



ROMANDIC

The White Book on Robotic Textile Manipulation (RTM)

Guillem Alenyà, Brussels 2026



We realize that...

- Europe's current capabilities, socio-economic drivers, and policy frameworks are only **partially aligned** with the evolving technological and industrial needs
- (DG ENV) Sorting for re-use, remanufacturing, recycling, recovery, disposal
- Low **coordination and investment efforts** do not allow to fully capitalize on automation opportunities in the textile and clothing sector



Key findings

- **Technological State-of-Art:** formidable challenge, no commercially dominant solution, mostly prototypes
- **EU R&D Leadership:** some projects, like ROMANDIC, SoftEnable, FlexCycle, Tornado...
- **Socio-Economic Drivers:** re-shore (or near-shore) textile manufacturing for resilience and waste reduction
- **Policy Alignment:** EU Strategy for Sustainable and Circular Textiles, European Partnership for Textiles (2025–2030), Made in Europe, EFFRA roadmap
- **Comparative Positioning:** US ARM Institute, Made in China 2025



CHALLENGES

TECH GAPS

Reliability
Speed
Evaluation

ECONOMIC ASPECTS

Feasibility
Training

SOCIAL ASPECTS

Employment
Regional
strategies



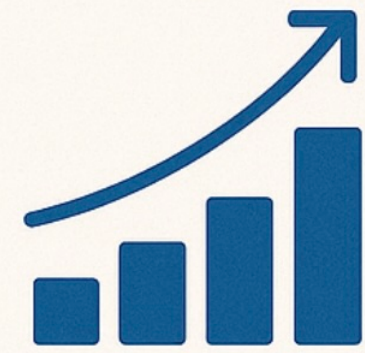
CHALLENGES

- **Technical Gaps:** process reliability across varying materials, speed and accuracy
- **Data and Evaluation Limitations:** no standard performance benchmarks
- **Economic Feasibility:** High up-front capital, integration complexity, and maintenance
- **Workforce and Social Considerations:** impact on jobs
- **Diverse Regional Strategies:** textile manufacturing (e.g. Italy, Portugal, Spain), machinery (e.g. Germany), recycling industry

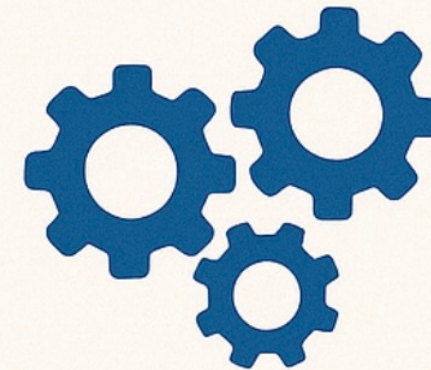




RECOMMENDATIONS



**Invest in Scale-Up
and Demonstrators**



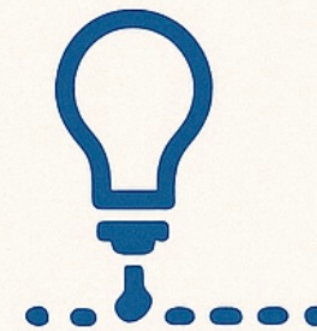
**Strengthen
Cross-disciplinary
Collaboration**



**Support SMEs with
Robotics-as-a-Service
(RaaS) Models**



**Upskilling and
Training Programs**



**Research to
Market Pathways**



**International
Collaboration
and Standards**



RECOMMENDATIONS

- **Scale-Up and Demonstrators:** pilot factories and innovation hubs
 - European Testing and Experimentation Facilities (TEFs)
- **Strengthen Cross-disciplinary Collaboration:** connect top labs and stakeholders, competitions
 - Network of Excellence





ROMANDIC



NETWORK OF EXCELLENCE

on Robot Manipulation of
Deformable Objects

