PROJECT TAN TOM

Tanning Tomography

The TAN-TOM project, funded under the Fund for Sustainable Growth of the Ministry of Enterprise and Made in Italy (MISE), focuses on non-invasive analysis techniques for leather processed in the tanning sector. It employs new multispectral optical and electromagnetic tomographic acquisition systems, utilizing artificial intelligence-based processing.
The project involves five partners, including three key companies operating in diverse industrial sectors:

- Barnini srl: Lead Company, specialized in automated systems
- SIRIO Lavorazione Conciaria srl: Expertise in tanning processes for third parties.
- TECNOCREO Engineering: Operates across various national industrial sectors.

Additionally, two Research Organizations contribute:

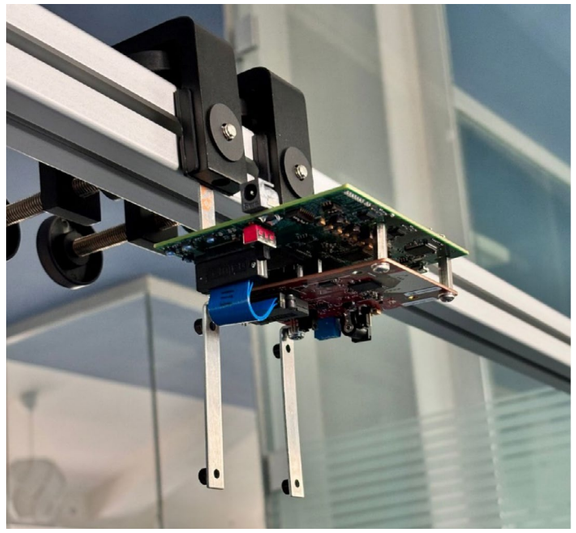
- National Inter-university Consortium for Telecommunications (CNIT): An ICT-focused non-profit research body.
- Experimental Station for the Leather and Tanning Materials Industry srl (SSIP): A National Research Body for the leather supply chain, serving as the Scientific Coordinator of the Project.

Furthermore, four high-profile companies contribute as consultants:

- COMPOLAB: An engineering firm skilled in multidisciplinary development of advanced solutions, from ideation to industrialization.
- FREE SPACE: An innovative startup dedicated to researching, designing, and producing systems and devices for electromagnetic signal generation, control, and transfer.
- BCN: A tanning company with over 80 years of experience, specializing in managingicomplex R&D projects, combining craftsmanship, technological innovation, and eco-sustainability in its third generation.
- FLYSIGHT: An SME operating in the defense, aerospace, and infrastructure sectors, producing decision-support software solutions based on artificial intelligence and augmented reality.

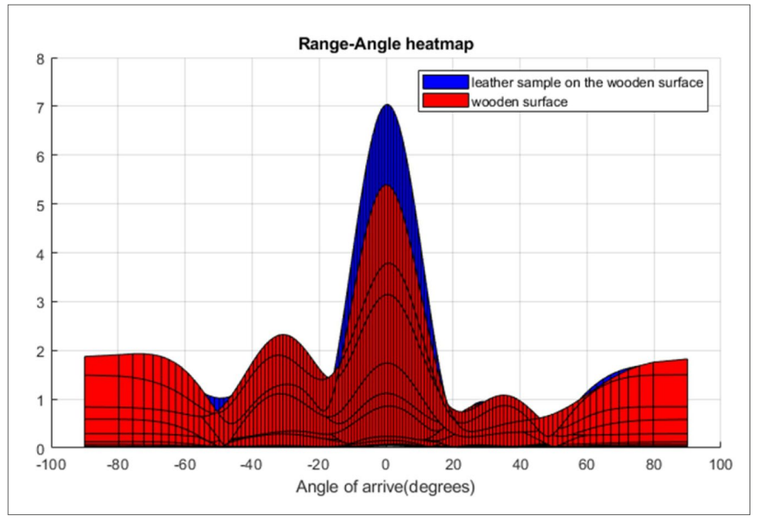
The project aims to create a “tomographic” leather inspection system (TAN-TOM) with high strategic potential for the development of the leather supply chain. This system will enable the analysis of leather quality during manufacturing processes, ensuring continuous monitoring and the development of advanced technological diagnostic systems for quality assurance.

Technical Sheet
Funding institution:
Ministero delle Imprese e del Made in Italy (MISE)
Project partners
Barnini srl, TECNOCREO srl., S.I.R.I.O srl, Stazione Sperimentale per l’Industria delle Pelli e delle materie concianti (SSIP)
Project duration
April 2023 - April 2026
Involved countries
Italy

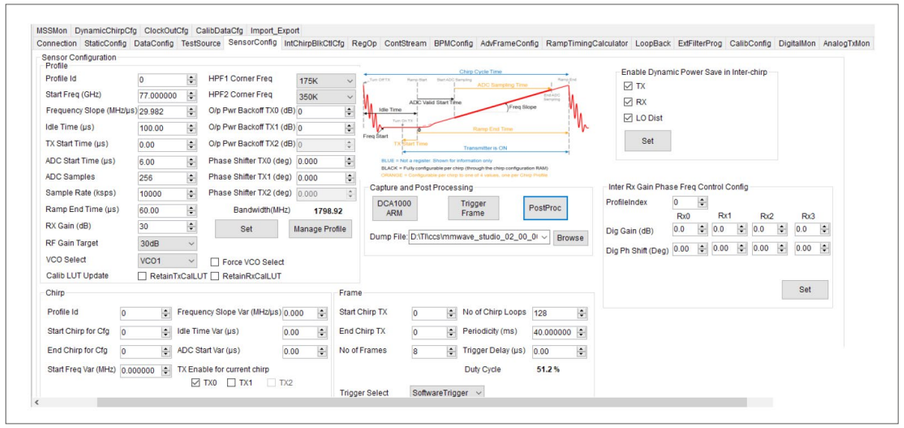


(a) Close-up view of the EHF radar (78 GHz) experimental setup: the red board is a TI AWR1642 mmWave FMCW automotive radar - the green board is a TI DCA1000 raw data capture card;

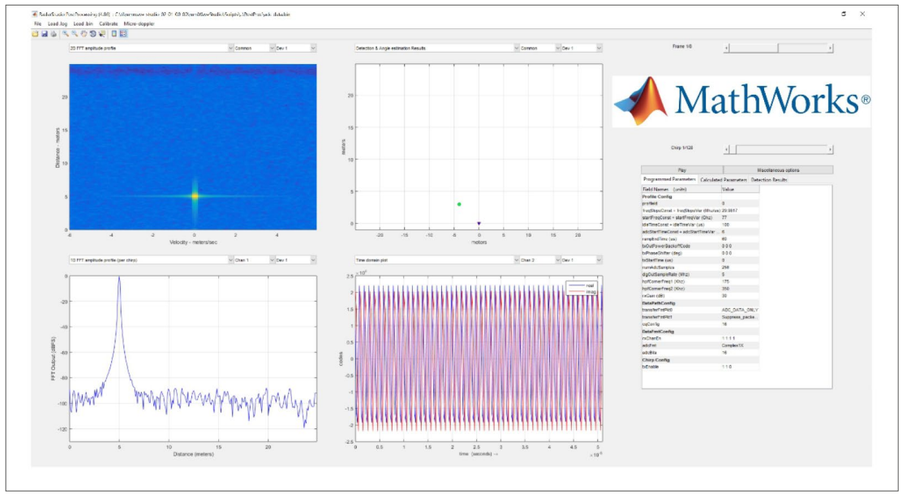
(b) Set of defected leather samples



(c) EHF radar (78 GHz) first experimental results on a leather sample: range-angle heatmap with and without the supporting surface



(d) Software support implementation: Texas Instrument mmWave Studio software (MMWAVE-STUDIO: https://www.ti.com/tool/MMWAVE-STUDIO)



(e) Software support implementation: MATLAB Runtime Eng (MATLAB Runtime Engine: https://www.mathworks.com/)