36TH BOOK OF THE YEAR

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A School with a View

AI: How Small Countries Can Compete Against Big Players

2023

"Countries, nations, cultures should focus on the challenge how to leapfrog into the AI area at the lowest possible cost and the lowest CO_2 emission theoretically possible."

—

(Prof. Philip M. Parker)

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AI: How Small Countries Can Compete Against Big Players

November, 2023

Welcome address by Prof. Danica Purg

President of IEDC – Bled School of Management

Prof. Danica Purg

Good morning your Excellencies ambassadors, dear Minister Dr. Stojmenova Duh, dear Prof. Philip Parker, dear panellists, dear president and members of the IEDC Supervisory Board, dear alumni, dear friends and guests from 19 countries,

Welcome to IEDC, to our traditional Annual Presidents' Forum, entitled: "AI: How Small Countries Can Compete Against Big Players".

Every year, we select topics for the Presidents' Forum that are impacting business processes, regional and world economies, our environments and above all leadership issues, and we bring to our school prominent thought leaders from around the world.

The choice of the topic for this year was easy. The Artificial Intelligence is a hot topic in the society, a phenomenon that is affecting our lives in many aspects, our work, management and leadership. AI has become an invaluable tool for organizations to optimize operations, lower manufacturing costs, and achieve other corporate goals. With the use of forecasting, natural language processing, and other AI capabilities, managerial choices will depend more and more on technology.

While AI can automate tasks, analyse data, and augment decision-making, it cannot replicate the qualities and skills of human leadership. Leadership remains a uniquely human endeavour that encompasses vision, empathy, values, and the ability to inspire others.

And here we see the responsibility and mission of our school and of our efforts. We position our school as a place where leaders come to learn and reflect, an international centre of excellence in management development, a business meeting point, and a unique place where works of art complement a creative environment for creative leadership, and we need creativity also as an educational institution, because we have not only to prepare people for jobs that don‘t yet exist, for technologies that are not there yet, but also for social and environmental impacts that are not seen yet.

I believe that this is the place to give attention to the impact of AI we can see already today. The discussion on AI has some similarities with the discussion on nuclear power. In our desperate looking for energy sources, nuclear power is declared to be “green” by many experts, avoiding the question of “nuclear waste” what has been the reason some decennia ago to go for other options. In our admiration about AI, the opportunities of AI and mentioning the positive impact of AI, we forget or avoid also to see the immense carbon footprint of training and operating the AI algorithms which increase environmental problems. I am sure that our speakers today will help us to look at AI in an open and holistic way.

Dear guests, we are honoured that Prof. Philip Parker has accepted our invitation to join us today. Prof. Parker is a Professor of Marketing at INSEAD and the INSEAD Chaired Professor of Management Science. He has also taught at Harvard University, MIT, Stanford University, and UCLA, and delivered courses in various countries in Africa, the Middle East, Asia, Latin America, North America, and Europe. He has degrees in Finance and Economics, and a PhD from the Wharton School of the University of Pennsylvania.

Prof. Parker has developed a number of AI-based educational platforms using automation technologies or “content engines” which have been applied to create dashboards, AI Learning Hubs and special interest search engines. These have been applied in projects sponsored by the Bill and Melinda Gates Foundation in Africa, Asia and the Latin America, especially generating content in underserved languages. With his team, he has implemented a number of business model innovations, rapid prototyping and massive roll outs.

I would like to remind you that after the forum, we publish the content in our traditional Book of the Year, which we send as New Year present to 10.000 addresses around the world. Interestingly, already our 2018 book was entitled "Artificial Intelligence and its impact on leadership". The impact of AI has since then become even more far-reaching and profound and we shall after the keynote lecture dedicate two expert panels to exchange ideas and learn how can we as organisations and leaders embed the strength of AI to react to foreseeable and unforeseeable developments, and lead according to the changing circumstances.

In the round-table, led by Prof. Parker, three great experts will exchange views and experience on how small players in Slovenia, the CEE region and beyond can compete with global players.

And I am honoured to announce another special panel, with which we are inaugurating the launch of the BILDAI- Bled Institute for Leadership in Digitalisation and Artificial Intelligence, which we are officially establishing today, with our founding partner, the company Roche Slovenia. The Institute was established in response to the needs of companies and other stakeholders, having in mind the need to develop creative and holistic leadership in times of digitalisation and AI. Prof. Stjepan Orešković, our President of Supervisory Board and the conceptual leader of BILDAI will host Ms. Eva McLellan, General Manager of Roche Slovenia, and other prominent experts and members of the BILDAI Scientific and Business Advisory Board.

We shall conclude our Forum today with the awarding ceremony. Five great IEDC Alumni will receive the Alumni Achievement Award – a recognition for their extraordinary accomplishments. I truly hope you will enjoy it and celebrate with us and the winners.

Dear guests, before I give the floor to the Minister, I would like to sincerely thank our sponsors and supporters: Elementum – the golden sponsor (thank you president, Mr. Bojan Pravica), forum partner (the Slovene German Chamber of Commerce AHK, thank you Ms. Katja Stadler) and Zavarovalnica Triglav, Isokon, Salonit Anhovo, Ljubljana Airport, Klet Brda. And last but not least, please note that you are sitting in the room called NLB as of today. We devoted it to this great bank as a gesture of gratitude for the longstanding support to our school through the NLB Chair and other ways.

Ladies and gentlemen, it is my big honour and privilege now to give the floor to the Minister of Digital Transformation, Dr. Emilija Stojmenova Duh, for her address.

Address of the Minister of Digital Transformation of the Republic of Slovenia

Dr. Emilija Stojmenova Duh

Dr. Emilija Stojmenova Duh

Dear President of IEDC-Bled School of Management Prof. Danica Purg, distinguished guests, ladies and gentlemen,

Good morning. It is my honour and great pleasure to welcome you at this important event that outlines the importance of Artificial Intelligence in particular for small countries as Slovenia.

Today, we are facing unprecedented challenges and transformation of our economic, environmental and social systems. Artificial Intelligence and other digital technologies offer significant potential to overcome these challenges. While small countries may not have the same scale and resources as larger players, specialization and a commitment to education and research can give them a competitive edge in specific AI domains. They can succeed in AI by focusing on areas of competitive advantage, fostering innovation, and developing a supportive ecosystem.

In Slovenia, Artificial Intelligence is one of the high priority areas when it comes to digital transformation. We have more than 40 years of research and more than 30 years of higher education experience in

the field of AI. Our educational programs in AI are advanced and academic research in AI contributes to fostering innovation. Our National Programme for Artificial Intelligence supports concrete measures to ensure research, innovation, deployment and use of AI systems throughout the innovation life cycle in 6 priority areas: health, industry 4.0, public administration, language technologies, sustainable food production, and environment and spatial planning.

We are setting up a National Centre for AI which will put Slovenia among the most advanced countries by promoting research, development and innovative use of Artificial Intelligence. The centre will bring together all stakeholders of the digital ecosystem – government, industry, researchers, academia and civil society as we believe that the best solutions can be achieved only by effective cooperation and partnership. One of our strategic goals is that by 2030 at least 75% of businesses will use cloud computing, big data and Artificial Intelligence. The latest data show that the share of companies using big data in our country is around 10%, while AI is used by just over 11% of companies and cloud services by 42%. To achieve the Digital Decade goals, we are promoting the deployment of new technologies in businesses and targeting investments in these areas.

In Slovenia, we have three European Digital Hubs. One of them is specialised also in the AI field. Their mission is to help businesses, local communities, government and individuals to be more competitive by using digital technologies in their work processes. They offer the possibility to test before investing, provide opportunities to enhance skills and to find investors as well as to strengthen the innovation ecosystem.

However, in order to promote the use of AI, it is crucial to create a high level of trust. Therefore, Artificial Intelligence should be developed and used in a way that is responsible, focused on social good, ethical principles and human rights. In Slovenia, we work closely with the OECD, we are active at the European Union level, in the Council of Europe, UNESCO, and other relevant international fora. Engaging in international research projects provides access to global expertise and resources. We have great expectations from the European Union Act on Artificial Intelligence and the future Convention on AI to be adopted by the Council of Europe.

Both have a great potential of becoming a global standard setter and could influence legal orders also beyond Europe. Also, the UNESCO Recommendation on the ethics of AI foresees that AI technologies

ensure the protection of human rights and fundamental freedoms. We believe that international organisations that deal with AI should all work closely together. Therefore, we are organising the Second Global Forum on Ethics in AI in February next year together with UNESCO where we will invite AI stakeholders from across the world, including policymakers, best experts, and thought leaders to search for common solutions to challenges of ethics and trustworthiness of AI.

When we talk about AI, we should not forget data. High-quality data is crucial for AI development. Slovenia is very successful in the field of open data maturity in public sector and is among fast trackers at the European level. Currently, we are setting up the network of data stewards in the public sector together with the OECD in order to strengthen data governance in the public sector, provide training and support to end-users on data management and further increase the quality and maturity of data. Our goal is to have trusted data management with cloud technologies, national and cross-border data interoperability and data spaces. Also, we are aware that we have to do more for implementing AI in government services, healthcare, and other public sectors in order to demonstrate the value and benefits of AI for the society.

But all this is of little help if our citizens do not know how to use Artificial Intelligence and modern technologies. There is no digital transformation without digitally skilled people. Therefore, we are building digital skills and competences systematically with a particular focus on training and helping those groups that would otherwise be excluded from the digital transformation process. For us, it is essential that users know the advantages and disadvantages of using modern technologies and that they are able to evaluate information critically or with a certain ethical maturity. Right now, a two-day Digital Skills Festival is taking place in Maribor, organised under the European Year of Skills. With the event, we promote retraining and upskilling in order to help people acquire the right skills for quality jobs, and more broadly for different life circumstances.

Ladies and gentlemen, AI tools are getting better and more attractive every day and will soon be an integral part of the vast majority of our activities. Slovenia is well prepared to use Artificial Intelligence for the benefit of people. We have a clear, long-term vision and strategy for AI development. As a small country, we are agile and focused which enables us to make rapid progress. And we firmly believe that efficient collaboration and commitment to AI excellence will provide us with a meaningful presence in the global AI landscape. Thank you.

AI: How Small Countries Can Compete Against Big Players

Prof. Philip M. Parker

Professor of Marketing at INSEAD and the INSEAD Chaired Professor of Management Science

Philip M. Parker

Good morning. It's an honor to be here. Thank you for the invitation.

I'd like to share a story about my experience directing the AI lab at INSEAD. My team consists of 18 engineers, a few editors and linguists, and a network of curators and freelancers.

Let's begin by exploring the origins of generative AI. Have you ever used a spreadsheet to organize data? You may have sorted a list from highest to lowest and classified accounts as big, medium, or small. That's unsupervised machine learning. (You can now update your resume.)

The major innovation of my generation was the electronic pocket calculator invented at Caltech in 1967. When you input four plus four into a calculator that is known as the prompt. The calculator then

answers “eight.” This is generative AI. While people did refer to pocket calculators as Artificial Intelligence in the past, this is no longer the case. This phenomenon is called the AI effect, which encompasses anything related to technology that was once considered advanced but is now commonplace. In 20 years, people will view current technology simply as a piece of software. AI is constantly evolving, and I want to talk about its generative aspect.

The artificial statistician

Professor John D.C. Little of MIT deserves credit for recognizing the rapid accumulation of optical scanner data, especially in the early 1970s and 1980s. The volume of data generated was so immense that there weren’t enough statisticians in the world to analyze it. So, Little came up with the idea of writing an algorithm that mimics a statistician. The artificial statistician examines real-time data and composes a memo to a recipient, such as a marketing manager. The memo might say something like this: Procter and Gamble is running a promotion in Cleveland, Ohio. As a Unilever marketing manager, you have three options for responding. Here is a recommendation: Number one, look at the experiment and learn from it. Number two, exploit the experiment. Tweak your products so that they will misinterpret the data. Or number three, they’ve left themselves open to you getting more sales. You can choose option A, B, or C. This marked the first instance of generative AI being used in a business setting, and it occurred in 1990.

I happen to be the grandson, academically, of the great John Little. I studied scanner data, telecommunications data, and other related information to find insights. Today’s younger generation calls this big data, but my generation referred to it simply as data. Although its popularity has grown, fundamentally nothing has changed. Throughout history, there have been various popularized forms of Artificial Intelligence. And we’re currently in a phase where people are observing things that have existed for some time but are now more readily available to the public. Let’s refer to it as the generative phase.

My goal is to share my experiences, our destination, and discuss how a country, a nation, a culture can leapfrog into this area at the lowest possible cost and the lowest CO2 emission output theoretically possible. Because training a language model like ChatGPT requires at least 4,000 graphic cards to be constantly running, the energy consumption is comparable to that of entire countries.

Cracking the problem

My journey began with cell-site optimization modeling and geospatial demand forecasting. These studies took months to complete and were utilized by the telecommunications industry. At the time, I was an economist in Washington, DC. I worked on various projects in Haiti, Brazil, Africa, and other places. It was clear that potential investors require due diligence before making foreign direct investments. If a product's export potential cannot be calculated, the country is unlikely to receive investments. For instance, in Haiti, a factory produces shower curtain rings and six-inch nails. Without proper market research on these products, investment is unlikely. In the 1990s, I had an idea to use an algorithm to create top-notch industry studies. If you hired McKinsey & Co. or another consulting firm to make a report, it would take six months and cost $300,000. Could an algorithm mimic the logic of a consulting firm and generate countless industry studies? Our lab cracked this problem in 2000.

We turned the switch and created around 57,000 advanced industry studies delivered through platforms such as Standard & Poor's Capital IQ. The process doesn't involve any human labor. These research reports are fully produced by algorithms. The system is in a storage room, and it has been running for about two decades.

The advantages of using algorithms to publish on less popular topics can also be extrapolated to underserved languages. If you visit an American bookstore, you'll see a massive self-help section. It appears Americans are unsure of what to do. However, if you go to a French bookstore in France, the self-help section is small, with few books. Are the French centered and the Americans flipped out? The truth is that fewer people speak French, and the value chain of the French language for publishing isn't as strong. You go to Italy, the situation is worse. Arabic terrible. When it comes to African languages, there is hardly any published material available.

Therefore, we have developed a funding strategy of selling industry studies to the World Bank, the IMF, and Goldman Sachs. We used the funds to produce language-learning materials such as books, crossword puzzles, dictionaries, and games for the 300 underserved languages around the world.

We distributed these types of projects with Rotary International, Adopt a Village programs, and various others. I created a patent to make

the technology widely available. In 2000, I filed the patent, and it was ultimately approved by the US Patent Office in 2007. No one wanted to approve it, because it was the use of algorithms to generate original content, and it covered everything: music, radio, television, books, newspapers, etc. Our patent was intended for defensive purposes. After filing the patent, we allowed anyone to use it free of charge. Despite initial skepticism from the Patent Office, we successfully demonstrated its feasibility during a visit to their DC office. They requested a research report on patent examiners. I entered a few words and clicked a button. The result was a 250-page report on patent examination, and they granted me the patent. INSEAD subsequently issued a press release that appeared in The New York Times. I was then inundated with requests, including an important phone call pertaining to our lab's work.

Serving underserved languages

The Bill and Melinda Gates Foundation approached us, asking for help working with the world's poorest people, who typically work in agriculture. Agricultural information, especially in native languages, was not accessible. We aimed to close that content gap. As a result, Africans are now accustomed to receiving crop recommendations and climate updates in local dialects. This platform was created about 12 years ago at INSEAD and is now used in nearly 90 countries worldwide. We don't brand it with our name. Organizations use it and give it their own name. You may have heard of the Grameen Foundation. Groups, such as the European Union have given us money to spread the platform around the world. This is a very useful idea, but the problem is that many of the world's poorest people in agriculture wish to leave that industry: farming is not very profitable for many and is very hard work. Farmers are interested in many other things. Maybe they want to work in bicycle repair, or they are interested in microfinance.

So, I proposed to the Gates Foundation to cover the costs of using AI to expand content on every possible subject in every possible language. However, this was beyond their scope. The foundation did generously grant us a large amount of funds from their budget to test it out. They did not want us to come back and ask for another large grant every three years. They asked us to make sure the project was sustainable, meaning profitable. However, to make it profitable, you need to have lower marginal and fixed costs. How do you create content and make it accessible to every country and culture without spending too much?

So, five and a half years ago we embarked on a journey in order to try to solve that problem. This presentation showcases what we have developed. The content will be available in various forms and locations by 2024. And it is a great honor to present some of it to you.

Two types of generative AI

When people discuss generative AI, they often use broad terminology due to their familiarity with ChatGPT. But this concept has been around a long time. And there are two types. One is called data reduction. You have massive amounts of data, and you reduce it to a little blurb. That's called reduction. There is an alternative that is also important. It's called expansion. Imagine the archives of a country that contain massive amounts of cultural heritage, and the information is hidden in a database. What would an expert do if he or she saw a single line of data and had to communicate it to someone else? That's called data expansion. There's a massive amount of locked-up knowledge, inherent insight buried in databases in really ugly formats.

Our lab has been working for about 25 years on these two types of AI in a diverse range of projects, from high-end industry studies to math books, spelling books, mobile applications, video games, encyclopedias, and poetry. One of the questions we've been asking is this: can generative AI generate an entire industry? A company like Google might have 10,000 engineers working on search. They are essentially typing code. Code is text. Can I develop an automated engine that writes another engine to create a search engine, reducing the need for 10,000 human engineers? This innovation could resolve the shortage of human resources while conserving energy. The big question is: can a country, organization, or culture launch into big tech for the price of opening a McDonald's restaurant?

The content divide

First, let's look at the big problem, the language gap or content divide. We all love Wikipedia. It's a great source of information. But there's something odd about it. It's the power curve. Only a few languages have a sizable number of articles. English has 6.7 million articles on Wikipedia. If you speak Kikuyu in Kenya and search the Internet for "lump in breast" in Kikuyu, you will get no results. So you go to the national language in Kenya. That's Swahili. And what do you find? Very

little. Why? Because this language lacks 99.4% of the information available in the English language. The reason for this is that humans write Wikipedia articles, which is costly. People are busy. They don't have time to do this.

So, our goal was to eliminate this gap. But in addition, in English, over 90% of articles consist of only one line. There is little content. Why is this? Again, because human writers are expensive, and it's unlikely that they will ever produce such articles.

For instance, "human problem solving" is barely covered in Wikipedia despite being a large field in AI. Similarly, there are many other missing topics, such as peeling. Peeling is an extensive industrial process encompassing chemical and industrial methods, but there is a lack of information on this subject. It's crucial for agriculture and conservation policy, among other things. One reason for this shortage of content is that human beings are deciding what is important and what is not. Wikipedia defines "accepted knowledge" as "books by reputable publishers, and high-quality newspapers like The New York Times". However, The New York Times is not necessarily the most reputable source for many different subject areas. For some it's very reputable, but for others it's not. More importantly, most cultures do not have a New York Times. So there's no one reputable to actually cite. There's no New York Times for physics, for example, or chemistry. Also, the criteria of notability is interesting. Editors themselves will decide what articles are published in Wikipedia based on their belief of how notable the subject is, and many people have said that that criteria has led to Wikipedia being dominated by three different groups. The first is London, the second is New York, and the third is San Francisco, Silicon Valley or California as a whole.

As I said, many languages don't have content. Well, let's take care of that once and for all. You can't do it with humans. It's simply not possible. It would take centuries to do this, and it probably would be incomplete and out of date by the time you did it. Our lab focuses on tackling challenges that humans haven't been able to solve, rather than replacing humans. We aim to enhance productivity through technology.

Let the user decide

Our lab often receives questions about how to determine what is true. It's like asking, who is Donald Trump? What's the truth? But really, there are many perspectives on this question. The issue is, who decides

which viewpoints should be featured? One solution is to let users decide for themselves.

The platform I'm about to show you, which we call Botipedia, algorithmically mimics a Wikipedia editor or contributor. It has all the rules that people can come up with and then creates content within those rules, across every perspective and subject area.

The story starts with a project supported by the Bill and Melinda Gates Foundation that created a portal dedicated to biodiversity, focusing on plants in tropical Africa. I've been told that roughly 500,000 biologists and biodiversity experts use this portal that we created at INSEAD (called prota4u.org). It's hosted by my lab. A group of very talented taxonomists and botanists were creating in-depth summaries of various species of plants. They were doing roughly 100 plant profiles a year. The problem was they wanted to do all plant species. There are 1.2 million species and subspecies, and it would take centuries to do this work. So they invited our lab to collaborate. We don't impose things on people. We collaborate. And I asked the experts if they would mind if we saw how they do these plant sheets. We sat down together and they literally described what they do to write plant fact sheets. We then had coders replicate what the experts did, replicating their logic. For example, we scored the degree to which a plant is used for medicinal uses. We made sure experts vetted the output. Then, based on this rating system, we produced basic plant profiles, derived from compiled information sources.

Show your work

Botipedia is an extension of Prota4U, but it covers all conceivable topics. One essential element is to show the provenance of information. Knowing the origin increases confidence in the output.

The content generator for Botipedia uses a combination of rule-based and non-rule-based processes. Rule-based AI can be compared to a pocket calculator. Would you want a pocket calculator to utilize machine learning or learn new operations? No. You want it to follow the rules. While machine learning has its benefits, it is not ideal when precision is key. Rule-based AI is typically superior to non-rule-based AI, however there are some edge cases where this is not true. For example, do you remember the early computer chess games? They were challenging and could defeat 98% of people, but they were rule-based and unable to defeat a grand master. More advanced rules and faster processing

speeds led to IBM's Deep Blue, which was considered by many to be the most advanced rule-based machine ever invented.

Deep-learning algorithms watch people play chess and learn what are good strategies. That's non-rule-based. The algorithms infer good moves from the data. This is why ChatGPT and other large language models have received some criticism. Some of these online chatbots give weird answers or they "hallucinate," saying things that simply are not true. They're not following rules. About 98% of the algorithms our lab utilizes are rule-based for that particular reason.

Botipedia has access to many sources that are not available on the Internet. You are likely acquainted with the United States Library of Congress or its British equivalent. These institutions are significant cultural treasures and truly remarkable. The US Library of Congress places great importance on examining all known photographs or images related to the United States from the advent of daguerreotypes. After conducting an in-depth investigation in the United States, we discovered that the Brits, as well as the Japanese, Australians, and New Zealanders, have similar archives. But these images are not cataloged in pages. We performed a deep crawl of all the archives, extracted the content, and harmonized the metadata for seamless searching across archives.

How to compete

I am now going to talk about how a small country can compete against a larger one. It is similar to how a group of five scientists can achieve great results in plant science by modeling expert techniques. That's the key: modeling the experts. I've just explained to you an intricate, N-dimensional graph mapping every recognized subject area across over 100 languages. How can we make this more accessible and customizable so that each user can select the specific graph data that is important to them, rather than relying on my assumptions of what they want to view?

I want to introduce a new idea. When you use a popular search engine such as Yahoo! or Google, you will notice that at the top of the page there are different sections, such as images and books. Do you know who determines that? It's not you, it's an algorithm. Similarly, newspapers appear in a certain way based on what an editor decides. Can algorithms mimic engineers or editors?

Let's start with news. Algorithms can generate local newspapers and online search engines. Many cultures and countries lack access to real-time news, and we want to provide a solution. We have begun developing algorithmically generated news for areas that lack news coverage, such as underserved communities. We have created a news engine that uses algorithms to generate results for a news search. How did we come up with this idea? The way our lab approaches AI is that we literally ask, what is the expertise? What is the intelligence of what people did to create newspapers in the first place? What did they do? How did they do it? What was their logic? What was their algorithm? So if you look at different newspapers today, you start noticing there are patterns that journalists use. And there are links to articles outside the newspaper. It's an aggregator. It's not purely original news.

Imagine you combine all of these different methodologies and say, how can I approach a community and actually create a local newspaper? We mimicked the methodologies which journalists use to create a local newspaper, for 104,000 US communities. What it does is drive clicks to the "newsmakers." We give them credit. The provenance is there. We're not trying to steal; we're trying to generate traffic for them.

Serving the long tail

The way our lab works is to look at the smallest place in the world, e.g. a remote village in Africa. If it economically can't work there, we shouldn't work on it. It should be able to serve the long tail first, not the largest cities. We target the smallest place. Their language, their culture, their environment, their desires. But it must be at the lowest possible cost. Low cost means low energy consumption. Low electricity use. Our philosophy also is to let people know where the information comes from and give them the freedom to change the algorithm. This approach also can apply to search. An engine can create a search engine, making it affordable for any country to create. The question becomes, how can this approach be implemented on a global basis?

We've decided to implement a decentralized strategy for tech adoption, enabling local companies to become unicorns. Our mission is to find local entrepreneurs, local institutions, local companies that are willing to adopt this. We've discovered in the research we've done so far that some countries will be orphans. They're simply too small to have a natural owner. So our lab will actually launch news and search engines for them. When possible, we'll always do co-creation and collaboration.

A decentralized federation

Not too long ago, the prime minister of Malaysia pushed the country to build its own Silicon Valley, and it had trouble taking off. The thought was "let's bring in talent and ideas will start to pop up." It just never worked. They started with the smartest people in the country, who then worked on very narrow applications, areas that could not scale broadly quickly. I believe it is a better idea to start with something that's already fairly advanced and then move from there. It's great to set up labs in institutions. It's even better if they're starting with a product that's already at the cutting edge, from which they can build and leapfrog. Then, once the source code is given away, they can then work with local partners. Those entities then become autonomous and scale globally. So, it's flipping the intellectual property concentration from a centralized to a decentralized federation, a federation of different labs that are willing to share best practices, code, and other assets.

In essence, you only need about 10 people to run a national search engine, because you don't need hundreds of coders and analysts. But you do need more very good people to make it work at the commercial level. In all cases, one needs to be driven to reduce the cost structure as low as possible.

Furthermore, there are many directives of the European Union governing user privacy. That gives our applications an advantage. They do not maintain log files of any sort, which also reduces costs. This will be a key factor to drive success in local communities.

Q & A

Samo Zorc *(Ministry of Digital Transformation, Slovenia):*

Well, what you just said is that you don't collect data from anybody personally. But once a state is buying one of your engines ... how do they sustain their model?

Philip Parker:

So, suppose you wanted to adopt a national search engine. How would you financially sustain your lab, search engine, or local news platforms? Clearly it has to be not on selling private data. So that model is off the table. What are the models that remain? Now remember the fixed-cost structure is far lower because we don't have server blades and

thousands of engineers. So, the contribution margins on whatever we do are going to be higher. That's good news. We obviously have advertising from business to consumer – B2C. There are opportunities as well in the B2B area – generative AI applications tailored to enterprises.

Simon Franko *(Managing Director, BASF Slovenia):*

Where do you see generative AI in 10 years?

Philip Parker:

Because I'm old, I'll let you know my experience. I was the last generation that did punch cards on an IBM System/360 mainframe computer. And there was a thing called a compiler that reads the cards. The next day you would find out the errors, and you would redo it. When we did regression analysis to fit a line to a curve, back in the day, we had to manually program each function and part. It was a time-consuming process. In the late 1970s and early 1980s, students began using two software products: SAS and SPSS. Later, Microsoft introduced a feature in Excel called the scatter diagram. These allowed users to input their data and run a regression in one click ("no-code programming"). This was the first time we had ever used a diagram with dots. Fit a line, add R-squared, and boom, you have an R squared! Initially, regression analysis was very expensive. Over time, the cost decreased, and now, it is open source. It began about 35 years ago with John D.C. Little's "CoverStory" paper, which led to large language models and generative technology.

Then came Narrative Sciences, then ChatGPT, LLaMA, Falcon, Mistral, and others.

Where do you think it's headed? It will become cheaper and more interesting. Many of the biggest breakthroughs have already occurred, but some remain to be seen. If what you are doing is formulaic in nature, someone is right now writing an algorithm to mimic you. The exciting future is the strategy of making it readily available to people in local communities.

Philip M. Parker

Dr. Riccardo Illy

IEDC Presidents Forum participants

IEDC Presidents Forum participants

Roundtable discussion of business leaders

***Mr. Maxim Korseko**, Director Central & Eastern Europe, Meta*

***Dr. Dunja Mladenić**, Head of Artificial Intelligence Laboratory at Jožef Stefan Institute, Slovenia*

***Mr. Miha Mlakar**, Cofounder of Pareto AI, Slovenia*

Moderator: ***Prof. Philip M. Parker***

Philip M. Parker, Maxim Korseko, Dunja Mladenić and Miha Mlakar

Philip Parker:

In the upcoming roundtable, our discussion will focus on the future of AI and the challenges it presents. Let's begin with a brief introduction of the panelists.

Maxim Korseko:

My name is Maxim Korseko and I'm director at Meta, the company which owns Facebook, Instagram, WhatsApp messenger. I work at the business division, my area of expertise is actually the practical application of AI solution and I will try to share my experience. Additionally,

I graduated from IEDC in 2009 and we still maintain the connections. I was in touch with another ex-classmate this morning, so, it is a great community.

Dunja Mladenić:

My name is Dunja Mladenić, from Jožef Stefan Institute, where I lead the department for AI. Over the past 30 years, I have been actively involved in AI research, working in computer science and AI. Our department has been expanding, and we actively send our researchers to various companies in Slovenia and abroad.

Miha Mlakar:

I'm Miha Mlakar, a co-founder of the company Pareto AI. My background is also in AI. I completed my PhD at Jožef Stefan Institute, I worked for the company in the States for a while, and then I co-founded the company back here in Slovenia. We focus on the application side, being a bridge and trying to help companies implement AI. We try to use the latest technologies in the simplest way and focus on the added value for the companies.

Philip Parker:

Thank you. Our first question is: "Looking ten years into the future, what specific AI applications do you think will be the most important for your country, for the European Union or for the world?" This is a challenging question because if it's happening now, it doesn't answer the question. It is ten years into the future. If you ask someone about ten years into the future, that is called science fiction of today. So I challenge the panel and I challenge you. If you had to think of something ten years into the future, what would it be? What kind of applications could there be?

Maxim Korseko:

In the future, there will definitely be something that we cannot even imagine today, the "known unknowns". I believe that AI will lead to the development of personal assistants that will feel increasingly human-like. Meta's investment in the Metaverse will expand, bringing more people into this digital realm. Speaking of the world, I really believe that AI is a great amplifying tool, helping us move forward as humanity. One thing, which is my personal wishful thinking, is that a number of things, local and global problems will be solved. The main bottleneck preventing us from making significant progress on climate change is battery storage.

We as a human race know how to extract energy from renewable sources, but we don't know how to transmit and store it from where it's generated. Widespread adoption of AI will be key. One of the companies of Slovenian origin uses AI to design its new fashion products. Another company has built an AI model to outsmart Facebook's mechanisms. Another built a model that helps to identify when it is best to invest in order to get the highest return. So these models are already bringing value to Slovenian companies. They are helping them to scale, to optimize their cost structure and to grow at a lower cost.

Dunja Mladenić:

If we are researching something today, it will take some time to get to real products. Our research is currently focused on incorporating more context into AI systems, on enabling more targeted solutions, and on addressing underrepresented languages. We are also exploring the impact of quantum computing on AI development. Data quality and multidisciplinary approaches are essential to advancing AI. If we can learn about the user's demographics, their network, and more of the user's context, then our systems could better serve that user. Furthermore, then we could develop a personal assistant not only for a single person, but also for groups of people. For example, modeling complex systems such as, Lake Bled to monitor the state of the lake, or climate change, or developing a digital twin of a country. Slovenia is small enough to develop a pilot project for our country. Hopefully, this is the direction in which research can take us, and then companies can take over and create sustainable models.

Miha Mlakar:

Slovenia is a small country, I love the language and I really enjoy working on it, but we know that it's more complex than English and there is a need for continuous efforts to address this challenge. Over the next decade, research should aim to build a comprehensive foundation for language interaction and understanding, covering both common usage and the more complex aspects. This initiative will not only benefit our country, but also provide a model for other small nations. In addition, we should consider the potential evolution of personal assistants over the next decade. It's a fascinating area of research with promising prospects. Another industry we need to talk about is healthcare. Using personal assistants to help the elderly and alleviate their loneliness is a remarkable opportunity. Technology can be a tool to enhance their well-being and promote greater independence. Despite the slow pace of development, I am optimistic about our ability to achieve these goals in the near future.

Philip Parker:

Musk and others started talking about investing in some of these advanced technologies back in 2015, and ChatGPT came seven years later. This underscores the importance of long-term vision and commitment. What other ideas or innovations can you share with us?

Igor Rudan:

Hi, I'm Professor Rudan from the Usher Institute at the University of Edinburgh, which is a digital school of public health. I hope that in ten years we will have all health as prevention. If we have enough data on everybody, we will be able to mathematically predict who out of millions is most likely to have a stroke and send them a text message. This will clear the hospitals.

Jennifer Pope:

Hi, I'm Jennifer Pope. I'm a visiting scholar here at IEDC for the year. I teach at Grand Valley State University in Michigan in the US. What about privacy in health care? I think DNA is where we are going to see a lot more improvements and we are going to be able to use it in better ways. But we have to think about privacy, and I think AI will have to be at the forefront of making sure that our data is protected as much as possible.

Klemen Šešok *(COO, Iskra):*

At the Bled Strategic Forum, two years ago, we had the honor of hosting the President of Estonia, who graced our stage. During her visit, she shared a visionary idea that resonates with how small countries can capitalize on big data. She discussed the concept of gathering valuable patient data and exploring opportunities to collaborate with interested parties, potentially revolutionizing our own healthcare system.

Maxim Korseko:

So on the topic of privacy, which is definitely a very important topic, the question is how do you define privacy? I think privacy is the ability of any company to link data to a specific person. It is called PII, personally identifiable information. That is why you need to draw a very clear line between the two. I think there should be no sensitivity about sharing the data as long as it is not linked to a specific person. Because data is needed to train the AI model, to be able to identify your tumor on your chest x-ray, to be able to make the right drug. This data is essential. If we do not share that data, no model will be built. That is a very important distinction.

Philip Parker:

A really good case study you should look at if you ever want to do some research on this is called InBloom. It was created for educational purposes, funded by the Gates Foundation, with the goal of allowing children to interact with the system as they go through their education. If you were weak in one subject, it would recommend the best curriculum. The intention was fantastic. And then two mothers in upstate New York said, "Are you saying there's a company that's collecting data on my children without my permission? That caused a $100 million investment project to collapse. So don't underestimate this, if people get upset about what might happen to their data that can be enough to stop certain initiatives.

Our second question has to do with talent. If a country is going to invest a lot of talent in this area, one of the problems you have is talent shortage. What can a country do to address the talent shortage and/or attract and retain talent? Should your country or region in which you operate make AI a strategic priority? And if so, how do you address the talent shortage and the facilities, the data centers that might come with it?

Dunja Mladenić:

This morning we learned about the long and rich history of AI in Slovenia. Not every country has so much emphasis on one field and on AI. This can be attributed to Prof. Ivan Bratko, an Academic Professor who started researching AI in the 1970's. From a single computer science department at Jožef Stefan Institute, we now have three departments directly working in the field of AI, each with over 40 talented people.

Unfortunately, we are experiencing a talent drain, not only from academia, but also from research institutes. In order to retain qualified professionals, we have to face the challenge of competing with offers from Slovenian companies or companies abroad, which allow them to work online for salaries that are two to five times higher. One of the problems is that we have a regulatory system that limits the mechanism for rewarding high-quality researchers at public institutes and universities. Also, as researchers, we cannot compete with industry giants with their vast resources. Instead, we should focus on specific, knowledge-intensive and deep aspects. Promoting international collaboration between research and business, as well as interdisciplinary partnerships, is essential. Furthermore, it is imperative to more prominently introduce AI and computer science in education, starting at the primary level, to ensure that our younger generation understands AI and how to use it effectively.

Miha Mlakar:

The unique combination of remote working opportunities and a stunning natural environment offers significant potential. The challenge is to attract external talent to work for Slovenian companies serving global clients. To do this, we must focus on making our business environment and opportunities more attractive. This applies not only to local work, but also to remote work scenarios. One possible solution is to promote transparency and knowledge sharing among companies. By openly sharing insights and methodologies, we can foster collective learning and innovation. This transparent approach will improve the overall quality of our businesses, making them more attractive to both local and international talent.

Maxim Korseko:

I would like to challenge the notion of thinking from the Slovenian point of view. Instead, we should reframe our approach to focus on making Slovenia exceptionally competitive in the global economy. The projected size of the AI-related business market is estimated to reach $15 trillion over time. While it will take time to reach this level, this market size is what is driving companies to invest in AI.

Let me illustrate this with an example from the Netherlands. Eindhoven used to be very dependent on Philips and when it started to divest, they divested a lot of businesses, a lot of people had to leave, and Eindhoven became a ghost town. At some point, the government of this region decided to transform this area by building a European Silicon Valley and bringing 20,000 new, technically educated people to the area, which is now known as Brainport. As a result, the region is now positioned to capture a significant share of the $15 trillion AI market.

Arnold Walravens *(professor of Corporate Governance and Arts & Leadership at IEDC):*

I faced these very challenges as my family resides in Eindhoven. The Brabant region is grappling with two pressing issues: large pig farms and extensive data centers that share the energy grid. As Danica mentioned earlier, there are profound social and environmental issues connected with our discussions today and it is imperative that we address them.

Philip Parker:

I would like to thank our panelists. Thank you very much.

Developing Modern Institutions to Lead Digital Change and Manage AI

Presentation of the Bled Institute for Leadership in Digitalisation and Artificial Intelligence (BILDAI)

***Prof. Stjepan Orešković**, President of the Supervisory Board of IEDC and majority shareholder of M+ Group, Croatia*

***Ms. Barbara Domicelj**, General Manager, Microsoft Slovenia*

***Ms. Eva McLellan**, General Manager, Roche Slovenia*

***Prof. Igor Rudan**, Director, Centre for Global Health Research and WHO Collaborating Centre, University of Edinburgh, UK*

***Prof. Robert Sackstein,** Senior Vice-president for Global Medical Affairs, Florida International University; Professor Emeritus, Harvard Medical School, Boston; Director, Harvard Career Development Program in Translational Glycobiology, Harvard University, USA*

***Mr. Jorge Fernández Vidal,** Investment Director, Liechtenstein Group*

Danica Purg, Stjepan Orešković, Eva McLellan - BILDAI founders

Stjepan Orešković:

I am pleased to welcome the panellists. Welcome Ms. Eva McLellan, Ms. Barbara Domicelj, Prof. Igor Rudan, Prof. Robert Sackstein and Mr. Jorge Fernández Vidal. I would like to ask each of you to introduce yourselves briefly and to highlight the important things that you have done or are doing in relation to the topic that we are discussing.

Eva McLellan:

I'm the President and General Manager of Roche Slovenia. I grew up in Canada and studied science at the University of Toronto. I've lived in many countries, including Switzerland and Belgium, and completed my business studies at INSEAD in France. This is why I appreciate Roche. We are the number one biotechnology company in the world, we focus on developing data, diagnostics and medicines and using all technologies, including AI. We work in a very decentralised way in the countries where we operate to help develop talent and skills. As the needs in healthcare systems increase and become more complex, we are aware of the role that Artificial Intelligence will play in addressing modern challenges. At Roche, we believe that with such strategic partnerships and co-creation, we can provide significantly greater value to society.

Barbara Domicelj:

I've been with Microsoft for almost 20 years. I have been through all the changes that Microsoft has gone through in the last few years, and in the last nine months, our whole lives have changed completely in terms of what our customers are asking for and what the leaders in the region and in Slovenia are demanding. Today we have heard many things that we, in a local subsidiary of Microsoft live for. This is my passion and the passion of my colleagues in Slovenia. There are 60 people working for Microsoft in Slovenia and we are probably the best exporters of our knowledge in Slovenia and also importers of good knowledge coming from abroad.

Igor Rudan:

I'm a medical doctor with many interests. I have two masters degrees and two doctorates, and if we had a universal basic income I would probably have many more doctorates. But I also had to eat. So I had to start doing something. I think I jumped on several waves of progress in medicine and in science. I developed a big biobank in Croatia called 10,001 Dalmatians, and we mapped the genes for human diseases and traits - about 2000 different genes. Then came the global health revolution. So,

I started working with the Bill and Melinda Gates Foundation, the World Health Organisation, UNICEF and others to reduce child mortality. I developed models that prioritised investments and reduced global child mortality. Then I also started to popularise science and wrote some books and made some documentaries. But anyway, AI is definitely an important interest for my group now. I work at the University of Edinburgh, where I have set up a Centre for Global Health. I was the first research director of the Usher Institute, which is a digital public health institute where we're trying to bring the digital revolution and progress in medicine together.

Jorge Fernández Vidal:

I work for the Liechtenstein Group, which is a holding company owned by the Princely Family of Liechtenstein. I hold an MBA from INSEAD and a PhD in Business Economics, and I teach strategy and transformation at IE Business School. Professionally, I have spent most of my career in McKinsey & Company in their transformation and restructuring practice and have led the business transformation efforts of two large multinationals.

Robert Sackstein:

My career has always merged unique fields, for example, merging my efforts as a bone marrow transplant doctor with the needed scientific studies in the lab to improve outcomes for my patients. I discovered the importance of understanding cell migration to the bone marrow because bone marrow transplant differs from typical organ transplants, as in solid organ transplant the transplanted tissue gets placed in the anatomic site where it characteristically resides. However, you do not transplant blood-forming stem cells by collecting them from the marrow of a donor and then injecting them directly into the marrow of a recipient. This approach was tried in the 1950s, and it was found that direct-injection bone marrow transplants failed because the injection itself damaged the marrow microenvironment that is necessary to support blood cell development. But, ironically, bloodstream injection of the marrow cells harvested from a donor's blood allowed the cells to naturally migrate to the recipient's bone marrow. When I started my career as a bone marrow transplant doctor, nobody had any idea what molecules were mediating that critical biology. No one knew anything about it then, which is the molecular basis of the ability of a haematopoietic stem cell, a blood-forming stem cell, to get into the bone marrow. My research highlighted in the importance of cell surface sugars in this process. This discovery led to my focus on merging glycoscience and clinical medicine into translational

glycobiology, a field I pioneered. Now, I propose applying this approach to AI and medicine, creating "Translational AI" to bridge the gap between clinicians, scientists, and AI experts. This could be furthered by the IEDC-Bled School of Management, potentially launching a journal for "Translational AI" to facilitate this interdisciplinary collaboration.

Stjepan Orešković:

Thank you very much, Robert. It's all about how to bring things together. A lot of complex things and trying to make them work for the benefit of our societies. So, just a few sentences about our efforts to establish the Bled Institute for Leadership in Digitalisation and AI. Personally, I'm a big fan of the fantastic book How Nations Fail. It's a big story about the role of institutions, independent institutions in developing societies, written by Professor Daron Acemoglu of MIT. The message of the book is that developed societies, in a very broad sense, are those that have been able to maintain and develop independent institutions. The problem with the world we live in is that we are, intentionally or not, destroying the institutions of the 20th century starting with the United Nations and going down. For many reasons that can be explained politically. But society cannot function without institutions. Our idea of creating an institute, which we are launching today, is about that. What would a 21st-century institution look like that would be able to answer all the questions we are discussing now? What are the problems with 20th-century institutions? Why don't they work? Without institutions that are modern, inclusive, transparent and equally accessible, we would be in big problems, including AI and technologies. So that's one of the reasons why we've been looking for partners. The first big challenge now is collaboration and how you work with others. This is also the biggest problem of humanity. The thing that makes us different from any other species in the world is our ability to collaborate. Our first motto for the Institute is to collaborate better than others, and the first collaboration was offered to Roche.

Eva McLellan:

With 16 years at Roche and a background shaped during the human genome sequencing era in 2003, my journey as a biologist has found a home in Roche's family-owned, innovation-driven culture. What I appreciate about Roche, is our commitment to creative leadership, integrity and future focus which aligns seamlessly with IEDC's values. Roche's recent collaborations, like the establishment of the Allston Innovation Center with Harvard, Boston, showcase our dedication to these initiatives. I am so pleased that at the same time, here in Europe we are estab-

lishing the Bled Institute for Leadership in Digitization and AI (BILDAI) with IEDC - Bled School of Management in Slovenia. I am also proud that in 2023, Roche was recognized as the leading pharmaceutical company in AI readiness, and we consider it our social responsibility to contribute our expertise. Our focus on data infrastructure and leadership development reflects our dedication. I personally want to emphasize ethics and integrity as the foundation for public trust, we see this collaboration as an opportunity for Slovenia to emerge as a key international hub for digitalization and Artificial Intelligence research, education, and innovation.

Stjepan Orešković:

When we came to Eva, we said: Eva, we don't need your money, we need Roche's knowledge. Fortunately, she said yes. But definitely, Roche is a great source of knowledge and we are looking for knowledge that is not short-term, and the family part of the ownership gives us some assurance that they are not just looking at PNL in 2024 and because we want to be an independent institution.

Igor, you were the first scientific director of the Usher Institute, which is now a great success. Who knows what will happen to us in the next five years? Maybe it will be just another failed attempt. So what have you done at Usher to make it a success? What would be your message to everyone in Slovenia? What should be done?

Igor Rudan:

Reforming established systems is tough; it's often easier to start from scratch. The UK's higher education sector, despite some challenges, remains forward-thinking. A notable example is Edinburgh's City Deal, with > £1 billion, which aims to make the city Europe's data capital. This ambition is backed by the University of Edinburgh's excellence in computer science and medicine. The university is investing £70 million in a new building to merge these disciplines, bringing together hundreds of professionals from both fields of data science and medicine to innovate collaboratively. The overarching mission is to shift medicine towards prevention, establishing Edinburgh as a pioneer in digital public health.

Stjepan Orešković:

Jorge, part of your life has been dedicated to researching why and how digitalisation works or doesn't work in the real world. What was the message? We have technologies that are sometimes perfect, but then the results can be perfect or bad. What did your research show?

Jorge Fernández Vidal:

In summarizing successful digital transformation in business, the first key aspect is integrating IT/digital expertise with business know-how. Leaders must be adept in both areas to drive meaningful change. Secondly, traditional organizational structures are obsolete in the digital era. This calls for a more adaptable approach, involving a mix of temporary, internal, and external teams. Thirdly, it is essential to address the unique demands and perspectives of digital talent. They often seek greater autonomy, purpose, and flexibility, requiring a shift in management strategies. Lastly, continuous learning is vital, especially for leaders. Staying abreast of rapid technological advancements is critical, and may involve engaging with educational institutions or organizations for ongoing learning.

Philip M. Parker, Danica Purg, Dunja Mladenić, Eva McLellan, Miha Mlakar, Barbara Domicelj, Igor Rudan

Stjepan Orešković:

Let's take what you said and apply it to a concrete example of Microsoft, which has almost perfect, or at least very good, products. When you go to institutions, organisations or even whole societies and offer your solutions, the result is very different. Sometimes it's fantastic, it works, the uptake is complete and you make rapid progress. On the other hand, there are probably complete failures. What makes the difference?

Barbara Domicelj:

Collaboration is in the DNA of Microsoft. So whatever product we launch, it has to be inclusive for everybody we always think about underprivileged people and what are the legal implications of being 100% or

even 120% sure that the data is private, that it stays private. Another thing we need to have as business leaders is humanity and courage. If you look at Netflix, if you look at Disney, even if you look at Amazon, at the end of the day it was courage and leaders who were brave enough to make decisions to try and fail but learn a lot. And I think that is a key differentiator in everything we do.

Robert Sackstein:

The discussion highlights important ethical considerations in advancing technology, especially as regards to new therapeutic approaches. There is a need to converge a meeting of the various stakeholders to help build consensus. An example of such an effort is the UK's 1984 Warnock Report on human fertilization and human embryo research, a report which framed scientific goals with respect to ethical boundaries. As we integrate human intelligence into medical care algorithms, similar dilemmas arise regarding the balancing of technological capabilities with the achievement of human quality of life, with the preservation of and respect for human dignity, the appreciation of human autonomy, and the preservation of diversity in human lifestyles. There are also profound technical challenges to employing AI in clinical medicine. For example, the shift in surgical practice from hands-on to robotic procedures raises questions about the technological impacts of AI, suggesting the need for careful oversight to ensure that technological advances align with the doctor-patient relationship and with humanity's best interests. This requires a collaborative approach involving ethicists and professionals across many disciplines to navigate the complex intersection of medical needs, technology, ethics and human values.

Stjepan Orešković:

Indeed. Jorge, let's follow the same line of thought. You are an investment director in the large fund owned by the Prince of Liechtenstein and most of your investments are related to food and agriculture. It's interesting to look at your portfolio and I'd like to understand how you decide where to invest, bearing in mind all three questions we've heard today: food safety, environmental sustainability and profitability of your investment. It's a very concrete situation.

Jorge Fernández Vidal:

Our group focuses on managing intergenerational wealth, so we invest for the long term. We aim to make investments in climate-safe

assets or solutions, ideally synergetic with our existing portfolio and in areas where we have deep expertise. For example, we invest in areas of growth that can increase production, reduce emissions, and make better use of critical resources like water. We invest in sectors that can drive systemic change and really do not shy away from betting on what we think are transformational technologies - even if they take a very long time to get to market. Obviously, we try to get an adequate return from that, like all investment groups, but we really have a much more patient perspective than many.

Stjepan Orešković:

Let's talk about what BILDAI should do in the future. Eva, what do you see as the biggest opportunities in the healthcare sector in Slovenia, taking into account all the advantages of a country of the right size?

Eva McLellan:

AI has incredible potential, but it doesn't need to be used everywhere. In healthcare, we're facing crucial challenges like worker shortages and slow progress, not just in Slovenia but globally. Slovenia, with its 70-year oncology registries, offers a unique chance for advanced healthcare data analysis, setting an example for other countries. In healthcare, data handling is tightly regulated, only second to the aviation industry, ensuring responsible AI integration. This peaks to trust, the pharma industry, being data-driven and regulated, shows how AI can be used responsibly. Personally, as we hear today from our colleagues, when health is on the line, privacy concerns may take a backseat to urgent decisions, like extending a loved one's life. While we won't compromise privacy for small gains when it comes to serious health matters, one must weigh the cost-benefit of privacy considerations – this is a personal matter.

Stjepan Orešković:

What would you do with the Institute that would put on the world map the best problem solvers in the field of AI and digitalisation management?

Igor Rudan:

The success of the Institute hinges on addressing and solving real needs. We must prioritize AI applications for maximum return with minimal investment. Regulation is crucial but challenging and needs to be responsive and effective. Reflecting on Nikola Tesla's era, we see how vastly different the world was then, lacking many modern technologies

and grappling with basic electrification and industrial challenges. Back then, the state played a critical role in regulation and patent enforcement, amidst intense competition among innovators like Edison and Tesla. However, today's world is far more complex, with rapid advancements and numerous players, making it difficult for states to keep pace. In this context, institutions like ours can play a pivotal role in monitoring developments, informing policymakers, and balancing risks and benefits. This could prevent a scenario where tech companies self-regulate and make decisions without sufficient oversight, a situation that could undermine the need for checks and balances in a democratic society.

Robert Sackstein:

The Institute stands out for its commitment to obtaining critical input from thought leaders in order to position Slovenia prominently in the field of AI, and also, for enhancing opportunities for the development of AI throughout the greater world, particularly in healthcare. Optimizing the resources of Slovenia's healthcare system and its oncology databases will be key to the success of this aim. But, importantly, any dataset utilized must be carefully validated, as the vast amount of scientific literature and data at present contains biases and/or inaccuracies that could markedly impede the utility of supervised-learned AI. With proper curation of available input data, AI algorithms can be created that could serve as a valuable tool in discerning data quality and authenticity. By ensuring rigorous data quality control in Slovenia, we can significantly advance the effective application(s) of AI to tackle the most life-threatening diseases, such as cancer.

Stjepan Orešković:

The school is in Slovenia, but from the very beginning it was international, just like science is international and technologies are international.

Igor Rudan, Barbara Domicelj

And whatever we are going to do, we should be ambitious to do it under the global criteria, because it doesn't make sense to do anything else.

Jorge Fernández Vidal:

My hope is that the Institute will help the business leaders of tomorrow, those that are going to make the relevant decisions of the future. It is important that we get this wave of transformation right and for that, education will be critical to navigate our very uncertain future. I think the Institute can and should play a pivotal role in that.

Barbara Domicelj:

Just recently, Microsoft's business leaders met at CEMA to look for a difference between the countries that are lagging behind and the leaders in AI. I was happy to see that when they identified the ten reasons why countries are leading, Slovenia had eight of them: talent pool, strong academic research and strong investments from the government and others. Now the question is whether we can be a lighthouse or whether we will be a laggard due to rapid development, and if we sleep on it, we will never be a leader in this area.

Stjepan Orešković:

What would Roche say ten years from now? Was it a good decision to be part of BILDAI?

Eva McLellan:

Looking ahead a decade, Roche's involvement in co-founding BILDAI will be seen as a pivotal decision that made a real impact. Our legacy won't be just about individual achievements but about fostering a vibrant community and generating valuable insights collectively. We envision a thriving ecosystem, proud to serve as a case study for others in the industry. This initiative represents our commitment to creating lasting positive change bringing people together internationally, and I am excited to see the influence it will have over the years to be able to proudly say – we sparked that, we made a difference.

Stjepan Orešković:

Thank you. I think this is really the biggest challenge for everybody. I hope that we will be able to develop an ecosystem in the full sense of the word. Thank you for your attention.

IEDC Alumni Achievement Award winners 2023

The Award recognizes the outstanding career, leadership, innovation, social achievements of up to five remarkable individuals among IEDC alumni community. The AAA Award is given out at the yearly IEDC Forum.

Robert Ljoljo *(President of the Board of Management, Lek d.d. and Sandoz Country President Slovenia) Slovenia*

Robert has a remarkable career spanning 20 years at Lek, during which he led the implementation of multiple technology solutions and systems. He managed large teams at various levels, including country, regional, and global, which earned him numerous prestigious awards such as the Sandoz and Novartis Awards of Excellence. With extensive experience in executive management of both generic and innovative pharmaceuticals worldwide, Robert's strengths lie in operational excellence and change management within the global pharmaceutical industry.

Zoran Mitreski *(President of the Management Board, Konzum plus and Executive Director of the retail business area, Fortenova Group) Croatia*

Zoran is an accomplished retail professional with extensive experience in Konzum. He has navigated the company through some of its most challenging times, including the major crisis of 2017. Thanks to his leadership and that of the team of senior managers, the business was stabilized and once again achieved outstanding results. Recently, Zoran was in addition appointed to the position of the Executive Director of the retail business area in Fortenova Group. In this role, he oversees a regional network comprising around 2,500 sales points and over 30,000 employees, assuming responsibility for this vital business area.

Mona Neagoe *(Partner, Board Member and the Head of South-Eastern Europe, Pedersen & Partners) Romania*

Mona is a Partner at Pedersen & Partners, an integrated firm with 54 offices around the world, a Board Member and the Head of South-Eastern Europe. Through her outstanding career, she has built-in executive search and leadership consulting at a global scale. With over a decade of consulting

Aleksandar Raić, Danica Purg, Mona Neagoe, Robert Ljoljo; in the background: Zoran Mitreski, Lidija Žigić

Alumni Achievement Award

experience with Andersen and EY, Mona transitioned to executive search in 2005 and has since provided invaluable guidance to clients on complex matters such as leadership, corporate governance, and organisational issues and has successfully led over 500 search mandates across a variety of sectors, including Private Equity, Financial Services, Consulting, Consumer Goods, and Healthcare, throughout CEE countries.

Aleksandar Raić *(Vice President of AI Transformation, Infobip) Croatia*

As an IT professional his career spans successful project oversight and CIO roles in major enterprises. He recently spent three years as Vice President of People & Transformation at Infobip, focusing on integrating acquired companies and valuing people as the company's key asset. In the past six months, Aleksandar led an AI-focused team, optimizing internal processes and embedding AI into Infobip's product and cloud communications platform. Now, in his new role, he'll exclusively drive AI initiatives, empowering Infobip and its customers to deliver personalized AI-enhanced experiences across various use cases. His unwavering commitment to tech-driven innovation positions him as a visionary leader in harnessing AI.

Lidija Žigić *(CEO, NLB Banka d.d. Sarajevo) Bosnia and Herzegovina*

Lidija has over two decades of experience in the finance industry, with a focus on managerial and leadership roles. In January 2017, she was appointed as the CEO of NLB Banka d.d. Sarajevo, having previously served as a Board Member for two and a half years. Under her guidance, the bank underwent a successful transformation from a traditional institution to a modern, digitized one, gaining strong brand recognition in the market. Lidija's achievements have been acknowledged with several awards, including the 'Zlatni BAM/Golden BAM' in 2019 for her success as a female banking executive. She was also named 'Woman of the Year' in 2018.

IEDC Books of the Year

2023 ***Philip M. Parker****, AI: How Small Countries Can Compete Against Big Players*

2022 ***Howard Yu****, What makes a company 'Future-Ready'?*

2021 ***New Leadership for Sustainable Future: 35th Anniversary of IEDC***

2020 ***Ichak Adizes****, Global Crisis as Leadership Challenge*

2019 ***Dominique Turcq****, Beyond AI: How Neurosciences and Biology will Change our World and how Leaders Should get Prepared for It.*

2018 ***Daniel Susskind****, Artificial Intelligence and its Impact on Leadership*

2017 ***José (Joe) Santos****, Globalisation is Dead. Long Live Globalisation!*

2016 ***Joe Peppard****, Digitalization as Investment in Change*

2015 ***William A. Fischer****, Are You a Digital or an Analogue Leader?*

2014 ***Roger Martin****, How Winning Strategy Works and What Is It Really? Why Strategic Planning is not Strategy?*

2013 ***Pankaj Ghemawat****, How Global are We?*

2012 ***Henry Chesbrough****, With Open Innovation to Success*

2011 ***Creating the Future: 25th Anniversary of IEDC***

2010 ***Stéphane Garelli****, Business as Unusual; A Competitiveness Outlook for 2011, and Beyond*

2009 ***Hermann Simon****, Role Models of Leadership beyond the Crisis*

2008 ***William A. Fischer****, New Generation Innovation*

2007 ***Jean-François Manzoni****, How to Avoid the Set-Up-To-Fail Syndrome*

2006 ***Ichak Adizes****, What is a Leader? (a video lecture)*

2005 ***Peter F. Drucker***, *Manage Yourself and Then Your Company: Set an Example*

2004 ***Manfred Kets de Vries***, *The Bright and Dark Sides of Leadership*

2003 ***Fons Trompenaars***, *The Challenge of Leadership - Visions, Values, Cultures*

2002 ***Milan Kučan, Jean-Philippe Deschamps, William George,*** *Leadership for Innovation*

2001 ***Milan Kučan, Peter Kraljič, Peter J. Rohleder,*** *Competitiveness of Companies in Central and Eastern Europe*

2000 ***Paul Strebel***, *Focusing on Breakthrough Options*

1999 ***John M. Stopford***, *Harnessing Organizational Knowledge for Strategic Innovation*

1998 ***Pedro Nueno***, *Maintaining Your Personal Value*

1997 Lecture by ***Peter F. Drucker*** on the occasion of the 10th IEDC Anniversary: *Manage Yourself and Then Your Company: Set an Example*

1996 ***10 years of IEDC***

1995 ***George Taucher***, *How to Succeed with Strategic Alliances*

1994 ***William A. Fischer***, *The New Faces of Manufacturing*

1993 The European Presidents' Challenge; Beyond Restructuring

1992 Developing Managers for Eastern and Central Europe

1991 ***Thomas J. Peters***, *The American Way of Managing – A Model for the Whole World?*

1990 ***Arnoldo C. Hax***, *Redesigning of Strategic Concepts and Processes*

1989 ***Derek F. Abell***, *Management in the Organization of the Future*

1988 ***Peter Kraljič***, *Ways to Industrial Success*

About IEDC–Bled School of Management

The IEDC–Bled School of Management, founded in 1986 as the first management school of its type in Central and Eastern Europe, is one of the leading international management development institutions in Europe. This year IEDC is celebrating 37 years of its existence.

It is a place where leaders come to learn and reflect, an international centre of excellence in management development, a business meeting point, and a unique place where works of art complement a creative environment for creative leadership. Some of the world's most eminent professors and consultants teach here, and participants attend from all over the world. The total number of participants since the establishment until today stands at more than 100,000 from 100 countries.

The IEDC–Bled School of Management is an award-winning school. In 1999 it was one of the first two management schools to be awarded the IQA (International Quality Accreditation), while in 2005 it received, as the first one in CEE, international accreditation from the Association of MBAs (AMBA).

In 2011, the President of the Republic of Slovenia conferred The Golden Order for Services upon the IEDC-Bled School of Management, for its pioneering work in the field of business education in Slovenia and CEE and for its contribution to putting forward high business standards by teaching good practices and sharing new expert knowledge.

In 2012, the Executive MBA Program of IEDC–Bled School of Management was recognized by the Association of MBAs (AMBA) as one of the four most innovative MBA programs in the world, among 700 MBA programs accredited by AMBA in over 75 different countries. The IEDC–Bled School of Management won that recognition for innovation in combining the arts with leadership and management education.

The IEDC – Bled School of Management has been very active in the UN PRME (Principles for Responsible Management Education) activities and it was the first management school from the CEE region to be recognized as PRME Champion.

This year IEDC – Bled School of Management was listed among the top 100 management schools on the WURI ranking - "The World University Ranking for Innovation". IEDC was ranked 16th place in Entrepreneurial spirit, 25th in Crisis Management, 26th in Ethical Value, 40th in Fourth Industrial Revolution.

IEDC President, Prof. Danica Purg was named 2010 International Educator of the Year by the Academy of International Business for her outstanding achievements in international business education. In 2013, she became the Chair of the UN PRME Steering Committee and in 2020 she was leading the restructuring of PRME as its Acting Chair. The Global UN PRME Forum awarded Prof. Purg in New York in 2018 for her pioneering work in establishing the UN PRME initiative.

The President of the Republic of Slovenia awarded Prof. Danica Purg with the Honorary Order of Freedom for her contribution to management development in Slovenia and Central and Eastern Europe. She is also the recipient of the 2014 Lifetime Achievement Award in the field of management by the Managers' Association of Slovenia and the "National Order of the Legion of Honour", the highest French order of Merit, received in 2018 for her dedication and support in strengthening bilateral relations among France and Slovenia, especially in the field of management education. In 2022 Prof. Purg was awarded the Order of Rio Branco, the highest decoration of the Brazilian state for foreign nationals.

Along with its highly-ranked International Executive MBA and Doctoral programs, the IEDC offers short executive seminars for top management and a wide range of general management programs including a four-week General Management Program and an International Summer School for Young Managers - YMP. Companies and other organizations appreciate very much IEDC's innovative, experiential learning with great impact.

IEDC has reliable partnerships with a number of well-known regional and international clients, among them: Vienna Insurance Group, Nova Ljubljanska Banka, Coca-Cola CEE, Zavarovalnica Triglav, Pivovarna Laško Union (part of the Heineken Company), Achmea the Netherlands, Austrian Post, Cosylab, Croatia Osiguranje, Erdemir Turkey (part of OYAK Mining Metallurgy Group), Erste Group Bank, Generali ACEER, Gorenje/Hisense, Krka, Lek Sandoz, Luka Koper, Medtronic EMEA, Nicelabel International, Smollan South Africa, Syspro South Africa, Tikveš Winery North Macedonia, and many others.

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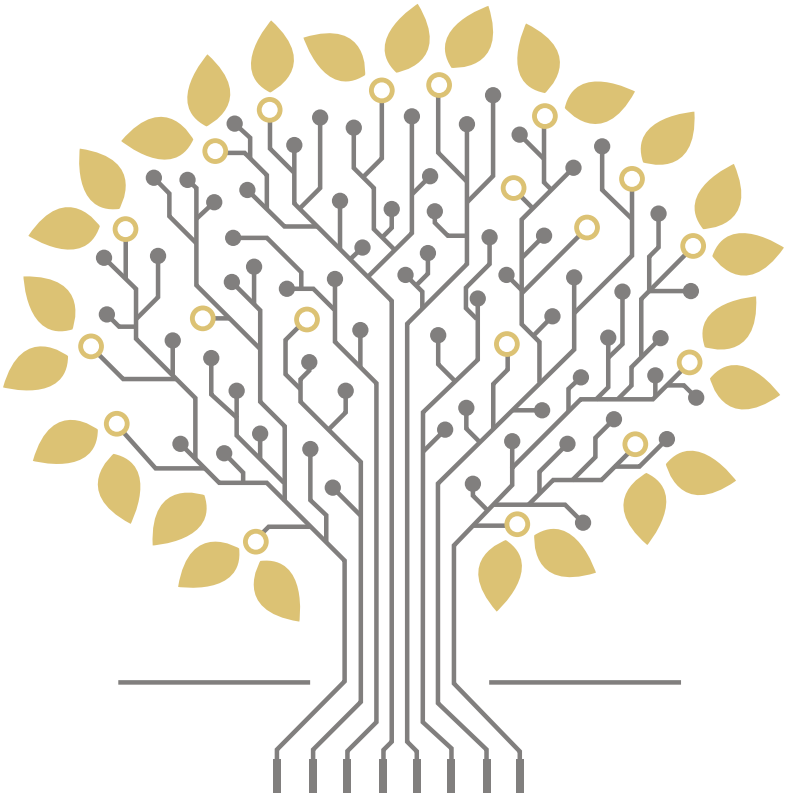

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