

Social Value Impact Report 2021

Contents

03	Preface
04	Executive Summary
05	Pandemic Crisis vs Year of Technology Innovation
07	Growth of Crowd-Sourcing Platform aiworks
09	Job Education Consignment & Employment-Linked Program for Disadvantaged Groups
10	Sustainable Employment and Career Development Support for People with Disabilities
12	Establishment of Education Culture & Expansion of Education Projects
14	Creation of Social Values in Key Businesses
18	Conclusion
19	Appendix - Social Progress Credit (SPC)

Preface



Dale Yoon
Founder & CEO | Testworks

Since Testworks published the Social Value Impact Report 2020 for the first time in Korea as an IT technology based social venture enterprise, the company has received a lot of attention and positive responses from the industry. We thank you all for such support and encouragement for Testworks' small but various attempts to make a meaningful impact on the social issues and expand our efforts to reach more people and communities.

We believe that for Testworks to realize its goal of diversity and inclusion in employment, technological innovation and sustainable growth of business are required as the underlying basis. To make this happen, we need to continuously innovate our own technology and service. In this sense, 2021 was another significant year for everyone at Testworks as we achieved a visible outcome in Artificial Intelligence (AI) R&D and created a new social value through the investment of Series B financing of 5.5 billion KRW that we secured in November 2020.

Testworks is being recognized by more companies in the industry as a reliable one-stop data service provider which leads and supports the commercialization of AI. Publicly, in April of this year, Testworks was granted the presidential commendation at the Government Award Ceremony for Korean New Deal Contributors held by the Ministry of Strategy and Finance (MOEF). This was an official recognition of Testworks' achievement on the establishment of various AI data in large-scale based on its persistent R&D efforts on AI data technologies. Furthermore, in June, Testworks was selected as one of the most promising small and mid-size enterprises (SMEs) which has a potential to become a unicorn company in Korea, supported by the Ministry of SMEs and Startups.

Even under the increasing economic uncertainty due to the pandemic and fast-changing business environment, everyone at Testworks is committed to building and continually refining our growth engine to achieve the company's mission, and we put our best efforts to realize more diverse and inclusive workplace culture through fair and equal job opportunities.

Executive Summary

As of November 2020, Testworks secured a Series B financing valued at 5.5 billion KRW from multiple investors, including D3 Jubilee Partners, an existing investor of Testworks and impact fund management company, SK Inc., Korea Development Bank, and Shinhan Card. With this financial support, Testworks continues R&D for advancement of its own solution and creation of new technologies, and aims to refine the growth engine to strengthen the basis of technology innovation.

Through aiworks, a proprietary crowd-sourcing platform for collecting and processing AI data, Testworks quickly and effectively responds to the demand of high-quality data supply and processing requirements of corporate clients. At the end of 2020, the cumulative number of platform members was more than approximately 30,000, and the number increased to 70,000 by the end of 2021, and further increased by 80,000 in the first half of 2022. As of 2021, accumulated employment rate created by crowd-sourcing suggests that the number of people employed by the platform amounts to 433.

Testworks has extended and connected the principle of fair opportunity and inclusion in employment to education and job placement of senior workforce. As a result, we are contributing to the creation of digital jobs, a new form of employment, through memorandum of understanding (MOU) with local government agencies, such as Seoul 50 Plus Foundation – West Campus, and Korea Labor Force Development Institute for the Aged Citizen, which entrust us with vocational education.

Testworks' employment of the disabled has made meaningful examples of career development that goes beyond job enlargement and growth. An employee with developmental disability started his career in the data-labelling group, has moved up to a reviewer supervisor since then, and is now preparing for a new career while working on required license and certificates. He feels pride and self-confidence as he succeeded in the change of career to a tester. Another employee with developmental disability in the data-labelling group has received the essential education and expanded his work successfully. Now, he prepares his own class materials and gets ready for firsthand trainings. He is developing his skills and knowledge along with other students.

In order to expand the education opportunities for aiworks platform users, Testworks has opened the aiworks academy site, following the establishment of ICT Education Center. Through the online live streaming classes and learning contents, the site increases the firsthand training opportunities and helps students link training to job opportunities to improve their skills in their areas of interest.

Testworks takes interests and participates in various social projects in both public and private sectors. Through collaboration with other social venture enterprises, we are contributing to the development and commercialization of more AI data-based services, such as creation of social values, improvement of environmental problems, and promotion of local communities and culture.



Pandemic Crisis vs Year of Technology Innovation

While the prolonged COVID-19 pandemic has resulted in the economic crisis in an unprecedented scale, it accelerated digital transformation and innovation in all aspects of our lives, especially in economic and industrial activities, and the phenomenon became more evident as we are entering the “With Corona” era. At the core of such rapid transition are AI-related future technologies, which have already been applied to or are being considered to be applied by various industries.

For years, Testworks has been collaborating with corporate clients who request data and model establishment. In doing so, we developed and advanced our own solutions, and have become the market-leader in AI data industry with distinct skills and technology.

In particular, as the demands for 3D AI development and 3D data are increasing from the companies that are keen to secure future technologies related to metaverse, smart factory, and autonomous driving, Testworks adopted the 3D data collection and auto-processing technology that meets and exceeds the expectation of customers.

Testworks is focusing on talent recruitment and technology investment. At the same time, it is committed to overcoming the challenges posed by the pandemic, as responding to the market requirements, and taking a leap forward to prepare for a better future.

Part of the key outcomes we have achieved through this time of challenges include attracting IR Series B Financing, improving our own platform, preparing the growth engine by developing a new solution, acquiring the KOLAS accreditation for international standards, and securing the client base, both new and long-term wise.

Attraction of Series B Impact Financing Valued at 5.5 billion KRW

In the second round of investment in 2020, Testworks appealed its competitive power in technology and quality as well as its social value which has a great potential to make a positive impact on social issues, and successfully attracted the investment not only from the existing investor, D3 Jubilee Partners, an impact fund management company, but also from new investors, such as SK Inc., Korea Development Bank, and later Shinhan Card. The total investment amount we have secured in Series B Financing is 5.5 billion KRW.

aiworks Crowd-Sourcing Platform for a More Convenient User Experience

The aiworks members varies in ages from 20s to 60s. As an impact platform for those who are more vulnerable in the job market, such as women with career break, people with disabilities, and senior citizens, aiworks has completed the first reconstruction and is preparing its second renewal to launch a project and improve the platform accessibility with provision of more user-friendly services.

Development of blackolive 3D for 3D AI

Testworks' blackolive was applied to K-DATA voucher support project, NIA AI dataset building project, and many other private sector businesses and received the 1st class GS (Good Software) certification in April 2021, as it has been widely approved as an efficient large-scale dataset building automation solution. In particular, using its own high-quality dataset, Testworks has successfully developed blackolive from a 2D automatic object detection model to a 3D data processing tool and extended its usage to not only as a Point Cloud data processing tool essential to 3D AI model-based training, but also as a MLOps platform that allows an easier management of tasks. With this improvement, blackolive makes a faster and more efficient response to customers' 3D data construction and is being used widely by the members' of Testworks. In addition, reflecting the feedback from our own members given through their actual on-site works, blackolive provides state-of-the-art functions with greater accessibility and convenience than any other 3D data processing tools in the market.

Development of ADQ, an AI Data Quality Verification Tool

AI data quality verification is still primitive in Korea. Although we have improved the verification process internally through repeated work of examination, the feedback we gained from the examiners directed our attention to efficiency based on technical support. As a result, we have developed and released a specialized tool for AI data quality verification (ADQ) according to the Data Quality Index in the dimension of labelling accuracy to resolve the difficulties in the front-line. By using ADQ, companies and institutions that need quality assurance guide, or third party quality assurance can now establish a quality verification process and enjoy a more convenient examination management with detailed result analysis report.

KOLAS (Korea Laboratory Accreditation Scheme) Accreditation

Through verification business, Testworks provides testing service for software quality improvement, embedded software CI/CD solution, and customized step-by-step consulting service from developing software to code quality control. Based on the expertise in quality verification, Testworks had worked for 2 years to obtain KOLAS accreditation since the early 2020 and achieved the goal in January 2022 after going through KOLAS' meticulous document examination and on-site evaluation. KOLAS (Korea Laboratory Accreditation Scheme) is a national accreditation body as a part of KATS (Korean Agency for Technology and Standards) under the Ministry of Trade, Industry, and Energy. It operates accreditation schemes conforming to international standards, performs a comprehensive evaluation on a subject organization's testing equipment or apparatus, testing ability, and facility and infrastructure, and certifies the organization for testing competency. The scope of KOLAS accreditation that Testworks acquired this year includes ISO/IEC 25023 and ISO/IEC 25051 in software area, and the standards by Notice No. 2020-84 of the Ministry of Science and ICT. The KOLAS accreditation proves Testworks' competency and technological skills in software testing that matches the international standards.

Securing the Client Base with Technological Power and Quality Service

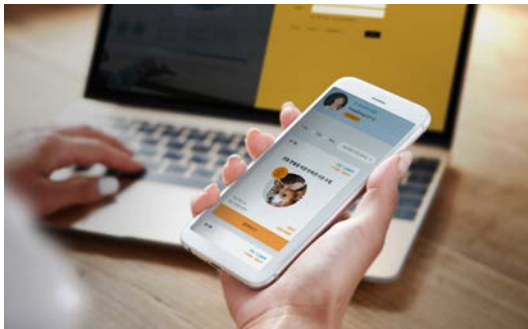
A successful securing of customers, both new and long-term, depends on reasonable price, adequate response, technology and skills, fast delivery, and quality customer service. Testworks has been dedicated to its clients with these elements. Customers trust Testworks' experience and expertise and are satisfied with our one-stop service. They also pay attention to the fact that Testworks is a social-venture enterprise contributing to creation of social values. In the intense competition of the market, Testworks has developed and secured its own technology and maintains the service quality steadfast. The value of inclusive employment created by Testworks is in fact supporting those who are at a disadvantage in job opportunities despite their skills and high potential, such as people with disability, women with career break, and senior citizens. It is also helping them use their abilities to the fullest in the society through fair opportunities. Testworks hopes for these opportunities to increase in our society.

2

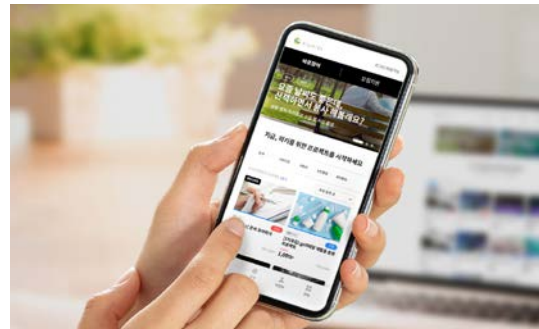
Growth of Crowd-Sourcing Platform aiworks

Testworks has taken various attempts to optimize and promote the crowd-sourcing based aiworks platform, while participating in a private company's AI data model construction project and government's Digital New Deal Data Dam Construction Project.

As a part of such endeavor, we have provided a service that allows the members to participate in digital jobs on the platform and make profits more easily by reorganizing the service site to improve accessibility to the platform and by developing the platform functions to launch more diverse projects. In addition, more MOUs have been made with other organizations to link the education to employment and growth.

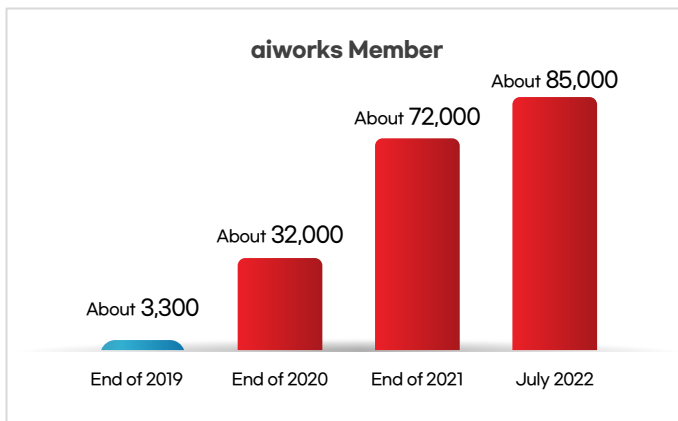


Reorganization of aiworks (2020)

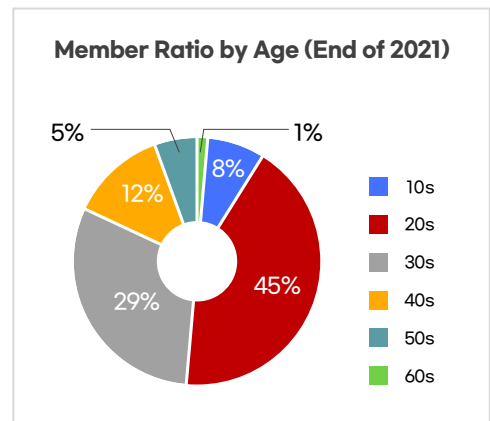


Reorganization of aiworks (2021-2022)

At the end of 2020, the number of aiworks members reached more than 30,000. The number increased to 70,000 at the end of 2021 and as of July 2022, has reached over 85,000 already. This shows that the main age group which used to take interests in digital job opportunities has been radically shifting from 20s and 30s to a wider demographic, thanks to our improved platform accessibility, and various education programs and projects.



2019~2022 Number of aiworks Member



2021 Member Ratio by Age Group

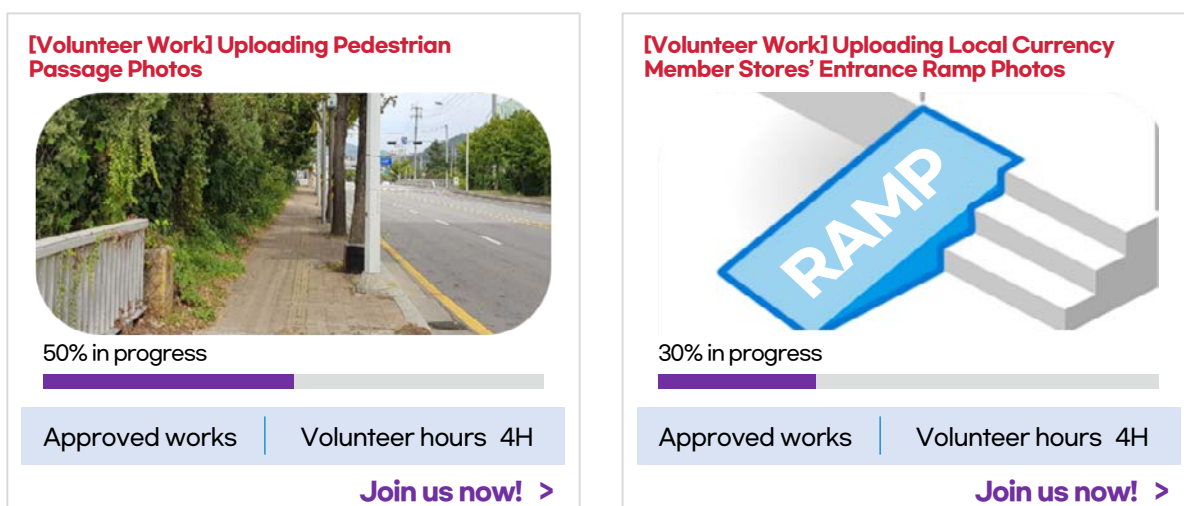
As of 2021, the employment effects generated by crowd-sourcing can be converted to the quantitative values as follows.



2021 Crowd-Sourcing Job Creation Effect

The key reason that aiworks has received much attention and recognition as a differentiated impact platform is that in addition to the growing number of members, it continuously launches and runs various online volunteer campaigns concerning social issues in an aim to solve them.

In the second half of 2021, we conducted two volunteer projects in collaboration with 1365 Volunteering Portal. One was a project that collected the photos of pedestrian passage surface to help solve the difficulties or dangers in sidewalk walking. The other was a project that collected the photos of ramps before the entrances of local currency member stores.



2021 aiworks Virtual Volunteer Projects

The table below shows that with the correction of last year’s report in which parts of data were missing, the overall number of participants and the hours of volunteer activity increased from 2019 to 2021. The reason that the number of participants and volunteer hours in 2021 slightly decreased compared to 2020 was mostly because of the delay in project launching and its operation due to the platform reorganization. Specifically, in 2020 there were five volunteer projects, whereas in 2021, there were two projects in which 286 people participated and worked for average of four hours per person, recording a total of 1,144 hours of volunteering.

aiworks Volunteering	2019	2020	2021	2022 (End of July)
Hours of activities	610 hours	1,951 hours	1,144 hours	8,683 hours
Number of volunteers	158	542	286	2,171

2019~2022 aiworks Volunteering Status

As of July 2022, aiworks hosts a project that collects location information and photos of public benches to help develop an AI service for vulnerable road users and people with walking disabilities. Approximately 2,200 people are actively participating in this project. We are planning to launch more projects with a greater variety of social issues through aiworks and expand the partnership with other organizations, in both private and public sector.



Job Education Consignment & Employment-Linked Program for Disadvantaged Groups

To fulfill a company's mission of inclusive employment through fair and equal opportunities, education must serve as a prerequisite. In 2021, Testworks expanded the educational opportunities and employment-linked programs vigorously, with the expertise in education activities.

First, in order to diversify the job-finding channel for more disadvantaged groups in employment, we launched collaborative education courses with local government agencies which entrusted Testworks with data labeling education and increased the educational opportunities. For those who completed the courses through the local government agencies, we provided an opportunity to participate in various projects under the Digital New Deal program.

Based on 2021 SPC (Social Progress Credit; please see the appendix) materials, the number of graduates from the data labeling courses opened at an education institution for senior citizens and the Women's Resources Development Center were 77 for the 50s and higher age group, and 138 for the women and young adult group, totaling 215.

Period	Education Title	Institution	Target	Hours	Numbers
03.08 - 03.26	AI Training Data Labeler Course	Seoul 50 Plus Fdn. West Campus	Age 50	39	11
07.20 - 08.04	Data Labeler Education (Chuncheon)	Korea Job Creation Association	Age 50	72	10
09.27 - 11.02	Data Labeler Course 1	Seocho 50 Plus Center	Age 50	30	10
11.17 - 12.16	Data Labeler Course 2	Seocho 50 Plus Center	Age 50	30	8
11.03 - 11.08	Korea Labor Force Development Institute for the Aged Citizen, Class 2, Season 2	Korea Labor Force Development Institute for the Aged Citizen	Age 50	20	17
11.22 - 11.24	Korea Labor Force Development Institute for the Aged Citizen, Data Labeler Class 1, Intensive Course	Korea Labor Force Development Institute for the Aged Citizen	Age 60	15	21

2021 Entrusted Senior Education – Data Labeler Course for Ages 50

Period	Education Title	Institution	Target	Hours	Numbers
06.14 - 07.12	Data Labeler Course, Nowon 1	Nowon Women's HR Development Ct.	Women with career break	60	14
10.05 - 11.03	Data Labeler Course, Nowon 2	Nowon Women's HR Development Ct.	Women with career break	60	14
05.10 - 05.14	AI Data Labeler Course	Seocho Women's HR Development Ct.	Young adult under age 39	15	14
05.24 - 05.28	AI Data Labeler Course	Seocho Women's HR Development Ct.	Young adult under age 39	15	19
04.26 - 04.30	AI Data Labeler Course	Seocho Women's HR Development Ct.	Young adult under age 39	15	12
04.20 - 05.03	AI Data Annotator Course & Job Search Support	Yeongdeungpo Women's HR Development Ct.	Women with career break	28	15
04.28 - 05.28	AI Data Labeler Course	Eunpyeong Job Ct.	Women with career break	60	13
07.28 - 07.28	AI Data Labeler Course (2nd)	Eunpyeong Job Ct.	Women with career break	60	13
10.07 - 10.28	AI Data Labeler Course (3rd)	Eunpyeong Job Ct.	Women with career break	60	13
03.15 - 04.26	AI Data Labeler Course	Eunpyeong Women's HR Development Ct.	Women with career break	60	11

2021 Entrusted Education at Women's HR Centers and Job Centers – Data Labeler Course

Those who completed the data labeler course were given a preferential opportunity to participate in NIA's AI data construction projects involved by Testworks in 2021, such as 'Precision Agricultural Machinery Autonomous Driving Data', 'Intersection Signal Data', and 'Eye Movement Data', as a crowd-walker. The number of graduates who participated in the labeling work for more than four months reached 53.

4

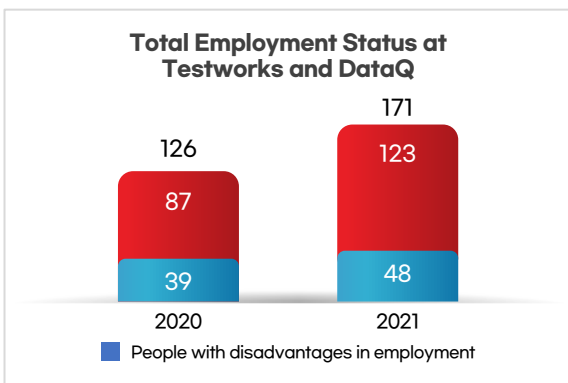
Sustainable Employment & Career Development Support for People with Disabilities

In collaboration with DataQ, our affiliate in Standard Workplace with Disabilities, Testworks is extending internal and external education for employees with disabilities, providing them with career development opportunities, and aim to support their sustainable employment and growth in the job market. Since 2017, Testworks' employees with disabilities have started their career with a new type of work such as AI data labeling and examination, and since have shown their strengths in more delicate and sophisticated tasks. In addition to data labeling task, many of them are challenging the status quo and attempting to develop their career choice and expand the work scope.

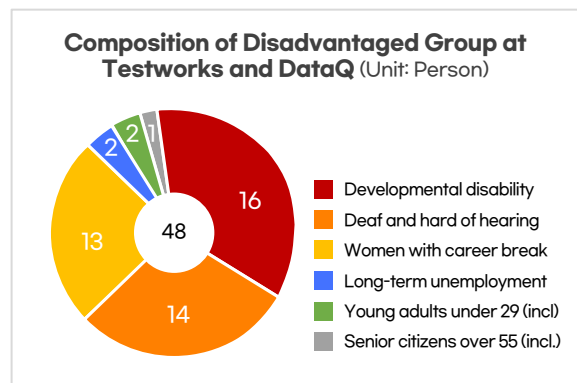
For example, from 2021 to 2022 we have had two employees who have developmental disabilities and succeed in career changes and work scope expansion. One of them has moved to our Software Verification Department, which is in charge of Testworks' long-term clients, including Samsung Electronics, Honeywell, Atomy, and Seegene, and since then has started a new career as an expert in quality verification and security. The other employee currently leads data labeling courses for colleagues and new hires based on one's experience as a data labeling instructor.

The total number of Testworks and DataQ employees increased from 126 at the end of 2020 to 171 at the end of 2021. 45 people were newly hired in a single year of 2021.

Of the total 171 employees as of 2021, the number of employees with disadvantages in employment are 48, including people with disabilities, women with career break, and senior citizens. This is approximately 28% of our total employment, exceeding the mandatory quota of disadvantaged group employment set for mixed-type social enterprises by more than 20%.



2020~2021 Increase in Total Employee Number



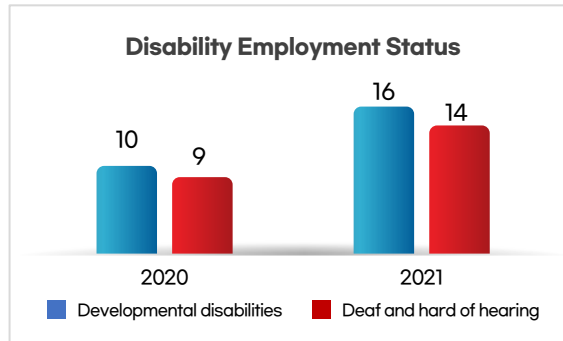
2021 Composition of Disadvantaged Group of the Total Employees

As of the end of 2021, the total number of employees with disabilities at Testworks and DataQ is 30, including four part-time employees.

Category	2017	2018	2019	2020	2021	Total
Employment Status	2	3	9	5	11	30

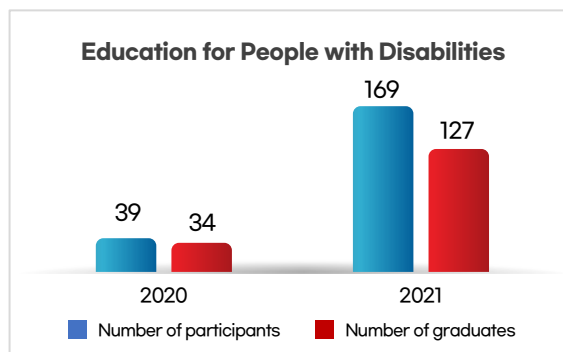
End of 2021, Disability Employment Status

In 2021, the number of employees with disabilities out of the total 45 new hires was 11, which accounted for about 24%. Furthermore, as of the end of 2021, the total number of employees with disabilities at Testworks and DataQ reached 30, of whom 16 have developmental disabilities and 14 are deaf and hard of hearing.



2020~2021 Disability Employment Status at Testworks and DataQ

In addition to the recruitment of new employees in 2021, Testworks provided employment-linked education sponsored by NIA for the disadvantaged group in employment, as well as on/off-line education programs as a part of impact strategy project sponsored by Social and Economic Support Center of the City of Seoul. Through these courses, we provided an education for 169 people with disabilities and graduated 127 people amongst them. The graph shows that the number of graduates has increased by almost four times in 2021, compared to 2020.



2020~2021 Education for People with Disabilities

Of the total 127 graduates, 4 people were hired by DataQ and 39 were given an opportunity to work for data establishment project as a crowd-worker.

This round of education was more significant in a situation where social distancing continued due to COVID-19, especially to the participating students with disabilities and their guardians/parents, as it showed the possibility of changing the preconception of IT industry toward a certain group of employees and expanding digital education accessibility to a wider demographic. Some parents were delighted to know that their developmentally challenged children now have a path to pursue a new job, a data labeler in AI technology field, rather than a simple labor job.

Although Testworks and DataQ are dedicated to establishing a comprehensive system that includes online education courses, job compatibility assessment, and on-site firsthand sessions, for the purpose of sustainability and expandability of disability employment, we need more continuing interests and cooperation from the governments, local public bodies, and private sectors to maintain the social values through this process.

5

Establishment of Educational Culture & Expansion of Education Projects

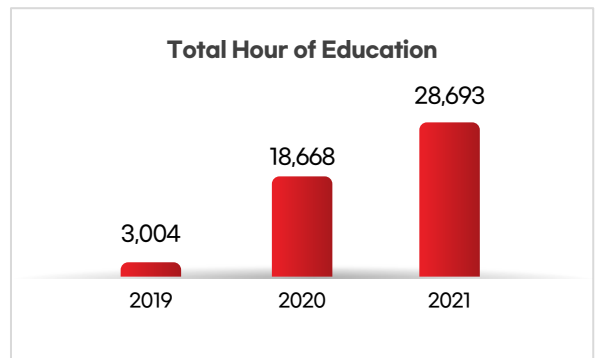
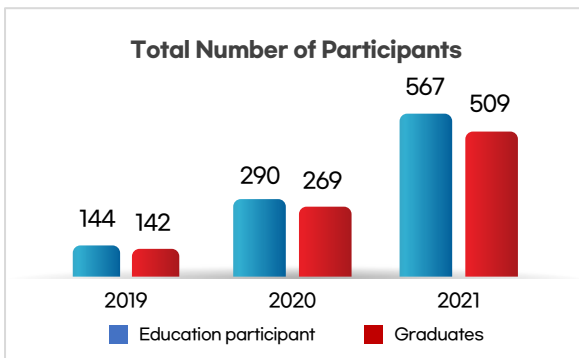
In March 2021, Testworks launched the Educational Culture Team with an education expert we hired for this purpose. Through various education projects, the Educational Culture Team supports the students' change for a better future and helps them lay out their own foundation for growth.

However, the COVID-19 pandemic threw the society and economy into a tailspin, and the education market was not immune to this impact. At Testworks, we faced difficulties especially in the operation of real-time classes and firsthand practice-focused courses, which used to be the strengths of Testworks. To overcome these challenges, the Educational Culture Team expanded the education service which had been fragmentarily provided on aiworks to the aiworks academy site and established a process for digital education contents production and online education operation. More importantly, the Team had to strengthen the basic education contents for digitally vulnerable groups which used to be excluded from most of the educational benefits. The Team also utilized the collaborative and support programs of public institutions and local government agencies and tried to link the education to employment opportunities.



2021 Testworks' Education Programs in Collaboration with Various Government Bodies

Through these efforts, Testwork's ICT education for disadvantaged group in employment since 2019 grew almost double in size in 2021, compared to 2020. Testworks' education consists of professional and detailed courses aiming to support the students' changes and growth through the learning from basic to firsthand classes. If we convert the entire education provided in 2021 to time, it amounts to a total of 28,693 hours' provision of educational service.



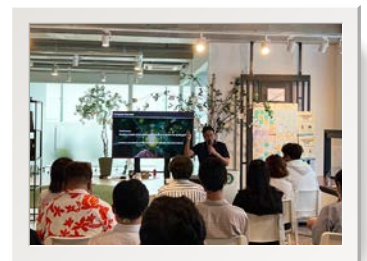
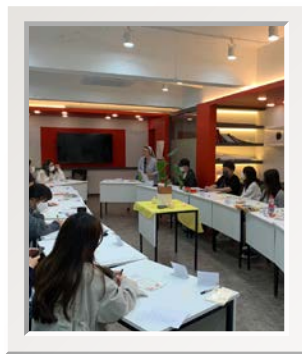
2019-2021 Total Number of Participants and Education Hours

Since 2021, education target has expanded and the programs for seniors of ages 50 plus have been promoted, resulting in total of 121 senior citizens' participating in the programs at the end of 2021. In addition, the number of participants in the education for people with disabilities was 169, four times more than that in 2020. As for the education for marriage immigrants and for farmers and fishermen, we need more systematic support from related local government bodies and associations in each city and province.

Category	2019	2020	2021년
People with disabilities	20	39	169
Women with career break	124	232	277
Senior citizens			121
Marriage immigrants		13	
Farmers & Fishermen		6	
Total	144	290	567

2019-2021 Education Service for Each Target

In addition to external education projects, Testworks supports internal education programs that help employees learn about topics in fields of AI and quality assurance. Moreover, to overcome various difficulties frequently experienced in SME start-ups, we provide workshops to establish workplace culture and facilitate better communication amongst peers, Birkman Assessment service for all employees, analytics-based communication training in small group, monthly online meeting for entire employees, and regularly publish impact reports for internal use.



Communication Culture at Testworks

6

Creation of Social Values in Key Businesses

As ESG (Environmental, social, and governance) becomes ever more significant, companies are struggling to prepare an environmental, social, and governance from a long-term perspective. Now is the time that companies should try different changes to practice ESG management under the evaluation of business's sustainability and social impact to attract investors. Testworks was established by Mr. Yoon Seok-Won, the founder and CEO of the company, with a goal to contribute to the creation of social values. In this sense, Testworks was born with a pioneering mindset and leadership in terms of ESG management. In practice, since its establishment in 2015, Testworks has been preaching social values as it progresses and since then made a positive impact in the community.

Under this founding philosophy, creation of social values based on technology innovation, Testworks has been actively participating in various private and public social projects with a great interest in solving social issues by using AI technology and innovation. When conducting NIA's AI data construction project and K-DATA's Data Voucher support project, our focus has been on social problem-solving.

Since last year, we conducted projects of more diverse subjects, especially related to living quality improvements for the disabled, improvements in environmental issues, reviving the local economy and communities, and environmental improvement for children innovation, by way of actively collaborating with other social venture enterprises. Through this, we support development and commercialization of AI services, and make contributions to shaping the ecosystem for AI industry.

Of the projects we conducted from 2021 to the first half of 2022, major tasks related to social problem-solving, and the number of people employed thereby are as follows.

01 NIA (National Information Society Agency) Emergency Preparedness KSL(Korea Sign Language) AI Data Construction Project

Data construction by extracting morpheme and non-manual signal information and key point data from data containing safety info against disaster which can be used for Deaf people in their daily routine and professional area.



Number of employments
114 people



02 NIA (National Information Society Agency) MTMDC(Multi-Target Multi-Dual Camera) AI Data Construction Project

Data construction with thermal data filmed with the same method as RGB data in order to compensate the limitation of RGB data for tracking confirmed cases of COVID-19 and other purposes



Number of employments
91 people



03 Social Venture Superbin Data Processing

Data processing project with data necessary to develop AI which can simplify the recycling process by automatically selecting reusable resources from the recycling processing



Number of employments
11 people



04 Social Venture Foresys Data Processing

Data processing project with data necessary to improve AI-based smart system designed for effective management of collected marine debris, such as litter in ocean and waste plastic



Number of employments
9 people



<div style="border: 2px solid purple; border-radius: 15px; padding: 10px;"> <p>05 Social Venture Be Adventure. Be Adventure Data Collection and Processing</p> <p>Data collection and processing project with data necessary to develop the most important historic places and stories of the region to tourism contents in game format so as to promote the local tourism</p> <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;"> <p>Number of employments</p> <p>10 people</p> </div> </div> </div>	<div style="border: 2px solid gray; border-radius: 15px; padding: 10px;"> <p>06 GINNO Tech Data Processing</p> <p>Data processing project to develop an Intelligent Transport System that can be used to set up an effective traffic safety management strategy in school zones</p> <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;"> <p>Number of employments</p> <p>37 people</p> </div> </div> </div>
<div style="border: 2px solid orange; border-radius: 15px; padding: 10px;"> <p>07 Social Venture GROWING MOM Data Processing</p> <p>Data processing project with data required to develop an AI model which can help efficient counseling service by increasing accessibility to childcare counseling at more reasonable costs, while resolving the disparity and imbalance of information through online service provision</p> <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;"> <p>Number of employments</p> <p>24 people</p> </div> </div> </div>	<div style="border: 2px solid black; border-radius: 15px; padding: 10px;"> <p>08 ITP 인천테크노파크 <small>INCHEON TECHNOPARK</small> Child Abuse Image Data Construction TG-sponsored Collaboration Project</p> <p>Data construction for AI training on intelligent video image analysis that detects child abuse images from CCTV</p> <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;"> <p>Number of employments</p> <p>6 people</p> </div> </div> </div>

2021 Projects Directly Related to Social Problem-Solving & Number of Employment Created

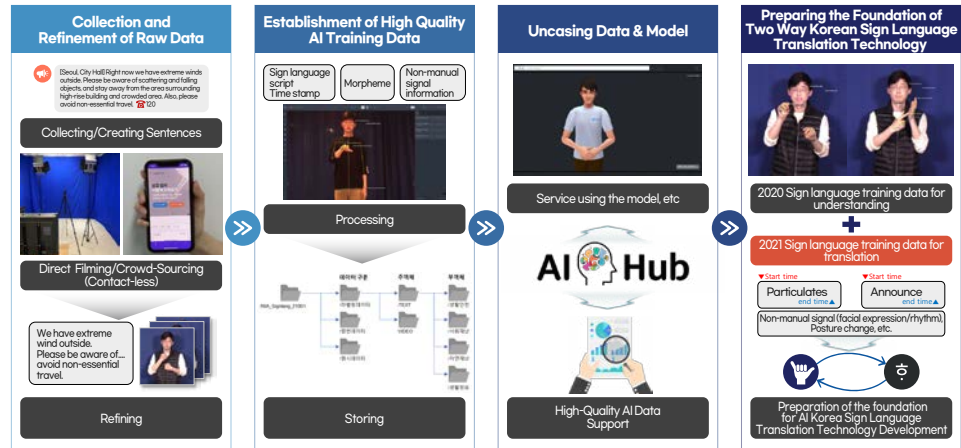
2021 NIA AI Data Construction Project for Emergency Preparedness KSL(Korea Sign Language)

Description	A part of 2021 AI training data construction project operated by the National Information Society Agency (NIA) and sponsored by the Ministry of Science and ICT. It aimed to establish sign language dataset for delivering safety information against disaster for Deaf people who have profound hearing loss and use the Korean sign language as their 1st language.
Operator and participating companies	Testworks was the operator of this project and carried out the work in collaboration with Kangnam University, which has sign language linguistics and translation programs and research ability, and EQ4ALL Co., Ltd., which has Korea sign language-Korean translation solution as well as sign language avatar video production solution.
Understanding of Korean sign language	Korean sign language was created based on visual and movement system in the Deaf culture and is difficult to convey the exact meanings of a communication made in Korean (verbal and written) into another language. Deaf people usually use TV subtitles and writing to communicate with hearing people who use Korean; nevertheless due to the difference between Korean sign language and Korean syntax, in case of conversation by writing, only 12% deaf people understand the exact meanings of a communication, and in case of TV subtitles, only 9% of deaf people can understand the exact meanings of the contents.

Background and objectives

To build a basis of problem-solving with AI technology for deaf people, especially in case of disaster situations and safety issues, we established a dataset useful to Korean sign language-Korean translation AI model training. In addition, we arranged that deaf people could participate in the work position which require data collection and processing in the course of data establishment.

Data construction process



2021 Sign Language AI Training Data Construction System

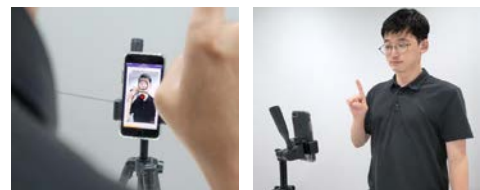
HR use for generating, refining, processing, and examining raw data, and quality assurance

1. Participation of sign language experts from Kangnam Univ.
2. Participation of Korea sign language translators: We recruited people over 18 who use Korean sign language as their 1st language and gave 5 sentences in Korean. Then we examined the video sample of sign language translation and evaluate their ability as a sign language translator.
3. Participation of Korean sign language-Korean translator: We used sign language experts for Korean sign language's data expertise and data quality assurance.
4. Participation of crowd-sourcing online HR: In consideration of the COVID-19 induced social distancing situation and the local diversity of the language providers, we collect ed contact-less images through aiworks crowd-sourcing platform.

» Shooting Environment

Location Conditions	
Equipment	Smartphone, holder stand
Lighting	Natural light (No backlight)
Background	Simple monotone background

[Conditions for contact-less shooting location]



[Contact-less shooting example]

» Target

Conditions for Recorder	
Language	Use 1 st language as sign language
Attire	Monotone top and bottom
Accessory	No except glasses

[Conditions for contact-less recorder]

» Shooting Condition

Raw Data Information	
Image condition	FHD (1,920 x 1,080)
Data format	mp4
Frame	30FPS

[Raw data information]

Recording Condition for aiworks Contact-less Video Recorder

Service examples using sign language dataset Barrier-free kiosk, facility info desk, weather forecasting service, visual map service, sign-language application service, etc.

Job creation effect Including 87 deaf crowd-workers who use their first language as sign language, the total number of people who secured employment for more than three months in Korean sign language-Korean translation field were 114 in total.

2021 NIA Multi-Target Multi-Dual Camera Dataset Construction Project

Description A part of 2021 AI training data construction project operated by the National Information Society Agency (NIA) and sponsored by the Ministry of Science and ICT. It aimed to establish Multi-Target Multi-Dual Camera Dataset containing thermal data, in order to compensate the limitation of RGB data.

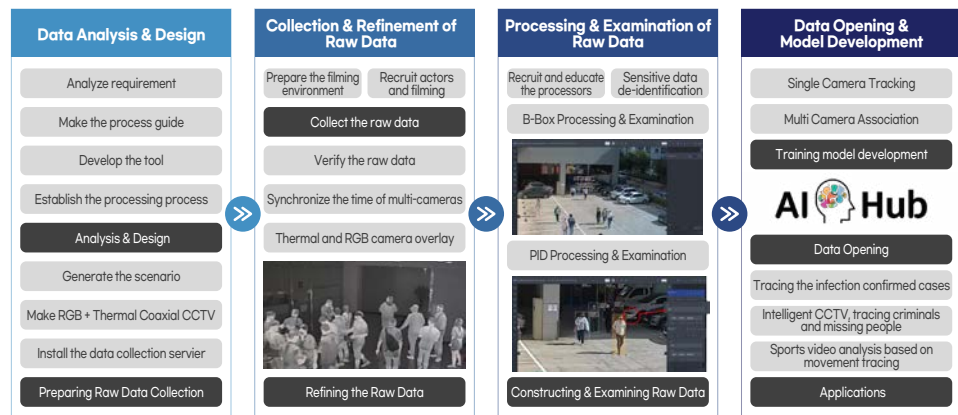
Operator and participating companies Testworks was the operator, and carried it out in the form of consortium with KAIST's Robotics and Computer Vision lab, which participated in a quarantine system development project in response to pandemics in Korea since 2020, and Miru Systems Co., Ltd. which has its own research center and optical technology, as well as precision machine-based system developing knowhow and video equipment.

COVID 19 tracing 2021 COVID 19 tracing was performed in a way that we checked the information by interviewing the confirmed cases and cross-checked it with CCTV images, mandatory records, smartphone location information, credit card record, and many other procedures.

Background and objectives The project aimed to establish a dataset useful to build an intelligent CCTV system which can trace the movement of COVID-19 confirmed cases, assure the efficiency of quarantine system, and overcome the limitation of existing CCTV.

Data construction and AI model development In this project, Miru Systems installed a thermal-RGB CCTV in the KAIST, collected MTMDC data, refining and delivered the data. Testworks used its own data crowd-sourcing platform aiworks and data processing solution blackolive and performed the refined data's labeling, labeling examination, and improvement by its own data expert HR and crowd-workers. By using the established data, KAIST's RCV Lab developed multi-objects tracking AI model and demonstration service.

Data construction process



2021 MTMDC AI Training Data Construction System

Service examples using multi-sensor tracking dataset

The dataset is useful for developing an automatic COVID-19 confirmed cases tracing AI service, and also for making an intelligent CCTV system which can trace the movements of targets in crowded areas such as subway stations, or at night, which was difficult to do with the existing CCTV.

Job creation effect

Number of crowd-worker who completed the data processing examination education and then secured an employment for more than three months in the dataset construction works was 91 in total.

Conclusion

From 2021 to the first half of 2022, Testworks has focused on new missions; developing technology and securing talents to prepare a new growth engine of the business, as well as making its way to the global market. In fact, the seeds to advance to the global market were already sown as we participated in the K-Startup Center program in Stockholm, Sweden through the Korea Institute of Startup & Entrepreneurship Development (KISED) and made global businesses with a few companies. In 2022, we are vigorously working to open an overseas office in Vietnam through KOICA IBS projects and establish a data education and processing center there. Moreover, Testworks has been selected for the Silicon Valley's Korea Innovation Center (KIC) sponsored Express Soaring 2 program and started the communication with expert companies in AI technology for partnership.

Testworks will continue its sustainable growth, to make itself a good example of success, and a best practice of a Korean business enterprise which pursues both the economic and the social values.

Appendix

Social Progress Credit (SPC)

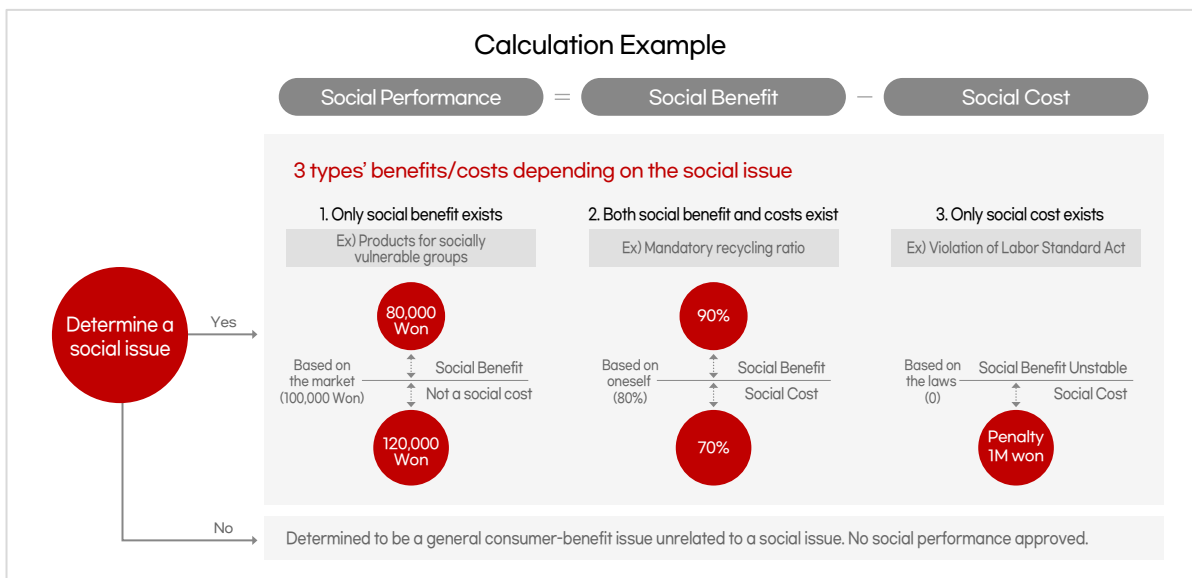
Social Progress Credit (“SPC”) is a project initiated by the Center for Social Value Enhancement Studies (the “Center”), SK Group’s Public Interest Foundation, for measuring performances of social enterprises in terms of monetary values and compensating them appropriately.

SPC’s objectives are to spread social values by identifying the current social values and setting and managing them as the reference point for improvement.

Through SPC, the Center strives to make new investments in social enterprises, domestic and overseas, and recruit talents. By supporting their growth and potentials, the Center aims to create a virtuous cycle for social enterprises’ ecosystem.

The social values measured by SPC are the values created by solving the type of social problems, of all, that are impossible to be solved by individual attempts, and they are comprised of the total sum of each social performance contributing to social problem-solving.

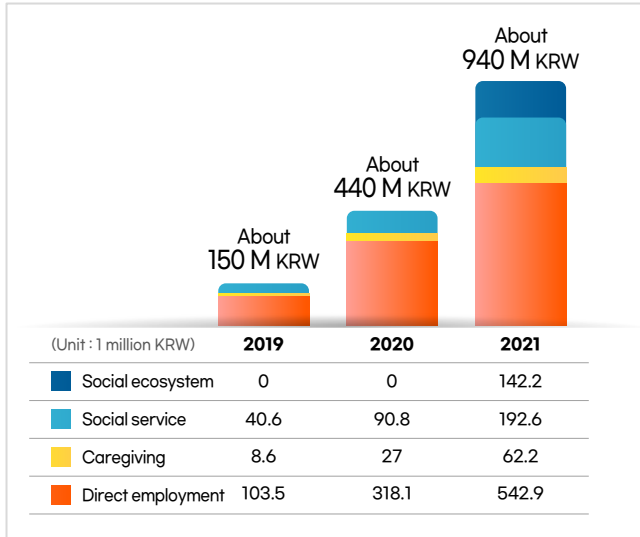
Social performance means the cost calculated by deducting the social cost from the social benefits. When an outcome of social performance is reverted not to an individual but to the community, making contribution to the public good and shared growth of the community, a social value is measured positively. In principle, SPC pursues to measure the social values with the outcome, and conservatively based on the reference market in consideration of the benefits and costs of the interested parties.



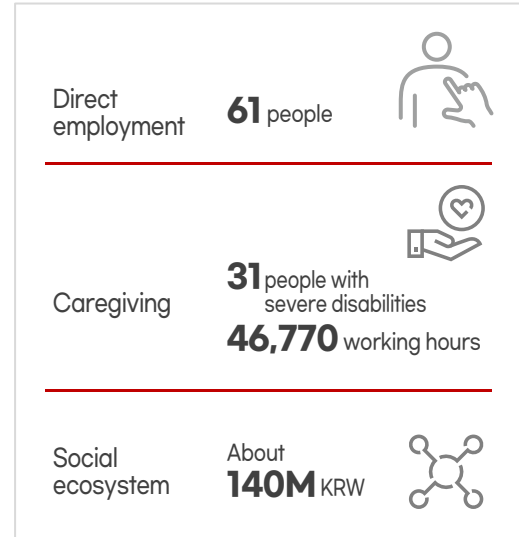
Method to Measure Social Values (Source: CSES Website)

2021 Testworks' Key SPC Performances

Testworks has been participating in SPC project initiated by the Center for Social Value Enhancement Studies (the "Center"), SK Group's Public Interest Foundation, and measures SPC for its social services and employment outcomes.



2019~2021 Testworks' SPC-based Social Performance



2021 Key SPC Performances

In 2021, Testworks generated the social performance outcome, valued approximately at 940 million KRW. This was more than twice the amount of the previous year; and along with the employment performance outcome, the social service performance outcome has increased, as well. In addition, as a new performance of 2021, we created the social ecosystem outcome.

The employment performance is the outcome of direct employment of 61 people, including people with disabilities and women with career break, and of caregiving for 31 people with severe disabilities, of which the total value amounted to approximately 600 million KRW.

The caregiving performance was measured by the working hours of people with severe disabilities. In 2021, we measured 46,770 hours worked by 31 severely disabled people. This signifies that we have solved a social problem of caring for people with severe disabilities, with employment.

The social service performance was measured by our provision of education to 450 people, including people with developmental disabilities, deaf and hard of hearing, women with career break, senior citizens, and young adult job seeker, through 2021 ICT Expert Education Program for Disadvantaged Group in Employment sponsored by NIA and various data labeler courses, in collaboration with Nowon/Secho/ Yeongdeungpo/Eunpyeong Women HR Development Center, Seoul 50Plus Center Foundation, Eunpyeong Job Center, Korea Older Worker Development Institute, and Korea Job Creation Association.

The monetary value of the newly generated social ecosystem performance is approximately 140 million KRW, which was calculated by converting the added value generated from the women with career break's service contract. It indicates the measurement of additional opportunities such as service contracts and other methods of labor, rather than direct employment, based on the data labeler's job characteristics that the majority of the participants are a freelancer worker and the needs of women with career break who prefer flexible working method.

History & Awards

- 2015**
 - Established Testworks Inc.
- 2016**
 - Selected as a Preliminary Social Enterprise, Seoul
 - SAP Korea, Autism@Work SW Tester Education Course
 - Selected as an excellent company for women's job creation, Seoul
- 2017**
 - Awarded the top prize in Social Enterprises Fostering Project by the Korea Social Enterprise Promotion Agency
 - Certified as a social enterprise by the Ministry of Employment and Labor
 - Awarded the prize in Change Maker section by KT Group Hope Sharing Foundation
 - Selected for 6th On-Dream Fellow by Hyundai Motor Group
 - Selected for SPC by the Center for Social value Enhancement Studies
 - Certified as an excellent socio-economic enterprise
- 2018**
 - Awarded the top prize from Seoul Forest Youth Social Venture Innovation Contest, Seongdong-gu Office
 - Secured the Series A financing (100 million KRW)
- 2019**
 - Selected as a supplier for K-DATA, Data-Voucher Support Project
 - Received commendation from KIBO for creation of social values and employment
 - Attended Korea-Sweden Business Summit as a Korea social venture enterprise (accompanied the President for his visitation to three countries in northern Europe)
 - Received commendation from the Minister of Science and ICT for leadership in formation of intelligent information society
- 2020**
 - Certified as a standard workplace for disabled by the Korea Employment Agency for Persons with Disabilities (Impactworks, currently DataQ)
 - Selected for 'Software High Growth Club 200' by the Ministry of Science and ICT
 - Selected as an excellent example of May's Data-Network-AI by the Ministry of Science and ICT
 - Selected as a small but strong enterprise in Seoul
 - Awarded embracement prize at the 1st inews 24 social Data-Network-AI innovation prize
 - Acquired Series B financing (5.5 billion Won)
- 2021**
 - blackolive acquired the first-class GS certification by TTA
 - Awarded the presidential commendation by the Ministry of Science and ICT for improvement of informational culture
 - Selected for KSC Stockholm program through KISED
 - Awarded the grand prize in AI data section held by IT Chosun 2021 Korea AI top prize
 - Received the appreciation plaque by the Korea Software Industry Association for improvement of producer capability
- 2022**
 - Acquired the KOLAS international accreditation for international standards testing
 - Received the appreciation plaque from NIA for contribution to ICT and data projects
 - Received the presidential commendation by the Ministry of Economy and Finance for contribution to Korea New Deal performance
 - Awarded commendation from the Minister of Employment and Labor for promoting employment of people with disabilities
 - Selected for Baby Unicorn 200 Fostering Project by KISED
 - Selected for Soaring 2 Program of KIC Silicon Valley sponsored by NIPA
 - Selected for Inclusive Business Solution (IBS) by KOICA

Social Value Impact Report 2021

Published in August 2022
Published by Testworks Inc.

Lead authors

PR & Marketing | Eun-Young Lee
| Gi-Sam Park

Main Contact

PR & Marketing | mktg@testworks.co.kr


TESTWORKS

Testworks Inc. www.testworks.co.kr

FLs 2-5, 42-19 Baekjegobun-ro 41-gil (W123 Building), Songpa-gu, Seoul
e-Mail : cs@testworks.co.kr | Tel : 02-423-5178 | Fax : 02-424-5178