

SUSTAINABLE DESIGN OF SMART FURNITURE SYSTEM WITH LIFE-SAVING FUNCTION IN CONDITIONS OF EMERGENCY FOR COMMUNITY SETTINGS



Research Day UNICAM
Camerino 12 dicembre 2024



Research project: VITALITY. Innovation, digitalization and sustainability for the diffused economy in Central Italy (July 2022- December 2025) – SPOKE 6 - WP3

Innovation Ecosystem, co-funded by MUR/PNRR - Spoke 6: Innovation and safeness in living environments in the digital and green transition era, coordinated by Unicam - P.I.: F. Corradini; WP3 leader: L. Pietroni

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Permanent/temporary staff: 46% permanent / 54% temporary

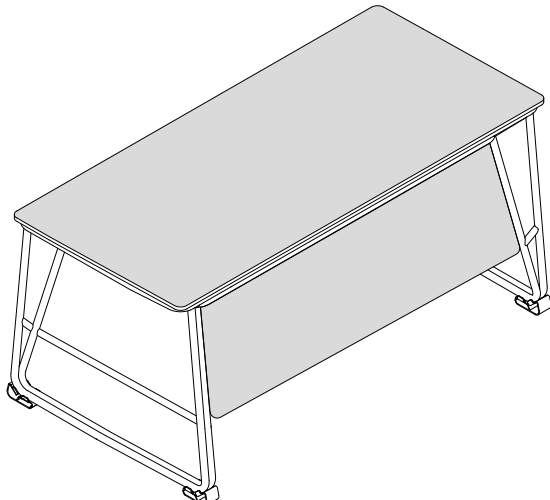
School of Architecture and Design

Characterising studies

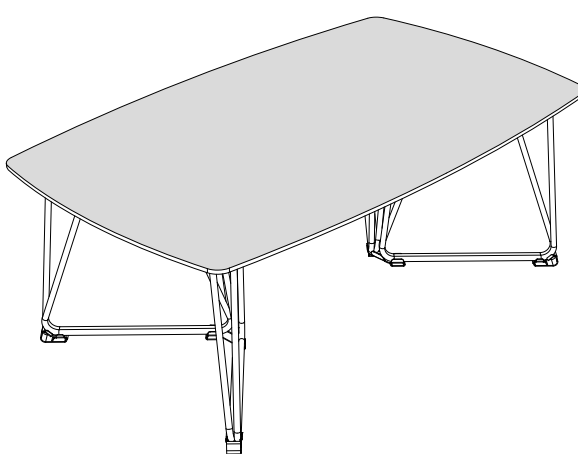
Starting from the results of S.A.F.E, a previous research project coordinated by the University of Camerino, Vitality WP3 focuses on the design and development of new types of pieces of furniture with life-saving functions in case of earthquake for community settings and different building types, heritage listed ones included. The main goal is the set-up of pilot spaces in real reference contexts (TRL7), namely school environments and workplaces, in order to test and verify an integrated system of prototype furniture, along with the definition of new testing procedures for structural validation of their seismic resistance and the development of immersive learning environments able to communicate the purpose and operation of the appointed life-saving equipment.



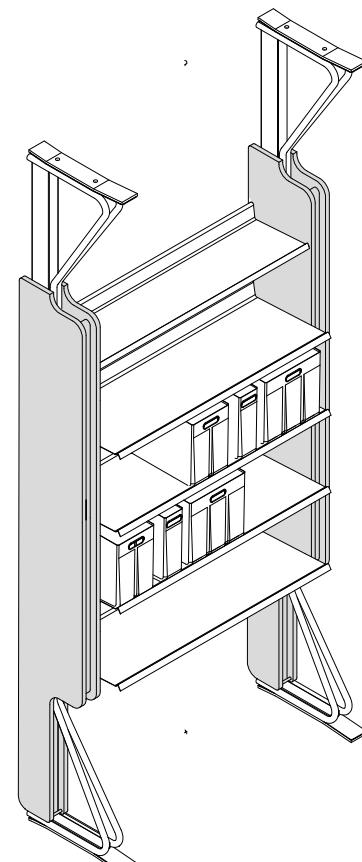
40x student desks



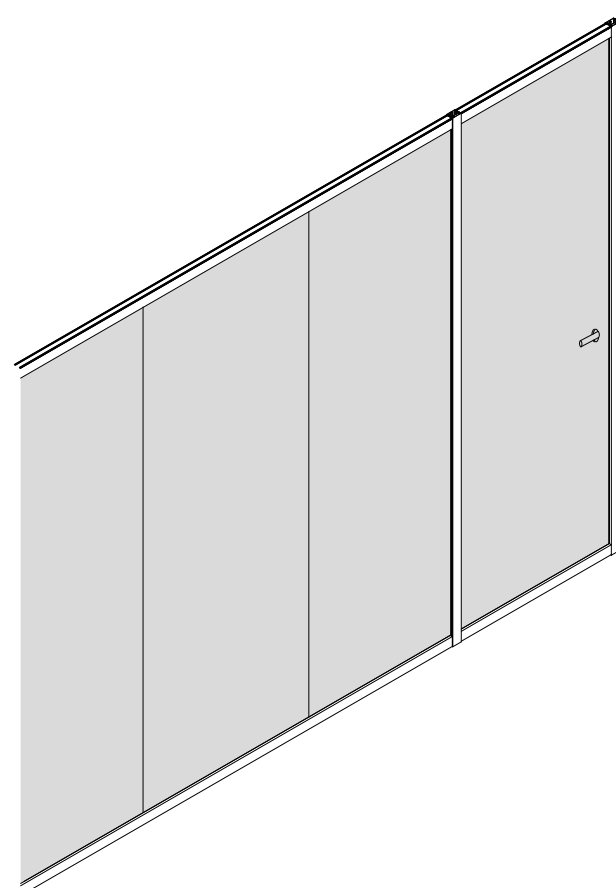
2x teacher desks



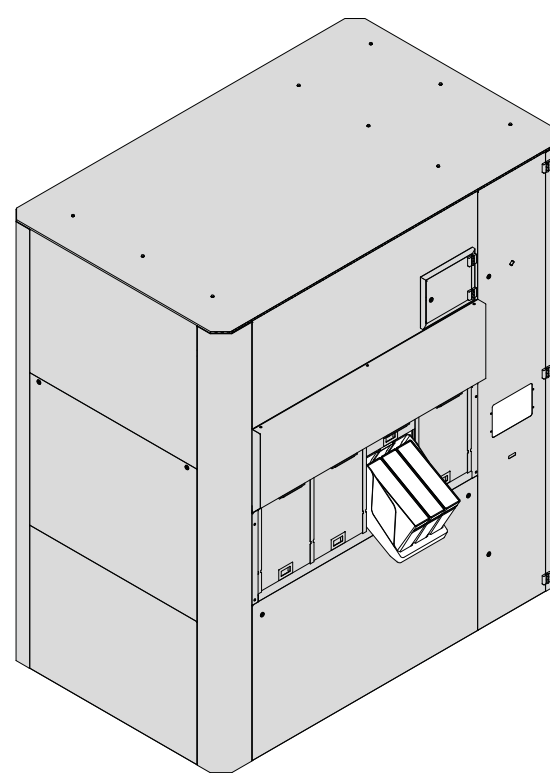
2x meeting tables



2x shelving units



2x partition walls



1x automated distributor

↑ 6 different types of pieces of furniture with life-saving properties in case of an earthquake have been designed and manufactured in order to be tested in real first demo site

Funding source

This work has been funded by the European Union - NextGenerationEU, Mission 4, Component 1, under the Italian Ministry of University and Research (MUR) National Innovation Ecosystem grant

Business connection

The manufacturing and outfitting of prototype pieces of furniture with life-saving properties involved several companies from the wood-furnishing sector, especially for schools and offices, and commercial activities from the ICT and IoT field.

National and international impacts

First of all, the project addresses the rising social need for greater safety coming from earthquake-prone areas, in Italy and abroad, with affordable and non-structural solutions bringing protection also in heritage-listed buildings, often lacking earthquake resistant measures. Researchers also developed a certification scheme that companies working in the furniture field can voluntarily adopt in the future, which defines dimensional features and testing procedures for pieces of furniture with anti seismic properties.



↑ Structural tests are being carried out to verify prototypes' resistance to the impact of falling rubbles



↑ Finding shelter under the protective desk during an emergency



↑ Some pictures from the pilot classrooms set up with life-saving furniture at ITT Fermi school in Ascoli Piceno, the first demo site appointed for on-site tests, also engaging everyday users