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SMARTY - ACTION PLAN: MUNICIPALITY OF PRATO NEXT TECHNOLOGY TECNOTESSILE

comune di PRATO

NEXT TECHNOLOGY TECNOTESSILE

Annex 1 – Action plan

Part I – General information

Project: SMARTY

Partner organisation: Municipality of Prato

Other partner organisations involved: Next Technology Tecnotessile

Country: ITALY

NUTS2 region: TUSCANY

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Part II – Policy context

The Action Plan aims to impact:
Other regional development policy instrument

Name of the policy instrument addressed:
Development and Cohesion Fund (Fondo per lo Sviluppo e la Coesione)

Part III – Details of the actions envisaged

ACTION 1

1. **The background** (description of the lessons learnt from the project that constitute the basis for the development of the present Action Plan)

The Municipality of Prato with its 195,089 inhabitants is the second largest city in Tuscany and the third in Central Italy for the number of resident citizens. Prato is famous all over the world for its textile-fashion sector, one of the largest in Italy, which employs about 33,000 workers and is worth about 3% of European production in the sector of major fashion brands, as well as in production of fast fashion. The Prato district is particularly active in the production of woolen yarns and fabrics, with around 7,000 fashion companies (of which over 2000 in the strict sense of the word textiles) generating around 2 billion euros in exports. The Prato companies produce fabrics for both ready-to-wear fashion and for the major Made in Italy brands, as well as fabrics for furnishings, knitwear, non-woven fabrics, and technical and special textiles for industrial use.

Global competition has made it necessary to innovate production processes over the last 30 years. The progressive loss of turnover due to the consequences of the Multifibre agreement, and the economic and financial crisis of 2007-2008, led to the closure of numerous companies, resulting in heavy corporate restructuring processes with significant employment losses.

After the slight recovery in recent years, the transformation caused by the digitalization of processes now requires new changes so that the companies in the district can maintain and increase their competitiveness. The Prato textile-fashion sector needs to innovate its production processes to improve efficiency and competitiveness, and to meet the increasingly strong demands of the market - to reduce times and costs on the one hand, but above all to increase quality and transparency from other. The solutions offered by emerging technologies combined with the latest generation connections such as 5G have a huge potential to generate greater efficiency and productivity with high standards of quality and sustainability.

In particular, the enterprises of the district need advanced functions of logistics, traceability, monitoring, quality control, etc., which can only be obtained through the use of emerging technologies supported by the new ICT and advanced engineering networks. The new solutions obtainable through emerging technologies (Blockchain, IoT and AI) combined with the latest generation 5G connections would allow the implementation of new sustainable production models along the entire supply chain, from the procurement of raw materials, to product design, production, logistics, even the disposal and reuse of textile waste.

According to a 2018 survey concerning a sample of approximately 24,000 Italian and 2,395 Tuscan SMEs, about 8.5% of Italian companies use at least one 4.0 technology, with a propensity for use directly proportional to their size: 4.0 companies with more than 10 employees are 18.4% of the total of small businesses, a percentage that touches 36.4% in those with more than 50 employees. Tuscany exceeds the national figure (37.9%) although it has an even lower distribution of 4.0 companies: -7% compared to Veneto and Piedmont, -6%, -5% and -3% respectively compared to Emilia Romagna, Lombardy and Marche.

Almost 50% of Italian 4.0 companies exclusively use data-related technologies (horizontal or vertical integration of information, cloud, big data, analytics, etc.), more than a third are also active in production technologies (interconnected robots, additive manufacturing, simulations, augmented reality and intelligent materials). In Tuscany, companies that integrate both technologies prevail (38.5%) while the management of big data / analytics (0.4%) is lacking with respect to the national figure (1.3%).

With regard to planned interventions, Tuscany is lower than the national figure also for the percentage of larger companies that plan 4 or more investments in 4.0 technologies: 33.9% against almost 50% of Italian companies with 50 employees or more; a similar trend also for the 10-49 employee class (23.5% in Tuscany and 41.4% in Italy). Among those that already adopt 4.0 technologies, 45% of Tuscans with more than 50 employees declare that they have no 4.0 investments planned, with an average of planned interventions (1.9) well below the national one (2.3) ; substantial equilibrium, on the other hand, with regard to companies with 10-49 employees: Tuscany 2.15, Italy 2.27.

The interventions of the companies seem more oriented towards growth rather than the simple containment of costs; both nationally and regionally, the use of 4.0 technologies aims at improving product quality and minimizing errors. The greater flexibility of production and the personalization of products is instead a goal that grows with size, while the entry of new markets would concern smaller companies.

As for the propensity of businesses to innovate in relation to the type of management (family, non-family), in line with the national figure, 71% of Tuscan businesses are family-run, with a control attributable to a single subject that deals with management and choices; moreover, in 56.7% of cases it is a centralized family management, ie not open to sharing strategic choices with external parties and therefore more prudent. This data is flanked by what indicates 52.6% of family-run businesses managed by non-graduate managers, a figure well above the national average (48.6%) and which, together with the greater diffusion of non-family businesses without graduates (4% over the Italian figure), suggests a relative lack of highly trained managerial figures and a consequent greater closure towards innovation (a feature in common both for centralized family businesses and for those with greater diffusion of management, and at regional and national).

Dissemination of 4.0 companies by sector: The Tuscan delay in the adoption of 4.0 technologies is evident in all the sectors considered by the research, with a peak of 20% in the case of the manufacture of means of transport. The Tuscan sector that uses them most is that of electrical machines and electronic equipment (40%). The rubber, plastic and chemical sector is significant (29.3% against 30.9% in Italy) while it is lower in the mechanical, food and clothing sectors, with percentages just over 10%.

Also, from the survey it emerges that, both at national and regional level, the difficulties of applying the 4.0 paradigm depend on the presence of personnel with skills that are not in step with the needs required by the digitization process; in Tuscany this is more evident for technologies related to data management. At the same time, however, the great propensity of Tuscan companies to overcome this void should be emphasized: 12% did so by hiring new staff, 10% by investing in training, another 10% by turning to external collaborations.

Another interesting element highlighted concerns the attitude of Tuscan companies towards competitiveness drivers (R&D programs, innovation, presence on international markets). The percentage of 4.0 companies that have introduced at least one innovation in the last three years (2015-2017) is far below that of the regions taken in comparison: Veneto, Emilia Romagna and Marche are around 20% (national figure 17 %) while Tuscany is stuck at 10.4%. A lower diffusion of innovative companies (the gap with the comparison regions is high) can be partly attributed to the lower number of these that operate in subcontracting (2.3% against 13.4% in Italy): an element that could indicate a low participation of Tuscan production units in global value chains and which, linked to the management methods of Tuscan companies, may be the reason for the reduced dynamism. Similar scenario also with regard to exporting companies: in Piedmont, Emilia Romagna and Veneto it exceeds 22%, in Tuscany it does not reach 8% in Tuscany. However, even if they show a lower predisposition to innovative dynamic strategies and international openness, Tuscan companies confirm good economic performance: 43% declared they had registered an increase in turnover, 37.1% substantially stable and only 19, 9% a significant drop.

Use of public subsidy tools by companies 4.0. Approximately 70% of traditional companies that have benefited from public aid have benefited from a single instrument (both in Tuscany and at national level). 4.0 Tuscan companies have proven to be more inclined to accumulate more incentives than the comparison regions, however a high percentage (41%) does not exploit any. Among the most exploited are the tax overvaluation of investments (Hyper and Super depreciation) and incentives for capital goods: respectively 35.8% and 27.6% of 4.0 Tuscan companies.

In this context, the action promoted by the Municipality of Prato has been directed towards the creation of a new technology transfer infrastructure to investigate and exploit the innovative potential of emerging technologies - Internet of Things, Artificial Intelligence, Blockchain and 5G - applied to the textile-fashion sector and Made in Italy, to favour the creation and acceleration of new businesses in this area, and transferring the solutions developed to companies in the sector.

At the end of July 2020, the Municipality of Prato participated in a restricted call for proposals of the Italian Ministry of Economic Development (MISE) related to the creation of five R&D Centers - aka Houses of Emerging Technologies (*Casa delle Tecnologie Emergenti* - CTE). The policy instrument financing the Houses of Emerging Technologies at national level is the Development and Cohesion Fund (FSC). Together with the ESIF, it is the main financial instrument implementing the policies for the development of economic, social and territorial cohesion and the removal of economic and social imbalances in implementation of the Art. 119 of the Italian Constitution and Art. 174 of the EU Treaty. The FSC has its origins in the Funds for underutilized areas (FAS), established with the financial law of 2003 at the Ministry of Economy and Finance and the Ministry of Productive Activities. Subsequently, the management of the Fund has been established at the Presidency of the Council of Ministers and called the Department for cohesion policies (DPC). With the legislative decree 31 May 2011, n. 88, the FAS took the name of the Development and Cohesion Fund (FSC) and was aimed at giving programmatic and financial unity to the set of additional nationally funded interventions, which are aimed at economic and social rebalancing between the various areas of the country. The FSC

has a multi-annual character in line with the temporal articulation of the programming of the European Structural Funds, guaranteeing the unity and complementarity of the procedures for activating the related resources with those provided for EU funds. In particular, the Fund's intervention is aimed at financing strategic projects, both of an infrastructural and intangible nature, of national, interregional and regional importance.

The Prato proposal named PRISMA (i.e. PRato Industrial SMart Accelerator) falls within the Prato Smart City Plan's systemic actions as a follow up project to the Prato Smart City Plan "5G experimentation" project that the City of Prato implemented in 2019. The PRISMA project proposal has been approved with a budget of 2,9 Million Euro in December 2020. Its aim is to create a new technology transfer infrastructure to investigate and exploit the innovative potential of ETs and 5G – through the creation of three Labs respectively dedicated to the IoT, AI and Blockchain - applied to the textile, fashion and Made in Italy sectors. The project is led by the Prato Municipality and brings together a consortium of Universities, R&D centres and other technological partners.

While developing the PRISMA proposal, the Municipality of Prato (MoP) had to consult the most advanced knowledge on how to structure innovative R&D centers which can exploit the potential of emerging technologies, such as the Internet of Things, Artificial Intelligence, and Blockchain, with the support of 5G connectivity. Such a know-how is rare to find, unless one accesses the experience of long-term innovators that traditionally have high investments - both public and private - in R&D. This was just the case with some SMARTY partners who presented their GPs at the SMARTY seminars. The main change triggers for PRISMA were the following Good Practices:
1) The "Digital Tech Transformation – 3M Buckley Innovation Centre" good practice that was presented in Semester III under the policy theme "Digital Innovation Hubs" which provided in-depth lessons and know-how that helped the MoP structure PRISMA'S activities dealings with the Transfer of knowledge in terms of services to be offered to SMEs, such as: the creation of Office and Labs space the Design & Technology support for business innovation a start-up area where startups and businesses work and interact with each other a Conference, training & meeting space Without the lessons from this GP, the above PRISMA activities could not have been so effective, and we are not sure they would have been approved by the Italian Ministry for funding.
2) The "Platform for the Industry of the Future" good practice presented by the Łukasiewicz Research Network – Institute for Sustainable Technologies that was presented in Semester II under the policy theme "Clusters and clustering initiatives & Assessment tools", which helped structure the audit activities of PRISMA thanks to an in-depth know-how for the analysis of the technological maturity of SMEs, that the Platform achieved through its online tool for the self-assessment of the digital maturity of the companies and the training of managers and business owners on I4.0 technologies.

2. **Action** (description of the actions to be implemented)

The Municipality of Prato and PRISMA partners have started the implementation of the PRISMA project in March 2021 (during phase 1 of the SMARTY project) focusing their attention and efforts on the following activities:

1. Creation of the PRISMA Laboratories (IoT + AI + BC)
2. Technological audits of SMEs
3. Training seminars for the creation of basic skills in entrepreneurs
4. Co-design workshops (match-making between the university know-how and the SMEs' needs)
5. First call for R&D projects aimed at innovative clusters of Universities, Research Centers and SMEs - Technical-Scientific Coordination - monitoring & evaluation of the activities of the CTE.

Together with the scientific partners we have developed the contents of the various activities such as technological audits (under the supervision of PIN University), information seminars (all technical-scientific partners), co-design seminars (all technical-scientific partners), tender development for projects with companies (all technical-scientific partners). Together with the partners, the calendar of activities envisaged by the individual working groups was defined, updated and developed, coordinating and linking their needs with those that emerged both in the partnership and in meetings with stakeholders. The technological audit, a fundamental activity of the project, was structured as a company audit path in which the "value discovery" process identified the specific innovative driver for each company, through a guided activity in three step: 1. SWOT analysis of the company in terms of innovation potential; 2. elaboration of new strategies, emerged in the meetings with the companies and verified in the company, to promote the technological and organizational contents enabled by I4.0 technologies combined with 5G; 3. support for the development of new project ideas to be submitted to CTE PRISMA calls. Training seminars and co-design workshops: as a result of the direct survey based on business analysis, PRISMA has organized a series of information, training and co-design seminars on: • analysis of the technical-scientific frontier of interest for the SMEs on selected topics; • issues that emerged during the interviews and workshops with companies. These seminars have been organized with the involvement of important economic and productive realities at international level. The series of seminars included 9 seminars on topics such as: 5G technologies and application scenarios, VLC and use cases, Artificial Intelligence - technologies and areas of use Quantum Communications, Industry 4.0 and cyber-physical systems, the applications of blockchain technology to processes and products, cybersecurity in industry 4.0, Virtual / Augmented reality for industrial applications, Industrial IoT. Partners have also started to work towards the definition of the public call for joint R&D projects involving R&D centres and universities participating in PRISMA on one side and textile SMEs on the other side. An open call to select most innovative start-ups that operate with new business models, particularly based on 5G technology, the Internet of things, artificial intelligence, and blockchain, has been launched by StartupItalia at the beg. of July. The call will be closed at the end of Sept. 2021. In parallel, the Municipality of Prato has defined the spaces hosting the PRISMA technology transfer center

at the PIN University Center and in Via Galcianese within a larger complex owned by Sviluppo Toscana and started the works for architectural adaptation and building renovation, adaptation of mechanical, electrical and special systems setting up of spaces (furnishings, flooring, etc.) equipment of the spaces with advanced instrumentation, in particular as regards the contamination room, etc.

The effects of the change achieved through the PRISMA project are as follows.

Systemic effects for the local T&C industrial district:
- Development of new solutions based on emerging technologies for the Made in Italy;
- Acceleration of start-ups in the Blockchain, IoT and AI fields applied to the textile-fashion sector;
- Technology transfer to companies in the manufacturing district.

Increased services for SMEs and other economic and technological actors:
- Acceleration of start-ups and newly formed companies that provide advanced technological solutions to companies in the textile-fashion sector;
- Implementation of joint research projects between Universities, Research Centers and SMEs that exploit the innovative potential of emerging Blockchain, IoT and AI technologies and of the 5G connection applied to Made in Italy;
- Prototyping and transfer of the solutions developed to companies in the manufacturing district.

It is to be noted that the activities 2 to 5 above are of a cyclical nature, which means that they will be further implemented - that is reiterated annually - during Phase 2. The Action Plan during Phase 2 will therefore deal with monitoring the outcomes and results of these activities, according to the following indicators:

- 2 more calls for innovative R&D projects delivered in 2022 and 2023
- 15 accelerated start-ups in the thematic areas of the CTE;
- 30 companies benefited from research and experimentation projects;
- 10 innovative products developed (resulting proof of concept solutions from R&D projects);
- 30 jobs created in the application fields of emerging technologies and 5G.

3. **Players involved** (please indicate the organisations in the region who are involved in the development and implementation of the action and explain their role)

Main players involved are the Municipality of Prato and the partners of the PRISMA project, namely:
- PIN, the University of Florence Campus in Prato

- University of Florence, Dept. of Information Engineering
- National Institute of Optics of the National Research Council
- Next Technology Tecnotessile
- StartupItalia! srl
- Sviluppo Toscana
- Estracom S.p.A.

Besides these main players, the project involves as well SMEs in the fashion-textile sector and start-ups, selected via competitive calls for pilots, which are directly involved in the project activities through R&D project pilots having a TRL from 6 to 8. Other important players involved are the SMEs associations such as Confindustria Toscana Nord, Chamber of Commerce, Confartigianato and CNA Toscana as well as the trade unions, CGIL, CISL and UIL, which have an important role for the communication and dissemination of project activities and results.

4. **Timeframe**

The timeframe of PRISMA is from March 2021 to December 2024.

5. **Costs** (if relevant)

2,9 Million Euro

6. **Funding sources** (if relevant):

The project is financed by the Development and Cohesion Fund (FSC) which is, together with the ESIF, the main financial instrument implementing the policies for the development of economic, social and territorial cohesion and the removal of economic and social imbalances in implementation of the Art. 119 of the Italian Constitution and Art. 174 of the EU Treaty. The FSC is managed by the Presidency of the Council of Ministers, via the Department for cohesion policies (DPC).

Date:_____

Signature: _____

Stamp of the organisation (if available): _____