

Mongolian Economy

Experience

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for defects

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The epidemic of COVID-19 spread around the world provides an opportunity to indicate the level of digital development in the country. Experts say that whether developed or developing, countries that are focusing on such a change are winning today. Countries have closed borders and forced public and private workers to work from home. E-learning, education, e-conferences, seminars and conferences are held across borders. The last three months have been a time when the importance of digital development around the world has been felt.

Months have passed since Mongolia realized that digital development had to be accelerated. In fact, since the introduction of the Internet in the 1990s, much has been talked about about digitization in the country, and successive governments have set policies. It leads to the next government without significant and consistent implementation. D.Enkhbat, the founder of Datacom, was the first to introduce the Internet. "Mongolia is still in its infancy. There are not enough steps to take it to the next level and use it as a tool to accelerate development." he said.

It should be noted that L. Oyun-Erdene, the Head of the Cabinet Secretariat of Government is taking the initiative and is actively working on the implementation of the Digital Mongolia project. The De-Mongolia National Committee was established by the order of the Mongolian Prime Minister. They are also working in partnership with Estonia's e-Governance Academy.

In 2019, members of the e-Policy Committee of the Congress, chaired by L.Oyun-Erdene, visited Estonia and examined



their experiences. However, over the past 30 years, several teams of parliamentarians and journalists have visited Estonia and studied their experiences. As soon as they arrive, parliamentarians will talk about becoming like Estonia and developing e-government. I would like to emphasize that the pace of conversation will gradually decrease. "But this is not the case. This creates a legal environment for any government to continue

to develop," said the Head of the Cabinet Secretariat of Government

While the digital shift technology and infrastructure are in place, there is a shortage of people to implement digitization in key sectors of the economy and this needs to be reformed, according to the Oxford University Research Team Mongolia e-Survey 2019. "Electronic transition is not about information technology or computers. The problem is not with technology, but with the old way of thinking about the systems management that implement it," says D. Enkhbat, founder of the Digital Kharakhorum Academy.

The Mongolian Economy magazine worked in partnership with the working group of National Committee on Digital development on the creation of this edition. This issue provides an overview of the e-Mongolia project, its work processes and policies, Estonia's experience, private sector involvement, and work in progress.

Most importantly, Estonian experts believe that the key to accelerating project implementation is to integrate the public and private sectors into a single policy and management, and improve coordination.

I wish them success on their work to become e-Mongolia.

Editor-in-Chief D. Bekhbayar

Digital development

Mongolia in the digital age project



The Digital revolution is radically transforming lives and livelihoods. Technological advancement is essential for the development of the Mongolian economy and society. Indeed, technology can create further opportunities that could become the backbone of our economy.

The fact that the Mongolian population is relatively young compared to other countries can be regarded as an advantage in fostering the digital economy. Even so, there are far fewer people who can reap the full potential of frontier technologies.

Mongolia needs to identify its national strategy for digitalization following the best practices of other countries that successfully integrated advanced technology into their economic policies. This strategy will play as a roadmap to the prosperity of an inclusive digital economy for everyone including policymakers, businesses, and citizens.

From February to September 2019, the “Mongolia in the digital age” project was implemented by the Pathways for Prosperity Commission under Oxford University and local partner Access Solutions LLC with close collaboration from the government of Mongolia. The main purpose was to show how the Mongolian

government, private sectors, and citizens can cooperate in integrating digital technology, fostering the sustainable development of economic sectors, and creating jobs. Following a series of discussions on the primary findings from the assessment of Mongolia’s readiness to capture digital opportunities, several recommendations were drawn up.

The Pathways for Prosperity Commission works with highly skilled global leaders from the government, private sectors, and academia. The co-chairs, Melinda Gates, the Minister of Finance in Indonesia Sri Mulyani Indrawati, and executive chairman of Econet Group Strive Masiyiwa make their efforts in encouraging national policymakers to avoid the misconception that technology destroys jobs, so they could welcome technological innovation openly and accelerate inclusive economic growth.

Even though a country should determine its pathways to inclusive prosperity in the digital age, the policymakers certainly will require assistance and support in certain areas. The Pathways for Prosperity Commission has provided a digital economy kit which is a framework for harnessing digital technology to enhance inclusive economic growth following their national strategies. The ►

- ▶ kit includes tools for (1) assessing economic readiness for the digital age (2) holding national digital dialogue for strong digital foundations (3) developing a national strategy to accelerate the digital readiness of a country and enable inclusive economic growth.

The assessment results were presented at the international conference called “Nomads in the digital age” on September 17, 2019. The event was attended by the Prime Minister of Mongolia Ch. Khurelsukh, the Minister of Foreign Affairs D. Tsogtbaatar, the Major of Ulaanbaatar and Governor of the Capital of Mongolia S. Amarsaikhan, the Communication and Information Technology Authority, the Information Technology Division of the Cabinet Secretariat of Government of Mongolia, a professor of the Pathways for Prosperity Commission Stefan Dercon, and other representatives. The “Nomads in the digital age” conference begun with opening remarks from a co-chair of the Pathways for Prosperity Commission Melinda Gates. Then it was followed by the results of the assessment, and the discussion on further challenges.

The strategic recommendations of the “Mongolia in the digital age” initiative provide the following six sets of directions.

1. *Providing digital literacy for all ages*
2. *Increasing Internet connectivity*
3. *Creating business-friendly and effective policy environment*
4. *Building an ecosystem that provides support to innovative startups*
5. *Ensuring cybersecurity and information security*
6. *Accelerating the development of other sectors through technology*

According to the assessment report and the strategic recommendations, Mongolia has a huge potential to accelerate economic and social growth by harnessing frontier technology. Furthermore, it was concluded that Mongolia is in good condition in terms of digital readiness. The finding opens a door to new frontier technologies and digital opportunities. Foremost priority must be given to rapidly digitalizing economically significant sectors such as mining, agriculture, and energy.

To become part of the global digital economy that is based on emerging technologies, Mongolia needs to focus on building the necessary infrastructure and focus on acquiring talent. Furthermore, it will require agreement, support, and close cooperation from the government, businesses, civil society, and citizens.

This strategic recommendation for national digital prosperity will play a crucial role in building an inclusive digital economy and for preparing a globally competitive workforce in Mongolia.

The government of Mongolia launched the next-level project called “E-Mongolia” to digitalize public services and to build e-governance by taking the Republic of Estonia as a role model. The “National Committee on Digital development” under the Cabinet Secretariat of Government of Mongolia established a working group to assess the digital environment and develop the most suitable model for Mongolia with the collaboration of the e-Governance Academy of Estonia. For instance, they held an “E-Mongolia” forum that brought together over 100 representatives from both the public and private sectors in Ulaanbaatar on December 4, 2019. As an opening remark, the President of Mongolia Kh. Battulga said, “One of the government

This strategic recommendation for national digital prosperity will play a crucial role in building an inclusive digital economy and for preparing a globally competitive workforce in Mongolia

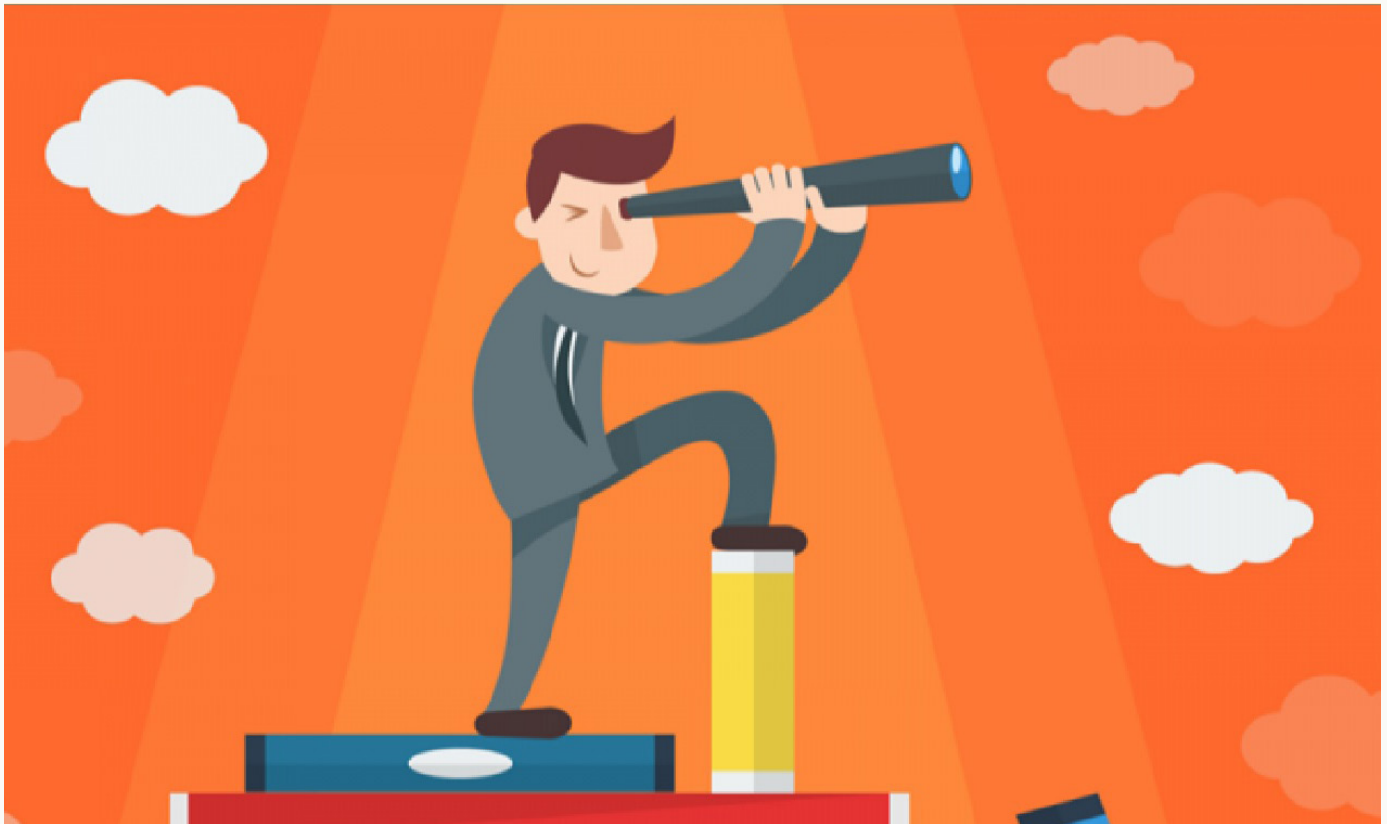


priorities for the future development of Mongolian society and economy is to strengthen the e-governance.”

A mobile application is an optimal and user-friendly solution for building e-governance and, of course, digitalizing all public services. In light of the initial findings of the “E-Mongolia” project, all bureaucratic and not readily available public services will be digitalized first. Currently, the working group is aiming to make those services publicly accessible by the first half of this year. ■

E-governance

Solutions



Mongolia ranks 35th out of 180 countries in the Transparency International's 2019 Corruption Awareness Index. A score below 35 or 35 is considered a very corrupt country.

According to the report, there is a lack of transparency and accountability of the government in Mongolia, high levels of corruption, the impact on court decisions, and a lack of accountability for the abuse of civil servants.

A common desire of governments around the world is to reach the highest level of "development".

Today, countries are working towards "sustainable development" to meet the needs of future generations.

However, corruption destroys this desire. Corruption reduces economic investment, curbs competition, skews markets and creates income inequality. Corruption also reduces the government's ability to provide quality services and investments and increases budgetary burdens.

Electronic migration is a way to eradicate the corruption that has led to development. Time demands it from us. The fourth industrial revolution has already begun. You only have time to see the changes.

The new generation and the technology industry are asking, "Why do we need to contact government officials to get government services?" L.Oyun-Erdene, Chief Cabinet Secretary, stressed that the establishment of e-government would eliminate the state's bureaucracy, which creates conditions ►

A common desire of governments of all countries is to reach the highest level of "development"

► for corruption. The same idea was put forward by Estonia in 1996 and is currently being implemented. According to the Corruption Perception Index 2019, Estonia ranks 18th with 74 points. "Digitalization creates transparency. In Estonia, people have great confidence in the government" said Dr. Arvo Ott, chairman of the Estonian Academy of e-Government Trustees, to our magazine.

Possibility of diversification

The Mongolian government forgot when it began talking about economic diversification. After all, it has been discussed for many years. This time, you will have the opportunity to diversify the key sectors of the economy and increase profits through e-transitions. "The information technology sector in Mongolia has the resources to transform key sectors of the economy into high-tech industries," said B.Bilegdemberel of the Communications and Information Technology Authority. For example, agriculture, the second largest sector of economic output, has introduced livestock registration, animal gene pools, and animal health monitoring technologies. However, experts say that the process of the technologization of key sectors of the economy is going slower than the capabilities of the information technology sector.

The use of the Internet of Things (IoT) and artificial intelligence (AI) to collect and process agricultural experiences and environmental information can increase agricultural productivity even in areas with limited access to water. GPS, self-driving cars, and software create smart agriculture and agriculture to reduce seeds, fertilizers, and fuel waste. This reduces costs and increases efficiency for industry products. Innovative use of information and communication technology will reduce information inequality and enable small and medium-sized businesses to actively participate in the market without paying traders high commissions. For example, on July 1, 2015, Narendra Modi, Prime Minister of India launched an e-India program to improve e-services and e-education to improve the lives of people living in remote areas.

This is because 68 percent of the country's population lives in rural areas and most of their livelihood comes from agriculture. The introduction of information and communication technology within the concept of electronic agriculture has enabled farms to operate more efficiently and sustainably, improve the supply of goods and services, provide nutritious, safe and appropriate food to the population.

Another sector that can diversify our economy is tourism. The sector is expected to contribute more than 2 billion USD to Mongolia's GDP by 2028 (1.32 billion USD in 2017). Stakeholders say that increasing outward journey of citizens in neighboring countries of China, Russia, South Korea, and Japan has made it time to focus on attracting tourists to Mongolia. Digital technology allows you to customize and enhance the tourist experience. Therefore, according to Mongolia's Digital Readiness Assessment Report, Mongolia needs to connect all tourist sites to the Internet and provide services and information in English. The tourism sector is a major driver of economic growth in developing countries, creating millions of jobs and supporting entrepreneurs and innovation. As of 2018, 72,648 small businesses are working in tourist camps, resorts, ger camps and other types of housing in Mongolia. The sector is divided into sub-sectors such as transportation, housing, distribution, and other services, and all of these sectors can use digitalization to create various opportunities.

The government has restarted the e-Mongolia program, which addresses many social and economic issues. The creation of the e-government, which has been discussed for over a decade, began just before the election, but policymakers have stated that the program should continue under any government. But e-transition is a never-ending story, said Dr. Arvo Ott, chairman of the board of governing the Estonian e-government academy. ■

In the context of e-transition, it is possible to diversify the key sectors of the economy and increase profits

E-Mongolia Program

L.Oyun-Erdene: The key to digital transformation is a political will to abandon the outdated mindset



The Mongolian Economy talked with L.OyunErdene, Minister and Chief Cabinet Secretary of Mongolia about the E-Mongolia program.

-How would you evaluate the results of e-government policies that have been implemented by the previous Governments of Mongolia? Could you explain what do we define as digital transformation?

-Various E-governance development policies and projects have been implemented by the last four governments. We reached the current level of development owing to the works and projects carried out by the Governments and its ministers in the past. Especially, tremendous work has been done in relation to infrastructure development. For instance, all provinces and districts are connected to an internet connection, e-Kiosk machines that provide public services, state information exchange system “KHUR” has been introduced, businesses enjoy the benefits of the digital tax system, VAT promotion system Ebarimt.mn, and now Decentralized authentication network (DAN) system is in use. However, it is crucial to note that we have not reached the desired outcome and results we were hoping

for. We have understood that it is crucial to plan well in advance to reach our goals.

It is been carried out by both international and domestic researchers that development policies tied to election cycles, lack of political legacy, the bureaucracy of state bodies, high level of corruption, poor business environment are the main reasons holding the development of Mongolia back. Thus, we must adopt a long-term comprehensive policy to address all these problems.

The long term development policy of Mongolia, “Vision-2050”, has been developed based on a wide range of research and studies after assessing the achievements and failures of the past 30 years.

A digital transformation should be regarded as the key process to eliminate corruption and bureaucracy, digitalizing government services by creating interoperable IT systems and implementing comprehensive policy. To accelerate the progress, digitalization should not be linked to any cabinet or a political party, instead, it must be carried out and improved collectively over time.

-Mongolian digital transformation policy will be based on the Estonian e-governance model. We have acknowledged that Mongolian digital transformation is following the footsteps of Estonia’s e-government model. Could you tell us why Estonia was chosen to be the idol model?

There are number of leading countries in e-government development such as Georgia, Estonia, Singapore, and South Korea. The government representatives visited and conducted in-depth research on the e-government models of those countries and came to an agreement to choose Estonia as the role model. The underlying reason was that Estonia is quite similar to Mongolia. To mention a few similarities, both countries have a small population and are former socialist countries. Moreover, as Estonia introduced e-governance relatively early, the quality of its public services have surpassed such developed countries as Germany and the US and many countries of the European Union are implementing the Estonian ►

► e-governance model. Hence, after careful consideration, the Government decided that the Estonian e-governance model would be more suitable for Mongolia.

Mongolians believe one of the most challenging problems that lacking out development is small population size where almost everybody is somehow related to everybody else. It is widely spread phenomenon to offer a job to only relatives, with lack of connection it is hardly possible to get any work done, and as a connection is a key it is hardly possible to take accountability measures. On the contrary, Estonia, a country has half the population of Mongolia and smaller land, was able to provide non-bureaucratic and noncorrupt government services to its citizens due to its successful digitalization.

-How can we achieve digitalization? What are the benefits?

-We have identified the core problems, and now we are moving to the next step which is a solution. "E-Mongolia" forum was held in December 2019 convening the key stakeholders of both public and private sector. Previously, we thought that digitalization is a matter of technology. Now we have a better understanding. The key to successful digital transformation is political will, coordination among state bodies, a collaboration between the government and private sector, and most importantly a shift from outdated culture to a new mindset. In other words, technological solutions are not the challenging part whereas it is critical to ensure well coordination among state bodies and sustainable progress for the necessary changes in the legal framework and successful adaptation of digital technologies.

Estonia went through a similar path. At that time, due to ambitious political leadership and indecisiveness, it took Estonia twelve years to achieve the current level. Estonia saves approximately 820 years of working time for the citizens annually, where it would have been wasted for sitting in the traffic, standing in long queues, or visiting various government agencies for single service. Within only seven years, the bureaucracy was basically eliminated and the corruption index dropped to the level of highly developed countries in the world.

"E-Mongolia" program, a national comprehensive policy for e-government, is being formulated by the Government of Mongolia in collaboration with Estonian E-governance Academy. As I mentioned before, Mongolia has already solved issues around infrastructure. Based on the existing infrastructure, we are planning to digitalize all public services gradually and launch a national portal and mobile application that will enable

single-window service. In the short run, we are targeting to digitalize up to 100 public services and offer it to the public using the web portal and mobile application by June 2020. Thereby, we need to address issues associated with the legislation that is critical in digitalizing public services, digital authentication, information security, and fast data exchange.

I would like to highlight here that collaboration between the public and private sector towards the same digital goal will be fundamental for success. It is crucial not to waste precious time and resources for inventions that are ready to use in the private sector and the main strategy should be bringing the innovations and resources together for inclusive development.

Furthermore, not only digitalization of public services saves precious time and resources for both state and citizens it will play as a crucial tool to eliminate government bureaucracy that provokes corruption as the dependency of human interaction will be no longer needed.

-How long will it take Mongolia to achieve such results?

As I mentioned before, to grow as one of the most respected e-government models, Estonia took 12 years due to lack of innovative mindset, the individual ambition of different government bodies. It should be accepted that we face similar problems in Mongolia.

Therefore, the Government and all political parties need to ensure continuous and consistent implementation of the "E-Mongolia" program.

It is indeed an advantage that the youth accounts for 70 per cent of the Mongolian population. That means it will be relatively faster for Mongolia to adopt digitalization as the young population is accustomed to technology.

If all the key players including the Government, mobile operators, commercial banks, and information technology companies march towards the same goal, we can bring "E-Mongolia" into reality much faster than expected.

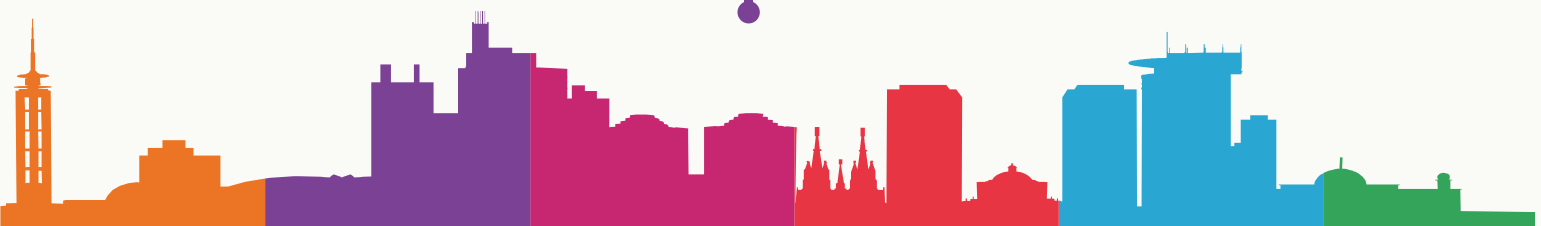
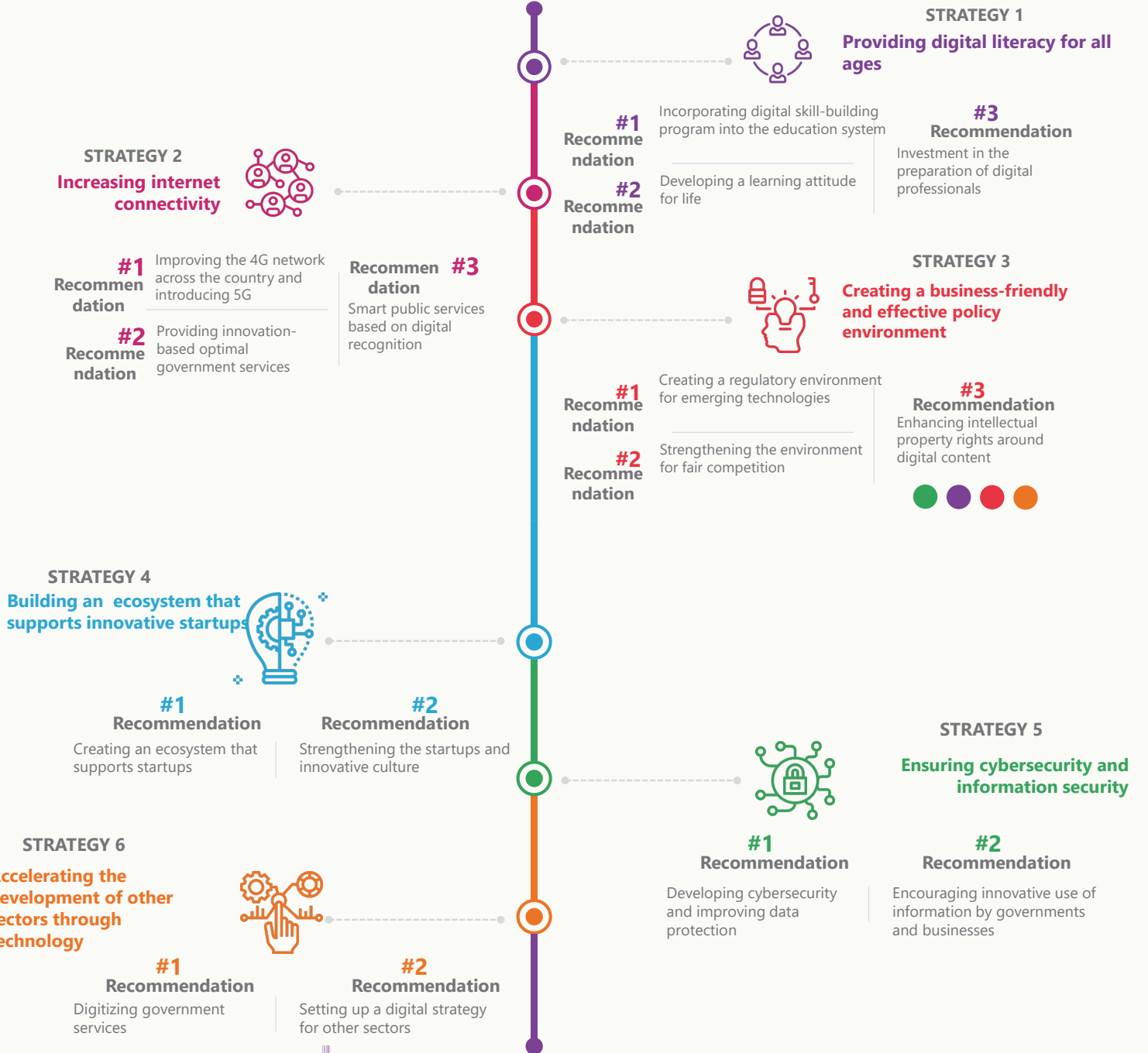
On a final note, I would like to emphasize once again, E-Mongolia must march consistently regardless of a political party or fraction.

If all the key players including the Government, mobile operators, commercial banks, and information technology companies march towards the same goal, we can bring "E-Mongolia" into reality much faster than expected

Infographic

DIGITAL STRATEGY

Development map



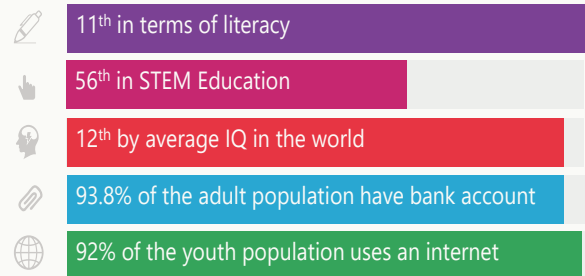
MONGOLIA IN NUMBERS

POPULATION



ICT DEVELOPMENT INDEX

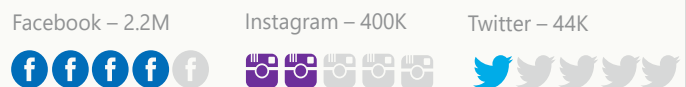
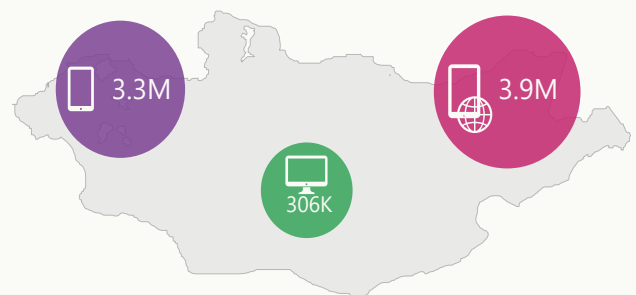
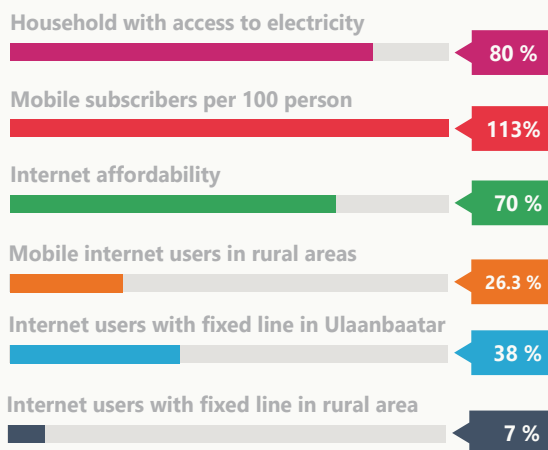
14 According to the ICT Development Index of the International Telecommunication Union, Mongolia is ranked 14th in the Asian region



Source: NSO, ITU, World Bank

INFRASTRUCTURE

Digital Readiness Assessment



Source: NSO, CRC, ITU, World Bank, we are social

E-Governance Academy

Hannes Astok: We are providing an opportunity for our citizens to save both time and money



The Mongolian Economy spoke with Hannes Astok, Director for development at the e-Governance Academy of Estonia during his visit to Mongolia.

There were several challenges, but the biggest one was not the technology, but changing the mindset of government officials

-What kind of services does Estonia offer online? I have heard there are over 3000 government services available online?

-Yes, various types of government services. Most of them are available online and some are

invisible as they run between government agencies. You can do everything online in Estonia except you

can not marry, divorce and sell the property. It's not a technical issue, but the procedure itself. However, online marriage is under discussion.

-When and how did the government come with the idea of full digitalization?

-It started at the end of the 1990s. As more people started to use the internet and mobile phones, we understood that the easiest way to provide public services to citizens was to do it through the internet. Estonia's population density is very low. But compared with Mongolia, it is much denser. Due to the long-distance, we decided that it is better to offer the citizens a self-service option, rather than invite them to the government agencies and make them wait in line. For that, we needed digital data, strong ▶

► digital identity for citizens to understand who we were working with and put together all the systems, making it visible for government portals. It took 15 years and it is never really ready as it needs to be improved constantly. We should always try to make it more comfortable, invisible and proactive. Our new approach is to offer what citizens need before they ask for it. For instance, when a baby is born, we advise the parents on how to get a name or birth certificate before they start to look for an application. Further, they will need daycare or kindergarten for the child, so we can suggest options, for which they will need to make only a few clicks. The same procedure is applied for school.

- When exactly the e-government was launched and what was the biggest challenge of creating an e-government?

- It sure didn't happen in one day and we were making it step by step. Every ministry, agency, and the municipality did the transition gradually. There were several challenges, but the biggest one was not the technology, but changing the mindset of government officials. I will give an example of that. It has already been five years since we were allowed to sell a car online. Both I and the new owner must log in to the portal and do the transaction. We don't need to do it at the same time, I can start the procedure and my counterpart can finalize it. I can also apply for a new driver's license online as all my data is already there. Before that, we had a problem with the former director of the Road administration as he kept saying we can not do it. However, the new management decided that they can do it. They said that we need to change some regulations and work hard to make it happen. Eventually, what didn't happen in the previous 10 years happened in two years. The technology was available 10 years ago, but it didn't happen. So, it is all about the way of thinking. Do we have to ask ourselves Do we want to change it? Are we motivated to do so? and so on. Digital transformation is a process of reengineering the services and the government in general. What we advise and what our government is doing is taking a step back and starting from scratch, rather than trying to modernize the services. We need to focus on what our citizens need and redesign the services. I think it's a good approach for Mongolia.

-At the discussion, you said that you didn't

wait for the authorities to approve. How did you overcome this challenge?

-Not all of them were against the transition. Some ministries and agencies are very active and become the leaders, while the others lag. There are always a couple of ministries that are more enthusiastic and see the benefit of eliminating long lines at the service centers. Thus, we should motivate and promote those who are interested in it. Eventually, the ones who were not interested will join.

- On the one hand the digitization of services increases inclusion. On the other hand, the elderly who are not friends with technology may have a problem with it. How do you solve it?

-No. The physical offices are still open. Only a very limited number of services like student services are fully digitized, which you can not apply in paper anymore. But most of our services are still available in a traditional manner and probably will be for the next 20 years. Because there is always a grandmother who can not do it online. It is normal and you should consider it. But it doesn't have to be a huge service center, one official will be enough.

-What quantity of resources did Estonia save thanks to the e-government? Can you tell us all the advantages it brings?

-There is no proper methodology for such calculation. I think the most crucial thing is the time we save. If we want to get government services traditionally, we have to visit the office between 9 AM and 4 PM during workdays. But you work during that time as well. So, it should be considered. Getting the services online has its perks as you can do it anytime and anywhere you want. We are providing freedom to our citizens. In addition to the time, with online services we also save money. Even in a small country like Estonia, some government service center is located 50 km away from you. So let's do some calculations. You drive to the center, submit the application and come back which is already 100 km. The next time you go there again to pick up the documents which are another 100 km. It costs your money. Thus, the e-government saves a big amount of money not only for the government but also for individuals and businesses. It is also ►

Digital transformation is a process of reengineering the services and the government in general

► environmentally friendly.

-How does the government ensure security?

-Technical experts of the Estonian government are working hard on that. It should be noted that this is a continuous process because cybercriminals are smart guys. It is like an endless competition between them. The government must be up to date with technology companies to be capable of protecting the information stored in our database. Ensuring security is endless work and it is never really ready. If you say it is ready now, tomorrow the attacker can take it down.

-What was the purpose of the secondary school IT program introduced in the 1990s? Was it a preparation for the digital transition?

-Yes, it was. It was a pretty simple process with several steps. First of all, every school was provided with a computer class, so that every person could learn how to use a computer. Those classes are renewed and still available for computer courses. Then we provided a good internet connection, which is crucial. A great emphasis was put on the development of digital learning materials. The teacher's training was an important part as well. I think the program was a good foundation as the children graduate with proper computer skills and affect their decision to become an ICT engineer, which in turn boosts the economy.

-Were there any other similar programs that laid the foundation for the transition?

-There was another program for adults, especially for the elderly. It was a cooperation between the government, banks, ICT companies, and telecoms. The purpose of the program was to provide them initial digital skills like how to use the internet securely. It should be noted that the elderly were very interested.

-Where do the public servants go when everything is automated?

-Our experience is that nothing happens in one day. It is a long process. Everything comes and goes gradually. Therefore, we didn't fire anyone. People are moving from government offices for various

reasons: some retire and others move to another position. Sometimes the agencies just do not hire new people and promote good employees. Thus, the number of government officials haven't increased. It is now as it was 15 years ago. It has decreased only a little as with the elimination of old positions, so many new tasks and positions appear instead.

-How do you see the opportunities for Mongolia's digital transition?

-The overall picture is very promising. Your data is available in digital format and the registry offices are in good quality. This is an important part of the foundation. Digital identity exists, but only 25 thousand people use it. So, the issue is to discuss why the rest of the population is not using it. Perhaps, it's too complicated to get it or too expensive. On the other hand, there is no motivation to use it because there are no available services where you can use it. Many other technology solutions are available in your country, it just needs more coordination, development of digital services and communication with the citizens. A couple of computers can be set up in computer classes or shopping malls to assist the people on how to get digital services. The transition is also kind of an educational program. In general, I think it is very doable. The government, banks, ICT companies, and telecoms must be joining forces.

-In addition to the accessibility, what are the other advantages of Mongolia?

-Besides saving time and money, it makes the government more transparent as well. As the President of Estonia says "It is very hard to bribe the computers." It is also more efficient for the government as the services are delivered faster and it requires less staff. The public servants can spend time more productively rather than sitting in the service centers.

-What should be the first step for Mongolia in this direction?

-Better coordination from the government, discussion of the stakeholders, making a good action plan and sticking to it are the first steps. The separate pieces are almost there, you just need to put it together and cooperate closely. The government must strengthen its cooperation inside and with the private sector. ■

Besides saving time and money, it makes the government more transparent as well

Experience

Power of the hiding hand

T.SARANGUA

In contrast to Adam Smith's "invisible hand", there is a theory of another hand, the "hiding hand" by renowned economist Albert Hirschman. When he described the theory, he stated "creativity always comes as a surprise to us." The theory explains the process of implementing a decision that was taken under the ignorance of future obstacles. Certain hiding hands can hide difficulties and obstacles from us.

The history of Estonian modern development is a remarkable example for explaining this theory. After Estonia gained its independence in 1990, the first Prime Minister Mart Laar declared "digital transformation" as the main policy goal. He served as the Prime Minister of Estonia from 1992 to 1994 and later on from 1999 to 2002. Regarding Laar's decision on how he decided to start the digitalization, he said, "I was 32, I was young and crazy, so I didn't know what is possible and what is not, so I did the impossible." He first came across this idea from his favorite book, a memo by a professor at Tallinn University of Technology, Raimund Ubar. In the book, it is written "Don't buy anything old" to avoid the trap set by Western countries for developing countries.

Baltic Tiger

The emergence of the hiding hand theory can be seen 30 years since digital transformation started in Estonia. The Republic of Estonia is a country on the eastern coast of the Baltic Sea and has the smallest population of 1.3 million in Europe. Yet, it is considered one of the fastest-growing economies in the European Union. In 2005, Estonia was named as the most advanced digital society in the world. Estonia held its first electronic voting in 2005, and it became the first country to launch an e-residency in 2014. In terms of



Certain hiding hands can conceal difficulties and obstacles from us

the Human Development Index (HDI), Estonia was ranked 30th out of 189 countries (as of 2019). The country is ranked high in economic freedom, personal freedom, press freedom, and education. According to the 2018 World Bank report, GDP per capita of Estonia is at 35,973 USD. Its rapid economic growth put Estonia on the same footing as Lithuania and Latvia, hence gaining the name, the "Baltic Tiger". As reported by Eurostat, the government debt of Estonia is the lowest among countries of the European Union. A balanced budget, almost zero debt, free trade regime, competition among commercial banks, and innovative services based on internet and mobile phones are the main characteristics of Estonia's best practices of a market economy.

Though the goal to become a digital nation was determined one day, in the past, it took continuous ►

► effort to achieve that goal. In the mid-1990s, the “Tiger Leap” project was proposed and undertaken nationwide to raise public awareness on becoming a digital nation. As a result of the main initiatives in education, all school grades and classrooms received computers and internet access by 2000. The government provided free computer training to 10 percent of the adult population. Through these efforts, the percentage of internet users reached 91 percent in 2016 from 29 percent in 2000. The Estonian government reached such success by carrying out the digital transformation starting at public services, then social services, and lastly through a digitalized business environment. Nowadays, a new generation, who are inclined to receive all types of social services online including education and healthcare, is being shaped. A citizen of Estonia spends only 5 minutes to pay taxes, 99 percent of the government services are available online for 24 hours, and one-third of the population vote electronically. Nonetheless, a technological solution alone was not the key to success. Estonian experts noted that the following three factors were crucial to achieving the goal: first policy and strategy; second, infrastructure and technology; and third, promotion of internet usage. Heiko Vainsalu, an advisor at Estonia’s e-Governance Academy, pointed out that the history of Estonian digitalization is not a simple success story because it involved numerous experiments in the past, lessons from failures, and continued endeavor.

Lessons from the attack

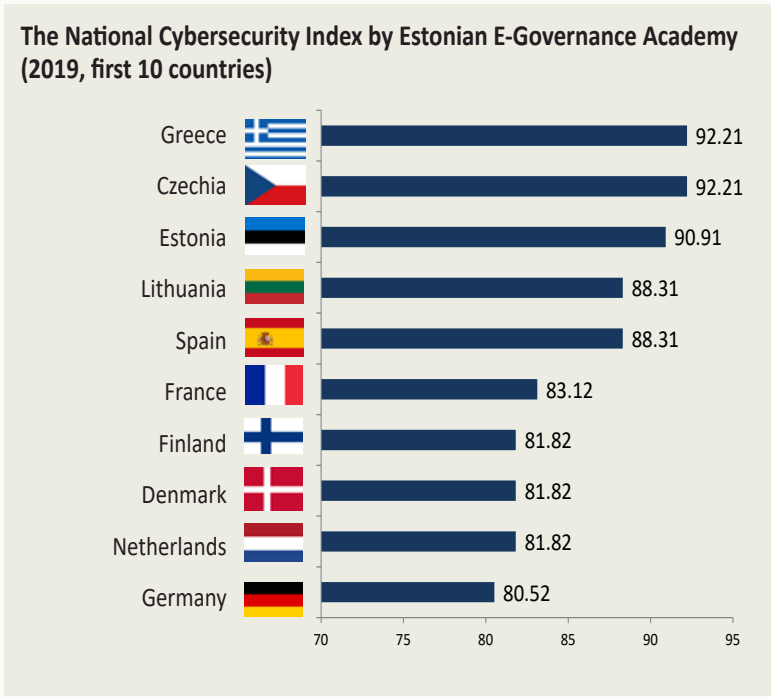
Estonia is a leading nation in terms of its cybersecurity system in Europe. Moreover, Estonia is responsible for the cybersecurity of NATO’s Cooperative Cyber Defense Centre of Excellence. The reason for its internationally recognized cybersecurity is related to lessons from past failures.

In 2007, Estonia became a victim of a series of cyberattacks. Those attacks took place during a dispute with Russia over the relocation of the monument (Bronze Soldier of Tallinn) that was dedicated to Russian soldiers who liberated Tallinn

Following the cyberattack, Estonia began developing blockchain technology with an aim to protect information stored in the government database

during WWII. The websites of various organizations such as the Estonian parliament, banks, ministries, media were hacked. The great majority of the cyberattacks aimed to manipulate public opinion against the relocation of the monument. Furthermore, conflicts arose over revising major Estonian websites, the Estonian Reform Party’s website, and even over the English version of the Wikipedia article on Bronze Soldiers. Some observers say that the intricate cyberattack in Estonia was an attack that has never been experienced before. The attack is being studied by many defense forces of various countries. Nevertheless, in January 2008, an ethnically Russian Estonian citizen was convicted of committing the cyberattack and was sentenced.

Thereby, following the massive cyberattack, Estonia began developing blockchain technology with an aim to protect information stored in the government database. The digitalization of Estonia went through a rough path of trials and errors, and hard lessons, but most importantly, they were able to pass on the “legacy” to the next generation. Experts of Estonian e-Governance say that technology constantly changes with time thus digitalization will face challenges and will advance along the way. ■



Estonian digital programs

2000 E-tax board

Enterprises and institutions began filing tax declarations electronically. A business owner only spends three to five minutes to file their tax declaration. Each year, 95 percent of all tax declarations are filed electronically.

2001 X-Road

X-Road bridged information and data exchange between data servers. It enabled secure and fast data exchange between the public and private sectors. Further, X-road will be used for cross-border data exchange and for creating a joint data center.

2002 E-identity

There are three types of electronic identifications. 99 percent of 1.3 million Estonians have an ID card with a chip. This ID card can be used to receive essentially any services including mobile, electronic, internet bank, and government services. After the DigiDoc program installation, an ID card can be read through a PC with an internet connection or with an ID reader.

Digital ID can replace documents such as driving license, healthcare, and social security identity. Moreover, it can be used anywhere, including shops, book stores, hospitals, banks, and cinemas. Also, the information in the digital ID can be transferred via email.

Not only e-ID but also Mobile ID can be used. It is numerical information embedded in the mobile SIM card. Such numerical data enables internet banks, financial transactions, digital signature, and voting electronically from anywhere in the world. There is also a Smart ID, a smart card that can be installed in various devices such as tablets, Android or iOS smartphones. It has the advantage of serving as both a digital ID and Mobile ID card.

2005 I-voting

Estonia is the first country to hold voting electronically. Its citizens can cast their ballots within 3 minutes using their ID card or Mobile ID from anywhere in the world. It is an easy to use and highly secure smart solution compared to traditional “black box”.

2007 Cyber security

Information technology is extensively utilized in ensuring social order. The E-police, rescue team, and e-ambulance services can be delivered in no time. Consequently, during the past 20 years, the rate of deaths due to the crime and violation were reduced by 50 percent. For instance, 35 percent of accident locations within a 5-meter radius are determined remotely. Also, 93 percent of emergency calls are answered within 10 seconds. It became unnecessary for traffic officers to stop a vehicle for technical inspections.

2008 Blockchain technology (Blocked data chain)

To achieve the primary goal to combat cyberattacks, blockchain technology is used in civil registration, health, judicial, legislative, security, and commercial code systems. Estonia is ensuring cybersecurity of NATO, the US Department of Defense, and European Union information systems.

2008 E-health

95 percent of hospitals and doctors have a digitized data system. The system is protected by blockchain technology. Moreover, a patient’s medical record for the last 10 years is accessible at any doctor’s office.

2004 E-residency

E-residency is a digital ID card issued by the Estonian government. The card is issued to Estonian national and temporary citizen / foreign national/ and grants a right of access to all Estonian e-services. Furthermore, it gives an advantage in becoming business partners with member states of the European Union. It makes it easier to run a business from anywhere in the world.

2020 “Digital Estonia” program

Estonia intends to create the Nordic Digital Infrastructure Institute in the near future. It will introduce a “joint data” server to protect copies of state information of other countries from natural disasters and external cyberattacks. They are planning to increase the number of workers in the sector by twice and establish a Global information society Think Tank in Estonia.

View points

Policy-makers, experts, and sectoral representatives openly spoke about the digitalization process in the past, the pres-

ent achievements and results, and future goals. Furthermore, they have shared their opinions on what actions should be taken

by the government to successfully complete the digitalization this time and what are the challenges.

A clear structure or group that is responsible for digital transformation must be set up at the government level



N. UCHRAL,
Member of the State Great Hural and Director of the E-Policy Temporary Committee

The government priority is no longer a military strength or abundant resources but a strong sustainable economy and society. The main drive is the development of digital and communication technology. The private sector is taking a lead in bringing new technology solutions that could simplify our lives and enhance productivity. The World Economic Forum and the governments around the world carefully paid attention to technological change and began realizing the true potential of digitalization. Digitalization and technology come first, then the government attempts to understand citizens' needs after that comes the inclusive and effective service delivery, innovative solutions, and the creation of a new government model. Some researchers point out that we can reduce government spending by delegating public services to the private sector.

The governments around the world aim for successful digital transformation but only over 60 percent of them in the developmental stage and 25 percent are at the beginning stage of true transformation. Compared to other nations, a great deal of work has been

done with regard to digitalization yet it still lacks coordination and national level policy. Thus, the Temporary Committee on E-Policy of the Parliament and a working group of the Cabinet were established to determine the common e-policy and initiate the implementation. Digitalization is not a mere repair of the visible part of the software. It certainly requires a complex set of solutions such as structure, arrangement, information exchange, integrated management, coherence, and information security. Hence, skilled leaders are vital for the digitalization in Mongolia. A clear structure or group that is responsible for digital transformation must be set up at the government level.

We have a policy to rely on local staff to establish the e-embassy



D.TSOGTBAATAR,
MP, Minister of Foreign Affairs

Work is underway to develop electronic diplomacy based on electronic embassies, establish trade missions, and promote Mongolia through social media. The establishment of the electronic embassy is a bit slow in terms of technology because it is based on blockchain. The Ministry of Foreign Affairs has a policy of relying on local staff rather than involving foreign experts in this work. If this happens, it will have a positive impact on Mongolia's diplomacy, economy and trade. Some

companies do business with technology without opening a representative office overseas. Similarly, the Ministry of Foreign Affairs hopes that a complete electronic transition will be able to communicate and attract businesses to many sites that are not accessible via the Internet. The Ministry has developed this transition concept and has already implemented it. Since this took a long time to implement nationwide, it was only implemented by the executive branch. But now, we have paid attention to the government level, drafted relevant legislation and submitted some of them to Parliament. However, errors occur during processing and execution. We work on improving and resolving the details.

E-transitions require proper government policy, active participation and support



TS.ERDENEBAT,
Economic and Industrial Policy Advisor to the President of Mongolia

The constitutional amendment states that Mongolia's development policies and plans will be long-term and sustainable. Creating a database for development policies and plans is important, and the digitalization process that has taken place over the last five to ten years can help.

In the long run, we believe that the future of Mongolia's economy is a digital economy. Due to the nature of the economy, the ability to focus ►

▶ on capital, domestic consumption and the domestic economy is limited. However, technological trends emerging in the world are giving Mongolia an advantage. This means that anyone can become an exporter and participate in the e-economy.

Furthermore, to implement e-government, there must be government policies, policies approved by Parliament, and policies that can serve as law. Once you have created a policy, you need some incubators and financial mechanisms to implement it. On the financial front, start-ups are reducing wage, office rent, and equipment issues. However, such projects cannot be financed by short-term, high-interest financing from commercial banks. On the other hand, such projects are more likely to fail than some sectors. Therefore, governments need to take this risk into account and develop financing options.

We need to incorporate e-KYC technology to know our consumers from distance



E. ANAR,
Director of Payment
Settlement at the
Bank of Mongolia

Last year, approximately 90 percent of Bank of Mongolia's transactions were made through internet banking services. Nowadays, banks are bringing in advanced technological machines. Cash withdrawal and insert ATMs, kiosks that print your account balance using your personal ID card and fingerprints, and convenient NFC advanced payment cards are among the list. Moreover, fintech companies are operating independently and with other banks. This gives opportunities to customers to use their phone number, social media,

and email address to do a range of actions. Such as money transfer, manage multiple bank accounts, keep their cash in "electronic wallets", and use their mobile phone applications to take out a loan. Along with technological advancements, more laws should be passed that regulate the new services to protect the user from certain risks that come with such developments. However, Mongolia's legal environment is too traditional and slow to adapt to such conditions. There is no legal management that sanctions the use of a highly demanded e-KYC technology for them. The law about the usage of electronic signature was passed in the year 2013, but is mostly used among organizations, rather than citizens. Due to the increasing number of user information, username, password, transaction and card information, problems of keeping this data will arise. This is not only a concern for banks, it also concerns the new players in the finance field, fintech and big tech companies. In 2018, the International Telecommunication Agency conducted a safety index research within 175 countries, in which Mongolia ranked number 85. This is not a very pleasing result.

With the help of big data and artificial intelligence, there are more robo-advisors. These are designed to meet the needs of each individual user, suggesting an array of financial services, manage complaints, and offer advice. In the near future, fintech companies are expected to cooperate with banks to introduce such services. In order to digitalize the payment system for government services, the Bank of Mongolia presents the "Automatic Clearing House" service. With this, the treasury department of the Ministry of Finance can send the total pension money to banks without losing time to transfer into the user's account.

The Bank of Mongolia has started the project to introduce the international standardized EMV/NFC chip into the national tugrik payment cards. With this project, payment card confidentiality and safety is guaranteed.

There are opportunities for public-private partnerships as a result of the digital shift



G. CHINZORIG,
CEO of the Telecommunications
Regulatory Commission

Mongolia has embarked on an electronic transition, bringing public-private partnerships and collaborations. Examples include the HUR system, which creates a unified database of e-governments and citizens that will be the basis for e-government transition. The HUR system, which exchanges information between organizations; and citizens identify and provide services online. It is a "DAN" system that opens opportunities.

Digital shifts offer significant changes and opportunities, from public services to private business models and principles. For example, the government believes that it will increase access to services, reduce government bureaucracy, improve the business environment, strengthen the economy, increase competitiveness, and improve people's living standards. Additionally, companies have the opportunity to increase profits and enter international markets.

Last year, the Mongolian Parliament passed amendments to the Telecommunications Act, the Radio Act, and the Postal Act. In addition, draft information security and data protection laws have been drafted and submitted to Congress ▶

► for discussion. According to the International Telecommunication Union's Communications and Information Technology Development Index, Mongolia ranks 91st in 176 countries and 14th in 34 countries in the Asia-Pacific region. In response to these legal changes, Mongolia can further improve its status.

Centralizing about 11,250 services to citizens in one window saves time and money



J. TAMIR,
Head of Information Technology Division of the Cabinet Secretariat of Government of Mongolia

We aim to provide citizens with access to all government services 24 hours a day, from home and mobile, without visiting government agencies or authorities. Government agencies and the private sector, such as banks and mobile carriers, offer services to citizens online, but these systems are separate. Therefore, citizen data should be integrated as much as possible and the services provided should be centralized in one window. Concentrating about 11,250 services offered to citizens in one window not only saves time and money, but also reduces bureaucracy and corruption by making public services independent of the people. In addition, the transparency and openness of government information allows citizens, businesses, and organizations to make informed decisions in a short time based on accurate, factual information. It can also analyze large databases.

To become an e-Mongolia, you need to maintain current political leadership, increase IT skills and

public servant motivation, provide the necessary funding in a timely manner, integrate software according to an integrated architecture, and ensure information security.

In December 2019, the government organized a "Digital Mongolia" national consultation with the Mongolian President's Office, the Great Human State Government, and the Estonian E-Government Academy as part of the government's long-term development policy by 2050 . During this time, a memorandum of understanding was signed with the Estonian e-government academy and related work began. For example, the "E-Mongolia" program was developed and a national council was established to implement e-youth practices and culture. In addition, the National Commission on eDevelopment was established, and the Charter approved the integration of software used by government agencies into a single window to provide accessible, secure and efficient government services to the public.

The education sector is working on a policy to improve information technology



O. DUNJINAMDAG,
Acting Director of Information Technology and Statistics Department of the Ministry of Education, Culture, Science and sport

In the education field, the Science Network Center was established in 2002, and the Education Data Center and Network Management Center were established in 2012, creating a comprehensive information technology network. Today, 90 percent of state and local secondary school classrooms are

connected to educational information and communication networks. Furthermore, to digitalize activities in the education sector, create an integrated database, and provide information to citizens quickly, the education management information system was gradually developed in 2013. Development is in progress. This system includes all kinds of kindergartens, school buildings, human resources, student and academic assessment, grade improvement, graduation, state exams, transitions, e-journals, statistics and reports, and first grade online registration provide ownership of Scholarship application form. Moreover, all levels of education documents and diploma inquiries are issued through the HUR system. In the past year, education management information systems have helped 2,354 educational institutions of all forms of ownership, more than 1 million students, more than 100,000 teachers, staff, parents, parents, and foreign scholarship applicants. This system is actively used by over 65,000 employees in the industry.

Last year, school holidays were extended due to the spread of colds. This year, the outbreak of the COVID-19 virus banned schools and kindergartens at all levels. During this time, our ministry has worked with the Mongolian Television Association to organize classes on television and post online. In the future, we will work on the development and implementation of an online learning platform and provide online training to all teachers and staff in this sector. In connection with the approval of the Government Policy on Information and Communications Development in 2017 Government Resolution 47, our ministry has developed a policy for the development of information and communications technology in the education sector. ■

Challenges

Opportunity to make up for defects

Mongolia began a digital transition using electronic ID cards to all citizens more than 10 years ago. The introduction of e-ID, which recognizes faces and fingerprints and contains all personal information, has created a reliable database for government agencies such as suffrage, taxation, customs, passports and defense agencies. However, regarding use, e-ID is not used at a sufficient level compared to the original Estonian digital ID. e-ID cards were first introduced in 2012 to promote public services and reduce administrative costs. Therefore, with the introduction of a “kiosk” device based on an electronic ID card, citizens can receive 19 types of inquiries and documents without visiting government agencies. The kiosk provides public services to 2,000 to 3,500 people on weekdays and 530 to 760 people on weekends. Recently, however, thanks to private-sector, e-IDs have become available for telecommunications and banking services. In addition to initiatives to digitalize public services, mobile operators, banks and financial institutions are rapidly digitalizing services. Start-ups in Mongolia have limited funding sources, but Itools LLC and LendMN NBFI have successfully raised equity markets. LendMN, in particular, is considered to be globally competitive.

In line with the requirements of the time, digital signatures were introduced in the banking sector in 2018 within the framework of the Digital Financial Services Project. Large banks have also launched mobile applications to simplify daily transactions and other banking activities. According to a 2017 study by the Center for e-Business Development, more than 70 percent of consumers use mobile banking apps every day.

The banking and financial sectors are leading the private-sector digitalization process, and government-level registration and tax authorities' technical reform has been active in recent years. For example, the tax information system has been upgraded and an electronic VAT refund system, E-barimt, has been introduced. The ebarimt system currently has 1.2 million users, a significant increase from 2016 when it had 496,000. "Developments vary from sector to sector, but good practices implemented in one

ID cards were first introduced in 2012 to promote public services and reduce administrative costs

sector should be used in other sectors," said T.Batbileg, Director of the Technological Center of Customs and Tax Information. On the other hand, L.Hulan, Honorary Consul of Consulate of the Republic of Estonia to Mongolia, said "In Estonia, all public and private services are available if you have a mobile phone and an electronic ID".

Today, government agencies and the private sectors, such as banks and mobile operators, offer services to citizens online, but these systems are separate. It is still difficult to exchange information from one organization to another. In short, “access” is lacking in Mongolian electronic migration.

Ready for online migration

Are our basic infrastructure and environment ready to make e-government comprehensive? To answer this question, industry experts have released the Digital Readiness Assessment report. Today, 80 percent of the population is connected to the central power grid, while the remaining 20 percent live far away from the center of the province or soum, with limited access to electricity. Providing them with enough energy is expensive and difficult. According to the report of the International Telecommunication Union (ITU), Mongolia's main advantage over digital access is the use of mobile phones. Mobile Internet access is a viable way to reach rural areas with poorly developed fixed information and communication infrastructure.

In terms of human resources, our university system is outdated and preparing engineers with little knowledge of new technology. For example, "Mobicom spends three years training new graduates to meet their job requirements," said B. Soyolchimeg, the company's human resources manager. According to the 2017 Employer Satisfaction Survey, 30.4 percent of new graduates are unable to complete job-related tasks, and 24.6 percent lack the knowledge and experience to complete their jobs. Also, when it comes to finding jobs, they are often low paid, leading to the departure of moderate and some skilled workers in developed countries such as Korea and Japan.

Regarding financial accessibility, the current financial system has not been developed to cover all areas of society. Commercial banks dominate the financial sector, and foreign banks are not allowed from doing business ▶

► in Mongolia, weakening competition. While SMEs make up 90 percent of registered companies and 50 percent of employment, 90 percent of these organizations, or 36,800 companies nationwide, do not have access to bank loans.

From a legal perspective, Mongolia is one of the countries in the Asia-Pacific region, with the lowest trade and resource management systems and the lowest tax burden in the world. There are little direct government involvement in commodity markets and few state-owned enterprises. In general, the legal system has important elements, but its enforcement capacity is weak.

According to police, as of 2017, 299 cyber crimes were registered nationwide. Cybercrime is not new, but there are currently no specific laws regarding the confidentiality of information. Electronic signatures are also a challenge for fintech companies. The legal basis for the use of electronic or digital signatures was established by the government in 2011 and is set out in

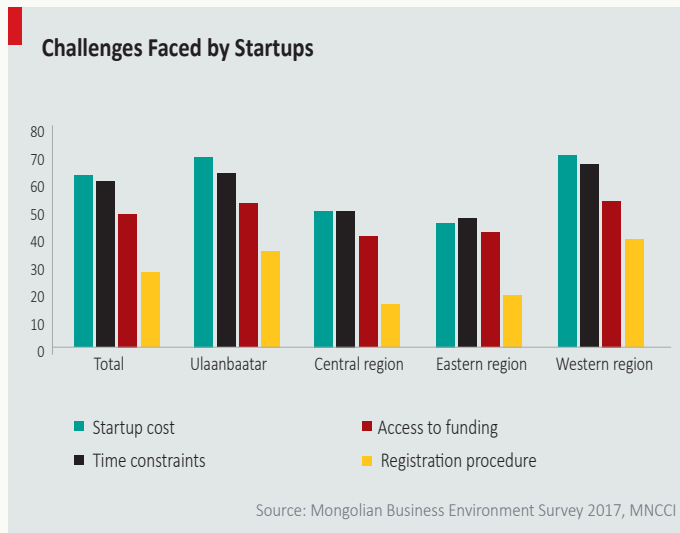
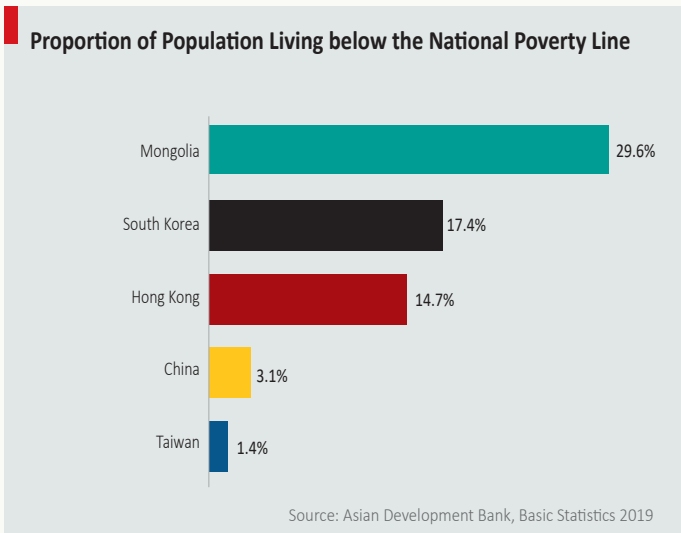
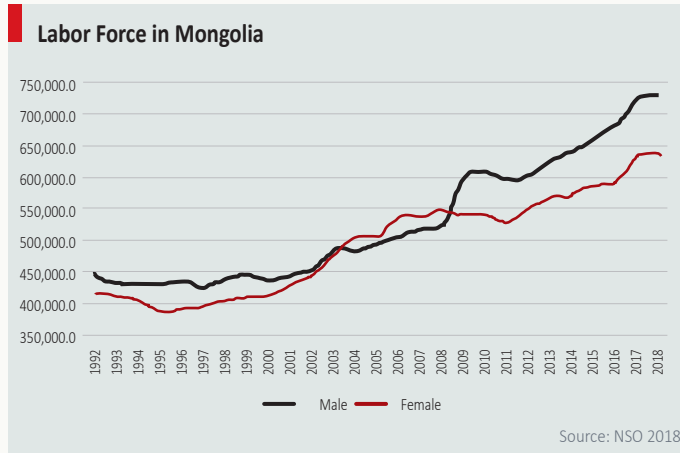
other relevant laws. However, Bank of Mongolia and the Financial Regulatory Commission do not accept electronic signatures for banking operations, including contracts and transactions. Today, Mongolians are widely involved in local online shopping platforms and online shopping such as Amazon and Alibaba. However, the lack of a strong legal framework for online payments and individual payment systems makes it difficult to introduce e-commerce into domestic and international markets.

In addition to these basic infrastructure improvements, the main problem facing Mongolian society is the level of poverty. More than 30 percent of the population is below the poverty line, and another 20 percent are near poverty, with restricted access to the Internet in every way. According to statistics, one in three people has no financial means to buy the Internet or smart devices. Therefore, government need to plan its e-transition policies in a more comprehensive way to bridge this digital divide. ■

Access to Information and Communications Technology (2018)

	Fixed-telephone subscriptions per 100 inhabitants	Mobile-cellular subscriptions per 100 inhabitants	Fixed-broadband subscriptions per 100 inhabitants	Percentage of households with a computer	Percentage of households with Internet access at home
Mongolia	11.7	133.2	6.7	36.4	23
South Korea	50.6	129.7	37.9	72.4	99.5
Kazakhstan	18.3	142	12.4	78.5	87.6
Canada	37.5	89.2	35.2	88.2	91.2
Estonia	26.1	145.4	28.2	86.9	90.5

Source: ITU



Guest

Arvo Ott: We conclude that current level of Mongolian digitalization is relatively good



On the left of the picture, Arvo Ott, Chairman of the Management Board of e-Governance Academy, and on the right, Heiko Vainsalu, Consultant in Roksnet Solutions Ltd

Delegations from the Estonian e-Governance academy had visited state agencies for further cooperation last February. During their working visit, the Mongolian Economy interviewed Mr. Arvo Ott, Chairman of the Management Board of e-Governance Academy and Heiko Vainsalu, Consultant in Roksnet Solutions Ltd, which is partners with e-Governance Academy.

- What is the purpose of your visit here in Ulaanbaatar? Tell us some news from the meetings here?

-Arvo Ott: Actually, we had a joint project that focuses on the state assessment. Maybe you can call this gap analysis. We have meetings during this week with CITA, foreign ministries, and banks to get a bigger picture of e-Government. This project is implementing six months to one year. We can simply continue its goals. But I need to look at

some resources and maybe recommendations and discuss some regulations which might be of interest for both sides. We have Estonian experiences. But every country has differences. That is why this type of learning week is important for us. We got a lot of information before. So, this time we are just focusing on some of the aspects. But it's like that kind of recommendation looking together and might be the next steps. Then do some program coordination and might be also some issue about legislation that is so abstract. e-Government is pretty complex with so many different aspects included. Also, technology and architecture. So those are focuses that are specific on our visits.

-Heiko Vainsalu: I recapped Mongolia's remarkable achievements in terms of bringing ▶

E-Government is pretty complex with so many different aspects included

► **new e-services. Mongolia we are finding that similar authorities and institutions are very slow and low. They cannot make very high-level jumps anymore. They need support from other organizations. Now Mongolia is the right moment of engaging this kind of interoperability of cross-governmental organizations. It could be able to make more use of digital technology.**

-What is the next step of the project and what would be further cooperation?

- Arvo Ott: In this project, we are just focusing on limited assessment discussion here and find also may be issues which are common this is very important. Next step we are working together with this road map to short term aims and but also longer-term aims. So, in the sense of next planning and of course, we are interested in how Estonia and Mongolia can work together in different directions. But we are not doing very much, we are not focusing on technological development in this case. With our knowledge, it is e-Government working at the central level. Of course, we have knowledge of technology and the possibilities of technology. But in this project, we are working on the framework.

-The technological transformation can make a benefit to economic growth in every sector. Could you tell us about a good example of it?

-Heiko Vainsalu: Maybe banking is the most innovative and I am thinking that road too. But Estonians already 20 years ago converted to all banking to such an extent that was happening we see nowhere in the world. The benefits that create e-Government by it means electronic identity has like in this administrative level has an impact on all the industries. No exceptions and no highlights. But just an example of everybody's life is better off. I think the main driver for Estonia in terms of e-Governance was like we are a small country. So, we need to cut costs, we need to make administration thinner and lighter and cheaper and yet be safe and secure. So, this has been driven for Estonia in the governmental sector and the whole society has benefited from the e-ID and a secure connection.

-There are a lot of technological changes happening in the agriculture sectors. This is one

of the main economic sectors in Mongolia. How technology transforms such sectors to create a benefit?

-Arvo Ott: For example, in Africa, since like some relatively easy tool for agricultural people how to sell products and advise what's like metrology and water, etc. this type of thing. Another case is that also technology can help and to figure out certain things and help people through mobile services. Because in those countries people are living far from the central area. In Estonia, I would say we don't have the main dominant industry. We don't have mining. But when we look at Mongolia, of course, the agriculture sector is one thing and some specific issues like nomads moving everywhere. Also, in mining, we have one project in Guyana which is in South America. They are starting to get wind and they are much more focused on how to use technology to protect nature and to make those production things as much as possible to protect people from the climate. This is one good example of use of technology also to use public data that would be needed for people to understand what is going on and they supporting some policies at least have the possibility to give their opinion on some projects. In Estonia a lot of people pro and against actively the use of technology. But online it makes it easier to do discussions.

-One-third of the Mongolian population is living in a poverty line according to the latest World Bank Report. I think it's very important to solve some social problems while creating an accessible digital service. What is the relationship between social-economic factors and digitalization and how to handle it?

- Heiko Vainsalu: Public and government sectors should be providing services to the citizens when they need it and not when their citizens ask for them. This sense it long prospective to citizens should be able to be nomads or if live somewhere in the outskirts of Mongolia and do whatever they want to live for life are working being an entrepreneur or work for something that somebody else whatever they want to do and the government should be proactively providing services. This means the government has to be integrated and the government must be ready to provide services and every point

Big countries like Australia and Canada have not yet fully introduced electronic identity

► is needed. Therefore, I would say long prospective having people in connection to the internet is not so much needed. Rather the government must be aware of what is happening. But to reach that in stages of that in the meantime you have to make citizens well connected and try to reach them reasonably. And in Mongolia here this is a kind of socio-economic problem-solving type of thing that for the provision of public services, the government has to figure out how to provide services so that citizens and everyday life are distracted much. So I wouldn't expect citizens to drive or arrive miles and kilometers to get to some service centers, but rather how to bring services to the citizens.

-Estonia has been spending many years transforming digitalization. What is the current level of digitalization? Technology always updated and innovated. What is the newest process in Estonia today?

- Heiko Vainsalu: The point for Estonia has reached now is that we have reached a situation where our digital governance has become a legacy. So we have to actively work before the items to build 10, 15 years ago must be renewed, replaced and updated. Estonia's first digital signatures they signed in 2002 used cryptography. But nowadays it has become weak. So these signatures must be resigned and something must be done to protect the signatures from being hacked. So we are dealing with such kinds of problems with finding out ways to do this activity also. So I think that the most important thing that different countries can learn from Estonia is that don't look at Estonia so many other success stories. But rather as a place for a lot of things that have already been tried. We have failed in a lot of things, we have not successfully and not fully efficiently in many things. But on this path, we have reached this point to some extent. So this is like some of what we are ready for in our legacy. The second thing is that maybe it must be understood about Estonia that throughout this kind of 20 years Estonia has never been so much technological innovation. This has been more like management government innovation and also business process innovation on how to use existing mature technologies. In Estonia it's rather not following the principle but thinking about what other real problems in the society. That is why many

rankings you cannot see Estonia is number one. We are maybe 4th, 5th or 10th place in the world. But not number one. Why? Because we are not aiming for that goal we are trying to solve all our problems. So, in this case, I think Mongolia is also important to understand what is the real problem that needs to be solved in society. Is it that efficient? Is it that government is lowering resources, what is the problem that you are trying to solve and then finding the right tools for that.

-Estonia leads its digital safety system in Europe and is responsible for the NATO Cooperative Cyber Defense Centre. So what is the technology or know-how of the safety system?

-Arvo Ott: Cybersecurity is one of the pillars. When we started to build we are doing a parallel we are looking for cyber-security. But cybersecurity is of course a wide topic such as legislation, organization, policy, technology. But the good thing is to build technological development with cybersecurity is to make some good teachers. It means that people can check their data, see how others are using data, how to protect your credential systems. This is due to the fact the world is changing. It's a never-ending story similar to e-government.

Heiko Vainsalu: Maybe we could even say that this e-government platform baseline systems having information security in mind. Problems have been solved looking at what are the possible threats that can be tried must be addressed. Trying to find a way of how to protect yourself against these attacks. We have designed our baseline systems.

Then of course again training and education of the whole education system to be aware of that. One of the Estonian cybersecurity experts who was also director of the General Information System authority who's responsible in Mongolia for this kind of technical implementation of e-governance. He once said breaks are needed to try fast. Which means that you need ways of how to shut things down if it starts to go bad. You must be always aware that you must be able to control that if things are still going normally or over has been attacked, somebody taken or stolen chain something like that. If these things happen we know it's okay and removes or stops and ►

Look at Estonia as a place where a lot of things have already been tried

► some things remain safe. So Estonians have very pragmatics on security.

-Tell our readers for more information about the “e-Governance Academy”?

- Arvo Ott: Academy starts as an NGO. A lot of delegation started to come to Estonia with the same questions as what is X-Road, what is the digital ID, how is the organization going etc. So it was too difficult for the government to deal with. We are hosting around 50 delegations per year from a hundred countries. What we are doing is giving 6 months to one-year advice to help some countries such as Benin and Ukraine helping to create technology. Also, we are doing some training for people to understand some blocks and some business companies. But I think that you can't copy e-Government from other countries. Because every country is different. You can learn the methodology and some knowledge from other countries. After then we are cooperating with knowledgeable people.

-There is a system called X-Road very highlighted. Recently Finland adopted this system. What is the role of this system and what exactly X-Road?

-Heiko Vainsalu: This system is one of the backbone systems of Estonia. This kind of platform has several of them. X-Road is helping backing integration systems. From the Mongolian perspective, Khur at the moment is now doing exactly what it needed to do. But things are getting more complicated and more complex.

Because the interoperability ecosystem just comes up. Then we would see a reason to make changes that Khur makes it act more similarly actually how it should be built up. X-Road was adapted by Finland in 2015. We made an agreement with Finland that we are creating an NGO. The NGO developed core components of X-Road. Now Estonia and Finland are running separate instances of this whole platform. So the core platform as a technology. To Mongolia, we exported its concepts. In other countries when they are suited, X-Road like Iceland, Kyrgyzstan, Azerbaijan, Columbia, and Ukraine. Now there are a lot of countries in Central America.

-What do you think about the current

development of Mongolian digital transformation?

-Arvo Ott: We are working with more than a hundred countries. All the countries make a step of aiming e-Government. Almost all are not about technological challenges. I think to compare with this other country, Mongolia is doing well. Of course, there are some challenges in some cases, for example, an electronic identification card. The type of card may be the same as Estonia, but some possibilities are not the same. Some things are missing with its big picture. This week we are talking about several aspects of issues for solving immediately and some longer terms. But the good issue is that people are trying to solve some issues. However, sometimes it's slow but some private business sectors are so active. Banks are active. So we evaluate the situations pretty well in the sense of digital technology. You can find many countries' data are still on the paper. I think developing countries do new things much faster than already in the past 15 years with the same systems. Big countries Australia and Canada at different levels don't have an electronic identity. In this sense, many good decisions have been done here. But in practice people always expect much faster changes. In Estonia, newspapers are saying the “Tiger Leap” now going to slow down. Not doing the same as in the past possible. So here the situation is very much promising. We are trying to access electronic identity to make many good benefits. If banks, private sector pushing to have government together. It might be a good next future.

-How can you evaluate Estonia and the Mongolian digital transformation?

-Heiko Vainsalu: If we consider place and time and what is the current stage and where you are heading. I think that kind of perspective this time you are better off than Estonia when it had launched the X-Road platform for the second two years. With Khur now running two years, you have a way you head. You have a better opportunity, you have many services, you have more participants and organizations showing up and you have more people using some of this app. In this sense, if you take an Estonia second year like some of 2002, 2003 and compare with Mongolia. Mongolia would be more head. Now we are just further ways sometimes. So we cannot compare Mongolia and Estonia in 2020. ■

So we cannot compare Mongolia and Estonia in 2020

Man who introduced Internet to Mongolia



Founder of the "Karakorum" Digital Academy D.Enkhbat

D.Enkhbat: The problem isn't a technology, it's the old-fashioned system management

The Mongolian Economy spoke with D.Enkhbat, a founder of Karakorum Digital Academy, about the technological development and digitalization process in Mongolia.

-How would you describe the past progress of digitalization? For example, were digital services focused on reducing administrative costs rather than costs incurred by citizens?

-In terms of e-governance initiatives, we were quite active. The government established the National Data Center and successfully digitalized public services. However, in my opinion, for the last three or four years, it has been inactive.

Digitalization is not merely an automation of traditional work and reduction of costs. If you receive

wings, you must fly like a bird instead of running like terrestrial animals with useless wings. To put it simply, the digital transition is not a technological problem. It is about taking organizations, businesses, and industries that use information technology to a whole new level. The digital transition is not automation or computerization. In the West, a digital transformation means that a rebirth of a company in the modern digital marketplace. Amazon has not only automated shopping or connected stores to the Internet but it completely disrupted the market. Digital transitions change the activities and goals of the organizations and institutions behind them, not just computer and information technology. Therefore, digital transformation is not just for IT and its respective professionals. ►

► **-In the past the e-governance initiative has been proposed several times but failed to implement. What steps need to be taken to ensure the continuity and successful implementation of the “Digital Mongolia” program this time?**

-If you look at Estonia from outside and imitate it, you will not succeed. The distribution of power and authority has changed as well. For instance, suppose you select a lower-level committee chair. We have ten people who know the Khoroo's chairman, and hundreds of Khoroo residents who do not know what happened. To change this, all residents can vote on their mobile phones. Therefore, we need to change our perspectives and learn how to carry out a political reform from Estonia.

The best practices of Estonia and Singapore are useless unless we set a clear goal. The transition will only happen if we start to talk about changing our orthodox systems that exist in all levels. The term “digital transition” is misunderstood due to the fact that it has the word “digital” in it.

Basically, the secret of the digital transition is that new technologies give an opportunity to change the core institutions and systems. Not only transformation of public services but also many other functions of the state, or in short, a government reform is necessary in Mongolia.

-Even if it fails, it is important to take an initiative in some way. What do you think about this?

-Of course, it is very important. The main challenge is how to hold a national or a large-scale discussion on government reforms with the political parties, parliaments, and president. As we are failing to do so, someone gets elected, changes previous decisions, and talks about something else. This has gone on for the past 30 years. It, indeed, surprises Estonians. Almost a dozen of our representatives have visited Estonia to learn about Estonian e-governance.

In order to implement national reforms, it is necessary to comprehensively assess the legal environment, the role, and the structure of the state. Initiatives are very important in this task. I have no choice but to support it. It's a big deal that we understand the need for digital transition, especially at the ministerial level. The most important part is to reach agreements at the state, administrative, legislative, judicial and presidential levels.

-The private sector is very active in the information

technology sector. How has this involvement of the private sector affected the current development of digitization in Mongolia?

-The private sector has been leading for the last 30 years. The information technology sector is mostly led by the private sector initiatives. Particularly, banks and mobile phone operators are leading in this sector. That means we can solve technological problems relatively quickly. In addition, the services provided by the private sector are up-to date and tailored to your business and capacities. Therefore, the key question is how to turn private technology into a force for national development, and how to include more than 100,000 companies, three million people, education, health, and transportation sector. The alternative would be to turn it into an element of development in all sectors. If it was a symphony, we would need a common note to play.

One of the problems of the private sector is that everyone sings their own song. Now it is important, however, that what type of music will three million Mongolians sing, what symphony will be played, and how digitalization be utilized in national development policies. This is the function of the state we have been talking about. Management needs to exercise leadership over this link. The miracle of Estonia is that informatization was a political decision. The purpose of digital transition was to increase competitiveness, differentiate itself from other countries, and make it a development tool.

-Today, technology is said to determine our path to development. How do you see this progress?

-In the digital world, someone can be in New York, Africa or Mongolia but it does not matter. Therefore, in this new world, we need to think of a new development model. A new field has arisen. As for Estonia, they did not rely on coal like us and did not choose the old path. They put their bet on digitalization. Countries, businesses, and schools are discussing digitalization at all levels. So my position is the same. If Mongolia bets on digitalization as soon as possible, we will have the same opportunities as others. In this market, everything is new and everything is just beginning. Yes, if Estonia can do it, so can we. However, after 10 or 20 years, this market will become increasingly difficult for new players.

-Does the concept of development change over time?

-First, you need to understand development correctly. Many people do not distinguish between development and growth. Growth is the expansion of something that already exists. However, development means going to ►

It is necessary to comprehensively assess the legal environment, the role, and the structure of the state

► the next level and becoming more complete. It is very important to make money by selling coal today. It is perhaps extremely important. However, no matter how large the industry, it will not evolve. Thirty years from now, this industry will disappear.

The key question is how to turn this coal, the money we earn, into development. Mining is undoubtedly important, but even if you do not develop what you find, you will be leaving the country with lots of plastics and empty holes. In other words, today we need to look at mining and beyond it.

- We have been talking for many years about getting rid of our dependence on mining. So will digitalization be another opportunity to diversify the economy?

-This is a great opportunity. However, let's not forget one thing. It is useless to simply digitalize the old system without making any changes. Bullock cart does not need to be computerized but it needs to be completely transformed into a car.

Let's talk about the tourism industry. Airbnb is a brand new model. It does not possess any rooms or hotels, but it is the largest hotel company in the world. This company is making tourism completely different. All perspectives, such as management and marketing are changing. In the same way, we must change this sector, not computerize tourism in the old way.

Digitalization connects everything that was not previously connected. Secondly, it makes everyone smarter. In other words, a lot of things are done by computers and technology itself. Thirdly, it is democratizing. Development is not led by one ministry or one large company, but by equal participation of all. In fourth, the potential of information technology is important as it keeps pace with the world. In short, if we want to make the digital transition and join the digital world, we need to change the management and structure of the old system. The main problem we are facing is not technology, but outdated thinking, methods and outdated management systems at all levels.

-What is the current level of digitalization in our country compared to other countries?

-We have lost initiative and speed due to the weak development of Mongolia's information technology environment. If we want to start a company in Mongolia, there are no investors and no legal environment. Therefore, I would not assess the development of this sector as good or bad. It's just that we can do it. So this is a very big issue. Another problem is that we do not have professional

staff. The universities have largely reduced enrollment in information technology than before. The well-trained professionals simply went abroad.

As someone who has run an IT company, finding skilled employees has been a headache. In addition, the government delegates the IT projects to foreign companies. This is a wrong policy and a big mistake. Technology can be imported. However, this should be done by the private company in charge of the project, not by government ministries and officials themselves. When the contract expires, the foreigners will leave. However, local companies are doing what they can and can't do. That's why our companies and specialists are working hard. However, we do not have the will to combine all this and achieve great goals, the rules, and the environment of the joint game.

-How will your current initiatives be implemented in line with the government's digital transition policy? Will you contribute to this work?

-Business.mn is part of our mission. It is a project that aims to connect 100,000 Mongolian companies and create a meeting point. Leaders do everything first. Nonetheless, the director of a private company doesn't do as I say, he does it if he wants to. My job is not to persuade him to do it, but to tell him why he needs it, why it's digital, why everyone is connected and diversified. Therefore first, to connect, second, to understand the digital possibilities, and third, to organize cooperation is the goal. That's why we are launching magazines, podcasts, websites, and "digital karakorum". This is how we see the digital transition in the private sector.

However, the government is creating its information system as part of the digital transition. These are two sides of the same coin. When D.Byambasuren was the Prime Minister, I was the Deputy Minister in charge of digitalization at the Ministry of National Development. At that time, digitalization was proposed as a development policy in the government meetings. In the past, I have visited several countries, including Singapore, Malaysia, South Korea, Estonia, and New Zealand for a research purpose. It is understood that the main problem of e-government is not technology but system reform. In general, depending on the political parties and the electoral system, I think we should do our best to reach an agreement with the people in the private sector when all government work is unstable and difficult.

If the government works together with the private sector and sets a big national goal, of course, we will continue our contribution. ■