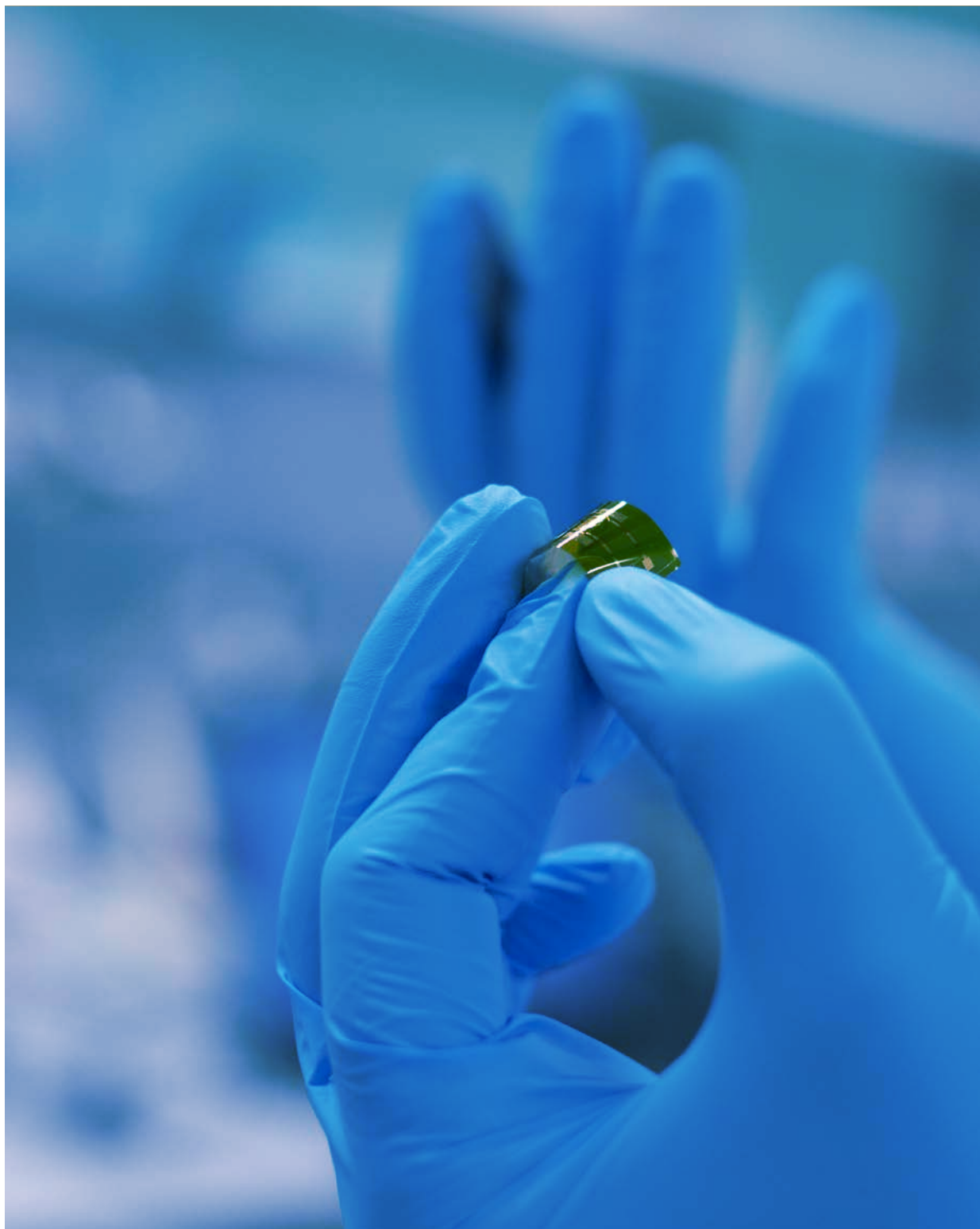


Research Report 2023



Freie Universität Bozen
Libera Università di Bolzano
Università Lìedia de Bulsan



Research Report 2023

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Preface

Im Jahr 2023 gab es eine wichtige Umstrukturierung: Die Fakultät für Informatik und die Fakultät für Naturwissenschaft und Technik wurden neu geordnet in eine Fakultät für Ingenieurwesen und eine Fakultät für Agrar-, Umwelt- und Lebensmittelwissenschaften. Diese Neuausrichtung schärft das Profil und erhöht die Sichtbarkeit der Lehr- und Forschungstätigkeiten. Die erstere der beiden Fakultäten forscht und lehrt in den Bereichen Informatik, Künstliche Intelligenz, Elektronik, Energie und Automation; die letztere konzentriert sich auf (Berg-) Landwirtschaft, Lebensmitteltechnologie, nachhaltige Produktion von Nahrungsmitteln sowie das Management von alpinen Ökosystemen.



President — Prof. Ulrike Tappeiner

Das Thema der Nachhaltigkeit ist weiterhin von oberster Priorität und fordert alle in der Gesellschaft, auch die Universitäten. Zum einen bildet die Universität Entscheidungsträger

von morgen aus, die zusätzlich zur fachlichen Qualifikation auch für Themen der Nachhaltigkeit sensibilisiert werden müssen. Zum anderen ist der Beitrag der Wissenschaft zu den unterschiedlichen Nachhaltigkeitszielen von enormer Wichtigkeit, um Entscheidungsträgern objektive und belastbare Daten für evidenz-basierte Entscheidungen zu liefern. Vor diesem Hintergrund hat der Universitätsrat (neben dem bestehenden Kompetenzzentrum für ökonomische, ökologische und soziale Nachhaltigkeit) einen Aktionsplan für das Nachhaltigkeitsmanagement an der Freien Universität Bozen verabschiedet. Dieser sieht fünf Arbeitsgruppen vor, welche zu den Themenbereichen Forschung, Lehre, Interaktion mit der Gesellschaft, Betrieb und Organisationskultur konkrete Maßnahmen zur Entwicklung der Nachhaltigkeit an der Universität erarbeiten. Damit will die Universität einen Beitrag zur Sicherung der Lebensqualität und der Lebensgrundlagen für die jetzige und für zukünftige Generationen leisten.

Anche nel 2023 i docenti delle cinque facoltà e degli otto centri di competenza hanno effettuato le loro ricerche con grande passione, intensità e ad un elevato livello di qualità. Quest'ultimo è testimoniato da numerose pubblicazioni in riviste e conferenze internazionali di altissimo profilo,

ma anche dai numerosi riconoscimenti scientifici ottenuti da professori/professoressa e ricercatori/ricercatrici.



Rector — Prof. Paolo Lugli

Per quanto riguarda l'acquisizione di fondi terzi, il 2023 è di nuovo un anno di grande successo. Sono stati avviati più di 200 nuovi progetti di ricerca, con un finanziamento esterno di € 15,2 milioni, che rappresenta una parte notevole del budget dell'ateneo. La maggior parte di questi finanziamenti deriva da bandi competitivi, inclusi 18 progetti europei (€ 6,2 milioni) e 47 progetti PRIN (€ 3,1 milioni). Sono 76 i contratti di ricerca con aziende (€ 1,7 milioni), il che sottolinea il forte collegamento con il territorio.

La qualità della ricerca ed i finanziamenti esterni rappresentano anche aspetti importanti per il posizionamento delle università nei ranking. Nel ranking CENSIS 2023, unibz si classifica al primo posto tra le piccole università italiane non statali per la settima

volta consecutiva. Nel ranking internazionale di Times Higher Education unibz si posiziona nel range 351–400, un aumento di 100 posizioni rispetto all'anno precedente. Il numero di citazioni rappresenta il nostro criterio più forte, confermando la qualità della ricerca.

The University is committed to strengthening its links with the local area and to enhancing knowledge transfer from the university to the stakeholders, thereby contributing to the development of the region. To facilitate this transfer and foster excellence in research, unibz operates 13 state-of-the-art research laboratories at the NOI Techpark. The newest lab is the Laboratory of NMR-Spectroscopy, which is jointly run with the Laimburg research centre and aims to investigate the origin of agricultural products and characterize new substances. The lab was inaugurated in May with the Swiss Nobel prize winner Kurt Wüthrich in attendance.

Furthermore, the eight Competence Centres of unibz have a similar mission, namely to consolidate – in close collaboration with local stakeholders – interdisciplinary and application-oriented research concerning challenges emerging from the territory. In 2023, the new Competence Centre for the Management of Cooperatives was founded with

the aim to foster the creation and circulation of managerial knowledge and skills to boost the capacity of cooperatives to create value for the society.

Thanks to a generous donation from the Stiftung Südtiroler Sparkasse and the Südtiroler Sparkasse, in 2023 the Free University of Bozen-Bolzano awarded a research prize and an innovation prize for sustainability, which was open to all researchers and companies in South Tyrol. This and numerous other initiatives demonstrate unibz's solid engagement with, and connection to, the local area.

All the results described in this report have been achieved thanks to the great passion and dedication to research shown by our professors, researchers, and PhD students, supported by expert and experienced administration staff. We would like to express our sincere gratitude to the entire unibz community.

Enjoy reading the Research Report 2023!

Ulrike Tappeiner, President
Paolo Lugli, Rector
Johann Gamper, Vice-Rector



Vice Rector for Research — Prof. Johann Gamper

Highlights

1.

University rankings. unibz rises in THE and maintains 1st place in CENSIS

University rankings are and remain a widely used selection criterion for many students. In 2023, the Free University of Bozen-Bolzano achieved an excellent result in two university rankings. In the Times Higher Education Young University Rankings, unibz is ranked 92nd (compared to 114th in 2022), while in the Italian CENSIS ranking, it remains firmly in first place among small non-state universities, as it has been for the past seven years. In the CENSIS national ranking, unibz ranks first among small non-state universities (up to 5,000 students) with 88.6 points.

In the university rankings, various performance indicators are evaluated: the ratio of students to lecturers, the number of citations of publications by the teaching staff, the international research network, but also the employment situation of graduates and the ability of a university to respond quickly to requests for information and to be at the forefront of the use of digital services.

2.

Sustainability Prizes

Sustainability in its various forms was the focus of a special award ceremony: for the first time, in Summer 2023, two new research prizes were awarded at the unibz Bolzano campus, which are presented by the Free University of

Bozen-Bolzano together with the two sponsors *Südtiroler Sparkasse* and *Stiftung Südtiroler Sparkasse*: the Research Prize for Sustainability and the Innovation Prize for Sustainability. The proud winners were the researchers Isabel Schäufole-Elbers and Ariele Zanfei as well as the entrepreneur Werner Schönthaler and the industrial designer Noa Paul from *Schönthaler Bausteinwerk GmbH*. Isabel Schäufole Elbers has been doing research at unibz in the subject area of rural economics since 2022. Ariele Zanfei is president and co-founder of the unibz spin-off AIAQUA.

- 1 ↓ Campus Bozen-Bolzano
- 2 ↓ Sustainability Prizes 2023
- 3 → Junior Research Awards
- 4 → ECHO kick-off meeting



3.

Junior Research Award Alto Adige 2023

Il premio del 2023 è stato assegnato a Barbara Gross. La pedagista insegna Pedagogia generale alla Facoltà di Scienze della Formazione della Libera Università di Bolzano e, dal 2022, è professore junior all'Università di Chemnitz. La ricercatrice, originaria della Val Sarentino, si concentra in particolare sulla diversità linguistico-culturale e equità educativa. La giuria ha deciso a favore di Barbara Gross per il suo "eccellente curriculum in un settore sempre più importante per l'Alto Adige". Uno dei due premi di menzione speciale della giuria è andato al biotecnologo e fisico Alan

laneselli, che opera nel campo delle biotecnologie, dell'informatica e dell'intelligenza artificiale e dal 2022 è assegnista di ricerca alla Facoltà di Ingegneria della Libera Università di Bolzano.

4.

Gesunde Böden dank Partizipation der Bevölkerung: unibz koordiniert das Citizen-Science-Projekt ECHO

Der Boden ist eine unverzichtbare Grundlage für unsere Ernährung und viele Ökosysteme. Dennoch ist ein immer größerer Anteil der Böden in Europa in „ungesundem“ Zustand, sagt die Leiterin des Kompetenzzentrums für Pflanzengesundheit der unibz, Prof.in Tanja Mimmo. Sie koordiniert ein EU-weites

Projekt (Horizon Europe) in dem die Bevölkerung gemeinsam mit Wissenschaftlern und Wissenschaftlerinnen am Schutz und dem Erhalt von Böden arbeitet. Die Citizen-Science-Initiative „ECHO – Engaging Citizens in soil science: the road to Healthier Soils“ vereint 10 führende Universitäten und Forschungszentren, 4 KMU und 2 Stiftungen. Unter Koordination der unibz sollen neue Daten über den Gesundheitszustand der Böden in der EU generiert und 28 Citizen-Science-Initiativen in den EU-Mitgliedstaaten entwickelt und umgesetzt werden. Die Bevölkerung soll dabei aktiv zur Datenerhebung beitragen und zu einem verantwortungsvollen Umgang mit der Ressource Boden befähigt werden.



5.

iNEST: Ökosystem der Innovation in Berggebieten

Ökosysteme, die forschungs-
basiert Innovation generieren:
Solche Früchte trägt der Aufbau-
fond PNRR. Eines dieser Ökosys-
teme ist iNEST (Innovation in
Berggebieten), in dem sich
9 Universitäten gemeinsam
mit Forschungsinstitutionen
und Firmen zu einem Netz-
werk zusammengeschlossen
haben. Darin werden mehr als
500 Forschende an konkreten
Ant-worten auf die Herausfor-
derungen von Gebirgsregionen
arbeiten – in wirtschaftlicher,
ökologischer und sozialer
Hinsicht. Für die Leitung der
Forschungsbereiche innerhalb
„Spoke 1“ – Mountain Innovation

Ecosystems sind Prof. Fabrizio
Mazzetto und Prof. Guido Orzes
von der unibz verantwortlich.
Zur besseren Koordination aller
Aktivitäten innerhalb des Netz-
werkes hat die unibz das Kompe-
tenzzentrum für Innovations-
ökosysteme in Bergregionen
unter der Leitung von Prof.
Fabrizio Mazzetto eingerichtet.

6.

Laboratorio di Spettroscopia NMR. Inaugurazione con il Premio Nobel

Il 15 maggio 2023, prof. Kurt
Wüthrich, chimico e biofi-
sico svizzero e premio Nobel
per la chimica, ha parteci-
pato all'inaugurazione ufficiale
del Laboratorio di Spettro-
scopia NMR di unibz e Centro

di Sperimentazione Laimburg
al NOI Techpark. Obiettivo della
nuova struttura è l'utilizzo della
Spettroscopia NMR come tecnica
analitica per determinare auten-
ticità, tipicità e origine dei
prodotti agroalimentari del terri-
torio, nonché per condurre studi
strutturali, cinetici e funzio-
nali di molecole biologiche e
l'identificazione di nuove mole-
cole incognite. Per l'occasione
era stato organizzato il primo
Simposio scientifico sulla tecno-
logia NMR in Alto Adige. Ospite
d'onore dell'evento è stato il prof.
Wüthrich che ha esposto la storia
dello sviluppo della tecnologia
NMR e ne ha presentato le ultime
novità e le prospettive future.

5 ↓ iNEST

6 ↓ Laboratory of NMR-Spectroscopy © Ivo Corrà

7 → Prof. Franco Concli

8 → Dr. Alessandro Gianola

5



6



7.

Prof. Franco Concli inducted to the "Sigma Xi" Research Honor Society

Sigma Xi (ΣX) is a research honor society for scientists and engineers, founded in 1886 at Cornell University by a group of engineering students and a junior faculty member, Frank Van Vleck. More than 200 Nobel laureates have been members of Sigma Xi, including, among others, Albert Einstein and Enrico Fermi. Professor Concli's appointment as a Full Member of Sigma Xi recognizes his outstanding contributions to research in the field of Machine Design. This prestigious honor highlights his significant achievements and impact in his area of expertise. Membership in

Sigma Xi is by invitation and requires nomination by two Sigma Xi members. To become a Full Member, one must have demonstrated notable achievements as an original researcher in a field of pure or applied science. These notable achievements must be evidenced by being the principal author of at least two distinct articles published in specialised journals, patents, or specialised monographs.

8.

Alessandro Gianola Wins the 2023 CADE Bill McCune PhD Award

The CADE Bill McCune PhD Award is a recognition established in by 2019 CADE Inc. to honor each year a PhD thesis defended the previous year, for its substantive

contributions to the field of Automated Reasoning, its theory, its implementation, and/or its application on important problems. Gianola's winning thesis, titled "SMT-based Safety Verification of Data-Aware Processes: Foundations and Applications," delves into the development of logical-mathematical methods, particularly model-theoretical approaches, to tackle verification problems in systems with infinite states. These methods hold significant applications in the domain of business process management (BPM), making them valuable tools for ensuring the safety and correctness of complex processes involving data. With his PhD-Thesis' work Alessandro Gianola had already won the 2022 Best Italian PhD Thesis in Theoretical Computer Science award and the 2022 Best BPM Dissertation award.



9.

L'elettronica ricavata dagli scarti della frutta

Il continuo incremento dell'uso di dispositivi elettronici, assieme agli ovvi vantaggi, suscita preoccupazioni giustificate anche dal punto di vista ecologico e sociale, sia per quanto riguarda il reperimento dei materiali rari necessari a produrli, che per il loro corretto smaltimento e riciclo. Si pone quindi la necessità di ripensarne la produzione per renderla sostenibile. L'équipe del Sensing Technologies Lab, il laboratorio di nanotecnologie e sensoristica diretto dai prof. Paolo Lugli e Luisa Petti, ha sviluppato assieme a partner interni (Facoltà di Design e Arti, di Ingegneria e di Scienze ambientali,

agrarie e alimentari), nazionali e internazionali una nuova tecnologia che utilizza la carta realizzata a partire dagli scarti della frutta per produrre circuiti elettronici stampati. Alcune possibili applicazioni: come biosensori per il monitoraggio di funzioni corporee oppure nell'agricoltura di precisione.

10.

Preservare il Permafrost sulle Dolomiti

Il cambiamento climatico rappresenta una minaccia significativa per diversi ecosistemi montani. Uno degli esempi è la fusione del permafrost, che può portare a diverse conseguenze negative, tra cui l'instabilità del suolo e danni alle infrastrutture

costruite nel territorio montano. L'innovazione tecnologica può però contribuire fattivamente alla conservazione dei delicati ecosistemi di montagna. Ne è un esempio concreto il progetto "Rescue Permafrost" presentato nell'estate del 2023 nel Parco delle Tofane, Dolomiti ampezzane. Un intervento ambizioso sul fronte della sostenibilità che vede un contributo importante anche di unibz, con il know-how del team di ricercatori in Fisica Tecnica Ambientale, guidato dal preside prof. Andrea Gasparella, che ha effettuato l'analisi preliminare dinamica dell'impatto del sistema geotermico sulla temperatura del suolo.

9



10



11.

Science Live: Mehr als tausend Menschen begeistern für die unibz aufgrund der Wissenschaft

Viele Familien mit Kindern, aber auch Erwachsene und Jugendliche strömten im Oktober 2023 auf den Campus Bozen der unibz, um das Wissenschaftsfestival „Science Live“ zu besuchen. An 33 Stationen konnten sie in spielerischen und interaktiven Aktivitäten in die Welt der Forschung einzutauchen und aus erster Hand erfahren, wie dort nach Lösungen und Strategien gesucht wird, um die komplexen Veränderungen und Herausforderungen unserer Zeit zu bewältigen. Das Ziel lautete, für Wissenschaft zu begeistern. Und

es wurde erreicht, bezeugen die Bilder des Wissenschaftsfestivals. Viele Kinder und Jugendliche hatten die Möglichkeit, sich mit Professoren und Professorinnen sowie mit Forschenden spielerisch auszutauschen und einen Einblick zu gewinnen, wie es in Zukunft sein könnte, in ihre Rolle einzutauchen.

12.

Industry Challenge: Studierende erarbeiten Lösungen für Südtiroler Unternehmen

Wie kann ein Arbeitsplatz für die halbautomatisierte Montage von Duschkabinen effizient gestaltet werden? Das war eine der Aufgabenstellungen, an der Studierende in der Lehrveranstaltung „Produktionssysteme

und Industrielogistik“ von Prof. Dominik Matt arbeiteten. In sogenannten *Industry Challenges* werden die Studierenden mit konkreten Herausforderungen von bekannten Südtiroler Unternehmen, wie in diesem Fall DUKA, konfrontiert und erhalten alle nötigen Informationen und Daten, um Lösungen dafür zu erarbeiten. Aus den Vorschlägen wird jeweils ein Siegerprojekt prämiert. Das beliebte Format hat der Professor der unibz und Leiter von Fraunhofer Italia vor drei Jahren entwickelt. Die Vorschläge, die Studierende darin erarbeitet haben, werden vielfach ganz oder teilweise in den Unternehmen implementiert.

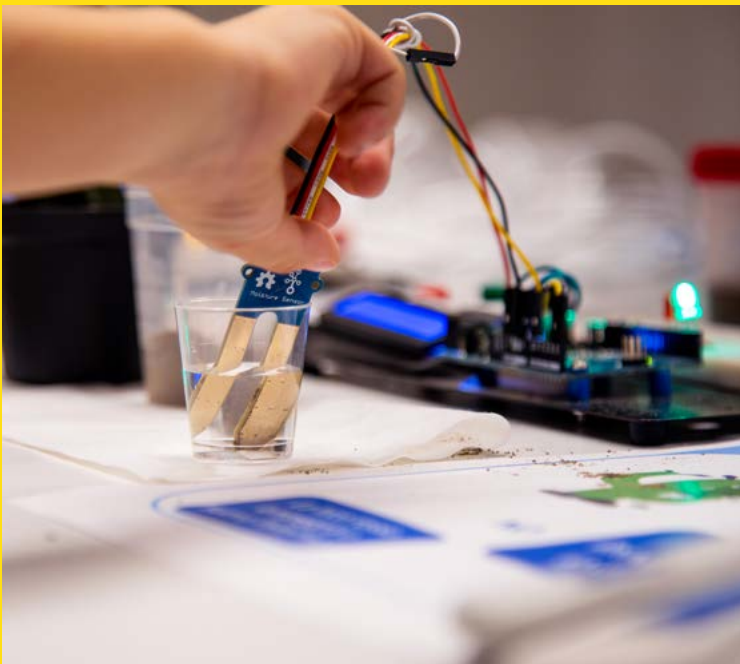
9 ← Circuit made in the Sensing Technologies Lab

10 ← Prof. Andrea Gasparella

11 ↓ Image of the Science Live Event 2023

12 ↓ Prof. Dominik Matt

11



12



Faculty of Agricultural, Environmental and Food Sciences



© Eleonora Lunardonì



KEY DATA

PEOPLE

- + 376 Students
- + 24 PhD Students
- + 24 Tenured Professors
- + 51 Researchers
- + 24 Contract Professors
- + 22 Technical and Administrative Staff

BACHELOR

- + Agricultural, Food and Mountain Environmental Sciences
- + Enogastronomy in Mountain Areas

MASTER

- + Environmental Management of Mountain Areas
- + Food Sciences for Innovation and Authenticity
- + Horticultural Science
- + Viticulture, Enology and Wine Marketing

PHD

- + Food Engineering and Biotechnology
- + Mountain Environment and Agriculture

In Dean's Words

INTERVIEWED BY ARTURO ZILLI

Prof. Gobbetti, what has been the Faculty's research agenda over the past academic year?

If it comes to research, the Faculty of Agricultural, Environmental and Food Sciences is the flagship of unibz. The research agenda is extremely competitive and aims at consolidating and improving both the rate of publications in peer review journals and the success on competitive calls for local, national and international projects. Furthermore, we continued to aim at increasing the rate of commissioned research projects, the so called technology transfer. Over the years we aimed at improving our national ranking. The last national assessment ranked our Faculty at the third place within more than fifty Italian departments/faculties with similar scientific sectors.

How do you assess research activities with respect to the goals set at the beginning of the year?

Yearly, the Faculty is monitoring the research activities of all permanent and temporary staff members. In particular, monitoring concerns the number and quality (rank of the journals and number of citations) of international peer reviewed publications, the number and financial budget of research projects on a national and international level, and technology transfer (commissioned research). We strongly believe that the research activity is not only important per se, but also affects the quality of our teaching activities.



Dean — Prof. Marco Gobbetti © Ivo Corrà

To what extent has the Faculty collaborated with other academic institutions or research organisations and companies in the past year, and what has been the impact on the local area of these collaborations?

The current results are very encouraging. The number of annual publications per capita is approx. 9, simultaneously we are the only Faculty involved in five European projects (Horizon calls), and the rate of success on local and national levels is very satisfactory. All these achievements are somewhat related. The quality of our publications has promoted us as participants in consortia that have won important European projects. And this has meant that we were able to collaborate for long time (at least four years) with prestigious European institutions. Once we have entered these consortia, future success in other competitive calls is easier. Also noteworthy

is the close interaction with other local research institutions, local associations and companies. The research activities developed certainly have a social and economic impact on the province territories. It makes us very proud that national and international industries find in our research groups an international reference to support them to develop new processes and products. We must not forget that these achievements have been also possible because of the extremely valuable infrastructures that the Province has made available. The future goal will be to involve in such activities all research groups in the Faculty, so that these achievements will improve with greater input from all members of the Faculty. ■



Research Areas

Teaching and research activities at the Faculty mainly deal with agricultural sciences, environmental management, and food sciences. Sustainability and interdisciplinarity mark out the approach of the Faculty's work. Innovation for agricultural and food processes and products and an intense knowledge transfer are other distinguishing features, together with a focus on the mountain region. The Faculty was ranked among the top 100 Young Universities in the 2023 Times Higher Education (THE).

Agriculture

Coordinator: Prof. Massimo Tagliavini

Research aims at facing the challenge of producing healthy and sustainable food under climate, decreasing natural resources, and growing pressure from new pests and pathogens. Studies mainly deal with the complexity of biological systems, the exchange of material and energy between the soil-plant systems and atmosphere, precision farming, livestock performance and welfare, the effects of climate change and economic system evaluation.

Food Sciences

Coordinator: Prof. Matteo Scampicchio

This research area focuses on the functional and nutritional attributes of foods and beverages, including sensory and shelf life studies. Research activities in this area aim to exploit multidisciplinary approaches that include food



Vice Dean for Research — Prof. Matthias Gaulty
fermentations, innovative extraction technologies, and omics approaches, with the goal of not only ensuring high quality standards for foods and beverages, but also advancing the biorefinery of food by-products, aligning with the principles of the circular economy.

Analysis and Management of Mountain Ecosystems

Coordinator: Prof. Camilla Wellstein

This research area aims to understand the local and global effects of natural and anthropogenic disturbances on the functioning of terrestrial and aquatic mountain ecosystems, in order to provide tools for a sustainable ecological management of the latter.



CLEVAS — Effect of Climate Extremes on Grapevine Production in South Tyrol: Early Detection of Abiotic Stress and Consequences for Wine Quality

The rate of warming in South Tyrol significantly exceeds the global average, a trend that is projected to continue during the 21st century. Consequently, South Tyrol is expected to face an increasing frequency in heatwaves and drought periods in the future. Viticulture in South Tyrol has already started to feel the consequences of climate change, with grape quality, wine taste and quality clearly affected by the modified thermal conditions. The overarching aims of this project were (i) to investigate whether chlorophyll fluorescence allows the early detection of abiotic stress (high temperature and drought) in grapevine and (ii) to quantify the consequences of abiotic stress on grape and vine quality.

To disentangle the effects of heat and drought on grapevine physiology, a two-factorial heat x drought experiment under controlled environmental conditions was conducted at the Eurac Research's terraXcube facility with 'Sauvignon Blanc' vines. These climate chamber experiments were complemented by a two-year field experiment in which grapevines were exposed in situ to deficit irrigation (and compared against regularly irrigated plants) at an experimental vineyard and the resulting effects on grapevine physiology studied. In addition,

grapes from the rainfed and irrigated plants were harvested and microvinified. The resulting wines were analysed and underwent a sensory analysis by an expert panel. At the ecosystem scale, the CO₂ and H₂O exchange of the experimental vineyard together with sun-induced chlorophyll fluorescence was monitored over a period of up to two years.

The project's major result is that soil water availability turned out to be the first order, heat the second order effect for grapevine physiology amongst the abiotic stress that were studied, and chlorophyll fluorescence is able to pick up the resulting stress. It was clearly shown that sufficient plant-available soil water can mitigate the negative effects of heat. While the physiological reactions to drought were clear, effects on wine quality and sensory parameters were variety-specific and, amongst the metrics evaluated for each variety, complex, resulting in no clear differences between rainfed and irrigated



INFO BOX

FUNDING TYPE

Autonomous Province of Bolzano-Bozen DURATION

10/2020 – 06/2023

RESEARCH AREA

Agriculture

UNIBZ RESEARCH TEAM

Prof. Massimo Tagliavini (PI), Prof. Carlo Andreotti, Prof. Damiano Zanotelli, Prof. Leonardo Montagnani, Dr. Maria Dolores Asensio Abella

PROJECT PARTNER

Leopold-Franzens-Universität Innsbruck (LP), Versuchszentrum Laimburg Research Centre, Eurac Research

SELECTED PUBLICATIONS

- + Shtai W., D. Asensio, A. Kadison, M. Schwarz, B. Raifer, C. Andreotti, A. Hammerle, D. Zanotelli, F. Haas, G. Niedrist, G. Wohlfahrt, M. Tagliavini. (2024). Soil water availability modulates the response of grapevine leaf gas exchange and PSII traits to a simulated heat wave. *Plant and Soil*. doi.org/10.1007/s11104-024-06536-7
- + Shtai W. The effects of heat and drought on grapevine physiology under controlled environment and open field conditions. and PhD Thesis. PhD programme Mountain Environment and Agriculture. Free University of Bozen-Bolzano (to be defended in 2024).

wines. Given the likely future increase in the frequency and intensity of heatwaves and drought episodes, the results suggest increasing pressure on irrigation water resources in South Tyrol as they clearly demonstrate irrigation being able to mitigate the negative effects of heat. Chlorophyll fluorescence is in principle a suitable tool for an early detection of stress and could play a valuable role in triggering management actions, however current generation satellite products do not offer the required combination of high spatial and temporal resolution.

← The eddy covariance station for measuring gas exchange between soil-plant system and atmosphere, located in the experimental vineyard.



Research Projects

BIOVISO — Ökologische Netzwerke zur Überwachung der biologischen Vielfalt im Boden und zur Förderung nachhaltigerer landwirtschaftlicher Ökosysteme

Heutzutage ist die Obstproduktion einer der anspruchsvollsten landwirtschaftlichen Sektoren, denn es besteht ein ständiger Bedarf an Qualität und Ertrag. Obstbäume machen etwa 1 % der weltweiten landwirtschaftlichen Produktion aus und spielen in vielen Volkswirtschaften eine zentrale Rolle. Die Obstproduktion kann sich auf frische, verzehrfertige Produkte oder Nebenprodukte (z. B. Säfte, Zuckerextrakte, Liköre, Wein usw.) konzentrieren. Eines der profitabelsten Nebenerzeugnisse aus Obst ist der Weinsektor mit 259 Mio. Hektolitern Wein pro Jahr, was fast 30 Mrd. des weltweiten Weinmarktwertes ausmacht. Italien ist ein führendes Weinbauland mit einem hohen Exportanteil, und Südtirol ist eine der wichtigsten Regionen für den



italienischen Qualitätsweinmarkt. Die Ertragskapazität und die Qualität der Traubenproduktion sowie die allgemeine Pflanzengesundheit ergeben sich aus den vielfältigen Wechselwirkungen verschiedener Faktoren, darunter Bodeneigenschaften, klimatische Bedingungen, Wasserversorgung und saisonale Schwankungen sowie landwirtschaftliche Bewirtschaftung. Die biologische Vielfalt des Bodens (Bakterien, Pilze, Protozoen und Bodentiere) spielt dabei eine entscheidende Rolle. Es ist jedoch nur wenig darüber bekannt, wie diese komplexe biologische Vielfalt durch biotische und abiotische Faktoren wie Bodeneigenschaften, chemische Verunreinigungen und landwirtschaftliche Landnutzungspraktiken beeinflusst wird und wie die biologische Vielfalt mit Boden, Traubenqualität und Ertrag zusammenhängt.

In diesem Zusammenhang identifiziert das Projekt BioViSo die abiotischen und biotischen Schlüsselfaktoren und Schlüsselarten, die die Bodenqualität beeinflussen oder für sie stehen. Um dieses Ziel zu erreichen, wird ein innovativer ökologischer Modellierungsansatz auf der Grundlage von Netzwerkanalysen in Weinbergen angewandt. Dieser Ansatz integriert chemische und biologische Analysen und einen Umwelt-DNA-Ansatz. Informationen über Bewirtschaftungssysteme und die geografische Lage werden ebenfalls einbezogen. Diese Ergebnisse werden die Grundlage für die Entwicklung einer innovativen Methode



INFO BOX

FUNDING TYPE

Joint Projects – Austrian Science Foundation (FWF) – South Tyrol/Alto Adige

DURATION

01/2023 – 12/2025

RESEARCH AREA

Agriculture

UNIBZ RESEARCH TEAM

Prof. Luigimaria Borruso (PI), Prof. Tanja Mimmo, Dr. Oussama Bouaicha

PROJECT PARTNERS

Leopold-Franzens-Universität Innsbruck, EURAC Research

zur Überwachung der Qualität und Gesundheit von Agrarökosystemen im Boden von der Parzellen- bis zur Landschaftsebene bilden.

← Sampling site, depicting the different rows of vines



Research Projects

ALTROCLIMA — Tendenze del trasporto del carico di fondo alpino in presenza di rapidi cambiamenti climatici

I paesaggi alpini stanno sperimentando il riscaldamento climatico a tassi più elevati rispetto ad altre regioni del mondo. A livello globale, gli impatti del riscaldamento sulla criosfera sono evidenti in tutte le regioni montane, tra cui il degrado del permafrost, i tassi di movimento di massa (caduta massi, colate detritiche, frane) alle quote più elevate, i flussi fluviali e gli ecosistemi terrestri e acquatici. Le previsioni di cambiamento della copertura nevosa/ghiacciata sono disponibili fino alla fine del XXI secolo e ci sono tentativi di associare il cambiamento climatico al flusso fluviale nei paesaggi alpini, includendo un trattamento corretto della criosfera. Il modo in cui il trasporto del carico di fondo si evolverà in base a questi fattori è molto meno ben definito, nonostante l'importante significato



ambientale del carico di fondo per il funzionamento ecologico dei torrenti alpini e per la sua potenziale pericolosità per le comunità alpine. La sfida è rappresentata dal fatto che il trasporto del carico di fondo è eccezionalmente difficile da misurare e, a livello globale, a differenza di altre misure di cambiamento ambientale, abbiamo pochissimi siti strumentati in tutto il mondo per il monitoraggio del trasporto del carico di fondo che si estendono per più di un decennio di osservazioni.

Lo scopo principale di questo progetto è quello di comprendere e prevedere come il rapido riscaldamento climatico abbia e avrà un impatto sul trasporto del carico di fondo negli ambienti alpini su una scala temporale centenaria. Gli obiettivi sono: O1 fornire la prima quantificazione affidabile e multi-sito in ambiente alpino di come il trasporto del carico di fondo stia cambiando sotto il riscaldamento; O2 determinare il ruolo relativo dei processi a scala di paesaggio nel guidare l'esportazione stimata del carico di fondo nei bacini analizzati; O3 stabilire un quadro modellistico appropriato per prevedere l'apporto di carico di fondo dai ghiacciai e dai pendii alla rete fluviale, utilizzando le evidenze di O1 e O2; O4 calibrare e validare un modello predittivo per rappresentare il flusso di carico di fondo attraverso la rete di drenaggio, supportato dai dati di O3; O5 fornire le prime previsioni del trasporto di carico di fondo alpino



INFO BOX

FUNDING TYPE

Joint Projects – Swiss National Science Fund – South Tyrol/Alto Adige

DURATION

01/2023 – 12/2025

RESEARCH AREA

Analysis and Management of Mountain Ecosystems

UNIBZ RESEARCH TEAM

Dr. Andrea Andreoli (PI), Dr. AnneLaure Argentin, Dott. Felix Pitscheider

PROJECT PARTNER

Université de Lausanne (LP), Università di Padova, Universität Bern, Wageningen University & Research

in condizioni climatiche future, considerando i cambiamenti sia nell'apporto che nella capacità.

Utilizzando un metodo innovativo per l'analisi delle registrazioni del carico di fondo fornite dalle prese d'acqua alpine di alta quota, ricostruiremo l'esportazione del carico di fondo per oltre 60 bacini alpini con copertura glaciale variabile per le Alpi svizzere e l'Alto Adige.

La ricerca fornirà le prime previsioni con incertezza su come il trasporto del carico di fondo potrebbe evolvere in presenza di cambiamenti climatici del XXI secolo. La comprensione e le previsioni associate non avranno solo un valore accademico, ma saranno importanti anche per i gestori delle risorse idriche (comprese le aziende idroelettriche e le agenzie nazionali/locali per la mitigazione delle inondazioni) nelle regioni alpine.

← © reisetopia, Unsplash



Research Projects

ITTnet — The Italian TREE-TALKER NETWORK: continuous large scale monitoring of tree functional traits and vulnerabilities to climate change

The Italian TreeTalker Network (ITTNet) was a national relevance research project (PRIN) that established a novel measurement network for quantifying the impact of climate change on forests by integrating classical forestry approaches with large-scale, real-time continuous monitoring of tree physiology and micro-climatic conditions. Until a few years ago, such an approach was limited by the still high-costs of the measurement devices, their high energy consumption, and the need for continuous maintenance, which often prevented environmental monitoring in hard-to-reach areas such as mountainous regions. The ITTNet network, a unique and unprecedented example worldwide, included 30 sites distributed from Sicily to the Autonomous Province of Bolzano. At these sites, a total of about 600



trees were monitored using low-cost multi-sensor devices called “TreeTalkers” based on the Internet of Things (IoT). The new developed devices could measure radial growth, water transpiration, environmental characteristics (light, temperature, and relative air humidity) and the mechanical stability of individual plants.

A radio protocol for data transmission and access to cloud services via the GSM network enabled the real-time transmission of the collected high-frequency measurements to a common web database. By interpreting these observations, the research groups involved, could explore the relationships between climate and tree physiology to quantify the impacts of extreme weather events or biological disturbances on forest functioning.

In detail, this new network used an innovative approach based on the observation and analysis of large amounts of data concerning the forest ecosystem to:

- 1) Characterise the normal or safe mode of operation of trees during standard climatic conditions.
- 2) Identify non-linear responses of the forest physiology beyond the safe mode of operation, induced by disturbances and recovery capacity through characterisation of the resistance responses in addition to the adaptive capacity of the monitored trees and conditions that may lead to permanent damage.
- 3) Testing the possibility of using a continuous high-frequency monitoring system to identify early warning signs of tree stress.

Indeed, the measurement devices used made it possible to follow



INFO BOX

FUNDING TYPE

Ministerial Funding

DURATION

08/2019 – 08/2023

RESEARCH AREA

Analysis and Management of Mountain Ecosystems

UNIBZ RESEARCH TEAM

Dr. Enrico Tomelleri (PI), Prof. Roberto Tognetti, Dott. Luca DaRos, Prof. Giustino Tonon

PROJECT PARTNERS

Università degli Studi della Toscana (LPI), Università degli Studi del Molise, Università degli Studi di Palermo, Università degli Studi della Campania “Luigi Vanvitelli”, Università di Firenze, Fondazione Edmund Mach

SELECTED PUBLICATIONS

- + Tomelleri, E., Marchesini, L.B., Yaroslavtsev, A., Asgharinia, S., Valentini, R. (2022). Toward a Unified TreeTalker Data Curation Process. *Forests*, 13(6), 855.
- + Tognetti, R., Valentini, R., Marchesini, L.B., Gianelle, D., Panzacchi, P., Marshall, J.D. (2022). Continuous Monitoring of Tree Responses to Climate Change for Smart Forestry: A Cybernetic Web of Trees. In: Tognetti, R., Smith, M., Panzacchi, P. (eds) *Climate-Smart Forestry in Mountain Regions. Managing Forest Ecosystems*, vol. 40.
- + Vaglio Laurin, G., Cotrina-Sanchez, A., Belli-Marchesini, L., Tomelleri, E., Battipaglia, G., Cocozza, C., Niccoli, F., Kabala, P., Gianelle, D., Vescovo, L., Da Ros, L., Valentini, R. (2024). Integrating spectral below-canopy and satellite data for an improved forest phenology monitoring system. *Ecological Indicators*, 158, 11132.

physiological processes in real time with a resolution and precision that cannot always be provided by forest inventories or remote sensing technologies. The ultimate goal of the project was to deepen the knowledge of tree physiology response to a changing climate and to support silvicultural strategies to mitigate the impacts of climate change and for possible adaptation. This is to ensure the provision of ecosystem services of supply, regulation, and culture to future generations.

← Example of monitored tree (CC BY-NC)

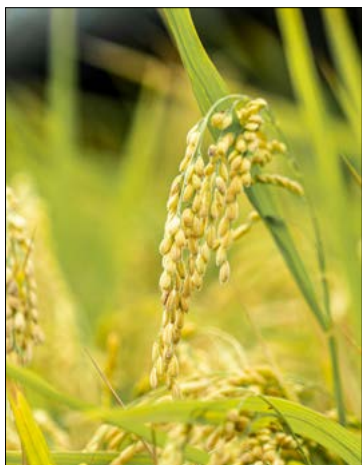


Research Projects

RAINDROP — Rice by-products valorisation: from the recovery of bioactive compounds to the regeneration of used frying oils

Nowadays, Governments all around the world are boosting the transition from a linear to a circular economy. In a circular economy approach, the value of products, materials and resources is maintained in the economy for as long as possible, minimising waste generation. Briefly, the by-product of a process becomes the input of a new process where it acquires new value. In this regard, rice (*Oryza sativa*) by-products are an excellent candidate to be valorised, for two main reasons: they contain several bioactive molecules (e.g., tocopherols, oryzanols, phenolics, and flavonoids), and they are produced in great amounts since raw rice has to be treated in order to remove the outer layers of the grain.

In 2022, according to FAOSTAT, around 740 million tons of rice have been produced worldwide,



with 8% of this production ending up as rice by-products. At present 90% of the total rice by-products is used in animal feeding, while the remaining 10% is used as a substrate for the recovery of bioactive compounds.

In addition to rice by-products, used frying oils represent also an important waste, generated at domestic or industrial level. At the moment, more than 42 million tons of frying oil are produced in the world, and only limited amounts are recycled, finding use in the production of lubricants, biofuels, or additives for asphalts, as well as in animal feeding, paint materials or soap production. Several attempts have been made by applying different methods for the regeneration of frying oils, such as filtration, distillation or adsorbent treatments. However, these techniques often suffer from low separation efficiency, use of toxic chemicals, and the generation of high amounts of wastewater.

Within this context, the present project aims to develop innovative approaches for the valorisation of rice by-products and the regeneration of used frying oils. To this purpose, bioactive compounds from rice by-products will be recovered using green extraction technologies. These products will undergo a thorough characterisation, also evaluating the bioactivity properties. The silica-rich part of the rice by-product will be then used as an adsorbent bed through which the frying oil will move using as desorbent



INFO BOX

FUNDING TYPE

Ministerial Funding; NextGenerationEU
PNRR M4C2I1.1

DURATION

11/2023 – 10/2025

RESEARCH AREA

Food Science

UNIBZ RESEARCH TEAM

Dr. Maria Concetta Tenuta (PI),
Prof. Giovanna Ferrentino, Prof. Matteo
Scampicchio, Dr. Ksenia Morozova

PROJECT PARTNERS

University of Verona

mobile phase carbon dioxide at supercritical conditions. In detail, the absorbent capacity of the silica contained in rice by-products will be exploited for the absorption of frying oils' low molecular weight compounds such as free fatty acids, mono and diglycerides. The regenerated frying oils will be tested for their physico-chemical properties including the assessment of the oxidative stability. This will allow to evaluate their suitability to be reutilised in frying processes and the estimation of their shelf life.

← Winston Chen, Unsplash



Cooperation and Internationality

Nel 2023, la Facoltà di Scienze Agrarie, Ambientali e Alimentari ha visto una serie di rilevanti cooperazioni di ricerca a livello nazionale e internazionale. La selezione ne presenta le principali, suddivise per area di ricerca.

L'area di ricerca **Agricoltura** collabora con importanti istituzioni locali, come la Fiera di Bolzano-Messe Bozen e l'Unione Agricoltori e Coltivatori Diretti Sudtirolesi – Südtiroler Bauernbund, così come con Bioland Südtirol, Südtiroler Wein Konsortium – Consorzio Vini Alto Adige, Apfel Konsortium – Consorzio Mela Alto Adige ed Assomela. I partner nella ricerca includono il Centro di Sperimentazione Laimburg ed Eurac Research, ed importanti istituzioni nel Regno Unito, in Germania, Spagna, Austria e Francia, negli Stati Uniti, in Argentina, in Sudafrica, in Australia ed in Indonesia.

Molte delle collaborazioni tipiche delle aree di ricerca **Agricoltura e Management and Technologies for Mountain Environments** avvengono all'interno delle attività del programma di Dottorato Mountain Environment and Agriculture.

Nell'ambito del dottorato in "Food Engineering and Biotechnology" (FEB), l'area di ricerca **Food Sciences** collabora attivamente con molti gruppi internazionali, l'University College of Cork (IE), La Technische Universität Berlin e Technische Universität München, nonché con il Conycat Technology Park di

Merida (MEX), e l'organizzazione intergovernativa CIHEAM (FR). La collaborazione è intensa anche con molti partner industriali del settore enologico, come Wineleven e Maselli Misure, e con aziende locali, nazionali e internazionali quali Loacker, VOG Products, Dr. Schär, Federazione Latterie Alto-Adige, Mila, Evonik, Puratos, Cerelia, Lavazza, Ferrero, Barilla, Bonomelli, Nestlé, Zuegg. Due delle aziende sopra citate hanno finanziato una posizione di RTD senior ed una posizione di dottorato per tre anni.

L'area di ricerca **Analysis and Management of Mountain Ecosystems** collabora con diversi attori regionali pubblici e privati, come il Dipartimento Forestale, la Ripartizione Natura, Paesaggio e Sviluppo del territorio, l'Agenzia di Protezione Civile e l'Agenzia di Protezione Ambientale della Provincia Autonoma di Bolzano, l'Autorità di Bacino delle Alpi Orientali, il Centro di Sperimentazione Laimburg, Eurac Research, Eco-Research e l'azienda sanitaria dell'Alto Adige. A livello nazionale, sono presenti collaborazioni con le istituzioni IRSA CNR di Brugherio e di Roma e con le Università di Bari, Camerino, Foggia, Padova, Pavia, Perugia, Trento, con l'Herbarium austroitalicum - Università di Caserta e con la Società Botanica Italiana (SBI). Sono inoltre attive numerose cooperazioni internazionali in Sudafrica (Università di Stellenbosch), Germania (Università di Freiburg, Göttingen, Münster, TUM München), Spagna

(Università di Valladolid, Lleida e Oviedo), Polonia (Università di Varsavia), Slovenia (Università di Ljubljana) e Austria (Accademia austriaca delle scienze e Università di Innsbruck).



Research Events

9 – 10 February 2023

The international **Conference of Young Botanists** was a great opportunity to discover and share the latest findings and results in research about photosynthetic organisms, funghi and their symbionts as well as on their interactions in any type of aquatic or terrestrial environment. The presentations and discussions continued through two days of inspiring sessions, knowledge sharing and interaction with young colleagues. Over 150 international participants came to unibz and presented 87 talks and 34 posters.



15 March 2023

NMR Symposium & Opening at NOI Techpark

The Workshop was organised in collaboration with Laimburg Research Center and with the participation of the 2002 Nobel Prize Laureate in Chemistry Prof. Kurt Wüthrich, pioneer in NMR spectroscopy applied to the characterisation of proteins with the aim to inaugurate the NMR Spectroscopy Laboratory at the NOI Techpark (BZ). The first scientific symposium on NMR technology organised in South Tyrol saw various contributions of national and international Academic speakers.

unibz.it/en/home/newsroom/news/64511821833d8

22 – 24 May 2023

The **ERIAFF's (European Regions for Innovation in Agriculture, Food and Forestry Network) 2023 conference** with focus on the "Green and climate transition plans in agriculture and in agro-forestry systems" was organised in collaboration with Research Centre Laimburg and Eurac Research.

eriaff.com/?page_id=1956



22 June 2023

Prof. Emanuele Boselli and Dr. Edoardo Longo were guest lecturers at the Webinar "**Stabilità dei vini durante conservazione e trasporto**" organised by ASSOENOLOGI (Associazione Enologi Enotecnici Italiani).

assoenologi.it/eventi-assoenologi/webinar-stabilita-dei-vini-in-bottiglia-durante-conservazione-e-trasporto

6 October 2023

Participation with oral presentations at unibz's Science Festival **Science live – get curious!**

unibz.it/it/home/third-mission/science-live/



27 October 2023

Workshop on Climate-smart forest forestry and advanced forest planning with the LiDAR technology

The event was organised by the Free University of Bolzano in close cooperation with the Forest Service Department of the Autonomous Province of Bozen-Bolzano (Forest Planning Office).

22 November 2023

International Conference, Oenoviti International Sprint Meeting

Title: co-chair of the panel on Challenging Climate Change: consequences and solutions to the impact of climatic change on vines, grapes and wines (Risev-Wlmes Project Outcomes).

oenoviti.com/events/344-mini-symposium-sprint-meeting-6-2023.html

1 December 2023

Stakeholder Event

The new Faculty of Agricultural, Environmental and Food Sciences was presented to major local stakeholders.

4 December 2023

Press conference with Cacciatori di briciole

The results of unibz's research study on beer from bread as a good practice for the reduction of food waste were presented at NOI Techpark Bolzano, in collaboration with Cacciatori di briciole (Bolzano), and Chiara Gadda, Vicepresident of the XIII Commissione Agricoltura, Camera dei Deputati.

gruppovolontarius.it/news/i-cacciatori-di-briciole-del-gruppo-volontarius-e-unibz-una-collaborazione-virtuosa-1.html

Faculty of Economics and Management



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KEY DATA

PEOPLE

- + 1060 Students
- + 38 PhD Students
- + 38 Tenured Professors
- + 42 Researchers
- + 70 Contract Professors
- + 20 Technical and Administrative Staff

BACHELOR

- + Economics and Management
- + Economics, Politics and Ethics
- + Informatics and Management of Digital Business
- + Tourism, Sport and Event Management

MASTER

- + Accounting and Finance
- + Data Analytics for Economics and Management
- + Entrepreneurship and Innovation
- + Public Policy and Innovative Governance
- + Tourism Management

PHD

- + Economics and Finance
- + Management

In Dean's Words

INTERVIEWED BY SUSANNE PITRO

Prof. Gunkel, what have been the major successes or accomplishments achieved by the Faculty in research this year?

In 2023, we witnessed a significant leap in our productivity of publications in top-quality journals, with 16 articles securing spots in the highest echelons of the Academic Journal Guide (AJG), marking a 14% surge from the previous year. Additionally, six publications were featured in journals included in the prestigious Financial Times 50 list.



Dean — Prof. Marjaana Gunkel

Are there any particularly significant research projects you would like to highlight?

Among the aforementioned articles, two were published in journals that rank at the top of the AJG and are included in the Financial Times 50 list, indicating that these journals are truly world-leading in their respective fields. The article "Reproducibility in Management Science," published in *Management Science*, assesses the reproducibility in nearly 500 Management Science articles. The study "Convergence of collaborative behavior in virtual teams: The role of external crises and implications for performance," published in the *Journal of Applied Psychology*, explores the dynamics of collaborative behavior in virtual teams and its impact on team performance, with a focus on responses to crises like Covid-19.

What has been the financial situation for the Faculty's research this year?

The amount of externally raised funds for research increased by 60% to a record level of €1.28 million. Twelve of these projects were funded by the Italian state, four by companies active in the Province, one by the Province itself, and two by the European Union.

What have been the main challenges encountered in pursuing the Faculty's research objectives this year?

Newly introduced Italian regulations concerning purchases made by public institutions are proving to pose a major challenge for our research activities. The procedures are so demanding on the part of the suppliers that we unfortunately experience refusals to sell us vital inputs (e.g., databases) or services (advertising our events internationally).

Are there tangible examples of how research has influenced specific sectors or improved quality of life?

Our *raison d'être* is to have a positive effect in some form on society. One example is the faculty's involvement in financial literacy, which is described in detail later in this report. Some few other examples of our positive impact are when faculty members used their research to propose how winegrowers in Kosovo can become more competitive, or suggested how differences between consumers' attitudes and their actual behavior with respect to sustainable food can be bridged, or how banks in the Province can implement more sustainable operating procedures, systems, and customer offerings. ■



Research Areas

2023 was a very successful year for the Faculty since the quality of its research output increased and at the same time the amount of external funds raised for research reached new record levels. From 2022, the Faculty uses internationally recognised journal lists to evaluate and monitor its research productivity. In 2023, 16 articles were published in the highest quality categories (4* – world leading and 4 – top) of the Academic Journal Guide (AJG), which represents a 14% increase compared to the previous year. The total number of articles published in category 3 (highly regarded) or higher ranked journals increased by 24% to 63 articles. The Faculty is particularly proud that six of those publications were in journals included in the Financial Times 50 list. In addition to the published output, the Faculty disseminated its research results through participation in a large number of important international conferences, invited seminars at universities in Italy and abroad, and workshops. A large part of the Faculty's research was also featured in national and international media. The amount of externally raised funds for research increased by 60% to a record level of € 1.28 Million. These funds are dedicated to 17 research projects and research collaborations that were launched during the year. Among these projects are 12 funded by the Italian programme for research of national interest (PRIN). In turn, three of those projects relate also to the national recovery and resilience plan (PNRR) and are as such not only of great academic interest but also of importance from



Vice Dean for Research — Prof. Linus Siming

a societal viewpoint. The Faculty's interaction with society in other forms also remained intense during 2023. Faculty members carried out more than 150 third-party engagements that involved a broad set of stakeholders including – among others – the general public, corporations, and public institutions. During the year the Faculty launched two new 4-year PhD programmes in collaboration with the University of Trento. Both the Management programme and the Economics and Finance program enrolled 4 PhD students each. The two universities take 3-year turns in administering the programme. The inaugural administrative seats are Bozen-Bolzano for the programme in Management and Trento for the programme in Economics and Finance.

Entrepreneurship, Innovation and Management

Coordinator: Prof. Alfredo De Massis

Keywords: Entrepreneurship, Innovation, Management, Human Resources

Tourism, Marketing and Regional Development

Coordinator: Prof. Federico Boffa

Keywords: Tourism, Marketing, Regional Development, Sustainability

Financial Markets and Regulation

Coordinator: Prof. Massimiliano Bonacchi

Keywords: Finance, Accounting, Financial Law

Law, Economics and Institutions

Coordinator: Prof. Roberto Farneti

Keywords: Law, Philosophy, Political Science, Ethics

Quantitative Methods and Economic Modelling

Coordinator: Prof. Steven Stillman



Research Projects

MNEMET — Modelling Non-standard data and Extremes in Multivariate Environmental Time series

The rapid changes the Earth system is facing and the risks generated by climate change with increasingly frequent and more devastating extreme weather events have led to a broad consensus among top institutions on the crucial importance of investigating environmental problems from both a political and scientific perspective. Consequently, the interest of the scientific community in developing methods to assess climate change and its impacts on the natural and human systems is increasing and it poses new challenging tasks in modern statistics.

Multivariate statistical modelling can provide a fundamental contribution to environmental research, by making it possible to describe the spatio-temporal dynamics of the variables involved, their complex interactions, and focusing on the occurrence of extreme events. Following the indications of the Sustainable Development Goals adopted by the United Nations, MNEMET aims to develop reliable statistical methods to handle

multivariate data that can be flexible enough to capture most deviations from normality and non-linear dependencies as well as multivariate extremes. Such features are, in fact, likely encountered in several contexts, including the analysis of climate data.

More specifically, three inter-related methodological issues are addressed. The first issue concerns modelling asymmetry and heavy tails in the distribution of shocks in high-dimensional time series, going beyond the usual assumption of Gaussianity. Advances along this direction may allow the description of complex relationships between different weather variables, the price of energy commodities, and the price of permits. The second focuses on measuring the dependence between time series, i.e. the cross-dependence, that represents a relevant open issue, especially in a multivariate setting where much of the research focused on serial and linear dependence. Flexible measures can be exploited to analyse possibly highly cross-sectionally dependent climate time series concerning Italian Regions with the aim to investigate the recent



INFO BOX

FUNDING TYPE

Ministerial Funding; NextGenerationEU PNRR M4C2I1.1

DURATION

10/2023 – 10/2025

RESEARCH AREA

Quantitative Methods and Economic Modeling

UNIBZ RESEARCH TEAM

Prof. F. Marta L. Di Lascio (PI)

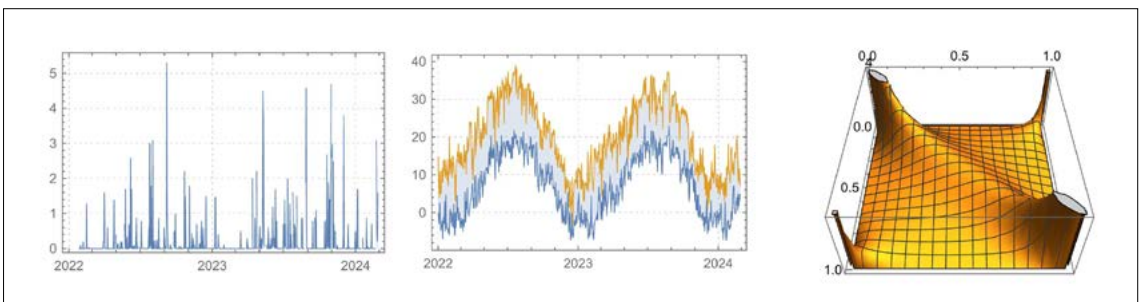
PROJECT PARTNERS

University of Milan, University of Trieste
SELECTED PUBLICATIONS

- + Di Lascio, F.M.L. and Pappadà, R. (2024) "Hierarchical clustering and CoClust algorithm: a nested procedure to analyse sustainable heating data". SMSP 2024 (Submitted).

co-evolution of environmental phenomena. Finally, MNEMET will address spatio-temporal dependence in modelling extreme environmental events. To this aim dynamic panel regression models that account for cross-sectional dependence and a copula-based approach to describe possible complex tail behaviours are developed. Methodological findings can be exploited to derive reliable forecasts of extreme events and investigate air quality evolution as well as the impact of pollutants on precipitation extremes.

↓ Time series of total precipitation (left) and minimum and maximum temperatures (middle) in Bolzano, Cauchy copula density function (right)
© F. Marta L. Di Lascio



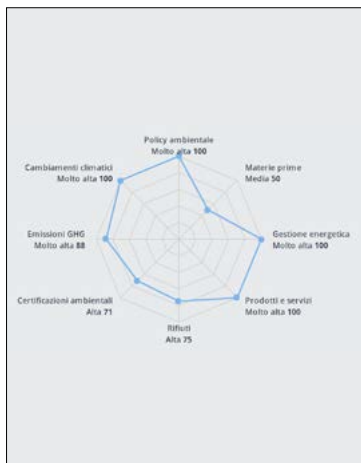


Research Projects

SUSTPLAN — Sostenibilità di impresa: vantaggi competitivi e finanziari

Le questioni ambientali, sociali e di governance (ESG) costituiscono la base di una sana cultura aziendale. Le aziende che perseguono una strategia ESG possono migliorare il proprio vantaggio competitivo e la propria performance finanziaria. Inoltre, le società orientate ai criteri ESG sono più attraenti per investitori e finanziatori.

Dopo l'approvazione della Direttiva Corporate Sustainability Reporting (CSRD) 2022/2464/UE, le aziende dell'Unione Europea si trovano ad affrontare una crescente pressione a rendicontare sulla sostenibilità. Le nuove regole garantiranno che i partecipanti ai mercati finanziari e le altre parti interessate abbiano accesso alle informazioni di cui hanno bisogno per valutare i rischi di investimento derivanti dai cambiamenti climatici e da altre questioni di sostenibilità.



Inoltre, la Direttiva contribuirà anche a creare una cultura di trasparenza riguardo all'impatto delle imprese sulle persone e sull'ambiente. La CSRD si applicherà a tutte le grandi imprese, nonché alle piccole e medie imprese (PMI) quotate. Nonostante la portata della norma, un aspetto degno di nota della rendicontazione CSRD, è l'obbligo per le aziende di rendicontare non solo in merito alle proprie operazioni, ma anche alla loro catena del valore. Pertanto, le aziende dovranno raccogliere anche informazioni sulle pratiche di sostenibilità delle organizzazioni con cui intraprendono rapporti commerciali diretti e indiretti a monte e/o a valle dell'impresa. In questo contesto, per ottenere vantaggi competitivi e finanziari, le aziende locali dovranno sviluppare strategie di sviluppo sostenibile e adottare modelli di business orientati alla sostenibilità. Il progetto ha raggiunto i suoi principali obiettivi: diffondere la conoscenza e la cultura sui temi della sostenibilità legati al business e supportare cinque imprese del territorio nel definire un percorso di transizione verso la sostenibilità. La formazione iniziale ha posto le basi per comprendere la normativa e le richieste prioritarie in tema di informativa di sostenibilità da parte di banche e grandi imprese clienti, mentre gli incontri con le singole imprese hanno permesso di approfondire le iniziative già realizzate e le esigenze di ciascuna impresa.



INFO BOX

FUNDING TYPE

Research Contract

DURATION

12/2022 – 02/2024

RESEARCH AREA

Financial Markets and Regulation,
Competence Centre for Economic,
Ecological and Social Sustainability

UNIBZ RESEARCH TEAM

Dr. Nicola Dalla Via (PI),
Prof. Massimiliano Bonacchi,

Prof. Paolo Perego

PROJECT PARTNERS

Confidi Alto Adige, Camera di Commercio
di Bolzano

Le imprese coinvolte hanno dimostrato di avere una solida consapevolezza dell'importanza e dei benefici dell'investire nella sostenibilità e di conseguenza un'ottima propensione al cambiamento.

Dagli incontri con le imprese è emersa la necessità di rafforzare la comunicazione delle iniziative di sostenibilità intraprese e del progresso verso il raggiungimento degli obiettivi. Si è anche constatato come il colloquio con l'impresa rappresenti un utile complemento alla misurazione della performance di sostenibilità effettuato per mezzo di questionari di valutazione che non sempre riescono a rappresentare la reale situazione dell'impresa.

← Combination of different ESG scores © Nicola
Dalla Via



Research Projects

FINLIT_TAA_STUD — The Economic-Financial Heritage of Trentino-Alto Adige: protection, enhancement, and improvement of economic-financial literacy among citizens

La transizione in Italia dai sistemi pensionistici retributivi a quelli contributivi, come stabilito dalla legge del 1995, sottolinea il bisogno di coinvolgimento attivo dei cittadini nelle decisioni finanziarie, evidenziando l'importanza dell'educazione finanziaria. Quest'ultima, definita dall'OECD, abbraccia la consapevolezza, la conoscenza, e le competenze necessarie per prendere decisioni finanziarie sagge. Pensplan si posiziona come punto di riferimento in Trentino Alto Adige per promuovere l'educazione finanziaria, rivolgendosi a studenti, docenti e, attraverso progetti futuri, anche ad altre categorie – identificate attraverso questo progetto – che potrebbero trarne particolare giovamento. L'obiettivo è migliorare la consapevolezza finanziaria per sostenere

scelte più informate e promuovere il benessere economico.

Il progetto ha un duplice obiettivo: in primo luogo, si prefigge di fornire supporto a Pensplan nell'analisi, valutazione ed ottimizzazione dei materiali formativi, sia tradizionali che digitali, preparati per le attività attualmente in corso. In secondo luogo, il progetto mira a curare la selezione e l'aggiornamento dei contenuti specifici per le attività formative rivolte ad altre categorie individuate dal progetto. Ciò include la preparazione di materiale ad hoc per l'educazione finanziaria, assicurandosi che sia attuale e mirato alle necessità dei diversi gruppi destinatari.

unibz supporta Pensplan offrendo la sua expertise accademica per sviluppare contenuti didattici basati su evidenze scientifiche e adottando metodi didattici innovativi come simulazioni finanziarie e giochi di ruolo. Questo impegno non solo migliora l'efficacia dell'educazione finanziaria ma promuove anche la ricerca sull'efficacia delle strategie educative. Un aspetto interessante è l'influenza della cultura regionale sull'educazione finanziaria, data la diversità linguistica presente in regione. Questo permette di valutare come le differenze culturali influenzino l'educazione finanziaria, offrendo spunti per personalizzare le campagne educative.

La prima fase del progetto è terminata ed implementata. Claudia Curi e Andreas Di Biasi



INFO BOX

FUNDING TYPE

Research Contract

DURATION

12/2022 – 12/2025

RESEARCH AREA

Financial Markets and Regulation, Quantitative methods and economic modeling

UNIBZ RESEARCH TEAM

Prof. Claudia Curi (PI), Prof. Mirco Tonin, Dr. Andreas Dibiasi

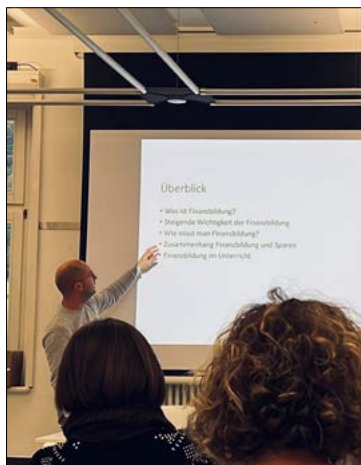
PROJECT PARTNER

Università degli Studi di Trento

SELECTED PUBLICATIONS

- + Cavotta, V. Curi, C., Dibiasi, A., Tonin, M. (2024), Nonprofit financial advisors and pension planning. *Working Paper*.
- + Curi, C., Dibiasi, A., Ploner, M. Tonin, M. (2023), Educazione Economica e Finanziaria – Fonti Utili, *Report*.

hanno partecipato alla sessione formativa dei docenti delle scuole superiori presso l'Accademia di formazione continua di Castel Rechtenenthal in data 9.11.2023. Il materiale didattico è stato prodotto (slides, schede, e sillaby) e distribuito. Ora si prevede la preparazione di materiali per nuove categorie.





Research Projects

CLIPKOS – Clinical trial data between privatisation of knowl- edge and Open Science

Klinische Studien tragen so genannte moralische Risiken in sich, welche die Freiheit und Verantwortlichkeit der wissenschaftlichen Forschung beeinträchtigen und somit deren recht verstandene gesellschaftliche Nützlichkeit gefährden können. Die Zugänglichkeit von klinischen Daten und die Transparenz der zugehörigen Prozesse gelten als Antworten auf diese Risiken und als Mittel zur Wiederherstellung der Garantien zur Wahrung der Menschenwürde. Parallel und ergänzend zu den rechtswissenschaftlichen Untersuchungen der Projektpartner, geht die unibz-Forschungsgruppe auf einige Kernfragen auf dem Gebiet der Datenethik ein. Die entsprechenden Fragestellungen sind eingebettet in eine Diagnose lange währender Grundtendenzen der wissenschaftlichen Forschung, die das Aufkommen der genannten

Risiken begünstigen. Die funktionale Optimierung und Erfolgsorientierung der Forschungsmethoden führt oftmals zu einem Verlust der ethischen Grundierung der wissenschaftlichen Arbeit, folglich zur Abwendung vom Begriff der Menschenwürde als durchgängige Maßgabe einer wissenschaftlichen Untersuchung. Die ethische Dimension kommt dann höchstens als nachträgliches Korrektiv zur Behebung sichtbarer Abirrungen ins Spiel. In dieser Gemengelage bedeutet ein privatisiertes, geschlossenes, somit intransparentes Forschungsumfeld eine zusätzliche Gefährdung für die verbleibenden Bindungen an die freie Verantwortung und die Wahrheitssuche in der Forschung. Das beginnt bei der Formulierung der Forschungsziele (einschließlich des zugrunde liegenden Verständnisses von Gesundheit und Heilung) und greift auf die Gestalt und Durchführung entsprechender Studien über, die sich primär an einem privaten Nutzen ausrichten. Außerdem kann ein geschlossenes Forschungsumfeld politische Entscheidungsträger von ihrer Verantwortung entbinden, wenngleich auch offene Umfelder Gefahren politischen Missbrauchs bergen. Im Bereich der klinischen Studien ist wissenschaftliche Verantwortung in erster Linie eine Frage der verantwortlichen Erhebung, Interpretation, Speicherung und Verbreitung von Daten. Je mehr diese dem öffentlichen Diskurs und der öffentlichen Prüfung entzogen sind, desto größer sind



INFO BOX

FUNDING TYPE

Ministerial Funding; NextGenerationEU
PNRR M4C2I1.1

DURATION

9/2023 – 9/2025

RESEARCH AREA

Law, Economics and Institutions

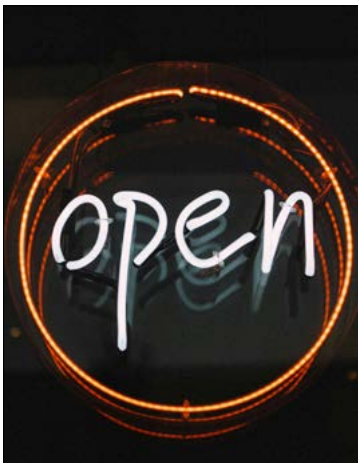
UNIBZ RESEARCH TEAM

Prof. Ivo De Gennaro (PI), Dr. Ralf Lüfter,
Dr. Robert Simon

PROJECT PARTNERS

Universität Trient, Universität Turin,
Universität Pisa, Consiglio Nazionale
delle Ricerche

die moralischen Risiken auf der begrifflichen und der praktischen Verantwortungsebene. Begrifflich kann es zu einer gänzlichen Entwurzelung der wissenschaftlichen Praxis aus einem würdebasierten Gesundheitsverständnis kommen. In der Praxis verursacht die Privatisierung von Daten soziale Risiken und Kosten, u.a. durch unnötige medizinische Neuausrichtungen; die Gefahr, dass unangemessene Behandlungen oder alternative Behandlungsoptionen unentdeckt bleiben; die Unmöglichkeit, Datensammlungen in neuen Zusammenhängen wiederzuverwenden. Schließlich sollte, um Praktiken „epistemischer Korruption“ entgegenzuwirken, eine Open-access-Politik für Veröffentlichungen durch ein transparentes Publikationsverfahren ergänzt werden. Die Untersuchungen dieser Aspekte sollen letztlich in Handlungsempfehlungen für politische Entscheidungsträger und Aufsichtsbehörden münden.



← © Finn Hackshaw Unsplash



Cooperation and Internationality

The Faculty extensively collaborates with universities, private companies, research- and public institutions. Here are some few examples of the collaborations that were started during 2023:

Cooperation with the University of Innsbruck regarding joint accounting seminars and workshops.

Collaboration with 10 higher education institutions (e.g., Università di Pisa, Ghent University, Hochschule München University of Applied Sciences) and additional partners such as research and innovation centers, an entrepreneurial association, and two European regional valleys to facilitate start-up and innovation activities.

Cooperation with the Associazione Elisabetta Paolucci to enhance inclusion in schools and with the associazione SIIPAC to counter behavioural addictions.

Collaboration with the University of Padua and Max-Planck-Institut für ausländisches und internationales Privatrecht for the organisation of Italian-German Symposium on corporate law.

Cooperation with Athesia for a study on newspaper covers and boards in South Tyrol.

Partnerships with Sparkasse Bozen for training of board members on sustainability issues and with Raiffeisenverband Südtirol on various projects relating to sustainability and ethics in banking.

Cooperation with “Fachoberschule Marie Curie” in Meran for a study day on “The wars in former Yugoslavia” and with the “Global Campus on Human Rights”, Venice, for an Euregio-summerschool on Human Rights in the Digital Age.

Cooperation with “Centro per la Cultura”, Merano, for the organisation of a conference on pedagogy, ecology and the arts and with “Vivius. Zukunftsfähiges Bauen und Planen” for training on ethical aspects of sustainability.

Cooperation with the Association of Residences for the Elderly of South Tyrol on public law issues. Many collaborations are still ongoing from previous years, of which some are listed here:

Collaboration with the Raiffeisenverband Südtirol on the strategic assessment of cooperative banks and training of board members, with Raiffeisen Mutualitätsfond for a study on alternative credit union governance models, and with Südtiroler Volksbank regarding bank sustainability.

Cooperation with the Universities of Innsbruck and Trento regarding Euregio mobility.

Cooperation with the Employers’ Association of the Province of Bozen-Bolzano for coaching students to develop new businesses.

Partnership with Pensplan regarding research and teaching activities on Financial Literacy in the Provinces of Bozen-Bolzano and Trento.

Research and teaching cooperation with Baruch College and NYU Stern.

Collaboration with the Italian Union of Journalists and Professional Association of Journalists on the boundary between economics and journalism.

Research and teaching activities cooperation with Alperia Spa regarding energy markets.

Partner in the Alliance for Research on Wine and Hospitality Management which includes Cornell University, Kedge Business School Bordeaux, EHL Lausanne and Hong Kong Polytechnic University.

Research and teaching activities cooperation for joint lectures and events on philosophy with University of Innsbruck, University of Trento and the Center for Autonomy Experience at Eurac.

Collaboration with the Administrative Chamber of Bolzano for organisation of events on administrative law aimed at lawyers and Masters students.

Partnership with the Museum Brunnenburg in Dorf Tirol for the organisation of cultural events on philosophical and literary topics.



Research Events

12. – 13. September 2023

Am **Dolomites Summer Finance Conference** nahmen Forschende aus drei Kontinenten teil. Die Keynote-Rede wurde von Prof.in Cláudia Custódio (Imperial College Business School) gehalten.

Dolomites Summer Finance Conference / Free University of Bozen-Bolzano (unibz.it)



6. – 7. Oktober 2023

Die Tagung **Pflichten in einer liberalen demokratischen Gesellschaft** wurde in Zusammenarbeit mit der Universität Trieste, Universität München und die Euregio-Plattform für Menschenwürde und Menschenrechte (EUPHUR) zum Thema die Korrespondenz von Grund- und Menschenrechten und Pflichten veranstaltet.

Pflichten in einer liberalen demokratischen Gesellschaft / Freie Universität Bozen (unibz.it)

11. – 12. Oktober 2023

Der Workshop **TomSust 2023 – Workshop on Tourism Sustainability and Regional Development** wurde mit Schwerpunkt auf Fortschritten im Bereich der Nachhaltigkeit des Tourismus und der regionalen Entwicklung organisiert.

TomSust 2023 "Workshop on Tourism Sustainability and Regional Development" / Free University of Bozen-Bolzano (unibz.it)

12. Oktober 2023

Der Workshop **Evoluzione della comunicazione aziendale, risultati finanziari ed impatto su stakeholders** wurde in Zusammenarbeit mit der Kammer der Wirtschaftsprüfer und Steuerberater der Provinz Bozen (ODCEC) zum Thema die Rolle der neuen europäischen Standards für die Nachhaltigkeitsberichterstattung.

Evoluzione della comunicazione aziendale, risultati finanziari ed impatto su stakeholders / Libera Università di Bolzano (unibz.it)



9. – 10. November 2023

Der **Bolzano Political Economy Workshop** brachte Spitzenwissenschaftlerinnen und Spitzenwissenschaftlerinnen zusammen sowie einer Keynote-Rede des Prof. Massimo Morelli (Universität Bocconi).

Workshop on Political Economy / Free University of Bozen-Bolzano (unibz.it)

20. November 2023

Die Tagung **Finanzielle Bildung in Südtirol** wurde mit Schwerpunkt auf methodische Fortschritte und deren Anwendungen in Finanzbildung organisiert.

Financial Education in South Tyrol / Libera Università di Bolzano (unibz.it)



1. Dezember 2023

Im Rahmen des Zyklus von Seminaren zum Thema Nachhaltigkeit in der Tourismusbranche, gemeinsam organisiert von unibz und Universität Trento, wurde ein Workshop **Nachhaltige Bewirtschaftung der natürlichen Ressourcen: Energie, Flora, Mensch** gehalten.

La gestione sostenibile delle risorse naturali:

energia, flora, uomo / Libera Università di Bolzano

(unibz.it)

3. – 4. Dezember 2023

Der Schwerpunkt des Workshops

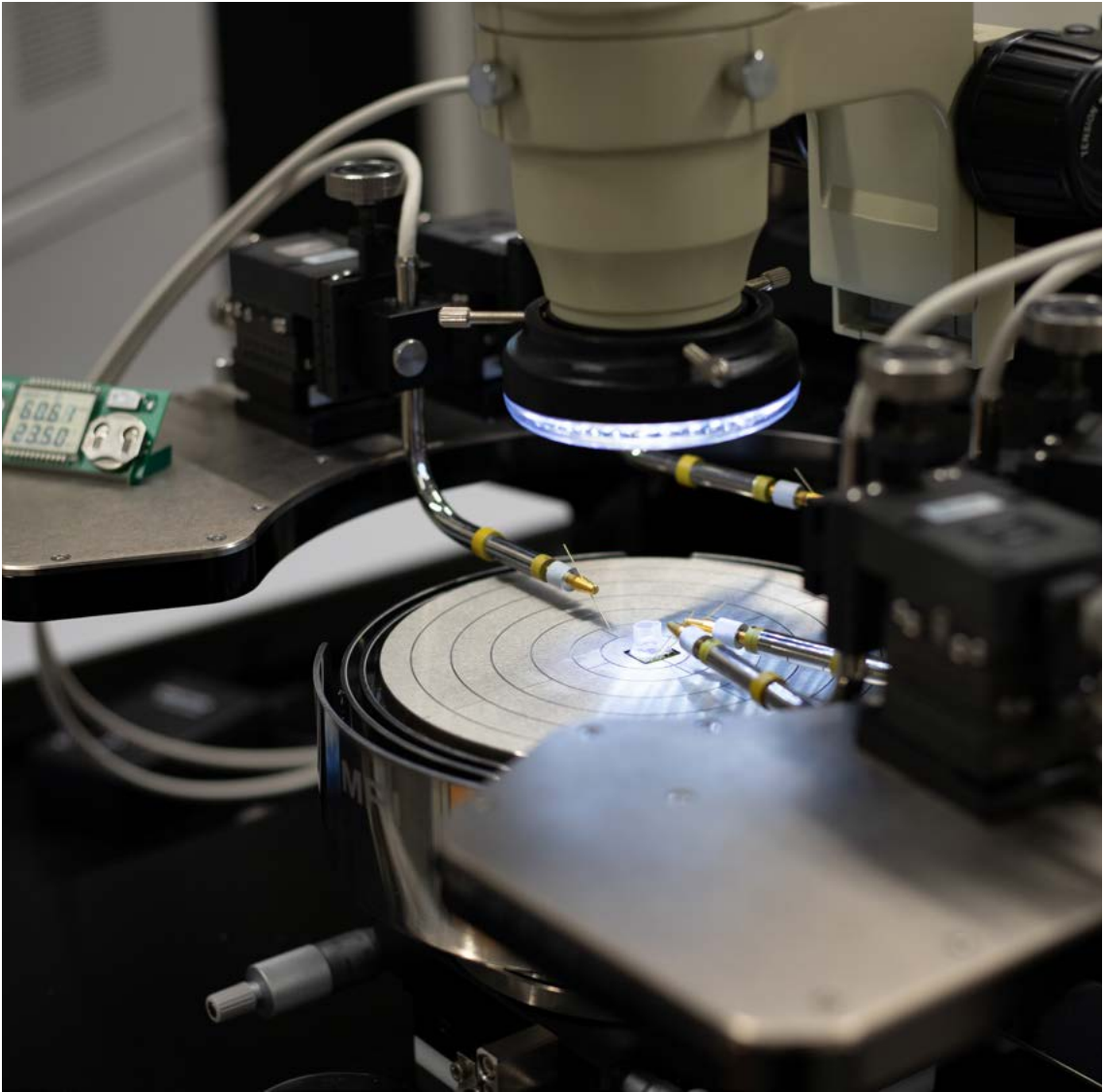
Staging democracy: how culture & creativity stimulate democratic engagement lag auf dem Thema, wie wir Kultur und Kreativität sowohl als Vehikel für die aktive Beteiligung junger Bürger und Bürgerinnen an der Demokratie als auch als Forschungsobjektiv zur Beobachtung, zum Vergleich und zur Erklärung demokratierelevanter Phänomene nutzen können.

Staging democracy: how culture & creativity stim-

ulate democratic engagement / Free University of

Bozen-Bolzano (unibz.it)

Faculty of Engineering



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KEY DATA

PEOPLE

- + 863 Students
- + 44 PhD Students
- + 44 Tenured Professors
- + 86 Researchers
- + 77 Contract Professors
- + 25 Technical and Administrative Staff

BACHELOR

- + Computer Science
- + Electronics and CyberPhysical Systems Engineering
- + Industrial and Mechanical Engineering
- + Informatics and Management of Digital Business

+ Wood Technology

MASTER

- + Computing for Data Science
- + Data Analytics for Economics and Management
- + Energy Engineering
- + Industrial Mechanical

Engineering

- + Software Engineering

PHD

- + Advanced-Systems Engineering
- + Computer Science
- + Sustainable Energy and Technologies

LIFELONG LEARNING

- + Fire Safety Engineering
- + Sustainable Management of Geo-hydrological Risk in Mountain Areas

In Dean's Words

INTERVIEWED BY ARTURO ZILLI

Prof. Gasparella, what has been the Faculty's research agenda in the past academic year?

Since this is a newly established faculty, among the most important goals was to go and clearly define the set of research themes, and this involved improving the perception of their identity with the clarification of their interactions. As a result, we also defined the areas of potential development where, by bringing together expertise from different fields, we can be particularly effective. This also served to give a general strategy orientation to the positioning of the Faculty and the definition of future development strategy. We realised the topics of cross-cutting interest are those that deal with technologies that serve or support the activities of both operators and end users, so from the industrial sphere, to the domestic sphere to the health sphere. We realised that we can bring together technologies ranging from hardware, software, artificial intelligence, and even the definition of mechanical, robotic, and automation systems. With a focus on the individual inclusivity and the overall sustainability and efficient use of resources.

How do you evaluate the research conducted by the Faculty?

Research evaluation is primarily based on scientific productivity. Overall, I'm quite satisfied with our performance, which varies but is generally positive. I am particularly happy with the



Dean — Prof. Andrea Gasparella

young researchers, who are valuably contributing to the overall performance. Our Faculty's scientific community is well-represented and recognised internationally. This visibility is also reflected in the numerous scientific events we participate in, but also organise, and host.

To what extent has the Faculty collaborated with other academic institutions, research organisations, and companies in the past year, and what impact have these collaborations had on the Province of Bolzano?

Collaborations with companies are crucial for an Engineering faculty, as it is important for research to be readily available and applicable for businesses. Our partnerships with companies have continued and evolved beyond short-term projects or service provisions. There's a strong interest, above all on a local level, in

developing long-term collaborations, supported by our newly established Faculty steering committee. Long-lasting collaborations with local research centers and with international academic institutions are also well documented and a key asset in our strategy of conducting cutting-edge research through contributing with highly specialised competences in recognises network.

How can the establishment of a new campus refine the Faculty's research profile?

The new campus is significant in several ways. Practically, it consolidates our teaching and research activities, improving logistical management. Symbolically, its location within the technology park highlights our commitment to technology transfer and development services. These aspects enhance our efficiency and visibility, strengthening the Faculty's role and impact in the region. ■



Research Areas

The Faculty's organisational model, based on 3 institutes and 9 macro-areas, is oriented toward a disciplinary aggregation of teaching and research expertise to take advantage of operational efficiencies and synergies. At the same time, multidisciplinary interactions emerge that characterise the overall focus of the Faculty, which is committed to contributing to and interpreting the needs and strengths of the area by pursuing highly strategic research. In this regard, two intersecting axes have clearly emerged: on the one hand, the one linking the hub of innovative digital HW and SW technologies, including AI and HCI, with the major advancements in industrial, mechanical and energy engineering; on the other, that which connects the specific sensitivity to the conservation of natural resources and the environment, with the attention on and care of the human being in all dimensions. From the intersection of these multipolar interests and skills emerges a complex network of multidisciplinary application areas, characterised by the introduction, development, and implementation of technologies oriented toward improving efficiency, effectiveness, and sustainability at the individual, organisational, and societal levels, such to contribute to the overall progress and the solutions of the unprecedented challenges ahead. In research, work has been done on (i) consolidating the composition and focus of the macroareas, identifying strategic areas for Faculty



Vice Dean for Research — Prof. Angelika Peer

enhancement, and (ii) expanding the capacity to raise research funds. (i) The Faculty has defined a research focus consistent with the macroarea composition, capable of both developing activities with high disciplinary specialisation and exploiting synergies within or between Institutes. All macroareas were distinguished by their ability to raise funds, collaborate with companies, and promote third mission initiatives.

Institute 1: Computer Science and Artificial Intelligence

Knowledge and Data (KRDB)

Coordinator: Prof. Oliver Kutz

Keywords: Knowledge Representation; Conceptual and Cognitive Modelling; Ontologies; Intelligent Information Systems; Business Process Modelling

Data-driven Artificial Intelligence (D2AI)

Coordinator: Prof. Antonio Liotta

Keywords: Machine Learning; Computer Vision; Data Analytics; Big data; Intelligent Systems

Mathematical Foundations (MATH)

Coordinator: Prof. Maria Letizia Bertotti

Keywords: Dynamical Systems, Complex networks, Game theory, Fractional calculus, Operations research

Institute 2: Information Engineering

Materials and Devices for Smart Systems (MDSS)

Coordinator: Prof. Niko Münzenrieder

Keywords: Wearables, Thin-film technology, Sensor systems, Smart textiles, Sustainable electronics

Software Engineering and Autonomous Systems (SEAS)

Coordinator: Prof. Claus Pahl

Keywords: Dynamic Architecture and Systems, Software Development and Quality, Continuous Agile and Lean Process Innovation, Computing Education Research, Field Robotics.

Human-centered Intelligent Systems (HCIS)

Coordinator: Prof. Rosella Gennari

Keywords: Responsible Artificial Intelligence (AI), Decision Support, Personalisation and Recommender Systems, Human Technologies, Embodied AI.

Institute 3: Industrial and Energy Engineering

Industrial Engineering and Automation (IEA)

Coordinator: Prof. Dominik Matt

Keywords: Smart Systems and Technologies; Sustainability; Advanced Engineering Solutions; Resilient Supply Chains; Value-oriented Business Operations

Energy Resources and Energy Efficiency (ERE2)

Coordinator: Prof. Marco Baratieri

Keywords: Sustainable Energy Generation and Storage; Energy Efficiency and Management; Resilient Energy Technologies; Circular Energy Infrastructures; Hydropower and Bioenergy

Sustainability and Safety for the Natural and built Environment (S2NBE)

Coordinator: Prof. Maurizio Righetti

Keywords: Hydrogeological instability, prevention and contrast; Energy performance of buildings; Health and well-being in buildings; Sustainable management of water resources; Resilient communities and territories; Sustainable management of artificial reservoirs and impact on ecosystems.

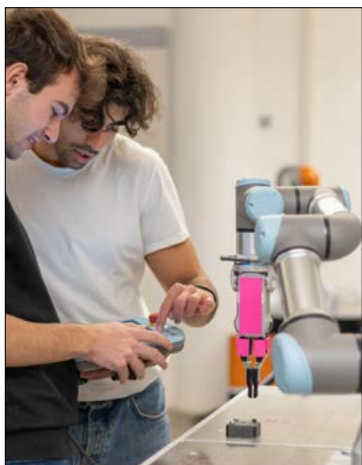




Research Projects

SESTOSENSO — Physical Cognition for Intelligent Control and Safe Human-Robot Interaction

Sestosenso develops technologies for next generations of collaborative robots capable of self-adapting to different time-varying operational conditions and capable of safe and smooth adaptation from autonomous to interactive when human intervention is required either for collaboration or training/teaching. The project proposes a new sensing technology from the hardware and up to the cognitive perception and control levels, based on networks of embedded proximity and tactile sensors on the robot body, providing a unified proxy-tactile perception of the environment, required to control the robot actions and interactions, safely and autonomously. Within the project, the same technologies are also applied to wearable devices (like exoskeletons) to provide the user with better spatial awareness and to enforce safety in critical human-robot interactive tasks.



Then, robots are expected to adapt their behavior in presence of changes in the nearby space, to properly react to and control the contact forces acting all over the robot body, and to recognise human gestures and touch to engage safe human robot interaction.

The final goal of Sestosenso is then to develop and demonstrate by means of three industrially relevant Use Cases, i.e. automotive, food and agricultural industries, the capabilities of self-standing robot systems using proxy-tactile feedback.

The unibz research unit contributes, through the FiRST – Field Robotics South Tirol – and the Smart Mini Factory laboratories expertise and facilities, to the development of algorithms and guidelines for enhanced human-robot collaboration and spatial awareness. It leads, in particular, Use Case 3 where the technical and technological results of the project are tested and evaluated in an outdoor scenario, i.e. a co-operative grape harvesting activity. Here, in presence of unmodelled and delicate obstacles (plants), a mobile robot has to safely cooperate with a human wearing a sensorised exoskeleton.



INFO BOX

FUNDING TYPE

Horizon Europe – RIA – DIGITAL-EMERGING – grant agreement 101070310

DURATION

10/2022 – 09/2025

RESEARCH AREA

Industrial Engineering and Automation (IEA)

UNIBZ RESEARCH TEAM

Prof. Renato Vidoni (PI), Prof. Karl Von Ellenrieder, Prof. Erwin Rauch, Prof. Luisa Petti, Dr. Luca Gualtieri, Dr. Marco Camurri, Dr. Giovanni Carabin

PROJECT PARTNERS

14 partners from Italy, Spain, France, Slovenia, Sweden, Latvia, the Netherlands, Greece, Switzerland, and the United Kingdom with Università degli Studi di Genova as Lead Partner

WEBSITE

sestosenso.eu

SELECTED PUBLICATIONS

- + Gualtieri L., Fraboni F., Brendel H., Pietrantoni L., Vidoni R., Dallasega P. (2024), Updating design guidelines for cognitive ergonomics in human-centred collaborative robotics applications: An expert survey, *Applied Ergonomics*, 117, art. no. 104246. DOI: 10.1016/j.apergo.2024.104246
- + Pircher E., Carabin G., Camurri M., Vidoni R., Towards Collaborative Grape Harvesting with a Mobile Manipulator, ERF forum 2024, to appear in *Springer Proceedings in Advanced Robotics (SPAR)*.
- + Gualtieri, L., Fraboni, F., Brendel, H., Dallasega, P., Rauch, E., Pietrantoni, L. (2023). Guidelines for the integration of cognitive ergonomics in the design of human-centered and collaborative robotics applications. *Procedia CIRP*, 120, 374-379.



Research Projects

A FRONTrunner approach to Systemic circular, Holistic & Inclusive solutions for a New Paradigm of territorial circular economy

Con l'obiettivo di promuovere pratiche di decarbonizzazione e un utilizzo responsabile delle risorse in un'ottica di economia circolare, il progetto FRONTSH1P mira a sviluppare e dimostrare quattro soluzioni sistemiche circolari (CSS) ciascuna volta alla valorizzazione di una particolare tipologia di rifiuto: imballaggi in legno, alimenti e mangimi, acque reflue, plastiche e gomme. Ogni CSS è pensata per essere facilmente implementabile e replicabile. Inoltre, attraverso la creazione di cluster regionali circolari, FRONTSH1P vuole coinvolgere attivamente i cittadini e i soggetti interessati a livello locale, regionale e nazionale, diffondere consapevolezza sui temi di sostenibilità e circolarità e promuovere la transizione da un'economia lineare a una circolare su vari livelli.



unibz è a capo della CSS1 che prevede principalmente la progettazione, la costruzione e il funzionamento di un gassificatore a biomassa per la valorizzazione dei residui di imballaggi in legno alla fine del loro ciclo di vita (per es. pallet inutilizzabili). Nella CSS1, il gassificatore è pensato come un impianto poligenerativo in grado non solo di produrre gas da bruciare ulteriormente per fornire energia termica rinnovabile agli utenti finali, ma anche char, un materiale carbonioso, nero, poroso (simile a un carbone attivo), da utilizzare come additivo per il compost e come filler/pigmento nero per matrici polimeriche in sostituzione a filler/pigmenti di origine fossile. Inoltre, a valle della combustione del gas, la CSS1 prevede la cattura della CO₂ presente nei fumi e la sua successiva valorizzazione come agente schiumogeno nell'industria della plastica.

L'adozione di un tale approccio circolare per la valorizzazione di imballaggi legnosi non solo consente di minimizzare i rifiuti e tutte le problematiche connesse alla loro gestione, di preservare le risorse naturali e di ridurre le emissioni di gas serra, ma anche di produrre prodotti a basso impatto come oggetti o mobili in legno, energia termica rinnovabile, pigmenti e CO₂ per applicazioni industriali.



INFO BOX

FUNDING TYPE

Horizon 2020 – RIA – LC-GD-2020 – grant agreement 101037031

DURATION

11/2021 – 10/2025

RESEARCH AREA

Energy Efficiency and Energy Resources (ERE2)

UNIBZ RESEARCH TEAM

Prof. Marco Baratieri (PI), Prof. Massimiliano Renzi, Dr. Francesco Patuzzi, Dr. Vittoria Benedetti

PROJECT PARTNERS

35 Partners from Poland, Italy, Greece, Portugal, Spain, The Netherlands, Belgium, Switzerland, Germany with K-FLex Polska SP Z.O.O. (LP)

WEBSITE

frontsh1p.eu

SELECTED PUBLICATIONS

- + C. Caligiuri, M. Z. Qureshi, M. Renzi, V. Benedetti, F. Patuzzi, M. Baratieri (2023), Wood packaging waste valorization: design of a producer gas combustion test-rig for fundamental flame studies, in: *European Biomass Conference and Exhibition Proceedings*.
- + V. Benedetti, L. Menin, S. Piazza, D. Antolini, M. Kollmer, F. Patuzzi, M. Baratieri, Gasification of wood packaging waste: a polygenerative approach – poster – EUBCE 2023, Bologna, Italy.
- + V. Benedetti, L. Menin, S. Piazza, D. Antolini, M. Kollmer, F. Patuzzi, M. Baratieri, Thermal energy, fillers and pigments from wood packaging waste – oral presentation – SSWM 2023, Chania, Greece.



Research Projects

DIGIFOREST — Digital Analytics and Robotics for Sustainable Forestry

Forests are essential for combating climate change and maintaining our planet, with forestry operators and organisations monitoring forests, assisting their growth, timber output and maintenance. Unfortunately, monitoring large expanses of forest can be difficult and inaccurate which is dangerous for properly maintaining a forest's health. The EU-funded DIGIFOREST project introduces an innovative solution, improved forest monitoring and data management using robots and artificial intelligence. By utilising several different robots to collect 3D spatial data on forests and individual trees followed by AI documenting and AI representing it, it offers forestry operators and policymakers an unparalleled tool.

What if one could create a revolution in spatial data acquisition, organisation and analysis and give forestry operators and enterprises up-to-date, tangible information about the status of their forests down to the individual tree? It is believed this would improve their oversight by allowing more accurate growth modelling of forest stands and precise predictions of timber yields. It would remove the uncertainty of when thinning operations are needed or where there are trees which are ready for harvest. It could also enable operators to automatically plan where their staff or equipment should be deployed and

better quantify a forest's carbon sequestration - with low uncertainty per-tree carbon estimates. Precise measures of crown volume and tree diameters would improve the granularity of carbon credit schemes. This could inform national governments and policy makers when deciding policy on initiatives such as carbon offsets and carbon farming.



DIGIFOREST proposes to create such an ecosystem by developing a team of heterogeneous robots to collect and update this raw 3D spatial representations, building large scale forest maps and feeding them to machine learning and spatial AI to semantically segment and label the trees and also the terrain. The robot team used will be composed by both rugged field robots as well as more experimental vehicles. Most enterprising of all is the intention to (semi-)automate a lightweight harvester for sustainable selective logging.



INFO BOX

FUNDING TYPE

HORIZON-IA – HORIZON Innovation

Actions

DURATION

09/2022 – 02/2026

RESEARCH AREA

Software Engineering and Autonomous Systems (SEAS)

UNIBZ RESEARCH TEAM

Dr. Marco Camurri (PI), Dr. Enrico Tomelleri

PROJECT PARTNERS

Technische Universität München (Lead Partner), University of Oxford, Norwegian University of Science and Technology (NTNU), Eidgenössische Technische Hochschule (ETH) Zürich, Universität Bonn, Eidg. Forschungsanstalt für Wald, Schnee und Landschaft (WSL), MOOG Inc., Hexagon, PreFor

WEBSITE

digiforest.eu

SELECTED PUBLICATIONS

- + Frey, J., Mattamala, M., Chebrolu, N., Cadena, C., Fallon, M., & Hutter, M. (2023, July). Fast Traversability Estimation for Wild Visual Navigation. *Proceedings of Robotics: Science and Systems*. doi:10.15607/RSS.2023.XIX.054
- + M.V.R. Malladi, T. Guadagnino, L. Lobefaro, M. Mattamala, H. Griess, J. Schweizer, N. Chebrolu, M. Fallon, J. Behley, & C. Stachniss (2024). Tree Instance Segmentation and Traits Estimation for Forestry Environments Exploiting LiDAR Data. In *2024 IEEE International Conference of Robotics and Automation (ICRA)*.
- + Murtiyoso, A. et al. [2024] "Virtual forests: a review on emerging questions in the use and application of 3D data in forestry", *International Journal of Forest Engineering*, 35(1), pp. 29–42. doi: 10.1080/14942119.2023.2217065.

Progress in this project will be demonstrated with an ambitious series of field trials. With the clear engagement of forestry and industrial companies, commercial pathways are readily available.



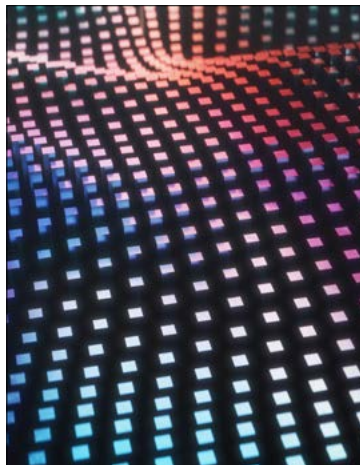
INODE – Esplorazione intelligente di dati aperti

La crescita e la disponibilità dei dati e la loro democratizzazione hanno cambiato radicalmente l'esplorazione dei dati negli ultimi dieci anni. Dati che contengono informazioni su esperimenti scientifici, salute, energia, istruzione, ecc., vengono generati costantemente da utenti, sistemi e sensori. Questi dati sono di natura altamente eterogenea, spaziando da dati altamente strutturati in forma tabellare a testi non strutturati, immagini o video. Inoltre, soprattutto i contenuti online, non sono più gestiti esclusivamente da grandi organizzazioni. Archivi di dati aperti sono resi pubblici e possono essere utilizzati da diverse tipologie di utenti con esigenze diverse. Di conseguenza, si rende necessario fornire meccanismi flessibili per l'esplorazione dei dati, resa difficile dai grandi volumi e dalla complessità degli stessi.

Nel progetto INODE è stato proposto un approccio radicalmente nuovo per l'esplorazione intelligente di dati aperti. Il principio fondamentale è che gli utenti possano interagire con i dati in modo più intuitivo, simile a un dialogo con un essere umano. Per realizzare questo principio, il progetto ha sviluppato una suite di servizi mirati, agili e sostenibili, per l'esplorazione di insiemi di dati aperti che aiutano gli utenti in molteplici modi: a collegare e sfruttare più insiemi di dati; a cercare ed accedere ai dati usando il linguaggio naturale,

esempi e condizioni analitiche; a farsi guidare dal sistema nella comprensione dei dati e nella formulazione di interrogazioni; e a esplorare i dati e a scoprire nuove intuizioni attraverso la visualizzazione.

L'offerta di servizi di INODE risponde alle esigenze della comunità scientifica, grazie a tre casi d'uso: uno in bioinformatica che si occupa di biomarcatori del cancro, uno nel settore della politica della ricerca e dell'innovazione e uno in astrofisica. Ma le tecniche e gli strumenti sviluppati sono del tutto generali e possono essere applicati in una varietà di domini e casi d'uso. Unibz ha svolto un ruolo chiave nel progetto, fornendo, attraverso il sistema open-source Ontop, l'infrastruttura di base per l'accesso semantico ai dati. Ontop, che è stato sviluppato presso il KRDB Research Centre negli ultimi 10 anni, presenta i dati memorizzati nelle sorgenti sottostanti sotto forma di un Knowledge Graph virtuale (VKG), che può essere interrogato



INFO BOX

FUNDING TYPE

Horizon 2020 — INFRAEOSC — grant agreement 863410

DURATION

11/2019 – 04/2023

RESEARCH AREA

Knowledge and Data (KRDB)

UNIBZ RESEARCH TEAM

Prof. Diego Calvanese (PI), Dr. Davide Lanti, Dr. Alessandro Mosca, Dr. Guohui Xiao, Prof. Marco Montali

PROJECT PARTNERS

Zürcher Hochschule für Angewandte Wissenschaften (Lead Partner), Athena Research and Innovation Centre, Max-Planck-Institut für Extraterrestrische Physik, Fraunhofer-Gesellschaft, SIRIS Academic, Centre national de la recherche scientifique (CNRS), SIB Swiss Institute of Bioinformatics, Infil Technologies PC

WEBSITE

inode-project.eu

SELECTED PUBLICATIONS

- + Calvanese, D., Gal, A., Haba, N., Lanti, D., Montali, M., Mosca, A., & Shraga, R. (2021). ADaMaP: Automatic alignment of relational data sources using mapping patterns. In *Proc. of the 33rd Int. Conf. on Advanced Information Systems Engineering (CAiSE 2021)*. LNCS Vol. 12751, pp. 193–209. Springer. doi: 10.1007/978-3-030-79382-1_12
- + Calvanese, D., Gal, A., Lanti, D., Montali, M., Mosca, A., & Shraga, R. (2023). Conceptually-grounded mapping patterns for Virtual Knowledge Graphs. *Data and Knowledge Engineering*, 145, 102157. doi: 10.1016/j.datak.2023.102157
- + Calvanese, D., Lanti, D., de Farias, T. M., Mosca, A., & Xiao, G. (2021). Accessing scientific data through knowledge graphs with Ontop. *Patterns*, 2, 1–10. doi: 10.1016/j.patter.2021.100346.

in modo uniforme. In INODE, sono state estese le capacità del sistema in diverse direzioni, aumentandone l'efficienza e consentendogli di elaborare tipi di interrogazioni più complesse, ad esempio quelle che prevedono operazioni analitiche complesse. Sono state anche proposte nuove tecniche per la progettazione di soluzioni di accesso e integrazione dei dati basate sui VKG.

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FLEXIBOTS — Flexible Elektronik trifft μ -Robotik: Der Weg zu erweiterten bio-intelligenten medizinischen Behandlungen

Mikroroboter sind nur Micro- oder Millimeter große Maschinen, welche in der Zukunft autonom spezialisierte Aufgaben in unzugänglichen Orten ausführen sollen. Dazu müssen sie durch komplexe künstliche und biologische Umgebungen, oder sogar innerhalb des menschlichen Körpers navigieren um nach Bedarf, z. B. gezielt Medikamente zu verabreichen, oder nach Schadstoffen zu suchen. Um derartige Aufgaben erfüllen zu können, müssen diese winzigen Maschinen in der Lage sein sich zu bewegen, ihre Umgebung wahrzunehmen und mit der Außenwelt zu kommunizieren. Dementsprechend müssen solche intelligenten Mikroroboter mit verschiedenen elektronischen Sensoren und Schaltungen welche als künstliches Nervensystem agieren ausgestattet werden. Während das



Multi-Scale Robotics Lab der ETH Zürich seit vielen Jahren mobile Mikroroboter für verschiedene Aufgaben basierend auf Polymeren und Kompositmaterialien herstellt und diese auch mit Hilfe magnetischer Felder gezielt durch flüssige Umgebungen schwimmen lassen kann, macht die Größe, Zusammensetzung und Geometrie dieser Roboter es schwierig diese mit konventioneller Elektronik auszustatten. In diesem Projekt wird deshalb im Labor für flexible Elektronik der Universität Bozen an ultra-dünnen, leichten und deformierbaren Sensoren und Schaltungen gearbeitet, welche sich der Form selbst kleinster Roboter anpassen können. Diese flexiblen und unkonventionellen elektronischen Bauteile werden in den Labors am Hauptsitz von unibz und am NOI Techpark mit Hilfe von Dünnschichttechnologie auf halb-fertigen, aber fragilen, Mikrorobotern fabriziert und auch charakterisiert. Anschließend wird die Fabrikation der Roboter an der ETH Zürich beendet. Bis jetzt konnte schon ein Prozess etabliert werden der es Dünnschichtelektronik direkt auf dreidimensionalen Oberflächen aus funktionalisierten Polymeren herzustellen. Wobei eine Schwierigkeit darin besteht alle Temperaturen so niedrig wie möglich zu halten, um die sensiblen Polymere nicht zu beschädigen. Es konnte bereits Sensoren, anorganische Transistoren basierend auf Oxid-Halbleitern und Antennen zur kontaktlosen Energieübertragung realisiert werden. Zusätzlich wurden



INFO BOX

FUNDING TYPE

Joint Projects – Swiss National Science Fund – South Tyrol / Alto Adige

DURATION

02/2021 – 10/2024

UNIBZ RESEARCH TEAM

Prof. Niko Münzenrieder (PI), Dott. Dianne Corsino, dott. Federica CataniaTomelleri

PROJECT PARTNERS

Eidgenössische Technische Hochschule (ETH) Zürich, Università degli Studi di Modena e Reggio Emilia

SELECTED PUBLICATIONS

- + Catania, F., Scattolo, E., Giubertoni, D., Cian, A., Shkodra, B., Lugli, P., Petti, L., Münzenrieder, N. and Cantarella, G. (2024). Channel Nanoscaling of InGaZnO TFTs and Circuits via Focused Ion Beam. *ACS Applied Electronic Materials*, 6(3), 1841–1847.
- + Catania, F., Khaanghah, N. S., Corsino, D., de Souza Oliveira, H., Carrasco-Pena, A., Ishida, K., Meister, T., Ellinger, F., Cantarella, G. and Münzenrieder, N. (2023). AC Performance Tunability of Flexible Bottom-Gate InGaZnO TFTs by an Additional Top-Gate Contact. *IEEE Transactions on Electron Devices*, 20(12), 6359–6363.
- + Corsino, D., Catania, F., Ishida, K., Meister, T., Ellinger, F., Cantarella, G., & Münzenrieder, N. (2022). Monolithic integration, performance, and comparison of self-aligned and conventional IGZO thin-film transistors on a flexible substrate. *IEEE Journal on Flexible Electronics*, 1(3), 159–166.

schon Mikroroboter mit integrierten Temperatur Sensoren demonstriert werden, ohne die Beweglichkeit der magnetisch kontrollierten Roboter zu beeinflussen. Durch die Kombination solch einzigartiger mechanischer und elektrischer Eigenschaften ist es zum ersten Mal möglich, miniaturisierte intelligente Roboter zu realisieren, um in der Zukunft minimalinvasive Therapien durchzuführen.



Research Projects

FH2ASTER - Schnelle, auf H2-Matrix-Arithmetik basierende Lösungen für die thermonukleare Energieforschung

Die Fusionsenergie kann eine langfristige Energieversorgung mit ununterbrochener Stromzufuhr, hoher Stromerzeugungsdichte und ohne Treibhausgasemissionen bieten und so dazu beitragen, die schlimmsten Auswirkungen des Klimawandels zu verhindern und einen nachhaltigen Beitrag zur künftigen Energieversorgung zu leisten. Die intensiven Bedingungen in einem Fusionskraftwerk (extreme Temperaturen und hohe Magnetfelder, die für die Kernfusion erforderlich sind) erfordern die Lösung mehrerer potenzieller Probleme. Mit Hilfe der mathematischen Modellierung wird versucht, einige der Hindernisse zu überwinden, die sich aus diesen komplexen Gegebenheiten ergeben.

Ziel des Projekts war die Entwicklung von datenarmen und

kernunabhängigen Berechnungsverfahren mit geringer Komplexität zur Lösung großer Fusionsplasmamodelle, die in Form einer Integralformulierung ausgedrückt werden. Die vorgeschlagenen Methoden basieren auf der sogenannten hierarchischen H2-Matrix-Theorie, die eine äußerst kompakte und genaue kernelunabhängige Darstellung von Integralgleichungen durch schnelle Kompression geeigneter Matrixblöcke ermöglicht.

Der Anwendungsfall bezieht sich auf ein groß angelegtes Problem, das in Kernfusionsanlagen auftritt. Die vorgeschlagenen algorithmischen Lösungen werden in einer schnellen Simulationssoftware für die Fusionsforschung implementiert und getestet, die über die beispiellose Fähigkeit verfügt, gleichzeitig dreidimensionale Effekte von Leitern, die das Plasma umgeben, und die inhärente Nichtlinearität des Plasmaverhaltens selbst zu berücksichtigen. Das Ziel des Projekts war



INFO BOX

FUNDING TYPE

Autonomous Province of Bozen-Bolzano

DURATION

10/2020 – 12/2023

RESEARCH AREA

Data-driven Artificial Intelligence (D2AI)

UNIBZ RESEARCH TEAM

Prof. Bruno Carpentieri (PI), Dr. Valentino Scalera, Dr. Mufutau Ajani Rufai, Dr. Mudassir Shams

PROJECT PARTNERS

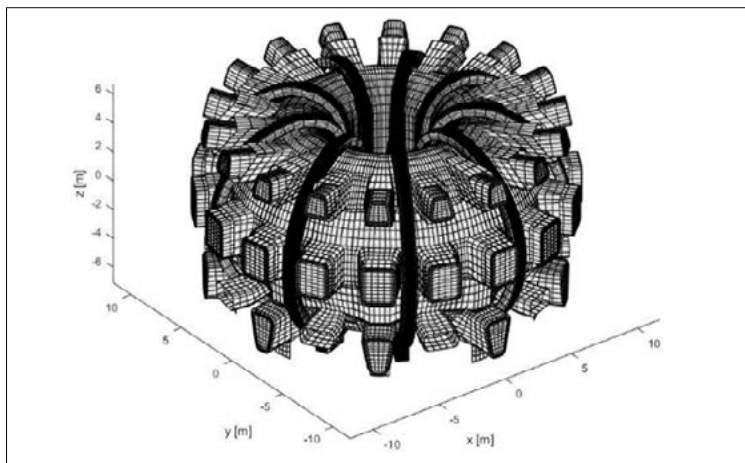
Purdue University, CREATE Consortium, Leopold Franzens Universität Innsbruck, Middle East Technical University, Old Dominion University

WEBSITE

inode-project.eu

SELECTED PUBLICATIONS

- + Ventre, S., Carpentieri, B., Giovino, G., Tamburrino, A., Villone, F., & Rubinacci, G. (2022). An Effective H2-LU Preconditioner for Iterative Solution of MQS Integral-Based Formulation P. In *Advances in Fusion Energy Research-From Theory to Models, Algorithms, and Applications*. IntechOpen. Doi: <https://doi.org/10.5772/intechopen.108106>.
- + Carpentieri, B., Tavelli, M., Sun, D. L., Huang, T. Z., & Jing, Y. F. (2023). Fast Iterative Solution of Multiple Right-Hand Sides MoM Linear Systems on CPUs and GPUs Computers. *IEEE Transactions on Microwave Theory and Techniques*, 1–14. Doi: <https://doi.org/10.1109/TMTT.2023.3345478>.
- + Rufai, M. A., & Carpentieri, B. (2023). A variable step-size implementation of a new one-step block method for integrating Burgers' model equation. *Alexandria engineering journal*, 83, 355–366. Doi: <https://doi.org/10.1016/j.aej.2023.09.078>.



es, numerische Werkzeuge zu entwickeln, die sehr schnelle Simulationen ermöglichen, die von der Industrie genutzt werden können und eine Lücke in der derzeitigen Software zur Lösung solcher Probleme zu schließen.

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Cooperation and Internationality

Der Forschungsschwerpunkt Knowledge and Data (KRDB) beschäftigt sich mit Themen des Wissens, des Umgangs mit großen Datenmengen, und der künstlichen Intelligenz. Ein 2023 vom Europäischen Fonds für regionale Entwicklung neu gefördertes KI-Lab erweitert nunmehr sein Serviceangebot. KRDB Mitglieder haben mehr als 50 öffentliche Präsentationen zu KI-Themen gehalten. KRDB hat regional mit Partnern, wie der Fondazione Bruno Kessler, zusammengearbeitet und ist Partner im „POS-T2STROKE“ Projekt. Im Rahmen des Cyber-ChallengeIT wurde ein Netzwerk zur Cybersecurity aufgebaut. Weitere signifikante internationale Kooperationen umfassen die Universität Liverpool, das Birkbeck College London, die Universität Oslo, die Universität Bergen, Norwegen und die Norwegian University of Science and Technology, die TU Wien, die TU München, die Universität Twente, die Universität Maine (USA) und die Universität Jönköping.

The macroarea Data-driven Artificial Intelligence (D2AI) actively collaborates with regional, national, and international partners to advance AI research and applications. Locally, D2AI collaborates with multiple Faculties at unibz, but also with several companies (e.g. Durst and TechnoAlpin), with companies affiliated with NOI and Covision Lab, and with institutes like EURAC, and FBK, leveraging shared expertise in machine learning and data science, to address regional

challenges in fields such as: earth monitoring; climate; smart agriculture; tourism; e-health; and industry automation. On these topics, D2AI collaborates also with several prominent institutions both nationally (e.g., PRIN projects COMMON-WEARS, and SELF4COOP; project 5VREAL; Schaeffler), and internationally (e.g., Pfizer; Vodafone; EuroMediaGroup; SmallPixels; NVIDIA; Computer Vision Center; TU Munich; Friedrich-Alexander-University Erlangen-Nürnberg).

Nell'ambito della macroarea Mathematical Foundations (MATH), nel corso del 2023 sono state realizzate e rafforzate collaborazioni e interazioni con diverse istituzioni nazionali e internazionali di ricerca e formazione. In particolare, i membri della macroarea hanno collaborato scientificamente con i colleghi delle seguenti Università: Università Pompeu Fabra (Barcellona, Spagna), Università di Bologna (Italia), Università di Brescia (Italia), Università di Buenos Aires (Argentina), Università degli Studi della Campania „Luigi Vanvitelli“ (Caserta, Italia), Université Catholique de Louvain (Belgio), Università degli Studi di Milano Bicocca (Italia), Università degli Studi di Napoli „Federico II“ (Italia), Semnan University (Iran), ETH Zurich (Svizzera).

The macroarea Materials and Devices for Smart Systems (MDSS) collaborates with a large number of regional, national, and international research centres and universities. Notable examples

are Laimburg, and Eurac Research in South-Tyrol; FBK, Istituto Italiano di Tecnologia, Politecnico di Torino, the Universities of Pisa, Modena and Reggio Emilia, Salento, Trento, or Venice in Italy; as well as leading universities in Europe and overseas such as the TU München, ETH Zürich, EPFL, University College London, Stanford University, Instituto de Telecomunicações, the École des Mines de Saint-Étienne, Université Paris Cité, Israel Institute of Technology, or the Carnegie-Mellon University. Furthermore, diverse industrial collaborations involve projects with local craftsman from the wood and stone sector and companies including Microgate, Microtec, Loacker, Empatica, and Tratter Engineering as well as projects with international cooperations for example Thales Alenia, BMW and KTM.

Die Macro-Area Software Engineering and Autonomous Systems (SEAS) arbeitet mit dem Versuchszentrum Laimburg, sowie in Bezug auf Industrie mit FlyingBasket Srl, Fraunhofer Italia und MavTech Srl, Wuerth Phoenix und der Südtiroler Informatik AG (SIAG) zusammen. Auf nationaler Ebene arbeitet SEAS aktiv in PRIN-Projekten mit der Universität von L'Aquila und der Universität von Sannio zusammen. Weitere nationale Partner sind die Universitäten in Perugia, Trento, Roma Tor Vergata, Milano, Bari und Bologna, sowie die italienische Agile Bewegung und das Ministero Dell'Istruzione e del Merito. Auf internationaler Ebene

arbeitet SEAS mit TU München, Universität Oxford, Norwegian University of Science and Technology, Eidgenössische Technische Hochschule, Universität Bonn, Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft, Universität Jaume I de Castellon, Universität Jyväskylä, Diputacion Provincial De Castellon, Universität São Paulo, Federal University of Technology Parana, ITESM Queretaro und der Universität Oulu zusammen.

La macroarea Human-centered Intelligent Systems (HCIS) collabora a livello nazionale ed internazionale con gruppi di ricerca chiave nel mondo dei sistemi intelligenti per le persone. Esempi di collaborazioni internazionali sono con: NTNU e il centro di ricerca BISITE, nel campo dell'HCI per l'ambito educativo; Karlsruher Institut für Technologie, Università di Innsbruck e National Technical University of Athens per l'ambito dei sistemi dell'Embodied Artificial Intelligence. Esempi di collaborazioni nazionali e locali sono:

Politecnico di Bari; Politecnico di Milano; Politecnico di Torino; Università di L'Aquila; Università di Salerno; Università Ca' Foscari di Venezia; Università di Trento; Direzioni Istruzione e Formazione della Provincia; Dipartimento di Cultura italiana, Commercio e Servizi, Artigianato e Industria; EURAC; Centro di competenza SMACT; Aziende GKN Sinter Metals, Durst AG, Bidac Srl.

Die Macro-Area Industrial Engineering and Automation (IEA)

arbeitet mit vielen regionalen, nationalen und internationalen Institutionen und Forschungspartnern zusammen. Auf regionaler Ebene ist die Zusammenarbeit mit dem NOI TechPark, mit verschiedenen Verbänden, wie z. B. dem Landesverband der Handwerker sowie mit der Handelskammer, zu nennen. National bestehen Zusammenarbeiten mit dem Politecnico di Torino, Politecnico di Milano, Università di Udine e Università di Catania, u.v.m. Im internationalen Kontext bestehen enge Netzwerkbeziehungen bspw. mit TU München, TU Graz, ETH-Zürich, TU Delft, TU Eindhoven, TU Kaiserslautern, Montanuniversität Leoben, Norwegian University of Science and Technology, Royal Institute of Technology, University of Malta, Purdue University Fort Wayne, Chiang Mai University, Universidad del Salvador, Stellenbosch University, Deakin University, Worcester Polytechnic Institute, Chalmers University of Technology, Ohio State University u.v.m.

The macroarea Energy Resources and Energy Efficiency collaborates with various public and private regional players, such as the NOI Techpark, the Laimburg Experimentation Centre, Eurac Research, Eco-Research and Automotive Excellence Südtirol. At the international level, there are various cooperations with universities and research centres, for example with the USA (The City College of New York and Cornell University), Japan (Hiroshima University), India (Indian Institute of

Science –Bangalore), Germany (Karlsruher Institut für Technologie, Erlangen-Nürnberg Universität and RWTH Aachen University, and Bergische Universität Wuppertal), Austria (Bioenergy 2020+ and TU Graz), Denmark (Danmarks Tekniske Universitet), France (Ecole des Mines Albi-Carmaux and IMT Atlantique) and Greece (National Technical University of Athens and University of the Aegean), the Czech Republic (Brno University of Technology) and Belgium (University of Mons and Vrije Universiteit Brussel).

L'area di ricerca Sustainability and Safety for the Natural and built Environment (S2NBE) collabora con diversi attori regionali e nazionali pubblici e privati, tra cui Bevölkerungsschutz e l'Agenzia di Protezione Ambientale della Provincia Autonoma di Bolzano, l'Agenzia per l'Energia Alto Adige – CasaClima, il Comune di Bolzano, Bacini Montani della Provincia Autonoma di Trento, EURAC Research, l'Autorità di Bacino delle Alpi Orientali, numerose imprese (tra cui Alperia SpA, Gerit Srl, Progress SpA, myGEKKO gmbH, Glassadvisor Srl, CAEmate Srl, Rothoblaas Srl) e diverse università italiane (tra cui l'Università degli Studi di Trento, l'Università degli Studi di Padova, IUAV, l'Università Cà Foscari, l'Università degli Studi di Trieste, il Politecnico di Torino). A livello internazionale sono in essere svariate collaborazioni con università e centri di ricerca, ad esempio con Austria, Francia, Germania, Olanda, Regno Unito, Stati Uniti, Svizzera.



Research Events

10 febbraio 2023

La decima edizione del Seminario nazionale CSSI **Siccity e crisi Energetica: le sfide nella gestione dei sistemi acquadottistici**, organizzato al NOI Techpark.

March – May 2023

For the first time Bolzano participated in the **CyberChallengeIT** initiative with Fabrizio Maggi as local organiser and competition coordinator.

22. – 23. April 2023

Die Macroarea HCIS organisierte in Zusammenarbeit mit Prof.in Angelika Peer den **Brain Computer Interface Designers Hackathon (BR41N.IO)**.

www.br41n.io/Spring-School-2023

10 maggio 2023

Seminario tecnico **La progettazione idraulica del nodo di Innichen-San Candido, la progettazione e la simulazione su modello fisico** al LaboraTory of Fluid Dynamics.

19 May 2023

The IEA macro-area co-organised together with the Faculty of Economics and Management the event **Sustainability of companies: guidelines, standards, certifications and ratings**, which was attended by around 40 representatives of companies and institutions.

certificationsforsustainability.projects.unibz.it/wp-content/uploads/2023/05/2023-05-19_Workshop.pdf

22. – 23. Juni 2023

Die Macroarea IEA veranstaltete zum zweiten Mal das jährlich stattfindende **International Symposium on Industrial Engineering and**

Automation (ISIEA 2023) an der unibz: „Towards a Smart, Resilient and Sustainable Industry“ mit Yuri Borgianni, Margherita Molinaro, Guido Orzes und Dominik Matt als Organisatoren.

2 – 5 luglio 2023

Diego Calvanese è stato il General Chair della conferenza **31st Symposium on Advanced Database Systems (SEBD 2023)**, organizzata a Galzignano Terme (Italia)

sebd2023.dei.unipd.it

10 – 12 July 2023

The macroarea SEAS organised the **ISE PhD School 2023** in collaboration with the University of Innsbruck with Barbara Russo as PC Co-Chair and Claus Pahl as part of the steering committee, supported by Jorge Melegati, Diaeddin Rimawi and Refat Othman, as was the ASQT conference on Software Quality on 12 July in collaboration with the University of Klagenfurt with Barbara Russo as an organiser. Furthermore, the **CLOSER Conference 2023 on Cloud Computing and Service Science** was organised by Claus Pahl as Conference Chair.

12. – 14. Juli 2023

Die Makro-Area HCIS organisierte die **13th International Conference on Methodologies and Intelligent Systems for Technology Enhanced Learning**, eine internationale Konferenz zu Methodologien und intelligenten Systemen für die Bildung, in Zusammenarbeit mit verschiedenen Universitäten in ganz Europa, z. B. NTNU, Bisite von Salamanca U., L'Aquila U. (der Link verweist

auf die diesjährige Ausgabe der Konferenzreihe)

www.mis4tel-conference.net

2 – 4 settembre 2023

Oliver Kutz è stato Program Chair del **36^o International Workshop on Description Logics**, tenutosi a Rodi, in Grecia, in concomitanza con la **20th International Conference on Principles of Knowledge Representation and Reasoning (KR 2023)** e il **21st International Workshop on Non-Monotonic Reasoning (NMR 2023)**.

dl2023.w.uib.no

20 – 21 October 2023

FSE Drivers of Change: Complexities and Opportunities at NOI Techpark and unibz, organised in collaboration with the Agora Activities Safety Village.

www.unibz.it/it/news/article/prevenzione-e-sicurezza-antincendio-nel-convegno-di-unibz-al-noi-techpark

8. – 9. Dezember, 2023

Alessandro Artale war General Co-Chair der Konferenz **12th International Joint Conference On Knowledge Graphs (IJCKG 2023)**, Tokio, Japan.

ijckg2023.knowledge-graph.jp/index.html

14 December 2023

The Macroarea IEA co-organised in cooperation with the CC for Economic, Ecological, and Social Sustainability the third-mission event **L'introduzione di pratiche di sostenibilità nella strategia delle imprese in Alto Adige** with the Chamber of Commerce of Bolzano, Cassa Centrale Raiffeisen dell'Alto Adige, Loacker, and Niederstätterpresenting.

Faculty of Design and Art



© Eleonora Lunardonì



KEY DATA

PEOPLE

- + 342 Students
- + 16 PhD Students
- + 16 Tenured Professors
- + 19 Researchers
- + 55 Contract Professors
- + 27 Technical and Administrative Staff

BACHELOR

- + Design and Art – Major in Art
- + Design and Art – Major in Design

MASTER

- + Eco-Social Design

LIFELONG LEARNING

- + Design for Children

In Dean's Words

INTERVIEWED BY SUSANNE PITRO

Prof. Cohen, what has been the Faculty's priority agenda in terms of research for the past academic year?

The Faculty of Design and Art has prioritised a transversal approach, focusing on three main areas:

Qualitative Research: Emphasis was placed on refining ethnographic studies, participatory design, and in-depth case studies. Projects like "Dialoguing Species" and "Treesense" exemplify this commitment to qualitative depth.

Engagement Practices: The Faculty engaged diverse communities through collaborative workshops, public exhibitions, and interactive design processes. Notable initiatives include the Climate Citizens Assembly and the "Change Agents" project, involving participants in democratic and eco-social transformation practices.

Strengthening Networks: Expanding collaborations with national and international academic institutions and research entities was a key focus. Notable partnerships included those with ELISAVA, Moholy-Nagy University of Art and Design, University of the Arts Berlin, and Shenkar University under the Erasmus+ project "Change Agents", along with numerous established partnerships.

This approach ensures that the Faculty's research remains methodologically robust, socially engaged, and globally connected.



Dean — Prof. Nitzan Cohen

What are the main research objectives or projects that the Faculty intends to pursue in the upcoming academic year?

We aim to participate in and lead research consortia in larger national and international research calls. Our overarching goal is to strive for future-viable modes of production, consumption, and life, fostering sustainable economies and cultures. Key objectives and projects include:

Integrated Creative Tasks:

We understand the creation of products, spaces, processes, interactive applications, and transmedia communication as integrated tasks that blend artistic and design practices. This holistic approach ensures comprehensive and innovative solutions to complex, real-world challenges.

Sustainable Economies and Cultures: Our projects will continue to explore and promote sustainable practices in both design and the arts. By

focusing on eco-social design, participatory art practices, and the integration of digital technologies, we aim to contribute to the development of resilient and sustainable communities. Art and Design as Catalysts for Change: We view both art and design as powerful catalysts for desirable and necessary change. Our research will prioritize creating solutions that are not only innovative but also socially responsible and environmentally sustainable. This involves engaging with communities, industry partners, and other stakeholders to co-create meaningful and impactful artistic and design interventions. By maintaining this transversal focus and embracing new opportunities for collaboration and innovation, we aim to lead the way in fostering sustainable futures through our research. This holistic and integrated approach will ensure that our contributions are both cutting-edge and deeply rooted in the values of sustainability and social responsibility. ■



Research Areas

The Faculty of Design and Art research endeavours encompass a broad spectrum, ranging from traditional domains such as product design, communication design, and contemporary art practices, to burgeoning areas like eco-social design and/or art, participatory design and art practices, and a diverse array of experimental engagements with anthropology, sociology, biology, artificial intelligence, and education. Emphasising interdisciplinary collaboration, we strive to foster synergies among practitioners, humanistic scientists, artists, designers, and innovative methodologies, thereby forging an increasingly interconnected network that unites partners from industry, academia, and scientific spheres.

Our international research network continues to expand, with collaborations spanning Austria, Germany, Switzerland, The Netherlands, Portugal, Spain, the UK, and extending further to encompass partnerships in Australia, Mexico, New Zealand, and the US.

The research conducted by the Faculty of Design and Art defies traditional boundaries of disciplines, methodologies, media, and modes of dissemination, as the insights gleaned from its inquiries frequently incorporate practical applications, groundbreaking concepts, and visual methodologies. This research manifests in diverse formats, ranging from exhibitions and participatory social interventions to explorations of augmented reality visualisation techniques, investigations into living



Vice Dean for Research — Prof. Eva Leitolf

spaces and lifestyles, and experimental studies of novel materials and (bio)technological processes. While the Faculty's three research clusters maintain their unique identities, research groups frequently collaborate across clusters to leverage each other's specialised knowledge and practices for mutual benefit.

MAKE: Exploring Innovative Approaches to the Ideation of Artefacts and Spaces

Coordinator: Prof. Gerhard Glüher

Keywords: value of art/design creations, Design Friction Lab, interspecies relationships.

The MAKE cluster delves into unconventional approaches aimed at enhancing the intrinsic value of art and design creations. In 2023,

Prof. Nitzan Cohen and the Design Friction Lab (DFL) continued their work on innovative products and secured external funding from various sources. In an exemplary manner, Prof. Yavuz led several innovative projects, including "Treesense", a playful exploration funded by Worth Partnership, which examines human-tree connections. Additionally, she worked on "Dialoguing Species", a project aiming to design shared worlds through ethnographic research, funded by PRIN 2022 PNRR.

TRANS-FORM: Exploring Design, Art and Social Practices for Political and Eco-Social Transitions

Coordinator: Prof. Sónia Cabral Matos

Keywords: Democratic participation, eco-social transformation, interdisciplinarity, inclusivity and diverse audiences.

The TRANS-FORM cluster members launched new initiatives that have helped renew interest in democratic participation, eco-social transformation, interdisciplinarity, inclusivity and diverse audiences.

Prof. Kris Krois and his team were engaged in creating a Climate Citizens Assembly at unibz through the project “Climate Citizens Assemblies: An Instrument for climate justice and inclusive decision-making”. Dr. Palmieri, Prof. Krois, and Prof. Cabral Matos joined the ERASMUS+project “Change Agents – Blueprints for Inter-institutional Collaborations in Social Design”. Activities of The New European Bauhaus (NEB) Lab focused on an NEB workshop led by Prof. Kris Krois, while Prof. van Bezooijen supported an ignite grant application with BASIS, strengthening the ongoing dialogue between Eurac Research, the CasaClima Agency, and the provincial administration in South Tyrol.

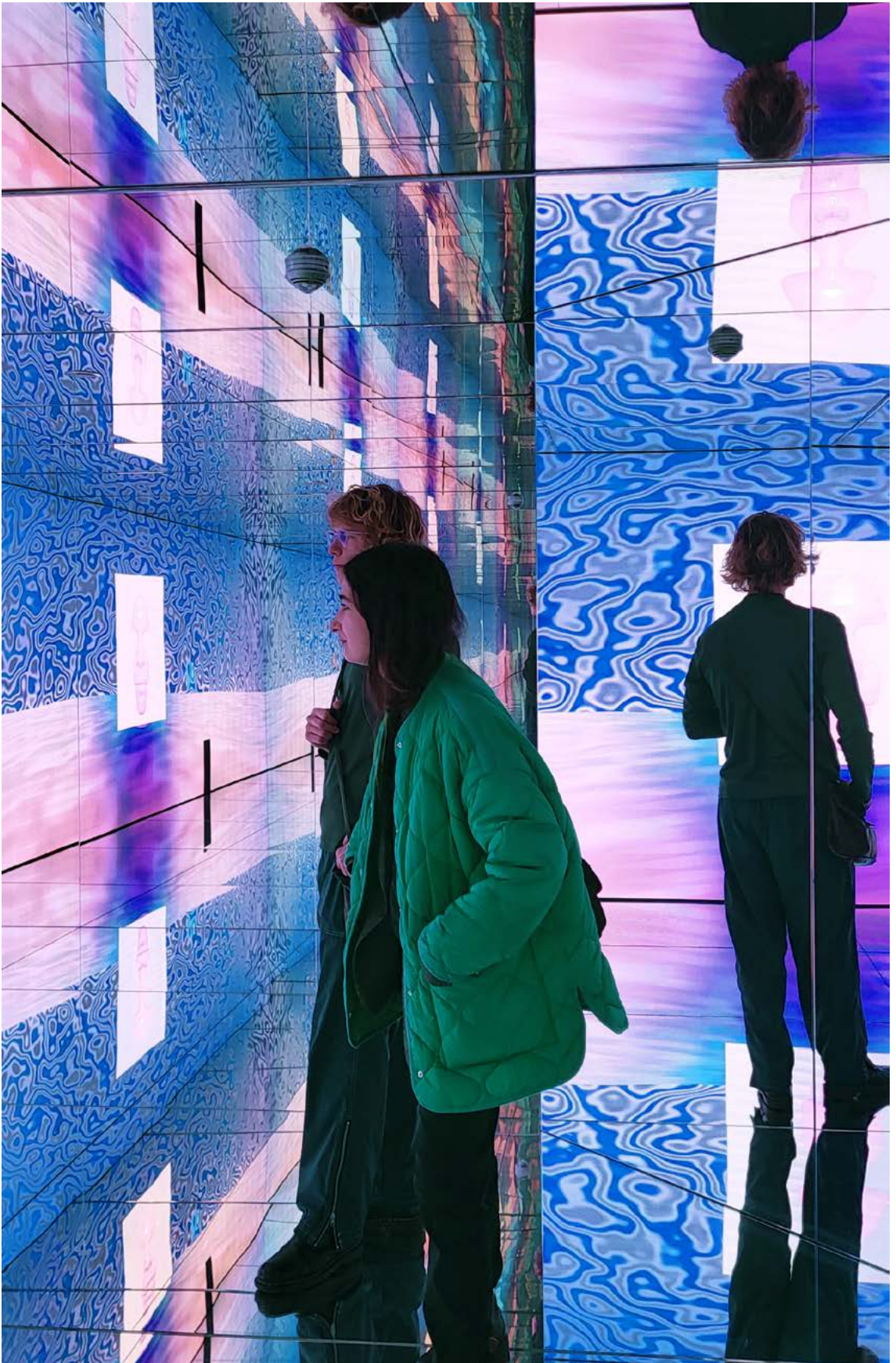
ENABLE Design & Art Competences, Material Culture and Human Development

Coordinator: Prof. Andreas Metzner-Szigeth

Keywords: Artistic processes, aesthetics, design, art theory, embodied knowledge.

The ENABLE cluster centers on artistic processes, aesthetics, design, and art theory, along with sociological and educational matters and methodologies. It explores intersections, interactions, and the advancement of digital technologies, as well as the concept of “embodied knowledge” within artistic endeavors and novel methods of visualisation, graphic design, and print media.

Following the thematic focuses of the previous three years, in 2023 the ENABLE cluster dealt with the comparatively broad area of “Diversity of Perspectives, Cultures and Professions”. Among the numerous activities of members of the cluster, were the initialisation of the research project “Italian borderscapes after 2020 – Mapping, unfolding, and re-framing border territories in response to the Covid-19 pandemic”, funded by the Italian Ministry of University and Research within the framework of Projects of Significant National Interest (PRIN) and in cooperation with Politecnico di Milano (lead partner) and the National Research Council (CNR).





Research Projects

DIYR – Do It Yourself Revolution

DIYR (pronounced dear) Celebrates the spirit of independence, creativity, and resourcefulness. The acronym DIYR stands for “Do It Yourself Revolution”, promoting reflection and new forms of production, combining simplicity and longevity, ethics and aesthetics. DIYR is an innovative wide spanning and ongoing research project which sets to take design-led research out of academia to society and the market.

DIYR designs growing ecosystems of innovative, playful, guiltless, and highly purposeful social electronics for anyone to build, hack, personalise, share, fix, and forever keep. DIYR actively empowers countering of planned obsolescence and reducing e-waste. Enabling one to get active, gain knowledge and skills to repurpose components and make things one need, like, and would keep; while in the process,

developing a mindful approach to resources, products, alternative production, and active environmental responsibility. DIYR is founded on acknowledging that personal involvement in the creation of an object fosters a unique connection and endows the product with greater emotional significance, integrating feelings with practicality and design. DIYR is based on acknowledging that self-gained understanding of an object’s build promotes a stronger relation and emotional value to it, combining emotions with function and purpose. The growing DIYR collection currently features various lighting fixtures, fans, blue-tooth speakers, hangers and racks with quirky aesthetics, high functionality and endless ways to make them yours and speak of yourself. Particular emphasis is given to using the simplest materials and processes and the repurposing of valuable resources, as such, special



INFO BOX

FUNDING TYPE

Internal Funding

DURATION

12/2021 – 12/2024

RESEARCH AREA

Product design, distributed manufacturing, DIY, circular future for home appliances

PRINCIPAL INVESTIGATOR

Prof. Nitzan Cohen

WEBSITE

diyр.dev

SELECTED PUBLICATIONS

- + Cohen, N., Alt, P., Ugur Yavuz, S. (2021). DIYR – DIY-Redefined, exploring the innovative potential of designing DIY electronics. *Proceedings of the Fab 16 Research Papers Stream*, 181–190.(Submitted).

instructions enable the repurposing of used rechargeable batteries (Battery Second Life). The complete DIYR collection is made for anyone to be able to produce, it is divided into four levels from “Very Little Skills” to “Quiet some Skills”. All instructions indicate the estimated direct components costs and indicated the estimated average making time. All instructions are subjected to the creative commons licensing.

DIYR.dev website makes available the necessary for anyone to turn into a doer and produser (producer/user) of useful and beautiful objects, through the step-by-step easy to follow instructions for the complete ecosystem. DIYR is Prof. Nitzan Cohen’s vision of fostering the development of resilient futures through empowerment and do-it-yourself practices. Pursuing this vision is done in a collaborative manner at the Design Friction Lab of the Free University of Bozen-Bolzano.



← DIYR Fan Collection © Gerhardt Kellermann



Research Projects

Treesense – Die spielerische Vorstellung, ein Baum zu sein

Das Projekt ging von der Idee aus, Kinder durch ein immersives Spielerlebnis mit der Natur zu verbinden. Im gesamten Projekt wird der „Baum“ als Metapher für die Natur verwendet. Der Designprozess umfasst Co-Design und spekulative Designmethoden, um einen interaktiven Prototyp zu schaffen – ein Spiel-Set, mit dem Kinder die Erfahrung machen können, „ein Baum zu sein“. Der Bausatz ermöglicht es Kindern, sich das Leben eines Baumes vorzustellen, indem sie spielerisch textile Materialien mit interaktiven Modulen kombinieren. Es enthält einen runden Teppich, verschiedene textile Blätter und Interaktionskarten, die mit drahtlosen elektronischen Modulen ergänzt werden können, um sich mit dem Leben eines Baumes in den vier Jahreszeiten zu beschäftigen. Eine Gruppe von Kindern setzt die Geschichte des Baumes zusammen, die durch

die Interaktionskarten vermittelt wird, wobei genügend Raum für die Kreativität der Kinder bleibt, um die Abenteuer des Baumes zu erweitern. Körperliches und soziales Engagement steht im Vordergrund der Spielkiste, um sich in die Weltwahrnehmung eines Baumes einzufühlen. Das TREESENSE-Set eignet sich für verschiedene Umgebungen, vom privaten Spiel bis hin zu öffentlichen Gemeinschaftsveranstaltungen.

Ein besonderer Dank geht an Samlabs für die Zusammenarbeit bei der Bereitstellung interaktiver Module für den Prototyp.



INFO BOX

FUNDING TYPE

EC COSME — WORTH II Partnership

Project

DURATION

07/2022 – 04/2023

RESEARCH AREA

Interaction Design, More-than-human design

UNIBZ RESEARCH TEAM

Prof. Secil Ugur Yavuz (PI), Prof. Beate Weyland

PROJECT PARTNER

Mihoo Design (Michaela Honauer – University of Twente, The Netherlands), Spell Disain (Kristi Kuusk – Estonian Academy of Arts, Estonia)

WEBSITE

wearable-play.com/home/treesense

SELECTED PUBLICATIONS

- + Honauer, M., Kuusk, K., Ugur Yavuz, S. (2023). Project Exhibition, “TREESENSE”, Virtual Worth Exhibition, 03. – 07. July Online. Link to virtual exhibition (you find us under Textiles N-Z).
- + Honauer, M., Kuusk, K., Ugur Yavuz, S. (2023). Project Exhibition, “TREESENSE”, Fuorisalone (Milan Design Week), 17.–23. April, Milan, Italy.



← © Treesense



Research Projects

WHI-RO – REMEMBERING THE WHITE ROSE

The project consisted of a training course in the form of a workshop that lasted six months, aimed at producing a design concept for a monument to the Weiße Rose, which was submitted to the Municipality of Bolzano.

The workshop was open to a group of students of the Faculty of Design and Art of the Free University of Bozen-Bolzano, belonging to the Bachelor in Design, the Bachelor in Art and the Master in Eco-Social Design. The students were accompanied by a tutor: an artist with documented experience in the field of public art, whose task was to activate with the participants a series of discussions on the main themes linked to the history of the Weiße Rose, as well as on the new forms of monumentality that characterise contemporary society. In addition, a series of activities open to

the public were organised, such as guided tours to historical sites and lectures by experts. These activities formed an integral part of the workshop, offering tutors and students a series of ideas from which to develop the project concept, while at the same time providing the population of the city of Bolzano with an opportunity to discuss both the issues addressed and the project.

The resulting proposal is currently in production and will be installed in Universitätsplatz – Piazza Università, Bozen-Bolzano in 2024. A publication about the whole process is in the making.



INFO BOX

FUNDING TYPE

Research Contract

DURATION

05/2022 – 12/2023

RESEARCH AREA

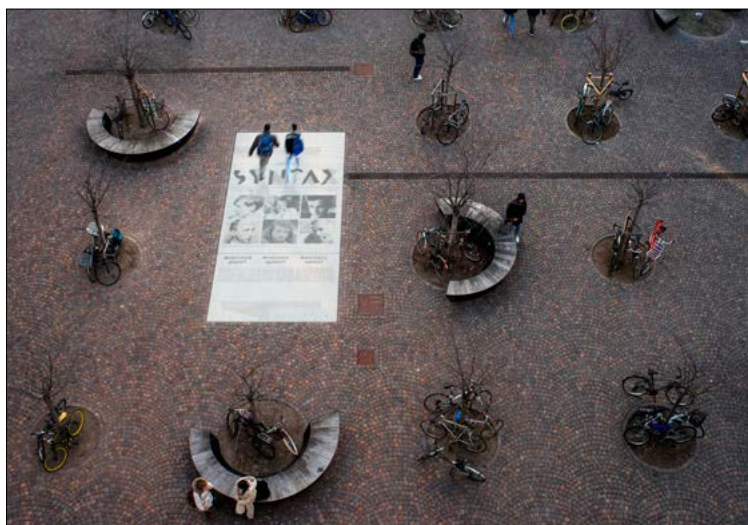
MAKE: Exploring Innovative Approaches to the Ideation of Artefacts and Spaces

PRINCIPAL INVESTIGATOR

Dr. Davide Tommaso Ferrando

PROJECT PARTNER

Comune di Bolzano



← © Weisse Rose Lightcarpet newspaper top



Cooperation and Internationality

Amid the phygital turn, a pivotal confluence of physical and digital domains, the symposium “Performing Spaces: On Designing Phygital Narratives within the Cultural Heritage Ecosystem” delved into the profound transformations impacting cultural experiences, design paradigms, and the preservation of tangible and intangible heritage. The conference with sixteen speakers from international university such as Harvard metaLAB (US), UCLA (US), Portsmouth University (UK), Halmstad University (Se), University of Maryland (Us) and Polytechnic University of Milan, Padova University and University of Sassari-Alghero was organised by Prof. Letizia Bollini, Dott. Giulia Faccin with Dott. Chiara Facchini (Polytechnic University of Milan) and Dott. Beatrice Citterio.

performing-spaces.com/

The Enable cluster initialised the PRIN 2022 research project Italian borderscapes after 2020 – Mapping, unfolding, and re-framing border territories in response to the Covid-19 pandemic, in co-operation with Polytechnic University of Milan (lead partner) and the National Research Council (CNR).

italianborderscapes.polimi.it

A team of the Trans-form cluster and the Competence Centre for Sustainability with Prof. Aart van Bezooijen (PI) and Dr. Jacopo Ammendola in collaboration with BASIS Vinschgau Venosta (BASIS), Italy, organised an “Ideas Competition for the New European Bauhaus (NEB) initiative”. The aim was to infuse innovative solutions

into the Vinschgau-Venosta Valley in South Tyrol, particularly focusing on the thematic axis of the NEB Ignite event: “Regaining a sense of Belonging”.

new-european-bauhaus.europa.eu/about/about-initiative_en

The PRIN 2022 PNRR funded research project Dialoguing Species – Designing Common Worlds through Ethnographies looks in depth at two specific Italian cases of expert practices to protect the biodiversity while at the same time allowing human activities and compares these practices with cutting edge designing projects around Europe (and beyond). The project is led by unibz (Prof. Elisabeth Tauber) in collaboration with Polytechnic University of Turin.

polito.it/ricerca/una-ricerca-integrata/anagrafe-della-ricerca?progetto=1384/2023

In collaboration with ELISAVA – Barcelona School of Design and Engineering, the Moholy-Nagy University of Art and Design, the University of the Arts Berlin (UdK) and Shenkar University, the Trans-form cluster (Dr. Teresa Palmieri, Prof. Seçil Ugur Yavuz, Prof. Sonia Matos worked on the Erasmus+ project Change Agents – Blueprints for inter-institutional collaborations in social design. The project objective is to create lasting infrastructures of collaboration and to build solid bridges between different key social agents and institutional settings (higher education institutions with NGO sector) to help developing more sustainable social practices by articulating epistemic

tools that encourage socially conscious approaches and attitudes on the field of design.

designdisaster.unibz.it/change-agents-blueprints-for-inter-institutional-collaborations-in-social-design

The ESF funded project DIL: District Innovation Lab saw a team of the Trans-form cluster (Prof. Seçil Ugur Yavuz, Prof. Aart van Bezooijen, Dr. Ingrid Kofler, Dr. Merve Bektas in co-operation with the Officine Vispa Bolzano and Cieffe Trento. The project researched an integrated a set of consulting, services, training and orientation aimed at generating the pre-conditions essential for a stable emancipation of migrant women.

officinevispa.com/portfolio/fse20245-dil-district-innovation-lab/



Research Events

23. Januar – 4. Februar 2023

Econoclasm: Dr. Davide Tommaso Ferrando (mit Leander Schwazer und Prof. Gerhard Glüher) organisierte und kuratierte die Ausstellung, die die Vernetzung von Ikonoklasmos und Ökonomie erforscht, die dem zerstörerischen und ausbeuterischen Verhalten unserer Kultur nicht mit Negation begegnet, sondern produktiv angewendet, Galleria d'Arte Alessandro Casciaro, Bolzano, Italy.

rainews.it/tgr/bolzano/video/2023/01/econoclasm-lirifiuti-di-bolzano-diventano-opere-darte-ef5ed862-1d04-4f8e-8f2e-d6fd1dfc79b5.html



22 febbraio 2023

Ricordare, Dimenticare: organizzato da prof. Roberto Gigliotti e Dr. Davide Tommaso Ferrando in collaborazione con la Piattaforma Patrimonio Culturale Produzione Culturale, l'evento coinvolge sei esperti ed esperte di fama internazionale (Christian Berger, Matilde Cassani, Horst Hoheisel, Andreas Knitz, Alessandro Oldani, Lisa Parola, Marina Pugliese e Simone Trabucchi), che interverranno su temi legati al ruolo della monumentalità nella società contemporanea, al difficile equilibrio tra la necessità di ricordare e il desiderio di dimenticare, e alla città come luogo in cui queste tensioni si manifestano.

culturalheritage.unibz.it/en/activities/remembering-conversations-su-citta-memoria-e-monumenti-ge-spraechen-zur-stadt-zum-gedenken-zu-denkmalern

27 February 2023

Do Things Have a Soul?: The Conference, held by Tiziano Scarpa at unibz was organised and directed by Dr. Marcello Barison. These questions were discussed: With artificial intelligence, objects have begun to make their voices heard, talking to us. But how do other objects, even those that seem inert, speak? What personalities do they have? With what property do they become characters in our lives and in the stories, we read and watch on our screens?

unibz.it/itld/news/article/63f726d01d3d1

8 – 9 March 2023

Fit for the future with design – How governance and management can benefit from creative approaches: organizzato von Prof. Metzner-Szigeth und Dr. Kofler zusammen mit Prof. Pechlaner und Dr. Erschbamer als verantwortliche Partner des Center for Advanced Studies der EURAC, unibz.

unibz.it/en/events/141950-fit-for-the-future-with-design-how-to-inspire-future-oriented-governance-and-management

29 March – 1 April 2023

By Design or by disaster Conference 2023 “String Figures” in partnership with the multiplier event of the Project KAUZ – laboratory for climate justice, work and future (Erasmus+ KA 2-3): A conference with an elaborate program with eight keynote speakers like David Hofmann (Climate Action Alliance, Scientists for Future, XR and Regala Zukunft) that allowed to learn about and get active in social-ecological transformation.

designdisaster.unibz.it/2023/kauz-project.org/

17 – 23 April 2023

TREESENSE: a project exhibition by Michaela Honauer, Kristi Kuusk, and Cecil Ugur Yavuz at Fuorisalone (Milan Design Week), Milan, Italy.

wearable-play.com/home/treesense/

18 – 23 April 2023

It's time to pull the curtain – plastic on stage!: Exhibition conceived by Prof. Kuno Prey for Salone Satellite 2023, Salone Internazionale del Mobile, Fiera Rho, Milano, Italy.

books.google.it/books/about/Plastic_on_Stage.html?id=01oK0AEACAAJ&redir_esc=y

19 – 21 May 2023

Unfolding Pavilion: #OPENGIARDINI: Dr. Davide Tommaso Ferrando organised and curated the international exhibition (with Daniel Tudor Munteanu) at the occasion of the 18° Mostra Internazionale di Architettura, la Biennale di Venezia, Giardini Pubblici, Venezia, Italy.

archdaily.com/1003309/the-unfolding-pavilion-investigates-the-public-openness-of-the-giardini-della-biennale-in-venice



← © Econoclasm, Exhibition, Dora Musola, 2023

↑ Unfoldingpavilion #opengiardini © Laurian Ghinitoiu

12 June – 31 August 2023

Reading Landscape?: Prof. Eva Leitolf and Giulia Cordin curated the exhibition with guided tours as an outcome of a research-teaching project in collaboration with Lumen Museum for Mountain Photography, Bruneck, Italy.

lumenmuseum.it/it-it/temporary-exhibitions/reading-landscape



14 June 2023

Revolutionizing Architectural Practices – Analysing AI and the Digital Landscape: Talk by Mustapha El Moussaoui within the framework of interdisciplinary workshop “Hyperdigital Designs” at Cambridge University, Cambridge, UK.

2 October 2023

Landscape with(out) Locus: Negotiating Images 2 (Nero Editions): Book launch and exhibition by Prof. Eva Leitolf and Giulia Cordin within the framework of Bolzano Art Weeks. The academic publication researches the question if landscape can be represented in the Capitalocene as something independent of the viewer, unibz.

neroeditions.com/product/landscape-without-locus/

8 October – 4 November 2023

Reverse Gazes: As part of the exhibition series “Joints” in collaboration with Foto Forum Bolzano, Prof. Eva Leitolf and Giulia Cordin curated the exhibition which reflects politics of the gaze within the patriarchal system in the age of media manipulation, Bolzano Art Weeks, Bolzano, Italy.

salto.bz/de/article/03112023/reverse-gazes



9 November 2023

WUD – World Usability Day “Cooperation and Collaboration”:

An international conference with twelve speakers from business, activism, and academia who shared their insights on the power of collaborative and co-designing practices. Organised by prof. Letizia Bollini and Matteo Moretti, co-founder of Sheldon.studio, with Chiara Facchini, in collaboration with NOI TechPark and Exeen.it a Milan-based company, promoted by AltoAdigeinnovazione, DRIN and OnTopic and side event of SFSCON 2023.

unibz.it/en/events/wud-bozen-bolzano-2023-world-usability-day



↑ Reading Landscape, Lumen Museum
Exhibition, 2023 © Hannah Göbbels Laurian
Ghinitoiu

↑ Reverse Gazes, Haley Morris-Cafiero, Foto
Forum © Daniel von Johnston

↑ WUD - World Usability Day 2023 © Letizia
Bollini

29 – 30 November 2023

Small Books – Editoria in scala

ridotta: Conference organised by Prof. Giorgio Camuffo with professional book makers, publishers, designers and artists like Federico Antonini (Timeo), Marcello Barison, Noemi Biasetton (unibz), Andrea Codolo e Giacomo Covacich (bruno), Francesco D'Abbraccio e Andrea Facchetti (Krisis Publishing), Serena De Mola, Stefano Faoro, Lorenzo Ercoli, Michele Galluzzo, Emilio Macchia e Erica Preli (eee), Saul Marcadent (Iuav University of Venice), Lorenzo Mason, Corrado Melluso (Timeo), Nicola Narbone e Francesco Valtolina (Commerce), Elisabetta Rattalino, Luca Trevisani.

unibz.it/events/small-books-editoria-in-scala-ridotta

24 November – 15 December 2023

Fashion For Future Bolzano

2023: Initiative and exhibition campaigning for a better fashion and textile industry and more conscious consumption, unibz.

fashionforfuture.bz.it/fashion-for-future-

[bolzano-2023](https://fashionforfuture.bz.it/fashion-for-future-bolzano-2023)



↑ Fashion Conference-27© Anna Mayr

Faculty of Education



© Eleonora Lunardonì



KEY DATA

PEOPLE

- + 1575 Students
- + 49 PhD Students
- + 49 Tenured Professors
- + 67 Researchers
- + 159 Contract Professors
- + 20 Technical and Administrative Staff

BACHELOR

- + Communication Sciences and Culture
- + Social Education
- + Social Work

MASTER

- + Primary Education
- + Applied Linguistics
- + Innovation and

Research for Social Work and Social Education

- + Musicology

PHD

- + Education and Social Sciences
- + Linguistics

LIFELONG LEARNING

- + Antropolad: Further Education Course in Ladin Language and in Culture and Alpine Anthropology
- + Training Course (24CFU)
- + Training Course for the teaching qualification procedure

- + Training Course for Substantial Suitability
- + Training Course for Primary School Teachers of German as a Second Language in Italian

In Dean's Words

INTERVIEWED BY ARTURO ZILLI

Prof. Brighi, are there any particularly significant research projects you would like to highlight?

We have many, particularly in the realm of Erasmus projects that focus on teacher training, which is one of the faculty's core missions. Among these, I would highlight projects that innovate teaching methodologies for STEM education, such as physics and mathematics. For example, we are working on a project that explores Embodied Education and narrative approaches for science learning. This is an innovative area where we are recognised as a national and international reference point. Another significant area involves projects focusing on diversity and inclusion for various vulnerable groups, such as immigrants, persons with disabilities or people in situation of social fragility. We also have other Erasmus projects that address financial education, sustainability, and the promotion of physical well-being through motor activities. Beside Erasmus+, we have been appointed also with several PRIN Projects, some of them exploring the impact of new technologies on human sciences (like serious games, virtual reality for heritage, digital tools for learning) as well on social mapping of territories and language diversity.

What have been the most innovative or emerging research areas within the Faculty?

Sustainability in all its facets – social, environmental, and economic – will be central in the



Dean — Prof. Antonella Brighi

coming years. There is, indeed, a strong focus on researching the processes and skills that guide and foster sustainable choices, which are crucial for sustainability education.

Another issue will be investigating how new technologies such as AI will impact on education, learning and on social services. Additionally, we aim to create synergies between research areas that have traditionally operated separately within our Faculty and across Faculties

Would you like to create interdisciplinary connections beyond the Faculty's boundaries?

Absolutely, because science is moving in that direction. We are working on establishing collaborations with the other four faculties. It will be important, for example, to bring together economists, system evaluators, educators, psychologists, and statisticians to analyse problems that the school system

may face, and propose innovations in teaching methods. The faculty should become a hub not only for basic research but also for applied research.

How do you plan to achieve this?

There are several actions that we may implement. Among these, there is the idea to make the Laboratories a bridge between academic research and applied research to find innovations to implement in schools. We are organising the labs to ensure that the laboratory becomes a mechanism for transferring knowledge to the social and educational context of the region. The idea is to build a pipeline to increase our impact on the territory having our research a driver for educational and social innovation. ■



Research Areas

Through its commitment to teaching, research, and third mission activities, the Faculty is dedicated to enabling individuals to realize their full potential, pursue their aspirations, and make meaningful contributions to self-improvement and societal advancement. The Faculty actively collaborates with regional, national, and international institutions in pursuit of an inclusive and sustainable vision of human and social development.

In 2023, the Faculty maintained its position of leadership in the CENSIS ranking, which highlighted the quality of its study programmes and the effectiveness of its initiatives. The recent CENSIS report once again placed the Primary Education Sciences programme at the top of its class, the Social Educator programme at second, and Communication Sciences and Culture at fourth.

The Faculty kept levels of scientific productivity (number and quality of publications) and increased external research funding, especially due to the good performance in attracting PRIN projects. The seven macro-areas of the Faculty, all characterised by an innovative approach to research and educational practice, have contributed to these positive results through the development of new methodologies, practices, and technologies aimed at addressing present and future challenges in education and social domains across various life contexts.



Vice Dean for Research — Prof. Attilio Carraro

Permanent Education – Processes and Projects of Education and Development with a Focus on South Tyrol

Coordinator: Prof. Iris Nentwig Gesemann

Keywords: Cultural and historical contexts; Diversity; Education and well-being; Education in times of socio-ecological transformation; Learning in formal, non-formal and informal educational contexts and settings; Lifelong learning in different social.

IN-IN Education: INnovative and INclusive Education

Coordinator: Prof. Beate Weyland

Keywords: Curriculum studies; Educational research; Media pedagogy and use of ICT, also for inclusion; Special needs education and inclusive education; Teaching and learning.

Psychology and Wellbeing Promotion in educational Contexts

Coordinator: Prof. Demis Basso

Keywords: Cognitive processes; Clinical developmental psychology; Education; Typical and atypical development; Wellbeing and quality of life.

Languages and Multilingualism in South Tyrol

Coordinator: Prof. Silvia Dal Negro

Keywords: Evolution of languages; Languages and multilingualism in South Tyrol; Language usage in different communicative and social contexts; Language policies and language education.

Aesthetic Experiences and Communication

Coordinator: Prof. Paolo Somigli

Keywords: Aesthetic languages; Music history and education; Physical activity, physical education, sport; Visual arts; Well-being through aesthetic and physical experience.

Educational Contexts, Disciplines and their Teaching in the Nursery and Primary School

Coordinator: Prof. Giorgio Bolondi

Keywords: Development of scientific competences in children; Disciplines didactic; Embodiment in education; History and geography education; Teachers' training.

Socio-Cultural Worlds: Institutions, Welfare, Social Professions, Environment and Population

Coordinator: Prof. Kolis Summerer

Keywords: Anthropology; Law; Social statistics; Social work; Sociology and social policies.





Research Projects

Non sono un robot – Lavorare con l'intelligenza artificiale nell'educazione della prima infanzia

Guardando all'IA nel lavoro pedagogico negli asili da una prospettiva scientifica, ci sono ancora alcune lacune nella ricerca su questo argomento. Solo alcuni articoli descrivono concetti educativi efficienti volti a promuovere l'alfabetizzazione dell'IA (cf. Chen et al., 2020; Kandhofer et al., 2017).

Inoltre, ci sono molte perplessità sulla tecnologia, i media digitali e l'IA, specialmente nella pratica dell'educazione della prima infanzia (ECE) (Mertala, 2017). Pertanto, è essenziale che i professionisti formati pedagogicamente comprendano appieno le implicazioni derivanti dall'interazione tra l'uomo e l'IA. Il progetto è quindi orientato alla pratica pedagogica, gli educatori sono incoraggiati ad affrontare il tema dell'IA da un lato e a testare le possibilità di implementazione

concreta con materiali didattici, i cosiddetti toolbox, dall'altro. In questo modo, l'uso dell'IA può diventare una competenza chiave sia nella formazione professionale pedagogica che nelle biografie educative dei bambini.

Un risultato specifico, l'obiettivo del progetto l'm not a robot è la progettazione di moduli trasferibili e pratici all'interno del perfezionamento dei professionisti dell'istruzione, consentendo loro di integrare le tecnologie basate sull'IA nel loro lavoro quotidiano in modo significativo. Inoltre, saranno sviluppati e testati metodi didattici innovativi per l'insegnamento e l'apprendimento dell'IA.

In Alto Adige, questi materiali sono disponibili come cassetta degli attrezzi con 12 parti e con dispense pedagogiche con riferimento ai curricula provinciali attraverso il laboratorio di apprendimento Eduspace – un'unità di lavoro della Libera Università di Bolzano. La fase



INFO BOX

FUNDING TYPE

Erasmus+ Knowledge Alliances – Grant Agreement 2020-1-DE02-KA226-008104

DURATION

03/2021 – 06/2023

RESEARCH AREA

IN-IN Education: INnovative and INclusive Education

UNIBZ RESEARCH TEAM

Prof. Ulrike Stadler-Altman (PI),
Dr. Susanne Schumacher

PROJECT PARTNERS

Børneinstitution Holluf Pile-Tingkær (DK),
Klax Berlin GmbH (DE), Vytautas Magnus University (LT)

WEBSITE

im-not-a-robot.eu

SELECTED PUBLICATIONS

+ Stadler-Altman, U.; Schumacher, S. (2022), I'm not a Robot – Report on the Implementation of AI in Early Childhood Education. In M. Carmo (ed.), *Proceedings of END 2022, Education and New Developments*, Volume 1, WIARS Portugal, Science Press, pp. 155–159.
[doi.org 10.36315/2022v1end033](https://doi.org/10.36315/2022v1end033)

di implementazione nei distretti della scuola materna inizierà nel settembre 2024 con il sostegno del gruppo di lavoro Media Education Direzione Istruzione e Formazione tedesca.



← © Susanne Schumacher



Research Projects

DID – New Perspectives on Diphthong Dynamics

The overarching objective of the proposal is to further the understanding of the inner temporal dynamics of diphthongs across a range of diphthongs and for two different languages. Despite diphthongs being part of many vowel inventories in the world's languages, there is a dearth of knowledge about what the defining characteristics of diphthongs are and how to capture theoretically and empirically their oscillating identity between unity and duality.

The proposed work will capitalise on the diphthong inventories of Tyrolean and Sardinian, as well as on recent advances in data quantification methods in the phonetic sciences to significantly deepen the knowledge of diphthong dynamics in speech production. The work carries innovative potential in several aspects: For one, the project provides the first comprehensive acoustic phonetic description of the vowel inventories of two phonetically understudied languages. The vowel inventory for Tyrolean and for Sardinian will be acoustically recorded: 40 speakers per language, divided into two age groups to be able to observe possible ongoing sound changes.

Secondly, the aim of the project is to exploit state-of-the-art statistical techniques for the analysis of time series data to study the inner temporal structure of the diphthongs. These analyses are designed to open new vistas on

the question whether diphthongs can be understood as a sequence of two vocalic gestures, coarticulated to varying degrees, or whether the target of diphthong production is a dynamic transitional movement through the vowel space.

Thirdly, the project will make available to the scientific community a database with the recordings, as well as speech technological tools that will facilitate future research on these languages. This operation will leverage the possibilities of training large language models for speech recognition even for low-resource languages.

Expanding the knowledge of diphthong dynamics is crucial to deepening our theoretical and empirical understanding of (1) types of vowels and synchronic vowel systems, (2) the evolutionary paths vowel systems take diachronically, (3) theories of speech production, which rarely deal with diphthongs.



INFO BOX

FUNDING TYPE

Joint Projects – Deutsche Forschungsgemeinschaft – South Tyrol / Alto Adige

DURATION

01/2023 – 12/2025

RESEARCH AREA

Languages and Multilingualism in South Tyrol

PRINCIPAL INVESTIGATOR

Prof. Alessandro Vietti

PROJECT PARTNER

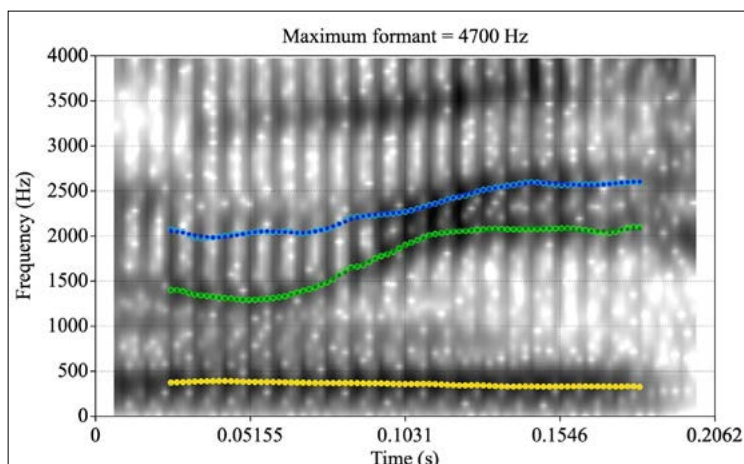
Ludwig-Maximilians-Universität München

WEBSITE

www.phonetik.uni-muenchen.de/forschung/DID/did.html

SELECTED PUBLICATIONS

+ Vietti, A., & Mereu, D. (2023). Mid vowels at the crossroads between standard and regional Italian. *Sociolinguistica*, 37(1), 17–39.



↑ Spectrogram of the diphthong vowel [ui] in German dialect 'Tuifl' (German 'Teufel')



Research Projects

E⁴ – Higher Educational Tools for an Embodied & Creative Education on Energy

E⁴ aims at both supporting and reforming teacher education at academic level in matters concerning energy, by training University professors charged with teacher education (Initial Teacher Education, prospective and in-service teacher education at primary and lower secondary school level) in new imaginative teaching methods to facilitate the transfer of energy-related scientific knowledge to students. Academics will be able to develop lectures based on teaching approaches encouraging imagination and creativity to science education, so to transfer these practices to future and in-service teachers. They, in turn, will be able to integrate these approaches in their school lessons, in order to adapt to the new generation's learning capacities and needs, and to educate and sensitise their students to take care of the environment and to help tackle climate change and promote conscious technological change.

There is a need for universities charged with teacher education (Educational Science Faculties) to reach out to the wider community and become meaningful partners in a network with companies, organisations and institutions working on our energy future.

On this scenario, it is intended to create (1) innovative materials for teacher education to upskill university professors and school-



teachers with new narrative and imaginative approaches to teaching and science education and (2) a network of academic institutions charged with teacher education and external stakeholders dealing practically with energy matters. The results of this project – both learning materials for university courses and access to material, knowledge, and opportunities provided by the network – shall be made available on a dedicated web platform.



INFO BOX

FUNDING TYPE

Erasmus+ Knowledge Alliances – Grant Agreement 2021-1-IT02-KA220-HED-000032259

DURATION

02/2022 – 02/2025

RESEARCH AREA

Educational Contexts, Disciplines and their Teaching in the Nursery and Primary School

PRINCIPAL INVESTIGATOR

Prof. Federico Corni

PROJECT PARTNERS

Università di Modena e Reggio Emilia, Nicolaus Copernicus University, Universitat de València, Dublin City University, InEuropa Srl, Innovation Technology Services LTD, ESCIENCIA scientific events

WEBSITE

energy4teachers.eu

SELECTED PUBLICATIONS

+ Puecher, C., Altiero, T., Amoroso, M., Cantó Domènech, J., Fuchs, H.U., Giovannini, I., Grazzini, B., Jaime Lahoz, I., Karwasz, G., Piccinetti, L., Santoro, D., Wyborska, K., Corni, F. (submitted). E⁴: Professional learning for science teachers on using imaginative tools for teaching about energy. *Journal of Physics: Conference Series*.

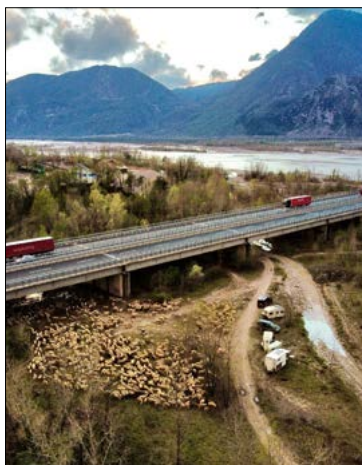


Research Projects

Globale Weiden – Ethnografische Erkundungen alpiner Graslandverbindungen

Das Projekt betrachtet das Weideland als einen nicht-menschlichen Akteur, der es uns ermöglicht, die menschliche Welt besser kennenzulernen, indem eine vergleichende ethnografische Studie über Viehzuchtpraktiken, Weideland und den internationalen Lebensmittel- und Tiermarkt in der Schweiz und Nordostitalien durchgeführt wird.

Was kann man über Weidegrasland lernen, wenn man es als Teil einer Kette von Beziehungen betrachtet, die Menschen, Tiere und den internationalen Markt für Tierfutter miteinander verbindet? Wie reagieren Graslandschaften, die nach wie vor zu den größten Biomen der Welt gehören, auf die sich verändernden menschlichen Praktiken? Wie interagieren Weiden, Tiere, Hirten, Bauern, der Tiermarkt und die internationale Futtermittelindustrie; in welchen



Abhängigkeiten stehen sie zueinander? Und schließlich: Welche Wechselwirkungen bestehen zwischen lokalen und globalen Akteuren und Akteurinnen, wie z. B. Kraftfutterherstellern, und wie können alle möglichen Elemente, die entfernt mit dem Grasland verbunden sind (z. B. Menschen, Tiere, Böden, Gras, Fleisch, Kraftfutter...), einen Blick über die Grenzen der Weiden ermöglichen?

Zur Beantwortung dieser Fragen werden multi-sited und multi-species Feldforschungen in der Schweiz (Graubünden, Wallis und Jura) und im Nordosten Italiens (Südtirol und Friaul) mit verschiedenen Akteuren und Akteurinnen durchgeführt: Hirten und Hirtinnen, Bauern und Bäuerinnen, Tieren, Grasland sowie mit Vertreter*innen und Vertreterinnen des Tiermarktes und der Futtermittelindustrie.

Diese bahnbrechende sozial-anthropologische Studie über Grasland reagiert auf die alarmierenden Erkenntnisse von Ökologen über den Verlust der biologischen Vielfalt sowie auf die „UN-Dekade zur Wiederherstellung von Ökosystemen“ (2021–2030), die sich auf Grasland-Biome konzentriert. Am Beispiel der Weidelandschaften in der Schweiz und im Nordosten Italiens sollen die wesentlichen Faktoren ermittelt werden, die das Überleben der Weiden begünstigen.



INFO BOX

FUNDING TYPE

Joint Projects – Swiss National Science Fund – South Tyrol/Alto Adige

DURATION

01/2023 – 12/2025

RESEARCH AREA

Socio-Cultural Worlds: Institutions, Welfare, Social Professions, Environment and Population

PRINCIPAL INVESTIGATOR

Prof. Elisabeth Tauber

PROJECT PARTNER

HES-SO Valais Wallis (Switzerland), Frobenius Institute (Frankfurt a.M. Germany), University of Neuchâtel, (Switzerland, CEDD-agro-eco-clim, Switzerland

WEBSITE

hevs.ch/en/projects/global-pastures--ethnographic-explorations-of-alpine-grassland-connections-206008



Cooperation and Internationality

La Facoltà ha creato negli anni una fitta rete di collaborazioni a livello regionale, nazionale e internazionale, con università, enti di ricerca e con diverse istituzioni pubbliche e private.

Der Forschungsbereich **Lebenslanges Lernen – Bildungs – und Entwicklungsprozesse mit Schwerpunkt auf Südtirol** hat seine internationalen Kooperationen in Forschung und Lehre mit verschiedenen Universitäten intensiviert, z. B. im Rahmen eines Euregio-Projekts mit den Universitäten Innsbruck und Trient sowie im Rahmen eines Forschungsprojekts zum Lernen in der Grundschule aus der Perspektive von Kindern in Kooperation mit dem Institut für Demokratische Entwicklung und Soziale Integration in Berlin. Darüber hinaus arbeiteten Forschende aus dem Forschungsbereich mit der PH-Graubünden, der Uni Innsbruck und der PH-Zürich zum Thema bildungsbiographische Verläufe im ländlichen Raum zusammen. Das Erasmus+ Projekt „GovInEd“ in Kooperation mit der pädagogischen Hochschule Steiermark begann 2022 und wurde 2023 fortgesetzt. Für die regionale Kooperation kann zudem die Zusammenarbeit mit den deutschen und italienischen Schul- und Kindergartendirektionen hervorgehoben werden, insbesondere die Zusammenarbeit mit der Landeskinderkardendirektion deutschsprachiger Kindergärten im Projekt „Wege in die Bildung 2030 – Offengestaltete Pädagogik in Südtirols

Kindergärten“, die Beratung, Weiterbildung und Forschung durch die unibz enthält.

L'area di ricerca **IN-IN Educa-tion: Didattica innovativa e inclusiva**, pone attenzione sia al contesto territoriale (Uffici Scolastici Provinciali, Ufficio Giovani Provinciale), sia alla cooperazione internazionale (Per il progetto finanziato da DAAD sull'internazionalizzazione Univ. Vechta e Univ. di Tallin; cooperazione con l'Università di Vienna, Facoltà di Scienze dell'educazione e Facoltà di Architettura Bibab sulla qualificazione degli spazi scolastici). Questo legame tra territorio ed internazionalità si riflette nelle attività di ricerca (PRIN con le Università del Salento, di Roma Tre, di Padova e di Perugia, e vari progetti partiti con diverse università straniere, tra cui in particolare le università di Oldenburg, Chemnitz, Leipzig e Paderborn) e nell'ambito di quelle di terza missione realizzate dai componenti dell'Area. Nel corso del 2023 sono stati presentati e sviluppati progetti che guardano alla qualità dell'educazione e allo sviluppo sostenibile e che affrontano problematiche legate all'educazione inclusiva e alla riduzione delle disuguaglianze sociali. Attraverso le reti del laboratorio Edenlab, è stata rafforzata la ricerca sullo sviluppo degli spazi scolastici a livello nazionale cooperando con diverse comunità scolastiche e aziende (GAM – Gonzagarredi, MEMO, Comune di Modena, Associazione Amici del Cortile Salso-maggiore, IC fondo Revò, IC A.

Moro Terni, Fondazione Famiglia Materna Rovereto, IC Samugheo (OR) IC Trento 3, IC Pessano con Bornago).

L'area **Psicologia e promozione del benessere nei contesti educativi** ha in corso collaborazioni di ricerca con molteplici istituzioni. A livello nazionale, si contano interazioni con vari istituti italiani (tra cui: le Università di Padova, Bologna, Foggia, Roma “La Sapienza”, “RomaTre”, “CaleidoScuola”, CNR di Genova, ...) con i quali sono in corso progetti di ricerca di interesse nazionale (PRIN) e sono stati presentati progetti nelle aree della salute, dell'innovazione e della qualità di vita. A livello internazionale sono in corso collaborazioni con istituti da tutti e 5 i continenti. In particolare, intercorrono rapporti da vari anni con la Flinders University (Australia), con il Leeds Trinity College (UK), con l'Universidad Catolica del Maule (Cile) sui temi del cyberbullismo, benessere studentesco e le life-skills. Nell'ultimo anno sono state attivate relazioni con l'Artec Ltd. (Giappone), Northern Illinois University (USA), L'Universidad de Castilla-La Mancha (Spagna), la Johannes Gutenberg-Universität Mainz (Germania) rispettivamente sui temi dei giochi educativi, il pensiero computazionale, i neuromiti e la memoria prospettica.

The Area **Languages and Multilingualism in South Tyrol** is part of several national and international networks: two such

examples are LinE (Language in education), a large international research network led by the University of Trento, and Language Documentation, comprising the universities of Napoli "L'Orientale" and Tuscia-Viterbo, as well as the NGO Ethnorêma. Otherwise, international joint projects see the cooperation with LMU München and Zürich and national projects see the cooperation with a large number of universities, such as Modena e Reggio Emilia, Bologna, Pavia, Pisa, Udine, Verona and others.

Researchers of the Area **Aesthetic Experiences and Communication** report several collaborations in the field of exercise and sports sciences with universities in Europe, USA, Australia, Africa and Latin America. These collaborations are connected to international project partnerships (FitBack, ePhyLi, BMC, MYSport, MOBAK) and to important leadership roles in international (AIESEP) and national (SISMeS) scientific societies. Collaborations at local level with educational and sports institutions are also established. In the domains of visual arts and music, collaborations at international (IMS, IHRIM activities; Universities and Research institutes in Great Britain, Poland, Swiss, Vatican City) and at national level (UniVe, UniTn, Università Cattolica and PRIN projects), as well as cooperative activities with educational institutions in the provincial area (e.g. primary and middle schools in Bressanone-Brixen, Bolzano-Bozen, Fortezza-Franzenfeste) are highlighted.

I ricercatori dell'area **Ambiti formativi, discipline e loro didattica nella scuola** hanno proseguito e rafforzato le cooperazioni con gli stakeholders locali, in particolare le sovrintendenze scolastiche, le scuole e le reti di scuole sul territorio. Questo si è concretizzato in numerosi progetti di implementazione e disseminazione dei risultati delle ricerche, percorsi di formazione per insegnanti, attività con gli allievi. Sono inoltre proseguite le cooperazioni con ricercatori di diverse aree europee ed extra-europee legate ai progetti di ricerca e ai network propri dell'Area. In particolare si possono citare il progetto "LeMa – Lernstandserfassung Mathematik" in collaborazione con la Deutsche Bildungsdirektion/Inspektorat für Integration, e il progetto LEMA D; la serie di seminari "Digitales LehrerInnenzimmer" organizzati dalla Deutsche Bildungsdirektion/Pädagogische Abteilung, il gruppo di lavoro con gli insegnanti dei Kindergarten della Pustertal e della Eisacktal e l'organizzazione dell'incontro Brima-Primar; il lavoro per la revisione delle Indicazioni Provinciali per la scuola Italiana, il gruppo di lavoro con gli insegnanti di Vipiteno, la cabina di regia "Effetto Scuola" per le scuole della provincia; il lavoro con il Kindergartensprengel Mühlbach sul tema "Physik und Chemie im Kindergarten", la collaborazione con la Pädagogischen Abteilung der Deutschen Bildungsdirektion sul tema "Roten Faden Naturwissenschaften", il progetto

"Promemoria Auschwitz". Le cooperazioni internazionali coinvolgono i partner dei progetti Erasmus+ e diverse altre istituzioni europee ed extra-europee, tra le altre, la Pädagogische Hochschule Salzburg, la rete finanziata dall'International group for Psychology of Mathematics Education, comprendente ricercatori di Argentina, Israele, Australia, Canada, il Working Group su Assessment in Mathematics dell'European Society for Research in Mathematics Education.

L'area **Dinamiche socio-culturali: istituzioni, welfare, professioni sociali, ambiente e popolazione** ha implementato le collaborazioni con prestigiose Università ed enti di ricerca del Marie Curie Doctoral Network Consortium, così come i rapporti con organizzazioni internazionali (International Social Theory Consortium, International Sociological Association, European Association of Schools of Social Work, European Social Network, Laboratory of Longevity and Ageing, Sexuality and Social Work, Mediterranean Association for the Sociology of Tourism), nazionali (Consiglio Nazionale dell'Ordine degli Assistenti Sociali, Società Italiana di Servizio Sociale, Osservatorio LGBT; Rete antiviolenza, Associazione italiana per lo sviluppo sostenibile) e locali (tra cui enti ed uffici pubblici, istituzioni culturali, organizzazioni del terzo settore e associazioni).



Research Events

18 – 21 gennaio 2023

XVIII edizione delle **Giornate di Neuropsicologia dell'Età Evolutiva** (GNEE). The conference covered different topics, from embodied cognition, to epigenetics, to empathy and emotional regulation.

9 – 11 February 2023

XIII Edition of the **Cognitive Science Arena** (CSA). A conference where young researchers had the opportunity to present their work in a friendly and cooperative environment. The goal of CSA was to provide a competent and useful “boot camp” for young researchers.



11 – 12 May 2023

Scuola Atelier Schule – Learning Environment Applications. International conference linked to the EU Project LEA (Learning Environments Applications). A cross-disciplinary conference about pedagogy, architecture and design.

17 – 18 July 2023

Inspiration for and design of a Seminar on Embodiment in Education. A workshop with 20 participants, 6 keynotes, and 3 workshops aimed at bringing together researchers and practitioners in the field of Embodied Cognition who are interested in Embodiment in Education.

www.unibz.it/en/events/1st-specialist-seminar-on-embodied-education

14 October 2023

BRIMA-Primar for teachers of the region. The conference counted over 400 participants, 2 keynotes, and 16 workshops both in Italian and in German.

23 – 24 novembre 2023

Schule als Spielraum – Scuola spazio ludico. Una conferenza internazionale che si è posta come cornice di discussione sulle teorie, le ricerche e le esperienze nel campo della pedagogia del gioco e della didattica ludica.

24 November 2023

International symposium **Singing and inclusion**, with 12 speakers and 104 people registered for the conference. The symposium offered a reflection on the relationship between singing and inclusion in different social and geographical contexts. World-renowned experts in the field of music education and, in particular, singing education were hosted.

30 November – 2 December 2023

8th International Conference: EDUCAZIONE, TERRITORI, NATURA – Bildung, Erde, Natur – Education, Earth, Nature, Zerosciup, with 200 participants. The conference dealt with the questions: What can we do for the sustainable development of the Planet's being? Can we change the way we live? Can we adapt to the Planet's changes? Should we change the way we teach and learn? Should we learn to connect rather than disconnect? And, can we imagine ecological and sustainable ways of inhabiting the Earth?



Competence Centre for the Management of Cooperatives

The Centre fosters creation and circulation of managerial knowledge and skills to strengthen the capacity of cooperatives to create value for society, in concert with South Tyrolean stakeholders concerned with the development of the cooperative system as well as with national and international research partners.

The first research area of the Centre explores the institutional role and regional significance of cooperatives in light of global transformations. The second area deals with the leadership, management and corporate governance of cooperatives. The third research area concerns the personnel management in cooperatives.

Keywords: cooperatives, regional development, management, governance, local community

In Director's Words

INTERVIEWED BY ROSMARIE HAGLEITNER

Prof. Lang, to what extent has the Competence Centre collaborated with other academic institutions or research entities in the past year?

The Centre cooperates with regional, national, and international research partners on developing cooperative enterprises. Among others, it collaborates with the European Research Institute on Cooperative



Director — Prof. Richard Lang

and Social Enterprises (EU-RICSE) in Trento. In September 2023, a workshop entitled 'The Evolution Of The Cooperative Form' was co-organised with EURICSE and the Office for Cooperatives of the Province of Bozen at the 9th EMES International Research Conference on Social Enterprise in Frankfurt. This workshop discussed innovative cooperative initiatives addressing societal challenges such as food production, climate change, aging populations, and long-term unemployment.

In October 2023, the Centre partnered with Università degli Studi di Napoli Federico II for a conference at unibz on social cooperatives for integrating disadvantaged people. With Prof. Richard Lang becoming

Director in 2024, the Centre increased its research activity and engaged in two consortia of European research partners to develop EU research funding proposals.

What have been the impacts of these collaborations on the Competence Centre's research?

Collaborations with unibz researchers during the Centre's creation phase helped define its preliminary research agenda and align with institutional stakeholders' expectations. Initial collaboration with EURICSE and EMES provided visibility in national and European networks for social economy and social enterprises, laying the foundation for future joint

research and dissemination activities. As a result of collaborations with European partners, the Centre participated in two major EU funding proposals: Marie Skłodowska-Curie Actions (MSCA) on rural entrepreneurship and HORIZON Research and Innovation Actions on the social economy's role in a sustainable future.

What are the main research objectives or projects that the Competence Centre intends to pursue in the upcoming academic year?

Are there new directions or research areas that the Competence Centre plans to explore? With further recruitment of researchers, the Centre will continue to conduct internationally competitive research and knowledge transfer on cooperative management.

Its research will explore entrepreneurship, innovation, and competitiveness in the cooperative sector, focusing on regional contexts and social, ecological, and economic challenges. The Centre will collaborate with South Tyrolean institutions and national and international research partners. Participation is planned in consortia for EU funding programmes, such as COST Actions and HORIZON 'New European Bauhaus'. Centre members will engage in international scientific networks and conferences such as EMES, ENHR, and IRIS. Research themes will include innovative cooperative housing models, citizens' cooperatives and local development, generational change in cooperatives, sustainability reporting for cooperatives, and comparisons of cooperative banking models. ■



Research Project

OISIS — Observatory on Social Innovation and Social Enterprise

This project had been triggered by the strong in-terest raised by the Department for the Development of Cooperatives in the Autonomous Province of Bozen-Bolzano and corresponds to the University's Third mission. The project had three major goals and related activity areas.

- + Identification and study of the ecosystem of social innovation: The project applied methods of analysis of social networks and innovative sampling techniques for the description of complex ecosystems. The possibility to understand the potentials of an ecosystem, and to design policies that support innovation and entrepreneurship with social impact largely depends on the description of the ecosystem. On this regard, this project promised to inject fresh reflections on the way social innovation eco-systems are represented and evolve overtime.
- + Open innovation for social innovation: Open innovation is the dominant paradigm for the production of innovation, especially in technologically advanced areas. The observatory intended to consider, according to some recent trends emerged in international literature, the potential that the Open innovation paradigm offers to the development of social innovation. Most of the innovation with social impact are deeply rooted on the engagement of a network of



stakeholders; nevertheless, so far, the relational nature of social innovation has not been explicitly expressed as an open innovation phenomenon.

- + Growth and third sector. Many cooperatives and social enterprises are born and remain small, thus limiting the impact of their actions. According to the growth mindset emerging perspective, development is not simply oriented to profit maximisation. Growth is also connected to a learning mindset that pushes further individuals and organisational goals in order to have an impact, and to tackle typically unresolved social problems.

An important element of the OISIS project was the co-organisation of the "Social Business Model Clinic", open to social cooperatives to analyse their value proposition and develop a stronger social business model, with a view to developing management skills in cooperatives. The results were



INFO BOX

FUNDING TYPE

Autonomous Province of Bozen-Bolzano

DURATION

06/2020 – 06/2023

RESEARCH AREA

Entrepreneurship and Innovation

UNIBZ RESEARCH TEAM

Prof. Alessandro Narduzzo (PI), Dr. Valeria Cavotta

PROJECT PARTNERS

Autonomous Province of Bozen-Bolzano, Coopbund Alto Adige Südtirol, Raiffeisenverband Südtirol, Cooperdolomiti, Associazione Generale delle Cooperative Italiane (AGCI)

WEBSITE

ois.projects.unibz.it

SELECTED PUBLICATIONS

- + Narduzzo, A., Menini, C., & Klotz, M. (2023). Innovation and transformation paths of social enterprises: perspectives and experiences. Paper presented at the XVII Scientific Colloquium on Social Enterprises. IRIS Network, Perugia, Italy, June 9, 2023.

also presented at the IRIS Scientific Colloquium on Social Enterprises, held on 9 and 10 June in Perugia, Italy.



Cooperation and Internationality

The Competence Centre pursues a multidisciplinary research approach and actively cooperates with regional stakeholders and institutions concerned with the development of the cooperative system as well as with national and international research partners. These collaborations are intended to help develop viable and forward-looking solutions for the different cooperative sectors in South Tyrol and the European region Tyrol-South Tyrol-Trentino.

Important regional stakeholders of the Centre are the Office for Cooperatives of the Province of Bozen and the four major cooperative associations that are active in South Tyrol. Regular meetings and consultations are held with these stakeholders to ensure alignment of the Centre's objectives with the needs of cooperatives in South Tyrol. The cooperation between the Centre and these stakeholders covers different areas, such as workshops, conferences and other dissemination events at the Centre, but also research projects.

The Centre further collaborates with the European Research Institute on Cooperative and Social Enterprises (EURICSE) in Trento. For instance, in September 2023, a Workshop entitled "The Evolution Of The Cooperative Form. Towards A Stronger Community Commitment" was co-organised with EURICSE and the Office for Cooperatives of the Province of Bozen at the EMES International Research Conference on Social Enterprise in Frankfurt.

The workshop aimed to give visibility to innovative cooperative initiatives that have emerged to encounter unmet needs and increasingly pressing challenges over the last decades, focusing on community building, food production, climate change, aging populations, or long-term unemployment. Moreover, the workshop focused on the processes which have led to the creation and transformation of cooperatives, paying particular attention to the engagement of local communities, as well as on governance models and funding sources.

Another international stakeholder of the Centre is the IGA (Internationales Institut für Genossenschaftsforschung im Alpenraum) which held an annual conference in Bolzano in autumn 2023 to which members of the Centre contributed. In addition, Prof. Agstner, as a representative of the Centre, was appointed as a member of the IGA advisory board.

Members of the Centre engage in various international scientific networks and respective conferences such as of the EGOS (European Group for Organisational Studies), EMES (Research Network for Social Enterprise), ENHR (European Network for Housing Research) and IRIS (Network italiano degli Istituti di Ricerca sull'Impresa Sociale).

Another collaborative activity of the Centre was the Social Business Model Clinic in the framework of the OISIS project which aimed at developing managerial

skills within cooperatives and involved social cooperatives for the analysis of their value proposition and the development of a stronger social business model.



Research Events

5. Oktober 2023

Die neuen Möglichkeiten der sozialen Zusammenarbeit: An der Konferenz nahmen verschiedene Vertreter und Vertreterinnen von Sozialgenossenschaften aus ganz Italien sowie akademische Experten und Expertinnen auf diesem Gebiet teil. Der Schwerpunkt der Veranstaltung lag auf der Vermittlung von innovativen Best-Practice-Beispielen von Sozialunternehmen und insbesondere auch Sozialgenossenschaften für die Arbeitseingliederung von benachteiligten Menschen in der Gesellschaft. Während der Konferenz wurden neue Erfahrungen und Praktiken aus einer multidisziplinären Perspektive erörtert, um ein Studienfeld für die Entwicklung innovativer Lösungen in lokalen Kontexten zu schaffen. Im zweiten Teil der Veranstaltung hatten die Teilnehmer und Teilnehmerinnen die Möglichkeit, Ideen mit den verschiedenen Referenten und Referentinnen zu diskutieren, sich zu vernetzen, die in den Vorträgen behandelten Themen zu vertiefen und auch ihre eigenen Erfahrungen vorzustellen. Die Konferenz wurde in Zusammenarbeit mit den regionalen Stakeholdern des Zentrums organisiert, allen voran dem Amt für Genossenschaftswesen der Autonomen Provinz Bozen.

unibz.it/de/events/

[le-nuove-frontiere-della-cooperazione-sociale](https://unibz.it/de/events/le-nuove-frontiere-della-cooperazione-sociale)

11 September 2023

The Evolution Of The Cooperative Form. Towards A Stronger Community Commitment: This workshop was co-organised by the Centre together with EURICSE at the 9th EMES International Conference on Social Enterprise in Frankfurt, Germany. This session featured and discussed innovative cooperative initiatives that address pressing challenges such as climate change, aging populations, or long-term unemployment. Against this background, a discussion forum with experts was held, gathering experts and cooperative representatives from Italy, Germany and France, encouraging a critical reflection on the diverse patterns of evolution of such cooperatives. The focus was to better understand processes that have led to the creation and/or transformation of such cooperatives, including community engagement, governance issues and funding sources.

emes.net/events/conferences/9th-emes-international-research-conference-on-social-enterprise/

Competence Centre for Economic, Ecological and Social Sustainability

The Centre is a multidisciplinary and cross-faculty centre of excellence, involving professors and researchers from Italian and foreign universities. The main objective is to study the economic, environmental, and social aspects of policies and actions aimed at sustainable development in South Tyrol and beyond.

In 2023, sustainability in South Tyrol reached a key moment with the implementation of the “Climate Plan South Tyrol 2040,” highlighting the need for a comprehensive strategy to achieve climate neutrality and sustainability goals. The Centre supports these goals by promoting research and education in sustainability, aligning with the plan’s ambitions.

In the research area **Economic Sustainability** (coordinator: Prof. Massimiliano Bonacchi), the Centre has helped businesses in South Tyrol and Italy enhance their sustainability practices. For example, it assisted Manteco in measuring and reporting on sustainability in their sustainability report. Additionally, the Centre contributed to unibz’s curriculum with a sustainability reporting module and organised events to develop skills in sustainability reporting and certification.

In the research area **Social Sustainability** (coordinator: Prof. Aart van Bezooijen), the Centre organised significant events like the “Fashion For Future” conference on sustainable fashion and the UPCON – Upcycling convention.



Director — Prof. Elisabeth Gsottbauer

These events not only enhanced local and regional consciousness of both environmental and social sustainability but also align closely with the Climate Plan’s goals of promoting sustainable practices across all sectors.

In the research area **Environmental Sustainability** (coordinator: Prof. Camilla Wellstein), the Centre is committed to high-level research and community engagement on ecological challenges. It hosted a conference on sustainable pasture management and the “Climbing for Climate” event, attracting researchers, stakeholders, and the public alike to discuss issues of forest conservation and the mitigation of environmental degradation.

The Center was strengthened with new partnerships, such as Ulrich Atz from New York University as a visiting scientist and the appointment of Elisabeth Gsottbauer as an endowed professorship in 2024. Looking ahead, the Centre’s integrated approach across economic, social, and environmental sustainability will continue to drive progress towards climate neutrality and sustainability goals at all levels.

In Directors's Words

INTERVIEWED BY SUSANNE PITRO

Prof. Bonacchi, was waren die wichtigsten Ziele des Kompetenzzentrums im vergangenen Jahr?

Bonacchi: Unser wichtigstes Anliegen war, die lokale Wirtschaft durch gezielte Initiativen bei der Umsetzung nachhaltiger Geschäftspraktiken mittels ESG-Integration zu begleiten und Unternehmen auf zukünftige Vorschriften wie die „Corporate Sustainability Reporting Directive (CSRD)“ vorzubereiten. Darüber hinaus geht es uns darum, das Bewusstsein für Nachhaltigkeit bei Studierenden, Stakeholdern und in der gesamten Bevölkerung zu erhöhen; beispielsweise mit Veranstaltungen wie „Fashion for Future“ oder „Climb for Climate“.

Auf welche Erfolge kann das Kompetenzzentrum zurückblicken?

Bonacchi: Das Kompetenzzentrum hat seine Aktivitäten, auch dank der Rekrutierung neuen Personals, stark ausgeweitet. Ein bedeutender Meilenstein war die Unterzeichnung des fünfjährigen Rahmenvertrags „Sustainable Development of Val di Fiemme-Fleimstal (FIEMS)“ mit der Fiemme Per ETS Foundation, der die Basis für Forschungsprojekte und Kooperationen für nachhaltige Entwicklung legt. Mit Confidi Alto Adige und der Handelskammer Bozen führte das Zentrum Forschungsaktivitäten zum Thema „Sustainability in Business: Competitive and Financial Advantages“ durch. In diesem Rahmen wurden 5 lokale Unternehmen bei ihren



Prof. Massimiliano Bonacchi

Nachhaltigkeitsstrategien unterstützt. In eine ähnliche Richtung zielte ein Forschungsprojekt mit Manteco SpA zum Thema „Sustainability Reporting: New GRI Standards and Integration of the SDGs“. Das Zentrum hat einen PNRR-Zuschuss im Rahmen von Spoke 4 „Sustainable Finance“ gewonnen, der weitere F&E in diesem wichtigen Bereich unterstützen wird. Für Angestellte der Südtiroler Sparkasse haben wir ein Schulungsprogramm zu Nachhaltigkeitsberichterstattung und nachhaltige Finanzen entwickelt und durchgeführt.

Frau Prof.in Gosttbauer, was wird im kommenden akademischen Jahr im Fokus stehen?

Gosttbauer: Universitätsintern wird es in Zusammenarbeit mit anderen Mitgliedern der Universität darum gehen, die Integration des Themas Nachhaltigkeit in unser Lehrangebot weiter zu verbessern sowie interdisziplinäre Forschungs-

projekte und Outreach-Bemühungen zu fördern. Darüber hinaus planen wir, uns als interdisziplinäres Kompetenzzentrum weiter mit Mitgliedern aus allen Fakultäten zu vernetzen. Extern planen wir, unser Fachwissen weiterhin durch die Organisation und Teilnahme an öffentlichen Veranstaltungen sowie durch Kooperationen mit lokalen Stakeholdern wie Unternehmen, Wirtschaftsverbänden und der öffentlichen Verwaltung zu verbreiten und unsere Beratungsrolle in Gremien wie dem Südtiroler Klimabürgerrat fortzuführen. Unter meiner Leitung werden wir einen neuen Forschungsschwerpunkt einführen, der sich auf Klimapolitik und Strategien zur Förderung nachhaltigen Verhaltens konzentriert. Ein spezifisches Projekt, an dem ich arbeite, beinhaltet die Förderung von „grünen Jobs“, um junge Menschen für Karrieren in nachhaltigen Branchen zu ermutigen und vorzubereiten. ■



Research Project

SUST_MANTECO – Sustainability reporting: new GRI standards and SDGs integration

With the recent approval of the Corporate Sustainability Reporting Directive (CSRD), the European Union has superseded the previous Directive known as the Non-Financial Reporting Directive (NFRD). Pending the adoption of a single European standard, the GRI principles have established themselves as a global standard for sustainability reporting. The latest revision of the GRI standards introduced changes both in terms of structure and content and entered into force at the beginning of 2023. The evolution of legislation and standards have contributed to increasing corporate responsibility and transparency towards the stakeholders. By means of sustainability reporting it is possible to measure the impact generated by an activity on the environment and on society as a whole. The analysis of the impact of the activities can be deepened by

disclosing the company's contribution to the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030.

The project aims to examine the phases of the transition process of Manteco's sustainability reporting to the new version of the GRI standards to be used for the preparation of sustainability reports and to investigate the process of integrating the Sustainable Development Goals into corporate strategy and reporting. More in detail, during the first phase of the project, the research team carried out a preliminary analysis of the existing sustainability report, the organizational structure of the company and the sustainable development activities already implemented.

In the second phase, the reporting areas that required greater improvements were identified. The main goal was to increase the quality of disclosure and align with the new GRI standards in force from 1 January 2023.

Further, all company's activities referred to material topics were analysed and mapped based on their contribution to the relevant sustainable development goals (SDGs) defined by the United Nations.

Lastly, a gap analysis of the governance area was carried out. The research team examined the current organisational structure, codes of conduct and existing policies and identified potential areas for improvement.



INFO BOX

FUNDING TYPE
Research Contract
DURATION
05/2023 – 07/2023
RESEARCH AREA
Economic Sustainability
UNIBZ RESEARCH TEAM
Dr. Nicola Dalla Via (PI),
Prof. Massimiliano Bonacchi
PROJECT PARTNER
Manteco S.p.A.

Overall, the project made it possible to spread the culture of sustainability and to understand the most critical issues faced by family businesses in measuring sustainability performance and in providing sustainability disclosure.





Cooperation and Internationality

The Competence Centre continued the cooperation with Confidi Alto Adige and Camera di Commercio di Bolzano with the aim of disseminating knowledge about business related sustainability topics and support the transition of selected local companies towards a sustainability-oriented business model.

Further, the Centre applied and won a cascade grant issued by Ca' Foscari University and referred to the Spoke 4 Sustainable Finance topics – project GRINS (Growing Resilient, Inclusive and Sustainable).

In connection with the organisation of events the Centre collaborated with the Forestry Department of the Autonomous Province of Bolzano and Assoimprenditori Alto Adige – Unternehmerverband Südtirol.

The Center established a 5-year research frame agreement with the Fondazione Fiemme Per ETS aiming at future research cooperations, joint actions and synergies on sustainability topics related to unibz and the territory of Val di Fiemme.

The Centre collaborated with BASIS Vinschgau-Venosta in Schlanders, KAUZ – laboratory for climate justice as an international partner, the Citizen Cooperative Obervinschgau, and unibz – Faculty of Design and Art to co-organise the annual conference “By Design or By Disaster”.

The Centre collaborated with Botteghe del Mondo – Weltläden Südtirol, OEW – Organisation for a solidary world (Organisation für Eine solidarische Welt, Brixen) and Slow Fashion Journalist Susanne Barta to co-organize the “Fashion for Future” festival.

The Centre collaborated with the organisation REX – Materials and things (Bozen), OEW – Organisation for a solidary world (Brixen), and unibz – Faculty of Design and Art to co-organise UPCON – Upcycling Convention in Brixen.

The Centre collaborated with the VIVO garden student initiative to organise a seminar entitled “Creative Composting – Communities, Circularity and Microorganisms”.

A guest researcher, Ulrich Atz from NYU, New York was visiting the Centre in October 2023.

The centre collaborated with sustainability managers from national and international companies to organise a seminar series on “Sustainability Accounting and Integrated Reporting”. Stefania Caristia (KPMG), Cibrario Assereto, Clara (Cleary Gottlieb Steen & Hamilton LLP), Pasqualina Sacco (ARB SBPA), Cristiano Zazzara (NYU-Stern), Angelo Corsette (CDP Equity), Filippo Bocchi (HERA)



Research Events

29 March – 1 April 2023

Conference **String Figures – By Design or by disaster**. The annually held conference of the MA Eco-Social Design.

www.unibz.it/en/events/142253-string-figures



27 April – 6 May 2023

Fashion For Future Bolzano:

Thinking and acting for more sustainable and fair fashion with a social conference, materials exhibition and interactive workshops.

www.unibz.it/en/events/142475-fashion-for-future-bolzano

[bolzano](http://www.unibz.it/en/events/142475-fashion-for-future-bolzano)



19 May 2023

Workshop **Certificazioni e standards per la “misurazione” della sostenibilità delle attività economiche**. During the event, speakers discussed about contracts, technical standards and certification systems for the effective development of sustainable economic relationships.

www.unibz.it/it/events/142496-certificazioni-di-sostenibilita

30 September 2023

Event **Climbing for Climate 5: Climate, Forest and CO2** organised in South Tyrol as part of the network of Universities for Sustainable Development (RUS) and in collaboration with the Italian Alpine Club (CAI). The event was attended by approx. 25 people.

www.unibz.it/it/events/climbing-for-climate-5

12 October 2023

Conference titled **Evoluzione della comunicazione aziendale, risultati finanziari ed impatto su stakeholders**. During the conference, the speakers discussed the impact of the recently introduced Corporate Sustainability Reporting Directive (CSRD) on companies, professionals, and the banking industry. Over 60 people attended this event in person and about 100 online. The event was supported by Ordine Dottori Commercialisti of Bolzano.

www.unibz.it/it/events/evoluzione-della-comunicazione-aziendale-risultati-finanziari-ed-impatto-su-stakeholders

20 November 2023

The workshop **Financial Education in South Tyrol** focused on the topic of financial and social security education, as a tool to fight inequalities and poverty and promote fair and sustainable economic growth in response to the aging population.

www.unibz.it/it/events/financial-education-in-south-tyrol

23–24 November 2023

The conference **Moral Hazards in Sustainability Research and Policy** explored critical aspects, mystifications, insufficiencies,

and pitfalls in sustainability research and policy in an economic, legal, political, and ethical perspective.

www.unibz.it/en/events/moral-hazards-in-sustainability-research-and-policy

6 December 2023

In the seminar titled **Creative Composting – Communities, Circularity and Microorganisms**

Ayumi Matsuzaka shared several community examples of creating Terra Preta Soil substrate in various neighborhoods of Berlin.

www.unibz.it/en/events/creative-composting-all-about-communities-circularity-and-microorganisms

14 December 2023

In the seminar titled **Life Cycle Assessment of Nature-Based Production Systems** an expert on sustainability consulting from EY Switzerland presented the importance of Life Cycle Assessment (LCA) in evaluating nature-based production systems.

www.unibz.it/en/events/life-cycle-assessment-of-nature-based-production-systems

18 December 2023

Conference: **Weiden im Berggebiet nachhaltig bewirtschaften**.

The event, co-organised with AGROSCOPE Switzerland, focused on news from research and advice on climate change, pasture management, biodiversity, and marketing. Over 50 people attended the event.

www.unibz.it/de/events/weiden-im-berggebiet-nachhaltig-bewirtschaften

Competence Centre for Regional History

The Competence Centre for Regional History has historical scientific purposes, with activities on the research and mediation fields centering on the historical Tyrol and the Alpine region and aiming in particular at conducting basic historical research, intensifying scientific cooperation, and strengthening the network of regional historical research in the Alpine region. In the course of 2023, the said historical research and mediation activities were consolidated and expanded. One project was launched (ACTIVE_HIST: Persistence and Activated History: Evidence from Tyrolean WWI casualties) and several were concluded with success among them the project Frauenbiographien und Straßennamen – biographies of women and name of streets.

The Competence Centre's research activities focus on the following three research areas.

Regional Contemporary History

Coordinator: Prof. Oswald Überegger

Keywords: First World War, History of Violence, Cultures of Remembrance, Minorities, South Tyrol's Autonomy

This research area analyses regional history during the 20th century, with a special focus on history after 1945 and on historical memory cultures.



Director — Prof. Oswald Überegger

Regional History of the Modern Age

Coordinator: Dr. Francesca Brunet

Keywords: History of Mobility, Sinti and Roma, Poverty and Social Marginality, Crime and Deviance, Law and Institutions

The “long” 19th century in the Tyrolean region is the focus of this research area. On a regional level, the 19th century can be described as an elementary development phase, a “laboratory of modernity” (E. Frie), which still can be taken as a framework for our understanding of Tyrol, “Tirolizität” or “Trentinità”, and the “Tyrolean region”.

Regional Women's and Gender History

Coordinator: Dr. Siglinde Clementi

Keywords: Gender order, Periods of transition, Relational categories, Feminism, Intersectionality

Within this research area, the category “gender” is given new significance in the analysis of regional history. Since the 1970s, a differentiated view on women's and gender history has begun to take hold and to call for “gender” to be considered as a relational category in all historical epochs.



**AUTUNA — Zwischen Autonomie
und Unabhängigkeit.
Eine Emotionsgeschichte
des Südtiroler Separatismus**

Emotionen machen bekanntlich Politik. Sie haben Einfluss auf das Handeln politischer Akteure und Akteurinnen und konditionieren sogar Entscheidungen. Emotionen bestimmen auch ganz wesentlich mit, wie politische bzw. gesellschaftliche Ereignisse öffentlich wahrgenommen und interpretiert werden. Kurzum: Emotionen sind ein wesentlicher Bestandteil des Politischen und umgekehrt: Emotionen sind vielfach politisch bedingt. Dementsprechend intensiv beschäftigen sich die Historiker und Historikerinnen seit einigen Jahren mit emotionsgeschichtlichen Ansätzen, die sich als eigener, interdisziplinär angelegter Forschungsstrang in der Geschichtswissenschaft durchgesetzt haben.

Das Projekt „Zwischen Autonomie und Unabhängigkeit. Eine Emotionsgeschichte des Südtiroler Separatismus“ versucht die neuere emotionsgeschichtliche Forschung mit regionalgeschichtlichen Ansätzen zu verbinden. Es fragt nach der Bedeutung von Emotionen in der Südtiroler Autonomie- bzw. Unabhängigkeitspolitik seit 1948. Welche Rolle spielen Gefühle in autonomie- bzw. unabhängigkeitspolitischen Zusammenhängen? Und welche emotionalen Momente – man denke beispielsweise an Sigmundskron 1957 – und Argumente stechen in der politischen Geschichte

Südtirols seit Inkrafttreten des Ersten Autonomiestatuts 1948 hervor? Emotionen werden vor allem über Symbole, Embleme und Bilder transportiert. Wie ist der emotionale Gehalt rituellen politischen Handelns einzuschätzen? Und auf welche Weise werden Argumente pro oder kontra Autonomie, Unabhängigkeit und Separatismus emotional aufgeladen und untermauert? Politischer Aktivismus und Emotionen sind eng verzahnt. Welche Rolle spielen insbesondere die Medien für die regionale Protestkommunikation? Und auf welche Weise nehmen sie Einfluss auf die gesellschaftliche Wahrnehmung von Autonomie- bzw. Unabhängigkeitspolitik?



INFO BOX

FUNDING TYPE
Internal Funding
DURATION
09/2022 — 08/2024
RESEARCH AREA
Regional Contemporary History
PRINCIPAL INVESTIGATOR
Prof. Oswald Überegger



↑ Die Protestaktion auf Sigmundskron 1957.



Cooperation and Internationality

Nel 2023 il Centro di Competenza ha collaborato con svariati partner nazionali ed esteri. Prof. Oswald Überegger è membro del gruppo di ricerca del progetto *Kommentierte Quellenedition der Protokolle des ÖVP-Parlamentsklubs 1945 bis 1955. Der Anfang der Zweiten Republik im Spiegel der politischen Akteure* (Karl von Vogelsang-Institut, Universität Graz).

Prof. Oswald Überegger è membro del gruppo di ricerca e del comitato scientifico del *Centre International du Recherche (CIR) Historial de la Grande Guerre* in Péronne (FRA)

Dr.ssa Siglinde Clementi è membro del comitato consultivo internazionale del progetto di ricerca *Noble Siblings: Wealth Arrangements and Social Configurations from the Sixteenth to the Eighteenth Centuries* avviato dal Dipartimento di Storia Economica e Sociale dell'Università di Vienna e finanziato dall'Austrian Science Fund FWF.

Dr.ssa Siglinde Clementi è membro del direttivo della Società Italiana delle Storiche, l'associazione nazionale italiana per la storia delle donne e di genere.

Dr.ssa Francesca Brunet è membro associato del progetto di ricerca internazionale e interdisciplinare *Milano and Ticino (1796–1848). Shaping the Spatiality of a European Capital*, finanziato dal Fondo Nazionale Svizzero per la

Ricerca Scientifica (FNS) e realizzato dall'Università di Lucerna, dall'Università della Svizzera Italiana – Archivio del Moderno, e dall'Université Paris 1 – Panthéon Sorbonne, in collaborazione con l'Università di Milano, l'Università Cattolica di Milano, il Politecnico di Milano, l'Università di Innsbruck e l'Accademia Austriaca delle Scienze.

Dr.ssa Francesca Brunet è inoltre membro associato del progetto internazionale e interdisciplinare *SPAZIDENTITÀ. Spazialità materiale e immateriale dell'italianità dalla Repubblica Cisalpina al Fascismo: territori, città, architetture, musei* (projet en partenariat avec l'École française de Rome 2022-2027).



Research Events

11. – 12. Mai 2023

Pazifismus und Biographie:

Vortragsabend und Studientag an der Universität Innsbruck unter anderem mit der britischen Historikerin Ingrid Sharp (University of Leeds).



27. – 29. September 2023

Der Bauernkrieg im Vergleich: Tirol und Thüringen:

Internationale Tagung in Zusammenarbeit mit den Thüringer Museen und der Hofburg Brixen.



7. – 9. September 2023

Bozner Gespräche zur Regionalgeschichte zum Thema **Umwelt und Region:**

Internationale Nachwuchstagung in Zusammenarbeit mit Geschichte und Region / Storia e regione und mit der Fondazione Bruno Kessler – ISIG, Trento.



26. – 28. Oktober 2023

Pass on. Generational Transfers of Wealth from the 16th to the 20th Century:

Internationale Tagung in Zusammenarbeit mit dem Institut für Wirtschafts- und Sozialgeschichte der Universität Wien und dem internationalen Netzwerk Gender Differences in the History of European Legal Cultures.



Neben zahlreichen Einzelveranstaltungen (u. a. Vorträge, Buchpräsentationen, Radiosendungen) im Laufe des Jahres wurde das Vortragsprogramm History on Tour fortgeführt sowie die Vortragsreihe „Geschichten von Mobilität, Marginalität und Unterdrückung in Vergangenheit und Gegenwart, Film und Kunst“ vom 3. Oktober bis 4. Dezember abgehalten.

Competence Centre for Social Work Social Pedagogy and Social Policy

The Centre investigates research topics of great relevance to the territory in view of local, national, and international developments. Generally, the centre's research emphasises participatory approaches and it is linked to the unibz research area: Socio Cultural Worlds: Institutions, Welfare, Social Professions, Environment. The Centre's activities in 2023 revolved around three main research areas.

Child and Youth Welfare

Coordinator: Prof. Ulrike Loch

The Centre, the Faculty of Education and the association "La Strada – Der Weg" onlus prepared a research-based brochure for the first contacts with refugee families.

Ageing, Care, Diversity, Gender, and Migration

Coordinator: Prof. Dorothy Zinn

This area carried out the research project "Taking Care" on the perspectives of care recipients in South Tyrol, and initiated projects on gender-based violence.

Social Policy, Social Innovation, Social Protection, and Participation

Coordinator: Prof. Ulrike Loch

In 2023, this area focused on digital communication, poverty, and co-design.



Director — Prof. Ulrike Loch

In Director's Words

INTERVIEWED BY ROSMARIE HAGLEITNER

Frau Prof.in Loch, welche Auswirkungen hatte die Forschung des Kompetenzzentrums auf die Gesellschaft?

Gibt es Beispiele dafür, wie die Forschung bestimmte Bereiche beeinflusst oder die Lebensqualität verbessert hat?

Durch die Zusammenarbeit von Forschung, Praxis und Lehre wird die gesellschaftliche Bedeutung des Sozialsektors und der sozialen Studienangebote der unibz hervorgehoben. Unsere Gesellschaft benötigt dringend

sozialwissenschaftliche Antworten auf aktuelle Probleme und Krisen. Forschung, Praxis und Politik können diese gemeinsam generieren. Der jährlich stattfindende forschungsbasierte Fachtag für Soziale Arbeit und Sozialpolitik des Kompetenzzentrums fördert den Austausch zwischen Wissenschaft und Praxis sowie Nutzern und Nutzerinnen und Mit-Gestalter und -Gestalterinnen des Sozial- und Gesundheitssektors in Südtirol. Über diesen Austausch und die mediale Präsenz des Zentrums ragen wir zur öffentlichen Sichtbarkeit der Leistungen und Herausforderungen des Sozialsektors bei. Demokratische Gesellschaften brauchen ein nachhaltiges Sozial-, Bildungs- und Gesundheits-

system, hierzu gibt es keine Alternative. Thema des Fachtages 2023 war Armut. Keine Armut ist das erste der UN-Nachhaltigkeitsziele.

Unsere Forschung zeigt, dass Armut in Südtirol ein gesellschaftliches Tabu ist, besonders in der deutschsprachigen und wahrscheinlich auch in der ladinischen Bevölkerung. Dieses Tabu bleibt aufrecht, obschon die Armutsquote in Norditalien, auch in Südtirol, steigt.

Soziale Organisationen beziehen sich explizit auf unsere Forschung, um auf die steigende Armut in Südtirol hinzuweisen. Auch Medienanfragen nehmen zu. Um die Ursachen von Armut wie Inflation, Wohnungsnot sowie das unausgewogene Verhältnis zwischen Einkommen und Lebenskosten verändern zu können, bedarf es konstruktiver Diskussionen und Veränderungen gesellschaftlicher Rahmenbedingungen, die Armut hervorbringen.

Welches Feedback hat das Kompetenzzentrum von externen und internen Stakeholdern erhalten?

In den letzten Jahren haben wir mehrere Forschungsprojekte mit Stakeholdern des Kompetenzzentrums entwickelt, was der Sozialforschung ermöglicht, gesellschaftsrelevante Fragen zeitnah aufzugreifen und praxisrelevante wissenschaftliche Antworten zu generieren. Ein Beispiel hierfür ist die Forschung zu „Dopo di Noi“. Wir haben gemeinsam mit der Lebenshilfe Südtirol als Praxispartner und der LUMSA Universität Rom als wissenschaftlicher Partner das Forschungsprojekt von der Fragestellung bis zur Ergebnisdiskussion durchgeführt. Diese Zusammenarbeit ermöglichte es der Lebenshilfe, Forschungsergebnisse direkt in den Gründungsprozess der Südtiroler Stiftung „Dopo di Noi – Nach uns“ einzubringen und lieferte neue Erkenntnisse

zum Co-Creation-Prozess. Diese niedrigschwellige Kooperation wird von Stakeholdern und wissenschaftlichen Partnern und Partnerinnen gleichermaßen geschätzt und betont die Gleichwertigkeit von lokaler, nationaler und internationaler Forschung. Wertschätzendes Feedback erhielten wir bei Fachtagen und in Form neuer Kooperationsanfragen. ■



DICO I-III – Digitale Kommunikation

Soziale und digitale Ungleichheiten haben durch die Covid 19-Pandemie zugenommen (Guadagno, 2020; Kox, van Liempt, 2020). Angesichts des Digitalisierungsdruckes während des ersten Lockdowns, wurden im Rahmen von DICO I Interviews mit Sozialassistenten und Sozialassistentinnen unterschiedlicher Sozialsprengel geführt, um ihre Erfahrungen mit Beratungen via digitale Medien zu erheben. Im Winter 2021/2022 zeigten die Forschungsdaten vor allem die Konsequenzen der fehlenden digitalen Ausstattung und der reduzierten Kompetenzen, sowohl aufseiten der hilfesuchenden Menschen als auch der Fachkräfte und Dienste. Die Sprengelsozialarbeit stand vor der Notwendigkeit, flexible Lösungen für Beratungen und Kontaktaufnahmen zu finden. Claudia Lintner (2022, 2023) konstatiert, wir verzeichnen nicht nur eine Zunahme der



Digitalisierung von Lebenswelten, sondern auch eine Zunahme der Digitalisierung öffentlicher sozialer Dienstleistungen. Insbesondere sozial schwache Personengruppen sind von dieser digitalen Entwicklung tendenziell ausgeschlossen. Dies betrifft u. a. Flüchtlinge und obdachlose Menschen (Lintner, 2021). Dienste der aufsuchenden Sozialarbeit wie Streetwork, die an den Bedürfnissen dieser Nutzer und Nutzerinnen orientiert sind, weisen heute ein hohes Erfahrungswissen in der Integration von digitalen Methoden in die alltägliche Arbeit auf. Sie standen zunächst vor der Aufgabe, digitale Angebote für Menschen zu entwickeln, die ihre Aufenthaltsorte ständig ändern. Dementsprechend flexibel müssen diese ambulanten Angebote auf unterschiedliche Umstände reagieren. Ziel von DICO II war deshalb, den Einsatz von technologischen Innovationen in der Praxis der niedrigschwelligen Sozialarbeit mit Personengruppen zu verstehen, die auf die aufsuchende Sozialarbeit angewiesen sind. Die Ergebnisse zeigen, dass Technologien in den Arbeitsalltag integriert werden, mit denen flexibel auf die wechselnden digitalen Kommunikationswege der begleiteten Menschen reagiert werden kann. Wichtig sind in diesem Feld auch das Bereitstellen von hybriden Angeboten.

Im Anschluss lag der Fokus auf der Arbeit der Anti-Gewalt-Zentren, um zu verstehen, wie Frauen, die von geschlechtsspezifischer Gewalt betroffen



INFO BOX

FUNDING TYPE

Internal Funding

DURATION

10/2021 — 12/2023

RESEARCH AREA

Social Policy, Innovation in the Social Sector, Social Security and Participation
UNIBZ RESEARCH TEAM
Prof. Ulrike Loch (PI), Dr. Claudia Lintner, Dr. Franca Zadra, Dr. Valentina Gobbett Bamber

SELECTED PUBLICATIONS

- + Lintner, C. & Zadra F. (2024). Outreaching digitally: The use of digital means in outreach social work practices, *Autonomie locali e servizi sociali*.
- + Lintner, C. & Zadra F. (in press). A multidimensional perspective on digital inequalities. The role of ICTs in the inclusion of undocumented migrants and asylum seekers in Italy. *Journal of Social Work*.
- + Zadra F. & Lintner, C. (under review). Upskilling digitally. *Violence Against Women*.

sind, auch digital durch Fachkräfte unterstützt werden können (DICO III). Die Studie zeigte, dass in digitalen Räumen oder durch digitale Technologien ausgeübte Gewalt, als Fortsetzung der Offline-Gewalt durch die (ehemaligen) Partner und Partnerinnen verstanden werden muss. Digitale Gewalt wird von (ehemaligen) Partnern und Partnerinnen vorwiegend eingesetzt, um Überwachung, Stalking und Kontrolle zu erreichen. Im Rahmen des Forschungsprojektes wurde mit Fachkräften zudem reflektiert, wie Frauen besser vor dieser Gewaltform geschützt werden können, u. a. durch den Einsatz von digitalen Medien.

← Marina Della Rocca, Dorothy Louise Zinn und
Ulrike Loch © Kompetenzzentrum für Soziale
Arbeit und Sozialpolitik



Cooperation and Internationality

Sin dalla sua fondazione nel 2021, il Centro di Competenza coltiva collaborazioni con gli stakeholder locali e con esperti ed esperte a livello internazionale. I partner principali del Centro sono servizi pubblici e privati che operano nell'ambito del sociale nel territorio della provincia di Bolzano, coinvolgendo alcuni rappresentanti dell'amministrazione pubblica attivi in tale ambito. Nel 2023 si è vista un'intensificazione della collaborazione con tali partner.

Il progetto "Il mondo della vita di bambini e adolescenti in Alto Adige – una ricerca partecipativa", ha lavorato con i centri giovanili e lo Jugendring altoatesino, sia con i bambini e gli adolescenti per capire cosa è importante nel loro ambiente di vita e cosa influisce di più sulla loro condizione di benessere sia sociale che psicologico.

Il progetto "Dopo di Noi" ha coinvolto sia l'associazione Lebenshilfe di Bolzano sia l'università Maria Ss.Assunta, LUMSA di Roma: i due enti hanno collaborato per elaborare esperienze di qualità, in risposta ai bisogni delle persone con disabilità e delle loro famiglie.

Infine, il progetto "Dico III" sulla relazione tra violenza di genere e digitalizzazione, ha visto la partecipazione dei centri antiviolenza sia a livello locale che nazionale.

Lo staff del Centro di Competenza è attivo in gruppi di lavoro territoriali, come il tavolo di lavoro della Ripartizione 24 per le Politiche Sociali della Provincia Autonoma di Bolzano "Donne, Migrazione e Violenza", per la creazione di progetti e buone prassi nell'accoglienza di donne migranti e richiedenti asilo che hanno subito violenza. Partecipa inoltre a WAVE (Women Against Violence Europe) che riunisce centri antiviolenza in Europa. In maggio 2023 ha avuto luogo presso il centro di competenza, la riunione della "Consulta per il sociale della Provincia Autonoma di Bolzano" che ha consentito un proficuo scambio sulle ricerche in corso con i membri dell'organo provinciale. Il Centro ha anche monitorato il progetto FSE "SCEGOL", promosso da Ethical Software e Donne Nissà Frauen (Bolzano), per l'empowerment di giovani donne con background migratorio.

Nel 2023 è continuato lo scambio regolare con i membri del Comitato scientifico del Centro su attività di ricerca, contenuti metodologici e focus su direzioni di ricerca future. I membri del Comitato sono: prof.ssa Maren Zeller – Department für Soziale Arbeit, Fachhochschule Ostschweiz St. Gallen (CH); prof. Folco Cimagalli – LUMSA, Roma; Luca Critelli – Dipartimento Famiglia, Anziani, Sociale e Edilizia abitativa, Provincia Autonoma di Bolzano; prof. Koen Hermans – Centre for Sociological Research and Centre for Care Research and Consultancy,

Università Leuven (BE); dr. Bruno Marcato – Hands Onlus Bolzano.

Nell'autunno 2023 il Centro di Competenza ha aperto un account LinkedIn www.linkedin.com/showcase/competence-centre-for-social-work-social-pedagogy-and-social-policy/?viewAsMember=true.



Research Events

In data 08.05.2023 si è svolto il secondo Simposio **Le sfide della povertà – Soziale Antworten auf schwierige Lebenslagen** del Centro di Competenza in collaborazione con l'Ordine degli Assistenti Sociali Regione Trentino-Alto Adige. Le tematiche hanno riguardato in modo centrale il concetto di povertà sia nelle sue declinazioni sociali che nelle prospettive di prevenzione alle forme di povertà. I due keynote speakers, Dr. Alban Knecht (Universität Klagenfurt / Università Klagenfurt) e Dr. Evan Tedeschi (Unibz) hanno presentato i dati elaborati nelle ricerche di tipo quantitativo e relative ad alcune analisi elaborate sia nel territorio austriaco che nell'Alto Adige. Le presentazioni sono state seguite da quattro workshops così suddivisi che hanno accolto l'audience per interagire su diversi aspetti relativi al fenomeno della povertà. Il primo Workshop dal titolo *Abitare e povertà* ha affrontato la dimensione dell'abitazione e dell'abitare in connessione con fenomeni strutturali e territoriali della povertà: non solo a Bolzano ma anche con una prospettiva macroregionale che coinvolge il territorio di Roma e l'analisi di alcune aree periferiche. Il secondo workshop *Gender e Care* è stato rivolto alla dimensione anche della cura connessa al genere e alle prospettive di tale dimensione nella sfera della povertà. Il terzo Workshop *Minori e povertà sociale* ha riguardato l'importante attività delle ricerche che coinvolgono i minori e le

associazioni sulla povertà. Infine, il quarto workshop *Prevenzione di povertà tramite caring-communities* ha portato alla luce importanti analisi di prospettive di cura e di prevenzione quale le caring-communities.

Il simposio ha avuto riscontro anche da parte del mondo della stampa locale e dei media. Anche il canale austriaco ORF2 ne ha parlato in un'edizione del 15 maggio con focus su "Kinder und Jugendarmut Psychosoziale-Folgen auf Heranwachsende". Il Centro di Competenza ha potuto diffondere le news del prossimo simposio grazie anche alla pagina LinkedIn attivata nel 2023 e che coinvolge l'attenzione di numerosi followers su tematiche di politica sociale e di lavoro sociale relativamente all'Alto Adige e nel contesto italiano ed europeo.

www.unibz.it/it/home/research/competence-centre-social-work-social-pedagogy-social-policy/downloads/

Competence Centre Tourism and Mobility

Das Kompetenzzentrum präsentierte sich im Jahr 2023 in der internationalen Forschungsszene durch weitere Publikationen in führenden wissenschaftlichen Zeitschriften, Beiträgen in Sammelbänden und der Teilnahme an internationalen Fachtagungen. So ist es gelungen, das Kompetenzzentrum nicht nur in Südtirol, sondern auch international zu einer bekannten und anerkannten Institution weiterzuentwickeln. Im Laufe des Jahres wurden Projekte aus drei der vier Forschungsschwerpunkte bearbeitet und zudem eine Reihe von Projekten des Bereichs Third Mission durchgeführt.

Modelle und Theorien

Tourismus und Mobilität sind das Ergebnis menschlichen Verhaltens. Daher befasst sich die Forschung in diesem Bereich mit komplexen Fragestellungen, da die Entscheidungen von Reisenden wie auch der lokalen Bevölkerung eine Mischung aus persönlichen Präferenzen, der Verfügbarkeit von Alternativen sowie sozialen und persönlichen Normen sind. Häufig sind Forscherinnen und Forscher mit dem Fehlen von Daten konfrontiert, die das Verhalten von Menschen beschreiben. Zudem können geeignete Methoden zur Datenanalyse noch nicht verfügbar sein. Ziel des Kompetenzzentrums ist es, neue theoretische und methodische Beiträge zu liefern, um das Verhalten im Tourismus und in der Mobilität besser zu verstehen und damit die Grundlage für die Entwicklung von wirksamen



Director — Prof. Thomas Bausch

Maßnahmen und Managementtechniken zu schaffen.

Projekte:

- + Mobile Fahrradzählgeräte
- + Radfahrerbewegungsmuster App moveOmeter

Destinationsstragien

Dieser Forschungsschwerpunkt ist mit der allgemeinen Forschungsfrage verbunden, wie Konsumentinnen und Konsumenten ein mentales Bild von Destinationen bilden und wie dieses Bild zum Markenwert von Destinationen beiträgt. Die Forschung zum Thema Destinationsimage/Destinationsmarke geht davon aus, dass jede Konsumentin/jeder Konsument ein individuelles und sich veränderndes Bild von einer Destination hat. Dies wurde in mehreren

empirischen Studien von Forscherinnen und Forschern bestätigt, aber einige Aspekte bleiben in diesem Bereich unbeantwortet.

Projekte:

- + Lebensraumqualität in Südtirol
- + Interkulturelle Unterschiede im Verständnis der Verbraucherinnen und Verbraucher von Nachhaltigkeit und nachhaltigem Tourismus
- + Die Wahrnehmung von Fotografien durch potenzielle Urlaubsgäste
- + Die Veränderung des Destinations-Images durch den Aufenthalt vor Ort

Betriebswirtschaftliche Forschung

Seilbahnunternehmen konzentrieren sich hauptsächlich auf

zwei Bereiche, um die Zufriedenheit ihrer Gäste zu erhöhen: Schneesicherheit und Vermeidung von Warteschlangen an den Talstationen. Neueste Forschungen zeigen, dass Überfüllung und Schneequalität der Pisten weitere Faktoren sind, die die Zufriedenheit der Gäste beeinflussen. Die durch den Klimawandel ausgelöste veränderte Schneequalität (künstliche Beschneigung) kann ein Auslöser für unzufriedene Skifahrerinnen und Skifahrer werden. Studien haben zudem gezeigt, dass Überfüllung einen sehr negativen Einfluss auf die Zufriedenheit der Skifahrerinnen und Skifahrer hat. Ziel des Kompetenzzentrums ist es auf der Grundlage von Umfragen zur Gästezufriedenheit und dem Gästeverhalten und von Wetterdaten / Schneequalitätsdaten, Faktoren für die Zufriedenheit von Wintergästen zu ermitteln und Managementempfehlungen zu geben. Die Rolle von Wintersportgroßveranstaltungen für das Image einer Winterdestination ist wissenschaftlich bislang kaum betrachtet worden. Zwar gibt es vereinzelt Studien zu olympischen Winterspielen, doch hat sich bislang niemand den regelmäßig wiederkehrenden Veranstaltungen, wie etwa dem FIS Alpinen SkiWeltcup gewidmet. In einer ersten Studie, deren empirischer Erhebungsteil im Rahmen einer vom Kompetenzzentrum betreuten Abschlussarbeit erfolgte, haben wir uns daher dem Thema am Beispiel von Alta Badia und der Weltcup-Strecke Gran Risa gewidmet.

Projekte:

- + Studie zum Skiwinter 2022/23
- + Rolle des Ski-Weltcups für das Destinationsimage von Alta-Badia

Third Mission

Das Kompetenzzentrum nimmt neben seinen Forschungsschwerpunkten eine aktive Rolle ein, indem es sich an öffentlichen Debatten und Aktivitäten beteiligt und sein Wissen den regionalen Stakeholderinnen und Stakeholdern und ihren Verbänden zur Verfügung stellt. Es unterstützt Partner aus Politik, Tourismus und Mobilität durch Ad-hoc-Analysen, Kurzgutachten, Impulsreferate oder die Teilnahme an Diskussionsrunden.

Aktivitäten 2023:

- + Studie zur Erhöhung des Anteils der Bahnreise nach Südtirol auf 25 %
- + Teilnahme an Veranstaltungen der touristischen Interessensgruppen
- + Mitwirkung an der Ausarbeitung des Landesplans für nachhaltige Mobilität und Transport
- + Anlaufstelle für fachliche Auskünfte für Medienvertreterinnen und -vertreter (Teilnahme an Radiosendungen, Artikel zu touristischen Themen in regionalen Medien)

Competence Centre for Plant Health

Plants are a fundamental element of our environment and provide the basis for our food supply chain. The different microclimatic zones in South Tyrol allow the cultivation of a variety of different crops, with a cultivated area of almost 25,000 hectares, where mainly apple orchards and vineyards, but also several different special crops are grown. Healthy plants are a prerequisite for high-quality food and sustainable agricultural productivity. Yet, crop health is endangered by climate change and the consequent rise in extreme weather events and by warmer temperatures and the spreading of invasive and destructive pests.

The main objective of the Competence Centre is to study abiotic and biotic stress drivers to understand their influence on plant health, investigate changes and foresee upcoming challenges, and to develop novel technological approaches. Basic research in the plant-environment interconnections is coupled with practice-oriented research projects. This will enable researchers to reach a real-time assessment of the direct impacts and to develop practical solutions, which in turn can be taken as an important basis for facing future challenges in South Tyrolean agriculture and forestry. The research results will therefore contribute significantly to a more sustainable agriculture in South Tyrol. The research activities of the Competence Centre are divided into three research areas: abiotic factors, biotic factors, and



Director — Prof. Tanja Mimmo

technology and management. In particular, the research area 'abiotic factors' combines plant genetics, plant physiology, and soil chemistry to study plant-soil-environment interactions. The aim of the research area "biotic factors" is to study diseases and pests and their effects on plant health, while the aim of the research area 'technology and management' is to collect, process, and analyse a wide range of data and information, and to produce innovative mechatronic and robotic solutions for automatic crop protection.

Research area: Abiotic factors

Coordinator: Prof. Tanja Mimmo

Keywords: Plant-soil-environment interactions, molecular plant physiology, nutrient management, soil fertility, soil biodiversity.

Research area: Biotic factors

Coordinator: Prof. Hannes Schuler

Keywords: molecular phytopathology, invasive pests, molecular mechanisms, population genetics, innovative plant protection.

Research area: Technology and Management

Coordinator: Prof. Fabrizio Mazzetto

Keywords: automatic crop protection, Sensor technology, precision agriculture, farm management, mechatronic solutions.

In Director's Words

INTERVIEWED BY ROSMARIE HAGLEITNER

Prof. Mimmo, what have been the major successes or accomplishments achieved by the Competence Centre in research this year?

This year, the Competence Centre has achieved several major successes and accomplishments in research. One of the standout aspects of our success has been the active involvement of our competence centre in securing third-party funding, particularly within the Horizon Europe Mission Soil framework with the project "Healthy Municipal Soil – HuMUS" aimed at engaging and activating municipalities and regions to protect and restore soil health and the project "Engaging citizen in soil health: the road to healthier soils – ECHO" aimed at involving citizens in soil protection and restoration by enhancing their knowledge and skills. But the Competence Centre has been active also at local level with the project "Ways to control the spruce bark beetle – Controlips" funded by the Autonomous Province of Bolzano, that aims to study the beetle's biology and develop strategies to detect infestations early and adapt South Tyrol's forests to climate change.

To what extent has the Competence Centre collaborated with other academic institutions or research entities in the past year and what have been the impacts on research on the Competence Centre?

Over the past year, the Competence Centre has actively collaborated with major research centres and academic institutions both locally and on a national and international scale. Our competence centre has been a pivotal participant in networks such as The Network of European Regions for Innovation in Agriculture, Food and Forestry (ERIAFF) with the lead of the Agroecology Working group and Euphresco, which is a network of organisations that fund research projects and coordinate national research in the phytosanitary area. Both networks bring together leading research entities and stakeholders from across Europe and beyond. These collaborations have had a profound impact on the Centre's research, enhancing our ability to address complex challenges through shared expertise. By participating in these networks, we have been able to engage in cutting-edge research projects, gain access to a broader range of data and methodologies, and foster innovation through diverse perspectives.

What are the main research objectives or projects that the Competence Centre intends to pursue in the upcoming academic year?

Our primary objectives include Climate-Resilient Agriculture, Soil Health and Fertility, Forest Health and Management and Development and Refinement of sustainable pest management strategies. We are also exploring some new directions in our research agenda including Urban Agriculture and Green Spaces. Additionally, we will continue to be active in securing third-party funding to support our research endeavors. Through these objectives and new research directions, the Competence Centre for Plant Health aims to lead innovative solutions for sustainable agriculture and forest management, contributing to global food security and environmental sustainability. ■



Research Project

ECHO — Coinvolgere i Cittadini nella Scienza del Suolo

ECHO è un'azione di ricerca e innovazione (Research and Innovation Action) cofinanziata dall'Unione Europea, nell'ambito del programma Horizon Europe. Con una durata di 4 anni, il progetto mira a coinvolgere i cittadini nella protezione e nel ripristino della salute dei suoli, sviluppando le loro competenze e potenziando le loro conoscenze.

I cittadini contribuiranno attivamente alla raccolta dati del progetto, promuovendo una gestione responsabile del suolo e incoraggiando cambiamenti comportamentali in tutta l'Unione Europea.

ECHOREPO, un repository a lungo termine di libero accesso e direttamente collegato all'Osservatorio Europeo del Suolo (EUSO), permetterà non solo ai ricercatori, ma anche ai cittadini, ai decisori politici, agli agricoltori, ai proprietari terrieri e altri utenti

finali, di utilizzare i dati ricavati dalla Citizen Science, in sinergia con dati e iniziative di monitoraggio del suolo già esistenti. ECHOREPO fornirà informazioni preziose sullo stato di salute del suolo in diverse regioni, aiutando i cittadini a prendere decisioni informate sulla gestione del territorio e sulla conservazione.

Il progetto ECHO raggruppa 16 partner provenienti da tutta Europa, tra cui università di spicco, centri di ricerca, PMI e fondazioni, con una passione comune per il suolo. Sotto il coordinamento della Libera Università di Bolzano-Bozen, ECHO esaminerà 16500 siti in diverse regioni climatiche e biogeografiche per raggiungere i suoi ambiziosi obiettivi:

- + Coinvolgere i cittadini aumentando le conoscenze, stimolare il loro interesse per le questioni legate alla salute del suolo e motivarli a proteggere e ripristinare i suoli



INFO BOX

FUNDING TYPE

Horizon Europe – MISS-2022-SOIL – Grant Agreement n. 101112869

DURATION

06/2023 – 05/2027

RESEARCH AREA

Abiotic factors

UNIBZ RESEARCH TEAM

Prof. Tanja Mimmo (PI), Prof. Stefano Cesco, Dr. Claudia Cappello, Dr. Céline Laurent, Dr. Luigimaria Borruso, dott.

Raphael Tiziani

PROJECT PARTNERS

University of Eastern Finland, Universität Hohenheim, American Farm School, Università Di Bologna, Re Soil Foundation, Plantpress, FCIências.ID – Associação Para A Investigação e Desenvolvimento De Ciências, Faculdade De Ciências Da Universidade De Lisboa, Solutopus, University Stefan Cel Mare Suceava, The James Hutton Institute, Fundación Ibercivis, Quanta Labs, Universidad De Extremadura, Ambianta

WEBSITE

echosoil.eu/it

SELECTED PUBLICATIONS

- + Tanja Mimmo (2024), "ECHO: Engaging citizens in soil health and science", Open Access Government January 2024, pp. 410–411. Available at: openaccessgovernment.org/article/echo-engaging-citizens-in-soil-health-and-science/172160/. (Accessed: 28 Mar 2024)

- + Potenziare le capacità dei cittadini invitandoli a svolgere un ruolo attivo nella raccolta dati e nella scienza del suolo per generare conoscenze sulla salute del suolo a beneficio di tutti



← ECHO kick-off meeting



Cooperation and Internationality

Nel corso del 2023, Il Centro di Competenza è stato impegnato in varie attività di cooperazione nella ricerca sia a livello locale che a livello internazionale. Queste collaborazioni hanno coinvolto soprattutto istituti di ricerca locali e partnership europee.

Complessivamente, queste attività di cooperazione svolgono un ruolo cruciale nel potenziare le capacità di ricerca del Centro, facilitare lo scambio di conoscenze e promuovere l'innovazione nel campo della salute delle piante e dell'agricoltura. Nel corso dell'anno, il Centro di Competenza per la Salute delle Piante ha proseguito la sua partecipazione come chair del working Group Agroecology di ERIAFF e membro della rete internazionale EUPHRESCO, collaborando con diversi partner nella ricerca sui problemi fitosanitari, con particolare attenzione ai parassiti invasivi. A tal riguardo, il Centro di Competenza ha siglato un accordo con il Servizio Fitosanitario della Provincia Autonoma di Bolzano e ha avviato l'attività di monitoraggio ufficiale degli organismi di quarantena in Alto Adige.

Nell'ambito della ricerca Tecnologia e Gestione si è posto l'accento sullo sviluppo di soluzioni meccatroniche innovative per la protezione automatica delle piante, nonché sull'applicazione di sensori e sistemi di sensori innovativi, sostenibili dal punto di vista ecologico ed economico. In particolare, è stato avviato il

progetto di ricerca commissionata "FOCUS SPRAYING – Irrorazione di precisione e analisi delle foglie". Questo progetto si propone di testare l'efficacia di sensori ottici innovativi per il rilevamento precoce dello stress idrico e nutrizionale nelle piante coltivate. Saranno valutati gli impatti in termini di sostenibilità economica, ambientale e sociale della produzione agricola, con particolare attenzione al risparmio di acqua, fertilizzanti e pesticidi.



Research Events

22. – 24. Mai 2023

ERIAFF-Jahreskonferenz

Das Kompetenzzentrum war Gastgeber der 9. ERIAFF-Jahreskonferenz in Bozen mit einer Reihe von Aktivitäten, die Teilnehmer und Teilnehmerinnen aus ganz Europa mit Themen im Zusammenhang mit grünen und klimatischen Übergangsplänen in der Landwirtschaft und in Agrosystemen beschäftigten.

[unibz.it/it/events/142138-2023-eriaff-annual-](https://unibz.it/it/events/142138-2023-eriaff-annual-conference)

[conference](https://eriaff.com)

eriaff.com



12. Juli 2023

Digitale Erkennung von Phytoplasmosen im Obst- und Weinbau

Diese Veranstaltung untersuchte die Nutzung moderner Technologien zur Erkennung von Pflanzenkrankheiten und eröffnete neue Möglichkeiten für die Landwirtschaft, insbesondere hinsichtlich der frühzeitigen Erkennung von Krankheiten in Apfel- und Weinreben. Die Konferenz wurde in Zusammenarbeit

mit dem Versuchszentrum Laimburg organisiert.

unibz.it/de/events/142758-digitale-erkennung-von-phytoplasmosen-im-obst-und-weinbau

24. November 2023

II. Südtiroler Bodensymposium Bodenkartierung

Die zweite Ausgabe des Bodensymposiums konzentrierte sich darauf, wie Südtirol die europäischen Ziele für gesunde Bodenökosysteme erreichen könnte, obwohl es keine systematische Bodenkartierung gab. Das Symposium hatte zum Ziel, Bewusstsein für die Bedeutung



der Bodenkartierung zu schaffen und die Bemühungen Südtirols in diesem Bereich zu unterstützen. Es wurden Erfahrungen benachbarter Regionen sowie konkrete Anwendungsbeispiele präsentiert. Eine Podiumsdiskussion unter der Leitung von Prof. in Tanja Mimmo ermöglichte den Vergleich dieser internationalen Erfahrungen mit den Anforderungen Südtirols. Schließlich wurde in einem Workshop ein erster Entwurf für eine mögliche Südtiroler Bodenkarte diskutiert. Das Symposium, das erstmals 2022 stattfand, möchte jährlich wichtige Akteure und Akteurinnen im Bereich Boden zusammenbringen, um Know-how auszutauschen und neue

Lösungen für eine nachhaltige Bewirtschaftung von Böden zu fördern. Partner der Veranstaltung waren unibz, Eurac Research und das Versuchszentrum Laimburg sowie verschiedene lokale Organisationen und Unternehmen.

unibz.it/de/events/ii-suedtiroler-bodensymposium-ii-convegno-sul-suolo-in-alto-adige

[unibz.it/de/news/article/suedtirols-luecke-im-](https://unibz.it/de/news/article/suedtirols-luecke-im-bereich-bodenkartierung-schliessen)

[bereich-bodenkartierung-schliessen](https://unibz.it/de/news/article/suedtirols-luecke-im-bereich-bodenkartierung-schliessen)



Competence Centre for School Inclusion

The Competence Centre is dedicated to research, networking and scientific communication in the field of inclusive education. It follows a broad idea of inclusion-related research as a question about the relationship between social diversity and inequity and how this is reflected in the education system. Research in the field of inclusive education contributes to generating fundamental knowledge and feeding this into the national and international discourse, to developing applicable conceptualisations for educational practices and for the professionalisation and professionalism of staff. A relevant milestone for 2023 was to generate clear research strategies for the second circle of the Competence Centre until 2026 and to translate those into concrete work steps and initiatives, linked to the ongoing dissemination of research results at the level of the international scientific discourse and the public. Numerous submissions of research proposals as well as publications in internationally named journals and various presentations at (regional and international) conferences clearly show this.

Research Areas

1) Analysis of inclusive educational cultures, policies and practices and 2) professionalisation of teachers and other educational professionals with regard to equitable and inclusive educational institutions.

Coordinator: Prof. Simone Seitz

Keywords: educational research, (in)equity, inclusion, professionalisation, internationality.



Director — Prof. Simone Seitz

In Director's Words

INTERVIEWED BY ROSMARIE HAGLEITNER

Frau Prof.in Seitz, was waren die wichtigsten Ziele des Kompetenzzentrums im vergangenen Jahr und auf welche Erfolge kann es zurückblicken?

2023 stand im Zeichen intensiver Arbeit an der Konzeption von Forschungsanträgen. Wir haben mehrere große Anträge zur Förderung eingereicht und hierbei ein internationales Grundlagenforschungsprojekt zum Verhältnis zwischen Leistung und Inklusion erfolgreich eingeworben, das von der Deutschen Forschungsgemeinschaft (DFG) und der Provinz

Bozen im Format JOINT kofinanziert wird (APrA, 2025–2027). Wir haben außerdem kleinere, pilotierende Studien in Vorbereitung weiterführender Forschungsvorhaben konzipiert und realisiert. Inhaltlich haben wir den Schwerpunkt international vergleichender erziehungswissenschaftlicher Forschung ausgebaut.

Welche Forschungsprojekte möchten Sie hervorheben und wie wurden Studierende in die Forschungsaktivitäten einbezogen?

2023 haben wir zudem an Forschungsprojekten gearbeitet, die regionalen Bedarf und anwendungsorientierte Fragestellungen aufgreifen.

Wir haben die wissenschaftliche Begleitung zum Programm „Wege in die Bildung 2030 – guter inklusiver Unterricht“ der Deutschen Bildungsdirektion übernommen (GOODWILL; 2023–2026) und die Sichtweisen von Kindern und Jugendlichen mit Behinderungserfahrungen auf Erziehungswirklichkeiten und Partizipationsmöglichkeiten in der Provinz erhoben und dokumentiert (PART-Youth; 2022-2023). In diesem Projekt haben wir Studierende mit ihren Qualifikationsarbeiten eingebunden und so das forschende Lernen im Studium gestärkt.

Wie sah die Zusammenarbeit mit anderen Forschungseinrichtungen aus?

Wir haben im Kontext der internationalen Forschungsarbeiten intensiv mit anderen Universitäten zusammengearbeitet und aktiv internationale Netzwerke initiiert. Unter anderem haben wir innerhalb der World Education Research Association (WERA) erfolgreich ein internationales Forschungsnetzwerk (IRN) zum Themenfeld der Bildungs(un)gleichheit in der Primarstufe eingeworben.

Was sind die wesentlichen Forschungsbereiche innerhalb des Kompetenzzentrums?

Unsere Forschungsarbeiten folgen einem ungleichheitskritischen Forschungsansatz. Dies zeigt sich an Fragen nach (ungleichen) Machtverhältnissen und Diskriminierungserfahrungen innerhalb von Bildungsinstitutionen, aber auch an kritischen Analysen von strukturellen Ordnungen, wie z. B. dem Verhältnis zwischen Leistungsnormierungen und Inklusion oder dem zwischen Solidarität und Wettbewerb im Bildungssektor.

Was wird im kommenden akademischen Jahr im Fokus stehen?

Wir wollen die international ausgerichtete und vergleichende Forschung und Netzwerkbildung weiter stärken. Wir sind überrascht, wie wenig in anderen Ländern über das inklusive Bildungssystem Italiens bekannt ist. Daher möchten wir einerseits die internationale forschungsbezogene Zusammenarbeit stärken und andererseits unsere Forschung durch gezielte Publikationen sowie direkten Dialog international bekannter machen – in den zahlreichen Delegationen mit Besuchsgruppen aus den verschiedensten Ländern gelingt uns das schon sehr gut. ■



KIBI — Konzeptualisierung von Inklusion im Bildungsbereich

Ziel des Forschungsprojekts KIBI war es, einen übergreifenden theoretischen und methodischen Rahmen für die Forschungsprojekte des Kompetenzzentrums zu generieren. Um dem Standort und der internationalen Ausrichtung des Kompetenzzentrums Rechnung zu tragen, wurden hierfür Wissenschaftskulturen und wissenschaftliche Diskurse, die in unterschiedlichen Sprachen geführt werden, mit Blick auf ihre Überschneidungen methodengeleitet analysiert und verknüpft, insbesondere unter Rückgriff auf einerseits diskursanalytische Verfahren sowie andererseits systematic reviews. Auf diesem Weg wurden leitende Begriffe und Zusammenhänge im Lichte einer internationalen Perspektive theoretisch erschlossen und fundiert. Inhaltlich stand vor allem ein genaueres Ausloten des Verhältnisses zwischen Bildungsgerechtigkeit und Inklusion im Fokus.

Es wurde so eine verbindende und tragfähige Grundlage für das Forschungsprogramm des Kompetenzzentrums geschaffen und damit für Forschungsfragestellungen, die inklusive Bildung ungleichheitskritisch sowie insbesondere im Format international ausgerichteter und international vergleichender Forschung in den Blick nehmen. Im Fokus der hierin eingebundenen Forschungsarbeiten standen unter anderem a) Diskurse über Inklusion, Begabung und Leistung, b) strukturelle Ordnungen und Politiken inklusionsbezogener Ressourcenverteilung in Bildungssystemen, c) governancebezogene Netzwerkanalysen in Bezug auf inklusive Bildung sowie d) Diskurse zu Bildungsungleichheit und Ganztagsbildung.

Hiermit wurde außerdem ein Rahmen geschaffen für Studien, die sich dem Forschungstypus des Educational Design Based Research und somit stärker anwendungsorientierter Forschung zuordnen lassen, denn die hier anvisierten Forschungsgegenstände auf den Ebenen der Schulentwicklung und Unterrichtsentwicklung lassen sich als Konkretisierungen der Frage nach dem Verhältnis zwischen Bildungsgerechtigkeit und Inklusion verstehen. Konkret wurde hier zur Individuellen Bildungsplanung im Rahmen inklusiver Unterrichtsplanung sowie zur inklusionsbezogenen Schulentwicklungsforschung gearbeitet.



INFO BOX

FUNDING TYPE

Internal funding

DURATION

11/2020 — 10/2023

RESEARCH AREA

Analysis of inclusive educational cultures, policies and practices

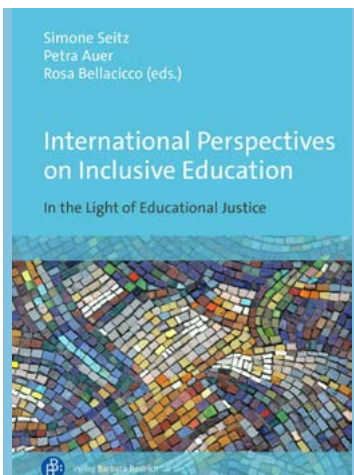
UNIBZ RESEARCH TEAM

Prof. Simone Seitz (PI), Prof. Heidrun

Demo, Dr. Petra Auer

SELECTED PUBLICATIONS

- + Seitz, S., Auer, P. & Bellacicco, R. (Eds.), *International Perspectives on Inclusive Education – In the Light of Educational Justice*. Budrich. DOI: [org/10.3224/84742698](https://doi.org/10.3224/84742698)
- + Demo, H., Bellacicco, R., Auer, P., Cappello, S., Frizzarin, A. (2024). Il rapporto fra PEI e progettazione didattica per la classe nella scuola primaria. *Nuova Secondaria Ricerca*, 7, 111-120.
- + Seitz, S., Kaiser, M., Auer, P. & Bellacicco, R. (2024). Giftedness, achievement, and inclusion: A discourse analysis. *L'Integrazione Scolastica e Sociale* 23(1), pp. 8–32. DOI: [10.14605/ISS2312401](https://doi.org/10.14605/ISS2312401)



← Seitz, S., Auer, P., & Bellacicco, R. (2023).

International Perspectives on Inclusive Education:

In the Light of Educational Justice. Barbara Budrich.



Cooperation and Internationality

Cooperative research projects at international, national and regional level, running in 2023:

All means all!

The project connects universities in Europe by developing shared teaching materials. Interactive, multimedia Open Educational Resources are made available for teacher education. Partners: Universität Bremen, National University of Ireland Maynooth.

Digital Education Material

Il progetto intende fornire un supporto pratico e concreto allo sviluppo di libri di testo digitali. Partners: Universität Münster, Universität Vechta, Universität Hamburg, Technische Universität Graz.

GovInEd

The project focusses network analyses and involvement of relevant actors and stakeholders in the context of inclusive education transformation processes and ongoing reform efforts in the participating countries. Partners: Pädagogische Hochschule Steiermark, Pädagogische Hochschule Ludwigsburg, Universidad de Barcelona.

Goodwill – ResearchinG SchOOl Development: PathWays to Inclusive and quality Education 2030

Das Forschungsprojekt zielt auf genaueres Wissen zu inklusionsbezogenen Schulentwicklungsprozessen. Die wissenschaftliche Begleitstudie nimmt dabei das Projekt „Wege in die Bildung 2030 – Guter Unterricht in der inklusiven Schule“ in den Blick.

Partner: Deutsche Bildungsdirektion – Autonome Provinz Bozen.

Pensare in grande: Percorsi inclusivi nella prima infanzia 0–6

Il progetto di ricerca interdisciplinare vuol essere una chiave per attuare un'inclusione di qualità nei servizi per bambini da 0 a 6 anni e indaga i processi inclusivi sul territorio italiano e internazionale. Partners: Università Europea di Roma, Università Cattolica di Milano, Università di Perugia.



Research Events

Dialoghi aperti sull'inclusione scolastica.

A gennaio 2023 si è conclusa con successo la serie di dialoghi aperti sull'educazione inclusiva. Al centro degli incontri c'è l'obiettivo di dare impulso alle culture e alle pratiche inclusive e, allo stesso tempo, uno spazio comunicativo per riflettere sulle esperienze pratiche e sulle domande aperte per lo sviluppo dell'educazione inclusiva. Gli eventi si sono svolti in forma ibrida e si sono alternati in italiano e tedesco.

unibz.it/assets/Events/Pdf/Api/204186.pdf

Convegno internazionale

Il 3 – 4 marzo 2023 si è svolto il convegno bilingue (tedesco/italiano) **Didattica e Inclusione Scolastica. Inklusion im Bildungsbereich: Vernetzt: costruire comunità**. Il tema era il potenziale dell'educazione digitale e l'importanza del networking tra i diversi partner. Tra i Keynote speaker era presente Mel Ainscow, illustre studioso, tra i più influenti nel campo dell'educazione inclusiva.

didatticainclusione.events.unibz.it/

Conferenza internazionale: La conferenza bilingue (italiano/tedesco) **Scuola spazio ludico – Schule als Spielraum** che si è svolta nel novembre 2023 è stata organizzata dai membri del Centro di Competenza e dai membri associati.

unibz.it/it/events/

schule-als-spielraum-scuola-spazio-ludico

Competence Centre for Mountain Innovation Ecosystems

The Competence Centre for Mountain Innovation Ecosystems – entirely financed with iNEST project funds from the National Recovery and Resilience Plan (PNRR) – seeks to foster the development of new products, processes and lifestyles capable of consolidating or sustaining the local traditions that guarantee the survival and demographic viability of mountain contexts. This objective is pursued through a twofold strategy: (1) enhancing the strengths of mountain resources (extensive agro-forestry-livestock activities, flourishing tourism in unique environmental ecosystems, biodiversity, multiculturalism and local traditions); and (2) mitigating risks that are particularly relevant in these contexts (fragmentation and security of production systems, difficult logistics, hydrological risks, reduced quality of life).

The Centre also promotes interaction between universities and the region in sectors considered of strategic importance for successfully implementing green and smart transitions (energy, smart manufacturing, robotics and mechatronics, materials, AI and data science) and contributes to the creation of a tourism ecosystem in which culture operates as a key driver of strategic innovation.



Director — Prof. Fabrizio Mazzetto

Safety and quality of life in Mountain

Coordinator: Prof. Maurizio Righetti and Prof. Ilenia Fronza

Keywords: mountain habitat, social life quality, multiculturalism, climate change, smart villages

Resilience of Mountain Production Systems and Supply Chains

Coordinator: prof. Guido Orzes

Keywords: extensive farm systems, forestry systems, winter industry, mountain crafts, supply chains.

Decentralisation of Mountain Structures and Infrastructures

Coordinator: Prof. Fabrizio Mazzetto and Prof. Marco Baratieri

Keywords: energy strategies, energy production, energy management, logistics in mountain areas, transportation

Green and digital transition for advanced manufacturing

Coordinator: Prof. Massimiliano Renzi

Keywords: smart manufacturing, sustainability, mechatronics and robotics, artificial intelligence, materials.

Tourism, Culture and Creative Industries

Coordinator: Prof. Serena Volo;
Keywords: tourism, digital technologies, cultural heritage, communication strategies, big data

In Director's Words

INTERVIEWED BY ARTURO ZILLI

Prof. Mazzetto, what have been the major successes or accomplishments achieved by the Competence Centre for Mountain Innovation Ecosystems in 2023?

The Competence Centre (CC) was established to manage the research activities of the iNEST Consortium (Northeastern Innovation Ecosystems), financed with PNRR funds from the MUR, the Italian Ministry of University and Research. All the results acquired to date by the Centre should therefore be seen within this framework of PNRR activities. Results that to date can be summarised on two levels: 1) the initiation of research by the members of the Centre's critical mass on issues relating to the quality of life in mountain contexts, the resilience of production systems, mountain infrastructures with a focus on energy management and logistics, all based on technological solutions with a high degree of digitalisation and favorable to strategies of environmental, economic and social sustainability; 2) the opening of cascade fundings initiatives, in order to involve private companies with their own initiatives in the context of research activities pertaining to the Centre.

Are there any particularly significant research projects you would like to highlight?

Precisely because of the number and articulation of the research to be dealt with, it is very difficult to mention specific initiatives without wronging others. With regard to the resilience of production systems, mention can be made of initiatives on the safety of mountain farming operations, on new agricultural and zootechnical models for niche products, and on innovative forms of grassland and forestry management. With regard to mountain infrastructures, the strategies for optimising energy resources and mountain building management are noteworthy, as are the proposals for alternative logistics for last mile productive micro-mobility. Lastly, among the various topics financed within the framework of the cascade fundings are the proposal to introduce pistachio cultivation based on digital strategies that preserve the healthiness of the food for consumers, as well as the idea of enhancing communications in extremely isolated high-altitude contexts through the use of temporary radio links supported by airships anchored to the ground.

What the future strategies of the Competence Centre?

Ultimately, the Centre presents itself as an integrator of competences and roles converging towards the identification and development of innovative solutions for the numerous problems that still afflict

life in the mountains. In the future, the Centre will also be active in proposing joint research with private companies, supporting them in the phases of project definition, prototype implementation, field and laboratory testing, and validation of results. As unibz will continue to be a founding member of iNEST, the CC will also be able to network and foster contacts with roles and skills provided by other universities in the North East. ■



Research Project

iNEST – Interconnected Nord Est Innovation Ecosystem

The iNEST project seeks to create a complementary and collaborative hub for innovation in the Nord-Est macro-region by leveraging on the innovative R&D excellences present in the area and interconnecting the local ecosystems. The Research and Innovation Programme of iNEST is organised according to a structure consisting of one HUB and nine Spokes, involving all Universities of Nord-East as well as the main Research and Technology Transfer Organisations.

The Free University of Bozen-Bolzano leads the activities of the Spoke 1 and develops research and technology transfer activities in the interdisciplinary area of mountain ecosystems. The main general objective is encouraging the development of new products, processes and lifestyles capable of consolidating or supporting local traditions that guarantee the survival and demographic

vitality of the mountain contexts from any standpoints (economic, environmental and social). This acting on:

- + enhancing the strengths of mountain resources (extensive agro-forestry-animal activities, flourishing tourism in unique environmental ecosystems, biodiversity, multiculturalism and local traditions);
- + hampering the major risks particularly relevant in these contexts (fragmentation and safety of production systems, hard logistics, hydrological hazards, reduced quality of life). Extensive use will be made of cross-disciplinary approaches to favour technology transfer actions based on ICT and smart digitalisation, sustainability, circular economy and social surveys.

unibz is also involved in the activities of the Spoke 3 and 6, focused on the green and digital transition for advanced manufacturing and on tourism, culture and creative industries, respectively, as well as on the four cross-cutting activities, i.e., start-ups and spin-offs, lab villages, citizen engagement and education and lifelong learning.



INFO BOX

FUNDING TYPE

European Union Next-GenerationEU (National Recovery and Resilience Plan/ Piano Nazionale di Ripresa e Resilienza – PNRR) Mission 4 Component 2, Investment 1.5 D.D. 1058 23/06/2022)

DURATION

09/2022 — 12/2025

RESEARCH AREA

All of the previously mentioned areas

UNIBZ RESEARCH TEAM

Prof. Fabrizio Mazzetto (PI), Prof. Guido Orzes, all professors, researchers, technologists and research fellows affiliated to the Competence Centre

PROJECT PARTNERS

University of Padova, University of Verona, Ca' Foscari University of Venice, Iuav University of Venice, University of Trento, University of Udine, University of Trieste, International School for Advanced Studies (SISSA), National Research Council (CNR), National Institute of Oceanography and Applied Geophysics (OGS), Corila, Cresme, Eurac Research, Bruno Kessler Foundation, Ca' Foscari University Foundation, Edmund Mach Foundation, Friuli Innovazione, HIT – Hub Innovazione Trentino, Autorità di Sistema Portuale del Mare Adriatico Orientale – Porti di Trieste e Monfalcone, Polo Tecnologico Alto Adriatico, SMACT, t2i.

WEBSITE

consorzioinest.it

SELECTED PUBLICATIONS

- + Carabin, G., Becce, L., Mandler, A., Mazzetto, F. (2023) Integrated determination of tractor centre of gravity and lateral rollover angle. Proceedings of the 49th International Symposium. *Actual tasks on Agricultural Engineering (ATAE 2023)* (pp. 23–32). Opatija, Croatia.
- + El Hokayem, A., Battini, F., Pernigotto, G., & Gasparella, A. (2023). Assessment of the Capabilities of a Simplification Algorithm for Building Energy Modelling for the Evaluation of Control Strategies: a Case Study in Bolzano, Italy, *Journal of Physics*. Open Access proceedings Journal of Physics: Conference series (iop.org)
- + Colombo, N., Brighenti, S., Wagner, T., Thakuri, S., Salerno, F. (2023). Hydrological and chemical effects of a changing cryosphere on mountain freshwaters, *Frontiers*. In *Earth Science*. DOI.org/10.3389/feart.2023.1234976



1 ↑ iNEST – Spoke 1 Parallel Session

2 ← PNRR Financing



Cooperation and Internationality

Il Centro di Competenza nasce per creare e gestire l'ecosistema dell'innovazione in contesti montani e si costituisce come punto di riferimento per tutte le attività di ricerca dei ricercatori e delle ricercatrici di unibz che sono coinvolti nel progetto iNEST – Interconnected Nord Est innovation Ecosystem.

Per questa ragione, i temi trattati all'interno del Centro di Competenza spaziano su tutti gli aspetti innovativi che possono riguardare la montagna, dall'habitat naturale alla qualità della vita, dall'economia alle strutture e infrastrutture, sia per l'energia sia per la logistica. Accanto a tali tematiche, il centro si occupa anche di transizione green e digitale nel manifatturiero e di turismo e cultura.

Per quanto riguarda le attività legate alla montagna, il Centro ha svolto nel 2023 un importante ruolo di coordinamento degli oltre cento ricercatori e ricercatrici che operano all'interno del progetto di creazione e gestione dell'Ecosistema dell'innovazione nei contesti montani, appartenenti alle Università di Padova, Udine, Venezia (Ca' Foscari) e Verona, oltre all'European Academy (Eurac) di Bolzano.

In parallelo, i ricercatori e le ricercatrici hanno operato, sui temi della manifattura avanzata in sinergia con le Università di Udine e Trento, Ca' Foscari e luav di Venezia e i poli di trasferimento tecnologico Friuli Innovazione (Udine), Fondazione Bruno

Kessler (Trento) e Polo Tecnologico Alto Adriatico (Pordenone). Invece, per quanto riguarda il settore del turismo, il Centro ha collaborato con le Università di Ca' Foscari di Venezia, Trento e Verona.

Oltre alle attività di ricerca e innovazione, il Centro è stato coinvolto anche nello svolgimento delle attività trasversali (Cross-Cutting Activities) del progetto iNEST: CC1 – spin off and start up; CC2 – Lab Village; CC3 – Citizen Engagement; CC4: Education and Long Life Learning, la cui realizzazione ha comportato attività di Terza Missione.

Infine, il Centro ha lavorato per estendere l'ecosistema ad aziende e altri soggetti operanti nel territorio del Nord-Est e del Mezzogiorno tramite il meccanismo dei bandi a cascata. Sono in particolare stati pubblicati due bandi che hanno permesso di assegnare oltre € 800.000 ad aziende del Nord-Est e oltre € 700.000 ad aziende operanti nel sud Italia per svolgere attività di ricerca industriale e sviluppo sperimentale su tematiche di innovazione in contesti montani.



Research Events

13 marzo 2023

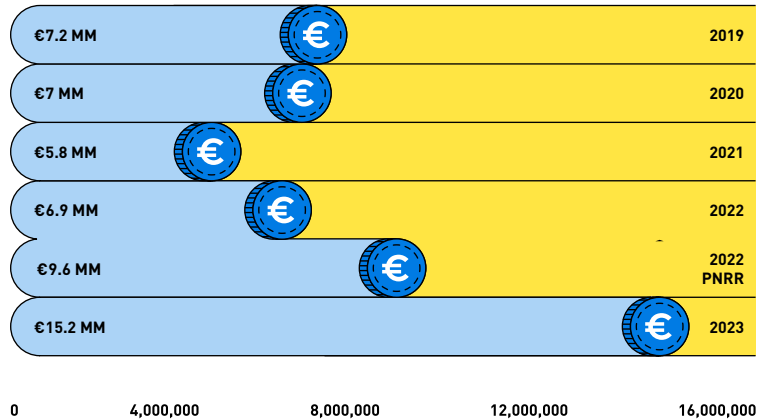
Kick-off meeting: Presentazione del Progetto iNEST – spoke1 “Ecosistema dell'innovazione nei contesti montani” alle istituzioni, alle imprese e ai portatori di interesse.



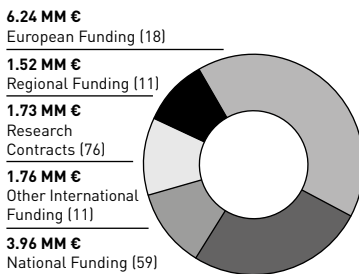
Figures on Research Projects and Funding 2023

In 2023, unibz completed 217 research projects. 200 new research projects were started, 175 of which received external funding for a total value of 15.2 MM €. In particular, 47 national PRIN projects were funded or co-funded by the European Union (Next GenerationEU) National Recovery and Resilience Plan – Mission4 Component2 Investment1.1 “Fund for the National Research Program and for Projects of National Interest” for a total value of 3.1 MM €.

External Funding 2019—2023

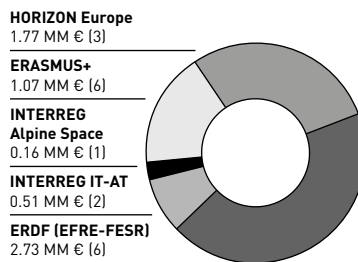


External Funding by Funding Source (and Number of Projects)



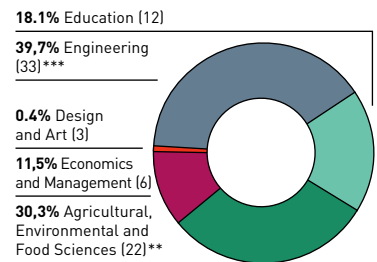
18 new EU-projects were started for a total value of 6.2 MM €

European Funding by Funding Programme (and Number of Projects)

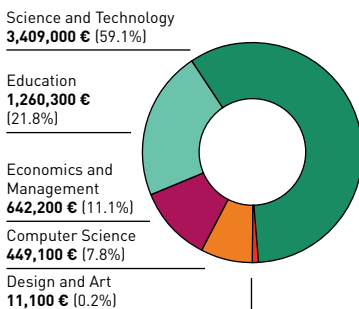


unibz signed 76 new research contracts with third parties for a total value of 1.7 MM €

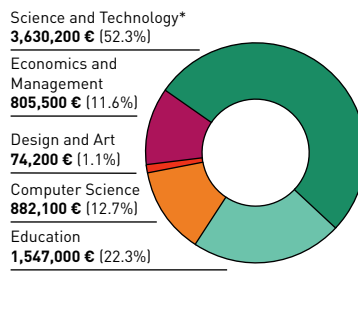
Research Contract Funding by Faculty* (and Number of Contracts)



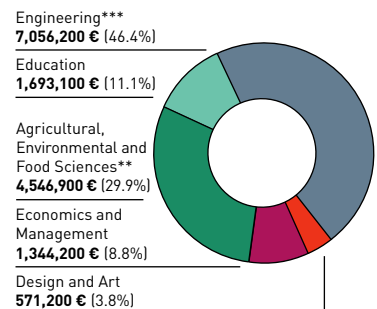
External Funding 2021



External Funding 2022



External Funding 2023



* Including Faculty-related Competence Centres

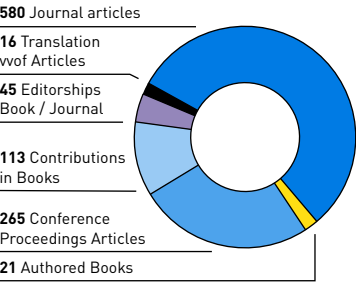
** Including projects started at the Faculty of Science and Technology

*** Including projects started at the Faculties of Computer Science and Science and Technology

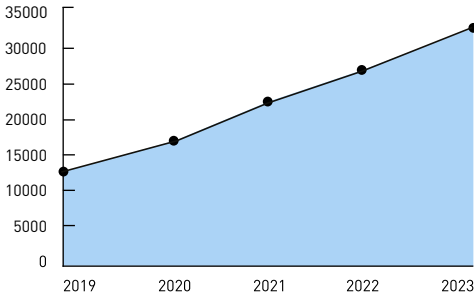
[Source: boris – unibz]

Figures on Peer-reviewed Publications in 2023

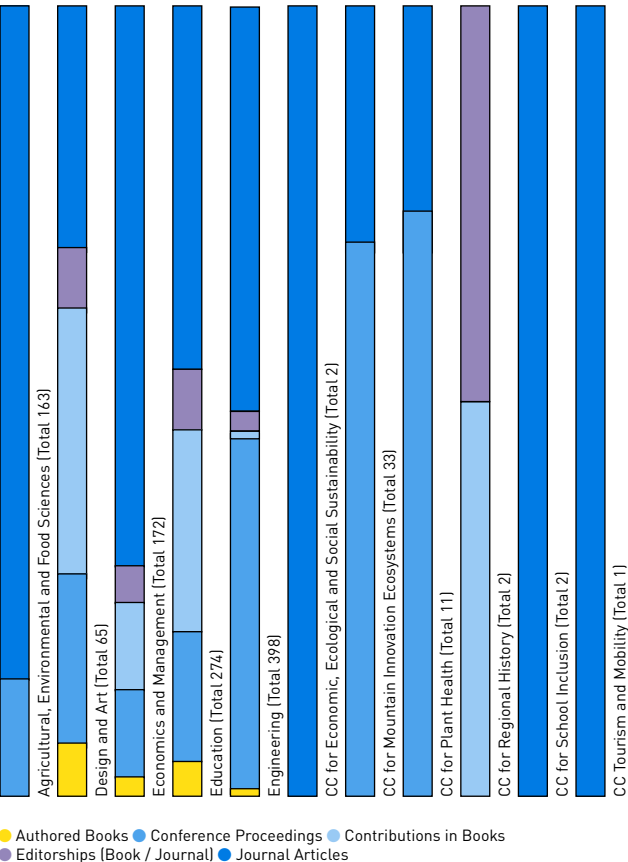
unibz Publications 2023 by Publication Type (Source: Boris)



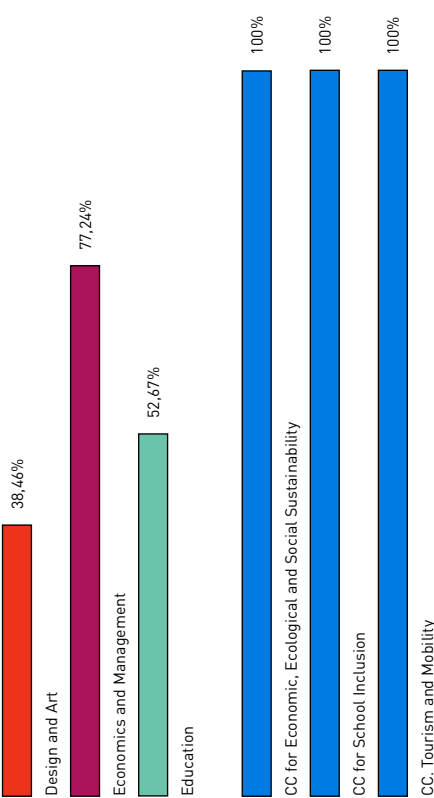
unibz Citations – Peer-reviewed publications from authors with unibz affiliation (Source: Scopus)



Publications by Faculty / Competence Centre and Publication Type (Source: Boris)



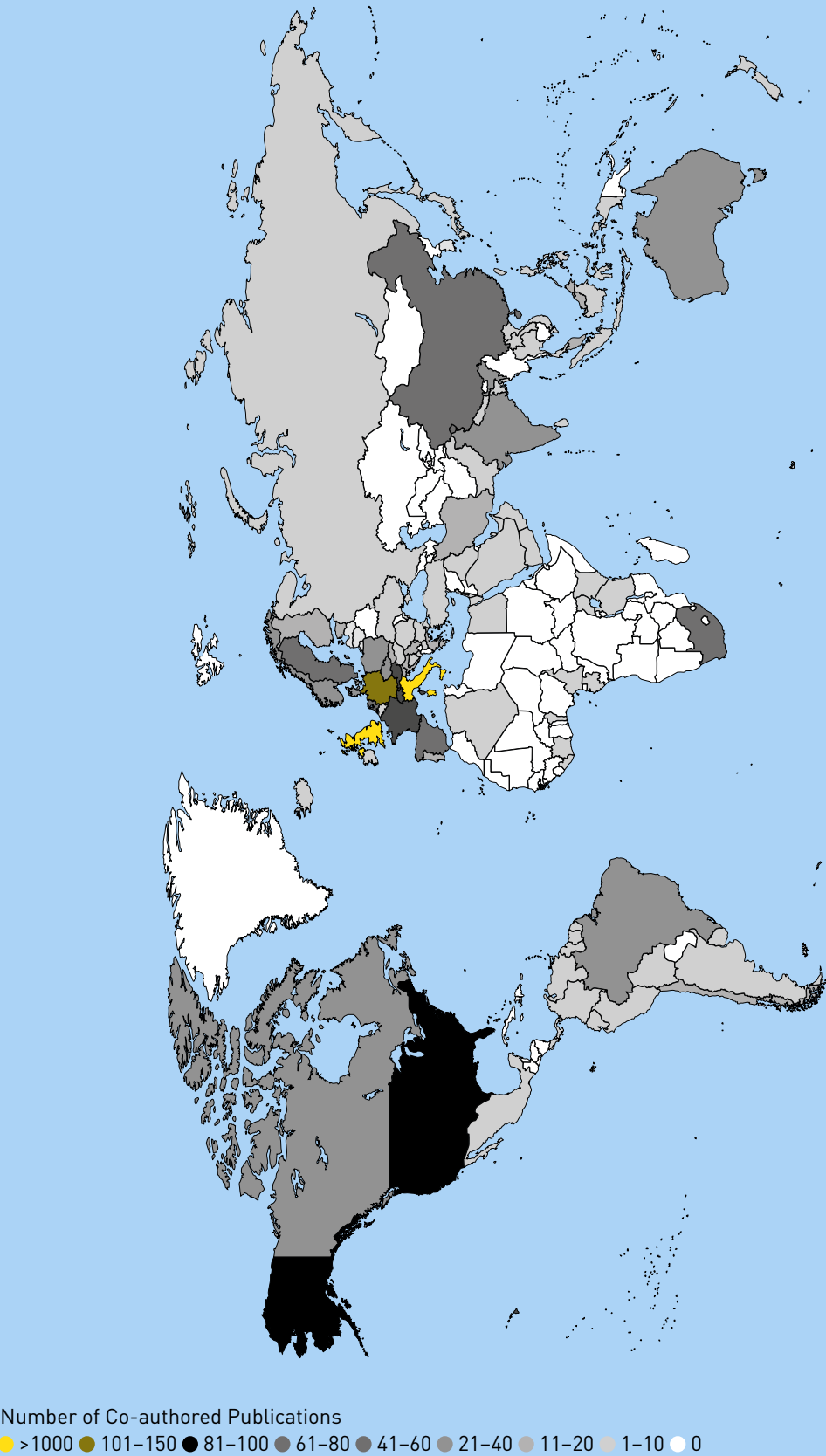
% of A-Class Academic Journal Articles Compared to the total number of articles published in academic journals in the same year



A-Class: Excellence journals in the non-bibliometric scientific areas (as rated by ANVUR). Not applicable to the Faculties of Engineering and Agricultural, Environmental and Food Sciences (STEM subjects).

2023 unibz Publications – Co-Authors Network

[Source: Scopus / Graphics: powered by Bing]



Industry and Society

Erfindungen und ihre Verwertung: Patente und Marken

Durch Patente werden Erfindungen geschützt und gleichzeitig der Öffentlichkeit zugänglich gemacht, die so zur Verbreitung von Wissen beitragen. Der Schutz und die Verwertung des geistigen Eigentums ist für die Universität ein wichtiger Indikator für ihre Innovationskraft.

Die unibz entwickelt Patente von ihren Forschenden, auch in Zusammenarbeit mit Unternehmen.

2023 hat die unibz mit ihren Forschenden 28 gewährte Patente und 1 angemeldetes Patent (in Prüfung); dazu kommen 3 registrierte europäische und 5 internationale Marken.

Die Erfindungen stammen aus den unterschiedlichsten Bereichen von Elektronik, IT, Benutzersystemen und Ingenieurbau über Mikrobiologie und Lebensmitteltechnologie bis hin zu neuen Designanwendungen.

Das neueste Patent wurde 2023 entwickelt und stammt aus dem Ingenieursbereich: Es ist eine neue Lösung zur Erhöhung der Leistungsdichte ohne zusätzlichen Platzbedarf in mechanischen Systemen, eine immer wiederkehrende Herausforderung für Konstrukteure und Konstrukteurinnen.



European Networks

unibz is actively promoting the collaboration of its researchers within several European research and innovation networks, together with the Research Center Laimburg and the Autonomous Province of Bozen-Bolzano and by means of a common liaison office in Brussels.

UnLiON – is an informal network of 54 Brussels-based liaison offices representing more than 160 excellent universities in Europe, Japan and Russia. In 2023 the Rector of the unibz held a keynote speech during the Annual Event whose main theme was “Science for Policy – getting the most impact out of Europe’ Universities in an increasing complex world”.

unibz is part of the Extended Secretariat to support the organisation of Brokerage events and the annual event.

www.unilion.eu

GIURI – Gruppo Informale di Uffici di Rappresentanza Italiani is an informal platform bringing together the liaison offices and representatives of Italian stakeholders’ interests at European institutions, and active in the field of Research & Innovation (universities, research centres, industries, trade associations, financial intermediaries, regions, and local authorities).

www.linkedin.com/company/giuriit

ERIAFF – European Regions for Innovations in Agriculture, Food and Forestry is an informal association of regional Authorities that



works on themes of common interest, also involving regional stakeholders. The Autonomous Province of Bozen-Bolzano is member of this network.

www.eriaff.com

unibz researchers also cooperate with other thematically focused working groups that are active in the fields of Agriculture and Food: Agroecology Working Group (chaired by unibz who is also one of the partners of the Agroecology Partnership), High Tech Farming, Plants Protein Working Group, Food System Working Group and Forested Region Working Group.

s3platform.jrc.ec.europa.eu/high-tech-farming

www.eriaff.com/?page_id=1306

EIT FOOD is a pan-European organisation that accelerates innovation to build a future-fit food system that produces healthy and sustainable food for all.

www.eitfood.eu

EUPHRESCO is a network of organisations that fund research projects and coordinate national research in the phytosanitary area. The overall goal of Euphresco is to support collaboration in

phytosanitary research, and to maintain itself as a strong, long-term network of research stakeholders. In 2022, the Free University of Bolzano was confirmed as member of EUPHRESCO through its Competence Centre for Plant Health.

www.euphresco.net

BIC The Bioeconomy Industry Consortium is a non-profit organisation set up in Brussels in 2013 to represent the private sector in a Public-Private Partnership (PPP) with the European Commission, focused on strengthening the bio-based industries sector in Europe. The Free University of Bozen-Bolzano is an associated member.

biconsortium.eu

1 ← Micro4Food Lab © Eleonora Lunardoni

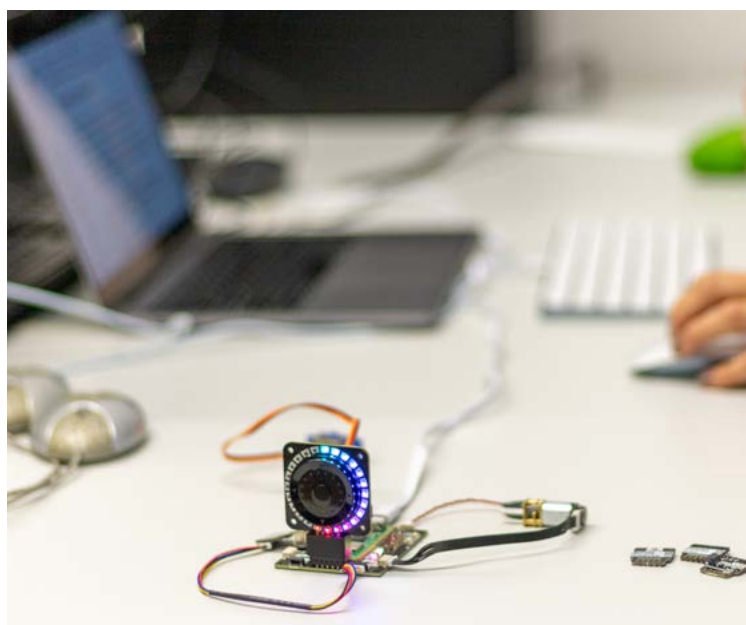
2 ← Logo ERIAFF

3 ↓ BITZ unibz fablab © Eleonora Lunardoni

In 2023 and for the third consecutive year, the Brussels liaison office together with the Career Service of unibz organised the initiative "Getting to know Europe" to inform students and researchers about the different workplace scenarios in Europe. For the third edition, the focus was put on International Cooperation, Migration, Defence, Investment Bank, Digital Industry and Artificial Intelligent.

BITZ unibz fablab

BITZ unibz fablab è il laboratorio di Fabbricazione Digitale della Libera Università di Bolzano, inaugurato l'8 marzo 2018. Le attività organizzate e promosse dal Fablab sostengono e diffondono la cultura del fare e del processo, attraverso un forte utilizzo di nuove tecnologie. Qui si possono realizzare oggetti e



lavori autonomamente, condividere con altri progetti legati alla fabbricazione o alla riparazione di oggetti. Il Fab Lab è anche uno spazio sociale di condivisione e di collaborazione, aperto alla città, a studenti delle facoltà unibz e delle scuole, cittadini, inventori e, infine, makers.

BITZ fa parte della rete internazionale dei Fablab, della rete italiana dei Fablab e Makerspace universitari e dispone di macchinari professionali per la produzione digitale come taglio laser, stampanti 3D e plotter da taglio. Oltre alle attività quotidiane come officina condivisa, BITZ collabora con varie istituzioni e cooperative di Bolzano. Nel 2023 è stato organizzato un 72h Game Development Hackathon (GAME JAM) assieme a "DUNG" (Associazione South Tyrolean Gaming Fertilizer); inoltre, BITZ è partner

del progetto SWAP del Comune di Bolzano, iniziativa per uno scambio intergenerazionale fra giovani e Senior volto a migliorare le competenze tecnologiche sempre più necessarie nella vita di tutti i giorni.

Il fablab BITZ unibz conta attualmente 912 membri, di cui 311 iscritti nel 2023. Il 83% sono membri della comunità universitaria e il 17% sono cittadini, la quota femminile è del 53%. La maggior parte degli utenti del fablab ha un'età compresa tra i 21 e i 30 anni, seguita dai 31–40enni e dai minori di 20 anni.

bitzfablab.unibz.it

fablabs.io/labs/bitzunibzfablab

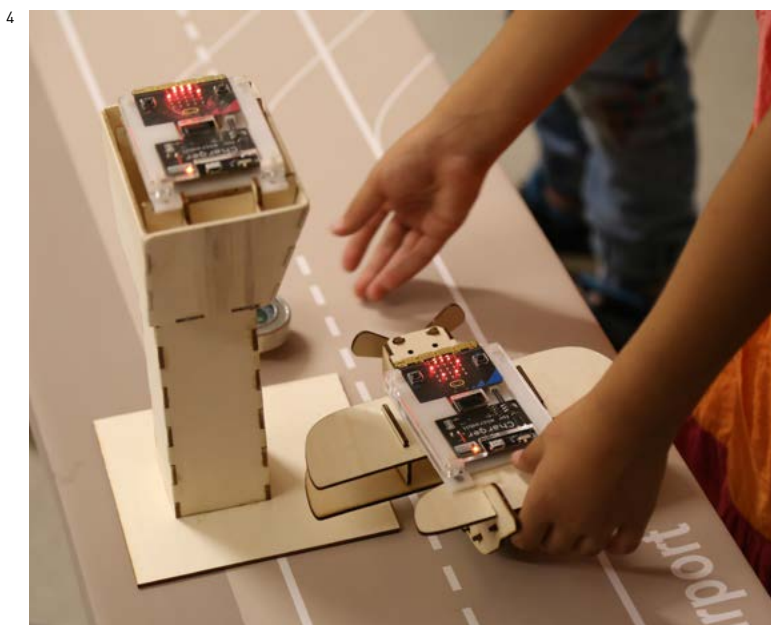
www.u-fab.it



NOI Techpark

Die unibz betreibt am NOI Techpark insgesamt 13 Labore der Fakultät für Ingenieurwesen und der Fakultät für Agrar-, Umwelt- und Lebensmittelwissenschaften, mit dem Centre for Family Business Management. Die Labore werden zu Lehrzwecken und für angewandte Forschung in Kooperation mit Unternehmen und öffentlichen Körperschaften verwendet.

Rund 230 Forschende sowie Techniker und Technikerinnen widmen sich aktuellen Herausforderungen und nachhaltigen Lösungen für Mensch und Umwelt in den Forschungsbereichen Agrarwissenschaft, Industrieingenieurwesen und Automation, Technologien intelligenter Systeme, Lebensmittelproduktion, Wasserwirtschaft, Digital sowie Family Business Management. Themenbereiche sind u. a. die zunehmende Wasserknappheit und damit verbundenen hydrologischen Innovationen, die



Verarbeitung von Big Data, Ernährungsfragen mit Blick auf Entwicklung von Smart Food, Abfallbewirtschaftung und technologische Innovationen für die Landwirtschaft.

Im Jahr 2023 waren Forschende der unibz in 144 Forschungsprojekten mit 240 unterschiedlichen Kooperationspartnern, davon 87 private Unternehmen und Industriepartner in den Laboren am NOI Techpark tätig. Die Gesamtsumme an laufenden, extern finanzierten Projekten betrug € 7,1 Mio. was einer durch Drittmittel finanzierten Quote von 91,5 % entspricht.

Im Jahr 2024 wird die neue Fakultät für Ingenieurwesen am NOI Techpark fertiggestellt werden.

*Die Daten beziehen sich auf alle 2023 in den unibz Research Areas im NOI Techpark laufenden Forschungsprojekte.

noi.bz.it/en/laboratories

Key projects 2023 at NOI Techpark

Biologisch abbaubare Elektronik

LAUFZEIT: 2023 – 2025

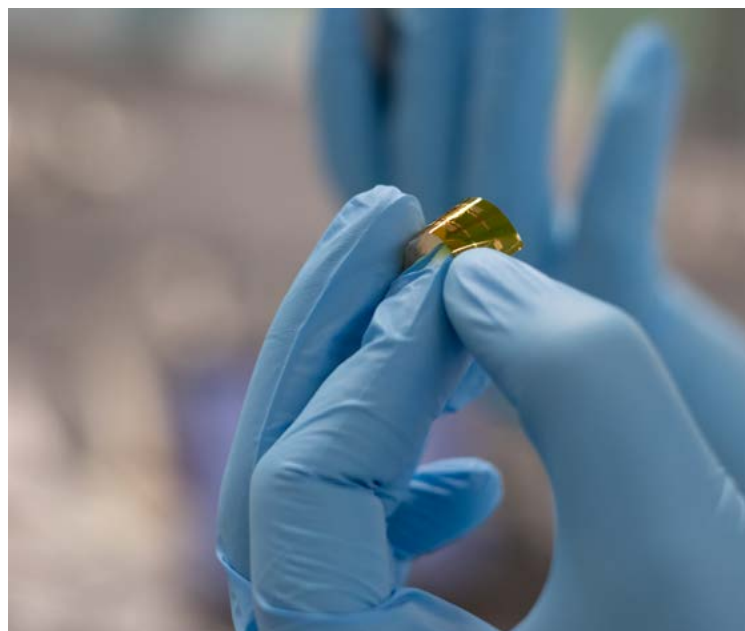
PROJEKTBUDGET: € 79.500

FÖRDERGEBER: MUR, European Union – Next GenerationEU – M4C211.1

PARTNER: Universitäten Venedig, Modena und Reggio Emilia

LABOR: Sensor System Technology Lab

Nachhaltige Elektronik ist ein neues Konzept, das darauf abzielt, elektronische Bauteile auf umweltfreundliche Weise zu ent-



werfen, herzustellen, zu verwenden und zu recyceln. Das PRIN 2022 Projekt BIOEL hat zum Ziel, die Grundlagen für den nächsten Technologiesprung in der Dünnschichtelektronik zu schaffen, indem Schaltkreisblöcke entwickelt werden, die nicht nur leistungsstark, sondern auch umweltfreundlich und komplett biologisch abbaubar sind. Von der Durchführung einer umfassenden Studie zur Biokompatibilität von Dünnschichttransistoren-Materialien bis hin zur Herstellung von vollständig biologisch abbaubaren Basiskomponenten und Schaltungsblöcken – das Projekt soll dazu beitragen, Wissen zu erweitern und praktische Anwendungen zu ermöglichen.

4 ← BITZ unibz fablab © Eleonora Lunardoni

5 → NOI Techpark © Ivo Corrà

6 ↑ Cyber Physical Systems Engineering

© Eleonora Lunardoni

Zugang zu Daten vereinfachen

LAUFZEIT: 2019–2023

PROJEKTBUDGET: € 765.000

FÖRDERGEBER: EU Horizon 2020

PARTNER: ZHAW, Athena, Fraunhofer IGD, SIRIS Academic, MPG, CNRS, SIB, Infili Technologies SA

LABOR: Smart Data Factory

Das Wachstum und die Verfügbarkeit von Daten sowie ihre Demokratisierung haben die Datenerforschung in den letzten 10 Jahren radikal verändert. Das EU-Projekt INODE zielt darauf ab, den Zugang zu Daten zu vereinfachen, und zwar über eine Reihe flexibler, zweckmäßiger und nachhaltiger Dienste für die Erkundung offener Datensätze. Diese helfen den Usern und Userinnen dabei, mehrere Datensätze miteinander zu verknüpfen und zu nutzen, auf

Daten zuzugreifen und sie zu durchsuchen, Systemunterstützung beim Verstehen von Daten und der Formulierung von Abfragen zu erhalten und Daten zu erforschen und durch Visualisierungen neue Erkenntnisse zu gewinnen. Die entwickelten Techniken wurden an drei realen Anwendungsfällen getestet.

Generationswechsel in Familienunternehmen

LAUFZEIT: 2023–2024

PROJEKTBUDET: € 47.000

FÖRDERGEBER: Aspiag Service GmbH

CENTRE: Centre for Family Business Management

Im Projekt mit Aspiag Service geht es darum, herauszufinden, wie Familienunternehmen im 21. Jahrhundert den Übergang von einer Generation zur nächsten meistern. Im Fokus der Forschung steht, wie sich der Generationswechsel bei Unternehmerdynastien auswirkt und wie Familien- und Unternehmenstraditionen genutzt werden, um Innovation voranzutreiben. Das Projekt besteht aus zwei Teilen, einem theoretischen und einem empirischen, also einer konkreten Fallstudie. In Letzterer werden die Erfahrungen einiger Familienunternehmen, die mit Aspiag Service verbundene sind, untersucht. Ziel ist es, zu verstehen, wie sie den Generationswechsel angehen, und daraus Erkenntnisse zu gewinnen, die zukünftig erfolgreiche Nachfolgeprozesse fördern.

Flexibel automatisieren

LAUFZEIT: 2021–2023

PROJEKTBUDET: € 30.000

FÖRDERGEBER: Autonome Provinz Bozen

PARTNER: Thermo Tecno

Management GmbH

LABOR: Smart Mini Factory

Die Firma TTM – Thermo Tecno Management bietet Lösungen zur Ummantelung von technischen Dämmstoffen. Ihr Fokus: individuelle Lösungen für unterschiedliche Kundenbedürfnisse. Umso wichtiger ist eine flexible und effiziente Produktion. Im Rahmen des gemeinsamen Forschungsprojekts hat das Team der Smart Mini Factory eine automatisierte Teile-Entnahme durch kollaborative Roboter, sogenannte Cobots, entwickelt und getestet. Auf Basis der entwickelten Bahnsteuerung und einer neuen Ultra-

schall-Schneidtechnologie kann das Unternehmen in Zukunft jene Schneidprozesse, die für Mitarbeitende risikoreich sind, automatisieren und damit auch die Produktivität erheblich steigern.

Gesundheitsbooster schwarzer Holunder

LAUFZEIT: 2023–2024

PROJEKTBUDET: € 50.000

PARTNER: Iprona AG

LABOR: Micro4Food

Hinter diesem Projekt steht die Idee, schwarzen Holunder als Zutat für neue funktionelle Getränke zu verwenden. Seine Beeren haben viele gesundheitsfördernde Eigenschaften gezeigt, darunter antioxidative, antikarzinogene, entzündungshemmende, antimikrobielle, krampflösende, antidiabetische, antidepressive und antivirale



7

Wirkungen. Ziel des Projekts ist es deshalb, herauszufinden, wie Produkte mit schwarzem Holunder die Darmgesundheit beeinflussen können. Dazu wird ein spezielles Modell des menschlichen Verdauungstrakts verwendet, der SHIME®. Er simuliert den menschlichen Gastrointestinaltrakt und ermöglicht es, die Wirkung der Produkte auf die Darmbakterien nachzubilden und zu untersuchen.

Verwertung von Reisnebenprodukten

LAUFZEIT: 2023–2025

PROJEKTBUDET: € 112.000

FÖRDERGEBER: MUR; European Union – Next GenerationEU – M4C2I1.1

PARTNER: Universität Verona, Riso Melotti GmbH

LABOR: Food Technology

Das PRIN 2022 PNRR-Projekt RAINDROP zielt darauf ab, gebrauchtes Frittieröl unter Verwendung von Reiskleie, einem Nebenprodukt der Reisverar-



beitung, zu recyceln. Die Reiskleie wird als Adsorptionsbett in einem überkritischen Fluidextraktionsprozess verwendet, um niedermolekulare Verbindungen zu entfernen, die für die Ranzigkeit des gebrauchten Öls verantwortlich sind. Zusätzlich werden bioaktive Verbindungen aus den Reishülsen extrahiert und dem gereinigten Öl zur Anreicherung zugesetzt.



7 ← Smart Mini Factory © Serena Osti

8 ← Food Sciences for Innovation and Authenticity

© Eleonora Lunardonì

9 ↑ Shime © Eleonora Lunardonì

New Professorships

Faculty of Agricultural, Environmental and Food Sciences



Leonardo Montagnani

POSITION: Endowed Professor (Forest management and silviculture, AGR/05)

FORMER POSITION: Assistant Professor

RESEARCH FOCUS: His primary focus lies in examining how climate change impacts carbon and water cycles, especially within forest and tree ecosystems.



Roberto Tognetti

POSITION: Professor of Forest Ecology and Management, director of the Master in Environmental Management of Mountain Areas (EMMA).

FORMER POSITION: Professor of Forest Ecology and Management at the University of Molise. Chair of the EFI (European Forest Institute) Project Centre on Mountain Forests (MOUNTFOR) and the COST Action CA15226 Climate-Smart Forestry in Mountain Regions (CLIMO).

RESEARCH FOCUS: Research concentrates on forest ecophysiology, investigating the interplay among climate change, environmental disturbance, and functional ecology. Expertise focuses on integrating ecosystem processes and ecological indicators across various spatial and temporal scales.



Damiano Zanutelli

POSITION: Tenured Associate Professor – Faculty of Agriculture, Environmental and Food Sciences. Academic discipline: Arboriculture and forest systems (07/AGRI-03)

FORMER POSITION: Assistant Professor (RTD-B) – Faculty of Agriculture, Environmental and Food Sciences. Improvement of water and nutrient use efficiency in fruit tree systems

RESEARCH FOCUS: His research is based on characterisation of carbon, water, and fluxes at plant and ecosystem scale in fruit tree systems. He analyses plant response to abiotic stress like drought and heat. Professor Zanutelli is also focusing on the application of plant-based sensors for the continuous monitoring of plant physiology and the improvement of irrigation water management.

Faculty of Design and Art



Sónia Cabral Matos

POSITION: Associate Professor in Design

FORMER POSITION: Before joining unibz in 2023, she was a Lecturer (Grade B) in Design and Screen Cultures at Edinburgh College of Art, University of Edinburgh.

RESEARCH FOCUS: Using design research as a methodology, she developed projects focusing on eco-social transformation while promoting community engagement with ecologically relevant themes through conceptual tool design and participatory interventions. Given the complexity of the chosen topics, Prof. Cabral Matos often works in interdisciplinary teams with expertise in social and natural sciences.

Faculty of Education



Angelika Pahl

POSITION: Associate Professor of Physics Didactics (FIS/08)

FORMER POSITION: Docent of Early Science Education at the University of Teacher Education Bern (Switzerland). Previously, she also conducted research on science education for children at the Faculty of Chemistry at Bielefeld University (Germany).

RESEARCH FOCUS: Prof. Dr. Pahl's research is focused on hands-on science activities for children in kindergarten and primary school. She investigates children's ideas of inanimate natural phenomena and the effects of inquiry-based learning, as well as the attitudes and confidence of kindergarten and primary school teachers when teaching physics/science.



Ilaria Riccioni

POSITION: Associate Professor in Sociology sps/07 at the Faculty of Education, Campus Brixen

FORMER POSITION: Researcher in Sociology sps/07 at the Faculty of Education, Campus Brixen.

RESEARCH FOCUS: Her work develops between critical sociology through classical and modern sociological thought and empirical research through the qualitative methodology of life stories and participant observation. In the research developed so far, Prof. Riccioni has explored various themes and phenomena that trigger social change, including: the dynamics of intercultural co-existence; music as a factor of social cohesion; the social and political impact of the theatre in a globalised and digitalised society; the social impact of art and artistic phenomena as crucial factors in processes of socialisation, inclusion, and social resistance; other research interests include the relationship between art and science and the social impact of digitalisation in everyday life.

Faculty of Engineering



Maria Teresa Trisciuzzi

POSITION: Associate Professor of Children's Literature (M-PED/02 Storia della pedagogia) (PAED-01/B Storia della educazione e dell'educazione)

FORMER POSITION: Docent of "Children's Literature", "Literacy in Kindergarten", "Reading and approach to texts", "Pedagogy and promotion of reading" at unibz; RTD Junior and RTD SENIOR on Children's Literature at the Faculty of Education of unibz; from 2014 to 2020 was Contract Professor of Children's Literature at Department of Education of Uni of Urbino. Previously, she got her PhD in Pedagogical Sciences at the Department of Education of Bologna University.

RESEARCH FOCUS: Her research interests extend to topics such as the relationship between childhood, nature and the ecological perspective; educational conditioning and gender studies; the inclusive, intercultural and multicultural dimension of Children's literature; family stories represented and narrated in past and present Children's literature; the Visual Storytelling between picture book, wordless book and wimmelbuch.



Ilenia Fronza

POSITION: Associate Professor of Information Processing Systems (ING-INF/05)

FORMER POSITION: Researcher at unibz – Faculty of Engineering

RESEARCH FOCUS: Professor Fronza's area of research is Computing Education Research (CER), which encompasses all aspects of teaching and learning computing at all levels, ranging from early education to professional contexts. Her research focuses on software engineering education and training, pedagogical approaches and tools, diversity, and inclusion.



Oliver Kutz

POSITION: Associate Professor of Informatics (INF/01)

FORMER POSITION: Junior and Senior Researcher at unibz, Faculty of Computer Science. Previously Principal Investigator at the University of Magdeburg (Germany) and Postdoctoral Fellow at the Universities of Bremen (Germany) and Manchester (UK).

RESEARCH FOCUS: The research focus of Prof. Kutz lies at the crossroads of cognitive artificial intelligence, computational creativity, formal logic and applied ontology, combining ideas and methods from these diverse areas to address challenges in knowledge-based AI in the fields of arts (music, architecture), robotics, medicine, and sustainability studies. He is currently the President of the International Association for Ontology and its Applications, IAOA.



Giovanni Pernigotto

POSITION: Associate Professor of Building Physics and Building Energy Systems (ING-IND/11)

FORMER POSITION: Senior researcher at unibz, Faculty of Engineering

RESEARCH FOCUS: His research interests range from the characterization of the thermal behaviour of the building envelope to the study of the energy performance of buildings and the quality of the built environment, including analyses on the existing building stock for the definition of new energy policies. His research methods combine experimental and simulation approaches, applied at envelope element, building system and urban scale.



Erwin Rauch

POSITION: (Endowed) Full Professor for Sustainable Manufacturing and founder/Head of the new Sustainable Manufacturing Lab (SML) at NOI Techpark in Bruneck-Brunico

FORMER POSITION: Associate Professor for Manufacturing Systems and Technologies and Head of the Smart Mini Factory (SMF) laboratory for Industry 4.0. Over the last years he conducted research in the field of Industry 4.0, Smart Manufacturing, Industrial Collaborative Robotics, Industrial IoT, Digitalization in Manufacturing and Systems Engineering.

RESEARCH FOCUS: The new Chair of Sustainable Manufacturing is active in research on Circular Economy on product/system level, Decarbonisation and Life Cycle Assessment, Resource Efficiency and Waste Management in Production and Socially Sustainable Manufacturing. According to the Dual Transformation (Digital and Green) advanced and digital technologies are studied to enable the sustainable transition of producing companies with a specific focus on small and medium sized enterprises (SMEs).

Awards and Distinctions

Agricultural, Environmental and Food Sciences

24 November 2023

Young Researcher Award 2023 of the Stiftung Südtiroler Sparkasse given to Prof. **Hannes Schuler**.

Economics and Management

30 giugno 2023

Il prof. **Alfredo De Massis** ha ricevuto il *Barbara Hollander Award* della Family Firm Institute.

3 agosto 2023

Dr.ssa **Isabel Schäufele Elbers** è vincitrice del Premio di ricerca per la sostenibilità 2022 della Fondazione Cassa di Risparmio di Bolzano e della Cassa di Risparmio di Bolzano per i suoi risultati scientifici sul comportamento di consumatori/trici e sul consumo alimentare sostenibile.

13 settembre 2023

La prof.ssa **Laura Valle** è stata eletta membro del Consiglio della European Association of Jurists.

16 novembre 2023

Il prof. **Alfredo De Massis** e il prof. **Sascha Kraus** sono stati inseriti negli elenchi *Clarivate Highly Cited Researchers 2023 in the Field of Economics and Business*.

24 novembre 2023

Claudia Cozzi è vincitrice del Premio alla Ricerca per Giovani Ricercatori e Ricercatrici 2023 della Fondazione Cassa di Risparmio di Bolzano alla Libera Università di Bolzano per i suoi risultati scientifici di spicco.

24 novembre 2023

Il prof. **Alfredo De Massis** ha vinto il Premio alla Ricerca 2023 della Fondazione Cassa di Risparmio di Bolzano alla Libera Università di Bolzano per i suoi risultati scientifici di spicco.

3 dicembre 2023

Un articolo delle prof.sse **Monica Rosini** e **Lucia Busatta** ha vinto il *Bando 2023* della rivista *Quaderni costituzionali* sul tema "La Costituzione a scuola: il ritorno dell'insegnamento dell'educazione civica".

Engineering

Gennaio 2023

Il prof. **Oliver Kutz** è stato eletto presidente dell'International Association for Ontology and its Applications (IAOA).

March 2024

The paper "Using supply chain databases in academic research: A methodological critique" (co-authored by Giovanna Culot, Matteo Podrecca, Guido Nassimbeni, prof. **Guido Orzes** and Marco Sartor) received the *Top Downloaded Article Award* of the Journal of Supply Chain Management.

14. – 15. Mai 2023

Auf dem International Symposium on Integrated Magnetism 2023 (iSIM 2023) in Sendai, Japan, erhielt Prof. **Niko Münzenrieder** den iSIM Young Investigator Award.

13 – 16 Agosto 2023

Durante la quinta edizione della Conferenza Internazionale di Tecnologia Elettronica Flessibile

(IFETC), tenutasi a San José (USA), il Dott. **Albert Heinrich Lanthaler** ha ricevuto il premio come miglior articolo tra gli studenti.

21 September 2023

Dott. **Giulia Elli** received the *ZONTA International Women in STEM/MINT Award*.

September 2023

Prof. **Diego Calvanese** wurde zum Mitglied des Board of Trustees der International Joint Conference on Artificial Intelligence (IJCAI) ernannt.

October 2023

The data-update for "Updated science-wide author databases of standardised citation indicators" (elsevier.digitalcommonsdata.com) where a publicly available database of top-cited scientists that provides standardised information on citations, h-index, co-authorship adjusted hm-index, citations to papers in different authorship positions and a composite indicator (c-score) were created, several professors of the Macroarea "Industrial Engineering and Automation" are listed among the most cited professors for the recent year as well as among the 2% top scientists for long career-impact in their specific fields; for career-long impact: Prof. **Dominik Matt**, Prof. **Franco Concli**; for single recent year impact: Prof. **Erwin Rauch**, Prof. **Dominik Matt**, Prof. **Patrick Dallasega**, Prof. **Franco Concli**, Prof. **Renato Vidoni**, Prof. **Yuri Borgianni**.

29. Oktober – 1. November 2023
Auf der internationalen IEEE

Sensors Konferenz in Wien, Österreich wurde **Niloofar Saeedzadeh Khaanghah** mit dem ersten Platz des *Best Student Paper Awards* ausgezeichnet.

18 – 20 November 2023
Nunzia Zecchillo, Margherita Molinaro and Prof. **Guido Orzes** received the “*DSI Chapter Best Paper Presentation Award – Finalist*” for recognition of outstanding achievement at the Decision Sciences Institute 2023 Annual Conference for the paper titled *Effectiveness of Firm-level Sustainability Policies: A Systematic Literature Review*.

Gennaio – Dicembre 2023
Dr. **Ivano Colombaro** ha vinto il *Progetto Giovani Ricercatori dell'Istituto Nazionale di Matematica Avanzata – Gruppo di Fisica Matematica*, con il progetto “*Modelli per la propagazione termica governati dalla legge di Darcy frazionaria*”.

Januar – Dezember 2023
Im Dezember 2023 wurde Dr. **Ivano Colombaro** vom The European Physical Journal Plus mit dem *Distinguished EPJ Referee 2023 Award* ausgezeichnet.

Design and Art

The book “*Registica Multimodale. Saggi 1998–2022 / Multimodal Directing. Essays 1998–2022*” authored by Prof. **Letizia Bollini** has been included as finalist/short list in the researchers and teachers category of the 2023 IAWDA Aiap Women in Design Award, 5th International Edition. The

publication “*Designing Designers: From Products to Teaching*” (Corraini Edizioni) by Prof. **Kuno Prey** has been selected for the ADI Design Index 2023.

Dr. **Marc Herbst** was nominated and awarded the Fred Dewey Legacy Project – Venice California, Activating Fred’s Library Residency.

Education

25 marzo 2023
Ad Arezzo, la prof.ssa **Silvia Del Negro** è stata eletta presidente della Associazione Italiana di Linguistica Applicata (AltLA).

26 October 2023
Prof. **Kolis Summerer** received the Google Trust & Safety Award 2023.

24 November 2023
Dr. **Marco Robecchi** received the *La Grange dell'Académie des Inscriptions et Belles Lettres award* for his book *Riccolde de Monte di Croce, “Liber peregrinationis”, traduit par Jean le Long d’Ypres, Strasbourg*.

29 November 2023
At the University of Milano Bicocca, Dr. **Michele Cagol** received the 4th *Riccardo Massa Award* for the article *Verso una pedagogia radicalmente relazionale*, published in *MeTis*, 12(2), pp. 250–265 (2022).

15 December 2023
Prof. **Paul Videsott** presented to the European Parliament his publication *Les Ladins des Dolomites*. The book is the first comprehensive presentation of the Ladins of the Dolomites in French.

Management of Cooperatives

Dr. **Peter Agstner** was appointed as a member of the IGA advisory board (Internationales Institut für Genossenschaftsforschung im Alpenraum).

Social Work Social Pedagogy and Social Policy

02 December 2023
Dr. **Marina Della Rocca** received a *special mention* in the scientific literature section of the 24th Edition of the “*Il Paese delle Donne Award 2023*” for her book, *Una casa per tutte le donne. Etnografia della relazione di accoglienza con donne migranti in situazione di violenza*. The award ceremony took place in the historical archives of the UDI (Unione Donne Italiane) at the Casa Internazionale delle Donne in Rome. The book, published by Edizioni Junior in 2023, highlights the many facets of the problems faced by migrant women, especially those who have experienced violence.

School Inclusion

18 dicembre 2023
La ricercatrice dr.ssa **Sara Baroni** ha ricevuto il *Premio “Claudia Augusta” 2023* per la rilevanza della tesi di Dottorato dal titolo “*Educazione, emergenza, resilienza. Narrazioni dall’esperienza degli insegnanti partecipanti al progetto ripARTiamo! al tempo del Covid-19*” presso il Centro Trevi di Bolzano.

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