

Jahresbericht 2020/2021

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FOREWORD



Minister Theresia Bauer

Minister Wolfgang Tiefensee

Foundation administration of the Carl Zeiss Foundation

Dear readers,

After two years of the corona pandemic, we have addressed many things that used to be the exception: permanent home office work, online meetings, video events, digital Christmas parties, etc.

Many things are now possible without any problems thanks to the advantages that an increasingly digitized world brings with it. There is still a need to catch up in other areas.

Research in particular will open up new digital possibilities for us. The Carl Zeiss Foundation is making a contribution to this and is supporting it with its long-term priority topic "Artificial Intelligence" (AI) launched in 2021.

Research on this important driver for the digital revolution. We approved 22 AI projects in the first year. With a total of around 44 million euros, we are supporting both basic research and transfer activities. With the funding of the first and currently only endowed professorship for the law of artificial intelligence in Germany, we are also taking on the socially relevant challenges of self-learning AI and big data on the value and legal system.

One of the guiding principles of the Carl Zeiss Foundation is the concentration of funding activities on thematic priorities that address current scientific challenges and are of economic and social relevance. With our second long-term focus topic "Resource Efficiency", which started at the end of 2021, we want to focus on the technical side of sustainability. A third priority topic is being prepared for 2022.

Such an expansion of the funding activities is only possible thanks to the successful economic activities of our foundation companies and the associated dividend distributions to the foundation. The two companies Carl Zeiss AG and SCHOTT AG managed to get through the Corona crisis well and continue to grow. We would therefore like to thank all employees and the Management Board, chaired by Dr. Karl Lamprecht (Carl Zeiss AG) and Dr. Frank Heinrich (SCHOTT AG) for their dedicated work under difficult conditions. The board of trustees and its outgoing chairman Prof. Dr. We thank Dieter Kurz for the trusting

Cooperation.

Another word of thanks goes to the growing number of employees in the Foundation's office who are responsible for implementing and supporting the programs and projects.

We hope for an end to the Corona virus in 2022 Pandemic and the return to normality, so that we can intensify the personal contacts between and with our funding recipients.

We wish you exciting insights into our funding activities!

Handwritten signatures of Theresia Bauer and Wolfgang Tiefensee in black ink.

THE

FOUNDATION, ENDOWMENT

NUMBERS, DATA, FACTS



Prof. Dr. Ernest Abbe

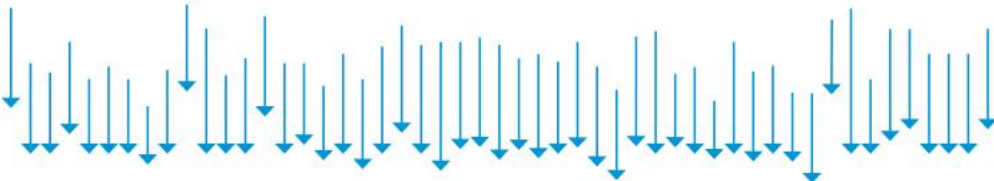
Founding of the Carl Zeiss Foundation in Jena in 1889



Promotion of research and teaching in the STEM field



Regional focus on the producing countries
Baden-Württemberg, Rhineland-Palatinate and Thuringia



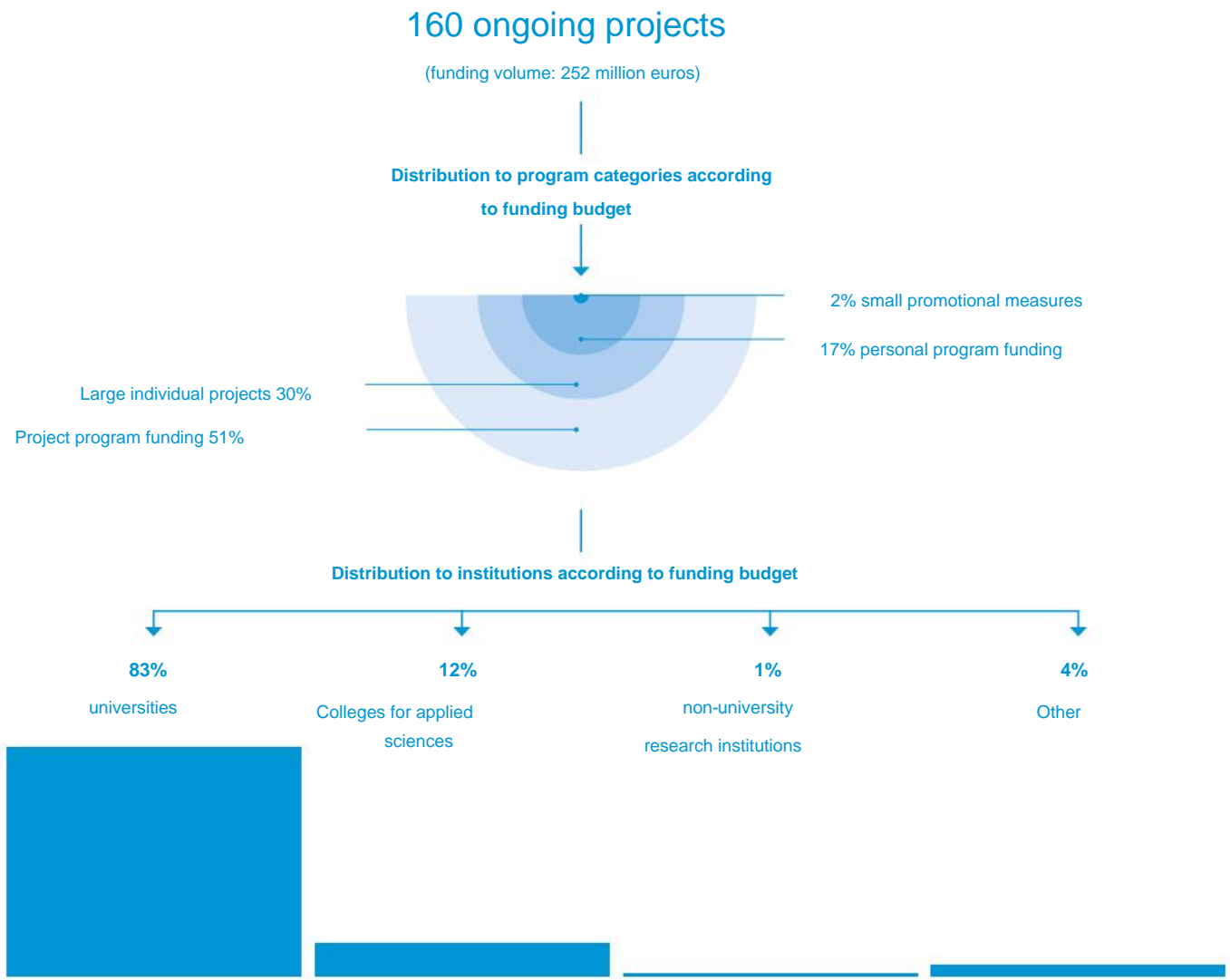
41.7 million euros in funding for 51 projects

approved in the 2020/2021 financial year (October 1, 2020 to September 30, 2021).



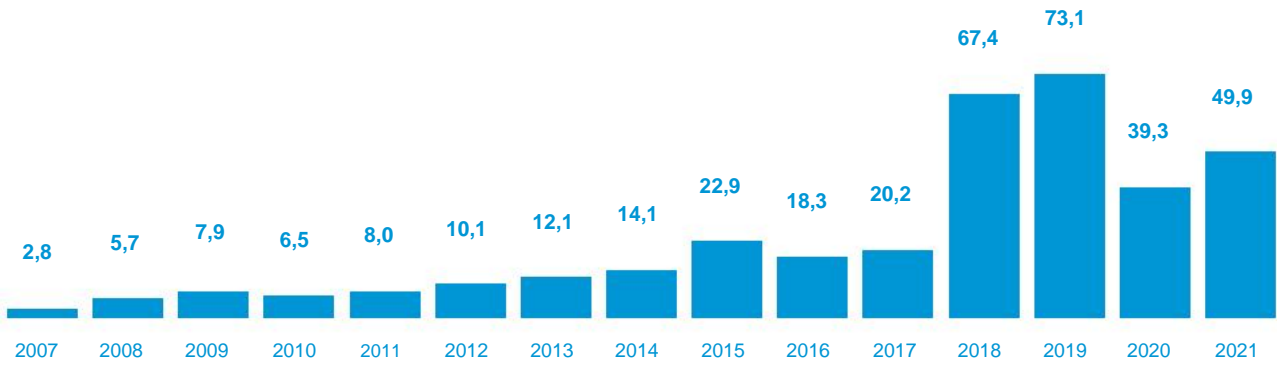
Since 2007 alone, around EUR 359 million in funding has been approved for 794 projects.

The Foundation



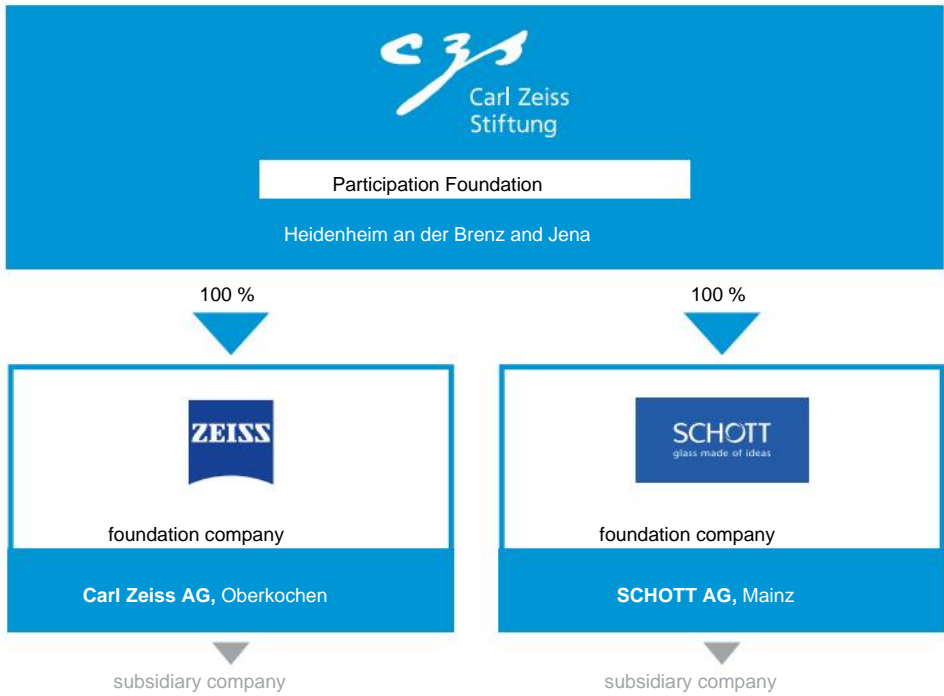
Approved funding per calendar year

(in million euros) from 2007-2021



FOUNDATION COMPANY

The foundation is the sole shareholder of the companies Carl Zeiss AG and SCHOTT AG. It finances its sponsorship activities through the dividend payments of the two foundation companies.



Carl Zeiss AG

ZEISS is a global technology group in the optical and optoelectronic industry. The company has been shaping technological progress for 175 years. With its solutions, ZEISS advances the world of optics and develops market-defining ones in many areas

Innovations for the benefit of customers and society as a whole. The broad portfolio of the ZEISS Group is divided into four future-oriented divisions: Semiconductor Manufacturing Technology, Industrial Quality & Research, Medical Technology and Consumer Markets. The company, which was founded in Jena in 1846, is headquartered in Oberkochen.

SCHOTT AG

SCHOTT is an international technology group that sees its core task in the sustainable improvement of people's living and working conditions.

For this purpose, the company has been developing and producing special materials, components and systems for more than 125 years. The main markets are the household appliances, pharmaceuticals, electronics, optics and automotive sectors.

The corporate headquarters and the main plant are located in Mainz. In addition, SCHOTT is involved in production locations and sales offices in more than 40 countries represented close to customers.

The Foundation

FOUNDATION BODIES

foundation administration

- **Theresia Bauer,**
Minister for Science, Research and Art
State of Baden-Württemberg
- **Wolfgang Tiefensee,**
Minister for Economy, Science and Digital
Society of the State of Thuringia

Board of Trustees

- **Prof Dr Dieter Kurz,**
Chairman of the Board of Trustees (until December 31, 2021)
- **Prof. Dr. Dr. Andreas Barner,**
President of the Donors' Association for German Science
- **dr Eric Schweitzer,**
Honorary President of the Association of German Chambers of
Industry and Commerce

thanksgiving

From 2012 to 2021 Prof. Dr. Dieter Kurz Chairman of the Board of Trustees of the Carl Zeiss Foundation and associated Chairman of the Supervisory Board of the two foundation companies Carl Zeiss AG and SCHOTT AG.

The doctor of physics has worked for ZEISS since 1979 in several responsible positions in research and development, marketing and sales in Germany and abroad. As head of the semiconductor optics and semiconductor manufacturing technology division, he was responsible for the development of the "Semiconductor Manufacturing Technology" division.

Board Advisory Board

- **dr Karl Lamprecht,** CEO of Carl Zeiss AG
- **dr Matthias Metz,** Member of the Board of Carl Zeiss AG
- **dr Ludwin Monz,** Member of the Board of Carl Zeiss AG (until December 31, 2021)
- **dr Christian Mueller,** Member of the Board of Carl Zeiss AG
- **dr Jochen Peter,** Member of the Board of Carl Zeiss AG
- **dr Markus Weber,** Member of the Board of Carl Zeiss AG
- **dr Frank Heinrich,** CEO of SCHOTT AG
- **Hermann Ditz,** Member of the Board of SCHOTT AG
- **dr Heinz Kaiser,** Member of the Board of SCHOTT AG
- **dr Jens Schulte,** Member of the Board of SCHOTT AG

in the company and developed into one of today's most important business areas. From 2001 to 2010 he was spokesman and chairman of the board and thus also a member of the advisory board of the foundation.

We thank Prof. Dr. Dieter Kurz warmly for his decades of solidarity, his dedication and commitment to the foundation and the foundation companies. He was always a reliable contact person who contributed his expertise to the benefit of the foundation.

OFFICE



dr Felix Streiter,
Managing Director



Hannes Banzhaf, CFA
Deputy Managing Director/Head
of Finance



Anna Müller-Trimbusch,
Head of Funding Programs



Michaela Bogenrieder,
Controlling



Petra Dabelstein,
Social Media-/
Alumni Manager



Lukas Findeisen,
Program Manager



Ivonne Fresh,
Team Assistant/Secretariat



dr Phil-Alan Gärtig,
Program Manager



Sonja Hake,
program manager



Judith Hohendorff,
program manager



Florian Jenner,
Program Manager



Vanessa Marquardt,
communications manager



Michaela Reininger,
management assistance



Matthew Stolzenburg,
Program Manager/
speaker law

The Foundation

COMMUNICATION AND NETWORKING

New digital face



The Carl Zeiss Foundation received a new digital face in 2021. After a comprehensive relaunch

The foundation's new website is modern and clear. In addition to a target group-specific search for suitable funding opportunities, it offers, among other things, insights into the history and an overview of

all funded projects in the current focus areas of the foundation.

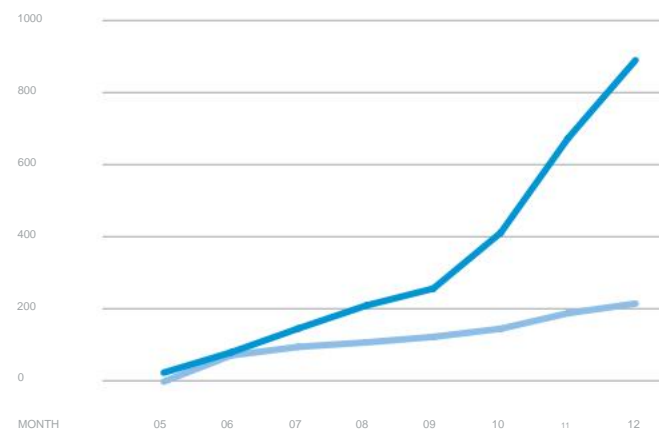
The foundation has been on the social media channels LinkedIn and Twitter since June 2021. Inform

Information on funding programs, calls for proposals, historical reviews and information relevant to the foundation is published. Research projects are also supported by the media and sponsored individuals are presented.

Large ranges were achieved very quickly on both channels and a growing following can be achieved.

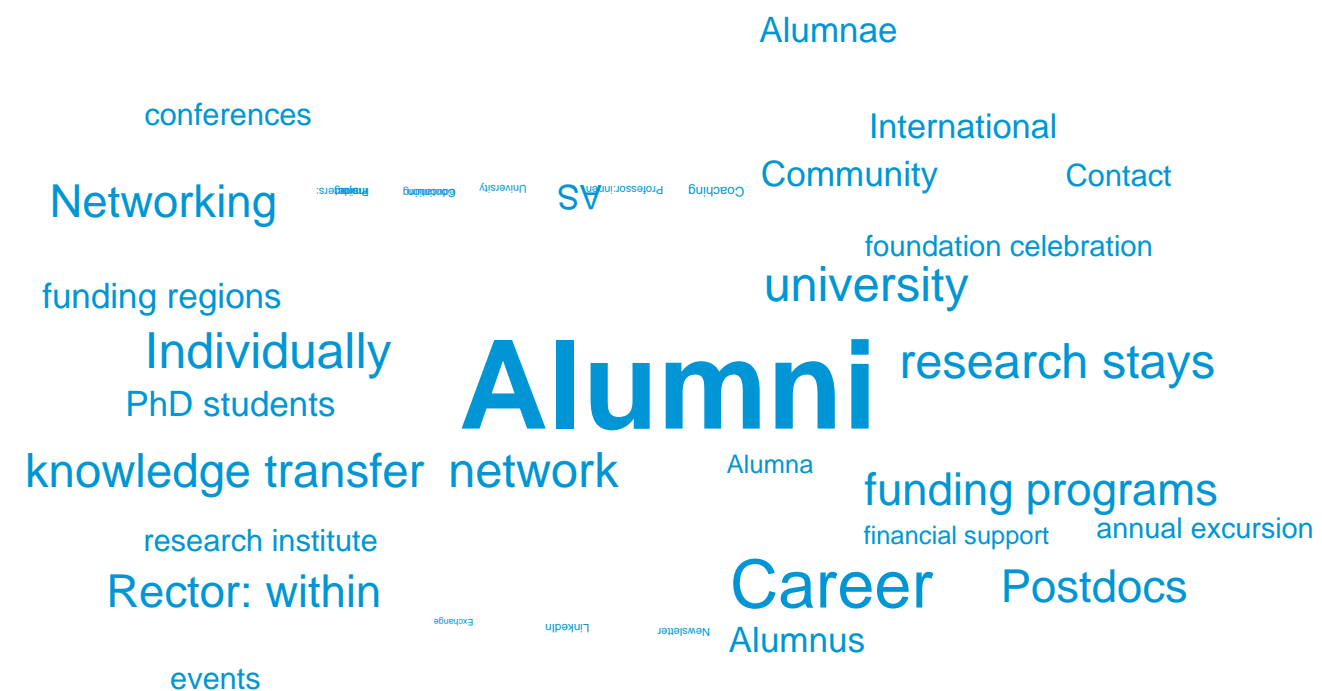
In the first six months, almost 1,000 followers are gained.

NUMBER OF FOLLOWERS (IN 2021)



LinkedIn — Twitter

Networking writ large...



With measures accompanying the programme, more specifically Alumni sponsorship and new network formats would like to Carl Zeiss Foundation will in future be in contact with its current and former sponsors beyond the mere sponsorship activities stay and build an alumni network.

For this purpose, an alumni portal was developed in the fourth quarter of 2021. In 2022, special sponsorship and network offers for alumni and "Friends of the Carl Zeiss Foundation" will follow.



As a former endowed professor of the Carl Zeiss Foundation, I am interested in an alumni network. Such a network could support further exchange, intensified networking among each other and long-term cooperation.

In addition, the connection to the Carl Zeiss Foundation would be visible both internally and externally for many years.

Foundation Professor Dr. Till Nagel, University of Mannheim



PROMOTION TASK

funding strategy

The Carl Zeiss Foundation has been promoting science and research in the STEM field for over 130 years. This makes it one of the oldest and now also the largest scientific foundations in Germany.

The current funding activity is based on a new funding strategy that was adopted at the beginning of 2021 and comprises four guiding principles:

1 We enable scientific breakthroughs in basic and applied research

This claim is reflected in the targeted funding of large individual projects and demanding funding programs such as CZS breakthroughs (for universities) and CZS Transfer (for universities of applied sciences). The aim is to push the limits of what is technically feasible and thereby add value for science, create economy and society.

2 We offer freedom to institutions

The Carl Zeiss Foundation acts quickly and flexibly, as shown, for example, by the wide range of funding opportunities in the CZS Prisma program. The foundation trusts in the creativity of the individual and the innovative strength of the institutions it supports, and is willing to accept risks.

3 We show profile in main topics

With its key topics, the Carl Zeiss Foundation addresses current scientific challenges that are of economic and social relevance. In 2021, the first two key topics "Artificial Intelligence" and "Resource Efficiency" were adopted. The development of a third priority topic is planned for 2022.

4 We create added value by supporting collaborations

In particular, the Carl Zeiss Foundation would like to work at interfaces: between academic disciplines, scientific institutions, social sectors and countries. This claim is reflected in the funding portfolio, for example in the CZS fund for the appointment of international scientists and the interdisciplinary research groups of the CZS Nexus program.

■ promotional activity

funding balance

Before the new funding strategy of the Carl Zeiss Foundation was adopted at the beginning of 2021, the office took an analytical look back at the funding activities from 2007 to 2019.

This comprehensive funding review focused on three key questions: • What was done? • What has been achieved?

• What can we learn from this for the future?

Extensive quantitative and qualitative data were collected for this purpose. The nearly 450 recipients and alumni were questioned and expert interviews were conducted with key players in the foundation's selection and funding activities.

Important findings from the balance sheet were in particular: The Carl Zeiss Foundation is well positioned overall and has a positive image. It should retain its basic funding approach, which offers flexibility and freedom for the implementation of good scientific ideas. However, this should be supplemented by a clearly differentiated set of instruments for project management and success monitoring. It is important to address the various target groups, in particular the individual types of higher education institutions, with appropriate funding offers.

In addition to uni-local funding, aspects of cooperation should also be taken into account. The change from format-based to topic-based funding was a step in the right direction to enable the foundation to develop a better profile. However, the topics should be served over longer periods of time in the future. At the same time, funding offers that are open to topics and can be used at short notice make sense. The future funding portfolio should be based on a constant balancing of the various interests and at the same time on a self-confident and clear positioning of the foundation.

The CZS office will be happy to provide the detailed 135-page subsidy balance sheet on request. Some exemplary data and voices are presented below.

Approved funding volume from 2007-2019:

271.6 million euros

Approved funding from 2007-2019 by subject:

21% computer science

20% Engineering Sciences

20% physics

13% chemistry

7% Biology

3% math

16% other

FUNDING EXAMPLES

39 research structures **35.4 million euros**



In concrete terms, we were able to acquire two research buildings for Kaiserslautern, based on funding in the research structure program. For me, this belongs in the premier class of sustainable profile development, since the foundations for outstanding long-term research cooperation and infrastructures are literally "cast in concrete" here.

Prof. Dr. Arnd Poetzsch-Heffter, President of the TU Kaiserslautern



97 endowed professorships **65 million euros**



By sponsoring endowed professorships, the Carl Zeiss Foundation creates scope for the establishment of new scientific focal points. Personally, the sponsorship has given me – a fairly young first-time appointee – a unique opportunity to carry out various inventive research projects in the field of language processing and artificial intelligence.

Prof. Dr. Ngoc Thang Vu, CZS endowed professor at the University of Stuttgart



293 doctoral students & 122 postdocs **28.7 million euros**



The flexible support of the Carl Zeiss Foundation enabled me to gain in-depth knowledge during my doctorate and build a worldwide network. This represented a central Point for my further professional career as a postdoc up to my current leading position in science as a professor.

Prof. Dr. André Schleife, CZS doctoral student at the University of Jena from 2007-2010



688 Germany annual scholarship holders **1.2 million euros**



Not only the financial support is very good. In particular, the recognition and encouragement for continuing to support good studies and activities at and outside the university motivate me to remain committed to it.

Jasmin Calmbach, Germany scholarship holder at the TU Ilmenau



■ promotional activity

Approved projects in the 2020/2021 financial year

focus topic	Funding program project title	Institution	Funding amount	
Artificial intelligence	CZS Breakthroughs Aging Smart – designing rooms intelligently	Technical University Kaiserslautern	4.290.000 €	
Artificial intelligence	CZS breakthroughs co-presence between people and Interactive companions for seniors	Technical University Ilmenau	4.497.000 €	
Artificial intelligence	CZS breakthroughs identification and manipulation of the physiological and psychological Clocks of the Lifespan	University of Jena	4.500.000 €	
Artificial intelligence	CZS Breakthroughs Keeping Young with Robots – Versatile Assistance robotics for coping with everyday life	Karlsruhe Institute for Technology	4.500.000 €	
Artificial intelligence	CZS Breakthroughs Smart Aging in the Community Context: Investigation of intelligent forms of Self-regulation and co-regulation under real conditions	University of Heidelberg	€4,500,000	
Artificial intelligence	individual project	AI-based microbiome analysis in aging	Leibniz Institute for Aging Research – Fritz Lipmann Institute eV	2.500.000 €
Artificial intelligence	individual project	Endowed Professorship for the Law of artificial intelligence	University of Tübingen	2.999.999 €
Artificial intelligence	CZS Prisma	Research transfer in the scientific telemedicine	University of Jena	16.200 €
Artificial intelligence	CZS Prisma	Deep learning for the structure elucidation of natural products with multidimensional NMR spectroscopy	University of Jena	72.520 €
Artificial intelligence	CZS Prisma	Towards Hyper-Actuated Soft Robotic Systems	University of Stuttgart	74.200 €
Artificial intelligence	CNS Transfer	Building a Serious Games Lab with the Focus on "Senior Health Games"	University of Trier	970.000 €
Artificial intelligence	CNS Transfer	Digital technologies for the care of people with dementia	University Furtwangen	990.000 €
Artificial intelligence	CNS Transfer	Multi-Generation Smart Community – Co-working and social participation through multigenerational networking in the smart Neighborhood	University of Jena	940.000 €
Artificial intelligence	CNS Transfer	Non-invasive system for measuring parameters relevant to sleep quality	University of Konstanz	1.000.000 €
Artificial intelligence	CNS Transfer	Spatial intelligence for the integrated care for the elderly in rural areas quarters	University of Mainz	1.000.000 €
resource efficiency	individual project	Carl Zeiss Cooperation Fund for sustainability research	Technical University Kaiserslautern	2.000.000 €

Main theme funding program	Project data	Institution	Funding amount	
STEM in general	CZS Fund for Vocation of International Knowledge schaffler:innen	Professur Health Behavior, Prevention and Management	University of Tübingen	120.000 €
STEM in general	CZS Fund for Vocation of International Knowledge schaffler:innen	Algebra Professor	University of Jena	92.000 €
STEM in general	CZS Fund for Vocation of International Knowledge schaffler:innen	Professor of Zoology	University of Jena	116.000 €
STEM in general	CZS Fund for Vocation of International Knowledge schaffler:innen	Professorship of Solid State Physics – X-ray scattering at softer Material	University of Mainz	120.000 €
STEM in general	Germany scholarship 150 Germany scholarships		Universities of Ilmenau, Jena, Kaiserslautern, Karlsruhe, Mainz, Trier, Stuttgart, Ulm; colleges Aalen, Albstadt-Sigmaringen, Bingen, Jena, Kaiserslautern, Karlsruhe, Mainz, Mannheim, Nordhausen, Schmalkalden, Trier	540.000 €
STEM in general	CZS breakthroughs	Even in old age in all eyes See distances clearly: Novel neuronally controlled intraocular lenses and contact lenses	University of Tübingen	2.806.000 €
STEM in general	individual project	Scholarships Lindauer Nobel Laureate Meetings	Lindau Nobel Prize Winners' Conferences Foundation	1.000.000 €
STEM in general	individual project	Further promotion of German Optical Museum – Endowed Professorship Timo Mappes	German Optical Foundation Museum	1.015.204 €
STEM in general	GSO/CZS return program	Professor of Molecular plant physiology	University of Freiburg	100.000 €
STEM in general	CNS Impulse	100 years planetarium – Financing of a planetarium show	Society of German-speaking planetariums registered association	540.000 €
STEM in general	CNS Impulse	Albert Einstein Discovery Center	Albert Einstein Discovery Center Ulm Ulm e.V.	70.000 €
STEM in general	CZS Prisma	New crystals for photonic quantum technologies	University of Stuttgart	70.000 €
STEM in general	CZS Prisma	Acquisition and commissioning of a ceilometer Observing aerosol pollution and clouds	University of Mainz	45.000 €
STEM in general	CZS Prisma	Acquisition and installation of a wafer bonding system	Schmalkalden University	71.000 €
STEM in general	Other projects			121.000 €

■ promotional activity

Focus on "Artificial Intelligence"



Artificial intelligence (AI) is both the subject and driver of science. As one of the most important and promising future technologies, it influences everyday business and society.

AI systems and the application of AI methods such as machine learning or deep learning can be found in almost all areas of life today. Search engines can access

In this way, suitable information can be found more quickly, voice controls can interpret instructions better and media content can be adjusted automatically with image processing software.

Artificial intelligence is the driver for almost all scientific disciplines. It makes it possible to address multidimensional and complex challenges, for example in the field of medical diagnostics, to increase efficiency in production or in relation to environmental problems.

Despite groundbreaking successes and applications of AI, we are only at the beginning when it comes to understanding the potential and risks of this technology. There are still many unanswered research questions, particularly with regard to explainability, the most effective and safe training possible for AI systems, or increasing the efficiency of resource consumption.

The Carl Zeiss Foundation has set itself the goal of funding projects in three fields of action within the main topic of AI. These include "Fundamentals of Artificial Intelligence", "Enabling and Supporting Technologies" and "Application of AI" in the areas of environment, health, production and law. Above all, interdisciplinary AI research approaches should be supported. With its funding, the foundation not only wants to advance research, but also expand the didactics of computer science, increase the attractiveness of science and counteract the shortage of skilled workers.

The transfer of AI research into application is particularly important, which is underlined by programs such as CZS Transfer or CZS Prototypes.

In 2021 alone, 22 projects with a total funding volume of around 44 million euros were approved, including the projects presented as examples on the following pages.

CZS BREAKTHROUGH PROGRAM

JOHANNES GUTENBERG UNIVERSITY MAINZ

„Trading Off Non-Functional Properties of Machine Learning“

funded as part of the call for proposals "Scientific Breakthroughs in Artificial Intelligence"

Artificial intelligence (AI) enables machines to interpret data, recognize objects and intelligently intervene in their environment. Like intelligent living beings, intelligent machines are also exposed to different framework conditions and properties that influence each other.

In the funded project, an interdisciplinary research center for machine learning will be set up at the University of Mainz. Here, the interactions and dependencies of different framework conditions and properties of machine learning are to be analyzed and weighed up. AI systems are examined with regard to transparency, fairness, data protection and efficient use of resources. Various conflicting goals are to be identified and characterized in order to create viable compromises for the application.

For example: How decentralized can data be stored and processed to protect privacy and to what extent does this affect energy consumption?

In cooperation with the Mainz University of Applied Sciences, the solutions found are to be used in an AI lab.



■ promotional activity

PROGRAM CZS TRANSFER

RAVENSBURG-WEINGARTEN UNIVERSITY

"AI-based digital twin"

funded as part of the call for proposals
"Breakthroughs with AI in production"

The concept of Industry 4.0 strives for the comprehensive digitization of industrial production. For example, the use of data and artificial intelligence is intended to increase efficiency and reduce resource consumption. One component of this industrial transformation is the use of intelligent digital twins, with which real production systems are copied and virtually mapped.

The aim of the funded project is to design an AI-based, self-learning digital twin that simulates the production process and product life cycle as realistically as possible. The focus is on the question of how digital twins with artificial intelligence can independently adapt to the respective production system and keep themselves up to date. Ultimately, the information

ments that the digital twin needs for the simulation automatically from the already existing data of the production can be learned. The constant input makes the simulation more and more accurate and powerful over time. Furthermore, the twin should not only learn independently, but also be able to explain decisions that he makes on the basis of what he has learned.



INDIVIDUAL PROJECT

LEIBNIZ INSTITUTE FOR AGING RESEARCH JENA –
FRITZ-LIPMANN-INSTITUT E.V. (FLI)

„AI-based microbiome analysis in aging“

Aging is a multidimensional trait and must also be considered to be understood. Considering the different Facets of biological aging, the FLI has a number of interdisciplinary research areas that focus on cell dynamics, genetics, epigenetics, systems biology and fundamental processes of aging.

The new junior research group funded by the Carl Zeiss Foundation will deal with the influence of the so-called microbiota on the aging process. A single human At any point in time, the human body contains more than 100 trillion microbial cells, which exceed the number of host cells by a factor of 3 to 10. A growing number of studies shows the crucial influence of the microbiota on development, health and disease. Microbiota could serve as an indicator of disease and ultimately choice of therapies used to treat age-related diseases. There are already large amounts of data on the microbiota itself, but there are still no analytical methods to evaluate them. The aim of the research work of the junior research group is to develop and apply methods of artificial intelligence in order to connect the phenotypic profiling of aging with microbiome data.



■ promotional activity

INTERVIEW WITH PROF. DR. MICHELE FINCK,

first and only endowed professor for the law of artificial intelligence in Germany.

Dear Professor Finck, since August 1, 2021 you have held the professorship for the law of the artificial Intelligence (AI) at the University of Tübingen. Why did you choose to work at the intersection of AI and law (in academia)?

Personally, I find this a very exciting area. I think artificial intelligence raises a lot of questions that are extremely relevant, both legally and socially. I consider myself very fortunate to be able to contribute to these questions. Independent academic research is very important, especially in my subject areas – as a counterpoint to lobbying or studies that are funded by actors with specific self-interests, for example in the current debate on the regulation of data and AI, which is being conducted at European level.

In addition, I really enjoy research, as well as working with students and young people scientists.



In your opinion, are there particularly important research topics at the interface between AI and law?

Even though I see a lot of exciting topics in my research area, I would like to mention three complex topics that I am particularly interested in.

First and foremost – and this is the most important question at the moment – is how we handle data. Data is the lifeblood of current forms of AI. The quality of AI depends on the quality of the data. However, digital data is a relatively new object for us humans. We as a society are still in the process of understanding what digital data means and how we contextualize it and ultimately

can also regulate. And here there is a crucial conflict in terms of generating, sharing and analyzing data. This can create incredible societal value, but it can also cause a lot of societal damage. This tension between the advantages and disadvantages of data analysis - including through AI - is very exciting, but makes regulation difficult.

A second important research topic is the question of how to create a legal framework that promotes socially meaningful innovations but can counteract socially meaningless innovations. Which is very difficult because it is currently not possible to say in which direction the various technologies will develop.

As a third important topic, I would name the contribution of artificial intelligence to climate protection. There needs to be more discussion about how, for example, data and AI can be used to combat climate change or deal with its effects. These are not only social but also legal questions, such as whether there should be exceptions to data protection law in order to provide data for special climate protection measures.

How important is your international network, especially to Great Britain, where you lived and worked for a long time, for your work?

International networking and international cooperation are incredibly important in my research fields.

Even if there are significant differences in the different

There are legal frameworks in countries, so the key questions of what digital data is, what it means and how to deal with it are of global importance and concern researchers all over the world equally.

That's why I'm planning to hire young scientists for doctoral and post-doctoral students at my chair

from different countries. Furthermore, it is


My goal is to bring guest researchers from all over the world who are researching AI and law to Tübingen.

Networking with Great Britain in particular is also a personal concern for me. Because of my professional past, I feel connected to English universities in a certain way. I still have many personal and professional contacts with colleagues from that time - which of course makes working together easier.

In addition, Great Britain is technically interesting after Brexit because the basics of data law are similar to those of the EU, but Great Britain now has more freedom to adapt them independently.

What are your goals for the next five years?

My goal is to contribute to the current regulatory debate on AI and data at the European level through my research. I hope that I can also make a contribution to making Tübingen and perhaps Germany as a whole more internationally visible when it comes to excellent interdisciplinary research on digitization.



Professor Dr. Michele Finck

2006–2012: Law studies at the Universities of Luxembourg, King's College London, Pantheon-Sorbonne Paris and at the European University Institute in Florence
PhD from Oxford University

2012–2015: Lecturer in European Law at Oxford University

2014–2018: Research Associate at the Max Planck Institute for Innovation and Competition Munich

2017–2021: Holder of the endowed professorship of the Carl Zeiss Foundation for the law of Artificial Intelligence at the University of Tübingen

■ promotional activity

Other grants

GERMAN OPTICAL MUSEUM JENA

The German Optical Museum (DOM) as a research museum brings together a collection of over 40,000 objects that is unique in the world.

The museum lives from the connection with current science and research. The Carl Zeiss Foundation is one of the five founding sponsors of the museum and its sponsorship aims to strengthen the communication of scientific knowledge to society, especially in optics, a scientific field that is inextricably linked to the history of the foundation is.

For this reason, she promotes the position of museum directors, which is designed as an endowed professorship for the history of physics with a focus on science communication at the University of Jena, in the long term until 2029.

The holder of the endowed professorship of the Carl Zeiss Foundation is Prof. Dr.-Ing. Timo Mappes. He habilitated at KIT, worked as a visiting professor in Denmark and switched to corporate research at Carl Zeiss AG in 2012, later to be responsible for global research for ZEISS eyeglass lenses. In July 2018 he was appointed professor at the University of Jena to establish the leading museum of optics in Jena as the founding director of the DOM.



ALBERT EINSTEIN DISCOVERY CENTER ULM E.V.

Albert Einstein, probably the best-known physicist of the 20th century, was born in Ulm in 1879. With his physical research he fundamentally altered.

To this day, his theories are widely used scientific research and development.

The Albert Einstein Discovery Center, scheduled to open on Einstein's 150th birthday in 2029, aims to honor Einstein's contributions to science, technology and society in a globally visible location.

The concept envisages combining a historical guide to the life and work of Einstein, a modern technology exhibition and a science center with hands-on experimental physics.

The Carl Zeiss Foundation is one of the first to support the development of this innovative location as part of the "The First 11" campaign. In terms of imparting knowledge, this should enable the development of very special and fascinating exhibits and support the aim of the center to make science generally understandable and to encourage curiosity about physics and MINT subjects among young people.



■ promotional activity

CZS PRISMA PROGRAM

"Purchase and commissioning of a ceilometer to observe aerosol pollution and clouds"

Prof. Dr. Holger Tost, Johannes Gutenberg University of Mainz

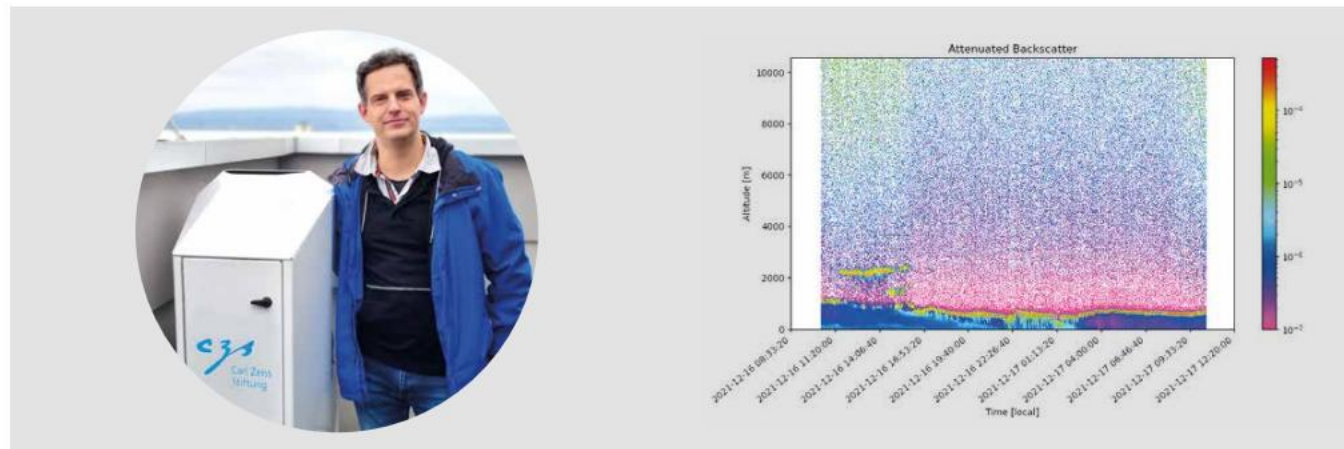
Professor Tost is endowed professor of the Carl Zeiss Foundation for environmental modeling in the climate system at the University of Mainz. His research work focuses on finding out to what extent clouds influence the chemical composition of the atmosphere, but also how atmospheric chemistry changes clouds and their properties. Atmospheric aerosol particles, among other things, play a role here.

With the help of the one acquired in the CZS Prisma program ceilometers, Professor Tost can measure aerosol particles and clouds at altitudes of more than 10 km

to lead. The data obtained from this is combined with model simulations. A more detailed analysis in combination with other measuring devices (near-ground particle measurements, webcam, other meteorological parameters) allows a comprehensive, better analysis of the clouds and aerosol concentrations at the Mainz site and

provides potential for numerous scientific sub research and student work. The device and the data collected with it are also used in teaching

Professor Tost used. In addition, the data, visualized by images, are made accessible to the public via a website.



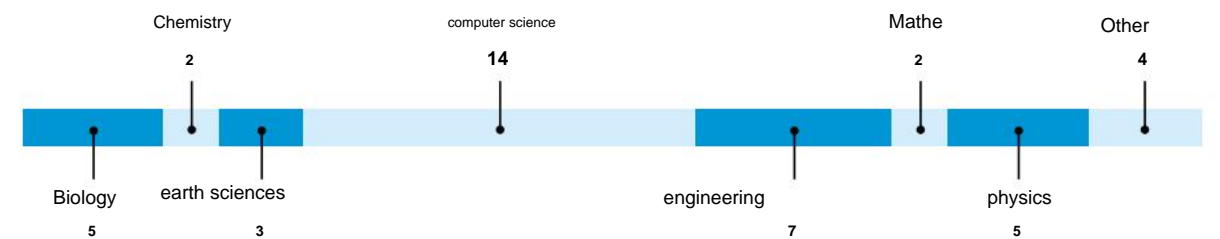
NEWLY APPOINTED PROFESSORS

Since 2007, the Carl Zeiss Foundation has approved funding for a total of 113 professorships in various programs, of which 42 are currently occupied and receiving funding. This makes it one of the largest sponsors of endowed professorships in Germany.

The majority of these professorships were and are fully funded as foundation or foundation junior professorships. In addition, appointments of German scientists from abroad were supported with additional funds in the GSO/CZS return program. Also with the 2021 new With the CZS fund for the appointment of international scientists, the foundation supports universities in creating a competitive offer for the appointment of top international researchers. Additional funds for dual-career measures can also be applied for.

The professors presented in alphabetical order on the following pages took up their post in 2021.

Which disciplines do the currently funded professors represent?



■ promotional activity



Jun.-Prof. Dr.
Katrin Amann-Winkel

Since October 2021 professor for solid state physics at the University of Mainz and group leader at Max Planck Institute for Polymer Research Mainz
funded by CZS funds for the appointment of international scientists

Professional career: •
Physics studies at the Technical University of Darmstadt • Doctorate at the University of Innsbruck
• further stop: Stockholm University

Research focus: Physical
properties of water: behavior of the H₂O molecule and its network under extreme conditions such as very low temperatures, high pressures and in connection with soft matter or restricted geometries.

The goal is to make predictions about how water interacts with other substances, from single salt molecules to large bio-molecular structures.



Prof. Dr.
Doris Aschenbrenner

Since April 2021 endowed professor for Digital methods in production at the Aalen University
funded in the endowed professorship program

Professional career: •
Studies in computer science and doctorate at the University of Würzburg
• further stations: Center for Telematics Würzburg, Co-founder of Awesome Technologies Innovations labor GmbH, professorship TU Delft

Research focus:
Development of an "Operator 4.0" in the digitized factory including human-robot interaction with augmented reality.



Prof. Dr.
Andreas Hejnl

Since October 2021 Professor of Zoology at the University of Jena and director of the Phyletisches Museum* (*1908 established with funds from the Carl Zeiss Foundation)
funded by CZS funds for the appointment of international scientists

Professional career: •
Studies in biology at the Free University of Berlin • Doctorate at the Humboldt University in Berlin
• Further stations: TU Braunschweig, University of Hawaii, Professor at the University of Bergen

Research focus:
Evolutionary research with a focus on marine animals. Current research on the question of how blood came about and how living beings manage oxygen transport and immune defense without blood.



Jun.-Prof. Dr.
Kristina Herfert

Since March 2021 junior endowed professor for Functional and metabolic brain imaging at the University of Tübingen
funded in the young talent program

Professional career: •
Study of molecular biology at the University of Saarland and the University of Tübingen
• Doctorate at the University of Tübingen • Further stations: Broad Institute of MIT and Harvard (Boston), Werner Siemens Imaging Center Tübingen

Research focus: Molecular,
metabolic and functional imaging of the brain in small animals using PET (positron emission tomography) and combined PET/MRT (magnetic resonance tomography). Development of PET tracers in neurodegenerative diseases.

■ promotional activity



Prof. Dr.
Marco Kuhrmann

Since September 2021 endowed professor for Agile system development at Reutlingen University [funded in the endowed professorship program](#)

Professional career: •

- Computer science studies at the University of Potsdam
- Doctorate and habilitation at the Technical University of Munich
- further stations: University of Southern Denmark, TU Clausthal, professorship at the University of Passau

Research focus: Hybrid

development methods, ie combinations of traditional and agile software and system development approaches for a fast but systematic approach to industrial software in critical, regulated domains such as medical technology, automotive and space.



Prof. Dr.
Gerard Pons-Moll

Since March 2021 endowed professor for continuous research Learning on multimodal data streams at the university Tübingen [funded in the CZS Perspectives program](#)

Professional background: •

- Computer science studies at the Technical University of Catalonia and at Northeastern University Boston
- Doctorate at the University of Hanover
- Further stations: Max Planck Institute for Computer Science Saarbrücken, there most recently as a research group leader for „Real Virtual Humans“

Research focus: Realistic

modeling of human protagonists in virtual worlds, both in terms of their appearance and behavior. For example, the human protagonists should be able to interact autonomously with the virtual world, continuously interpret the experiences made there and adapt their behavior accordingly.



Prof. Dr.
Norbert Schmitz

Since August 2021 Professor of Health Behavior, Prevention and Management at the University of Tübingen [funded by CZS funds for the appointment of international scientists](#)

Professional career: • Statistics

- studies and doctorate at the university Dortmund
- Habilitation at the University of Düsseldorf
- Further stations: University of Düsseldorf, Aarhus University, Erasmus University Rotterdam, Professur McGill University Montreal

Research focus: Public health:

influences of behavioral, environmental, biological, social, economic, cultural and psychological factors on health and disease in the population or in population groups; population-based measures for prevention, health promotion and medical care.



Prof. Dr.
Henrik Suss

Since September 2021 Professor of Algebra at the University of Jena [sponsored by CZS funds for international appointments scientists](#)

Professional career: • Studied

- mathematics at the Humboldt University in Berlin
- Doctorate at the BTU Cottbus
- Further stations: Lomonosov Moscow State University, University of Edinburgh, University of Manchester

Research focus: Algebraic

geometry with a special interest in algebraic torus actions, Kähler-Einstein metrics, K-stability and Cox rings of algebraic varieties and connections to symplectic geometry.

■ promotional activity



Prof. Dr.
Christina Zielinski

Since April 2021 endowed professor for infectious immunology at the University of Jena and head of the Department of Infection Immunology at the Leibniz Institute for Natural substance research and infection biology Jena [funded in the endowed professorship program](#)

Professional career: •

Medical studies at the Universities of Heidelberg and Harvard University and Duke University •

Doctoral thesis at Yale University • Further stations: Institute for Research in Biomedicine

Bellinzona, Charité Berlin, University of Tübingen,

Professor at the Technical University of Munich

Research focus: Regulation

of human T-cells (a group of white blood cells that support the immune system) with the aim of creating translational applications, e.g. for T-cell therapies in autoimmunity, infections and cancer.

NETWORKING MEETING OF THE CZS FOUNDATION PROFESSORS

For the fourth time on December 10, 2021

Networking meeting of the CZS endowed professors took place. 30 currently funded professors took part in the event, which was held digitally due to the corona situation. They were welcomed by Minister Theresia Bauer, Chair of the Foundation Administration.

In addition to a lecture on "Artificial Intelligence and Law" by Michèle Finck, CZS endowed professor at the Faculty of Law at the University of Tübingen, there was an intensive exchange on the subject of alumni.



FINANCES

annual accounts

PROFIT AND LOSS ACCOUNT for the period from October 1, 2020 to September 30, 2021

	2020/2021		2019/2020	
	TOR	TOR	TOR	TOR
1. Other operating income		3.851		620
2. Personnel expenses				
a) Wages and salaries	-885		-669	
b) Social charges	-152		-99	
		-1.037		-768
3. Depreciation of property, plant and equipment		-21		-9
4. Other operating expenses				
a) Expenses for funding programs	-40.005		-57.222	
b) Sachaufwendungen	-1.179		-1.084	
		-41.184		-58.306
5. Income from participations		40.000		95.300
6. Income from other securities and loans of financial assets		1.539		1.480
7. Other Interest and Similar Income		14		23
8. Depreciation of marketable securities		0		-176
9. Income taxes		-504		-747
10. Earnings after taxes / net profit for the year		2.658		37.417
11. Earnings Carry Forward		0		7
12. Withdrawals from Statutory Reserves		40.538		58.131
13. Allocation to statutory reserves		-49.155		-28.016
14. Withdrawals from other retained earnings		47.535		35
15. Allocation to other retained earnings		-539		-10.188
16. Retained Earnings		41.037		57.386

■ finance

BALANCE

SHEET as of September 30, 2021

Active

	30.09.2021		30.09.2020	
	TOR	TOR	TOR	TOR
A. FIXED ASSETS				
I. Tangible assets				
stationery		115		76
II. Financial investments				
1. Shares in affiliated companies	787.687		787.687	
2. Investment securities	75.682		89.651	
3. Other loans and other financial investments	130.141		80.606	
		993.510		957.944
		993.625		958.020
B. CURRENT ASSETS				
I. Other assets				
		905		333
II. Other securities				
		0		46.639
III. Cash on hand, bank balances				
		77.773		63.172
		78.678		110.144
		1.072.303		1.068.164

Passive

	30.09.2021		30.09.2020	
	TOR	TOR	TOR	TOR
A. EQUITY				
I. Establishment Capital				
		800.000		800.000
II. Retained Earnings				
1. Statutory Reserves	51.022		42.405	
2. Other retained earnings	51.858		41.468	
		102.880		83.873
III. retained profit				
		41.037		57.386
		943.917		941.259
B. PROVISIONS				
1. Provisions for taxes				
		0		73
2. Provisions for subsidy programs				
		38.702		46.875
3. Other Provisions				
		187		209
		38.889		47.157
C. LIABILITIES				
1. Liabilities for funding programs				
		89.474		79.733
2. Other Liabilities				
		23		15
		89.497		79.748
		1.072.303		1.068.164

■ finance

Interview with Hannes Banzhaf

Hannes Banzhaf has been with Carl-Zeiss since March 2018

Foundation active and responsible as deputy

Managing director of the finance and human resources departments und IT.

He studied economics at the University of St. Gallen studied and then at the London School of Economics

earned a Masters in Accounting and Finance. His professional career started at the BMW Group in the pension fund team and at Allianz Global Investors in the support of institutional clients. He then worked as an auditor at PwC in Zurich, most recently as a manager for audit mandates in the reinsurance sector.

Hannes Banzhaf is a Swiss certified public accountant, Chartered Financial Analyst (CFA) and certified foundation manager (DSA).

Mr. Banzhaf, the foundation capital of the Carl Zeiss Foundation consists exclusively of the 100% shares of the foundation companies Carl Zeiss AG and SCHOTT AG. Regular income from the foundation results from annual dividends from the two companies, from which the sponsorship activities and administrative costs are financed. Does that mean that if the companies are doing badly, the foundation is also doing badly?

Initially, lower dividends only reduce the possible future funding volume that we as a foundation can approve. Even in the event of a decline or non-payment of dividends, we are able to service the foundation's existing multi-year funding obligations and administrative costs. For this purpose, among other things, the foundation held financial investments with a total market value of EUR 289 million as of the end of September 2021. Of this, 78 million euros are invested in the money market and are available for prompt disbursements of funding allocations. For the remaining part of the financial assets, a longer-term investment is made in accordance with the investment guideline with the aim of real value retention.

This is certainly not an easy task at the moment. How do you assess the current situation on the capital market?

On the one hand, safe investments do not bring any nominal returns. At the end of September 2021, the interest rate on the 10-year federal bond was -0.26%. Taking into account inflation, which is currently 5.2% (Statista, November 2021 compared to the same month last year), it is obvious that a bond portfolio can no longer generate real value retention, even if typical credit risks are included (corporate bonds, high-yield bonds, emerging market bonds).

On the other hand, the stock market now points a high rating. A number of relevant fundamental valuation ratios for the global stock market are significantly above the historical average.



Some capital market observers even consider parts of the stock market, such as the USA and some technology stocks, to be overvalued, which will in all likelihood mean that future stock returns will be lower than in recent years.

How do you meet these challenges, especially with regard to your investment strategy?

We rely on a broadly diversified investment portfolio and the collection of a large number of risk premiums as well as complexity and illiquidity premiums on the capital market. The diversification takes place in particular via the following elements:

- Strategic asset allocation: diversification across twelve primary asset classes
- Diversification via sub-asset classes and products: Additional diversification within the asset classes with the help of risks and products that have the lowest possible correlation. For example, we distribute our investments in the real estate asset class across different sectors of the real estate market (office, retail, logistics, etc.).

• Diversification across regions: The portfolio is fundamentally global, albeit with an overweighting of the Europe region and the euro currency, since our promotional obligations are in the euro currency.

• Diversification across stocks: Most investments we do in the form of institutional mutual funds with a large number of underlying individual titles. With direct investments in promissory note loans, we limit the exposure to individual issuers.

After all, we pay attention to the lowest possible costs and usually negotiate the fees with the asset managers individually under the standard conditions.



finance

What is your current asset allocation?

In comparison to the previous year, we have reduced the proportion of traditional liquid listed investments (equities and bonds) from 46% to 33% in order to optimize the portfolio over the long term. This reduction was mainly in favor of alternative investments.

We believe that these types of investments are better. Have risk/return ratios and due to the variety of different risks an essential

enable greater diversification and thus a more optimal portfolio. In our estimation, the complexity and illiquidity premium of alternative investments is at least 1-1.5% per year. In addition, the tangible assets within the alternative investments offer good protection against inflation. In addition, illiquid investments are less exposed to short-term fluctuations in valuations on the capital market, which are often irrationally large from a fundamental point of view.

Are there other goals that you are pursuing in your investment strategy in addition to the real value retention of long-term financial assets?

Our foundation is oriented towards the common good.

That is why we pay particular attention to ensuring that our financial investments have a positive non-financial impact. When it comes to financial investments in listed shares and bonds, seven out of eight of our selected funds (93%) have an Art. 8 classification according to the new Sustainable Finance Disclosure Regulation (SFDR).

This means that a large proportion of our liquid investments take ecological or social criteria into account.

With the (semi-)illiquid financial investments in the so-called private markets, we pay attention to the highest possible positive impact and consider this to be particularly relevant in this segment, since direct cash flows into projects take place there through investments. According to the SFDR classification, our Private Markets segment has an Art. 9 fund share of 18%. That means: A relevant share

Our Private Markets investments are dedicated impact funds with a targeted sustainability effect ("dark green").

There are also a number of other financial investments which, although they cannot (or cannot) be classified using the SFDR, they are still sustainable in our opinion. Examples of this are acquired cooperative shares in GLS

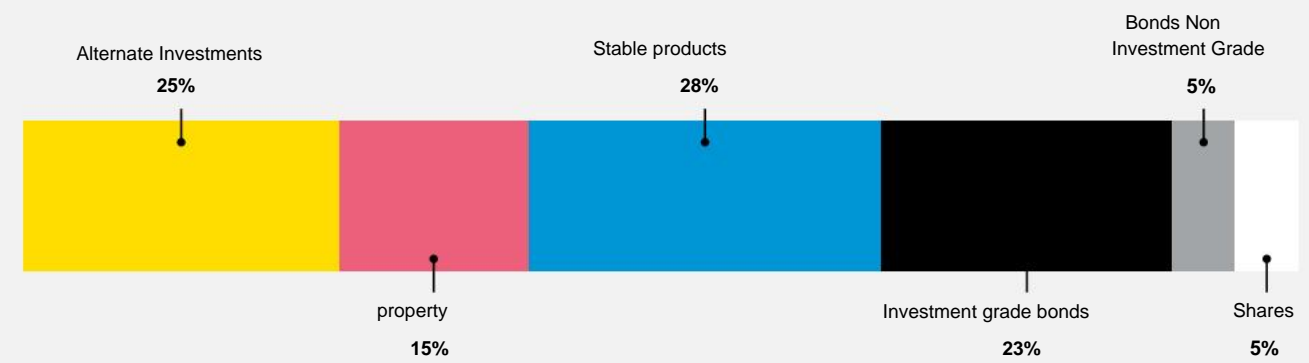
Bank and a promissory note loan to the Thüringer Aufbaubank.

We place a special focus on reflecting our key issues on the financial investment side.

For example, in 2021 we invested in a private debt fund for pre-financing and interim financing of a project portfolio with a clear focus on renewable energies and sustainable infrastructure, with a view to the second key issue of resource efficiency.

Overall, the share of all financing for energy generation from renewable energies for our Private Markets segment is 14%.

FINANCIAL INVESTMENT PORTFOLIO



Alternate Investments	25%	Investment grade bonds	23%
Absolute Return/Alternative Credit	9%	Corporate Bonds Europe	11%
Private Debt	8%	Corporate Bonds Global	11%
Renewable Energy/Infrastructure	6%	Non-Investment Grade Bonds	5%
Private Equity	2%	Emerging Market Bonds States	3%
property	15%	Global High Yield	2%
Stable products	28%	Shares	5%
Promissory note loans to development aid funds	9%	Equities Europe	2%
Insurance and capitalization products	9%	Aktien Global (Multi-Asset Fund, Equity > 50%)	2%
Promissory note loans to financial institutions	9%		
Cooperative shares GLS Bank	1%		

IMPRINT

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The Carl Zeiss Foundation is committed to the goal of sustainability. For activities of the office (business trips, office supplies, etc.), 100 tons of CO2 were therefore compensated by a donation to atmosfair for 2021.

The formulations in this report basically mean the members of all genders. To improve legibility, only the masculine form is used.

