The rise of artificial intelligence and the reversal of globalization: The phenomenon of de-globalization facilitated by AI

Haseong Jeong, CEO of AlphaCode

Over the past few decades, globalization has strengthened worldwide connectivity by breaking down economic, social, and cultural boundaries. It has been the driving force behind the expansion of international trade, advances in information technology, the free movement of capital, and the international migration of labor. Recently, however, the rapid development of artificial intelligence (AI) has accelerated de-globalization. I would like to analyze how globalization gave birth to AI, and conversely, how AI is changing the paradigm of globalization and promoting de-globalization. Globalization has facilitated the exchange of knowledge and technology, which has enabled the integration of globally dispersed knowledge bases. Open economies and the free flow of information have stimulated research and innovation, which in turn has led to the birth of AI technology. Globalization has enabled AI to harness resources on a global scale, combine with diverse human capital, and make remarkable advances. However, advances in AI are now causing us to rethink the economic integration that globalization has fostered. The changes brought about by AI have a range of social and economic impacts. Economically, increased regional independence promotes domestic consumption and production, but also carries the potential for reduced competitiveness in global markets. Emerging issues such as data sovereignty impose restrictions on the international flow of information, challenging traditional principles of globalization and accelerating de-globalization.

#deglobalization   #automation   #localization of production   #local self-reliance   #employment change   #data sovereignty

Automation and regionalization of production

<Source: Isock photo>

The combination of AI and robotics is revolutionizing the production process. Instead of shifting production offshore to reduce labor costs, companies are now exploring the possibilities of adopting AI technologies to produce efficiently within their own borders. This is dramatically reducing the need for human labor in the production process and shifting manufacturing from countries with traditional cheap labor back to developed countries where capital is concentrated.

AI can also make production more agile and responsive to local markets by optimizing demand forecasting and supply chain management. This enables companies to produce products that are customized for each region, and empowers consumers to meet their diverse and segmented needs. As such, AI can facilitate the geographic dispersion of production and increase the self-reliance of each local economy.

Transforming your employment structure

Advances in AI technology are fundamentally changing not just the way we produce, but also the structure of employment. This will have a particularly large impact in labor-intensive industries and is expected to cause significant changes in the economies of developing countries, which are traditionally labor-rich. There are predictions that many jobs will change or disappear with the introduction of AI and automation technologies. To respond to changes in the labor market, countries will need to strengthen education and training programs and prepare to create jobs that require higher skills. This means that countries will need to focus on promoting employment within their borders and strengthening the self-reliance of their economies. High-skill training and retraining are essential to responding to these changes.

Recent developments such as Generative AI are also putting professionals in creative and advanced roles at risk. These technological advances are creating the possibility that even highly skilled professionals will see some of their work automated and transformed. Therefore, lifelong learning and continuous upskilling will become even more important in the future, and the ability to respond to technological change will be essentially emphasized.

<Source 'Getty Images Bank'>

Strengthen data sovereignty

Source 'Getty Images Bank'

Data is the key fuel for modern AI technology. The freedom of data flow has been an important factor in driving globalization, but concerns about privacy and cybersecurity have led countries to take steps to protect their citizens' data. This data protectionism is placing restrictions on the flow of data between countries, and it's forcing a major shift in how global data-driven services are delivered.

The de-globalization brought about by advances in AI is linked to the importance of data sovereignty. AI requires large amounts of data, and ownership and access to data plays a key role. Each country or company has an interest in protecting and effectively utilizing its own data. This has led to a movement to strengthen data sovereignty.

Globalization has increased the number of times data crosses borders and is traded internationally, but each country seeks to strengthen its own data protection and privacy security. This can place restrictions on the international trade of data, and data protection through regulation and authority is what drives de-globalization.

In addition, some countries emphasize localization of data, with the principle that data should be stored and processed within their borders. This makes it difficult for data to move internationally and can place constraints on global data flows.

Finally, competition for patents and technology development is fierce in the AI space. Countries and companies are trying to protect their data resources and make their AI technologies competitive in international markets. This competition limits some aspects of globalization and accelerates economic and technological competition between countries.

Rapid advances in artificial intelligence (AI) technology are fueling major changes in economic and social structures around the world. The innovations brought about by AI are not only dramatically increasing productivity, but are also becoming a major factor in changing traditional forms of employment and industry structure. These changes are accelerating the automation and digitalization of the economy, which in turn is reinforcing the trend toward de-globalization

Changes in production and employment structures are being driven by the application of automation technologies, with many manufacturing industries shifting away from traditional labor-intensive models and toward machines, robots, and AI systems. This is disrupting the job market and posing significant challenges, especially for low-skilled workers. Meanwhile, the demand for highly skilled workers is growing, creating new opportunities for those with expertise in areas such as AI, data science, and robotics.

The rise of data sovereignty coincides with a move by countries to protect the data of their citizens and control the data that happens within their borders. This imposes constraints on international data flows, reinforces the tendency for countries to build internal data infrastructures, and ultimately contributes to the de-globalization trend toward building self-reliant economic systems rather than globalization.

These trends present new challenges and opportunities for countries around the world. For example, the shift from a traditional export-driven economic model to one centered on domestic and regional markets could reduce uncertainty in global supply chains. At the same time, countries will need to develop policies to retool their education systems, adjust labor markets, and encourage innovation in response to these changes, which will be an important strategy for future job creation and economic growth.

In an era of de-globalization, the role of AI is becoming increasingly important and requires an in-depth discussion on how to harness and orchestrate the changes it brings. We need to find ways to leverage AI technologies to create economic opportunities and maximize social benefits, while at the same time putting in place policies that minimize the negative side effects of AI and address ethical concerns. This is a challenge that requires collaboration and collective effort by national governments as well as the international community. A balanced approach is needed to ensure that AI brings benefits to humanity, while appropriately managing changes in the international order.

AI advances and human jobs

Artificial intelligence is one of the biggest topics in our society right now, and there is a general consensus that it will continue to develop intensively and replace human skills and labor. In this article, we will discuss what aspects of human labor will be changed and replaced by the development of AI.

#artificialintelligence   #futurejobs   #workautomation   #autonomousdriving   #legaltech

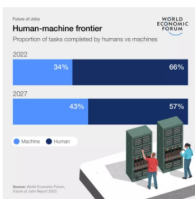## 1. Advances in artificial intelligence and human job changes

Fastest growing vs. fastest declining jobs

Top 10 fastest growing jobs	Top 10 fastest declining jobs
1 AI and Machine Learning Specialists	1 Bank Tellers and Related Clerks
2 Sustainability Specialists	2 Postal Service Clerks
3 Business Intelligence Analysts	3 Cashiers and ticket Clerks
4 Information Security Analysts	4 Data Entry Clerks
5 Fintech Engineers	5 Administrative and Executive Secretaries
6 Data Analysts and Scientists	6 Material Recording and Stock Keeping Clerks
7 Robotics Engineers	7 Accounting, Bookkeeping and Payroll Clerks
8 Electrotechnology Engineers	8 Legislators and Officials
9 Agricultural Equipment Operators	9 Statistical, Finance and Insurance Clerks
10 Digital Transformation Specialists	10 Door-To-Door Sales Workers, News and Street Vendors, and Related Workers

Source
World Economic Forum, Future of Jobs Report 2023

Note
The jobs which survey respondents expect to grow most quickly from 2023 to 2027 as a fraction of present employment figures.

Source: WEF

The World Economic Forum (WEF) has released the Future of Jobs 2023. According to the report, a quarter of all jobs will be transformed over the next five years due to rapidly growing trends in artificial intelligence, digitalization, renewable energy, and supply chain reshoring, while the adoption of artificial technology and increased digitalization will disrupt the labor market. It predicts that up to 26 million jobs will be lost, including cashiers, ticket takers, computer programmers, and record-keeping and administrative positions.

"Even in creative fields, AI is making it easier than people thought," said Sam Altman, CEO of Open AI. A key technology in the Fourth Industrial Revolution, AI is the technology that empowers machines to be human intelligent. The emergence of machine learning and deep learning technologies, which enable machines to learn, reason, understand language, and perform creative activities on their own, has made it possible for machines to analyze data and perform intelligence activities without the need for humans. Highly advanced artificial intelligence will provide judgment and decisions in many fields, including economics, society, politics, family, and education, and humans will come to rely on these technologies. While these advances in technology make our lives easier and bring efficiencies to labor production, there are also concerns that many jobs could be lost as robots replace humans.

In 2022, 34% of work will be done by machines and 66% by humans, and by 2027, 43% will be done by machines and 57% by humans, further driving automation. While automation has freed us from the horrors of repetitive labor, it's also seeping into creative tasks like writing, coding, and making music. In one case, musician Paul McCartney used AI to partially generate the voice of his bandmate John Lennon to create a posthumous Beatles song.

Future of jobs
Human-machine frontier
Proportion of tasks completed by humans vs machines

2022	34%	66%
2027	43%	57%

● Machine   ● Human

Source: WEF

2. Example of a highly replaceable job

Sources: JoongAng Ilbo

▪ **Customer service**

AI-powered chatbots are reducing the need for human workers by providing quick and personalized responses to customer questions. With features such as robotic process automation, customer self-service, chatbots, and sentiment analysis in the customer service proactive ChatGPT, customer service departments will continue to incorporate the latest AI technologies. Customer service roles are becoming more automated, with tools like chatbots and virtual assistants handling a wider range of customer inquiries. Self-checkout in grocery stores will become less involved with human workers, reducing the number of jobs in related industries.

▪ **Content writer**

AI content creators already help brainstorm ideas and generate repetitive content. For basic content marketing tasks like writing formal emails or short social media posts, AI is already capable enough. In some cases, AI can take over many of the tasks for human content marketers, drafting longer-form content.

▪ **Graphic designer**

Generative Fill, a new feature in Adobe Photoshop, is an example of how generative AI can augment the graphic design profession. This feature allows even people with no experience in photo editing to edit photos realistically using text prompts. Tools like Dall-E, Midjournal, and Lensa also create realistic-looking images and detailed artistic renderings from text prompts. Businesses and individuals will be less reliant on graphic design services to produce eye-catching visuals in the future.

▪ **Engineers**

Generative design with AI accelerates the computer-aided design process. Generative design helps generate ideas by generating all computationally possible solutions to a problem within a given set of parameters. This is even possible when the design is completely new and a radical departure from anything that came before.

3. Will AI rapidly replace jobs?

Advances in autonomous vehicles are reducing the need for human drivers and have impacted both the taxi and ride-sharing industries. In fact, Uber has partnered with self-driving car companies like Waymo and Aurora to give riders more choices, which has increased the potential for conflict with human drivers. However, most autonomous vehicles today are only partially automated, according to levels of driving automation proposed by the Society of Automotive Engineers. The world's leading companies are developing vehicles that are more advanced, with automation systems taking over all aspects of driving in some environments, but they still require a driver. In order to achieve full automation without the need for a driver, not only the automation system itself, but also the environmental conditions, such as the advancement of mobile communications, the accumulation of big data, and the improvement of road conditions, will need to be in place.

What about Legaltech, which combines law and technology? A study by authors from Princeton University, New York University, and the University of Pennsylvania predicts that AI will eventually take on many of the tasks typically handled by paralegals and lawyers. A March 2023 Goldman Sachs study estimates that AI could perform 44% of the tasks typically handled by U.S. and European paralegals. OpenAI's top language model, GPT-4, passed the bar exam at the 90th percentile. AI will help automate routine legal tasks such as document review, contract analysis, legal research, and relevant case law. However, AI can only work within the data it is given. If the nature and scale of the existing data is unfavorable to a particular group, it will continue to raise questions of bias and impartiality. While many people expect an "AI judge" to be more impartial and remove personal feelings from the equation, it's also possible that the AI will be swayed by the data it's trained on.

4. Reflections on job changes

New technologies like artificial intelligence have a lot to do with the labor market, both destroying and creating jobs. While advances in technology like AI can make the economy more efficient, there are concerns that it could reduce the number of jobs. Today's jobs are more multifaceted and complex than those of the past. We need to raise the question of how much work will be done by AI as it becomes more advanced. Even if your job disappears, there are plenty of new jobs that can coexist with AI and constantly create new jobs. What should we be aware of in terms of job changes as AI advances?

First Industrial Revolution 18th century	Second Industrial Revolution 19th - early 20th century	Third Industrial Revolution Late 20th century	Fourth Industrial Revolution (Second Information Revolution) Early 21st century - Present
The steam-powered mechanization revolution	Revolutionizing mass production with electrical energy	Computer and Internet-based knowledge information revolution	Hyperconnected revolution based on information technologies such as big data, AI, and IoT

Source: Samsung SDI

First, new technologies will require new jobs. Just as the first revolution in the 18th century needed engineers to build steam engines, the second revolution in the 19th century needed electricians, and the third revolution in the 20th century needed computer operators to manage microchips, the fourth revolution will need people to operate AI. In other words, the more AI we use, the more diverse and numerous jobs will be created.

Second, new technologies lower costs, and lower costs create new jobs. Whereas in the past it was expensive to make a single product, today it is possible for a large number of people to gain status for little cost. High-cost jobs will gradually become less expensive, creating many employment opportunities.

Labor will also need to change. While it can be difficult to see your lifelong skills replaced by another technology, humans will need to coexist with AI and learn how the new technology works.
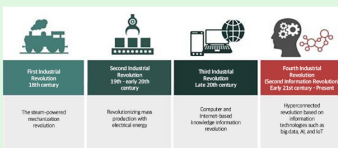
Reference

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-Daniel Prophet Predicts the Age of Artificial Intelligence (AI)?
-Three Ways Artificial Intelligence Can Create Jobs
-Artificial intelligence and technological innovation will create 69 million new jobs over the next five years, and 83 million jobs will be lost.
-Will AI replace jobs? 9 job types that might be affected
-AI Taking Over Jobs: What to know About the Future of Jobs
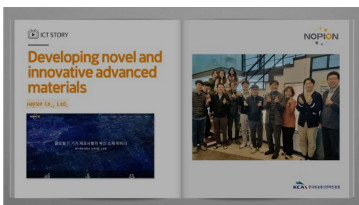
Nopion Co., Ltd.

⌖ Core Technologies and Achievement Highlights

- Development and performance verification of electronic packaging materials that enable 5G high-speed communication of electronic devices
- Development of electrical connection materials between fine wiring of various 5G communication electronic components and components that are becoming lighter-thinner-shorter-smaller, and innovation of material technology
- Development of micro-soldering material technology that responds to high-speed signal transmission characteristics and overcomes the technological limitations of conventional access materials

Cutting-edge electronic device core material technology that leads the future

Self-Assembly Anisotropic Conductive Adhesive (SACA), a core product of Nopion

Nopion Co.,Ltd.,founded in 2016,is a company that researches and develops new SACA(Self Assembly Anisotropic Conductive Adhesive)materials,which are electronic components essential for high-tech products such as smartphones and semiconductors.It is a material technology that enables electrical connections in the micro-area of electronic components.Specifically,it involves micro-soldering connection materials that connect ultra-fine areas,including micro-patterned PCBs,micro LED chips,and semiconductor packaging.Nopion's flagship product is Self-assembly Anisotropic Conductive Adhesive(SACA).In terms of electrical connection functions,it enhances the reliability of various electronic devices by assessing the performance of high-speed interconnects and providing interpretation and design of interconnects,going beyond mere quantification of electrical resistance values.This technology is garnering attention as a crucial core material for future high-speed networks like 5G/6G and advanced fields that necessitate extensive data processing,such as AI semiconductors.SACA,developed by Nopion,is a new material for micro-wiring connections capable of transmitting high-speed signals.It serves as a conductive bonding material that ensures data integrity of several Gbps for 5G or 6G network products and AI semiconductors.This innovative material technology is essential for future electronic products.The market for SACA applications currently amounts to a total of KRW 2.7 trillion.This includes KRW 1.3 trillion in the flip chip-based semiconductor packaging material market,KRW 200 billion in the mobile material market,such as smartphones,and KRW 1.2 trillion in the next-generation display material market,specifically micro LED.Furthermore,SACA has the potential to expand its applications to the flexible transparent antenna and patch-type biosensor markets.With these growth opportunities,Nopion aims to achieve sales of KRW 75.7 billion by 2027

Taking steps to secure Nopion's unique competitive advantage

Nopion has achieved significant results through its focus on securing sources for SACA and mass production technology.We participated in the ICT Funding Project called the'Project for creating new radio-based industry and fostering SMEs.'This project aimed to measure,analyze,design,and support the interconnect performance of conductive adhesive materials for high-speed communication(such as 5G).Nopion embraced this project as an excellent opportunity to validate the technology we had accumulated thus far.In 2023,we also recognized the importance of pre-verifying user data integrity and conducting performance analysis on high-speed networks for the commercialization of transparent antenna access materials.Hence,this was a critical time for Nopion to engage in these activities.The core of the project were:To secure high-speed signal transmission characteristics based on SACA measurement/interpretation.To secure electrical modeling technology for conductive adhesive based on electromagnetic/circuit simulation.To complete the construction of a high-frequency measurement setup for extracting characteristics of Gbps-class signal transmission.To prove superior characteristics compared to competing products by analyzing them against existing products.Through this project,we secured various verification of high-speed digital circuit experts and electrical modeling technologies,and in particular,could strengthen product competitiveness from the customers'perspective through comparative evaluation with existing products.In addition to making direct achievements in bonding material development for 5G transparent patch antennas and collaborating on mass production with global companies,we have successfully secured the key characteristics of SACA for 5G antennas from the customers'perspective.These characteristics include:speed,signal strength integrity,VSWR(Voltage Standing Wave Ratio)characteristics,and more.These accomplishments serve as valuable examples that can be utilized for future sales and marketing efforts.Furthermore,the advent of 5G applications is expected to bring new opportunities not only for antennas but also across various fields,including global business,transportation,medical care,and entertainment.

Pioneering the global emerging industry market

The development of new convergence industries necessitates cooperation among experts from various fields.Nopion also undertook this task through collaborations with our team of new material engineers and professors associated with the organization.However,this collaboration also presented challenges.The engineers required a fundamental understanding of high-speed networks,while the professors responsible for the verification system needed a clear grasp of the characteristics of new materials,resulting in some communication difficulties.To address this issue,Nopion organized numerous seminars and meetings to foster a deeper understanding of technology.Developing new materials,particularly in the realm of convergence materials,require the expertise of professionals from diverse disciplines.Offering comprehensive support in the form of R&D packages,from the developmental stage to performance verification,would greatly facilitate the technological advancement of small and medium-sized enterprises.Through this project,Nopion has achieved significant results through collaboration with global companies for mass production.This accomplishment is highly encouraging as it opens up possibilities for establishing a collaborative system with global IT companies based on new micro-soldering technology.By overcoming the limitations of conventional connection materials such as solder paste and ACF,and applying an innovative connection implementation method to materials,Nopion has paved the way for advancements in mounting technology.Moving forward,Nopion aims not only to further enhance its own material technology but also to strengthen collaboration between industry,academia,and research institutions.This collaboration will focus on key technologies for device composition,fostering exchanges and exploration of new industrial sectors.We look forward to pioneering the global new industry market with Nopion's unique technology and creating various high-tech products using Nopion's connection material technology worldwide.

⌖ ICT Funding Project

• **Dedicated Institution**	Korea Radio Promotion Association
• **Business Objective**	Creation of radio wave-based new industries and fostering of SMEs
• **Business Description**	SMEs' radiowave joint engineering lab operation support

⌖ Company information

• **CEO**	Lee Kyungseop
• **Type of Business**	Manufacturing of new materials for semiconductors and advanced displays
• **Year of Establishment**	2016. 01
• **Website**	www.nopion.com

TIME LINE

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2016. 1.	Established Nopion Co., Ltd.
2018. 10.	Attracted SEED investment (KRW 200 million from 4-RUN Ventures)
2020. 6.	Attracted Series A investment (KRW 2.5 billion, including Samsung Venture Investment)
2020. 11.	Certified as a MFE (Materials, Parts, Equipment) Startup 500 by Ministry of SMEs & Startu
2020. 12.	US patent registration for SACA original patent, then completed patent registration in Japan, China, and Taiwan
2021. 7.	Relocation to new office (Deoksan-gu, Suwon-si / Construction of Class 1,000 clean room production facility)
2022. 12.	NET Certification (SACA) from the Ministry of T, Industry and Energy
2023.07.	Designated as an excellent company research institute by the Ministry of Science and ICT
2023. 06.	In the process of verifying the introduction of SACA with numerous domestic and foreign global companies with the goal of commercialization in 2023

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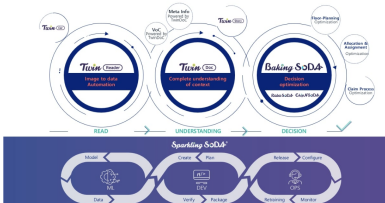
AgileSoDA Co., Ltd.

🔎 Core Technologies and Achievement Highlights

- AI-based hybrid chatbot solution, boasting the largest number of domestic business cases across all industries

- Pioneering new domestic big data and artificial intelligence markets through commercialization of big data search, analysis, and collection SW

- Contributing to strengthening domestic software, domestic software, data, artificial intelligence, intelligence information, competitiveness
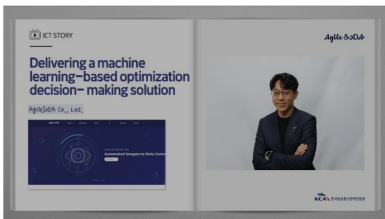
Entrust important decision-making to artificial intelligence (AI) now!

Decision Intelligence suite

On October 24, 2017, Intel's 'SHIFT 2017' event held at Skylight Modern in Manhattan, New York, USA, In his keynote speech, Andrew McAfee, chief scientist at MIT, made a resonating point, saying, "Don't resort to intuition and instinct anymore, entrust important decision-making to artificial intelligence(AI)." The plan it has proposed is to enhance the competitiveness of companies by using AI in the date-based decision-making process. In an instant, the hall erupted in an audible buzz at the new use of AI, which had relied on simple tasks. And now, about five years later, AI is diverting from simple and straightforward utilization in various industries and permeating into the core area of decision-making. Recently, increasingly more companies are deciding to use artificial intelligence(AI) to digitally transform and secure competitiveness. However, it is not an easy process for most companies in general to introduce AI technology suitable for their business and use it efficiently. But there is a company that solves these companies' pain points and helps their business pursue innovation. 'AgileSoDA' is a company specializing in enterprise AI software(SW). This AI-specialized company focuses on supporting companies to quickly adopt AI technology, develop and manage it on their own through Decision Intelligent Suite, providing a wide range of services from data extraction to machine learning solutions.

AgileSoDA's 'decision intelligence suite' Writing a new chapter in enterprise AI

With the mantra'AI as your other brains our mission, AgileSoDA helps build another brain that AI technology leverages for important decision-making in everyday business operations. The main services are TwinReader(OCR), TwinDoc(NLP), BakingSoDA(decision-making optimization), SparklingSoDA(ModelOps-based AI operating environment), etc. TwinReader combines the strengths of models and rules to improve the recognition rate and processing speed in tandem. Moreover, document classification without learning is possible because it creates and manages document'types'instead of individual documents. TwinDog creates an optimized dedicated language model trained and developed with data owned by the customer. Therefore, it has a higher level of understanding and accuracy compared to models trained with general data. What's more, analysis based on location and relationship rather than keywords is possible, and the underlying intent of the document can be identified with emotional elements hidden in the data. BakingSoDA provides an environment where AI can learn by easily converting the environment and conditions of business reality into a virtual environment. Users can develop their own performance through MLOps-based model creation and deployment, training and retraining functions. SparklingSoDA leverages learning results into an asset based on an AI model lifecycle that quickly adapts to changes and keeps learning. This solution is mainly used to manage logs, history, and trained models at each stage of the pipeline. With this technology, AgileSoDA has received numerous awards, including 87 domestic and international patent applications, four domestic and international academic papers, and the Presidential Commendation from the Ministry of Science and ICT.

Analyze country-specific needs and establish business direction

AgileSoDA has been participating in the Artificial Intelligence(AI)Voucher Support Project'hosted by the Ministry of Science and ICT, an ICT Funding Project, for 2022 and 2023 consecutively. The artificial intelligence(AI)voucher support project is a government-led project targeting small and medium-sized venture businesses/medium-sized companies/demand-driving companies'that preparing for AI adoption to introduce optimal AI within a short period of time, and provides opportunities for market creation that have developed artificial intelligence solutions. AgileSoDA provides AI solutions to SMEs and venture businesses that need to apply AI products and services in addition to efforts to build AI learning data and mass-produce public data, and has made contributions to the spread of the AI technology utilization ecosystem in all industries. And as a domestic company, with its unrivaled technology, it has so far been stably implementing the AI voucher project for the last seven months, which is a short period. First off, the task of development of AI sentiment analysis VOC for multilingual reviews'has reflected 12 attributes organized according to reviews from five countries, and data analyzed on product attributes and user emotions was provided at a cycle desired by customers. This has played a pivotal role in analyzing country-specific needs and establishing business directions. As a challenge that goes beyond domestic and overseas marketing efficiency, AI technology is assuming a key role in being selected as an excellent AI voucher supplier in recognition of its technology through high learning ability and accuracy of customer-specific language models. Three Japanese patents and program copyright registration are in progress through the development of an AI model to determine the degree of vehicle damage.

Knocking on the door of overseas markets with advanced AI technology

AgileSoDA's efforts are recognized in overseas markets beyond South Korea. In recognition for its technological and performance excellence, natural language processing(NLP)platform 'TwinDog has entered the Japanese market by supplying products to NTT Comware, a subsidiary of NTT Group, Japan's largest telecommunications company. Moreover, it is expanding its research and development fields through MOUs with various companies such as LG CNS/InsMCT(robot control), Lotte Data Communications(distribution), and ASIC Land(semiconductor). Efforts to amount to the security of future food are also underway. It is expanding cloud-type services(SaaS-type e software)by transferring existing on-premise products and services to the cloud, and is preparing a bridgehead for entering overseas markets by opening an office in Vietnam. Moreover, it is leading ESG management practices by participating in the establishment of a domestic eco-system.

🔎 ICT Funding Project

- **Dedicated Institution** — National IT Industry Promotion Agency
- **Business Objective** — Intelligence information industry infrastructure creation
- **Business Description** — AI Voucher Support Project

🔎 Company information

- **CEO** — Choi Daewoo
- **Type of Business** — AI software development and supply business
- **Year of Establishment** — 2015. 4.
- **Website** — www.agilesoda.ai

TIME LINE

2015. 4.
Founded AgileSoDA Co., Ltd.

2019. 4.
Won the Korea Small and Medium Business Award

2020. 6.
Awarded the Intelligent System Excellence Award from the Korea Intelligent Information Society

2021. 4.
Listed as Top 500 High-Growth Companies in Asia Pacific by Financial Times

2021. 10.
Named as Asia's First-ever Gartner Cool Vendor in AI core technologies

2021. 11.
Awarded the Grand Prize in the process automotive category at the Korea Artificial Intelligence Awards

2021. 12.
Earned a commendation from Minister of Science and ICT Award and Digital Today CEO Award

2022. 1.
Began overseas export of products (TwinDoc, Japan)

2022. 3.
Ranked No.1 in the South Korean Company Competitiveness Index and won Grand Prize in the South Korea First Class Companies Award

2022. 4.
Presidential Award of CJ CIAT Demo Day for Achievements in ICT, presented at 2022 Information Communication Day

2022. 12.
Participated as an AI voucher supplier (certified as an excellent company)

2023.
Acquired GS certification (Good Software) 1st grade for TwinReader and SparklingSoDA products

NOPION   Agile SoDA   momjobgo   KW Tech

MomELancer Co., Ltd.

🔍 Core Technologies and Achievement Highlights

- Developed IT services for corporate customers based on Mamjobgo network members

- Provided online and offline vocational training through the Mamjobgo platform's IT training service, including member career management, recruitment matching, and community operation

- Organized cutting-edge curricula for software and AI education professionals, offering site-specific customized courses
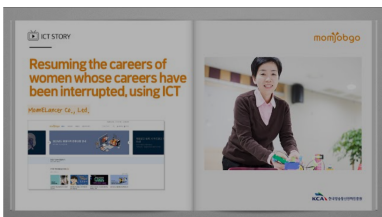
MomELancer is helping women develop their careers.

Photo of MomELancer School education site

In Korea, many women often face the difficult choice of leaving their jobs due to childbirth and childcare responsibilities.Even after resolving childcare challenges,they encounter significant obstacles when attempting to reenter the workforce.Consequently,they become career-interrupted women.According to the National Statistical Office's 2022 employment survey for each region,there are approximately 1.4 million career-interrupted women in Korea.Meanwhile,the software industry in Korea has been grappling with a shortage of skilled professionals for over two decades.The demand for talent in the ICT-related sector has surged exponentially due to the widespread adoption of the Fourth Industrial Revolution and companies'digital transformations.However, meeting this demand with an adequate supply of manpower has proven to be challenging.Additionally,there has been a substantial increase in demand for class instructors in elementary and middle schools,as coding education and other software-related information technology courses have become mandatory and expanded.Recognizing this situation,MomELancer Co.,Ltd.identified career-interrupted women as a potential solution to address the growing demand for software professionals.MomELancer is a social venture and a social company that implements vocational training using ICT for career-interrupted women,youth and seniors,who belong to a social group vulnerable to employment,and creates jobs by operating a community.Momjobgo(that trains them to adapt to changes in the 4th industry job environment.MomELancer was founded in 2013 after winning the National Social Venture Contest managed by the Ministry of Employment and Labor.In 2014,MomELancer opened the Momjobgo service(www.momjobgo.com)to support women of talent so that their value can be appropriately evaluated in the ICT field.MomELancer School(company founding and job creation education academy for women of talent)opened in 2014,Ahn Lab Teacher Academy(training course to nurture software coding instructors)conducted with Ahn Lab Co.,Ltd.in 2016,Dae It Girls and Codu Ace(training course to improve the capability of women of software talent)operated with the support of the National Information Society Agency in 2021,and Built Up Campus(professional ICT education support program).

Refining the curriculum with the ICT Funding Project

Photo of MomELancer regular board of directors' meeting

During the ICT Funding Project,MomELancer upgraded the existing curriculum and prepared a new curriculum to keep pace with the latest ICT trends and demand from the private sector.That is,Dae It Girls,data analyst training course,was upgraded and the vocational training course for software and AI lecturers was newly established.Dae It Girls is a data analysis nurturing course for young job-seeking women in their 20s and 30s,which is composed of the basic course(560 hours),AI ethics(12 hours)and metaverse(28 hours).The training course is designed to repeat the project through design thinking and agile techniques.However,it is difficult to complete both small group activities and individual coaching activities within 560 hours.MomELancer could understand the learning progress by course while implementing the project and strengthened the employment portfolio by preparing mini projects,individual projects,and final demo day project.MomELancer also nurtured more specialized data analysts by operating intensive job-linked courses.The newly established vocational training course for software and AI lecturers course is designed to strengthen the job competence of career-interrupted women who are currently working as a software instructor or who want to work as a software engineer.MomELancer offers AI ethics and metaverse training courses that are trendy and suitable for the field,in order to respond to the continuous demand of various educational fields,such as schools,enterprises and public institutions,for experts who know metaverse and AI.The courses were designed based on the learning facilitation teaching method,project type education design method that combines the professional knowledge area with curriculum and real-life problems,and PBL teaching method that can actually plan content.As a result,MomELancer enhanced management and operation capabilities,and a community atmosphere could be created that enables mutual prosperity of graduates after the training.In addition to this,MomELancer significantly increased the satisfaction of the graduates by offering additional courses,such as 1:1 employment coaching.

Reborn as a software developer training institution

MomELancer has obtained the official title of software developer training institution through the ICT Funding Project.As a result,MomELancer is externally recognized as an excellent institution for nurturing women of talent by dividing the courses into two tracks-data analysts and software education experts.In addition to realizing social achievements of helping career-interrupted women find jobs.Therefore,MomELancer training graduates and the community network expect a lot.It is expected that more more women will play an active role in the 4th industrial era after receiving vocational training for ICT utilization from MomELancer,and MomELancer will contribute to resolving the SW manpower shortage issue.

🔍 ICT Funding Project

• Dedicated Institution	Institute of Information & Communications Technology Planning & Evaluation
• Business Objective	Fostering people of creative information and communication talent
• Business Description	Supporting the designation of software expert nurturing institutions

🔍 Company Information

• CEO	Kim Hyeonsuk
• Type of Business	Education-related research service, education consulting and advisory, application/system software development and supply, etc.
• Year of Establishment	2013. 09
• Website	www.momjobgo.com

TIME LINE

2013. 9.
Established MomELancer Co., Ltd.

2015. 11.
designated as a preliminary social enterprise by the Ministry of Gender Equality and Family

2016. 5.
Donated training service to youth in the vulnerable social group as social contribution cooperation with Kakao Co., Ltd.

2018. 7.
Received the commendation for the 31st anniversary of Information Culture Month <Minister of Science and ICT>

2018. 11.
Certified as a social enterprise (No. 2018-208)

2022. 5.
Implemented the project for designating specialized software nurturing institutions for Institute of Information & communications Technology Planning & Evaluation

2022. 8.
Selected as an excellent social economy company by Seoul Metropolitan Government

2023. 6.
Received commendation for the 36th anniversary of Information Culture Month <Presidential Award>

Securing global competitiveness with
domestic engineering software

NOPION　Agile SaaS　momobgo　KW Tech

KW Tech Co., Ltd.

Core Technologies and Achievement Highlights

- Holds the technology for semiconductor process analysis software development in consideration of various physical and chemical effects.
- Increased awareness as a company specializing in the development of semiconductor process analysis software and developed overseas markets.
- Contributed to semiconductor process improvement, cost reduction, and strengthening of competitiveness of semiconductor-related companies.
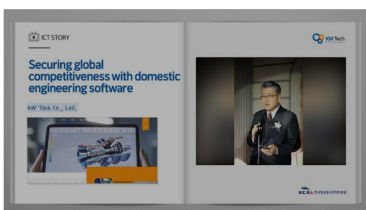

Approaching overseas markets with excellent software development
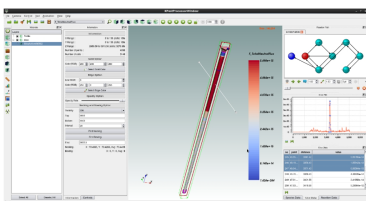
Operating screen of K-SPEED, a semiconductor shape analysis software

The semiconductor industry accounts for 20% of Korea's total export. However, the global semiconductor market is competing infinitely, since each country supports its semiconductor industry. In particular, China is narrowing the technological gap by making unlimited investments, and the US is also making aggressive investments to lead the market. Under these circumstances, the domestic semiconductor industry is required to secure original technology and develop new processes. KW Tech Co., Ltd. is a company specializing in the development and sale of CAE software such as plasma, thermal flow, and numerical analysis used in various industries such as semiconductors, displays, machinery, aviation, and automobiles. Since its establishment in 1998, KW Tech has been making efforts to build technological infrastructure and provide solutions with cutting-edge technology to become an integrated engineering company. KW Tech developed K-SPEED, a simulator for semiconductor plasma process analysis, in order to localize engineering software and supplied software to domestic and overseas markets such as the semiconductor division of Samsung Electronics, the representative semiconductor company in Korea, in 2013 followed by SK hynix in 2015, KIOXIA in Japan in 2016, Tokyo Electron in 2020, and Western Digital in 2022.

The ICT Funding Project laid the foundation for rapid technological developments
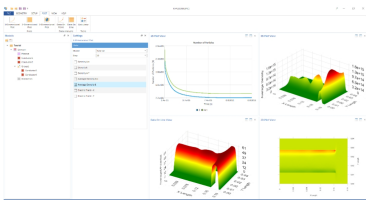
Operating screen of K-PLASMA (PIC), a PIC-based semiconductor equipment analysis SW scheduled for commercialization

KW Tech implemented the project of developing a computational analysis software module for predicting the semiconductor etching and deposition process during the ICT Funding Project. Based on it, KW Tech significantly reduced the analysis time by linking computational numerical analysis and obtained the result of process analysis which has been difficult to feel efficiently and quickly using HPC. KW Tech also applied data structure and capacity optimization technology to obtain quickly the analysis results of semiconductor plasma deposition and etching process and GPU parallelization technology such as GPU environment optimization technology as well to reduce the calculation time. As a result, KW Tech could commercialize accurate and speedy simulation software and secure global competitiveness for domestic semiconductor device and equipment manufacturers.

Seeking market expansion with technological independence

Semiconductor process analysis software requires continuous technology development to respond to rapidly changing market conditions. It also requires high-performance, large-capacity calculations. Accordingly, KW Tech was developing basic algorithms for ICP equipment simulation and 3D semiconductor shape simulation that could be applied to both semiconductor processes as well as conventional CCP equipment simulation. At that time, KW Tech needed development resources with high performance and stability, and it was able to solve various problems with the help of the HPC(High Performance Computing) Innovation Hub. As the largest single GPU-based high-performance computing center in Korea, the HPC Innovation Hub provides free HPC systems for small and medium-sized businesses that cannot introduce expensive research equipment, so that they can improve performance and quality from the beginning of product development. KW Tech could receive feedback on errors immediately using the supported high-performance, large-capacity HPC resources, which shortened the technology development period. As a result, KW Tech obtained many effects such as improvement of the semiconductor process, cost reduction, and reduction of response time in case of failure. KW Tech could also contribute to the localization and market expansion of simulation software that has mostly been imported. In addition, users did not have to worry about data leak in the domestic semiconductor market dominated by imported engineer software, and they could minimize the dependence on imported semiconductor process technology.

Leading the semiconductor process analysis software market

Plasma used in the semiconductor manufacturing process has many unknown theoretical areas, and it is difficult to confirm and prove the plasma phenomenon directly. KW Tech has been focusing on R&D while finding new facts by implementing simulations based on known theories and experiments and checking the results. On the other hand, the market for semiconductor process analysis continues to grow as simulation software has to replace the experiment where it cannot be performed due to the ultra-miniaturization of the semiconductor process. According to a semiconductor market research company, the global semiconductor market was valued at USD 595.7 billion last year, and that of the semiconductor process analysis and simulation software was approximately KRW 700 billion, or 0.1% of the semiconductor market, although accurate statistical data is not available. The software market is expected to continue to grow. The technology developed by KW Tech is currently tested and commercialized at the HPC Innovation Hub and is expected to contribute significantly to the semiconductor industry in the near future. KW Tech aims to develop high-speed prediction technology for semiconductor plasma process analysis based on AI. KW Tech will lead the global market beyond the domestic market by overcoming difficulties step by step and moving toward a greater future.

ICT Funding Project

Dedicated Institution	Institute of Information & Communications Technology Planning & Evaluation
Business Objective	Creating a global ICT Innovation cluster
Business Description	Business HPC Innovation Hub

Company Information

CEO	Seo Gwangyeon
Type of Business	Application software development and supply
Year of Establishment	1998.
Website	www.kw-tech.co.kr

TIME LINE

1998.
Established KW Tech

2004. 9.
Established the AE Research Center affiliated with KW Tech

2008. 5.
Released K-Plasma Ver.1

2011. 12.
Completed commercialization of K-SPEED

2013. 8.
Signed a K-SPEED supply contract with the semiconductor division of Samsung Electronics

2014. 12.
Managed the development of the upgraded 'K-DDFLASMA' module for the Ministry of Trade, Industry, and Energy

2016. 10.
Selected as 'K-BrainPower' specialist company with excellent brain capabilities by the Korea Institute for Advancement of Technology

2018. 6.
Signed a K-SPEED supply contract with the semiconductor division of KIOXIA (entering the overseas market)

2020. 11.
Signed a K-SPEED supply contract with the semiconductor division of TOKYO Electron

2020. 12.
Signed a contract with the Korea Institute of Fusion Research to transfer the technology of 'Property of matter data for plasma equipment analysis'

2022. 4.
Signed a K-SPEED supply contract with the semiconductor division of Western Digital