

**2023**  
**SCEWC KOREA Pavilion**

**B**

Eco-Friendly Mobility



## *F1soft CO.,LTD*

- 01 F1-Vision
- 02 iPlusLabeller
- 03 Iotag: Real-Time Locating System
- 04 K-Smart HACCP Solution
- 05 ERP(Enterprise Resource Planning)
- 06 MES (Manufacturing Execution System)
- 07 SCM(Supply Chain Management)  
SRM(Supplier Relationship Management)

**F1soft**

06

**F1soft**



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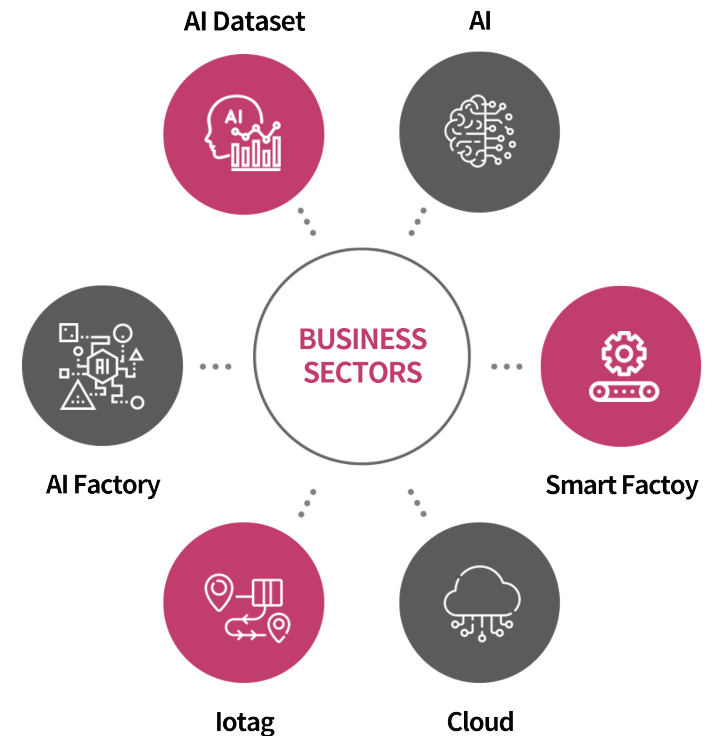
#### Company Introduction

### Manufacturing Digital Transformation and Smart Factory AI-based DX Specialist Company

- F1soft is a leading provider of advanced technology solutions for production manufacturing platforms. Its services encompass the development and management of ERP/MES/SCM systems, AI-based Machine Vision, AI-based Object Detection systems, AI data platforms, and Big Data Analytics platforms. With a strong focus on innovation, F1soft has emerged as a leading supplier of smart factories and AI solutions.
- F1Soft Co., Ltd. was established in 2009 and has 150 small and medium-sized businesses in the smart factory and artificial intelligence platform business.
- We have successful use cases of constructing an AI Factory for manufacturing processes related to semiconductors, food, product containers, printing, and cable connectors.
- We have established a defect detection vision system based on AI-based machine vision in a food processing company, to obtain smart HACCP certification for the first time in the food industry.
- Based on AI machine vision technology accumulated in the food industry and experience in processing large amounts of artificial intelligence data, F1soft aims to build an advanced AI system in the smart mobility (automobile) field, which is a representative multi-value chain industry.

## CORE BUSINESS SECTORS

Discover the various product solutions and services by F1soft, Which have become essential in Smart factories with AI



# 01

## F1-Vision

Technology / Product	F1-Vision
Detailed Genre	Defect Detection
Product Type	Software / Hardware
Target Company	Medium/Small-Sized Manufacturing Company
Technology/Product video link	

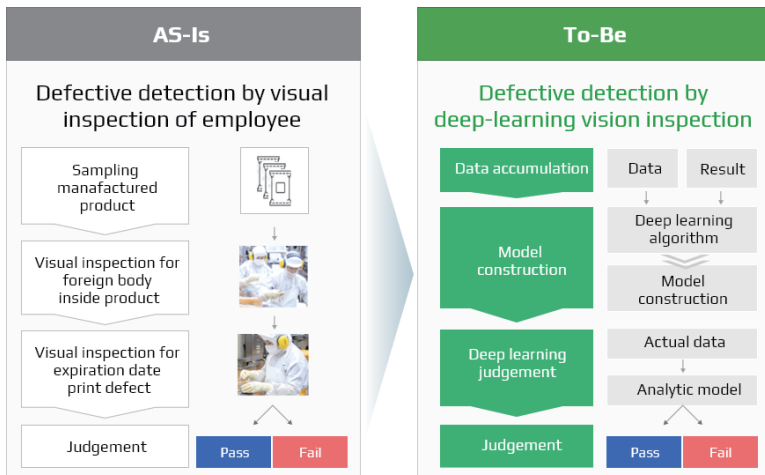
### Contents Introduction

## F1-Vision AI-Based “Machine Vision System” solution For the food inspection process

F1-Vision is an AI-based machine vision solution for defect detection, such as expiration date misprint and foreign matter detection.

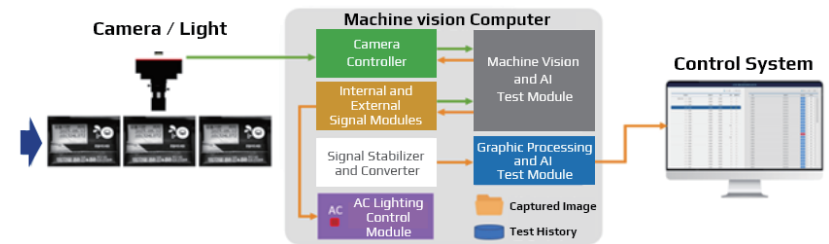
#### Key features of F1-Vision

- Supplies analytic model frequently implemented in the manufacturing process in vision analysis
- Supports distributed task processing, scheduling, real-time conduction service for real-time administration and algorithm, and model management



#### F1-Vision Structure

F1-Vision offers Algorithm and model management, execution control, distributed processing, scheduling, and realtime execution service.



#### F1-Vision Use Case

### Expiration Date Print Defect Inspection

**F1-VISION** 2023-02-01 11:25:27

Raw Konjac 600 g

1,665 2023.07.31

11.95 %

199	190	9
TEST	PASS	FAIL
No	TIME	RESULT
7	11:24:45	TimeOut
6	11:23:46	TimeOut
5	11:22:20	TimeOut
4	11:20:13	TimeOut
3	11:20:06	TimeOut
2	11:15:52	VS 18LLP081502
1	11:12:08	TimeOut

# 02

## iPlusLabeller

Technology / Product	iPlusLabeller
Detailed Genre	Data processing, Unstructured data processing, Data refining, Labelling
Product Type	Software
Target Company	Medium/Small-Sized Company
Technology/Product video link	

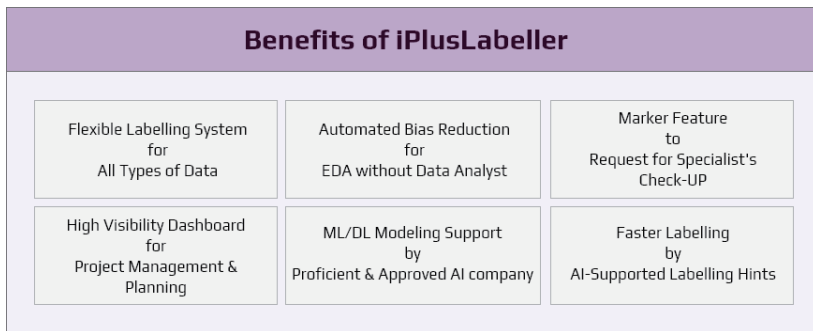
### Contents Introduction

 **iPlusLabeller AI-Based Data Toolkit**  
for EDA / Data Preprocessing / Annotation

iPlusLabeller is an advanced AI-assisted data annotation tool, designed to provide the process of preparing data for machine learning / deep learning models. With iPlusLabeller, you are not just annotating data – you are shaping the future of AI.

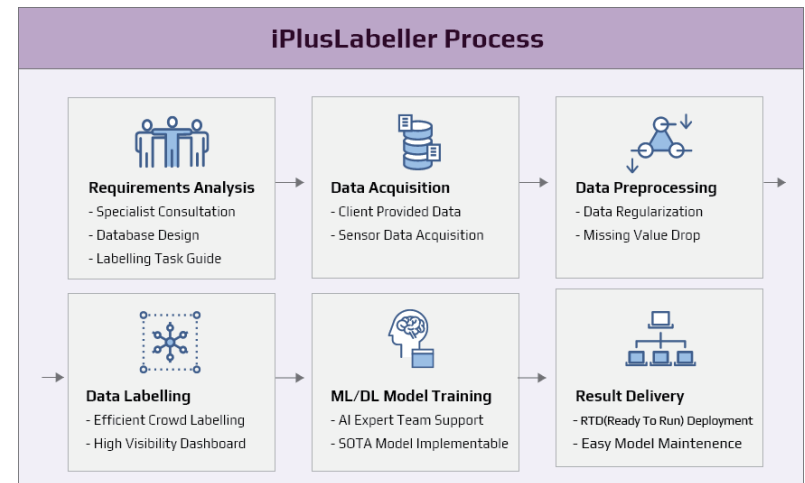
#### ● Key Features of iPlusLabeller

As a data labeller, iPlusLabeller provides maximum flexibility to choose the method and structure of the resulting data. Any type of data can be labeled, and the client can organize supervising system for a specific purpose. Also, iPlusLabeller’s AI support gives hints that accelerate labelling task.



#### ● Key Functions of iPlusLabeller

iPlusLabeller has a automated bias reduction system. By using iPlusLabeller, clients don't need to conduct Explorative Data Analysis and just fix the bias in simple web-based UI. Also, data labellers without specialized field knowledge can label data rapidly with AI-supported hints and effective marker feature to request check up by supervisors.



#### ● iPlusLabeller Use Case



# 03

## lotag: Real-Time Locating System

Technology / Product	lotag: Real-Time Locating System
Detailed Genre	RTLS(Real-Time Locating System)
Product Type	Hardware for Industrial site, Entertainment, Smart home, Sports, Store/shop, and Medical/Healthcare
Target Company	Medium/Small-Sized Company
Technology/Product video link	

### Contents Introduction

### lotag Sensor-fusion based precise locating system RTLS(Real-time Locating System)

lotag is an indoor locating system adopting the most precise Ultra Wide-Band(UWB) method developed by F1soft. lotag is a precise real-time location system that can be applied to GPS-unreachable places such as subway, school, underground parking lot and concert hall to track locations.

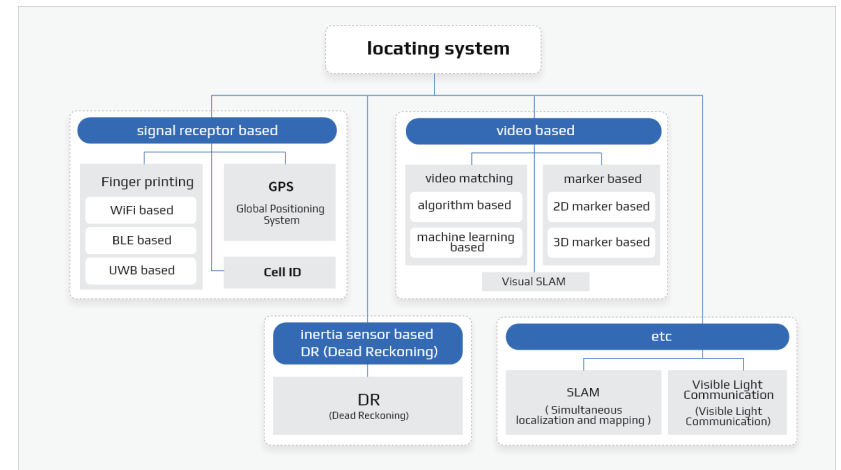
#### Key features of "lotag"

lotag is a real-time locating system with a low introductory price, high precision(>0.5m), and low power usage(max. lifespan 3yrs) made fit for various field conditions



#### lotag Structure

F1soft is developing fine locating system not only based on sensor, but also merged with AI. Locating technology plays a huge role on technologies that deals with real world's coordinates or merges reality and virtual reality, such as digital twin, AR, and VR.



#### lotag Use Case

- ▶ Location tracking system for underground/indoor circumstances
- ▶ Proximity Alert System(PAS) for manufacturing/logistics company
- ▶ Workout tracking for health care service
- ▶ Entrance control system for security



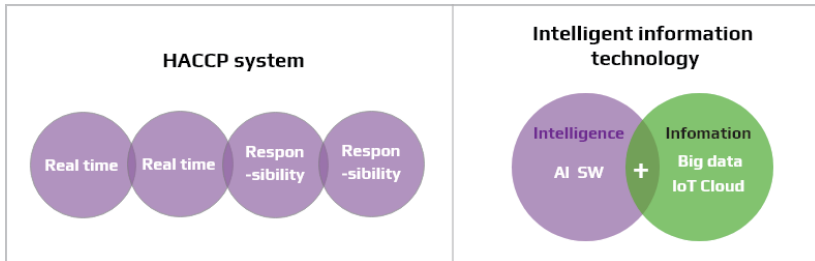
# 04

## K-Smart HACCP Solution

Technology / Product	K-Smart HACCP Solution
Detailed Genre	Food Processing
Product Type	Software / Hardware
Target Company	Medium/Small-Sized Manufacturing Company
Technology/Product video link	

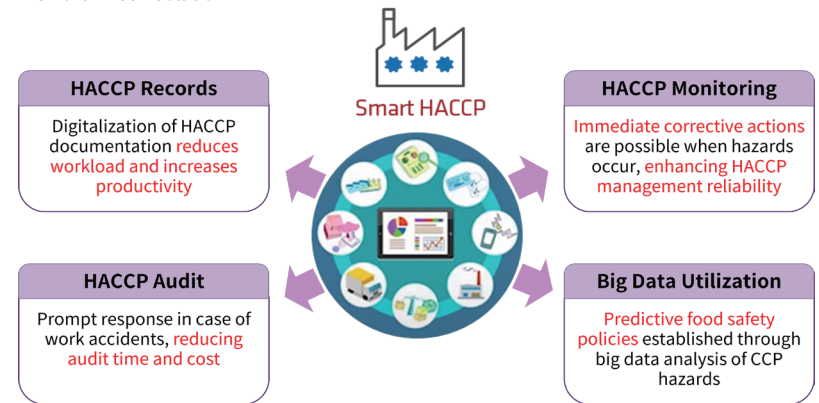
### Contents Introduction

- **What is HACCP?**  
HACCP is an English abbreviation for Hazard Analysis and Critical Control Point and is referred to as HACCP or Food Safety Management Certification Standard.
- **What is K-Smart HACCP?**  
HACCP management system that maximizes efficiency through real-time management through automated monitoring of CCP process by fusion of ICT technology in HACCP management system



- **K-Smart HACCP's Strength**
  - ▶ Automates recording through sensor integration
  - ▶ Visualizes HACCP status and task process
  - ▶ Provides statistical indexes for business administration
- **Expected Effects of Introducing K-Smart HACCP**
  - ▶ Increased safety due to the automated test/recording process
  - ▶ Faster manufacturing process due to reduced human interference
  - ▶ Easier improvement detection due to data integration

### • K-Smart HACCP Solution



### • K-Smart HACCP Solution Use Case

**Metal Detector Monitoring and Auto-recording System (CCP1)**

**PH Meter Monitoring and Auto-recording System (CCP2)**

**Metal Detector Monitoring System for Office Buildings**

**Production Progress Monitoring System for Office Buildings**

# 05

## ERP(Enterprise Resource Planning)

<b>Technology / Product</b>	ERP(Enterprise Resource Planning)
<b>Detailed Genre</b>	Master Data, Sales Management, Purchase Management, Quality Control, Human Resource Management, Accounting Management, Material Management, Groupware
<b>Product Type</b>	Software
<b>Target Company</b>	Medium/Small-Sized Company
<b>Technology/Product video link</b>	

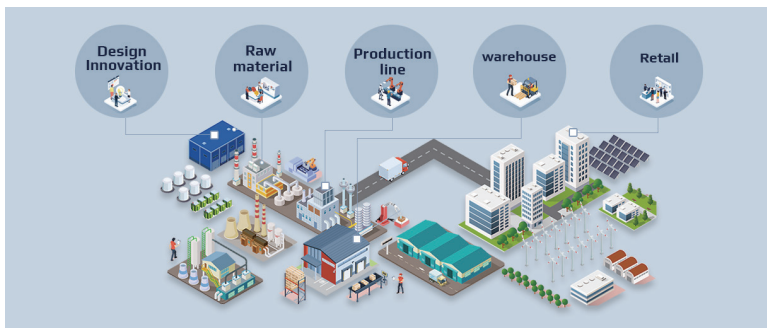
### Contents Introduction



The "iPlusERP" supports customized ERP solutions optimized for customers' specific industries. Through digital transformation, we provide intelligent solutions that combine AI with manufacturing big data to uncover and solve business challenges

### Key features of "iPlusERP"

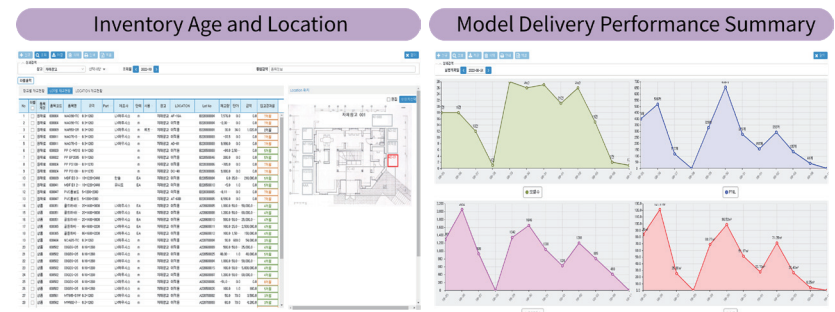
- ▶ Customized mobile reporting for management
- ▶ Accounting system centered on management accounting
- ▶ Automatic creation of approval documents linked to Groupware
- ▶ Integration with Barcode and RFID smart tags
- ▶ Individual tracking of products, materials, and work-in-progress(WIP) for each project
- ▶ Various payroll calculation methods



### ERP Structure

Enterprise-level information management (ELS)		TV status board		Performance Analysis
Master Data Management	Human Resources and Rayroll	Accounting Management	Cost Management	Business
System Management	Customer Service Management	Project Management	Sales Management	
Production Management	Procurement and Inventory Management		Quality Management	
ERP task progress management	Notices/ notifications	Attendance management	Email management	Groupware
Early Warning	Data management	Electronic approval	Schedule management	
Bulletin board				

### ERP Sample Screens





# 06

## MES (Manufacturing Execution System)

Technology / Product	MES (Manufacturing Execution System)
Detailed Genre	Master Data, Manufacturing Management, Procedure Management, Quality Control, POP, Human Resource Management, Groupware
Product Type	Software
Target Company	Medium/Small-Sized Manufacturing Company
Technology/Product video link	

### Contents Introduction



The "iPlusMES" is a system that builds a production-oriented process and enables profit creation through real-time statistical analysis and visualization on the production floor.

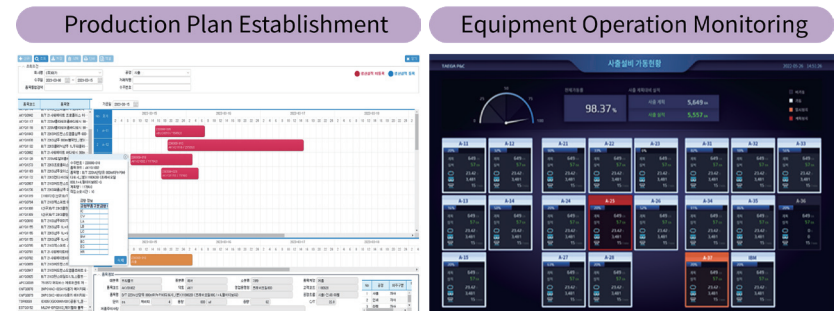
- Key features of "iPlusMES"
  - ▶ Enhanced manufacturing traceability for management
  - ▶ Support for complex C/S management processes
  - ▶ Integration with Barcode and RFID smart tags
  - ▶ Real-time monitoring and visualization of process progress by order
  - ▶ Work standard history management
  - ▶ Automatic creation of requests linked to Groupware



### ● MES Structure

Enterprise-level information management (ELS)		TV status board		Performance Analysis
Master Data Management	Customer Service Management	Human Resources and Rayroll	Project Management	System Management
MES / POP (Manufacturing Execution System/Production Optimization Platform)				Business
Sales Management	Production Management	Procurement and Inventory Management	Quality Management	
ERP task progress management	Notices/notifications	Attendance management	Email management	
Early Warning	Data management	Electronic approval	Schedule management	Groupware
Bulletin board				

### ● MES Sample Screens



# 07

## SCM(Supply Chain Management) SRM(Supplier Relationship Management)

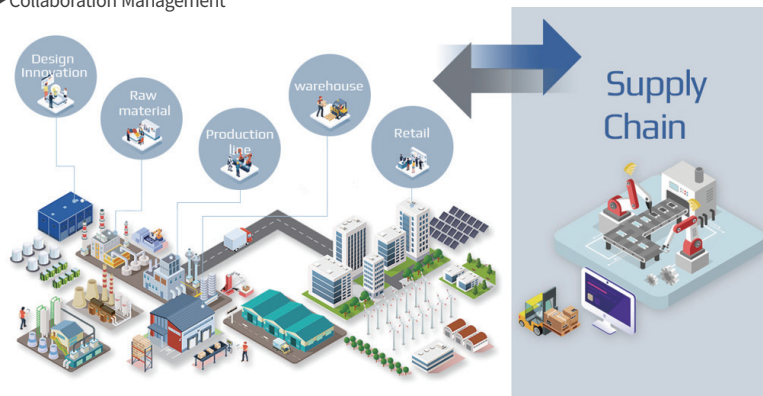
<b>Technology / Product</b>	SCM(Supply Chain Management) SRM(Supplier Relationship Management)
<b>Detailed Genre</b>	Master Data, Order Management, Inventory Management, Nonconformity Management
<b>Product Type</b>	Software
<b>Target Company</b>	Medium/Small-Sized Manufacturing Company
<b>Technology/Product video link</b>	

### Contents Introduction



The "Collaboration management system" manages collaborative work with suppliers, partners, and other organizations within the supply organization, such as RMA, A/S, estimates, and orders, in conjunction with the purchasing process of the head office.

- Key features of "iPlusSCM"
  - ▶ Supplier Management
  - ▶ Supplier Assessment / Nurturing
  - ▶ Collaboration Management



### ● SCM Structure

Environment Setup	Community	WEB	Master Management
<ul style="list-style-type: none"> <li>Environment Setup</li> <li>Basic Information                             <ul style="list-style-type: none"> <li>Environment Setup</li> <li>Basic Information</li> </ul> </li> <li>User Management                             <ul style="list-style-type: none"> <li>User management</li> <li>Login user registration</li> </ul> </li> <li>System Management                             <ul style="list-style-type: none"> <li>System environment setup</li> <li>Function definition by screen</li> <li>Group authorization creation</li> <li>Group-specific user settings</li> <li>Scheduler management</li> <li>Multilingual management</li> <li>System usage status</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Community                             <ul style="list-style-type: none"> <li>Comprehensive status                                     <ul style="list-style-type: none"> <li>Comprehensive status</li> </ul> </li> <li>Public materials                                     <ul style="list-style-type: none"> <li>File data management</li> <li>Label management</li> </ul> </li> <li>Management tasks                                     <ul style="list-style-type: none"> <li>Notice writing</li> <li>Notice inquiry</li> </ul> </li> <li>Bullein board                                     <ul style="list-style-type: none"> <li>Bulletin board creation</li> <li>Bulletin board list</li> </ul> </li> </ul> </li> <li>RMA                             <ul style="list-style-type: none"> <li>RMA application</li> <li>RMA status (RMA manater)                                     <ul style="list-style-type: none"> <li>RMA repair status</li> <li>Quotation status</li> <li>Payment status</li> <li>Invoice status</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Item management                             <ul style="list-style-type: none"> <li>Item registration status</li> </ul> </li> <li>Supplier management                             <ul style="list-style-type: none"> <li>Supplier profile inquiry</li> </ul> </li> <li>Purchase request                             <ul style="list-style-type: none"> <li>Purchase request creation</li> <li>Purchase request progress status</li> <li>Purchase progress status</li> </ul> </li> <li>Unit price / order management                             <ul style="list-style-type: none"> <li>Order waiting list</li> <li>Order status list</li> <li>Order detail status</li> <li>Unit price status</li> </ul> </li> <li>Delivery management                             <ul style="list-style-type: none"> <li>Delivery agent</li> <li>Delivery status</li> </ul> </li> <li>Workflow                             <ul style="list-style-type: none"> <li>Approval list</li> <li>Approval delegation</li> <li>Approval line management</li> <li>Receipt line management</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Partner area classification information</li> <li>Partner information</li> <li>Sales unit price management</li> <li>Metadata inquiry</li> <li>Terminal Fixation classification</li> <li>Standard industrial price management</li> <li>Industrial price management</li> </ul> <ul style="list-style-type: none"> <li>Purchase Request                             <ul style="list-style-type: none"> <li>Create Purchase Request</li> <li>Purchase Request Status</li> <li>Purchase Progress Status</li> </ul> </li> <li>Component management                             <ul style="list-style-type: none"> <li>Component request status</li> <li>Component request</li> <li>Component price inquiry</li> </ul> </li> </ul>

### ● SCM Sample Screens

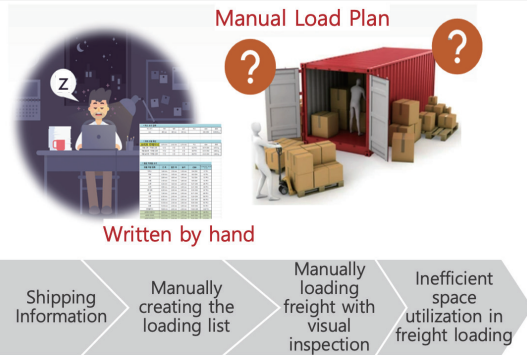


Container loading optimization using AI >>

AI-based solution for a more intelligent freight loading optimization process

AS-IS

Expert manually creates the container load plan (3 hours). There can be empty space in the container as the worker loads freight by calculating the space with the eye (Cost high shipping charges)

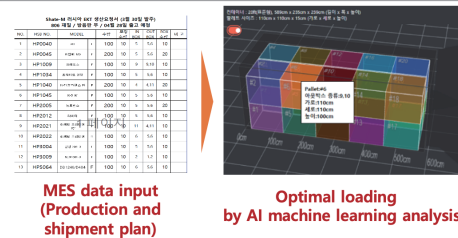


TO-BE

Anyone can generate the container load plan using AI (1 min)

Container loading capacity can be maximized

(reducing logistics cost by KRW 120m, production cost by KRW 840 m)



Category	AS-IS	TO-BE	Expected Effects
Hours for creating container load plan (Based on 20 FEET)	3 hours (for experts to analyze data and manually create the plan)	Within 30 minutes (For AI machine learning analysis and expert verification)	Reducing more than 2.5 hours (80%)
Container load plans completion count (Based on 3 working hours)	1	6	Generate additional 5 plans
Accuracy of optimal load plan	80%	More than 90%	Confirming the container load plan within a short time after the worker makes a final check on AI analysis
Freight logistics cost	KRW 2.4 billion	KRW 2.28 billion	Reducing the freight logistics cost by 7% (Of 2.4b of logistics cost, it is expected to reduce KRW 150 million)
Production cost	KRW 12 billion	KRW 11.16 billion	Reducing production cost by 7% (Of 12b of production cost, it is expected to reduce KRW 840 million)
Notes	Only expert (production manager) is capable of handling the task	Employee reassignment is available	Improving work efficiency by reassigning employees in this task requiring certain types of workers to more universal tasks

**AI inspection on welding defects >>**

AI-based solution to automatically inspect welding defects on the car body frame

**AS-IS**

Welding defects are detected by workers' visual inspection (hand-written marking)

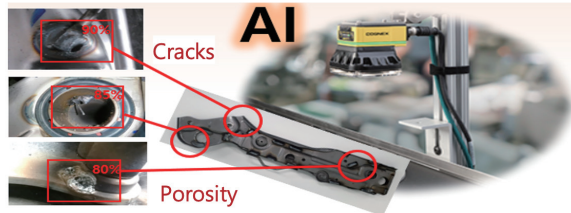


Production Line → Car Body Seat Frame Sampling → Visual Inspection of Welding Defects → Pass/Fail Judgment

**TO-BE**

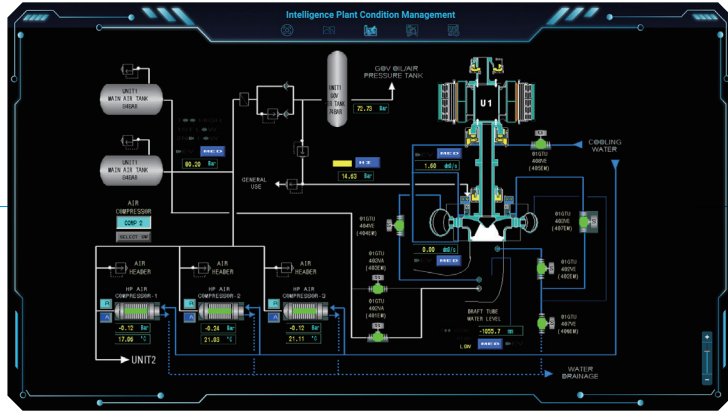
Welding defects are detected by the AI Vision inspection system

- To reduce inspection time 73%, increase accuracy 20%, and cut down production cost 7% (KRW 70 million)



Data Collection → Building AI Model → Defect Inspection through Deep Learning → Pass/Fail Judgment

Category	AS-IS	TO-BE	Expected Effects
Welding defect inspection time (Total time required for the process Such as robot welding)	15 seconds/EA (97 seconds/EA)	4 seconds/EA (86 seconds/EA)	- Reducing welding defect inspection time by 11 seconds (73%) - Reducing the time of the process by 11 seconds (11%)
Average daily operation hours (Based on average daily 198 operations)	5.4 hours	4.7 hours	Reducing 0.7 operation hours on a daily average
Daily loss time of a worker (Based on the average daily working target time: 4.6 hours)	0.8 hours (Compared to the daily target, worker's work rate: 86%)	0.1 hours (Compared to the daily target, worker's work rate: 98%)	Reducing the daily loss time (overtime work) by 0.7 hours (Improve worker's work rate 12% compared to the daily target)
Number of defect inspection (Based on average daily 5.4 hours)	198	226	Conducting additional 28 inspections
Accuracy of defect inspection	Approx. 70%	More than 90%	Reducing the return rate of defective products in lot production by increasing inspection accuracy 20%
Annual production cost savings (Based on the production line)	Product cost: KRW 1 billion	Expected Production cost: KRW 930 million	Reducing the annual production cost of the production line subject to the solution by approx. KRW 70m (7%)



**IMPIX Inc.**

**01** A<sup>2</sup>LAB

**02** B<sup>2</sup>LAB

**03** M<sup>2</sup>LAB



**07**





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URL N/A

### Company Introduction

Impix, which is celebrating its 20th anniversary this year, has been continuously demonstrating its technological expertise to enhance manufacturers' competitiveness and to lead the domestic and international markets.

Impix is a solution provider that gathers all process data generated from smart factories and implements foundational technologies that enable factories to operate based on AI. Its headquarters is located in Seoul and has branches operating throughout the nation. Additionally, it has overseas offices in Wuxi and Chongqing, China.

#### The main products of Impix are :

- (1) collecting manufacturing data generated in the factory,
- (2) standardizing and refining the collected data for efficient management and analysis,
- (3) building a Digital Twin that implements the actual factory operation status into a virtual factory in real-time, and
- (4) predicting various failures in factories and increasing manufacturing productivity through relationship analysis between process and quality, using artificial intelligence technology.

## 01

### A<sup>2</sup>LAB

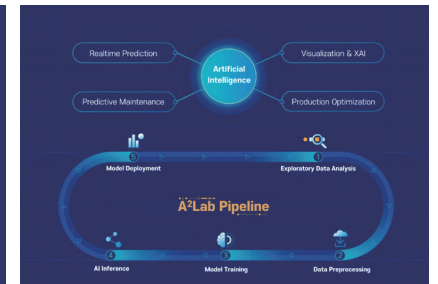
Technology / Product	A <sup>2</sup> LAB
Detailed Genre	AI Solutions specialized for manufacturers
Product Type	Installation-type application program.
Target Company	- Manufacturers looking to adopt AI - Distribution companies seeking to provide AI solutions overseas to their respective countries.
Technology/Product video link	N/A

### Contents Introduction

Impix's AI solution, A<sup>2</sup>LAB, supports preprocessing for a variety of 5M1E data generated in the production site, providing an artificial intelligence-based operating environment by learning and applying AI models through the implemented datasets.

In particular, the real-time inference technology applied to this solution is a key function required for applying artificial intelligence in the manufacturing sector. Real-time process data and inspection (or image) data are entered into the learning models for manufacturing big data, enabling immediate detection of abnormalities and quality prediction on-site.

This data-based factory operation detects various and complex causes that interfere with optimal production in advance, and is used as a tool for quick problem-solving.



## 02

B<sup>2</sup>LAB

Technology / Product	B <sup>2</sup> LAB
Detailed Genre	System development platform for building big data systems
Product Type	Development tool-type application program
Target Company	- Manufacturers wishing to gather data from production facilities. - Smart factory solution providers seeking business partners. - Distribution companies seeking to provide IoT solutions overseas to their respective countries.
Technology/Product video link	N/A

## Contents Introduction

In industrial fields, large amounts of non-standardized data are constantly generated from barcode scanners, RFID readers, vision image data, machine data, GPS information, and measurement sensors, among others.

B<sup>2</sup>LAB is a modular platform that enables real-time event-based data processing using standard protocols (such as OPC-UA) through a device that extracts/collects stream data from PLC and measurement sensors.

The data collected from IIoT sensors, including production quantity, inspection history, material history, and more, through OPC-UA can be transmitted to IT infrastructure and cloud environments using Edge technology based on Kafka (JSON/XML). This data can be integrated with various industrial solutions based on standard interfaces of big data systems.

Additionally, real-time data generated from equipment and sensors is stored in a TSDB in a tag format, rather than a general RDBMS, and is configured to store and utilize raw data better than before.



## 03

M<sup>2</sup>LAB

Technology / Product	M <sup>2</sup> LAB
Detailed Genre	System development platform for building Digital Twin / Metaverse
Product Type	Development tool-type application program
Target Company	- Manufacturers looking to adopt Digital Twin or Metaverse - Distribution companies seeking to provide Digital Twin or Metaverse solutions overseas to their respective countries.
Technology/Product video link	N/A

## Contents Introduction

Impix's Digital Twin / Metaverse Platform M<sup>2</sup>LAB is a virtual smart factory that combines manufacturing AI and Metaverse, and is a customized digital platform for enterprises to experience processes at the same level as the production site and enable real manufacturing AI analysis simulation.

The main functions of M<sup>2</sup>LAB are :

- (1) Bi-directional control: Supports two-way facility control functions based on HMI-linked control.
- (2) Information visualization: Shares intuitive quantitative data with each organization to eliminate sunk costs due to information asymmetry and promote joint optimization of manufacturing across all departments.
- (3) Resource integrated control: Maximize the value of each manufacturing resource through integrated control based on One Platform, reduce work hours, and create an optimal work environment.
- (4) Virtual simulation: Minimizes the opportunity cost of production operation by pre-verifying and executing optimal operating conditions.
- (5) Solution scalability: Builds a plug & play environment for expanding new solutions and continuously improving production efficiency.



AI equipment error detection >>

AI system to predicts equipment errors and the timing for part of replacement

AS-IS

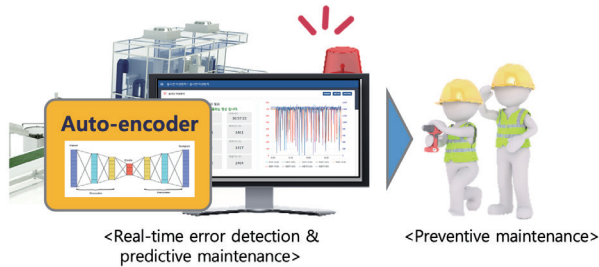
There is a limit to increasing productivity due to repair work after equipment failure  
 -Before MTBF: 40 days, after MTBF (First year): 60 days  
 -Equipment Utilization rate before : 72.7%, after (First year): 79.1%



< Reactive action after equipment failure >

TO-BE

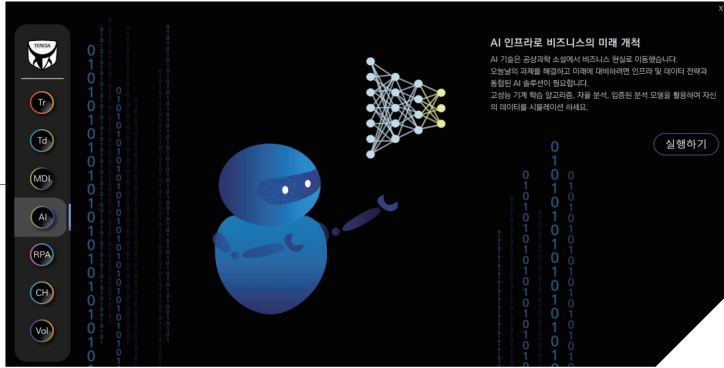
AI detects errors in real time for performing preventive maintenance before failure occur  
 - Equipment utilization rate 85% (7% increase compared to the first year)  
 - Economic impact of KRW 35 million a month due to an increase in the operation rate



< Preventive action before equipment failure >

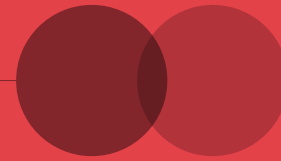
Category	AS-IS	TO-BE	Expected Effects
Number of annual equipment failures	9	3	To reduce equipment failure 67% (1/3)
MTBF (Mean Time Between Failures)	40	80	To reduce the time between failures 50% (1/2)
Equipment preventive maintenance	Maintenance based on worker's know-how (without standards)	AI detects errors in real time	To conduct preventive maintenance based on data
		DID installed Alarm sent to the worker's mobile phone	To predict and detect, realize errors quickly
Data collection and storage	The worker extracts and analyzes data from the equipment on a regular basis by manual	Data automatically collected in real time can be searched anytime in the system	To strengthen data capitalization and monitoring
Accuracy of error detection	Relying on worker's sensory quality control (Low accuracy)	93% accuracy based on external AI performance evaluation	As the qualified AI detects errors, the reliability of the error detection results can be guaranteed
Equipment utilization rate & productivity	Equipment utilization rate 72.7%	Equipment utilization rate 85.1% (7% increase compared to the first year)	A 1% increase in equipment utilization rate at full capacity generates economic benefits of KRW 5 million a month per equipment (KRW 5m x 7 = KRW 35 million) Annual expected effects: over KRW 400m (KRW 35m x 12 = KRW 420 million)





**DLIT**

- 01** TERESA AI
- 02** GLOTOP
- 03** TERESA BI



**08**





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### Company Introduction

#### 1. Company Introduction

- 1) Business area(department) : AI/CPS/MES/ERP/SCM/CRM, SI, SM, Consulting
- 2) Length of service in the relevant : October 2000 ~ Present
- 3) Vision : Customer success through perfect transformation of customers (Manufacturing industry)
- 4) Customer : General manufacturing industry
- 5) Core technology : Cloud, BigData, AI, IoT, Block Chain, AR/VR, Mobile

#### 2. Major Business Areas

- 1) AI
  - AI Field (Design, Process, Supply Chain, Predictive Maintenance, Inspection)
  - Consulting, Data Diagnosis
  - AI Model Development and Service
  - Building AI Factory
- 2) SI/ Digital Twin
  - Consulting, design development and operational support
  - Project progress according to customer requirements
  - System integration (SI) maintenance
- 3) ITO
  - Customer's IT outsourcing operation
  - Establishment of IT Master Plan
  - System construction & System maintenance and education
- 4) Development of smart factory, Consulting
  - Diagnosing the level of the customer's smart factory and establishing a roadmap for improvement
  - Establishing a smart factory tailored to the characteristics of the industry (ERP, MES)
  - Supporting the integration of smart factories
  - Establishing a maintenance and advanced upgrade strategy

## 01

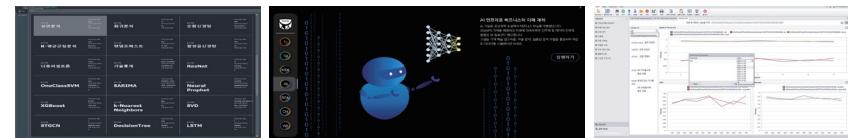
### TERESA AI

<b>Technology / Product</b>	TERESA AI
<b>Detailed Genre</b>	AI platform
<b>Product Type</b>	Software
<b>Target Company</b>	General manufacturing industry
<b>Technology/Product video link</b>	<a href="https://www.youtube.com/watch?v=t3LrJ7ezlqg">https://www.youtube.com/watch?v=t3LrJ7ezlqg</a>

#### Contents Introduction

Real-world examples of 5 types of artificial intelligence in the manufacturing AI field.

- 1) Design Intelligence
  - Analysis of customer purchase patterns, analysis of customer tendencies, customized recommendation services
  - Possessing a verified AI platform, natural language processing and sentiment analysis, and video analysis
- 2) Predictive maintenance
  - Predictive maintenance system for equipment equipment anomaly detection and monitoring system
  - predicting optimal operating conditions for equipment and equipment predictive maintenance platform.
- 3) Inspection intelligence
  - Deep learning-based AI quality inspection system
  - Recommendation engine and claim prediction system for the cosmetics industry
- 4) Process intelligence
  - Equipment predictive maintenance, optimal equipment operating conditions, recipe prediction, and anomaly pattern analysis
  - Predictive system for optimal production process conditions
  - Color data training and recipe process prediction in the color matching field
- 5) Supplychain intelligence
  - Customer data correlation analysis and recommendation system
  - Customer behavior and trend analysis, and AI-based personalized marketing system
  - Open market analysis and product review analysis, natural language processing, and marketing analysis service.

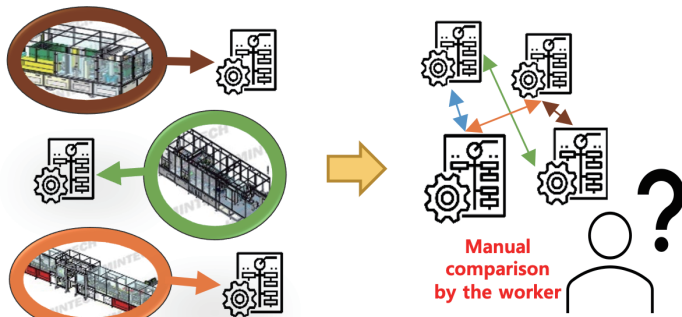


**Intelligent AI designing >>**

Intelligent AI eco-friendly mobility equipment

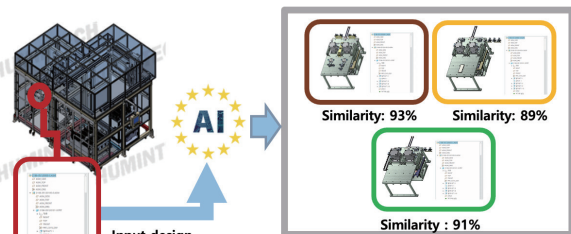
**AS-IS**

- The number and types of drawings increase due to pre-order manufacturing
- It is difficult to compare and analyze drawings instantly, and too much work hours are required



**TO-BE**

The time can be saved as AI compares and reviews the similar drawings and makes drawings (35 mins → 25 mins), It is expected to **reduce the labor cost KRW 937,500 per drawing (reducing by 3.75 days)**



**Figuring out the similarity to the existing equipment drawings by utilizing AI**

Category	AS-IS	TO-BE	Expected Effects
Labor cost for reviewing and making drawings	Period for reviewing and making drawings per project: 62.08 days * Different according to the product shape	Period for reviewing and making drawings per project: 58.33 days	To save KRW 937,500 a person per drawing (reducing by 3.75 days) • Applicable only when there are similar components for comparison • Basis of cost calculation: KRW 250,000 (average monthly labor cost for design)/day (8H)
Prevention of design errors	Workers compare and utilize drawings based on their experiences and skills	AI compares and utilizes drawings consistently based on data	To reduce maintenance cost by 7% due to increase in product reliability and performance
Reduction in product defects due to decrease in drawing errors			To reduce client complaints and warranty cost by 7%

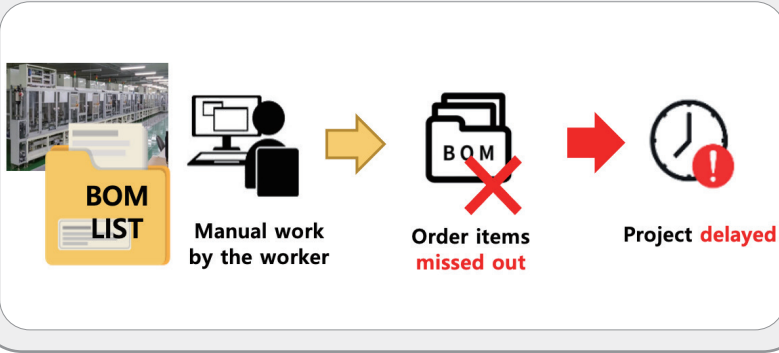
AI prediction on order lead time >>

AI/big data-based demand prediction solution by product

AS-IS

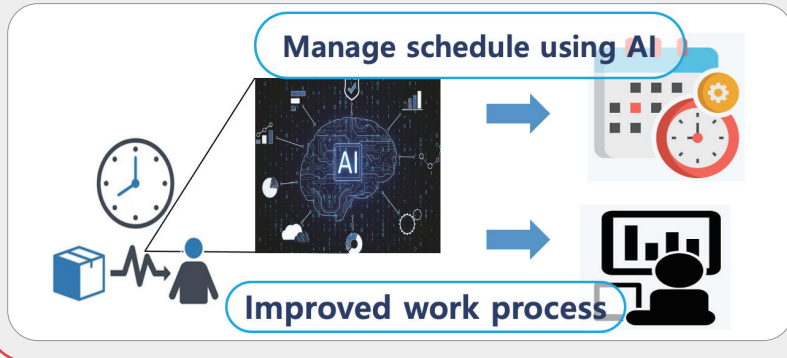
Some parts are missed out during the ordering process as the order is made based on the worker's experiences

The project schedule is disrupted as the inventory and ordering data are not properly managed



TO-BE

To shorten the working time for each worker to secure items using our solution 59.7 days → 54.3 days (increasing approx. 9.04%), Project delay: 30 days → 10-18 days on average (reducing approx. 40%)



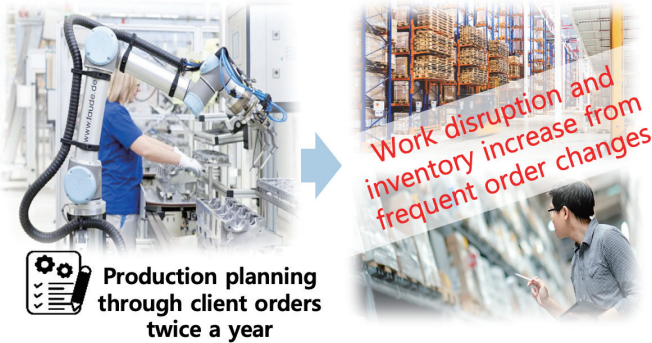
Category	AS-IS	TO-BE	Expected Effects
Worker's working time	Worker's working time 59.7 days on average per worker	Working time with the solution 54.3 days on average per worker	To reduce working time 9%
Missing order items	Occurrence of personal errors	Missing items are marked and notified	To prevent personal errors and check if there are missing items
Management of ordering/receiving deadlines by product	Based on the average deadline per client (30 days on average)	Based on the deadline predicted by AI (10-18 days on average by product)	To reduce the project delay rate by 40% through prediction on the exact deadline
Management of BOM and inventory list	The worker makes the list and manages the file	The list is registered and managed in real time using the solution	To reduce the worker's average working time by 50%
Accuracy of prediction on order lead time	External factors cannot be reflected as the prediction is made based on ordering history of the client	Accuracy of AI prediction is more than 80% with external factors reflected	To reduce errors on prediction of the order lead time by reflecting external factors

AI Convergence Support for Chungnam eco-friendly mobility >>

AI demand prediction solution

AS-IS

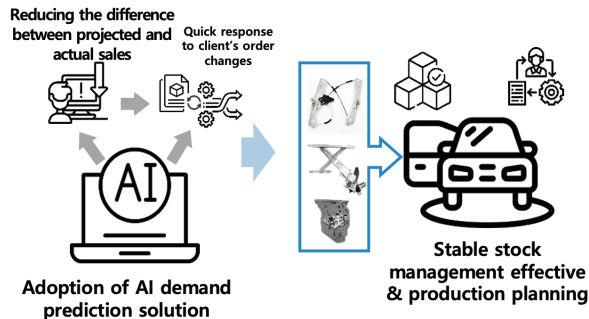
Manual production planning/Difficult to respond to frequent order changes



TO-BE

Adoption of AI demand prediction solution

Labor expenses are reduced by KRW 700 million, and inventory holding cost by KRW 90 million by reducing the difference between projected and actual sales



Category	AS-IS	TO-BE	Expected Effects
Accuracy of demand prediction	Difference rate between projected and actual sales 300%	Difference rate between projected and actual sales 250%	To reduce the difference rate 50% by adopting AI demand prediction solution
Warehouse cost from extensive inventory reduction	Current inventory holding cost (Daily projected material cost X 4 days (Inventory holding days)) = KRW 1.4 billion	Average inventory holding cost by reducing inventory 7% = KRW 1.3 billion	To reduce the warehouse cost by KRW 0.1 billion (reducing 0.28 days' inventory)
Reduction of labor expenses with effective production planning according to accurate demand prediction	Increase of labor expenses with overtime work from changes of production plan  Projected labor expenses in 2023: KRW 10.2 billion	Reduction of labor expenses with a 7% of productivity increase  '23 projected labor expenses x productivity increase target (0.07) = KRW 0.7 billion reduced	To reduce labor expenses by KRW 0.7 billion

**AI outlier detection >>**

Intelligent processes through data modeling and analysis

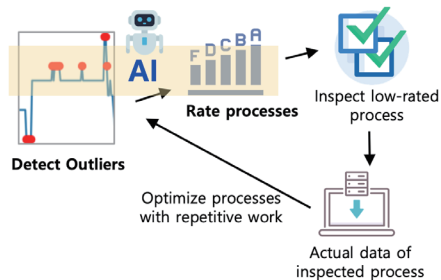
**AS-IS**

- As the worker detects outliers from file data, it takes too much time and undermines the credibility of the results
- The worker needs to manually modify ratings according to the status of processes



**TO-BE**

- As AI detects outliers, it reduces working hours to analyze the causes of the errors, and the results are credible
- The number of process cycles is reduced as ratings are automatically confirmed by AI
- Monthly analyzing hours are reduced from 184 hours to 48 hours



Category	AS-IS	TO-BE	Expected Effects
Number of data analysis workers	3	2	To save KRW 40 million about labor cost by reducing one person
Monthly data analysis time	184 hours a month	Less than 48 hours a month	To reduce monthly analysis time by 70%
Data management	Text files	Database	To increase data search speed
Increase in process rating accuracy	40%	80%	To increase accuracy 40%
Reduction of labor expenses with a reduction of working hours from accurate outlier detection & process rating	Projected labor expenses in 2023: approx. KRX 100 million	Reduction of labor expenses with a 7% of productivity increase '23 projected labor expenses x productivity increase target (0.07) = Approx. KRW 7 million reduced	To reduce labor expenses by KRW 7 million

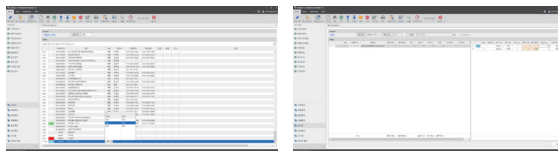
## 02

## GLOTOP

Technology / Product	GLOTOP
Detailed Genre	Enterprise solution
Product Type	Software
Target Company	General manufacturing industry
Technology/Product video link	

## Contents Introduction

No	Solution	Explanation
1	GLOTOP-MES	Manufacturing execution system
2	GLOTOP-ERP	Enterprise resources planning
3	GLOTOP-MRP	Domestic MRP
4	GLOTOP-HI PLUS	Hypothesis industry representative ERP
5	GLOTOP-OFFICE	Enterprise information platform
6	GLOTOP-SCM	Supply chain management solution
7	GLOTOP-Attendance	Attendance management solution
8	GLOTOP-FE	Smart fire equipment inspection
9	GLOTOP-CCM	Customer-centric management solution
10	GLOTOP-HRM	Personnel evaluation management solution
11	GLOTOP-PIOS	Entrance and exit material inflow and outflow
12	GLOTOP-CALIBR&TEST	Measurement equipment inspection/Calibration management
13	GLOTOP-RTS	Quality reliability management
14	GLOTOP-AUDIT	Internal quality inspection system
15	GLOTOP-IPTMS	Intellectual property rights management solution
16	GLOTOP-AQMS	Semiconductor quality characteristic management
17	GLOTOP-GLP	Non-clinical trial management
18	GLOTOP-CRM	Customer management
19	GLOTOP-SPC	Statistical quality control
20	GLOTOP-FTP	Document and authorization management



## 03

## TERESA BI

Technology / Product	TERESA BI
Detailed Genre	BI platform
Product Type	Software
Target Company	General manufacturing industry
Technology/Product video link	<a href="https://www.youtube.com/watch?v=LlvvRT_rbtK">https://www.youtube.com/watch?v=LlvvRT_rbtK</a>

## Contents Introduction

## 1. TERESA BI

- 1) BI (Business Intelligence) plays a role in enhancing a company's competitiveness in the market by making business decisions based on analyzed/aggregated information rather than relying on experience and limited data
- 2) TERESA BI is divided into Designer and Viewer
- 3) Providing customizable BI programs tailored to the characteristics of each business and occupation. (editing of existing reports)

## 2. TERESA D (Designer)

- 1) Supports data visualization through 22 basic charts, scatter, pie, card tree maps functions. It also supports geographical point maps and choropleth maps.
- 2) Supports functions such as color editing, legend settings, point labeling, and master filtering.
- 3) Possible to connect various databases such as MSSQL, MySQL, Oracle, PostgreSQL, as well as Excel and CSV files
- 4) Can output data through PDF, image, print, and Excel export.

## 3. TERESA R (Report)

- 1) The report can be shared in real-time within the organization through the function of publishing the report in Teresa Viewer (Teresa R)
- 2) Permissions can be granted based on group, department, user, and level
- 3) Shared reports can be edited and immediately shared by authorized users.

