The Rise of Artificial Intelligence in Central Eurasia

From Jobs to Governance: The AI-Driven Transformation of the Region

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General Overview of AI Development in Central Eurasia

The Development of Technology and Innovation in Central Eurasia

The development of technology and innovation in Central Eurasia has accelerated significantly over recent years, driven by growing interest from both governments and the private sector. The region, comprising diverse countries such as Uzbekistan, Kazakhstan, Georgia, Armenia, Azerbaijan, Kyrgyzstan, Tajikistan, and Turkmenistan, is increasingly recognized for its potential to leverage technology, particularly artificial intelligence (AI), as a catalyst for economic growth and societal advancement.

New startups continue to emerge across various sectors, from fintech and agritech to healthcare and digital governance, benefiting from both local initiatives and international collaborations. Additionally, educational programs dedicated to technology and innovation are expanding, reflecting greater efforts to address the skills gap and nurture a competitive workforce. Governments are progressively integrating technology into their national development plans, adopting digital transformation strategies, and providing supportive environments for tech-driven entrepreneurship.

However, despite this encouraging progress, the region still encounters significant challenges, such as a persistent shortage of skilled professionals, limited access to venture capital and investment opportunities, inadequate digital infrastructure, and inconsistencies in regulatory frameworks. Addressing these obstacles effectively remains crucial for Central Eurasia to realize its full technological and economic potential.

Education and Workforce Development

A European Commission representative emphasized that early investment in AI education is crucial for long-term economic growth, citing the need for stronger industry-academic partnerships to develop practical AI skills among students.

Education in technology and innovation is growing in Central Eurasia, but it has yet to fully meet industry demands.

- **Kyrgyzstan** is rapidly developing AI programs. For instance, the Kyrgyz National University has established the Institute of Computer Technology and Artificial Intelligence, focusing on neural network research. Government-supported AI initiatives include the digitization of the Kyrgyz language and the launch of the "AkylAi" voice assistant. In the startup ecosystem, Accelerate Prosperity, a global initiative of the Aga Khan Development Network (AKDN) in Central and South Asia supports young AI companies in entering the market.
- **Baku University (Azerbaijan)** has introduced AI-based courses within its applied mathematics and business management programs, fostering a new generation of AI specialists in the country.
- **Kazakhstan** has established Tomorrow School, the country's first peer-to-peer AI school, enrolling over 5,000 students in its initial cohort.
- **Armenia** has introduced AI-focused bootcamps and master's programs, but the country still faces a talent shortage, with many graduates seeking opportunities abroad.
- **Tajikistan** has integrated AI training into its top universities, producing around 200 AI specialists annually to meet growing market demand.

Government Policy, Regulation, and Global Alignment

A former European Parliament official suggested that Central Eurasian countries should focus on aligning with international AI regulations to enhance market access and attract foreign investors.

Some countries in the region have already started implementing digital and AI-related policies.

- **Uzbekistan** aims to enter the top 50 countries in the AI Readiness Index by 2030 and has introduced funding programs that match private investments.
- **Kazakhstan** is developing a National Research Center for AI, which will be a hub for local AI advancements.
- **Georgia** has introduced risk-based AI regulations, ensuring compliance with the Council of Europe's AI framework.
- **Armenia** is drafting its first national AI strategy, aiming to define priority sectors and attract foreign investment into AI-driven projects.
- **Tajikistan** has launched a government-backed AI initiative to integrate AI solutions into public administration, starting with digitalizing legal and tax services.

Although regulatory barriers for AI development remain low in most countries, the absence of well-defined national strategies, insufficient government support, and slow implementation of initiatives continue to hinder industry growth. A European Commission representative highlighted that Central Eurasian countries must align their strategies with international standards to improve global market access.

Startups and Investment

Industry experts have highlighted that startups in the region should focus on niche applications of AI rather than attempting to compete directly with global tech giants. According to experts, smaller economies benefit most when they leverage unique local strengths, such as specialized data or industry expertise, to develop competitive AI solutions.

Despite these challenges, the region has seen a rise in startups focused on technology and innovation.

- **Armenia** is home to globally recognized tech companies such as Picsart, Podcastle, Crisp, and Renderforest, which have attracted millions of dollars in investment, mainly from the Armenian diaspora.
- Soulin AI in **Turkmenistan** is developing speech recognition and synthesis models for the Turkmen language, ensuring the preservation and digital accessibility of the national language.
- The startup ecosystem in **Kyrgyzstan** is expanding, with Accelerate Prosperity initiative providing funding and mentorship to AI-driven enterprises, including health tech and fintech startups.
- **Tajikistan** has started implementing AI in the financial sector, where machine learning has helped reduce non-performing loans to 1%.
- **Uzbekistan** has seen the rise of AI-driven startups in the logistics and agritech sectors, with the government providing early-stage grants to boost innovation.
- **Kazakhstan** has attracted major international AI firms to collaborate with local startups, increasing foreign direct investment in the tech sector by 30% over the past two years.

Access to funding remains the biggest challenge. A former European Parliament official suggested that countries in the region should focus on niche technology sectors rather than attempting to compete directly with major tech hubs like the U.S. and China, as this could attract more specialized investment. Local venture capital activity is low, forcing startups to seek investment from international sources.

Key Barriers to Growth

According to AI researchers, the lack of advanced computing infrastructure remains a major roadblock. Experts warn that without significant investment in local AI training facilities, startups will continue to rely on foreign cloud providers, limiting their scalability and competitiveness.

Shortage of skilled professionals. Despite the expansion of education programs, the job market is struggling to keep up with the demand for tech talent.

Limited access to investment. Most startups in the region still rely on foreign venture capital to grow.

Weak infrastructure. The region lacks large-scale computing centers and advanced research facilities needed to support high-level technological development.

Future Prospects and Opportunities

Several industries in Central Eurasia are showing significant promise for AI-driven growth, leveraging technology to create economic value and address local challenges.

In the finance sector, Tajikistan stands out as a successful example, where financial institutions have adopted AI-driven systems for risk assessment, significantly reducing non-performing loan rates from 6% to 1%. This demonstrates AI's clear impact on economic stability and operational efficiency within the region.

Education has emerged as another critical area for AI application, particularly in Uzbekistan, where comprehensive educational programs are being implemented. These programs cater to a broad range of learners, from secondary school students to experienced professionals, effectively creating a pipeline of skilled AI specialists to meet future market demands.

In the sphere of public administration, Azerbaijan's innovative KITAB project illustrates the practical use of AI technology to modernize and streamline government services. This project, automating numerous administrative tasks, not only enhances efficiency within Azerbaijan but is also gaining international recognition and adoption.

Agriculture and logistics sectors in Uzbekistan have also embraced AI to overcome logistical challenges and optimize production. Startups are actively using AI solutions for supply chain management and predictive analytics, helping farmers and businesses make more informed decisions and significantly improve productivity.

International partnerships play a crucial role in accelerating technological advancement in Central Eurasia. For instance, Georgia's collaboration with the Bavarian AI Agency has significantly improved AI education and professional

training. Kazakhstan has successfully attracted global AI firms, resulting in a 30% increase in foreign investment over the past two years, bolstering the local innovation ecosystem. Similarly, Uzbekistan participates in international AI research collaborations with renowned global institutions like Plug and Play and AloqaVentures, gaining valuable expertise and resources to further develop its domestic AI sector.

Overcoming Existing Barriers

To fully realize their potential, countries in Central Eurasia are actively addressing existing barriers to technological growth.

- **Venture capital attraction.** Kazakhstan is experimenting with innovative funding models to support AI startups and attract private investment, aiming to create a sustainable and robust financing ecosystem.
- **Infrastructure development.** Georgia is building dedicated AI hubs in cities such as Tbilisi, Telavi, and Kakheti, providing vital infrastructure and resources to support AI research and startup incubation.
- **Regulatory adaptation.** As emphasized by a European Commission representative, aligning national AI regulations with international standards is essential for attracting foreign investment and ensuring regional competitiveness in the global technology market.

National Outlook: Key Trends, Challenges, and Opportunities

Armenia

Armenia's technology sector, particularly AI, has seen notable growth in recent years, driven largely by a dynamic startup ecosystem and strong diaspora investments. The country hosts globally recognized technology companies such as Picsart, Podcastle, Krisp, and Renderforest, collectively attracting tens of millions of dollars in international funding, primarily from the Armenian diaspora community. For example, Picsart alone has raised over $195 million and achieved unicorn status, significantly boosting Armenia's visibility on the global tech stage.

Despite these successes, Armenia faces considerable challenges, especially a persistent shortage of skilled technology professionals. According to industry experts, approximately 30% of Armenia's tech graduates move abroad annually, attracted by better opportunities and higher salaries. A senior representative from the Foundation for Armenian Science and Technology (FAST) noted, "The talent drain remains our biggest challenge. We need stronger incentives to retain young specialists and encourage experienced professionals to return."

In response, Armenia has launched several targeted educational initiatives, such as intensive coding boot camps, master's degree programs specializing in AI, and collaborative dual-degree programs between local and international universities. Initiatives like the FAST AI Bootcamp have already trained hundreds of young professionals, directly addressing the skills gap identified by employers.

On the regulatory front, Armenia is currently drafting its first comprehensive national AI strategy. However, experts, including former European Parliament officials, have emphasized the need for clearer policy directions, urging the country to identify specific technological niches rather than broadly competing with major global hubs. They argue that focused specialization in areas such as data analytics, fintech, or educational technology would allow Armenia to attract targeted foreign investments and partnerships.

To sustain its current momentum and scale further, Armenian startups rely heavily on international funding, primarily from U.S.-based venture capitalists and diaspora-backed funds. Local funding availability remains limited, often capped at around $200,000 per investment, forcing successful startups to seek larger rounds abroad. To strengthen the ecosystem, experts advocate for expanding local venture capital capacity and improving infrastructure, especially high-performance computing centers necessary for advanced technological research and development.

Azerbaijan

Azerbaijan is progressively incorporating AI into its national development, although implementation remains selective. One of the most prominent AI initiatives in the country is the Intelligent Traffic Management Center, which leverages AI to optimize urban transportation, significantly reducing congestion and improving overall efficiency in city management. The country's pivotal oil and gas sector is also adopting AI technologies to enhance data processing and improve decision-making efficiency, with the national oil company, SOCAR, actively investing in AI-driven solutions.

Educationally, Azerbaijan has a strong foundation in AI research, primarily driven by institutions like the Azerbaijan Oil Academy and Baku State University. Under the leadership of renowned expert Professor Jacques Aliyev, the Academy has trained numerous specialists who contribute to significant AI developments across sectors. At Baku State University, AI integration within applied mathematics programs is emphasized to enhance unbiased decision-making processes. According to an expert from Baku State University, "The ultimate goal of AI is to improve decision-making by delegating specific tasks to machines, minimizing human bias, and enhancing reliability through data-driven analysis."

However, despite advancements, AI collaboration in Azerbaijan remains cautiously controlled due to national security concerns. Experts liken AI cooperation to discussions around sensitive technologies such as nuclear energy, where international partnerships are highly selective. Nevertheless, Azerbaijan has ambitious plans to broaden AI integration significantly by 2035, with substantial investment from large corporations and governmental support through economic programs designed to foster AI research and implementation. A notable example of Azerbaijani innovation is the KITAB project, an AI-based public service platform successfully exported to other countries, reflecting the nation's emerging role in the global AI landscape.

Georgia

Georgia is steadily advancing its technology and innovation sectors, with AI playing an increasingly important role. The startup ecosystem has experienced significant growth, largely supported by the Georgian Innovation and Technology Agency (GITA), which has invested approximately $14 million in over 240 startups, generating private investments 13 times greater than the initial state funding.

The country has also secured an associate status with Horizon Europe, the EU's largest research and innovation funding program, providing Georgian startups and researchers direct access to European AI funding and expertise. Moreover, Georgia's National Bank has implemented comprehensive AI regulations for the financial sector, ensuring compliance with the Council of Europe's AI ethical framework. A European Commission representative highlighted Georgia's steps toward aligning local regulations with European standards, emphasizing that this approach greatly enhances the country's attractiveness to international investors.

However, Georgia still faces notable challenges, including limited access to local venture capital and insufficient computing infrastructure necessary for large-scale AI development. Despite these hurdles, the country is successfully leveraging international cooperation. Georgia's partnership with the Bavarian AI Agency has already led to impactful educational programs, including training initiatives like the "Artificial Intelligence at School" project, which prepared 30 ICT teachers for teaching AI and mobile app development.

International experts have suggested that Georgia can significantly improve its global competitiveness by further investing in niche AI applications, such as fintech, cybersecurity, and agricultural technology, which align closely with its current economic strengths.

Kazakhstan

Kazakhstan is emerging as one of Central Eurasia's leading nations in technology and artificial intelligence, underpinned by significant public and private sector investment. The country has seen a substantial increase in AI-related foreign direct investment, growing by approximately 30% over the last two years. A key driver of this growth is the establishment of the National Research Center for AI, intended as a hub for cutting-edge AI research, innovation, and talent development. It has adopted a national AI development strategy, outlining key priorities for AI adoption across various sectors and establishing a framework for long-term growth.

Educationally, Kazakhstan demonstrates proactive steps through initiatives like the Tomorrow School, the country's first peer-to-peer AI learning platform, which has enrolled over 5,000 students. However, despite educational investments, Kazakhstan continues to face shortages in skilled AI professionals. According to an expert from Astana Hub, Kazakhstan's leading startup incubator, "The gap between the education system's output and industry requirements remains significant, which poses a barrier to sustainable growth."

Kazakhstan's government is addressing these challenges by actively supporting AI startups through technology parks and acceleration programs like Astana Hub, Silkway Accelerator, and AI'Preneurs, currently fostering more than 150 AI startups across sectors such as healthcare, finance, and telecommunications. Major corporations, including telecom giant Beeline, are actively integrating AI solutions, significantly improving service delivery and customer experience.

International collaboration is also a cornerstone of Kazakhstan's AI strategy. Recent agreements with global AI firms have significantly boosted local startups' capabilities and attracted additional international expertise and investment. An official from the European Commission emphasized, "Kazakhstan's strategy of combining strong governmental support, international cooperation, and targeted educational initiatives positions it well to become a regional AI powerhouse."

Kyrgyzstan

Kyrgyzstan's government has launched initiatives such as the Tunduk Digital Platform, which utilizes AI-driven technologies to digitalize public services, significantly improving transparency and reducing bureaucratic inefficiencies.

Education and talent development remain critical challenges. According to the Kyrgyz Ministry of Education, only a handful of universities currently offer specialized AI-related courses, producing fewer than 100 AI specialists annually. An expert from Kyrgyzstan's High Technology Park emphasized, "There's a considerable gap between the growing market demand for AI talent and the limited capacity of our educational institutions. Expanding educational programs and international partnerships is vital."

Investment and infrastructure are also significant barriers. Local AI startups heavily depend on international donors and investors due to the scarcity of domestic funding sources. The startup ecosystem is supported primarily by organizations such as the High Technology Park, which houses around 90 resident companies, but less than 10% are specifically AI-focused.

International cooperation is becoming increasingly essential for Kyrgyzstan. Partnerships with organizations like the World Bank and international tech firms aim to accelerate digital transformation and infrastructure development. A European Commission official recently noted, "For Kyrgyzstan, embracing niche AI applications and international collaborations is the most practical path toward becoming competitive in the broader Eurasian technology landscape."

Tajikistan

Tajikistan is gradually embracing technological innovation, particularly through the application of AI in targeted sectors such as finance and public administration. One notable success story is the financial industry's adoption of machine learning, significantly reducing the rate of non-performing loans from 6% to just 1%. Additionally, the government has begun implementing AI-driven initiatives aimed at digitalizing legal and tax services, streamlining bureaucratic processes, and increasing transparency.

Several startups like zGAN, Epsilon3.ai, Zypl.ai, Qulla.ai have emerged as flagships within Tajikistan's AI startup community, demonstrating substantial potential for the industry's further growth.

However, the shortage of skilled professionals remains a pressing issue. Since 2005, over 20,000 students have studied AI-related courses, yet only around 300 specialists graduate annually. A senior official from Tajikistan's Ministry of Education emphasized, "Our current educational capacity cannot fully satisfy the rapidly growing demand for AI talent in both public and private sectors."

Significant progress has also been noted in AI education. Since 2021, three specialized AI laboratories have been established, educating more than 500 students. AI-related disciplines are currently offered in seven of the country's leading universities. Additionally, AI subjects have been integrated into the school curriculum. The AI Factory project provides young specialists with expert mentorship and opportunities to participate in international outsourcing projects.

Infrastructure limitations further challenge Tajikistan's technological ambitions. The country lacks dedicated computing centers and robust digital infrastructure needed for complex AI solutions, forcing startups to rely heavily on international cloud services. Nevertheless, thanks to its accessible and inexpensive electricity, Tajikistan has good prospects for developing efficient data centers, significantly enhancing its digital infrastructure, and enabling the execution of more complex and large-scale AI projects.

Despite these obstacles, Tajikistan's telecommunications sector has been proactive; major telecom companies, such as Tcell and Megafon Tajikistan, have initiated AI projects focusing on customer analytics and service optimization.

International collaboration is crucial for Tajikistan's continued growth in technology. The country actively promotes the idea of AI self-regulation, conducting consultations and aligning positions with neighboring Central Asian states as well as with the European Union. The President of Tajikistan has proposed adopting a UN resolution on AI self-regulation in Central Asia, aiming to make the region a model for other regions that are not yet global centers of AI development. Experts, including a former European Parliament official, suggest that Tajikistan should "prioritize partnerships with global tech companies and international institutions to access both funding and advanced technological expertise," thereby accelerating the nation's digital transformation.

Turkmenistan

AI development in Turkmenistan remains in its early stages, largely due to significant infrastructural and economic barriers. Currently, Turkmenistan lacks clearly defined government initiatives or dedicated AI funding programs. According to industry experts, the primary challenges faced by AI startups include limited access to powerful computing resources, high-speed internet, and specialized educational programs. These limitations severely constrain the development and scalability of AI projects within the country.

Local AI initiatives that do exist are typically driven by private companies or individual innovators, often reliant on international expertise. A successful example includes an application employing computer vision technology, allowing users to improve physical exercise techniques using their smartphone cameras, a rare case of local AI innovation gaining positive international attention.

Experts highlight the country's isolation as another significant barrier. Strict visa restrictions and limited international collaboration opportunities significantly hinder knowledge transfer and foreign investment. According to a representative from a local business incubator, "The success of AI startups in Turkmenistan largely depends on international connections. Those who have studied abroad or participated in international training programs bring back the knowledge needed for innovation."

While the government has expressed interest in fostering innovation, practical measures such as establishing specialized incubators, accelerator programs, or offering targeted grant support have yet to materialize. Experts advocate for legislative reforms and increased governmental support as critical steps towards cultivating a sustainable AI ecosystem, emphasizing the need for international partnerships and specialized training initiatives to significantly accelerate technological progress and economic growth.

Uzbekistan

Uzbekistan is rapidly advancing its technology and innovation sectors, setting ambitious goals for artificial intelligence development. According to Uzbekistan's Ministry of Digital Technologies, the country aims to create approximately 100,000 AI-related jobs and increase AI-driven exports to $1.5 billion by 2030. AI applications are already widely used across healthcare, agriculture, finance, energy, and e-government sectors.

The establishment of special economic zones offering tax benefits and infrastructure support has significantly boosted AI-related business activities. The government has also introduced co-financing programs, matching private investments in AI projects, particularly encouraging startups in logistics and agricultural technology.

However, a major challenge remains the shortage of skilled professionals. Currently, only 12 universities offer AI-related courses, training on average, 600 students annually, which falls short of market needs. A representative from the European Commission emphasized that "accelerating talent development and establishing partnerships with international educational institutions is crucial for the sustainable growth of Uzbekistan’s AI sector."

Additionally, Uzbekistan is developing a national AI regulatory strategy aimed at ensuring compliance with international standards and safeguarding citizens' data. A former European Parliament official noted that these regulatory measures would help Uzbekistan become "a significant regional player, greatly enhancing its attractiveness to foreign investors."

Practitioners and Innovators

Global Perspective

Dan Nechita, former Head of Cabinet for MEP Dragos Tudorache, European Parliament; Lead Technical Negotiator for the EU AI Act

– Based on your experience with the EU AI Act, what lessons can be drawn for regions like Central Eurasia in establishing effective AI governance?

– I think the most important thing is to start with the objective — what are you trying to achieve with regulation? In the European Union, we had multiple objectives. The first was to regulate AI at the EU level to create a unified framework across all member states. This approach ensures that companies operate under a single set of rules, allowing them to benefit from access to the entire European market. Not everyone was in favor of additional regulations, but that was a key part of the strategy.

Another major objective was ensuring that AI regulation aligns with fundamental EU values, particularly the protection of fundamental rights and democracy. For example, AI systems classified as high-risk must be designed to minimize harm and prevent discrimination when used on different populations.

– That makes sense. But when we think about smaller or less developed regions like Central Eurasia, how can they align their frameworks with these standards? Is it really feasible? The EU model seems to be well-suited for Europe, but for countries in Eurasia, wouldn't it be too complex?

– I don't think it has to be overly complicated. The EU AI Act is a comprehensive piece of legislation because it covers many areas, but its core is based on developing standards. Many of these standards will likely be adopted not just in the EU but also internationally. Aligning with these standards can be beneficial for any country that does business with the EU.

For countries in Central Eurasia, one approach is to create a regulatory framework that is compatible with EU and international standards. This would help local companies integrate into global markets while maintaining flexibility for domestic needs. But regulation is just one aspect — conceptual alignment is also key. Ensuring transparency, unbiased data, and responsible AI development are universal principles, not just EU-specific ones.

Additionally, countries need to consider their strategic priorities. Do they want to attract international AI companies? Do they want to support local startups and innovation? Or are they looking to strengthen ties with the European market? The chosen strategy will determine the most suitable regulatory instruments. In some cases, adopting existing international agreements on AI, rather than creating an entirely new framework, might be a more practical first step.

– Do you think that aligning with international agreements could be the first step for startups entering this field? Could this be their starting point?

– Yes, I think so. However, my natural inclination is to think about governments first — what can governments do? But if you're a company, your focus should be on the markets you want to enter. If your goal is to expand to the United States, you need to understand U.S. regulations. If you want to enter the European Union, you need to comply with EU rules. The earlier a company understands these regulations and aligns with them, the better.

Some of this compliance work involves ensuring the quality of the data you use and following best practices in data governance. If you don't incorporate these principles from the beginning, adjusting later — after two years of product development — will be extremely difficult.

– When it comes to international collaboration, what role do you see it playing in helping regions like Central Eurasia develop strong AI policies?

– I'd start with the existing international structures. Engaging with these platforms is crucial to understanding global trends and best practices. I assume that some decision-makers in these regions are already involved in international discussions.

At the UN level, there's a high-level working group on AI policy, which is an important initiative. Additionally, in February 2025, Paris hosted a summit involving close to 100 countries — far beyond just the EU. Keeping track of these discussions is essential.

Another important organization is the OECD, which has been working on AI policy and guidelines. Even if a country is not an OECD member, it can still benefit from the organization's research and recommendations.

– Our next question is about specific policy tools from the EU AI Act. Could you highlight the most important tools that could be effectively adopted by Central Eurasian countries? What should be the first step?

– The first step is to establish clear rules. The EU AI Act classifies AI systems based on risk. It applies specifically to AI that poses risks to health, safety, or fundamental rights. Once a system is classified as high-risk, the law requires that it be made as safe as possible.

Beyond setting rules, enforcement is crucial. There are at

least three mechanisms in the EU AI Act that could be adapted elsewhere:

1. **National supervisory authorities.** Each EU member state has an authority responsible for monitoring AI systems and ensuring companies comply with the law.
2. **Regulatory sandboxes**. These are environments where startups can test their AI products while receiving guidance on compliance. This is especially useful for small companies unfamiliar with regulations.
3. **European level institutions**. While more complex, these institutions oversee AI governance at a broader level. Countries outside the EU can study their structure and adapt similar oversight mechanisms within national agencies.

– In terms of competitiveness, how can Central Eurasia improve its position? It is clear that there is room for improvement, but what should be fixed first? What are the key priorities?

– That's a complex question, and the answer will vary from country to country. However, a good starting point is identifying a comparative advantage — what can these countries offer that makes them competitive in AI?

From a European perspective, we often discuss how the U.S. dominates the tech sector, with companies like Google and Microsoft leading the way. The question is: does Europe need to create its own version of Google? Is that even realistic or competitive?

Rather than trying to replicate what already exists elsewhere, it's often more effective to leverage existing strengths. The same applies to Central Eurasia. These countries should focus on their unique capabilities — whether it's talent, data infrastructure, or specific industries where AI can be applied effectively.

So, how do you utilize SMEs effectively? SMEs excel at building applications on top of existing AI models. Once you have a foundational AI model, you can develop thousands — or even millions — of applications on top of it.

One approach for Europe, which also applies to the countries you're advising, is to support SMEs in developing AI applications. Each country should assess its strengths — does it have a skilled but cost-effective workforce? Strong expertise in mathematics and sciences? Depending on these factors, they can identify where they are most competitive within the AI value chain.

Competing on the same terms as major tech hubs isn't always realistic. It's like expecting an elephant to climb trees — it doesn't make sense. Instead, countries should focus on their unique strengths and leverage them strategically.

Of course, this varies from country to country, and I can't say with certainty what the best competitive advantage is for each one. But beyond technical capabilities, political will is also crucial. If politicians are only interested in making media appearances and talking about AI without real commitment, progress will be limited. However, if there is genuine political will to make AI a strategic priority, it opens up many possibilities.

– Based on numerous conversations with startup founders across Central Eurasia, a common concern has emerged: the lack of proactive government involvement. Many have noted that authorities are hesitant to invest in or actively promote the development of the AI sector. This appears to be one of the most significant barriers to progress. While it is uncertain whether this situation will shift in the near future, we remain hopeful for positive change.

The way to change that is to show politicians why it's in their best interest to take AI seriously. AI is a hot topic, and leaders who engage with it gain relevance, visibility, and voter support. If they see AI as an opportunity to strengthen their political standing, they'll be more likely to take action. Without political will, none of the technical solutions we discussed will be implemented.

– But what about companies? What steps can they take to increase their visibility and competitiveness in international markets?

– That depends on the type and size of the company. From my perspective — being in Brussels and focused on the EU — having a presence in international discussions is key.

Companies should participate in global forums, attend trade shows, and, if possible, establish a presence in their target markets. Whether that's the EU, the U.S., or Asia, early engagement is crucial. Many companies focus solely on business development, but at some point, they also need to become visible in policymaking circles. Decision-makers should be aware of their work, as this can influence regulatory developments and open new opportunities.

– How do you see international organizations like the EU or the United Nations shaping AI policies in emerging regions such as Central Eurasia?

– There are two different aspects to consider here. The EU doesn't directly dictate AI policies for Central Eurasia, but because of its market size and influence, it indirectly shapes policies.

For example, if a country wants to align with the EU market, it makes sense to structure its AI policies in a way that's compatible with EU standards. Whether a country

prioritizes innovation, fundamental rights, or funding, understanding how the EU approaches these issues is beneficial. This is part of the so-called "Brussels effect" — when the EU implements a major regulation, it often becomes a global standard. We saw this with the General Data Protection Regulation (GDPR), and AI regulations could follow a similar path.

The UN, on the other hand, operates differently. Because it involves so many stakeholders, its policies tend to reflect the lowest common denominator — broad principles rather than strict regulations. However, it remains an important space for shaping global AI governance. Countries should actively participate in these discussions, not just to follow international trends but to help shape them.

– Central Eurasia has a major issue with political leadership. Based on your experience, what are the biggest challenges in implementing AI regulations effectively at the regional level? And what advice would you give to politicians in these countries?

– Well, the most effective way to frame this for politicians is to highlight how engaging with AI governance can help maintain their popularity. AI is becoming a critical issue globally, and leaders who fall behind risk losing relevance — not just domestically, but also on the international stage. AI governance is increasingly linked to investment opportunities and global influence, so being part of these discussions is essential.

On a practical level, there are two things that are absolutely necessary — no matter how ambitious the plans are.

1. **Funding**. Talking about AI strategy is one thing, but without real financial investment, nothing will happen. Governments need to allocate resources to establish AI agencies, regulatory sandboxes for startups, and innovation hubs. Without funding, these initiatives will remain just empty promises.
2. **Talent and skills.** Even with the best intentions and significant funding, the AI policy will fail without skilled professionals. Governments need to prioritize STEM education, support research and innovation, and invest in universities that produce top-tier graduates. Another major challenge is talent retention — big companies like Microsoft can easily attract local talent with high salaries. If governments want to build a sustainable AI ecosystem, they need to create incentives and opportunities that encourage top talent to stay and contribute to local development.

So, in short: political will, funding, and talent development are the three key factors for success.

Andrei Khrapavitski, Developer in Large Language Models, Head of R&D Initiatives, Results-CX

– What key factors make the U.S. a comfortable environment for AI startups?

– Several factors contribute to the overall favorable environment for startups in the U.S., particularly in the AI sector. Strong funding opportunities provide access to venture capital, angel investors, grants, and other financial sources. Supportive government policies and business-friendly regulations minimize bureaucratic barriers, with laws designed to encourage innovation. The U.S. offers access to cutting-edge research and top talent, fostering close collaboration between startups, universities, and research institutions. Additionally, the country has a well-established infrastructure and ecosystem, with a large domestic market and technical conditions that enable rapid growth. This allows startups to scale quickly and invest heavily in R&D, train flagship AI models, and build a robust infrastructure for inference, all of which are crucial for AI startup success.

– How do government institutions and regulations in the U.S. support tech business growth?

– One of the most important aspects is not necessarily direct government support but rather the fact that authorities do not obstruct business growth. Establishing a business in the U.S. is easy, and the regulatory environment is designed to facilitate private enterprise. However, at the highest level, there is also recognition that leadership in technology is a matter of national interest. Examples include the CHIPS and Science Act (2022), an initiative under Biden aimed at boosting domestic semiconductor manufacturing and supporting technological research. Additionally, reshoring policies are in place to bring manufacturing back to the U.S. and attract more investment, particularly in the energy sector, which is critical for tech companies that rely on energy-intensive data centers. This approach ensures that while businesses operate freely, strategic industries receive targeted support to maintain U.S. technological leadership.

– How important are venture investments, and what alternatives exist in the U.S.?

– Venture capital plays a crucial role in the growth of tech startups in the U.S. VC firms provide not only financial backing but also industry connections and mentorship. However, startups have multiple funding alternatives. Angel investors, who are private individuals willing to invest in early-stage startups in exchange for equity or convertible debt — offer another route. Crowdfunding platforms like Kickstarter and Indiegogo enable startups to raise small amounts of capital from a broad audience, often in exchange for early product access or other incentives. Additionally, government grants and innovation programs offer non-dilutive funding aimed at specific industries or social challenges. Traditional bank loans remain an option, requiring collateral and financial guarantees. Startups in the U.S. can combine multiple funding sources, creating a flexible and accessible investment ecosystem that fuels the growth of new tech companies.

– What barriers exist for startup development in Central Eurasian countries?

– The countries in this region are highly diverse, and so are their challenges. However, some common obstacles stand out: bureaucratic hurdles and complex regulatory procedures, limited access to global markets, difficulties in attracting investment and investor risks, as well as a lack of infrastructure and ecosystem support. It is incredibly challenging to develop any kind of business when the situation can turn 180 degrees overnight, as happened in Belarus in 2020, or when we see sudden policy shifts in Georgia. Investors value predictability. For founders, the business climate is crucial, along with the ability to attract and retain talent — something that becomes nearly impossible if a country engages in war or decides to roll back its development by 20 years.

– Can we say that startups in Central Eurasia face systemic constraints (government regulation, lack of investors)?

– Yes, yes, and yes. This is a common struggle for the region. However, I would suggest looking at Estonia and Lithuania. These small post-Soviet states have successfully tackled many systemic issues. There are good examples to follow, meaning that this experience can be replicated!

– How does the political system influence innovation? What examples show that open economies are more successful in technology?

– The impact is profound. Various global rankings consistently show that the most innovative countries tend to be liberal democracies with open economies and a business-friendly environment. Innovation thrives not only in economically free but also politically free nations. Freedom of expression and the exchange of ideas play a critical role in technological progress, along with political stability and predictability. Among the most successful innovation-driven countries, we see Switzerland, Taiwan, South Korea, many EU nations, and the U.S.

– Is it possible to build tech companies in closed regimes? What are the key limitations?

– It is possible to try. If a country has a large enough pool of qualified professionals and a sizable internal market, success stories can emerge, as seen in China. However, even in China, developing a successful business is full of obstacles, internal restrictions, and hidden challenges. The Chinese model is, in many ways, externally oriented. It is hard to imagine China's success without a prolonged period of economic liberalization, the ability to export products to the U.S. and global markets, which, in turn, led to rapid growth, increased domestic consumption, and created opportunities for Chinese startups. Investments in innovation and higher education also played a key role.

That said, China is far from an ideal example. Chinese startups face massive challenges. In 2024, China's venture capital market experienced its harshest decline, reaching the lowest total venture funding level since 2014, with only about $20 billion invested, according to Crunchbase data. Overall, venture funding in China dropped 32% from 2023, reaching just $33.2 billion last year. Economic slowdown and increasing regulatory oversight have led to IPO freezes, forcing investors to demand the return of their capital.

Returning to the core question, economic liberalism, business and personal freedom, political stability, and predictability are the key drivers of success. Without them, startups will struggle.

– What needs to change in Central Eurasian countries for IT businesses to develop like in the U.S.?

– First and foremost, the mindset. There is a need to stop clinging to the past as if it holds all the answers. Understanding history — not just of one's own country, but of all humanity — is essential as a tool for learning from past mistakes. There is no secret knowledge about which political and economic models work and which do not.

Many older people, including in the U.S., believe that the past was better. But it wasn't. They were just younger, remembering the most vibrant moments of their lives. This is why many elderly people in Eurasia reminisce about the Soviet era and dream of returning to it. This is a flawed way of thinking. Instead of searching for solutions in their own past, these countries should focus on projecting possible futures, drawing from both positive and negative experiences worldwide.

The U.S. attracts people from all over the world like a magnet because it is not a country of the past — it is a country of the future. Many see opportunities here,

whether for themselves or their children, to earn money, build a successful business, and create something new.

The U.S. embodies the Hollywood-glorified image of a pioneer nation, where people are willing to risk everything for an uncertain but ambitious goal. "What if it works?"— this is the mindset of every successful founder.

The U.S. is truly a multicultural, open society — even if recent news might make it seem otherwise. But even in this more isolationist period of American politics, the essence and spirit of the country remain unchanged. This openness, spirit of freedom, pioneering mentality, and multiculturalism are exactly what I would wish for the countries of this region.

– How realistic is it to create a successful startup in the region and then move it to the U.S.? Are there any cases?

– Yes, there are such examples. Companies like EPAM and Grammarly come to mind, which started in the region and later expanded to the U.S. However, I don't have specific insights to share on this matter.

– What is behind the "will for political change"? Should it come from the bottom — entrepreneurs — or from the top — the government?

I believe that the desire for freedom exists in many people around the world, even if it doesn't always show up in public opinion polls. Some processes can take a long time to build up but then unfold suddenly — just like unicorn startups! Many people are not willing to take risks unless they sense that the right moment has arrived. That was the case in Belarus — who would have thought that in 2020, such massive protests would arise? People want a better life for themselves and their children.

It's best when this understanding exists within governments as well. But for that to happen, power needs to change regularly. The worst scenario is when power remains in the same hands for too long. That leads to a loss of connection with reality, economic stagnation, young people seeking opportunities abroad, and — potentially — the gradual buildup of a collective will for change, waiting for the right moment to fully manifest.

Paul DeMott, Chief Technology Officer, Helium SEO

– Could you start by introducing yourself and your work in AI? What aspects of AI development are you most focused on?

– My work mainly focuses on blending advanced AI technologies with marketing strategies to deliver scalable, efficient and innovative solutions. Mainly, I make AI as my tool in helping businesses in their reach and growth in the digital scene. Over the years, I have been fortunate to lead teams working on AI applications that make businesses smarter, faster and more adaptive to changing market conditions.

– From your experience, what are the most critical factors that enable a country to successfully develop AI at scale?

– First of all, you need a strong base of skilled people who understand AI, machine learning, and data science. This means investing in education, from universities churning out graduates with these skills to vocational programs that train people for more specific AI-related jobs. Beyond formal education, there's a need to encourage continuous learning. AI is moving so fast, and professionals need ways to keep their skills up to date through workshops, online courses, and research opportunities. At Helium SEO, we're always looking for talent, and it is not easy.

Then you've got to have data and lots of it. AI models are data-hungry beasts. A country needs to have policies that promote the collection, sharing, and proper use of data while at the same time also protecting people's privacy. Think about initiatives that encourage open data sets, government support for data infrastructure, and partnerships between industry and research institutions to share data resources. This whole area is tricky and needs a lot of thought to get it right. I've seen companies struggle when they do not have enough training data.

Finally, and this is huge, a country needs to commit to AI for the long haul. It's not a short-term investment. This means government funding for AI research and development, incentives for companies to invest in AI, and a regulatory environment that supports innovation. It also means building a culture that is open to experimentation and willing to take risks. AI is still new, and not everything will work out as planned. I think governments can even help by being early adopters of AI tech, using it to improve public services and driving demand for AI solutions.

– How important are government policies and regulations in fostering AI growth? Are there any best practices from highly developed AI ecosystems that emerging markets should adopt?

– Government policies and regulations are incredibly important for driving AI growth because they set the foundation for innovation while addressing risks. Policies that balance innovation with ethical considerations ensure that AI development benefits society as a whole, not just a select few. AI's involvement in a state should be subject to policies and regulations in the form of legislative acts meaning, there should be a law behind it. In the first place, a law should be made before starting to engage with AI in a certain government so that everything that AI does in a government setting is according to the promulgated law that came before its integration. If you ask me what policies should be there in order to foster AI growth, I'd say focus on policies that promote flexibility, encourage experimentation, prioritize societal benefits, and foster international cooperation are essential for fostering sustainable AI growth.

Looking at successful AI ecosystems like the U.S., UK, and EU, there are several best practices emerging markets can adopt. For instance, the U.K.'s principle-based regulatory framework focuses on flexibility and proportionality. Instead of rigid rules, it allows regulators to adapt to the context in which AI is deployed. This minimizes unnecessary burdens on businesses while addressing risks like transparency and safety. Emerging markets could benefit from adopting similar adaptable frameworks that encourage innovation without stifling smaller players

The U.S., on the other hand, places significant emphasis on public-private partnerships and funding for foundational AI research. By prioritizing areas like healthcare, urban systems, and public welfare, the government ensures that AI development addresses societal challenges rather than just consumer markets. Emerging markets could replicate this by identifying local challenges where AI can make a tangible impact and directing resources toward solving them.

Lastly, international collaboration is critical. High-income countries sharing expertise and technology with emerging markets can bridge gaps in infrastructure and skills. This creates opportunities for shared growth while ensuring global ethical standards are upheld. Emerging markets should actively engage in such partnerships to accelerate their AI adoption journey.

– What role does infrastructure — such as cloud computing, data centers, and internet accessibility — play in AI adoption? Where should countries in Central Eurasia focus their efforts?

– Think of cloud computing as the backbone. It provides the scalability and processing power needed for AImodels, especially since machine learning involves a ton of data crunching. You need reliable data centers to store and process that data efficiently. Without these, AI development becomes slow and expensive. Then there's internet accessibility. If a country has poor connectivity, it's tough to deploy AI solutions widely, whether it's for agriculture, healthcare, or smart cities. In Central Eurasia, I believe the initial push should be on strengthening these core areas. I would prioritize investments in cloud infrastructure and expanding high-speed internet access to both urban and rural regions. Maybe governments can incentivize private companies to build data centers by offering tax breaks or subsidies. There could be programs that focus on training people to maintain these infrastructures, because you need a skilled workforce, after all.

– Talent development is a common challenge in emerging markets. What strategies have been most effective in building a strong AI workforce in advanced economies?

– From my experience, advanced economies invest heavily in AI-related education programs at all levels, from universities to vocational training. I am talking about specialized AI courses and also integrating AI concepts into more traditional fields. A great example of this is how many universities are now offering joint degrees in business and data science. This helps bridge the gap between technical AI development and its practical application in various industries. Education is not a one-time thing. I believe a major thing that can influence the strength of the AI workforce is the emphasis on creating a culture of continuous learning and innovation. This involves supporting ongoing professional development, encouraging experimentation, and providing opportunities for employees to learn new skills and stay updated with the latest AI advancements. I've seen many companies implement internal AI training programs and encourage employees to attend conferences and workshops. They are also creating internal AI communities where employees can share knowledge and collaborate on projects.

– AI research and innovation often depend on funding. What types of investment models (public, private, VC, etc.) have proven most effective in accelerating AI growth?

– Public funding, through government grants and initiatives, is essential. It often supports early-stage, high-risk research that private investors might shy away from. These funds can kickstart groundbreaking projects and create a foundation of knowledge that others can then build on. For instance, government-backed programs have helped universities and research institutions make significant strides in machine learning algorithms. I've also observed that corporate investment is becoming increasingly significant. Large tech companies often have

dedicated AI research divisions and investment arms. These corporations can provide not only funding but also access to vast amounts of data, computing resources, and market expertise, which is a tremendous advantage for AI development. The ideal scenario, in my experience, involves a synergy between these models. You get public funding for basic research, VC funding for startups turning those discoveries into products, and corporate investment for scaling and integration into existing platforms. Each type of investment plays a specific role in the AI ecosystem, and they all help to accelerate growth.

– Many Central Eurasian countries face regulatory uncertainty around AI. What key aspects of AI governance should they prioritize to create a balanced environment for innovation and ethical AI use?

– If Central Eurasian countries want to navigate the AI landscape effectively, a few things should be top of mind. I'm talking about principles that ensure AI systems are fair, transparent, and accountable. Think about it: you wouldn't want an AI making biased decisions that affect people's lives, right? So, governments need to work with experts to define what's acceptable and what's not. And, as I mentioned earlier, laws should be promulgated even before integrating AI into the government and that will make way into data governance. These countries need to figure out how to manage data responsibly, especially when it involves personal information. This means putting in place rules about how data is collected, stored, and used to train AI models. People need to trust that their data isn't going to be misused, or they'll be wary of AI altogether. Countries need to create a regulatory environment that encourages experimentation while also protecting people's rights and safety. It's a balancing act, but it's essential for Central Eurasian countries to unlock the full potential of AI while minimizing the risks.

– How important is international collaboration for AI development? What can countries in Central Eurasia do to better integrate into global AI research and business networks?

– When different countries collaborate, they can pool their strengths, avoid duplicating efforts, and accelerate the pace of innovation. For example, one country might have a strong focus on AI ethics and safety, while another might excel in developing cutting-edge algorithms. By working together, they can create AI systems that are not only powerful but also responsible and aligned with human values. Now, when we talk about Central Eurasia, there are some specific things those countries could do to better integrate into global AI research and business networks. First, I would suggest they invest in education and training programs to develop a skilled AI workforce. This includes not just technical skills like machine learning and data science, but also soft skills like communication, collaboration, and critical thinking. It's also important to support local AI startups and entrepreneurs, providing them with funding, mentorship, and access to international markets.

– What are the most promising AI-driven industries for emerging markets like those in Central Eurasia, and how can they position themselves for success?

– First, think about industries where AI can solve very specific problems that these markets face. I see a ton of potential in agriculture. Imagine using AI to optimize irrigation, predict crop yields, or even identify diseases early on. That could seriously boost food production and reduce waste in a region where those things can be a real challenge. I recall a time when helping an agriculture client, their yields increased significantly because AI was able to optimize their irrigation! Then, there's the healthcare sector. Telemedicine powered by AI can bring medical expertise to remote areas, while AI-powered diagnostics can help with early detection of diseases. Education is another great area. AI can personalize learning experiences, making education more accessible and effective for students in these markets. In order for this to happen, talent and partnerships should be nurtured. I believe that governments and educational institutions should invest in training programs to build a local AI workforce. Also, these countries need to create a regulatory environment that encourages innovation while also protecting consumers. Think of clear rules around data privacy and security. Partnerships are also essential. These emerging markets can team up with established tech companies and research institutions from around the world to gain access to knowledge, resources, and investment. I can remember partnering with a startup company that specializes in AI, to solve our current issues with one of my clients, which proved to be very successful. I think that focusing on real-world problems, investing in talent, creating the right regulatory environment, building partnerships, and specializing in niche areas is the path to success for emerging markets in the AI space.

– Looking ahead, what are the biggest trends in AI that developing regions should be preparing for now?

– Personally, I think we should keep an eye on AI-powered automation. We use automation all the time in our SEO work to analyze data, optimize campaigns, and generate reports. Developing regions can implement this to streamline their industries, from agriculture to manufacturing. With automation, small businesses can compete with larger corporations. Also, it could free up their workforce to focus on higher-value tasks. Think

about it, AI handling repetitive tasks and people focusing on innovation and creativity.

Also, I think the growth of AI-driven cybersecurity is something to watch. Security is a big deal for any region, but it is especially important for areas that are still developing their digital infrastructure. I suggest they invest in AI cybersecurity, because it can proactively identify and respond to threats in real-time. This technology can protect critical infrastructure, businesses, and citizens from cyberattacks. The key is not just to adopt the technology, but also to develop the expertise to manage and adapt it to the region's specific needs.

Andrii Fediv, Digital Marketer, Sembly AI

– Could you please introduce your initiative and the AI-powered solutions you are working on?

At Sembly AI, our flagship solution is an Augmented Worker Intelligence tool: Semblian 2.0, which turns meetings into actionable outputs, producing ready-to-use documents, tailored reports, and strategic insights with minimal human input.

By aligning meeting outcomes with individual and team objectives, the platform crafts next-step deliverables that are 80% complete, allowing employees to concentrate on high-impact tasks.

In practice, Sembly AI records virtual meetings (Zoom, Microsoft Teams, Google Meet, etc.), uses natural language processing to turn speech into text and to generate intelligent meeting notes and insights. By leveraging machine learning for speech recognition and language understanding, we help organizations save time and capture knowledge seamlessly.

In short, we're using AI to supercharge employee productivity by generating hyper-personalized deliverables in Word and PDF formats, streamlining post-meeting workflows, and creating space for strategic innovation.

– How has AI transformed agriculture and supply chain management in highly developed economies?

– AI has completely reshaped agriculture and supply chains in developed countries. Farmers now use tools like AI-powered drones and sensors to monitor crops, manage water use, and precisely apply fertilizers.

This technology helps increase yields, cut costs, and make farming more sustainable. Cloud-based AI systems digest data and provide recommendations — for instance, Microsoft's FarmVibes AI can analyze soil nutrient levels, weather forecasts, and even satellite imagery to suggest precisely how much fertilizer or water different parts of a field need.

For example, Ukrainian farmers collaborate with companies like Nibulon, using AI drones for detecting landmines, ensuring safety and productivity.

– What role does AI-driven data analytics play in optimizing supply chains and precision farming?

– AI-driven analytics simplify decision-making in farming and logistics. In agriculture, AI tools take complex data from fields — such as soil moisture or weather patterns — and give clear recommendations to farmers about what actions to take.

By crunching data that would overwhelm a human, AI helps farmers decide when to plant, irrigate, spray, or harvest for maximum yield. This takes a lot of the guesswork out of farming.

In supply chains, AI analytics help businesses accurately forecast product demand, optimize inventory, and streamline logistics, which reduces waste and saves resources.

– What are the biggest barriers to AI adoption in agritech and logistics, particularly in emerging markets?

– The main barriers in emerging markets are limited access to technology, high upfront costs, and low digital skills among users.

Many small farmers can't afford expensive AI equipment, and local conditions might lack the data needed to train AI systems effectively. Additionally, unreliable infrastructure like electricity and the internet hampers adoption significantly.

These barriers highlight that technology alone isn't enough — support systems (training, financing, infrastructure) need to improve in tandem.

– Considering regions like Central Eurasia, what infrastructure or policies would help accelerate AI integration in agriculture?

– In Central Eurasia, improving internet and electricity infrastructure is key — this ensures farmers can actually use AI tools. Additionally, governments should focus on

policies that educate farmers on digital skills, subsidize technology costs, and promote cooperation among countries. If farmers have better internet connectivity and are trained to use new technologies, AI adoption will naturally speed up.

On the policy side, governments can do a lot to accelerate AI adoption. One key step is investing in human capital — training and education so that farmers and agri-business workers know how to use digital tools.

The region should pursue a twin approach: build out the tech infrastructure (internet, IoT, power) and implement forward-looking policies (education, funding, and regional cooperation) to create an environment where AI in agriculture can thrive.

– How important is access to IoT, cloud computing, and high-speed internet for AI-driven agritech solutions?

– These three elements are essential — without IoT sensors, cloud computing, and fast internet, AI solutions simply won't work effectively. IoT sensors collect data from fields, cloud computing processes that information quickly, and high-speed internet keeps everything connected and running smoothly.

Without solid internet access, the feedback loop breaks, limiting the value farmers get from these advanced tools.

– What lessons from successful AI-driven agriculture models in developed countries could be applied to emerging economies?

– Emerging markets can learn from developed countries by focusing first on education and clear communication with farmers.

Demonstrating the practical benefits of AI through local pilot projects helps build trust. Additionally, technology should be adapted specifically for small farms rather than assuming what works in large industrial settings will always fit local needs.

It is not about copy-pasting what worked in Europe but rather about tailoring AI tools to local farming practices. In some cases that might mean simpler mobile-based apps in local languages, or AI services offered through cooperatives so that even modest-scale farmers can benefit.

– What policies or financial incentives have been most effective in supporting AI agritech startups globally?

– Globally, the most effective supports have been innovation grants, tax incentives, and public-private partnership programs.

The European Union's initiatives, such as Horizon Europe and the €60 million agrifood TEF project, are great examples. These programs give startups the resources and support needed to test, refine, and scale their AI products successfully.

– How can partnerships between international agritech firms and local startups drive AI adoption in Central Eurasia?

– Partnerships between global companies and local startups are essential because they combine international expertise and resources with local market knowledge. International companies provide advanced technology, while local startups adapt these solutions to regional needs.

This collaboration significantly boosts AI adoption by building trust and offering tailored solutions to local markets. As an example, Kyrgyzstan's proposal for a Regional AI Hub in the Eurasian Economic Union aims to foster exactly this kind of large-scale cooperation and skill-sharing among member states. For Central Eurasia, which is very diverse, this approach helps ensure AI solutions are both cutting-edge and context-appropriate.

– Looking ahead, what do you see as the most impactful AI-driven trends in agriculture and how can developing regions prepare?

– First, invest in the foundational infrastructure — without electricity, fast internet, and basic mechanization, these advanced tools can't operate.

Second, focus on skill-building: training a new generation of farmers, agronomists, and tech specialists comfortable with data and technology. This might mean updating curricula in agricultural universities to include AI and data science or offering vocational training on using drones and farm management software.

A Cornell analysis on emerging markets highlighted building telecom infrastructure and investing in AI/ML education as essential first steps for harnessing AI's potential.

Third, develop supportive policies and incentives, such as innovation grants and partnerships (perhaps with companies from more advanced markets) to transfer knowledge. Small-scale pilot projects can help regions adapt these technologies effectively, positioning them well for future growth.

Ilia Badeev, Head of Data Science, Trevolution Group

– What are the key barriers preventing AI development in a country with potential, and how can they be overcome?

– Obviously, the key barriers are lack of people, infrastructure, and desire to develop AI. But let's say all the parameters are there. Let's say a country has a lot of people, smart people, and it has the infrastructure and the desire, then the key barrier will definitely be the legal part or the bureaucracy surrounding AI as well as international competition. That's what we can see right now, for example, between China and the U.S. Both countries have the highest AI potential globally. They both exert pressure on each other: marketing, branding, cost, legal, and AI chip pressures. And that obviously stifles progress.

– What policies and government initiatives could accelerate AI adoption across industries?

– Laws help by keeping the industry balanced — neither overregulated nor underregulated. So proper regulation and continuous feedback from businesses, startups who are developing AI, various social partners, and NGOs.

– How can AI talent be nurtured locally, and what role should universities and private sector partnerships play?

– It's good to think beyond just local talent and try to attract foreign students to battle the classic brain drain problem. The combination of both is the success factor and that's why the U.S. is so advanced in AI. When it comes to local talent specifically, the university is the lock, but partnerships are the key. It is important to incentivize fresh graduates to stay in the country and to apply their knowledge in their country. Job opportunities are always beneficial, especially for students in applied disciplines, who focus on practical and industry-relevant skills.

– What industries in an emerging AI market have the most potential to benefit from AI, and how can AI integration be incentivized?

– So, AI will affect all the industries that are right now overpopulated by people and underpopulated by technology. A simple example: a plant or a factory with 10 engineers overseeing 100 robot assembly lines won't really experience that big of an AI impact, since the environment already relies so much on programming.

Whereas industries that are heavily reliant on human workforce — apart from schools, healthcare and emergency services, of course — will encounter AI more and more, and it will either make their business or product more efficient. The integration should follow basic free market principles — if it makes business sense, it should probably be implemented. The main incentive for AI integrations should be commercially beneficial.

– What infrastructure improvements (e.g., data centers, computing power, broadband expansion) are necessary to support AI growth?

– First of all, a high-speed and reliable internet is crucial. Because even if you don't have local data centers, you can use AI-as-a-service, in the cloud, basically. But without a stable data connection none of the options work. The internet is the modern road. If you don't have these modern roads, then it doesn't matter how many plants or data centers you will build, if you can't access them reliably.

The second prerequisite for a data center is to have cheap, available electricity. And the third and most important part of the equation is the GPUs. You need to buy a lot of them, and there is huge demand for them right now. In addition, GPUs have a wholesale premium. If you buy more, you pay more. Also, cooling needs to be factored in — so access to water.

– How can businesses be encouraged to integrate AI into their operations despite high initial costs and technological gaps?

– Actually, the initial costs for AI, especially if you use it as a solution as a service, are relatively affordable. The number of startups right now proves it. If it gives a competitive advantage and makes business sense, then it's a good business decision.

– How can AI be adapted to local languages and cultural contexts to maximize impact?

– Oh, that's a big problem. You need the local language datasets, massive language datasets and a lot of them. Some countries really struggle with that. But large data sets are the answer — for both language and cultural context. You need a lot of cultural content, literature, documents, etc. produced in your language.

– What role should open-source AI tools and regional cooperation play in accelerating AI development?

– AI has historically been open source. It's been a crucial part of developing AI. AI wouldn't be at this stage right now if it wasn't open sourced. The same goes for international or regional cooperation — you can do more if you work together. Instead of competing on AI development, regional countries can cooperate in the sense of maybe establishing a joint data center, as it can be too big of an undertaking for one country to do it alone. Think of the Large Hadron Collider in Switzerland. It's a joint European project for the common good. Everyone chips in some money, and you end up with the most advanced scientific endeavor in the world, which is cool.

Fei Chen, Founder & CEO, Intellectia AI

– During the pre-interview conversation you mentioned the need for advanced cloud computing, fast connectivity, and GPU access. Which specific infrastructure improvements do you believe Central Eurasian countries must prioritize first (e.g., data centers, broadband expansion, digital hubs) to see a tangible impact on AI adoption?

– To see tangible AI adoption, the countries of Central Eurasia must first prioritize the development of data centers so that the local AI models can be trained successfully. Currently, there is limited GPU availability and costly cloud computing preventing AI scalability. High-speed broadband and 5G network development are also necessary, particularly in rural and industrial areas where connectivity gaps remain.

Building digital hubs and AI innovation zones in major cities can also encourage uptake by making available shared computing capacity, storage capacity, and joint AI research facilities.

– While Uzbekistan and Kazakhstan have kickstarted national AI strategies, what strategies have you seen work best for attracting foreign direct investment (FDI) and venture capital to AI-driven startups in emerging markets? Are there any unique incentives or programs that Central Eurasian nations might adopt?

– Effective FDI in new AI markets normally involves tax benefits, startup-friendly regulations, and government-sponsored venture capital schemes. Kazakhstan and Uzbekistan have taken the right steps but can do more in providing grants for AI R&D, AI startup regulatory sandboxes, and simplified visa regimes for AI entrepreneurs. Singapore and Israel have already shown the model of government co-investment alongside private VC partnerships, which would be equally applicable in Central Eurasia.

– Given that much AI research and funding come from private firms, how can government agencies effectively collaborate with private sector partners or foreign investors? What lessons from other regions might Central Eurasian policymakers learn when designing public-private AI programs?

– Governments need to be in a collaborative "triple helix" mode in which academia, private industry, and government agencies work together to create AI programs. A key lesson from Europe is that public-private AI partnerships function effectively when governments offer direct investment for industry-sponsored AI research. Kazakhstan, for example, can introduce AI-dedicated procurement programs in local government agencies where they outsource local AI businesses for automation, cybersecurity, or smart city solutions, thereby inducing demand and driving innovation.

– You mention that upskilling courses and AI bootcamps can help address the talent gap. Which models for AI training and industry-academic partnerships have you seen succeed globally, and how might they be adapted to countries with more limited resources?

– The leading AI training models in the world are university-industry collaboration and bootcamp training. Central Eurasian countries would initiate intense AI certification programs with global tech leaders (e.g., Google, Microsoft, NVIDIA) and sponsor AI PhD research programs to create regional thought leaders. A nimble model would be AI apprenticeships, where students alternate studying and applying AI in the government or private sector.

In order to lure AI talent, nations should be able to provide competitive salaries, career development opportunities, and R&D incentives. One approach is to establish AI research fellowships with guaranteed grants to in-country AI projects, such as Canada's AI supercluster program. The establishment of AI-dedicated free economic zones with tax incentives and investment for AI specialists, such as Dubai's AI hub, would also be appealing to local and international AI specialists.

– In our conversation before the interview you mentioned that Central Eurasia may be on the verge of becoming an AI hub. In your view, which countries in the region are currently best positioned to lead this transformation, and what critical steps must they take next to solidify that leadership?

– Kazakhstan is now set to lead AI development in Central Eurasia due to its government-driven AI investments, evolving digital infrastructure, and early adoption of AI in industries like mining and finance. Uzbekistan, thanks to its ambitious AI strategy and digital schooling initiatives, is also a strong contender.

Nevertheless, to lock in AI leadership, these countries need to expand AI pilot programs to nationwide deployments, develop cross-border AI collaborations, and align AI strategies with international standards to attract foreign tech firms.

– Looking ahead, what would you consider the biggest near-term opportunities and risks for AI development in Central Eurasia, particularly with respect to global economic shifts or emerging technologies?

– The greatest near-term potential of AI in Central Eurasia lies in the automation of manual-intensive sectors like mining, agriculture, and logistics — fields in which AI-driven efficiency gains would be transformative. AI-driven fintech can also redefine financial inclusion in Central Eurasia.

Nonetheless, among the key risks is overdependence on foreign AI technologies without developing domestic expertise, which could constrain long-term autonomy. Geopolitical risks, including sanctions on AI chip imports, can also derail progress if countries do not create domestic semiconductor and AI hardware ecosystems.

AI can potentially turn Central Eurasia into a competitive player in global innovation. To do this, however, the region requires strategic investment, regulatory vision, and robust industry-academic collaboration. If all these come together, Central Eurasia can place itself as a rising AI superpower within the next decade.

Karine Caunes, Executive Director, the Center for AI and Digital Policy

– What are the primary challenges AI companies in Central Eurasia face when developing and deploying AI technologies?

– Key challenges include loss of control, risks to fundamental rights, security, and safety, along with the need to invest in locally driven, human-centric innovation.

– How do regional legal frameworks and regulations impact the growth of AI initiatives?

– Regional legal frameworks and regulations can either stimulate sustainable innovation and correctly allocate responsibility within the value chain or they may end up placing liability solely on deployers when users' fundamental rights are violated.

– Are there specific infrastructural or talent gaps hindering AI innovation in the region?

– The foremost need is for interdisciplinary skills and competencies. Collaboration and coordination play a crucial role.

– What role can governments and policymakers play in creating a more supportive ecosystem for AI companies in Central Eurasia?

– Governments can establish regulatory sandboxes, launch AI literacy programs, and promote human-centric innovation.

– Are there successful examples of partnerships or initiatives in other regions that could be adapted to support local AI development?

– An example could be collaboration with UNESCO and participation in the AI Safety Institutes network.

– How can international organizations, including the Center for AI and Digital Humanism (Digihumanism), assist in addressing the challenges specific to this region?

– We can offer expert advice to governments in developing or refining national AI strategies, setting up independent supervisory authorities, and conducting fundamental rights impact assessments.

– How would you assess the current state of AI development in Central Eurasia compared to other regions?

– It's neither the best nor the worst; what matters are the objectives.

– What competitive advantages, if any, do AI companies in Central Eurasia possess on the global stage?

– They understand the local ecosystem and language, which demonstrates that development might not be as expensive as assumed.

– Are there specific sectors or industries where the region demonstrates promising AI applications?

– There is potential to establish strong positions in local industries, especially if efforts are united to present a common front and develop shared strategies, but alignment in values is necessary.

Practitioners and Innovators

Regional Perspective

Armenia

Suzanna Shamakhyan, Executive Director, Foundation for Armenian Science and Technology (FAST)

– Can you tell us about FAST and its role in supporting AI and technology development in Armenia?

– Founded in 2017, FAST emerged from the vision of the Armenian diaspora, with the aim of transforming Armenia into a global innovation and AI hub. The foundation focuses on ecosystem building that spans the full innovation cycle — from education to the commercialization of science.

By analyzing Armenia's strengths and gaps and determining where we can contribute to the global value chain, we ensure that our strategies are impactful and sustainable. We take a holistic approach to technology development in Armenia and are focused on designing and piloting solutions that foster ecosystem development, ensuring scalability and long-term, systemic impact. A key aspect of our strategy is spinning off successful models, enabling them to grow independently and expand their influence across the ecosystem.

– Do you collaborate with the government, universities, or businesses?

– We work closely with all key stakeholders, including the government, development agencies, non-profits, academia, research institutes, universities, startups, industry, and schools.

A fundamental aspect of our approach is to facilitate cross-sector collaboration. By engaging a wide array of stakeholders, we are able to bridge gaps and catalyze meaningful progress across different sectors.

With regard to government partnerships, we contribute to the design of policies, the development of strategic initiatives, and the piloting of key projects. As a private-sector partner, we test proof-of-concept initiatives, and once they have been refined through implementation, we collaborate with government entities to scale them, ensuring their integration into the broader system for long-term impact.

A notable example of such a collaboration is our Generation AI High School Project, which we are currently scaling nationwide, providing students with competencies to create and lead in the rapidly advancing field of AI.

– How would you describe the current AI landscape in Armenia?

– Armenia's engagement with AI began around 2017, when the first AI research labs, conferences, training programs, and data analytics initiatives were established. Prior to this, the country had solid foundations in related fields, such as computer science and mathematics. However, dedicated AI and machine learning initiatives only began to take a structured form in recent years.

Today, Armenia has a growing AI ecosystem, with several notable startups, including the unicorn Picsart, and around 10-12 companies at the Series A and B stages. There are also many early-stage startups in the seed and pre-seed phases. As the industry expands, the demand for AI talent continues to grow, leading to the development of new master's programs, boot camps, and upskilling initiatives. On the research front, several academic teams and laboratories are producing internationally recognized publications. FAST has supported four to five international AI research teams in Armenia through its ADVANCE Research Grants, a model that has since been adopted by the Armenian government as a model to finance research projects. Universities have also started integrating AI

into their programs. For instance, the French-Armenian University, in collaboration with the University of Toulouse, now offers dual-degree programs focused on AI.

Together with the Minister of Education, Science, Culture, and Sports, we have been implementing the Generation AI program, which integrates advanced mathematics and AI curriculum in public schools. This program complements a broader STEM education reform supported by the EU and the World Bank. Unlike basic AI literacy programs, this initiative focuses on in-depth AI education, mathematics, and computer science to prepare future innovators, R&D engineers, and entrepreneurs.

– What are the biggest challenges AI companies and researchers face in Armenia?

– The key challenges faced by AI companies and researchers in Armenia are primarily related to scalability and maintaining quality. Despite significant potential and the contributions of the Armenian diaspora in terms of talent and networks, expanding AI businesses remains difficult due to a shortage of senior-level professionals. AI, as a rapidly evolving field, requires experienced specialists who are in high demand, while junior-level roles are increasingly being automated.

Furthermore, many local and international companies seeking to expand in Armenia encounter difficulties in finding a sufficient supply of qualified and affordable top talent. Addressing this talent gap will take time, but once resolved, it will enable the growth of R&D teams within existing companies and enhance Armenia's attractiveness to global tech giants.

The country also lacks advanced AI research programs, such as doctoral programs or specialized research centers. To address this gap, both FAST and the government are working with principal investigators (PIs) from the Armenian diaspora to establish PhD programs and research labs. Successfully bringing in a number of PIs could significantly strengthen AI research in Armenia. At the policy level, Armenia is in the process of developing a national high-tech strategy, with AI as a priority sector. Defining a clear vision is crucial — what does it mean for Armenia to become an AI hub, what will the industry's expected size be, and which AI niches should be prioritized? These are essential questions that policymakers and the tech ecosystem should address. Additionally, AI governance and regulations must be addressed, particularly regarding the balance between private sector-led development and state regulation. These decisions will shape the future of AI in Armenia and could significantly boost the growth in the sector.

– How accessible is government funding for AI startups in Armenia?

– Over the past few years, the Armenian government has introduced several initiatives aimed at supporting AI startups, particularly through grants available at the idea and early seed stages. These grants are relatively easy to obtain. Additionally, the government offers tax incentives, significantly lowering income tax rates for tech companies compared to other sectors.

The government has also facilitated the participation of local startups in international expos by covering booth costs and travel expenses, bringing global investors into the Armenian ecosystem. Another initiative, which we co-developed and piloted in 2018 with the government, focuses on helping diaspora startups relocate to Armenia.

There was even a Shark Tank-style TV show aired on national television, offering startups a platform to pitch their ideas. This is part of a broader governmental effort to foster a culture of entrepreneurship and technological innovation. Apart from government support, Armenia has a well-established network of angel investors and venture capital firms that have been active for over a decade. As a result, early-stage startups with competitive ideas generally find it easy to secure local funding. However, challenges arise at the growth stage. While some venture capital firms provide initial investments, many Armenian startups, like others globally, seek Series A and B funding abroad, particularly in the United States, where we have strong diaspora connections. Few also explore opportunities in the EU and the Gulf states, such as Qatar and the UAE, where governments provide significant incentives for companies that register locally and establish a physical presence.

– What steps could the Armenian government take to further support AI startups and the industry?

– The government could play a stronger role in two key areas.

First, it needs to define a clear AI industry strategy. Should Armenia focus on developing product-based AI companies? Should we aim to attract major AI tech firms to establish R&D centers in the country? Or should we prioritize AI service providers and outsourcing? A well-defined vision would allow for better-targeted incentives.

For example, if Armenia aims to prioritize product-based AI startups, the government should invest in AI infrastructure to mainly support prototyping, testing, and data security. If the goal is to attract large tech companies, the country needs to develop high-performance computing resources and provide access to specialized talent to make Armenia a more attractive destination for R&D.

Second, the government could play an active role in integrating AI into key economic sectors. It could launch targeted programs inviting AI startups — both local and international — to work on challenges in priority industries

such as education, healthcare, public administration, or agriculture. This would not only drive sector-wide improvements but also create direct opportunities for AI companies through government contracts and real-world implementation cases.

Given Armenia's relatively small size, a highly targeted and well-structured AI policy could deliver a rapid and meaningful impact.

Regional Director of one of the leading AI companies

– To start, how would you assess the current state of the AI industry in Central Eurasia? And which countries in the region show the most potential?

– One way to assess AI development in the region is by looking at whether a country has developed and adopted a national AI strategy. Some countries in the region do already have such strategies in place, notably some of the larger and more economically developed ones.

Another important factor is GPU-computing resources. Only a limited number of countries have some levels of AI-specific infrastructure, and even in those cases, access to these resources is restricted to specific organizations.

– So, the key indicators would be a government-backed AI strategy and access to computing power?

– Exactly. The first key factor is a well-defined national AI strategy with a clear roadmap and government commitment. Some countries have officially adopted such plans, while others have yet to establish one.

The second factor is computing resources, particularly GPU clusters and data centers necessary for AI training and inference. Only a small number of countries in the region have such infrastructure, and even then, it remains very limited and unavailable to the public — restricted to specific institutions or government-backed initiatives.

The third factor is access to public cloud computing with GPUs. In this regard, none of the countries in the region have fully developed domestic cloud infrastructure capable of supporting large-scale AI development. As a result, they mostly rely on international cloud providers and hyperscalers like OCI, GPC and others. This dependency creates additional challenges for AI innovation in the region.

As a consequence, none of the countries in the region have developed their own national LLM, which is another important milestone to speed up AI-driven economy development. Having national LLM is crucial as it preserves the language, it reflects unique culture, and it allows local business and organizations to start applying AI that is capable of speaking local language.

At the moment, while there are some projects and initiatives underway, we are still far from seeing a fully developed AI ecosystem in most of these countries.

– What other critical elements should we consider?

– Another important factor is the presence of AI education programs in leading universities. So far, only a few countries in the region have established specialized AI programs at major universities. These are primarily found in a small number of countries, while in most of the region, such programs are either nonexistent or in very early stages.

Infrastructure is also crucial, specifically the data centers. When a company wants to develop AI-based solutions, it needs access to GPU-computing power. Since there are no domestic cloud services with GPUs in the region, companies usually turn to global cloud providers. However, this becomes a challenge when dealing with sensitive data — such as personal data, healthcare records, natural resource data, or financial information — that legally cannot be processed abroad. In such cases, companies must build their own GPU-computing infrastructure.

AI-specific data centers differ from regular data centers in terms of power capacity and computing capabilities. A critical benchmark is the power supply and cooling capacity available per server rack — today, the very minimum requirement is around 11 kW. However, the region has very few AI-compatible data centers that meet modern standards. The number is so low that you could count them on two hands and still have fingers left.

Some countries have a handful of operational data centers, while others have none. That said, a few countries have older facilities that could potentially be upgraded to meet modern AI needs. The possibility of retrofitting existing infrastructure is being considered in some areas, but in most cases, entirely new data centers would need to be built from scratch.

Overall, the state of AI infrastructure in the region remains quite underdeveloped. Some progress has been made, but the key challenges — lack of AI-ready data centers, limited computing resources, and insufficient local cloud services — continue to hinder large-scale AI development.

– Let's talk about startups. What would you say are the top three difficulties for startups in the region?

– The first and biggest challenge is the lack of skilled AI specialists. There is a global demand for AI engineers, data scientists, and machine learning experts, and in this region, the shortage is even more severe. Most countries here do not have well-established university programs in AI, and even if they wanted to develop such courses, they lack the necessary infrastructure and computing resources. Without proper GPU facilities, it's like trying to teach someone to drive without having a car. As a result, the few specialists that do emerge are quickly recruited by large tech companies or international firms, making it even harder for local startups to find talent.

The second challenge is the lack of local GPU cloud infrastructure. Without computational resources, startups struggle to train AI models and deploy scalable solutions. They often have no choice but to rely on foreign cloud providers, which isn't always feasible due to data protection regulations. Sensitive information — such as healthcare data, financial records, or natural resource information — often cannot be processed outside the country, leaving startups with very limited options.

The third issue is the low level of technological awareness among potential clients, particularly in government institutions. While private companies tend to be more open to AI solutions, many state-affiliated organizations remain skeptical or resistant to new technology. In some cases, this resistance is due to a lack of understanding, while in others, it stems from fear — fear that AI-driven efficiency improvements might expose inefficiencies in their current operations. This creates an additional barrier for AI startups trying to secure local clients.

– So, there's a divide — on one side, young, ambitious startup founders eager to innovate, and on the other, a conservative system that is resistant to change. These two realities coexist but seem completely disconnected. That must make it extremely difficult for startups to operate. Where do they find the resources to grow if their home countries don't provide much support?

– That's exactly the issue. Most successful startups in the region don't focus on local markets. Instead, they develop products and services aimed at global customers or other international markets.

– Many of the startups we have spoken to are interested in how small policy changes could improve conditions for emerging AI companies. Do you have any recommendations on practical steps to foster AI development in general?

– For AI to develop effectively within a country, there needs to be a supportive ecosystem with all the necessary components. It's similar to planting a tree — you need the right seed, soil, water, sunlight, and nutrients for it to grow.

The first essential component is AI education. Universities must integrate AI courses into their curriculums so that students gain the necessary skills. However, education alone is not enough — universities also need access to basic GPU-computing infrastructure. Even if they cannot afford high-performance supercomputers, there should at least be some minimal AI training resources available. Without hands-on access to computing power, students cannot gain practical experience.

The second component is computing infrastructure and cloud resources. Countries need a national cloud or local private GPU-cloud solutions, allowing startups, commercial companies, and government institutions to access AI-related computing power within the country. Without domestic infrastructure, AI development remains heavily dependent on foreign cloud providers, which can create data security and regulatory challenges.

The third key factor is government commitment and strategy. A well-defined AI strategy helps ensure coordination across different sectors. In some countries, there are dedicated AI offices within ministries or specialized government committees that focus on integrating AI into different industries. For example, some governments have appointed Chief Data Officers (CDOs) within ministries and major state institutions. These individuals look for the best ways to monetize the data and bridge the gap between AI technologies and real-world industry challenges, ensuring AI is applied where it can bring the most value. In some places, industry-government collaborations have taken the form of AI development councils that bring together public and private sector stakeholders to discuss new AI use cases and policy frameworks.

The fourth element is sector-specific AI research centers. These centers focus on applying AI to key industries relevant to a country's economy. Every country has different economic priorities — some rely heavily on agriculture, others on mining, logistics, or IT. For example, in some countries, agriculture is a major part of the economy, so they would benefit from AI research centers dedicated to optimizing farming technology. Other nations might focus on AI applications in industrial automation or logistics. Obviously, there are also general directions that are crucial for any country such as healthcare and digital governmental services.

These centers should collaborate with startups, track global AI trends, and test new AI-driven solutions. Their

role is to bring technological advancements into key industries, demonstrating the potential impact of AI on economic growth. Once AI applications prove effective, governments are more likely to invest in expanding AI education, infrastructure, and public-private partnerships.

Beyond industry-specific initiatives, some areas — such as healthcare — are universally critical. No country can afford to ignore AI-driven advancements in medical diagnostics, hospital management, and healthcare accessibility. AI research centers focused on healthcare innovation should be a priority everywhere.

– So, in short, the key steps are AI education, infrastructure development, government AI strategies, and industry-specific AI research centers. Correct?

– Yes. If a country wants AI to develop successfully, it needs a long-term vision and a structured approach. When these foundational elements are in place, AI startups will naturally have better conditions to grow, both locally and internationally.

Yuri Kozlov, CEO, JudgeAI

– Could you briefly explain what your project is about, what solutions you develop, and how it works?

– Our project focuses on creating an AI-powered judge — a fully automated system for resolving legal disputes. The goal is to develop an advanced AI judge capable of completely replacing a human judge in handling court cases of any complexity.

What sets us apart from other similar initiatives is that most AI-driven legal solutions rely on precedent-based learning. These systems train on previous court decisions and use predictive algorithms to estimate case outcomes. Our approach, however, is fundamentally different.

We use legal algorithms that simulate human reasoning, rather than just statistical forecasting. Our system applies structured legal logic rather than simply analyzing historical data. Essentially, it doesn't just predict case outcomes — it actively simulates the decision-making process of a human judge. That's why we're the only fully operational startup in this field with an actual working product.

– That sounds incredibly complex and innovative. Is the main difference that other AI systems work like a search engine, while yours tries to mimic human thought?

– Yes, exactly. Let me break it down further.

When a system is trained in past legal cases, it essentially becomes an advanced search engine. Users input their case details and the AI searches for similar past rulings. It then predicts the likelihood of a certain outcome based on statistical analysis. For example, it might say that there's an 80% chance of the case being dismissed.

But a real judge doesn't work like that. A human judge doesn't just look at past cases and match patterns; they use logical reasoning. That's the key difference. Our system doesn't just reference previous rulings; it actively simulates human judicial decision-making.

For example, we tested our AI on a case brought before the European Court of Human Rights. A Russian citizen claimed he was beaten while in pre-trial detention and was denied access to a doctor and a lawyer for three months. When he finally received medical attention, it was too late to properly document his injuries. The European Court dismissed his complaint due to a lack of evidence.

However, our AI judge came to a different conclusion. It ruled that the burden of proof should be on the prison administration, not the detainee, because prisoners are in a vulnerable position. It was reasoned that the state was responsible for ensuring medical access and documenting injuries. Since the prison failed to provide evidence that the man was treated, the administration should be held accountable.

– How did you come up with the idea for this startup? Why did you decide to work in this specific field?

– I'm a practicing lawyer with 13 years of experience. While working in legal automation, I focused on document drafting and procedural automation. Initially, AI in the legal field was quite basic — it relied purely on formal logic encoded into software.

However, when advanced neural networks and deep learning emerged, we realized we could build a fully automated judicial decision-making system. That's when we began developing an AI-driven court system that could function across different jurisdictions and handle cases of any complexity.

– What is the startup ecosystem like in Armenia? Does the infrastructure support startup development?

– Armenia, as a startup hub, is completely neutral. There are no internal restrictions on innovation or development. Unlike some European regulations, Armenia has no legal barriers preventing the use of certain technologies. For example, AI models that are restricted in Russia, Belarus, or Iran are fully accessible in Armenia.

However, the government does not actively support startups either. Unlike the UAE, which funds and regulates startup ecosystems, Armenia has no government-backed startup initiatives, no sandbox programs, and no simplified regulatory frameworks for company registration. The market is extremely small, and any funding comes exclusively from private investors, mostly from Armenian diaspora-backed funds based in the U.S.

Because of this, almost all Armenian startups focus on exports. For example, we collaborate with the UAE, India, and the U.S. rather than local institutions like Armenia's Ministry of Justice or Supreme Court — because there's simply no budget for such projects in Armenia.

– So, in simple terms, the main barrier is money?

– Yes, everything ultimately comes down to funding. There are also logistical limitations. For instance, if you want to integrate an international payment system for selling your services, you can't do it in Armenia because the infrastructure isn't there yet.

– Has there been any effort by local companies or business leaders to push for policy changes? Have there been discussions with the government about improving the startup ecosystem? Or is it just accepted that there's no money?

– There have been some isolated attempts, especially from the Ministry of Economy. Certain startups that could benefit Armenia have tried to secure government support, but the response is always the same — there's no funding.

– If you had to suggest three key reforms that could help AI startups in Armenia, what would they be?

Creating a free economic zone. Similar to what exists in the UAE. Armenia has high labor taxes, making it difficult for startups to hire talent. A free economic zone would provide tax relief and make it easier for businesses to grow.

Establishing a regulatory sandbox. A controlled environment where AI-driven legal solutions can be tested safely. AI in the judiciary is a sensitive area, and testing such systems within a legally protected framework would be a major advantage.

Providing direct government support. Unlike other countries, Armenia has no structured financial incentives for startups. Without government-backed funding or grants, the industry remains entirely dependent on private investments.

– And speaking of funding — how accessible is private investment? Is it enough for startups to grow, or does it only cover basic survival?

– There are different funding stages. The earliest stage — when a startup only has an idea and a small team — is the most difficult. For example, SmartGate VC is one of the biggest venture funds in Armenia. Their early-stage funding provides about $10,000 per startup, which isn't nearly enough.

At later stages, when startups need $5 million or more for serious growth, Armenian investors typically offer only $150,000–$200,000. International funds barely invest in Armenian startups at all.

– Why do so many startups from your region focus on the UAE?

– The UAE has a clear policy of attracting tech innovation. Their goal is to be global leaders in AI and advanced industries. They offer tax incentives, open access to all resources, and have zero restrictions on innovation.

However, breaking into the UAE market is extremely bureaucratic. Many officials don't speak English fluently, and decision-makers often avoid admitting when they don't understand something — so projects get delayed indefinitely. The system works, but only for those with strong high-level connections.

– And what about Armenia's talent pool? Are there enough skilled professionals to sustain a startup ecosystem?

– Armenia has a small but highly skilled workforce. However, because the population is only 3 million, there simply aren't enough people to fill all the roles. Most talented professionals already work for major international companies, making it very hard for startups to recruit top talent.

Ivan Bobkov, CEO, Selfio

– Could you please tell us about your initiative? What exactly do you do? I'd love to hear the idea, the name, and what you're developing overall.

– Our product is called Selfio. It's an online platform that lets you easily create a polished video with yourself. Let's say you're some sort of expert who wants to share knowledge in a video format, but you're not quite sure how to produce a high-quality video. You want a professional result, you want it done quickly, and you don't want to spend a lot of money. That's exactly what our service provides — it essentially functions like a professional video studio; except it's powered by artificial intelligence. You do the initial recording, and we handle the editing to create a great-looking video. That's the general idea.

– Could you clarify the target audience? For instance, is this for experts in any field who just want to record, say, an educational video?

– Yes, for example, educational videos. One of our users is a university professor who wants to sell his knowledge online. He needs to record a video course for that.

– That's great and sounds convenient. Why did you decide on this idea specifically? How did you come up with it?

– We came up with the concept a few years ago while working at a university. We built a video production studio in our department and mainly focused on recording professors and automating the process for their courses. At some point, we realized we could turn this into a service that anyone in the world could use — not just university staff.

– So when did you officially launch?

– We actually started the project back in 2022, but it only really evolved into an online service more recently, around 2023 or so.

– What's the situation like now? You mentioned wanting this idea to be accessible worldwide. Which countries are using the service at this point?

– We still don't have a huge user base since we're in early testing. So far, most of our users are Russian speakers in Russia, Kazakhstan, Armenia, as well as people in the UK and Germany — those are the main regions at the moment.

– Could you please explain, as someone who has no understanding of what it means to create a startup in Armenia, how difficult it is?

– If you put the question this way, it doesn't really matter whether you are in Armenia or not. It's difficult everywhere.

– In fact, it does. Based on conversations with individuals from various Central Asian countries, we have observed a wide range of experiences. The level of support and the available infrastructure can differ significantly from one country to another. That said, perspectives may vary, and we're interested in hearing your views as well.

– Look, starting a startup is not exactly a rewarding endeavor — at least not instantly. I've been doing this for several years, and it's tough. And of course, if the environment you live in, the country and surroundings, actively puts obstacles in your way, then it becomes even more difficult. That's why people who want to build a global startup and enter the international market need to find a country that is open to the global world, one that doesn't create unnecessary barriers for its residents.

There needs to be a simple way to set up payment systems, to register companies, and to receive money. And at the same time, you don't want regulatory authorities to constantly interfere and make your life difficult.

– Does Armenia have all of that, or are there problems?

– Well, to be honest, I haven't opened a legal entity in Armenia yet. And, in fact, I'm not entirely sure that I will, for one simple reason — Armenian venture investors who fund startups almost universally require startup founders to register a legal entity in the state of Delaware. Practically 100% of them.

So, the vast majority of Armenian startups are, formally, American startups, even if they are being developed and operated entirely in Armenia.

– Could you explain why that is happening?

– As far as I understand, it's mainly about a much greater level of trust in the American legal infrastructure, particularly in courts dealing with venture capital matters. Essentially, in the U.S., these processes are well-established and run smoothly, whereas Armenia doesn't yet have such a developed system. That's why investors insist on opening an American legal entity.

– We'd like to talk a little more about whether Armenia has well-established processes or not. What are the challenges in establishing them? Is it a government issue — meaning that something is lacking to make things run smoothly — or is it something else?

– Well, regarding this specific question, I think it would be better to speak with venture investors in Armenia.

They would likely provide a much better answer than I can, given their direct experience in venture investments. But I can assume that it's simply because the U.S. has historically been a country built on business, and startups as a phenomenon are nothing new there. They've simply had more time to develop this infrastructure.

I do see some positive developments. They are introducing various incentives and improving them. Recently, for example, they introduced a tax benefit package for IT companies, which, I believe, lasts until 2032. It includes a simplified profit tax — around 2%, if I'm not mistaken. You might want to double-check that. But overall, the government is making efforts to support the IT sector, attract specialists, and make the country more appealing for them to stay and grow.

– Speaking of attracting businesses — you mentioned that a few years ago, the government wasn't focused on this, but now there are some benefits. Could you please elaborate? It is important to understand what exactly the government is doing to develop the startup ecosystem. What achievements have been made, and what still needs improvement? Are there any initiatives for attracting investments or professionals? Any specific programs?

– As far as I know, there are some government grants available. But I'm not sure whether they are accessible to non-Armenians, or to those who are not Armenian citizens. I haven't looked into it in detail.

– If you were to highlight the top three challenges that people face when trying to start a startup in Armenia, what would they be? It could be funding, a lack of specialists, or anything else. What are the biggest obstacles from the very beginning?

– If we're talking about government interference, I wouldn't say it actively creates obstacles. But, of course, there are always challenges. Let me think… To be honest, I can only mention a few if I really stretch it.

For instance, one of the first things that comes to mind is the payment system. Stripe, for example, is the most popular payment system for startups — it's the easiest for developers to integrate and offers attractive conditions. But Stripe is not available in Armenia.

There's a list of countries where Stripe operates — it's actually not that long. It includes the U.S., Canada, Australia, and most EU countries. That's it. Armenia isn't unique in this; Stripe isn't available in Georgia or Kazakhstan either. In fact, it's not available in many countries around the world.

– So, it significantly complicates things, right?

– No, not significantly. You have other payment systems like LemonSqueezy, Paddle and others. And they're available in Armenia just fine.

– So, that's what most people do?

– Yes, exactly. That's why it's difficult to call this a real problem; it's more of an inconvenience.

Another potential challenge could be the language barrier. Although most Armenians speak Russian and English well, language can still be a factor.

For example, my startup is currently participating in a local accelerator program. Officially, all communication is supposed to be in English, and during the main sessions, it is. But since over 90% of the participants are Armenian, they naturally switch to Armenian in informal conversations. That can make you feel like you're missing out on some parts of the experience.

You could, of course, insist that everyone speaks English, but personally, I wouldn't do that. Unlike in the U.S., where you have people from all over the world and English is the default, Armenia is predominantly Armenian — both in terms of its population and the international professionals working here.

– So, it's more of an individual challenge than a systemic one.

– Exactly.

– If you had to compare Armenian startups with those in other international ecosystems, how would you assess them? What do they lack to be on par with global players? Or would you say they're already at that level?

– In general, Armenian startups (Picsart, Podcastle, Crisp, Renderforest) are quite competitive. I wouldn't say anything is lacking — they seem to have everything they need. There are several well-known Armenian startups, including some in the video tech sector, that have raised tens of millions of dollars in investment.

– We've heard from colleagues in Kyrgyzstan and Kazakhstan that they have established dedicated academies to train young IT specialists and aspiring entrepreneurs. They bring people together in one place, offer theoretical education, and run courses to cultivate the next generation of startup founders. Do you have anything like that in Armenia?

– You mean courses or community-based programs?

– Yes, something along those lines.

– I actually lived in Kazakhstan for about a year and a half, so I know about those programs there. But to be honest, I haven't come across anything like that in Armenia, and frankly, I don't think it's necessary.

– Why not?

– Because I don't believe you can teach someone how to build a startup in a classroom.

– So, you think it's something you either have within you or not?

– Not exactly. It's more about constant trial and error. You try something, fail, try again, fail again, and eventually, you figure things out. No one is stopping you from expanding your knowledge on your own.

Ideally, it's better to find mentors — people who have already been through the process and are more experienced. They can offer situational advice to help you avoid repeating common mistakes or at least reduce the likelihood of making them.

Of course, general knowledge about startups can be taught in courses, but beyond that, it's all about personal experience.

– Let's talk a little more about funding. How difficult is it for startups in Armenia to attract investment? You mentioned venture capital — how open are investors to supporting startups?

– There are quite a few venture capital funds here, including some international ones. I regularly see investments of $200,000 or $300,000 being made in different startups. So, I wouldn't say there are any particular difficulties with raising funds.

I haven't personally raised investment here yet — I'm currently working on it — so maybe in the future, I'll have a clearer picture. But from what I've seen, there's no uniquely Armenian obstacle to securing funding. It really depends on you and your project.

– Would you say the startup industry is currently seen as a promising and lucrative field for investment?

– Absolutely. Right now, practically every startup integrates AI in some way. It's no longer considered an innovation — it's more like an expectation. If your startup doesn't involve AI, people will look at you strangely.

– Like, "What's wrong with you?"

– Not necessarily "what's wrong," but you'd need to have a really solid reason for not including AI. Otherwise, investors might question your approach.

Azerbaijan

Farid Osmanov, Chairman of the Innovation and Digital Development Agency (IDDA)

– What are the key government policies and initiatives aimed at fostering AI development in Azerbaijan?

– The Government of Azerbaijan has placed artificial intelligence at the center of its national digital transformation agenda, acknowledging its potential to drive economic growth, improve governance, and enhance public service delivery. A number of strategic policy documents and initiatives reflect this commitment, aiming to establish a strong AI ecosystem that aligns with both global trends and national priorities.

The Ministry of Digital Development and Transport of the Republic of Azerbaijan (hereinafter — the Ministry) is the central executive authority responsible for implementing state policy and regulation in the fields of digital development, e-government, telecommunications, postal services, space activities, high technologies (including AI as well), personal data, and transportation. In this capacity, the Ministry coordinates AI-related policies, ensuring their alignment with national economic objectives and international best practices.

A major milestone in this direction is the "Artificial Intelligence Strategy of the Republic of Azerbaijan for 2025–2028" (the Strategy) approved by Presidential Decree dated March 19, 2025. This is the first comprehensive national strategy dedicated to AI. The Strategy defines strategic objectives and priority directions, supported by a detailed action plan and performance indicators. Throughout the 2025–2028 period, the Strategy aims to align the national AI ecosystem with global readiness benchmarks, demonstrate AI's practical value across sectors, expand the talent pool in the field of AI, and implement pilot projects in collaboration with both local and international partners. It also envisages strengthening regional cooperation and encouraging the participation of startups in the national AI ecosystem, particularly in priority sectors.

In addition, AI is one of the core pillars of the "Digital Development Concept of the Republic of Azerbaijan," (the Concept) approved by Presidential Decree dated January 16, 2025. The Concept aims to improve public administration, accelerate economic development, and enhance the quality of life through the application of digital technologies. Built upon the principles of digital government, digital economy, and digital society, the Concept defines the transition to a modern, citizen-centric, and technology-enabled state. Among its key objectives are the modernization of ICT infrastructure, the strengthening of startup and innovation ecosystems, and the promotion of next-generation technologies, including AI and blockchain. AI is foreseen as a key tool for enabling more flexible, efficient, and transparent governance processes, alongside innovations such as big data analytics and cloud computing.

– What is the long-term vision for Azerbaijan in AI and digital innovation, and how does the government plan to position itself in the global AI landscape?

– Azerbaijan aims to position itself as a regional leader in responsible and inclusive AI by aligning technological progress with national socio-economic priorities. The country's long-term vision is to build a trusted, innovation-driven AI ecosystem that delivers public value, ensures

ethical and secure use of emerging technologies, and actively contributes to shaping global AI standards through international collaboration. In line with this vision, the government has defined the following strategic priorities and directions for AI development.

Development of AI governance. At the core of this vision is the creation of a robust and transparent AI governance framework that enables innovation while safeguarding national interests and societal values. Through the national Strategy, the government is establishing a system that promotes collaboration among public institutions, academia, and the private sector. State agencies will be assigned sector-specific responsibilities, while strategic sectors such as agriculture, healthcare, education, and transport will be prioritized for AI deployment. Azerbaijan also aims to expand its role in international AI cooperation, contributing to global regulatory, ethical, and technological dialogues.

Enhancement of data governance and infrastructure. To unlock the full potential of AI, Azerbaijan is investing in modern digital infrastructure and data governance. High-performance computing systems, including GPU-based architectures hosted in national data centers, will support AI model training and deployment. The country is also strengthening open data platforms, promoting open-source AI tools, and developing a national data management strategy based on international standards. These measures will ensure data quality, accessibility, and security — crucial enablers for innovation at scale.

Advancement of AI talent and skills. Developing a strong pipeline of AI talent is a national priority. Azerbaijan is modernizing education and training programs to build a competitive workforce in AI, data science, and related fields. Special focus is given to Natural Language Processing (NLP) for the Azerbaijani language to ensure its digital representation in emerging technologies. The development and adoption of Azerbaijani-specific Large Language Models (LLMs) will play a critical role in enabling advanced AI applications and preserving linguistic identity in the digital age. Access to AI infrastructure, practical learning opportunities, and support for academic and applied research will accelerate the growth of AI startups and foster domestic expertise.

Creation of a favorable business environment for AI. The government is committed to creating a supportive business climate to stimulate AI innovation and attract investment. Key initiatives include concessional financing, expanded support mechanisms for entrepreneurs, and increased residency of AI-focused companies in technology parks and industrial zones. These efforts aim to boost the digital economy, promote innovation, and make Azerbaijan an emerging hub for AI development and production.

By advancing these strategic priorities, Azerbaijan is laying the foundation for a sustainable and globally connected AI ecosystem — one that enhances national competitiveness while contributing to the responsible development of artificial intelligence worldwide.

– What are the main challenges in AI adoption and development in Azerbaijan, and how does the government plan to overcome them?

– Despite the strategic focus on AI, Azerbaijan faces several key challenges that must be addressed to accelerate AI adoption and development nationwide.

Shortage of AI talent and skills. One of the most significant challenges is the limited availability of qualified professionals in key AI domains such as machine learning, data science, NLP, and algorithmic modeling. The scarcity of skilled talent slows down innovation, affects the quality of AI solutions, and limits the ability of both public institutions and private enterprises to implement AI-driven projects.

Gaps in digital infrastructure. AI adoption requires advanced infrastructure, including high-performance computing systems, cloud services, and secure data centers. While Azerbaijan has initiated investments in this area, existing infrastructure remains insufficient to meet the demands of training and deploying complex AI models, particularly LLMs and real-time applications. Without scalable and reliable infrastructure, the growth of AI research and commercial solutions remains constrained.

Lack of comprehensive AI governance framework. The absence of an integrated regulatory framework for AI governance presents challenges related to data privacy, algorithmic transparency, ethical standards, and accountability. As AI systems become more embedded in public services and decision-making processes, the need for clear legal and ethical guidelines becomes increasingly urgent. Without appropriate regulation, there is a risk of misuse, public mistrust, and non-compliance with international standards.

Funding barriers for AI startups and SMEs. Early-stage AI startups and small technology enterprises often face difficulties in accessing financing and investment for research, product development, and market expansion. A lack of dedicated financial instruments, venture capital, and support mechanisms inhibits entrepreneurship in the AI space. This creates a gap between innovation and commercialization, particularly for high-potential projects that require long-term investment.

Azerbaijan is addressing these challenges through a coordinated national strategy aimed at building a secure, inclusive, and innovation-driven AI ecosystem. Key

measures include integrating AI into higher education, expanding training programs, and developing a regulatory framework focused on ethics, data protection, and accountability. The government is investing in high-performance computing infrastructure, promoting cross-sector collaboration, and enhancing financial support for AI startups through grants, concessional loans, and incentives. These efforts collectively aim to foster local innovation, accelerate AI adoption, and strengthen Azerbaijan's position in the global AI landscape.

– Are there specific industries where AI plays a crucial role in Azerbaijan's development strategy?

– Azerbaijan's national AI Strategy adopts a sector-driven approach, prioritizing domains where AI can generate the greatest impact on economic growth, public welfare, and national resilience. A central objective is to identify high-potential sectors for AI deployment based on a comprehensive assessment of the country's strategic goals, international technology trends, and market conditions. This prioritization will enable the government to channel resources and expertise into areas where AI can drive the most transformative change, ensuring that implementation efforts are focused, coordinated, and aligned with long-term national interests.

In parallel, as part of Azerbaijan's broader digital transformation agenda, sector-specific digital roadmaps have been developed and are currently under implementation. These roadmaps define targeted AI use cases in areas such as education, healthcare, government services, and intelligent transport systems — each selected for their potential to benefit from automation, data-driven insights, and improved efficiency. In addition, AI is being actively explored in critical fields such as agriculture, energy, transportation, and public safety, where it serves as a strategic enabler of innovation, resilience, and sustainable development. By aligning AI deployment with sectoral and national priorities, Azerbaijan seeks to unlock the full potential of emerging technologies in service of both economic advancement and public value creation.

– What measures are being taken to improve AI education and skills development in the country?

– To address the growing demand for skilled professionals in AI, Azerbaijan has launched a comprehensive set of initiatives focused on strengthening AI education and talent development. A key milestone in this direction is the establishment of the AI Academy, which will serve as a national hub for AI learning and research. The academy will offer specialized courses, hands-on training programs, and certification opportunities in partnership with universities, technology companies, and research institutions. It will also facilitate scholarship programs, mentorship initiatives, and networking platforms to attract, develop, and retain local talent, laying the groundwork for a robust and innovative AI ecosystem.

In parallel, progress is being made across all levels of the education system to expand access to AI-related learning. At the higher education level, dedicated research laboratories have been established to support master's and PhD students working on AI-driven projects, enabling advanced research in applied AI across strategic sectors. Simultaneously, AI and digital literacy content are being introduced into general education, supported by digital platforms that provide over one million students with access to interactive, remote learning environments. These combined efforts are essential for preparing the next generation of AI professionals and positioning Azerbaijan as a competitive player in the global AI landscape.

– How does Azerbaijan cooperate with international organizations and companies to advance AI technology?

– Azerbaijan actively engages in international cooperation to advance AI and align with global innovation trends. By partnering with leading global organizations and private sector stakeholders, the country gains access to policy expertise, research collaboration opportunities, and funding mechanisms that support its AI development goals.

These partnerships include joint R&D initiatives, knowledge-sharing programs, and pilot projects designed to strengthen local expertise and accelerate AI adoption across sectors. Azerbaijan also participates in global AI policy dialogue and has demonstrated leadership in linking AI with sustainable development. Notably, during COP29, the country hosted sessions focused on AI-driven climate solutions and energy efficiency, highlighting the transformative role of AI in addressing global challenges and reinforcing its commitment to responsible and inclusive innovation.

– What role does AI play in Azerbaijan's broader digital transformation and economic diversification efforts?

AI is at the core of Azerbaijan's strategy to accelerate digital transformation and reduce dependence on traditional industries such as oil and gas. By integrating AI technologies into critical sectors, including public administration, education, healthcare, finance, logistics, and agriculture, the government aims to automate services, enhance decision-making, and boost innovation.

AI adoption also contributes to economic diversification by fostering new business models, supporting startup growth, and attracting foreign investment. In parallel, AI is enabling the development of smart cities, advanced public services, and robust cybersecurity systems — laying

the foundation for a resilient digital economy. These efforts are central to Azerbaijan's long-term vision for sustainable growth and regional technological leadership.

– Are there regulatory frameworks in place to ensure ethical AI development and deployment in Azerbaijan?

– Globally, several jurisdictions are advancing regulatory frameworks to guide the ethical and responsible use of AI. Notably, the European Union's AI Act introduces a risk-based approach to regulate AI systems, emphasizing transparency, safety, and fundamental rights. Other countries such as Canada, Singapore, and the United Kingdom have also published AI governance guidelines that prioritize accountability, non-discrimination, and human oversight.

In line with these global developments, Azerbaijan is actively establishing a national regulatory framework to govern ethical AI development and deployment. A key milestone in this process is the Digital Code, which serves as the primary legal foundation for digital technologies, including artificial intelligence. The Code defines principles for data protection, transparency, algorithmic accountability, and risk-based classification of AI systems. Specific chapters address high-risk AI applications, supplier and user obligations, compliance requirements, incident reporting, innovation support mechanisms, and safeguards for data collected through AI. By aligning its regulatory approach with international best practices, Azerbaijan aims to foster a trustworthy AI ecosystem that supports innovation while ensuring ethical, secure, and human-centered deployment of AI technologies.

– How does the Azerbaijani government support AI startups and the broader innovation ecosystem?

– The Azerbaijani government is actively fostering a vibrant innovation ecosystem and supporting AI-focused startups through a multi-tiered strategy. This includes access to funding, infrastructure, talent development, and dedicated programs to facilitate startup growth. A significant step has been the establishment of national innovation centers, incubation and acceleration programs across universities and regions, as well as the expansion of mentorship, prototyping, and commercialization support.

To enable access to capital, Azerbaijan is facilitating investments through strategic partnerships with international and regional venture capital funds and business angel networks. New financial mechanisms are being developed to support early-stage AI ventures, while dedicated startup support instruments — such as innovation grants, soft loans, and public-private initiatives — are helping reduce barriers to market entry.

Universities are playing a key role in building the startup pipeline. Dozens of incubation programs, innovation contests, and research labs have been launched across institutions, with a focus on student entrepreneurship, applied AI use cases, and prototype development. These programs not only provide technical training but also connect young innovators to the broader investment and mentorship networks.

Furthermore, international exposure is encouraged through participation in global startup summits, technology exhibitions, and innovation roadshows, enabling Azerbaijani AI startups to showcase their solutions, attract global partners, and enter foreign markets. The government also promotes innovation culture through dedicated awards, ecosystem mapping, media partnerships, and community-building events aimed at strengthening collaboration across academia, industry, and government.

– What other government incentives, including funding and tax relief, exist for AI-related businesses?

– To stimulate innovation and support the growth of AI-related businesses, the Government of Azerbaijan has introduced a comprehensive set of fiscal and institutional incentives aimed at creating a favorable business environment. One of the key developments is the establishment of dedicated venture funds to improve access to capital for startups and small enterprises working on AI technologies. These funds enable early-stage companies to scale their solutions and bring innovations to market while attracting private co-investment into the national AI ecosystem.

In parallel, Technology Parks (technoparks) offer a wide range of tax, customs, and social security benefits for resident AI companies. These include a 10-year exemption from corporate income tax, property tax, land tax, and dividend tax on income derived from eligible activities. Additionally, VAT and customs duties are waived for imported technological equipment used in R&D and production. Employees working in eligible roles benefit from personal income tax exemptions — up to 8,000 AZN at 0% and reduced rates beyond that threshold. Technopark residents and their contractors may also benefit from relaxed migration rules for attracting foreign AI specialists, and preferential social insurance payment options over a 10-year period.

Through this incentive framework, the government aims to reduce operational costs for AI enterprises, incentivize innovation, and enhance the country's attractiveness as a regional hub for advanced digital and AI technologies.

Ramin Rzayev, Professor Specializing in AI, Baku University

– Could you start by describing the current state of artificial intelligence in Azerbaijan, in a way that is accessible even to someone with very little background in the topic? How is AI used, and how widespread is it in Azerbaijan?

– To begin, let's clarify what we mean by artificial intelligence and its influence. It's crucial to establish a common understanding before diving deeper. No need to worry about the technicalities — I'll explain it in simple terms. AI is a field that has become one of the most frequently discussed topics globally.

Although it may seem new, artificial intelligence has actually been in development for quite some time. We started discussing it in depth after World War II, especially after the contributions of Hermann and the evolution of electronic systems. These innovations laid the foundation for modern AI, guiding its trajectory into the 21st century. Today, AI continues to grow, with significant progress in areas such as pattern recognition, natural language processing, Big Data Analysis, automatization with higher-level robotization, and deep machine learning.

– You were explaining how artificial intelligence is being used in Azerbaijan. Could we pick it up from there?

– It's important to consider the various components I mentioned, such as the direction of research in our scientific and educational community. I can say that in Azerbaijan, there are specific ongoing developments. For instance, the Azerbaijani language is part of the broader Russian linguistic context in terms of informational space. This is why we have semantic analysis, translation to and from Azerbaijani, and so on.

It's notable that Azerbaijani is spoken by around 150 million people globally, though compared to other major language groups like English, Spanish, French, and Romanian, it may not be as widely recognized. Still, it's crucial for us to have systems that can handle automated speech recognition, text processing, and other aspects.

– Could you tell us more about the role of AI in the public sector in Azerbaijan? How is it being used practically in everyday applications?

Artificial intelligence is currently being used in several sectors in Azerbaijan. One example is our Intelligent Traffic Management Center, which is employed to manage urban transportation more effectively. Considering the many challenges our cities face, such as congestion, this AI-based system helps optimize routes, reduce traffic, and implement regulatory measures to improve overall traffic management. It's a practical application of AI aimed at solving everyday challenges in our cities.

– Sounds significant. Anything else?

– Another significant area where AI is being utilized in Azerbaijan is machine learning, which is foundational to many of the new advancements we're witnessing today. The Azerbaijan Oil Academy has been at the forefront of AI research for decades, achieving notable scientific milestones.

Under the leadership of Professor Jacques Aliyev, a renowned expert in this field, many specialists have been trained who are now contributing to various AI initiatives. These include the development of network systems, which are crucial for automating different processes within the country.

– And what about education? Are universities in Azerbaijan involved in AI research, or are there specific programs focused on AI development?

– Yes, universities in Azerbaijan are also focusing on AI. At our Faculty of Applied Mathematics, for example, students are trained in digital skills and the fundamentals of AI, which are crucial for today's job market. Rather than teaching AI as a separate subject, we aim to integrate these skills across various disciplines. The development of AI is a synthesis of both fundamental and applied sciences, requiring a multidisciplinary approach that involves mathematics, computer science, and even social sciences.

— How does AI help in decision-making processes, and are there specific examples of this in Azerbaijan?

– The Azerbaijani government also understands the importance of AI and actively supports its development. There are economic programs designed to foster AI research and implementation.

It is well recognized at all levels of government that AI is crucial not just for technological advancement but also for national security. Countries that master AI will maintain a competitive edge, while those that do not risk falling behind.

Large companies are also investing heavily in AI, even though immediate returns might not be evident. It's all about preparing for the future and ensuring that Azerbaijan remains competitive on the global stage.

– Are there any partnerships or collaborations with companies that are helping to drive AI development?

– Azerbaijan is not a poor country; it is self-sufficient and actively developing several sectors, including technology and AI. One of our national projects is a service called

"KITAB," which aims to provide efficient public services. This is a notable Azerbaijani innovation that we are proud to export to other countries. Azerbaijani companies are conducting relevant research, and this product helps process large volumes of data to make quick decisions that benefit our citizens.

AI development is also supported through partnerships with several companies and research centers. For example, the national oil company SOCAR is investing in AI to process large volumes of data and enhance decision-making efficiency.

There are numerous ongoing initiatives to establish a solid foundation for AI across different sectors, with the goal of broader adoption by around 2035. The focus is on investing in AI today so that we can reap significant benefits in the future as the technology continues to mature and its applications expand.

– What are some of the major drivers of AI development in Azerbaijan, or perhaps globally?

– One of the main drivers for AI development, especially in Europe and the U.S., is the demographic trend of an aging population. With fewer people of working age and a growing number of retirees, there is increased pressure on productivity and economic stability. AI can help bridge this gap by automating tasks and improving efficiency. Moreover, the cost of high-skilled labor in the tech sector is rising, which creates additional incentives for businesses to invest in AI to reduce costs and enhance productivity.

– Could you tell us about international cooperation in the AI field? How is Azerbaijan collaborating with other countries, and are there any reforms that could further advance AI development in the region?

– After World War II, the development of AI sparked a debate among scientists. Some argued for entirely new, fundamental approaches, while others believed we could achieve AI progress by enhancing existing technologies. This debate still continues today, as AI carries both great promise and potential risks. There have even been discussions to warn the global community about the dangers of relying too heavily on machines for decision-making.

Regarding international cooperation, it's important to remember that AI is a matter of national security for every country. This means that significant advancements are often kept confidential. We see countries like China, Russia, and India making rapid progress in AI development, and Azerbaijan is also striving to stay competitive. However, cooperation in this field can be similar to discussions on nuclear technology — sensitive, selective, and often limited by national interests.

In terms of reforms, we are still not at the stage of full-scale AI implementation that would demand drastic legal or societal changes. Instead, the process will likely be evolutionary. Society and nations will need to gradually adapt as AI becomes more integrated. For instance, in Azerbaijan, we are already investing in educational initiatives to build digital literacy and foundational AI skills, preparing our young professionals for the future.

– So, if we consider potential reforms, what kind of changes do you see happening as AI becomes more integrated into society?

– At this point, reforms related to AI aren't yet in full swing because we're still at the early stages of broader implementation. Rather than sudden changes, I believe the transformation will be evolutionary. In Azerbaijan, for instance, we are experiencing rapid digitalization, and people are slowly adapting to new technologies, such as AI-driven public services.

As AI becomes more embedded in different sectors, it will be crucial to establish legal frameworks to regulate its use, ensuring that AI is integrated ethically and effectively. Education also plays an essential role here — our graduates are already expected to possess digital skills, and this forms a solid foundation for future AI applications. It's a gradual but necessary evolution, and building these competencies now will help ensure we're ready for a more AI-driven society in the near future.

Georgia

Nino Taganashvili, DPO & Strategic Planning Manager, Georgia's Innovation and Technology Agency (GITA)

– Can you elaborate on the key government initiatives in Georgia aimed at developing artificial intelligence? How have these initiatives influenced technological progress, and what other impacts have they had?

– Georgia is currently in the early stages of developing a comprehensive artificial intelligence policy framework and associated reforms. While these efforts are underway, Georgia's Innovation and Technology Agency (GITA) has been particularly proactive within its mandate. GITA is leading several initiatives aimed at fostering the development and integration of AI technologies across various sectors. Specifically, the Agency is actively working on developing Georgia's first National AI Strategy and its corresponding Action Plan. This policy document will set the national vision for AI and identify strategic interventions to guide AI development in various sectors, ensuring that ethical and responsible AI principles are integrated.

Moreover, plans are underway to set up Georgia's first AI Center of Excellence at the Kutaisi Techhub. The center's objectives include: developing a core Georgian AI model to aid local businesses, government, and academia; enhancing AI solutions through robust computing infrastructure; providing access to high-performance computing resources to accelerate AI applications; facilitating interaction within the AI and technology communities to foster innovation; promoting academic research and teaching by improving access to resources. Additionally, GITA regularly conducts research papers to capture the best global practices and practical use cases in AI development.

Furthermore, several other government institutions are actively using AI solutions in their operations. For instance, the National Agency of Public Registry employs an electronic platform that utilizes artificial intelligence for remote identification and verification during smart contract processing. This platform confirms the identities of the transaction parties involved. To complete the session successfully, participants must follow the software's and operator's instructions, ensuring that their device camera remains on throughout. If there is any uncertainty about the procedures or actions required, the operator will provide guidance and assist with successful completion. Should the session be interrupted or the camera turned off, participants will need to restart the identification and verification process by accessing the same link again.

The Prosecutor's Office of Georgia has implemented the IBM 12 Analysis Program, which enables users to consolidate banking and telephone statements, along with other data from various formats, for analysis. It efficiently organizes data, detects relationships between networks, identifies patterned behaviors related to data threats and tracks criminal activity through automated data visualization. The system can process data in real-time, supporting both crime prevention and investigation.

Additionally, the Ministry of Justice has integrated an AI-based module into the lawmaking process, automating many steps involved in forming legal norms, which significantly conserves time and resources.

AI usage is also prevalent in educational institutions, notably at Business and Technology University (BTU), which

plays a key role in advancing AI literacy and innovation in Georgia. Established in 2018, BTU's AI laboratory has become a space for major AI competitions and hackathons. Additionally, the university has developed ClassroomAI, Georgia's first AI assistant tailored for students. Designed by BTU students, ClassroomAI provides easy access to academic, administrative and institutional information, significantly enhancing the student experience.

These initiatives have played a key role in boosting Georgia's technology landscape, making processes more efficient and fostering innovation. By embracing AI and other advanced technologies, they have helped various sectors manage data better and collaborate more effectively, pushing Georgia forward as a growing hub in tech development.

– What are the most successful examples of AI startups in Georgia, and what contributed to their success? What are the main challenges AI startups face in Georgia?

– Georgia is experiencing a growing AI ecosystem, with several emerging startups gaining recognition worldwide. Although the scene is still in its developmental stages, several AI startups have found notable success by focusing on the specific needs of local and regional markets and leveraging opportunities in global markets. Particularly, a Georgian AI startup "Pulsar AI" has made local history with its exit and being the first homegrown startup to be acquired by the US company: digital automotive merchandising platform SpinCar. "Pulsar's team of deep learning specialists, developers, data scientists, linguists, and operations personnel has developed some of the most powerful conversational AI capabilities available today," said SpinCar Co-Founder and CEO Devin Daly.

Another successful Georgian startup that has received good recognition is Theneo. Theneo supports next-generation API Documentation with AI Brilliance. AI Theneo is the first company to automate the complete documentation life cycle, from generating content to publishing. Theneo is the winner of the Pitch Contest at the Web Summit 2022 in Lisbon, amongst fierce competition from over 2,300 startups representing various countries. Theneo is a Georgian startup that took part in Y Combinator's Acceleration Program as well.

Helio.AI is also a successful recruiting software company founded in 2023 in Georgia. The platform uses artificial intelligence and game-based assessments to streamline the hiring process. It allows companies to manage their entire recruitment workflow from posting jobs and collecting resumes to screening candidates and evaluating their potential through gamified profiling. Helio.AI aims to reduce hiring time and automate over 50% of manual recruitment tasks, providing a comprehensive solution for efficient and effective talent acquisition.

Furthermore, Enagram is a solid language technology platform that develops and creates high-quality linguistic tools in Georgian and other languages with the help of artificial intelligence.

Another company that has achieved significant worldwide recognition is Lawformer. Lawformer AI is a technological tool designed for lawyers to simplify the process of managing complex contracts. It breaks down lengthy contracts into understandable segments and allows for the organization of a personal library of frequently used clauses. Users can quickly add these pre-approved clauses into new contracts, significantly reducing drafting time. Features include legal document management, a comprehensive database of clauses, a training module for drafting skills, access to legal cases, news and blogs. Lawformer AI supports various contract types, from simple NDAs to complex merger agreements, streamlining the review process.

Calen.ai is one of the successful companies specializing in AI-driven solutions for automating scheduling and calendar management. Their technology integrates with existing calendar tools to streamline appointment setting, reducing the need for manual coordination. The company focuses on enhancing productivity by optimizing how individuals and teams manage their time and schedule meetings.

– How many AI projects have been launched in Georgia over the past few years? What percentage of these projects have been successfully implemented?

– It's challenging to specify the exact number of AI initiatives in Georgia, given the diverse stakeholders involved, including government, business, academia and civil society organizations. However, there is no evidence to suggest that these initiatives have failed. For instance, projects managed by GITA related to AI have generally been successful. Programs like AI workshops, seminars, hackathons, tech weeks and boot camps have seen a steady increase in participation from various parties and it demonstrates a growing interest and successful engagement in AI development across the country.

– Which funding sources are most significant for Georgian AI startups?

– GITA has provided various funding mechanisms to support early-stage startups. In the last ten years, the Agency has invested $14 million in about 240 startup projects. This investment has created a supportive environment that attracted private investments worth 13 times the original amount and generated significant revenue. GITA's Startup Matching Grants program is a

powerful innovation engine in the country, specifically aimed at first-time entrepreneurs. It provides essential support including financial support, coaching, networking opportunities, and access to experts from Silicon Valley. The Program offers up to 150,000 GEL ($53,244.28) equity-free financing with only 10% co-financing required, along with Innovation Grants for Regions of up to 25,000 GEL ($8,874.05). These initiatives significantly lower the barriers for aspiring innovators to launch their startup ideas.

Georgia is increasingly positioning itself as a growing regional hub for innovation and technology, attracting international collaborators. A notable example is the significant partnership between GITA, the Bank of Georgia, and the globally acclaimed accelerator and venture capital firm, 500 Global. The "500 Global in Eurasia" program underscores the firm's commitment to fostering startups across the region. Since its launch in 2020, this collaboration has successfully accelerated approximately 70 startups through six program cohorts, with the seventh round currently ongoing.

What is more, GITA has recently announced significant developments and initiatives under its "GITA 2.0" strategy to enhance the growth of the Georgian innovation and startup landscape. These initiatives include launching new early-stage acceleration programs, providing additional tax incentives for innovative startups and SMEs (details of which will be discussed later), and establishing Excellence Centers in key technology sectors identified by the Government of Georgia. AI is one of the selected areas for further development and support.

– What are the main barriers holding back the development of AI in Georgia?

– Several barriers are hindering the advancement of AI in Georgia. One significant challenge is the scattered and often unstructured data across various sectors, such as healthcare and agriculture, much of which remains undigitized. The initial step of data accumulation is critical for AI development and this scattered landscape makes it difficult to harness data effectively.

Frequent policy changes also impede the establishment of a consistent policy framework for AI, creating uncertainty for stakeholders. Additionally, the presence of multiple agencies, each working on different aspects of digital government and technology development, can lead to fragmented efforts and lack of smooth cooperation among them.

According to the government ordinance #629 on the Approval of the Rule for Development, Monitoring and Evaluation of Policy Documents, creating and adopting strategic plans involves complex, lengthy procedures and formalities. This can make the process more burdensome compared to other countries where drafting and approving strategic documents may be more streamlined.

Furthermore, Georgia's small economy poses challenges in acquiring the necessary infrastructure for AI development, which requires substantial resources. There is also a lack of "sandboxes" or testing environments where private companies can explore solutions, particularly those addressing ethical, responsible and explainable AI, without the immediate pressure of full-scale implementation. These factors collectively slow down the pace at which AI can evolve and be effectively integrated within the country.

– What programs or support measures exist for AI startups in Georgia? What challenges do they encounter when starting and scaling their businesses?

– Since 2018, the Agency has been overseeing the Startup Matching Grants program, which supports the development and commercialization of innovative products, services, processes and technologies. Designed for startups, the program funds selected projects up to 150,000 GEL ($53,244.28), requiring a 10% contribution from the beneficiary. Additionally, participants receive training in business plan development, budgeting, forecasting and market research, enhancing their entrepreneurial skills and economic empowerment, including support for women startup founders.

Since 2023, the Agency has launched the Innovation Grants for Regions program to boost local innovation and technological ecosystems in Georgia's regions. This program supports the creation of technological startups by fostering the development, adoption and commercialization of innovative products, services and technologies. Targeting individuals and entrepreneurial entities registered in the respective regions, the program provides grants up to 25,000 GEL ($8,874.05) for projects involving innovative devices and programs.

Additionally, the Agency is running the Regional Pre-accelerator Program, which offers intensive entrepreneurial training to help startup founders in various regions develop their business ideas from concept to product. This program also prepares participants for regional grant programs. It targets startup founders and individuals with innovative ideas who reside in the regions, as well as entrepreneurial entities registered there.

As mentioned earlier, additionally, the agency conducts the 500 Georgia Acceleration Program is a part of 500 Global, a venture capital firm that invests in technology startups worldwide. This program aims to boost the growth of startups in Georgia by providing capital,

mentorship and access to a global network. It supports ambitious founders in creating rapidly growing tech companies and helps them enter broader markets.

This year, the agency launched its first Artificial Intelligence Weeks, specifically for women entrepreneurs and schoolgirls. The initiative focuses on teaching them how to use AI tools, aiming to spark their interest in artificial intelligence and enhance their daily use of modern technologies. So far, 26 participants have completed a series of five-day workshops and practical sessions and over 30 more are set to receive training during these weeks.

Moreover, in 2024, several specialized programs were successfully hosted across nine Tech parks in Georgia, each focusing on different AI applications. These included „AI for All" at Ozurgeti Techpark, "Food Tech AI" at Akhmeta Tech park, "Green AI" at Telavi Tech park, "Tech Sparks AI" in Kakheti, "MIT TOT: AI and Robotics in Real-World Application" at Tbilisi Tech park and "AITalent" at Kaspi Tech park. These events aimed to enhance local expertise and innovation in various technology sectors.

Furthermore, GITA is actively involved in the "Digital Transformation of SMEs in Eastern Partnership Countries" (DT4SME) project, financially supported by the GIZ. This project includes a sub-program titled "Supporting Digital Transformation of Small and Medium Enterprises through R&D." It features a grant component which focuses on creating new solutions or enhancing existing ones through R&D grants. These grants are designed to develop innovative, sustainable and effective digital solutions for small and medium-sized enterprises. SMEs selected through a competitive process can receive funding up to 25,000 GEL ($8,874.05). To qualify for these grants, SMEs must collaborate with either a startup beneficiary of GITA or a research organization to implement digital transformation initiatives. Although the program is not exclusively for AI startups, the first batch included an AI startup that partnered with the applicant.

As for the challenges, a lack of funding can be an issue in the field of AI. Although some funding options are available for AI startups as highlighted above, there are limited numbers of angel investors and a shortage of venture capital funds. This lack of funding could hinder the ability of AI startups to scale up globally.

Also, startups often encounter difficulties obtaining high-quality datasets in Georgian that are necessary for training AI models, particularly within specialized niche local domains.

Talent retention poses a significant challenge as well that can undermine a country's potential in AI. Despite having a pool of skilled professionals, many of these individuals seek better opportunities beyond national borders. This trend depletes the local talent available for AI development and hampers innovation and progress within the industry. Companies struggling to retain their top talent may find it increasingly difficult to compete on the global stage, ultimately affecting the country's overall technological advancement and economic growth. Addressing the factors that lead to this brain drain is essential for fostering the strengthening of the AI sector in Georgia.

And lastly, Georgia's domestic market is relatively small, which presents challenges for startups seeking to scale their operations. To overcome this limitation, many entrepreneurs focus on targeting regional or global markets to achieve growth and expansion. Also, awareness and adoption of AI is relatively low. Businesses and the public sector are still adapting to AI technologies, which hinders the faster development of AI startups within the country.

– How are large companies in Georgia integrating AI into their operations? Can you provide examples of successful projects?

– Large companies in Georgia are starting to embrace the potential of artificial intelligence to transform their operations. By adopting AI-driven solutions, they aim to streamline processes, deliver faster service, and create more personalized experience for their customers.

Additionally, AI is being utilized to improve decision-making processes, allowing companies to analyze data more effectively and make better choices. Integrating AI into businesses is still a work in progress, but many successful projects and new trends show their increasing role and impact in the private sector. The most obvious cases of AI integration are visible in the banking sector. For example, TBC Bank has implemented customer support through AI-powered chatbots to handle inquiries and complaints efficiently, AI algorithms for fraud detection and risk management in financial transactions and personalized product recommendations based on customer behavior and financial data. Furthermore, Bank of Georgia has implemented AI-driven credit scoring systems for loan approvals, enhancing accuracy, reducing bias and automating back-office processes like document processing and compliance checks. Tegeta Motors, a leading auto parts distributor in Georgia, optimizes inventory with LEAFIO AI, an Inventory Optimization management system.

– How is AI development affecting the labor market in Georgia? Is there a growth in new AI-related professions, and how is this changing the skill requirements for workers?

– The labor market in Georgia is beginning to transform

as AI expertise starts to play a growing role in career advancement. This change brings both opportunities and challenges with AI adoption, making it clear that ongoing investment in education and workforce development is essential to keep Georgia competitive in the fast-changing global economy. Although still in the early stages of AI adoption, Georgia is already experiencing the emergence of new job opportunities and a shift in skill requirements across various industries.

AI is fostering the creation of new roles in technology-focused fields such as data science, machine learning engineering and AI ethics. Simultaneously, traditional professions are being reshaped into hybrid roles that integrate AI technologies. Marketing professionals now leverage AI tools for analytics and campaign optimization, while human resources specialists increasingly depend on AI-driven systems for recruitment and employee management. These roles demand specialized skills, yet a notable skills gap persists in Georgia's workforce. Employers are seeking proficiency in areas such as programming, data analytics, cloud computing and AI applications, where expertise remains limited.

To address this gap, both the government and private sector are prioritizing upskilling and reskilling initiatives. Programs like GITA's Do IT in Georgia and Do IT with the EU provide training in programming languages such as Python, data analytics and machine learning.

International education providers have also identified Georgia as a promising market for AI-focused training. A notable example is the "Development of Full Stack AI Vocational Course in Machine Learning and Deep Learning", implemented by Supernova and the Georgian American University (GAU) with financial support from the USAID Industry-Led Skills Development Program. This initiative aims to build a highly skilled labor force in Georgia by offering training programs and conducting extensive awareness campaigns across the country, including in Tbilisi.

Building on these efforts, institutions like EuroMaTech and The Knowledge Academy provide AI and machine learning training courses tailored to the needs of modern professionals. These programs offer practical knowledge and hands-on experience in data analysis and AI implementation across various industries. Datamites, another prominent provider, offers corporate training in Python, machine learning and key AI concepts such as computer vision, natural language processing (NLP) and generative adversarial networks (GANs), with certifications backed by international business analytics associations.

The rise of coding bootcamps, hackathons and partnerships with universities is fostering a robust pipeline of AI talent in Georgia. Public and private universities, including the Business and Technology University (BTU), are actively supporting this transformation through training and retraining programs, workshops and seminars tailored to the needs of students, as well as public and private sector professionals.

Schools and universities are adding AI-related subjects to their curricula, leading to more participation in specialized programs. Georgia's growing tech ecosystem, backed by companies and startups, is also driving this change by investing in employee training programs, helping teams gain the skills needed to use AI effectively.

Therefore, it is evident that AI technologies are changing Georgia's labor market, increasing the demand for specialized skills and creating new opportunities in different sectors. Through public and private efforts in education and workforce development, Georgia is preparing to meet the needs of an AI-driven economy and make the most of these technologies.

– What educational programs or courses in AI are available at Georgian universities? Are there any initiatives to introduce AI education into school curriculums?

– There are several educational programs and courses offered at Georgian universities, particularly, the Business and Technology University (BTU) integrated AI into its curricula and implemented internationally scaled educational-technological projects. BTU launched its Bachelor's program in Computer Science and Artificial Intelligence in December 2023, completing the accreditation process in the spring of 2024. In its first academic year, approximately 100 students enrolled, with enrollment expected to grow in subsequent years. The program offers a comprehensive curriculum encompassing theoretical and practical aspects of computer science and AI, including: Theoretical foundations of computer science; Basics of artificial intelligence and machine learning; Programming paradigms; Introduction to electronics and robotics; Natural Language Processing (NLP); Big data analytics; IBM blockchain technology; Back-end and front-end development; Mobile application development; Fundamentals of software testing and Cybersecurity. Additionally, BTU provides state-of-the-art technological laboratories, co-working spaces and internship opportunities to enhance students' academic and professional development. The given program integrates a robust international exchange component as well, enabling students from the third to the sixth semester to participate in fully or partially funded exchange programs. Collaborating institutions include: The Polytechnic Institute of Bragança, Portugal (Informatics Engineering); Vilnius University of Applied Sciences, Lithuania (Software

Engineering) and Aschaffenburg University of Applied Sciences, Germany (Electrical Engineering and Information Technology).

BTU also offers a doctoral program focusing on digital governance and AI applications in the public sector. The program emphasizes strategic research on leveraging AI in digital governance and aims to equip researchers with advanced skills in public administration. Graduates are trained to develop policies and frameworks for digital governance, addressing challenges in modern administrative systems.

The Caucasus School of Technology (CST) of Caucasus University also offers an undergraduate program in Computer Science tailored to meet international accreditation standards and the evolving needs of the local labor market.

This program combines technical expertise in computer science with foundational business knowledge, preparing students for multidisciplinary roles that require both technical acumen and strategic decision-making abilities. Key features of the program include: technical proficiency (core computer science courses equip students with a foundation in subjects such as web technologies, Python programming, high-performance computing (HPC), web penetration testing, blockchain and AI) and business integration (courses in business administration enhance students' understanding of organizational dynamics, enabling them to design, select and manage computer-based systems effectively in alignment with client needs).

Georgian American University's (GAU) School of Informatics and Engineering offers a Master's Program in Informatics with a core emphasis on artificial intelligence. These programs collectively address a growing demand for skilled professionals in both technical and managerial domains of IT and computer science.

The Bachelor's Program in Information Technologies at Georgian National University (SEU) is developed following the institution's educational planning and development standards, aligning with the modern challenges of the field and the local labor market's demands. The program's primary objectives include providing foundational knowledge of information technologies while equipping students with the skills to address industry challenges effectively.

The program begins with fundamental courses in information technologies and programming languages, building toward more specialized areas such as AI and its ethical applications.

SEU has also designed a Bachelor's Program in Data Science and Artificial Intelligence. This program integrates technical expertise in programming with a strong foundation in mathematics and algorithmic thinking, essential for solving complex computational problems. The curriculum combines practical programming skills with theoretical knowledge in mathematics, ensuring students develop the algorithmic thinking required to excel in the field. The program is dedicated to providing high-quality educational experience, featuring modern courses and access to advanced resources.

Kutaisi International University (KIU) also offers a Bachelor of Science program in Computer Science, which is designed to provide students with a solid foundation in computer science, focusing on both theoretical knowledge and practical application. Core concentration areas are: Language-based technologies; system architecture; Digital systems; Databases; Logic and automatic inferences; Software engineering; Distributed systems and AI. This comprehensive curriculum equips graduates with the knowledge and skills necessary to excel in various sectors of computer science, preparing them for careers in research, development and innovation.

Ilia State University periodically runs specific initiatives to foster AI awareness in students, such as international conference "Sustaining Ethical Practices in Education"; a panel discussion on artificial intelligence, hosted by Ilia State University's Cyber Laboratory, Unilab, also program "Artificial Intelligence Clubs in Schools of Georgia" to educate and engage students in AI.

Supported by TBC and organized by Alte University, the project "Artificial Intelligence at School" has been launched to enhance technological literacy among teachers and introduce them to the fundamentals of AI. The initiative aims to equip teachers with knowledge about AI, familiarize them with various AI platforms, and enable the integration of technology in education. As part of the program, 30 ICT school teachers will be selected to participate in specialized training that covers the following topics: Introduction to Artificial Intelligence: A general overview of AI concepts and principles; AI Platforms and Applications: Exploring existing AI tools and their practical use; Mobile App Prototyping: Developing mobile applications using MIT App Inventor; AI Model Integration: Working with simple AI models in educational settings and Information Security in Education: Ensuring cybersecurity in the academic environment.

The project is implemented in partnership with the Association of Teachers of Exact and Natural Sciences ("Teachers Lab"), the Georgian Association of Artificial Intelligence (GAIA) and the NGO "Techdro."

Lastly, in 2025, Georgia will present its first national team of students at the World Olympiad in artificial intelligence. To prepare for both the international and

domestic Olympiads, GAIA, in partnership with the Komarov School, is launching an AI Olympiad course. The course will be taught by Georgia's leading AI and machine learning professionals. Only selected students will have the opportunity to take the Olympiad course in preparation for the competition. However, all interested students and pupils can access the course lectures, materials and a dedicated Discord space online, allowing them to engage with the content independently, even if they are not participating in the Olympiad.

– What legislative frameworks exist in Georgia for regulating the development and use of AI? What are the main issues and debates surrounding this topic?

– Georgia adopts a risk-based approach to AI regulation, primarily demonstrated through its commitment as a signatory to the Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law [CETS No. 225]. This convention provides a comprehensive framework for managing the lifecycle of AI systems, focusing on assessing and mitigating risks that could impact human rights, democracy and the rule of law.

Although Georgia has not yet enacted a specific regulatory act solely for AI, its participation in this international convention highlights the country's dedication to adopting risk-based principles in all relevant policy areas. As a signatory, Georgia ensures that AI-related activities uphold human rights and democratic values. The measures adopted will be customized according to the context and potential impact severity.

In 2020, the President of the National Bank of Georgia issued Order №151/04, approving the Regulation for Risk Management of Data-Based Statistical, Artificial Intelligence and Machine Learning Models. This regulation aims to establish a comprehensive risk management framework for these models, enhancing the management of associated risks. It specifies the procedures for developing and utilizing models for entities under the supervision of the National Bank of Georgia, including commercial banks, non-bank deposit institutions, microfinance organizations, and legal entity lending entities. The regulation is applicable to models that could significantly impact the risk position of the model user entity. Each model user entity is required to implement a model risk management system tailored to its size, complexity of operations, organizational structure, business model, risk profile and the potential impact of specific models on the entity's material risks.

Although not specifically AI-related, personal data regulation is crucial because it ensures the responsible use and protection of personal information, which AI systems often process. Strong regulations protect individual privacy by ensuring data is handled securely and only used for legitimate purposes. This is crucial in AI applications that can process vast amounts of personal data, potentially leading to privacy invasions if not properly managed. Furthermore, effective data protection laws build trust between technology providers and users, increasing public confidence in AI technologies. In Georgia, a new law on personal data protection, effective since March 2024, is a significant achievement. This law aligns closely with the GDPR, enhancing data security and privacy standards in the country.

– What makes the Georgian approach to AI unique compared to other countries in Central Eurasia? What local factors are considered in the development of AI technologies?

– Georgia's approach to AI development stands out in Central Eurasia due to its strategic blend of business-friendly policies, tax incentives and tailored legislative frameworks aimed at fostering innovation. These efforts are driven by factors like Georgia's strategic location, its expanding technology sector and its dedication to incorporating AI into its overall economic growth plans.

To enhance the business environment, solidify Georgia's role as a regional hub and attract multinational corporations, the Georgian government has introduced a framework enabling companies to obtain "International Company" status and benefit from significant tax advantages. Companies with this designation are subject to reduced profit and income tax rates of 5%, compared to the standard 15% and 20%. The government has outlined the criteria for granting this status, defining the permitted activities and specifying eligible expenses. Currently, these tax benefits apply to enterprises in the IT and maritime services sectors.

The introduction of this tax regime has already yielded positive results, particularly in the IT sector. Within just two weeks of its implementation, the global IT giant EPAM Systems established operations in Georgia, highlighting the country's growing appeal as a destination for international businesses. Following the legislative changes implemented in 2020, over 120 companies have been successfully registered in Georgia. Therefore, this development underscores the growing attractiveness of Georgia's business environment, particularly for international and tech-focused enterprises. The arrival of these companies is likely to create many job opportunities for Georgian IT workers and help them develop their skills.

GITA is also working on amendments to the "Law on Innovations" to strengthen Georgia's innovation ecosystem even further. The proposed legislative changes

include a comprehensive tax support mechanism designed to foster the development of innovative enterprises. This mechanism introduces three distinct statuses, each offering tailored benefits.

Innovative startup status. Available for a 10-year period, this status provides a tiered tax structure. Companies will enjoy a 0% income tax rate for the first three years, a 5% rate for the next three years and a 10% rate for the remaining four years. This measure is aimed at supporting early-stage startups by reducing their financial burdens during critical growth phases.

Innovative small and medium enterprise (SME) status. This status allows SMEs to apply a "super-deduction" for research and development (R&D) expenses, enabling them to deduct these costs from their taxable turnover. This incentive is designed to stimulate innovation and encourage investment in R&D activities.

Research and development service provider status. Entities granted this status will benefit from a reduced profit and income tax rate of 5%, incentivizing the provision of R&D services and fostering collaboration between Georgian and international enterprises.

These initiatives, still in the preparatory stages and subject to potential adjustments. By aligning fiscal policies with the needs of innovative and technology-driven industries, the government aims to position the country as an attractive hub for international investment and a catalyst for regional economic growth.

What is more, Georgia's proximity to European and Asian markets also makes it attractive to IT companies. Additionally, Georgia offers supportive business practices that make starting a business easy and flexible. Based on the "one window principle," registration and other procedures needed to start a business can be completed in just one day and at a single location. This streamlined approach helps simplify the process for new businesses.

– What international collaborations or partnerships have been established to advance AI in Georgia? How are these influencing technological progress in the country?

– Several international collaborations have been established to advance AI in Georgia, contributing significantly to the country's technological progress across various sectors.

In 2021, the European Commission and the Government of Georgia signed an agreement granting Georgia association status with Horizon Europe. Under this arrangement, Georgia collaborates with research consortia, one example being the Forge AI project. This project involves various stakeholders, including GITA, universities, research organizations and startups.

Also, partnership between ALLSTARSIT, a leading global technology company and the Georgian AI Association (GAIA) should be mentioned here. Through a Memorandum of Understanding, the two organizations aim to foster a robust AI ecosystem in Georgia. Key areas of focus under this collaboration include organizing AI workshops, conferences and events to facilitate knowledge exchange among AI professionals, students and enthusiasts. The partnership also supports joint research initiatives to explore innovative AI applications across multiple sectors, such as healthcare, defense and environmental sustainability. Moreover, efforts to strengthen Georgia's AI community will be pursued through networking events, hackathons and online forums.

In the healthcare sector, CancerCenter.AI has also engaged in transformative international collaboration. As part of the Polish Challenge Fund project, implemented by the United Nations Development Programme (UNDP), the CancerCenter.AI team worked with Georgian healthcare professionals to enhance cancer diagnostic capabilities. They successfully launched and provided training for the use of advanced technologies such as PathoCam, alongside radiology and pathology algorithms. The project has explored the integration of Laboratory Information System (LIS) modules into pathology laboratories, providing additional avenues for educational and diagnostic applications.

AI4Globe is another example of successful partnership; this is an international initiative aimed at increasing global AI literacy, significantly transforming educational experiences and unlocking new opportunities to harness the full potential of AI. This project brings together prominent organizations and institutions, including UNICEF, UN Women, UNICRI and academic partners such as KTH Sweden, University of Granada (Spain), TalTech (Estonia), Polytechnic Institute of Bragança (Portugal), Zwickau University of Applied Sciences (Germany), Beetroot Academy (Sweden-Ukraine) and Tekwill. Additionally, the European Business Association is involved in fostering collaboration across various sectors. Through these partnerships, AI4Globe is creating a global network to provide accessible AI education, facilitate knowledge sharing and drive innovation in AI solutions across diverse fields.

KIU has partnered with the Bavarian Artificial Intelligence Agency (Baiosphere) through a memorandum of cooperation. This partnership highlights KIU's dedication to international collaboration and innovation in AI. The key goals of the agreement include developing AI-focused curricula with Bavarian experts, advancing AI research to benefit both Georgia and Germany, and

exchanging academic and administrative staff to share knowledge and best practices. This six-year agreement emphasizes the importance of international collaboration in technology. By combining expertise from Georgia and Germany, the partnership aims to enhance educational and research capabilities and advance AI applications. This collaboration also helps KIU establish itself as a leader in technology education and research by fostering the exchange of innovative ideas and methods.

– How difficult is it for companies that use or develop AI to enter and compete in international markets?

– Entering international markets as a Georgian AI company brings several challenges, including technical, regulatory, cultural and competitive issues. Companies have to handle complicated international rules, meet different data privacy and AI laws and adjust their products to suit various market needs. On top of this, differences in culture and language mean that companies need to customize how they develop products and interact with customers.

A key obstacle for Georgian AI startups is the country's relatively small domestic market, which limits opportunities for scaling operations locally. This pushes many entrepreneurs to set their sights on regional or global markets for growth. Competing internationally requires not only financial resources and advanced technical capabilities but also strategic partnerships and a deep understanding of foreign markets.

Adding to these challenges is the low level of AI awareness and adoption within Georgia. Many businesses and public sector organizations are still in the early stages of integrating AI technologies into their operations. This limited familiarity hinders the growth of a strong domestic AI ecosystem, making it challenging for startups to secure local clients, partners or investors who recognize the value of AI solutions.

Nana Dikhaminjia, Co-founder, Clear Signal Solutions and Techdro

– What are the key lessons you've learned from leading digital transformation projects in Georgia. Could you tell us more about the AI landscape?

– Over the past year, AI and digital transformation have gained significant traction in Georgia. Various companies and startups have been exploring AI-driven solutions across different fields.

One example is Theneo, a startup focused on developing AI-powered API documentation tools. While they have a team in Georgia, their primary market is the U.S., and they mainly collaborate with international companies rather than local ones.

Another notable startup is Pulsar AI, which initially operated locally but later rebranded and expanded through exit by Impel.

Currently, there are around 30 to 35 startups in Georgia working on AI-related product development. Additionally, an AI association has been established to connect industry players. The head of this association is actively trying to facilitate collaboration with various agencies, including the government.

– But given the current political situation, that's become more difficult, correct?

– Yes, everything I'm describing happened before the elections. Back then, things were moving quickly, and the startup ecosystem was developing at a fast pace. However, after the elections, and especially in the summer, progress slowed dramatically.

The political protests had a major impact, as most AI-related initiatives — at least 90% of them — relied on cooperation with government agencies. Without government involvement, things became far more complicated. International aid was still helpful, as it tends to move faster than state funding, but even that was affected.

So when we talk about AI development in Georgia, we need to differentiate between the situation *before* the elections and the situation *after*.

– What role did the AI association play in this process?

– The association aimed to create a structured framework for cooperation between universities, private companies, and state agencies like the Georgian Innovation and Technology Agency.

For example, they were working on establishing an AI Excellence Center to advance AI research and applications. They also organized conferences, hackathons, and training programs for students. We collaborated with them on several occasions — our teams participated in hackathons, and we contributed to training sessions.

– How were major banks and corporations integrating AI into their operations?

– Larger institutions, such as the Bank of Georgia and TBC Bank — the two biggest banks in the country — were actively exploring AI-driven solutions. They had internal teams working on AI projects to optimize operations, but these weren't necessarily externally marketed AI products.

Instead, they focused on incorporating AI into business processes, improving customer service, and automating workflows. While their AI developments weren't widely publicized, they occasionally presented their work at tech conferences.

Additionally, many businesses started integrating existing AI solutions into their operations, particularly for management, HR, and project planning. Companies were keen on leveraging AI-driven tools to enhance efficiency rather than developing proprietary AI models from scratch.

– And what about AI education? Were universities adapting to the trend?

– There was a growing effort among universities to integrate AI into their curricula. However, the approach varied widely.

Some institutions, like Georgian National University SEU, introduced AI-related courses within their computer science programs. Other universities took a more theoretical approach, focusing on research rather than practical implementation. For instance, Ilia State University had a research center dedicated to AI, but its focus was primarily scientific rather than applied technology development.

On the other hand, some universities used AI more for marketing than substance. One example is BTU, which heavily promotes itself as an AI-driven institution. They started developing AI-generated teaching materials and books, positioning themselves as pioneers in AI-based education. Their AI-generated teaching materials are often just poorly edited AI outputs. For example, they would use AI to generate lecture notes or even entire textbooks and then publish them as "innovative AI-powered educational resources."

In some cases, they even held AI-generated conferences, where AI chatbots simulated conversations between experts from Germany and China, and they published these as academic discussions. It's completely superficial — there's no real value in it. However, the same university has outreach programs for AI education of school students and women.

So, some startups and institutions were making real progress, while others were just capitalizing on the AI trend without meaningful contributions.

Despite the political challenges, some initiatives are still being promoted. The university rectors sometimes even present these projects at international conferences. They claim they will develop AI-based educational materials for students of all levels — school students, university students, and even adults. They also announced plans to introduce unique teaching programs. However, nothing substantial has come of it so far. Perhaps the political situation is the reason for the stagnation. This is the general situation in Georgia right now.

– You mentioned the situation before and after the elections. It seems like almost everything has changed, and for obvious reasons. Could you explain what's happening now? It looks like Georgian startups are facing significant difficulties.

– I'll outline the situation for you. The current government has actually been in power for 13 years. However, until recently, they maintained a pro-European stance — at least outwardly.

In 2012, they came to power and inherited an pro-European agenda. Over the years, they maintained international partnerships, but internal government problems started affecting these collaborations. Despite this, most international support systems continued operating.

– Right, because Georgia's constitution explicitly states its commitment to European integration.

– Exactly. European integration is part of Georgia's constitutional framework, which means we have always worked to strengthen our ties with Europe.

In 2014, Georgia secured major EU-backed funding and launched large-scale projects to modernize the tech sector. This funding wasn't just loans — it came with clear conditions on how the money should be used. Much of it was directed toward developing Georgia's technology sector, which led to the creation of the Georgian Technology Innovation Agency.

GITA then established eight tech parks across the country, with a primary focus on startups. Their initiatives included:

Developing programs for school and university students to foster interest in technology.

Providing grants and funding competitions for startups.

Supporting science commercialization because in post-Soviet countries, science was never commercialized, and we lacked experience in monetizing research.

– So, GITA played a crucial role in shaping Georgia's startup ecosystem?

– Yes, absolutely. I worked closely with them, even though I was always critical of the government and pushed for better policies. But at the time, cooperation was possible.

Three years ago, I was spending half my time in Silicon Valley and the other half in Georgia because my family is here. Even two years ago, the government was bringing tech experts to Georgia and forming international partnerships. For example, in 2023, they appointed a new consul general in San Francisco — not for diplomatic purposes, but specifically to help Georgian startups establish connections in Silicon Valley and attract investors.

Even in December 2023, they were taking active steps to integrate Georgia into the global tech ecosystem. The person appointed as consul general wasn't a diplomat — he was a former vice president of a major Georgian bank. This showed that even at high levels of government, there was still a strong push to promote startups and economic growth.

– And then everything changed?

– Yes. The same government that had been supporting startups suddenly turned against the West. By April, they started claiming that the U.S. and European embassies were working to overthrow the government. This political shift led to serious consequences.

International funding was suspended. The EU, USAID, UNDP, and other agencies had been pouring money into Georgian startups, but they quickly pulled back when the government started attacking civil society. Many projects were canceled or put on hold.

– So, even though these international programs were supposed to support startups, they couldn't continue without government cooperation, correct?

– Exactly. For these programs to work, there needs to be government involvement. You need state universities, schools, and institutions to be part of the process. But now, with the government refusing to collaborate, everything is stalling.

Even students, who were previously volunteering in various programs, are being restricted. Schools are now hesitant to work with independent organizations, making it harder to sustain these initiatives.

The situation is quite chaotic. The government is still trying to present the illusion that everything is fine and that startups will continue receiving support.

We had meetings with the Georgian Innovation and Technology Agency, and they tried to reassure startups that nothing has changed. But in reality, investors have started pulling out. Many were already hesitant, and now they are even more cautious.

Even I, as a small angel investor who used to fund Georgian startups, have stopped because I simply don't know what will happen next year. I used to travel to Georgia frequently — sometimes five times a year — to participate in Georgia's educational and outreach projects, but now I don't see the point.

I also ran a small NGO called TechDro (which translates as TechTime). It was focused on technology education for young girls. Last year, we had around 700 participants in our programs, and we selected 200 of them for an intensive summer tech camp. But this year, I had to shut everything down because of the worsening situation.

I also had a grant that was supposed to support these initiatives, but managing it became nearly impossible. Our organization was entirely volunteer-run, and we had no external funding apart from occasional sponsorships from universities and banks. Despite that, the government pressured us to register as a foreign agent, just like in Russia.

– They asked you to register as a foreign agent just for running an educational program?

– Yes. They are using the same playbook as Russia. The government started labeling independent NGOs and initiatives as "foreign agents." Once you are given that status, you are placed on a watchlist, and your work is severely restricted.

Then they took it a step further — they demanded that we send them all our participant data. They wanted the names, contact details, and personal information of everyone who attended our programs. Not only that, but they planned to publish this information online.

It was completely unacceptable. Many of our participants come from low-income families, and some receive state subsidies — about 25% of the Georgian population depends on social assistance. These students barely have enough money to attend conferences or participate in events. Our program helped cover their expenses, and now the government wanted to expose them publicly.

There was no way I could comply with that, so I shut the organization down.

– So, the government's new policies have directly impacted international funding as well?

– Yes. We had a small grant from the U.S. Embassy to teach schoolgirls about medical technologies, but now it's uncertain whether the project can continue. We also had another initiative for teachers, which has now been halted.

Foreign agencies like USAID and the EU used to provide significant funding for educational and tech programs in Georgia. But now, the government is harassing organizations that receive foreign funding. They are cracking down on any entity that collaborates with Western institutions.

At this point, we don't know what the future holds. The authorities are trying to normalize the situation, but in reality, startups are struggling more than ever.

In my case, I typically apply for small grants and help connect people with funding opportunities. But for the past six months, I haven't applied for anything because the situation is so uncertain. That means that next year, I won't have anything to offer Georgian school students because the entire process was disrupted.

– And beyond funding, what does this mean for Georgia's startup ecosystem?

– Georgia's startups rely heavily on access to the European and U.S. markets. Even if they eventually expand into Central Asia or the Middle East, having a track record in the Western market is crucial for credibility.

However, now many European and U.S. investors are avoiding Georgia entirely. They see what's happening and don't want to risk getting involved.

The Georgian government insists that they aren't pro-Russian, but their actions tell a different story. They are systematically cutting ties with Western institutions and isolating the country.

– And this is scaring investors away?

– Absolutely. Just yesterday, the government introduced new laws that effectively criminalize criticism of politicians and political parties. If you say anything negative about a government representative, you can be fined or even jailed.

– That's total censorship.

– It is. The fines range from $800 to $1,000 — which, for the average Georgian, is two to three months' salary.

On top of that, they've restricted protest laws. Now, if you stand in the street with a sign, you can be fined. Even if you're just standing there without actively protesting, the authorities can claim you're breaking the law.

This is exactly how Russia operates. Investors see these moves and don't want to associate with a country that's heading in that direction.

I know of at least two startups whose investors backed out. One was an Estonian investor who specifically told them, "We don't want anything to do with a country aligned with Russia."

And it's not just about the money. It's about trust. Estonia, Latvia, Lithuania, and other countries in the region see what's happening and don't want to risk working with Georgian companies.

Gigi Giorgadze, CEO, Skillwill

– How would you assess the current state of AI development in Georgia?

– Artificial intelligence is among the top three technology priorities in Georgia. However, the sector remains in an early phase of development. Despite this, there is a growing AI startup ecosystem with notable success stories. One of the most successful Georgian AI startups, Pulsar AI, was acquired by a major American company. Other promising Georgian AI startups include Theneo, Helio AI, Calen AI, and Stori AI. In addition to these startups, several companies develop AI-driven products and services for corporate clients, such as Supernova, Data Analysis Lab/Enagram, and AI Lab Tbilisi.

Furthermore, international companies such as EPAM, Lineate, and Quantori have operations in Georgia, offering AI and data science-related services to global clients. However, faster AI development is hindered by several factors, including a shortage of experienced AI talent, Georgia's relatively small market size, and limited access to high-performance computing infrastructure.

However, Georgia faces challenges in the AI development process. For example, the country does not score well in the AI Readiness Index published in 2023 — it ranked 99th out of 193 countries, lagging behind all the neighboring countries. Especially alarming is that Georgia had zero points when it comes to vision about AI development. Despite these challenges, if the private sector, academia, public and the government join forces, we can tackle the challenges. For example, by finding specialization areas, enhancing technological skills, providing infrastructure and data, and creating new funding opportunities, Georgia can turn AI into a strategic, future-proof competitive advantage.

– How advanced is AI research and development in Georgia compared to neighboring countries?

– AI research in Georgia is concentrated within a few small academic research teams, and significant R&D activities mainly take place in commercial banks, where AI models are used for operational efficiency. However, the country lacks a strong ecosystem of AI or data research institutions.

Comparatively, Armenia has made significant strides in AI R&D, collaborating with NVIDIA to establish a national data center at the University of Armenia. Georgia, on the other hand, is only beginning to explore sovereign AI development and infrastructure investments.

– Are there specific AI technologies (e.g., machine learning, NLP, computer vision) where Georgia has a competitive edge?

– Georgian startups have naturally gravitated towards Natural Language Processing (NLP) and the development of Georgian Large Language Models (LLMs) due to the unique linguistic challenges of the Georgian language. However, no specific AI technologies have been formally identified as a national competitive advantage. Discussions on identifying potential AI strengths in Georgia are ongoing.

– What are the biggest gaps in AI talent and skills development in Georgia?

– Georgia has demonstrated its ability to develop technological talent and successfully export IT services. However, AI development requires specialized expertise that remains scarce in the country.

Currently, Georgia has several hundred AI engineers and data scientists, most of whom transition into the field from programming, mathematics, physics, or economics backgrounds. Notably, in 2024, two undergraduate AI programs were launched at National University of Georgia (SEU) and Business and Technology University (BTU). SEU also offers a Master's program in Data Science, while BTU has introduced a PhD program focused on AI applications in public administration.

Beyond formal degrees, specialized AI training programs and bootcamps exist. Examples include the AI Lab Academy course and upcoming GAIA-led AI training programs. Additionally, corporate training programs in AI and data technologies are being developed by businesses.

More master's programs, industry-aligned training, and qualification programs are needed to accelerate AI talent development. Encouraging early interest in AI among young people is also critical. GAIA is actively working with universities and high schools to increase AI awareness through student engagement programs where industry professionals share career insights. Expanding AI-related content into high school curriculums, including online modules, could further strengthen the talent pipeline.

– Are there any government initiatives or policies actively supporting AI development in Georgia?

– The Georgia's Innovation and Technology Agency has declared AI a national technological priority and has launched initiatives to support its development. Some ongoing government-backed projects include:

Building an AI Excellence Center, which will provide access to significant computational resources.

Government-funded AI training programs to upskill local talent.

Grant programs for startups, including AI-focused ventures.

The development of a national AI strategy has been discussed, with the World Bank assisting GITA in drafting a roadmap. Additionally, GAIA has launched research efforts to identify the best practices and assess the local AI landscape.

– How easy is it for AI developers in Georgia to secure funding or investment for their projects?

– AI startups in Georgia primarily receive funding through GITA's grant program and AXEL, a network of angel investors. Other early-stage funding sources include accelerator programs such as Future Lab, which focuses on AI startups. However, most of these funding mechanisms support only early-stage ventures (idea/MVP stage). To scale, Georgian AI startups often seek funding from global accelerators and tech giants' startup programs.

– Do Georgian AI companies and developers have enough opportunities to work with international tech firms or research institutions?

– Some Georgian AI companies, such as Theneo, Pulsar AI, and Stori AI, have successfully collaborated with international partners and primarily target US markets. Others, like Helio AI, focus on regional expansion.

However, collaboration with global tech firms is often limited to participation in cloud and accelerator programs. Research collaborations with international institutions are sporadic, mostly facilitated through EU grants. The National Applied Mathematics Institute is currently leading a research project funded by Horizon Europe and is preparing a new project with an international consortium. Greater integration with European and regional research networks is needed to strengthen AI innovation in Georgia.

– How would you describe the startup ecosystem for AI-focused companies in Georgia?

– We have 2 AI startups per million people while Estonia has 10. We also have companies that have successfully integrated AI into their business strategies and the banking sector is a leader here. However, other large sectors, including retail, pharmacy, medical, insurance and gambling sectors have huge amounts of data that can be monetized. These businesses and SMEs too lack expertise and knowledge to harness economic benefits of AI and data and need support in education, reskilling, and service delivery.

AI startups are gaining traction in Georgia, but, like globally, building truly valuable AI-driven services remains a challenge, particularly in smaller markets. The local AI startup ecosystem is dynamic, supported by organizations like GAIA and AXEL. Some promising AI startup applications in Georgia include:

Call Center Automation (Calen AI)

AI-powered chatbots for customer support (Supernova, AI Lab, Calen AI)

Speech-to-text and text-to-speech models (Languagegram)

Conversational Search for e-commerce (Quissly)

AI-driven recruitment management systems (Helio AI)

Marketing and copywriting tools in Georgian (Ucraft.io, Calen AI, AI Lab, Sizmar AI)

AI-based marketing and customer analytics (Optio AI)

Most Georgian AI startups aim for expansion into Central Asia rather than Europe or the US, although Future Laboratory Accelerator collaborates with Stanford University to prepare startups for the US market.

– How does the regulatory environment affect AI innovation and deployment in Georgia?

– Currently, AI is not regulated in Georgia. The closest regulatory framework affecting AI development is Georgian GDPR (data protection law). Data privacy concerns, coupled with ambiguous copyright laws, pose challenges for AI adoption and the development of Georgian-language AI models.

In the financial sector, the National Bank of Georgia regulates AI-driven models used in banking through a sandbox approach, promoting innovation while ensuring compliance.

Tornike Tsiramua, Tech Entrepreneur, Biliki AI

– Can you tell us about your initiative — what you do, your main products or services, and what problem you aim to solve?

First of all, we no longer run startups. However, Biliki AI was a one-stop-shop travel assistant that helped travelers plan sustainable trips quickly and easily. Our platform provided AI-generated itineraries, carbon footprint estimations, sustainable accommodation bookings, and eco-friendly experience recommendations. Our solution helped travelers reduce their carbon footprint by 10% while making trip planning seamless.

– What are the biggest challenges that startups in Georgia, especially in AI, face today?

– First of all, there is a limited AI talent pool. While Georgia has strong tech talent in software development, since it's a more or less new thing there is a shortage of AI specialists with expertise in deep learning and data sciences. Then, there is a lack of funding. We don't have local VCs and have only a few angel investors actively investing in AI startups. Most funding comes from international grants or accelerator programs.

Market size. The local market is small, meaning startups must go global early, which requires additional resources and international connections. However, it is a good starting point, you can easily register an entity and test it on the local market.

And, finally, education and mindset. Few universities teach entrepreneurship and innovation. Still requires more things to do, across Georgia to educate people and establish a proper mindset to build a startup.

– How supportive is the Georgian government towards AI startups? Are there any programs, funding, or policies that help new businesses grow?

– GITA offer grants of up to 150,000 GEL ($50,000) for startups, which has been helpful for early-stage businesses. Local accelerator and startup programs — we have some good programs that help startups, including Impact Hub Tbilisi which provides accelerator and additional perks for startups, and Georgian Angel Investment Network (Axel), which unites angel investors and Georgian startups to benefit from them. However, we need more funding resources such as VCs, and more educated angel investors to increase quality and accessibility. International accelerators and partnerships — startups like ours benefit more from programs like Google for Startups Accelerator, which provides mentorship and global exposure.

– What would be the most impactful change or support that could help AI startups in Georgia succeed right now?

– A dedicated AI grant program would help startups invest in talent and technology. Universities need stronger

AI and machine learning programs to build a local talent pipeline. The government and enterprises should open datasets for AI startups to develop better models. Besides, we require more partnerships with international AI hubs, and accelerator programs would help startups scale beyond Georgia.

– How do Georgian AI startups compete internationally, and what barriers do they face when trying to expand beyond the local market?

– Georgian AI startups must compete globally from day one due to the small local market. We have several strong AI startups, such as Helio AI, Calen AI, etc. However, key barriers include many Georgian startups struggling to secure Series A+ investments, making global scaling difficult. Especially, at this specific moment, when Georgia is in a political crisis.

Being from a small country, startups must prove their credibility to international clients and investors.

Despite these challenges, Georgian startups provide unique AI applications and join international accelerators to compete effectively on the global stage.

– What key innovations or policy changes do you think are necessary to accelerate AI startup growth in Georgia?

– I think AI research grants and programs would encourage innovation and new product development collaboration between AI startups, universities, and corporations could accelerate real-world AI adoption. Today, companies should realize that AI is an additional source of solutions for their daily workflow and benefit the customers.

Moreover, reducing taxes on AI-related R&D and software exports would help startups scale faster.

We need a good and sustainable environment in the country for international VCs or angel investors to invest in Georgian AI startups, that would boost the ecosystem.

– How do you see the AI industry evolving in Georgia in the next few years?

– The AI industry in Georgia is still in its early stages, but I see significant growth potential over the next few years. More startups will emerge, seeking international markets early due to the small local ecosystem. AI education and talent development will improve, but retaining top AI specialists may be a challenge. For that reason, we need a stable political and economic situation, and good regulations, that will help in increasing the ecosystem.

Kazakhstan

Gizzat Baitursynov, Chairman of the Committee for Artificial Intelligence and Innovation Development of the Ministry of Digital Development of Kazakhstan

– How do you assess the current state of AI development in Kazakhstan? Which industries or sectors are most actively adopting AI?

– Kazakhstan is experiencing positive dynamics in the IT sector, creating favorable conditions and serving as a crucial factor for the active development of AI. AI technology has demonstrated successful applications across various fields.

Five priority economic sectors have been identified: the fuel and energy complex, industry and construction, healthcare, finance, and public administration. Efforts to implement AI include analyzing the current situation in these sectors, training employees in government agencies, identifying areas for AI application, selecting solutions from the private market, and launching pilot projects.

– What economic advantages could broader AI adoption bring to Kazakhstan? Are there forecasts or data supporting this impact?

– The Concept and Action Plan for AI Development (2024–2029) aims to create innovative solutions. According to the Concept, the expanded adoption of AI technologies in Kazakhstan has significant potential for economic development. This includes enhancing labor productivity, optimizing business processes, and creating favorable conditions for startups. These measures are expected to attract investments into the country's economy and strengthen its position in innovation and high technology.

According to McKinsey's estimates, GDP could increase by 5% in each sector where AI is applied. These forecasts underscore the high potential of AI to stimulate economic growth, improve production efficiency, and enhance quality of life.

– Which key AI areas could significantly improve Kazakhstanis' quality of life? Could it be through urban technologies, public service automation, or other fields?

– Currently, several projects are being implemented to make government services widely accessible to the population:

eGov AI: an innovative expert chatbot that allows users to interact with government services through simple language queries. It helps citizens obtain certificates and documents, provides access to essential services and links, including mobile versions (eGov Mobile). Expected benefits include reduced request processing time, fewer repeated requests, and improved customer satisfaction.

E-otinish Bot: designed to manage electronic citizen appeals. It analyzes messages, monitors data, and helps government agencies respond quickly to public issues, identifying the tone of messages. Expected outcomes include a 50% reduction in processing time, a 40% increase in analysis accuracy, a 30% improvement in responsiveness, and a 25% boost in citizen satisfaction.

Other pilot projects are being tested to improve urban infrastructure and the quality of life for the population.

– How developed is Kazakhstan's AI startup ecosystem? What are the most successful startups?

– The AI startup ecosystem in Kazakhstan is actively developing with state support, technology parks like

Astana Hub, and various acceleration programs. Currently, several dozen startups are working in AI, focusing on data processing, language model development, smart city solutions, fintech, and agrotechnology.

Among the 1,500 IT companies at Astana Hub, 150 are engaged in AI solutions. Successful startups are developing applications in industry, education, and healthcare, attracting attention locally and creating opportunities to enter international markets.

– In which niches do Kazakh AI startups primarily work? Are they focused on local solutions or aiming for international markets?

– Many startups strive to expand beyond the local market. For instance:

Cerebra has successfully entered the Uzbek market, is working on expansion into Saudi Arabia, and aims at the U.S., a key market for innovative solutions. These projects develop scalable products adaptable to the requirements of various countries, making them attractive to international investors and partners.

Interest in globally scalable startups is growing due to efforts to integrate Kazakhstan into international ecosystems. This positions the country as a promising center for AI product development. Specialized technology parks, such as Astana Hub, and initiatives like the Silkroad Innovation Hub provide a conducive environment for startups capable of competing on a global level.

– What programs or initiatives significantly support AI startups?

– Key programs include:

AI'Preneurs: An acceleration program for creating new AI startups. Of the 10 teams reaching the final stage of the investment committee, 7 received funding.

Silkway Accelerator: Designed to develop projects, scale them, and enter international markets.

Hero Training with Draper University: Supported the most promising startups, many of which attracted significant investments.

Additionally, acceleration programs for AI startups have been launched, motivational events to popularize AI are held, and a large-scale national hackathon has been conducted in 19 cities across Kazakhstan. Astana Hub and the AI'Preneurs program provide preferential conditions for supporting Kazakh AI startups and research groups.

– What steps are being taken in Kazakhstan to train AI specialists?

– Educational initiatives in AI already involve hundreds of thousands of people, including:

School-level training: establishing TUMO creative technology centers across the country (7 centers in major cities and 50 TUMO boxes in rural areas).

Student training: creating a network of Tomorrow Schools (7 AI schools in Kazakhstan) to prepare AI specialists, developing AI departments, and introducing interdisciplinary AI programs in colleges and universities.

Tomorrow School: Kazakhstan's first peer-to-peer AI school on the 01 Edu platform, offering free education without prior programming skills. Around 5,000 participants registered during the selection process.

Civil servant training: mandatory AI basics courses for current and new employees and quarterly online bootcamps, such as "AI People Bootcamp."

The TechOrda program trains school and university teachers in AI-related disciplines to teach students AI basics, programming, and data analysis. Currently, 300 educators are undergoing training.

Plans for the next five years include training 1 million people: 500,000 school students, 300,000 university students, 100,000 civil servants, 70,000 corporate sector representatives and startups, and 30,000 others.

– Does the level of AI specialist training in Kazakhstan align with international standards? What areas need further development?

– The level of training for AI specialists in Kazakhstan is approaching international standards due to reforms in the education system and the creation of innovation centers. Educational programs in 17 universities now cover applied AI and its medical applications. Key focuses include expanding international cooperation, enhancing practical student training, and establishing research laboratories in partnership with tech companies.

– Are there examples of successful collaborations between educational institutions and businesses in AI projects?

– Yes, examples include:

Tomorrow School: opened in collaboration with Astana Hub, using innovative platforms for education.

The TechOrda program: enabled teachers and students to gain practical experience with international companies.

Acceleration programs like Silkway Accelerator also support startups and foster integration into the economy.

– Are internships or exchange programs available with major tech companies for practical experience?

– Kazakhstan offers opportunities for practical experience in AI. Programs like TechOrda and Tomorrow School emphasize practical skills for students and educators. The

country also maintains partnerships with leading global accelerators (Google for Startups, Draper University, Nvidia Inception Program) and major tech corporations (Apple, Microsoft, Huawei, EPAM).

– How rapidly is Kazakhstan's AI industry developing, and what milestones support its growth?

– The AI industry in Kazakhstan is growing steadily. The 2024–2029 AI Development Concept laid the groundwork for institutional environments, human capital, and infrastructure development. Key achievements include:

The completion of the Kazakh language model KazLLM, already applied in various sectors.

The creation of the Smart Data Ukimet platform, integrating information systems for data analysis and accelerating technology adoption in public administration and other fields.

– How do Kazakhstan's AI prospects compare with other Central Asian countries? What are the country's strengths and challenges in AI?

– Kazakhstan is emerging as a pioneer in AI and digital innovation in the region. The measures discussed earlier solidify its status and readiness to take a leading global position.

– What is necessary to accelerate AI progress in Kazakhstan? Could it be improving educational programs, increasing investments, or something else?

– Kazakhstan's strategic vision is outlined in the AI Development Concept for the next five years. Key actions include ongoing analysis, employee training, identifying AI application areas, and integrating private market solutions into pilot projects.

– What barriers commonly hinder AI implementation in Kazakhstan, and how can they be overcome?

– A major barrier is the lack of structured and consolidated data. The Ministry is addressing this issue by creating a state data lake to support AI development.

Madina Abdrakhmanova, Deputy Director of Product and External Affairs, Senior Data Scientist, Institute of Smart Systems and Artificial Intelligence at Nazarbayev University

– How would you describe the current state of AI development in Kazakhstan? Which areas or sectors are actively applying it right now?

– I think we can already see its presence in our daily lives as users. For instance, geometry-based applications and license plate recognition are widely used in shopping malls, airports, and even on our phones. These systems have been around for some time, although people often don't realize it's AI at work.

In schools, geometric and number recognition applications are becoming part of the learning process. Additionally, financial services have integrated AI, allowing people to quickly access funds through banking systems, often without recognizing the AI element behind it.

– Interesting. Which industries are most actively using AI in Kazakhstan?

– Telecommunication companies are leading the way in AI adoption. They are innovating rapidly and integrating AI to enhance their services. For example, Beeline is a great example of a telecom company actively investing in AI-driven solutions.

Beyond telecommunications, banks are also adopting AI, though at different rates. More progressive banks are quicker to adapt and integrate AI into their operations, while older, more traditional institutions tend to evolve much more slowly.

– It seems like funding plays a big role in determining the pace of AI adoption.

– Absolutely. Larger companies with substantial budgets have the advantage of deploying their own advanced AI systems. Smaller entities, however, often rely on renting AI solutions, which can be limiting.

– What about startups? How challenging is it for them to develop AI technologies given financial constraints?

– Startups face significant challenges, especially around funding and access to resources. Many rely on pre-existing algorithms or third-party tools rather than developing their own AI systems. For example, startups focusing on video generation or other intensive AI applications must secure substantial funding just to rent the computational power needed for training models.

The high cost of equipment rental is a major hurdle. Without direct access to advanced infrastructure, startups

are forced to allocate large portions of their budget to these expenses, which can be a bottleneck for innovation.

– Let's talk about education. What is the role of universities in AI development in Kazakhstan?

– Universities play a crucial role, especially institutions like Nazarbayev University, which follow international models of education. For example, we divide disciplines into schools and departments, much like American universities. There's a strong emphasis on practical, research-based learning.

One unique aspect is that even undergraduate students are integrated into research projects. In many other countries, including the U.S., undergraduate students rarely get the opportunity to work on cutting-edge research. Here, from their third year onward, students can join labs, contribute to real projects, and co-author academic papers.

– That's impressive. It must give students significant hands-on experience.

– Exactly. This hands-on approach sets us apart. Students don't just learn from lectures; they actively participate in projects like developing algorithms, training models, and analyzing data. These are critical skills that prepare them for future careers in AI.

– Do universities also guide students on specific career paths?

– Absolutely. Based on a student's interests and abilities, we recommend courses and projects to help them specialize. For example, some focus on robotics, while others dive into computer science or mathematics. This guidance ensures that students gain both theoretical knowledge and practical skills.

– Does Nazarbayev University collaborate with other institutions or industries on AI projects?

– Yes, collaboration is a significant part of what we do. At our Institute of Smart Systems and Artificial Intelligence (ISSAI), we conduct joint research with schools of medicine, engineering, and other departments to apply AI in various fields. For example, we've partnered on projects related to personalized dietary recommendations and circular economy.

Another key area at ISSAI is natural language and speech processing. We've developed the first digital corpus for the Kazakh language, which was previously underrepresented in AI research. This work kicked off a series of publications at major international conferences focused on recognition and generation of text and speech data.

– That sounds like groundbreaking work.

– It is. For example, in 2024, we've focused on two major projects: Kazakh Large Language Model and Kazakh Foundational Speech Model. The latter was integrated into our first commercial project Soyle App. In 2025, we introduced the first Language-Vision Model of Central Asia. We hope the project will gather further funding to significantly improve the performance of the model.

– What challenges does Kazakhstan face in terms of infrastructure for AI development?

– One of the main issues is the lack of access to advanced computing equipment. For example, many of the supercomputers (NVIDIA DGX A100) we use were purchased years ago and are now outdated. Acquiring new equipment is difficult, especially with global supply chain issues and restrictions.

As a workaround, we often rent computing power from providers, such as Paperspace, but this approach has its limitations. It's expensive, and not all institutions can afford it. For universities or startups without substantial funding, this is a significant barrier to progress.

– Has this affected the pace of AI innovation in Kazakhstan?

– Definitely. Without modern infrastructure, the development and training of AI models take much longer. It also limits our ability to compete internationally. However, there have been efforts to address this, such as securing partnerships with private companies and international organizations to support AI research.

– What about collaboration with international institutions?

– Collaboration is crucial. We've worked with institutions in Europe, the U.S., and China to share knowledge and resources. However, getting recognition in the global academic community is still a challenge. As a relatively new research institute, ISSAI doesn't yet have the same level of visibility as established Western institutions.

– What about regional collaborations?

– Regionally, we've been working with other universities in Central Asia to foster a stronger AI ecosystem. For example, we've hosted workshops and seminars to share expertise and encourage cross-border cooperation. The goal is to build a network that can collectively address challenges like infrastructure and funding.

– Looking ahead, what do you see as the key priorities for AI development in Kazakhstan?

– The first priority is improving our infrastructure. Without modern computing systems, it's impossible to keep up with global advancements in AI. The second is investing in education and training to build a highly skilled workforce capable of driving innovation.

We also need to focus on developing commercial products

that demonstrate the value of AI to businesses and the government. By showing tangible results, we can attract more investment and support for the AI ecosystem.

– Are there any specific strategies in place to achieve these goals?

– Yes, the government is working on a national AI strategy that includes creating specialized AI hubs, encouraging private sector investment, and fostering international partnerships. Nazarbayev University and ISSAI are also playing a key role in shaping this strategy by contributing research and providing recommendations based on our expertise.

– That sounds like a solid plan.

– It is, but the implementation will be critical. With the right investments and collaboration, Kazakhstan has the potential to become a regional leader in AI.

Meruyert Tleubergenova, Startup Program Leader and Strategic Advisor in Central Asia's innovation, Astana Hub

– In the beginning, let's discuss how you assess the current state of artificial intelligence development in Kazakhstan. Which industries or sectors are most actively implementing AI?

– The current state of AI development in Kazakhstan demonstrates solid mathematical and algorithmic foundations. However, the industry lags behind global standards. The main areas of AI applications include fintech projects and government services. However, progress is significantly hindered by a lack of specialists, data, and professional communities, which are crucial for the successful implementation of AI technologies.

– What economic benefits can wider adoption of AI bring to Kazakhstan? Are there any forecasts?

– AI has the potential to significantly increase business efficiency, improve the quality of public services, and reduce costs associated with routine processes. For example, implementing AI in healthcare could optimize diagnostics and disease monitoring. However, achieving these benefits requires investments, support for startups, and programs that encourage the use of local solutions.

– How developed is the startup ecosystem in the field of AI in Kazakhstan? How many startups are operating in this field?

– The AI startup ecosystem is still underdeveloped in Kazakhstan. The number of startups is limited, and their main challenges are a lack of investment, data for model training, and networking opportunities. Introducing support programs similar to those abroad could foster the growth of startups and increase their competitiveness.

– In which niches do Kazakhstani AI startups most frequently operate? Are these local solutions or projects with the potential to enter international markets?

– Kazakhstani AI startups most often focus on local solutions in areas such as financial technologies, monitoring, security systems, and healthcare. The main challenge is the lack of access to large volumes of data, which limits their ability to enter international markets.

– What programs or initiatives are providing the most meaningful support to AI startups?

– Support programs for startups exist, but they mainly focus on general IT rather than specialized AI. Government grants often require partnerships between universities and businesses, but there is currently no well-defined ecosystem for such interactions. Specialized programs supporting training in model development, data annotation, or the creation of large data hubs are also lacking.

– What steps are being taken in Kazakhstan to train specialists in the field of AI?

– Kazakhstani universities provide a strong mathematical foundation, but practical training in AI is currently lacking. Private companies take on this role by training interns within their teams. However, to establish a sustainable talent pool, specialized educational programs, and inter-university initiatives are necessary.

– To what extent does the level of specialist training in Kazakhstan meet international standards? What areas require further development?

– The level of preparation among specialists in Kazakhstan is decent due to a strong mathematical education. However, unlike international standards, there is a lack of networking and practical experience, leading to professional isolation. To improve this situation one can be advised to develop the professional community

through events and conferences and implement university programs that teach practical work with AI models.

– Are there examples of successful cooperation between educational institutions and businesses for the implementation of AI projects?

– Currently, there are few such examples. State grant programs involve universities and businesses, but there is a lack of full-scale collaboration for implementing solutions. It is necessary to develop joint research programs similar to those implemented in leading global universities.

– Are internships, exchange programs, or collaboration opportunities with major technology companies provided?

– Official exchange or internship programs are absent. The main reason is the significant salary gap between Kazakhstan and international companies, which limits the exchange of specialists. To address this issue, subsidy programs and internship programs with state support are needed.

– How rapidly are AI industries developing in Kazakhstan? What are the key events and initiatives that are most significant?

– AI is one of the fastest-growing industries globally, but its development in Kazakhstan is slow due to a lack of professional community, weak infrastructure, and insufficient investment. The most significant initiatives in Kazakhstan are related to the development of e-Government services (eGov) and the establishment of Astana Hub as a center for IT startups.

– How do you assess Kazakhstan's prospects compared to other Central Asian countries? What are the strengths and challenges in the country's AI sector?

– Kazakhstan is a regional leader due to its openness to technology, advanced digitalization, and competitiveness in the IT sector. However, the key challenge is the lack of a strong professional community and ecosystem for AI development. To maintain leadership, more support programs and collaboration between businesses, government, and universities are needed.

– What, in your opinion, is needed to accelerate progress in the AI field in Kazakhstan?

– To accelerate progress in the field of artificial intelligence in Kazakhstan, targeted measures are necessary. Firstly, significant increases in investment are needed, as developing AI products entails high costs for data collection, annotation, and hypothesis testing. Secondly, subsidy programs similar to those in Singapore, encouraging local companies to adopt startup solutions, would be beneficial. Developing infrastructure, including state-provided large datasets for model training, can also give a powerful boost to industry development. Additionally, improving educational programs to prepare more specialists with current knowledge and practical skills are crucial.

The primary barrier to implementing AI products in Kazakhstan is their high development costs, particularly challenging in the B2B segment, where substantial time and resources are required for product creation, testing, implementation, and business integration. Overcoming these challenges requires not only enhancing grant support but also providing startups access to government data for model training and conducting data annotation events. These steps can significantly ease the path for local companies to develop competitive products.

Despite challenges, Kazakhstan has substantial potential to maintain leadership in Central Asia. With its openness, competitive environment, and advanced digitalization, the country can leverage its advantages for further growth. However, to meet global standards and compete successfully with leading countries, more active implementation of startup support measures, development of professional communities, and increased investments in AI are essential.

Currently, many startups label themselves with AI, but genuine research and development (R&D) in this field are scarce, not only in Kazakhstan but globally. The development of AI in the country is actively supported by the government, with plans this year to establish a major AI research center, recently tasked by President Kassym-Jomart Tokayev. This initiative has been entrusted to Astana Hub, marking a significant investment in AI, which is unprecedented compared to other countries.

Pilot programs are already underway in Kazakhstan, albeit in their early stages, which could become significant international initiatives. It's particularly encouraging that these programs are often free and supported by the Hub and the government, offering excellent opportunities for startups and AI professionals.

Ruslan Zhemkov, Founder, Climate Action Initiative Central Asia

– Could you first explain your initiatives? You mentioned in our previous conversation about using funds from Google. Could you explain it more?

– We have a project called Climate Action Initiative Central Asia — it's a platform for sustainable forestry, reforestation, and forest monitoring aimed at creating new projects. I am one of the project leaders alongside our main coordinator, Kabaeva. We initiated this project because we identified several problematic areas in this field:

1. Approximately 80% of the trees planted don't survive.
2. There's a lack of transparency in reporting and managing forestry projects.
3. The market participants are closed off and rarely share data.
4. People struggle to navigate new forestry projects, especially regarding carbon credits — how to register, lead, or operate them effectively.

We created a platform to enable market participants to communicate in simple terms, accessing data transparently and efficiently.

AI plays a critical role in our work. It contributes in several ways:

- Predictive analytics: helping landowners and farmers determine the best practices for their land — what trees to plant, where, how, and with what density. The AI algorithm becomes smarter with the increasing data we input.
- Data analysis: integrating other important data like satellite monitoring, climate, soil, and water conditions to support successful forestry projects.
- Automated reporting: compiling data from planting and monitoring phases into reports that comply with leading global standards, such as Verra's "Reforestation Standards", used in 70% of global forestry projects.

Our platform benefits diverse stakeholders, whether you're a landowner, an investor, or a corporation like Coca-Cola seeking regional sustainability initiatives. Participants can join projects, invest, provide land, or create large-scale forests from scratch. They receive structured reports and earn carbon credits, a digital currency traded globally. This approach allows people to save the planet while earning substantial profits.

– It's incredibly interesting. Could you explain further? How popular is this field?

– It's a very trendy field right now, essentially the "new green oil." Why is it so trendy? The global focus on sustainability has become all-encompassing. Corporations and financial institutions are obligated to submit various forms of sustainability reports. For instance, the European Union requires companies to issue reports on their efforts to conserve water, reduce electricity use, create sustainable ecosystems, or improve workforce diversity. These reports demonstrate that the company is evolving responsibly.

In Europe, these reports are mandatory for 100% of market participants. While the U.S. doesn't yet require them universally, nearly all financial institutions and corporations, like Google and Meta, are already engaging in these practices and purchasing carbon credits.

You're probably familiar with related concepts, such as ESG (Environmental, Social, and Governance) initiatives. It's all interconnected — different words, markets, scales, and data levels. For example, some companies may focus on gender equality in corporate governance as a way to contribute to social sustainability, while others might plant trees or build solar power plants. The scale varies, but these practices are becoming essential for companies worldwide.

The larger and more internationally active the company is, the more crucial these requirements become. Companies have two options: either change their production methods or invest in large-scale projects or buy carbon credits. This way, they may not physically alter their production processes, but their actions contribute to green initiatives, such as reforestation.

– Sounds promising. Could you share insights about the conditions for companies in your country? Is this profitable or attractive for investors?

– Since AI emerged as a prominent trend, it's become a top focus area for both venture deals and climate-related investments. Our project combines AI and climate objectives, leveraging AI for complex data analysis. This integration makes our startup unique and highly valuable.

– Let's talk about starting a new AI-related startup. Are conditions favorable in your country?

– It depends on the type of AI you're referring to. If you mean AI for machines, algorithms, or the new intelligent agents we're seeing now, it's different for each. And it really depends on what you want to use. As for the technical details, I'm not an engineer, but there's a general talent pool and accessible resources. Most AI tools and capabilities are available for free.

However, a lot depends on the tools you're using. For example, if you rely on cloud solutions or complex systems

from Google, you'll work within Google's ecosystem. Google often rewards startups that adopt their products by providing credits and resources. The same applies to Microsoft, AWS, and similar services, which offer various incentives.

The real issue lies in computational resources. In developing countries, supercomputers are typically limited and often government controlled. In Kazakhstan, for instance, we have a couple of machines — one at Nazarbayev University and another at a state institution. There are plans to acquire more, but access for startups remains uncertain. I haven't heard of entrepreneurs being able to simply call up a university and request to use their supercomputer for training AI models.

While the country is slowly building its hardware capabilities, access to these resources is limited. This makes it challenging to train AI models efficiently and cost-effectively, especially for projects requiring massive data sets.

– Well, what could the government do to provide support? Could you list the top three ways the government could help or suggest reforms that could boost startup development?

– First, it's always education because specialized, in-depth knowledge adapted to the Russian and Kazakh languages is essential. Not just general knowledge you can find online, but thematic, niche, or specialized expertise. That's the first priority. Second, I'd say financial initiatives, such as tax benefits, subsidies, grants, or preferential loans — there are countless mechanisms for this. For example, we support renewable energy; why not provide similar support to companies or corporations working in this field? That could be a strong incentive for development. And third, access to essential resources, like computational power and infrastructure — that is, access to supercomputers and other critical capacities.

– How does bureaucracy affect these processes?

– Kazakhstan's vertical management structure often breeds corruption, making it challenging to access significant resources without navigating through layers of hierarchy.

– And what about education? Are there effective training programs or academies for AI?

– There are attempts, like programs at Astana Hub, but they lack the depth and expertise needed. Industry leaders like Google or Microsoft should be more involved to provide relevant and up-to-date training.

– Are industry experts invited to assist with local development?

– Yes, but this depends on lobbying efforts. Companies like NVIDIA and Google have shown interest, but their involvement is often driven by specific stakeholders.

Kyrgyzstan

Olga Bryzgalova, Leading Specialist, Ministry of Education and Science of the Kyrgyz Republic

– How would you describe the current state of artificial intelligence development in Kyrgyzstan? Which sectors are currently implementing AI the most actively?

– The current state of AI development in Kyrgyzstan can be described as being in its early stages. The country is only beginning to recognize the potential of AI, but its implementation is still limited to specific sectors. Challenges include a lack of computational resources, limited access to data, and the absence of a national AI strategy. However, AI is actively used in the financial sector, education, healthcare, and other areas like e-government and logistics.

– In which areas, in your opinion, can AI significantly improve the quality of life for Kyrgyz citizens?

– AI holds immense potential for improving citizens' quality of life. It can automate government services, enhance education through adaptive learning platforms, and improve healthcare with disease diagnostics. Additionally, AI can boost the efficiency of agriculture, transportation systems, and efforts to combat social inequality.

– What are the key objectives of Kyrgyzstan's Ministry of Education in the field of AI development?

– The Ministry of Education's main goals include integrating AI into the educational process by creating digital platforms, developing personalized learning tools, and enhancing teacher qualifications. The Ministry also aims to adapt international technologies and prepare students for participation in global initiatives.

– What educational courses and programs are available in Kyrgyzstan for studying AI?

– Several universities, such as Kyrgyz National University and the International University of Kyrgyzstan, offer programs related to AI. There are also specialized courses on online platforms like Skillbox and Lerna.kg. However, the overall number of students studying these disciplines remains relatively small.

– How do you assess the level of AI education in Kyrgyzstan compared to international standards?

– The level of AI education in Kyrgyzstan currently lags behind international standards. Key issues include a shortage of qualified educators, limited access to modern technologies, and a lack of interdisciplinary approaches. To improve the situation, it is essential to develop educational programs, establish research labs, and involve international experts.

– Can you provide examples of successful implementation of AI-related educational programs or projects in Kyrgyzstan?

– Kyrgyzstan has seen a growing interest in artificial intelligence, reflected in educational initiatives and projects. For example, the Institute of Computer Technology and Artificial Intelligence at Kyrgyz National University offers programs in programming and information systems, introducing students to the basics of AI. The AI Lab at the International University of Kyrgyzstan focuses on research in neural networks and intelligent systems. Additionally, Kyrgyzstan participates in international forums, such as the Turkic States Summit on AI, and benefits from platforms like Lerna.kg, which provides access to online AI courses.

– How is the Ministry of Education preparing young people to work in the rapidly evolving AI industry?

– The Ministry of Education is taking several steps to prepare youth for the AI industry. This includes developing AI-related courses in universities like Kyrgyz National University and the International University of Kyrgyzstan, promoting STEM education through conferences and events, and creating a national AI strategy. There is also a focus on providing access to digital tools and modernizing educational infrastructure to give students practical skills for AI-related careers.

– Are there partnerships with international educational platforms or tech companies to provide students with internships and practical experience?

– Kyrgyz educational institutions are actively building partnerships with international platforms and companies. For instance, Kyrgyz State Technical University collaborates with Samsung, offering tracks in mobile development, AI, and IoT. Programs like Erasmus+ provide opportunities for academic mobility and internships in European universities, and Kyrgyz-Russian Slavic University implements initiatives like the University 4.0 program, which integrates innovation and digitalization into education. These collaborations aim to equip students with practical skills and global experience.

– How successfully do students apply their AI knowledge in their careers after graduation?

– The success of students in applying their AI knowledge varies. Some graduates find opportunities in international companies, such as Google or Amazon, while others contribute to local projects like chatbots for banks or data analysis systems for government agencies. However, challenges remain, including limited local job opportunities, a lack of infrastructure, and businesses' low awareness of AI's potential. Personal initiative, such as participating in online courses and hackathons, often plays a crucial role in graduates' success.

– What challenges do students face in AI education in Kyrgyzstan?

– Students face numerous challenges, including limited access to advanced courses, inexperienced instructors, and inadequate interdisciplinary training. Technical issues, such as outdated computer labs and a lack of computational resources, also hinder progress. Furthermore, there is insufficient access to large datasets and localized materials in Kyrgyz or Russian. Financial barriers and a lack of long-term career prospects in AI locally can further reduce motivation.

– How quickly, in your opinion, is Kyrgyzstan's AI industry developing, and what key events or initiatives are driving this progress?

– Kyrgyzstan's AI industry is developing slowly but steadily. Key drivers include educational initiatives, government efforts to digitalize public services, and international collaborations. Events like the STEM4ALL conference and the Turkic States Forum on AI bring attention to the field, while local startups and partnerships with companies like Samsung contribute to practical advancements. However, progress is hindered by insufficient infrastructure, limited investments, and a shortage of skilled professionals.

– In what ways do you think AI can help overcome challenges specific to Kyrgyzstan's development?

– AI has the potential to address several key challenges in Kyrgyzstan. In public services, AI could automate routine processes like document registration, enhance transparency by detecting corruption patterns, and optimize resource allocation for social assistance. In education, adaptive AI platforms could improve access for students in remote areas, while in healthcare, AI could assist in early diagnosis and resource management. Additionally, AI-driven solutions in agriculture and environmental monitoring could improve efficiency and sustainability in these critical sectors.

– What recommendations would you give to accelerate AI adoption in Kyrgyzstan?

– To accelerate AI adoption, Kyrgyzstan needs to develop a national AI strategy focused on priority sectors such as education, healthcare, and agriculture. Investments in infrastructure, such as computing resources and data systems, are essential, alongside initiatives to train local talent through advanced educational programs. Encouraging partnerships with international companies and universities can provide expertise and funding, while promoting AI awareness among businesses and the public can help generate demand for AI-driven solutions.

– How does the Ministry of Education address the lack of AI-trained professionals in Kyrgyzstan?

– The Ministry of Education is working to address the talent gap by introducing AI-focused curricula, providing training for educators, and collaborating with international experts. Initiatives like STEM conferences, AI-focused workshops, and programs such as the AI Lab at the International University of Kyrgyzstan aim to build capacity in this field. The Ministry also emphasizes practical training through internships and research collaborations with local and international organizations to prepare students for the demands of the AI industry.

– What are the main barriers to building a robust AI ecosystem in Kyrgyzstan?

– The main barriers include a lack of computational infrastructure, limited access to large, high-quality datasets,

and a shortage of qualified AI specialists. Additionally, the absence of a national regulatory framework for AI and insufficient public and private investment slow down progress. Another significant challenge is the limited awareness among local businesses about the benefits of AI, which impacts the demand for AI solutions and the employment opportunities for graduates.

– What is your vision for the future of AI in Kyrgyzstan?

– With the right investments in education, infrastructure, and partnerships, Kyrgyzstan can build a sustainable AI ecosystem that contributes to social and economic development. By focusing on practical applications in areas like healthcare, agriculture, and public administration, the country can create impactful solutions while fostering a new generation of skilled professionals. Collaboration with international partners and targeted policies can ensure that Kyrgyzstan becomes an active participant in the global AI landscape.

Aijan Alisherova-Duymaz, Researcher, Accelerate Prosperity Kyrgyzstan

– Could you briefly explain what your organization does?

– Accelerate Prosperity is a global initiative of the Aga Khan Development Network (AKDN) focused on fostering economic development and business opportunities in regions where the potential is often untapped. We position ourselves as a social impact investor.

We offer financial solutions as well as pre- and post-investment technical assistance to help grow early-stage businesses, startups, and innovative ideas. Building an investable pipeline requires organizing meetings with small and medium-sized businesses, identifying their challenges and designing acceleration programs for entrepreneurs, followed up with providing investments. So our main services are investments, incubations, and accelerations. Recently, we've added a new service as investment readiness in order to help companies attract investments externally and scale.

Our target audience primarily includes small and medium-sized enterprises and startups. We currently operate in four countries: Kyrgyzstan, Tajikistan, Pakistan, and Afghanistan — places where economic opportunities are still underdeveloped.

– That's a great overview. Now, let's move on to a broader topic. Are there any government initiatives in Kyrgyzstan aimed at developing artificial intelligence? If so, how do they influence the field?

– The work on artificial intelligence in Kyrgyzstan at the government level is still at an early stage. To my knowledge, one of the first state-supported projects was focused on digitizing a database of Kyrgyz words. This was aimed at creating a foundation for AI applications in the Kyrgyz language.

For example, there was a project that resulted in a Kyrgyz-speaking virtual assistant called "AkylAi." Interestingly, while the government initially allocated funding to one company, it wasn't the one that developed this assistant. Instead, the project was created by graduates of our programs by Ulan Abdyrazakov, Nursultan Bakashov and Timur Turatali. They designed the assistant's voice and appearance and even hired an actress to record its speech. The assistant was first presented at KIT forum in 2024.

This team also founded Kyrgyz AI community and the first AI academy in Kyrgyzstan. These are private initiatives, not direct government programs. However, the government indirectly supports such projects by offering simplified tax regimes in High Technology Park, which is a significant advantage for all services delivering developers. Beyond that, I'm not aware of any other large-scale AI programs initiated by the state.

– That's interesting. What about startups in Kyrgyzstan? Are there any notable examples of successful projects in the field of AI?

– Yes, there are some standout projects. One example is a project focused on AI-powered tools for team management and remote collaboration called Enji.Ai. This startup is expanding not only within Central Asia but also into the Middle East.

Another successful story is MyStory founded by a team of young entrepreneurs, using AI to create personalized books by parents to their children.

The above-mentioned AI community leaders are also working on the implication of AI into a mental health assistant in order to improve sleep quality. This startup is preparing to enter the U.S. market, which is a significant milestone.

There are also several projects that are under development and we are waiting when there will be a beta version to test. These AI co-pilots in sales support Neobis, KiKo.Ai that will be reconnecting families online and many new developing AI projects.

Throughout 2024 alone, we've hosted around six hackathons and events related to AI. These initiatives generated several promising ideas, though some projects stalled due to a lack of funding. Unfortunately, aside from our organization, there are no other investors actively supporting Kyrgyz startups in the idea stage. This creates a significant challenge for entrepreneurs trying to move from ideas to implementation.

– Why is funding such a challenge? Is it purely an economic issue, or are there other factors at play?

– The main issue is that most development agencies focus on traditional sectors like agriculture, textile production, and tourism. Innovation, including AI, receives very little attention.

Small grants of $10,000–30,000 could make a significant difference, allowing startups to assemble teams and work on their projects. However, those kinds of financial instruments are almost nonexistent here.

– That sounds frustrating. Why do you think AI and innovation aren't prioritized, even though many countries see them as the future?

– In Kyrgyzstan, the focus remains on traditional investments. It's likely due to limited resources and a lack of understanding of the potential that AI holds. If the government allocated funds for such initiatives, we'd see more progress. But currently, no significant state financing exists for this sector.

Additionally, there's no venture capital system in Kyrgyzstan because the necessary legislation is missing. This forces local startups to look for funding internationally. Many talented teams relocate to markets like the U.S. or the Middle East to secure investments, as it's nearly impossible to find support within the country.

– So, when Kyrgyz startups manage to secure international funding, what challenges do they face afterward?

– The biggest challenge is relocation. To receive funding in markets like the U.S., startups often need to establish a presence there. While this is possible, it's not easy — many founders have families or responsibilities back home.

Another challenge is the limited local talent pool. Although Kyrgyzstan has excellent IT specialists, the numbers are relatively small due to the country's population size. Most of our developers focus on outsourcing work rather than building their own products because they need immediate income. This mirrors the early path of Belarus, where developers initially worked on outsourcing before moving to independent projects.

– That brings us to another point — what about the talent pipeline? Are there enough skilled professionals in Kyrgyzstan to support a growing tech industry?

– We have talented professionals, but the numbers are limited. Kyrgyzstan has a population of about 7 million, with only 3–4 million in the workforce. Out of this, only a small percentage is involved in tech.

To improve, we need to introduce AI and data science courses in schools and universities. For example, Kazakhstan and Uzbekistan have partnered with Coursera to make world-class educational resources accessible to students. This allows them to learn directly from top universities like Stanford, Harvard, and Yale. Kyrgyzstan should implement a similar initiative at the state level.

– That's a compelling idea. Finally, on an international level, how do Kyrgyz startups perform when they manage to break into global markets?

– Many perform well, but it requires relocating to those markets. For example, we have a few successful Kyrgyz startups currently operating in the U.S. They've managed to secure funding, some receiving up to $10 million from venture capitalists. With this support, they're able to focus on developing their products without worrying about immediate financial challenges.

The main difficulty for these startups is adapting to competitive environments abroad and building networks. Once they secure funding and establish a presence, the process becomes smoother. However, it's still unfortunate that these successes often happen outside Kyrgyzstan, as we lose talented people who could have contributed to the local economy.

Aisuluu Zhamangulova, Founder, Mugalim AI

– Could you start by telling us about your activities in general? What are the main directions of your work in the AI field?

– We have an artificial intelligence-based platform for teachers. We launched it last year, in March. It's a platform that provides 17 tools as its foundation. At its core, we use various models to generate content for teachers and assist them in preparing for lessons. These 17 tools include lesson plans, tests, quizzes, project assignments, lab work, and so on. Behind each of them is a framework powered by specific AI models.

We integrated the education standards of Kyrgyzstan into the platform and later translated these into Kazakh and Uzbek languages. Currently, it operates in English as well as Russian. As of today, we have around 30,000 registered users. There is a monetization component — teachers can purchase subscriptions and use the platform for a specific time. However, 10% of the features are free, so they can generate something, see how it works, and get a feel for it.

– It's not like a directive coming from above, it's entirely up to them if they want to use it, right?

– Exactly. On the contrary, we don't work with the government at all. We have no connections with them — none whatsoever. We created this exclusively because we had previously worked with teachers and had a platform where they took professional development courses.

Those courses varied — some were released by the Ministry of Education, while others were created and sold by different experts. There were also courses that we, as experts, developed and sold. Through this work with teachers, we realized that while online courses are helpful, they aren't enough. They don't solve the core problem.

You can train teachers as much as you want, but in our country, for example, it doesn't necessarily improve the quality of education. During conversations with teachers, we asked about their challenges and where their time went. Two key issues stood out:

1. They spend a lot of time creating lesson plans, which are mandatory in our country.
2. Although they learn teaching methods, integrating these methods into their lessons is difficult and time-consuming.

This requires creativity and careful thought about how, when, and where to apply these techniques. However, teachers often lack the time and resources to research and create these materials.

That's when we came up with the idea of a system that not only aligns with national standards and integrates active methods that genuinely work but also helps create engaging, innovative classes.

It's important to note that our system doesn't focus on evaluating or grading teachers in any way. Instead, it's purely about supporting them. And all of this can be done in just two clicks.

– If we talk about the difficulties you have encountered from the start — maybe funding, promotional barriers, or anything else — could you share what challenges you've faced?

– Overall, technically speaking, everything went quite quickly and easily for us. There weren't any promotional barriers. I would say that we gained our first 7,000 users without any marketing because people shared it themselves — they made instructional videos and forwarded them to each other.

However, our conversion rate to paid clients was very low, with only five people subscribing. It was a small conversion rate, so we decided to expand our reach. The biggest issue, I think, lies in the mindset of teachers in post-Soviet countries, where they're strongly accustomed to such services being free. We still occasionally receive angry messages or emails saying, "This is very useful, but why is it not free?"

– Could you explain how expensive it is to use your platform?

– No, it's not expensive. In September, teachers still had the option — and we've decided to continue this into the next academic year — to pay for unlimited access for nine months of the academic year. If a teacher's average salary is about 25,000 soms (approx. $286), they can subscribe for the nine months for only 3,000 soms (approx. $3.5).

– In other regions, like the EU, governments sometimes collaborate with educational initiatives, signing contracts with educational institutions. Teachers use the platform for some time, get accustomed to it, and later continue independently. Have you considered this kind of collaboration with the government?

– We haven't considered collaborating with the government because we know they wouldn't support something like this. There's also an issue where, if something is private, they feel it cannot be promoted, discussed, or implemented.

That said, providing free access for teachers so they can

use it for a certain period and then subscribe if they choose to is a great idea. It's something we're definitely considering.

– Before we move on, could you talk about the main challenges companies like yours face? You've mentioned the lack of government support or even opposition to private initiatives. How does this affect projects like yours?

– That's a very good point. When I was in the U.S. on a fellowship, I met with founders of startups working in school education, very similar to ours. I asked them how their processes worked. The structure of the market there is completely different. Their main clients aren't teachers, schools, or even the government, but rather independent distributors who are financially autonomous.

These distributors independently decide what services to use to improve education.

In our case, it's a different story. Schools and districts are very centralized; they don't have their own budgets or autonomy to decide what to buy or why. Everything is managed centrally. All state schools rely on the Ministry of Education, which spends significant amounts of money on developing various platforms.

Currently, I know that a lot of grant money has been spent on ministry-led platforms — for teacher training, electronic diaries, and more. The Ministry keeps aiming to centralize everything, and when they see commercial solutions on the market, they simply take those ideas, secure grants, and create their own platforms.

This is another reason why we don't work with the Ministry — they'll take your idea, apply for grants from organizations like the World Bank, and build their own major platforms. They control everything centrally.

At times, it feels demotivating to work in Kyrgyzstan's market. Every decision the Ministry of Education makes seems to reflect their ambition to become a Google or Meta, which, of course, won't happen. They aim to centralize everything into a single platform and control it themselves.

– Why do they want this? Do they explain their motivation, or is it just instinct? Has it always been this way — more money involved?

– Yes, it has always been this way because, unfortunately, our Ministry of Education is a large bureaucratic system that essentially survives on grants from international organizations. In my subjective opinion — and this is clearly a personal view, they're just used to taking money, implementing various projects, and launching platforms. None of these platforms function properly to this day. I don't understand their desire to keep doing this because it's such an unsustainable approach. They are not a tech company that can develop and maintain solutions properly — they could outsource this, but they don't want to.

This is partly because they think state schools should only use state-developed platforms, which they believe should be free. That's the problem.

To be honest, we're no longer focused on continuing to work in Kyrgyzstan. We're exploring other markets. We're even starting to question whether Kazakhstan or Uzbekistan are viable options, though the situation is slightly better there.

– You mentioned the platforms developed by the government don't work properly. Is it correct that they just take the grant money, invest in something to tick a box, and then don't care much about what happens next?

– Yes, there are many such platforms. We even compiled a list of them to analyze what works and what doesn't and to give teachers access to the functional ones. Some of the platforms were decent, but they're still labeled as "pilot projects" and remain unfinished.

These organizations believe they're ensuring sustainability by handing these projects over to the Ministry of Education. However, the Ministry has numerous such projects and lacks both the human and financial resources to maintain them.

– You mentioned exploring other markets. If not Uzbekistan or Kazakhstan, are you considering international markets? Which ones are you targeting?

– Yes, we've developed several hypotheses and decided to try new markets. For example, Abu Dhabi — they're open to collaboration. We've analyzed the market there, and it's significant. Since we're already translating into Arabic, focusing on that region makes sense.

– Could you comment on what reforms or support measures the government could introduce to help companies like yours stay in Kyrgyzstan?

– I think the key is readiness. Since education is a complex sector — not just about technology — it's critical to address its nuances.

In Kyrgyzstan, many teachers know about us and follow our platform, but very few are willing to pay for it. The only way forward, I believe, is for the government to become more invested in supporting startups like ours.

This applies not only to the Ministry of Education as a key player but to the government as a whole. It's crucial for them to develop a startup ecosystem, provide growth opportunity, and offer support.

We can see the level of support in Kazakhstan and Uzbekistan — there's a massive number of startups thriving there because they are actively supported.

– If we talk about training specialists or preparing personnel capable of working in this area, how well is Kyrgyzstan doing in this regard?

– Specifically in artificial intelligence? Honestly, I don't know much about what's being done here. There is a small community of people who gather around this topic, maybe you've spoken with some of them. I know they have an academy, and they've set up 30 grant-funded spots for training. But that seems like a drop in the ocean compared to how rapidly AI is advancing and permeating every field. I truly don't know much about systematic efforts to grow talent in this area.

– Based on what you've said, it seems that your country lags behind compared to your neighbors. Is this due to a lack of funding or other reasons?

– Funding is definitely one reason. This area needs significant investment. For example, in Uzbekistan, we've seen how pouring money into startups allows them to grow. Over time, the most competitive, adaptable, and intelligent ones create solid products and move forward.

If, from the outset, you only have a handful of people starting startups and they lack real financial support, it's hard to develop an ecosystem. The pipeline is too small.

– Uzbekistan also went through significant political changes, which likely contributed to their progress.

– Yes, that's a key factor. In our country, they would rather build a football stadium than invest in startups. It's an exaggerated example, but it reflects the general attitude toward private businesses — just squeeze as much as possible out of them.

The tax regime here has also worsened. While they claim to want entrepreneurs and businesses to thrive, they don't actually create favorable conditions for this. It's surprising and difficult to understand, especially given the new government's approach.

Tajikistan

Firuzjon Sodiqov, Secretary, AI Council under the Ministry of Industry and New Technologies of Tajikistan

– The first question is about the goals of artificial intelligence in Tajikistan. What are the main areas of application that you consider most promising for the country?

– We began our first AI-related initiatives back in 2019 with the establishment of the AI Academy. The initial goal was to train specialists in the field and ensure their employment in relevant sectors. Over time, we achieved early results, with about 50 students graduating from the academy in the first cohort. This laid the foundation for further development.

In September 2022, H.E. Emomali Rahmon, the President of the Republic of Tajikistan, signed the National AI strategy for Tajikistan's development until 2040. A key goal of this strategy is for AI-related developments and product implementation to contribute 5% to the country's GDP by that time. Currently, the financial sector is the leading area for AI applications. For example, financial organizations have been integrating AI-driven tools for risk assessment and document automation since early 2022.

– Could you tell us about the creation of the AI Council?

– The AI Council under the Ministry of Industry and New Technologies of Tajikistan was established in 2021. Its primary goals were to promote AI, monitor developments in the field, and coordinate efforts among government and private entities. With the adoption of the strategy, the council became the central body overseeing AI-related goals and ensuring the alignment of efforts with the national development plan.

– Do you have any data on how many AI specialists have been trained in Tajikistan since the council's inception?

– Since the establishment of the AI academy, over 400 individuals have started their education in this field. Of these, more than 300 have graduated as qualified specialists. Additionally, around 200 students are currently enrolled in university programs dedicated to AI, which were introduced in 2021.

– Are there any programs or courses aimed at school-aged students to prepare them for AI-related careers?

– Yes, pilot AI courses were launched in schools in 2024. Currently, 10 schools offer extracurricular AI classes that provide students with foundational knowledge in AI. Furthermore, the number of schools is increasing and project implementation is ongoing to adopt AI courses as a primary subject in school programs.

– Which sectors in Tajikistan are currently using AI most actively?

– The financial sector is by far the leader in AI adoption. Banks and microfinance organizations have integrated AI into their operations, particularly for risk assessment and client services. For instance, AI-driven algorithms are used to process customer queries and evaluate credit risks.

The telecommunications sector follows closely, utilizing AI to enhance customer interactions and automate responses. Lastly, government ministries have developed a plan for adopting AI for administrative processes. For

example, there's a platform that uses AI to manage licensing for the production of food and drinks. The system evaluates submitted documents, flags inconsistencies, and automates responses to applicants.

– Are there any specific results or measurable impacts from the adoption of AI in Tajikistan?

– Yes, the financial sector has seen significant results. For instance, AI-driven credit assessment tools have helped reduce the percentage of non-performing loans from 6% to 1%. Additionally, over $300 million in loans have been issued with the support of AI, ensuring more accurate evaluations and reducing financial risks for lenders.

– What are the main challenges companies and sectors face when implementing AI in Tajikistan?

– The first major challenge is a lack of qualified personnel. While we've made progress in training specialists, the number of skilled engineers remaining in R&D is limited. The second challenge is access to high-quality data. Many companies have historically neglected data collection, and without robust datasets, it's difficult to develop effective AI models. Now, as the importance of data becomes more apparent, businesses are realizing they need better systems to collect and store historical data.

– Can you provide any data on investments in AI projects in Tajikistan over the past five years?

– There are some notable examples, for instance, zypl.ai secured more than $3 million in funding over the past two years. In general, the number of active AI startups in Tajikistan is growing and more investments are coming up.

– Are there any laws or regulations governing the use of AI in Tajikistan?

– At the moment, there is no specific law regulating AI as we envision a self-regulating approach. Currently, we are working with partners in Central Asia to develop self-regulation principles that will address the ethical and practical applications of AI without strict regulation of AI in the region.

This is an initiative to establish a unified self-regulatory framework for Central Asia. This effort involves collaboration with Kazakhstan, Uzbekistan, Kyrgyzstan, and Turkmenistan, aiming to create shared principles for AI governance in the region. For example, one principle focuses on ensuring AI models are transparent and adaptable to real-world use cases.

In addition, the President of Tajikistan has proposed the creation of a Regional AI Centre in Dushanbe to coordinate AI initiatives and policies across Central Asia. This center would facilitate collaboration and align efforts among the countries in the region.

– What about international partnerships? Are there any notable collaborations on AI development?

– Yes, during his statement in the UNGA 79th session General Debates H.E. Emomali Rahmon, the President of the Republic of Tajikistan, encouraged consensual resolutions 78/265 and 78/311 to showcase the progress Central Asian countries are making in AI and to mobilize support for their efforts to harness AI for socio-economic development and sustainable growth, proposed to adopt a special resolution entitled "The role of Artificial Intelligence in creating new opportunities for socio-economic development and accelerating the attainment of the SDGs in Central Asia." The adoption of a resolution will be very important for the further development of AI in the region and developing countries.

Additionally, we've signed a memorandum of cooperation with the UAE. This partnership involves using Tajikistan's experience in adopting an AI strategy for the UAE Emirate Ras Al-Khaimah and in return provides investment in our economy. It's a mutually beneficial arrangement that combines expertise and resources.

– What measures would you recommend to enhance AI development in Tajikistan and ensure its long-term growth?

– There are several key steps that can drive AI development forward.

First, the government's continued support is crucial. From initiatives like those proposed at the UN General Assembly to the adoption of a national AI strategy, these actions provide a strong foundation for progress.

Second, we need to invest in infrastructure, particularly in data storage and processing facilities. Reliable infrastructure is essential for developing advanced AI models and ensuring they are applicable to real-world use cases.

Third, building a skilled workforce is critical. Tajikistan needs to focus on training engineers and specialists who can work on innovative projects. This includes both local educational initiatives and partnerships with international institutions to bring in expertise and share knowledge.

Lastly, fostering collaboration between the public and private sectors is vital. Joint projects can bridge the gap between research and implementation, allowing for faster adoption of AI solutions in industries such as finance, telecommunications, and government administration.

To reach all the goals mentioned we have launched with Area AI.

Area AI — national 'AI Park' project presented to the President of Tajikistan to position the nation as a global AI

powerhouse from R&D to deployment. This is a significant project for the further development of AI in Tajikistan, which includes from education to green data centers and more.

– Are there any specific projects or ideas that highlight the potential impact of these measures?

– Yes, one notable initiative is the development of Tajikistan's first fundamental AI model called zGan. This project is currently in the development stages but has already reached milestones such as patent applications. With continued investment in infrastructure and workforce training, these types of projects could significantly accelerate the country's progress in AI development.

If these steps are implemented effectively, we could achieve the goal of having AI contribute 5% to Tajikistan's GDP by 2040, as outlined in the national strategy.

Najima Noyoftova, Director of the Executive Office, A7Sigma

– Let's start with the basics. Could you explain to someone with no prior knowledge about the state of artificial intelligence in Tajikistan? What's happening there now, and how is it evolving?

– Sure, I'll begin by sharing a bit about myself and my company. I am the Director of Executive Office in A7σ (A7Sigma), which is a holding company managing various projects we develop in Tajikistan. Our main goal is to implement the national strategy for AI development in Tajikistan. You may not know this, but Tajikistan is the first country in Central Asia to adopt a national AI strategy. It was introduced and signed into law by our national leader, President Rahmon, in 2022. Since then, our company has been focused on realizing this strategy. The main goal of this national strategy is for AI to contribute to 5% of GDP by 2040. We are actively working to achieve this target.

Our holding includes several companies. One of them, zypl.ai, is well-known across Central Asia and focuses on credit assessments. This company has created an ecosystem around credit scoring, with various products actively implemented in major banks. It has solidified its position in Central Asia and is now expanding into more developed markets, such as the United States, European countries, and the Gulf region.

In addition to this, we have another area of expertise, where we work on a fundamental level. Instead of solely using existing global models, we develop foundational models ourselves. One of our key developments is zGAN, a synthetic data generator. I don't think the technical details are necessary, but it's important to note that zGAN represents what could potentially become the first AI patent from Tajikistan.

– That sounds impressive. Could you elaborate a bit more?

– Securing this patent is a significant achievement for us since, globally, nearly 50% of countries don't have any patents in AI. Currently, we're in the final stages of obtaining the patent, which is a testament to Tajikistan's progress in this field.

Looking ahead, we aim to develop several such models each year, which will strengthen our position on the global stage. For instance, one of our teams, epsilon3.ai is deploying zGan not only within the private sector but also in government systems. Recently, President Rahmon issued a directive to integrate AI into public administration, opening up numerous opportunities for our projects.

This initiative isn't limited to Tajikistan; we're expanding to six other countries, including Kazakhstan, Uzbekistan, Indonesia, Saudi Arabia, and South Africa.

– That's fascinating. Are there other areas where AI is being applied?

– Absolutely. One of our key cases involves AI applications in retail. We are conducting back tests with major local companies and plan to enter global markets soon. Additionally, we're working on various other projects, all of which originate in Tajikistan, bolstering the country's position as a hub for AI innovation and exports.

From my perspective, AI development in Tajikistan is accelerating rapidly. We are doing our part to drive this growth and contribute to the global AI landscape.

– You've already outlined some areas where AI is being used, but could we expand on this? If possible, could you name the top three sectors or industries where AI is actively being implemented? Is the government interested in developing these areas?

– If we're talking about the top three areas, the first would definitely be FinTech. This sector is actively growing, with many companies already serving a significant number of clients, including on the global market. For example, the United States is a key focus for these companies.

The second area, I'd say, is public administration. As I mentioned earlier, the president recently directed the integration of AI into public services. We've already completed a few projects in this domain, and I'm confident we'll see more extensive adoption soon. With this directive, government officials are now more open to implementing AI solutions, which will greatly help us expand in this area.

The third area would be retail. Although there aren't many large-scale projects yet, there is one promising case in Tajikistan. Retail is a highly prospective sector, and I believe we'll see significant results from ongoing projects in the near future.

– That's interesting. Let's talk about the startup ecosystem in this field. From what you've said, it seems the government is making efforts to support startups. Would you say the ecosystem is self-sustaining at this point, or is it still in the early, fragmented stages?

– Let me answer this by describing one of our initiatives, which directly relates to your question. We're currently working on creating a National AI Hub focused specifically on AI projects. This will be the first park of its kind in the region, solely dedicated to AI. While similar IT parks exist in Kazakhstan and Uzbekistan, our goal is to create one exclusively for AI innovation.

The fact that we're developing an entire park and already have numerous potential resident projects speaks volumes about the ecosystem's development. It's growing rapidly, and we're working closely with all participants to further strengthen it.

– Regarding the startups and solutions being developed, are they primarily targeted at solving local issues, or are they designed with international markets in mind?

– Of course, we always consider the global applicability of our solutions. Nearly all the projects I mentioned have international partners and are designed with a global market in mind. We don't create solutions solely for local issues or specific sectors. Our focus is on the future, and we aim to expand into new markets with these projects.

– What about government support, specifically financial backing? Could you provide any figures or examples of the support provided by the government?

– We receive significant support from the government, particularly in terms of advocacy. President Rahmon frequently highlights the importance of this sector, which gives us substantial opportunities to operate in the market. The president has publicly expressed support for our initiatives, and we've presented our concepts to him directly.

While we don't receive direct financial aid, the government's endorsement is invaluable. It provides us with a "green light" to develop and implement our solutions both domestically and internationally.

– So, there isn't any direct financial support yet. I understand that it might be tied to economic constraints, as not all governments have the resources to sponsor such initiatives.

– It depends on what you mean. If you're asking about dedicated funds, like presidential grants or something similar, we don't have that at the moment. For example, in Belarus, there's a presidential fund that allocates money to projects deemed important by Lukashenko. It's not quite the same here, though.

– So, are there any other types of funds or financial mechanisms involved?

– We've had cases where a project was funded through collaboration between our government and an international fund. For example, there was a partnership involving an academy funded by another state. That's the kind of case I can point to for now.

– Since we've touched on this topic, we'll return to education later. If we're talking about reforms or government actions that could help you further develop AI, what could those be?

– At the moment, I don't see any direct support from the government, apart from the public endorsements we've received, which are already quite significant. Recently, we initiated a proposal for self-regulation in AI across Central Asia, where we aim to establish shared principles for AI governance in the region.

To provide some context, currently, formal regulation of AI exists mainly in Europe. For example, there's the EU AI Act, which imposes strict controls on AI activities and requires licenses for developing AI products. Our idea is to create self-regulatory principles, where AI startups in any sector adhere to existing frameworks rather than establishing a separate regulatory body for AI.

This would allow startups to operate within broader industry regulations, such as those already enforced by national banks. We're actively seeking support for this initiative not only in Tajikistan but also from other Central Asian countries. If successful, it would create a second precedent globally for self-regulation in AI.

– Let's return to education. You mentioned an academy earlier. Could you explain how new AI specialists are being trained? Are these efforts tied to universities or private initiatives like yours?

– Let me start with the academy. It was established in 2021, and over 700 students have already graduated. Recently, the academy revamped its curriculum, introducing a phased approach to learning, with AI being a primary focus. The academy is funded by our team to develop local talent. This is essential because we need skilled professionals for our projects without having to rely on external hires.

This model has been successful, as most of our employees across various projects are local specialists.

At the national level, some universities in Tajikistan have AI departments. Additionally, as part of the national AI strategy, we recently launched an initiative to introduce AI classes in schools. Currently, this is limited to private schools as extracurricular activities. However, we plan to expand to public schools by the next academic year, making AI an optional subject nationwide.

– What are the main barriers for startups in Tajikistan? Could you name the top three?

– Speaking from a private sector perspective, I'd say the first challenge is a lack of awareness about AI's potential, both in government and private organizations. Often, people ask, "Why focus on AI when we have poor internet?" While this is an obstacle, it's not significant enough to halt progress.

The second challenge is the shortage of skilled specialists. While we're addressing this issue through our academy, the rapid growth of our projects and new startups means the demand for talent is constantly increasing.

Lastly, there's the issue of skepticism. Many people don't understand what we're doing or why we've chosen to focus on AI. Questions like, "How is this relevant to our sector?" are common, and it takes time to demonstrate AI's practical applications and potential.

Turkmenistan

Daniil Maykovskiy, Certified Management Consultant, Co-founder and Director, MCT Agency; Co-founder and CEO, StartUp Academy

– Could you tell us a bit about the MCT Agency? What does your company do?

– MCT Agency is a consulting company that has been operating in the Turkmenistan market for 18 years. Our main areas of activity include management consulting, marketing, and business strategy advising. Over the last 4.5 years, we've also developed our own business incubator. The incubator's primary goal is to support local startups, create an environment for knowledge and experience exchange, and provide access to international resources. Despite the country's challenging economic conditions, we are committed to promoting innovation and helping build competitive businesses.

– Can you share success stories of Turkmen startups in the field of AI that you've worked with? How successful is this area in Turkmenistan overall?

– Currently, there are few startups in Turkmenistan utilizing artificial intelligence, but there are some notable examples. One successful project is an application with computer vision technology. It helps users perform physical exercises using their mobile phone camera. AI algorithms analyze the movements and provide feedback on how to improve their technique. This startup has received positive feedback and is realizing the potential in international markets.

Another project involved developing AI to analyze lung scans for medical diagnostics. Unfortunately, it wasn't completed due to funding and infrastructural challenges. Overall, the AI field in Turkmenistan is still in its infancy, mainly due to limited access to technologies, educational programs, and a lack of experts in this domain.

– What do you think are the main factors that contribute to the successful development of AI startups in Turkmenistan?

– The success of AI startups in Turkmenistan largely depends on international connections. Those who have studied abroad or participated in international training programs bring back the knowledge and experience needed to create innovative projects. Access to foreign markets and partnerships helps these startups overcome domestic constraints.

Accelerator programs and grant support, which are currently almost non-existent in Turkmenistan, are also critical. If such initiatives were introduced, they could act as a significant catalyst for development.

– What unique challenges do Turkmen startups face? How do these affect their ability to compete internationally?

– The main challenge is the country's relative isolation. Turkmenistan remains a relatively closed economy with strict visa restrictions, making it difficult to exchange experiences with other countries and attract international experts and investors.

The domestic market is also limited. Companies often face difficulties securing funding and a lack of skilled personnel. All these factors make competing on the

international stage almost impossible. However, Turkmen startups, through perseverance and ingenuity, strive to overcome these barriers.

– What technological, economic, or regulatory barriers most significantly impact the development of AI startups in Turkmenistan? What steps are being taken to address them at the state level?

– In Turkmenistan, a clear policy to support AI startups has not yet been established. The main barriers include a lack of technical infrastructure, limited access to affordable high-speed internet, and insufficient development of educational resources. Economic constraints further hinder companies from investing in AI development.

At the state level, potential measures of support are still being discussed. There are plans to create programs that could stimulate startups through grants and tax incentives, but it's difficult to say when these will be implemented.

– What role does the Turkmen government play in supporting AI startups? Are there any specific programs or initiatives that have helped accelerate growth in this field?

– Currently, the Turkmen government is in the early stages of discussing potential support measures for startups. There are no specific initiatives or programs focused on AI yet. However, there is a general interest in fostering innovation. If the government actively develops this area through specialized incubators or educational projects, it could significantly change the situation.

– How do advances in AI impact the Turkmen economy? Have they led to job creation, GDP growth, or an improved quality of life?

– It's difficult to speak about a significant impact of AI on Turkmenistan's economy at this stage. The sector is still in its infancy, and its effects on job creation or GDP growth are minimal. However, the potential for this field is enormous. With the development of technology and educational programs, significant growth is possible in the future.

– How does the availability of technical resources and infrastructure affect the development and implementation of AI projects in Turkmenistan?

– The availability of technical resources is one of the key challenges. For instance, many companies face a shortage of powerful servers and specialized software. Internet access in the country is slow and expensive, making it difficult to access international platforms and databases.

– What forms of international cooperation are most effective for Turkmen AI startups? Are there examples of successful international projects or partnerships?

– International cooperation helps compensate for the lack of internal resources. For example, our business incubator collaborates with colleagues from Kazakhstan, enabling experience sharing, attracting foreign experts, and organizing joint projects. In the future, we hope to expand cooperation with other countries.

– What reforms, in your opinion, are needed to create a more favorable environment for innovation and entrepreneurship in AI?

– Reforms in legislation are needed to simplify doing business. Programs that support startups through grants, access to infrastructure, and educational resources are also crucial. These measures would help attract foreign investors and specialists to the country.

– What forms of early-stage startup support would be most effective in Turkmenistan? Are specialized incubators or accelerators for AI startups necessary?

– Incubators play a crucial role in the development of startups, especially in their early stages. The establishment of a specialized incubator for AI startups could accelerate growth in this field in Turkmenistan. Additionally, grant programs to support startups in their ideation phase would be very beneficial.

– How can educational programs be improved to train AI specialists in Turkmenistan?

– To improve training, it's necessary to implement modern educational programs, invite international experts, and develop online courses. Universities also need access to specialized teaching materials and support for training instructors.

– How can international experts and investors be more involved in the development of the AI sector in Turkmenistan?

– This can be achieved by organizing international conferences, forums, and exchange programs. It's also important to create platforms where investors can interact with Turkmen startups. Furthermore, expanding the network of business angels and fostering international collaboration will help attract both expertise and funding.

Allan Kazakov, Artificial Intelligence engineer and researcher, Soulin AI

– Can you tell us about your company and what you're working on?

– Soulin AI is focused on developing speech-to-text and text-to-speech models specifically for the Turkmen language. Our mission is to preserve and promote the Turkmen language in the digital age. So far, we've built a working speech synthesis model and a basic speech recognition model. But it's not just about the technology — we're also passionate about spreading awareness of AI in Turkmenistan. We're launching educational initiatives and building a community around these modern technologies to ensure they have a meaningful impact.

– That's inspiring. Now, zooming out a little — how would you describe the current state of AI in Turkmenistan?

– It's still in its early stages, but we're seeing some really exciting developments. For example, we've been working on a speech recognition system for the Turkmen language. The idea is to eventually enable voice assistants and educational apps that can simplify learning the language or accessing public services.

– Are there any other success stories you could share?

– Absolutely. One standout project is a startup that uses AI in agriculture. Their technology helps farmers identify plant diseases through photos, which has been a game-changer for improving crop yields. Agriculture is such an important part of our economy, so these innovations are incredibly impactful. Right now, the successes are mostly local, but they're laying the foundation for a more competitive industry in the future.

– What do you think are the main factors driving these successes?

– A big one is the enthusiasm of young people. We recently had a student startup competition, and it was inspiring to see so many creative ideas — everything from business automation to AI in education. These kinds of events are a great way to nurture talent and innovation.

Another important factor is support from international organizations like USAID. They provide educational programs and accelerators for startups, giving entrepreneurs the tools they need to grow and even go global.

– How does the Turkmen government fit into this picture? Are they doing much to support AI development?

– The government plays a key role, especially through its digitalization initiatives. For instance, they're implementing "smart city" technologies, which use AI for things like managing transportation and energy resources more efficiently.

They're also focusing on e-learning platforms. These create opportunities for AI to be integrated into education, making modern technologies more accessible to young people.

– Let's talk about the bigger impact — how is AI already contributing to Turkmenistan's economy?

– It's making a difference in some very tangible ways. For example, automation in agriculture helps us use resources more efficiently, which leads to better yields. In logistics, AI reduces transportation costs, which directly increases profitability for companies.

– International collaboration seems like it could really boost the development of AI here. What kinds of partnerships are the most effective?

– Educational and accelerator programs have been very effective. Teams from Turkmenistan have participated in Central Asian hackathons, where they got valuable feedback from international experts and even attracted investor interest.

Collaborations with foreign universities are another key area. These partnerships allow Turkmen specialists to learn from the best global practices and bring that knowledge back home.

– How do you think education can be improved to prepare more specialists in AI?

– For starters, we need to introduce courses on AI and data analysis into university programs. Partnering with global educational platforms like Coursera or edX would also be a great way to give students access to world-class resources.

– Finally, how can Turkmenistan attract more international experts and investors?

– Hosting events like forums and hackathons is a great way to draw attention. For example, "HI-TECH Turkmenistan" has already started to attract foreign specialists. These events provide opportunities to exchange knowledge and build partnerships that could lead to exciting new projects.

Uzbekistan

Oleg Pekos, First Deputy Minister of Digital Technologies, Ministry of Digital Technologies of the Republic of Uzbekistan

– Can you elaborate on the key government initiatives in Uzbekistan aimed at developing artificial intelligence? How have these initiatives influenced technological progress, and what other impacts have they had?

– Uzbekistan has embraced artificial intelligence as a cornerstone of its national development strategy under the "Digital Uzbekistan 2030" framework. Guided by the Presidential Decree PQ-358, the country has set ambitious goals to rank among the top 50 in the Government AI Readiness Index, generate $1.5 billion in AI-driven exports, and create 100,000 jobs by 2030. These efforts have been underpinned by significant investments in digital infrastructure, including the planned launch of high-performance computing clusters and a centralized big data repository to support AI innovation across sectors.

AI technologies are being integrated into critical areas such as healthcare, agriculture, finance, energy, and e-government. From early disease detection and personalized medicine to fraud prevention and demand forecasting, these applications have improved efficiency, reduced costs, and enhanced accessibility to essential services. In parallel, Uzbekistan has prioritized human capital development, introducing AI-focused programs in universities and partnering with global institutions to equip its workforce with the skills needed for an AI-driven economy.

International collaborations with leading technology companies are further accelerating the localization of advanced AI solutions and attracting investment, positioning Uzbekistan as a rising player in the global AI landscape. These initiatives are not only advancing technological progress but also boosting economic growth, improving governance, and enhancing the quality of life for citizens, solidifying Uzbekistan's reputation as a regional leader in AI development.

– What are the most successful examples of AI startups in Uzbekistan, and what contributed to their success? What are the main challenges AI startups face in Uzbekistan?

– Uzbekistan has emerged as a surprising force in the global AI startup landscape, fostering innovative companies that are making significant impacts both domestically and internationally. Let's delve into a few examples of these trailblazers and explore the key factors behind their success:

Geomotive: this digital advertising platform harnesses the power of AI to revolutionize Content Management Systems and location-based targeting. Their innovative approach to audience engagement through AI precision earned them a coveted spot at TechCrunch 2024, solidifying their global relevance. They have attracted $300,000 in venture investments.

Point.AI: focused on automating customer support through AI, Point.AI recently secured a pre-seed funding round, propelling their expansion into global markets. Their success is fueled by a customer-centric approach and the ability to attract significant investments. Well-known venture fund, Plug and Play, as well as Netherlands fund Domino

Ventures and Uzbekistan venture fund AloqaVentures trusted in the startup and invested in its future.

Tass Vision: this company transforms raw surveillance camera footage into actionable analytics, specifically designed to enhance sales in the retail sector. Their success reflects the power of niche AI applications in tackling real-world business challenges. They have attracted more than $450,000 in investments.

These examples showcase the impressive strides Uzbekistan is making in the AI sector, but it's not without its challenges.

One of the primary hurdles is limited access to funding. While there's increasing interest, the venture capital ecosystem is still relatively nascent, making it difficult for startups to secure the necessary financial backing. The five active venture funds with their overall $15-$20 million USD venture capital are not meeting the expectations.

Another significant challenge is the shortage of skilled AI talent. While universities are producing talented graduates, there's a need for more experienced professionals to guide and mentor young entrepreneurs. Additionally, lack of technical infrastructure for data processing and launching projects based on artificial intelligence is also hindering the development of startups in the AI sector. However, with the Presidential Decree on the strategy for the development of artificial intelligence technologies until 2030, we are aiming to solve all of these problems.

– How many AI projects have been launched in Uzbekistan over the past few years? What percentage of these projects have been successfully implemented?

– Over the past few years, Uzbekistan has emerged as a growing hub for artificial intelligence, with the launch of over 50 AI projects across a wide range of sectors. These initiatives reflect the country's strategic focus on embracing cutting-edge technologies to address both local and global challenges. From optimizing operations in industries like retail, banking, and healthcare to enhance public services and education, AI is becoming an integral part of Uzbekistan's digital transformation journey.

Among these projects, approximately 60% (*30 startups*) have been successfully implemented, a significant achievement given the nascent stage of AI adoption in the region. This success highlights not only the technological expertise being cultivated but also the effective alignment of policies, investments, and infrastructure to support innovation. The focus on AI is not just about technological advancement — it is also a means to foster economic growth, improve efficiency, and create new opportunities for talent development and job creation.

– What is the total amount of investment in AI startups in Uzbekistan over the past year? Which funding sources are most significant for Uzbek AI startups?

– Over the past three years, Uzbekistan's startup ecosystem has attracted over $140 million in investments, with more than $3 million allocated to over 10 AI-focused startups. This indicates that while the AI sector is emerging as a key area of innovation, it still represents a relatively small portion of the overall investment landscape. Key funding sources include venture capital firms like AloqaVentures, international accelerators such as Plug and Play Tech Center, and government-backed initiatives like the "Digital Startups" program, which provides early-stage financial support and fosters innovation.

This modest level of investment in AI highlights significant opportunities for growth. To accelerate development, it is imperative to build greater trust among venture funds by showcasing the scalability and global potential of Uzbek AI startups. As policymakers, we must also focus on creating a favorable regulatory environment, enhancing data processing infrastructure, and investing in the cultivation of IT talent. By addressing these areas, Uzbekistan can solidify its position as a competitive player in the global AI market and unlock the transformative potential of artificial intelligence for economic growth.

– What are the main barriers holding back the development of AI in Uzbekistan?

– One of the main barriers to the development of AI in Uzbekistan is the shortage of qualified specialists in the field. While the government has introduced AI-focused academic programs and is collaborating with global institutions to address this gap, the current supply of skilled professionals falls short of the growing demand. This limits the country's capacity to fully develop and implement advanced AI solutions across various sectors.

Additionally, challenges such as insufficient access to high-quality, labeled datasets, the need for more robust computational infrastructure, and the relatively nascent stage of private sector involvement in AI innovation also slow progress. Despite investments in big data repositories and planned high-performance computing clusters, many industries still face difficulties in integrating AI due to a lack of readiness and expertise.

Regulatory frameworks are also evolving, and while progress has been made in data protection and ethics, the absence of comprehensive legal structures tailored

to AI innovation and deployment creates uncertainty. Overcoming these barriers will require sustained efforts in education, infrastructure, and policy development, along with fostering partnerships between the government, private sector, and international organizations.

– What programs or support measures exist for AI startups in Uzbekistan? What challenges do they encounter when starting and scaling their businesses?

– Uzbekistan has implemented various programs to support AI startups, including the establishment of IT Parks, which provide tax benefits, infrastructure, and networking opportunities. Government initiatives like the "Digital Uzbekistan" program aim to foster innovation and attract investment in the tech sector. Additionally, accelerators and incubators, such as the Plug and Play Tech Center, offer mentorship, funding, and resources to early-stage AI startups.

Despite these supportive measures, AI startups in Uzbekistan face several challenges. Access to funding remains a significant hurdle, as the local venture capital ecosystem is still relatively nascent. Additionally, a shortage of experienced AI talent and a lack of mature technological infrastructure can hinder growth. Moreover, navigating complex regulatory environments and building strong partnerships with established businesses can be daunting for young startups.

– How are large companies in Uzbekistan integrating AI into their operations? Can you provide examples of successful projects?

– In Uzbekistan, large companies, particularly in the financial sector, are leading the way in integrating artificial intelligence into their operations to enhance efficiency and security. One of the most notable applications is the use of AI-based credit scoring algorithms by banks. These advanced tools analyze extensive datasets to assess loan applicants' creditworthiness, even those with minimal credit histories. For instance, Aloqabank successfully implemented an AI-driven scoring model, enabling it to build a $20 million loan portfolio with a default rate of less than 1%. This highlights how AI is transforming risk assessment and making financial services more inclusive.

Biometric technologies, such as Face ID, have also become an integral part of large institutions' operations. These systems are used for secure client identification, and streamlining customer interactions while reducing the risk of fraud. The Ministry of Justice, for example, employs Face ID across public service centers, allowing citizens to access services without physical documentation, significantly enhancing convenience and security.

Additionally, AI-powered fraud detection systems are being used to analyze transaction patterns and identify anomalies in real-time. These technologies provide businesses with an effective tool to prevent financial losses by flagging suspicious activities before they escalate.

In customer service, companies are deploying AI-driven chatbots and virtual assistants to handle inquiries more efficiently. These tools offer instant responses to common questions, improving customer satisfaction while allowing human staff to focus on more complex tasks.

– How is AI development affecting the labor market in Uzbekistan? Is there a growth in new AI-related professions, and how is this changing the skill requirements for workers?

– The development of artificial intelligence in Uzbekistan is reshaping the labor market in profound ways, both by creating new opportunities and redefining skill requirements across industries. A working knowledge of common AI tools, such as ChatGPT, Perplexity, Midjourney, and DALL-E, is increasingly expected from professionals in sectors like marketing, education, design, and customer service. These tools enable workers to enhance creativity, improve efficiency, and deliver higher-quality outputs, contributing to overall productivity growth.

For instance, in marketing and media, tools like ChatGPT and Perplexity are being used for content creation and audience analysis, while DALL-E and Midjourney are revolutionizing graphic design and branding efforts. Similarly, educators are leveraging AI to personalize teaching methods and streamline administrative tasks, ensuring more tailored and effective learning experiences for students.

While AI adoption has made many sectors more efficient, it is also reshaping the IT industry, particularly for software engineers involved in outsourcing. Globally, there is a trend of outsourcing tasks to AI instead of human engineers, and Uzbekistan is beginning to feel the effects of this shift. Software engineers may find a decline in traditional outsourcing job openings as companies increasingly rely on automated solutions for coding, testing, and debugging tasks.

Nevertheless, AI's integration into workflows is rendering the broader workforce more productive by automating routine tasks and freeing up time for higher-value activities. To adapt to these changes, workers across all industries must continue to upskill, particularly in digital tools and AI systems, to remain competitive in an evolving job market.

– What educational programs or courses in AI are available at Uzbek universities? Are there any initiatives to introduce AI education into school curriculums?

– Uzbekistan is rapidly advancing its AI education framework to meet the growing demand for skilled professionals in this field. Currently, 12 public universities offer specialized programs in artificial intelligence, with a total annual quota of 572 students, including 510 at the bachelor's level and 62 at the master's level.

To further strengthen the talent pipeline, we plan to introduce AI education into school curriculums. This initiative aims to familiarize students with foundational AI concepts and programming from an early age, fostering a generation of AI-literate graduates.

A key highlight is the AI Talents Program, which offers free education in advanced AI disciplines to winners of prestigious international Olympiads, such as IMO, IPhO, and IOI. This program, conducted in partnership with domestic and international learning centers, ensures world-class training for the country's top-performing students.

– What legislative frameworks exist in Uzbekistan for regulating the development and use of AI? What are the main issues and debates surrounding this topic?

– Uzbekistan has established a foundational legislative framework to regulate the development and use of artificial intelligence, with a strong emphasis on human welfare as the guiding principle. The country's approach to AI regulation is outlined in the Presidential Decree PQ-358, which approved the national AI strategy until 2030. This decree sets key priorities, including creating a robust legal environment for AI technologies, ensuring data security, and aligning national standards with international best practices.

A significant component of this framework is the upcoming Ethics Principles for AI Development and Use, scheduled for release in 2025. This document will define ethical guidelines to ensure that AI technologies serve the public good, uphold human dignity, and mitigate risks associated with misuse. These principles will address critical areas such as transparency, accountability, and the protection of personal data, aligning AI development with Uzbekistan's commitment to a human-centric approach.

Despite these advancements, several issues and debates remain. Key concerns include balancing innovation with regulation, ensuring inclusivity in AI benefits, and addressing the potential for job displacement due to automation. Furthermore, the need for comprehensive oversight mechanisms to prevent bias and misuse of AI systems is a topic of active discussion among policymakers and stakeholders.

– What makes the Uzbek approach to AI unique compared to other countries in Central Eurasia? What local factors are considered in the development of AI technologies?

– Uzbekistan's approach to AI is unique in Central Eurasia, shaped by its demographic and economic realities as well as its forward-thinking policies. With 60% of the population under the age of 30, Uzbekistan boasts one of the youngest populations in the region, coupled with dynamic population growth trends. This presents both a challenge and an opportunity. The government views AI as a key tool for creating jobs and addressing the employment needs of this youthful and growing workforce. Unlike some countries where automation may be seen primarily as a threat to jobs, Uzbekistan is fostering AI as a job generator, ensuring that it complements human labor rather than replacing it.

As the largest country in Central Asia, Uzbekistan also benefits from its strategic location and diverse economy, which inform its AI priorities. Local factors such as a strong agricultural base, a rapidly expanding financial sector, and a growing emphasis on e-governance shape the development of AI technologies. For instance, AI is being tailored to address challenges in precision farming, improve access to public services in rural areas, and enhance transparency in governance.

The Uzbek government's high-level support for AI development also sets it apart. Initiatives like the Presidential Decree PQ-358, which outlines a national AI strategy, and efforts to integrate AI education across schools and universities reflect a clear commitment to building an AI-driven future. Additionally, local priorities such as preserving cultural heritage and promoting Uzbek language processing technologies are integral to the country's AI agenda, ensuring that development is aligned with national identity and needs.

– What international collaborations or partnerships have been established to advance AI in Uzbekistan? How are these influencing technological progress in the country?

– Uzbekistan has established numerous international collaborations and partnerships to advance its AI development, leveraging global expertise to drive technological progress. When developing its National AI Strategy, outlined in the Presidential Decree PQ-358, the government consulted with leading international institutions such as the World Bank, UNDP, Meta, NVIDIA, and others. These consultations ensured that Uzbekistan's strategy aligns with global best practices while addressing local needs.

A major milestone was the September 2024 trip to San Francisco by a delegation led by the Minister of Digital Technologies. During this visit, the delegation met with

top global AI companies, including Intel, NVIDIA, AMD, OpenAI, and Scale AI. Key outcomes included agreements to equip six Uzbek universities with high-performance AI laboratories using cutting-edge computational equipment from Intel, NVIDIA, and AMD. The delegation also secured support from OpenAI to improve Uzbek language processing in AI models and discussed collaborations with Scale AI to provide data labeling job opportunities for Uzbek STEM graduates.

A highlight of Uzbekistan's international collaborations is the partnership with DataVolt, a Saudi company that has pledged $5 billion in foreign direct investment to build three AI-ready, net-zero data centers in Uzbekistan with a total capacity of 500 MW by 2030. These state-of-the-art data centers will serve as a cornerstone for hosting advanced AI solutions and attracting leading global IT companies to operate within Uzbekistan.

– How difficult is it for companies that use or develop AI to enter and compete in international markets?

– Entering and competing in international markets can be challenging for companies that use or develop AI, especially in emerging economies like Uzbekistan. One major hurdle is the intense competition from well-established global players, who dominate the field with advanced technologies, substantial R&D budgets, and mature ecosystems. Startups and smaller firms often struggle to match the resources and expertise of these industry leaders.

Another challenge lies in meeting international standards and regulations for AI development and deployment. Many markets, particularly in the EU and North America, have strict guidelines on data protection, ethical AI use, and transparency, which can be difficult for companies from less regulated environments to navigate. Ensuring compliance with these standards requires additional investment in legal, technical, and organizational frameworks.

Access to high-quality data and advanced computational resources also pose a barrier. While Uzbekistan is making strides in building AI-ready infrastructure, companies often face limitations in accessing large, diverse, and labeled datasets or state-of-the-art hardware to train and deploy competitive AI models.

Additionally, brand recognition and trust are significant factors in international markets. Companies from emerging AI economies may face skepticism about their capabilities or the quality of their solutions, making it harder to gain traction with global clients.

Obidjon Akhmedov, Head of International Partnerships and Industry Engagement, PDP EcoSystem

– Could you tell us about your startup? When was it founded, what field do you operate in, and what AI technologies do you specialize in?

– Our startup, PDP Invest, was founded in 2023 as part of the PDP ecosystem. We specialize in crowdfunding investment using the REIT model for real estate acquisition. Beyond this, we actively develop AI-driven solutions, particularly in education. AI plays a key role in PDP University and PDP Academy, where we use adaptive learning, student performance analytics, and personalized recommendations to enhance the educational experience and make learning more efficient.

– What AI-related projects have you implemented, and do you have successful case studies? What are your plans?

– Currently, our AI projects focus on educational technology. We implement adaptive learning systems, AI-driven student engagement analytics, and smart recommendations. One of our key achievements is using AI-powered tools to boost student engagement and improve academic performance.

Looking ahead, we aim to expand our AI applications in education, develop new AI-driven automation tools, and enter international markets. Our long-term strategy involves scaling our solutions beyond Uzbekistan and integrating AI into broader domains such as real estate and investment technologies.

– What markets are you targeting, and who is your primary audience?

– At this stage, we are primarily focused on the Uzbek market, but global expansion is a key part of our strategy. Our audience spans a wide age range (10 to 70 years old), encompassing students, professionals, and entrepreneurs who want to learn programming, AI, and other high-demand skills.

– How do you assess Uzbekistan's startup ecosystem, and what role do government and investment support play?

– Uzbekistan's startup ecosystem is evolving rapidly, with increasing interest from venture funds and strong government support. The government actively backs IT startups through IT Park initiatives, offering grants, tax incentives, and acceleration programs. There are also venture funds and accelerators that provide investment for innovative projects.

However, there are still challenges. Access to data, investment, and skilled professionals remains limited. Strengthening the legal framework for intellectual property, improving international market access, and increasing investments in science and technology could significantly accelerate startup growth.

– How easy is it to collaborate with government agencies, and what additional support could help your startup grow faster?

– Our experience working with government agencies has been relatively smooth — the government is open to dialogue and offers various forms of support for IT companies. However, simplifying regulatory procedures, enhancing access to international markets, and increasing investment in research and development would further accelerate our growth.

– What are the biggest challenges AI startups face in Uzbekistan? Are there specific barriers to data access, investment, or talent?

– Like many AI startups, we face challenges such as limited access to quality data, high infrastructure costs, and a shortage of experienced AI specialists. While IT Park and university initiatives are improving the talent pipeline, more efforts are needed in professional training, talent retention, and fostering AI research.

Another issue is brain drain — large international tech companies often attract Uzbekistan's top talent with high salaries, which makes it difficult to retain skilled professionals locally. To counter this, the country needs stronger incentives for specialists to stay and work on domestic AI projects.

– Where do you find AI specialists, and how do you evaluate AI talent development in Uzbekistan?

– We primarily recruit talent from local universities like PDP University and invest heavily in in-house training programs to build AI expertise. While the AI talent pool is growing, more structured training and upskilling programs are needed to bridge the gap between academic knowledge and industry demands.

We believe AI has immense potential in education, fintech, agriculture, healthcare, and logistics. AI-driven automation, predictive analytics, and decision-making tools can significantly enhance efficiency in these sectors.

Our projects already contribute to workforce development by providing high-quality education and training, and helping graduates secure jobs or launch their own startups. This, in turn, strengthens Uzbekistan's economy and technological infrastructure.

– Do you work with international partners, and do you have plans for global expansion?

– Yes, we collaborate with international universities and companies, particularly in areas such as investment, expertise exchange, and AI research. Entering the global market is one of our top priorities, and we are actively working on expanding our reach.

– What does Uzbekistan's AI ecosystem need to develop faster, and what kind of support would be most beneficial?

– For AI to thrive in Uzbekistan, the country needs stronger infrastructure, better data access, and incentives for specialists to work in AI. Government support in the form of research and development grants, accelerator programs, and preferential tax policies would be highly beneficial.

Additionally, simplifying regulations, fostering more AI-driven startups, and creating innovation hubs would further strengthen the ecosystem and position Uzbekistan as a regional AI leader.

Abdukakhkhor Tashmukhamedov, Chief Executive Officer, Green White Solutions LLC

– What is your initiative, and what exactly do you do?

– We specialize in digitizing businesses that need greater transparency and improved tools for tracking money and profits. Sometimes a business begins a partial transition to digital solutions but doesn't see the expected results. Our specific solutions focus on managing, boosting efficiency, and increasing margins by setting up structured processes across the company. This approach covers the full cycle, which is essential for distribution businesses, among others.

– Could you share how you use such tools or technologies in your work? Where exactly do you apply them and what do you use?

– Last year, for example, we started demonstrating an idea for product recognition. A field employee goes to a client and records inventory levels of our products and those of competitors. We also provide recommended orders so that representatives always have the right stock until the next visit.

– That sounds complex but interesting. Can you tell me more about the main advantages?

– Sure. One of our competitive advantages is that we offer solutions that truly make business processes simpler. Our technology can provide real-time data about stock markets, sales — both direct and by phone — and handle brand management modules. This includes field staff gathering information about each retail location and competitor's presence. We cover every aspect: equipment, refrigerators, and other devices crucial for day-to-day operations. Ultimately, the system calculates the profit the company makes at the end of each month. Without needing extra tech support, anyone can quickly see where the company is profitable and where it's losing money.

– That's convenient — it seems to save a lot of time and money.

– Absolutely. Because of that, we're now expanding into Central Asia and the Middle East; we're also in Saudi Arabia.

– What markets are you focusing on? Are you aiming only at your home country or other countries as well?

– We primarily target Central Asia and the Caucasus region; we have a strong presence in Uzbekistan and Kazakhstan. We've also started branching out to other areas. Since last year, we've attracted clients in more random fashion through word of mouth, such as in Mongolia and even Canada — smaller businesses that heard about us from partners.

– Earlier, you mentioned certain markets, could you clarify why they're beneficial? We'd be interested in hearing your version to better understand how you see the advantages.

– When we talk about these markets, especially in Central Asia, we find that business processes and distribution mechanisms there closely match our solutions. That's why we see a strong fit for what we do.

– But if we talk about your typical clients, who do you usually work with? What industries or types of businesses approach you most often?

– We work with large companies such as Pepsi, Coca Cola, Bayer, Lastellis — in fact, these are large players. We also actively cooperate with category B companies, of which there are many on the local market and in the countries where our product is present.

– So, these are really big names.

– Yes. A lot of our clients are large corporations, Interpipe, for example. The rest are medium and smaller businesses, like Jem Jamalem (just to name a few) — we still keep some of those clients.

– Sounds like it's useful for a wide range of companies. Would you say your solutions are also appealing to startups or is it more of a niche for established businesses?

– It's more of a niche for medium and large-scale businesses. Startups that haven't yet figured out their exact product or target audience might not benefit as much. Our focus is definitely on the mid to large segment.

– Could you talk about the startup ecosystem in your country overall? If someone were to launch a new initiative, what should they be prepared for? What opportunities might be available, and what are the main challenges likely to arise?

– The biggest advantage here — and it applies to much of Central Asia — is a rapidly growing population. However, venture capital systems are still underdeveloped, though improving. Skilled personnel is another challenge, but the government is working on it, and we believe things will change in about two years. Right now, we're still in early stages, and you must be prepared for that.

– Is there any direct government support for startups? Maybe special programs?

– Yes, plenty — especially for women. There are different

grants from government and international organizations. Every year the President allocates a $1,000,000 fund for about 15 startups: five get $100,000 each, five get a smaller amount, etc. The Ministry of Digital Technologies also has its own grants, and there's an Agency for Youth Affairs. Essentially, the government is actively stimulating the sector.

– If a startup encounters issues, how easy is it for them to communicate these problems to the government? Is that process straightforward?

– These days, it's actually quite open. Ten years ago, you'd face more difficulties, but now, if you approach the right officials, they'll try to help you get started. The main persistent challenge remains a lack of skilled personnel.

– People say education is the key to resolving that talent shortage. Do you agree?

– Absolutely. Even in places like the United States, top companies like Google and Apple are constantly hiring. Education is critical, but it takes time.

– So the biggest barrier is a lack of specialists? Or is funding also a problem?

– Funding is less of an obstacle than you might think. You can prove your concept locally because the population is large enough. The real problem is that many people here aren't used to paying for efficiency solutions because profit margins in some local industries are already high. So, they often don't see a need for optimization.

– Another issue might be the "brain drain" — people with strong qualifications can go work for Google or other global companies. How do Uzbek startups retain this talent?

– Yes, we're working on creating better conditions, so that people don't feel they have to leave, and the government is assisting. But fully matching Western opportunities is difficult in the near term. We also see many skilled workers lured by government-affiliated enterprises here, which can sometimes spoil them with higher salaries and lower workloads. Ultimately, it's about finding balance.

– Let's talk a bit about international partnerships. You've mentioned expanding to foreign markets — how do international audiences perceive startups from Uzbekistan? Are there any reputational issues?

– Some foreign partners doubt whether we can create serious products. There have been cases where outsourcing specialists didn't fulfill obligations, hurting our reputation. Last year on TechCrunch Disrupt, whenever we mentioned we're from Uzbekistan in Central Asia, we got reactions that implied skepticism. It's not pleasant, but we have to prove ourselves through consistent results and solid references.

– That sounds like a challenge, having to demonstrate credibility over and over. But it seems like you believe this will improve with time.

– Yes, we were quite isolated until recently. Now we're open, and we just need to keep proving we can deliver. It takes collective effort from both the government and local entrepreneurs to build a better reputation.

– What are your biggest current challenges or objectives on a broader scale?

– Mainly the shortage of talent, which makes scaling tough. But that's a common problem for many markets. We try to be creative, sometimes working remotely or leveraging other solutions to bridge the gap.

– It sounds like you're laying the groundwork to solve these issues in the long run.

– Yes, most local entrepreneurs need to learn from Western companies and share their knowledge with the younger generation. We're investing in education — we train for free about 100 students in programming every year, trying to create talent rather than just waiting for it. The government also helps by providing buildings and covering utilities so we can offer these courses.

– So you teach them in-house?

– Yes, every six months we take on about 50 young people — men and women — test them on basic math and logic and provide daily 1.5-hour programming sessions for a year. After that, they can stay with us or pursue opportunities elsewhere.

– It's great to hear the government also supports this.

– Yes, the local authorities assist in finding students and even built a dedicated facility for us last year, covering all maintenance costs so we can focus on teaching.

– That's wonderful — it sounds like your country is transitioning rapidly. I hope people embrace these changes positively.

– Yes, it's about the population adapting well. But we're optimistic.

Alexey Khaynovskiy, Founder, Geomotive

– Can you tell us about the current state of startups in Uzbekistan? How many are there, and can this ecosystem be considered successful?

– First, to give you some context — Uzbekistan's startup scene is actively growing. The country is becoming increasingly attractive to international investors, with several global funds already investing. The government is also keen to boost the ecosystem with state programs designed to support startups and make life easier for entrepreneurs.

When it comes to specific technologies, like advanced language models, I'm not sure if Uzbekistan has reached the stage where companies are actively applying them. However, I do know that similar developments are happening in neighboring countries like Kazakhstan and Tajikistan.

Locally, startups in Uzbekistan tend to focus on solving practical problems. For example, there's a startup helping small shops manage their finances digitally. These stores often rely on handwritten records, and the startup provides them with a single platform to track their goods and revenue.

– That sounds promising.

– Yes, these startups address real-world challenges. However, you won't yet find companies working on large-scale projects, like building local electrical grids or leveraging networks for cutting-edge technologies. The economy is still at a stage where more basic, practical issues take priority.

– You mentioned earlier that there are government programs supporting the growth of startups. Could you elaborate on these initiatives?

– Certainly. One example is the creation of special economic zones. Companies registered in these zones receive significant benefits, including tax exemptions and preferential tax rates. However, these perks are reserved for businesses involved in priority sectors, such as analytics, mathematics development, education, and artificial intelligence projects.

In fact, last year — or maybe earlier this year — a dedicated program for funding AI-related projects was introduced at the presidential level. The government matches investments made by private funds, essentially doubling the capital available for startups. It also provides grants to promising projects.

Overall, the government is actively pushing digitization efforts. This includes initiatives for insurance companies and as well as startups working on digital products. Privileged conditions are in place to support their growth.

There are additional efforts to integrate Uzbek startups into the global market. For instance, there's a strong collaboration with external partners, including the UAE and Turkey. IT Park, a key player in this ecosystem, actively facilitates international partnerships and promotes Uzbek startups abroad.

They also organize training and development programs to enhance the skills of entrepreneurs. These programs are crucial for fostering innovation and supporting local businesses.

– What are the main challenges startups in Uzbekistan face? Could you name the top three?

– Absolutely. The first major issue is the size of the local market. It's small, and for startups to thrive, they often need to expand internationally. However, when you tell international investors or clients that you're from Uzbekistan, there's a lot of skepticism.

– That sounds familiar. People often assume that Belarus is just a part of Russia.

– Exactly. When I traveled to San Francisco recently, a customs officer asked me, "Uzbekistan? Is that part of the USSR?" It highlights the perception problem. The country doesn't yet have a strong global image, though this is improving with government efforts to raise its profile.

The second challenge is human capital. While we do have exceptionally talented individuals, they are few and far between. The majority of specialists, particularly in tech and R&D, lack deep expertise. This is partly due to decades of neglect in the education system.

– That must make it tough for startups to find skilled employees.

– Absolutely. There are short-term courses and training programs, but they're often superficial. The younger generation is ambitious and eager to learn, but they lack foundational knowledge. This is especially true for science-driven sectors, which require in-depth skills and expertise.

The third challenge is funding. While there are some venture funds and support initiatives, the ecosystem for startup financing is still underdeveloped. For example, attracting international investors is difficult because they're cautious about entering smaller, less established markets like Uzbekistan.

– So, even though the ecosystem is growing, there's still a long way to go.

– Exactly. Building a strong startup ecosystem takes time, especially in a developing economy. But the potential is

there, and I believe we'll see more progress in the coming years.

– You mentioned that international funds are investing in Uzbek startups. Could you explain why they're interested?

– There are two primary reasons. The first group of investors consists of funds that operate based on their strategic goals. For instance, some state-linked or public-private funds have a social mandate to invest in developing regions, including Uzbekistan. Their focus isn't necessarily on immediate returns but on fostering growth.

The second group includes private and international funds that see long-term potential in Uzbekistan. These investors recognize the country's young population, its abundance of natural resources, and its strategic location — close to China, Turkey, Pakistan, and India. With proper development, Uzbekistan has the potential to become an economic powerhouse in Central Asia within the next decade.

– So, they see Uzbekistan as a high-potential, untapped market?

– Exactly. The country is undergoing a transformation. It's opening up, and the government is actively supporting businesses. For instance, policies have shifted to encourage wealth creation and entrepreneurship, which was previously restricted. This change is giving business owners more confidence to invest locally and take bigger risks.

However, international investors also ask tough questions. They want to know if Uzbek startups can expand beyond the local market. Regional scalability is a big factor for them, as the domestic market alone is too small to sustain significant growth.

– That makes sense. Without regional reach, it's hard to attract big investors.

– Exactly. But there's progress. For example, Turkish, Indian, and Chinese investors are already very active in the market. China, in particular, has become Uzbekistan's largest investor this year.

– That's promising.

– It is. The challenge now is to improve infrastructure and human capital so Uzbek startups can compete globally.

– You've mentioned education several times. What are the biggest issues in this area, and how could they be addressed?

– The main issue is the lack of a strong foundational education system. For decades, education in Uzbekistan was treated as a privilege rather than a right. Access was limited, schools were expensive, spaces were scarce, and often admission was based on connections rather than merit.

Even within the remnants of the Soviet-era system, the quality of teaching significantly declined. Over the years, this led to a shortage of skilled professionals. Young people today are ambitious and full of energy, but they lack the foundational knowledge needed for complex, science-driven industries.

– That sounds like a major obstacle for startups.

– It is. While there are training programs and courses designed to address these gaps, many of them are too basic. They often teach surface-level skills but fail to provide the depth needed for solving advanced problems. As a result, startups struggle to find qualified personnel to handle intricate tasks.

– What about reforms? Is there anything being done to improve the situation?

– There are ongoing efforts, but it's a long-term process. Building an effective education system requires not just better curriculums but also motivated and skilled instructors. For example, there have been attempts to introduce entrepreneurial training, but the execution often lacks substance.

– Do you have any examples of successful initiatives?

– Yes, one notable example is a business education program that brought Malaysian professors to Uzbekistan a few years ago. It was a highly competitive course, and those who completed it now occupy top positions in government and business. These are the people driving Uzbekistan's progress today.

– That's encouraging.

– It is, but we need more programs like this — ones that are rigorous and inspire participants to think critically. If we focus on developing a structured, high-quality education system, it could be transformative for the country.

– How does the culture and regional identity of Uzbekistan influence its startup ecosystem?

– Uzbekistan has a unique cultural and regional identity, which plays a significant role in shaping its business environment. For instance, Uzbeks are known for being non-confrontational and collaborative. This creates a business culture that is generally friendly and cooperative.

However, one challenge is that Uzbekistan is often lumped together with other Central Asian countries, like Turkmenistan or Kazakhstan, as if it's all one region. This lack of distinction can sometimes overshadow the individual strengths and potential of each country.

– That must be frustrating.

– It is, but things are changing. For example, Kazakhstan has embraced a more aggressive, expressive approach to its identity, with strong creative output in branding, music, and fashion. Uzbekistan, on the other hand, is quieter and more methodical. But this approach works for us — it aligns with our strengths in long-term planning and stability.

– So, there's a balance between individuality and regional collaboration?

– Exactly. Within the region, Uzbekistan has a strong reputation. Countries like Azerbaijan, Turkey, and even neighbors like Kazakhstan recognize Uzbekistan's reliability and value as a trade partner.

Interestingly, we've also seen businesses from neighboring countries try to establish themselves in Uzbekistan, only to realize that the market dynamics here require a deeper understanding. Our local businesses know how to navigate these challenges, which gives them a competitive edge.

– That's a great insight into how culture shapes business.

– Absolutely. Cultural identity is a strength, and as Uzbekistan continues to develop, I believe we'll see even more unique approaches to business that reflect this identity.

– What does the future hold for Uzbekistan's startup ecosystem?

– The future is promising, but it hinges on a few critical factors. First, the country's young and rapidly growing population is a major asset. With proper investment in education and infrastructure, this demographic can drive significant economic growth in the next decade.

Second, Uzbekistan's geographic position is highly advantageous. It sits at the crossroads of major markets like China, Turkey, India, and Pakistan. This strategic location makes it a natural hub for logistics and trade, which can further fuel the startup ecosystem.

– And what about government support?

– The government is already playing a significant role in creating a more business-friendly environment. Tax incentives, grants, and programs to support digitization and innovation are laying the groundwork for future growth. However, there's still room for improvement, especially in reducing bureaucratic hurdles and improving the quality of education.

– Are there any challenges that might slow this progress?

– Yes, the main challenge is building a robust venture capital ecosystem. While there are some investors and funds entering the market, they're still few and far between. Startups need better access to capital, especially for scaling beyond the local market.

Additionally, the perception of Uzbekistan as a business destination needs to improve globally. While regional players like Turkey and China already recognize the country's potential, attracting investment from Western markets will require a stronger international image.

– So, there's potential, but is it a long-term process?

– Exactly. The pieces are falling into place, but building a thriving startup ecosystem takes time. If Uzbekistan continues to focus on improving its education system, attracting investment, and fostering innovation, the next decade could be transformative.

– That's an optimistic note to end on.

– It is. I truly believe Uzbekistan has the potential to become a major player in the region, and perhaps even globally, if it stays on this path.

Policy Recommendations

For Governments and Other Policymakers

- Develop a unified responsible use of AI regulation framework tailored to the specific geographic, demographic, and technological context of Central Eurasia. Align regional responsible use of AI regulation principles with global regulatory leaders such as the European Union and the United States, enabling AI products from Central Eurasia to access global markets without additional regulatory barriers.
- Promote the adoption of these harmonized regional AI self-regulation standards as a UN-endorsed model for AI governance in transition economies, positioning Central Eurasia as a global role model for responsible AI development.
- Integrate AI education into national school curricula and develop appropriate public education programs for general education institutions. Prioritize AI education at all levels, establish public-private partnerships for AI training, and introduce incentives to retain skilled professionals within the region. Policymakers should establish AI governance frameworks to ensure responsible AI usage in education. AI systems used in education should adhere to principles of transparency, accountability, and data privacy.
- Enhance Digital Infrastructure and Compute Capabilities: National investments in AI research hubs, cloud computing facilities, and data centers will provide essential support for local startups and enterprises.
- Facilitate AI-Focused Startup Growth: Establishing AI-focused incubators and venture funds, alongside streamlined regulations for tech entrepreneurs. To encourage innovation without compromising ethics or safety, each country should consider establishing regulatory sandboxes. These controlled environments allow for the testing and refinement of high-risk AI applications, particularly in critical sectors.

For the Local and Global IT Industry

- Global IT companies should consider not only the current AI landscape but also the long-term potential of the region, including its growing, well-educated youth population and cost-effective energy resources such as hydropower.
- Remove barriers to the import and deployment of advanced technological equipment necessary for establishing AI research facilities and data centers in the region.
- Encourage Niche AI Development: Companies should focus on leveraging AI for region-specific challenges, such as agriculture, logistics, and digital governance, where local expertise can provide a competitive edge.
- Establish AI Research and Development Centers: Global AI firms investing in Central Eurasia should collaborate with local universities and research institutes to establish R&D centers that drive innovation and talent development.
- Foster AI Talent through Industry-Academic Partnerships: Companies should invest in mentorship programs, internships, and AI upskilling initiatives to bridge the gap between academic knowledge and industry needs.

For International Financial Institutions and Development Agencies

- Support AI Policy Development Initiatives: Development agencies should assist governments in formulating AI governance policies, ensuring regulatory harmonization with global standards and best practices.
- Allocate resources specifically for AI education, supporting training initiatives, university programs, and professional AI certifications in the region.
- Support pilot projects for integrating AI into school education systems, including through the provision of advisory services and policy consulting. AI tools should be designed to cater to local languages, cultures, and education systems.
- Promote AI-Driven Social and Economic Development Programs: Funding AI applications in public services, healthcare, and education can accelerate sustainable development and economic resilience in Central Eurasia.
- Facilitate Cross-Border AI Collaboration: International organizations should promote regional AI cooperation through multilateral initiatives, joint research programs, and cross-border AI regulatory harmonization.

List of Interviewed Speakers Featured in This Report

Abdukakhkhor Tashmukhamedov, Chief Executive Officer, Green White Solutions LLC;

Aijan Alisherova-Duymaz, Researcher, Accelerate Prosperity Kyrgyzstan;

Alexey Khaynovskiy, Founder, Geomotive;

Aisuluu Zhamangulova, Founder, Mugalim AI;

Allan Kazakov, Artificial Intelligence Engineer and Researcher, Soulin AI;

Andrei Khrapavitski, Developer in Large Language Models, Head of R&D Initiatives, Results-CX;

Andrii Fediv, Digital Marketer, Sembly AI;

Dan Nechita, former Head of Cabinet for MEP Dragos Tudorache, European Parliament; Lead Technical Negotiator for the EU AI Act;

Daniil Maykovskiy, Certified Management Consultant; Co-founder and Director, MCT Agency; Co-founder & CEO, StartUp Academy;

Farid Osmanov, Chairman, Innovation and Digital Development Agency (IDDA);

Fei Chen, Founder & CEO, Intellectia AI;

Firuzjon Sodiqov, Secretary, AI Council under the Ministry of Industry and New Technologies of Tajikistan;

Gigi Giorgadze, CEO, Skillwill;

Gizzat Baitursynov, Chairman, Committee for Artificial Intelligence and Innovation Development of the Ministry of Digital Development of Kazakhstan;

Ilia Badeev, Head of Data Science, Trevolution Group;

Ivan Bobkov, CEO, Selfio;

Karine Caunes, Executive Director, the Center for AI and Digital Policy;

Madina Abdrakhmanova, Deputy Director of Product and External Affairs, Senior Data; Scientist, Institute of Smart Systems and Artificial Intelligence at Nazarbayev University;

Meruyert Tleubergenova, Startup Program Leader and Strategic Advisor in Central Asia's Innovation, Astana Hub;

Najima Noyoftova, Director of the Executive Office, A7Sigma;

Nana Dikhaminjia, Co-founder, Clear Signal Solutions and Techdro;

Nino Taganashvili, DPO & Strategic Planning Manager, Georgia's Innovation and Technology Agency (GITA);

Obidjon Akhmedov, Head of International Partnerships and Industry Engagement, PDP EcoSystem;

Oleg Pekos, First Deputy Minister of Digital Technologies, Ministry of Digital Technologies of the Republic of Uzbekistan;

Olga Bryzgalova, Leading Specialist, Ministry of Education and Science of the Kyrgyz Republic;

Paul DeMott, Chief Technology Officer, Helium SEO;

Ramin Rzayev, Professor Specializing in AI, Baku University;

Ruslan Zhemkov, Founder, Climate Action Initiative Central Asia;

Suzanna Shamakhyan, Executive Director, Foundation for Armenian Science and Technology (FAST);

Tornike Tsiramua, Tech Entrepreneur, Biliki AI;

Yuri Kozlov, CEO, JudgeAI.

Methodology

This report is based on a combination of expert interviews and desk research, focusing on how technology and innovation are evolving across Central Eurasia. Over the past several months, we interviewed a wide range of specialists — from government officials and academic researchers to startup founders and international policy advisors. These conversations helped us understand both the practical realities of developing new technologies in the region and the broader economic and regulatory environment that shapes their growth.

In addition to these interviews, we reviewed policy papers, industry reports, and market analyses to place expert insights in context. This approach — speaking directly with those on the ground and analyzing existing research — ensures that the report reflects both on-the-ground experiences and up-to-date data. By combining firsthand perspectives with broader economic and technical indicators, we aim to offer a balanced view of the challenges and opportunities facing technological development in Central Eurasia.

The questions we asked covered a variety of topics, such as education and workforce readiness, government support and regulation, funding mechanisms, and regional collaboration. Each section of the report synthesizes these findings and includes examples and recommendations that highlight what is working well, where gaps remain, and how different stakeholders — governments, businesses, and international partners — can collaborate to foster sustainable technological progress in the region.

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