Integrated Product Support(IPS) Expert

LINETECH ENG. Co., Ltd.

Company Introduction

LINETECH

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Company Introduction

Contents

COMPANY HISTORY

We're becoming the leading supplier of technology in the Integrated Product Support (IPS) field

LINETECH ENG IS..

Basic Information

CEO
—
Joo-Soo, Kim

Established Year
—
1995

Organization

7%
Management Support/Others

Number of
Employees
60

R&D Personnel
93%

Business

Business Area
—

IPS
(Integrated Product Support)
Expert

Office

Headquarter, Changwon

COMPANY HISTORY

We're becoming the leading supplier of technology in the Integrated Product Support (IPS) field

HISTORY

STEP 01

STEP 02

Started as Integrated Logistics Support (ILS) service provider

Becoming the Integrated Product Support(IPS) expert

1995 Established LineTech Engineering

1995 Registered as S&T Heavy Industry Co., Ltd. cooperator

1996 Registered as Hanwha Defense cooperator

1998 Passed the security measurement

1999 Registered as a member company of Hanwha Defense Cooperators Association

2000 Joined the Korea Defense Industry Association as an associate member

2006 Moved the office (Sapa-dong, Changwon-si))

2013 Acquired ISO 9001 Certificate

2014 Opened a new office(in Daebang-dong, Changwon-si)

2018 Converted to a cooperation (LINETECH ENG Co., Ltd.)
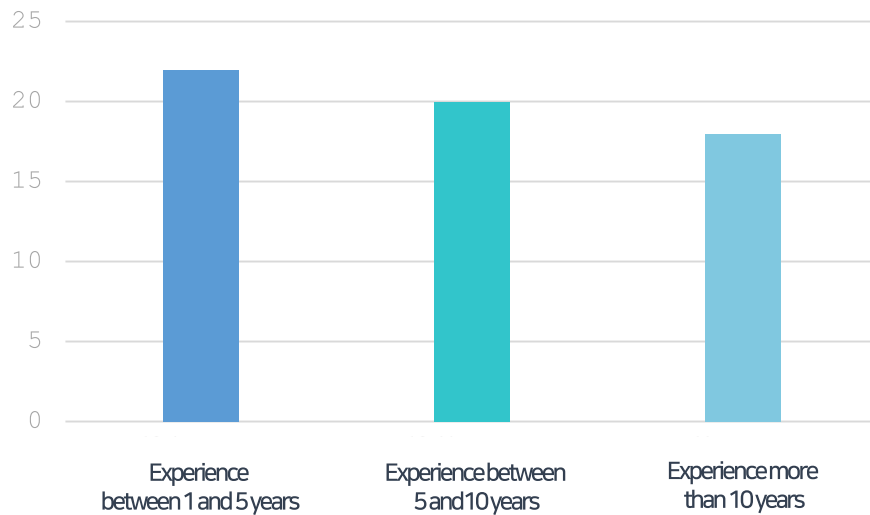
2019 Established R&D Institute

2021 Relocated to a new office building (LINETECH ENG Co., Ltd.)

Organization

IPS experts based on the weapon system Integrated Product Support(IPS)
development experience and R&D organization

IPS Experiences

Experience between 1 and 5 years	Experience between 5 and 10 years	Experience more than 10 years	Total
22	20	18	60
36%	34%	30%	

Job Position
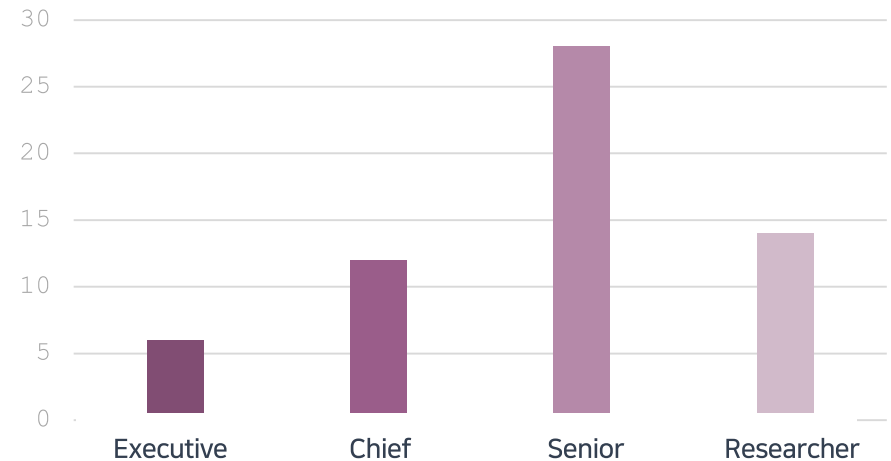
Executive	Chief	Senior	Researcher
6	12	28	14
10%	20%	46%	24%

HOLDING TECHNOLOGY

Holding specialized technology in the IPS field

Holding Technology

LINE TECH

IPS (Integrated Product Support)	RAM analysis	PSA (Product Support Analysis)	IPS Element Development	Computer Based Training (VR/AR, CBT)	Defense Export Logistic Support

IPS (Integrated Product Support)
- Improving the main system operating rate(operational availability)
- RAM analysis at various stages of the lifecycle
- Preparing and managing the life-cycle management plan.
- Consistent control and recurring system management of each IPS element between the acquisition and maintenance phases.

RAM analysis
- Calculating electrical/electronic parts reliability
- Calculating mechanical system reliability
- Building RAM DataBase
- Calculating Reliability/Maintainability/Availability

PSA (Product Support Analysis)
- Meeting to check the PSA Data
- Product Support Analysis
- Supply support / Manpower forces calculation
- SOLOMON
- CSP Calculation (OASIS)
- Maintenance task analysis/troubleshooting procedure
- S3000L Specification based PSA

IPS Element Development
- Developing the IPS elements
- Maintenance Task Analysis
- Developing Troubleshooting/Maintenance Procedures
- Developing the Technical Manual(TM)
- Developing assembly procedure/manual
- Preparing the Illustrated Parts Breakdown(IPB) and maintenance illustration

Computer Based Training (VR/AR, CBT)
- 3D CBT
- Web-based education and practical training material
- Developing a Virtual training system

Defense Export Logistic Support
- Setting up the Infrastructure required for export business
- Ownership of S-Serles application S/W
- Technical translation
- Technical translation of project proposal, technical manual, etc. related to export business

IPS(Integrated Product Support)

Development of IPS Elements Based on Rich Practical Experience and Professional Technology

IPS Elements Development of Weapon System

Naval

- Integrated Sonar System
- Optical Gyroscope
- Heavy Transport Vessel ECS
- Logistics Support Vessel Reduction Gear

Space & Air

- CHUNGooNG Guided Missile Loading System
- CHUNGooNG Hydraulic System
- KUH-1P Auxiliary Fuel Tank
- SIDAS
- RC-2000B Aircraft for Information and Electronic Warfare

CBT/IETM

- Division level Unmanned Aircraft(aerial) System(DUAS)
- K21 Armored Fighting Vehicle
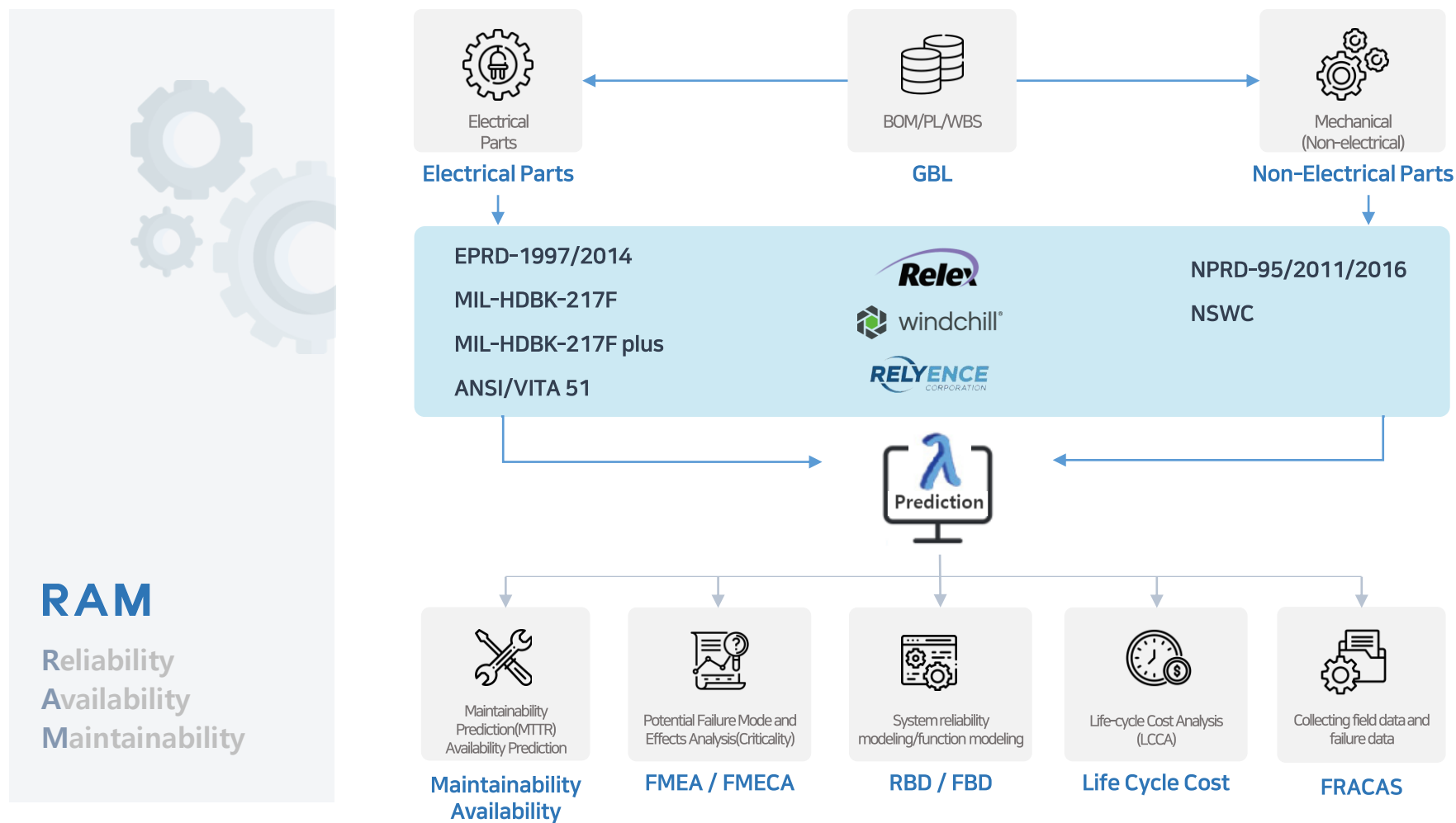- Smoke Generating Vehicle

IPS

Export

- Indonesia Export Vehicles
- REDBACK(LAND 400)
- CHUNGooNG Export
- CHUNMOO Export
- LAND 8116
- OMFV

Land

- 501/502 Launcher
- 120mm Self-propelled Mortar
- NBC Reconnaissance Vehicle -II(NBCRV) (armored/vehicle type)
- K21 Armored Fighting Vehicle
- Next generation Recovery Vehicle
- L-SAM Loading System
- Division level Unmanned Aircraft(aerial) System(DUAS)
- 901 Launcher

RAM Analysis

RAM Work Process

Electrical Parts

Electrical Parts

GBL

BOM/PL/WBS

Non-Electrical Parts

Mechanical (Non-electrical)

EPRD-1997/2014

MIL-HDBK-217F

MIL-HDBK-217F plus

ANSI/VITA 51

Relex

windchill®

RELYENCE CORPORATION

NPRD-95/2011/2016

NSWC

Prediction

RAM

Reliability
Availability
Maintainability

Maintainability Prediction(MTTR) Availability Prediction

Maintainability Availability

Potential Failure Mode and Effects Analysis(Criticality)

FMEA / FMECA

System reliability modeling/function modeling

RBD / FBD

Life-cycle Cost Analysis (LCCA)

Life Cycle Cost

Collecting field data and failure data

FRACAS

RAM Analysis

RAM

01 System Analysis (Mechanical/Electrical/Electronic)

- Electrical/Electronic Circuit Analysis
- Technical data analysis and understanding

02 Core Technology for RAM Analysis

- Planning RAM management/ Calculating system failure rate
- Parts Count Method(PCM) / Parts Stress Analysis(PSA)
- Mechanical Parts Reliability Analysis
- Selecting Pi-Factor
- Reliability S/W
- Analysis by mission type/system operation

03 Data Base for RAM Analysis

- Holding the RAM data calculated in the previous projects(Army/Navy/Air Forces)
  - RAM task/analysis plan
  - RAM / RAM-D analysis report / reliability worksheet
  - Reliability growth management plan/life cycle analysis data
- Technical data(Catalog) DB for each part
- Searching for similar data in the PCM/PSA calculation
- Managing the Part Data Sheet

04 Study on analysis standard and trend in the R&D Institute

- Research/translation of specifications related to the R&M
- Reliability Growth Tracking, RGA, FRACAS, 217plus, etc.
- Completed Maintainability Engineering Seminar (Business Capacity Reinforcement Project)
- Participated in various seminars/researches related to the reliability

05 Reliability Analysis S/W(Tool)

- Relax 7.7 / Relax2007 / Relax2011
- Windchill 10.1 / 10.3 / 11.0
- Windchill RBD / FTA Package
- OPUS 10

06 Various Analysis Experiences and Professional Manpower

- RAM analysis experts with over 20 years' experience
- A lot of experience conducting the RAM Verification/Validation and Test activities in the Maintenance Depot.
- RAM calculation/analysis/verification (Army, Navy and Air Force)

IPS(Integrated Product Support)

PSA(Product Support Analysis)

PSA(Product Support Analysis)

Purposes of Product Support Analysis(PSA)

- To optimize elements required to support the product
- To minimize down time
- To simplify support product and optimize operation/maintenance(O&M) cost
- To store analysis data in a single database and specification feedback
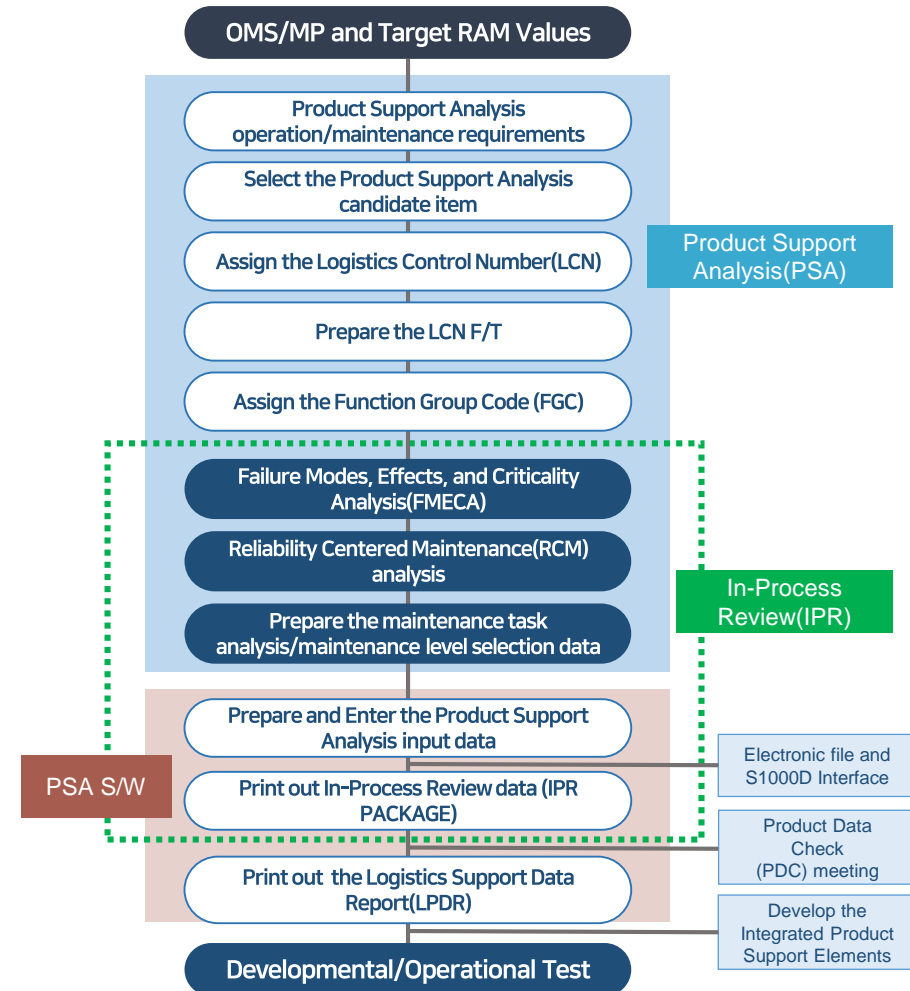- To identify, develop/acquire the PSA elements through the maintenance analysis

Product Support Analysis(PSA) Task

- PSA management, supervision, control
- Supportability Goal
- Selection and evaluation of alternative
- Determination of the required product support resources
- Product operation management
- Conformity Assessment

Core Technology

- Life Cycle Cost(LCC) Analysis
- Parts Obsolescence Analysis
- Level of Repair Analysis(LORA)
- FRACAS DB and reliability growth management analysis

PSA(Product Support Analysis) Procedure

OMS/MP and Target RAM Values

- Product Support Analysis operation/maintenance requirements
- Select the Product Support Analysis candidate item
- Assign the Logistics Control Number(LCN)
- Prepare the LCN F/T
- Assign the Function Group Code (FGC)

Product Support Analysis(PSA)

- Failure Modes, Effects, and Criticality Analysis(FMECA)
- Reliability Centered Maintenance(RCM) analysis
- Prepare the maintenance task analysis/maintenance level selection data

In-Process Review(IPR)

- Prepare and Enter the Product Support Analysis input data
- Print out In-Process Review data (IPR PACKAGE)

PSA S/W

- Print out the Logistics Support Data Report(LPDR)

Developmental/Operational Test

- Electronic file and S1000D Interface
- Product Data Check (PDC) meeting
- Develop the Integrated Product Support Elements

Computer Based Training(VR/AR, CBT)

Holding professional technology in the Computer Based Training field

Computer Based Training(VR/AR, CBT)

Virtual Maintenance Training System

Virtual Maintenance Training System(VMTS) is a simulation-based training tool that provides a learning environment for maintenance technicians to gain practical experience of systems and maintenance tasks.

Application

- Practical training of maintenance procedures
- Troubleshooting / Fault Isolation training
- Practical training of operating procedures
- Practical training of safety procedures
- Practical training of emergency procedures
- Equipment/System Layout study
- Practical training of removal/installation procedures
- Facility simulation
- Digital Mock-up

- Creating a simulated environment, similar to a real environment in 3D VR environment
- Simulating the operating state, failure and dangerous situation of equipment in a virtual environment
- Mastering maintenance procedures and troubleshooting/fault isolation procedures and repeated learning
- Maintenance training evaluation and Feed-back

Training Equipment(Immersive)

Instructor(Monitoring)

Training Equipment (PC type)

Defense Export Logistics Support

Setting up the Infrastructure required to support defense export project

01 PLAN
Detailed plan

- Export business plan based on existing experience
- Determination of the required human/material infrastructure
- Exclusive organizations dealing with each project/country

02 R&D
Research and Development

- Specialized research and study on defense export business
- Research on various specifications and S/W operation for export business
- Study on the domestic SOLOMON enhancement project

03 ORGANIZATION
Exclusively focused on export

- Organizations exclusively focused on export project
- Experience in export business and business link
- Fast adaptation for export business / Easy understanding

04 TRANSLATE
Translation/interpreting

- Translations by expert translators
- Organization of translators with expertise in manual translation
- Extensive experience in technical manual translation

05 CAREER
IPS experienced personnel

- Many employees with experience in developing IPS elements in Korea
- Many employees with experience in export business
- Many IPS development engineers who speak English fluently

06 SOFTWARE
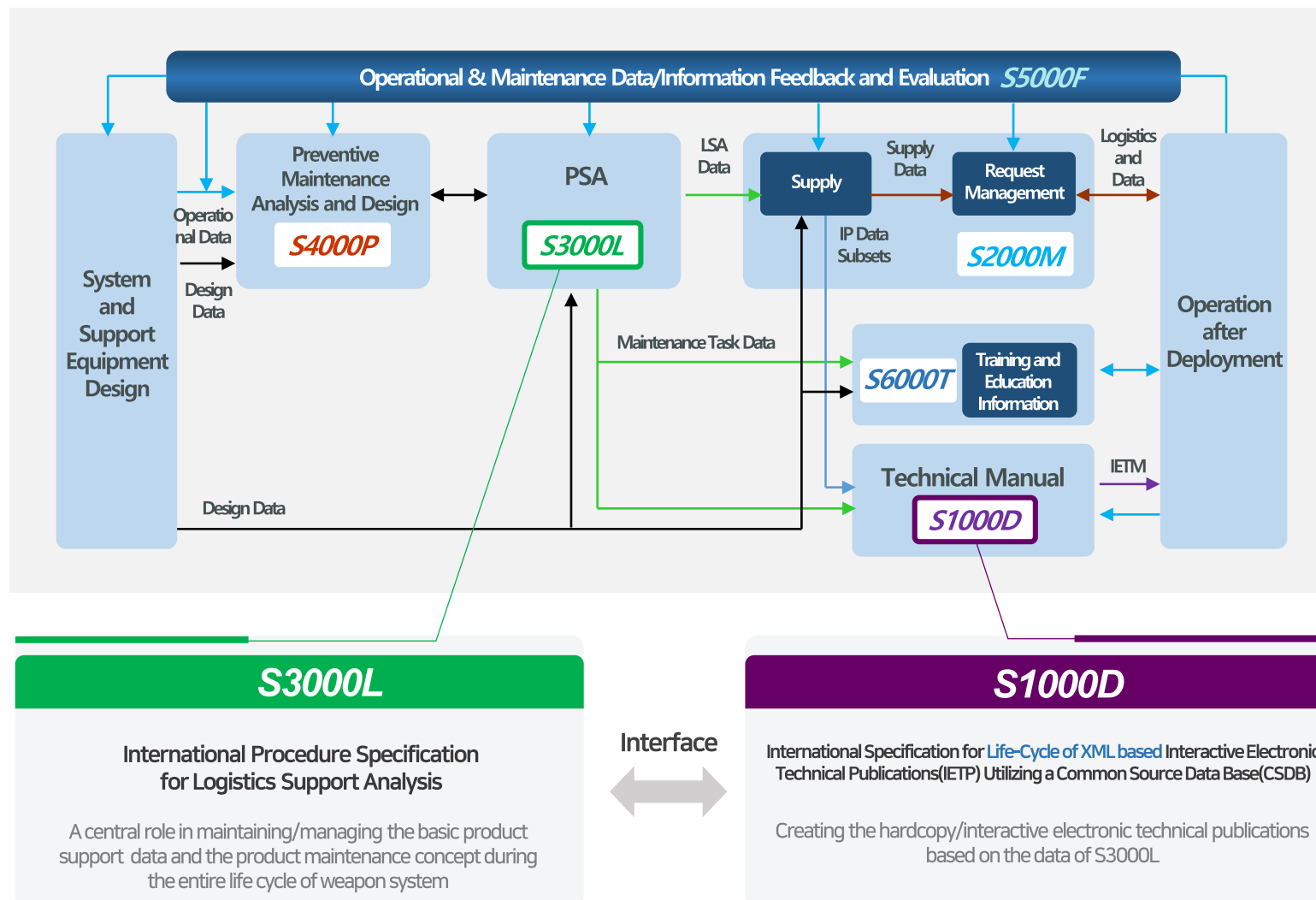Export Business S/W

- EAGLE LSAR / PS (Raytheon)
- CONTENTA (PTC)
- CATIA / Windchill / RBD / OPUS10

07 PROCEDURE
Export procedure

- Business procedures established through the export business plan
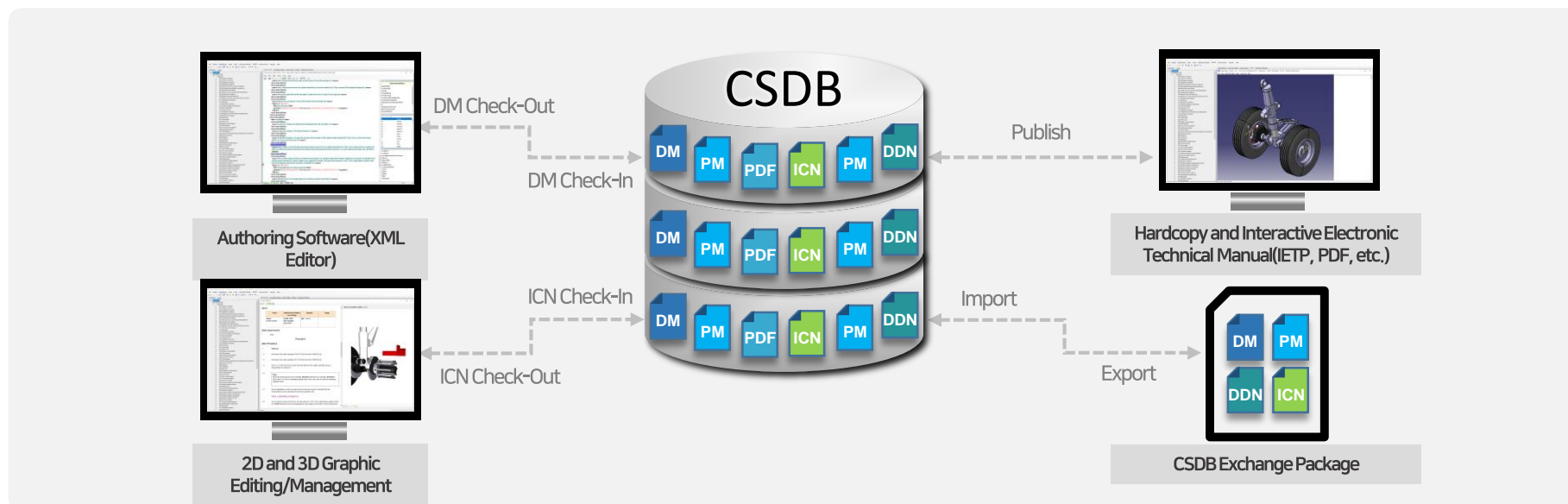- To be applied/used to future export business

Defense Export Logistics Support

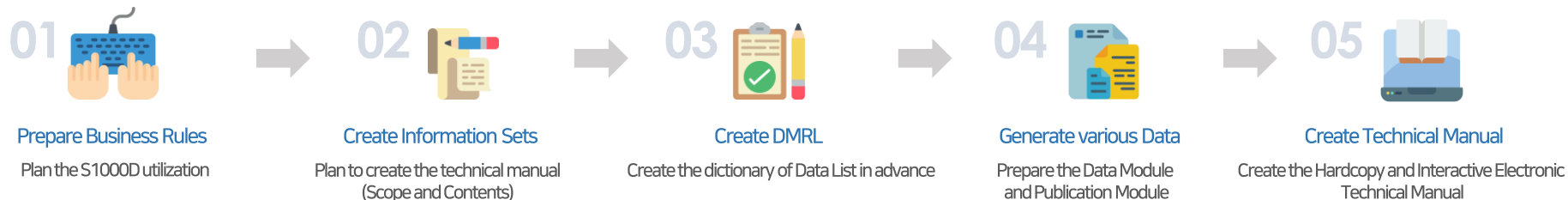## Holding International Specification S-Series SPEC Operational Capabilities and Solutions

Operational & Maintenance Data/Information Feedback and Evaluation **S5000F**

System and Support Equipment Design

Operational Data

Design Data

Design Data

Preventive Maintenance Analysis and Design **S4000P**

PSA **S3000L**

LSA Data

Supply

Supply Data

Request Management **S2000M**

Logistics and Data

IP Data Subsets

Maintenance Task Data

S6000T Training and Education Information

Technical Manual **S1000D**

IETM

Operation after Deployment

S3000L

International Procedure Specification for Logistics Support Analysis

A central role in maintaining/managing the basic product support data and the product maintenance concept during the entire life cycle of weapon system

Interface

S1000D

International Specification for Life-Cycle of XML based Interactive Electronic Technical Publications(IETP) Utilizing a Common Source Data Base(CSDB)

Creating the hardcopy/interactive electronic technical publications based on the data of S3000L

Defense Export Logistics Support

S1000D Application Development and Solution & System Construction

Authoring Software(XML Editor)

DM Check-Out

DM Check-In

2D and 3D Graphic Editing/Management

ICN Check-In

ICN Check-Out

CSDB

DM PM PDF ICN PM DDN

Publish

Import

Export

Hardcopy and Interactive Electronic Technical Manual(IETP, PDF, etc.)

CSDB Exchange Package

DM PM DDN ICN

Technical Manual Development Process Based on S1000D

01	02	03	04	05
Prepare Business Rules	**Create Information Sets**	**Create DMRL**	**Generate various Data**	**Create Technical Manual**
Plan the S1000D utilization	Plan to create the technical manual (Scope and Contents)	Create the dictionary of Data List in advance	Prepare the Data Module and Publication Module	Create the Hardcopy and Interactive Electronic Technical Manual

Defense Export Logistics Support

Technical Translation

Understanding and analysis of text

- Data acquisition and analysis
- Plan the vocabulary/sentence applicable to each technical field
- Identify customer request

Performance

- Vehicle exported to Indonesia
- Vehicle exported to UAE
- Chunmoo export (UAE)
- Chunmoo export(Saudi Arabia)
- CHUNGooNG export(UAE)
- REDBACK(Australia)
- OMFV(USA)
- LAND 8116(Australia) and etc.

Proofreading/Editing

- Technical proofreading and final proofreading by native speakers
- Check whether the applicable specification is applied
- Reflect customer's opinions and requests.

Multilingual/Multicultural Translation

- Translation services in multiple languages
- Translation service considering the cultural implications for a translated text

Holding Software(S/W)

RELEX
- System Reliability(Failure Rate & MTBF) Prediction and Analysis
- RELEX 7.7 / RELEX Studio 2007 / RELEX 2011

windchill
- System Reliability(Failure Rate & MTBF) Prediction and Analysis
- Windchill 10.1 / 10.3 / 11.0
- Windchill RBD / FTA Package

SOLOMON
- Logistics support analysis data input/output and management tool
- LSA data input/report generation
- Open software (Defense Acquisition Program Administration)

OASIS
- Initial CSP calculator tool after deployment
- Target operational availability setting / economic feasibility optimization
- Open software (Defense Acquisition Program Administration)

EAGLE LSAR
- LSA data management / analysis report generation software
- 5 International Specifications can be applied(S3000L., etc.)

EPS
- Hardcopy/Interactive Electronic Technical Manual writing and publishing software using the DM of S1000D Specification
- Interface with the EAGLE LSAR software

CONTENTA
- Hardcopy/Interactive Electronic Technical Manual writing and publishing software using the DM of S1000D Specification

OPUS10
- Total Life-Cycle Systems Management(TLCSM) satisfied, Spare Parts Optimization Analysis
- Maintenance Category and Level Optimization Analysis
- LORA analysis based on operating period and cost structure

Auto CAD
- Technical Manual Illustrations

INVENTOR
- 3D Modeling development and production
- Technical Manual Illustrations and multimedia production

Adobe illustrator
- Technical Manual illustrations and Multimedia production

Reliasoft Weibull
- Comprehensive life data analysis tool
- Reliability Growth Analysis(RGA) included

Hangul
- IPS elements development and OA tool
- Technical Manual/Reports, Etc.
- Hangul 2007 / 2010 / 2016

MS Office
- IPS elements development and OA tool
- IPS elements development analysis data management and generation
- MS-OFFICE 2003 / 2010 / 2016

KAIS
- Interactive Electronic Technical Manual(IETM) development tool
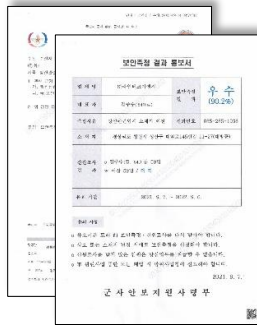- Open software (Defense Acquisition Program Administration)

CATIA V5
- 3D modeling development and production
- Technical Manual Illustrations and Multimedia production
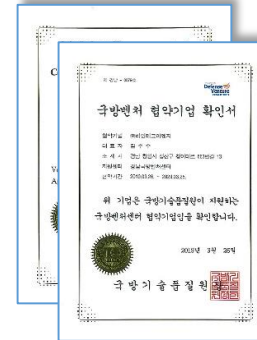
Certification and Patent
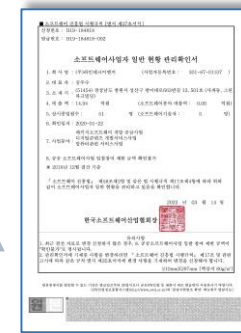
Certification and Patent

Notification of security measurement results
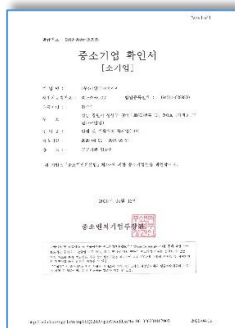(Defense Security Support Command)

Acquired Quality Management
System Certification(ISO9001)

Defense Venture Confirmation
(Defense Agency for
Technology and Quality)

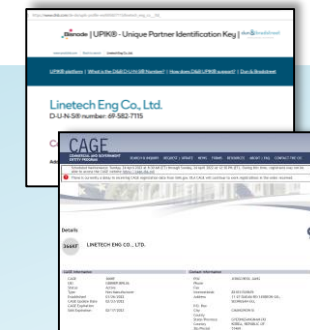Reported software vendor
(Software Industry Association)

Small & Medium Enterprise Confirmation
(Ministry of SMEs and Startups)

Certificate of company-affiliated
research institute
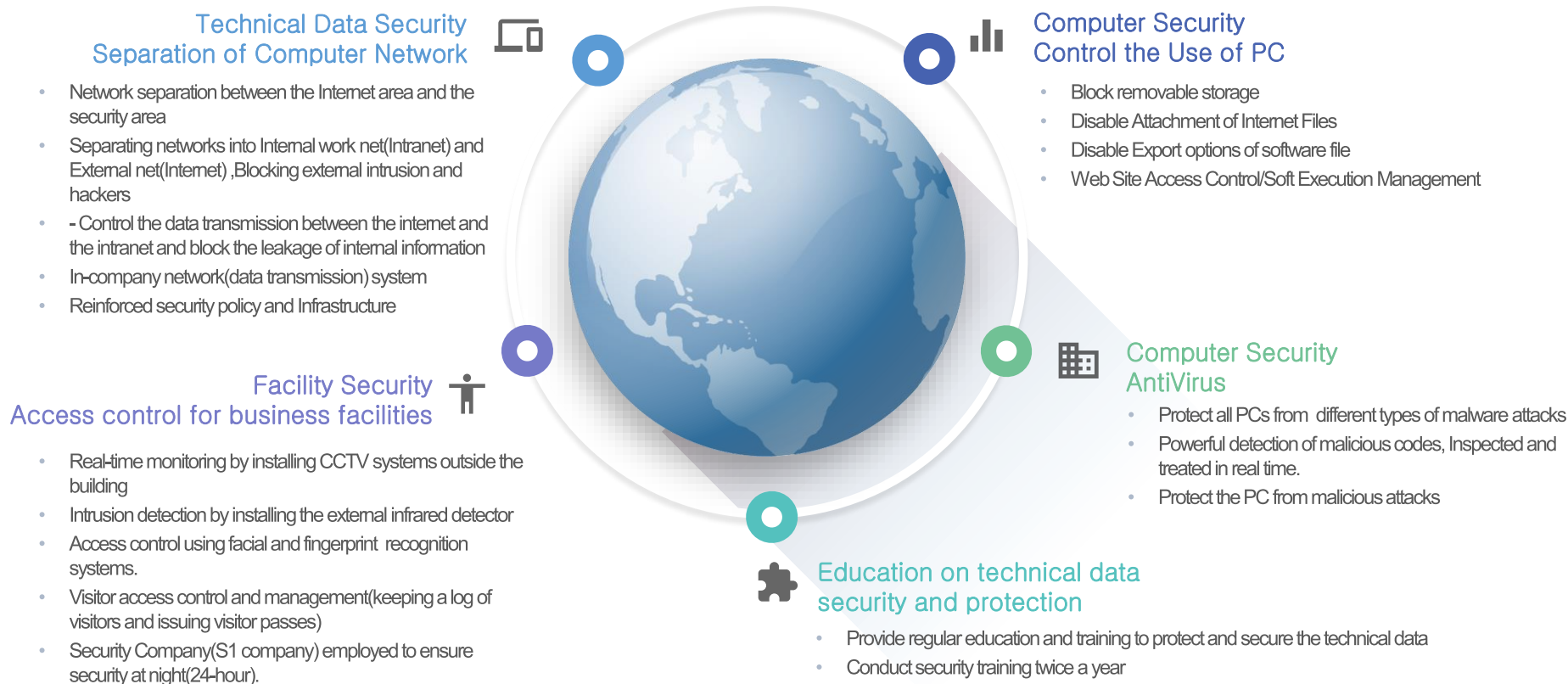(Korea Industrial Technology Association)

Certificate of
LSA automation patent
(Korean Intellectual Property Office)

DUNS NUMBER
(Global Business Identification Number)
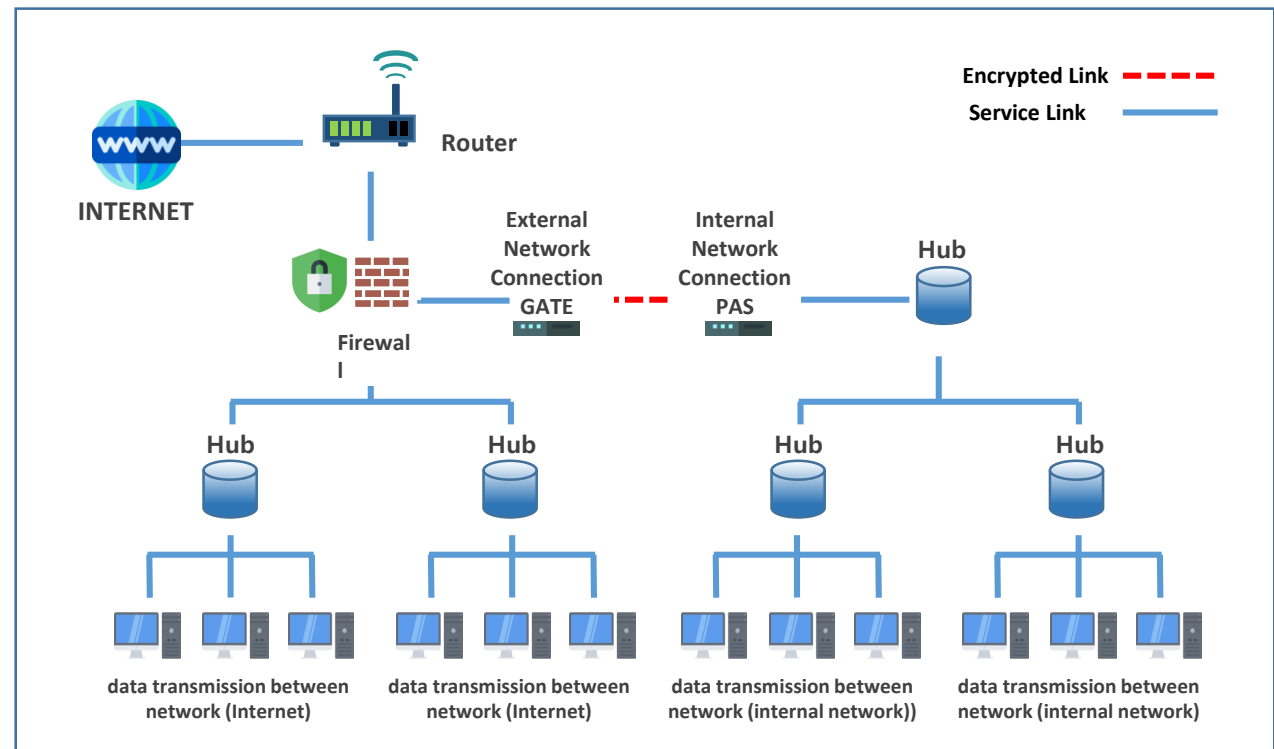CAGE registered in the System for Award Management

Security

In-company Security System

Technical Data Security
Separation of Computer Network

- Network separation between the Internet area and the security area
- Separating networks into Internal work net(Intranet) and External net(Internet) ,Blocking external intrusion and hackers
- **-** Control the data transmission between the internet and the intranet and block the leakage of internal information
- In-company network(data transmission) system
- Reinforced security policy and Infrastructure

Computer Security
Control the Use of PC

- Block removable storage
- Disable Attachment of Internet Files
- Disable Export options of software file
- Web Site Access Control/Soft Execution Management

Facility Security
Access control for business facilities

- Real-time monitoring by installing CCTV systems outside the building
- Intrusion detection by installing the external infrared detector
- Access control using facial and fingerprint recognition systems.
- Visitor access control and management(keeping a log of visitors and issuing visitor passes)
- Security Company(S1 company) employed to ensure security at night(24-hour).

Computer Security
AntiVirus

- Protect all PCs from different types of malware attacks
- Powerful detection of malicious codes, Inspected and treated in real time.
- Protect the PC from malicious attacks

Education on technical data
security and protection

- Provide regular education and training to protect and secure the technical data
- Conduct security training twice a year

Security

Built the In-company Network/Internet Network Disconnection(Network Connection System)

Network Connection(Disconnection) System Diagram

Disable Internet Connection

PC for Internet Connection

Internal Network PC

External Network PC

Encrypted Link
Service Link

INTERNET

Router

External Network Connection GATE

Internal Network Connection PAS

Firewall

Hub

Hub

Hub

Hub

Hub

data transmission between network (Internet)

data transmission between network (Internet)

data transmission between network (internal network))

data transmission between network (internal network)

19

Security

Installed Security Equipment Inside/Outside the Building
(Using S company's security system)

Installed security equipment inside/outside the building

Infrared Detector

CCTV

CCTV
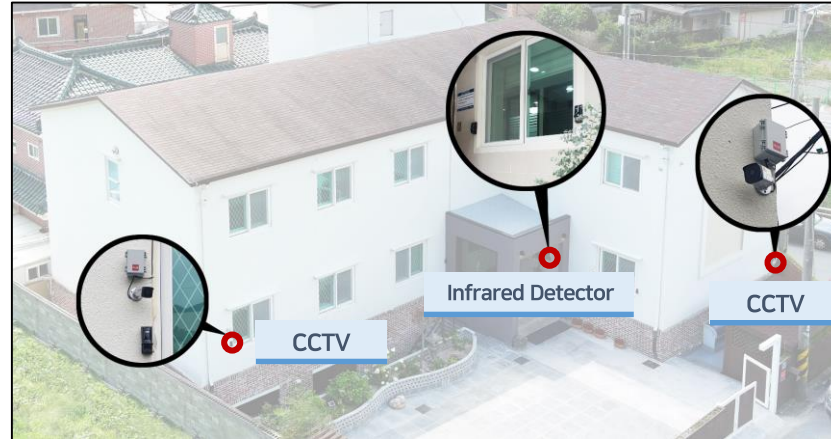
Access control (Using S company's security system)

Entrance inside/outside the building
Installed facial and fingerprint recognition systems.

CARD
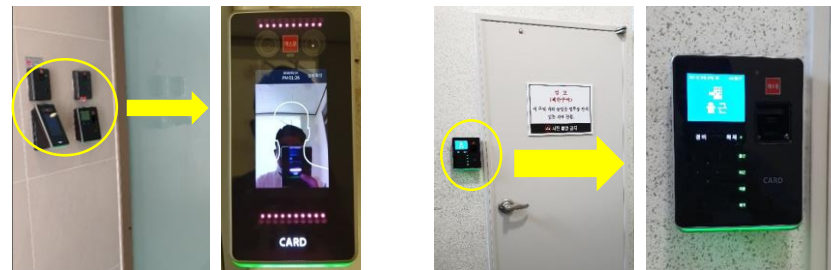
Security

Computer(Technical Data) Security

Media Control

Disable removable storage
Disable copy and export to USB, external hard drive, smartphone, CD-ROM

Disable Attachment of Internet Files
Disable all Internet-based file attachments including mail, cloud, and web browsers, etc.

Disable Export options of software file
Disable Export to Messenger, Remote Control, Web Hard, etc.

Real-time/Automatic Scheduled Inspection
Inspect files containing sensitive data in all employee PCs in real time and at scheduled intervals.

Encryption/Decryption
Automatically encrypts any file found during inspection, or manually encrypts files before saving.

Document Export Control
Disable Export files using the media and Internet including USB, mail, web hard, etc.

Web Site Access Control
Categorize by site properties
Control using Disable/Warning/Enable

Soft Execution Management
Categorize by S/W properties
Control using Disable /Warning/Enable