THE GOVERNMENT & AI·DATA·CLOUD ENTERPRISES' ACTIONS AGAINS COVID-19

The successful cooperation between dedicated medical staff, citizen participation, and cutting-edge ICT

Korea's Ministry of Science and ICT provide enterprises with swift support plans

COVID-19 is a serious issue not only for the medical team and the citizens, but also for the many AI·Data·Cloud enterprises located in Korea. Enterprises from each professional field are actively participating in overcoming the crisis, where MSIT, the Ministry of Science and ICT, issued a swift support plan for those enterprises fighting against the pandemic.

Through rapid learning and cognition of Big Data built on high performance computational resources, AI technology is now capable of obtaining accurate analysis and decision-making skills.

Korea is widely known for its 5G network based AI start-up companies and global ICT enterprises, Medical Information System, and the world's finest ICT infrastructure, which provide strong support for the following actions against COVID 19- ①Provision of COVID-19 spreading situation and its response information ②Diagnostic and screening tests ③Vaccine discovery and development ④ICT service development

The contribution of AI·Data·Cloud enterprises

1. The provision of COVID-19 spreading situations and its response information

The analysis and sharing speed of COVID-19 data provided by the Ministry of Health and Welfare (MOHW) and Korea Centers for Disease Control and Prevention (KCDC) is fast in Korea. The 'Corona Map', created by the Korea Spatial Information & Community, provides information such as contact tracing and screening center. Another useful resource is the public Chatbot service provided by WISENUT, which informs the public about the travel route of confirmed cases, screening centers and COVID-19 guidelines. In order to check up on the health conditions of those likely to be infected, AI based Voicebot service provided by NAVER's 'Clova' automatically makes calls twice a day. The result of the checkup is then sent to the local public health center via email.

Not only do AI·Data·Cloud enterprises provide information on confirmed cases, but also COVID-19 related media trend and the analysis of keyword search tool. DABLE provides the most favored COVID-19 related articles and media trend, by analyzing the traffic data of approximately 1,800 Korean press. In order identify the turning point and provide a comparison of similar terms as well as an official report, DAUMSOFT specifically analyzes the data of portal's COVID-19 related keywords.

2. Patient diagnosis and patient screening

AI infused COVID-19 diagnostic kits and X-ray screening procedures do save up a lot of time. SEEGENE is one of the enterprises which provide such kits and screening procedures. Not only do they save up time but were granted approval and also successfully obtained the EU certification. Its AI Medical Image reading device which classifies severe cases by reading X-ray images in three seconds has been installed in public health centers and hospitals. Another AI device made by JLK INSPECTION, which reads the patient's lung condition within a few seconds, plans to be installed in many healthcare facilities.

3. Vaccine discovery and development

As AI manages to collect and infer virus information as well as a vast amount of medical data through drug repositioning and its discovery and development, DEARGEN has used deep learning-based drug-protein interaction forecasting algorithm to foresee COVID-19 curative effacement, proposing HIV medications as drug candidates. On the other hand, ARONTIER is expecting a shortened response time of COVID-19 and other emerging infectious diseases by undergoing research on AI based new drug development integration platform.

4. COVID-19 response service development and SME support

Cloud enterprises such as KT, NBP, NHN and Koscom are currently providing full support to 38 private development teams regarding public mask sales information notification App, web services development, and free elastic infrastructure which handles network congestion. Many cloud enterprises are keeping themselves occupied with pushing ahead diverse support plans to overcome the pandemic.

Due to the spread of COVID-19, special fare policies (temporary CDN reduction by 30%) are being applied to rapidly increasing web traffic business categories such as shopping malls and cyber colleges. In order to support Startup companies, special events include the distribution of USD 1,000 vouchers. NBP reduced the server price of all SMEs up to 50%, providing home working solutions such as 'WORKPLACE' and free API to all public interest developers. NHN will be providing SMEs with functions such as messenger, shared calendar and video conference through its Cloud based collaboration platform 'TOAST Workplace' free of charge.

The Government's Support Plan

As a sign of token for AI·Data·Cloud enterprises trying to overcome COVID-19, MSIT (Ministry of Science and ICT) will offer computational resources and data vouchers along with Cloud services necessary for working from home. Systems supporting epidemiological surveillance will also be operated by Ministry of Land Infrastructure and Transport (MOLIT) and Korea Centers for Disease Control and Prevention (KCDC).

① Preferential support of high-performance computational resources will be provided to those developing solutions and AI algorithms against COVID-19 ② Reinforcement of Data Voucher support for businesses and institutions in need of infectious disease diagnosis, prevention, supervision and treatment related data utilization. A separate track for COVID-19 will be established, in which university research teams and institutions will be allowed to participate. ③ In order to minimize disruptions resulting from working from home, Cloud service-based cooperation and video conference will be actively used, in which company's levy is minimized from 30% to 0%. ④ In order to run the COVID-19 epidemiological survey system, MSIT, MOLIT and KCDC will make use of the Smart City technology developed by MSIT and MOLIT.

'Although many are facing difficulties due to the current COVID-19 outbreak, we are overcoming the hardship through citizens' voluntary participation along with competent medical personnel and institutions. And of course, Korean AI·Data·Cloud enterprises are also there to help. In order to win the fight against the pandemic, the government will pay strong attention to the voices of AI·Data·Cloud enterprises, asking for their assistance.' - Choi Kiyoung, the Minister of MSIT

KOREA'S LEADING SECURITY ENTERPRISES AND THEIR PERFORMANCE AMIDST COVID-19

USD 894 million - The total sales of listed 2019 Information Security enterprises

COVID-19 outbreak has put the world in great despair. As of May 25th, the total number of confirmed cases has now reached 5.3 million and according to IMF, the global economic loss is to reach up to USD 9 trillion by 2021 with an economic growth rate of -3.0%. This is considered as the worst recession since the Great Depression in 1930.

Where do the Korean security enterprises stand amidst such stagnation? The following article provides the answer to the specific questions, as it is an analysis of last year's sales status of Korea's leading physical and information security enterprises. The figures have been provided by the Financial Supervisory Service and its Data Analysis, Retrieval and Transfer System (DART).

1. Video Surveillance

IDIS

IDIS managed to increase its revenue by 2.2%, obtaining USD 88 million in 2019. The business profit increased by 181.7% (USD 3.2 million), but in terms of net income, a loss of 62.9%- from USD 3.9 million to USD 1.5 million occurred. Despite the withering market psychology, IDIS targets to launch solid video surveillance products & solutions, self-developed AI and video analytics solutions, as well as smart parking total solutions.

NC&

In terms of revenue, NC& managed to obtain USD 61 million in 2019 (▲150.4%), which is a huge step from USD 9 million business loss to USD 5 million business profit in 2019. The same applies to net income, which managed to obtain profit in 2019 - Net income loss of USD 9 million in 2018

managed to make its way to a profit of USD 3 million.

NC& is showing progressive growth since the latter half of 2019, targeting annual sales of USD 81 million in the black box business. Moreover, video surveillance camera ISP managed to maintain its revenue similar to last year, in which the importance of advanced products resulted into an improved profitability.

INNODEP

INNODEP managed to successfully raise its revenue by 76.3% last year (USD 49 million)- business profit of USD 2 million and Net income of USD 1 million. The pre-existing VMS and increase in procurement market sales with Cloud and Smart Monitoring Control Solutions, and high-speed search systems, are held responsible for the revenue.

INCON

Despite its revenue increase in 2019 (USD 25 million), the decline of revenue compared to the year 2018 (USD 33 million) was inevitable- a business loss of USD 1 million and a net loss of USD 9 million. Plans for the year 2020 include software technology investment and cost reductions as well as SI and overseas business for earnings growth and profit improvement.

INCON is currently occupied with sales·distribution of thermal imaging cameras as well as the following core products of Smart City construction tools such as integrations platform 'Smart-i' (providing disaster response service) and Fire Guards.

HITRON SYSTEMS

HITRON SYSTEMS's revenue in 2019 experienced a decline of 10.1% (USD 3 million) compared to the year 2018 (revenue-USD 34 million). Due to the delay of overseas business, reduction of SI solution business, and the delayed product launches, HITRON SYSTEMS had to face a business loss of USD 13 million and a net loss of USD 15 million. The supply of American ADT goods, the construction of domestic smart stations and AI CCTV product launch, will probably take up 30~50% of revenue increase. However, due to the current situation of COVID-19, overseas business has become stagnant, in which pandemic stabilization and recovery is urgent.

Hanwha Techwin

Hanwha Techwin managed to increase its revenue by 12.9% (USD 54 million) last year, obtaining a total revenue of USD 473 million. Hanwha Techwin marked its position as the leading global security enterprise by obtaining a business profit of USD 24 million and has been concentrating on the quality of growth and its core products and solutions since 2017. Integrated solutions for video surveillance system and the offering customers with beneficial products and solutions based on VOC, caught the attention of many.

	Year	IDIS	NC&	INNODEP	INCON	HITRON SYSTEMS	Hanwha Techwin	SUPREMA
Revenue	2019	87,841,215	61,123,234	49,404,653	25,003,833	30,354,656	471,741,732	58,020,349
	2018	85,987,925	24,412,687	28,021,405	33,348,454	33,772,738	417,952,571	42,404,691
Business Profit (loss)	2019	3,188,978	4,615,647	2,367,188	(1,308,955)	(12,522,300)	24,220,532	20,454,065
	2018	1,132,064	(8,796,650)	(1,957,267)	(1,230,998)	(714,891)	1,044,087	9,790,262
Net income (loss)	2019	1,454,262	3,042,385	1,343,819	(9,171,341)	(14,585,343)	22,081,770	21,616,124
	2018	3,923,528	(9,212,918)	(2,631,793)	(1,524,137)	603,556	(7,661,454)	9,135,431
Product		CCTV	Video Semiconductor	Video Surveillance Solution	CCTV	CCTV	Total Security	Access Control/ Biometrics

▲ 2018-2019 PHYSICAL SECURITY ANNUAL SALES REPORT
[Source: Financial Supervisory Service, ADT CAPS / BOANNEWS]

2. Access Control and Biometrics

SUPREMA

SUPREMA managed to obtain a revenue of USD 58 million in 2019 (▲36.8%) and a business profit of USD 20 million as well as a net income of USD 22 million. SUPREMA depicts how direct sales activities of American and European branches have had a positive effect on the business and how the business continues to grow through facial recognition products. In addition, its unique fingerprint recognition technology BioSign, is now filtered into the mobile system, playing a key role in boosting the company's revenue. Despite the business profit of USD 1 million and a net income of USD 5 million of SUPREMA HQ, a holding company of SUPREMA, the company had to face a revenue decline by 1.5% (USD 162,000).

UNION COMMUNITY

UNION COMMUNITY obtained a total revenue of USD 33 million, with a business profit of USD 2.8 million and a net income of USD 3.3 million. The total revenue has risen by 14.1%, the business profit by 5.5%, and the net income by 12.7%. Biometric terminals and the installation of Seal-Scan in city banks are depicted as the main reasons for the company's increase in sales.

UNION COMMUNITY targets 10% growth in 2020 as the product launch of multimodal facial recognition terminals and a new series of fingerprint and iris recognition are on its way. Due to the COVID-19 outbreak in the first half of 2020, the demand of untact biometrics authentication terminals are evidently on the rise. The same applies to UNION COMMUNITY, in which the importance on facial recognition terminals has increased by 12%. 'UBio-X Pro2' is the perfect example. The product is equipped with a deep learning algorithm and recognizes faces at a distance up to 3 meters, supporting cutting edge biometric techs aligned with liveness detection and anti-spoofing function.

COMMAX

According to the consolidated financial statement, COMMAX obtained a revenue of USD 116 million in 2019, sales declined by 1% year on year. On the other hand, COMMAX managed to obtain a business profit of USD 5 million and a net income of USD 3 million. The consolidation of strategic

sales activities in the domestic and overseas market and New-Growth business were the key factors to its profit.

3. Total Security Service

S-1 Corporation

Despite the USD 154 million business loss and a net income of USD 114 million, S-1 Corporation managed to obtain a revenue of USD 1.7 billion in 2019 (▲6.1%). The manager of S-1 stated clearly how System Security is showing steady *increase* in the level of *customer* retention. The increase of external contracts and contract renewals play an essential role in the increased revenue. Although the rise in labor costs resulted into business loss, impacts such as reduced corporate tax contributed to the net income.

ADT CAPS

After a successful M&A with SK Telecom, ADT CAPS obtained a total revenue of USD 747 million in 2019 (▲18.9%) - business profit by 29.1% (USD 105 million) and a net loss by 8.2% (USD 83 million). ADT CAPS is mainly focusing on dispatch services enforcement, unmanned parking, home security, as well as security convergence market entry. In order to overcome the pandemic crisis, ADT CAPS is providing government offices, schools, and companies with high performance thermal imaging cameras. As the demand for untact services are on the rise, so is the pace of development for untact access control services. According to ADT CAPS, the year 2020 is marked by physical security, 5G network, drones, and AI convergence. The company strives to obtain a new ICT by designating unmanned security, parking systems, and security convergence as the main target markets.

KT telecop

KT telecop obtained a total revenue of USD 268 million in 2019 (▲ 1.6%)- a business profit of USD 3.8 million and a net loss of USD 3.8 million. On similar lines to ADT CAPS, KT telecop targets to become the leading ICT security enterprise by expanding the security convergence of AI, 5G network and new ICT. Migrating from hardware-based to Cloud-based security systems and securing price competitiveness through innovative technology such as the Smart Video Management System, are the main benefits which KT telecop are planning to provide in the near future.

A more accurate AI-based Smart Management and dispatch services will be provided along with Integrated Management Platform Anti-Crime services, building management, and security solutions in cooperation with KT Group's capabilities. KT telecop will continue to consolidate thermal imaging cameras and untact access control (facial and iris recognition) systems which currently are more in demand.

	Year	Suprema ID	Suprema HQ	UNION COMMUNITY	COMMAX	S-1 Corporation	ADT CAPS	KT telecop
Revenue	2019	9,676,323	11,375,303	33,289,357	116,218,874	1,721,513,864	749,247,356	268,990,164
	2018	14,268,679	11,547,010	29,176,216	117,277,297	1,622,453,922	630,368,183	264,821,037
Business Profit (loss)	2019	566,809	1,375,154	2,830,481	5,231,705	154,504,560	105,805,712	3,928,932
	2018	4,218,209	1,712,021	2,683,825	4,477,872	156,502,204	81,934,769	2,331,203
Net income (loss)	2019	994,570	4,925,555	3,324,971	3,167,723	114,505,706	83,152,828	(3,923,255)
	2018	3,547,986	1,388,366	2,949,050	2,452,322	82,071,837	90,623,590	134,883
Product		Access Control/ Biometrics	Access Control/ Biometrics	Access Control/ Biometrics	Home Security	Total Security Service	Total Security Service	Total Security Service

▲ 2018-2019 PHYSICAL SECURITY ANNUAL SALES REPORT
[Source: Financial Supervisory Service, ADT CAPS / BOANNEWS]

4. Information Security

According to the 2019 market report, 20 information security enterprises listed under KOSDAQ (Korea Securities Dealers Automated Quotations) have shown positive results. Despite the absence of major changes, the overall 2019 results were better than the 2018 results. According to the Financial Supervisory Service and its Data Analysis, Retrieval and Transfer System (DART), 16 enterprises out of 20 have obtained higher revenues in 2019.

Dreamsecurity	Total Revenue	18,189,253	20,067,306	16,546,915
	Business Profit (loss)	938,788	2,243,595	304,850
	Net income (loss)	1,384,601	2,201,946	(1,790,328)
RAONSECURE	Total Revenue	22,773,220	19,731,568	16,945,877
	Business Profit (loss)	1,699,564	3,187,359	2,518,183
	Net income (loss)	1,580,717	3,003,683	2,660,490
SECUVE	Total Revenue	16,617,010	14,787,009	17,438,036
	Business Profit (loss)	4,053,892	1,871,843	2,294,958
	Net income (loss)	4,160,226	2,090,291	2,548,442
SECUI	Total Revenue	95,911,563	86,680,839	67,650,886
	Business Profit (loss)	3,875,459	6,554,970	5,780,628
	Net income (loss)	4,392,763	5,869,728	5,284,363

▲ 2019 INFORMATION SECURITY ANNUAL SALES REPORT
[Source: Financial Supervisory Service, BOANNEWS]

AhnLab	Total Revenue	131,068,171	125,887,328	118,704,620
	Business Profit (loss)	14,503,589	14,327,420	13,620,261
	Net income (loss)	15,234,805	17,480,205	13,197,366
SGA Solutions	Total Revenue	17,378,432	14,357,068	16,455,115
	Business Profit (loss)	(1,532,444)	(3,639,039)	782,534
	Net income (loss)	(18,984,653)	(5,492,321)	1,186,470
OPENBASE	Total Revenue	43,224,470	36,193,201	34,718,019
	Business Profit (loss)	1,373,528	1,301,492	874,166
	Net income (loss)	1,453,648	1,198,438	3,143,206
WINS	Total Revenue	60,583,187	53,559,456	54,066,062
	Business Profit (loss)	10,831,707	8,492,223	6,507,487
	Net income (loss)	10,705,578	8,689,435	6,955,569

IGLOO SECURITY	Total Revenue	60,410,336	51,675,908	48,282,134
	Business Profit (loss)	1,422,701	2,303,037	2,518,051
	Net income (loss)	1,815,354	6,919,438	3,384,891
INITECH	Total Revenue	40,587,074	42,981,912	51,297,531
	Business Profit (loss)	561,577	493,901	2,447,906
	Net income (loss)	(262,161)	786,161	2,197,930
ESTsoft	Total Revenue	15,904,051	17,308,203	16,825,037
	Business Profit (loss)	(2,060,859)	462,990	58,543
	Net income (loss)	(2,675,145)	528,755	941,258
GENIANS	Total Revenue	20,003,188	17,166,957	16,735,934
	Business Profit (loss)	2,550,794	2,673,831	3,715,243
	Net income (loss)	2,584,027	2,888,749	3,447,524

▲ 2019 INFORMATION SECURITY ANNUAL SALES REPORT
[Source: Financial Supervisory Service, BOANNEWS]

Unit: USD 1

Jiran Security	Total Revenue	19,716,022	16,940,586	17,364,059
	Business Profit (loss)	2,239,678	2,023,964	1,895,641
	Net income (loss)	2,289,961	2,437,441	2,195,359
KSIGN	Total Revenue	18,636,700	17,045,723	20,703,604
	Business Profit (loss)	2,733,361	2,214,712	(2,557,169)
	Net income (loss)	1,840,101	(39,387)	(3,013,517)
Kornic Glory	Total Revenue	9,059,239	7,287,492	7,447,415
	Business Profit (loss)	207,637	(620,298)	135,595
	Net income (loss)	(2,191,976)	(3,040,107)	133,628
FASOO	Total Revenue	21,840,093	20,756,651	23,481,497
	Business Profit (loss)	(1,046,871)	768,886	2,667,460
	Net income (loss)	(3,252,487)	822,436	2,056,547

PIOLINK	Total Revenue	28,237,346	21,995,067	23,661,640
	Business Profit (loss)	3,338,774	904,644	(2,440,529)
	Net income (loss)	4,520,808	291,945	(2,387,032)
Korea Electronic Certification Authority	Total Revenue	22,893,703	21,194,530	21,461,909
	Business Profit (loss)	5,547,562	5,002,219	5,719,450
	Net income (loss)	1,340,382	2,252,997	2,413,286
Korea Information Certificate Authority	Total Revenue	34,249,273	31,292,368	29,050,363
	Business Profit (loss)	7,553,089	7,112,385	6,382,972
	Net income (loss)	6,300,943	6,306,205	3,746,244
HANCOM WITH	Total Revenue	12,460,000	12,629,166	13,180,230
	Business Profit (loss)	(357,204)	406,669	75,943
	Net income (loss)	27,092,889	226,059	1,103,619

▲ 2019 INFORMATION SECURITY ANNUAL SALES REPORT
[Source: Financial Supervisory Service, BOANNEWS]

The highest revenue achieved in 2019 goes to AhnLab (USD 132 million) with SECUI (USD 96 million) in second place. IGLOOSECURITY (USD 60.7 million) and WINS (USD 60.9 million) also managed to obtain positive results. 11 enterprises showed a rise in business profit, in which SECUVE managed to double its business profit. The net income of 6 enterprises managed to increase, where HANCOM WITH's increase of net income was the most significant. The total revenue of all 20 enterprises equals to USD 714 million and USD 890 million by including SK Infosec's revenue.