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AI 기술

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# 1. Company Introduction

Ai

Konan Technology is a company specializing in Artificial Intelligence software. Since its establishment in 1999, we have built up the original technology for over 20 years by focusing on unstructured big data analysis and AI technology. Please watch Konan Technology drive AI business growth through “AI that sees, hears, understands and speaks like a human.”

Company Name	Konan Technology Inc.
CEO	KIM Young-Seom
Date of establishment	1999. 04
Key technologies	AI for Text, AI for Video
Main business	Konan Search 6, Konan Analytics, pulseK, Konan Chatbot, Konan Watcher, Konan Listener, Konan Voice, Konan AICC, Konan Deep Learning Framework, Konan Digital Twin Framework(PHM)
Number of Employee	193 (as of 2022.12.31)
Address	327, Gangnam-daero, Seocho-gu, Seoul, Daeryung Seocho Tower 6,7 FL
Corporate Type	KOSDAQ-Listed Company

## AI for Text



### Konan Analytics \_ Enhanced Data Analysis

- NLP-based analysis
- Unstructured big data analysis
- Content-based automatic classification
- Analysis result visualization
- Derive business insights

### pulsek \_ 온라인 미디어 심화분석 서비스

- Real-time business signal analysis
- Market risk sensing
- Derive business insights
- Analysis of policy-issue responses

### Konan Search \_ Neural Search Engine

NEW

- Vector search
- Multimodal search
- Disk-based big data search
- Multiple language search (English, Chinese, Japanese)
- Hybrid system architecture
- Web-based integrated operating tools
- Cloud support

### Konan Chatbot \_ AI-Based Chatbot

- AI Chatbot for customer consultation and interactive search
- Legacy systems related support

## AI for Video



### Konan Watcher \_ Video Understanding

- Face recognition
- Object detection and recognition, anomaly detection
- Deep meta-based character, situation, and place search

### Konan Listener \_ Voice Recognition

- Automatic creation of video subtitles

### Konan Voice \_ Voice Synthetic on Cloud

- Dub a script with selected voice actor

# Clients

Konan Technology has secured over 2,500 customers from large companies such as Hyundai Motor, Samsung Electronics, and SK Telecom to financial, media, and public institutions based on its trust and technology with its clients over the past 20 years.

2,500+ clients

3,000+ Projects

## Corporate



## Finance



## E-Biz



## Media



## Public



## Education



# History

**KONAN**  
TECHNOLOGY

“Konan Technology has been building unstructured big data analysis and AI technology for the past 20 years. For the next 10 years, we will write a history of leading the AI industry as an AI-specialized company that understands and services all image, voice and text.”

## Establishment

- 2009 Adopted Image search engine on Nate Portal
- 2007 Provides integrated search for Nate and Cyworld
- 2006 Strategic alliance with SK Communications
- 2005 Established Korea Digital Inc., foreign corporation
- 2004 Launched 'Konan Digital Arc' based SBS Digital News
- 2001 Konan image search technology adopted as MPEG7 international standard
- 1999 Established Konan Technology Ltd.

## Growth

- 2017 Started applying AI technology to commercial products  
'Konan Analytics 4' GS Certification  
Launched voice recognition technology product 'Konan Listener'
- 2016 Collected and calibrated data for video understanding
- 2015 Developed automated system(VTT)
- 2012 SP(Software Process) Certification Grade 2
- 2011 'Konan Media Arc' GS Certification  
Opened social analysis platform 'PulseK'  
Launched start TV search platform 'Interactive Semantic'

## Maturity

- 2023 Selected as an emerging AI+X Top 100 Company
- 2022 Stake acquisition of SKT  
Konan Technology (402030) Listed on KOSDAQ  
AI-based aerospace technology enhancement agreement between Konan and KAI
- 2021 Development of Konan Deep Learning Framework  
KAI equity investment and strategic alliance agreement  
Selection of best practices for active administration of pan-ministerial ministries - Ministry of Personnel Management
- 2020 Introduction of AI Testing Guidelines  
Selected as best practice for SP certification
- 2019 Business Agreement on AI-based Services with SK Broadband Content Platform
- 2018 Launched AI-enhanced products ('Konan Search 5, etc.)  
'Konan Search 5', 'Konan Bot' GS Certification  
Completed automatically generated subtitle project for Korea National Open University

# 주요 경영진 및 직군별 인력 구성

## 주요 경영진

**Konan Technology Inc.**



**Kim Young-seom CEO**

- PhD in Electronic and Communication Engineering, Hanyang University
- ETRI Senior Researcher
- US Bellcore Research Visiting Researcher



**Yang Seung-hyun CTO / SKT CTO**

- PhD in Computer Engineering, Seoul National University
- ETRI Senior Researcher
- Seoul National University IBM Natural Language Processing Lab



**Yoon Deok-ho Vision AI head of research institute**

- PhD in Computer Engineering, Seoul National University
- Professor, Department of Information and Communication, Hannam University



**Song Young-chang CFO**

- BA in Law, Seoul National University
- Chohung Bank
- KTB Network
- Heungkuk Life



**Choi Jeong-ju Executive Director / Vision AI Lab**

- PhD in Computer Science, Pohang University of Science and Technology
- Professor, Department of Media, Ajou University
- ETRI Senior Researcher



**Lim Wan-taek Managing Director / strategic planning**

- BSc in Computational Statistics, Seoul National University
- KTH Head of Mobile Division



**Do Won-cheol Director / Goup Leader**

- MSc in Computer Science, Hongik University
- Handysoft Technology Director



**Oh Chang-min Director / Group Leader**

- MSc in Computer Science and Engineering, Seoul National University
- Knowledge Power Plant · Empas Senior Researcher



**Kim Man-soo Director / Goup Leader**

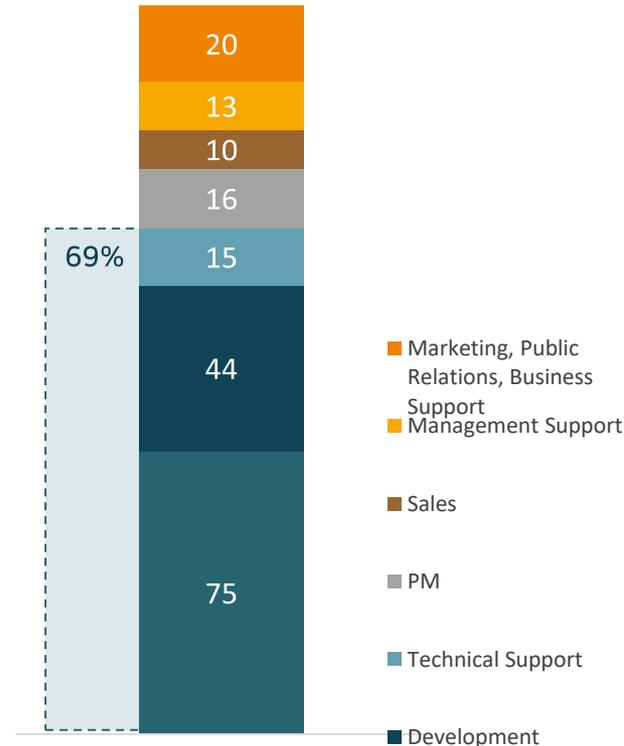
- PhD in Computer Science, Kyungpook University
- ETRI Senior Researcher



**Seo Young-Joo Director / Group Leader**

- PhD in Engineering, Korea Institute of Science and Technology
- ETRI Senior Researcher

## Composition of Personnel



**Total 193**

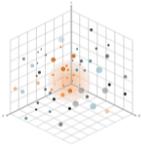
**134 R&D personnel, 69% of the total**

## 2. Key AI Products·Technologies by Konan Technology

Ai

## Neural search-based semantic search

- ✓ Vector search enables synonym search without a synonym dictionary
- ✓ Image vector search enables similar image search without image captioning



## Multimodal AI Search

- ✓ Search by taking pictures without typing
- ✓ Provides a solution for the problem of difficulty in obtaining desired search results using only a single means, by simultaneously learning complex information such as text and images through multimodal search

# Neural Search Engine Konan Search

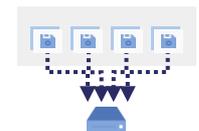
## Hybrid Search System

Increase search accuracy with a hybrid approach that analyzes data with rule-based NLP technology first and then further analyzes data with deep NLP technology

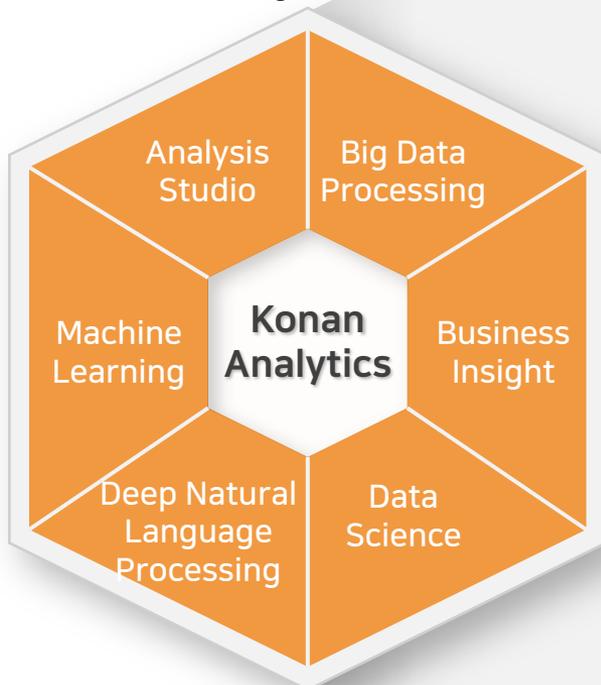


## Disk-based, large vector search

Disk-based algorithms support Vector Search of Billion-Scale, processing at index speed 9 times faster than open source



Konan Analytics is an 'intelligent text analytics engine' that analyzes structured and unstructured data based on machine learning, artificial intelligence, and data science technologies to discover business insights.



## Machine Learning · AI

Perform classification, prediction and summarization based on machine learning and AI-based learning models



## Analysis Studio

Easily and intuitively handle complex data processing tasks such as extract-transform-load (ETL) and exploratory data analysis (EDA) using the GUI



## Big Data Processing

Promptly analyze large amounts of data that cannot be processed via in-memory method



## Business Insight

A system that assists with quick decisions based on big data in a rapidly changing business environment



## Data Science

Extract refined knowledge and insights from structured and unstructured data through preprocessing, visualization, and modeling



## Deep Natural Language Processing

Analysis performance through deep natural language processing such as deep learning, vector semantic-based emotion analysis, automatic summary, machine reading comprehension (MRC), and name entity recognition (NER)

# Online Media Deep Analysis Tool, pulseK



Online media analysis service based  
on real-time collection and analysis



## Data Collection/Processing

- Real-time collection for big data analytics
- High-speed management of large amounts of data
- Efficient change management of collection targets
- Support for the collection of different channels
- Reliable processing of data over 10 million/1D

- Distributed/high-speed web crawling
- High-speed DOM parsing
- RDBMS high-speed content management
- Hadoop content management
- Flexible data transformation

## Analysis Services

- Real-time monitoring, insight analysis
- Provision of a customer-specific analysis model
- The only analysis environment that supports both strong and weak signal analysis

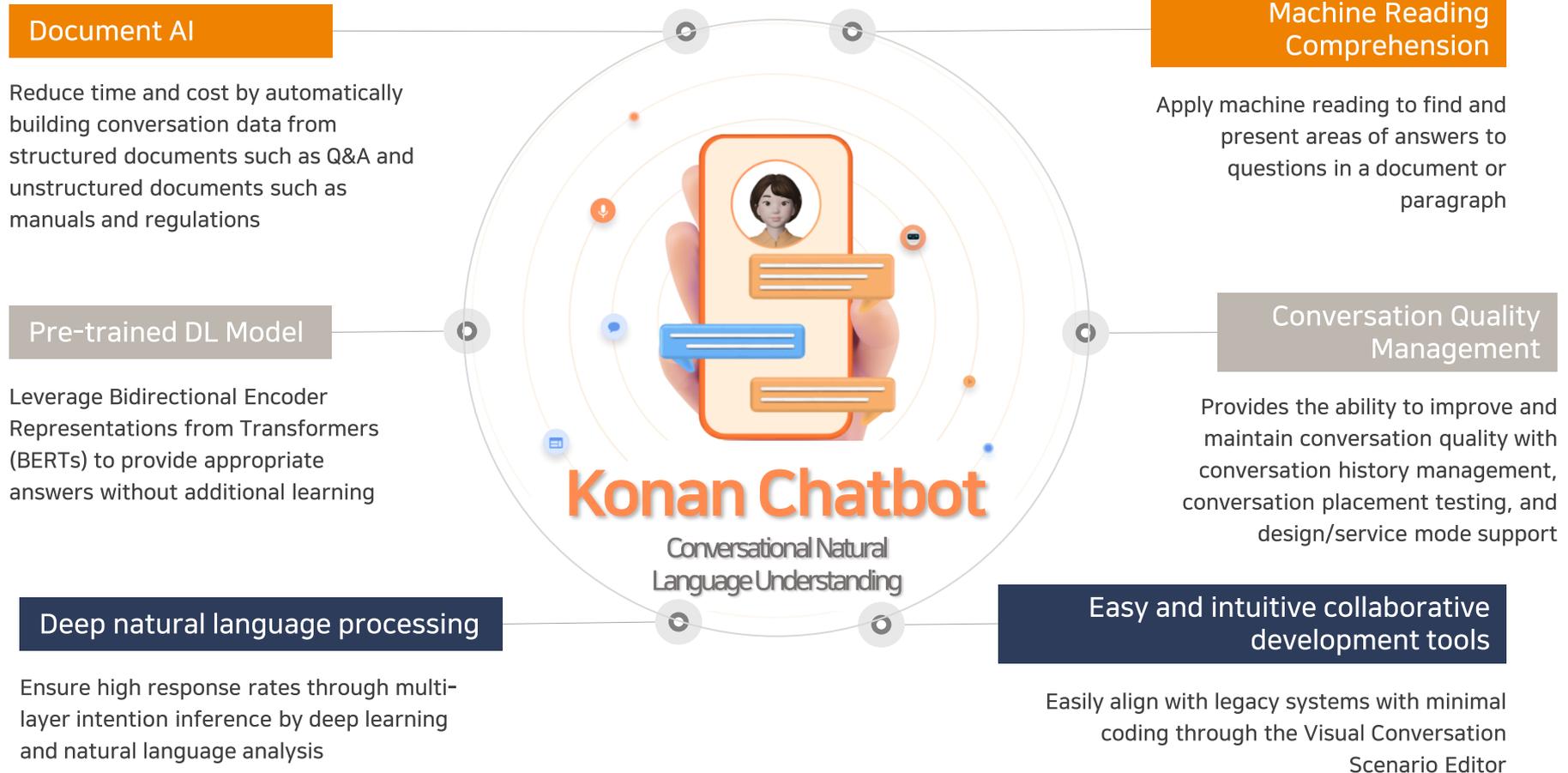
- Dictionary/non-dictionary-based morpheme analysis
- Document/sentence selective analysis
- Text mining, data mining
- Growth volume/rate future signal analysis
- Biz domain dictionary-based TPO analysis
- Sensibility/emotional analysis using ML/DL

## Big Data Consulting

- Derive future insights from various analytical models
- Provide consulting in various areas such as monitoring, crisis management, and Biz Trend analysis
- Discover new value through predictive and normative analysis beyond diagnostic analysis

- Text mining, data mining
- Co-occurrence and co-relation analysis
- Clustering/classification using ML/DL technology
- Time series analysis and predictive analysis
- Various domain knowledge

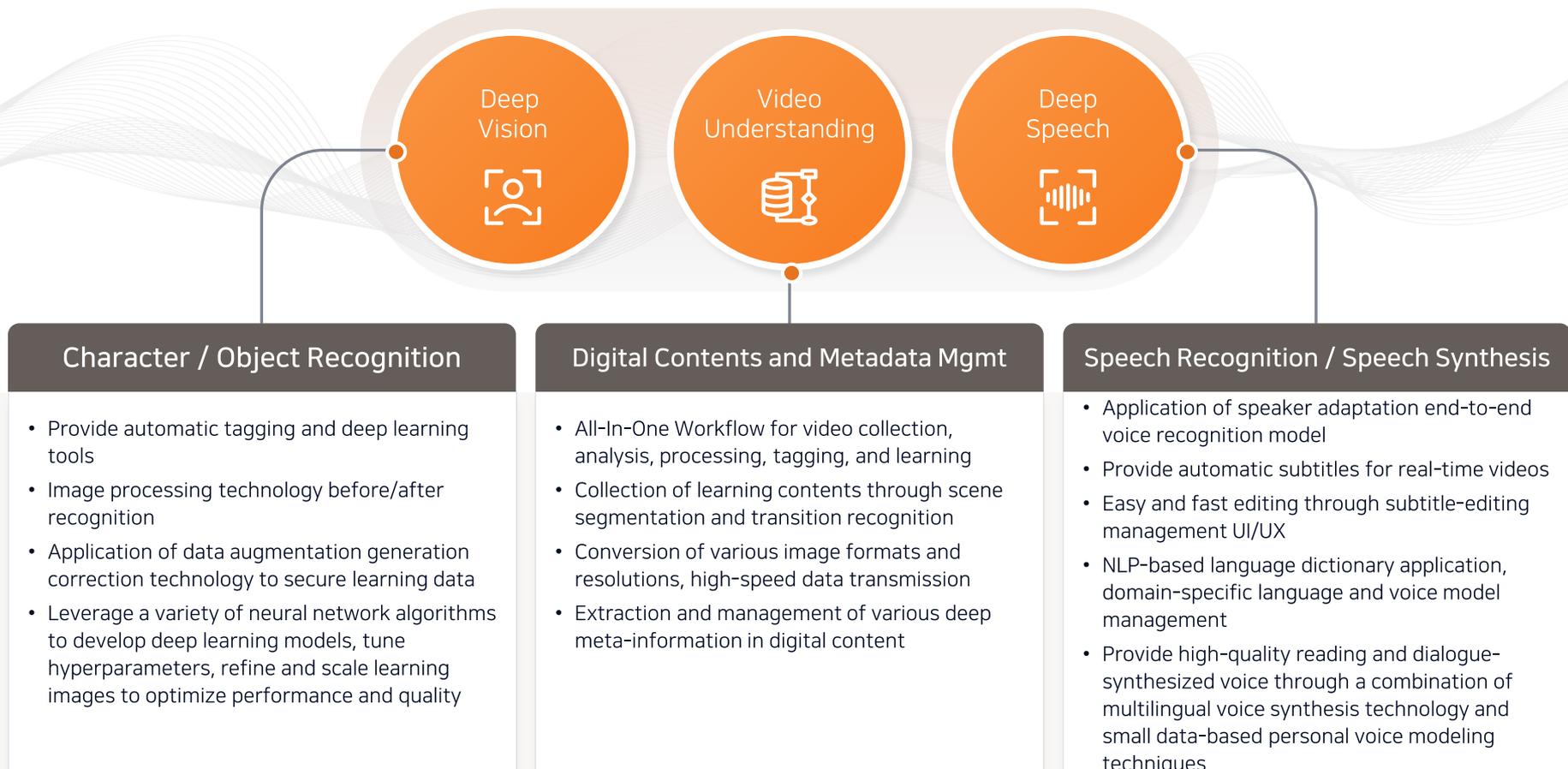
# Understanding Interactive Natural Language, Konan Chatbot



# Video Understanding AI Solution, Konan Watcher

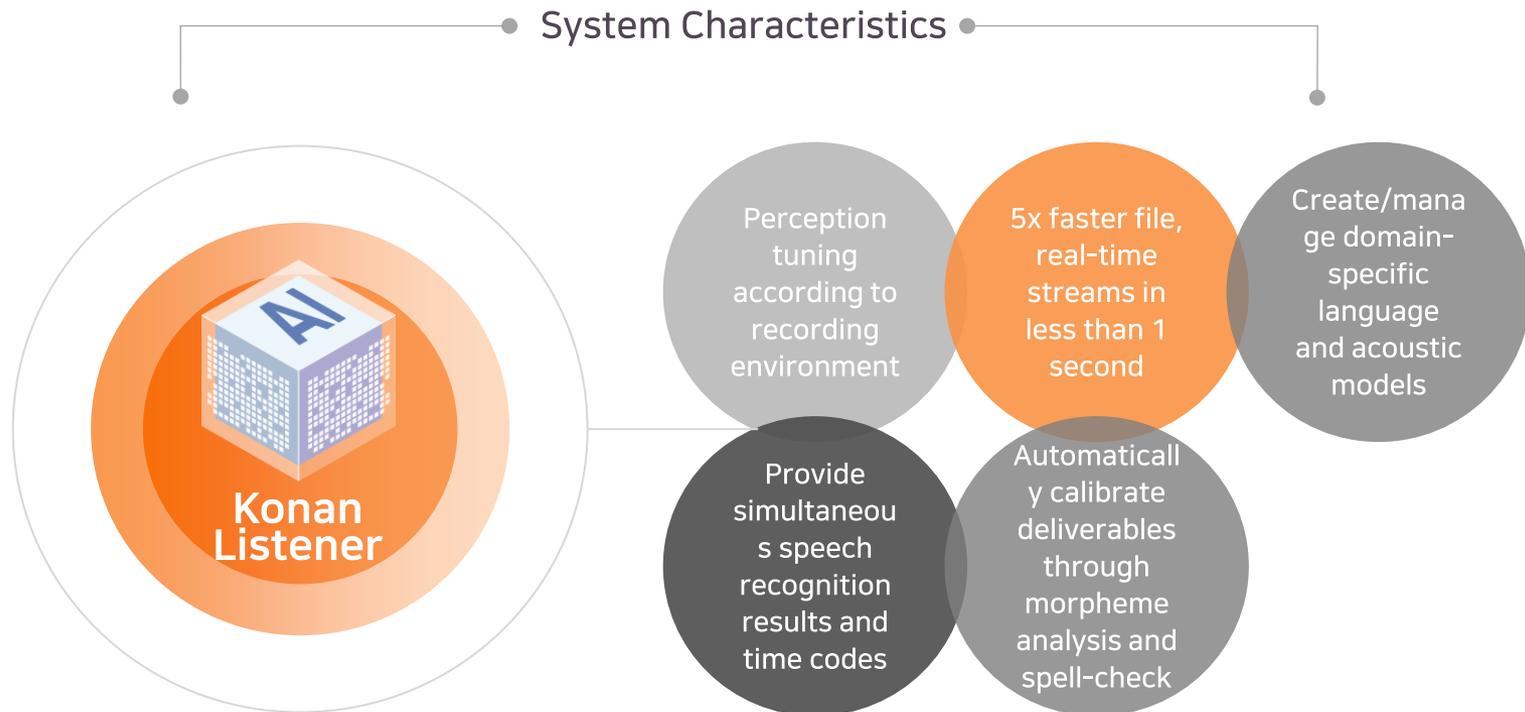
Konan Watcher is a video-understanding AI solution that combines large-capacity image processing technology and artificial intelligence (AI) technology

## Konan Watcher



# AI Voice Recognition, Konan Listener

Konan Listener is a speech recognition solution that recognizes speech in a video, converts it into text, and provides it with a time code. The competitive edge is the ability to automatically correct voice recognition results through in-depth text analysis technology, along with high speed that processes files five times faster and streams in real-time.



Konan Voice, an artificial intelligence voice actor, is an end-to-end speech synthesis solution that uses a single neural network technology to synthesize voice waveforms from input script text in real-time. It has the competitive edge to quickly synthesize the most natural high-quality voice.

## ▶ Artificial Intelligence Voice Synthesis Service

- High-quality artificial intelligence voice synthesis service that turns script text into the most natural voice

## ▶ Easy Usage

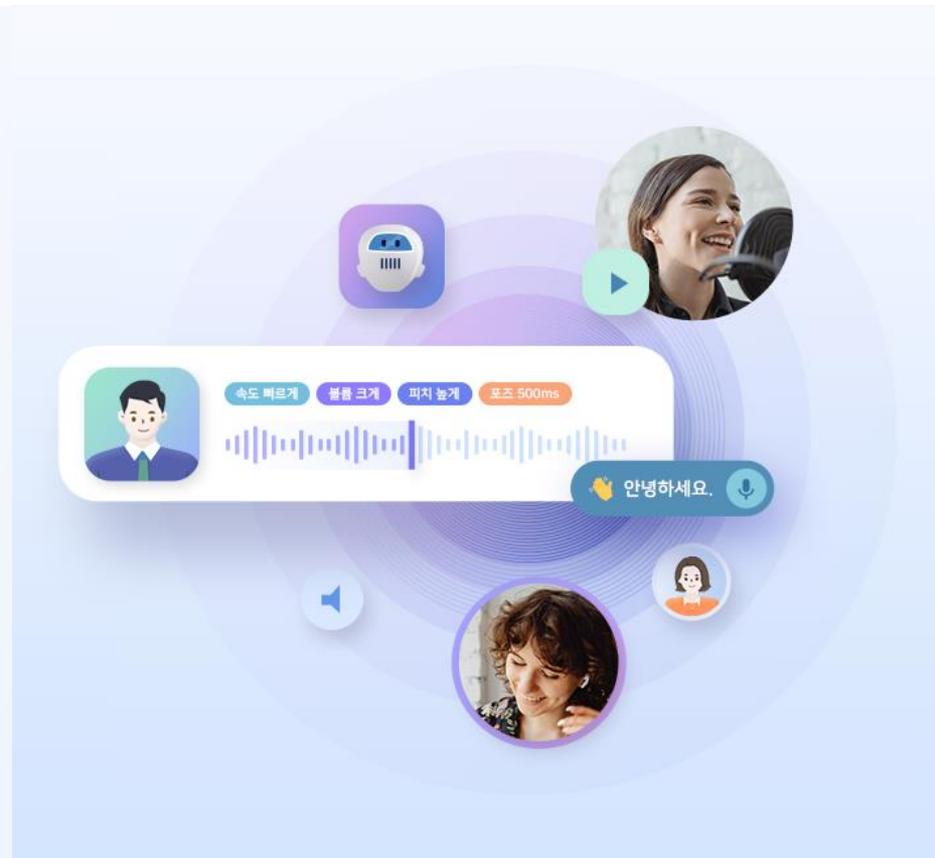
- Konan Voice is easy for anyone to use
- Simply select a voice actor and enter a script to complete voice generation

## ▶ High-Quality Voice that Surpasses Professional

- MOS 4.5+ natural, high-quality voice production capability
- \*Mean Opinion Score (MOS): A quality index that subjectively evaluates voice quality into five levels

## ▶ Natural Reading that Understands the Context

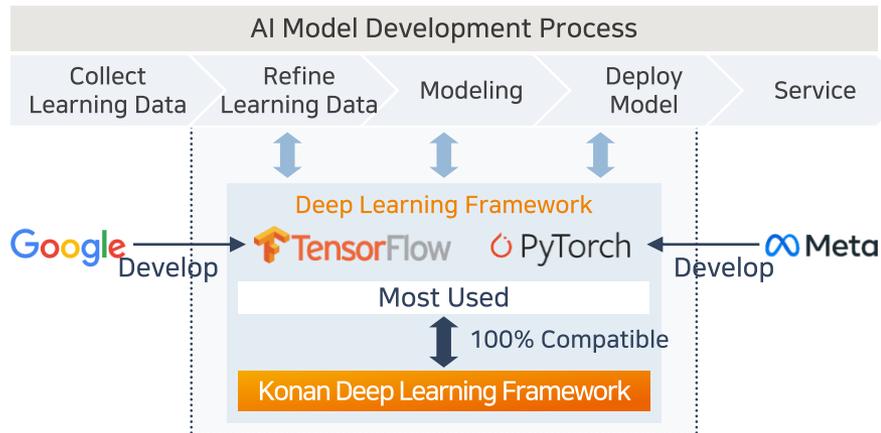
- Provides the most natural reading quality by understanding context and meaning, such as spacing correction, sentence closing-ending recognition, postposition correction, and dual expression recognition



# Konan Deep Learning Framework

Konan DLF which can support Security enhancement AI in the national/defense security field and edge computing\*.

## Compatible with Open-Source Deep Learning Framework



## Example

AI model can be mounted on drones to perform autonomous operations



## Comparative Advantage

Solving the limitations of open-source frameworks with self-developed frameworks

	Open-Source Framework	Konan Deep Learning Framework
Security	Difficulty in security verification due to large library size	Protection from security threats such as backdoor through 100% self-development
Lightening	Unnecessary installation of large-volume libraries → Not lightweight	Same performance, less than 10% capacity

Prevention of accidents such as drone falls due to backdoor hacking



\*Edge-computing: A technology that processes data at the very end of a computing system and close to a terminal device. For example, edge computing-based self-driving cars operate on their own situational judgment.

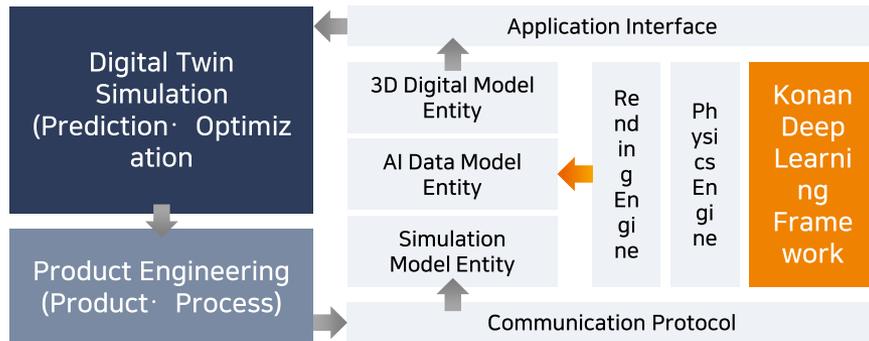
Data: Konan Technology

Source: Konan Technology

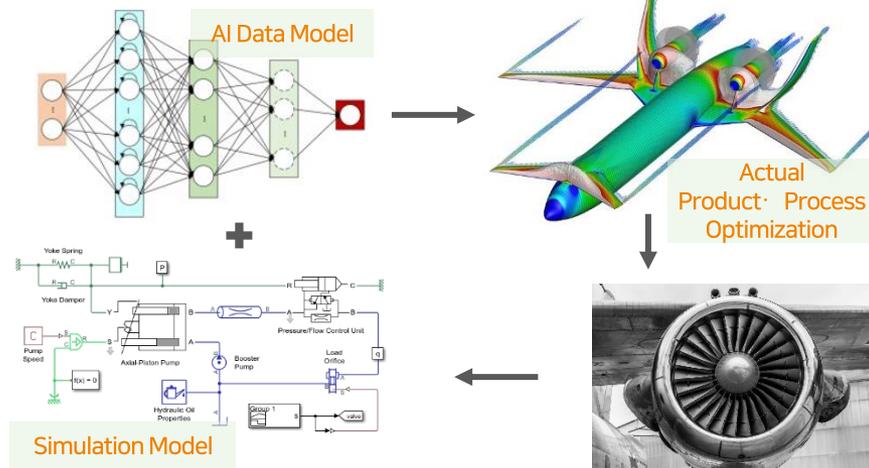
# Konan Digital Twin Framework

We are developing our own Konan Digital Twin Framework that combines physics-based simulation and AI algorithms, and plan to develop PHM for aircraft and autonomous flight simulation for drones by utilizing Konan Digital Twin Framework.

## AI digital twin that accurately simulates the real world



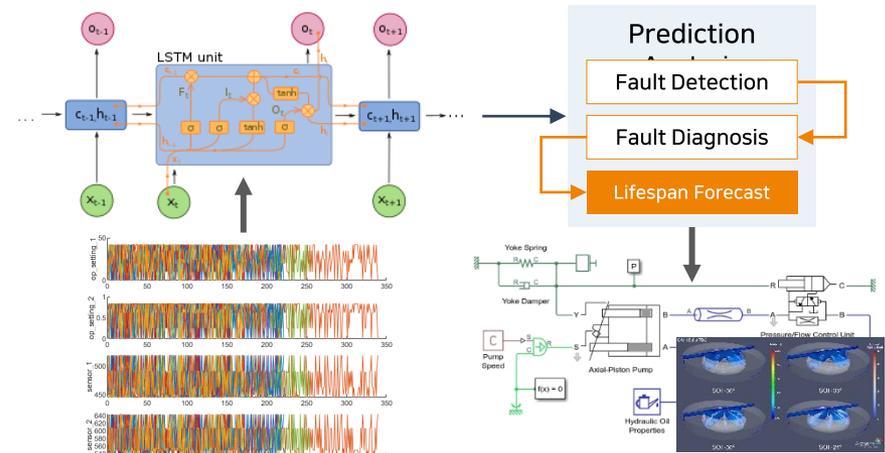
## Features



Product · process optimization through Physical Information Neural Networks (PINN) based virtual simulation

## Application Example

### Konan Digital Twin Frameworkbased PHM



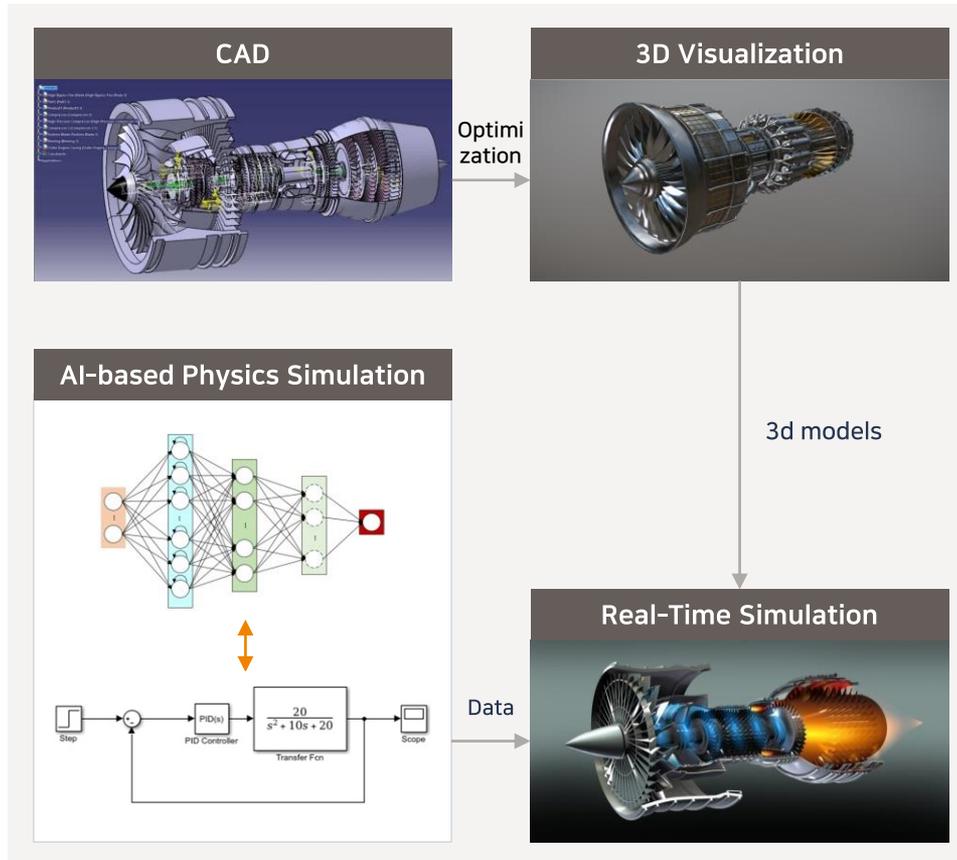
Derive product optimization and implement explainable Digital Twin using additional simulation models

### Reinforcement learning-based autonomous drone · aircraft autonomous flight simulation



# Konan Digital Twin Framework Application Services

Utilization of Digital Twin and Deep Learning Framework Technology to provide application services such as PHM and AI Pilot Training



## PHM

- Time Series Sensor Data-Based Deep Learning Diagnostic Algorithm
- Physical Simulation Interlinked Deep Learning (PINN) Algorithm
- Real-time, high-quality visualization
- Digital twin for fault diagnosis/prediction/cause analysis of equipment

## AI Pilot

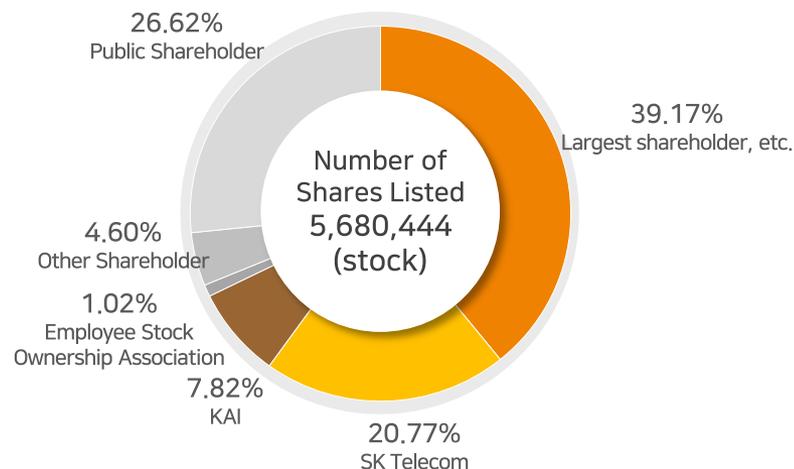
- Deep reinforcement learning algorithm
- Drone autonomous driving using reinforcement learning
- Air-to-air combat simulation using AI

# 3. Appendix

Ai

# Company Overview and Shareholder Composition

Company Name	Konan Technology INC.
CEO	Kim Young-seom
Establishment	1999.04 (listed in stock market 2022.07.07: KRX 402030)
Capital	2.84 billion won
Number of Employees	193 (as of 2022.12)
Major Business	Software development and supply, Internet service provision, Database and information processing business
Major Service	Deep Vision, Deep Speech, Deep Text Analytics, Deep Conversational Agent
Address	6th and 7th floor, Daeryung Seocho Tower, 327, Gangnam-daero, Seocho-gu, Seoul
Website	<a href="https://www.konantech.com">https://www.konantech.com</a>



## Lock-Up Overview

As of 2022.12.31 (Stockholders' List)

Shareholder Name	Number of Shares (stock)	Proportion (%)	Period	
Largest Stockholder, etc.	2,224,860	39.17%	2 years after listing	
5% or more	SK Telecom	1,179,580	20.77%	-
	KAI	444,444	7.82%	1 year after listing
Employee stock ownership association	58,200	1.02%	1 year after listing	
<b>Total</b>	<b>3,907,084</b>	<b>68.78%</b>	<b>-</b>	

Note1 : Of the 2,224,860 shares, including the largest shareholder, 771,680 are one year and six months of protection.  
 Note2 : Of the 2,224,860 shares, including the largest shareholder, 93,900 are one-year protection deposits.

# Summary Financial Statement

## Balance Sheet

Unit: million KRW

Division	2020	2021	2022
Current Assets	11,851	23,089	45,458
Non-Current Assets	2,328	1,913	4,409
<b>Total Assets</b>	<b>14,179</b>	<b>25,002</b>	<b>49,868</b>
Current Liabilities	5,109	6,609	6,879
Non-Current Liabilities	4,671	4,082	2,383
<b>Total Liabilities</b>	<b>9,780</b>	<b>10,691</b>	<b>9,262</b>
Capital Stock	2,000	2,222	2,840
Capital Surplus	7,280	15,169	43,844
Capital Adjustment	0	64	254
Accumulated other Comprehensive Income	8	(4)	(4)
Retained Earnings	(4,889)	(3,140)	(6,329)
<b>Total Equity</b>	<b>4,399</b>	<b>14,311</b>	<b>40,606</b>

Note: K-IFRS Standard

## Income Statement

Unit: million KRW

Division	2020	2021	2022
Sales	14,001	17,849	15,388
Cost of Sales	8,549	9,194	10,307
Gross Profit	5,452	8,655	5,081
Selling and Administrative Expenses	4,496	6,415	9,122
<b>Operating Profit</b>	<b>956</b>	<b>2,240</b>	<b>(4,041)</b>
Financial Income	(25)	12	800
Other Operating Gains	564	(314)	(44)
Profit before Taxes	1,495	1,938	(3,285)
Income Taxes Expenses	8	44	8
<b>Net Profit</b>	<b>1,487</b>	<b>1,894</b>	<b>(3,277)</b>

Note: K-IFRS Standard

# Thank You

[www.konantech.com](http://www.konantech.com)

[konan@konantech.com](mailto:konan@konantech.com)

1533-1614

