions for innovation Centers

▪ Take into consideration previous experiences made in Tunisia since the 1980s in relation to technology transfer to avoid the mistakes already made.

▪ Involve other disciplines (electronics, mechanics, IT, chemistry, etc.) in research and innovation actions in relation to the specialization of the Centres.

4. Output of the second roundtable

▪ The need to clarify the mission and purpose of these centers to avoid overlap with the role of CETTEX, MFCPole, CRT and other organizations.

▪ Improve the mechanisms for purchasing raw materials and also for paying the staff who run these facilities. He also wished that all actors act to ensure the complementarity of the innovation centers among themselves but also with other support organizations.

▪ The need to update the list of equipment for a better exploitation of the available material.

▪ The need to develop skills (continuous training, increased employability, etc.) through these centers

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▪ To set up a legal framework for the financial management of the centers, for the University of Monastir (recently transformed into an EPST), a decision of the rector can give a legal framework to the existence of the center.

▪ Thinking about and putting in place a legal framework (decree)

▪ Take advantage of the experience of BUTT (University Office of Technology Transfer) for the service provision procedure.

▪ It is important that the centers be drop-off points for researchers and industrialists, so Cettex will be a partner since its activities are centered and focused on industrialists.

▪ Consider changing the name of the centers: agreement after clarification of the objectives

▪ The multiple university/industry/support structure relationship is important and must be improved, the implementation of the virtual platform of academic and industrial advice (AITC) is one of the solutions.

Result of the questionnaire given to participants in the first round table

Results of the questionnaire: 22 answers, of which 16 respected the conditions of answers (choose only one idea and cross out only one idea), 4 sheets with multiple choices and 2 others out of the subject.

Table 1: roundtable answers on "*If the industrialist needs a service or information from an educational institution or research laboratory*":

	Keep	**To reject**
The contact is done in an easy way through one of the teachers	**9**	0
It is enough to send an email to the representatives of the structures	3	2
All information is available on the websites	3	0
No real need for the resources of the institutions and laboratories	0	**5**
Difficult to find the right contact	1	**5**
Information is not centralized	0	**4**

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From 16 answers, it was considered that the relationship with higher education and scientific research establishments is a personal relationship (a direct contact), a major problem of information exchange is underlined.

Table 2: roundtable answers on "*Equipment in research laboratories and higher education institutions":*

	Keep	**To reject**
Can be used by industry	**13**	0
Less efficient than equipment in private laboratories	2	1
No idea of what exists in these structures	1	**6**
Are known and industrialists take advantage of these facilities	0	**8**

Of the 16 responses, industrials want to exploit the facilities available in higher education and scientific research institutions are useful for their needs. While they are unaware of the available equipment and the operating approach.

Table 3: roundtable answers on "*Mechanisms for cooperation between industry and research and educational institutions (PFE, MOBIDOC, VRR, PNRI, etc.)*":

	Keep	**To reject**
Address medium and long term needs but not imminent needs	**9**	0
Just as a service to students, not a need	**6**	4
Are largely sufficient	1	**12**

All industrialists consider that the current mechanisms remain insufficient, and often do not meet their needs (especially the rather long duration of the project)

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Table 4: roundtable answers on "*If higher education institutions propose to industrialists to exploit these material resources and the skills of its staff*":

	Keep	To reject
It will be a paid service by the companies	**12**	1
Of voluntary work of the teachers	0	**15**
Payment through existing funds (drawing rights for example)	4	0

It is considered that the service must be paid for. Whatever the method, the responsible of the service should not do it for free.

Interpretation:

The current cooperation mechanisms are intended rather for researchers to meet a medium and long-term need but not for an imminent need.
The services proposed by the centres are interesting for the industrialists. These services will be paid for. The contact to make a test must be easy (contact of a teacher, an e-mail, or on a website).

5. Synthesis of the expected role of innovation centers based on European best practices and the national report

▪ The importance of creating specialized innovation centers to better implement research and innovation work. We cite as examples DESTEX, RESET and TEXSTRA which have opted for a set of instruments used by students in the textile clothing sector such as: creation of a book of lectures, creation of a virtual platform, manual of practice projects and open challenges (training tools and methodologies to promote creative and industrial design in the advanced textile clothing sector) and the organization of intensive summer courses. In addition, in this case, the Tunisian Textile Center CETTEX had piloted a program to move from subcontracting to the finished product: reaching the threshold of 70 companies in 2007 for 300 companies in 2018 (20% of companies) financed to 70% by FODEC.

▪ Industrialists need specialized skills in innovation (innovation expert). This is the case of TEXSTRA which has developed a training program and learning content targeted at higher education.

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6. Opinion of the visitors of the innovation centers after 1 month of installation of these centers

The feedback provided by the target groups underlines the explicit interest by the students side to exploit the technological centre's resources, focusing on 3D printer and 3D scanner possibilities.

All the actors involved in the recommendation's dissemination agreed on the fact that the centres would truly bring a new scenario full of multiple connections and opportunities for the participating groups of stakeholders. Many kinds of project involving diverse kind of actors related to the Tunisian textile industry have been unlocked due to these centres. In that line, in most of the held events, many talks between stakeholders took place.

For that reason, the main highlight of the general opinion of the visitors is that the launch of the centres is positive and promising.

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