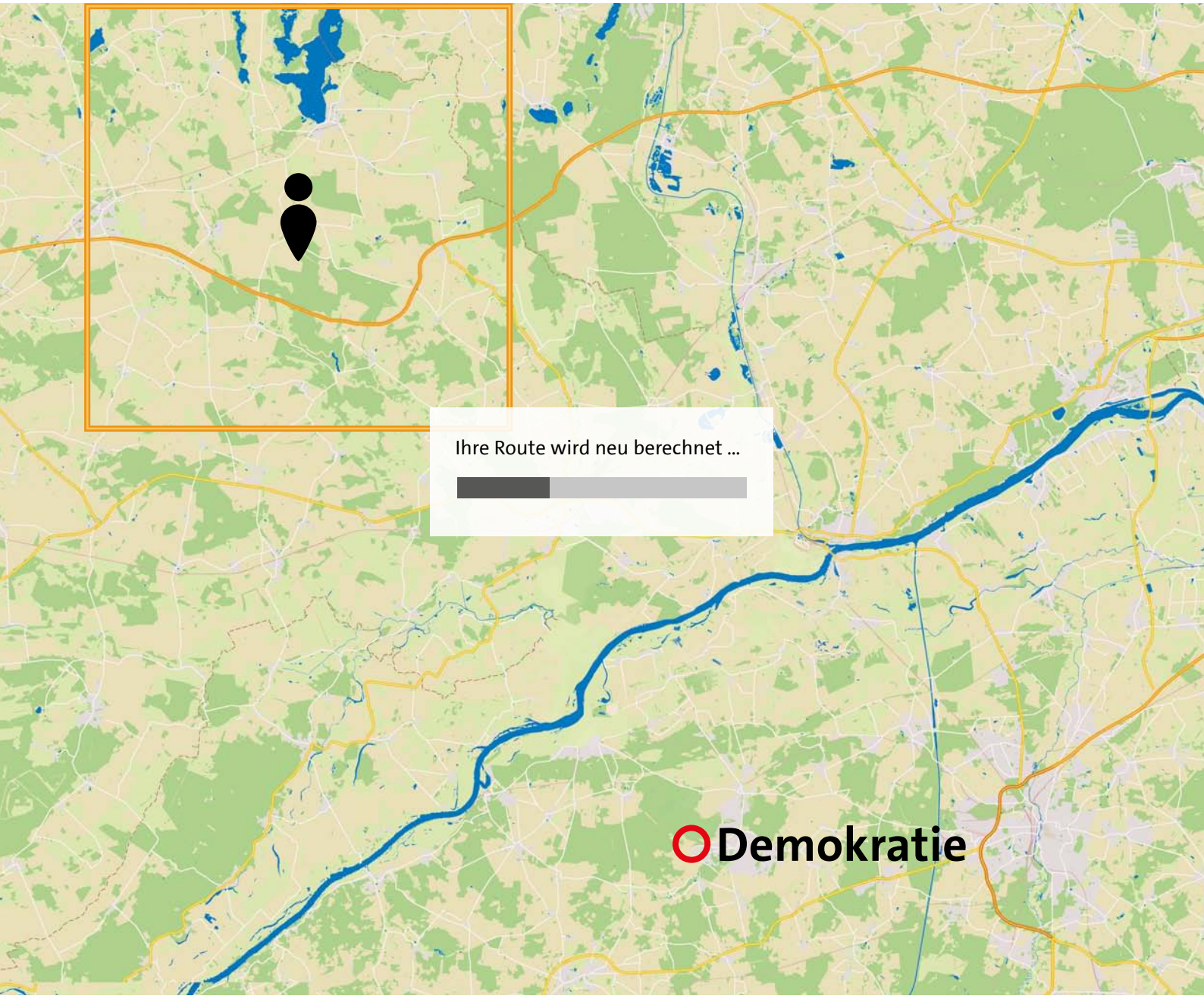
Synergie

FACHMAGAZIN FÜR DIGITALISIERUNG IN DER LEHRE | **#05**



Universität Hamburg
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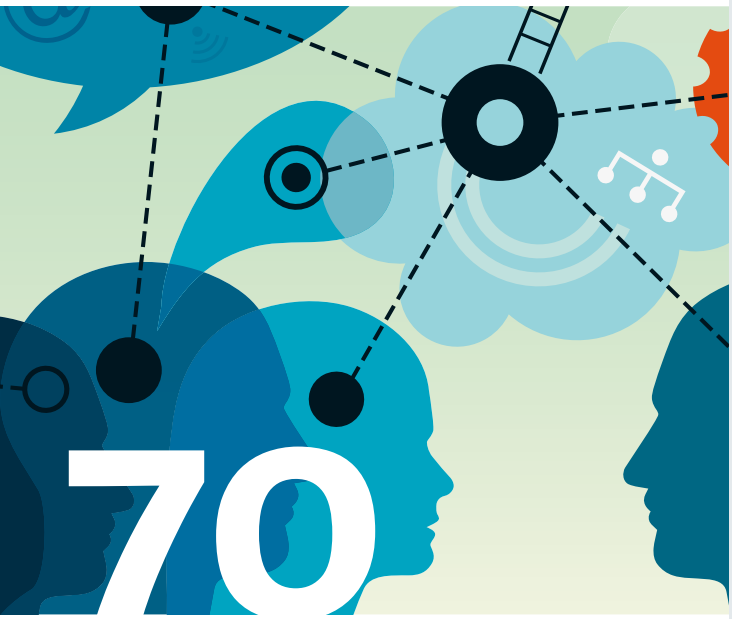
DEMOKRATIE
Digitalisierung, Demokratie und Transparenz

OER
OER Forschung

DEMOKRATIE

Politische Medienkompetenz als Zielvorstellung digitalisierter Hochschullehre

Welchen Beitrag können Hochschulen heute leisten, um ihre Studierenden auf eine emanzipierte Teilhabe an unserer digitalisierten Gesellschaft vorzubereiten?



OER

OER-Forschung – Warum es sie bisher nicht gab und wie sich das ändern kann

Die Entwicklung einer Forschung zu Open Educational Resources (OER) steht noch ganz am Anfang. Ein Überblick über aktuelle Erklärungs- und Lösungsansätze.

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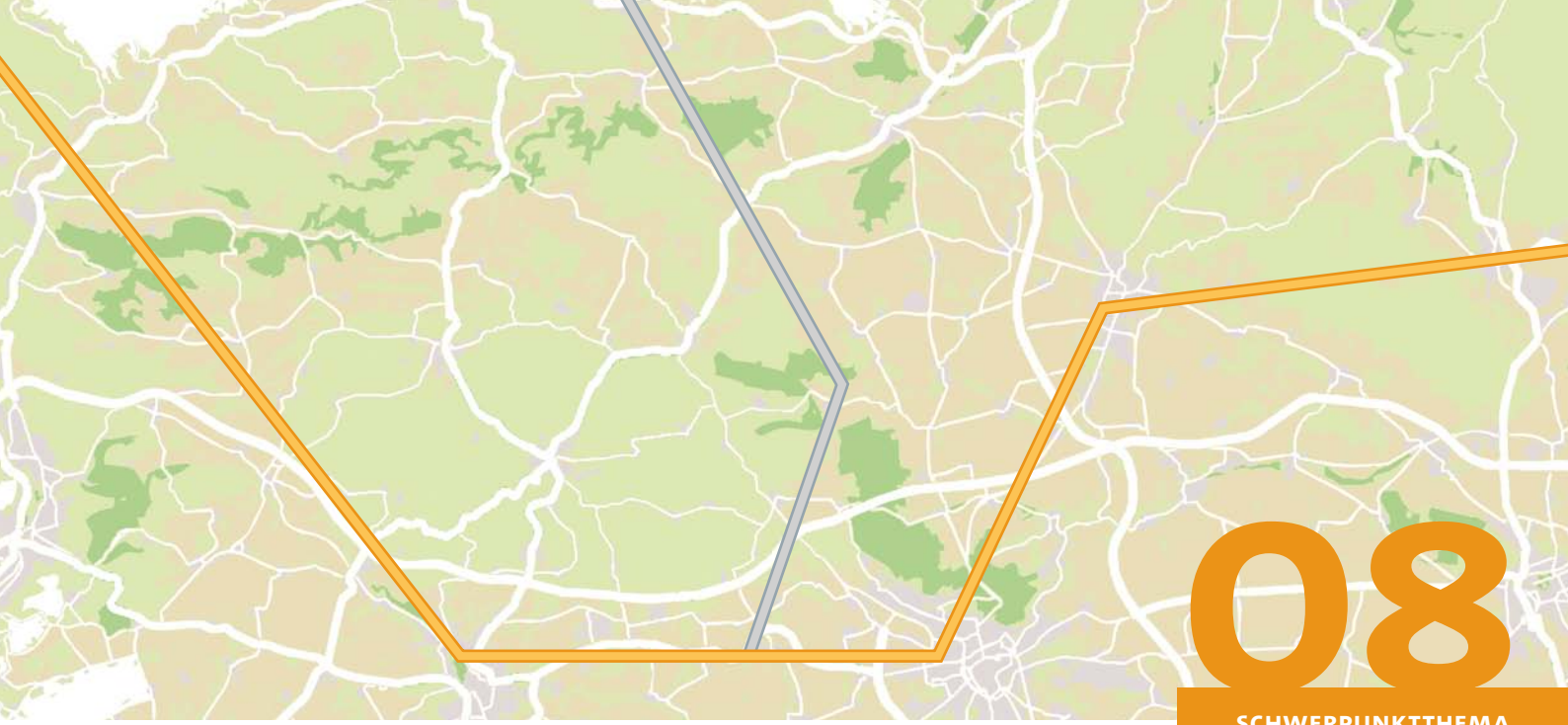

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SCHWERPUNKTTHEMA

DEMOKRATIE

Herausforderungen der Digitalität jenseits der Technologie

Die Entwicklung der modernen Gesellschaft macht Digitalität auch zu einem sozialen Thema. Im Zuge neuer Möglichkeiten wollen alle Stimmen gehört werden. Drei Formen der Digitalität spielen eine zentrale Rolle – Referenzialität, Gemeinschaftlichkeit und Algorithmizität.

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The Thoughtful Programmer, A Thoughtful Citizen. An Educational Agenda for Computer and Data Science

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E-Estonia: An interview with Mailis Reps

Minister of Education and Research of the Republic of Estonia, on democracy, transparency and digitalization

More information about the roadmap of e-services in Estonia can be found here: https://uhh.de/8347r

Dear Mailis Reps, when Estonia gained its independence in 1990, after years of affiliation with the Soviet Union, the country was in the fortunate situation that the desire for shaping society was strong among both non-governmental and economic institutions as well as citizens. In addition, there were comparatively few established political and legal structures to take into consideration as part of the comprehensive digitalization process. In your eyes, to what extent has digitalization helped in building democratic structures in Estonia?

Estonia's digital roadmap started in education. After Estonia restored its independence in 1991, vigorous modernization of Estonia's educational system started by using information technology for the benefit of all socio-economic development. It was based on three pillars—computers and the Internet, teacher training and electronic courseware in Estonian for general education institutions.

The first step was to provide all schools with computers and internet access. By 2000 all schools had computers and by 2001 all schools were connected to the Internet as well. It is also evident that those people who were in school back then are currently coming out today with excellent IT solutions, to mention just a few: Transferwise, Lingvist, GrabCAD, AdCash or Funderbeam. Innovation first happened in schools that has helped today's companies to be successful.

Since 2000 more and more important and useful e-services were launched: e-taxation and m-parking were the first ones. Access to population registry and X-Road became available in 2001, digital signature and ID cards in 2002. One of these services with the greatest impact on public usage of internet was related to education. In 2002, the e-School, also including e-student diaries was launched—this brought teachers and parents together online and, understandably, communication and cooperation between schools and homes significantly improved.

The EU summit in Tallinn in September 2017, to which Estonia invited all EU heads of states or governments during its EU Presidency, was also about ideas for the digital EU of 2025. In this context, an important term is the „fifth freedom", as you call it: beside the four fundamental freedoms that guarantee free movement of goods, persons, services and capital in the internal market, you desire the free flow of data. What exactly do you mean by that, and what specific advantages do you see in it?

Based on our experience we foresee remarkable added value by free movement of data between countries. Not only that countries' policy decisions would be more evidence-based and trustworthy, but also life for European citizens would be much easier. Different education, health or business-related services could be accessible for them anywhere. Free movement of labour force and student exchanges have become a normality, and people need information for making smart decisions, based on reliable data. Accordingly, the data must "travel together with people", i. e. they have to be accessible wherever the people are.

Concerning the use of digital processes in its public administration, Estonia is a global pioneer. 99 percent of all governmental services are available online. Since 2000, the entire country has had full access to the Internet and an e-Government system. Digital signatures have the same legal validity as traditional ones, and the possibility to submit tax returns online is now used by 95 percent of the total population. In 2007, Estonia was the first nation worldwide to hold a parliamentary election online. In your experience, which forms of participation can such a far-reaching digitalization enable, and which risks are associated with these forms of participation?

It is always hard to predict the future. When it all started in the 1990's, we did not imagine that in ten years we would be voting online. I'd like to say that we have digitalized everything that is there, and only some materials are offline due to their nature. I cannot say there will be huge changes or developments, but we will try to make the use of ICT meaningful.

Of course there are a number of risks to be considered, but it all comes down to people's digital skills. Not only that people should know how to use a computer or a smart phone, but also their ability to find and critically assess the information they get from social media and other web-based sources. People must be able to make well-informed decisions based on true and trustworthy information.

Another risk with digital services is the sharing of people's data. This is solved in two ways: people's own responsibility and skills to protect their data and identity and also governments' responsibility to take good care of people's data and their digital footprint in the e-services. Cybersecurity is one of the most important aspects in designing e-services (both public and private). In addition, it has also become an important field of studies in general, vocational and higher education.

Estonia is the European showcase for the digitalization of a nation—and also the European leader in PISA standards. Of course, this raises the question of a possible connection between the two positions. The Tiger Leap I program was officially launched in 1997 for a series of major digital projects. Schools were connected to the Internet and equipped with hardware and software, and teachers were trained in the use of information and communication technologies (ICT). Furthermore, you continued to promote the ICT skills of students and teachers and established e-learning as part of the daily curriculum. With eKool, for example, a digital teaching and learning platform was established for students, parents and teachers that is not only used in everyday school life, but has also become an instrument to interact with local communities, local partners and also the state. For what purposes is this platform currently being used in practice?

eKool, like other e-services in education, was initiated and designed to enable schools to focus more on important matters, most notably on the teaching and learning. The services are for reducing administrative and organizational burdens on schools and for maximizing their resources for teaching.

Another aspect of e-services in education is, of course, a wider impact of those services in improving data-based education planning not only for the government but also for schools themselves and school-owners.

The third and more practical impact that the e-services in education have brought along is improvement of people's digital skills—when a child starts using e-services from early age, it becomes a normality. The same applies to the parents who also can develop their skills together with their child.

In your experience and apart from that concrete example, how do you think teaching needs to be designed to prepare learners adequately for the impact of a digitalized society? And thus, also for a world in which job profiles are fundamentally changing, Internet corporations are becoming more and more influential, and the protection of data is becoming a crucial task?

There are three crucial questions that must be addressed. First, education has to predict the future, as we need to know today what the kids starting school at the age of 7 will need to know and do in 10 or 15 years. Second, the job profiles are changing and thus we are closely cooperating with researchers and employers—the panorama of skills is constantly changing in all fields. Third, we know that we must focus more on the needs for transversal skills and key competences that enable students to adjust and adapt their knowledge and skills to new circumstances.

Regarding the protection of data we indeed need to pay more attention to people's digital competence. And by this I do not mean only the ability to use a computer, but rather several digital sub-competences that involve: 1. information and the ability to critically evaluate/assess and use information; 2. safety, as in the ability to protect one's identity/data, health and environment in general; 3. Communication, as in the knowledge and skills to communicate on the Web (including netiquette); 4. content development/creation (including copyright matters); and 5. problem solving skills, meaning the abilities to cope with technicalities as well as to find solutions with the support of ICT. Estonian schools have acknowledged these expectations and are teaching accordingly.

The Ministry of Education and Research is responsible for the planning of education, research, youth, archives and language-related national policies. To this purpose the ministry manages the pre-primary, basic, general upper secondary, vocational secondary, higher, hobby and adult fields of education and organises research and development activities, youth work, and special-education youth work.

Mailis Reps, member of the Estonian Centre Party, is the Minister of Education and Research of the Republic of Estonia since 23rd November 2016. Previously, she held the same position 2002–2003 and 2005–2007. She was a member of parliament 2003–2015. She has Master's degrees in Law (from Central European University) and European Public Relations (from Maastricht University). Currently she is studying to obtain a PhD in European Law in Uppsala University.

The Information Technology Foundation for Education (HITSA), a non-profit organization founded by the Estonian government, the University of Tartu, the Tallinn University of Technology, Eesti Telekom and the Estonian Association of Information Technology and Telecommunications, is significantly responsible for coordinating the digital educational programs in Estonia. Its central goal is to ensure that graduates of all levels of education have extensive skills in ICT. What is the advantage of such an institution?

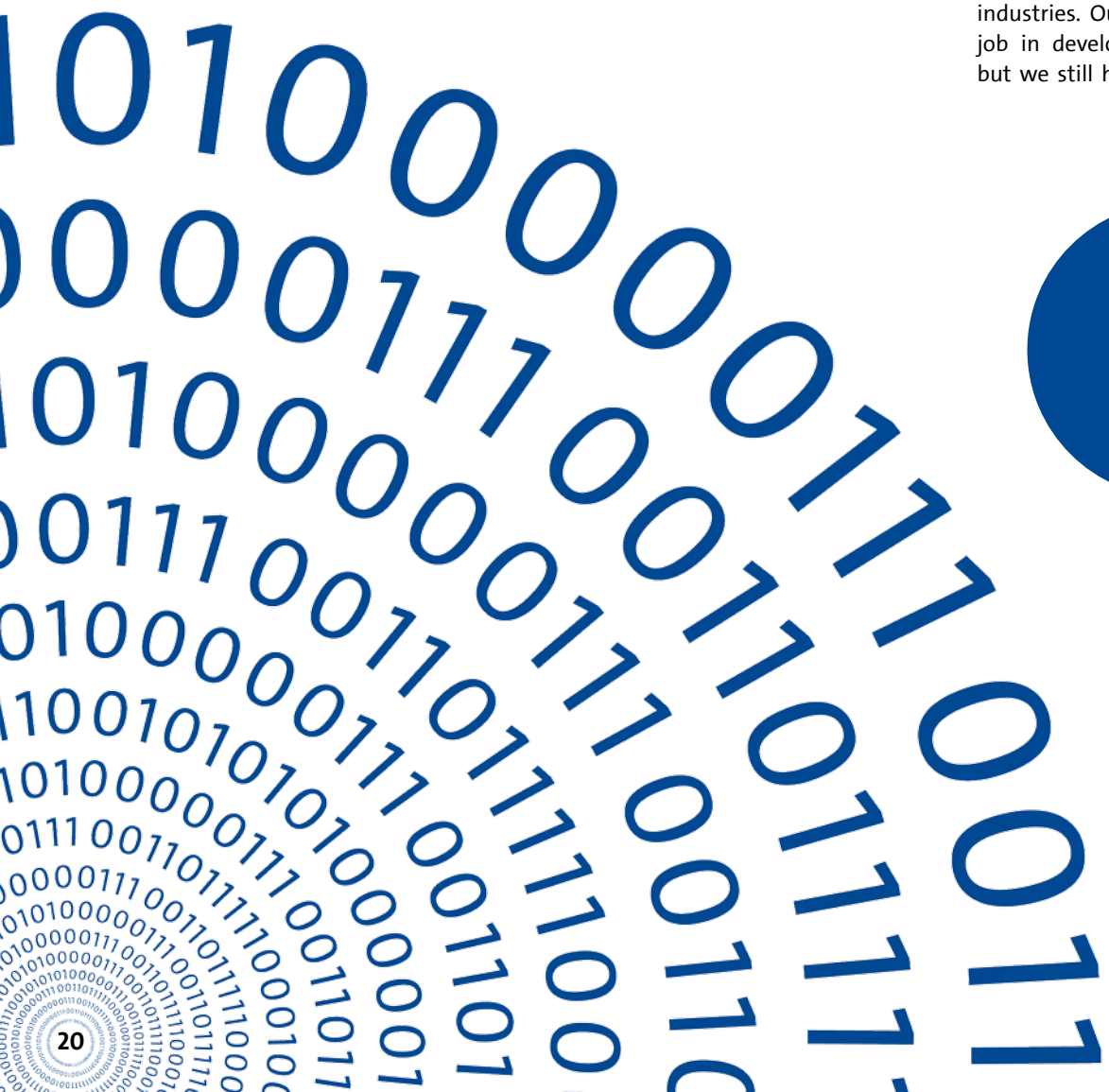
This is a very good question. HITSA has been established to be the platform for developing and implementing measures that help to meet our common goals. Good cooperation between different stakeholders—employers, schools, universities, researchers, government—has become one of our key factors of students' academic success, e. g. in PISA. It is essential to have all parties involved, because not only the IT sector, but also all other fields require IT expertise.

Following up on this: In your experience, what are the central conditions that politics must create in order to make future-oriented teaching successful in times of digitalization?

It is every government's responsibility to analyse the needs of every target group on their way to ICT use—whether there are necessary and accessible measures available. It is essential to focus on the expected results and explain these as many times in as many ways as necessary. In terms of students' digital skills and high-quality education in general, we have the privilege to have very high expectations from our society, and it is not only the government setting up expectations. Education is highly valued in Estonia and it is also the driving force for social progress at large.

Since 2000, all Estonian schools have been connected to the Internet, most classrooms have projectors and speakers, and some schools a 3-D printer. Many schools have smartboards which make it possible to assign individual tasks to students depending on their level of learning. Private smartphones are included in lessons, and tablet and laptop class sets are available as well as enough sockets and Wi-Fi access. Programming and robotics are optional subjects, and by 2020 all textbooks will be available digitally. All this describes a standard that other countries can only dream of. Where do you see the present challenges for the Estonian educational policy?

This indeed brings along new challenges. Of course, it is an ongoing challenge to predict the skills necessary for today's students in the context of increasingly digitalized industries. Our teachers are doing a great job in developing students' digital skills, but we still have a long way to go to pro-



vide better support for teachers for using information technology in the best possible and rational ways. The third challenge is to teach our students to become more digital developers, not only digital users.

Since 2002, the Tiger University programs have been available at universities. What kinds of projects are these exactly and what are your priorities for teaching in higher education compared to schools?
In higher education we are constantly moving in the direction where IT is part of all everyday activities, and not only for the IT profession.

Moreover, the IT profession has also changed in time and we need to adjust to new expectations and needs. IT professions are not only developers and analysts any more, but there are new and very specific fields of work. This matter is closely followed by HITSA and new measures/content have been designed together with universities, employers and researchers (for example big data, artificial intelligence, cybersecurity or internet of things).

Aside from being a digital pioneer and performing successfully in the PISA studies there is a further striking feature of Estonia: According to the 2017 World Economic Forum ranking, no other country in Europe is as open-minded as Estonia in founding companies and with so many start-ups to every inhabitant. Tallinn alone counts about 400 of them. Do you see a connection there?
Of course there is a connection. In addition to a high emphasis on ITC education, we are also providing entrepreneurship education. We are inspiring our students to become entrepreneurs and develop business-minded attitudes in them, so hopefully in future they will be able to establish their own companies and make the best out of their skills acquired at school.

Students are encouraged to establish their year-long mini-student-companies at basic schools already, and more often in high schools. They have mentors to support their business attempts by learning about different aspects of running a business. Many of those ideas and products are being turned into real companies (in legal terms) after graduation.

The fact is that establishing a company is very fast and easy for anyone in Estonia. It definitely is one of the reasons why so many small companies are founded. Where people in other countries often have to struggle with bureaucracy, we have understood that the implementation of new business ideas has to be as simple and easy as possible. To be honest, the more businesses there are, the more revenue there will be for the state through taxation.

The German school and higher education systems are also recognized worldwide; the dual education system has been widely exported abroad. Nevertheless, there is a need for improvement. Digitalization in education is currently much debated. In your opinion, which of your experiences from a country with 1.3 million inhabitants can be successfully transferred to other countries?
It is essential for all stakeholders to agree on the common objectives and this way good results are achievable in every country. The measures or the "how" part may differ in its substance or scale, of course. I am sure that many countries can learn from our experience and adapt our solutions to their circumstances. It is only a matter of scale, but it is easier to test things out on a smaller scale and, therefore, bigger countries definitely wish to learn from others' experience rather than try out themselves. The approach only works if everyone is included.

The idea of internationalization plays a major role in the context of digitalization in Estonia. For example, non-Estonians can apply for virtual citizenship with a so-called e-residency and thus have access to all online services. This offer is addressed especially to „digital nomads", for whom the concept of a national state is subordinated more and more. What effects do these digital achievements have on the internationalization of teaching?
In terms of e-residency and internationalization of Estonian education, the link is weak. All nationalities are welcome to study in Estonia, be it at general or vocational schools or universities. E-residency is a call for digital nomads that are living in other countries, but are interested in establishing a company in Estonia and it provides a better platform to do so.

Finally, a glimpse into the future: what will the next generation of digital learning environments look like?
Learning with no boundaries. It probably means still wider virtual learning opportunities that enable our children to learn, for example, the German language from the best native-speaking teachers in Germany. The processes that can be automatized in learning will enable focusing on other important competences in schools. I think students will need supportive learning environments in all times. It is still necessary to have some balance and specify which learning environments are the best. Like methods of teaching and learning have their limits, the same goes with virtual and traditional environments. We did not foresee the digitalization in Estonia's education 20 years ago either, but I still think human contacts are always needed.

Dear Mailis Reps, thank you very much for this interview!

The questions were asked by Astrid Froese and translated by Britta Handke-Gkouveris.

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SYNERGIE #06
Shaping the Digital Turn

Liebe Leserinnen und Leser,
die sechste Ausgabe von Synergie, Fachmagazin für Digitalisierung in der Lehre, erscheint im September 2018 im Rahmen der Themenwoche „Shaping the Digital Turn“ (21. bis 28. September 2018 in Berlin). Gemeinsam mit dem HFD ausgewählte Autorinnen und Autoren ergänzen mit vielfältigen Fachbeiträgen zur Hochschulbildung die Veranstaltung im Fachmagazin.

Die Ausgabe wird ab dem **21. September 2018** für Sie auf den verschiedenen Veranstaltungen der Themenwoche und darüber hinaus bei der Gemeinschaftskonferenz von Campus Innovation und Konferenztag Jahrestagung Universitätskolleg am 22. und 23. November 2018 ausliegen.

Informationen zur Themenwoche:
https://hochschulforumdigitalisierung.de/de/themenwoche-2018-shaping-digital-turn

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