

Research and innovation inside industry's digital transition

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A focus on digital technologies for the changing industry: FBK's applied research in manufacturing, aerospace, rail, automotive, energy and precision agriculture.

The industrial world is undergoing profound and unprecedented change: a surge in world population that requires reliable supplies, rapidly changing market conditions, and, simultaneously, an increasingly urgent need for greater sustainability.

These highly complex challenges signal the importance of unleashing the full potential of the vast amount of data available, in order to make efficient use of limited resources and facilitate better manufacturing decisions.

The [FBK Digital Industry](#) Center conducts research on digital technologies for various industries by implementing applications for critical systems, adaptive and autonomous systems, advanced perception systems, quality control systems, diagnostics and predictive maintenance systems.

Other areas of research are digital agriculture, geomatics and cultural heritage, particularly 3D modeling and automatic captioning of audiovisual materials.

The Center collaborates with numerous institutions and multinational companies on strategic projects with high innovation content – including the European Space Agency ([ESA](#)).

In March 2023, a closed-door “demo day” was held at FBK in, giving FBK researchers the opportunity to present “work in progress” in the various areas of investigation and experimentation that fall within the scope of the Research Center directed by **Alessandro Cimatti**.

The event represents a valuable opportunity to detach from contingent objectives, share what is being done and understand what colleagues are doing so as to reconstruct an overall vision that, although by no means is a given, is not the sum of the parts.

“For this event,” Cimatti commented, “we selected about twenty demos and posters describing new technologies or projects and their practical applications. Some of these technologies are ready for use, while others are in an experimental phase.

Thus we are talking about both established results and ongoing activities. One of the opportunities of the event is clearly to gather feedback from colleagues and to encourage the identification of new opportunities for joint research. It is important for us to combine scientific research results with practical spin-off, and this is possible because we develop technologies and solutions, including interdisciplinary ones, that are independent of the application domain and can be easily adapted to different areas. For example, an autonomous robotics solution can be applied for undersea surveillance, cultural heritage protection, or precision agriculture.”

The following videos capture the excitement of the eureka moments lived at the demo day and thoroughly describe 3 examples:

- “3D SOLAR”, with Elisa Farella – [3DOM](#)
- Autonomous mobile active sensing platform for agriculture. with Miguel Pincheira – [OpenIoT](#)
- ATO: Automatic Train Operation, fruit of the collaboration between the [ES](#) and [SE](#) units, with Daniele Giuliani

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