

Get ↗ Smart

#4

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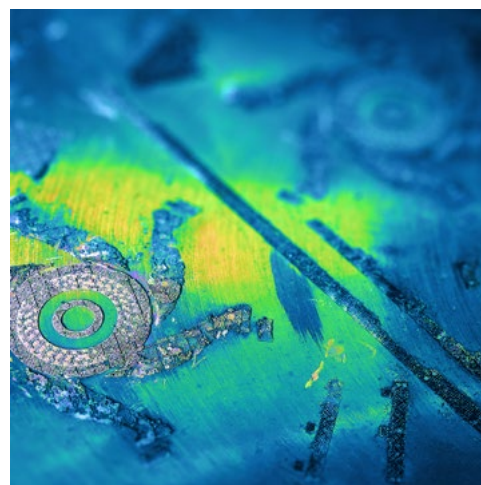
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*A color edited image of a 3D printer platform
after removing the printed part made of metal.*

GetSmart #4

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In today's globalised world, continuous progress is a key success factor. The Pilsen region, with its long tradition of industrial production and its major universities, recognises the importance of investment in research, development, and innovation. This magazine focuses on supporting and promoting those areas that can be a catalyst for development in the region.

The University of West Bohemia in Pilsen and the Faculty of Medicine at Charles University in Pilsen are centres of education and research that attract talented students, teachers, and scientists from all over the world. Research and development conducted at the university is often the subject of cooperation with business and industry, leading to innovation and the creation of modern technologies that strengthen the regional economy.

Cooperation with Bavaria, our neighbouring German state, offers further opportunities for growth and development in research and innovation. Through this cooperation, both regions can share experience, knowledge, and expertise, leading to job creation, better education, and increased competitiveness.

Sustainability is another keyword that should be at the heart of our focus. Investments in research and development in the field of green technologies and environmentally friendly solutions are not only beneficial for the environment, but also for the economy of the Pilsen Region. Supporting such innovations can be a significant stimulus for the sustainable development of the region.

Promoting and investing in research, development and innovation at all levels is necessary for the Pilsen Region to become a real catalyst for development. From education to industry, from universities to businesses, we need to work together to develop our region into a successful, sustainable, and competitive region in the global marketplace.

doc. Ing. Milan Edl, Ph.D.
Regional Manager for RIS3 strategy
in the Smart Accelerator project
of the Pilsen Region

Research, Development, and Innovation as a Catalyst for the Development of the Pilsen Region



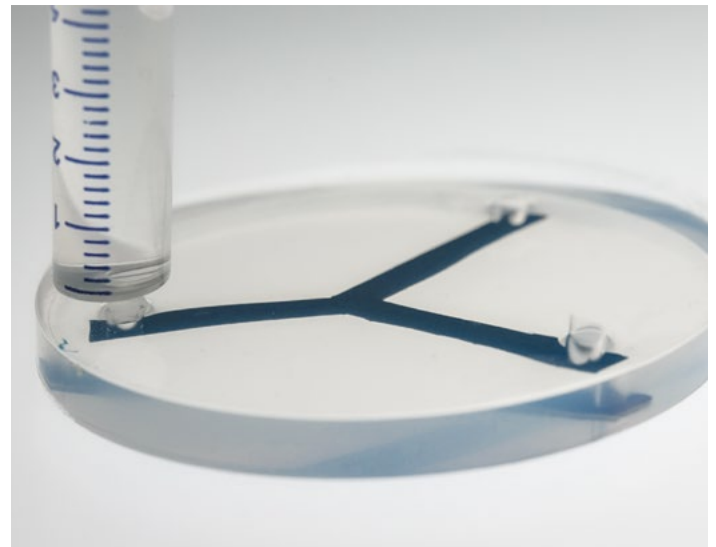
Must-read news from the Region



Since March, the University of West Bohemia in Pilsen has had a new rector, the sixth in a row. It is Prof. RNDr. Miroslav Lávička, Ph.D. He took office on 1st March 2023.



The winning project of the Transfera Technology Day 2022 competition was a magnetically controlled microfluidic pump developed at the Faculty of Electrical Engineering of the University of West Bohemia in Pilsen. The pump, designed for handling fluids on an exceedingly small scale, contains no moving parts, is simpler in design, many times lighter and smaller. Its base is a thin multilayer structure made of magnetic elastomer. The fluid pumping is provided by a magnetic field. The pump could be applied mainly in medicine or in various space projects.





In February, the gates of the new technology park TechTower, which was created by the reconstruction of the former Světovar brewery in Pilsen District Slovany, were officially opened. The unique space serves innovators, technology enthusiasts, startups, and students through the activities of SIT Port. But it is also open to lovers of good coffee and views thanks to a freely accessible café located on the 6th floor of the building.



The Pilsen-based startup JALUD Embedded in 2022 successfully passed the incubation programme prepared in the Smart Accelerator project of the Pilsen Region II. The technology startup succeeded in the final round of the Italian-Czech competition FUTURE OF CITIES & COMMUNITIES, which was attended by ten Czech startups and four Italian ones. The JALUDs were selected in the special category “Best AI startup”, which is their ticket to the biggest international startup festival WMF – We Make Future in Rimini in June, where they represented #Pilsen and the whole Czech Republic.

Even medical education cannot do without innovation. To practice procedures in emergency and intensive care medicine – resuscitation, intubation, cannulation and more – the Faculty of Medicine of Charles University in Pilsen has a Simulation Centre. Equipped with advanced simulators (dummies), the centre is a facility where students can practice their skills in a safe and controlled environment without risk to patients. Here they learn how to react to various situations that could be incredibly stressful and dangerous in real life. At the same time, they practice communication both with the patient and within the healthcare team. Students are given the task of handling a model situation, their progress is recorded on camera, and the teacher then gives feedback to the medics during a debriefing session. The simulation centre in Pilsen is one of the most advanced in the Czech Republic.



About the Support of Talented Pupils in the Pilsen Region

Mgr. Ludmila Novotná has been involved in youth support for her entire professional career at the Pilsen Regional Authority, which has been a really long time, almost 15 years.

What is meant by an exceptionally gifted pupil and how is the support of talented pupils in the Pilsen Region actually carried out? What projects are aimed at these pupils and where can I find more information about them? Not only that was revealed in the interview by Mgr. Ludmila Novotná from the Department of Education, Youth and Sport of the Pilsen Regional Authority.



Ms. Novotná, how long have you been involved in youth support projects and how did you get into it?

I have been involved in youth support for my entire professional career at the Pilsen Regional Authority, which has been a really long time, almost 15 years. When I joined the Department of Education, Youth and Sport, my responsibility included competitions and leisure activities in leisure education facilities. I am in charge of organising district and regional rounds of knowledge competitions for gifted and

exceptionally gifted pupils in primary and secondary schools. I also participate in the organization of the national rounds of these competitions, where the best from all 14 regions of the Czech Republic advance. This June, we organised a national High School Vocational Activities Showcase in our region, after nine years. Almost 300 competitors from all parts of the Czech Republic and 100 judges came to Pilsen. They competed in 18 disciplines. Last year we successfully organized the national round of the Chemistry and Physics Olympiad.



Last year the Pilsen Region Authority successfully organized the national round of the Chemistry and Physics Olympiad.

What shall we imagine by the term leisure education facilities?

Most people know them as leisure centres or children's and youth homes. We have 21 of them in the region. They are founded by municipalities; our region and one is a church-run facility. Leisure centres provide informal education focused on various areas of activity, mainly for children and young people in the form of interest groups, they also prepare camps and recreational activities, various events, and performances, some of them hold district rounds of competitions, work individually with gifted pupils, and also offer educational programmes for schools.

The Pilsen region has been involved in talent support for a long time. What has been worked on in recent years, what has been achieved? Has the form of support changed over time?

It all started with the decision of the Ministry of Education, Youth and Sports that the regions, or regional authorities, would provide district and regional rounds of school competitions and Olympiads. The Pilsen region wanted to offer successful pupils some kind of extension beyond the already

existing system of school advancement competitions. We feel that gifted pupils do not receive much support and that funding is directed more towards pupils with specific educational needs on the other side of the spectrum. We are aware that gifted and exceptionally gifted pupils also need and deserve support. That is why we prepared a project for the Education for Competitiveness Operational Programme at the Ministry of Education in cooperation with the School Services Centre Pilsen. The project called "Support for Talented Pupils in the Pilsen Region" was at that time, and in fact continues to be, unique in the country on such a large scale. In any case, it was approved in its entirety and since 2010 we have been drawing on European and state funds for it. During and after the sustainability period, the Pilsen Region has been supporting the project from its budget. Every year during the summer holidays there are specialised camps and courses for the best participants in regional and higher rounds of competitions and Olympiads. However, pupils who do not want to participate in competitions (non-competitive types of pupils, researchers) but are identified by the school counselling centre as exceptionally gifted (IQ 130 and above) also have the opportunity to participate.

Since 2012, gifted pupils who excel in their skills (craft camps) have also been involved in the project. Additional programmes and activities that we run in our region for the gifted are the subsidy programme for secondary schools, testing of the cognitively gifted in the 5th grade of primary schools, support for extracurricular activities, technical and other competitions announced by the Pilsen region, and the competition for the most successful school in competitions.

How do such camps and courses work? How many gifted pupils have participated in them since 2010?

The programme of the week-long off-site camps and courses includes expert lectures, practical exercises and measurements, laboratory experiments and practice in specialised classrooms and plants, field investigations, interesting excursions, conversations with native speakers, mock language exams, board games, individual tuition in music courses, presentations at concerts and deepening of manual skills in crafts. It brings together pupils performing exceptionally well in their areas of interest, i.e., science, social studies, languages, music, and crafts. Teachers at the camps are educators working at universities, grammar schools and language schools. Comprehensive psychological testing of the students is an essential part of the whole project, the results of which have the chance to influence the subsequent development of the participants through the family, but also the teachers. The test battery consists of tests of creativity, innate intellect, and verbal intelligence. Over the history of the project (12 years), 2,407 pupils have participated in the vocational camps and courses so far. One of them was Miroslava Novoveská from the Masaryk Grammar School in Pilsen, who won three medals at the International Chemistry Olympiad: gold (2018, Czech Republic and Slovakia), silver (2019, France) and bronze (2017, Thailand). In addition, she was a member of our silver team at the 2016 EU Science Olympiad. She participated in our camps, namely Chemistry and History. She also excelled in physics. She is now studying Natural Sciences at the University of Cambridge. Since last year she has been specialising in Chemistry. You can see Mirka in the project video report.

As part of the Talent Support Project, the website was created which is now being changed as part of the Smart Accelerator III project, it will be a portal with much broader functionality, is that right? What can talented pupils, their parents and people involved in talent support find there?

The project website was created in 2010, so we want to modernize it and make it an interactive and attractive portal for talented and active pupils. They will have the opportunity to choose activities that match their interests. There will be a section with a database of activities and individual offers. Companies and public institutions will offer student internships and excursions. Our ambition is also to promote the achievements of exceptional students in society, to support developing a community of talents, and to improve the awareness of teachers and parents. Here we also want to open the topics of mental health and the issues that come along with the difference of the gifted from the rest of society, such a psychological window, a counselling room. The content that has already been created on the existing website will be maintained. By that I mean sections for gifted students, teachers, and parents. Here you will find information about camps and courses, pupils' achievements, their results, test reports, links to competitions, a comprehensive photo gallery and a video report created for the ten-year anniversary of the project. Our upgraded website and portal will serve as a principal place where talents can find all the information they need and network with each other.





The programme of the week-long off-site camps and courses includes expert lectures, practical exercises and measurement and laboratory experiments.

In December 2022, the Pilsen regional council approved the budget for 2023, which again includes funding for the project "Support for talented pupils in the Pilsen region". How much money are we talking about?

For this project, the Pilsen region has released CZK 2.2 million for 2023. CZK. The Region also provides financial support to gifted pupils or their schools through other programmes.

If we are talking about gifted pupils, what percentage are we talking about?

Talent is often perceived as faster development compared to peers, as the existence of internal conditions for achieving excellence in an activity. Giftedness is of several kinds, from motor, to artistic and practical, to intellectual (rational, cognitive), and the diverse types of giftedness may overlap in one person. The intellectually gifted

have high intellectual potential and achieve extraordinary intellectual abilities (verbal, numerical, spatial, memory). A distinction is made between the gifted and the exceptionally gifted. The gifted usually learn quickly and easily, their prevalence in society is about 10 to 15 %, and they score above 120 in intelligence tests. The exceptionally gifted account for 2 to 3 % of the population, and their IQ tends to be above 130.

Would you know what percentage of these pupils actually develop their talent?

I dare not say. At the camps and courses, we get this information from questionnaires from parents of gifted pupils, but we do not cover all of them. The vast majority of our participants attend special interest groups, sports clubs, and primary art schools where they develop their abilities, skills, and interests.

Giftedness is of several kinds, from motor, to artistic and practical, to intellectual (rational, cognitive), and the diverse types of giftedness may overlap in one person.

Can we generally say that it is the pupils who excel mainly in technical or scientific fields, or are there also children with a focus on the humanities or future creatives, for example?

Gifted and exceptionally cognitively gifted pupils appear most often at science camps (mathematics, physics, astronomy, chemistry, biology). We also have them at social science camps (most of them among geographers), language camps and music courses, but not to such a considerable extent. I would look for the creatives mentioned among the language and music students. Many of them are multi-talented. For anyone interested in the testing results, I recommend looking up the reports on the project's website. They are publicly accessible.

I was impressed to see that there are meetings for parents of gifted children. What do these meetings look like?

The questionnaires that parents hand in at the camps show that more than a third of parents are interested in seminars concerning gifted pupils. Last year, we took an online approach and the most frequently chosen topic was mental hygiene for the gifted. The seminar was introduced with a comprehensive insight into the topic. The second part was devoted to specific methods and practices – both formative and educational, school and leisure ones – to encourage the further development of giftedness. The third part focused on techniques to care for the mental well-being of the gifted child. The seminar is available online.

It seems to me that working with the parents of talented pupils can be absolutely crucial, without them things are difficult...

I definitely agree with that idea. However, I would not see our attempts as systematic work with parents yet. We would like to work towards that in time.



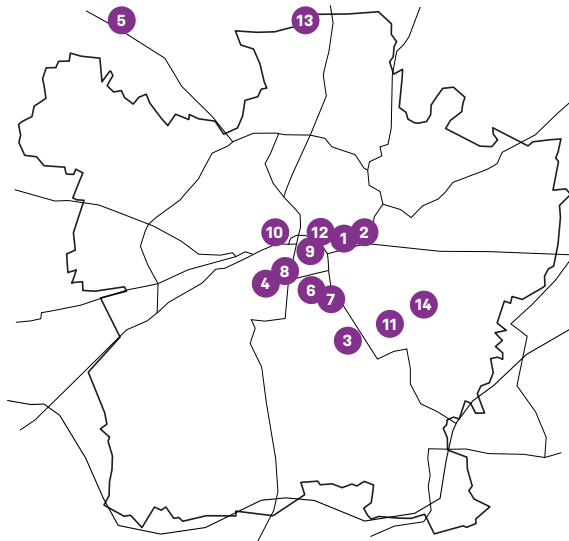
Even in small villages and towns, the talented are being treated well.

Would you confirm the premise that talented children in larger cities can develop their talents quite easily, but children in villages or small towns can be underprivileged...

It is understood that in a larger city there are more opportunities. But even in small villages and towns, the talented are being treated well. I have experienced first-hand what they can do with small children, for example, in the kindergarten in Štěnovice. This kindergarten creates a stimulating environment and conditions for the education of gifted children, promotes talent, implements activities to stimulate children's intellectual abilities, and has teachers trained in the Mensa NTC Learning method. It is a system

of teaching children's brain with the help of motions and activities. I would also like to mention the Holoubkov Primary School and Kindergarten, which uses the Gardner's theory of multiple intelligences method specifically for gifted pupils in kindergarten. In the primary school, the teachers then use the method of developing metacognition. The pupils are given problem-solving tasks, multi-day projects and multi-level assignments. They are encouraged to be independent, collaborative, and self-evaluating. Logical thinking and board game clubs are offered at the school. Both school directors pass on their experiences across the country. The results of their work are sought out by colleagues as examples of good practice.

Come for a Tour!

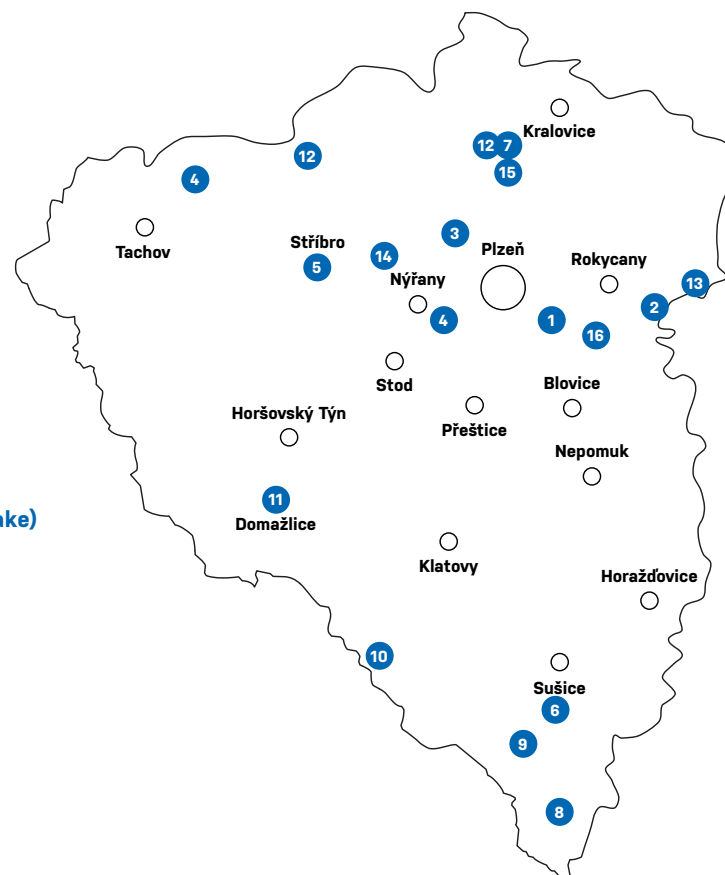


Pilsen

- 1 Pilsner Urquell Brewery
- 2 Gambrinus Brewery
- 3 Pilsen Water Treatment Plant
- 4 Techmania Science Center, located in the historic factory halls of Škoda Works'
- 5 ZEVO Incineration Plant Chotíkov
- 6 Cultural Space DEPO2015
- 7 Cultural Space Papírna Plzeň (Paper Mill)
- 8 Cultural Space Moving Station
- 9 František Křižík's original arc lamp at the Museum of West Bohemia
- 10 Kalikov Mill
- 11 TechTower
- 12 Museum of the Škoda Family
- 13 Medieval Grease Furnace Plzeň
- 14 Liqueur Company Stock Plzeň-Božkov

Pilsen Region

- 1 Bohemia Sekt Winery, Starý Plzenec
- 2 Water Hammer Mill Dobřív
- 3 Kaolin Mine Nevřeň
- 4 Mining Museums at Planá and Zbůch
- 5 Outdoor Mining at Stříbro
- 6 Glassworks Annín in Šumava
- 7 Centre of Building Heritage in Plasy
- 8 Vchynice-Tetov Navigation Canal
- 9 Čeňkova Pila Hydroelectric Power Plant
- 10 The Hydroelectric Power Plant Černé jezero (Black Lake)
- 11 Cultural centre – Domažlice Brewery
- 12 Railway Museum Bezdrůžice
- 13 Strašice Transport Museum
- 14 Pňovany Bridge
- 15 The Kaznějov Kaolin Quarry
- 16 Pouska's Mill in Mešno



Research & Development Data for the Pilsen Region

Basic Information about the Region

580 581

population as of 1. 1. 2023

43,1

average age of the population

10,6 %

university students in the region
are foreigners

30 %

of the region's population
is concentrated in Pilsen

14,5 %

residents of the region with university
education

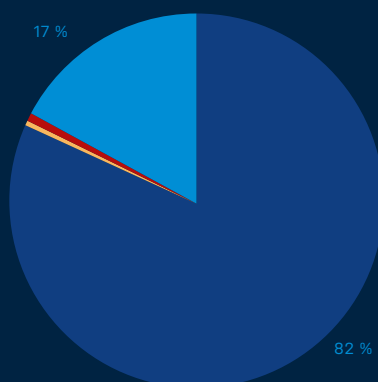
Expenditure on research and development

• R&D expenditure reached in 2021:
CZK 5.6 billion (CZK 4.9 billion in 2020)

• Growth of R&D expenditures in the region
increased compared to the previous year

• Up to **82 %** of total R&D expenditure is
concentrated in the business sector,
17 % in the higher education sector

• In 2021, business sector R&D expenditure
reached **1.5 % of GDP** (the 3rd highest
share among regions in the Czech Republic)



**R&D expenditure by sector of
implementation in the Pilsen
region in 2021**

- Business Sector
- University Sector
- Government Sector
- Private, non-profit Sector

Corporate Research and Development

• Information technology (ICT) and
biotechnology play an important role in
research and development in the region

• In the field of Biotechnology, a total of
131 million CZK was spent on R&D in regional
enterprises in 2021, which represents **6.8 % of
the total 2 billion CZK** spent on R&D in the field
of Biotechnology nationwide (4th place)

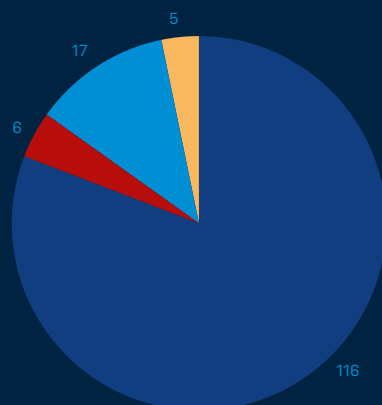
• In the field of ICT, a total of CZK 1.1 billion
was spent on R&D in regional enterprises
in 2021, which represents **4.3 % of the total
CZK 26 billion** spent on R&D in ICT in the
Czech Republic (3rd place)

R&D centres

- 2013: 107 workplaces, 2021: **144** workplaces
- The number of workplaces with the main economic activity Research has slightly increased in recent years to **12** in 2021

R&D centres by sector of implementation

- Business Sector
- University Sector
- Government Sector
- Private, non-profit Sector

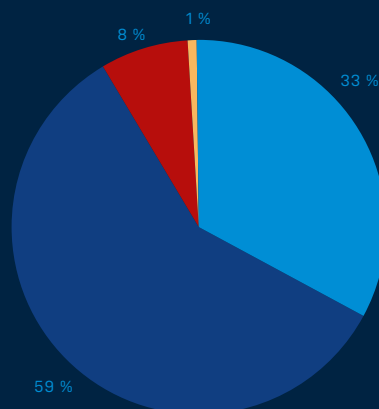


Research and development results

- In 2021, **20** patents were granted to applicants from the Pilsen region
- In 2021, a total of **159** valid patents were registered in the Pilsen region to applicants from the Czech Republic, most applicants were from companies (**58 %**), **33 %** from public universities and **8 %** were natural persons

Pilsen region

- Business
- Public Universities
- Private Individuals
- Private, Non-Profit Sector
- Public Research Institutions



R&D staff

- **3700** (respectively 3686 persons). There was a slight increase in R&D employment between 2020 and 2021 (by 90 persons).
- **6,4** R&D employees per 1000 inhabitants. In an inter-regional comparison, the region has the 3rd highest proportion of R&D employees calculated per 1,000 inhabitants of the mid-year population.
The national average: 8.1 R&D employees per 1000 inhabitants.
Prague: 23.9 R&D employees per 1000 inhabitants.
South Moravian region: 14.8 R&D employees per 1000 inhabitants

Women in R&D

- Significant increase in the number of female researchers in the region: 252 (in 2016), **333** female researchers in 2021
- share of female researchers in the total number of researchers: **14 %**

2nd lowest share of female researchers in inter-regional comparison
National average: 28 %

University students

Between 2018 and 2022, the number of students at the University of West Bohemia in Pilsen increased by **7 %**. More than **13,400** students study at the University of West Bohemia in Pilsen and the Faculty of Medicine of Charles University in Pilsen

Students of technical disciplines

17 % of university students living in the Pilsen region study technical disciplines
Zlín region: 18 %
South Moravian region: 16 %
Prague: 10 %



Biomedicine and Technology in Healthcare

The domain of the specialisation Biomedicine and Technology in Healthcare is based mainly on the long-term research priorities of the Biomedical Centre of the Faculty of Medicine of the Charles University in Pilsen and the Faculty of Applied Sciences of the University of West Bohemia in Pilsen and its research centre NTIS. These are the fields with a high application potential on a global scale and on a regional level, where the University Hospital Pilsen is a key partner. The perspectives of these fields are mostly linked to global megatrends related to the ageing population and the rise in standards of healthcare services. These medical disciplines expand the technological competences that are based on the successful cooperation between the Biomedical Centre and technically oriented faculties and research institutes of the University of West Bohemia in Pilsen (e.g., FAV, NTC, FST) and represent a potential for other research institutes and the commercial sector.

Areas of science, research, and innovation topics

- oncology
- infectious diseases and antibiotic resistance
- multidisciplinary medicine
- reproductive medicine
- preventive medicine
- organ replacement
- medical diagnostics
- assistive technologies, new forms of public social and health services
- materials in healthcare
- the use of computer simulations and computer modelling in medicine
- advanced medical technologies

Examples of research organisations

Biomedical Centre of the Faculty of Medicine of Charles University in Pilsen, Faculty of Medicine in Pilsen, University of West Bohemia in Pilsen (Faculty of Applied Sciences, Faculty of Applied Sciences-NTIS, Faculty of Health Care Studies)

Examples of enterprises

AbCheck s.r.o., Bioptická laboratoř s.r.o., Embitron s.r.o., Fakultní nemocnice Plzeň, Genetika Plzeň s.r.o., Cheirón a.s., NATALART s.r.o., Mulačova nemocnice s.r.o., Nemocnice PRIVAMED a.s., nemocnice zřizované Plzeňským krajem, Ofta s.r.o., Otto Bock ČR s.r.o., Protetika Plzeň s.r.o.

Responsible developer

Ing. Jana Klementová, consultant, guarantor of the Biomedicine and Technology in Healthcare Domain of Specialization of Smart Accelerator for the Pilsen Region III

Expert guarantor

Prof. Milan Štengl, M.D., Ph.D., Scientific Director of the Laboratory of Experimental Cardiology at the Biomedical Centre of the Faculty of Medicine of Charles University in Pilsen.



Domains of Specialization of the Pilsen Region

Legend:

ZČU University of West Bohemia

FAV Faculty of Applied Sciences

FAV-NTIS New Technologies for the Information Society (NTIS), a research centre of the Faculty of Applied Sciences (FAV)

FEL Faculty of Electrical Engineering

FEL-RICE Research and Innovation Centre for Electrical Engineering Faculty (FEL)

FST Faculty of Mechanical Engineering

FST-RTI Regional Technical Institute – Research Centre of the Faculty of Mechanical Engineering

FZS Faculty of Health Care Studies

NTC New Technologies – Research Centre

LF v Plzni UK Faculty of Medicine in Pilsen – Charles University



Smart Mobility

The aim of the Smart Mobility domain is to support research, development, and innovation activities in the Pilsen region on the topic of transport as an integrating element of society with a significant socio-economic effect, especially in terms of sustainable development, increasing safety, efficiency, and fluidity of transport. The main driving forces for the transformation in the sectors of application are the reduction of the negative impact of transport on the environment, the use of progressive materials and technologies including digital and artificial intelligence, the development of new and alternative drives and powertrains and the development of electromobility. Opportunities for the use of automated and autonomous vehicles and unmanned systems, intelligent transport systems, cooperative intelligent transport systems and new modes

of transport involving a broader concept of mobility as a service are expanding. The Pilsen region, and in particular its centre – the city of Pilsen – is an ideal place for demonstrating and testing new means of transport and systems, thanks to its industrial tradition, research capacities and developed public transport system.

Areas of science, research, and innovation topics

- new concepts for transport vehicles, drives and systems
- infrastructure for electromobility
- autonomous mobility
- transport monitoring, control, modelling, and planning

Examples of research organisations

University of West Bohemia in Pilsen (Faculty of Applied Sciences, Faculty of Applied Sciences-NTIS, Faculty of Electrical Engineering, Faculty of Electrical Engineering-Research and Innovation

Centre for Electrical Engineering, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering-Regional Technological Institute, New Technologies-Research Centre)

Examples of enterprises

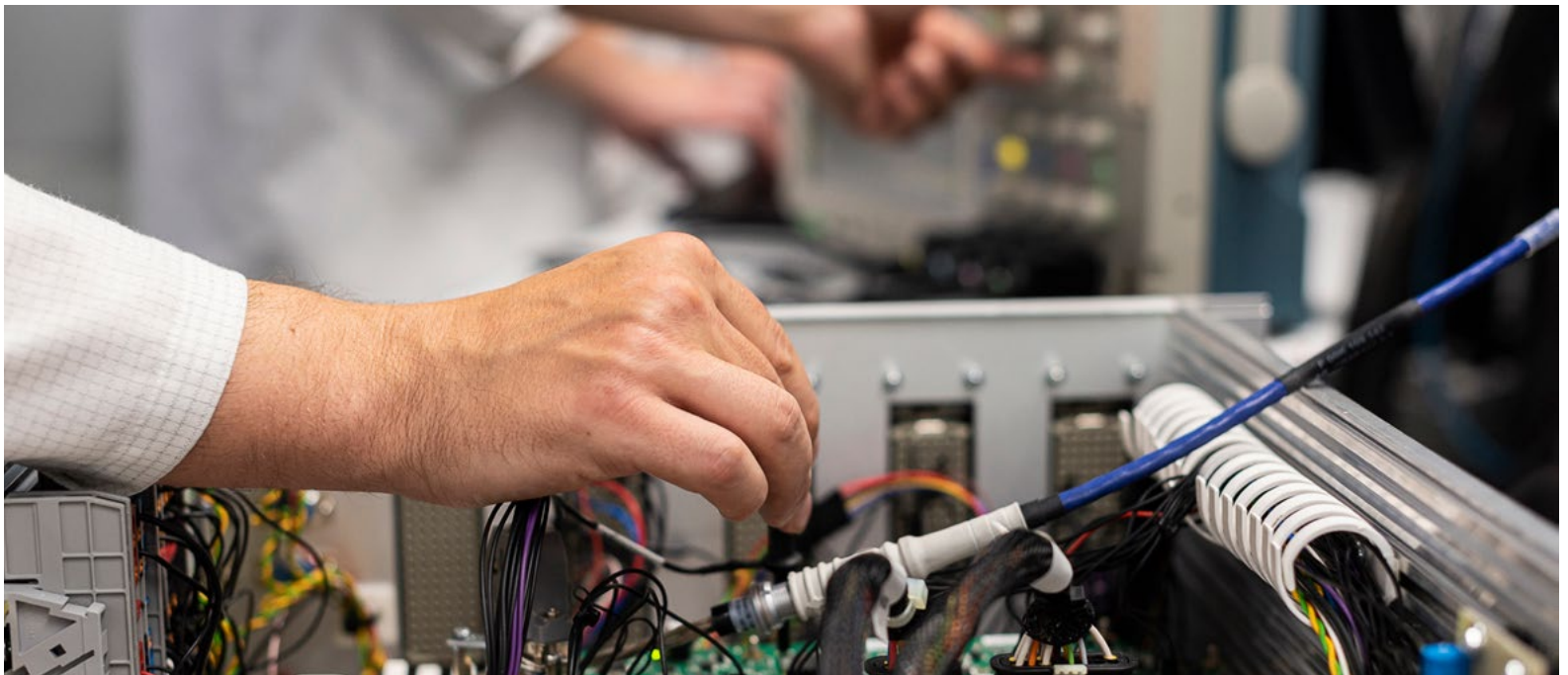
AKKA Czech Republic s.r.o., Compteq.io s.r.o.; EDIP s.r.o., InnoConnect s.r.o., Klastř Chytrý Plzeňský kraj z.s., Omexom GA Energo s.r.o., Plan4all z.s., Plzeňské městské dopravní podniky a.s., POVED s.r.o., Správa informačních technologií města Plzně p.o., ŠKODA Electric a.s., ŠKODA Transportation a.s., Wikov Gear s.r.o., ZAT a.s., ZF Engineering Plzeň s.r.o

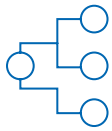
Responsible developer

Jan Naxera, consultant for the economic development of the Region, Regional Innovation Strategy of the Pilsen Region Project Developer

Expert guarantor

Prof. Ing. Zdeněk Peroutka, Ph.D., Dean of the Faculty of Electrical Engineering at the University of West Bohemia in Pilsen and Director and Head of the RICE R&D Centre





Smart Manufacturing Systems

The domain of the Smart Manufacturing Systems specialisation is based on the nature of the region, where the manufacturing industry has a decisive share in the regional economy. Therefore, the domain aims to support the development of capacities and cooperation in research, development, innovation in the region to take advantage of trends related to Industry 4.0 or 5.0 in key sectors of the region, especially manufacturing companies. The region has a long tradition of higher education and research in this area. Thus, through activities in research, development, and innovation, it is possible to contribute to the restructuring of production, higher labour productivity and thus global competitiveness. Among other things, the aim is to use R&D&I capacities to develop more economical, greener, more energy-efficient production processes and new manufacturing models in the context of the trend towards reducing the consumption of primary resources and reducing energy and material dependence.



Areas of science, research, and innovation topics

- sensors and sensor systems
- advanced diagnostics and predictive maintenance
- smart control of production processes
- robotics, collaborative systems
- embedded intelligence, prediction using data analytics
- virtual and augmented reality
- big data, data analytics and machine learning
- models, management, trends
- modular IVS and integration of IVS components
- IVS cyber and energy security
- adaptable solutions (customization) of services and products
- environmentally friendly and energy-efficient production processes

Examples of research organisations

COMTES FHT a.s., Research and Testing Institute Plzeň s.r.o., University of West Bohemia in Pilsen (Faculty of Applied Sciences, Faculty of Applied Sciences-NTIS, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering-Regional Technological Institute, Faculty of Electrical Engineering, New Technologies-Research Centre)

Examples of enterprises

Aimtec a.s., Compteq.io s.r.o., Doosan Škoda Power s.r.o., GTW BEARINGS s.r.o., Klastr Mechatronika z.s., Konplan s.r.o., Murrelektronik CZ, spol. s r.o., Safran Cabin CZ s.r.o., Siemens s.r.o., STREICHER, spol. s r.o., ŠKODA Electric a.s., Wikov Gear s.r.o., ZAT a.s., ZF Engineering Plzeň s.r.o.

Responsible developer

Bc. Kateřina Podaná, Regional Innovation Strategy of the Pilsen Region Project Developer, Klastr MECHATRONIKA, z.s. Executive Director

Expert guarantor

Doc. Ing. Milan Edl, Ph.D., Vice-Dean of the Faculty of Mechanical Engineering at the University of West Bohemia in Pilsen and Regional Manager for RIS3 strategy in the Smart Accelerator project of the Pilsen Region



Modern Power Engineering

The Modern Power Engineering domain builds on the significant capacities of research organisations in the region as well as corporate research and development. There is a long tradition in the Pilsen region in the field of power engineering, in heavy-current electrical engineering, in the development of control and regulation systems and in other areas related to energy safety or energy production and distribution in general. The common goal of interdisciplinary collaboration in research, development and innovation is to ensure affordable energy through reliable, flexible, low-emission and sustainable energy. The domain responds to the current and anticipated development of the energy mix in the Czech Republic and consequently also in the Pilsen region, where the economy is facing, among other things, a critical shortage of energy resources and increasing costs for their provision and distribution. At the same time, research, development, and innovation activities need to respect the requirements of environmental protection standards and bring innovative solutions in the corporate or public sphere. The domain topic permeates all sectors of the economy and is linked to other domains of specialisation in research, development, and innovation of the Pilsen region. The emphasis on the training of experts for future activities in the topics of the specialisation domain is an essential condition for the development of modern power engineering.



R&D topic area

- safe, reliable, and flexible energy sector
- power networks
- decarbonisation of the energy sector
- nuclear power engineering
- renewable energy resources
- heating industry and cogeneration
- energy storage
- energy savings and increased energy efficiency
- digitisation of the power sector
- regional and community energy sector

Examples of research organisations

University of West Bohemia in Pilsen (Faculty of Applied Sciences, Faculty of Applied Sciences-NTIS, Faculty of Electrical Engineering, Faculty of Electrical Engineering-Research and Innovation Centre for Electrical Engineering, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering-Regional Technological Institute, New Technologies-Research Centre), Centrum výzkumu Řež s.r.o., COMTES FHT a.s., Výzkumný a zkušební ústav Plzeň s.r.o.

Examples of enterprises

BRUSH SEM s.r.o., Czech Nature Energy a. s., Doosan ŠKODA Power s.r.o., ELIS PLZEŇ a.s., EnergyCloud, a.s., ETD TRANSFORMÁTORY a.s., G TEAM, a.s., GTW BEARINGS s.r.o., INEL – Holding, a.s., Klastr Chytrý Plzeňský kraj z. s., Omexom GA Energo s.r.o., Pinflow energy storage, s.r.o., PLZEŇSKÁ TEPLÁRENSKÁ, a.s., ŠKODA Electric a.s., ŠKODA JS a.s., ÚJV Řež, a.s., Wikov Gear s.r.o., ZAT a.s.

Responsible developer

Jan Naxera consultant for the economic development of the Region, Regional Innovation Strategy of the Pilsen Region Project Developer

Expert guarantor

Prof. Ing. Zdeněk Peroutka, Ph.D., Dean of the Faculty of Electrical Engineering at the University of West Bohemia in Pilsen and Director and Head of the RICE R&D Centre

New Materials and Technologies

The New Materials and Technologies domain aims to use the capacity of the research centres of the University of West Bohemia in Pilsen and other research organisations in the region, such as COMTES FHT a.s. and the Research and Testing Institute Pilsen s.r.o. Important is their cooperation with the application sphere, especially with manufacturing companies, and at the same time multidisciplinary cooperation, e.g. for applications in healthcare. The application of research and development results is particularly significant in the manufacturing industry, which is of key importance for the region's economy. Thanks to research and development, it is possible to come up with improved materials and technologies that have advantages over traditional ones. This can provide, among other things, more cost-effective solutions in production, in products, reduce energy and material intensity of production, enable recycling and reduce the carbon footprint.



Areas of science, research and innovation topics

- materials with advanced properties
- materials and technologies for additive manufacturing
- special steels
- research and development of methods, tests for standard-setting activities and non-standard verification and measurement of the properties of materials and technologies
- modern production and material processing technologies

Examples of research organisations

COMTES FHT a.s., Výzkumný a zkušební ústav Plzeň s.r.o., University of West Bohemia in Pilsen (Faculty of Applied Sciences, Faculty of Applied Sciences-NTIS, Faculty of Electrical Engineering, Faculty of Electrical Engineering-Research and Innovation Centre for Electrical Engineering, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering-Regional Technological Institute, New Technologies-Research Centre)

Examples of enterprises

Compo Tech PLUS, spol. s r.o., Doosan ŠKODA Power s.r.o., HOFMEISTER s.r.o., Klastr MECHATRONIKA, z. s., PEARTEC s.r.o., Safran Cabin CZ s.r.o., ŠKODA Transportation a.s., ŠKODA Electric a.s., Wikov Gear s.r.o., ZF Engineering Plzeň s.r.o.

Responsible developer

Bc. Kateřina Podaná, Regional Innovation Strategy of the Pilsen Region Project Developer, Klastr MECHATRONIKA, z.s. Executive Director

Expert guarantor

Ing. Libor Kraus, President of the Association of Research Organizations and Chairman of the Board of COMTES FHT a.s.

There is a long industrial tradition in the region, it would be foolish not to build our future on it!

—
Specialization New Materials and Technologies
through the eyes of the expert guarantor Bc. Kateřina Podaná,
RIS3 strategy developer

New Materials and Technologies is one of the five specialisations of the Pilsen region, why new materials?

There is a long industrial tradition in the region, and it would be foolish not to build on it in the future. What is interesting about the research here is that we are looking for and finding new applications of advanced technologies. The results of R&D (research and development) from the Pilsen region are already being used in various sectors, from the automotive sector to nuclear power plants to dental prostheses. Lasers and additive manufacturing (3D printing) are strong technologies in the region, and I don't mean that we would print toys or boxes on our desks. Experts at the University of West Bohemia in Pilsen can print for athletes and museums as well as for industrial companies. And at COMTES FHT, for example, they use additive technologies to modify cutting tools so that they are almost better than new ones, at Lintech in Domažlice they are experts in the use of laser technology for various applications and the list goes on.

Is there a long tradition of this field in the Pilsen region?

One would think that what is called New Materials and Technology cannot actually have a tradition. But it's the other way around. Thanks to many years of first-class research and development, we are able to "tune" conventional steel into special materials that are then used in demanding operations. With innovative technologies, we can modify the classic turbine blade to last longer and better. But it is no longer just the old "Škoda factory" that used to occupy half of Pilsen. There are innovative companies scattered all over the region that can keep up with the times and produce unique products. It is important for the innovation platform that local companies are able to talk about their successes. That is why it's good when we stay in touch and motivate each other. It is also great that local companies are interested in working with the university and secondary schools, even if it is not always easy.

Are other regions also involved in new materials? Is there competition for the Pilsen region in this specialisation?

Materials are and will be important in all regions and competition is not a bad thing at all. It forces us to think about innovations, modern technologies, new ways of using what we already know, and it forces us to be open and collaborative. The fact that research organisations can work together across the country or across Europe and in different fields also takes us further. For example, research into new materials for healthcare is interesting. We already know that there are metals that are biocompatible and can be used well for joint replacements, for example. But we can go even further in our research, looking for alloys that are lighter – we do not want one hip to be five times heavier than the other. Or we are looking for materials that will "grow" into the body better. These are projects and ideas that cannot be realised in a small pond within one region.

Where else can this specialisation go? What is its future?

Materials and technologies will continue to evolve towards greater sustainability. New materials and technologies give us new possibilities, they will keep developing and further and I look forward to that. Take 3D printing for example. We can already make, for example, complex casting moulds that allow us to achieve better quality castings. We can print orthoses out of composites that are functional and good looking, so people don't have to be ashamed of them. We can lighten some tools so that employees don't collapse under their weight and end up with damaged backs. We are starting to print dentures whose production with this technology is faster and more accurate because it does not depend on an overloaded dental laboratory. We can scan an interesting relic and preserve its model for future generations. We can print titanium hearing aids that are both pleasing and enjoyable for the user to use, and if they accidentally fall under the wheels of his car, they will last, unlike the plastic classics. And we don't just have to talk about recent technologies. Even the classic material processing as we know it from textbooks needs to evolve. Car sheet metals are a good example. They need to be strong because we want the crumple zones to really work in the event of an accident, they need to be light because we need to reduce emissions. Quality research and development from the Pilsen region is behind what material to use and how to process it correctly.

I would like to give one simpler example, namely the repair of shearing tools. These have a certain lifespan. When repaired properly, they don't just need to be made brand new, but often their performance is much better. Another example came up on my mind: there was a challenge where a certain car manufacturer changed its production strategies slightly and suddenly there were a series of parts that needed to be used differently. The options were twofold – throw them away or figure out how to use them elsewhere. Of course, the second option is better in terms of sustainability. The technology of laser relabelling of parts was then invented in our region of Pilsen. These are all issues that local companies and research organisations can address.



What is planned in the near future within the New Materials and Technologies specialisation?

There are a lot of plans!-) As a developer of the RIS3 strategy, I will strive to implement it. The region's innovation strategy should not just be a document in a drawer, it should help us move our region forward, and we cannot do that alone. So, my plan is not only to keep in touch with individual members of the Regional Innovation Platform (KIP), but to support them in their own plans. To connect companies and research organisations in the region, to open up new possible topics for collaboration. And we do not have to stay low and stick to "just new materials and technologies", we would like to connect companies across our platforms. New materials are also interesting for the specialisation biomedicine, and innovative technologies will also be used by (the specialisation) smart mobility. Again, I will give specific examples: The Research and Testing Institute is organising an interesting conference in June on the practical use of modern technologies such as thermal spraying. Together with two Bavarian universities, COMTES FHT is launching a new project on additive manufacturing, which in turn is expected to produce specific practical results for companies working with printed parts. The

MECHATRONIKA cluster together with the Moravian Aviation Cluster is preparing a project that will facilitate the penetration of printed parts into aviation. We are also building a strong community here to support start-ups and young companies. There is a lot going on, and I strongly believe that there will be more to come. We have our next Regional Innovation Platform meeting in the autumn, so we'll see what else gets done between now and then.

What has the Regional Innovation Platform for New Materials and Specialisation already come up with?

The most important thing that has been done is the sheer will to continue. Regional companies and research organisations want to continue to work together, they want to find and raise new topics and challenges, they want to offer interesting opportunities for talented students, they want to contribute to the reputation of the region. It is great that the research centres of the University of West Bohemia want to show off their achievements again and want to offer their know-how to regional companies. I am thrilled that in the Pilsen region there are tangible examples of capable companies and clever solutions that we can be proud of, and I am delighted with every further cooperation and success.

Creativity and knowledge are still needed in research

President of the Association of Research Organizations, Chairman of the Board of Directors of COMTES FHT a.s. and last but not least the expert guarantor of the smart specialization of the Pilsen Region New Materials and Technologies. 23 years ago, Ing. Libor Kraus with colleagues founded COMTES FHT, a research organization specializing in applied research of metallic materials. Since then, COMTES, based in Dobřany near Pilsen, has expanded massively, and built its own R&D park. In the interview, Libor Kraus revealed how innovations in the field of new materials and technologies, their research organization and startups in the region are doing.





Mr. Kraus, how are innovations in new materials and technologies doing?

If innovation had not been doing well, COMTES would no longer exist. Nowadays, companies turn to us most often with economic and environmental requirements, i.e., requirements to make production cheaper, to reduce energy consumption or material intensity, to cut emissions or waste from production, etc. At the same time, we are also developing completely new metal materials or even technologies for their processing, which bring significantly improved properties of existing materials.

The GetSmart magazine is published as part of the Smart Accelerator project. In its first edition from December 2020, you included an editorial explaining "why innovation and why the Pilsen region". If I asked you about this connection today, what would you say?

It has been a truly short time for me to change my statement back then, I still think that the Pilsen region is a good address for research, development, and innovation. There are several active, well-equipped technical and personnel research centres, we have a functioning infrastructure to support the research environment, there are three science and technology parks that support small and medium-sized companies and, last but not least, there are innovative companies that develop and produce their own products. The regional office supports the incubation of start-ups and the development of the research environment.

You have lived in the Pilsen region all your life and have been working in the field of applied research and innovation for more than 30 years. Could you imagine yourself working in this field elsewhere, or, conversely, doing something else in this region? Where would it be and what direction would you take?

I don't like what-if questions. Of course, I can imagine being born somewhere else, having a different education and life. My life's career is determined by where I grew up, what I know and where I have built my family and professional background. I can pursue my field anywhere in

the world, but it will be exceedingly difficult to move our unique laboratory equipment anywhere.

You started at Škoda as an ordinary researcher, and you also went through the research institute of Škoda Pilsen. When you think back to that time, do researchers today work in a completely different way than they used to, have the working procedures changed, or especially the environment and technology?

I started my research at Skoda back when socialism was coming to an end, so if I compare the possibilities then and now, there is an enormous difference. The 1990s was also a very turbulent time, when research was privatised and the need to apply the results of research to the market began. Compared to that era, the employment of young researchers today is much easier and facilitated by the very environment and technologies that researchers can use to do their work. Otherwise, the actual activities of researchers have not changed much; creativity and knowledge are still needed.

Is there a significant difference in private and public research institutes?

Yes, private research organisations are more oriented towards the application of research results in companies, public research organisations are evaluated mainly by their publication activities. Of course, there are many other differences, which are determined by the requirements of the founder, by legislation. Universities and institutes of the Academy of Sciences are established by special laws and are governed by different rules than state or private research organisations, which have to behave like business entities and are therefore freer and more operational; on the other hand, they have much less financial security to support their activities.

You have mentioned about the beginnings of COMTES FHT that you started with six employees in two rented offices, and it was actually a start-up. There are a lot of those being established today, but not every one of them will become a European-level institute with more than 100 researchers providing services to customers all over the world. How did you manage that?

Even the most ingenious business idea can die if you don't dedicate yourself to it, and on the contrary, by working hard you can push your idea through even in a big competition.

I always answer this question by saying that for us it is also a kind of American dream, setting up a research organisation is certainly not a normal business plan. All of the founders and co-owners of COMTES have worked and are working in research and development, so we wanted to use their knowledge and expertise. As a model of a functioning research organisation, we took the German Fraunhofer Institutes and tried to focus our research on activities and results that can be applied in practice. At the same time, we encourage all of our researchers to participate in global scientific conferences where they hear the latest findings and directions from the best institutes and where they can establish collaborative relationships and present their results. So, to summarise, we strive to create an environment and facilities for the implementation of high-quality research activities.

You ended the aforementioned editorial in a motivational way: "In the Pilsen region we are trying to find ways to change and move forward products, services and quality of life."

Can you tell us what you have managed to move forward and what other plans you have?

At COMTES, we completed the corrosion laboratory building last year and expanded our numerical simulation and forming technology facilities. We achieved a unique outcome when a global standard for testing microbalances was published last year, where my colleague Prof. Džugan chaired a working group preparing this standard, and a third of COMTES publications are contained in the

supporting literature. We have initiated two major projects in the National Centres of Competence in Engineering and Energy programme. We are about to install a large new 3D printer for metals, and we are building a robotics laboratory.

You are the chairman of the Regional Council for Research, Development, and Innovation (KRVVI), you have insight into the industry.

What direction is research taking, what characterises it in the region in 2023?

A difficult question, as the chairman of KRVVI I have long been striving for the Pilsen Region to create the environment and conditions for research and development, the directions will then result from the creativity of researchers and workplaces. In the long term, research in the Pilsen region is at a high level, especially in technical and medical fields, there are several research centres, both in universities and in the private sector, there are also innovative companies that develop and upgrade their own products and procedures, and recently the number of newly established startups and spinoffs has been increasing.

As chairman of KRVVI, you are part of the Incubation Programme Council and attend presentations of young companies that are looking for help with business development.

At the time you started, such incubation programmes didn't exist, I suppose, but then again there wasn't as much competition from all over the world...what do you think?





Do startups today have a tougher time or an easier time?

Tougher, easier, it all depends on your point of view. We started our business in 2000, but at that time we already had some personal know-how from previous work experience. The Pilsen BIC helped us a lot with starting our own company, where we attended something similar to today's incubation programme (training on business, legislation, accounting, taxes, etc.). It's always about clarifying the basic business strategy and then about the work the founder is willing to devote to developing their

business. Even the most ingenious business idea can die if you don't dedicate yourself to it, and on the contrary, by working hard you can push your idea through even in a big competition.

Within the Smart Accelerator project of the Pilsen region, the so-called KIPs were created, regional innovation platforms that focus on one of the five smart specialisations and involve representatives of the business, research, and public sectors, who jointly seek further specific opportunities for cooperation.

You actually have a triple role, you are the guarantor of the specialisation and at the same time a representative of both the business and research spheres, right?

I am the guarantor of the New Materials and Technologies platform, because COMTES is also involved in research and development of metallic materials and processing technologies. As the president of the Association of Research Organisations, I have quite a lot of experience with R&D legislation and, because we are a private research organisation, also experience with private business. I can therefore apply this experience to the benefit of the growth of research, development, and innovation in the Pilsen region.

You have already attended several KIP meetings. Can you tell us whether you have managed to establish any more concrete partnerships and whether you are succeeding in moving the field forward through KIP?

First of all, I would like to say that I am incredibly pleased that we have managed to involve both representatives of the public administration, research, and educational organisations, and especially companies in these platforms. Together we discuss the needs and possibilities for development, innovative ideas, and support for the research environment in the Pilsen region. From these meetings, and then from bilateral or multilateral sessions, specific collaborations on research topics have emerged.

If someone outside the industry asked you why new materials and technologies in the Pilsen region, what would you say? Why have you and your colleagues from COMTES focused on them?

It was a natural evolution for us, because we have worked in this field and had a number of innovative ideas on how to apply our experience. I have already mentioned that one of the strengths of the Pilsen region is education in technical fields and the settlement of a number of innovative companies that manufacture products in technical fields. I hope that in the future the Czech Republic will not discourage its industrial base with the current absurd energy prices and will become a creative centre for industrial production of the future.

Ing. Tomáš Avrat: „Cities are brands. Let's develop them.“



Mr. Avrat, you come from Brno, whose innovation ecosystem marketing strategy you have created and implemented. How did you proceed?

I was in charge of developing and implementing the strategy within the RIS team at the South Moravian Innovation Centre. The ecosystem had been successfully developing for 12 years when I joined. A new third RIS generation was on the scene, there were hundreds of entities in the ecosystem calling for improving Brno's international reputation. Many of them could not rely on "made in Brno" in their business. There was a need expressed from the ecosystem and from the participants themselves, and the organisation had to say how to prepare a strategy and start working on it actively, that was the starting point. I attended dozens of meetings and involved key players from the public, private and academic spheres in the project. Coming from the private sector, I needed to get a quick feel for what place branding was all about. For the first year, I drew inspiration and knowledge from international sources (conferences, examples of good practice, professional media). In November 2015, the city and the region approved the prepared marketing

and communication strategy and the implementation phase of the strategy started. The first person I hired was a copywriter. Her job was to collect relevant data, information, stories, success cases from the past and present, sort and compile everything and prepare what we called "Czech Press Agency for the innovation ecosystem". In the form of various documents and spreadsheets, we started to share this information publicly. To update and add content, we reached out to the ecosystem players themselves, so we worked on B2B marketing. And then in cooperation with them, we started to create additional outputs.

Can you be more specific?

We created common materials presenting the advantages of our innovation environment and the actors started to use these materials in their own communication. The participants needed a lot of motivation to share data with us, but at the same time to use the finished product and make their own marketing more attractive. To be honest, motivating companies has not been easy. Although we created a simple web image bank, we still had to encourage traffic and usage a lot. What we were experiencing, for example, was a

turnover of marketing managers and not passing on information to successors in the project. So, we had to convince multiple stakeholders in one company. Positive rivalry between firms also worked. It was enough to convince one company and some others in the industry also joined in. Motivating ecosystem stakeholders is a continuous, tedious, and never-ending job. It helps if you know what each player needs. We have defined the role of each stakeholder and what everyone expects from the platform. Someone needs data, someone needs recruiting support, someone needs a video spot and photos for their presentation, etc.

Did you look for inspiration in other regions?

The vision of the South Moravian Region is to be among the top EU regions, so it was immediately clear that we would look at how other European countries do it. I didn't therefore look at Czech regions because we wanted to target foreign countries. We hired experts from abroad and went to foreign conferences for inspiration, and I read case studies. This is the public sector, so the texts are accessible, even in English. I'll never forget going to the airport in Vienna (there and back) to pick up an expert from Sweden who was a keynote

speaker at our conference. I got a lot of inspiration from that almost 4-hour conversation, which I still benefit from today. We were the first to start in this field in the Czech Republic and I believe that our efforts have made us an inspiring example for other regions in our country.

Before you went to Pilsen for the meetup, did you have an idea of the innovation ecosystem of the Pilsen region? What impression does it make on you?

Yes, I always prepare myself in advance. I familiarized myself with the marketing strategy of the City of Pilsen and the RIS3 of the Pilsen Region, I looked at the websites and social profiles of the City of Pilsen and the Pilsen Region. I have noticed two things. The outputs related to the project are of high quality, you can see that it is “well done” and there is a lot of work behind it, there is an international comparison as well. What surprises me, and this is not only in your case, is that on the website and social networks of the Pilsen Region and the city the topic of science, research and innovation is not so much emphasized. It is obvious that the institutions themselves are not actively involved, as if they have “handed over” the topic to the care of your organization. However, this is not the right approach. It is not a question of creating new media, new communication channels

Ing. Tomáš Avrat, a marketing consultant, focuses on corporate branding and improving the reputation of a place. He has been developing brands for 25 years, the last eight of which have been focused on marketing and communication of innovation ecosystems, destinations, regions, and cities. He has been involved in the creation and implementation of the marketing and communication strategy of the innovation ecosystem in Brno.

He is currently working at the Moravian-Silesian Innovation Centre with the aim of increasing the attractiveness of Ostrava and the Moravian-Silesian Region towards talented students, employees, and scientists.

in this area, but of getting the topic into existing and widely read media. Cities and regions should be more vocal about the platform and give it more space in their own media.

How do you perceive the Pilsen Region? Does it have strong branding?

How do I perceive the Pilsen Region? I worked in the brewing industry for eight years, so, naturally, beer comes to mind first. Is that good or bad? That is for you to say, given the perception you want us, the inhabitants of other regions, to have. For my part, the topic of beer can also be used in a brilliant and clever way in relation to the topic of innovation. There are probably debates as to whether there is no longer any aversion to the connection, but it would also be a mistake to reject it given the topic of innovation. What does it actually mean that a world-class beer was created here in Pilsen? That is proof of innovation. And beer belongs not only to the local innovative culture. Haven't many things been invented over a beer? After all, we have rituals. I also perceive the project Pilsen – European Capital of Culture.

And to the second question. If it is about strong branding. You cannot ask the question like that. You can have a “strong brand” in the sense that a lot of people know the place. The problem may be that people will only recall characteristics that you

no longer want to associate with the place. In such a case, it is not a strong brand. Anyway, the answer to this question has to be given by those who take care of the reputation of the city and the region. If they measure the image, perception, associations to a place regularly, they know the answer. Personally, I have a problem with formal names and region borders and what was created 22 years ago. People have always identified themselves with towns and cities, then with the state, then with the region. A formal entity like a region tends to be the weakest in terms of identification. This needs to be noticed.

You mentioned Scandinavia a lot in your presentation as a positive example...

It is, in my opinion, the best area for place branding. When I immersed myself in the topic, I found that that's where the best inspiration is, that's where they do it best, that's where they put the most effort and resources, and that's also where there's the strongest need to work with the reputation of the place and a high level of cooperation. It comes from a lot of pressure to get the talents there. The trust between the public sector and other stakeholders is remarkably high, the public sector there is really up to scratch. They manage to attract even top experts from the private sector. We can learn the best principles and know-how in the field in Scandinavia for sure.

How did they grasp the topic in the individual regions in our country? Do you follow it?

Since I do this for a living, I follow all the regions, their communication, activities, projects. This also helped me in co-creating the Methodology for the Development of the Marketing and Communication Strategy of the Innovation Ecosystem within CzechInvest. I see my role as a populariser of good examples from abroad, so that our ecosystems can become one of the top ones in Europe. I watch what is happening and where, how they do it, how they approach it. We have good examples here too. However, it is important to realise that each region is at a different stage of its development. As far as innovation is concerned, there are regions that are not very keen on this topic. There is not enough support from key leaders.

Participants of the third year of the incubation programme, get acquainted

At the beginning of March, the BIC Pilsen, Business, and Innovation Centre, in cooperation with the City of Pilsen and the Pilsen Region launched the third year of the incubation programme, which this time will help several young companies from the Pilsen Region to start their business. Which companies are involved? What do they address within the incubation programme? Get to know them and their projects!

TIMI CREATION and their smart thermal cameras

The company TIMI CREATION s. r. o. was founded by Jan Šroub and Vladislav Lang, researchers from the NTC (New Technologies – Research Centre at the University of West Bohemia in Pilsen), in order to produce and sell thermal cameras suitable for school education. In their discussions with teachers, they encountered problems that schools face with the use of digital teaching aids. A typical example is tablets, which often break. At the beginning of each class, time needs to be spent on getting them up and putting them into operation and often on unscheduled updates. This causes delays in lessons. Schools do not have the resources to maintain them, so the devices end up unused in classrooms. As part of its incubation programme, the startup TIMI wants to develop a concept for teaching aid rentals that (re)solves all these problems. Teachers can become familiar with the cameras in practical workshops and then rent a set for the whole class for two weeks for free. There is also a LabIR Edu website where teachers can find experiments for physics, chemistry, biology, , technology or environmental education. Thermal cameras adapted for children are proving to be useful outside of school – in environmental centres, zoos, dental and eye clinics, or among firefighters for fire prevention, for example. During the incubation programme, TIMI needs to “grow up” and increase its capacity to be able to meet the demands of a growing market.

What gave you the idea to focus on thermal imaging cameras?

At NTC we have been working with thermal cameras for more than 20 years and one of our tasks was to introduce thermal cameras to students and show them where they find applications in today’s world. We did not see a suitable product on the market that could be used in classrooms, so we built our own thermal camera. It elicited a positive response from the teachers and things took off.

Could you describe your concept of teaching aid rentals that (re)solves all these issues?

The lending concept addresses several problems. The school does not have to acquire a thermal imaging camera for its property. At the same time, the school gets a larger number of thermal cameras (e.g., 10) so that the students have them in their hands and not just the teacher. It is also possible to add other equipment to the cameras and thus overcome the differences in the equipment of individual schools. Thanks to the rental, the thermal cameras are regularly checked, updated, and serviced, so that the teacher always has a fully functional set of thermal cameras. Last but not least, regular feedback after each rental is crucial for us. It helps us improve the whole concept and also acts as proof that everything is functional and sustainable in the long term.

How do thermal imaging cameras adapted for children differ from “adult” ones?

Teachers especially appreciate the large display on which everything can be clearly shown and evaluated. The operation is amazingly simple, so that no training is required. The thermal imager has a focusing distance of just a few centimetres and can thus be comfortably operated at the school desk. The angular shape of the body allows the camera to be easily placed on a desk without the need for a tripod. Students can take thermal images and videos. Nothing is stored in the camera itself; everything is stored on a USB flash drive that the pupil brings and takes away again when the work is finished. The thermal camera is thus ready for the next lesson.

How did you find out about the incubation programme?

We learned about the incubation programme from the BIC staff we were in contact with.

Where has the programme already moved you?

Just preparing for the programme has forced us to finish some things in progress. During the discussions, many things became clearer and new possibilities for development and cooperation opened up. The offer to participate in networking events is also a benefit that will definitely become apparent in the near future.

GUAVA brings greater understanding between clients and suppliers

Guava s. r. o. was founded in January this year by two fellow students from the Faculty of Applied Sciences, Stepan Moczak and Lukas Frey, who until then earned their living as freelancers by creating customized web applications. In the incubation programme, together with Tadeáš Kapic, they are developing the Parrrley project. It is a platform that helps creators and their clients to agree on assignments and collaborate effectively. The first target group includes web developers and designers. The guys know very well from their own experience how often the output of the work fails to match the client's idea and has to be redesigned. This is often due to poor communication. Clients are not experts in the field they commission and therefore cannot specify exactly what they want and why, and what they definitely do not want. Assignments are often modified on the fly. In Parrrley, both parties can always see what details they have agreed on and what they have not yet worked out. They thus have properly set expectations about budget and delivery time. The first version of Parrrley will be ready for testing by early autumn. Information regarding the platform will appear over time at parrrley.net. The incubation programme should help to create the first functional version of Parrrley and get it out to developers in the Czech Republic and abroad.

Within the incubation, you are developing your Parrrley project. Can you explain this platform, which helps developers and their clients to agree on assignments and collaborate effectively, in more detail?

Parrrley is an online platform that facilitates collaboration between digital creatives such as web developers, app developers and designers on the one hand and clients on the other. Our platform aims to minimize the misunderstandings and unnecessary work that arises from poor communication between these parties. In this way, Parrrley helps both parties agree on the brief, collaborate effectively, and save all parties' valuable time.

What makes this platform different from the competition, or why hasn't someone thought of it before you?

Parrrley is different from similar platforms because of its unique approach to solving communication problems between developers and clients. With our platform, developers and clients can address misunderstandings and lack of information at the very beginning of project development, minimizing unnecessary work and time wasted. In addition, the platform allows clients and developers to keep in touch throughout the development of a project so they can respond immediately to any changes. We believe we are forming a unique solution to this problem that will help developers and clients collaborate in a better way and more efficiently than ever before.

Do you expect your project to take off more here or abroad?

Of course, we would be happy if our Parrrley project would attract attention both in the Czech Republic and abroad. We are currently trying to find the ideal way to reach our potential users. We know that the value of Parrrley depends on its breadth and reach, so we are carefully planning how we want to spread to as many people as possible. Our goal is to create the largest user base possible, both in the Czech Republic and abroad. The problems our platform addresses occur all over the world, so we'd like to provide the product to as many people as possible from day one.

How did you find out about the incubation programme?

We first learned about BIC's incubation programme at the university's LevelUp accelerator. Then we met our mentor Lenka Palánová at the Boostup Night event, where we presented a different idea. We are very satisfied with how this programme is helping us develop Parrrley and the tools and resources it is providing.

Where has the programme already moved you?

The incubation programme has already taken us very far. We have a better understanding of how the market works, we have sorted our ideas and clarified our business plan. At the same time, we have focused on functionalities that could improve the service Parrrley provides to users. In addition, we have received some useful feedback and suggestions from experts in various fields. The programme also helps to better focus and define goals, build a business plan, and think through a financial plan. Overall, the incubation programme got us on the right track, helped us to orient ourselves in the market and moved us closer to our goal. We are incredibly grateful for this opportunity.

Zakra, a water management design office on the threshold of digitalization

Zakra s.r.o. is a design agency dealing with the design of small water management works such as domestic wastewater treatment plants or water and sewerage connections. Unlike other design offices, it guides its clients through the entire process, from the selection of the optimal solution, through the development and approval of the project, to the implementation of the work. Within the incubation programme, Zakra wants to address its development based on digitalisation and automation. In the initial phase of their business, the founders of the company gained practical experience in the execution of contracts and got to know the industry situation in depth. In the process, they identified interesting opportunities, found out how to make the work of a designer more efficient, how to solve a larger volume of orders in a shorter time and how to meet the interest of customers, which currently exceeds the capacity of design offices in the Czech Republic. The basis of the business will be digital tools that enable efficient acquisition and evaluation of data on the relevant site, essential for the construction of water management works, and tools for automating the design work itself. With their help, the company will also be able to scale its business further, i.e., not only to satisfy the requirements of a larger number of customers from the existing target group of builders and house owners, but also to offer its services or tools to other designers, real estate agencies or developers. Together with the BIC consultants, the young entrepreneurs select the services they will use the Pilsen Region's subsidy to pay for and which will help them realise their project.

As part of the incubation, you want to focus on developing your design office in the field of digitalization and automation. Can you specify this?

A: Every design office today spends a lot of time investigating local construction conditions prior to the actual design and engineering activities. Unfortunately, these are nowadays published in a decentralized way in different channels; at least a basic centralization of resources and data would be a significant saving for the efficiency of design offices. At the same time, disputes between designers and administrative authorities would not be so frequent. Our goal is to create a database with commonly published information that, together with the DTM, will make the work of everyone in the industry easier.

Unlike other design offices, you guide your clients through the entire process, from the selection of the optimal solution, through the development and approval of the project to the implementation of the work. Why don't other offices do this?

This is a decision arising from several aspects. Firstly, it is about client expectations; we are increasingly looking for solutions and contractors who will handle everything on a turnkey basis. So, there is a demand for this approach. The second aspect is feasibility, because we are involved in small water construction projects, we can tie the whole chain together. Our colleagues tend to focus on larger water works that require more specialisation.

What explains the fact that the interest of customers in the Czech Republic currently exceeds the capacity of design offices?

Again, it is a combination of factors. However, the primary problem, as with doctors, is based on the number of people interested in the field; there is a shortage of new water engineers entering the market. A similar phenomenon can be observed in the field of, for example, hydrogeology. In contrast, more construction is taking place in remote locations, there are subsidies such as the Nová zelená úsporám (New Green Savings Scheme) and there have been several key changes to the Water Act.

This naturally increased the demand for smaller water works.

Do you have ambitions to reach customers outside the country, or is that unrealistic in this sector?

The topic of expansion is still beyond our ambitions, moreover, it is connected with the legislative prerequisites for the level of authorization of a water manager. The Czech authorization seal is not automatically valid in another country. We are not thinking about expansion in the coming years.

What services have you used within the incubation programme to make your project work?

Currently, we are mostly in contact with Amitia, which is helping us to digitise public information and create an easily accessible database from it.

How did you find out about the incubation programme?

We learned about the incubation programme from the internet. We want to be active in the Pilsen business community and a few clicks on the web brought us here.

Where has the programme already moved you?

We have definitely moved forward in realizing what the priorities are and what they need to focus on.

Design and Innovation Centre

Two young designers, Patrik Rešl and Michal Kamas, entered the incubation programme this year with the intention of building a design and innovation centre in Pilsen. They both acquired their expertise and skills at the Ladislav Sutnar Faculty of Design and Art at the University of West Bohemia in Pilsen. Later they realised that they complemented each other perfectly and that together they could produce much better results than when working alone. This led them to the decision to start a business together, mainly designing interiors and their furnishings. They will combine their interior design studio with a showroom conceived as a loft apartment, where they will present customers with designer furniture from brands that have not yet been represented in our country. They have chosen attractive premises in the newly opened TechTower technology park for their project. Here they also intend to organize specialized workshops, lectures and other events for architects, students, and the public. This unique project will strengthen the image of Pilsen as a city of design, which will lead other colleagues to settle here with their activities. The founders of the centre are already consulting BIC Pilsen on the details of the project, the conditions of its viability and the way of its implementation.

Your intention is to build a design and innovation centre in Pilsen. What is meant by this? How will it differ from traditional design studios?

Yes, it is. Apart from our design services, this centre should be a new innovative platform for designers and experts. Compared to traditional design studios, our centre will be different in that it will serve as a meeting and cooperation point for various professionals from the fields of design, technology, and business. The 150 square meters will showcase the services and products of carefully selected companies, creating a “loft apartment” and a preview of living among technology and new materials. Visitors will thus be able to try everything out and possibly even buy it.

You also want to organise specialised workshops, lectures and other events for professionals, students, and the public. Is it fair to say that you will fill a gap in the market in this respect?

Yes, we want to organise specialised workshops, lectures and other events for professionals, students, and the public. The aim is to create an environment where people can continuously learn, get inspired and develop their skills and knowledge. In this respect, we could really fill a gap in the market and give people in Pilsen and the surrounding area the opportunity to meet, share experience and cooperate.

You both studied at the Ladislav Sutnar Faculty of Design and Art at the University of West Bohemia in Pilsen. Do you see Pilsen as a city of design? If so, why? If not, what else could be improved?

As far as Pilsen as a city of design is concerned, we perceive it as an environment with potential. Pilsen has a rich industrial tradition and in recent years the creative sector has been developing very well. However, there are still areas to work on and support the development of the design ecosystem in the city. Now we are mainly targeting the community itself, which after the completion of, for example, the Sutnar faculty, eventually disintegrates. We know that it will not be easy, but we want to stay loyal to Pilsen and we believe that

thanks to passionate people we will be able to create a place in Pilsen that will not only be attractive for design, but also for the community.

How did you find out about the incubation programme? Where has the programme already moved you?

We found out about the incubation programme through TechTower and through various professional and entrepreneurial forums. After researching the options, we decided to apply for the incubation programme to have access to support, mentorship and a network of contacts. The incubation programme provided us with the opportunity to network with other innovative entrepreneurs and receive valuable feedback on our project. The programme allowed us to move forward in our development and prepare for the successful launch of the design and innovation centre.

People are essential for our company and we were very fortunate in the early days to have been able to launch the company which led to global success thanks to our employees

What is the history of the company? Why have you decided for the Czech Republic, why Pilsen?

I have always had a warm relationship towards the Czech Republic. First of all, my ancestors from my mother's side were originally from here. And secondly, Saxony, where I lived at that time, is very close. We used to go to the Czech Republic to visit our relatives, for shopping, and to explore this beautiful country with its wonderful nature and culture. It was during one of these visits to my family that the idea to start a company here was born to expand GK business with a development centre. Therefore, together with our business partner Rainer Gläß, we decided to look for young enthusiasts here. At that time, we made a lot of contacts at the University of West Bohemia, which helped us to choose the right "set-up" for our company. The first managing director was Mr. Václav Šiman, who also studied and worked at the university.

We came up with the name Eurosoftware very quickly because we all wanted a united Europe at that time. The mother company GK wanted to

design and develop new products based on Java. However, this programming language was so new then that it was not even taught at the university yet. Despite of this, we quickly recruited young students from the University of West Bohemia to start developing Java-based software with us. This is how the incubator for our development centre in the Czech Republic was created. Today, it seems that everything went easily and smoothly. But I can assure you that we achieved this success thanks to a lot of effort and enthusiasm. It would not have been possible without skilled people. We have certainly also managed to attract young Czech colleagues thanks to our company culture.


Being an IT leader and inovator in the Pilsen region with worldwide market focus, how important is for you to find the right IT experts and new motivated employees? Do you cooperate with the University of West Bohemia or even high schools? How exactly?

Cooperation with the University of West Bohemia is a very specific topic. It has been performed on so

many levels that there is no simple answer to this question. Let's start with the aspect of educating young engineers. We have a very large number of employees from the University of West Bohemia. We have attracted very smart and well-educated people. But, of course, we would sometimes like to see the education more closely aligned with the requirements of industry.

Another aspect is quantity. Here I have to say, unfortunately, that the number of graduates does not match the requirements of the industry. Eurosoftware is just one of the companies that need engineers. There are many companies in Pilsen and the whole region that work with modern technologies. This is where politicians and representatives of industry should urgently introduce measures to prepare the city of Pilsen and the Pilsen Region for the future. In addition, Eurosoftware cooperates also very well with secondary schools.

But overall, I can say on behalf of Eurosoftware that thanks to the university, we have a good position within the whole GK Software group and we are actually very lucky that the company was established here at that time. We have grown and now we have

A photograph of Stephan Kronmüller, a middle-aged man with short grey hair and glasses, wearing a dark blue suit jacket over a white button-down shirt. He is smiling slightly and looking towards the camera while holding a purple tablet computer with both hands. The background is a bright yellow wall with several curved, glowing white light fixtures on the left side.

Stephan Kronmüller is the co-founder and managing partner of Eurosoftware, which has been operating in Pilsen since 1997. Since then, the company has built a well-deserved reputation as one of the leading IT companies in the Pilsen region.

about 270 employees. Today, Eurosoftware is the largest development centre of the GK Group. It is an important and stable member of the group.

What is the situation in Eurosoftware with getting new employees?

This topic can only be seen in the context of the whole region. When we need to attract new employees, we need to secure good overall conditions for living for these people. Of course, besides the employees themselves, we have to include family members and perhaps other relatives. People who have good living conditions can be very creative and productive. In addition to that, there must be enough people with the right skills available for the industry.

This is not just about Pilsen, other countries and cities face the same challenges.

We chose Pilsen because it is close to our headquarters in Schöneck in Saxony. And mainly because there is a university here with study programmes for engineers. Our expectation was, that we would get enough engineers from the University of West Bohemia. The truth is that most of our employees come from the university. So we have been able to fulfill this expectation. But of course, we would need even more people.

I think we shall solve the problem of recruiting new staff by employing people from other parts of the Czech Republic or even from other countries. In order for us to be an attractive company for these employees, it is important that the town further develops and grows, because thanks to this, specialists from other locations will move here. But Pilsen is ready for this, it has functional programmes and it also has finances. However, these resources must be used correctly. And we would like to participate in the relevant decisions so that these decisions are the right ones for us.

How would you describe the local working environment – cooperation with the Pilsen region and other partners in the region? Are you a member of any expert/business group here and is it beneficial for the company?

When I have to judge something, I very often follow my intuition. Then I perceive what works well and what still needs to be improved. Cooperation

is ongoing, but I would like it to be much more intense and more goal-oriented. As an entrepreneur, I always have goals set to lead me. In this context, however, it is very difficult to define these goals. We, as industry representatives, have very little idea of what options are available. Being the Managing Director of Eurosoftware, but also the President of the Technology Initiative Pilsen, I can see where we could process the topics together and effectively. Sometimes I miss the communication channel that would allow us to involve the responsible persons in the solution process. In many things we feel it painful when we do not find answers to seemingly solvable problems. To have the necessary information is needed, and it would be good if it were easier for industry representatives to access important information. It would certainly help to bring expectations into line with the facts, which would be a very nice first step. As an example, I would mention the topic of the Gigafactory. I know that the industry is very much involved in this topic, because it raises issues that need to be discussed and resolved. For example, this project will change the situation on the labour market. It will certainly also have an impact on the working and living conditions of people, and not just those who will then work in this company. These are exactly the types of issues that directly affect existing industrial companies. I am just giving this as an example. Perhaps the region is already dealing with this in some way and we just do not know the answers. Some companies here may be facing existential problems. That is why we would like to talk to the people responsible for this issue. So we are able to find the right platform and get the right partners for discussion, that is our wish.

What have you learned from those years being active business leader in Pilsen, what were the expectations from Pilsen at the beginning?

When I came to Pilsen, it was a gray dirty city with a lot of smog and dust. A lot has changed for the better during the years I've lived here. Pilsen has become a small metropolis, the people were and still are great and I feel very comfortable here. I didn't dare to hope at the beginning that Pilsen





Success cannot be replicated at all. We can only achieve it again through hard work, concentration and great patience.

You have already mentioned culture in Pilsen. What do you do in your free time and what are your favorite activities in Pilsen and in the region?

If I had some free time... (laugh).

I live here with my family, I have 3 children here who go to Czech schools. And I use my free time to spend with them, to develop them.

That means that when we have time together, I use the cultural and sports offer in Pilsen. I like music, I also like going to the theatre and sometimes I visit a good concert. In the past I trained Kung Fu in Pilsen and now I do Taekwondo with my son. I enjoy the fact that there is a very varied overall offer and I am happy that the people like to take advantage of that. As a special example, I would like to mention the Finale Pilsen film festival. Our company has been supporting this project on long-term basis and thanks to this fact I/we can look under the hood of the film scene.

If you were to decide where to start the IT business in the Czech Republic, would you choose Pilsen again? Why?

Of course, there is no doubt about it. If I look at it from the perspective of the achievements that have been made, perhaps we could repeat this success on the basis of the same concept.

But since this is a hypothetical question, and I don't have the opportunity to start again, I would like to mention that I am trying something new just outside Pilsen. I founded a start-up. Please wish me success.

But my experience tells me that success cannot be replicated at all. We can only achieve it again through hard work, concentration and great patience.

would become my home. But now I can say that I feel that way. Overall, things have improved a lot and Pilsen still has a lot to offer to its visitors and also to our customers.

I have to highlight especially the cultural offer in Pilsen. I have been enjoying it since I came here. For living here with your family, you require adequate infrastructure – schools, kindergartens, leisure facilities. This is what the city and the region must develop further, because we want to make Pilsen more and more beautiful and attractive.

We haven't yet talked about what Eurosoftware actually does and how it is affected by challenges and new market trends, such as the rise of artificial intelligence or changes in customer behaviour.

I could give you a very long answer to this question. However, Eurosoftware is the product development center of its mother company... This means that we have the task to connect our product with modern

technologies to improve it to achieve always better results.

In the shopping process, there are needs on both sides – the customer and the merchant. Both sides want to solve the daily shopping routine quickly and efficiently. This leads to the need to design new shopping strategies. GK GO, self check-out and self scanning as part of the GK product family solutions are the answer.

This also includes shopping assistants who help the customer in the selection of goods. Here, for example, artificial intelligence plays a very important role.

In addition, we still have to take into account the local specifics of the shopping process.

Artificial intelligence has been a topic for us for a long time and part of the company has been focusing on this. A store without a salesperson faces various challenges that can only be solved with modern technology. We are constantly looking for the best solutions.

Mr. and Mrs. Kavalíř: "Two Professions, One University, One Marriage"

Mgr. Petr Kavalíř, Ph.D., MBA is the director of the university institute New Technologies – Research Centre (NTC) of the University of West Bohemia in Pilsen. His wife Mgr. Gabriela Kavalířová, Ph.D. works at the Centre of Physical Education and Sport, Faculty of Education, University of West Bohemia in Pilsen and is a long-time coach and judge in modern gymnastics. What is it like when they get together at home? Do they talk about work and students at home?

Mr. Kavalíř, you're the director of the NTC Research Centre. How would you introduce your position to someone outside the industry? What do you enjoy most about your work?

Our research centre is dedicated to research and solutions for green technologies and advanced, materials in the areas of green energy, smart vehicles, and quality of human life and health. Our core mission is to bring new insights and innovative solutions that can have a broad impact on society and industry. What I mean by this is, for example, contributing to the adoption of quantum technologies, especially through our expertise with materials with unique properties, or technologies for renewable energy and energy storage, where we primarily expertise in electrochemistry, we also work with infrared technologies and biomechanical models of the human body. We work with various partners from around the world, including companies, government institutions and other research organisations, to promote technology transfer and practical applications. As a director, I am responsible for leading and

coordinating research projects, managing a team of scientists and researchers, and obtaining funds for our activities. In addition, my main task is to create an attractive and creative environment for our international team of 130 employees. To create an organizational culture based on shared values that not only supports existing employees but also attracts talents from all over the world. Excellent researchers from eight countries around the world, from Finland to India, already work for us. At the same time, I strive to build strong relationships with strategic partners from business, research and government both here and abroad.

Overall, at NTC we strive to be a driving force in science, innovation and technological progress, contributing to building a better and more efficient sustainable society.

What I enjoy most about my work is the daily contact with people - both inside the NTC and in the outside, mainly international, environment. I like challenges, I like to push things forward and I am always happy to see the successes that our teams achieve.

Mrs. Kavalířová, you work at the Centre of Physical Education and Sport at the Faculty of Education of the University of West Bohemia. Can you give us an overview of your work?

What does your usual working day look like?

I work at the Centre for Physical Education and Sport as an assistant professor. My main job is teaching students mainly in the bachelor's degree programmes in Physical Education and Sport, Physical Education with a focus on Education. I teach subjects such as basic gymnastics, rhythmic gymnastics, movement composition, dance, psychomotorics, health physical education or

the basics of exercise theory. From Monday to Thursday I teach full-time students, Fridays are reserved for combined studies and lifelong learning. I spend most of my teaching hours in the gym. I also go with the students to kindergartens and primary schools for practice. In May and September we attend a summer training course. I supervise quite a large number of bachelor's and master's theses every year. I am a member of state final examination committees and theses defence committees. As you can see, it's a really varied job. In addition to teaching, our work also involves scientific activities, i.e. attending various conferences, training courses, research and publishing articles. In addition, I try to keep up with the practice and cooperate, for example, with the Foundation for Sporting Youth in Pilsen on the projects Movement 1P and Kindergarten Sports Games. I am a member of the Coaching and Methodological Committee of the Czech Modern Gymnastics Association, I coach gymnasts or referee cup and championship competitions. In addition, I lead body forming classes for women. So, as you can see, the gym is my "second home".

Both of you are active on campus, do you talk about your work at home and address things like what could be improved at the university?

Yes, we do. We both want the university to improve. Even though we have different disciplines, we can draw on each other's experience. Even though we have different disciplines, we can benefit from each other's experiences...

You can find the continuation of the interview on the website www.regionpilsen.cz

When the Chatbot ChatGPT Writes the Article

Watch out, artificial intelligence is taking control of the world. Those of us who write for a living will soon have nothing to eat...is that really true? Have a read of our article, written by chatbot chatGpt, and judge for yourself whether we should worry about our livelihood. If you haven't heard of this chatbot, which we would almost be surprised of, as it earned a lot of attention last year, read on. Its prototype, based on the basic GPT-3.5 model, was released to the world in late November 2022 by OpenAI. The basic version was fully disclosed to the public, which is part of the reason it was so much talked about. As of today, it is available in the ChatGpt May 24 Version. What was our assignment?

“Please write a short article on the Pilsen region and the innovations and technologies that are being developed in the region. What industries are thriving the most. In what fields is the future of the Pilsen region in terms of technology and innovation. What industries can be described as the ones of the future?”

Here is the result:

In recent years, the Pilsen region has become an important centre of innovation and technology in the Czech Republic. Thanks to strategic development and support for research and development, various fields are developing here, representing the engines of economic growth in the region. Information technology, engineering and the automotive industry are currently the fastest growing sectors.

In the field of information technology, the Pilsen region has become a centre of software

development and digital services. Local companies specialise in the development of web applications, mobile applications, artificial intelligence, and data analysis. The Pilsen region also has a well-developed e-commerce sector that uses advanced technologies for online sales and logistics.

Engineering is another key sector in the Pilsen region. Various technologically advanced machines and equipment for different industries are manufactured and developed here. Pilsen region is known for its precision manufacturing that meets the highest quality standards. The automotive industry in the region is also significant, with the production and development of automotive parts and components.

Regarding the future of the Pilsen region in terms of technology and innovation, there are several fields that could have enormous potential. One of them is the area of green technologies and

sustainable development. The Pilsen region is becoming a leader in the field of renewable energy sources, development of environmentally friendly technologies and energy saving solutions. Innovative projects focusing on solar energy, wind energy and energy efficiency in buildings are being developed here.

Another promising field is biotechnology and the pharmaceutical industry. The Pilsen region is home to major research institutions and pharmaceutical companies involved in the development of medicines, diagnostic methods, and biotechnological processes. This field offers enormous potential for innovation and improvement of human health.

The areas of autonomous vehicles and artificial intelligence cannot be overlooked either.

Good job, chatbot, but we're not worried about our jobs. See you later!



 GetSmart

 Smart Pilsen Region

 www.regionpilsen.cz



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