



ManuTex

**Joint Research Strategy Initiative for the Future
of the European Textile, Clothing and
Machinery Industries**

Research Road Map

May 2007

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1. What is ManuTex

The ManuTex initiative has been jointly launched by the European Technology Platform for Assuring the future of Manufacturing in Europe (*Manufuture*) and the European Technology Platform for the Future of Textiles and Clothing (Textile ETP) in order to realise closer collaboration in pre-competitive research and development at European level between the Textile/Clothing and related Machinery Industries.

2. Rationale

Europe's textile and clothing industry as well as its textile and clothing machinery sector are the undisputed global innovation leaders in their respective markets. The Textile and Clothing sector has an annual turnover of more than 200 billion Euros and employs some 2.5 million people in over 150,000 companies across the EU-27. The European textile machinery industry has an annual turnover of more than 12 billion Euros and provides jobs to some 100,000 employees. Both sectors enjoy healthy market shares in the high quality segments of many export markets around the globe, provided they are open for EU exports. The EU is the world's biggest exporter of textiles and textiles and clothing machinery. It is the world's third biggest exporter of clothing. This global innovation leadership was built on a long tradition of symbiotic cooperation between the two sectors. Recent global market trends force both sectors in Europe to intensify their innovation activities to defend their leadership positions. In such a scenario, a close cross-sectoral collaboration in the field of research and technological development at European level promises a clear win-win situation for both sides.



3. Objectives

The objectives of the ManuTex initiative are:

- the establishment of a permanent collaboration forum between textile/clothing manufacturers and developers and manufacturers of machines, systems & tools for textile/clothing production to exchange information on major technological trends and evolving user needs
- the combination of complementary elements of the Strategic Research Agendas of the *Manufuture* and Textile European Technology Platforms in a joint Research Roadmap
- the initiation of strategic, genuinely breakthrough-oriented collaborative research projects between the two sectors bringing together the best available competences and capacities to mutual benefit

4. Stakeholders & Working Structure

The stakeholders of the ManuTex initiative are:

- the European textile & clothing industry and their representative organisations
- the European textile/clothing machinery industry and their representative organisations
- the European textile & textile machinery research community
- the European Commission & national authorities

The implementation of ManuTex is coordinated and facilitated by a Coordination Committee which is composed of representatives of all stakeholder groups. The Coordination Committee is chaired by Prof. Thomas Gries, Director of the Institut für Textiltechnik (ITA) at the RWTH Aachen University, Germany.



5. R&D Priorities

R&D priorities for ManuTex were developed on the basis of research priorities identified by the Textile ETP covering:

- New speciality fibres and fibre-composites for innovative textile products
- Functionalisation of textile materials and related processes
- Bio-based materials, biotechnologies and environmentally friendly textile processing
- New textile products for improved human performance (health care, protection, sports)
- New textile products for innovative technical applications (transport, construction, energy & environment etc.)
- Smart textiles and clothing (textile integrated electronics)
- Mass customisation for clothing and fashion
- New design and product development concepts and technologies
- Integrated quality and life cycle management concepts

and research priorities of ManuFuture addressing in various ways central future manufacturing concepts and strategies like:

- Adaptive manufacturing
- Digital manufacturing
- Manufacturing in networks
- Knowledge-based manufacturing



On the basis of a survey among European textile machinery manufacturers and their industry federations **organised in CEMATEX, the European Association of textile machinery manufacturers representing some 500 companies** — in late 2006 a number of key development targets were identified:

Short term attention areas:

- Deeper understanding of the basics of the main manufacturing processes to give machinery makers and producers the chance to continuously improve them
- Development of innovative textile manufacturing technologies to enable new processes, to shorten the process chain, for specialties and commodities
- Procedures for early detection of new trends and requirements in the user industry
- Quality focused development based on knowledge of the complete production chain
- Development of new testing methods and online-quality inspection systems
- Technology development taking into account the impact of broader societal trends and needs like the ageing society or environmental and resource efficiency imperatives on textile product markets



Some more specific technical priorities highlighted in the survey included:

- Application of RFID-technology in machines and components
- Integration of energy storage systems
- Development of more sophisticated teleservice systems for remote machine optimisation and maintenance
- Concepts and technologies for better networking of suppliers

Identified priorities for a more medium to long term perspective included:

- Development of new process combinations enabling either completely new products or radically improved processes for existing products
- Development of entirely new processes including process integration and related new testing methods and online quality inspection systems
- Creation and integration of expert systems
- Development of near wasteless, non-polluting textile production processes
- Intensive use of materials made from renewable resources



New processes and products arising from such research will enable European machine producers to introduce new innovative technology and products to the market and give the opportunity to Europe's sophisticated textile and clothing producers to exploit first mover advantages through co-developed leading edge machinery and equipment.

6. Conclusion

From the ManuTex survey findings and the major industrial innovation priorities identified by the Textile ETP and ManuFuture it can be concluded that ample opportunities for joint research efforts of the textile/clothing and related machinery sectors remain in Europe. Joint action should focus both on nearer term targets involving significant improvements of existing material and manufacturing concepts and technologies as well as on more long term objectives targeting radically new manufacturing concepts and technologies.



The following research priorities offer significant industrial potential in the short, medium and long term:

- **Development of improved conventional textile processes targeting higher productivity in manufacturing of already existing products as well as more efficient realisation of customised or individualised products, hybrid processes or shortened processes chains.**
- **New process developments resulting in new textile products especially in the fields of technical, medical or smart textiles.**
- **New process developments with specific focus on material and energy efficiency as well as noise reduction.**
- **Development of non-conventional textile processes overcoming major limiting factors, efficiency bottlenecks or undesirable side effects of existing state-of-the-art processes**
- **New processes and technologies for direct 3D manufacturing of products made of textiles and other flexible materials**
- **Research, design and utilization of new materials such as fibre reinforced plastics for light weight constructions and novel surface technologies including nanotechnologies.**

Process simulation technologies and mechatronics are expected to play a key role for progress in all these areas.

Shorter term research and development activities are routinely undertaken and funded by private consortia or in smaller scale public-private partnerships with additional funding from public support programs on national and regional level.

Longer term more challenging and risky R&D topics are more likely to be undertaken with heavier involvement of multidisciplinary and partly fundamental research expertise involving larger international consortia which should especially benefit from European research funding through the 7th Framework Programme and similar cross-national schemes.

About Manufuture

MANUFUTURE – European Technology Platform for Assuring the future of Manufacturing in Europe was launched in December 2004 when the document *Manufuture – a Vision for 2020* was published as the basis for development of a Strategic Research Agenda (SRA) underpinning a transformation of European manufacturing industry into a knowledge based sector capable of competing successfully in the globalised marketplace.

The economic importance of sustaining a strong manufacturing base in Europe is indicated by the fact that the manufacturing sector in the EU provides jobs for around 27 million people, and produces an added value exceeding €1 300 billion from 230 000 enterprises with 20 and more employees (2001). For more information visit www.manufuture.org



About the Textile ETP:

The European Technology Platform for the Future of Textiles and Clothing launched in December 2004 is an industry-led initiative which brings together all interested stakeholders: the textile and clothing industry itself, related industries and service providers, the research and education community and public authorities at all levels. The platform's main goal is the development and implementation out of a common long term vision and related strategic research agenda to support the transformation of this industry into a more knowledge-intensive and innovation driven sector.

www.textile-platform.org



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