

Research Report 2020



Freie Universität Bozen
Libera Università di Bolzano
Università Lìdia de Bulsan





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Preface



President

Prof. Ulrike Tappeiner

Das Jahr 2020 war ein schwieriges Jahr nicht nur für die Freie Universität Bozen, sondern für die Gesellschaft insgesamt. Die Pandemie hat die Menschheit vor neue Herausforderungen gestellt, die nur gemeinsam und mit enormem Aufwand zu meistern sind. Dabei hat sich die Bedeutung und absolute Notwendigkeit der Forschung für eine Gesellschaft neu manifestiert. In kürzester Zeit konnten Impfstoffe hergestellt werden, aber auch die Analyse von Daten war ein zentrales Element für die Politik, um richtige und evidenzbasierte Entscheidungen treffen zu können. Die Grundlage dafür stellt die intensive Grundlagenforschung über viele Generationen dar. Diese Situation hat uns gezeigt, dass die Forschung einen entscheidenden Beitrag zur Resilienz einer Gesellschaft leistet. Umso unverständlicher wiegt

daher der Umstand, dass viele Skeptiker und Leugner der Pandemie den Fake News im Internet mehr Gehör schenken als den Ergebnissen seriöser wissenschaftlicher Arbeiten, die nachweislich viele Krankheiten praktisch ausgelöscht haben.

Mit der Gründung der dreisprachigen Universität in Bozen im Jahr 1997 hat es sich das Land Südtirol zum Ziel gesetzt, nicht nur entsprechende Ausbildungsmöglichkeiten in der Region zu entwickeln, sondern darüber hinaus einen tiefgreifenden Mehrwert durch Forschungsaktivitäten für das Territorium zu generieren. Mit ihren fünf Fakultäten deckt die Universität ein breit gefächertes Spektrum an Wissenschaftsdisziplinen ab, in denen sie einen wertvollen Beitrag zur Entwicklung des Territoriums leisten möchte.



Rector

Prof. Paolo Lugli

Anche se la pandemia ha reso più difficile l'organizzazione della ricerca, i ricercatori e professori di unibz nelle varie facoltà hanno continuato la loro attività con grande intensità e con un alto livello di qualità. L'eccellenza della ricerca è testimoniata da numerose pubblicazioni in riviste e conferenze internazionali di altissimo livello, ma anche nei tanti riconoscimenti scientifici ottenuti da professori e ricercatori nella loro community. Un highlight particolare nel 2020 è stato il primo brevetto di unibz, che mostra da una parte l'alta qualità della ricerca e dall'altra parte l'impatto sul territorio.

La qualità della ricerca ha un suo impatto anche sui ranking delle università: unibz per la quarta volta consecutiva si classifica al primo posto tra le piccole università italiane non statali nel ranking di CENSIS, ed è tra le prime



Vice Rector for Research
Prof. Johann Gamper

500 università nel mondo nel ranking internazionale del periodico "Times Higher Education".

Un aspetto sempre più importante per le università è l'acquisizione di fondi terzi per sostenere la ricerca. Dal 2018 l'importo di fondi terzi è aumentato del 20%, fino a raggiungere 7 milioni di euro nel 2020. Di questi, 2,56 milioni di euro provengono da finanziamenti UE e 1,07 milioni di euro da contratti di ricerca prevalentemente con aziende del territorio. Questi numeri dimostrano che i nostri professori e ricercatori non solo sono attivi a livello europeo/internazionale, ma dedicano anche un grande impegno nelle collaborazioni con il territorio.

unibz fosters excellence in research in areas that are particularly relevant for the territory, and runs 13 state-of-the-art research laboratories at the South Tyrol Science and Technology Park (NOI Techpark).

In 2020, the "Senselab" has been added as a new laboratory, which aims at developing new sensor technologies with applications in biomedicine, environmental monitoring, or agriculture to name but a few. Being located at the NOI Techpark, the research labs are embedded in a stimulating and vibrant environment in close contact with companies, start-ups and other research institutes, thereby providing a significant contribution to the transfer of knowledge to the industry and society.

In a similar vein, the mission of the Competence Centres of unibz is to strengthen application-oriented research in selected fields. This is done in close collaboration with local stakeholders and with a focus on challenges that emerge from the territory. In 2020, two new Competence Centres were established.

The Competence Centre for School Inclusion aims at discussing research evidence from the Italian and South Tyrolean inclusive school system in the international scientific community. The Competence Centre for Plant Health investigates the impact of various stress factors on the health of plants.

All the results described in this report could be attained thanks to the effort and dedicated work of our professors and researchers, and with the support of a competent administration. We would like to express our sincere gratitude to the entire unibz community.

We hope you will enjoy reading the Research Report 2020.

Ulrike Tappeiner
 Paolo Lugli
 Johann Gamper



Highlights

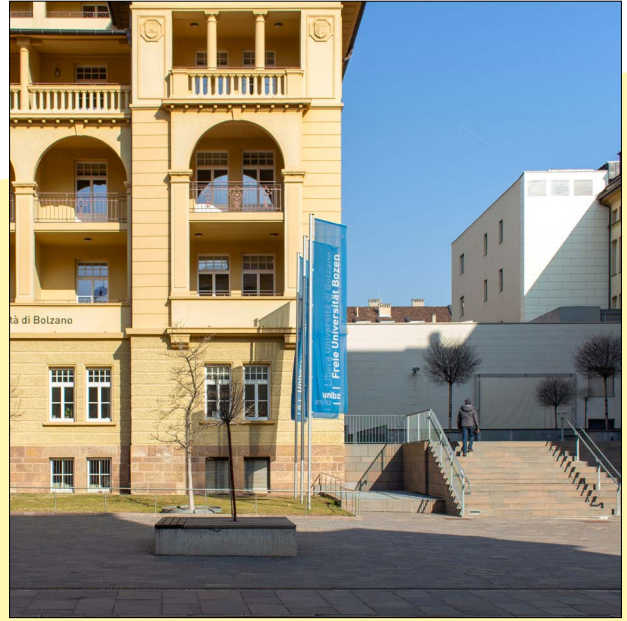
Un gel con proprietà antiossidanti dalle bucce di mela. Il primo brevetto di unibz

Dagli scarti della lavorazione delle mele, una cera con un effetto antiossidante e utilizzabile dall'industria alimentare e cosmetica: ecco il primo brevetto depositato dalla Libera Università di Bolzano al Ministero dello Sviluppo economico. Il traguardo è stato tagliato nei laboratori del Parco Tecnologico dai ricercatori dell'équipe di Matteo Scampicchio, ordinario di Tecnologie alimentari alla Facoltà di Scienze e Tecnologie. Come in occasioni di precedenti ricerche e scoperte, Scampicchio e il suo team di ricercatori sono riusciti a estrarre valore dai residui delle lavorazioni di prodotti del territorio che altrimenti andrebbero smaltiti, con un costo per le aziende. Infatti, il punto di partenza di questa scoperta sono state le bucce delle mele, rimaste come residui di lavorazione delle industrie altoatesine di trasformazione alimentare. I ricercatori di unibz hanno prodotto un oleogel con capacità antiossidanti che potrebbe essere usato dall'industria alimentare sia come ingrediente sostitutivo naturale a composti di sintesi che dall'industria cosmetica. Inoltre, il gel potrebbe essere utilizzato anche per la produzione di pet food, ovvero mangimi per animali domestici.



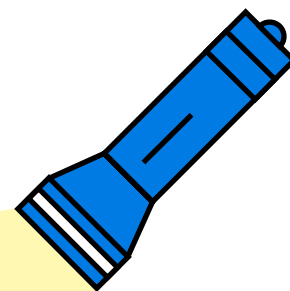
Giovanna Ferrentino, Prof. Matteo Scampicchio | Photo: ©unibz

Photo: ©unibz



8 Professor*innen der unibz unter Top 2% der Wissenschaftler*innen weltweit

Knapp 160.000 Wissenschaftler*innen zählen weltweit zu dem engen Kreis der Top 2 Prozent, die anhand einer Analyse, basierend auf Daten der Wissenschaftsplattform Scopus und mit Stichtag 6. Mai 2020, zu einer Liste der am meisten zitierten Forscher*innen zusammengestellt worden sind. Dieses Ranking umfasst alle bibliometrischen Disziplinen. Mit Blick auf die Freie Universität Bozen ergibt sich ein interessantes Bild. Ganze 8 Professoren verschiedener Wissenschaftsbereiche zählen zu den Top 2% weltweit: Prof. Marco Gobbetti (Lebensmitteltechnologie), Dekan der Fakultät für Naturwissenschaften und Technik; Prof. Paolo Lugli (Nanoelektronik), Rektor der Freien Universität Bozen; Prof. Giancarlo Guizzardi (Konzeptionelle Modellierung), Professor an der Fakultät für Informatik; Prof. Claus Pahl (Software Architecture), Dekan der Fakultät für Informatik; Prof. Francesco Ricci (Recommender Systems), Professor an der Fakultät für Informatik; Prof. Diego Calvanese (Wissens- und Datenverwaltung), Professor an der Fakultät für Informatik; Panagiotis Symeonidis (Recommender Systems), Forscher an der Fakultät für Informatik; Prof. Marco Montali (Künstliche Intelligenz), Professor an der Fakultät für Informatik.



unibz al primo posto tra i piccoli atenei non statali

Per la quarta volta consecutiva, la Libera Università di Bolzano si è classificata al primo posto tra le piccole università non statali.

Il ranking annuale del CENSIS è la più famosa classifica delle università italiane. Nell'edizione 2020/21 tutte le università italiane sono state valutate nelle cinque categorie: servizi, borse, infrastrutture, comunicazione e servizi digitali, internazionalizzazione. Per il quarto anno consecutivo, unibz ha superato tutti i concorrenti nella categoria delle piccole università non statali: con un punteggio medio di 101,4 punti, ha ottenuto il risultato più alto di tutte le università valutate. A questo risultato ha contribuito soprattutto la categoria "servizi", dove unibz ha raggiunto il numero massimo di punti (110). Ma anche nelle categorie "infrastrutture" (104 punti) e "grado di internazionalizzazione" (102 punti) unibz si distingue nettamente dalla media.

Prof. Tanja Mimmo | Photo: ©unibz



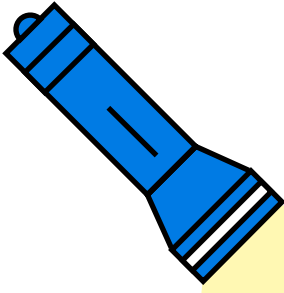
Competence Centre for Plant Health

In 2020 the Competence Centre for Plant Health was established and is managed by prof. Tanja Mimmo. The focus lies in the research of abiotic and biotic stress factors in order to understand their role on the health of plants, to research changes and to predict future challenges, as well as to develop innovative solutions and recommend them in practice. "At the Centre we develop practical solutions in order to create an important basis for the future challenges facing South Tyrol's agriculture and forestry", outlines prof. Mimmo the mission. The specific goals are to launch an application-oriented research, knowledge transfer and exchange, international networking and training and advice.

The research area Abiotic Factors combines plant genetics, plant physiology and soil chemistry to study plant-soil-environment interactions. Furthermore, the research area Biotic Factors studies the population genetics of invasive pests and emerging pathogens to develop innovative plant protection methods. The research area Technology and Management finally aims to establish innovative mechatronic and robotic solutions for an automated crop protection system.



Photo: ©unibz



Neues Kompetenzzentrum für Inklusion im Bildungsbereich

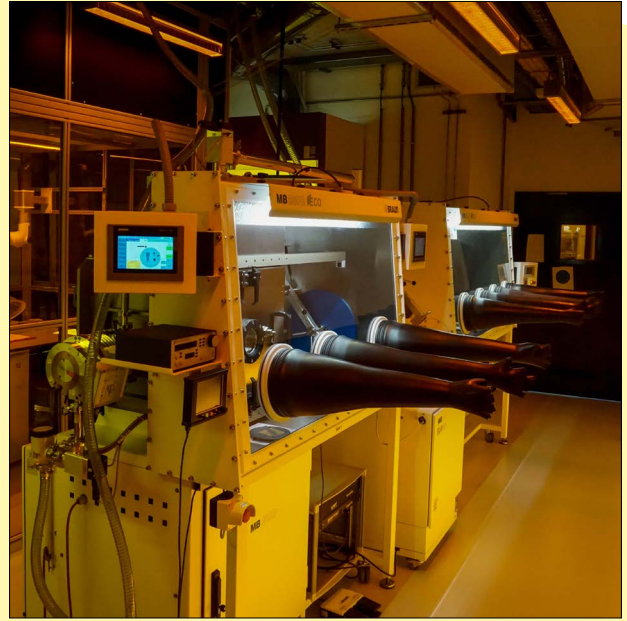
Südtirols Brückenfunktion für das Bekanntmachen des italienischen Inklusionsmodells im internationalen Raum nutzen und Forschungsprojekte für die lokalen Bildungsinstitutionen vorantreiben: Mit dieser Zielsetzung hat 2020 das Kompetenzzentrum für Inklusion im Bildungssystem seine Tätigkeit aufgenommen. Damit werden ein traditionell starkes Forschungsfeld an der unibz sowie die Zusammenarbeit zwischen Universität und Bildungsinstitutionen zum Thema Inklusion weiter ausgebaut. Ein Ziel, das auch politisch geteilt wird, weshalb mit dem Landesgesetz Nr. 7/2015 die gesetzliche Basis für ein solches Kompetenzzentrum gelegt worden war. Die Leitung des Zentrums liegt in den Händen von Direktorin Prof. Heidrun Demo, Vize-Direktorin Prof. Simone Seitz sowie der Forscherin Vanessa Macchia; darüber hinaus sind im Kompetenzzentrum drei weitere Forscher*innen beschäftigt. Eine fixe Zusammenarbeit besteht mit dem italienweit bekannten Inklusionsexperten und Professor der Freien Universität Bozen Dario Ianes.

6



Vanessa Macchia, Prof. Heidrun Demo, Prof. Simone Seitz, Prof. Johann Gamper | Photo: ©unibz

Senslab | Photo: ©unibz



Tecnologie per il futuro: Inaugurato il “Senslab”, il nuovo laboratorio di unibz al NOI

Nel laboratorio lavorano i ricercatori che fanno parte dell'équipe scientifica del rettore, prof. Paolo Lugli. La ricerca nel campo della sensoristica dischiude nuove possibilità applicative dei componenti elettronici: dalla biomedicina a sistemi intelligenti per il monitoraggio ambientale o della qualità nel settore agro-alimentare.

“Uno degli obiettivi del Sensing Technologies Lab è lo sviluppo di tecnologie innovative e a basso costo che aumentino la competitività di alcuni settori produttivi dell'Alto Adige in linea con la Smart Specialization Strategy della Provincia di Bolzano”, spiega il rettore Paolo Lugli. La stampa di inchiostri conduttivi, isolanti o semiconduttivi su materiali di vario genere come fogli di plastica, carta o tessuti, consente la realizzazione di componenti elettronici e sensori a basso costo, alta sostenibilità ambientale, ed estrema flessibilità.

Il Senslab di unibz è stato finanziato dal Fondo Europeo di Sviluppo Regionale (FESR) per il periodo 2014-2020. Nel NOI Techpark, il nuovo laboratorio di unibz è parte del Sensor System Technologies Lab, che ospita anche il Center for Sensing Solutions di Eurac Research.

Forschungspreis 2020 der Stiftung Südtiroler Sparkasse

Junge Forscher*innen an der Freien Universität Bozen für ihre wissenschaftliche Leistung auszuzeichnen – das sieht der Forschungspreis der Stiftung Südtiroler Sparkasse vor. „Unsere Stiftung möchte damit den Wissenschaftsstandort Südtirol festigen“, erklärt Präsident Prof. Konrad Bergmeister. 2020 ging der Preis an drei Preisträger.

Pädagogin Barbara Gross reichte drei Publikationen ein, darunter eine Buchpublikation, die sich mit der interkulturellen und mehrsprachigen Erziehung und Bildung ganz allgemein sowie dem damit verbundenen Interesse an soziolinguistischen und soziokulturellen Aspekten von Lernprozessen befasst.

Preisträger Ivan Miroshnychenko forscht am Zentrum für Familienunternehmen, das an der Fakultät für Wirtschaftswissenschaften angesiedelt ist: „Meine wissenschaftliche Arbeit widerlegt den Mythos, dass Familienunternehmen weniger innovativ sind, wachsen sie doch im Schnitt um 2% stärker als Nicht-Familienunternehmen.“

Der an der Fakultät für Naturwissenschaften und Technik tätige Ingenieur Massimiliano Renzi unterbreitete der Jury Studien, die sich auf den innovativen Einsatz hydraulischer Maschinen konzentrieren, mit denen die Rückstände der hydroelektrischen Quelle genutzt werden können.



Massimiliano Renzi, Barbara Gross, Ivan Miroshnychenko | Photo: ©unibz

Prof. Annemarie Augschöll Blasbichler | Photo: ©unibz



Member of the National Commission for the Reappraisal of the History of Italian Education

Last year, the Ministry of Education set up a scientific commission dedicated to the history of schools with the explicit aim of reviewing the genesis of school education in Italy on a scientific basis. This implies that all members of the commission are granted facilitated access to all data sources on national territory. Among the 23 members of this national commission, Prof. Annemarie Augschöll Blasbichler is a voice for the linguistic minorities in Italy, as the Ministry is decidedly interested in a reappraisal of the educational history of minorities. "The school is the most important formal educational institution in the state. Through content, methods but also organisational concepts, it is essentially responsible for the understanding of the self, the other and the world that is built up and passed on individually and collectively," emphasises Augschöll. The examination of different aspects of the school's history aims to analyse current challenges in educational issues. An example of this would be the frontal seating arrangement in school classes, a remnant from the beginnings of compulsory schooling in the 18th century, in which the absolutist state intended above all to practise discipline.



Faculty of Computer Science

+ Key Data

Campus Bozen-Bolzano

Active Study Programmes

Bachelor

- + Computer Science
- + Informatics and Management of Digital Business

Master

- + Computational Data Science
- + Software Engineering for Information Systems

PhD

- + Computer Science

People

- + Students: 306
- + PhD Students: 41
- + Tenured Professors: 18
- + Researchers: 52
- + Contract Professors: 23
- + Technical and Administrative Staff: 11



Dean
Prof. Claus Pahl

The Faculty of Computer Science is one of the most excellent computer science departments worldwide, being ranked among the top 150–175 on an international level and fifth in the Times Higher Education ranking list of the Italian universities. A 2020 article by Stanford University has classified six of its professors within the top 2% researchers worldwide. This testifies to the high quality of the Faculty's scientific output, which in turn states the importance of the research carried out at its research centres.

The research activities range from data and information systems to knowledge representation and processing, to software and system technologies and they are also carried out in synergy with micro-enterprises in the Province as well as with large research centres and companies globally operating in basic and applied research.

In 2020/21 the Faculty activated the 36th cycle of its doctoral course in Computer Science. The four-year doctoral programme enables high scientific standards and improves the competitiveness of the doctoral students on an international level by covering topics such as artificial intelligence and data science, software engineering and human-centric technologies by developing a higher usability of technology through intelligent solutions. Since 2018/19 the Faculty participates in the new international interdisciplinary three-year doctorate course on Advanced Systems Engineering of the Faculty of Science and Technology for the Computer Engineering area.



Research Areas



Vice Dean for Research
Prof. Barbara Russo

In 2020 the three research centres of the Faculty continued to expand their scientific output in their respective fields: as compared to 2019 the number of publications increased, as did the number of awards and of scientific events, in which the Faculty's researchers played a central role.

More in detail, there were 174 new publications, of which 106 conference articles, 50 journal articles, several book articles and edited books as well as a journal issue. The researchers of the Faculty also received a number of rewards for their papers, including one most influential paper award and one ACM SIGSOFT Distinguished Paper award; they chaired 15 scientific events (conferences and workshops), of which three as general chair, and were members of 19 scientific committees on an international level.

In 2020, external funding was received through the European Union, regional and national projects, and from contract research agreements with a total funding of € 885.000.

KRDB – Research Centre on Knowledge and Data

The KRDB Research Centre is coordinated by Prof. Enrico Franconi and its research activities are divided into four thematic areas: Conceptual and Cognitive Modelling, Foundations of Database Technologies, Intelligent Integration and Access to Data, and Process-aware Information Systems Management. The appointment of Fabrizio Maria Maggi strengthened the group's focus on process modelling.

IDSE – Centre for Information and Database Systems Engineering

The IDSE Research Centre is coordinated by Prof. Markus Zanker and its research activities cover five thematic areas: Computational Mathematics, Computer Vision and Image Processing, Database Systems, Decision Support, Personalisation and Recommender Systems, and Human Centred Computing. Other activities include decision support and analysis of sensor data in various fields such as agriculture, health, tourism and media, as well as the development of mathematical models in agriculture.

SwSE – Software and Systems Engineering Research Group

SwSE's research focuses on critical evolutionary systems. These systems change over time (evolve) are strategically important to their users (critical) and are heavily dependent on software. These systems must be predictable and reliable and must work in environments that are flexible, due to long-term evolutionary change and new adaptation needs. The research activities of the Centre are divided into four thematic areas: Dynamic Architecture and Systems, Software and Systems verification and reliability, Continuous Agile and Lean Process Innovation and Software Engineering Training and Education. The SwSE Research Centre is coordinated by Prof. Romain Robbes.



Research Projects

HOPE – High Quality Open Data Publishing and Enrichment

Open data have a huge potential in a data-driven society, yet there are many different obstacles to their use and publication.

The HOPE project aims at overcoming the main technical problems that current open data solutions suffer from; the objective is to define a methodology and realise associated tools to support an organisation in managing the publication lifecycle of semantically annotated open data. This will be attained by creating a new way of producing, publishing, maintaining, accessing, and exploiting privacy-preserving open data.

The project covers all data-related activities, from collection to the linking with other data sources, from quality check to publication, as well as tools for data usage that go beyond the traditional download of datasets.

The expected result is the release of the following scientific products:

- A methodology for managing and maintaining the ontology of an organisation; such ontology should include also aggregated concepts, considering the publication of aggregated data.
- A methodology based on ontologies for the collection, publication, and versioning of "high-quality, semantically-annotated datasets".

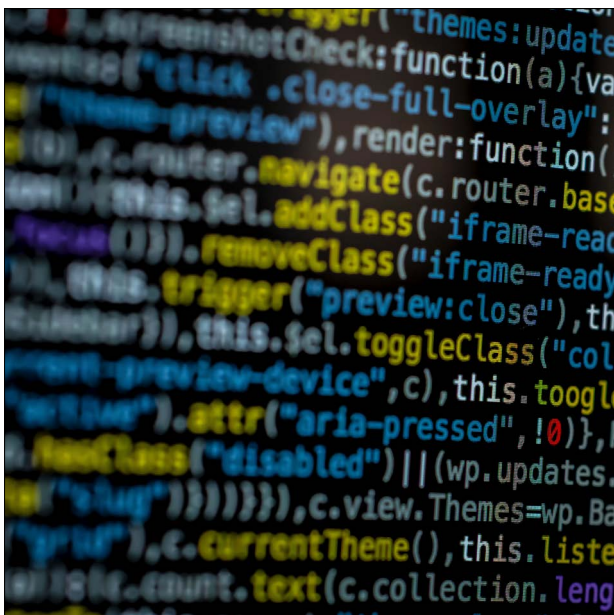


Photo: ©Markus Spiske | Unsplash

Key Data

- + **Funding Type:** PRIN 2017
- + **Duration:** 08/2019 – 02/2023
- + **Research Area:** KRDB – Research Centre for Knowledge and Data
- + **unibz Research Team:** Prof. Diego Calvanese (Principal Investigator), Prof. Werner Nutt, Dr. Davide Lanti, Dott. Xiao Guohui, Dr. Elisa Marengo, Dr. Julien Corman
- + **Project Partners:** Università degli Studi di Roma La Sapienza (Lead Partner), Politecnico di Milano, Università degli Studi di Cagliari, Università degli Studi di Milano
- + **Website:** hope-prin.org
- + **Selected Publications:**
 - Xiao, G., Lanti, D., Kontchakov, R., Komla-Ebri, S., Güzel-Kalayci, E., Ding, L., Corman, J., Cogrel, B., Calvanese, D. & Botoeva, E. (2020) The Virtual Knowledge Graph System Ontop. *Proceedings of the Nineteenth International Semantic Web Conference (ISWC 2020)*, vol. 12507, 259–277. doi.org/10.1007/978-3-030-62466-8_17.
 - Wan, H., Xiao, G., Wang, C., Liu, X., Chen, J., & Wang, Z. (2020). Query Answering with Guarded Existential Rules under Stable Model Semantics. *Proceedings of the Thirty-Fourth National Conference on Artificial Intelligence (AAAI 2020)*, 3017–3024. doi.org/10.1609/aaai.v34i03.5695.

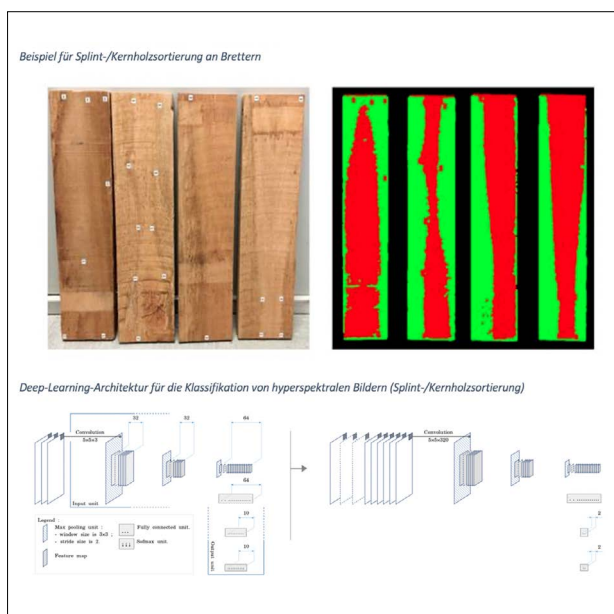
- Methods and techniques for verifying compliance with privacy regulations and for ensuring adequate levels of confidentiality.
- Methods and techniques for linking the ontology and the data with other data sources and subsequently enrich the open data by adding social data and data from various types of external sources (textual, semistructured, etc.).
- Data accessing tools that go beyond the simple download of datasets and that include data exploration and querying based on semantics, possibly using techniques for question-answering on statistical linked data.
- Methods to compare the published open data with open data from other organisations.

The envisioned result of the project is a complete web-based semantic open data manager that can be used by an organisation for governing the whole lifecycle of its open data and can be accessed by end users for effectively consuming the information provided by the organisation.

H2I – Hyperspektrale Bilder für Holz- und Obstinspektionen

Die genaue Kenntnis einiger Phänomene und physikalischer Details von organischen und nicht-organischen Materialien ist seit Jahren Gegenstand umfangreicher wissenschaftlicher Untersuchungen. Einige dieser Merkmale, wie z.B. Beschädigungen von Holz oder Obst, sind mit den derzeit am Markt verfügbaren Technologien nicht leicht festzustellen. Um diese zu erkennen und zu analysieren, bedarf es sowohl einer zuverlässigen und schnellen Technologie, die Bildmaterial sammelt, als auch Softwarelösungen, die in der Lage sind, nützliche Informationen für den Menschen präzise und in Echtzeit aufzubereiten, um die Bedürfnisse der industriellen Welt zu decken.

Hyperspektralaufnahmen erlauben es, Objekte eingebettet vor Ort zu untersuchen, ohne sie entnehmen und somit zerstören zu müssen. Dies wird erreicht, indem das Spektrum elektromagnetischer Strahlung jedes einzelnen Bildpunktes der Szene erzeugt wird. Hyperspektralaufnahmen sind weit verbreitet in Fernerkundungsanwendungen und der Astronomie und finden zusehends ihren Weg in die Archäologie, Landwirtschaft und Lebensmittelindustrie.



Graphic: ©Roberto Confalonieri

Key Data

- + **Funding Type:** European Regional Development Fund (EFRE-FESR) 2014-2020
- + **Duration:** 01/2019–03/2022
- + **Research Area:** IDSE – Centre for Information and Database Systems Engineering
- + **unibz Research Team:** Dr. Roberto Confalonieri (Principal Investigator); Prof. Stefano Cesco, Prof. Tanja Mimmo, and Prof. Youri Pii (Faculty of Science and Technology)
- + **Project Partner:** Microtec
- + **Selected Publications:**
 - Htun, P. P., Boschetti, M., Buriro, A., Confalonieri, R., Sun, B., Htwe, A. & Tillo, T. (2021). A Light-weight Approach for Wood Hyperspectral Images Classification. *2021 IEEE International Conference on Multimedia & Expo Workshops (ICME)*, pp.1–4, Los Alamitos, CA, USA, 2021. IEEE Computer Society. doi: 10.1109/ICMEW53276.2021.9455943

Diese Art von Bildern bringt zwei große Probleme mit sich: Erstens sind die Hardware-Plattformen teuer und komplex. Zweitens ist die Extraktion nützlicher Informationen aus hyperspektralen Bildern kompliziert, da zur zweidimensionalen Räumlichkeit die spektrale Dimension hinzukommt.

Ziel des Projektes H2I ist der Entwurf einer Erfassungsplattform mit konfigurierbarem Hyperspektralsensor, der das Spektrum von 900 bis 1700 nm abdeckt, sowie einer dedizierten Lichtquelle mit abstimmbarem spektralen Beleuchtungsprofil. Darüber hinaus wird eine Reihe von Deep-Learning-basierten Methoden entwickelt, um räumliche und spektrale Informationen zu extrahieren. Außerdem soll eine Lernmethode für Deep-Learning-Networks entwickelt werden, welche speziell für hyperspektrale Daten geeignet ist.

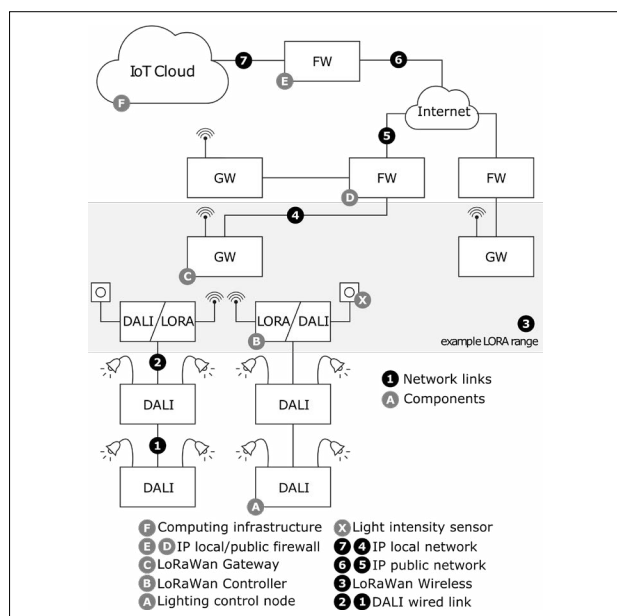
Die entwickelte Plattform könnte vielseitig eingesetzt werden, etwa zur Untersuchung von Holzmaterialien auf Defekte, zur Überprüfung von Früchten auf ihren Reifegrad oder eventuell vorhandener innerer Krankheiten oder aber zur Überprüfung von archäologischen Artefakten auf ihren Zustand.

I4S* – Industry 4.0 for Smart*

La sicurezza di sistemi Cyber Physical (CPS) (sistemi che sfruttano tecnologie software e protocolli di comunicazione di nuova generazione per interconnettersi) in contesti Smart-* (sistemi che mirano ad ottimizzare e migliorare le infrastrutture e i servizi ai cittadini rendendoli più efficienti, come per esempio Smart Cities) è un tema che oggi più che mai affligge sia l'industria, sia la ricerca, per gli aspetti legati a sicurezza e affidabilità. Per quanto esistano tecnologie software e protocolli di comunicazione sicuri, la presenza della componente fisica di tali sistemi e la sicurezza della persona che interagisce con sistemi Smart-* pongono nuovi quesiti e sfide senza precedenti che riguardano le vulnerabilità architetturali dell'intero ecosistema che ruota intorno al CPS.

Non è ancora chiaro quali siano le scelte architetture e tecnologiche che forniscono il grado di affidabilità e sicurezza voluto. Per esempio, i sistemi CPS possono essere orchestrati da apparecchi con diverse capacità di elaborazione e archiviazione dati che non sempre raggiungono i requisiti di sicurezza elevati del tradizionale IT. Pertanto, risulta più complicato che in altri sistemi adottare un meccanismo di sicurezza adeguato.

Il progetto di ricerca e sviluppo consiste nel definire soluzioni architetture per sistemi CPS in ambiente Smart-* che ne minimizzino le vulnerabilità conosciute



Graphic: ©unibz

Key Data

- + **Funding Type:** Research Contract
- + **Duration:** 09/2018 – 08/2022
- + **Research Area:** SwSE – Software and Systems Engineering Research Group
- + **Principal Investigator:** Prof. Barbara Russo
- + **Project Partner:** Systems Srl
- + **Website:** flhofer.github.io/I4S
- + **Selected Publications:**
 - Hofer, F., Russo, B. (2020). IEC 61131-3 Software Testing: A Portable Solution for Native Applications. *IEEE. Trans. Ind. Informatics*. 16(6), 3942–3951. doi.org/10.1109/TII.2019.2941584.
 - Hofer, F. (2018). Architecture, Technologies and Challenges for Cyber-physical Systems in Industry 4.0: A Systematic Mapping Study. *ESEM '18: Proceedings of the 12th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement*, pp. 1–10. doi.org/10.1145/3239235.3239242.
 - Hofer, F. (2018). Enhancing Security and Reliability for Smart- Systems' Architectures. *IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW)*, Memphis, TN, pp. 150–153. doi.org/10.1109/ISSREW.2018.000-8.

e incrementino il livello di affidabilità e sicurezza. I sistemi in oggetto si basano su reti LoRa, una soluzione a basso consumo energetico adatta all'utilizzo di servizi IoT. Le debolezze nella sicurezza di tali sistemi sono classificate in due categorie:

- risultanti da tecnologie eterogenee collegate in rete (aspetti puramente architetturali) e
- risultanti dalle funzioni di sicurezza utilizzate (aspetti di comunicazione).

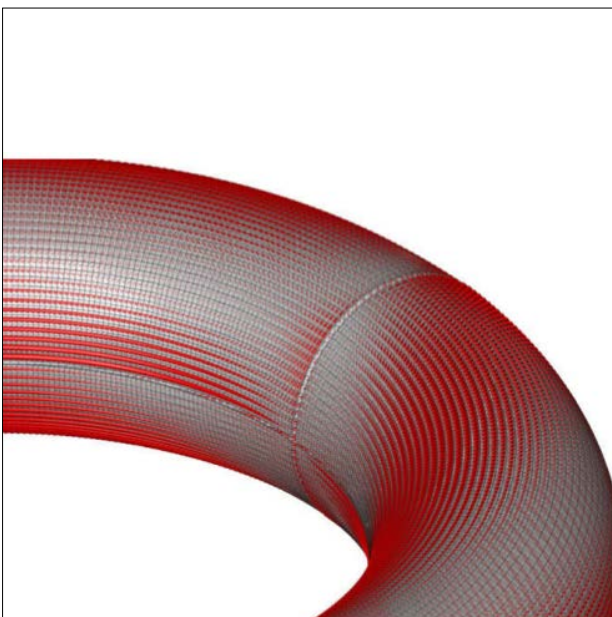
La collaborazione fra la Libera Università di Bolzano e l'azienda finanziatrice Systems Srl ha lo scopo di abbinare competenza e tecnologia per analizzare casi di studio, come ad esempio lo Smart-* per il comune di Merano, e proporre soluzioni architetture sicure realizzate su reti LoRaWAN.

Il metodo di lavoro si basa sul moderno metodo di trasferimento tecnologico svedese che prevede un ciclo continuo di esperimenti in vitro e sul campo per concepire e validare le soluzioni progettate e ottenere un risultato che sia valido sia per la comunità scientifica, sia per quella industriale. Nella ricerca accademica, il progetto coinvolge anche un dottorando.

FH2ASTER – Fast H²-matrix Arithmetic Based Solvers for Thermonuclear Energy Research

Computational science, the scientific investigation of physical processes through modelling and simulation, is built upon the problems of continuous mathematics involving real or complex variables. In numerical analysis, much computation is spent on the solution of linear algebra problems, such as solving systems of linear equations and least squares problems, computing eigenvalues and singular values of matrices. Recent developments in high-performance computing are radically changing the way we do numerics. The gap between fast and slow algorithms is rapidly growing, novel classes of highly parallel numerical methods will need to be found, only algorithms with linear or almost linear complexity will be of interest as we are solving much bigger problems.

The proposed research project will try to fill this gap by developing new matrix solvers based on the so-called hierarchical H²-matrices that provide a highly compact and accurate kernel-independent representation of integral equations by fast compression of suitable matrix blocks. One task, coordinated by the Free University of Bozen-Bolzano with the Purdue University, will produce highly efficient approximate factorisations and inversion algorithms



Graphic: ©unibz

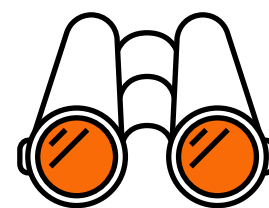
Key Data

- + **Funding Type:** Autonomous Province of Bozen-Bolzano
- + **Duration:** 10/2020 – 12/2022
- + **Research Area:** IDSE – Centre for Information and Database Systems Engineering
- + **Principal Investigator:** Prof. Bruno Carpentieri
- + **Project Partners:** Universität Innsbruck – Institut für Informatik, Purdue University, CREATE Consortium
- + **Selected Publications:**
 - B. Carpentieri. (2019). New Trends in Algebraic Preconditioning. *In New Trends in Computational Electromagnetics, Institution of Engineering and Technology*, pp. 535–566. doi.org/10.1049/SBE-W533E_ch13.
 - Ventre, S., Carpentieri, B., Giovenco, G., Rubinacci, G., Tamburrino, A. and Villone, F. (2019). An H²-LU Preconditioner for MQS Model Based on Integral Formulation. *In 22nd International Conference on the Computation of Electromagnetic Fields (COMPUMAG 2019)*, July 15–19, 2019, Paris, France. doi.org/10.13140/RG.2.2.12719.89766.

in almost linear computational cost and memory footprint using the fast arithmetic of H²-matrices. Another task, coordinated by the consortium CREATE, will implement and test the proposed algorithmic solutions in a fast fusion research simulation software with the unprecedented capability of simultaneously considering three-dimensional effects of conductors surrounding the plasma and the inherent non-linearity of the plasma behaviour itself. The code is currently used worldwide to analyse fusion devices, like the Joint European Torus tokamak (UK) and other devices, whether existing or in the construction phase, or under design. Finally, a second real-world case study arising from a boundary integral equations formulation of electromagnetics scattering problems with industrial applications will be considered. The goal of FH2ASTER is to develop numerical tools enabling very fast simulation that can potentially be used by industry to solve such problems, thus filling a gap in current software.



Cooperation and Internationality



La Facoltà collabora con organizzazioni di ricerca nazionali e internazionali, tramite progetti o accordi finanziati congiuntamente o nell'ambito del programma di dottorato in informatica.

Gli accordi o progetti svoltisi nel 2020 hanno potuto contare su un gran numero di partner prestigiosi, quali l'Università Tecnica di Vienna, le Università di Oxford e Manchester, l'Università di Innsbruck, l'Università di Stoccarda, l'Università di Cambridge, l'Università di Brisbane, il Politecnico di Milano, l'Università del Sannio, l'Università degli studi di Roma "La Sapienza", istituti di ricerca come il Max-Planck Institute, il Fraunhofer Institute Kaiserslautern, la Fondazione Bruno Kessler, il Centro Nazionale Francese per la Ricerca Scientifica, partner industriali – dai grandi gruppi come Telecom Italia, BMW, Deutsche Telecom alle aziende locali come Datatellers, Mircotec, GKN, Würth Phoenix, R3 GIS, DATEF, Raiffeisen, Systems Srl – e naturalmente il NOI Techpark e IDM.

Queste cooperazioni sono attuate nell'ambito di vari programmi di finanziamento a livello regionale, nazionale e internazionale. A livello europeo, la Facoltà è attiva nei programmi H2020 ed ERA; nei programmi locali sostenuti dal Fondo sociale europeo, dal Fondo europeo per lo sviluppo regionale e da fondi regionali; in programmi Euregio e di collaborazione transfrontaliera che collegano la nostra provincia con il Trentino e con il Tirolo. A livello nazionale, la Facoltà partecipa a due progetti PRIN.

Prosegue l'accordo con la Fondazione Bruno Kessler (FBK) di Trento per un programma di dottorato organizzato congiuntamente. A partire dall'anno accademico 2019/20 e per tre cicli consecutivi di dottorato, la FBK sponsorizza rispettivamente tre borse di studio quadriennali su temi di ricerca di comune interesse per la Facoltà e la Fondazione.

Prosegue anche l'impegno di Südtiroler Informatik AG (SIAG) che, come già nel 2019, finanzia per l'anno accademico 2020/21 una borsa di studio quadriennale a sostegno di temi di comune interesse.

Infine, sono stati attivati due nuovi accordi quadro quinquennali per la ricerca, tra la Facoltà e il Centre of the Espírito Santo State Court of Justice in Brasile.



Research Events



Alle Forschungszentren der Fakultät waren auch 2020 aktiv in der Organisation von Konferenzen und Workshops im Forschungsbereich involviert. Neben den forschungsorientierten Events organisierte die Fakultät auch Aktivitäten, die sich direkt an die Industrie oder den schulischen Bereich richteten. Aufgrund der Corona-Pandemie fanden alle Veranstaltungen online statt.

Die wesentlichen, breiter ausgelegten Forschungsaktivitäten im Jahr 2020 waren:

1. – 3. Juli 2020

Die sechste **ISE School International School on Software Engineering** fand online an der unibz statt. Die School, die dieses Jahr zusammen mit der Universität Innsbruck veranstaltet wurde, zielte darauf ab, jüngeren Forschenden und Praktiker*innen den wichtigen Aspekt der Softwaresysteme näher zu bringen.

seschool-series.github.io/2020

September 2020

Mehr als 700 Forscher und Forscherinnen nahmen am mehrwöchigen **Bozen Online Summer of Knowledge (BOSK 2020)** teil. Wissen aus Disziplinen wie Philosophie, Neurowissenschaften, Medizin oder Wissensrepräsentation wurde bei der ersten Ausgabe des Bolzano Summer of Knowledge präsentiert. Es wurden verschiedene Veranstaltungen, wie die Internationalen Symposien über zeitliche Repräsentation und Argumentation (TIME), organisiert.

summerofknowledge.inf.unibz.it

26. Oktober 2020

Der von der unibz Smart Data Factory organisierte **Data-4Smart-Health Workshop** förderte die Zusammenarbeit zwischen lokalen Unternehmen, Gesundheitsbehörden und Akteuren aus Forschung und Technologietransfer, um innovative Lösungen auf Basis von künstlicher Intelligenz im Gesundheitswesen zu entwickeln – insbesondere für die Verwaltung und Analyse großer Datenmengen. Die Veranstaltung fand am NOI Techpark statt.

data4smarthealth.eventbrite.it



EN DE IT ABOUT THIS PROJECT HOW TO USE PEPPER

- Tell me something about NOI.
- Show me the events
- How can I connect to the Internet?
- What are you made of?
- How much do you weigh?
- How tall are you?
- Where can I get a coffee?
- Where can I get a tea?
- What's your battery level?
- What's going on at NOI?
- Can you raise your arm?
- Hands up!
- Can I be your friend?
- Find a room
- Find a person



DISCOVER NOI

About NOI / What is going on at NOI



FIND...

... rooms / companies / events / people



JUST FOR FUN

See what Pepper can do!



READ QR-CODE

Reads the QR-code and executes the action



Awards and Distinctions



In 2020, **6 researchers** of the Faculty of Computer Science appeared in a list published Oct. 8th by US-based Stanford University and representing the top 2% of the most-cited scientists in all scientific disciplines worldwide, selected on the basis of their research papers' International Evaluation. The paper awards reflect the quality of the research carried out at the Faculty and all the researchers at the three Faculty's Research Centres have increased the number of their successes at major international events:

08 – 10 January, 2020

Best Paper Award for the paper of **David Massimo** and **Francesco Ricci** "Next-POI Recommendations for the Smart Destination Era" presented at Information and Communication Technologies in Tourism 2020, International Conference in Surrey, United Kingdom.

20 – 24 April, 2020

The *Outstanding Reviewer Award* was won by **Werner Nutt** at the International Conference on Data Engineering 2020 (ICDE 2020).

29 – 30 June, 2020

The *Most Influential Paper Award* was won by Marco D'Ambros, Michele Lanza and **Romain Robbes** for the paper "An extensive comparison of bug prediction approaches" at the 7th IEEE Working Conference on Mining Software Repositories (MSR 2010) held in Cape Town, South Africa.

24 June – 16 July, 2020

The *ACM SIGSOFT Distinguished Paper Award* was granted to Rafael-Michael Karampatsis, Hlib Babii, **Romain Robbes**, Charles Sutton, and Andrea Janes for the paper "Big code != big vocabulary: open-vocabulary models for source code" at the ACM/IEEE 42nd International Conference on Software Engineering, Association for Computing Machinery, New York, USA.

29 August – 2 September, 2020

The *Distinguished Paper Award* was assigned to **Roberto Confalonieri**, Tillman Weyde, Tarek R. Besold, and Fermin Moscoso del Prado Martin at the 24th European Conference on Artificial Intelligence (ECAI 2020) for the paper "Trepan Reloaded: A Knowledge-driven Approach to Explaining Black-box Models".

3 – 6 November, 2020

The *Best Paper Presentation Award* was assigned to Gustavo Guidoni, João Paulo A. Almeida and **Giancarlo Guizzardi** for the paper "Transformation of Ontology-Based Conceptual Models into Relational Schemas" at the ER 2020 International Conference on Conceptual Modeling.

18 – 20 November, 2020

Paolo Felli, **Alessandro Gianola** and **Marco Montali**, received the *Best Paper Award* at the 23rd International Conference on Principles and Practice of Multi-Agent Systems (PRIMA2020) virtual/online conference, for the paper "A SMT-based Implementation for Safety Checking of Parameterized Multi-Agent Systems".

Giancarlo Guizzardi was appointed *ACM Distinguished Speaker* (Renowned International Thought Leaders Speaking on the Most Important Topics in Computing Today) for three years.

Contacts

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computer-science



Faculty of Economics and Management

Key Data

Campus Bozen-Bolzano
Campus Bruneck-Brunico

Active Study Programmes

Bachelor

- + Economics and Management
- + Economics and Social Sciences
- + Informatics and Management of Digital Business
- + Tourism, Sport and Event Management

Master

- + Accounting and Finance
- + Entrepreneurship and Innovation
- + Public Policies and Administration

PhD

- + Management and Economics

People

- + Students: 1190
- + PhD Students: 32
- + Tenured Professors: 38
- + Researchers: 31
- + Contract Professors: 78
- + Technical and Administrative Staff: 17



Dean
Prof. Oswin Maurer

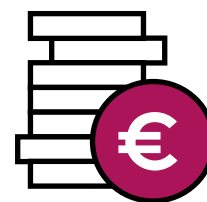
In 2020, the Faculty of Economics and Management was ranked among the Top 300 Faculties world-wide in its core areas Business and Management, Accounting and Finance, and Economics and Econometrics. The Faculty was also at the top of the U-Multirank international ranking, out of 1700 assessed universities, and ranked second among non-state universities in the national ranking of the Censis Institute.

The Faculty's research activity is organised along five research clusters: Entrepreneurship, Innovation and Management; Tourism, Marketing and Regional Development; Financial Markets and Regulation; Law, Economics and Institutions; Quantitative Methods and Economic Modelling.

The overall research performance of the Faculty has significantly improved in 2020. The number of publications has further increased and reached a total of 178 published papers. This equals to three publications per Faculty academic per year, an unprecedented number and also an excellent result as compared to other Economics and Management faculties.

Another nine externally funded projects have been added to the Faculty's portfolio in 2020, bringing the total number of new projects to 24 with a total funding of more than € 1 million, of which 70% have been acquired externally.

In addition to scientific papers and publications, the Faculty has disseminated its research results through international conferences, seminars, workshops, a working paper series, and the EconBlog. Moreover, a large number of third-mission activities have contributed to the Faculty's excellent research performance.



Research Areas



Vice Dean for Research
Prof. Mirco Tonin

The five research clusters at the Faculty have each a distinctive focus, but closely cooperate to foster high-level research. In 2020, researchers in the different areas were quick to react to the Covid-19 pandemic, contributing to the building of the know-how needed to face this severe shock.

Entrepreneurship, Innovation and Management

This research cluster is coordinated by Alfredo De Massis. Research deals with both management and internationalisation of small and medium enterprises, institutional innovation through public-private partnerships, and international differences in human resources management. Family business is a major focus: investigation centres on innovation and growth processes, generational change and succession management, covering

corporate entrepreneurship, business models and decision-making in old and newly established entrepreneurial and multigenerational firms.

Tourism, Marketing and Regional Development

In this research cluster, coordinated by Federico Boffa, research activities focus on tourism economic and managerial aspects and its social micro-foundations (consumer preferences, small business management, innovation, community involvement), as well as on environmental and energy studies, regional development and sustainable economic growth. The analysis follows a multidisciplinary approach incorporating managerial, economic, social and legal perspectives. It adopts not only an economic and a managerial perspective, but it also considers socio-economic, micro and macroeconomic, planning and legal aspects.

Financial Markets and Regulation

Massimiliano Bonacchi coordinates this research cluster that covers areas in Finance, Accounting, Quantitative Finance and Data Analytics. Finance: M&As and restructuring, financial stability, fintech, corporate governance, entrepreneurial finance of both public and private companies, corporate culture. Accounting: earnings quality, sustainability reporting, management control systems, accounting and taxation effects on firms and regulatory transparency. Quantitative Finance: pricing of financial contracts, risk management, asset allocation and asset-liability man-

agement. Data Analytics: Blockchain in Fintech, textual analysis of private firms' disclosure, Italian stock market analysis.

Law, Economics and Institutions

In this research cluster, coordinated by Paolo Giudici, research deals with both the comparative analysis of law & economics in the private and public sectors and the study of legal, ethical, and political systems. It covers a wide range of issues, from corporations and financial markets to contracts and European private law; from democracy and citizenship to governance and policies in multilingual societies; from human rights to the political, philosophical and aesthetical models of economics.

Quantitative Methods and Economic Modelling

This research cluster is coordinated by Francesco Ravazzolo and research activity centres on the theoretical foundation and the methodological aspects relevant for the empirical study of the economy. Activities cover various domains, such as the evaluation of public policies, labour and public economics, industrial organisation and energy economics. Researchers also work on decision theory, risk analysis, optimisation, and statistical methods.



Research Projects

Akademische Herkunft – Die Vorhersagekraft der akademischen Herkunft

Arbeitgebende des 21. Jahrhunderts können auf Absolvent*innen verschiedener internationaler Universitäten zurückgreifen. Es ist naheliegend anzunehmen, dass Studierende aus höher gerankten, prestigeträchtigeren und selektiveren Universitäten bessere Leistungen im Studium sowie im Arbeitsleben, im Vergleich zu ihren Kolleg*innen niedriger eingestuften Hochschulen, erbringen. Allerdings gab es bisher weder eine theoretische Diskussion noch eine empirische Untersuchung zu diesem Phänomen. Die Studie untersucht den Einfluss des Hochschulprestiges auf die Leistung in multikulturellen virtuellen Teams.

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Anhand einer Stichprobe, bestehend aus 28.339 Studierenden aus 294 Universitäten in 79 Ländern, die an einem Unternehmensberatungsprojekt gearbeitet haben (x-culture.org/for-researchers), wurde getestet, ob und wie sich die Leistung von Studierenden aus höher gerankten Universitäten von der Leistung der Studierenden niedriger gereihten Universitäten unterscheidet. Die Ergebnisse zeigen, dass Absolvent*innen von höher gerankten Universitäten generell etwas besser abschneiden. Allerdings kann eine prestigeträchtige akademische Herkunft auch mit Arroganz, übermäßiger Fokussierung auf

Key Data

- + **Funding Type:** Internal Funding
- + **Duration:** 01/2016 – 12/2020
- + **Research Area:** Entrepreneurship, Innovation and Management
- + **Principal Investigator:** Prof. Marjaana Gunkel
- + **Project Partners:** University of North Carolina at Greensboro, Manhattan College New York, Università di Macerata, Belmont University Nashville, KEDGE Business School Bordeaux, Mae Fah Luang University Bangkok, Kazan National Research Technical University, Macao Institute for Tourism Studies
- + **Selected Publications:**
 - Taras, V., Shah, G., Gunkel, M., Tavoletti, E. (2020). Graduates of Elite Universities Get Paid More. Do They Perform Better? *Harvard Business Review*. hbr.org/2020/09/graduates-of-elite-universities-get-paid-more-do-they-perform-better.
 - Taras, V., Gunkel, M., Assouad, A., Tavoletti, E., Kraemer, J., Jimenez, A., Svirina, A., Lei, C., Shah, G. (in press). The Predictive power of university pedigree on the graduate's performance in global virtual teams. *European Journal of International Management*.

die Aufgabe und mit Neid von Kolleg*innen in Verbindung gebracht werden. Das Leistungspotenzial von Absolvent*innen höher gestuften Universitäten könnte durch diese negativen Effekte untergraben werden.



Photo: ©Moujan Gilanmorad

CULTFIN – Cultural Preferences and Firm Financing Choices

How much money a company borrows from banks to fund investments, how much equity is included in the mix, or whether this creates reserves, is a matter of business policy. It has been demonstrated that the individual characteristics of managers can influence business policy. unibz professor Linus Siming has joined forces with other economic experts to investigate, whether the managers' cultural background likewise influences their companies' capital structure.

To examine this cultural component of financing decisions, the research team analysed approximately 3500 companies based in the autonomous province of South Tyrol in Northern Italy, home to both German and Italian linguistic groups; although the companies are based in the same restricted jurisdiction they have a different cultural background.

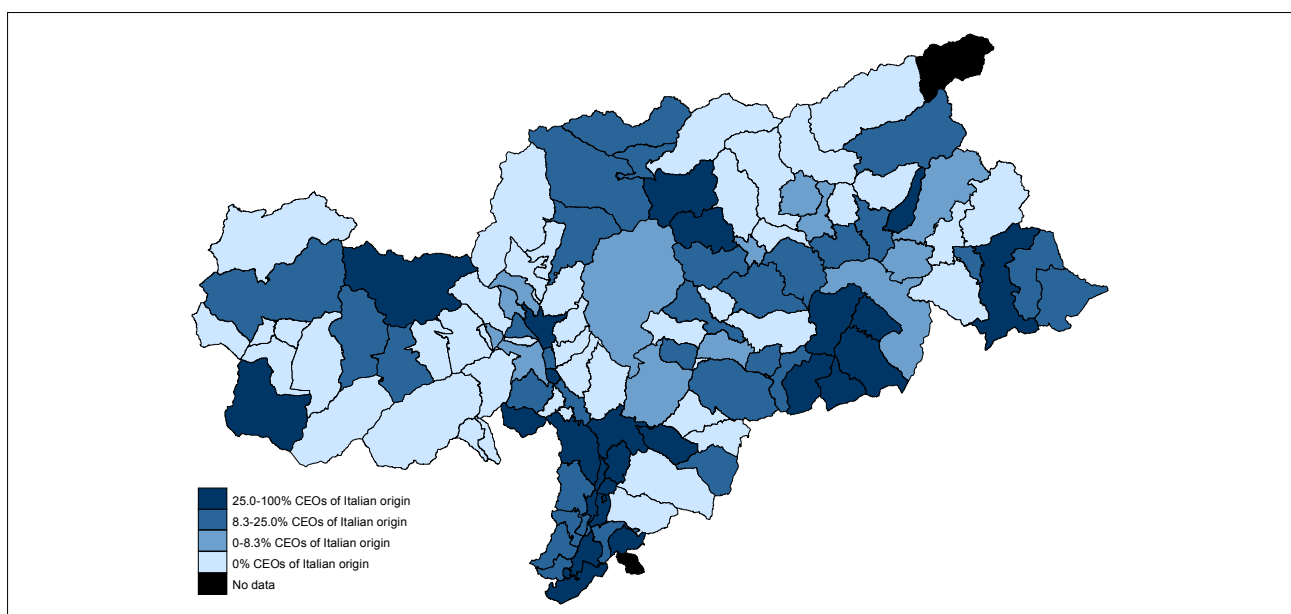
The study yielded the following findings: companies with Italian-speaking managers take up debt 5.5 percent more frequently than those managed by German speakers. They seek funding from financial institutions 10.7 percent more frequently and are 5.5 percent more likely to borrow from their suppliers in the form of trade credits. Companies managed by

Key Data

- + **Duration:** 09/2019 – 05/2020
- + **Research Area:** Financial Markets and Regulation
- + **Principal Investigator:** Prof. Per Linus Siming
- + **Project Partners:** Università di Bologna, Universität Zürich
- + **Selected Publications:**
 - Bedendo, M., Garcia-Appendini, E. & Siming, L. (2020). Cultural preferences and firm financing choices. *Journal of Financial and Quantitative Analysis*, 55(3), 897–930.
 - Bedendo, M., Garcia-Appendini, E. & Siming, L. (2019). Die Kultur prägt die Finanzierungsstruktur der Unternehmen. *Ökonomenstimme, online*.

Italian speakers also have more debt on their balance sheets (i.e. are more highly leveraged), and the ratio of debt to total assets is 3.3 percentage points higher. The results have a wide external validity. South Tyrol has a GDP level that is comparable to that of many advanced economies and is aligned with the average GDP of the European Union. Moreover, its residents are active in a wide range of sectors, from agriculture to manufacturing and services, and enjoy a high degree of industrialisation. Thus, the results are informative on the effects of culture on the financing practices of firms in wider setups, particularly for advanced economies.

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Graphic: ©Bedendo, M., Garcia-Appendini, E., & Siming, L. (2020). Cultural Preferences and Firm Financing Choices. *Journal of Financial and Quantitative Analysis*, 55(3), 897–930.

De_Tour – Touristische Erfahrungen durch Analyse neuer Daten gestalten

Die zunehmende Einführung von Technologien, die das Verbraucherverhalten nachvollziehen und mit Aufenthaltsorten verknüpfen, hat für die Tourismusforschung neue Wege eröffnet. In der Tat werden mit GPS, Mobile Positioning, Bluetooth Tracking, Geocoding durch Social Media und Fotodatenbanken die Bewegungen von Tourist*innen und ihr Verhalten in Raum und Zeit verfolgt. Das liefert aussagekräftigere und komplexere Abbildungen von touristischen Bewegungsmustern als offizielle Statistiken oder Übersichten der Tourismusindustrie.

Die neuen Datenprofile bieten Möglichkeiten, um das Image von Destinationen, das Verhalten von Tourist*innen und deren touristische Erfahrungen und Emotionen besser zu untersuchen. Forschungen dazu reihen sich in die im Entstehen begriffene Wissenschaft des Tourismus-Design ein, indem sie die Rolle von Emotionen beim Design touristischer Erfahrungen mit Hilfe der aus den Datensätzen gewonnenen Einsichten untersuchen und definieren.

Das Projekt De_Tour nutzt Big Data, Tracking und moderne Sensor-Technologien, um die Beziehungen zwischen touristischen Erlebnissen, Verhalten und Erinnerungen zu untersuchen und zu modellie-

Key Data

- + **Funding Type:** Internal Funding
- + **Duration:** 05/2018 – 11/2021
- + **Research Area:** Tourism, Marketing and Regional Development
- + **Principal Investigator:** Prof. Serena Volo
- + **Selected Publications:**
 - Volo, S. (2020). The experience of emotion: Directions for tourism design. *Annals of Tourism Research*, 86, 103097. doi.org/10.1016/j.annals.2020.103097.
 - Volo, S., & Irimias, A. (2020). Instagram: Visual methods in tourism research. *Annals of Tourism Research*, 103098. doi.org/10.1016/j.annals.2020.103098.
 - Volo, S. (2019). Tourism statistics, indicators and big data: a perspective article. *Tourism Review*, 75 (1), 304–309. doi.org/10.1108/TR-06-2019-0262.

ren. Insbesondere können mit der Analyse von Big Data die verschiedenen Facetten von touristischen Erfahrungen erfasst und gemessen werden, was wiederum die Grundlage für ein touristisches Erfahrungsdesign liefert.

Reisebewertungen und visuelle Daten, die auf Internetplattformen und in den Social Media verfügbar sind, werden genutzt, um spontane Reaktionen von Tourist*innen sowie ihre emotionalen Beschreibungen und Erinnerungen an touristische Erfahrungen zu erfassen. Daten von TripAdvisor und Instagram bieten zudem die Möglichkeit, das Image von Destinationen sowie verschiedene interkulturelle Aspekte zu untersuchen, die teilweise für Südtirol von Relevanz sind.

Die Bedeutung dieses Forschungsprojektes zeigt sich nicht nur an den Veröffentlichungen in bedeutenden internationalen wissenschaftlichen Zeitschriften, sondern auch am starken Interesse der regionalen Medien und der lokalen Interessenvertreter*innen.



Photo: ©Frusone Daniele

HRSC – Contratto, diritti umani, sostenibilità e responsabilità sociale d'impresa

Nel contesto del progetto di ricerca Contract, Human Rights, Sustainability and Corporate Social Responsibility (Contratto, diritti umani, sostenibilità e responsabilità sociale d'impresa) si sono studiate le fonti di regolazione della Responsabilità Sociale d'Impresa (RSI) sotto il profilo giuridico. Il progetto di ricerca ha analizzato il tema partendo dalla prospettiva filosofica verso una prospettiva applicativa in termini giuridici, a livello internazionale, europeo e nazionale, ed esaminando anche il ruolo del contratto come fonte di regole per la RSI.

Nell'ambito del progetto di ricerca si sono studiate alcune tematiche che hanno trovato trattazione nel libro di Laura Valle "Il contratto e la realizzazione dei diritti della persona" che ha ad oggetto la relazione tra diritto contrattuale e diritti della persona nell'attualità giuridica dei rapporti sociali ed economici. Nel percorrere le interrelazioni che caratterizzano oggi i due diversi ambiti del diritto privato, il lavoro prende in esame tra l'altro: i rapporti contrattuali su profili dei diritti della persona, la relazione tra autonomia privata e nuove tecnologie, la relazione tra contratto e diritti della persona nei metodi alternativi di risoluzione delle controversie, il contratto

Key Data

- + **Funding Type:** Internal Funding
- + **Duration:** 12/2016–01/2020
- + **Research Area:** Law, Economics and Institutions
- + **unibz Research Team:** Prof. Laura Valle (Principal Investigator), Prof. Stefania Baroncelli, Prof. Monica Rosini, Dr. Ralf Lüfter
- + **Project Partners:** University of Oslo, Università di Bologna, University of Cambridge, Universitat Jaume I de Castellon, Universidade Nova de Lisboa, Università degli Studi di Trento, Pennsylvania State University
- + **Website:** businesshumanrights.events.unibz.it
- + **Selected Publications:**
 - Valle, L. (2020). *Il contratto e la realizzazione dei diritti della persona*. Torino, Giappichelli.
 - Baroncelli, S., Valle, L. Corporate Social Responsibility, Human Rights and Sustainability: Integrated Perspectives from International Law, EU law and Contract Law (forthcoming). *Special Issue, International and Comparative Law Review*.

nell'ambito della responsabilità sociale d'impresa. Il lavoro evidenzia un mutato rapporto tra i due ambiti del diritto privato, il diritto contrattuale e i diritti della persona, un tempo ritenuti settori scarsamente comunicanti tra loro e che oggi operano spesso in via reciprocamente coordinata per dare un'adeguata regolazione alle situazioni e ai rapporti giuridici come si prospettano nella realtà attuale.

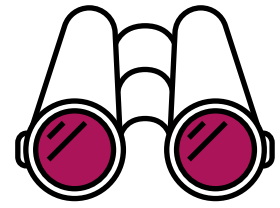
23



Illustrazione creata per un workshop nell'ambito del progetto | Graphic: ©unibz



Cooperation and Internationality



The Faculty is part of a dense network of collaborations at local, national and international level, which involves universities and other research institutes as well as public institutions and industries and is the result of a constant commitment of the Faculty members. Such cooperation promotes the quality and impact of research and has a positive effect both on teaching activities and student training (exchange agreements and internships), as well as on local and regional industries and institutions.

Partner of the "Alexander Langer's Legacy" Euregio Summer School on sustainable development, supported by the EUREGIO Mobility Fund, together with the Universities of Trento and Innsbruck.

Cooperation with ZPID – Leibniz Institute for Psychology Information in the organisation of CBTS 2020 (Consumer Behavior in Tourism Symposium 2020).

Previous collaborations, still ongoing:

Cooperation with Chamber of Commerce Bozen-Bolzano, NOI Techpark, and Autonomous Province of Bozen-Bolzano on projects on succession, innovation, family business and SMEs.

Partner of Südtiroler Sparkasse AG – Cassa di Risparmio di Bolzano SpA on a feasibility study on an algorithmic recommendation model supporting the bank in the advanced analysis of consumer choices and customer value.

Cooperation with Baruch College and NYU Stern for both research and teaching (dual degree).

Cooperation with NOI Techpark on topics about innovation and tradition in family firms; since 2020, NOI Techpark has funded a PhD scholarship.

Partner in the Alliance for Wine and Hospitality Management (AR-WH) in cooperation with Cornell University (USA), Kedge Business School Bordeaux (F), EHL Lausanne (CH), Hong Kong Polytechnic University (HK).

Cooperation with the Universities of Innsbruck and Trento, as well as Akademie Meran – Accademia di Merano, in the framework of the Euregio Platform on Human Dignity and Human Rights (EUPHUR).

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Below are some examples of the numerous cooperation initiatives, in which the Faculty of Economics and Management participated.

New collaborations during 2020:

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

Cooperation with Südtiroler Volksbank – Banca Popolare dell'Alto Adige on Bank Sustainability.

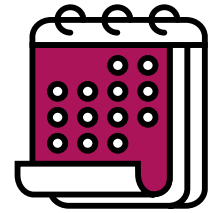
Cooperation with Kammer der Wirtschaftsprüfer der Provinz Bozen – Ordine dei Dottori Commercialisti della Provincia di Bolzano and Scuola di Alta Formazione (SAF) Triveneta on teaching activities related to the international certification of Certified Management Accountant (CMA) issued by the Institute of Management Accountants (IMA).



Zicklin School of Business awarded three scholarships to outstanding performers. In the picture from left: Andrea Zambolin, Qing Hu and Patrick Lombardo (unibz).



Research Events



Die Fakultät führt ein reichhaltiges Programm an Aktivitäten durch, darunter Workshops, Konferenzen, Forschungsseminare, Präsentationen und Rundtischgespräche, die dazu beitragen, den wissenschaftlichen Ruf der Fakultät für Wirtschaftswissenschaften und der unibz zu stärken. Diese Aktivitäten fördern Netzwerkverbindungen und Kooperationen und unterstützen die Verbreitung von Forschungsergebnissen in der wissenschaftlichen Gemeinschaft und unter Interessensvertretern in Wirtschaft und Gesellschaft. 2020 war ein besonders herausforderndes Jahr für Veranstaltungen. Es ist der Fakultät jedoch gelungen, einen Teil der geplanten Veranstaltungen online zu verlegen und so auch in diesen schwierigen Zeiten eine gewisse Kontinuität in ihren Aktivitäten zu gewährleisten. Unter anderem organisierte die Fakultät folgende Veranstaltungen:

15. – 16. Mai 2020

Workshop **Femminismo, politica e impresa sociale**, an dem Mitglieder zweier Forschungsbereiche der Fakultät (Law, Economics and Institution and Entrepreneurship and Innovation) und drei renommierte zeitgenössische Künstlerinnen teilnahmen.

asi.events.unibz.it

30. Juni und 28. September 2020

Webinar **Wirtschaft und Journalismus**, das in Zusammenarbeit mit der Vereinigung der Journalist*innenkammer Trentino-Südtirol und der Union der Journalisten Trentino-Südtirol organisiert wurde. Ziel war es, Studierende, Forschende und Journalist*innen mit Themen vertraut zu machen, die für den

Journalismus und die Wirtschaft relevant sind.

La passione della verità: www.youtube.com/watch?v=hH73yRVSOKI
Brain drain, attrattività e sviluppo regionale: www.youtube.com/watch?v=Zue6qmx2_a0

2. – 4. Juli 2020

36th EGOS Colloquium. Prof. Alessandro Narduzzo war Mitorganisator des Tracks „Multiple Lenses on the Complexity of Institutions“. egos.org/2020/hamburg/general-theme

1. – 2. Oktober 2020

Die Konferenz **Beyond the Euro-crisis: Covid-19 and the Future of Europe** wurde von unibz in Zusammenarbeit mit dem DCU Brexit Institute, der Universität Kopenhagen und der Central European University veranstaltet. Es handelte sich um ein Online-Event mit Ausnahme der Abschlussveranstaltung **High-Level Dialogue: Brexit, das EU-Konjunkturprogramm und die Zukunft Europas**, die an der Eurac stattfand und per Livestream übertragen wurde. Die Konferenz widmete sich speziell den Themen und das Erbe der Euro-Krise sowie deren Auswirkungen auf die Zukunft der Eurozone und der Wirtschafts- und Währungsunion (WWU).

bridgenetwork.eu/event/beyond-the-euro-crisis-covid19-and-the-future-of-europe



Poster Event

9. – 11. Dezember 2020

Im dreitägigen Online-Workshop **Learning Tools for Applied Quantitative Methods** wurden die neuesten methodischen Entwicklungen im Bereich der multivariaten Analyse für die Entscheidungsfindung mit Anwendungen in der Statistik und Ökonometrie vorgestellt. Am ersten Tag ging es um die mathematischen Grundlagen, einschließlich aktueller Beiträge zur Mengentheorie für die multivariate Statistik. Die Folgetage konzentrierten sich auf multivariate Methoden und Anwendungen für Statistik und Ökonometrie.

aqm.events.unibz.it





Awards and Distinctions



29 maggio 2020

Paola Rovelli ha vinto un assegno di ricerca della Associazione Italiana Ingegneria Gestionale per il progetto "Gender Equality Through Data Intelligence (GEDI)" nell'ambito del bando "Misure di sostegno ai soci giovani AiIG".

Giugno 2020

Vittoria Magrelli, Emanuela Rondi, Alfredo De Massis e Josip Kotlar sono risultati finalisti per il *Best Paper on Conference Theme* della IFERA – International Family Enterprise Research Academy Conference per "The Role of Temporal Orientations and Intergenerational Tensions in Multigenerational Family Firms", giudicato tra i 4 migliori articoli presentati.

Nomination alla IFERA 2020, *Best Paper Award*, nella categoria Contribution to Practice per "Revisiting the Question of Whether Family Firms Are Good or Bad Employers: Employment Security, Institutional Risks And Family Ownership" di **Alfredo De Massis, Iván Miroshnichenko**, Luis Gómez-Mejía, María José Sánchez-Bueno e Fernando Muñoz-Bullón. L'articolo è uno studio longitudinale sulla sicurezza del lavoro nelle imprese familiari.

Ivan Miroshnichenko si è aggiudicato il *Best Reviewer Award* alla IFERA – International Family Enterprise Research Academy 2020.

26 giugno 2020

Il *Premio Fondazione Cassa di Risparmio* alla Libera Università di Bolzano è stato assegnato a **Ivan Miroshnichenko**.

Settembre 2020

Alfredo De Massis è stato incluso nel *Talent Club* del sito *We Wealth*, che è composto dai primi 200 leader di pensiero e influencer italiani nell'area del family wealth e wealth management: economisti, asset manager, top manager, avvocati, commercialisti, consulenti immobiliari e artistici.

16 ottobre 2020

Alfredo De Massis e **Sascha Kraus** sono stati inseriti fra i 100 migliori studiosi a livello mondiale in tutte le discipline, per quanto riguarda l'impatto recente, e nel Top 2% per quanto attiene all'area Business and Management. (Dr. John Ioannidis/Stanford University et al. in the journal PLoS).

22 ottobre 2020

Jasper Brinkerink e **Emanuela Rondi** si sono aggiudicati il *Premio Pagliarani* per il *Best Paper Award* messo in palio dalla Associazione Italiana Ingegneri Gestionali per l'articolo "When Can Families Fill Voids? Firms' Reliance on Formal and Informal Institutions". Il paper si colloca nel filone di studi sul ruolo delle istituzioni formali e informali nelle decisioni di investimento in Ricerca e Sviluppo.

Contacts

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[www.unibz.it/en/faculties/
economics-management](http://www.unibz.it/en/faculties/economics-management)



Faculty of Science and Technology

Key Data

Campus Bozen-Bolzano

Active Study Programmes

Bachelor

- + Agricultural, Food and Mountain Environmental Sciences
- + Industrial and Mechanical Engineering
- + Wood Engineering

Master

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

2nd Cycle Master

- + Sustainable Management of Hydro-geological Risk in Mountain Environments

PhD

- + Advanced-Systems Engineering
- + Food Engineering and Biotechnology
- + Mountain Environment and Agriculture
- + Sustainable Energy and Technologies

People

- + Students: 555
- + PhD Students: 143
- + Tenured Professors: 67
- + Researchers: 60
- + Contract Professors: 56
- + Technical and Administrative Staff: 32



Dean
Prof. Marco Gobbetti

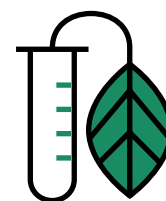
Teaching and research activities at the Faculty of Science and Technology mainly deal with agricultural sciences, environmental management, food sciences, mechanical and industrial engineering, energy and logistics, automation, and basic sciences.

Sustainability and interdisciplinarity mark out the approach to the exploitation of mountain territories, with technologies focusing on energy efficiency and automation, sensor and biosensor uses, and agriculture and food processing and quality. Innovation for industrial processes and products, and an intense technology transfer are other distinguishing features, together with a focus on the mountain region.

With an outstanding number of scientific publications, the Faculty is ranked among the top 250 in the 2020 Times Higher Education (THE) Engineering and Technology subject ranking.

Students can rely on an ideal study context thanks to a direct and constant interaction with lecturers and to the excellent facilities. Even in 2020, during the difficult Covid-19 pandemic situation, the use of modern digital technologies allowed to maintain a high-quality level in teaching.

The pandemic also meant no opportunity to physically take part in exchange and international cooperation programmes with universities abroad, which is usually an ideal context to pursue professional and educational goals in academia. Such programmes had to be limited to digital activities, nevertheless, a number of PhD programmes could be developed from the Master's programmes and reflect the core competences of the Faculty.



Research Areas



Vice Dean for Research
Prof. Matthias Gaulty

Agricultural Sciences

This research area is coordinated by prof. Massimo Tagliavini and aims at developing sustainable production systems and novel technologies that increase the yield and quality of agricultural products and production.

Food Sciences

Food Sciences sensory, shelf life, functional and nutritional attributes of foods and beverages are part of this research area, which is coordinated by prof. Marco Gobetti. The research aims at a multidisciplinary approach based on food processing, biotechnology, microbiology and omics technologies; these are the most suitable tools to guarantee high quality standards for foods and beverages as well as the bio recycling of food wastes according

to the current concept of circular economy.

Management and Technologies for Mountain Environments

This research area, led by Prof. Giustino Tonon, aims to understand the effects of natural and anthropogenic disturbances on the functioning of terrestrial and aquatic mountain ecosystems, both locally and globally, in order to provide tools for their ecological sustainable management.

Industrial Engineering and Automation

The purpose of this research area (coordinator: prof. Dominik Matt) is to do interdisciplinary research in the field of Industrial Engineering with a specific focus on automation, digitisation, sustainability and SME as well as to strengthen the research activity in the area of Industry 4.0 in Italy and beyond.

Energy Resources and Energy Efficiency

This research area (coordinator: prof. Marco Baratieri) aims at broadening the existing research spectrum both in the field of energy generation and energy efficiency; here again, a multidisciplinary approach is fostered in covering topics such as Energy Efficiency in Buildings and Production Processes, High Efficiency Electrical Conversion and Management of Renewable Resources.

Smart Systems Technologies and Engineering

This research area is coordinated by prof. Niko Münzenrieder and focuses on the development of innovative solutions for a digital society by bridging the gap between humans, the environment and technology. The main goal is the realisation of sustainable systems with bespoke mechanical, electrical, and biological properties based on biocompatible, recycled, and organic materials and of the relevant equipment with embodied artificial intelligence. The resulting systems are individually optimised for application in healthcare, agriculture, construction, environmental monitoring, or Industry 4.0 production processes.

Fundamental Sciences for Innovative Applications

This research area, coordinated by prof. Maria Letizia Bertotti, seeks solutions for several problems in different contexts. The investigations are hence carried out with the methods of the fundamental sciences: mathematics, physics, chemistry, and statistics. An active contribution to research on an international level is necessary to keep pace with the fast development of the mentioned sectors.



Research Projects

DROMYTAL – Controllo delle popolazioni di *Drosophila suzukii* sfruttando l'azione attrattiva dei lieviti

Il moscerino *Drosophila suzukii*, specie invasiva originaria del sud-est asiatico, sta causando negli ultimi anni notevoli danni in tutta Europa. In Alto Adige vengono colpite quasi tutte le colture fruttifere, escluse le pomacee, e in particolare ciliegie, albicocche e susine, nonché frutti a bacca (mirtilli, lamponi e fragole) e uva della varietà locale "Schiava".

I frutti attaccati in fase di maturazione presentano danni dovuti alla deposizione delle uova e al successivo sviluppo delle larve e si può arrivare alla perdita anche totale del raccolto. Il controllo con insetticidi di sintesi richiede numerosi trattamenti e anche metodi di contenimento quali catture di massa con attrattivi, reti anti-insetto e l'impiego di insetti antagonisti hanno mostrato una limitata efficacia.

Il progetto DROMYTAL è stato concepito con lo scopo di sviluppare un metodo di contenimento innovativo per la lotta al moscerino attraverso lo studio dell'azione attrattiva di specie di lieviti selezionati e dei loro metaboliti, mettendo a punto un sistema attract & kill. Il progetto sfrutta competenze interdisciplinari di entomologia, elettrofisiologia, microbiologia e metabolomica*. La formulazione di lievito che è

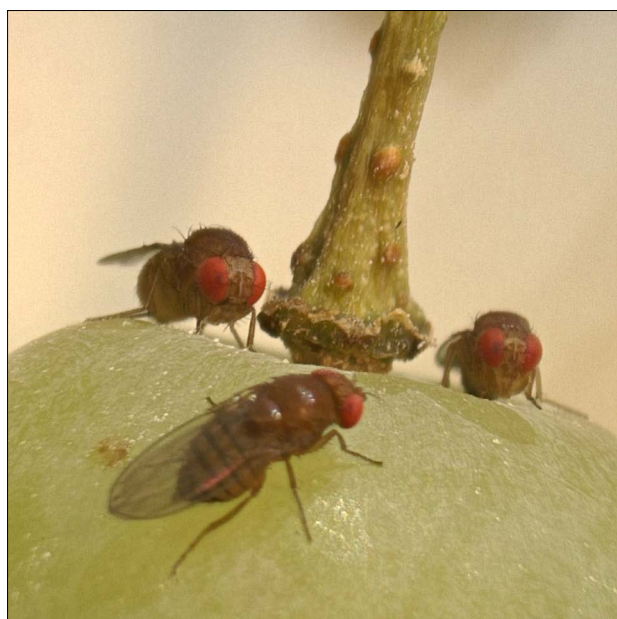


Photo: ©Claire Dumenil

Key Data

- + **Funding Type:** European Regional Development Fund (EFRE-FESR) 2014–2020
- + **Duration:** 11/2016–12/2020
- + **Research Area:** General and Applied Entomology
- + **Principal Investigator:** Prof. Sergio Angeli
- + **Project Partner:** Centro di Sperimentazione Laimburg Research Centre (Lead Partner)
- + **Website:** www.laimburg.it/it/progetti-pubblicazioni/dromytal.asp
- + **Selected Publications:**
 - Spitaler, U., Bianchi, F., Eisenstecken, D., Castellan, I., Angeli, S., Dordevic, N., Robatscher, P., Vogel, R.F., Koschier, E.H. and Schmidt, S. (2020). Yeast Species Affects Feeding and Fitness of *Drosophila suzukii* Adults. *Journal of Pest Science*, 93, 1295–1309. doi.org/10.1007/s10340-020-01266-y.
 - Bianchi, F., Spitaler, U., Castellan, I., Cossu, C.S., Brigadoi, T., Duménil, C., Angeli, S., Robatscher, P., Vogel, R.F., Schmidt, S. and Eisenstecken, D. (2020). Persistence of a *Hanseniaspora* Uvarum yeast-based attract-and-kill formulation against *Drosophila suzukii* on treated grape leaves. *Insects*, 11(11), 810. doi.org/10.3390/insects11110810.
 - Spitaler U., Bianchi L., Castellan I., Rehmann G., Eisenstecken D., Becher P.G., Angeli S., Schmidt S. (2019). An innovative management approach for Spotted Wing *Drosophila* (*Drosophila suzukii*) using an environmentally friendly attract and kill formulation. *Pheromones and Other Semiochemicals in Integrated Production and Integrated Protection of Fruit Crops. IOBC-WPRS Bulletin*, 146, 160–165.

risultata essere più attrattiva per la *Drosophila* è stata associata ad un insetticida a basso impatto ambientale per migliorare le strategie di controllo in pieno campo, riducendo così il quantitativo di fitofarmaci applicato sui frutti.

*Metabolomica: È lo studio dei metaboliti, cioè l'insieme di tutti i composti che si formano dalle reazioni biochimiche in una cellula, di un tessuto o di un organismo.

SMART PROTEIN – Smart Protein for a Changing World

Proteins are a basic part of the human diet, but the global consumption patterns and the deriving social, environmental and economic impact turn into the largest human pressure on Earth, threatening local and global ecosystems. The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States, and the Paris agreement on climate change (COP21) signed in 2015 created a juridical obligation for Member States and pushed for a re-thinking of the food system. Alternative protein sources are urgently needed to respond to the increasing protein demand from a growing world population and to the need for a more resource-efficient production.

The project's strategy has 4 priorities: nutrition, sustainability, innovation, and consumer trust and acceptance. The major goal is the industrial validation of plant proteins from fava beans, lentils, chickpeas and quinoa, and microbial biomass protein like food-grade yeast and fungi for the production of ingredients and products for direct human consumption; such proteins are innovative and healthy, EU-produced and thus cost-effective and resource efficient. Novel bread and cheese prototypes will be produced at pilot plants located at the NOI Techpark and an optimised protocol will be transferred to the food companies participating in the project.



This picture is from Smart Protein project dissemination bundle | Photo: ©smartproteinproject.eu

Key Data

- + **Funding Type:** Horizon 2020 – SFS-2018-2020 – Grant Agreement 862957
- + **Duration:** 01/2020 – 12/2023
- + **Research Area:** Food Microbiology
- + **unibz Research Team:** Prof. Marco Gobbetti (Principal Investigator), Prof. Raffaella Di Cagno, Dr. Andrea Polo
- + **Project Partners:** 33 partners from Austria, Belgium, Denmark, Germany, Ireland, Israel, Italy, The Netherlands, New Zealand, Portugal, Spain, Switzerland, Thailand, and U.S.A., with University College of Cork as Lead Partner
- + **Website:** smartproteinproject.eu
- + **Selected Publications:**
 - Filannino, P., Di Cagno, R. & Gobbetti, M. (2018). Metabolic and functional paths of lactic acid bacteria in plant foods: get out of the labyrinth. *Current Opinion Biotechnol.* 49, 64–72. doi.org/10.1016/j.copbio.2017.07.016.
 - De Filippis, F., Pellegrini, N., Vannini, L., Jeffery, I. B., La Storia, A., Laghi, L., Serrazanetti, D. I., Di Cagno, R., Ferrocino, I., Lazzi, C., Turrone, S., Cocolin, L., Brigidi, P., Neviani, E., Gobbetti, M., O'Toole, P. W. and Ercolini, D. (2015). High-level adherence to a Mediterranean diet beneficially impacts the gut microbiota and associated metabolome. *Gut*. doi.org/10.1136/gutjnl-2015-309957.
 - Gobbetti, M., De Angelis, M., Di Cagno, R., Polo, A. & Rizzello, C. G. (2020). The sourdough fermentation is the powerful process to exploit the potential of legumes, Pseudo-cereals and Milling By-products in Baking Industry. *Crit. Rev. Food Sci. Nutr.* 60, 2158–2173. doi.org/10.1080/10408398.2019.1631753.

The project has a double focus: the cultivation of the improved pre-commercial cultivars of high-protein crops on demo farms in selected European areas, and the setting up of a trustworthy domestic protein supply chain that includes fungal protein produced by upscaling nutritious by-products from the brewery, pasta, milling and bakery industries. These alternative protein sources ensure outstanding nutritionally balanced raw materials that can be turned into market-oriented, tasty, protein-rich foods with a positive impact on human health, the environment and biodiversity.

SMART PROTEIN addresses big societal, environmental and economic challenges by validating a regenerative and resilient protein supply chain that combines the organic production of plant protein from legumes and highly nutritious seed crops, and the smart production of microbial biomass protein from fungi.

SEDIPLAN-r – Bewertung und Planung des Sedimenttransports in Fließgewässern in Südtirol

In alpinen Fließgewässern kommt Bewegungsvorgängen von Feststoffen aufgrund ihrer Auswirkungen auf Umwelt, Energiegewinnung und Hochwasserrisiken eine große Bedeutung zu: Sedimentflüsse sind in der Tat entscheidend für die Aufrechterhaltung eines guten ökologischen Zustands von Fließgewässern. Zu diesem Zweck muss die Kontinuität des Feststofftransports in den Flüssen aufrechterhalten oder bei Unterbrechung wiederhergestellt werden. Dieses Ziel steht jedoch in potenziellem Konflikt mit Maßnahmen zum Hochwasserschutz, da der Feststofftransport die Gefährlichkeit eines Wasserlaufs erheblich verstärken kann. Weiteres Konfliktpotenzial ergibt sich bei der Stromgewinnung aus Wasserkraft, da die notwendigen baulichen Eingriffe Einfluss auf die Kontinuität und Dynamik des Feststofftransports flussabwärts nehmen.

Entsprechend setzte es sich das Projekt zum Ziel, den Lauf der Sedimente und die morphologischen Bahnen der Fließgewässer Südtirols zu erheben und in numerischer Modellierung zu rekonstruieren, um optimale Strategien für das Sedimentmanagement auf Ebene der Flussgebiete und unter Berücksichtigung von Wasserkraftwerken und Hochwasserschutzbauten erarbeiten zu können.



Photo: ©Francesco Comiti

Key Data

- + **Funding Type:** European Regional Development Fund (EFRE-FESR) 2014–2020
- + **Duration:** 01/2017–11/2020
- + **ResearchArea:** Management and Technologies for Mountain Environments; Energy Resources and Energy Efficiency
- + **unibz Research Team:** Prof. Francesco Comiti (Principal Investigator), Prof. Maurizio Righetti, Dr. Velio Coviello, Dr. Walter Boscheri
- + **Project Partners:** Cisma Srl, Mountain-eering Srl, Patscheider & Partners Srl (Partners of the complementary SEDIPLAN-i project)
- + **Website:** sediplan.projects.unibz.it / www.sediplan.net
- + **Selected Publications:**
 - Coviello, V., Arattano, M., Comiti, F., Macconi, P. and Marchi, L. [2019]. Seismic characterization of debris flows: Insights into energy radiation and implications for warning. *Journal of Geophysical Research: Earth Surface*, 124(6), 1440–1463. doi.org/10.1029/2018JF004683.
 - Boscheri, W., Pisaturo, G. R. & Righetti, M. [2019]. High-order divergence-free velocity reconstruction for free surface flows on unstructured Voronoi meshes. *Int J Numer Meth Fluids*, 90, 296–321. doi.org/10.1002/(SICI)1097-0363(19990630)30:-4<425::AID-FLD847>3.0.CO;2-D.
 - Coviello, V., Theule, J. I., Crema, S., Arattano, M., Comiti, F., Cavalli, M., Lucía, A., Macconi, P. & Marchi, L. [2020]. Combining Instrumental Monitoring and High-Resolution Topography for Estimating Sediment Yield in a Debris-Flow Catchment. *Environmental and Engineering Geoscience*, 27, 95–111. doi.org/10.2113/EEG-D-20-00025.

Im Laufe des Projekts konnte erstmals die jährliche Sedimentfracht der Hauptflussläufe Südtirols quantifiziert bzw. abgeschätzt werden. Dabei wurden auch Daten von Ad-hoc-Messstationen, Wasserkraftwerken und Sedimentrückhaltebecken integriert. Neu war auch die Verwendung verschiedener für das Sedimentmanagement relevanter räumlicher und zeitlicher Skalen, von kurzzeitigen lokalen Pegelaufzeichnungen bis hin zu historischen Daten landesweiter Flusslaufentwicklungen.

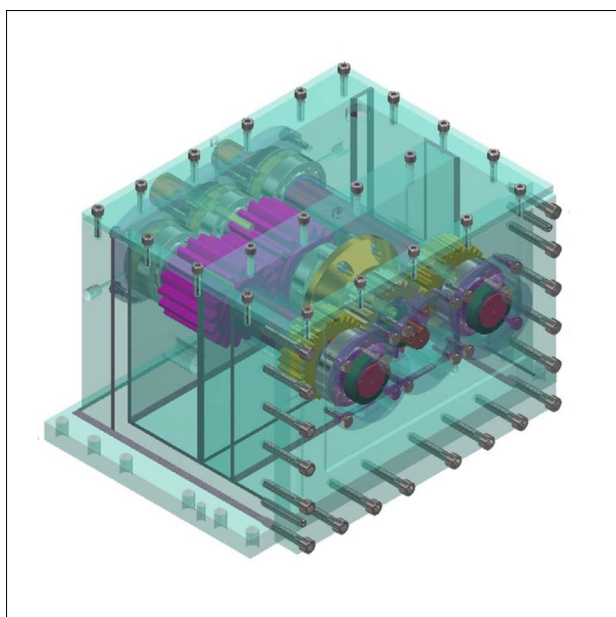
SEDIPLAN-r bietet dem öffentlichen wie privaten Sektor Südtirols große Vorteile. Die neuartigen Daten und Modelle ermöglichen es etwa den verantwortlichen öffentlichen Stellen, fundiertere evidenzbasierte Flussgebietsmanagementpläne in Abstimmung mit den europäischen und nationalen Vorschriften zu erstellen.

IDERPLANE – Design innovativo per cuscinetti a sfera affidabili

I moderni motori turboelica impiegati nel settore aeronautico richiedono l'utilizzo di trasmissioni meccaniche ad ingranaggi per la conversione della potenza. La miniaturizzazione dei componenti e l'alleggerimento hanno portato alla nascita di nuove modalità di cedimento: il progetto IDERPLANE si concentra sul fenomeno dello "spalling", ovvero un progressivo danneggiamento delle superfici a contatto (elementi volventi – piste cuscinetto) a causa di sollecitazioni sub-superficiali cicliche.

A differenza degli approcci tradizionali di progettazione che mirano all'analisi dello stato di sollecitazione, nel progetto IDERPLANE viene introdotto il concetto di damage tolerance, ovvero il monitoraggio dell'evoluzione del danneggiamento che consenta di operare in sicurezza anche una volta che la cricca sia nucleata ma non abbia raggiunto una dimensione critica. Per poter effettuare questo tipo di analisi in modo affidabile sono necessari molti dati su cui basare la statistica. IDERPLANE punta proprio a colmare questo gap con una campagna sperimentale mirata.

La forza e l'unicità del consorzio IDERPLANE sta nel gruppo, in cui ogni partner mette a disposizione del progetto tecnologie e capacità specifiche: ottenere



Test gearbox | Photo: ©IDERPLANE

Key Data

- + **Funding Type:** Horizon 2020 – Clean Sky 2 – Grant Agreement 821315
- + **Duration:** 11/2018–10/2021
- + **Research Area:** Industrial Engineering and Automation
- + **unibz Research Team:** Dr. Franco Concli (Principal Investigator), Prof. Renato Vidoni
- + **Project Partners:** Politecnico di Milano (Lead Partner), Università degli Studi di Brescia, Institut National des Sciences Appliquées de Lyon, Argo Srl
- + **Website:** www.iderplane.eu
- + **Selected Publications:**

Concli, F. and Gorla, C., Numerical modeling of the power losses in geared transmissions: Windage, churning and cavitation simulations with a new integrated approach that drastically reduces the computational effort (2016). *Tribology International*, 103, pp. 58–68. doi.org/10.1016/j.triboint.2016.06.046.

Rao, P. M., Foletti, S., Rosa, F., Bonaiti, L., Concli, F., Gorla, C. and Beretta, S., Mode III threshold under Rolling Contact Fatigue and 1 development of a test gearbox for planet gears. *Forschung im Ingenieurwesen Engineering Research* (in press).

Bonaiti, L., Bayoumi, A. B. M., Concli, F., Rosa, F. and Gorla, C., Gear root bending strength: a comparison between Single Tooth Bending Fatigue Tests and meshing gears. *J. Mech. Des.* 143(10): 103402. doi.org/10.1115/1.4050560.

curve di propagazione delle cricche in condizioni RCF su campioni di laboratorio (PolIMI); riprodurre la propagazione delle cricche sub-superficiali in test su dischi (UniBS); seguire e tracciare lo sviluppo delle cricche in condizioni di carico complesse (INSA); analizzare le sollecitazioni nei contatti (unibz). Grazie a queste basi, il progetto IDERPLANE punta ad una caratterizzazione completa del fenomeno dello spalling nei riduttori aeronautici grazie a banchi prova specifici progettati proprio da unibz.

SEnSHome – Sensoren für besondere Räume. Ihr Haus „so normal wie möglich und so besonders wie nötig“

Das Projekt SEnSHome erforscht die Entwicklung eines neuen Smart-Home-Designs samt Technologien, welche in Häusern „so normal wie möglich“ angewandt werden können, um Menschen mit Autismus-Spektrum-Störungen (engl. Autism-Spectrum-Disorders, ASD) oder anderen Beeinträchtigungen ein weitgehend eigenständiges Wohnen zu ermöglichen.

Um dieses Ziel zu erreichen, verfolgt SEnSHome einen nutzerzentrierten Designansatz. Die Herangehensweise des Projektes besteht darin, kritische Ereignisse für Menschen mit ASD anhand einer zentralen IT-Architektur zu identifizieren, wobei die dafür notwendigen Daten über eine Reihe von in den Wohnräumen integrierten Sensoren erhoben werden. Zudem arbeitet SEnSHome an der Entwicklung neuer Innenraumgestaltungskonzepte, die sich dafür eignen, Menschen mit Beeinträchtigungen ein unabhängiges Leben zu ermöglichen. In den neu entwickelten Designlösungen sollen die integrierten Technologien nicht nur eine Gefahrenüberwachung und -meldung ermöglichen, sondern auch den individuellen Komfort und das Wohlbefinden im Wohnraum verbessern.



Photo: © Sebastian Scholz (Nuki) | Unsplash

Key Data

- + **Funding Type:** Interreg V-A Italia-Österreich 2014–2020 – ITAT1088
- + **Duration:** 10/2019 – 03/2022
- + **Research Area:** Building Physics and Building Energy Systems
- + **unibz Research Team:** Prof. Andrea Gasparella (Principal Investigator), Dr. Marco Caniato
- + **Project Partners:** Fachhochschule Kärnten, Università degli Studi di Trieste, Eureka System Srl
- + **Associated Partners:** Associazione Progetto Autismo FVG, AEB (Arbeitskreis Eltern Behindert-er/Associazione genitori di persone in situazione di handicap), IRCSS Eugenio Medea, Televita SpA, Inklusion: Kärnten Familienberatungsstelle, P.SYS system creation
- + **Website:** senshome.projects.unibz.it
- + **Selected Publications:**
 - Caniato, M., Marzi, A., & Gasparella, A. (2020). A critical overview on the sensory perception related to people affected by Autism Spectrum Disorder. *Inter-noise 2020* (Seul, 23–26 August 2020).

Anhand eines Modells im Originalmaßstab werden mittels Komfort-, Akustik- und Bewegungssensoren Gefahren in eingerichteten Räumen aufgezeigt, um die Innenraumgestaltung zu optimieren. Ein abschließender Test wird dazu dienen, die Einhaltung sämtlicher Anforderungen zu überprüfen.

Insgesamt zielt SEnSHome darauf ab, Menschen mit ASD oder anderen Beeinträchtigungen ein selbstbestimmtes und unabhängigeres Leben zu ermöglichen und zeitgleich ein hohes Maß an persönlichem Raum und Privatsphäre zu gewährleisten. Dies ist in Gebäuden, die nach derzeitigem Standard gebaut werden, noch nicht gegeben.

Senslab – Sensing Technologies Laboratory

Aim of the project is the setup of a laboratory focused on the fabrication and characterisation of physical, chemical, and biological sensors for a wide range of applications. The available technologies are based on a combination of innovative printing methods and more traditional microfabrication techniques, targeting the development of electronic components on textile, paper, flexible plastic foils, or any other non-conventional substrate. The realised components and systems allow a low environmental impact and large-scale production of ad-hoc products in contexts where traditional electronics would not deliver satisfactory solutions. The components created in this way can be used for fundamental research in the field of nanomaterials and at the same time for the actual production of sensors in fields such as precision agriculture, health, large-scale environmental hazard monitoring or other applications which require a large number of environmentally compatible and possibly disposable devices.

The lab is divided into three different functional areas. The first one is focused on the synthesis and deposition of innovative nanomaterials such as carbon nanotubes and graphene. The second room includes equipment for microfabrication and printing of the basic electronic structures, allowing deposition of



Photo: ©Ivo Corrà

Key Data

- + **Funding Type:** European Regional Development Fund (EFRE-FESR) 2014–2020
- + **Duration:** 01/2018–01/2021
- + **Research Area:** Smart Systems Technologies and Engineering
- + **unibz Research Team:** Prof. Paolo Lugli (Principal Investigator), Prof. Luisa Petti, Dr. Enrico Avancini
- + **Project Partner:** NOI Techpark Südtirol/Alto Adige
- + **Website:** sensingtechnologies.groups.unibz.it
- + **Selected Publications:**
 - Douaki, A., Abera, B. D., Cantarella, G., Shkodra, B., Mushtaq, A., Ibba, P., Inam, A. S., Petti, L. and Lugli, P. 2020. Flexible Screen Printed Aptasensor for Rapid Detection of Furaneol: A Comparison of CNTs and AgNPs Effect on Aptasensor Performance. *Nanomaterials*, 10(6), 1167. doi.org/10.3390/nano10061167.
 - Shkodra, B., Abera, B.D., Cantarella, G., Douaki, A., Avancini, E., Petti, L. and Lugli, P. (2020). Flexible and Printed Electrochemical Immunosensor Coated with Oxygen Plasma Treated SWCNTs for Histamine Detection. *Biosensors* 10(4). doi.org/10.3390/bios10040035.
 - Ibba, P., Falco, A., Abera, B. D., Cantarella, G., Petti, L. & Lugli, P. (2020). Bio-impedance and circuit parameters: An analysis for tracking fruit ripening. *Postharvest Biology and Technology*, 159, 110978. doi.org/10.1016/j.postharvbio.2019.110978.

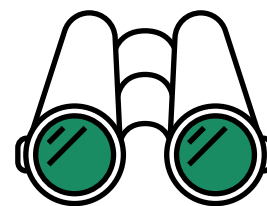
conductors and semiconductors. The final area is aimed at the assembly of different components, as well as at the characterisation of their electronic performances and the physical-chemical properties throughout their production processes.

The main available techniques are: photolithographic processes with metal and metal oxide evaporation, production and deposition of inks based on nanomaterials and solutions of organic conductors and semiconductors, synthesis of carbon-based nanomaterials via chemical vapor deposition, electronic characterisation with the support of a probe station and parameter analyzer, morphology characterisation via optical and atomic force microscopy, and a setup for the measurements of opto-electronic properties.

The project is coordinated by the rector Prof. Paolo Lugli with the strong support of Prof. Luisa Petti, who is in charge of the project management and dissemination.



Cooperation and Internationality



The Faculty of Science and Technology was involved in a number of relevant research cooperations at national and international level in 2020. The following is a non-exhaustive selection of the major research partnerships, divided per research area.

The research area **Agriculture** carries on a successful cooperation with major local institutional investors, such as the Bolzano Trade Fair (Messe Bozen – Fiera di Bolzano) and the South Tyrolean Farmers' Union (Südtiroler Bauernbund – Unione Agricoltori e Coltivatori Diretti Sudtirolesi); further engagements are with Bioland Südtirol, the Laimburg Research Centre, the Juvenes Onlus Youth Association, and the Konsortium Südtiroler Wein – Consorzio Vini Alto Adige, as well as with research institutes and international universities in the UK (Dundee, Essex, Cardiff), in Austria, and in France.

The research area **Management and Technologies for Mountain Environments** cooperates with local institutional investors such as the Forestry Department and the Forests Authority of the Autonomous Province of Bozen-Bolzano, Eurach Research, and ECO Research, and with research institutes and international universities such as the Bavarian State Institute of Forestry (LWF), universities in Spain (Valladolid, Lleida, Oviedo), and the Austrian Academy of Sciences.

Within the PhD activities in "Food Engineering and Biotechnology" (FEB), the research area **Food Sciences** carries out a strict col-

laboration with many international groups such as the Helsinki Institute of Sustainability Science (Finland) and the Conycat Technology Park in Merida (Mexico). Several research activities are ongoing, in cooperation with the University College of Cork (Ireland), the intergovernmental organisation CIHEAM and with many industrial partners in the oenology sector, such as Wineleven and Maselli Misure.

The research area **Industrial Engineering and Automation (IEA)** enhances cooperation with local institutional investors such as lvh-apa, Fraunhofer Italia, Eurac Research as well as several local industries (Durst Phototechnik, Alupress) and international companies (Schaeffler Group, Elvez), and also with research institutes and international universities from the UK (University of Sussex), Malta (University Malta), and China (University of Electronic Science and Technology of China).

The research area **Energy Resources and Energy Efficiency** fosters cooperations with Vienna University of Technology (AT) as well as with Purdue University (USA), Brno University of Technology (CZ), Université de Mons (FR), BEST Competence Centre Graz (AT), Technical University of Denmark, and Hiroshima University (JPN).

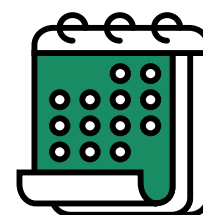
Among its stakeholders are proHolz Tirol (AT), Röchling Automotive, Troyer AG, Agenzia Casaclima, Comune di Bozen-Bolzano, Alperia s.p.a., CISMA.

The cooperation with international research institutes and universities carried out by the research area **Smart Systems Technologies and Engineering** resulted in numerous scientific publications and external research funding, such as a SNF joint project with Switzerland, or a Royal Society Grant from the UK. Further cooperations include Helmholtz-Zentrum Dresden-Rossendorf (DE), Istituto Italiano di Tecnologia (IT), Politecnico di Torino (IT), Universidad de Granada (ES), University of Oslo (NO), University of Innsbruck (AT). Also, cooperations with companies like Microgate Srl, Texmarket Srl, Microtec Srl, Kerr Italy are ongoing.

The research area **Fundamental Sciences for Innovative Applications** can number among its cooperations that with Doppelmayr Italia, Lana: research work was done by some of the team members on mathematical models for ropeways dynamics during which measurements of relevant physical parameters were performed at a real plant. Another cooperation was carried out with the Integrated Bioprocess Development Research Group of Vienna University of Technology (AT): the collaboration started in 2019 and has recently resulted in a positively assessed application for Austria-South Tyrol Joint Projects funding.



Research Events



27–31 gennaio 2020

RObozen: Scuola invernale internazionale per la progettazione di meccanismi e tecniche di motion planning per applicazioni meccatroniche robotiche e correlate:

L'evento, organizzato in collaborazione e con il supporto della Federazione Internazionale per la Promozione del Meccanismo e della Scienza delle Macchine (IFTOMM), era rivolto a dottorandi, giovani ricercatori e specialisti che lavorano nel settore, con lezioni tenute da esperti italiani e stranieri.



Foto di gruppo dei partecipanti a RObozen, scattata a gennaio 2020, prima dell'emergenza Covid-19. Photo: ©unibz

31 gennaio 2020

Workshop on Safety and Ergonomics for Industrial Collaborative Workspaces: Evento rivolto alle aziende locali e organizzato da Smart Mini Factory e da unibz. Il workshop è stato incentrato sulle principali opportunità e sulle sfide relative alle tematiche della cosiddetta "Industria 4.0", approfondendo gli aspetti tecnici e metodologici necessari per la collaborazione uomo-robot nei sistemi di produzione.

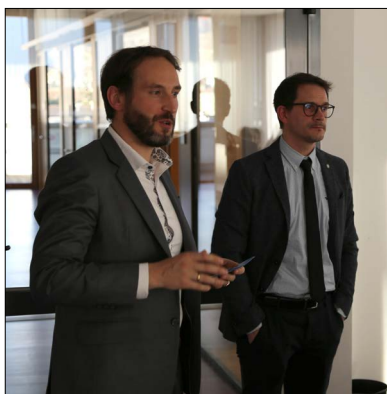


Foto scattata a gennaio 2020, prima dell'emergenza Covid-19. Photo: ©unibz

13 febbraio 2020

Giornata di studio sulle macchine per l'acqua e l'energia: La giornata di studio si è posta l'obiettivo di condividere e presentare le attività di ricerca svolte dai vari Atenei nazionali che si occupano del rapporto acqua-energia: il legame fra l'acqua e la produzione e l'uso dell'elettricità ha infatti un ruolo centrale nella transizione verso un sistema energetico sempre più orientato alle fonti rinnovabili e caratterizzato da una crescente scarsità della risorsa idrica e dai cambiamenti climatici.

28 settembre 2020

Technologies for the Future, Workshop internazionale e Inaugurazione del Senslab–Sensing Laboratories: Il workshop è stato concepito come un incontro di esperti di fama internazionale, nel quale condividere e discutere gli ultimi risultati e le nuove idee nell'ambito delle micro e nanotecnologie di punta e delle loro applicazioni in svariati settori legati alla strategia di specializzazione intelligente della provincia. Al workshop ha fatto seguito l'inaugurazione ufficiale del Senslab–Sensing laboratories, che fa parte del Sensor System Technolo-

gies Lab, un'iniziativa congiunta di EURAC e della Libera Università di Bolzano.



Foto del Workshop "Technologies for the Future" scattata a settembre 2020, nel rispetto della normativa al momento in vigore. Photo: ©unibz

16 ottobre 2020

Tecniche di misura e di ricerca sperimentale avanzate applicate alla fluidodinamica: Il Workshop si è posto come momento di incontro tra laboratori di ricerca e soggetti interessati alla fluidodinamica e alle applicazioni delle tecniche di misura nei fluidi, per favorire lo scambio e la cooperazione tra le diverse realtà operanti nel settore e aperte alla ricerca. L'evento si è tenuto al Laboratorio di Termofluidodinamica (LTFD) della Libera Università di Bolzano, presso il NOI Techpark, con sessioni teoriche sia in laboratorio che sul campo ed è stato realizzato nell'ambito del progetto "Applied Thermo-Fluid Dynamics Laboratories. Infrastrutture di ricerca applicata per le imprese e l'industria in Alto Adige", finanziato dal Fondo europeo di sviluppo regionale e dalla Provincia Autonoma di Bolzano.





Awards and Distinctions



9. Juni 2020

Massimiliano Renzi gewann den *Forschungspreis 2020 der Stiftung Südtiroler Sparkasse*. Der Preis würdigte seine Forschungstätigkeit und Projekte im Bereich innovativer Wasserkraftlösungen zur Energierückgewinnung im zivilen und industriellen Bereich.

30. Juni 2020

Axel Zehendner, Anni-Kaisa Kähkönen, **Philipp Christopher Sauer** und Patrick Schöpflin gewannen den *Harry Boer Best Student Paper Award 2020* für den Beitrag „Exploring Paradoxes in Sustainable Supply Chain Management – Insights from Multitier Supply Chains“. Die Auszeichnung, welche 2009 von der European Operations Management Association (EurOMA) ins Leben gerufen wurde, wird von Emerald Group Publishing unterstützt und würdigt die beste Arbeit, die bei der jährlichen EurOMA-Konferenz von Jungforschern präsentiert wird.

9. Juli 2020

Marco Baratieri, Francesco Patuzzi und **Daniele Antolini** erhielten gemeinsam mit Clemens Hollenstein, Christopher Zemann, Stefan Martini, Markus Gölls, Wolfgang Felsberger und Martin Horn den *Best Poster Award* auf der Konferenz EUBCE2020. Das Poster mit dem Titel "Evaluation of the Transient Behaviour of a Fixed-bed Biomass Gasifier for Demand-oriented Electricity Production" wurde als besonders wertvoller Beitrag zur 28. European Biomass Conference and Exhibition gewertet.

20. – 24. September 2020

Mit ihrem Beitrag „Development of a Climbing-Robot for Spruce Pruning: Preliminary Design and First Results“ gewannen **Giovanni Carabin, Davide Emanuelli, Raimondo Gallo, Fabrizio Mazzetto** und **Renato Vidoni** im Rahmen des 23rd CISM IFToMM Symposium on Robot Design, Dynamics and Control sowohl den *Best Application Paper Award* als auch den *Best Paper Award* sponsored by Hitachi Ltd.

9. Oktober 2020

Philipp Christopher Sauer erhielt den *Emerald & EFMD Outstanding Doctoral Research Award 2020* für seine Arbeit „Multitier Sustainable Supply Chain Management – Learning from the Minerals Case“. Der Promotionspreis wird von Emerald Group Publishing Ltd, dem Herausgeber der größten Sammlung internationaler Business- und Management-Zeitschriften, und EFMD, einer internationalen Non-Profit-Organisation auf dem Gebiet der Managemententwicklung, gemeinsam vergeben.

23. November 2020

Matteo Podrecca, **Guido Orzes**, Marco Sartor und Guido Nasimbeni gewannen den *Best Student Paper Award* auf der 51st Decision Sciences Institute (DSI) Conference für ihren Beitrag „Are corporate social responsibility initiatives worth having? Empirical evidences from SA 8000 decertification“.

10. Dezember, 2020 (online)

Im Rahmen der Konferenz Forward 2020 wurden **Camilla Follini** (Doktorandin im ASE-PhD-Programm, betreut von Prof. Dominik Matt), Andrea Giusti und **Dominik Matt** mit dem *Best Paper Award* für ihre Arbeit „Uso dell'openBIM per la navigazione robotica in cantiere“ ausgezeichnet.

Contacts

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sciencetechnology



Faculty of Education

Key Data

Campus Brixen-Bressanone

Active Study Programmes

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

General Pedagogy, Social Pedagogy, General Didactics and Disciplinary Didactics

Training course 24 CFU

- + For middle and high school teachers

People

- + Students: 1811
- + PhD Students: 37
- + Tenured Professors: 46
- + Researchers: 49
- + Contract Professors: 182
- + Administrative Staff: 18



Dean
Prof. Paul Videsott

The Faculty of Education plays a major role in teaching and university research on the educational and social field nationwide, owing to the specific linguistic, historical, and cultural reality of the Trentino-South Tyrol Region. This helps framing the role of research in the Faculty and defining the lines of future developments. In 2020 the Covid-related restrictions had a huge impact on the research activities worldwide. The Faculty of Education coped with the situation by focusing part of the research on Covid-related topics (e.g. using green plants for social distancing in the classrooms, or what problems pupils with special needs encounter in distance learning).

In spite of the difficult circumstances the Faculty has started 41 research projects for a total budget of 2.2 million €, of which 1.3 million € are third-party funds; these are significantly higher (more than twice as high) than those received in 2019 and are the largest third-party amount the Faculty has ever collected.

The Faculty's research activities focus on:

- education in families, kindergartens and primary schools with a special focus on inclusion;
- the development of professional skills required to teachers engaged in lifelong education;
- the social and cultural challenges posed by a sustainable social development, by inter-generational interactions and social inequality; and
- the challenge posed by learning, teaching, and using all kinds of languages (verbal, musical and aesthetic) in a multilingual context.

In 2020, prof. Giulia Cavrini was again confirmed as coordinator of our trilingual (Italian, German, and English) PhD-Programme in General Pedagogy, Social Pedagogy, General Didactics and Disciplinary Didactics, which responds equally to the need to provide specialists in the Trentino-South Tyrol-Tyrol area (EUREGIO) and to that of meeting the growing demands of European integration.



Research Areas



Vice Dean for Research
Prof. Giulia Cavrini

Research carried out in the faculty of Education focuses on seven main areas:

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

This research area centres on Lifelong Learning from early ages, dealing with the different contexts of training and experience and considering the affective-emotional and cognitive anchors and values taken in an intergenerational and cultural sense. Coordinator: Liliana Dozza

IN-IN Education: INnovative and INclusive Education

This research area focuses on developing approaches to teaching/learning skills and practices that are meaningful, evidence-based

and original, applicable in all educational institutions and compliant with the values and policies of inclusive education. Specific research activities are centred on the needs of heterogeneous groups and of students with Special Educational Needs Coordinator: Ulrike Stadler-Altmann

Psychology and Wellbeing Promotion in Educational Contexts

This research area focuses on the study of behaviour, main psychological functions, and psychological processes related to education and counselling, extending over the entire life cycle. This includes the observation of development levels to detect typical and atypical developmental markers, aiming at identifying risk and protection factors. Coordinator: Demis Basso

Languages and Multilingualism in South Tyrol

The research activity of this area focuses on the study of languages and multilingualism in South Tyrol along three main lines of inquiry: evolution of languages over time; description and documentation of language usage in different communicative and social contexts; linguistic and educational policies related to language acquisition processes and the teaching of languages in schools. Coordinator: Silvia Dal Negro

Aesthetic Experiences and Communication

Research investigates the different forms of aesthetic expression (music, movement, visual art) in

the multicultural social, cultural and educational context of South Tyrol. More specifically: musical heritages and cultures from different historical and social contexts; graphic and visual expression and communication from early childhood to adulthood; contemporary practices and innovative teaching methods for physical exercise and sports in primary schools and kindergartens. Coordinator: Paolo Somigli

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

Research in this area develops topics related to the development of skills in children at nursery and primary school. Emphasis is placed on education at the pre-primary level and on disciplinary subjects in primary school. Coordinator: Giorgio Bolondi

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

This research area gathers perspectives from diverse disciplines: from sociology to social anthropology, from law to social work. Researchers focus on theoretical development, fundamental and applied research dealing with the social world, diversity, population, institutions, values, environment and space, as well as cultural studies, cultural identities and memories, and cultural heritage. Coordinator: Susanne Elsen



Research Projects

CoReD –Kooperatives Re-Design mit und für Schulen

Ziel dieses Projekts ist es, ein besseres Verständnis von Lernumgebungen zu entwickeln. Die Projektaktivitäten und -ergebnisse werden pädagogische Fachkräfte, Lehrpersonen und Führungskräfte von Bildungsinstitutionen dabei unterstützen, sich bewusster mit ihrer Lernumgebung auseinanderzusetzen. Angestrebt sind die Entwicklung von Leitfäden und Orientierungshilfen bei Entscheidungen über Einrichtungen, materiellen Ressourcen und digitalen Angeboten. Hauptziele des Projekts sind:

- Bereitstellung benutzerfreundlicher Online-Tools, die es Bildungspraktiker*innen ermöglichen, zu verstehen wie ihre schulische Lernumgebung das Lernen und Lehren fördert/behindert.
- Entwicklung von Online-Tools, die es Bildungskräften ermöglicht, ihre Praktiken zu unterstützen bzw. ihnen hilft, innovativere und integrativere Lern- und Lehrerfahrungen für ihre Schüler*innen zu entwickeln.
- Erstellung von Online-Fallstudien und Leitfäden, die die schulischen Lernumgebungen analysieren und sowohl den Weg als auch die Erfahrungen von Praktiker*innen in verschiedenen Umgebungen aufzeichnen.
- Erstellung einer Website, auf der die Ressourcen gehostet werden, die gemeinsam Schritt für Schritt

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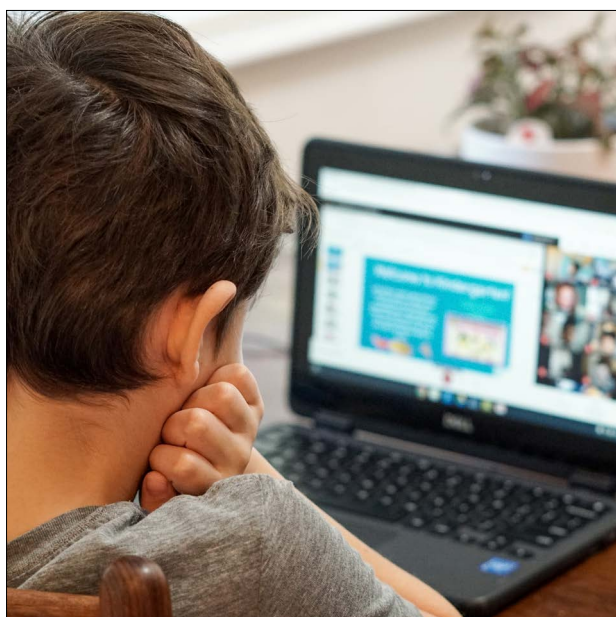


Photo: ©Thomas Park | Unsplash

Key Data

- + **Funding Type:** Erasmus+ Knowledge Alliances — Grant agreement 2019-1-UK01-KA201-061954
- + **Duration:** 10/2019–08/2022
- + **Research Area:** IN-IN Education
- + **Principal Investigator:** Prof. Ulrike Stadler-Altman
- + **Project Partners:** University of Newcastle upon Tyne (Lead Partner), University of Iceland, Aarhus University, University of Gävle, University of Coimbra
- + **Website:** www.ncl.ac.uk/cored
- + **Selected Publications:**
 - Stadler-Altman, U. & Lang, A. (2021). Kultur – Raum – Körper: Schule als Heterotopie des Lehrens und Lernens. In N. Eger & A. Klinge (Hrsg.). *Wie viel Körper braucht die Kulturelle Bildung?* Kopaed (S. 69–85).
 - Stadler-Altman, U. (2018). Ambienti di apprendimento formali: gli edifici scolastici e le aule influenzano i processi di insegnamento e apprendimento? Contributo teorico. *Formazione & insegnamento. European Journal of Research on Education and Teaching. Rivista internazionale di Scienze dell'Educazione e della Formazione Anno XVI (2)*, pp. 209–224.

von den Universitätspartnern, den Bildungskräften und Webdesignern entwickelt werden.

Die sechs Projektpartner haben forschungsbasierte Ansätze und spezifische Methoden zur Analyse von Lernumgebungen entwickelt. Ziel ist es, international erprobte Ressourcen bereit zu stellen, die in der pädagogischen Praxis als frei verfügbare, eigenständige Instrumente genutzt werden können. Dieses Ziel wird durch die Zusammenarbeit zwischen den Projektpartnern und Bildungsexpert*innen erreicht, welche die Tools in sechs verschiedenen europäischen Ländern erproben. Die daraus resultierenden Arbeitshilfen, Fallstudien und Leitfäden für die Praxis werden sukzessive in die sechs Projekt-Sprachen übersetzt, um die internationale Verbreitung zu maximieren. Auch wird sichergestellt, dass die Projektergebnisse weithin verfügbar bleiben. Verbesserungen im Bildungswesen werden so vorangetrieben, indem pädagogische Fachkräfte, Lehrpersonen und Führungskräfte dabei unterstützt werden, die Auswirkungen des Lernumfelds in der pädagogischen Praxis zu verstehen und so Entwicklungsprozesse in Kindergärten und Schulen anzustoßen.

Fuel Cells Hydrogen Educational Models for Schools

Hydrogen is the most abundant element in the universe, but the great potential of hydrogen energy and its significance for a sustainable future of our planet are rarely dealt with in European classrooms.

The purpose of the FCHgo project is to encourage ecological awareness in the coming generations and to develop behaviours based upon a sound knowledge of key technologies. It delivers a ready-to-teach toolkit, aiming to encourage teachers to tackle the hydrogen topic in their lessons and stimulate pupils' awareness and their interest for sustainable energy. The FCHgo school materials and activities help bridge the STEM knowledge gap and teach pupils (especially females) aged from 8 to 18 years the basic principles and applications of fuel cell and hydrogen technology by means of a narrative and playful approach that places much emphasis upon the use of natural language and images to ensure an imaginative and qualitative understanding of a scientific or technical system.

The toolkit is available in 10 European languages and can be downloaded from the project website; it provides a comprehensible technical introduction to Fuel Cells and Hydrogen Technology to teachers and all interested, accompanied by various materials divided



Photo: ©Brochure FCHgo 2021

Key Data

- + **Funding Type:** Horizon 2020 – FCH 2 JU – Grant Agreement 826246
- + **Duration:** 02/2019–06/2021
- + **Research Area:** Educational Contexts, Disciplines and their Teaching at Nursery and Primary School
- + **Principal Investigator:** Prof. Federico Corni
- + **Project Partners:** UNIMORE Università degli Studi di Modena e Reggio Emilia (Lead Partner), InEuropa Srl, ZHAW Winterthur – School of Engineering, Technical University of Denmark, Nicolaus Copernicus University Torun, Steinbeis 2i GmbH
- + **Website:** fchgo.eu
- + **Selected Publications:**

Altiero, T., Cesari, M., Corni, F., Fuchs, H. U., Dumont, E., Karwasz, G. P., Karawacki, M.A. & Wyborska, K. (in press). Narrative teaching on energy, environment and hydrogen – First results from EU "Fuel Cells HydroGen educational model for schools" Project. Malta, GIREF 2020 Seminar. *Journal of Physocs ConfProc*.

Dumont, E., Fuchs, H. U., Corni, F., Contini, A. M., Altiero, T., Romagnoli, M. & Karwasz, G. P. (in press). FCHgo: Fuel Cells HydroGen educational model for schools, an imaginative approach to hydrogen and fuel cell technology for young students and their teachers. Budapest, GIREF 2019 Conference. *Journal of Physics ConfProc*.

Karbowski, A., Wyborska, K., Altiero, T., Cesari, M., Corni, F., Dumont, E., Fuchs, H.U., Hagen, A., Link, L. & Karwasz, G. (in press). Fuel Cells Hydrogen Educational Model Goes to Schools – First results are encouraging. 8th International Conf. on Research in Didactics of the Sciences DIDSCI2020, June 17–19 2020.

according to the pupils' age: for example, simple illustrated stories or short animated movies about energy; instructions and ideas for different role-plays, in which students act as energy carriers (sun, electricity, heat, hydrogen) and film their performances; a set of instructions, worksheets, posters, cards and teacher's guides for experiments. For older pupils, the toolkit provides presentations and videos on key topics like climate change or alternative energies, or on practical applications of fuel cells and hydrogen.

FCHgo has recently launched an award open to schools and student groups, for the best idea to employ FCH-T.

VAR.HEE – La realtà virtuale e aumentata per le arti e il patrimonio nell'educazione e nell'esperienza museale

Il Progetto nasce dall'esigenza di indagare le possibilità di applicazione delle tecnologie digitali di realtà virtuale e aumentata all'educazione all'arte e al patrimonio.

Il progetto si propone i seguenti obiettivi: identificare gli strumenti e le risorse tecnologiche appropriate per gli approcci didattici e applicativi delle scuole primarie; realizzare un vademecum per la progettazione di ambienti di realtà virtuale (VR) in ambito educativo; sviluppare "progetti pilota" e moduli formativi sperimentali attraverso applicazioni VR.

Ad oggi, sono stati realizzati e sperimentati due videogiochi educativi (serious game) immersivi per l'educazione al patrimonio e i risultati ottenuti hanno trovato ampia disseminazione in 14 convegni e 12 pubblicazioni nazionali e internazionali.

A causa dell'emergenza sanitaria, nel 2020 il programma di ricerca e sperimentazione è stato interrotto ma riprenderà appena possibile con l'ampliamento del campione di sperimentazione (quasi 500 bambini della provincia di Bolzano) e l'ottimizzazione dei percorsi per una fruizione in contesti post-Covid.



Photo: ©unibz

Key Data

- + **Funding Type:** Internal funding
- + **Duration:** 01/2018 – 11/2021
- + **Research Area:** Educational Contexts, Disciplines and their Teaching in Nursery and Primary School; Aesthetic Experiences and Communication
- + **unibz Research Team:** Prof. Alessandro Luigini (Principal Investigator), Prof. Demis Basso, Dr. Monica Parricchi
- + **Project Partners:** Università di Bologna, Università degli Studi dell'Aquila, Università degli Studi di Camerino
- + **Selected Publications:**
 - Luigini, A., Parricchi, M., Basso, A. & Basso, D. (2020). Immersive and participatory serious games for heritage education, applied to the cultural heritage of South Tyrol. *Interaction Design and Architecture(s) Journal – ID&A*, 43, pp. 42–67.
 - Luigini, A., Fanini, B., Basso, A. & Basso, D. (2020). Heritage education through serious games. A web-based proposal for primary schools to cope with distance learning. *VITRUVIO – International Journal of Architectural Technology and Sustainability*, 5(2), pp. 73–85. doi.org/10.4995/vitruvio-ijats.2020.14665.
 - Luigini, A. & Basso, A. (2020). Heritage Education for Primary Age Through an Immersive Serious Game. In C. Bolognesi & D. Villa (eds.) *From Building Information Modelling to Mixed Reality. Springer Tracts in Civil Engineering*, pp. 157–174. Springer: Chem. doi.org/10.1007/978-3-030-49278-6_10.

I punti di maggiore interesse del progetto sono:

- L'applicazione di tecnologie innovative alla didattica, e in particolar modo all'educazione al patrimonio;
- La realizzazione di percorsi didattici in realtà virtuale immersiva che abbiano come obiettivo le istanze pedagogiche a discapito di una diffusa spettacolarizzazione delle esperienze;
- La sperimentazione su ampia scala con raccolta e analisi di dati quantitativi.
- La progettazione di percorsi didattici interdisciplinari capaci di integrare discipline differenti e di ampliare il campo d'applicazione dei serious game.

PUNKT – Personelle Unterschiede bei der Verwendung von Kohäsionsmitteln in Texten

Wie schreiben und reden Abgänger*innen der deutschsprachigen Oberschulen in Südtirol? Sind Einflüsse aus den anderen Sprachen in Südtirol zu finden? Welche Rolle spielt der Dialekt? Was erzählen diese Maturant*innen über den Umgang mit ihren Sprachen? Im Sinne eines Monitorings der Sprachkompetenzen sollen diesbezüglich Fähigkeiten und Schwierigkeiten deutschsprachiger Maturanten und Maturantinnen analysiert werden, um herauszufinden, ob sie denn so schlecht sind, wie oftmals beklagt wird.

Im Projekt wird speziell die Argumentation in Texten und Gesprächen untersucht, weil dieser Bereich für die berufliche und akademische Entwicklung entscheidend ist. Hierfür wird auf eine bereits erhobene und annotierte Text- und Gesprächssammlung aus deutschsprachigen Oberschulen in Südtirol zurückgegriffen. Die Daten bieten zudem die Möglichkeit, Einflüssen aus Kontaktsprachen nachzugehen, vor allem aus dem Italienischen. Über Interviews wird die Einstellungen dieser Jugendlichen zu ihren Sprachen (Deutsch und Dialekt, Italienisch und Englisch) und deren Verwendung im Alltag eruiert.

Zu obengenannten Fragen kann festgestellt werden:

- Die Abweichungen vom Standard sind grundsätz-

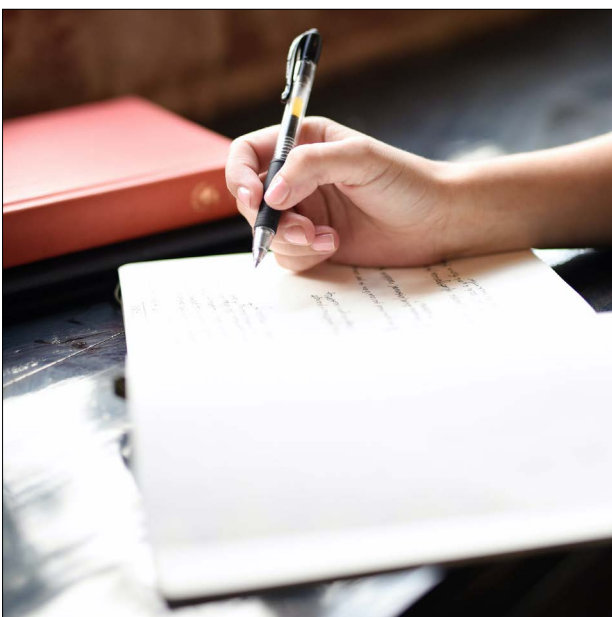


Photo: ©Hannah Olinger | Unsplash

Key Data

- + **Funding Type:** Internal Funding, Swiss National Science Foundation
- + **Duration:** 07/2019 – 12/2021
- + **Research Area:** Languages and Multilingualism in South Tyrol
- + **Principal Investigator:** Prof. Rita Franceschini
- + **Website:** komma.projects.unibz.it
- + **Selected Publications:**

Glück, A. (2020). Zur Wahl des Relativpronomens in attributiven Relativsätzen im Standarddeutschen in Südtirol. *Deutsche Sprache. Zeitschrift für Theorie, Praxis, Dokumentation* 48 (1), pp. 29–51. doi.org/10.37307/j.1868-775X.2020.01.03

Glück, A. & Leonardi, M. M. V. (2019). Zur Verwendung von Präpositionen in Texten und Diskursen von Südtiroler Maturanten. In S. Kürschner, M. Habermann & P. O. Müller (eds.), *Methodik moderner Dialektforschung. Erhebung, Aufbereitung und Auswertung von Daten am Beispiel des Oberdeutschen*, pp. 445–470. Hildesheim, Zürich, New York: Olms.

Leonardi, M. M. V. (2020). Famiglie plurilingui in Alto Adige: pratiche linguistiche e l'appartenenza linguistica. In: A. Marra & S. Dal Negro (eds.), *Lingue minoritarie tra localismi e globalizzazione. Atti del 19° Congresso Internazionale di Studi dell'Associazione Italiana di Linguistica Applicata (AItLA)*. Cagliari, pp. 167–181. Milano: AItLA.

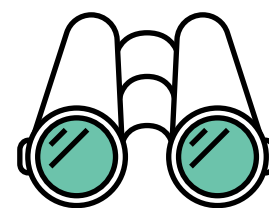
lich nicht mehr als in anderen deutschen Sprachgebieten. Gibt es solche, dann spielt in den meisten Fällen der Einfluss des Südtiroler Dialektes eine Rolle (man denke etwa an die unterschiedliche Behandlung der Fälle Dativ und Akkusativ).

- Der Einfluss des Italienischen ist nur marginal erkennbar: So zeigen sich im mündlichen Datenmaterial (von 44 Stunden) lediglich 132 italienische Ausdrücke, davon machen boh (68), mah (60) den überwiegenden Teil aus.
- Die Jugendlichen weisen in der Mehrzahl einen unverkrampften Umgang mit ihren Sprachen auf und schätzen die Mehrsprachigkeit.

Die Projektergebnisse sind für den Unterricht an den Oberschulen als auch für die vorgelagerten Schultypen von Interesse. Veranstaltungen wurden mit dem Deutschen Schulamt auch an der Universität abgehalten, um die Rolle des Dialektes zu diskutieren, der aus dem Deutschunterricht vornehmlich verbannt wird, während eine bewusstere Wahrnehmung der Unterschiede gegenüber dem Standard nötig wäre.



Cooperation and Internationality



The Faculty attaches great importance to the research cooperation activities. The number and scope of projects financed exclusively with third-party funds has increased significantly. Some of the most significant research cooperation activities of our Faculty are:

RIDE – Robotics for the Inclusive Development of Atypical and Typical Children, in collaboration with various partners including Eötvös Loránd University Budapest, Interonline, and Istituto Comprensivo Comenius Trento.

ARGOP – Argumentation in Open-ended Questions in Large-scale CB Assessment of Learning, in collaboration with EduVAL Project.

Fit Back – The European Network for Development of Physical Fitness Monitoring Systems, in collaboration with various partners including University of Ljubljana, University of Granada, and Hungarian School Sport Federation.

PRIME PETE – Primary Education – Physical Education – Teacher Education, in collaboration with various partners including University of Luxembourg, University of Sevilla, and European Physical Education Association.

VaCCiNa – Le determinanti del comportamento vaccinale in Alto Adige, in collaboration with Azienda Sanitaria dell'Alto Adige/Südtiroler Sanitätsbetrieb.

Direzione scientifica e didattica del laboratorio Fisica in Moto 2019–20, in collaboration with Fondazione Ducati.

MEL – Educazione Lettura digitale, in collaboration with CEPELL – Centro per il libro e la cultura.

FARM – Il modello di filiera dell'Agricoltura responsabile, in collaboration with various partners including University of Verona, Milano and Trento, Associazione La Strada Der Weg Onlus, and Confagricoltura Veneto.

ASTRA – Applying Sustainability Transition Research in Social Work tackling Major Societal Challenge of Social Inclusion, in collaboration with various partners including University of Jyväskylä, University of Bielefeld, University of Durham, and ISCTE-University Institute of Lisbon.

PONTE – Il Ponte/Die Brücke, in collaboration with Associazione La Strada – Der Weg Onlus, arciragazzi Bolzano, Forum Prevenzione Prävention, Fondazione/Stiftung Südtiroler Kinderdorf, and Cooperativa Sociale EOS Sozialgenossenschaft.

ITM – A European Comparison of Teaching Material – Criteria for its Development and Evaluation, in collaboration with various partners including University of Bielefeld, Grundschulsprenkel Bozen, University of Luxembourg, and Umea University.

CoPinG – Constructions of Parenting on Insecure Grounds: what Role for Social Work?, in collaboration with University of Trento, Trieste, and Calabria.

CO.RE_D – CollaborativeRe-Design With Schools, in collaboration with various partners including Univer-

sity of Newcastle upon Tyne, University of Iceland, Aarhus University, University of Gävle, and University of Coimbra.

VLL Corpus IV – Vocabolar dl lad-inleterar, in collaboration with Autonomous Region Trentino-Alto Adige/Südtirol, Rip./Abt. III Minoranze linguistiche, integrazione europea/Sprachminderheiten und Europäische Integration.

PULS+ Professional Support of Learning and School Building Development, in collaboration with various partners including University of Innsbruck, University of Art and Design Linz, Alanus University of Arts and Social Sciences, and Autonomous Province of Bozen-Bolzano Abt./Rip. 16.

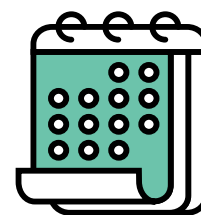
LEA – Learning Environment Apps, in collaboration with Sophia::Akademie, University of Innsbruck, and ICSadviseurs BV.

ProLernen – Professionalisation of Educators and Pedagogical Leaders through Learning Research with Vignettes, in collaboration with various partners including Vienna University and Leibniz University Hannover.

E-learnScene – Leveraging Language and Culture Learning in Heterogeneous Classes Through Action-based Learning Scenarios, in collaboration with various partners including Belgischer Germanisten- und Deutschlehrerverband, Ecole Internationale Le Verseau, and Istituto Comprensivo Bolzano Il Don Bosco.



Research Events



La Facoltà di Scienze della Formazione attribuisce grande importanza all'attività di disseminazione dei risultati della ricerca, dedicando un grande impegno ogni anno all'organizzazione di attività quali conferenze nazionali e internazionali, congressi, giornate di studio e workshop, alle quali vengono invitati non soltanto i ricercatori e gli esperti di settore ma anche gli insegnanti delle scuole di ogni ordine e grado e gli stakeholder di area sociale, educativa e umanistica a livello territoriale e nazionale. Tra i convegni internazionali e nazionali organizzati dalla Facoltà che hanno registrato un'ampia partecipazione segnaliamo:

15–18 gennaio 2020

Tage der Neuropsychologie des Entwicklungsalters/Giornate di Neuropsicologia dell'età evolutiva.

Organizzato da Livia Taverna.

17–18 gennaio 2020

Aktionsforschung, Lesson Study und Learning Study in Kindergarten, Schule und Universität: Herausforderung Mehrsprachigkeit/Ricerca Azione, Lesson Study e Learning Study nella scuola e in università: la sfida del plurilinguismo. Organizzato da Renata Zanin Scaratti.

7–8 febbraio 2020

Cognitive Science Arena. Organizzato da Demis Basso.

8–9 ottobre 2020

Fachtagung für Lehrpersonen der Mittel- und Oberschulen der Autonomen Provinz Bozen zu Formen des Widerstands gegen Faschismus und Nationalsozialismus im Zweiten Weltkrieg/Convegno/corso di formazione per insegnanti

delle scuole medie e superiori della provincia di Bolzano dedicato alle forme di Resistenza al nazifascismo nella Seconda Guerra Mondiale. Organizzato da Andrea Di Michele presso il Lago di Braies.

20–21 novembre 2020

Didaktik und Inklusion im Bildungsbereich/Didattica e Inclusione Scolastica – VI edizione. Organizzato da Dario Ianes.

26–28 novembre 2020

Bildung Erde Natur Lifelong, Lifewide, Lifedeeep Learning: Nachhaltige Bildung. 5. Internationale Konferenz/Educazione Terra Natura Lifelong, Lifewide, Lifedeeep Learning per lo sviluppo sostenibile. 5° Convegno Internazionale.

Organizzato da Liliana Dozza e Michele Cagol.

3–4 dicembre 2020

Outdoor Education: ambiente, contesti e sviluppo motorio dall'infanzia all'età adulta. Esperienze di ricerca a confronto. Organizzato da Patrizia Tortella.

18 dicembre 2020

Sprachminderheiten im Kino/Minoranze linguistiche al cinema. Organizzato da Silvia Dal Negro, Daniela Veronesi e Daniele Ietri.





Awards and Distinctions



Am 26. Juni 2020 hat **Barbara Gross** den Forschungspreis für herausragende wissenschaftliche Leistungen der Stiftung Südtiroler Sparkasse für drei eingereichte Werke erhalten.

Das bei Routledge publizierte Buch *Further Language Learning in Linguistic and Cultural Diverse Contexts: A Mixed Methods Research* (2019) beschäftigt sich mit dem interdisziplinären Bereich der interkulturellen und der mehrsprachigen Erziehung und Bildung sowie dem damit verbundenen Interesse an soziokulturellen und soziolinguistischen Aspekten von Lernprozessen bei Grundschulkindern. Die aus den Daten gewonnenen Ergebnisse stellen zudem die Basis zweier wissenschaftlicher Artikel in nach ANVUR als Klasse A eingestuften Journals dar. Diese Beiträge tragen die Titel *Educating for a Common Identity in Times of Superdiversity? The Example of Linguistic Diversity and Identity* und *Intercultural Education and Educational Research in a Globalizing World: Historical Developments and Contemporary Challenges*.

Am Beispiel Südtirols thematisieren die drei Werke die verflochtene, dynamische Wechselbeziehung zwischen sprachlicher und kultureller Diversität in Bildungsinstitutionen. In globaler Perspektive ist dieses Beispiel besonders geeignet, Stärken, Schwierigkeiten und Herausforderungen in hyperkomplexen und superdiversen Kontexten aufzuzeigen.

Contacts

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www.unibz.it/en/faculties/education



Faculty of Design and Art

Key Data

Campus Bozen-Bolzano

Active Study Programmes

Bachelor

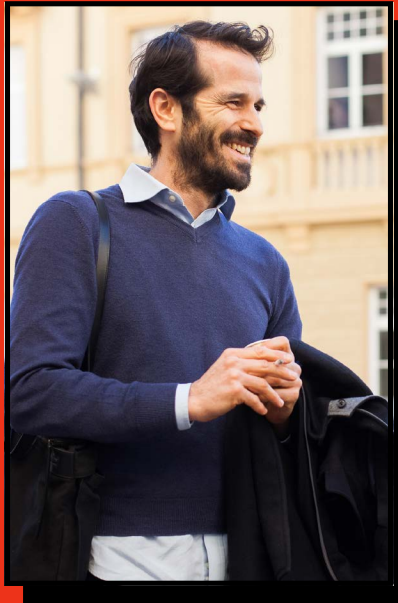
- + Design and Art
Major in Art
- + Design and Art
Major in Design

Master

- + Eco-Social Design

People

- + Students: 341
- + Tenured Professors: 15
- + Researchers: 19
- + Contract Professors: 56
- + Administrative Staff: 8
- + Technical Staff: 15



Dean
Prof. Nitzan Cohen

The Faculty of Design and Art is focused on research activities centering on exploratory, evaluative, and participatory investigations; these concern issues and processes that connect design and art to the macro areas of society, culture, technology, environment, and economy.

The ongoing goal is to develop and disseminate new knowledge, new practices, new courses of action or a combination thereof. The Faculty's research activities span from more classical forms of design and art, such as communication design, product design, and arts-based practices, to emerging or established subfields like eco-social design and/or art, participatory practices, and a wide scope of emergent design/arts-based practices; related anthropological and sociological issues are also part of the researchers' perspective.

Synergies between practitioners, scientists from humanistic disciplines, artists, designers and creative methods generated an increasingly interdisciplinary network that links together different faculties of unibz and these with other universities, art institutions, museums, research labs in Italy, Europe and world-wide. The Faculty's international research network is wide and continuously expanding with research partners located in Austria, Finland, Germany, Holland, Portugal, Spain and the UK, and Erasmus partners in Australia, Mexico, New Zealand, and the US.

Research at the Faculty of Design and Art entered a new energetic phase with the recruitment of five full professors in the years 2015–2020: three of them came from design-based practice, one from arts-based practice, and one from the social sciences, thus strengthening and broadening the Faculty's knowledge domains.



Research Areas



Vice Dean for Research
Prof. Gerhard Glüher

Research in the Faculty of Design and Art can be conceived as linking and comprising classical disciplines. The research profile, the activities, and the results in such an environment reflect investigations, experiments and interactions concerning phenomena that link society, theory, technology, artefacts, image, and augmented reality. The essential principle of design research or artistic research becomes visible or obvious in social projects with a participatory approach, exhibitions in their various forms and new methods to visualise, publish or distribute knowledge. In the Faculty's three research clusters and in the research platform Cultural Heritage – Cultural Production the research skills trigger creative processes and generate unexpected dialogues between human beings and their seemingly objective environment.

Each of the three research clusters has its own profile, but research groups are combined in a flexible way to generate best knowledge competences and synergies for single research projects and research events. Most of the researchers are design and art professionals, hence ideas, projects and investigations, as well as basic research results can be applied to current social situations.

Cluster "Make"

The cluster make is composed of researchers from design, architecture, art and design history. This cluster uses innovative approaches for its research projects: Alternative ways of conceiving, designing, making, producing, and presenting are investigated as means to increase the intrinsic value of the work and to promote the connection of global ideas with local situations.

Cluster "Enable"

The cluster enable is the largest research unit of the faculty and hosts researchers from all the scientific fields of the faculty. The projects and events organised by this cluster focus on design and art competences, art-theoretical reflections and sociological investigations, with specific reference to the meaning of mega-trends and a critical observation of current social processes and political situations.

Cluster "Trans-form"

The cluster trans-form explores design, art and social practices for political and eco-social transitions across public, commercial, and not-for-profit sectors using participatory, open, and collaborative design practices. Researchers in this cluster strive to contribute to the transformation of regulations among humans, communities, organisations, companies and other living beings, aiming at a more sustainable, resilient, just, and equitable future.

The research **platform Cultural Heritage and Cultural Production** – established in 2019 – helps extend the research competences of the Faculty. Parallel to the start of a large-scale research project, the platform launched and curated three exhibitions and a conference and initiated a series of public lectures for the Studium Generale offered by unibz.



Research Projects

WiL – Written in the Landscape: Places, Traces, and Memories of the World War I in the Sesto Dolomites

WiL recovers the memories of World War I and their connections to the landscape through an interdisciplinary project weaving together archaeology, history, and socio-cultural anthropology with geography, sociology, art, and design. The project focuses on the former battleground on the high plateau of the Three Peaks in the Sesto Dolomites. As a "borderscape" the Sesto Dolomites were historically marked by important traffic routes and cultural exchanges, and in more recent times by a bloody and traumatic war. The WiL project moves beyond the dichotomy of natural/cultural heritage and aims to investigate and rescue the living memories embedded in sites and places in order to overcome old antagonisms and historical trauma and to elaborate a critical and participatory approach to the legacy of the war.

The Cultural Heritage & Cultural Production Platform leads the research activities in collaboration with the Faculty of Education. Among the partners who support research and dissemination there are the Arc-Team, the Austrian Society for Fortification Research, the Museum of the War of Rovereto, the Bellum Aquilarum Onlus and EVAA-Anthropological Association South Tyrol.



Panorama of the Three Peaks and the battle zone | Photo: ©Waltraud Kofler Engl

Key Data

- + **Funding Type:** Autonomous Province of Bozen-Bolzano
- + **Duration:** 10/2020 – 12/2022
- + **Research Area:** Enable, Transform, and Make
- + **unibz Research Team:** Dr. Waltraud Kofler Engl (Principal Investigator), Prof. Stephan Schmidt-Wulffen; Dr. Daniela Salvucci, Dr. Andrea Di Michele, Prof. Susanne Elsen, and Prof. Alessandro Luigini (Faculty of Education)
- + **Project Partners:** EVAA – Ethnologischer Verein Südtirol/Associazione Antropologica Alto Adige, Museo della Guerra Rovereto, Arc-Team, Associazione Turistica di Sesto, OeGF – Österreichische Gesellschaft für Festungsforschung, Bellum Aquilarum Onlus
- + **Website:** www.culturalheritage.unibz.it/written-in-the-landscape

The first objective is to carry out a systematic archaeological and historical survey of the material traces and structures of the conflict. The second objective is to investigate memories, perceptions, and interpretations of WWI sustained by the local population. The third objective is to bring together researchers, local communities, and stakeholders to co-produce a participatory heritage of the war, based on critical remembrance and reconciliation. Overall, WiL will coalesce a deeper collective understanding of the Dolomites landscape, both for locals and for external visitors and tourists.

The project was launched in late September with a walk on the Anderter Alp open-air museum that was part of the European Heritage Days 2020, and with a kick-off meeting with the partners to exchange ideas about interdisciplinary research. In 2021 three researchers began the data collection for the different work packages.

The traces of World War I on the Dolomites front have so far been only partially recovered, mostly through written documents. This research project and the dissemination of its outcomes will bring up new critical insights into the dissonant heritage of the war landscape and increase the significance of the UNESCO Dolomites – World Natural Heritage Site by promoting shared knowledge and social participation.

KAUZ – Werkstatt für Klima, Arbeit und Zukunft

Worum geht es bei KAUZ?

Kernanliegen ist, die komplexe Fragestellungen der sozial-ökologischen Transformation für die Erwachsenenbildung zugänglich zu machen und damit das aktive Engagement dafür zu verbreitern. Da Lohnarbeit die derzeitige Lebensweise entscheidend prägt, richten sich die Bildungsmaterialien vorrangig an Beschäftigte, mit dem langfristigen Ziel, die erarbeiteten Formate in der gewerkschaftsinternen und öffentlichen Weiterbildungslandschaft zu verankern. Thematische Eckpunkte sind u.a. die „Imperiale Lebens- und Produktionsweise“ der Politikwissenschaftler Ulrich Brand und Markus Wissen, sowie eine Sorge-Perspektive auf Wirtschaft und Gesellschaft (vgl. Joan C. Tronto „Ethics of Care“).

Was macht KAUZ?

Im Zentrum des Projekts steht die Gestaltung machtkritischer Bildungsmaterialien und interaktiver Lernformate für die Erwachsenenbildung. Es werden Workshopkonzepte entwickelt, die Multiplikator*innen nutzen können, weiters eine Podcastreihe mit 'Good Practice'-Beispielen und Expert*innengesprächen, Erklärvideos, eine Website und Social Media-Inhalte. KAUZ will Bildungsräume und -materialien gestalten, die emanzipatorische

Key Data

- + **Funding Type:** Erasmus+ Knowledge Alliances
- + **Duration:** 09/2020 – 08/2023
- + **Research Area:** Ecosocial Design, Participatory Design
- + **Principal Investigator:** Prof. Kris Krois
- + **Project Partners:** Kollektiv Periskop, Common Future e. V., Dante Adult Education Institution
- + **Website:** kauz-project.org

Lernprozesse ermöglichen. Um das derzeitige Leben auf Kosten anderer zu überwinden, muss an tief verinnerlichten Weltbildern und gesellschaftlichen Strukturen gerüttelt werden. Transformative Bildungsarbeit will Lernprozesse ermöglichen, um die „Imperiale Lebensweise“ zu verlernen und es zu wagen, eine andere Welt zu denken.

KAUZ Kommunikations- und Interaktionsdesign

Komplexe Inhalte zugänglich und attraktiv zu vermitteln, ist eine Herausforderung für Kommunikations- und Interaktionsdesigner*innen. Für die entsprechende Forschung, Entwicklung und das Design ist ein Team an der Fakultät für Design und Künste verantwortlich. Maßgeblich arbeiten daran zwei Abgänger*innen des Master in Eco-Social Design, und setzen damit Arbeitsweisen, die sie im Studiengang erlernt haben, fort. Die Ergebnisse fließen wiederum als Lernmaterialien und -formate in den Studiengang ein.

Wer ist KAUZ?

Die Initiative KAUZ wurde von den Autor*innen der Broschüre „Von A wie Arbeit bis Z wie Zukunft“. In Österreich hat die Initiative ihre Heimat beim Kollektiv Periskop gefunden. Mittlerweile hat KAUZ vier Partnerorganisationen in Deutschland, Italien und Kroatien und wird in einem dreijährigen Projekt vom Erasmus+ Programm der Europäischen Union gefördert.

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CEYIZLAB Fabric(a) – Realizzare nuovi tessuti

Il progetto di ricerca Fabric(a) esplora esperimenti pratici e nuovi metodi per creare nuovi tessuti attraverso l'ibridazione di tecniche artigianali con strumenti di fabbricazione digitale.

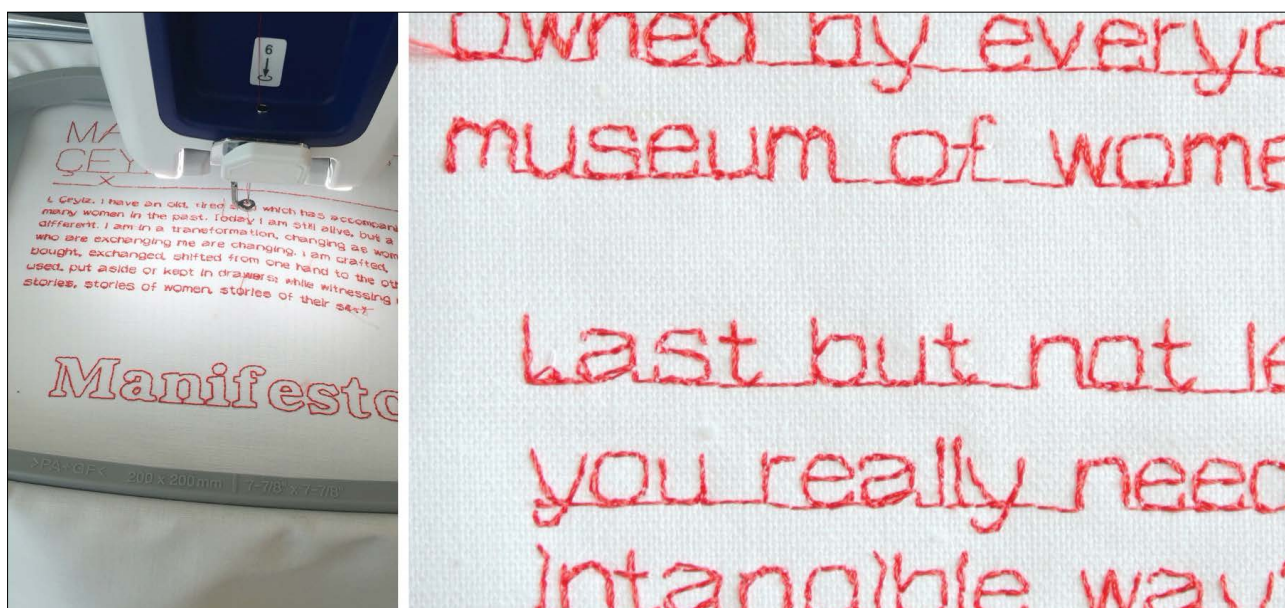
Çeyizlab è un progetto collaborativo all'interno di Fabric(a), incentrato su di un rituale tradizionale legato all'artigianato tessile domestico: la ricerca di Çeyizlab affronta il *Çeyiz* (la dote), un rituale tradizionale riguardante l'eredità che passa dalla famiglia alla sposa in Turchia. Questa tradizione ha lo scopo di sostenere gli sposi e aiutarli a iniziare il loro prossimo capitolo della vita senza problemi. Inoltre, il *Çeyiz* è un archivio collettivo di manufatti decorativi o funzionali, per lo più tessuti fatti a mano che creano anche un'economia informale per le donne che lavorano in casa; incorpora valori tangibili e intangibili che passano da una generazione all'altra nella famiglia. La preparazione del *Çeyiz* coinvolge non solo i membri della famiglia ma diventa un'attività collettiva che abbraccia diversi partecipanti in relazione diretta o indiretta con la sposa. Così, diventa non solo un'eredità familiare ma una creazione comune di un insieme di manufatti tessili, una sorta di archivio-museo casalingo di oggetti fatti a mano che racchiudono varie storie.

Key Data

- + **Funding Type:** Internal Funding
- + **Duration:** 07/2019 – 08/2021
- + **Research Area:** Make
- + **Principal Investigator:** Dr. Secil Ugur-Yavuz
- + **Project Partner:** Ohio State College of Arts and Sciences
- + **Video Link:** vimeo.com/461469204

Come accade a molte tradizioni, anche il *Çeyiz* è in fase di trasformazione a causa dei cambiamenti economici, sociali e tecnologici risultanti dalla crescente società dei consumi, che porta a un futuro insostenibile. Partendo dall'esplorazione delle minacce e delle opportunità insite in questa trasformazione, è emersa la domanda di ricerca: come possiamo far sì che questo processo di cambiamento evolva in futuri sostenibili e preferibili?

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TIP. Image. Text. Politics

The advent of digital technology and its popularisation generated a radical change in an already outdated and well-established mass-media society. One of the most prominent symptoms of this change is the vast and complex concept of 'transmedia storytelling.' This socio-technological phenomenon, which is unfortunately often misused, is generally understood as a smart marketing strategy for spreading a cultural product through different media and platforms but in fact, the transmedia phenomenon reveals a very deep socio-cultural (and even cognitive) change, which is based on newly articulated mechanisms of creation of meaning and leads different, formerly irreconcilable media to share different forms of constructing meaning and different ways of intertwining their respective contents.

This research project examines the diverse facets of the transmedia phenomenon and analyzes how the photographic images are shown in the multidimensional communicative panorama that characterizes our contemporary media condition. In fact, the TIP project centres on photographic projects that for their time are innovative in the way they relate to text layers and enquires into different text-image intermedia arrangements to better comprehend our digital media context. Thus, one central issue explored by

Key Data

- + **Funding Type:** Internal Funding
- + **Duration:** 05/2020 – 04/2023
- + **Research Area:** Enable
- + **unibz Research Team:** Prof. Eva Leitolf (Principal Investigator), Dr. German Duarte

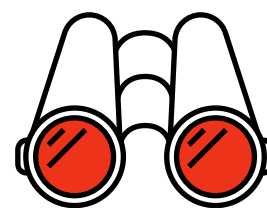
the research team is how the convergence of private and public spaces for thought, communication and action changes the relation between photographic images and textual information, thus contributing to new politics of seeing and communicating.

The TIP project aims at developing an image-text-based body of work that considers and critically questions the interplay of image and text in the processes of generation of meaning. Conventions in the academic discursive formats (like lectures and talks), in academic publications and in the making of art exhibitions will be questioned, challenged, and redefined by alternative uses of text and image layers.





Cooperation and Internationality



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La Facoltà fa parte di una rete ben strutturata che la collega a università nazionali ed estere, alle altre Facoltà di unibz e alle istituzioni di ricerca europee, nonché a musei, gallerie e istituti di ricerca per gli studi artistici e culturali. Il design e le arti, insieme alle scienze sociali e culturali e ai nuovi metodi di imaging e di ricerca sulle immagini, costituiscono – per la natura stessa degli interessi di ricerca – un campo di collaborazione transdisciplinare. Nell'ottica della Facoltà, la ricerca nell'ambito del design deve avere un riferimento applicativo e ciò ha portato a una grande varietà di progetti di cooperazione a livello locale, in primo luogo la piattaforma Cultural Heritage & Cultural Production, ma anche collaborazioni con la Fondazione Dalle Nogare, con il Comune di Bolzano per due progetti del prof. Kris Krois e del dott. Alvisè Mattozzi, con ar-ge Kunst Bolzano per una conferenza organizzata dal prof. Gigliotti e un contratto di sponsorizzazione con il Comune di Bolzano e la società cooperativa sociale OfficineVispa ottenuto dal prof. Kris Krois.

18–21 agosto 2020

All'interno della conferenza internazionale online EASST/4S 2020 CONFERENCE con tema "Locating and Timing Matters", organizzata congiuntamente dalla European Association for Science and Technology Studies (EASST) e dalla Society for Social Studies of Sciences (4S), il prof. Andreas Metzner-Szigeth ha realizzato due panel sessions intitolate "On the Interplay of Images" e "Imagaries and Imagination in Science

Communication", che sono state entrambe introdotte da un keynote dello stesso prof. Metzner-Szigeth.

26–27 settembre 2020

In collaborazione con la Fondazione Architettura Alto Adige, la piattaforma di ricerca Cultural Heritage ha offerto lezioni e conferenze sul patrimonio culturale architettonico e la sua influenza sull'edilizia contemporanea. La Piattaforma ha partecipato inoltre, insieme a istituzioni nordtirolesi e trentine, ai programmi EUREGIO "Fit4Co" ed "Euregio-Lab" e alla Giornata Europea del Patrimonio 2020 e ha collaborato a un progetto cinematografico sull'architettura del periodo fascista ad Asmara e Bolzano.

25 novembre 2020

Alla conferenza annuale EU Design Days Sustainability and Circular Economy (svoltasi online), organizzata dalla Conferenza annuale EU Design Days Sustainability and Circular Economy, Bruxelles.

Alla conferenza, organizzata dallo European Regions Research and Innovation Network (ERRIN), l'intervento dei professori Alastair Fuad-Luke e Kris Krois "Make Transformation Work Work! Eco-social designers generate multiple values & novel outputs", ha illustrato come gli studenti abbiano generato nuove reti attraverso progetti realizzati con partner locali e regionali nei settori dell'agricoltura, del turismo e dei servizi sociali/pubblici: le relazioni intersettoriali sono state costruite attraverso la ricerca etnografica in loco, processi di progettazione partecipata e prototipazione di prodotti, servizi, inter-

venti spaziali e una piattaforma podcast online.

Altre collaborazioni nel 2020:

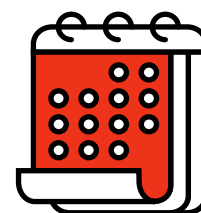
Il prof. Christian Upmeyer ha elaborato un progetto di ricerca applicata, sviluppando, per il Consiglio Provinciale di Bolzano, un prototipo di portale per i giovani, che è stato creato con la partecipazione di studentesse e studenti e dell'amministrazione provinciale e successivamente testato con i giovani. La fase di realizzazione è stata strettamente accompagnata dalla Facoltà e sostenuta in termini di contenuto e design fino alla pubblicazione nel novembre 2020.

nova-bz.org

Il prof. Kuno Prey ha avviato e/o realizzato progetti di ricerca applicata in collaborazione con il comune di Bressanone (portabiciclette "b") e con l'ospedale di Bolzano (una maschera respiratoria fai da te per il personale medico).



Research Events



17–18 April 2020

The **annual conference series By Design or By Disaster**, organised by the teachers and students of the Master in Eco-Social Design was converted into an online conference format due to the Covid-19 pandemic. Titled **Beyond Crisis**, the conference was a vibrant series of short talks and workshops that explored the question, "How to use the virus-induced situation to build up momentum for social-ecological transformation?" Over 350 people registered for the conference with up to 200 participating simultaneously in the diverse events and a number of international guest speakers. A further analysis of the workshop outcomes helped generate an open source Toolkit for Designing Actions in Times of Multiple Crises that was successfully tested at the "Hier und Da" festival in Obervinschgau/Alta Val Venosta in early October 2021.

designdisaster.unibz.it/the-toolkit-for-designing-actions-in-times-of-multiple-crises

designdisaster.unibz.it/beyond-crisis-outcomes-next-steps

Prof. Eva Leitolf participated with her own art works and presentations in various international exhibitions:

11 June–1 August 2020

"Getting Across" at NiMAC, Nicosia/Cyprus, organised and presented by NiMAC (Nicosia Municipal Arts Centre), associated with the Pierides Foundation and Goethe-Institut Cyprus.

nimac.org.cy/getting-across

11 February – 8 March 2020

"Getting Across" at Galerija umjetnina, Split/Croatia

www.goethe.de/ins/hr/de/ver.cfm?fuseaction=events.detail&event_id=21754884&

19 March–16 August 2020

"The World to Come: Art in the Age of the Anthropocene" at DePaul Art Museum, University of Chicago. resources.depaul.edu/art-museum/exhibitions/Pages/the-world-to-come.aspx

Emanuel Mathias, Artistic collaborator in the research project "Image. Text. Politics" (coordinated by Eva Leitolf) participated in exhibitions in Düsseldorf, Leipzig and Cologne with his own works and lectures.

Prof. Kuno Prey participated with his own artistic and design artefacts in exhibitions in Bozen-Bolzano (Prisma Gallery), in Innichen-San Candido (Kunst Café Mitterhofer) and in Meran-Merano; he also curated four exhibitions and was a jury member in three international commissions.

17–19 December 2020

Online Conference "Care Beyond Crises". Thinking of care as "... a species activity that includes everything that we do to maintain,

continue, and repair our 'world' so that we can live in it as well as possible" (Fischer & Tronto), the key question was "How to address the virus-induced situation to build up momentum for an eco-social transformation?" Speakers included Niels Hendriks (Dementia lab), Amy Franceschini (Futurefarmers), Bianca Elzenbaumer (Alpine Community Economies Lab/Brave New Alps), Andrea Vetter (Laboratory for new economic ideas), Andreas Unteidig (MA Transformationdesign, HbK Brunswickshig), and Elke Krasny (exhibition & book: 'Critical Care – Architecture and Urbanism for a Broken Planet'). The proceedings will be published in 2021.

designdisaster.unibz.it/2020





Awards and Distinctions



THIS IS NOT A THORNBUSH ist der Titel der Arbeit, welche von **Eva Leitolf** im Juli 2020 im Rahmen des Wettbewerbs *Kunst am Bau* für das Neue Palais in Potsdam realisiert wurde. In der ehemaligen Orangerie des Neuen Palais werden zukünftig das Abraham Geiger Kolleg und das Zacharias Frankel College des Instituts für jüdische Theologie der Universität Potsdam zuhause sein.

[BBR-Kunst-am-Bau-Wettbewerb \(bund.de\)](https://www.bund.de/bbr-kunst-am-bau-wettbewerb)

[Spreebote Online-Kultur-Eva Leitolf gewinnt Wettbewerb \(spreebote-online.de\)](https://www.spreebote-online.de/kultur/eva-leitolf-gewinnt-wettbewerb)

1. – 4. Juli 2020

Im Rahmen der 20th International Conference on Computational Science and its Applications (Cagliari, ITA) erhielten **Letizia Bollini** und Irene della Fazia den *Best Paper Award* für ihren Beitrag „Situating emotions. The role of the soundscape in a geo-based multimodal application in the field of Cultural Heritage” ([doi:10.1007/978-3-030-58808-3_58](https://doi.org/10.1007/978-3-030-58808-3_58)).



Award Prof. E. Leitolf Kunst am Bau: Neues Palais Potsdam Germany | Photo: ©Eva Leitolf, Amtsstube

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Competence Centre for Regional History

Key Data

Campus Brixen-Bressanone

People

- + Researchers: 6
- + Administrative Staff: 1

The Competence Centre for Regional History (ZefüR) is a historical-scientific Competence Centre with research focusing on the research areas of Regional Contemporary History, Regional History of Modern Times, and Women's and Gender History. Concentrating on the historical Tyrol and the Alpine region, the Centre aims in particular at basic historical research, at the intensification of scientific cooperation and at a stronger networking of regional historical research in the Alpine region. In 2020 the historical research and mediation activities of the Competence Centre were consolidated and broadened, and two new research projects were launched, one dealing with the history of crime in Tyrol in the 19th century and the other with the history of social housing in North and South Tyrol after 1945. The Centre also sought to set new highlights in the field of history education: "History on Tour" set up a lecture programme for South Tyrolean educational and historical associations.

Regional Contemporary History

This research area is headed by Oswald Überegger and Karlo Ruzicic Kessler and focuses on the regional history of the 20th century.



Director

Oswald Überegger

Special attention is paid to the years after 1945 and the topic of historical memory cultures. Coming to terms with the history of the 20th century is still difficult and controversial in South Tyrol: the end of the First World War and its consequences, fascism and national socialism, option and resettlement, the "bomb years" and finally the history of autonomy are not only objects of scientific research, but also controversial issues often instrumentalised in public discourse. The aim of this research area is to objectify the discourses and to give new impetus to the efforts towards a possible coming to terms with the regional contemporary history.

Regional History of the Modern Age

This research area, coordinated by Francesca Brunet, deals with the "long" 19th century in the Tyrolean

region. On a regional level, the 19th century can be described as an elementary formation phase, a "laboratory of modernity" (E. Frie), which still fundamentally shapes our understanding of Tyrol, "Tirolizität" or "Trentinità" and the "Tyrolean region". This development is closely linked to processes of nationalisation, social differentiation, and medialisation. After 1800, a completely new sphere of action and perception emerged, which was generated by state-institutional practice, religious-ecclesiastical transformation, socio-economic change, cultural modernisation and communicative consolidation. The research area focuses on this specific regional-historical problem with a basic heuristic approach.

Regional Women's and Gender History

This research area is headed by Siglinde Clementi and brings the category "gender" to bear on regional historical research. Since the 1970s a differentiated women's and gender history has developed, urging to consider "gender" as a relational category in all historical epochs, with a gender-specific and intersectional view. In regional history, women's and gender history is still strongly marginalised and underexposed. This research area aims to counteract these deficits and to focus in particular on the transition period between the 18th and the 19th centuries, when modernity was shaped, and the first half of the 20th century, and on the transition period to postmodernism, in which feminism as a political and cultural movement of the 1970s and its effects played a central role.



Research Project

Mobilità e politiche del controllo sociale in una regione di confine. Vagabondi, "Dörcher", "Zigeuner" in Tirolo tra gli ultimi decenni dell'Ottocento e il primo Novecento

Dalla seconda metà del XIX secolo il Tirolo appare, più intensamente rispetto ai decenni precedenti, come uno spazio di mobilità, sia intraregionale che transregionale. Lavoratori e lavoratrici, migranti stagionali, commercianti ambulanti, suonatrici e suonatori girovaghi, disertori, persone senza fissa dimora percorrevano di continuo il Land tirolese, rimanendone al suo interno o attraversandone le frontiere per spostarsi in altri Länder (regioni) della Monarchia, in Svizzera, in Germania, nel Regno d'Italia.

Entro questa massa itinerante molto varia ed eterogenea, alimentata dal drastico mutare delle contestuali condizioni economiche e sociali, vi erano individui particolarmente soggetti a controllo poliziesco e a tentativi di regolamentazione normativa: persone prive di mezzi di sostentamento, di casa e residenza, individuate dalle autorità con i termini – invero non sempre univoci – di Landstreicher ("vagabondi") o Arbeitsscheue ("restii al lavoro"), mendicanti, cui venivano accostate anche le persone e le famiglie identificate quali "zingare". Si tratta insomma di



Famiglia sinta in Val di Non, ca. 1907 | Photo: ©Archivio di Stato di Trento

Key Data

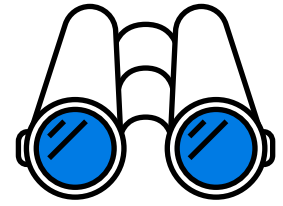
- + **Duration:** 11/2019 – 10/2022
- + **Research Area:** Regional History of the Modern Age
- + **Principal Investigator:** Dr. Francesca Brunet
- + **Selected Publications:**
 - Brunet, F. (2020), Kriminalität, Devianz und Randgruppen in Tirol von der Mitte des 19. Jahrhunderts bis zum Beginn des Ersten Weltkriegs. Ein Forschungsbericht, in: Martin Paul Schennach (Hg.), *Strafrechtsgeschichte im "langen" 19. Jahrhundert. Forschungen und Perspektiven*, Wien 2020, 89–106.
 - Brunet, F. & Saltori, M. (2021), Die Entscheidung über „Geld und Leben“. Das Appellations- bzw. Oberlandesgericht von Innsbruck und das italienische Tirol, in: Klaus Schröder (Hg.), *Fiat Justitia! 230 Jahre Oberlandesgericht Innsbruck*, Innsbruck 2021, 69–95.

individui la cui stessa esistenza iniziò ad essere percepita in modo sempre più esplicito come un problema di ordine pubblico. Se già in antico regime e nel periodo detto Vormärz (dal 1815 al marzo 1848) il vagabondaggio era ovviamente oggetto di controllo e punizione, è infatti proprio a partire dagli ultimi decenni dell'Ottocento che in Tirolo, come in tutta Europa, si assiste ad una sensibile intensificazione delle misure repressive – trasporti forzosi, estradizioni, carcerazioni e deportazioni in apposite case di lavoro – volte al contenimento del cosiddetto "malcostume del vagabondaggio" (Vagabundenunwesen).

Il progetto di ricerca, avviato nel novembre del 2019, si propone dunque di esplorare i principali aspetti di questa "mobilità deviante": quelli normativi e giuridici, quelli comunicativi e lessicali, quelli diplomatici ed istituzionali, quelli sociali e microstorici.



Cooperation and Internationality



In 2020 the Competence Centre was involved in several research collaborations with national and international cooperation partners; here's a selected overview:

Director Oswald Überegger held a visiting professorship in Austrian history at the Institute of History at the University of Graz during the summer semester of 2020.

The Competence Centre for Regional History is involved in HISTOREGIO, a large Euregio project jointly carried out by the Universities of Bozen-Bolzano, Innsbruck and Trento. A whole series of research and mediation initiatives are planned within this framework, the project aiming to strengthen regional historical cooperation across borders and in a multilingual context.

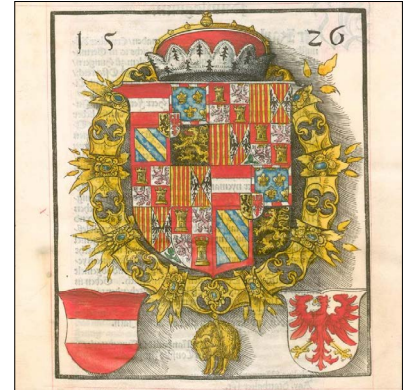
Oswald Überegger is a member of the international scientific advisory board of the project "Informal Communication and Information 'From Below' in Nazi Europe" (Infocom). The project, as a Leibnitz Junior Research Group, is situated at the Institute of Contemporary History in Munich. It focuses on the interaction of official information 'from above' and unofficial information dissemination 'from below' in National Socialism and explores the role of the dissemination of rumours from the perspectives of cultural studies and cultural history.

Siglinde Clementi is a member of the international advisory board of the research project "The Role of Wealth in Defining and Constituting Kinship Spaces from the

16th to the 18th Century" initiated by the Institut für Wirtschafts- und Sozialgeschichte of the University of Vienna (Margareth Lanzinger) and financed by the Austrian Science Fund FWF. Other partners are the Universities of Rouen, Trent, Bern, Cambridge, Hannover, Luzern, Primorsky, Urbino, and Zürich. Clementi is also a member of the board of the Società Italiana delle Storiche, the Italian national association for women's and gender history.

Francesca Brunet is associate member of the international and interdisciplinary research project "Milan and Ticino (1796–1848). Shaping the Spatiality of a European Capital" financed by the Swiss National Science Foundation, which includes the University of Lucerne, the Università della Svizzera Italiana–Archivio del Moderno, the University Paris 1–Panthéon Sorbonne and, as partners, the University of Milan, the Catholic University of Milan, the Polytechnic University of Milan, the University of Innsbruck and the Austrian Academy of Sciences.

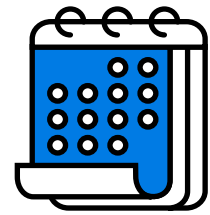
Research cooperation project "100 Jahre Regionalgeschichtsforschung in der Euroregion Tirol-Südtirol-Trentino. Eine Positionsbestimmung": Joachim Gatterer is a cooperation partner in this research project, which was initiated by Kurt Scharr (University of Innsbruck) and Christina Antenhofer (University of Salzburg) and includes Emanuele Curzel (Università di Trento) as a cooperation partner.



Tiroler Landesordnung 1526



Research Events



Das Kompetenzzentrum für Regionalgeschichte hat im Laufe des Berichtsjahres drei internationale Workshops, eine Tagung, einen Vortragsabend und mehrere Online-Seminare ausgerichtet. Eine Auswahl:

18. Februar 2020

Der Vortragsabend **Adolf Hitler und Benito Mussolini. Inszenierung einer politischen Freundschaft** mit Wolfgang Schieder wurde von Siglinde Clementi zusammen mit dem Brixner Verein „Heimat Brixen-Bressanone-Personen“ organisiert.



Tagungsplakat: ©Heimat

19. Oktober 2020

Der internationale Workshop **Sexuelle Gewalt im Ersten Weltkrieg: Militärgerichtsakten der k.u.k. Armee und Selbstzeugnisse als Quellen** wurde von Oswald Überegger gemeinsam mit dem Institut für Geschichte der Universität Wien organisiert.

7. November 2020

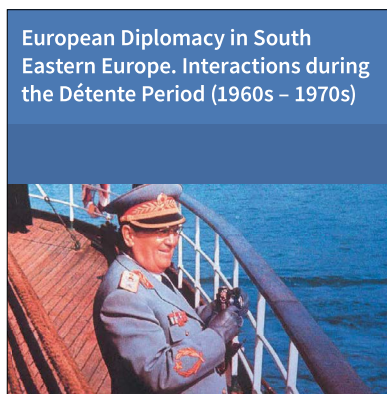
Der Workshop **Tirol/o 1919/20. Nationalismen, neue Grenzen, technologische Entwicklungen / Nazionalismi, nuovi confini, sviluppo tecnologico** wurde von Oswald Überegger in Zusammenarbeit mit der Universität Innsbruck und der Universität Trient im Rahmen des Projektes HISTOREGIO ausgerichtet.

13. November 2020

Der Workshop **Antifaschismus in der Peripherie (1922–1948)** wurde von Joachim Gatterer und Karlo Ruzicic-Kessler organisiert und stellte die vergleichende Analyse von Grenzregion im Faschismus und in den unmittelbaren Nachkriegsjahren in den Mittelpunkt.

26.–27. November 2020

Die internationale Konferenz **European Diplomacy in South Eastern Europe. Interactions during the Détente Period (1960s–1970s)** wurde von Karlo Ruzicic-Kessler gemeinsam mit dem Institut für Zeitgeschichte und dem Institut für Osteuropäische Geschichte der Universität Wien organisiert.



Tagungsplakat: ©Universität Wien

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research/competence-centre-
regional-history](http://www.unibz.it/en/home/research/competence-centre-regional-history)



Competence Centre Tourism and Mobility

Key Data

Bruneck-Brunico

People

- + Professors: 1
- + Researchers: 3
- + Administrative Staff: 1

The year 2020 was the first full working year of the Competence Centre, which was founded in 2019. As it focuses mainly on applied research projects in the field of tourism and mobility, it was heavily affected by the Covid-19 pandemic and several planned research projects had to be postponed or put on hold: for instance, a study about mobility and movement patterns of cyclists, planned for the period May–September in Val Pusteria-Pustertal. Furthermore, the pandemic has changed the usage patterns of means of transport, so that guests avoided public transports and turned to their own car, while bicycles were used to a much higher extent. Thus, the Competence Centre concentrated on research work that could exploit empirical data collected in the fall of 2019 and referred to the research area Sustainability and Brand Identity of South Tyrol. One study used data from a qualitative study in Germany and Italy to analyse the consumers' understanding of the term sustainability as well as their idea of practices for a sustainable tourism. A second study dealt with the perception of pictures and how they affect the formation of the destination site image. An ad hoc study for the cable car



Director

Prof. Thomas Bausch

companies in Val Pusteria-Pustertal replaced a cancelled study on skiers' satisfaction and analysed loyal skiers' expectations concerning the SarsCoV-2 safety measures taken to allow skiing despite of the pandemic. Several publications and the participation in an international conference about consumer behaviour in tourism complemented the centres' activities.

Sustainability and Brand Identity of South Tyrol

This research area centers on how the image of a destination site is shaped in the mind of consumers and how this image contributes to the brand equity of the sites. For instance, researchers have analysed how measures aiming at a higher level of sustainability implemented by destination sites contribute to the site image and its brand equity. Although literature as well as

several empirical studies about site image/site brand confirm that each consumer has an individual and changing image of destinations, some questions remain open, such as how the first visit rather than a repeat visit can change one's individual destination image. The ongoing research in the Competence Centre shall provide answers and useful hints for the marketing management of destinations in South Tyrol.

Guest Satisfaction Management in Skiing Resorts

This research area aims at investigating skiers' satisfaction. Measuring guest satisfaction and data on weather and on snow quality, the researchers analyse, whether muddy snow in low-altitude areas of ski resorts increased crowding effects at a higher altitude in order to provide management recommendations. A qualitative survey was prepared with interviews held between mid-February and early March. The outbreak of the Covid-19 pandemic and the sudden closure of the ski areas caused the survey to be stopped, as the findings of just 3 weeks in the mid- and late winter could not be seen as representative. In the late summer 2020 the Competence Centre conducted an ad hoc study for the cablecar companies of the Val Pusteria-Pustertal. At that time the companies were preparing for the winter season 2020/2021 and needed detailed information to be ready for the upcoming winter: how many skiers they could expect in view of the Covid-19 pandemic, and what kind of safety measures the guests would expect or refuse.



Research Projects

Sustainability as Part of the Brand Value of a Destination

In its second research area the Competence Centre includes dedicated projects on the topics of sustainability and of sustainable tourism in South Tyrol. Consumers' understanding of the term and concept of sustainability, their attitude towards sustainable tourism and their perception of sustainability as shown for instance in the "flight shame" attitude play an important role not only for the providers, but also for politics and research. Two comprehensive studies in Germany / Italy and in Norway / USA uncovered the understanding of sustainability and sustainable tourism from the consumers' point of view. The first study, carried out in December 2019, aimed to determine Germans' and Italians' understanding of sustainability and sustainable tourism and involved 87 people from Germany and 69 from Italy. The second study followed one year later: 120 Americans and 85 Norwegians were asked about their understanding of sustainability and sustainable tourism. In both cases researchers could collect a representative sample. Results show that most consumers have a vague and incomplete understanding of what sustainability is. A strong focus is placed on environmental aspects, while social or economic aspects are missing or rarely addressed. Cultural differences are particularly striking. Compared to

Key Data

- + **Research Area:** Sustainability and Brand Identity of South Tyrol
- + **unibz research Team:** Prof. Thomas Bausch (Principal Investigator), Dott. Verena Tauber
- + **Project Partners:** Munich University of Applied Sciences, EURAC Research
- + **Selected Publications:**
 Gössling, S., Humpe, A. and Bausch, T. (2020). Does 'flight shame' affect social norms? Changing perspectives on the desirability of air travel in Germany. *Journal of Cleaner Production*, 266: 122015. doi.org/10.1016/j.jclepro.2020.122015.

Germans, Italians and Norwegians, the US citizens seem to have a somewhat different understanding of the concepts: among other things, they also understand sustainability as financial independence or take the perspective of providers who are trying to run their tourism businesses and destination sites successfully and profitably.

The initial results of this study were presented at the CBTS 2020 – Consumer Behaviour in Tourism Symposium (16–18 December, 2020 www.cbts2020.org).



Das Image der Reisedestination Südtirol

Im Rahmen des bereits 2019 begonnenen Projekts zum Thema Destinationsmarketing (Forschungsschwerpunkt Sustainability and Brand Identity of South Tyrol) hat der Direktor des Kompetenzzentrums Thomas Bausch, zusammen mit Valentina Pizzuto und Florian Ortanderl, in einer Studie umfassende Daten über das Image der Reisedestination Südtirol erhoben. Dafür wurden potenzielle Touristen aus den beiden wichtigsten Kernmärkten Italien und Deutschland befragt, welche Assoziationen sie mit Südtirol verbinden, und welche Gründe ihrer Meinung nach für und gegen einen Urlaub in Südtirol sprechen. In einem experimentellen Forschungsdesign zu visuellen Aspekten des Destinationsimages konnten die Studienteilnehmer*innen aus gegensätzlichen Bildpaaren dasjenige Bild auswählen, das Südtirol für sie besser repräsentiert, und in einer Reihe von Fotografien die Bildelemente, die ihnen positiv oder negativ auffallen, markieren und kommentieren.

Die gewonnenen Daten wurden analysiert, um die Überzeugungen, Assoziationen und Eindrücke besser zu verstehen und Forschungsfragen zur Entstehung und Entwicklung des Destinationsimage zu beantworten. Weiters wurde erhoben, ob sich Unterschiede zwischen den beiden untersuchten

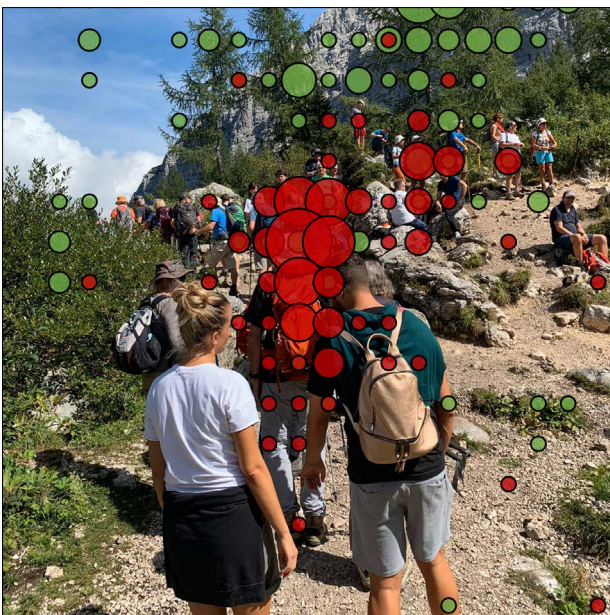
Key Data

- + **Research Area:** Sustainability and Brand Identity of South Tyrol
- + **unibz Research Team:** Florian Ortanderl (Principal Investigator), Valentina Pizzuto, Thomas Bausch
- + **Selected Publications:**
Bausch, T. & Gartner, W.C. (2020). Winter tourism in the European Alps: Is a new paradigm needed?. *Journal of Outdoor Recreation and Tourism*, 31. doi.org/10.1016/j.jort.2020.100297.

Quellmärkten, zwischen Besuchern und Nicht-Besuchern oder hinsichtlich demographischer Merkmale feststellen lassen.

Die Auswertungen der Befragungen zeigen ein sehr positives Image Südtirols als erholsame und aktive Alpendestination mit besonderen kulturellen und natürlichen Ressourcen. Kritisch gesehen werden das Preisniveau sowie Verkehrsproblematiken und hohe Besucherdichten zur Hauptsaison. Insbesondere im Hinblick auf die visuellen Aspekte teilen die Befragten ein stark idealisiertes Bild.

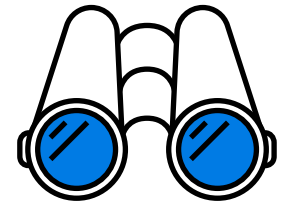
Ein Teil der Studie wurde im Dezember 2020 in einem Vortrag auf dem CBTS 2020 – Consumer Behaviour in Tourism Symposium (16.–18.12.2020 www.cbts2020.org) vorgestellt und ist aktuell in Vorbereitung für eine Publikation.



Picture from project Das Image der Reisedestination Südtirol | Photo: ©CCTM, 2020



Cooperation and Internationality



Le cooperazioni di ricerca del Centro di Competenza sono proseguite o ne sono state create di nuove con lo scopo di una pubblicazione scientifica congiunta.

La collaborazione esistente con William C. Gartner dell'Università di St. Paul (Minnesota-USA), è proseguita per due pubblicazioni congiunte.

La prima risponde alle speculazioni sul futuro del turismo causate dal primo lockdown all'inizio del 2020 e analizza come gli effetti del Covid-19 sul turismo come sistema globale si ripercuotano sulla ricerca: Bausch T., Gartner, W.C. & Ortanderl, F. (2020). "How to Avoid a COVID-19 Research Paper Tsunami? A Tourism System Approach". *Journal of Travel Research*.

Il secondo articolo contribuisce all'area di ricerca "Gestione della soddisfazione degli ospiti nelle stazioni sciistiche": Bausch, T. & Gartner, W.C. (2020). "Winter Tourism in the European Alps: Is a New Paradigm Needed?" *Journal of Outdoor Recreation and Tourism*.

La collaborazione con Alexey Gunya dell'Istituto di Geografia dell'Accademia Russa delle Scienze e Tilman Schröder del Dipartimento Turismo dell'Università di Scienze Applicate di Monaco ha portato alla pubblicazione riguardante un caso di studio a Kavala, Grecia settentrionale: Bausch T., Schröder, T. & Gunya A. (2020). "Pilgrimage as a Field of Tourism Development: The Case of Kavala (Northern Greece) and Its Institutional and Cultural Challenges". *International Journal of Religious Tourism and Pilgrimage*.

Con Stefan Gössling dell'Università Linneaus in Svezia e Andreas Humpe del Dipartimento Turismo dell'Università di Scienze Applicate di Monaco di Baviera è stato completato uno studio congiunto sulla "vergogna di volare" e le norme sociali: Gössling, S., Humpe, A. & Bausch, T. (2020). "Does 'Flight Shame' Affect Social Norms? Changing Perspectives on the Desirability of Air Travel in Germany". *Journal of Cleaner Production*.

Il direttore del Centro di Competenza, Thomas Bausch, collabora al programma di dottorato dell'Università Cattolica di Eichstätt (KU) con Harald Pechlauer, direttore del Centro per l'imprenditorialità alla KU. Insieme a un dottorando, è stato pubblicato un articolo nel campo dell'adattamento al cambiamento climatico: Bausch, T. & Koziol, K. (2020). "Winter Tourism in the European Alps: Is a New Paradigm Needed?" *Sustainability*.

Contacts

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Competence Centre for School Inclusion

Key Data

Brixen-Bressanone

People

- + Professors: 1
- + Researchers: 3
- + Administrative Staff: 1

The Competence Centre for School Inclusion is active since March 2020 and focuses its research activities on the area of inclusive education. It is based upon a broad idea of school inclusion as a developing process to tackle all the students' diversities. Research in the field of inclusive education contributes to granting participation and achievement to all learners by identifying and removing barriers both in the school culture and in its policies and practices. In this perspective, particular attention is paid to the groups of children and students that are more at risk of experiencing exclusion and underachievement. The research activities conducted at the Competence Centre aim on one hand at presenting and discussing research evidence from the Italian and South Tyrolean inclusive school system that can be found in international scientific networks, and on the other hand at developing inclusion in local kindergartens and schools through practice-relevant research activities. The Centre has two main research areas: the first one collects projects aimed at **the development of inclusion in kindergartens and schools** whilst the second one addresses **teacher training for inclusive education**. A number of research projects have already been developed.



Director

Prof. Heidrun Demo

The first research project, coordinated by Heidrun Demo, addresses some tensions in the South Tyrolean and Italian school system that arise from policies showing a narrow focus on disabilities within an inclusive school system. Specifically, the research team is interested in how resource allocation and Individual Education Plans for pupils with disabilities affect the quality of the everyday inclusive school practices.

Another research project, headed by Vanessa Macchia, centers upon the phenomenon of the so-called challenging behaviours in schools and kindergartens. Assuming a relational perspective, the research team focuses on the development of learning environments in kindergartens and primary schools with a preventive function.

A third research project, coordinated by Rosa Bellacicco, examines data regarding school inclu-

sion in the South Tyrolean kindergartens and schools. This ongoing project aims to identify and compare the variables considered in the different national and local reports, in order to highlight convergences and divergences and to highlight other relevant categories of analysis, thus offering a differentiated picture of school inclusion in South Tyrol.

The fourth research project is headed by Simone Seitz and aims at creating a theoretical framework that underpins all the research projects of the Competence Centre. The specific challenge here consists in the search for a coherence between theories coming from the scientific cultures of the German-, Italian- and English-speaking countries, which are united at the Competence Centre.

For the second research area, that addresses teacher training for inclusive education, the European Social Fund has been financing the Competence Centre's project "FUTURE LAB" since 2020. "Lebensplanung/Progetto di vita", a training course for secondary school teachers aimed at the development of life-planning supporting skills for students with disabilities, particularly in the orientation phases of lower and upper secondary school.

Finally, the Competence Centre, together with the Rector's Delegate for Disability in unibz, is also developing a regulation to guarantee all the necessary specific support measures to students with disabilities or special educational needs enrolled at the Free University of Bozen-Bolzano.



Research Project

TOP PLAN – Analisi dell’impatto della qualità della progettazione individualizzata e personalizzata per alunni con Bisogni Educativi Speciali (PEI e PDP) sulla qualità dei processi di apprendimento e insegnamento nelle classi altoatesine

Da 40 anni, il sistema scolastico italiano e altoatesino è strutturato in modo tale che tutti i bambini e i giovani con un’età compresa fra i 6 e i 14 anni vadano nella stessa scuola, obbligatoria e aperta a tutte e tutti. Questo crea le condizioni strutturali per una scuola inclusiva, in cui le differenze di tutte le alunne e di tutti gli alunni sono valorizzate. Tuttavia, solo per gli alunni con disabilità e bisogni educativi speciali è prevista una progettazione individualizzata e personalizzata (Piano Educativo Individualizzato PEI/ Piano Didattico Personalizzato PDP).

Nel caso della disabilità, poi, attraverso il PEI avviene l’assegnazione di risorse specifiche, come l’insegnante di sostegno o i collaboratori per l’integrazione. Anche se concepita con l’intenzione positiva di fornire un supporto a chi è esposto ad un maggior rischio di esclusione, la ricerca ha messo in luce come nella quotidianità delle pratiche inclusive la progettazione individualizzata comporti alcune tensioni. Infatti, la presenza di un insegnante di sostegno o

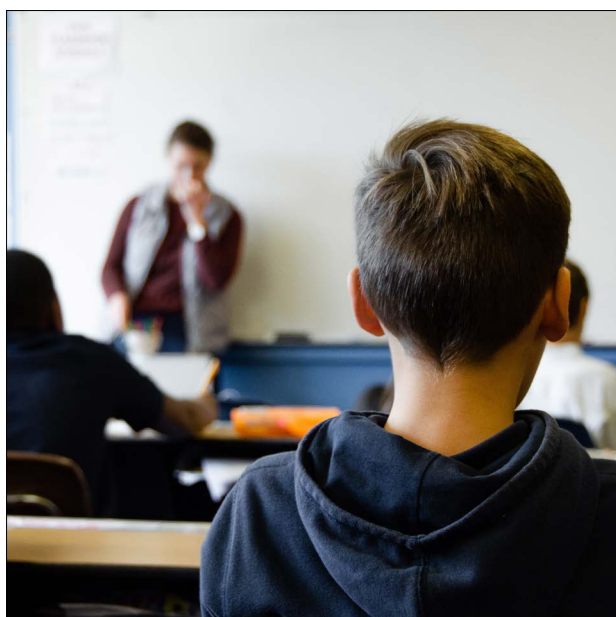


Photo: ©Taylor Wilcox | Unsplash

Key Data

- + **Duration:** 03/2020 – 03/2023
- + **unibz Research Team:** Prof. Hedrun Demo (Principal Investigator), Prof. Simone Seitz, Prof. Dario Ianes, Prof. Vanessa Macchia, Dr. Rosa Bellacicco, Dr. Silver Cappello, Dr. Petra Auer
- + **Website:** www.unibz.it/en/home/research/competence-center-for-school-inclusion
- + **Selected Publications:**
 - Bellacicco, R. & Cappello, S. (2020). Tutti uguali, tutti diversi: progettazione di PEI su base ICF. L’apporto della visione bio-psico-sociale tra luci e ombre. In D. Ianes, H. Demo (a cura di). *Non uno di meno. Didattica e inclusione scolastica*, pp. 119–132. Milano: Franco Angeli.
 - Cappello, S. & Bellacicco, R. (2020). Tutti uguali, tutti diversi: progettazione di PEI su base ICF. Confronto e sintesi dei principali modelli sperimentati sul piano nazionale. In D. Ianes, H. Demo (a cura di). *Non uno di meno. Didattica e inclusione scolastica* pp. 133–154. Milano: Franco Angeli.

una didattica progettata con un PEI rischia, in diversi casi, di diventare uno strumento di differenziazione in termini negativi invece che una risorsa.

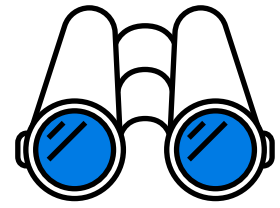
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Su questo sfondo, il progetto di ricerca si struttura su due livelli. Il primo si pone l’obiettivo di individuare modelli di assegnazione delle risorse che siano indipendenti da diagnosi mediche individuali, e che non leghino quindi le risorse a singoli alunni ed alunne. A tal fine, con il contributo di esperti internazionali, viene realizzata un’analisi comparata della letteratura e di diversi sistemi scolastici inclusivi in Europa, per individuare alternative al modello italiano di allocazione delle risorse.

Il secondo livello intende approfondire il tema relativo alla progettazione individualizzata. In una prima fase, vengono analizzati diversi modelli di PEI sperimentati in Italia. Successivamente, è prevista la realizzazione di uno strumento che possa favorire la progettazione di strategie di insegnamento-apprendimento inclusive per l’intero gruppo classe, tenendo in considerazione i bisogni e le potenzialità di ogni singolo alunno, per superare la progettazione individualizzata a favore di un Piano Inclusivo di Classe.



Cooperation and Internationality



Seit seiner Gründung im Frühjahr 2020 bildet die Zusammenarbeit mit lokalen Interessensvertretern wie auch jene mit Experten auf internationaler Ebene einen wichtigen Schwerpunkt des Kompetenzzentrums. Das Kompetenzzentrum konnte im Berichtsjahr bereits wichtige Kontakte zu lokalen Stakeholdern knüpfen und über eine erste Zusammenarbeit mit Experten*innen aus dem In- und Ausland den Aufbau eines internationalen Netzwerkes initiieren. Letzteres zielt auf eine grenz- und disziplinübergreifende Zusammenarbeit mit Wissenschaftlern*innen ab, die konkret zu oder nahe an den Themen der verschiedenen Forschungsprojekte arbeiten.

Auf lokaler Ebene wird das Projekt FUTURE LAB: Lebensplanung/Progetto di vita, in dessen Zentrum ein innovativer Ausbildungskurs für Lehrpersonen der beiden Sekundarstufen steht, in Zusammenarbeit mit den drei Bildungsdirektionen der Autonomen Provinz Bozen realisiert. Infolgedessen ergab sich die Neuartigkeit der Fortbildung nicht nur aus dem didaktischen Inhalt, sondern auch aufgrund der zweisprachigen Ausrichtung des Angebots, welche eine gemeinsame Teilnahme von Lehrpersonen ermöglicht.

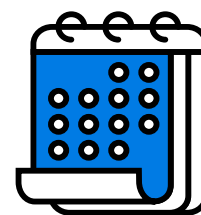
Die lokale Vernetzung wird zudem über die Vertretung des Kompetenzzentrums in der institutionsübergreifenden Arbeitsgruppe Inklusion des Landes (IAIL; Gruppo di Lavoro Interistituzionale Provinciale per l'Inclusione – GLIP) gefestigt. Die Arbeitsgruppe koordiniert als solche die Maßnahmen

zur Inklusion im Bildungsbereich. Neben dem Vorsitz durch die drei Inspektor*innen für Inklusion setzt sich das IAIL aus Vertreter*innen verschiedener Dienste und Organisationen auf Provinzebene zusammen. So zählen neben dem Kompetenzzentrum beispielsweise auch der Psychologische Dienst, die Bezirksgemeinschaften, die Abteilung Soziales wie auch die Betroffenen- bzw. Elternorganisationen zur Arbeitsgruppe dazu.

International widmet sich ein Teil des weit angelegten Forschungsprojekts TOP PLAN alternativen Ressourcenverteilungsmodellen im Kontext von Inklusion im Bildungsbereich und zielt unter anderem darauf ab, ein Netzwerk von Experten*innen aufzubauen. Bisher fanden bereits wissenschaftliche Austausche mit der Inland Norway University of Applied Sciences (NOR), der University of Groningen (NL) und dem Trinity College Dublin (IRL) statt.



Research Events



In 2020 the members of the Competence Centre for School Inclusion participated in several events related to the pandemic crisis. According to its mission the Centre tried to respond to the newly aroused necessities related to school closure and distance learning and to react to the increasing inequalities in education.

April – May 2020

Vanessa Macchia participated in the pan-European initiative **#EUvs-Virus** organised by the European Union, which aimed to foster networks linking the civil society with innovators, partners, and investors in order to find solutions for the challenges brought about by the Coronavirus. She attended the **Hackathon** (24–26 April) as well as the follow-up event **Matchathon** (22–25 May).

www.euvsvirus.org

April 2020

Dario Ianes and Rosa Bellacicco cooperated with the University of Trento, LUMSA University, and Fondazione Giovanni Agnelli in a nationwide investigation focusing on the impact of the first lockdown on children and adolescents with disabilities and its effects on inclusion in the educational context.

April – May 2020

Simone Seitz, Vanessa Macchia, Heidrun Demo and Dario Ianes took part in the **Open Dialogue Formats: Education in Times of Distance Learning** organised by the Faculty of Education. The overall goal of this series of events was to offer support to teachers and parents through an open-dialogue format realised in the digital

space. The contributions of the Competence Centre's members were addressed to both teachers and parents and focused on various challenges, such as distance learning for children with disabilities, the possible options for individualised learning and exchanges among students, and on time-management at home.

educationdialogues.events.unibz.it

May – October 2020

Heidrun Demo, Rosa Bellacicco, Dario Ianes and Silver Cappello participated in the national initiative **Oltre le distanze** that consisted of webinars and online workshops on ideas and actions to make school more inclusive not only in a time of closed schools and distance learning but also beyond this specific period.

lab.gedidigital.it/gedi-visual/2020/oltre-le-distanze

3 November, 2020

Rosa Bellacicco contributed as a lecturer to **Effetti virali. Essere educatori al tempo del Covid-19**, an online formative seminar organised by Fondazione UPAD and targeted towards educators, teachers and parents.

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Competence Centre for Plant Health

Key Data

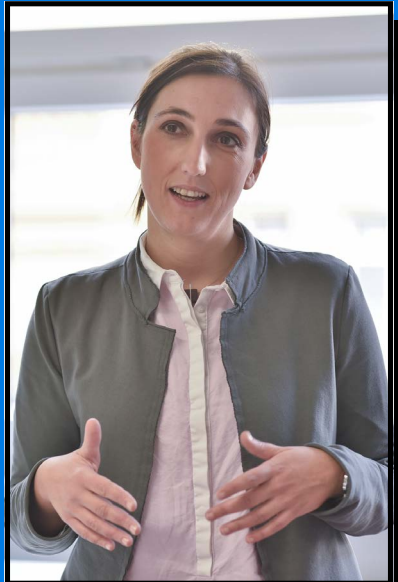
Campus Bozen-Bolzano

People

- + Professors: 3
- + Researchers: 3
- + Administrative Staff: 1

Plants are a core component of our environment and form the basis of our food chain. The different microclimatic zones in South Tyrol allow the cultivation of a variety of different crops. The cultivated area covers almost 25,000 hectares, with primarily apple orchards and vineyards but also a variety of special crops. The effects of climate change and the resulting increase in extreme weather phenomena are causing significantly more stress to crops. Warmer temperatures and the spread of invasive pests also induce an increase in pathogens and pests that have negative impacts on crop health. Healthy plants are a prerequisite for high-quality food and for a sustainable agricultural production.

The main focus of the Competence Centre lies on the investigation of abiotic and biotic stress factors in order to understand their role on plant health, to explore changes and predict future challenges as well as to develop innovative technological solutions and recommend them to practitioners. Basic research in plant-environment interactions is combined with practice-relevant research projects. This will allow direct im-



Director

Prof. Tanja Mimmo

pacts to be evaluated in real time and practical solutions to be developed in order to create an important basis for the future challenges of South Tyrol's agriculture and forestry. The research output will thus make a significant contribution to sustainable agriculture in South Tyrol.

Nel Centro di Competenza, l'attività di ricerca è organizzata in tre distinte aree di ricerca:

Area di ricerca **Fattori abiotici**: L'adattamento delle piante al loro ambiente circostante è essenziale per la loro sopravvivenza. Diversi stress abiotici, come ad esempio lo stress idrico o termico, oppure proprietà chimico-fisiche sfavorevoli del suolo spesso limitano la salute delle piante. Questa area di ricerca combina la genetica e la fisiologia delle piante con la chimica e la microbiolo-

gia del suolo per studiare le interazioni pianta-suolo-ambiente.

Research area **Biotic factors**: Biotic factors are an additional important factor for plant health. Pathogens and insects can cause plant damage and have negative consequences on plant health, especially on yield and quality. Therefore, the protection of plants against pathogens and pest species plays an essential role in the agricultural production. Plant protection calls for preventive measures and, above all, for a regulation of harmful organisms through direct control. The aim of this research area is therefore to investigate the biology, ecology and epidemiology of pathogens and pests and their interaction with the plant, in order to develop solutions for efficient and sustainable plant protection.

Forschungsfeld **Technologie und Management**: Um den Gesundheitszustand der Pflanzen überwachen zu können ist die Erfassung, Verarbeitung und Analyse einer Vielzahl von Daten und Informationen notwendig. In diesem Forschungsfeld werden bedeutende Umweltparameter der landwirtschaftlichen Produktion sowie die einzelnen Arbeitsschritte aufgezeichnet und verwertet. Weitere Schwerpunkte sind die Entwicklung und die Produktion von innovativen mechatronischen und robotischen Lösungen für einen automatischen Pflanzenschutz.



Research Project

Environmental DNA and Agroecological Networks for Biomonitoring apple Orchard Soils to Support Sustainable Agroecosystems

South Tyrol is one of the areas with the most intensive apple cultivation in Europe, with an annual production of more than 1 million tons. Large quantities of agrochemicals and fertilizers are required to maintain this production intensity. However, these agronomic practices might negatively affect and even undermine the chemical and biological soil quality and the existing agrobiodiversity. Soil agrobiodiversity includes a large number of organisms such as bacteria, fungi and earthworms, which offer fundamental ecosystem services necessary to sustain plant and human health. Indeed, soil microorganisms play a crucial role in preserving and protecting plant health and productivity, to the point that imbalances or changes in their abundance and diversity can have visible effects on the plant itself. This project started in June 2020 and will last one year involving the Competence Centre of Plant Health (Tanja Mimmo), the Faculty of Science and Technology (Luigimaria Borruso, Giulio Genova) and EURAC Research (Ulrike Tappeiner, Giulio Genova). Within the project, the research team has investigated more than 200 soil samples from apple orchards in South Tyrol with different agronomic management systems that combine the environmental DNA (eDNA) approach for rapid monitoring and agrobiodiversity measurement (e.g., bacteria, fungi and metazoans) with the traditional indicators of soil chemical and biological quality. The obtained data will be used to build an agroecological network to: i) disentangle the inter- and intra-kingdom species interactions ii) define the position, within the network, of the organisms that putatively could be beneficial for the apple tree growth iii) to unveil the environmental factors that promote the enrichment of these organisms. The results will be the prerequisite for the setup of agronomical practices aimed at a sustainable agriculture. Soil microbial management will permit to better exploit the natural resources that are already present in the soil and to reduce the use of external inputs.

Key Data

- + **Duration:** 06/20 – 06/21
- + **Research Area:** Abiotic Factors
- + **unibz Research Team:** Prof. Tanja Mimmo (Principal Investigator); Dr. Luigimaria Borruso, Giulio Genova (Faculty of Science and Technology)
- + **External Partner:** Eurac Research
- + **Selected Publications:**
 - Kalcsits, L., Lotze, E., Tagliavini, M., Hannam, K. D., Mimmo, T., Neilsen, D., Neilsen, G., Atkinson, D., Biasuz, E. C., Borruso, L., Pii, Y., Valverdi, N.A. (2020). Recent achievements and new research opportunities for optimizing macronutrient availability, acquisition, and distribution for perennial fruit crops. *Agronomy*, 10. doi.org/10.3390/agronomy10111738.
 - Cesco, S., Tolotti, A., Nadalini, S., Rizzi, S., Valentini, F., Mimmo, T., Porfido, C., Allegretta, I., Giovannini, O., Perazzolli, M., Cipriani, G., Terzano, R., Pertot, I., Pii, Y. (2020). Plasmopara Viticola Infection Affects Mineral Elements Allocation and Distribution in Vitis Vinifera Leaves. *Sci. Rep.*, 10. doi.org/10.1038/s41598-020-75990-x.
 - Celletti, S., Astolfi, S., Guglielmo, N., Colla, G., Cesco, S., Mimmo, T. (2020). Evaluation of a legume-derived protein hydrolysate to mitigate iron deficiency in plants. *Agronomy*, 10. doi.org/10.3390/agronomy10121942.

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Contacts

Competence Centre for Plant Health

Franz-Innerhofer-Platz 8
Piazzetta Franz Innerhofer, 8
Italy – 39100

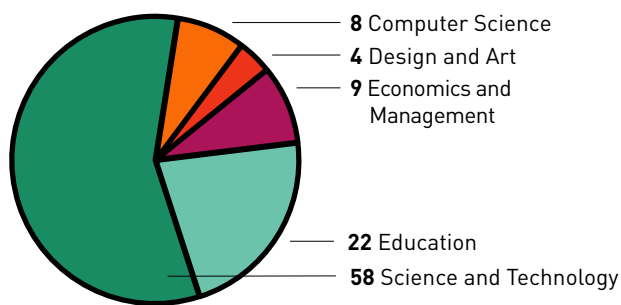
planthealth@unibz.it
www.unibz.it/en/home/research/
competence-centre-plant-health



Figures on Research Projects and Funding 2020

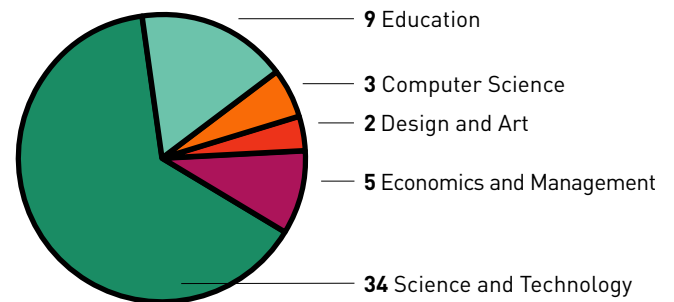
In 2020, unibz completed 154 research projects. 171 new research projects were started, of which 101 were externally funded for a total value of 7 million €.

Number of Externally Funded Projects by Faculty



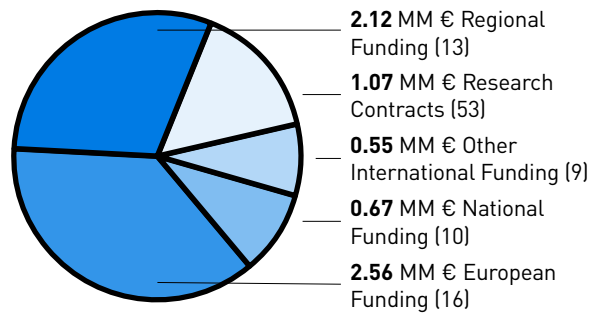
In 2020, unibz signed 53 research contracts with third parties for a total value of 1.07 million €.

Number of Research Contracts by Faculty

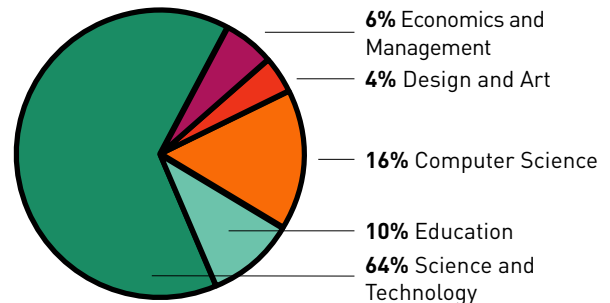


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External Funding by Funding Source (and Number of Projects)

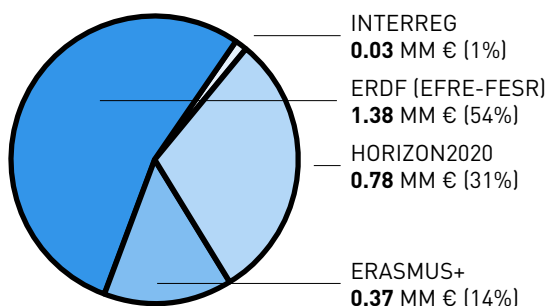


Research Contract Funding by Faculty



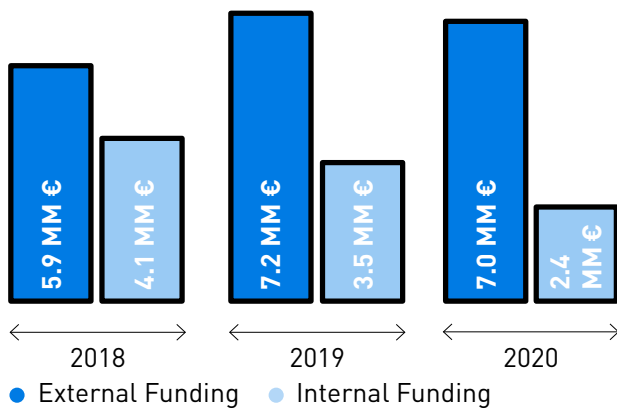
16 new research projects funded or co-funded by EU programmes were started in 2020 with a total budget of 2.56 million € allocated to unibz.

European Funding by Funding Programme

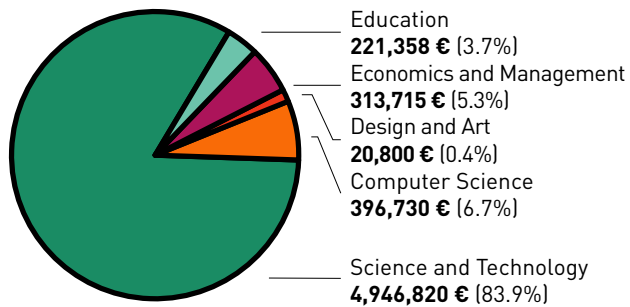


Since 2018, external funding for research projects involving the five faculties have increased by 20%, whereas internal funding have continuously decreased.

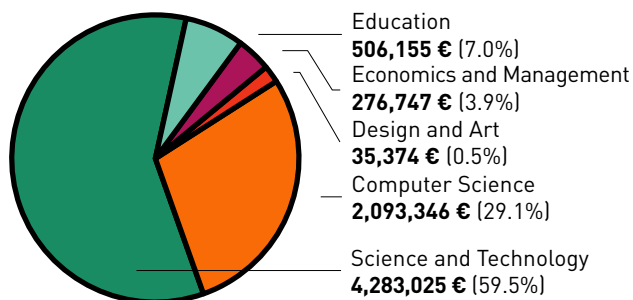
Research Funding 2018 – 2020



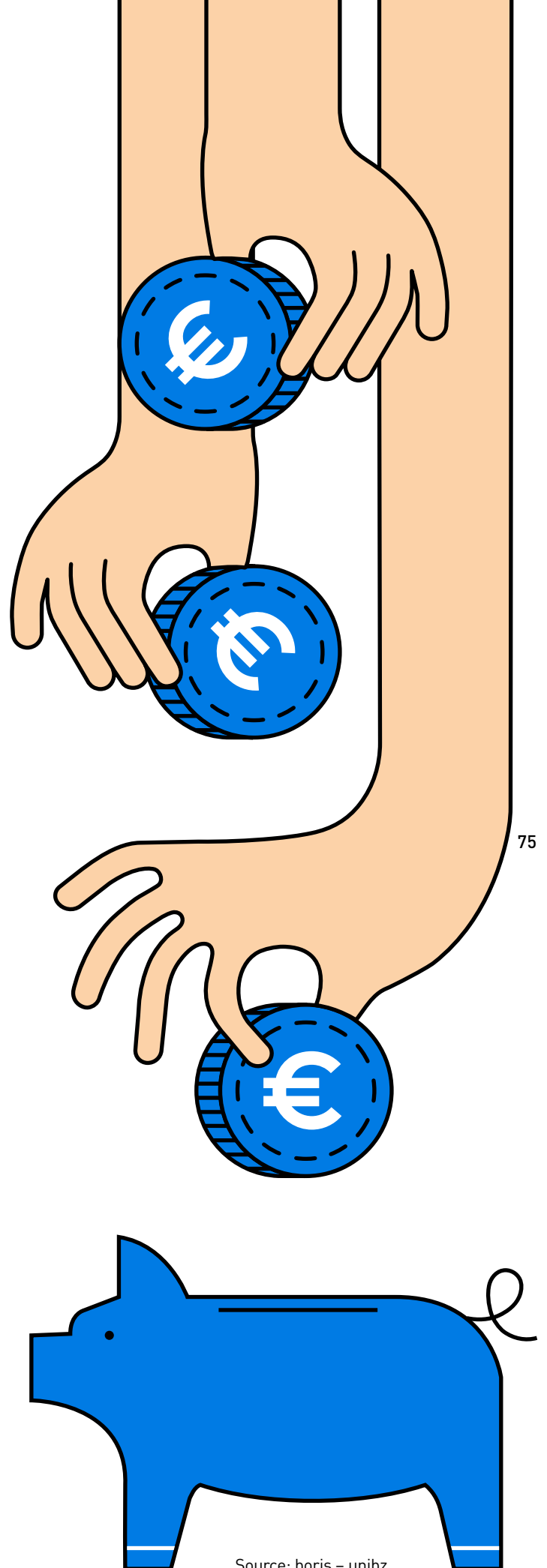
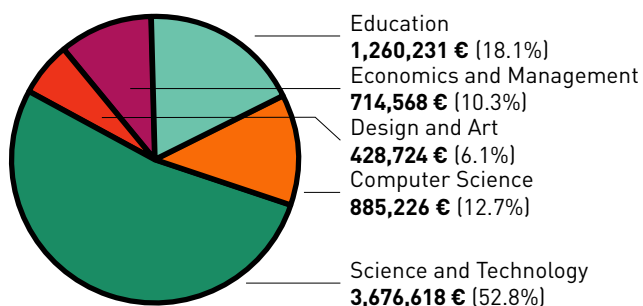
External Funding 2018



External Funding 2019



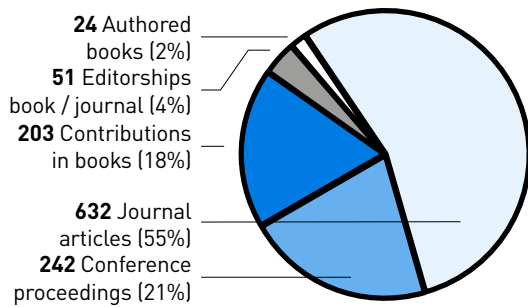
External Funding 2020



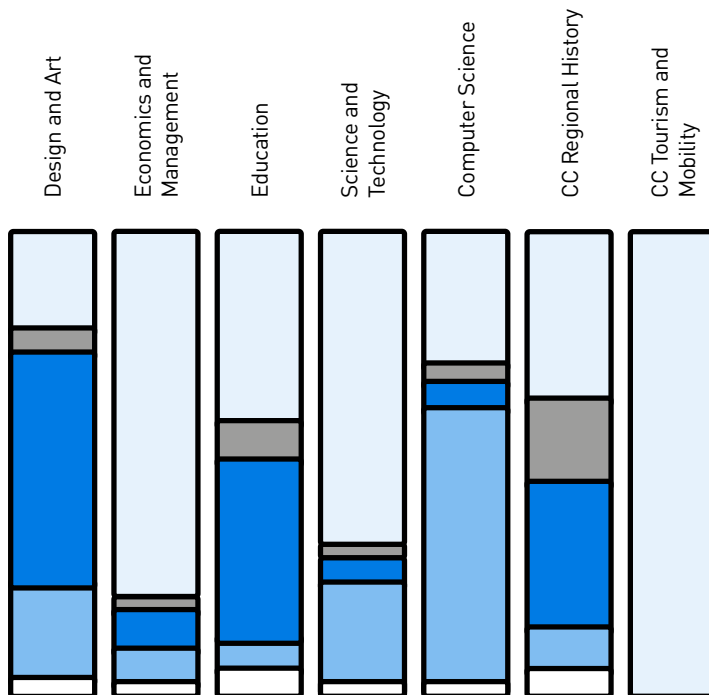


Figures on Peer-reviewed Publications in 2020

unibz Publications 2020 by Publication Type

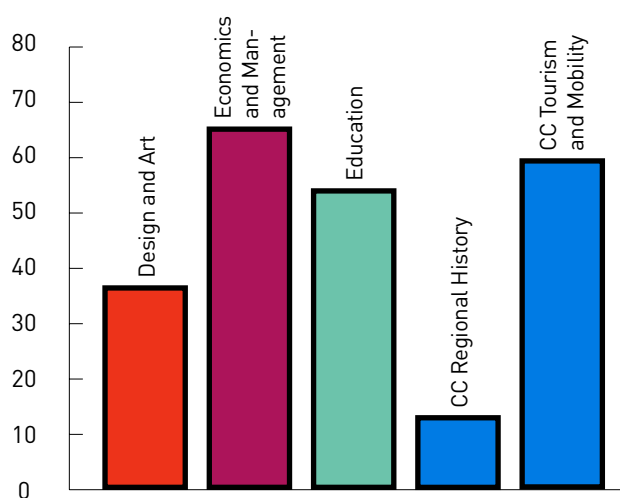


Publications by Faculty / Competence Centre and Publication Type



- Journal articles
- Editorships (book / journal)
- Contributions in books
- Conference proceedings
- Authored books

% of A-Class Academic Journal Articles*

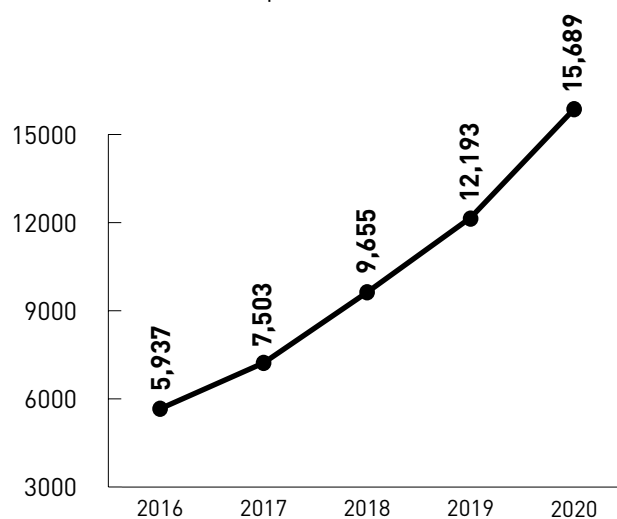


*compared to the total number of articles published in academic journals in the same year.

A-Class: Excellence journals in the non-bibliometric scientific areas (as rated by ANVUR). Not applicable to the Faculties of Computer Science and Science and Technology (STEM subjects).

Source: boris – unibz

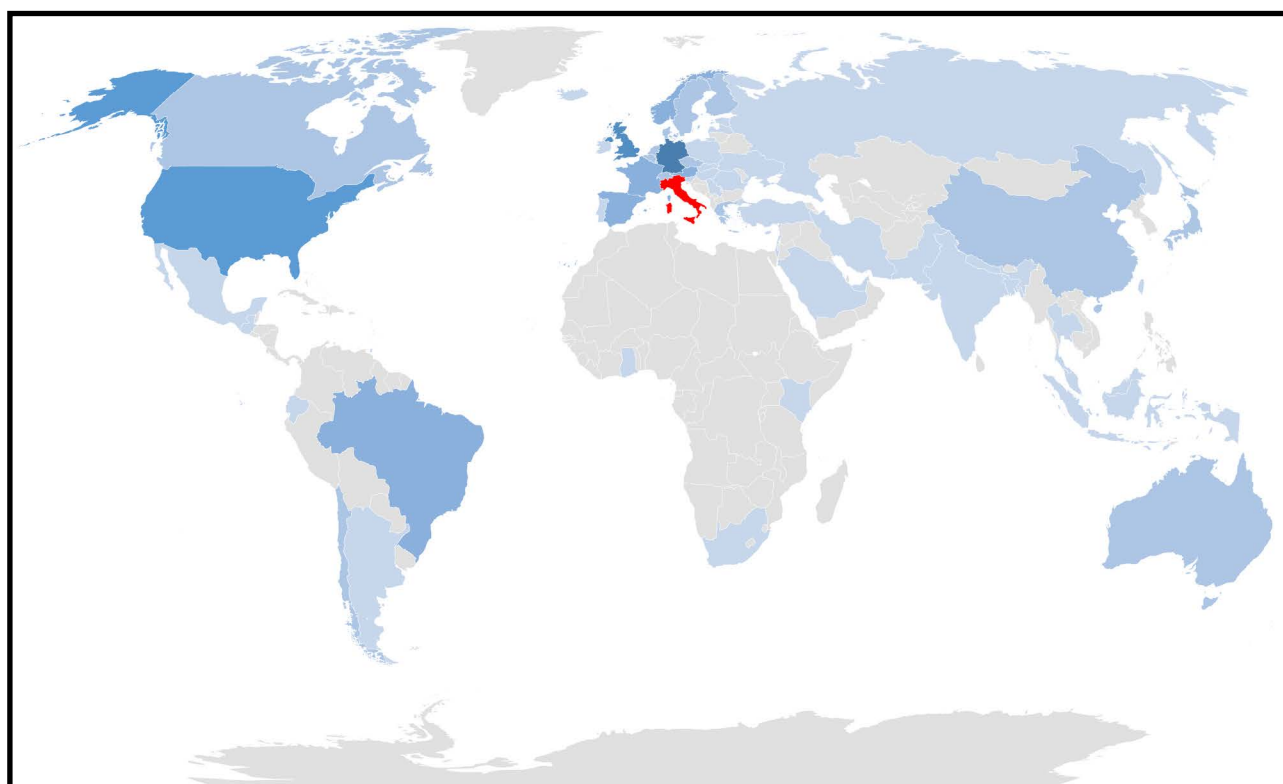
unibz Citations in Scopus*



*peer-reviewed publications from authors with unibz affiliation.

Source: Scopus

2020 unibz Publications – Co-Authors Network



Number of Co-authored Publications



Source: Scopus

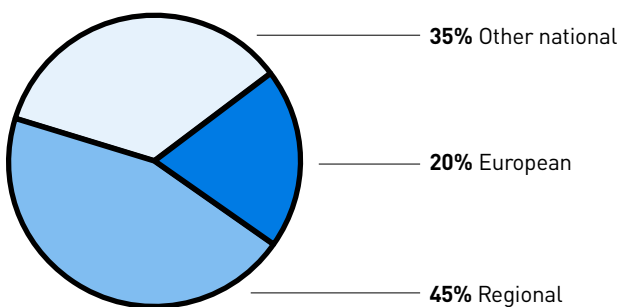
Graphics: powered by Bing



Industry and Society

unibz is a partner for research and innovation by working in close collaboration with local, national and international businesses and institutions. This direct collaboration between science, business and society creates new technologies, products and services; the practical relevance of research and teaching is reinforced by joint projects. Our focus, hence, is the promotion of Knowledge and Technology transfer and the collaboration between Research and Industry.

In 2020, unibz collaborated in 115 research projects, thereof 61 completed and 54 ongoing. 53 new research contracts were established with local, national and European industry partners and institutions for a total value of € 1,07 mio.



Research contracts 2020 by companies' or organisations' geographical location

NOI Techpark

The Free University of Bozen-Bolzano is represented at the NOI Techpark with 13 laboratories in the research areas of Energy Resources and Energy Efficiency, Agricultural Sciences, Industrial Engineering and Automation Technology, Food Sciences, Digitalisation and Entrepreneurship, Innovation and Management.

Ongoing projects 2020 – Key Facts*

150 unibz researchers and employees at NOI
26 Research projects with third-party funding
1.5 million € Third-party budget
47 Industry partners

*data refer to 2 out of 6 unibz Research Areas based at NOI Techpark, namely those that were active for the entire year 2020.

All research activities value interdisciplinary cooperation and interaction with local and international industry partners, as exemplified by the following key projects by the Faculty of Science and Technology.

Impianto pilota per la gassificazione di biomassa

Il progetto "Agroalimentary and agroforestry by Products" consiste nello sviluppo, progettazione, costruzione e test di un impianto pilota per la gassificazione delle biomasse. L'impianto doveva essere di piccola taglia, adatto alle esigenze di una piccola-media azienda agricola, in grado di essere alimentato con differenti tipologie di biomasse (anche di scarto e umide) e capace di produrre energia elettrica, energia termica e biochar con qualità tale da potere essere utilizzato come ammendante agricolo. La prospettiva è di superare il concetto di cogenerazione – ossia la produzione combinata di energia e calore, che ha governato lo sviluppo di questi impianti sino ad ora – estendendola a quella di poligenerazione (produzione di biochar, energia elettrica, vapore, calore e/o freddo).

Key Data

- + **Project:** AFTER – Agroalimentary and Agroforestry by Products: Thermochemical Evolution Process
- + **Lab:** Bioenergy and Biofuels Lab
- + **Principal Investigator:** Prof. Marco Baratieri
- + **Industry Partner:** Sauber Srl
- + **Duration:** 04/2020 – 04/2022

Lagerung von Weinen in absoluter Ruhe

Das Projekt untersucht die Wirkung der natürlichen magnetischen Levitation auf die Qualität von edlen Weinen während der Konservierung in Flaschen. Dabei werden die Flaschen verschiedenen Bedingungen ausgesetzt: in einem mit natürlichen Magneten gedämpften Regal, in einem Regal, das mechanischer Belastung durch gedämpfte Schallwellen ausgesetzt ist, und in einer Kombination aus beidem. Die Ergebnisse sollen aufzeigen, dass es durch verschiedene Lagerungssysteme möglich ist, die Alterung von Weinen nach vorgegebenen Zielen zu modulieren.

Key Data

- + **Project:** WAQ – Wine in Absolute Quietness
- + **Lab:** Oenolab
- + **Principal Investigator:** Prof. Emanuele Boselli
- + **Industry Partner:** Wineleven GmbH
- + **Duration:** 03/2020 – 07/2021

Proteine intelligenti per un mondo che cambia

Le proteine sono nutrienti vitali per il corpo umano. La più grande sfida, attualmente, è quella di fornire alla popolazione mondiale una dieta sana da fonti sostenibili. Il progetto Smart Protein, finanziato dall'UE, affronta questo problema attraverso filiere proteiche sostenibili con impatti positivi sulla bioeconomia, l'ambiente, la biodiversità, la sicurezza alimentare e nutrizionale e la fiducia dei consumatori. Convalida e attesta prodotti proteici a base di fave, lenticchie, ceci e quinoa che siano innovativi, convenienti ed efficienti in termini di risorse. Nell'ambito del progetto verranno create anche delle biomasse microbiche proteiche da funghi commestibili, derivati dal riciclo di residui di pasta, pane (crosta) e birra (lievito esaurito e radichette di malto).

Key Data

- + **Project:** SMART PROTEIN – Smart Protein for a Changing World
- + **Lab:** Micro4Food Lab
- + **Principal Investigator:** Prof. Marco Gobetti
- + **Industry Partner:** 16 international industry partners, including Anheuser-Busch InBev, Barilla, Beotronics, Doehler, Equinom, Quinoa Marche, and Soguima.
- + **Duration:** 01/2020 – 12/2023

Die unibz hat ihr erstes Patent

Das erste von der unibz angemeldete Patent wurde im Jahr 2020 erteilt. Aus Rückständen der Apfelverarbeitung hat die Forschungsgruppe von Prof. Matteo Scampicchio ein Wachs gewonnen, das unter bestimmten Bedingungen eine antioxidative Wirkung aufweist. Verwendbar ist es künftig als Ersatz für synthetische Inhaltsstoffe in der Lebensmittel- und Kosmetikindustrie. In einem internen Prozess der Bewertung der Erfindung und der Patentstrategie entschied sich die unibz, 2018 ihr erstes Patent auf nationaler Ebene anzumelden und hat zwei Jahre später nun die Bestätigung erhalten. Das angemeldete Patent bezieht sich sowohl auf das gewonnene Produkt, das Oleogel, als auch auf den Extraktionsprozess mittels überkritischem CO₂: ein Vorgang ohne negative Auswirkungen auf die Umwelt. Derzeit prüfen die Forscher*innen der unibz in ihren Laboren die Möglichkeit, Oleogel auch aus anderen Nebenprodukten verschiedener Getreidesorten, Sonnenblumenkernen, Traubenschalen, Olivenkernen, Sojabohnen oder Wachsplatten, die von Honigproduzenten verwendet werden, zu extrahieren. Erfindungen und Patente zeigen die Innovationskraft einer Universität sowie ihre Kompetenz in verschie-

denen Technologiefeldern. Die Universität unterstützt ihre Forscher*innen bei Patent- und Marken-anmeldeverfahren und in der Verwaltung des geistigen Eigentums zur wirtschaftlichen Verwertung ihrer Forschungsergebnisse.

Intellectual Property Rights

- 1 granted patent filed by unibz
- 16 granted patents filed by unibz researchers
- 3 granted trademarks by unibz
- 5 trademarks under evaluation by unibz
- 1 granted patent filed by unibz

Visiere protettive dalle officine di Design e Arti per il personale medico

Come molte istituzioni e aziende, dall'inizio della pandemia di Covid-19 anche i designer della Facoltà di Design e Arti ha riflettuto su come poter contribuire con il proprio know how.

Il risultato è una visiera protettiva in polycarbonato, realizzata seguendo le istruzioni di un progetto open source disponibile online e ulteriormente ottimizzata per un miglior funzionamento e per una produzione rapida ed economica. La produzione delle visiere è nata dal gioco di squadra del prof. Nitzan Cohen con i medici dell'Azienda Sanitaria dell'Alto Adige. Con l'aiuto degli esperti della Facoltà di Scienze e Tecnologie, Cohen e il team della sua Facoltà si sono assicurati che le visiere superassero i test standard e ricevessero infine la certificazione di conformità da parte dell'INAIL. Si è potuto mettere a disposizione così – a prezzo di costo – un prodotto semplice, economico e certificato.

3000 visiere protettive per il personale medico sono state consegnate, grazie alla Croce Rossa, a tutti gli ospedali altoatesini e all'Associazione delle Residenze per Anziani dell'Alto Adige. Le visiere sono adattabili ad ogni individuo e, rispetto alle normali mascherine, hanno il vantaggio di offrire una protezione supplementare per gli occhi e il viso.

A marzo unibz aveva fornito alla Croce Rossa e Bianca e all'Ospedale di Bolzano 42.500 guanti monouso, 350 camici da laboratorio monouso e 1500 maschere FFP2. Il materiale proveniva dalle scorte della Facoltà di Scienze e Tecnologie ed è stato fornito su richiesta delle organizzazioni.

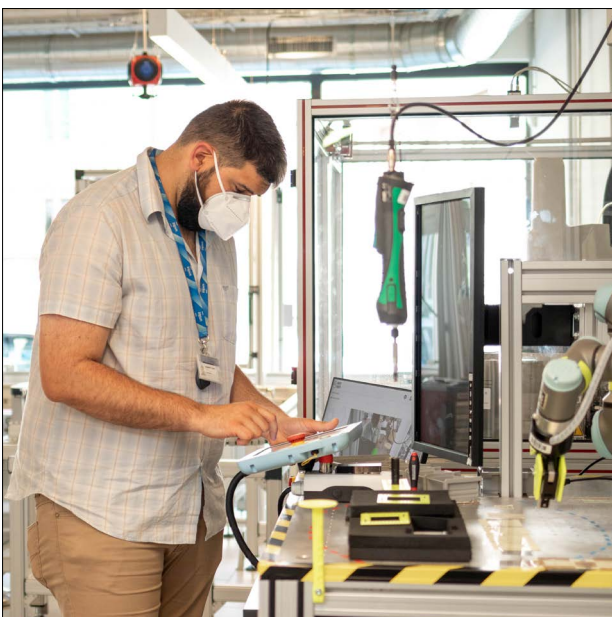
Das Lernfabriklabor zu Industrie 4.0

Das Smart Mini Factory (SMF) ist ein Lernfabriklabor für die angewandte Forschung und die Lehre. Es werden dort moderne und fortgeschrittene Konzepte von Produktionstechnologien und -methoden im Kontext von Industrie 4.0 untersucht und simuliert. Im Mittelpunkt stehen die Anforderungen von klein- und mittelständischen Unternehmen (KMU) an hybride und menschenzentrierte Produktions- und Montagesysteme sowie an Robotik und Mechatronik für die Industrieautomation. Ziel ist es, eine Plattform zu schaffen, mittels der sich Forscher, Studenten und die Industrie treffen, um den Wissenstransfer von der Forschung an die Industrie zu ermöglichen.

Das SMF betreibt international wettbewerbsfähige und anwendungsorientierte Forschung: laut der Datenbank Scopus reiht sich die unibz in die Top 10 Universitäten weltweit zum Thema Industrie 4.0 ein. So etwa wird das erfolgreiche EU-Projekt „SME 4.0 – Industry 4.0 for SMEs“ von der unibz koordiniert. Das SMF findet des Weiteren Einsatz in der praktischen Ausbildung von Studierenden bei vielen Lehrveranstaltungen und der Weitergabe von Know-how an angehende Ingenieure im Rahmen studentischer Projekte. Schlussendlich dient das Labor Unternehmen aus Industrie und Handwerk als Anlaufstelle für Forschungskooperationen und unterstützt diese bei der Umsetzung von Industrie 4.0.

Zu den Aktivitäten mit Unternehmen 2020 zählen ein Forschungsprojekt mit dem Sanitätsbetrieb Südtirol SABES zur Simulation der neuen Ersten Hilfe, mehrere Projekte mit Unternehmen zum Einsatz von kollaborativer Robotik in der industriellen Montage sowie mehrere Projekte mit Handwerksunternehmen zum Einsatz von Augmented Reality am Bau.

Einführungsvideo: www.youtube.com/watch?v=4tT8e-2qNU7I / Virtual Lab Tour: my.matterport.com/show/?m=7TJk9Z5eoBf



Smart Mini Factory | Photo: ©Eleonora Lunardonì

Zusammenarbeit zwischen Unternehmen und Universität in Doktoratsstudien

Unternehmen können durch eine Konvention mit der Universität Stipendien für die Teilnahme an Doktoratsstudien finanzieren. In den entsprechenden Wettbewerbsausschreibungen können hierfür spezifische Forschungsthemen vorgesehen werden.

Es können auch sogenannte "PhD executive – corsi di dottorato industriale" aktiviert werden, bei denen eine bestimmte Anzahl an Studienplätzen den Mitarbeiter*innen von Unternehmen vorbehalten sind. Voraussetzung ist auch hier die nachgewiesene hochqualifizierte Tätigkeit des Unternehmens im Bereich Forschung und Entwicklung sowie das positive Abschneiden der Unternehmenskandidaten im Rahmen des öffentlichen Stellenwettbewerbs. Erfolgreiche Kandidat*innen folgen anschließend einem auf sie ausgerichteten Forschungsprogramm. Hierbei wird eine enge Kooperation zwischen der Universität und dem Unternehmen sowohl inhaltlicher Natur als auch durch praxisbezogene Unternehmensbesichtigungen angestrebt. Die unibz bietet aktuell sieben Doktoratsstudien an vier Fakultäten an, wobei im Jahr 2020 fünfzehn Konventionen mit Unternehmen zur Finanzierung eines Stipendiums im Rahmen der Doktoratsstudien vereinbart wurden.

Learning something new every day

Studium Generale of unibz is an interdisciplinary study programme available to the general public for those who wish to strengthen their knowledge in various fields ranging from creativity and culture to technology, social science and law and business, from parenting parents and families to languages, sustainability and communication. The programme allows people of any age to attend university level courses.

Two different course programmes can be chosen within the framework of the Studium Generale: one with the majority of courses on the BozenBolzano campus and a new one on the BrixenBressanone campus with courses on current topics in the humanities and social sciences. The Studium Generale awards 30 ECTS-credits and can be accomplished within three years' time.

During the Covid-19 pandemic, a series of open lectures were recorded, and online courses were held. In 2020, 79 students were enrolled in the Studium Generale. Studium Generale is part of the Lifelong Learning initiatives and the Third Mission of unibz and aims at the engagement with and inclusion of the general public and its surrounding community.

llguide.unibz.it/en/studium-generale / www.youtube.com/channel/UCFpYuzu5BwMMdysRD5VfHxg/videos



Fig. 1: Bioenergy and Biofuels Lab | Photo: ©Ivo Corrà; Fig. 2: Oenolab | Photo: ©Ivo Corrà; Fig. 3: Micro4Food Lab | Photo: ©Harald Wisthaler; Fig. 4: Protective masks, Faculty of Design and Art | Photo: ©unibz; Fig. 5: Smart Mini Factory | Photo: ©Serena Osti; Fig. 6: Studium Generale | Photo: ©Stefania Zanetti



New Professorships

Faculty of Computer Science



Antonio Liotta

*Full Professor of Data Science
and Computer Networks
(ING-INF/05)*

Former position: Eindhoven University of Technology, Netherlands.
Research focus: IDSE – Intelligent systems, intelligent networks, smart sensing, Internet of Things.



Fabrizio Maria Maggi

*Associate Professor of Data
Science and Computer Networks
(ING-INF/05)*

Former position: University of Tartu, Estonia.

Research focus: KRDB – Process Modelling, Implementation and Improvement.

Faculty of Economics and Management



Sascha Kraus

*Full Professor of Management
(SECS-P/08)*

Former position: Before joining unibz, he held Full Professor positions at Utrecht University (NL), the University of Liechtenstein, École Supérieure du Commerce Extérieur Paris (F), and at Durham University (UK). He also held Visiting Professor positions at Copenhagen Business School (DK), and at the University of St. Gallen (CH), and was EECPCCL Participating Professor at Harvard University (USA).

Research focus: His main research areas are Strategy, Internationalization, Entrepreneurship and Innovation. He is the author of more than 100 academic articles, his research being published in journals such as: Global Strategy Journal, International Journal of Management Reviews, Journal of Business Research, Journal of Product Innovation Management, Journal of World Business, or Long Range Planning.



Giacomo De Luca

*Full Professor of Economics
(SECS-P/01)*

Former position: Before joining unibz, he held Full Professor position at University of York (UK). He also held several visiting periods at MIT (USA).

Research focus: His main research areas are Development Economics, Civil War, Institutions, Organised Crime.

Faculty of Science and Technology



Youri Pii

Associate Professor of Agricultural Chemistry (AGR/13)

Former position: Senior researcher at unibz – Faculty of Science and Technology

Research focus: His research interests are mainly focused on plant nutrition and the rhizosphere processes underlying nutrients uptake. He applies there by interdisciplinary methodologies aimed at identifying the molecular mechanisms that control important plant traits related to mineral nutrient acquisition, biotic and abiotic stress tolerance.

Faculty of Education



Jeanette Hoffmann

Full Professor of Didactics of German Literature (L-LIN/13)

Former position: She previously researched and taught in the field of German didactics at the Technische Universität Dresden, the Freie Universität Berlin and the Pädagogische Hochschule Oberösterreich.

Research focus: At present, her research focuses on graphic storytelling, literary learning and language acquisition, children's literature and its didactics, reading and media socialisation, in-

tercultural learning and multilingualism, empirical research on reader response, classroom interaction and professionalisation.



Simone Seitz

Full Professor of Didactics and Special Pedagogy (M-PED/03)

Former position: Prof. Dr. phil. Simone Seitz has held a full university professorship at the Universities of Paderborn (2015–2019) and Bremen (2009–2014). She had previously held a Junior professorship at the University of Bremen and prior to that she was a researcher at the Universities of Dortmund, Heidelberg, Oldenburg and Cologne.

Research focus: In her research she deals with the empirical analysis as well as theoretical foundation of teaching and learning, Early Education, the professionalisation of teachers and educators, and the development of schools and Early Day Care Centres within different education systems, with an overarching perspective on diversity, educational (in)equality and inclusion.



Dorothy Louise Zinn

Full Professor of Sociocultural Anthropology (M-DEA/01)

Former position: Dorothy Zinn taught social-cultural anthropology at the University of Basilica-

ta (1999–2011), and she was previously Associate professor at unibz (2011–2020).

Research focus: Prof. Zinn has conducted fieldwork in Southern Italy and South Tyrol and she has published extensively on issues such as immigration and multiculturalism, clientelism and political economy in Southern Italy, and on the work of Ernesto De Martino. She is also involved in research on Bronislaw Malinowski's presence in South Tyrol and is co-founder of the Malinowski Forum for Ethnography and Anthropology (MFEA).



Alessandro Luigini

Associate Professor (ICAR/17)

Former position: Assistant professor at the Free University of Bozen. He was previously adjunct professor and research fellow at Faculty of Architecture, University G. d'Annunzio of Chieti-Pescara.

Research focus: He is interested in art and heritage education, immersive digital environments, visual studies and graphic representation. His research approach is always interdisciplinary and his previous main research projects were focused on digital environments for heritage education in South Tyrolean schools and museums.



Urban Nothdurfter

Associated Professor of General Sociology (SPS/07)

Former position: He has been senior researcher at unibz and has taught Social Work at the St. Pölten University of Applied Sciences in Austria. As a visiting researcher he worked at the KU Leuven and the UC Berkeley School of Social Welfare.

Research focus: His research focuses on social policy development and social work practice, the street-level delivery of activation and social assistance policies and on issues of gender and sexuality in social work. Recent projects deal with LGBT+ parenting and the political role of social work.



Elisabeth Tauber

Associate Professor of Social Anthropology (M-DEA 01)

Former position: She has taught social anthropology at the Central European University Budapest, at the Ludwig Maximilian University Munich and at the Università degli Studi di Firenze.

Research focus: She has worked extensively with European Romani communities, in particular Sinti, focusing on gender, begging and gift economies, nomadism, mnemonic practices and archives. She is actually working with high alpine shepherds with an interest in human-non-human relationships,

cultures of pastoralism, ecological systems and issues related to the loss of biodiversity.



Alessandro Vietti

Associate Professor of Linguistics (L-LIN/01)

Former position: Assistant professor at unibz – Faculty of Education, teaching Linguistics and Sociolinguistics.

Research focus: His research interests are in language variation and change, phonetics, laboratory phonology, sociophonetics, bilingualism, quantitative methods.

Faculty of Design and Art



Aart van Bezooijen

Associate Professor of Industrial Design (ICAR/13)

Former position: Professor of Material and Technology Transfer for Art and Design at Burg Giebichenstein University of Art and Design in Germany where he heads the university's Material Collection.

Research focus: Dutch industrial designer with a collection of the most remarkable materials from around the world. As designer-researcher he explores how a new relationship with materials can help us to (re)think, create and contribute to more sustainable futures. His approach is hands-on, experimental, collabo-

rative and interdisciplinary.



Letizia Bollini

Associate Professor of Design (ICAR/13)

Former position: Architect, Ph.D. in Industrial Design and Multimedia Communication at the Milano Polytechnic, Visiting scholar at the San Francisco State University, Assistant professor at the Department of Psychology of the Milano-Bicocca University and lecturer/contract professor at the Milano Polytechnic, the University of Bologna and the Milan State University, Faculty member of the HEC in User Experience Design organised by the Milano Polytechnic.

Research focus: interaction, user experience and multimodal interface design, media languages, visual and socio-spatial representation, with a strong focus on technologies evolution, and accessibility mainly in the field of Cultural and Intangible Heritage and Digital Archives.



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