

TA.DI 15

Magazine of Technology Agency
of the Czech Republic

HOW DIVERSITY CONDUCTS TO
BETTER RESEARCH AND INNOVATION

TODAY'S WORLD IS LIKE A TUNA

TA CR AWARDS 2022



DIVERSITY

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INTRODUCTION



Dear readers,

I am pleased to present you with the 15th issue of our TA.Di magazine. This time, we focus on diversity, which is crucial for ensuring a high-quality and sustainable society. The current world is full of dynamic changes. In order to respond to them properly, we need to ensure the right conditions. However, on the way to creating such conditions, we may encounter a number of obstacles or challenges that we have to face. To overcome them, we need to dispose of stereotypical procedures and look at problems through a completely different lens, which is what diversity offers us.

Quality research, which is going to have the right impact on society and support economic growth, cannot adhere to rigid formulas and procedures. We must include women, both male and female students, and members of different cultures and ethnicities in research teams, and respect the experience of experts from different areas or countries. Their views and approaches to solving specific problems can bring a completely new direction of research and pivotal results. But diversity in research is not only about diversity in project teams. It is also about connecting often unrelated fields of science, specifically technical fields with the fields of social science, humanities, and artistic research.

This is just a fraction of what diversity encompasses. You can read specific examples of the usefulness of aspects of diversity, not only in research, in our articles and engaging interviews in the current issue of TA.Di.

I wish you a diversity-filled reading.

Petr Konvalinka

T A
Č R

October 2022
15th issue
of TA.Di magazine

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Publisher
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Evropská 1692/37, 160 00 Praha 6
IČO: 72050365
Evidenční číslo: MK ČR E 22630

Periodicity: half-yearly
Number of copies: 400 pcs
Distribution: by TA CR
Place of publication: Prague



www.tacr.cz

How Diversity Conduces to Better Research and Innovation

Author: **Marcel Kraus**

Photo: **Jan Tichý, Depositphotos**

A hundred years ago, research was still the domain of white men, either in the roles of those who conduct the research or those who form the reference group for the research. Compared to this state, we could say that research and innovation have never been more diverse than they are today. However, compared to how we actually reap the benefits of diversity in research and innovation, it is still woefully little. Let us take a look at how the benefits of diversity and interdisciplinarity can be used in a much more targeted way.



Marcel Kraus
Charles University – Center for the Transfer of Knowledge and Technology, project manager at the Hybernská Campus, former manager of the ETA and ZETA programmes of the Technology Agency of the Czech Republic.

It is a well-known fact that women, and also minorities, are significantly less represented in science, especially at the higher levels of the career ladder. Efforts to increase diversity in research usually aim at several areas, which are more or less accepted here as a relevant part of national research policies or development plans of research organisations: one is motivated by the interest in increasing equal opportunities and a more balanced representation of men and women, greater sensitivity to gender equality or social justice, and combating gender-based harassment; another area may be motivated by increasing the positive, more socially just impact of the conducted research on the entire society and economy.

Diversity and interdisciplinarity can also play a significant role in the process of scientific research, in science-based innovative solutions, or even in a more effective and efficient education. Belonging to different cultural patterns, personal experience resulting from respective social roles, and the resulting different vision of the world, values, and interpretation of reality are integral to every person, including scientists. And since these cultural practices cannot be put aside upon entering a laboratory or a classroom, they become part of education, research, and innovation. Diversity brings to research and innovation multifarious life practices, perspectives, values, and motivations that would otherwise not figure in shaping the world, to which knowledge and innovation contribute.

Effective research and innovation involve much more than simply overseeing the novelty of research, the replicability, or the systematicity of project implementation. The decisions of which problem to solve, which part of the population to study, what to support financially, and which measures or procedures to select are also essential for research. And it is during these decisions that the various personal views and values of researchers or research-related decision-makers are important. Let us recall, for example, the use of university students for psychological research or the investigation of the influence of temperature comfort in a car on the attention of drivers by interviewing a sample of the population of middle-class men around the age of 35. Results based on a narrow section of society, often corresponding to the composition of the group that conducts the research, may not yield universally valid results, and therefore innovations based on them may be irrelevant, unusable, or even dangerous

for other parts of the population. Different views and values, held by the researcher also influence their choice of methods – they can be more creative, less invasive (e.g. different methods of DNA collection in animals) or more environmentally sensitive. Differences in personal experience or first-hand knowledge of different cultural patterns can lead to new insights when interpreting data that would otherwise go unnoticed or not given due weight.

The innovative potential of research in social science, humanities, and arts goes hand in hand with diversity in research. In addition to generating a number of innovative ideas relevant to people of the 21st century – and rehabilitating hitherto marginalised research questions or bring new ones – these disciplines also add an interdisciplinary superstructure to research, whether based on a technical problem or a natural science or medical basis. It is precisely disciplines such as sociology, philosophy, pedagogy, economics, management, legal sciences, theology, cultural

DIVERSITY:

- synergy
- inclusion
- integration
- eliminating prejudice
- openness
- uncertainty
- willingness to take risks
- change
- enrichment
- variety
- comprehensive solutions
- connection
- cooperation
- interdisciplinarity
- usefulness for the society



studies, history, art, media, or journalism that can evaluate and ensure the positive impact of research on society.

Social science, humanities, and arts can contribute to the understanding of what makes research significant for the application sphere. These disciplines understand the importance of research output for companies, non-profit organisations, or authorities because they have knowledge of the current situation in society and know how to evaluate the probability of achieving changes. They help define the right kind of output to address a research challenge or opportunity in a way that is achievable. Since these fields are close to people, they know their weaknesses and strengths, motives, behaviour, and experience, and can thus predict the acceptability or effectiveness of the given innovation. For the same reason, they can also contribute to minimizing the risk of wasted research. In addition to technology transfer, so-called knowledge transfer or the valorisation of scientific knowledge in a broader context has been gaining more and more importance.

While diversity in research brings new research questions, novel methods, and more sensitive interpretation of data use by male and female scientists, interdisciplinary cooperation with the fields of social science, humanities, and arts helps anchor these principles in the research project and in the country's research ecosystem. Much of the R & I talent of women, minorities, or various marginalised groups would not be wasted if the academic environment offered a favourable climate for every potential scientist and if measures for equal opportunities were really implemented. Many of the negative effects of the modern world could have been avoided if we had asked scientists with social-humanities or artistic expertise for their opinion on the matter and applied it in research. Purposeful cultivation of diversity and interdisciplinarity in research will lead to drawing on the entire innovation potential available to us as a society. x

Children are
often more
open than
adults.

This is also true
in research.

Author: **Veronika Dostálová**

Photo: **FSV UK Archive,
Unsplash, Depositphotos**

Involving children in research has its advantages. Our little ones are often more sociable, open, and willing to share their experiences and opinions than adults. One of the interesting projects in which children played the main role is the *"Multicultural life and education of child prosumers"* supported by the ETA Programme. We talked about its progress, interesting results, and also the children's view of today's world and its problems with the project leaders Markéta Supa, Alice Němcová Tejkalová, Martin Soukup, and Vojtěch Hod'bod from the Faculty of Social Sciences, Charles University.

1 In the project, you set the goal of uncovering the multicultural and media experiences and attitudes of Czech children aged 8 to 12. Has the research yielded any surprising unexpected findings?

Alice Němcová Tejkalová: We were surprised by the low tolerance for any differences that we observed in the focus groups. For children, being overweight or having crooked teeth can lead to the painful experience of being excluded from the collective because they do not meet the requirements of the current and local ideal of beauty.

Martin Soukup: In other words, and in a somewhat simplified way, bodily difference meant more than cultural difference. But cultural differences also represented a barrier. When evaluating others, children focused not only on physical attractiveness but also on visible manifestations of cultural customs, for example veiling or dreadlocks. They displayed a number of stereotypes and prejudices based on these.

Markéta Supa: Our research initially only focused on cultural difference, but it eventually became clear that no one is completely spared from the experience of being rejected by the collective. This issue affects essentially all children (and adults). However, according to our research, those who do not conform to strict ideas of beauty and at the same time visibly display belonging to a “different” culture seem to be most at risk.

2 These are very interesting findings, but not very positive ones. Was there anything that surprised you in a good way?

Markéta Supa: Yes, the initial almost immediate condemnation often subsided as the discussion progressed, and the children began to show empathy and an interest in helping others. Asking them whether something similar had ever happened to them or someone close to them worked

almost like a magic wand. The direct experience of being rejected by the group, even on the basis of a very banal difference, helped the children to empathise, understand, and sometimes even act.

Martin Soukup: Younger children, when looking for a possible solution to the situation, mostly focused on ways to eliminate the difference, for example – take off the headscarf, cut hair, lose weight. Older children more often identified the deeper pitfalls of a given situation, and their proposals for overcoming barriers sometimes also took into account the need for mutual tolerance and respect.

Markéta Supa: However, the older children, like the younger ones, focused mainly on individual responsibility rather than systemic change.

3 Media education in primary or secondary schools is not firmly anchored in the curriculum. So how do Czech children fare in regard to the consumption and understanding of media content? For instance, can they process and understand news reports?

Alice Němcová Tejkalová: Our project did not directly deal with how children understand media content. Of course, within the focus groups, we examined where they got a particular information from, and they mentioned the respective media. However, we were primarily interested in their attitude towards difference, which is influenced by the consumed media content as just one of many factors.

Markéta Supa: We worked with the theory and practice of media education mainly in the second phase of the project, in which, together with the application guarantor – the Prague Multicultural Centre, we created and piloted a three-hour workshop for children called “We Change the World” based on the support of focus groups. Instead of analysing and understanding contents, we focused on

creative and socially participatory areas of media literacy. We thus worked with children as potential creators of media content. The main goal was to show the children that even systemic change is possible and that they can actively participate in it with the help of new technologies and thanks to cooperation with others, regardless of mutual differences.

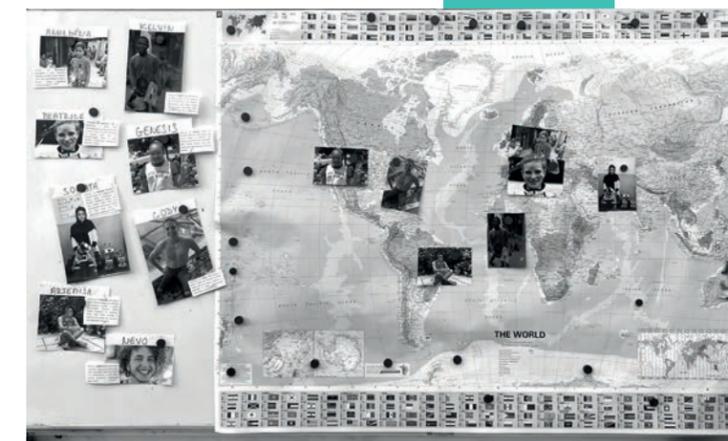
4 In the name of the project, you use the word “prosumer”, which is a person who not only consumes content, but also produces it. How specifically do you want to involve children in content creation?

Alice Němcová Tejkalová: Media content for children is very often created by adults based on their own ideas about children and experiences from childhood, and the children themselves are only very partially involved in the creative process. However, our research showed, as we described it in one of the articles we published, that this sometimes leads to the creation of programmes that children are not interested in at all, or even interpret them differently than their creators intended. One of the recommendations in the final reports for our application guarantors – Czech Radio and Czech Television,

was precisely that – when developing programmes, they should not only test them on children, but also listen to children in the introductory discussions, include them and involve them in the process, for example, in moderating as well as editing programmes.

5 Did the research results bring a solution to how to approach media education in schoolchildren?

Vojtěch Hodbod: For the needs of the mentioned workshop, a didactic method was created, the principles and approaches of which can be applied within media education, as we have also stated in the article published in the Media Education Research Journal. We do not provide general recommendations on how to grasp media education in schools. But some things have worked very well for us, for instance, focusing on the children’s own experience, their opinions and attitudes, and the use of inter-▶



Members of the research team from the Institute of Communication Studies and Journalism, Faculty of Social Sciences, Charles University:

active and creative methods. To give an example, during the workshop, the children first thought about what important social topic they really care about in their lives (they mentioned e.g. animal abuse or pollution) or what personal topic they are currently going through (parents' divorce or bullying). Subsequently, they were divided into groups according to the topic they were interested in, and in these groups they proposed a fictitious communication campaign, how the selected topic could be specifically addressed, or what they would like to say about this topic. During the design of the campaign, the children also got to know the stories of so-called "superheroes", which are child activists from different countries of the world, who connect their own experience with accepting differences and the effort for social change with the use of media and digital technologies. Children could also fictitiously call on one of the superheroes for help and use one of their superpowers. Then they presented their campaigns and had the opportunity to reflect on what they liked at the workshop, what they learned, and what they would do differently next time.

6 What are the main conclusions from testing your method?

Vojtěch Hodbod: First of all, the children reacted very positively to the fact that someone listens to what they have been dealing with in their lives, or that they have the space at school to focus on and express

themselves about topics that really matter to them. When the children evaluated our method, they repeatedly mentioned that they enjoyed this method of learning very much, that they liked working in a group, that they would like to think about these topics repeatedly and in more depth. One of the conclusions that emerges from our testing, for example, is that there is no need to be afraid of dealing with such sensitive and personal topics with children, and that if we can support children in reflecting on their own experiences, they can learn more about themselves and the world around them and really learn a lot about the media, and they can even teach us as well.

Markéta Supa: Our research therefore suggests that children's reflection on their own lives, together with their potential to be actively involved in society, can be jointly developed through media or other types of education from a relatively young age.

Vojtěch Hodbod: Of course, in order to be able to realise the potential that the method offers, we would need the children to be able to work in a similar way continuously and long-term, not in the form of a single workshop or short-term intervention. Everything that the children do only fictitiously in our workshop, they could subsequently do, experience, and get to know in quite realistic ways.

7 I would also like to ask about the multicultural aspect of research. What is the connection between



Mgr. Markéta Supa, M.A., Ph.D. is the main researcher of the project. She has been researching for a long time how children from different backgrounds perceive their own experience with media and learning about it. She received her doctorate in the philosophy of children's media education in Britain in 2015, where she still works as a Fellow at the Centre for Excellence in Media Practice. At the faculty, she is the chairperson of the committee for research ethics.

the multicultural and media experience of Czech children and why did you decide to combine these two topics? Was there a specific event that led you to this?

Martin Soukup: The multicultural nature of our society cannot be separated from our media lives. Every day, we consume media content and participate in its creation, whether through comments or our own posts on our social network accounts. This applies to both adults and children. Our society is multicultural in nature. In schools today, it is quite common for classes to consist of students from different cultural backgrounds, children do not necessarily celebrate only Christian holidays, as they may have a different year cycle structured by other holidays. The close connection between multicultural and media experience is well illustrated by the case of a photo of a school class in Teplice-Prosetice, which received hateful comments; there were many Arab, Roma, and Vietnamese children in the class.

Markéta Supa: Yes, that was a disheartening and simultaneously motivating event for us. And we could name more similar examples that



doc. PhDr. Alice Němcová Tejkalová, Ph.D. is the head of the Department of Journalism at the Institute of Communication Studies and Journalism. From 2018 to 2022, she was the dean of this faculty, and in the past, she has worked as a sports journalist with an interest in minority issues. Since 2019, she has been the co-coordinator of the Central and Eastern European region in the international Worlds of Journalism Study project. She is also the vice-president of the Commission for Equal Opportunities in Sport of the Czech Olympic Committee.

demonstrate the need to focus on this topic. From a global point of view, for example, the Black Lives Matter movement can be mentioned, which shows the close connection of media, multicultural, and civic experience.

Martin Soukup: These are definitely important topics that should not be underestimated, they can turn out to be immediately relevant from day to day, as the events in Ukraine show. After all, it is the children in the classes who create a collective with its own dynamics of relationships, where the children simply choose to be friends with someone and not be friends with someone else.

8 The survey took place among children aged 8 to 12 years. How do you actually work with children in research? What is the biggest challenge (e.g. children paying attention)?

Markéta Supa: Working with children in research is always wonderful. They are willing to share their experiences and opinions, often more openly and with more enthusiasm than adults. In this and other projects, we pay very close attention to



doc. PhDr. Martin Soukup, Ph.D. finds the basis of scientific work in field research, which he carries out in Papua New Guinea and recently also in the Philippines and the Czech Republic. Among other things, he is engaged in researching children's opinions on the nature of their own society, culture, and cultural changes, which they can observe and participate in.

the design of the research, taking into account the child participants and the obligations that arise for us from their involvement. On the one hand, it is necessary to approach children as equal partners and real experts in their own lives. On the other hand, it is advisable to use research methods and techniques that take into account their possible immaturity and vulnerability and that help them think about and talk about the topics. In this project, the focus groups consisted of several activities. One of them, for example, was a game about a casting agency, during which children proposed the plot of their own movie or TV series and chose actors and actresses from a pre-selected pool to play the main roles. Thanks to such an approach, research is fun for them, they do not lose their attention and motivation. At the end of the intervention, children are also often very interested in the goal of the research and want to know what we are going to do with what we have found. Therefore, we feel a great responsibility, and we try to be able to do something more with the findings than just publish professional articles. The ideal, but rather exceptional



Mgr. Vojtěch Hodbod is a PhD student in the field of Media and Communication Studies. He has been dealing with the study of the media experience of adolescents and the development of self-reflection in media education. He teaches media education at *Naše Lyceum Praha* secondary school.

9 Is there anything you would advise researchers who want to work with children?

Markéta Supa: First, to actually do such research and involve the children in the research as much as possible. Children have an internationally recognised right to express themselves in all areas and topics that affect their lives. It is our responsibility to create suitable conditions for them to do so and to have a sincere and active interest in their thoughts, feelings, and experiences. Furthermore, to not underestimate children and to be critical of their own assumptions about children and childhood. Research that seeks a deeper understanding of children in an open and non-judgmental way is often neglected by those that test children in some way and verify their abilities, knowledge, and skills. However, such tests often speak more about adults and their ideas than about the children themselves. ✕

“Dostupné bydlení ČS” Connects Czech Science and Czech Companies

Photo: Česká spořitelna Archive,
Depositphotos

“150 years ago, we donated the Rudolfinum to Prague; in 1925, we built a completely new district of Spořilov, which is perceived to this day as a pleasant place to live. At present, we also want to contribute,” says Marek Blaha, CEO of Dostupné bydlení ČS. “In a society that is not flourishing, with people that are not thriving, no bank prospers, let alone the biggest one”, he adds. The Česká spořitelna bank was inspired abroad, especially in Austria. In Vienna, the parent company of Česká spořitelna has been building apartments for sixty years, and now there are a total of fourteen thousand of them.

How does the affordable housing project accentuate diversity?

I dare say that we are a prime example of diversity and sustainability. The fact that we are trying to solve the availability of housing reflects the economic situation, social challenges, and also environmental aspects, as we want to follow the path of sustainable construction or wooden buildings. In addition, we cooperate and regularly consult our ideas with top scientific centres, whether it is the University Centre for Energy Efficient Buildings of the Czech Technical University, the University of Chemistry and Technology, or with research institutes focused on the social field. In this way, we connect know-how from various scientific fields in one project. At the same time, we also want to involve corporate clients in the construction. This means that Czech research centres and Czech companies will be directly connected in our project, and we believe that we can support the diversity in research and innovation of Czech companies.

Why is affordable housing important to us?

Last year, property price in the Czech Republic grew the fastest in Europe. Prices increased by about 26 per cent year-on-year. The Czech National Bank tightened

One of the important pillars of diversity in Česká spořitelna is its subsidiary company “Dostupné bydlení ČS” (Česká spořitelna – Affordable Housing). Its goal is to build affordable rental housing projects in the Czech Republic for selected professions that are, for example, important for the city (postal carriers, social and technical service workers, nurses, doctors, etc.). These people could live in an apartment for rent that would be a quarter cheaper than the market rent.

the criteria for mortgages, which further increased the unaffordability of owner-occupied housing. Czechs now need twelve to fourteen annual salaries to buy an average seventy-square-meter apartment, which is the highest number in all of Europe. Four salaries are enough for the Portuguese, for instance. Own housing in the Czech Republic is essentially unaffordable for young families, but also for middle-class earners with an average income. And this is an alarming social detonator.

What motivated you to start this project?

We are the largest bank in the country, in some way we are connected to every second resident, and it is in our highest interest that society prospers, people are not in foreclosures and have somewhere to live. In a society that does not flourish, with people who do not thrive, no bank thrives, let alone the largest. But for me, it is above all a very inspiring mission. And it is similar, for example, to when we established the passbook two hundred years ago.

In what way?

It was an innovation that brought bank services to people who had never used them before. Banks were only for nobles or rich industrialists. But then savings banks were established that offered the first passbooks. The founders of savings banks knew that if they gave ordinary people the opportunity to save, they would lift them out of poverty, strengthen social harmony and thus increase

Marek Blaha

has been the CEO of the new subsidiary of Česká spořitelna – Dostupné bydlení ČS, since January 2022. The company aims to create a housing stock of thousands of units with rent-stable and affordable housing, modelled after the Erste concept in Vienna. Marek has held a top management position at Česká spořitelna since 2016. As head of retail distribution, he has been responsible for five thousand people and CZK 26 billion in revenue.



the prosperity of the whole society and, last but not least, the prosperity of the savings banks. Savings banks focused specifically on supporting the middle class and financed the construction of breweries or glassworks that increased local wealth. That is why Česká spořitelna had a bee in its logo as a symbol of diligence and community.

You want to change the situation of affordable housing in the Czech Republic. How will you accomplish this?

We want to help break the ice a little and be inspired by the best models from abroad that have been working there for decades. In addition to Austria, it is also Germany, the Netherlands, or Switzerland. Then we want to present these examples of good practice to the public, government, and institutions in order to create a nationwide framework with clearly defined rules so that more investors can be involved. And moreover, there are tenants who will be assured of a long-term, stable, and affordable rent. Increasing the availability of housing through rent subsidies is an important tool for maintaining social harmony. ✘





United in Diversity

Author: **Táňa Hálová Perglová**

Photo: **Unsplash, Depositphotos**

Photo by Matteo Vistocco on Unsplash

“United in diversity” is the motto of the European Union, which was first used in 2000. It accurately describes the EU principles – we build peace and prosperity as one, but we each bring our differences with us – whether cultural, linguistic, or otherwise. Differences are not understood as something that divides us, but on the contrary as something that brings us together, brings different perspectives and thus greater tolerance and progress.

There are more initiatives in the field of diversity and inclusion at the EU level. We can name, for instance, the EU Platform for Diversity Charters, which helps the public and private sector organisations to create and implement effective policies promoting diversity and inclusion. The charters are organised at national level and already have more than 12,800 signatories, representing 16 million employees.

Or we may mention the European Capitals of Inclusion and Diversity Award, which is awarded to municipalities, cities, or regions for building a fairer society and promoting inclusion and diversity. In April of this year, eight local authorities received this award, but not one of them was from the Czech Republic.

Last but not least, let us mention the European Diversity Month initiative, which aims to draw the attention of employers and employees to the topic of diversity in society and in the working environment. Every May,

a topic is selected on which events across the EU focus.

Diversity in research and innovation

Diversity is a horizontal topic that is prescribed in EU policy as one of the basic principles. If we take a closer look at the area of research and innovation, this principle is already anchored in the legislative document itself – the Regulation on Horizon Europe. The text directly says:

“Evidence shows that embracing diversity, in all senses, is key to doing good science, as science benefits from diversity. Diversity and inclusiveness contribute to excellence in collaborative R&I: collaboration across disciplines, sectors and throughout the ERA makes for better research and higher quality project proposals, can lead to higher rates of societal take-up and can foster the benefits of innovation, thus advancing Europe.”

“In addition, the activities under the Programme should aim to eliminate inequalities and promote equality and diversity in all aspects of R&I with regard to age, disability, race and ethnicity, religion or belief, and sexual orientation.” >

How does this principle manifest in practice? Projects are selected according to three main criteria – excellence, impact, and implementation. However, the work programme may stipulate that other criteria will be taken into account for the given call, such as the involvement of small and medium-sized enterprises, the gender perspective, or geographical diversity. In particular, the criterion of gender balance of the team decides between projects that score the same number of points, but cannot all be financed due to lack of funds.

The aim of the EC during Horizon Europe is to achieve a composition of 50% women in expert groups and evaluation bodies. In terms of evaluators and their selection, great emphasis is generally placed on diversity. The criterion for selecting evaluators of calls is not only their professional focus – great emphasis is also placed on the balanced ratio of men and women, their geographical

distribution, and the representation of the private and public sector. Age is often reflected in the criteria as care is taken to cover different age categories for evaluators. After the entry of the Czech Republic into the European Union, it was even said that women from Eastern Europe, from the private sector, between the ages of 30 and 40 have the greatest chance of getting into the circle of evaluators and actually evaluating projects. There were few of them in the database of experts at that time. However, the fact remains that the EC regularly presents detailed statistics reflecting the diversity of evaluators to representatives of the member states. This statistic always takes into account the gender aspect, usually also the aspect of the distribution of the ratio of evaluators from the private sector versus the public sector. However, it depends on the configuration of the programme committee responsible for the given

part of Horizon Europe, which can also request more detailed statistics.

Diversity in research and innovation projects

If public institutions, research organisations, and colleges or universities want to participate in Horizon Europe calls from 2022 onwards, they must have a Gender Equality Plan that meets the binding criteria. Having a Gender Equality Plan drawn up means going through a gender audit, setting goals and measures, and fulfilling and regularly evaluating this plan. Plans usually focus on reconciling personal and work life, gender balance in management and decision-making, gender equality in recruitment and career progression, inclusion of the gender aspect in the content of research and teaching, and measures against gender-based violence, including sexual harassment.

Since the development of a Gender Equality Plan takes some time,

the European Commission allowed potential beneficiaries to prepare for this condition already during Horizon 2020. Within it, it was possible to participate in calls aimed at directly setting up a Gender Equality Plan within the institution, developing the entire system, and sharing experience with other foreign partners. Several Czech institutions used this opportunity.

The Gender Equality Plan and its aspects are then part of the profile of the applicant/beneficiary directly in the electronic system, which is used to submit Horizon Europe projects.

At the same time, greater emphasis is placed on the evaluation of projects from the perspective of gender in the research content.

Newly, Horizon Europe has also been focusing on women innovators, as part of the calls of the European Innovation Council (EIC). In addition to the special Prize for Women Innovators, the EIC also offers laureates participation in the Women Leader-

ship programme, within which they are provided with special coaching, education, and the opportunity to participate in dedicated events. Last but not least, the goal of the EIC is not only to have a more geographically balanced portfolio of projects, but also to have a greater representation of female innovators who lead projects and manage innovative companies.

Diversity and inclusion research

Within Horizon Europe, however, it is also possible to find dedicated calls focusing on inclusion, discrimination, and inequalities. These can be found under cluster 2 – “Culture, creativity, and inclusive society”. Here, research projects focus, for instance, on cultural diversity and ways of preserving European cultural heritage, on the effects of inequalities on democracy, on the integration of migrants, and on racial, ethnic, and religious equality.

The work programme is two years long, so it is possible to prepare well for the call in advance, find a suitable consortium, and put together a competitive project.

ERA Action 5

The issue of diversity and gender aspects is horizontal in both European and national policies. This is an area that needs further work as there is still a lot of prejudice. Within the framework of the European Research Area, one of the proposed actions, which received a large number of positive responses from EU member states, is Action 5, i.e. to “Promote gender equality and foster inclusiveness, taking note of the Ljubljana Declaration”. If the member states eventually commit to this action, they will work on specific measures not only at the EU level, but mainly at the national levels. ✘



Typology of Innovation Agencies According to Taftie

Autorka: **Baya Barбора Nuñez**
 Photo: **Pexels, Depositphotos**



As with all challenges, there are also associated opportunities.

Agencies may take on different elements of these roles at different stages as their own priorities evolve. The role of Implementer was the most widespread among the Taftie member agencies and is therefore considered a kind of “standard”, but at the same time, it does not exclude the simultaneous assumption of other roles. The TA CR, for example, perceives itself as an Implementer, but it also finds itself in the role of a Developing Agency and partly in the role of an Internationalist as well.

The study further identifies issues that agencies must be aware of when reassessing their roles. Four challenges stand out in particular:

- 1** To adapt but maintain a unified direction.
- 2** To stick to a strong and holistic strategy during transformation.
- 3** To build competitiveness through skills and talent.
- 4** To utilise different sources of funding due to political and financial instability.

Research has shown a number of ways to respond to the above challenges, for example:

Incorporating foresight and other innovative methods: To keep pace with change and new opportunities, agencies can use foresight and pre-planned scenarios and other innovative methods in response to turbulence. This will also help them avoid superficial assumptions and blind spots that can hinder their strategic planning.

Accepting the role of facilitator: Meeting all the needs of the transformation agenda is getting more and more difficult over time. One way to respond to the situation is to act as an organiser bringing together multiple actors and their capabilities.

Boosting the space for continuous learning: Agencies need to better understand what skills and capabilities they will need in the future to remain competitive. One way is to foster holistic learning cultures that help agencies collect data and use it to make informed decisions about their development trajectory.

Looking for opportunities beyond the horizon: Recurring economic and political changes are inevitable. Moreover, it can be assumed that they will appear more and more often. In response, agencies have an opportunity to consider how their funding models could be diversified and how institutional safeguards could be strengthened. These steps could help agencies build a greater degree of autonomy over time.

In addition to describing how the agencies currently operate, the final report of the Taftie Task Force Characterisation also provides an outlook for how they will operate in the future. The entire report is available on the Taftie website:



In July 2022, the European Network of Innovation Agencies – Taftie – presented the final report from the Task Force Characterisation working group, in which the Technological Agency of the Czech Republic (TA CR) also participated. The main objective was to analyse Taftie member agencies, determine their typology, discover their potential, and define the role they play in their country. Another objective was to identify the weak points of the agencies, such as insufficient experience or knowledge, competences, services, and skills that innovative agencies need to improve to function well.

The working group was established in April 2021 in response to the need for agencies to manage adaptation to changes in the innovation ecosystem, which puts significant pressure on them. According to the coordinators, the roles of innovation agencies are determined precisely by their position in the ecosystem. However, the ecosystem is variable, and as it changes, the positions of the organisations themselves can also change. Innovation agencies face this pressure to a great extent because the capabilities and standards of state institutions rarely match the dynamics of innovation processes. Therefore, flexible response and adaptation to the current demands of the ecosystem is challenging for agencies. According to the working group, some governments even find it easier to establish a new institution as soon as a significant policy change occurs, rather than allowing an existing institution to adapt its functioning and support tools accordingly.

But Task Force Characterisation research has shown that transforming an innovation agency is possible and, when successful, provides valuable opportunities for growth.

In general, research has focused mainly on how EU innovation agencies work. The analysis placed particular emphasis on the correlation between the strategies of the agencies, their support programmes, and organisational arrangements. The analysis has revealed six basic roles that innovation agencies take on to a greater or lesser extent to fit into their environment:

IMPLEMENTER: An agency whose main focus is the operation of research and innovation activities on behalf of its ministry.

STRATEGIST: An agency that plays a significant role in the formulation and development of innovation policy.

DEVELOPING AGENCY: An experimental agency that innovates its own processes and thus creates a new position in the innovation ecosystem.

ENTREPRENEUR: An agency that generates its own income from a number of different sources, including public funds.

LEAN AGENCY: An agency that maintains a growing budget and low operating costs.

INTERNATIONALIST: An agency with an agenda focused on international activity, from which it seeks to extract maximum potential.

Today's World is Like a Tuna

Author **Leoš Kopecký**

Photo: **Pavel Šinágl**,
Unsplash, Depositphotos



Tomáš Studeník willingly let us interview him in August, although he was currently on vacation by the sea in Slovenia. The original intention was to gain two or three explosive sentences from this radical innovator on the topic of prejudices in science and research, and then use them as quotations in an article, but our conversation went on and it would be a shame not to present his view on the matter in the full breadth and length of our half-hour talk.

I am curious myself, what kind of view I will have, but it will certainly be radical.

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So, what is your take on the usual topic of women in science and research?

The most interesting thing is that the only person who ever received two Nobel Prizes and, moreover, in two different fields was also the first woman to receive the prize – Marie Skłodowska-Curie. It's a shame that this phenomenon is not being developed. Discrimination still persists – be it in terms of salary or the fact that women are more often in the position of subordinates rather than managers. It's a shame because how science is done depends a lot on creativity and a different perspective rather than on what the mainstream represents. I believe that for further development it is necessary to involve more of the creative female approach than the views of bearded sages. This is the chance to move science forward. Personally, I am a big supporter and fan of more women participating in science, who would go into research – even in the so-called “hard” fields. However, this cannot be solved by waving a magic wand or imposing quotas. It's about resetting our cultural stereotypes, making changes in education. And this is a big task, which is not yet being adequately addressed, nor is anyone dealing with it as they should. There is no simple recipe. >

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As you said, the path leads by changing the paradigms of our mentality, by removing prejudices. How to achieve that?

Globally, at the moment, the proportion of women in science is about 35% and there are about 51% women in the population, so for some reason there are still quite a few women missing. The barrier is due to indoctrination and upbringing, how the system automatically places men and women in certain roles. For example, when my daughter is interested in programming and wants to program space probes, she usually arouses surprise in the people around her because it is still not a standard interest. Conversely, when my friend's son wants to design fashion collections, he receives a similar reaction. This discussion is not simple and is also taking place in other areas.

Who is to blame and how to change it?

One change that could be made quickly is to start showing successful women in scientific fields and look for female influencers and ambassadors that we know from other campaigns, for example hamburger campaigns, where there are already enough of them. But when it comes to women in science, it is a problem. They are not there. One could start from the top at the governmental or European level, and at the same time spread success stories from the bottom for peer motivation at different ages of children, because it is said that today, from the age of 6, peers take over parenting. I think there are quite a few success stories around us.

You have experience studying abroad, what is it like there?

I have knowledge from a British and French background, and in general, I believe that both the British and French mentality is more inclusive and open. There is definitely no cultural rigidity there. Britain has always

been a model of liberty and whoever you are, whatever you look like, and whatever you say, you are welcome. In our country, I sometimes have the impression that one may only say what one is supposed to say, and whoever deviates does not get such a standing ovation as, for example, in the British environment. I mean above all the academic environment - when you walk through Oxford or Cambridge, you feel the free spirit flowing between the halls and libraries and it doesn't matter if you are a man or a woman. However, I don't think they have a particular recipe there, rather it is already a tradition that has developed a little differently in our country in recent decades. Here, for a long time, there was conformist thinking and an effort not to stand out as a way to survive and cope with the system. Today, I already feel how detached views and the courage to be different are gradually being born. When I work with young people in the Caelestinus incubator or at hackathons, I feel that fresh winds are already here. I am not a pessimist who thinks that Czechia will remain some kind of open-air museum. On the contrary, I think that our ability to be "forethoughtful", as Jára Cimrman says, i.e. our acumen towards the world is emerging, and the fear - either of failure or of having the wrong genitalia to succeed in some field - has been gradually disappearing. >



RADICAL AND URBAN HACKER INNOVATOR

Tomáš Studeník

Tomáš Studeník received an MBA at the University of Liverpool and an Msc. in Innovation from HEC Paris. He organises innovation marathons called CEE Hacks, where students from all over the world solve problems in healthcare, transport, energy, industry, and the social sphere. Tomáš helps global companies awaken the spirit of innovation and look for new opportunities in the post-digital era. He heads the Insane Business Ideas consulting company. He also cooperates with government organisations Czechinvest, the Technological Agency of the Czech Republic, or the European Space Agency. In 2014, he introduced the entertaining/educational FuckUp Nights format in the Czech Republic, where failures in business and life are shared publicly. The best stories of failure were published in 2018 by Jan Melvil Publishing as the Big Book of Fuckups. Tomáš was nominated for Esquireman 2019 in the business category. In February 2021, the theatrical play project THEAITRE, authored by Tomáš, had its world premiere. It was the first stage play written by an artificial intelligence, and fittingly, it took place 100 years since the premiere of Čapek's R.U.R. play.

Photo by Matthew Henry on Unsplash

Do you think that diversity could be encouraged by rejecting uniformity?

That's not a bad idea. But there are different kinds of rejecting. I have previously discussed something similar with the TA CR and we tried to figure out how to encourage applicants for support to apply for projects with even bolder ideas. This means that the projects should not be written in such a way that they are likely to get approved, and thus not very daring, so that an evaluator is not frightened that the project is completely nuts. And with that comes diversity. In the innovation portfolio, which applies in the private sphere and somewhat also in the public sphere, the matrix of scientific progress, of those secondary applied innovations, will probably bring the most profit if it is also diversified itself. If it doesn't focus only on "easy peasy", simple and safe projects that don't pose much risk. The commercial sphere is also looking for risky projects, because it is precisely with them that there is a high chance of a large return that corresponds to that risk. And then it is offset by low-risk projects. The lack of the Czech science and research environment lies in the lack of courage to go for riskier things. Of course, the problem is that public money is involved. They always have to justify why they're taking a risk when they're risking everyone's money. It is necessary to explain to the government, the public, and experts that it is a reasonable approach to take a reasonable risk and that there is no reason to avoid even the very risky, novel, and seemingly crazy ideas if they fit into some strategy where it is compensated by safe projects. And if Czechia wants to achieve something in the field of international science, we cannot avoid bolder projects. The vision that we will only do safe, predictable things that will simply confirm the hypotheses we have written (most applications are written in a way that the hypothesis confirmation is prob-

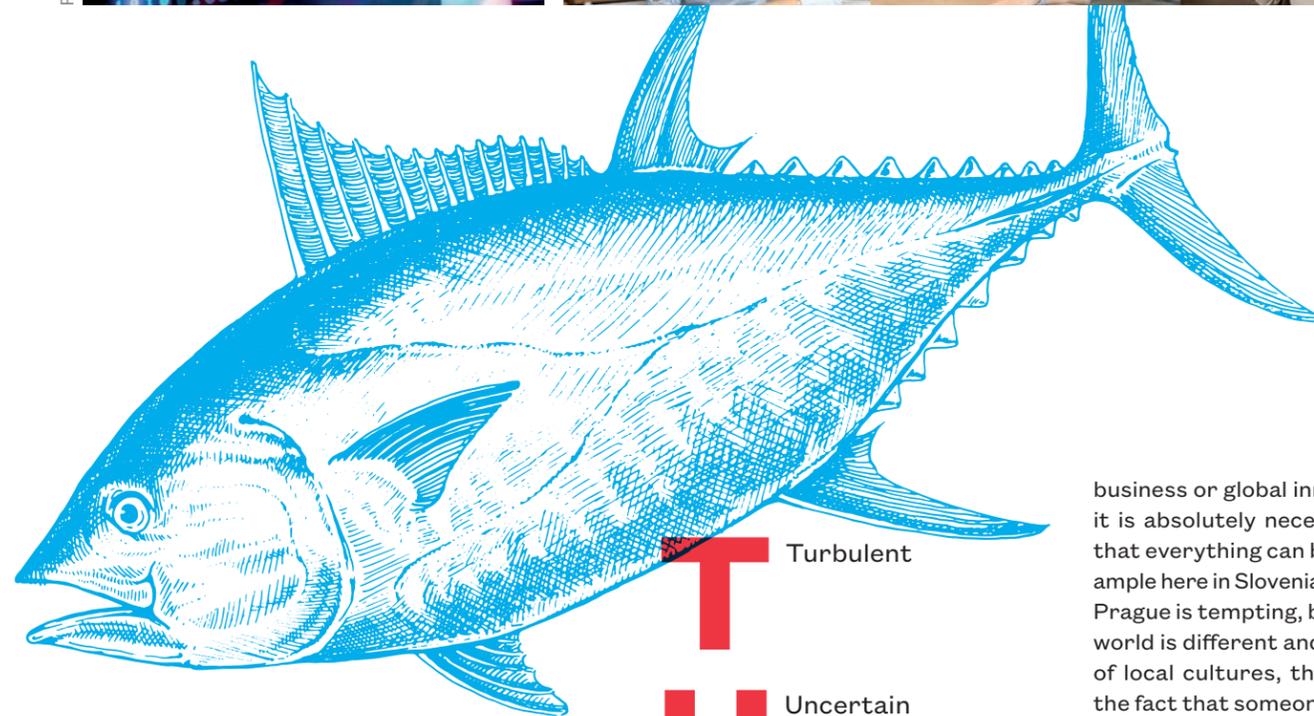
ably obvious) is not the right way to go. If I have a hypothesis, I want to confirm it with an experiment, and when I find out that it doesn't work, then it's also a piece of knowledge, albeit it's not published so much in magazines and no one brags about it. I think there is a lack of a system to work with failures and hypotheses that don't get confirmed. I personally work a lot with failures, and I think it requires a reconfiguration of the whole system, so that teams are not afraid to publish an experiment that fails, and mainly to analyse what was designed in a wrong way and why another experiment needs to be carried out. We should create some kind of system for publishing research failures so that they are not taken as something that does not belong in science and research.

What about skin colour?

Skin colour is still a problem. Just today, I read a report on Twitter that a group of African-Americans were denied entry at an American theme park. On the other hand, my experience from international teams during studies or during some projects is that the diversity is already present, especially when dealing with global



Photo by ThisisEngineering RAEng on Unsplash



T Turbulent
U Uncertain
N Novel
A Ambiguous

business or global innovation, where it is absolutely necessary. The idea that everything can be solved for example here in Slovenia or from a pub in Prague is tempting, but in reality the world is different and the knowledge of local cultures, the environment. the fact that someone grew up in another part of the world is so essential for global solutions and cooperation, that we cannot do without it. Here, diversity is a prerequisite. If we don't have a global dimension and experience from different continents and cultures, then we can hardly really solve anything. Sometimes it is difficult because we all have prejudices, it is even impossible to have none. One acquires them and one only needs to be aware of them when they appear in one's mind. For instance, when I speak to a colleague from India, I immedi-

ately start speaking English differently than when I have a colleague from South Africa in front of me. In the end, one finds that the issues are relevant, even if the country or culture is far away. For example, there is a heat wave in India, it is fifty degrees Celsius and humid, and they have no electricity. How they manage to live there without it is now extremely important for the developed world, because suddenly we have to deal with how we will live without gas, without electricity, what if there is a blackout? On the contrary, in more developing countries, where resources are very limited, innovations and technologies are created, which can later save the developed world and definitely enrich it. Natural disasters, as we often see them live, are no longer just in distant Australia or America. I'm sitting here in Piran, Slovenia, by the sea, but just a little further away in Carso, Italy, forests are burning. Suddenly one realises that it's all over the place. Remember, for example, the recent wildfire in Czech Switzerland. I think we will realise that we are also becoming a country that may face all those threats, and it is not harmful to bring the experience from the rest of the world here and adapt it. The more we perceive the planet and the globalised society, the more it will be necessary for us to build global teams not only within the countries of the European Union, but also to reach out further.

I like a slogan that works mainly in English, although not so much in Czech, but it is still significant. The world is like a tuna - TUNA - Turbulent, Uncertain, Novel, and Ambiguous. I think that the tuna world will become more and more tuna-like and the way science works, or business, or just about anything will have to be readjusted accordingly. One of the consequences will be that even here in our Czech valley, we will perceive that the world is globally different, and I hope that this will lead to greater inclusivity not only in terms of women in teams, but also of other skin colours. ✘

Connecting the World of Business and Academic Research in the Moravian-Silesian Innovation Centre

Author: **Veronika Svrčinová**

Photo: **MSIC Archive**



We are targeting people who are looking for successful ways of mutual cooperation. People who believe that quality research brings an infinite number of new opportunities not only for the world of business," says MSIC board chairman Pavel Csank. Although business and academic research need each other, the different principles on which they are based lead to the emergence of a number of barriers. Their removal can facilitate both the transfer of new ideas and the co-creation of new added value.

This year's focus is on different perceptions of excellence at different stages of the journey from research to the launch of a new product or technology. Participants can expect a panel discussion, specific stories of B2S cooperation, news from research and applied excellence, or a pitch deck session with high-tech startups, elite researchers, clusters, and others. There will also be space for networking, which will be accompanied by ample catering.

For example, biochemistry professor at Masaryk University Jiří Damborský, CEO at IOCB TECH Martin Fusek, CEO and Chairman of the Board of Directors of BioVendor Group Michal Kostka, Operations Product Manager at

Forvia (Hella) Pavel Tuček, Co-founder and managing director of i&i Prague and executive director of the i&i Biotech Fund Jaromír Zahrádka, Innovation Management Coordinator at ŠKODA AUTO Jana Polášek Filová, and many other important guests will speak about the search for agreement and mutual opportunities. The entire event will be moderated by Martina Pouchlá, a long-term moderator of Czech Radio.

Intensive cooperation between the business and academic spheres is a basic characteristic that marks the development of the innovation ecosystem. It leads to the transfer of specific knowledge, new technologies, and important contacts with an impact on the overall prosperity of the society. This is why the Moravian-Silesian Innovation Centre decided to devote such care to the topic and contribute to change through the conference.

Csank invites Moravian-Silesian companies: *"We look forward to everyone who likes to discover new paths in whatever they do. Especially in a world in which borders are increasingly artificial and crossing them is an inspiration as well as a challenge."*

You can find more information about the conference and other related B2S activities at



The second year of the Business2Science conference, which aims at effective cooperation between the worlds of business and research, will take place in Ostrava. On 10th November, the Moravian-Silesian Innovation Centre (MSIC) will welcome prominent speakers from both spheres to debate the various forms of research excellence. The varied program should lead to greater understanding and easier cooperation during the creation of innovations.





Photo by Andrea Placquadro from Pexels

I Am 64

and I Am Different...

Author: **Leoš Kopecký**

Photo: **Pexels, Depositphotos**

How different? And how much? Not much, I am just as different as anyone, it's nothing significant. But be wary, today it is not enough to simply acknowledge and accept the fact that we are all somehow different, that we are all original. It is important not only to respect the otherness, the diversity that we are aware of, but also to appreciate it and understand it as a positive, as a welcome contribution to the common great jigsaw puzzle of our lives. I think that the need to perceive personal differences is one of the main reasons why, for example, gender issues are addressed so often and abundantly in the media, on social networks, and in society, or why tattoos and piercings are so popular among young people.

We have become used to showing that we are different. For example, the British Facebook, in order to fully satisfy its users' desire for an original identity, offers 71 gender options in the profile. Is that too many? Too few? I don't know and I ask myself whether at my age (64), I am able to find the value and benefit of all these variants even in such an extreme spectrum. And which gender would I choose for my FB profile in Britain? I'm definitely not cassgender because the whole idea of gender is basically foreign to them, and I, as a father of two children, although twice divorced, feel like a normal man. But what is normal? This is where I wonder how often the word normal is given a meaning that does not belong to it. It is not true that NORMAL = GOOD (correct, moral). However, the association is there.

“Normality really becomes an ethically relevant issue. Not perhaps because what is normal would also be moral, but because the way we understand what is normal has a significant influence on how we behave ethically towards and make decisions regarding other people.”
Quote: Bc. Daniel Guńka, UPOL.

So I delved back into the gender list and started searching for myself more rigorously. Am I earthgender if I am excited by the beauty of nature, or rather faunagender since I've been living and sleeping with a cat for several years? I wasn't sure, so I left it to the younger ones as the question is much more relevant for them. I was rather interested in how this topic of differences, abnormalities, and normalities is reflected in science and research and if it is reflected at all.

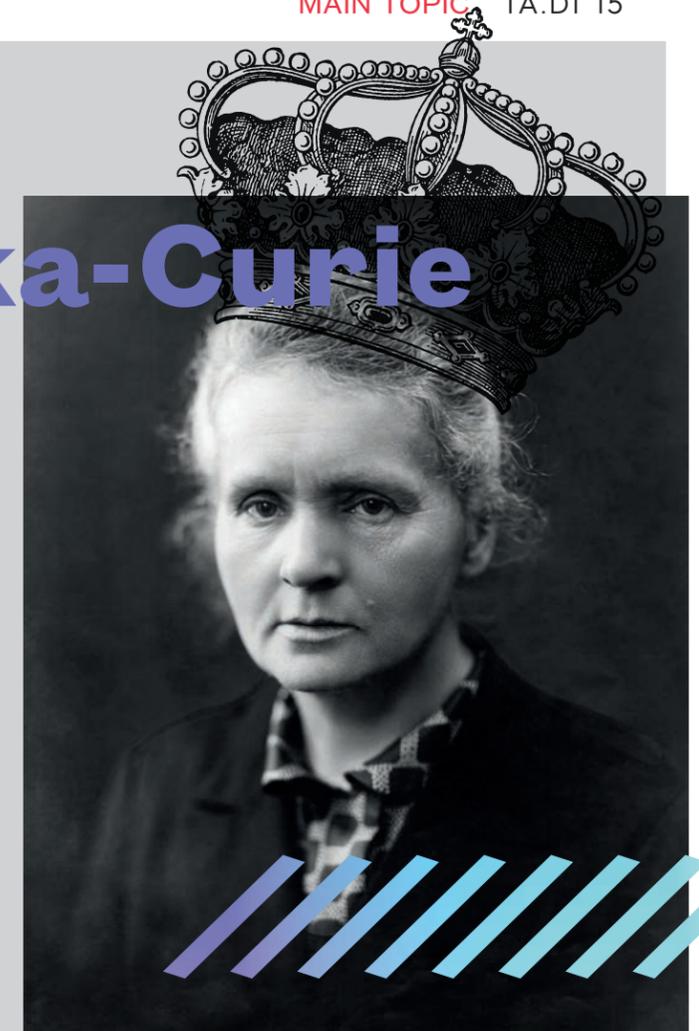
Leonardo Da Vinci, the greatest Renaissance giant, is believed to have said: “No man is such a fool that he does not succeed in at least one thing if he perseveres.” So whatever abilities and possibilities we have, according to the Italian master, we are destined for at least one great success. However, little is said about the master's own construction of identity and his possible differences, even though it must have been a topic for him and those around him. He was respected by society, admired by women, had an affair with at least two of his students, and his most frequently mentioned eccentricity was indiscipline. And society accepted the controversial behaviour of the genius in such a way that after a few more centuries, nobody in society was surprised by Einstein's biting statements or the fact that he did not like to wear socks. And at some point in time between these two geniuses, the idea of a bearded, hairy, dishevelled, elderly individual, who we call a scientist today, was probably born. Studies have confirmed that this is not a beneficial image. A survey in

Leicester, UK, and Perth, Australia, revealed that children as young as eight reject the possibility of being a scientist because they see them as “weird, middle-aged white guys who will never have any fun”. When asked to draw a scientist, children in most cases drew a white man with messy hair, a beard, wearing glasses and a white coat. Boys never drew a woman as a scientist, and girls did only rarely. Surprisingly, even dark-skinned or Asian children usually did not think to draw the scientist as black or Asian.

Clearly, there are more barriers. In my opinion, the worst and actually the key barrier is the lack of respect and interest of the majority society for scientists, researchers, and their work. Many other limits and prejudices also arise from it. The most common limits are probably age, gender, and nationality. From this point of view, the personal story of the world's most famous scientist, Marie Curie, is one huge obstacle course. I wouldn't trade my fate with Marie Curie, and I would like to give a few examples of applied research projects supported by the TA CR, which symbolise the current liberty, the absence of uniformity, and the exclusion of the existence of any restrictive schemes when deciding on research support. But I cannot publish the details, because that would only mean unethically labelling those researchers who are somehow different, exceptional – at least for me – and they certainly wouldn't praise me for that, so I will give just one example, anonymously. The oldest principal researcher of a research project supported by the TA CR is 79 years old, and I won't mention their gender because it's irrelevant. ✘



Maria Skłodowska-Curie



This Polish woman is certainly the most famous scientist in the world, who achieved many firsts that helped change many social paradigms. In 1903, she was the first woman in history to receive a doctorate in physics, and in the same year, she was the first woman to be awarded the Nobel Prize in Physics. She became the first female professor at the Sorbonne, and was the first scientist to win two Nobel Prizes in two different fields – the second one was in 1911 in chemistry.

But in the same year, Maria Skłodowska was also not elected to the French Academy of Sciences (Académie des sciences) by one vote. During the admission vote, she was criticised by the right wing of the press for her non-French origins and atheism, and there was speculation in other media about her Jewish origins. This was already one of the last vestiges of discrimination against this exceptional woman. And how had she encountered discrimination before that?

When she was a child, her father used to lock her in an attic room as a punishment for reading technical books. Disagreements with her father later led her to start living on her own, get a job, and save for a university education. However, as a woman, she soon found that Polish universities did not accept women to study. Together with her sister, she enrolled at least at the unofficial secret Uniwersytet Latający (the Flying University). The sisters agreed that Maria would initially financially support the elder Bronisława during her two years of medical studies in Paris in exchange for getting support from her later. The conditions in which she then lived

and was educated in Paris were extreme, she often had almost nothing to live on, suffered from cold during the winters and occasionally even fainted from hunger. During a short mutual separation in 1894, Maria visited her family in Poland and still hoped that she could work in her dream field of science in her homeland. However, she was denied a place at the University of Krakow, simply because of her female gender.

On 26th July, 1895, Maria Skłodowska and Pierre Curie got married in France. The wedding took place without a religious ceremony and the bride was dressed in a lab coat instead of a wedding gown. In 1902, the couple was invited to travel to the Royal Institute of London to give a talk on radioactivity. However, Maria (a.k.a. Marie) was strictly forbidden to speak, as

she was a woman, so only her husband Pierre spoke. Unfortunately, Pierre tragically died shortly after that. In 1911, Maria also went through a media lynching for having an affair with the married physicist Paul Langevin, a former student of Pierre's. Luckily, the Royal Swedish Academy of Sciences was not affected by the petty scandal and awarded Maria a second Nobel Prize.

Skłodowska-Curie died on 4th July, 1934, in the sanatorium of Sancellemoz near Passy (Haute-Savoie) of leukaemia apparently caused by ionising radiation from the materials with which she had worked without protective equipment. She was buried next to Pierre in Sceaux. In 1995, for her merits, she became the first woman to be buried under the dome of the Pantheon in Paris.

TA CR Awards 2022

Author: **Veronika Dostálová**
Photo: **Pexels, Depositphotos**

Every year, we have a very pleasant as well as difficult duty – to select the four “best” from among hundreds of research projects, which will receive a glass statuette, made in Lukáš Jabůrek’s workshop, from us at the TA CR Awards ceremony. After all, we have been doing this since 2013 and choosing the winners is getting more and more difficult. Not because applied research projects are few and far between, or because they are of poor quality. It is the exact opposite. Every year, we have countless top projects that not only bring a high contribution to society and our economy, but they also have much more in common – unique partnership, interdisciplinary work, perseverance, courage, and faith in oneself and the team.

This year, we aimed for projects that include the principles of diversity. At first glance, this may seem like an all-encompassing topic that can include practically anything that is somehow different and diverse. The truth is that we are not reminded of the importance of diversity in today’s world often enough. Without it, we would not be able to move forward, develop various tools and technologies, take on new challenges, or get along and collaborate with interesting people of different cultures and genders, whose variety brings a much-needed new perspective to research solutions.

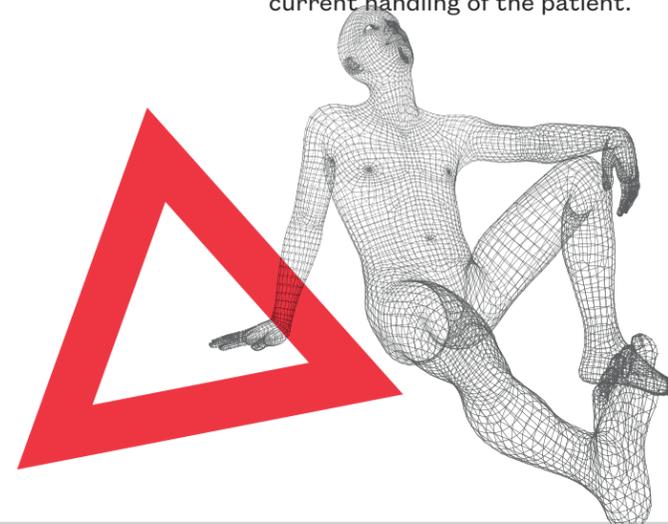
Category BUSINESS

Smart Medical Bed for Patients in Critical Condition

Participants:

- L I N E T, spol. s r. o.
- University of Hradec Králové – Faculty of Science

For long-term bedridden patients or patients hospitalised in ICU, an automatic hospital bed is an essential aid for better recovery. The smart bed developed by the L I N E T company and the University of Hradec Králové is several giant steps ahead of the regular ones. The smart solution is not only able to position the bed, but it can also monitor and detect the risks of bedsores and can propose preventive measures to prevent them. After the subsequent verification of the proposal by a doctor or nurse, the measures are carried out automatically, in some cases even without human verification. The bed contains 90 different functions and is designed to support the patient during hospitalisation, mobilisation, and transport. As part of the project, an advanced algorithm was also completed, which fundamentally facilitates the positioning of patients based on the analysis of the current handling of the patient.



Category PARTNERSHIP

National Competence Centre for Materials, Advanced Technologies, Coatings, and Their Applications

Participants:

- Institute of Physics of the Academy of Sciences of the Czech Republic
- BENEŠ a LÁT
- Biological Centre of the Academy of Sciences of the Czech Republic
- CARDAM
- Hydraulic Research Centre
- Česká zbrojovka
- Faculty Hospital in Prague-Motol
- HVM PLASMA
- L.E.T. optomechanics Prague
- OZM Research
- SIGMA Research and Development Institute
- J. Heyrovský Institute of Physical Chemistry of the Academy of Sciences of the Czech Republic
- Institute of Plasma Physics of the Academy of Sciences of the Czech Republic
- Institute of Thermomechanics of the Academy of Sciences of the Czech Republic
- Vakuum servis
- University of South Bohemia in České Budějovice – Faculty of Science
- Masaryk University – Faculty of Science
- Technical University of Liberec – Institute for Nanomaterials, Advanced Technologies and Innovations
- Palacký University in Olomouc – Faculty of Science.

National Centre of Competence for Materials, Advanced Technologies, Coatings, and their Application

(MATCA) focuses on the development of additive, plasma, and laser technologies. The cooperation of 19 partners from among research organisations and companies of different focus makes it possible to respond quickly and flexibly to the current needs of the market. The results of the project have been and will be dozens of functional samples and verified technologies from various areas of high-end material engineering. These are, for example:

- » plasma gasification of hazardous waste – effect of hot steam process gas;
- » Laser Shock Peening (LSP) process to improve resistance to cavitation erosion, additive manufacturing technology for pumps with LSP-modified hydraulic surfaces;
- » model pump produced by additive technology and with hydraulic surfaces modified by the LSP technology developed within the project;
- » a proven technology describing the application of topology optimisation during the transition of 3D printed prototypes to serial production;
- » a working sample of an anti-virus coating;
- » a functional biochip sample for the quantitative detection of SARS-COV-2 and dozens of others.

Category GOVERNANCE

AI Communication Platform for Suppressing an Infodemic

Participants:

- Charles University – Faculty of Social Sciences
- NEWTON Media, a. s.
- Masaryk University – Faculty of Medicine

An infodemic can be defined as a disproportionately large and rapidly spreading amount of information, which leads to its distortion and makes it difficult to find a solution to a problem. The most significant infodemic of recent years arose in connection with the spread of the Covid-19 disease and became a critical moment for global journalism. In addition to the number of often misleading and false information, the number of self-proclaimed “experts” on the subject has also grown. Researchers from the Faculty of Social Sciences, Charles University, together with colleagues from NEWTON Media and the Faculty of Medicine, Masaryk University, created a web portal that explained all the information and refuted hoaxes. The project combined journalism, medicine, and computer science and used elements of artificial intelligence, among other things. Furthermore, a functional sample of the algorithm was also developed, which can process tens of thousands of texts and carry out their categorisation, clustering according to the similarity of the topic, or classification of sources and trajectories of thematic news dissemination. The results and developed tools are available to the professional as well as lay public.



The purpose of the TA CR Awards is not only to pay tribute to outstanding researchers, but also to motivate exceptional talents, to highlight their tireless work and, last but not least, to strengthen the positive attitude of the wider public towards research. The TA CR Day, on which the TA CR Awards are presented, can be described as one of the highly significant traditional events in the field of research. The winning projects are nominated by our colleagues who monitor projects with excellent results, unique cooperation, and a high contribution to our country throughout the year. The winners are then selected by an independent commission made up of internal and external experts in science and research.

Photo by Savvas Stavrinos from Pexels

Category SOCIETY

Revitalisation of Agricultural Land in Areas of the Czech Republic Threatened by Drought

Participants:

- Mendel University in Brno – Faculty of Horticulture
- OSEVA development and research, s. r. o.
- Zemědělský výzkum, spol., s. r. o. (Agricultural research)
- Brno University of Technology – Faculty of Chemistry

The soil in areas affected by drought loses its characteristic properties – it is unable to absorb water and it loses the nutrients and organisms necessary for the successful growth of sown or planted plants. As a result, biodiversity is rapidly decreasing and life in the area is slowly disappearing. Although this phenomenon is not uncommon in recent years, it does not necessarily mean an irreversible state – there are a number of promising technologies that can improve it. The project participants focused on such technologies and created proven procedures, methodologies, and other useful solutions that lead to the revitalisation of agricultural land damaged by drought.



WE WOULD LIKE TO THANK OUR PARTNERS:

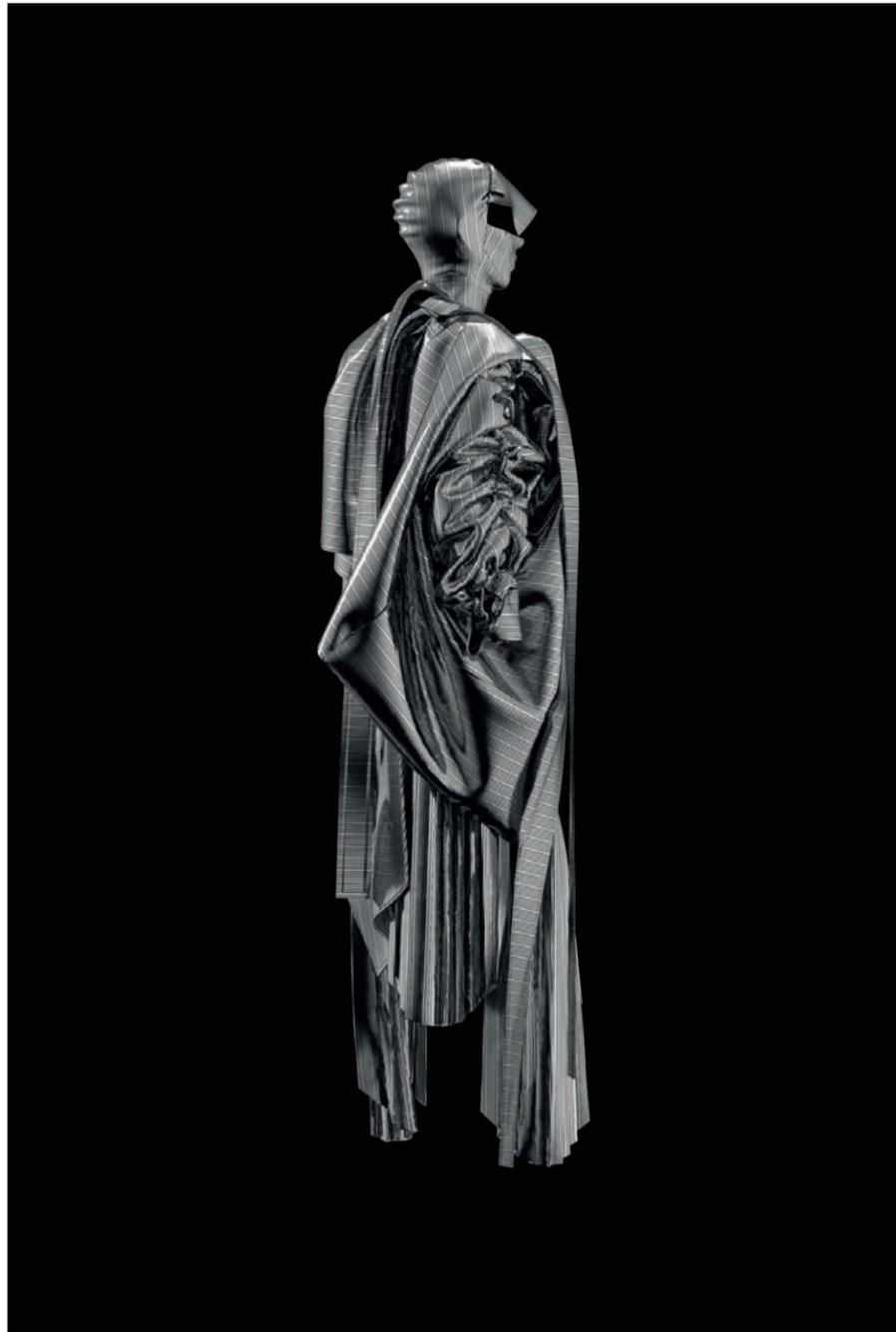


SKUPINA ČEZ



MEDIA PARTNERS:





Žil Julie Vostalová: The Computer Has Become Our Sewing Machine

Author: **Veronika Dostálová**

Photo: **Ž. J. Vostalová Archive**

When my colleague Ivana told me that she would like to include an interview with a young fashion designer in this edition, I was surprised. After all, our Agency does not deal with fashion topics that much. But when I started googling Žil and reading other interviews with her, I understood why. This smiling brunette is a true innovator and pioneer in the field of fashion design. She is dedicated to digital technologies, and even as a student, she was ahead of her time when she presented a collection of digital clothes at the Amsterdam Fashion Institute 7 years ago. I hope you will enjoy reading the interview as much as I enjoyed our face-to-face meeting.



model: New Aliens Agency
 render: Marek Bulíř, Jáchym Moravec, David Babka, Pavel Kuja
 fashion: TransformerJacket



Žil Julie Vostalová

is a digital fashion designer who deals with connecting traditional craftsmanship with new technologies. She also places great emphasis on sustainability in her work.

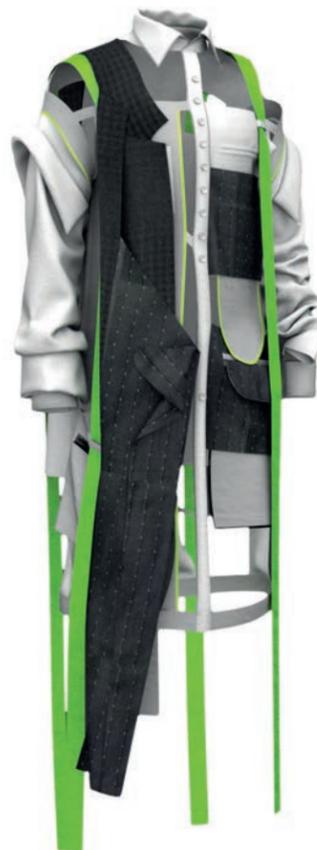


The topic of this edition of the magazine is Diversity (not only) in research. How do you perceive diversity in your profession? What can the reader imagine under the term diversity in the fashion industry?

I understand diversity as having many layers. In my work, I connect new technologies such as 3D printing, body scanning, and 3D prototyping. It is this linking of new technologies that brings diversity to our craft and changes the nature of our work and its future direction. However, we are currently faced with the fact that educational institutions are not prepared for this situation. Even when I was studying (in 2015), the “old bards” told us: “We are sorry, we don’t know how to prepare you for the current situation. This means that when you finish school, you probably won’t be fully prepared for reality, and we don’t know how to prepare you for it.”

And what is the cause? Are the technologies so new that nobody has had time to study them yet?

These technologies are called new, but they are not that new. Some form of digitisation in the fashion industry has been going on since the 1980 s. However, its tools are not widely used and do not have a strong connection to the fashion industry and the educational segment.



So it is up to schools now to learn to use these technologies and start teaching them?

I believe that educational institutions should primarily teach us to think critically. So let’s apply new technologies to teaching, but let’s also examine them critically. Not every technology can facilitate a given practical situation. It’s good to always keep in mind some context in which things arise. I graduated from the Amsterdam Fashion Institute, where they guided us towards sustainability from the beginning. For each project created, we had to submit a sustainability manifesto, where we had to think about the material used and its origin, the overall approach to design and the waste that was created. When I teach students, I try to apply this approach as well.

What made you decide to start designing in 3D in the first place?

When I graduated from school in 2015, 3D designing was relatively new. I am a child of the nineties, used to working on a computer and playing games on it since childhood. For me, the transition to 3D was something very natural. It is actually a kind of extended hand of creativity for me, freedom of creation. In addition, I liked that digitisation

in the fashion industry connects fields that would not be applicable in the traditional way of working, and I was able to meet a lot of interesting people. Designers of today work with IT developers, 3D graphics, motion graphics, directors, texture experts, animators. Thanks to digitisation, new and very diversified groupings are created.

You often mention 3D prototyping in interviews. What exactly is it and what is it good for?

3D prototyping is designing (in our case specifically designing clothes) in 3D in such a way that we adjust everything on the computer and we don’t have to use trial and error with real materials. We can make a number of prototypes without having to sew them from actual fabric. This technology experienced a big boom especially during the Covid crisis, when factories were closed and designers could not create in the traditional way. And as for the advantages, the inclusion of 3D prototyping in the design process brings material relief in particular – we save both textiles and paper, on which we would otherwise design or create a style. In addition, the elimination of this part of the process creates new jobs and reshapes the nature of the designer’s work. >

So we come back to sustainability, which is slowly starting to resonate even with the big players on the market. But it often refers to some kind of upcycling, recycled materials or “better” cotton cultivation. Of course, it’s often just greenwashing, but that’s probably a story for another time. You have taken sustainability to the next level in your work as you create digital models with zero waste.

How does the fashion industry view such innovations? Will it be common, or will pencil & paper and sewing test models still prevail?

Once again, this depends on the approach to education of young people. At the Amsterdam Fashion Institute, we were always driven to be able to connect with companies that work in the industry. The connection with industry was very intense there. And as we touched on the topic of diversity at the beginning, we already saw during the studies how saturated the market was. They connected us not only with those great designers who are known in the world, but also with fast fashion companies, where we could profile ourselves not only as designers, but also as managers, sales representatives, or marketers. So the companies are already letting in “young blood”, which brings new ideas and emphasises a sustainable approach in various areas. Even the fast fashion giants are somewhat open to accepting new ideas, but of course we cannot generalise. It varies person to person, management to management. So, I think there is a great chance of changing the approach, but I don’t dare to estimate how long it will take us to move mostly to the digital sphere.



Designers of today work with IT developers, 3D graphics, motion graphics, directors, texture experts, animators...

In addition to zero waste, what other advantage do you see in designing clothes in 3D?

Digital fashion and its benefits have been brought to light by the Covid crisis, mainly due to supply chain disruptions. Factories, warehouses, and shops were closing and transport was stagnant. Designers therefore turned to 3D designing, thanks to which they could stay in touch with their clients and continue their projects. So I see it as a big advantage that we can actually do our work all the time even if there are some restrictions in contact, transport, etc. 3D designing also brings new jobs, creates differently focused teams and a completely different form of work environment. For this method of work, you no longer need a sewing machine, thread, chalk, or scissors. All you need is a mouse and a computer. My colleagues and I often state boldly that the computer is our sewing machine.

We have said nothing but praises about 3D designing, but it certainly also has some pitfalls. For example, the haptic aspect of the model comes to mind. What do you think of that? After all, “touching” the sewn piece is very important for customers.

One of the common arguments we hear as 3D designers is that people can’t touch and try on the clothes. But we have to realise that we live in a time when we are surrounded by a visual culture of images, and it is not a problem for us, for example, to order clothes from an e-shop based solely on photos. I believe consumers are already used to this shopping format. A good example is the IKEA catalogue, where 95% of the content is CGI (computer generated image) – 3D modellers have thus taken over the role of photographers. This has become common practice without being noticeable to the eye. Digital evolution is taking place in other areas as well. It has been happening in architecture for many years. But yes, the haptic aspect is still a big question in the fashion industry. My colleagues and I are actually still trying to figure out “How to wear a pixel?” It is still uncommon practice and not everyone has access to it. 3D wardrobes are emerging, which people can wear but cannot touch or feel, opening up a space for research that will deal with the connection of robotics, sensors, and materials. ✘



The Importance of Social Sciences in Applied Research

Author: **Matúš Šucha**

Photo: **Unsplash, Depositphotos**

Let us begin by talking about the division of sciences. Four fields of science are commonly referred to under the acronym **STEM** – Science, Technology, Engineering, and Mathematics. The link between them is exactness. The **STEM** concept itself contains the idea of integration, that is, it tries to connect the mentioned scientific disciplines with an emphasis on increasing the applicability potential.

E
Engineering

T
Technology

M
Mathematics

S
Science

The Czech acronym **SHUV** refers to **three groups of scientific fields** – social sciences, humanities, and artistic sciences. Examples of social sciences are sociology, economics, and psychology, and examples of humanities are philological sciences, philosophical sciences, and historical sciences. Finally, studies of culture or history, and theory of art are examples of art sciences. To a certain extent, the link between these sciences is **probability**, i.e. they are probabilistic (as opposed to exact) sciences.

Connecting STEM and SHUV within applied research?

Social sciences are, in general, sciences dealing with man and society, and it could be said that they are the most exact of the SHUV group. Humanities differ from social sciences in a lower degree of quantification, and their methodology is more analytical in nature. However, the application of humanities in cooperation with STEM fields has considerable potential. An example can be language research in a digital environment (digital humanities) or the issue of ethics in autonomous vehicles (e.g. issues of prioritizing the protection of the people in the car or persons outside in the event of a traffic collision). An example of overlap between artistic science and STEM fields can be gamification or computer game design.

If we accept the definition that applied research focuses on obtaining new knowledge that is clearly focused on specific and predetermined goals that clearly find their use in practice, then the question inevitably arises – what are those goals? How, by whom, and using what methods were they determined? And how do we find out that with the help of the created innovation (i.e. the creation of some value with the contribution of something new) we have managed to fulfill the given goals? >



Social sciences help to set research goals

For the answer, we look to ancient Greece and use the famous saying of Protagoras of Abdera (around 450 BCE): *“Man is the measure of all things”*, which we usually understand as an expression of the sovereignty of human judgements – things have the properties that man gives them. The needs of society (thus the goals of applied research) are defined by what the **people** who shape society **consider important** and necessary. And this is precisely the domain of research in **social sciences and humanities**. That is, sciences that are not strictly exact, and because of this they can use observation (a person judging a person).

And thanks to the integration of social sciences in research, we are able to develop innovations that respond to defined problems, or to specified goals. Such innovations can take the form of technical (technological) innovations, for example the development of transparent solar panels, or non-technical innovations, for example communication procedures and persuasive energy saving campaigns.

Following the implementation of an innovation (commercial or non-commercial), it is necessary to evaluate whether the goal to which the innovation responded has been met. The result of the evaluation is usually not binary (the goal has vs. has not been met), but rather takes the form of determining the degree (e.g. percentage) of fulfilment and especially contains recommendations (feedback) for further research, which subsequently form the input parameters for starting a new research cycle (i.e. redefinition of goals and needs).

The final phase of the research cycle is usually the domain of social science research, for example when evaluating quantitative parameters (economics) or qualitative parameters (psychology, sociology).

Connections between STEM and SHUV are less frequent than we think

From the above, we can see that an interdisciplinary approach and the connection of individual scientific areas – simply put social and technical sciences – is quite natural. In reality, however, we come across it less often



Photo by Tingey Injury Law Firm on Unsplash

than we might expect. We are mostly just speculating about the reasons, some of which could be:

- » historical discontinuity, absence of experience and traditions (mainly due to repression of social sciences by the communist regime);
- » the absence of education (university, PhD) that would connect individual disciplines (the consequence of which is mutual misunderstanding, the so-called “speaking another language”);
- » insufficient institutional support (at the level of universities, research institutes, or providers of financial support) connecting research teams and interdisciplinarity

The Technology Agency of the Czech Republic is aware of the benefits of interdisciplinary research, in the sense of connecting social and technical sciences, and supports

them in a targeted manner. In the past and present, the OMEGA and ETA programmes, in the future also the comprehensive SIGMA Programme. The actuality and importance of interdisciplinarity is also underlined by the currently discussed material of the European Commission – “a proposal for a Council Recommendation on guiding principles for knowledge valorisation”, which states, among other things: *“The European Commission recommends to encourage and facilitate multidisciplinary collaborations going beyond technological areas and involving disciplines such as social sciences, the humanities and the arts, as well as co-creative approaches.”*

Examples of projects supported by the Technology Agency of the Czech Republic that connect STEM and SHUV disciplines:

- » Covid-19 infodemic: AI communication platform suppressing infodemic in connection with journalistic and media ethics (TL04000176)
- » Evolution of unmanned technologies and their societal perception: analysis of opportunities and minimisation of risks (TL01000322)
- » The use of the humanoid robot in promoting active ageing in older men and women (TL02000362)
- » Research in the area of digitizing the sewing of glass components and textiles (TL03000080)
- » Ethics of autonomous vehicles (TL01000467)
- » AIDTWIGLOW – Autonomous intelligent digital twin of the globalised world: digital ontology for smart analytics, simulations, projections, and decision-making (TL05000690)
- » Innovation and adaptation of authentication technologies for secure digital environment (TL01000207)
- » Training aimed at increasing police preparedness for mental intensity and communication-intensive situations using virtual reality (TL03000050) ✘

Submit Your Breakthrough Project and Get Support from the EIC Accelerator or the National Recovery Plan

The EIC Accelerator represents a unique support option for SMEs, startups, and spin-offs that develop breakthrough innovations with the potential to create a new markets or notably impact an existing market. The programme focuses on high-risk projects requiring significant financing and seeks to create the conditions for the emergence of European “unicorns”. If you have a groundbreaking project, do not hesitate to submit it. The closest call deadline is 5th October. If you do not receive support directly from the EIC Accelerator, but your project receives the Seal of Excellence in an international assessment, you can also receive support from the National Recovery Plan.

The EIC Accelerator provides mixed funding that consists of a grant or investment component. Applicants have the opportunity to receive up to 2.5 million euros as part of a grant or an investment of 0.5 to 15 million euros. The grant comprises 70% of eligible project costs and is provided in advance. The duration of the project implementation is 12 to 24 months.

The program is not limited by topic and the application can be submitted at any time, however, the closest deadline is 5th October 2022. The estimated time from submitting a full application to signing the contract and releasing the first payment is approximately four months. Within the programme, there are still specific calls focused on breakthrough innovations with an impact in the field of digital and health technologies and in compliance with the Green Deal and the revival of the economy.

Seal of Excellence: a second chance for promising projects

Applications under the EIC Accelerator that are not recommended for funding can still receive the Seal of Excellence, which can secure them funding from other sources. This seal is awarded to projects that meet all the criteria in the first round of evaluation and are assessed positively by the EIC jury. At the national level, the Technological Agency of the Czech Republic is a provider of support to SMEs that have received the Seal of Excellence within the EIC Accelerator. Projects that are awarded the Seal of Excellence in 2020–2026 may be funded by the National Recovery Plan. The total allocation for this purpose is CZK 200 million.

Companies that have received the Seal of Excellence or have been supported in the EIC Accelerator can also receive support from the EIC Business Acceleration Services.

Additional services for beneficiaries within the EIC Accelerator, including Seal of Excellence projects:

1. Coaching, mentoring, training
2. Access to global partners
3. Use of the innovation ecosystem and peers
4. The EIC Community Platform

Photo by Guilherme Stecanella on Unsplash

For more information, visit the TA CR website.

