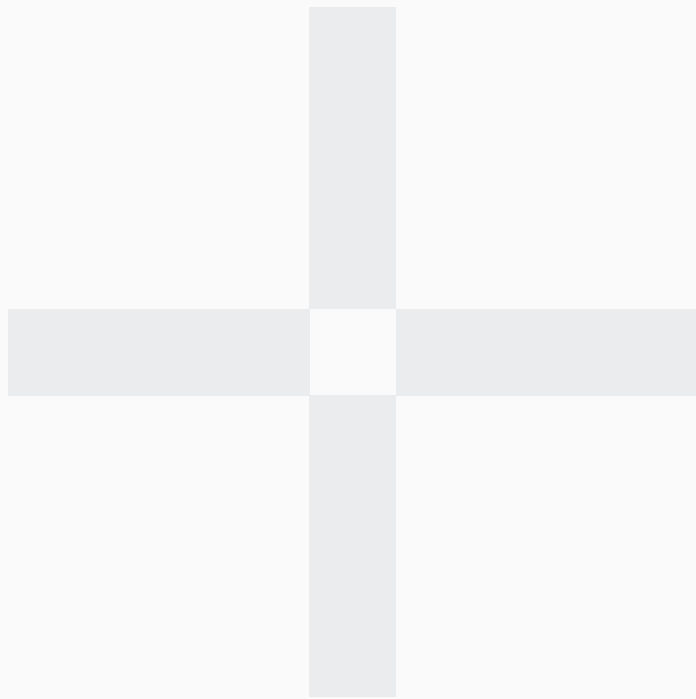
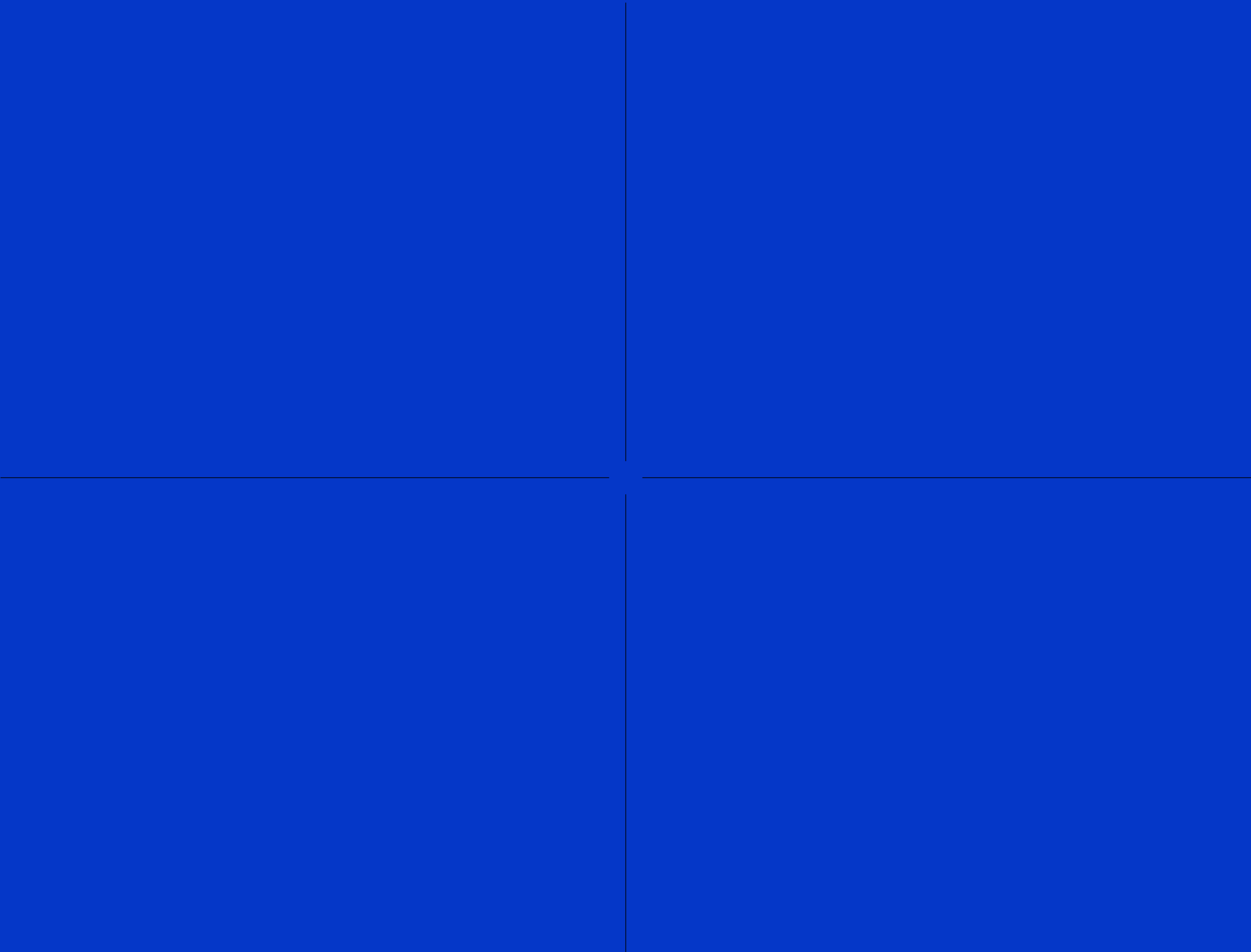


# KAKAO ENTERPRISE CORPORATE INTRODUCTION



AI



---

CONNECT.  
SOLVE.  
CREATE.  

---

We connect all elements and solve inconveniences  
in everyday lives. We create new lifestyles by  
focusing on better values. All with the power of AI.

# DIGITAL TRANSFORMATION

The leap in Artificial Intelligence (AI), Mobile, Cloud, and Data technology over the past ten years has brought unprecedented change in how we do business. This Digital Transformation is shifting the culture of our organizations and decision-making process. Kakao Enterprise is a leading IT platform business founded in December 2019 to support this coming wave of Digital Transformation in businesses through state-of-the-art technology and optimized solutions.

1

## Super Intelligence

State-of-the-art AI deeply rooted in our work and daily lives, making autonomous decisions to solve problems and create optimized, collaborative solutions.

2

## Hyper Connectivity

Organic, interactive, and communicative connections between human, technology, and service create new values across industries.

3

## Cloud Native

Cloud computing technology syncs, combines and expands the standardized corporate IT processes to establish a fast and convenient developer-friendly environment.

4

## Data Driven

A robust analysis of massive data contributes to improved business and enables quick, data-driven decisions.

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# kakao i

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## OUR TECHNOLOGY

Kakao i is the representative technology brand that encompasses the entire spectrum of Kakao Enterprise's diverse AI technologies. Kakao i is comprised of core AI technologies in recognition, conversation, search, and data analysis, transforming everyday lives and businesses for the better. Kakao Enterprise bridges individual technologies around Kakao i, expanding on the scope of services and platforms to accompany our customers in their journey toward Digital Transformation.

# Tech. Work. Business. Life. Future.

---

kakao i engine

---

kakao i connect Center

kakao i search

kakao i cloud

kakaowork

kakao i insight

kakao i connect

kakao i LaaS

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kakao i connect Place



# 01

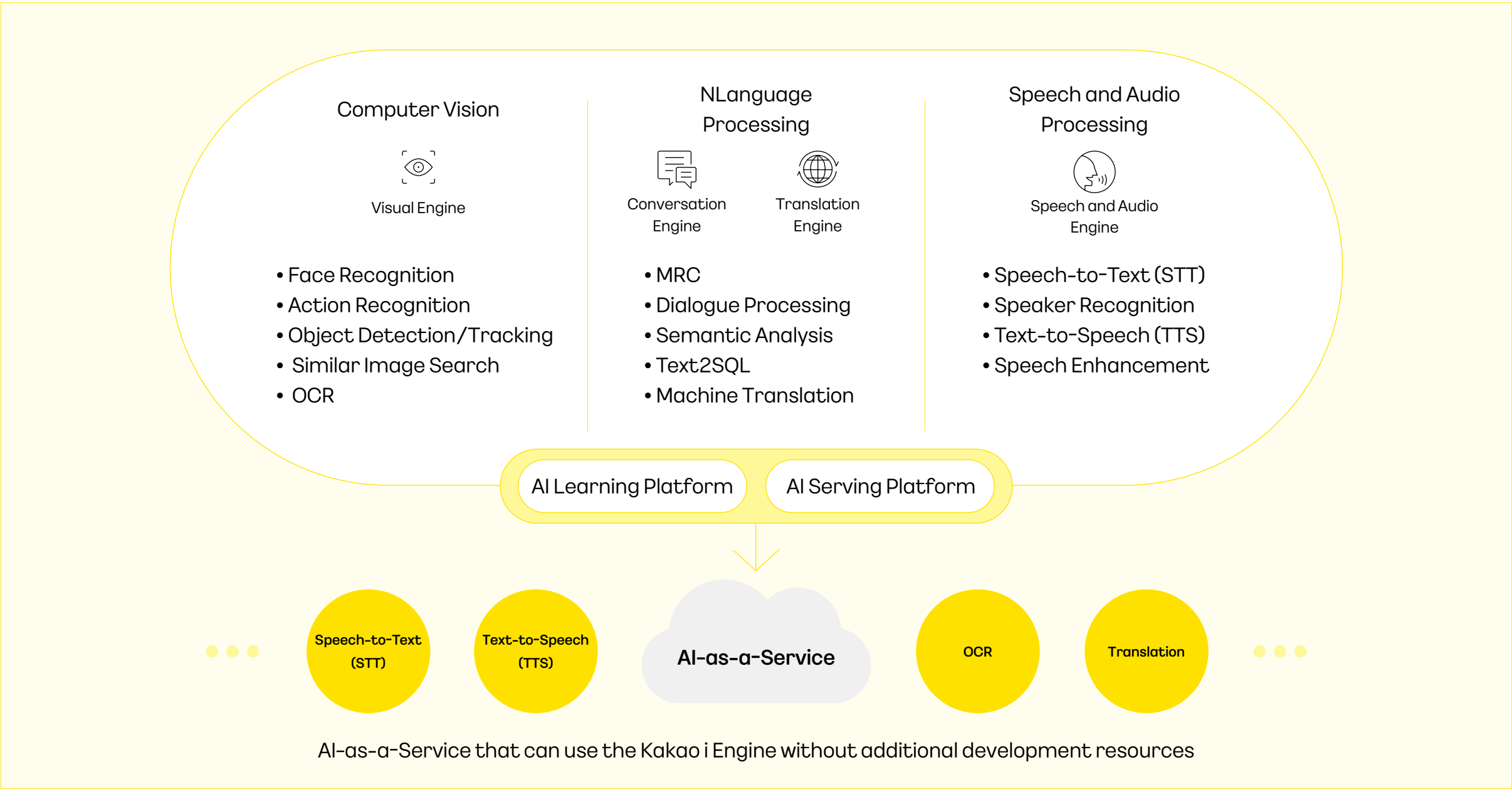
# kakao i engine

---

## Key Component AI Technology Solution

Kakao i Engine is a set of AI technologies that understand conversations and recognizes images and speech based on massive data. It serves as the foundation of digital platforms capable of Super Intelligence and Hyper Connectivity.

Kakao i Engine plays a pivotal role in finding highly optimized solutions with Computer Vision, Speech & Audio Processing, and Natural Language Processing technologies based on massive data sets. It also offers the AI-as-a-Service option to help enable key AI technologies with less development resources.



# 02

## kakao i search

---

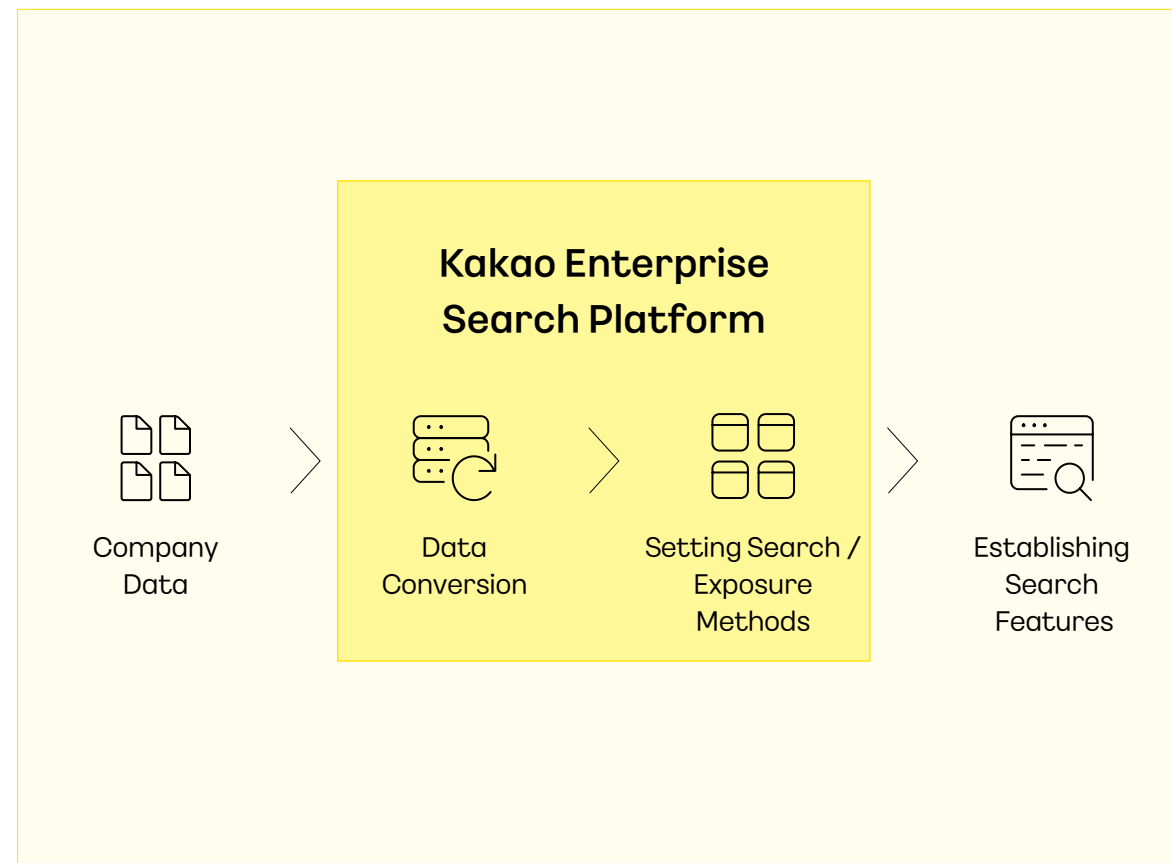
### Intelligent Search · Recommendation Solution

Kakao i Search merges expert knowhow gained from twenty years of search · recommendation services with outstanding AI research capabilities. It provides enhanced experiences in information search and knowledge building, helping businesses raise the capacity for Digital Transformation.

A robust corporate search platform powered with AI technology improves overall business environments. An organic network of mass data is structurally itemized in the form of knowledge to help users fully wield the power of data.

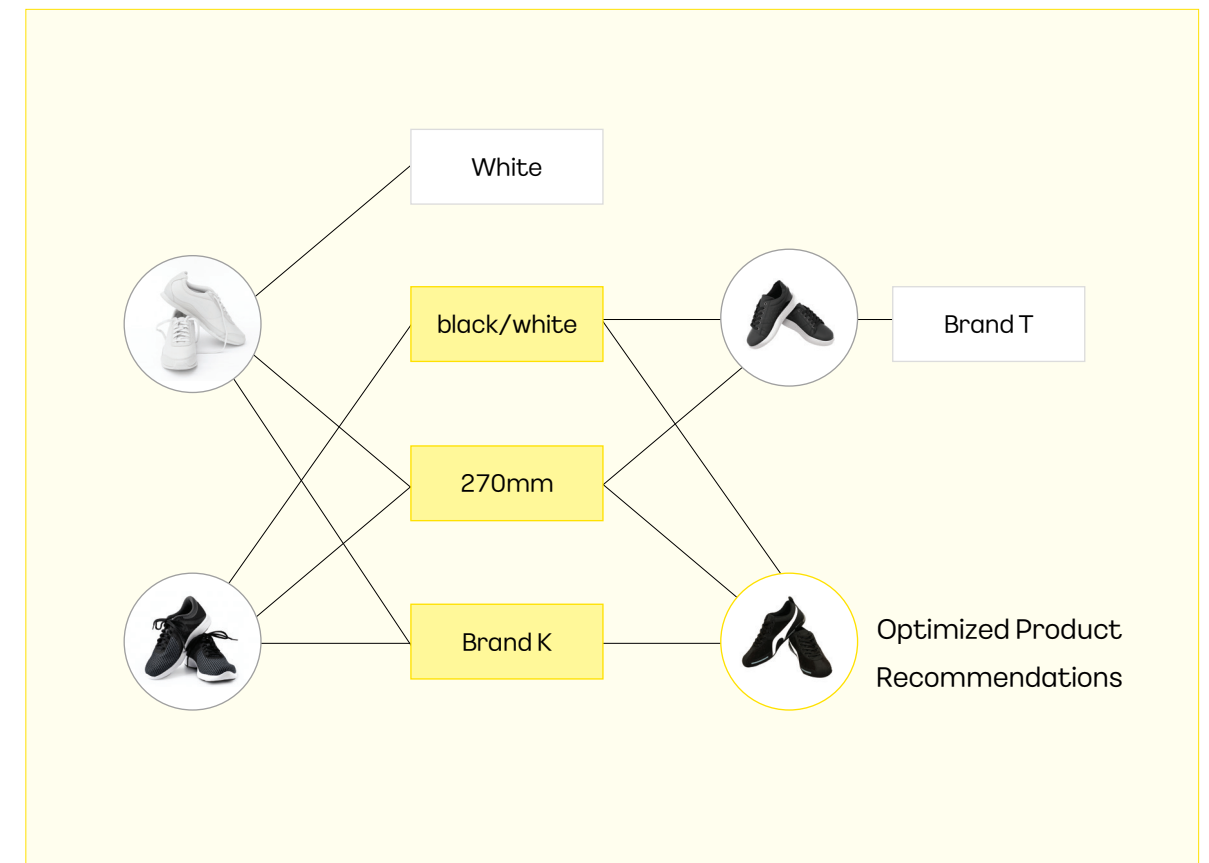
## AI Search Platform

- Building a portal-like search engine for businesses
- Integration of AI technologies including ML, recommendations, and knowledge graphs
- Efficient assetization and utilization of work data



## AI Knowledge Graph

- Logically structuring data and transferring it in the form of 'knowledge'
- Providing solutions optimized to Big Data environments
- Application to diverse business practices (e.g. managing risks and exploring sales opportunities)



# 03

# kakaowork

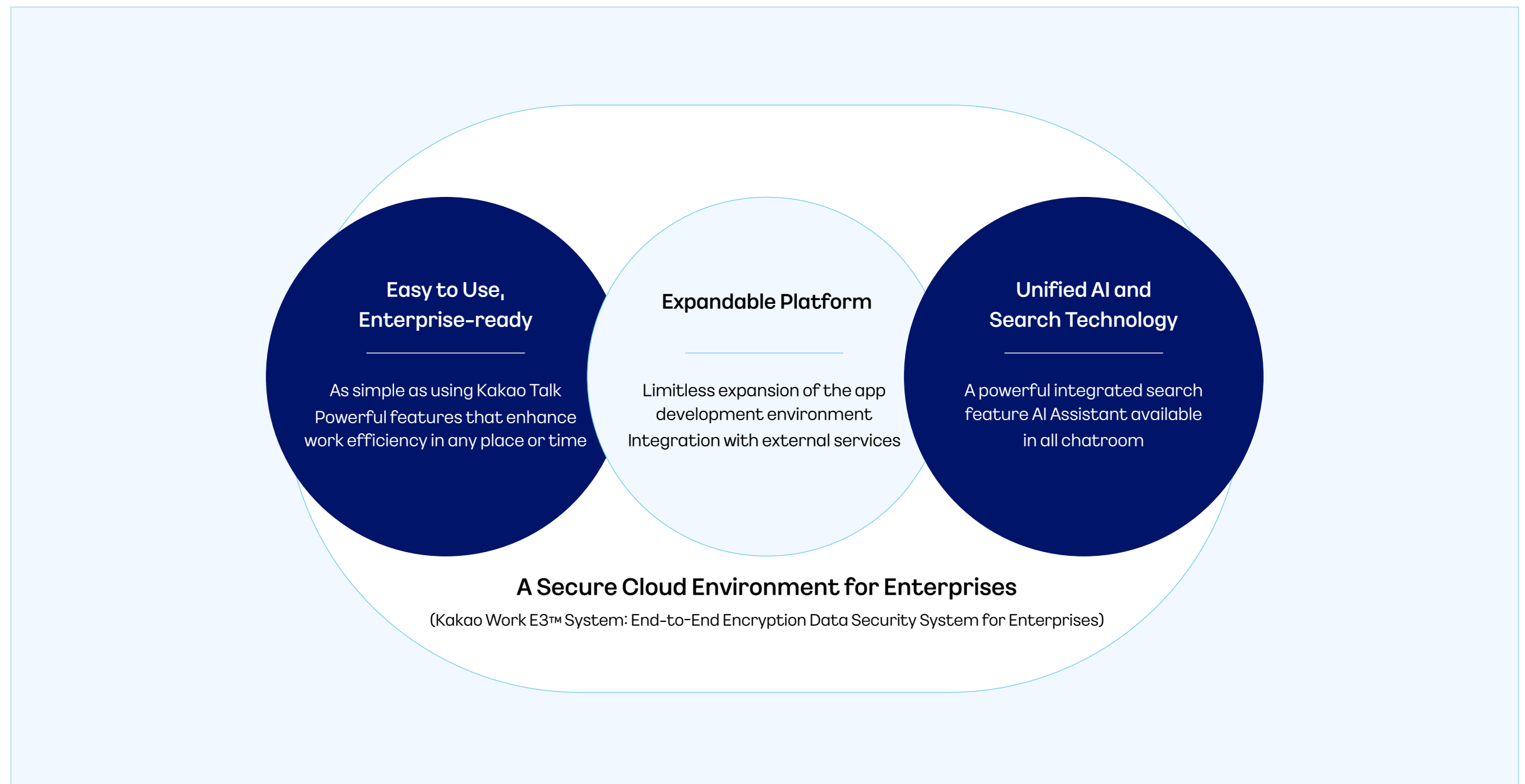
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## All-in-One Work Platform

Kakao Work is an All-in-One work platform powered by AI and search technology, providing highly customizable work environments with seamlessly connected tools and services.

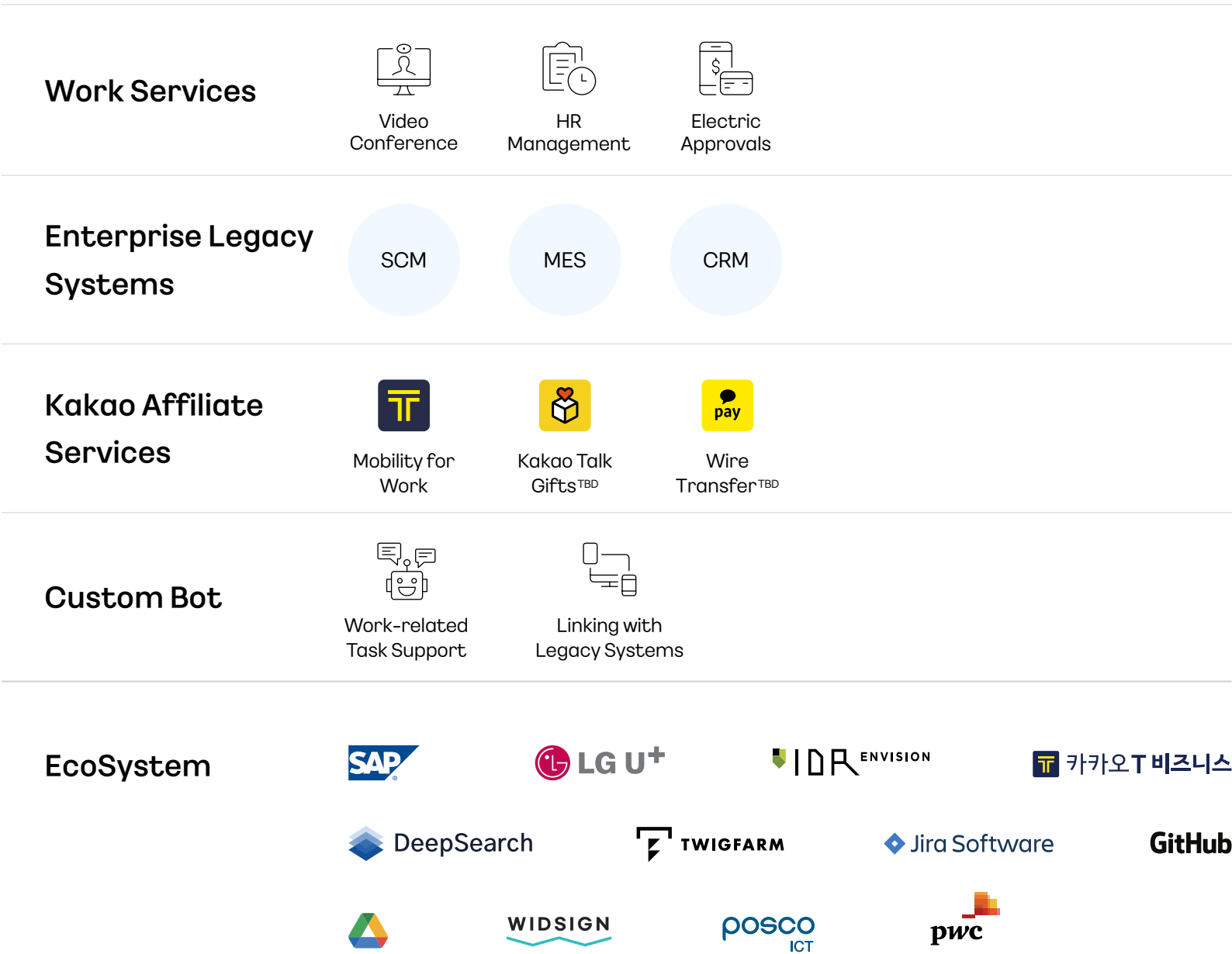
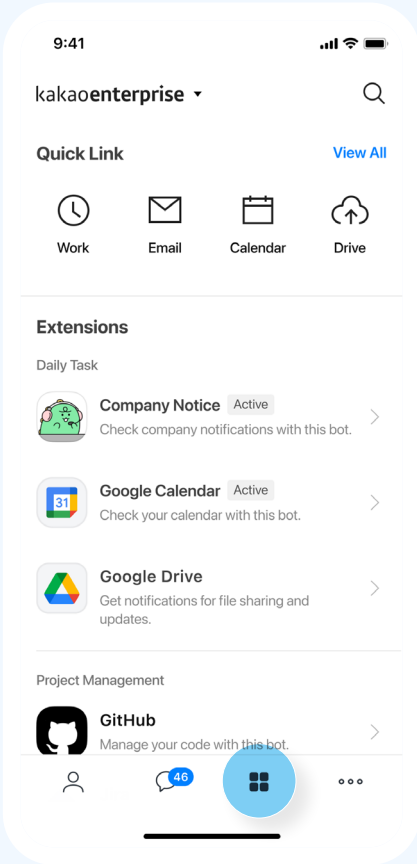
Kakao Work offers the best of both worlds in terms of familiar usability and business-tailored expertise. Users can integrate a wide range of services with a messenger-based app development environment, search on powerful search engines, and optimize work with the AI assistant Kasper. All functionalities are safely operated on a secure cloud environment.

## Core Capabilities



Kakao Work is pre-equipped with basic tools essential for work, such as video conference, HR time tracking, and approval workflow tools. Kakao Work can be integrated not only other Kakao services, but also with external software and services. The platform is expanding its Ecosystem by providing customized application development environments, supporting various applications and services types.

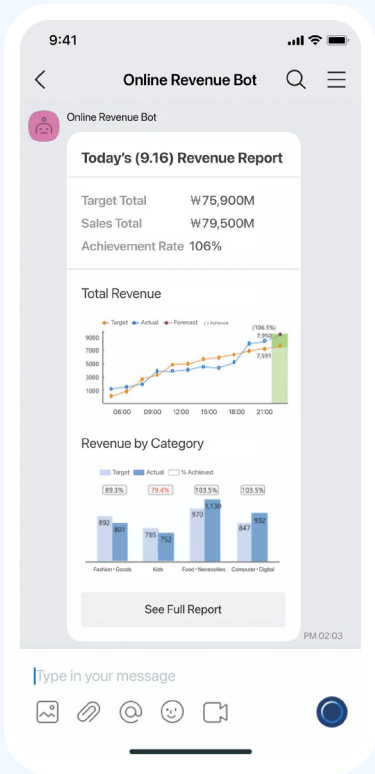
Kakao Work Eco Platform



A wide range of 'Work Bots' helps businesses easily and conveniently manage complex business processes such as finance, sales, manufacturing, and more.

Work Bot Use Cases

Sales Management



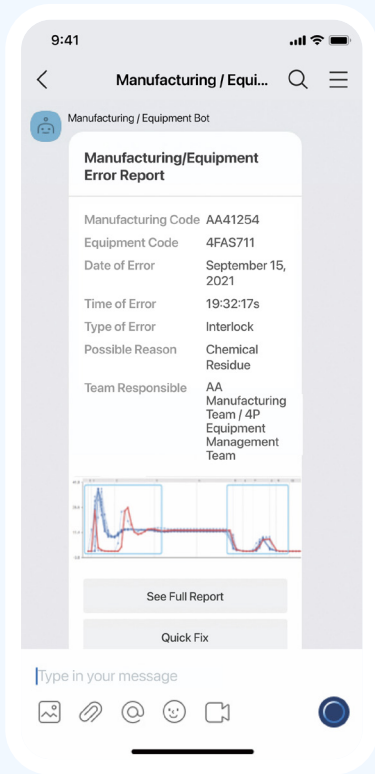
Lead and Customer Relationship Management

The screenshot shows the 'Customer Sales Bot' interface. At the top, it says 'Customer Sales Bot'. Below that is a section titled 'Customer Service Reservation' with the following information:

Customer Name	Apeach
Date of Birth	November 20, 1973
Phone Number	010-1234-5678
Product of Interest	Medical Insurance
Customer Type	New
Date of Reservation	September 21, 2021
Time of Reservation	3:00-5:00 PM
Place of Reservation	Gangnam, Seoul

Below this is a 'See More' button. At the bottom, there is a section titled 'Will you attend?' with 'Yes' and 'No' buttons, and a chat input field with a microphone icon.

Manufacturing Process and Equipment Management



Order / Shipping Management

The screenshot shows the 'Order / Shipment Bot' interface. At the top, it says 'Order / Shipment Bot'. Below that is a section titled 'Today's (9.16) Shipment Report' with the following information:

Delivery Center	Seoul Myeong-dong Center
Delivery Agent	Ryan
Delivery Date	July 14 (Tue) 06:09
Shipment Item	Cookies 39g
Item Amount	24 Piece x 10 Box
Shipment Item	Chips 90g
Item Amount	10 Bags x 20 Box
Shipment Item	Crackers 84g
Item Amount	10 Bags x 15 Box
Shipment Item	Candy 66g
Item Amount	20 Bags x 10 Box

At the bottom, there is a 'See Full Order' button and a chat input field with a microphone icon.



# 04

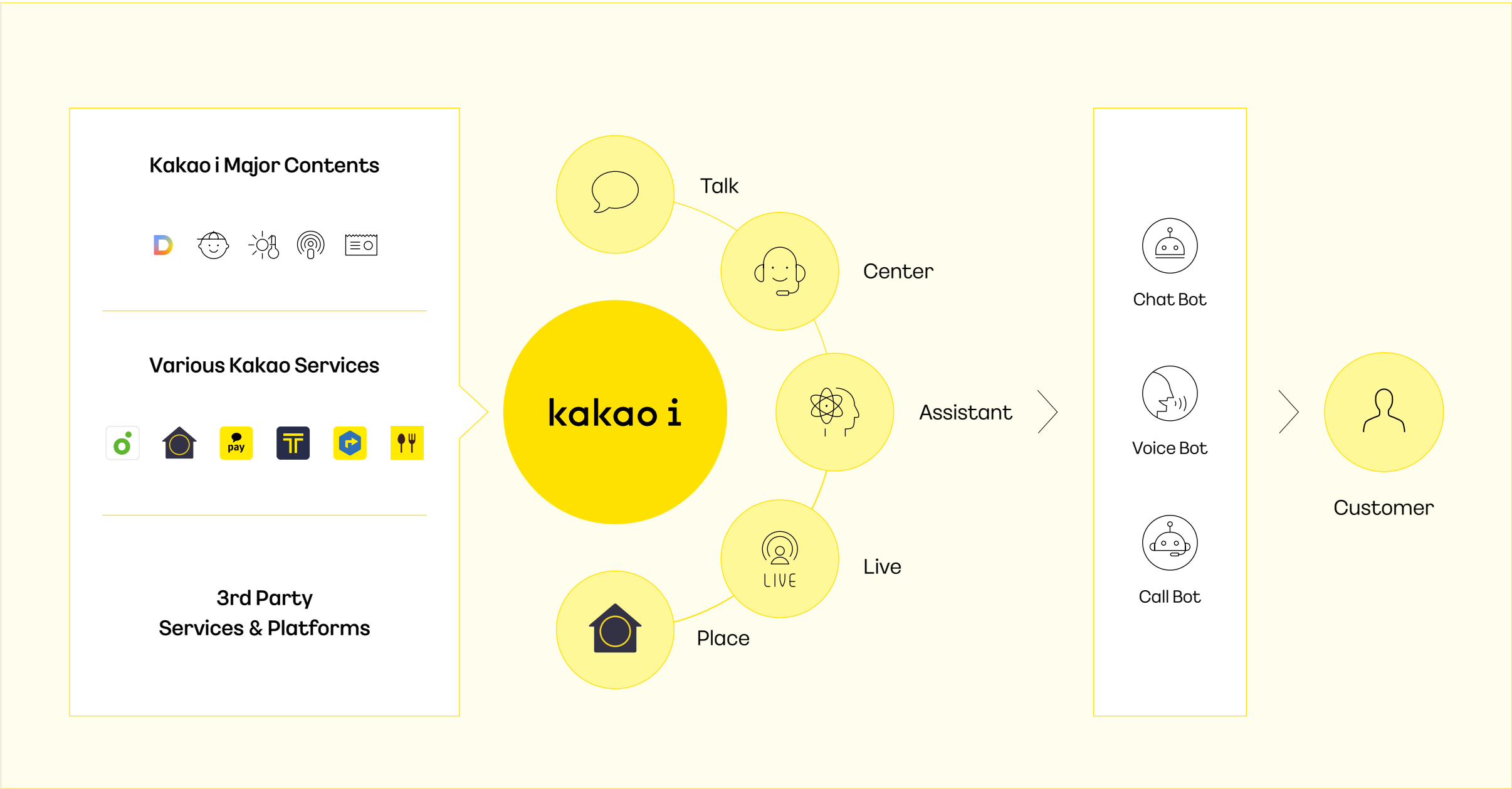
## kakao i connect

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### An AI-powered Business Platform

Kakao i Connect creates new technological experiences at each point of interaction between businesses and their customers by adding innovative new technology to existing platforms.

Kakao i Connect integrates advanced AI engines into various types of interfaces and content of service. It also provides Kakao's expert knowhow in service design and management to help businesses better serve their customers.



# kakao i connect Live

Kakao i Connect Live is a cloud-based livestreaming platform that can easily and conveniently develop video calls, live broadcasts, and conference calls without requiring a dedicated infrastructure. It supports an efficient development environment and additional features tailored to the fast-changing trends in untact interactions.

## Expected Results

### Cost Saving in Development and Operations

Reducing developer resources and freeing bandwidth

### Livelier Livestreams

Real-time communication with latency of less than a second

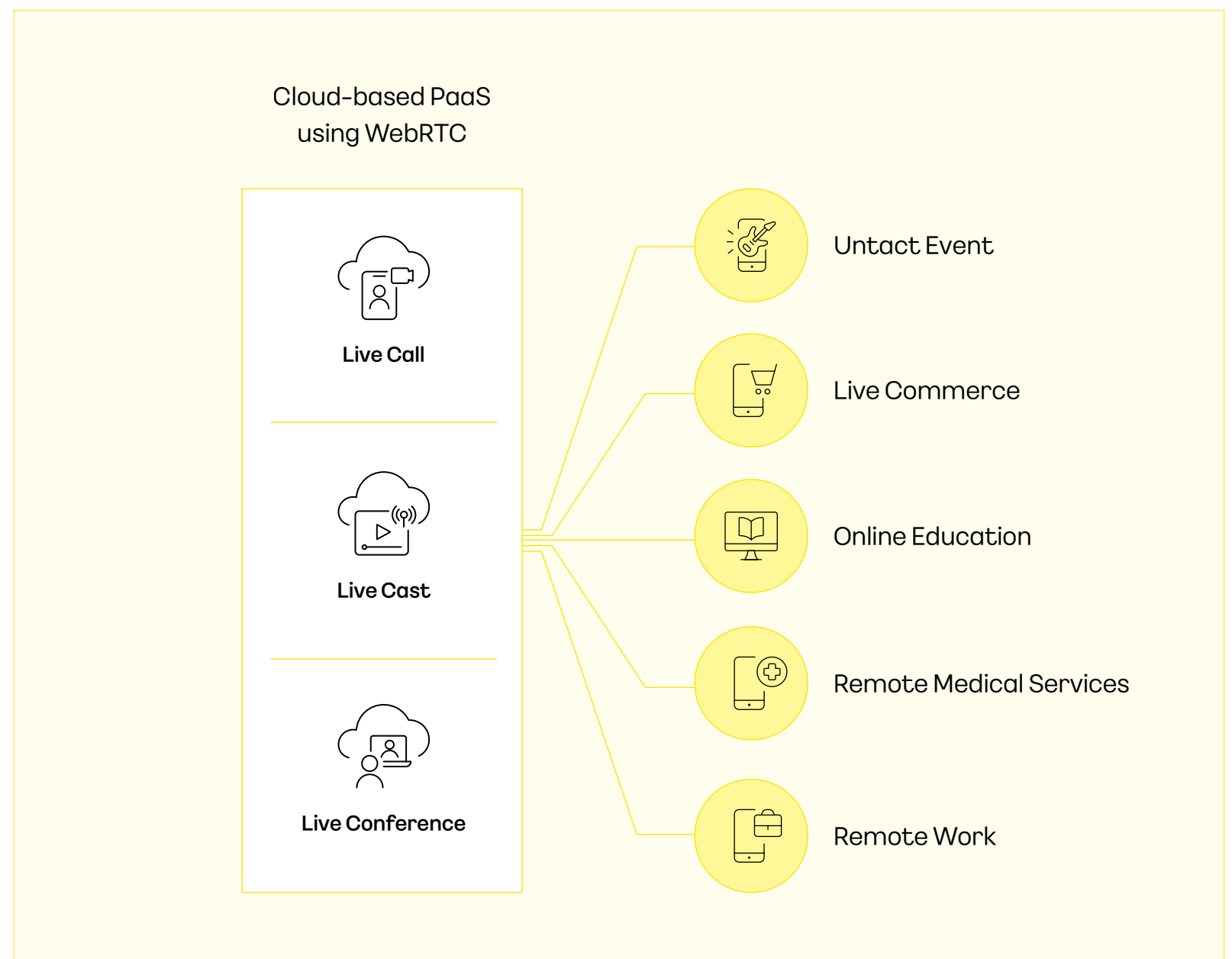
### Additional Features

Live Monitoring, Recording, Chatting, Reactive Events

### Easy and Convenient Development Environment

Access to various samples and extensive references

## Use Cases

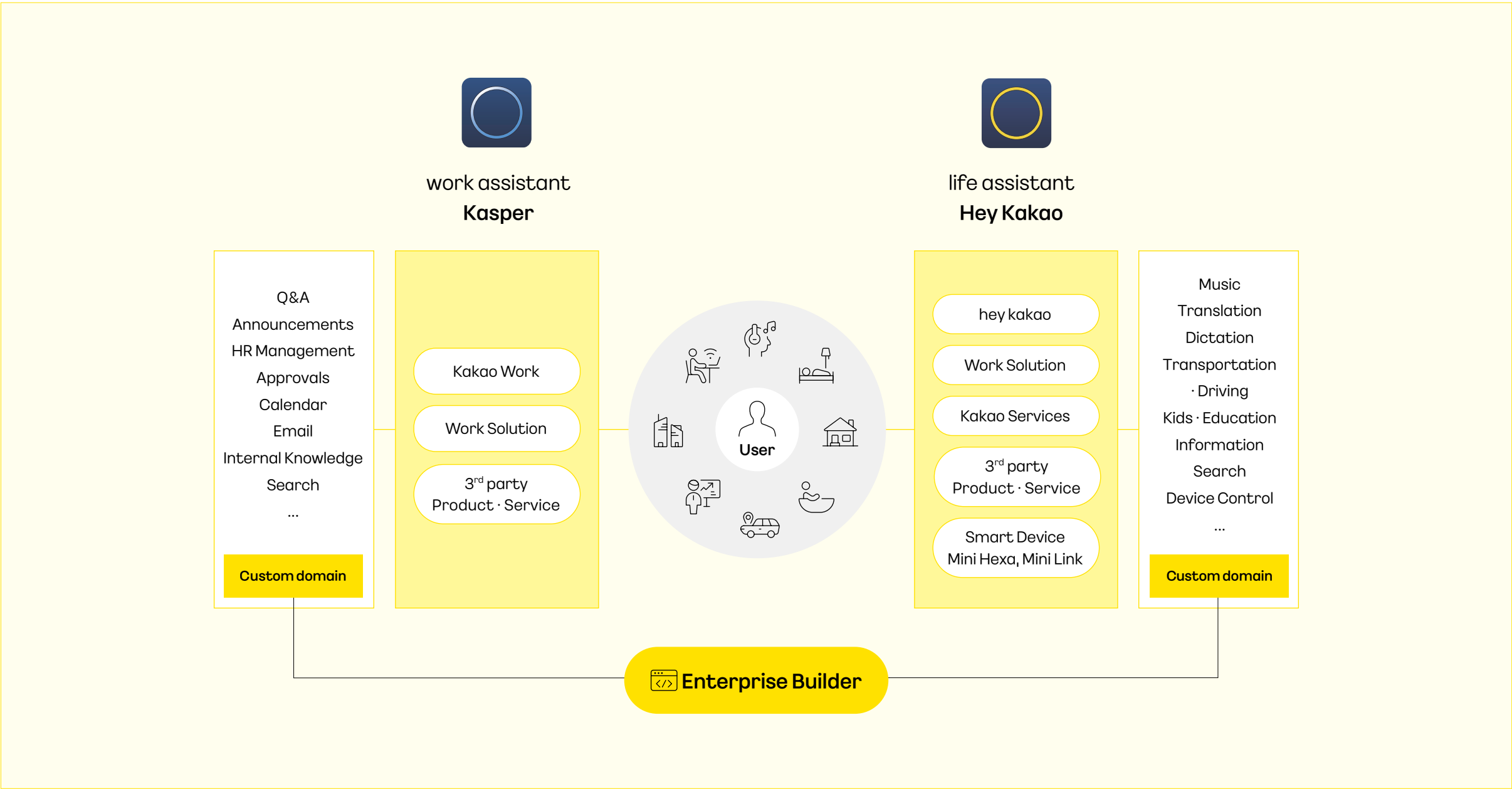


kakao i connect

# Assistant

Kakao i Connect Assistant provides a suite of AI Assistants that covers all areas of life and work. The enterprise bot builder will be available in the future to expand the AI assistant's role to customer-made apps, web, and devices.

Expansion of the AI Assistant



# kakao i connect Talk

Kakao i Connect Talk is a service platform that adds a multitude of business features into the Kakao Talk channel, most notably an AI Chat Bot applied with Advanced ML technology. Businesses can connect with customers faster and easier than before without requiring a separate app.

## Major Features



**Natural Conversation  
(Advanced ML Applied)**



**Various Recognition  
Technologies**

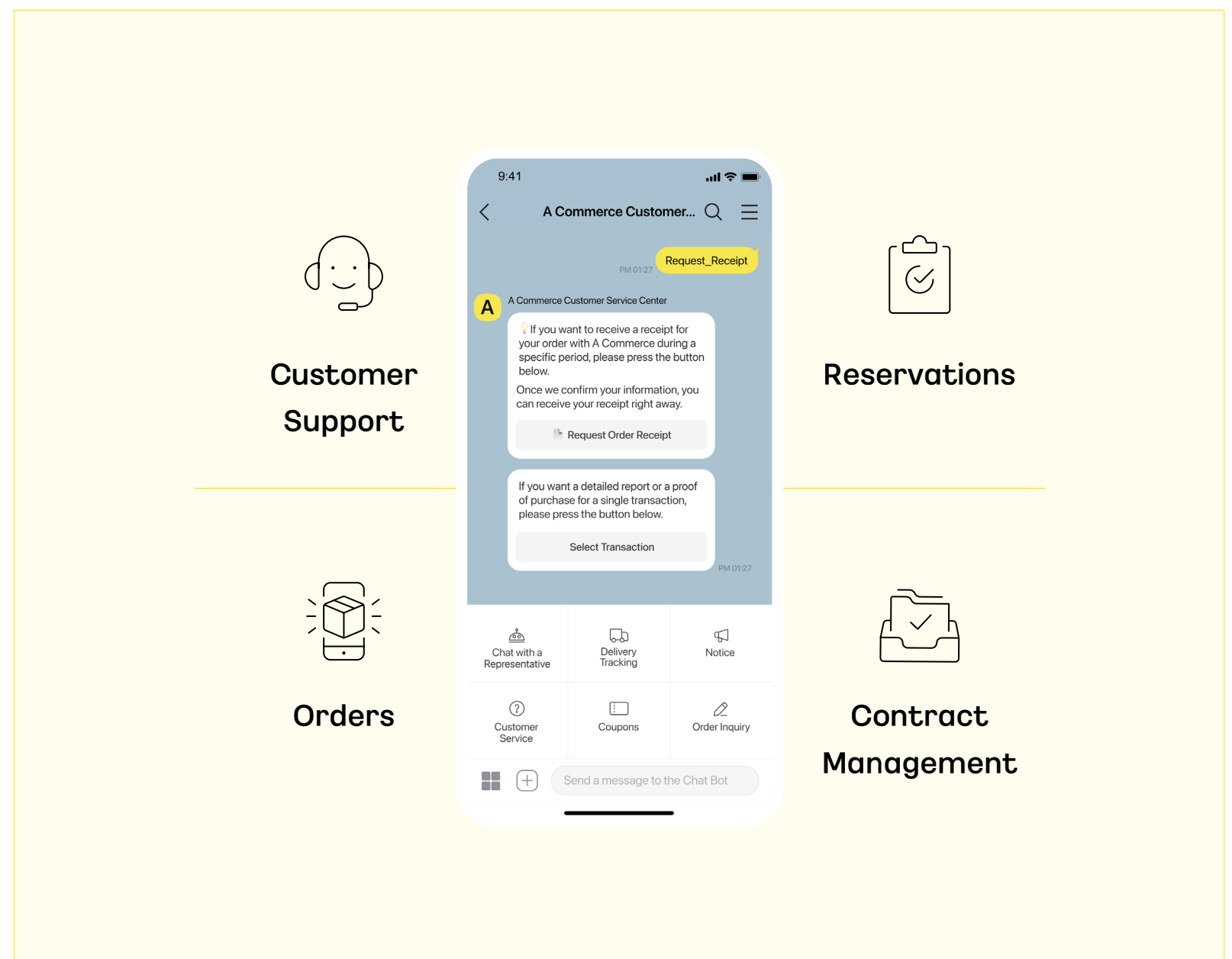


**One-click Signups / Login**



**Compatible with Legacy  
Systems**

## Full Range of Customer Services



Kakao i Connect Talk is already used in numerous industries. It manages efficient customer-facing tasks and communication to cut costs, acquire new customer segments, and create successful cases for Digital Transformation.

### Expect Results

**Improved Customer Satisfaction**  
24/7 Non-stop Customer Service

**Enhanced Customer-facing Communication**  
Optimized response based on intelligent interpretation of questions

**Acquiring Potential Customers**  
Leveraging the highly approachable Kakao Talk messenger platform

**Cost Saving and Revenue Uplift**  
Reducing CS workload by implementing interactive services

### Use Cases



**Public/Utility Company A**  
Immediately processing and confirming setups and automated payments



**Fintech Company B**  
Advanced ML upgrading features and improving customer satisfaction



**Life Insurance Company C**  
Automated and contactless FAQs, enabling efficient customer services



**Consumer Goods Company D**  
Proactive customer communications, lifting intent for online purchases

# 05

## kakao i connect Center

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### Contact Center Platform Powered by AI

Kakao i Connect Center is a contact center solution that collectively supports Chat Bots, Call Bots, and Customer Service Bots with key AI recognition technologies such as STT (Speech-to-Text) and TTS (Text-to-Speech).

Kakao i Connect Center is a cloud-based contact center platform that can automate and improve customer service tasks through quick and precise customer-facing services. It covers a wide spectrum of customer interaction points including calls, text, and chat, providing natural conversations that effectively enhances overall customer experiences.

## Expected Results

### Capable of 24/7 Customer Response

Fast and effective response to improve customer satisfaction

### Managing Customer Service Channels

Overseeing multiple points of customer interaction including phone, text, and chat

### Improving Call Center Environments

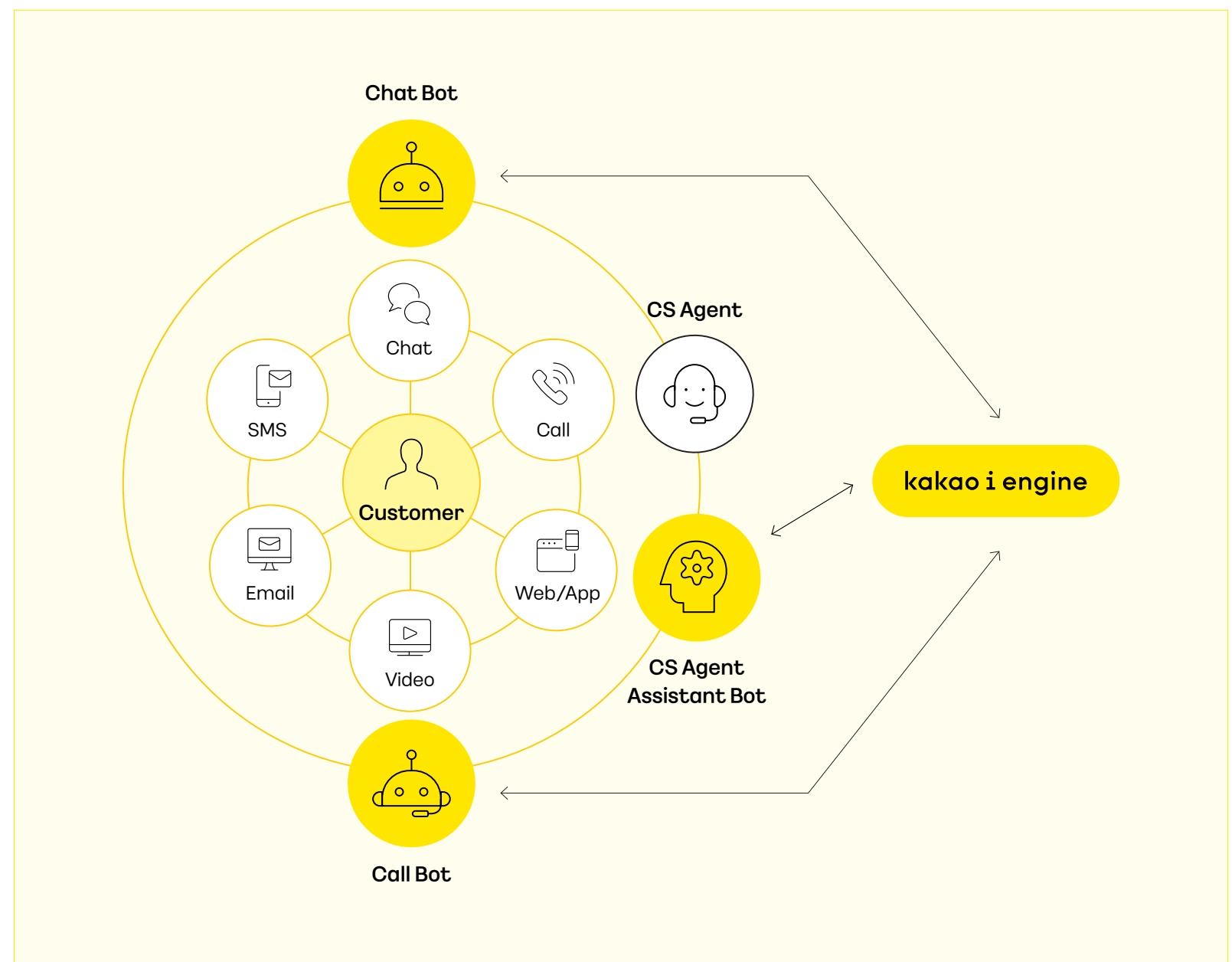
Reducing workload and creating more efficient processes

### Natural Conversation Processing

Applying DFLO Technology\*

\* DFLO is a combination of the letter 'D', which represent Dual Deep Learning Dialog, and the word 'Flow'. It is an AI solution that enables natural conversations that are not confined by context or sentence structure.

## AI Contact Center Supporting Omnichannel





# 06

## kakao i connect Place

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### A Customizable Space Design Platform Powered by AI

Kakao i Connect Place brings AI, IoT, and Big Data technologies to build a highly optimized environment for our day-to-day activities. This smart spatial platform connects every aspect of our work and daily lives to make everything easier and more convenient than ever.

AI and IoT technologies power our environments to make our lives easier, safer, and more convenient. Starting from the Kakao Home, Kakao i Connect Place plans to expand into residential areas, commercial buildings, and multi-use complexes to establish a technology platform that can serve as a foundation for Smart Cities.

Roadmap for the Customized AI Space Platform



# 07

## kakao i cloud

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### Comprehensive Cloud Platform for Businesses

Kakao i Cloud connects technologies and platforms based on Kakao's expertise in Cloud service.

With the power of AI, Kakao i Cloud helps customers achieve Digital Transformation and accompanies their journey toward success.

Kakao i Cloud provides a stable and high-performance Cloud service known for its superb track record in IT infrastructure and operation technology which have supported Kakao's suite of services over the past ten years. Kakao's innovative development culture and expertise create a pioneering platform for its customers

## Kakao's Expertise

Take advantage of Kakao's in-depth knowledge, knowhow, and extensive experience in Cloud technology.

- Supporting convenient and efficient operation of cloud services
- Consulting services in migration, operation, and linking based on extensive knowhow

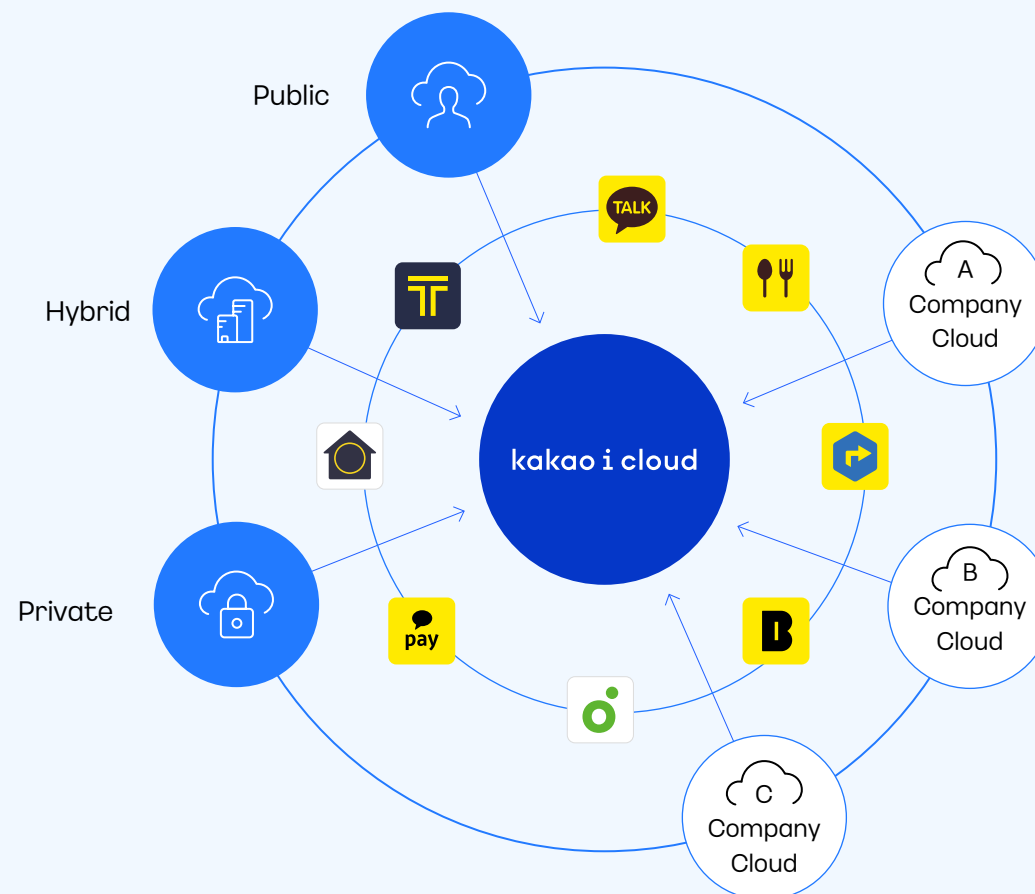


Various infrastructure environments, including Public, Hybrid and Private, are available. Kakao i Cloud enables a customizable operation of service through its flexible and expandable cloud platform.

## Connect Everything

Bridge the gap between various tech services and platforms.

- Connected Cloud that encompasses multi and hybrid cloud
- Specialized services by industry: public, finance, medical, education and more
- Linking with a wide selection of Kakao services

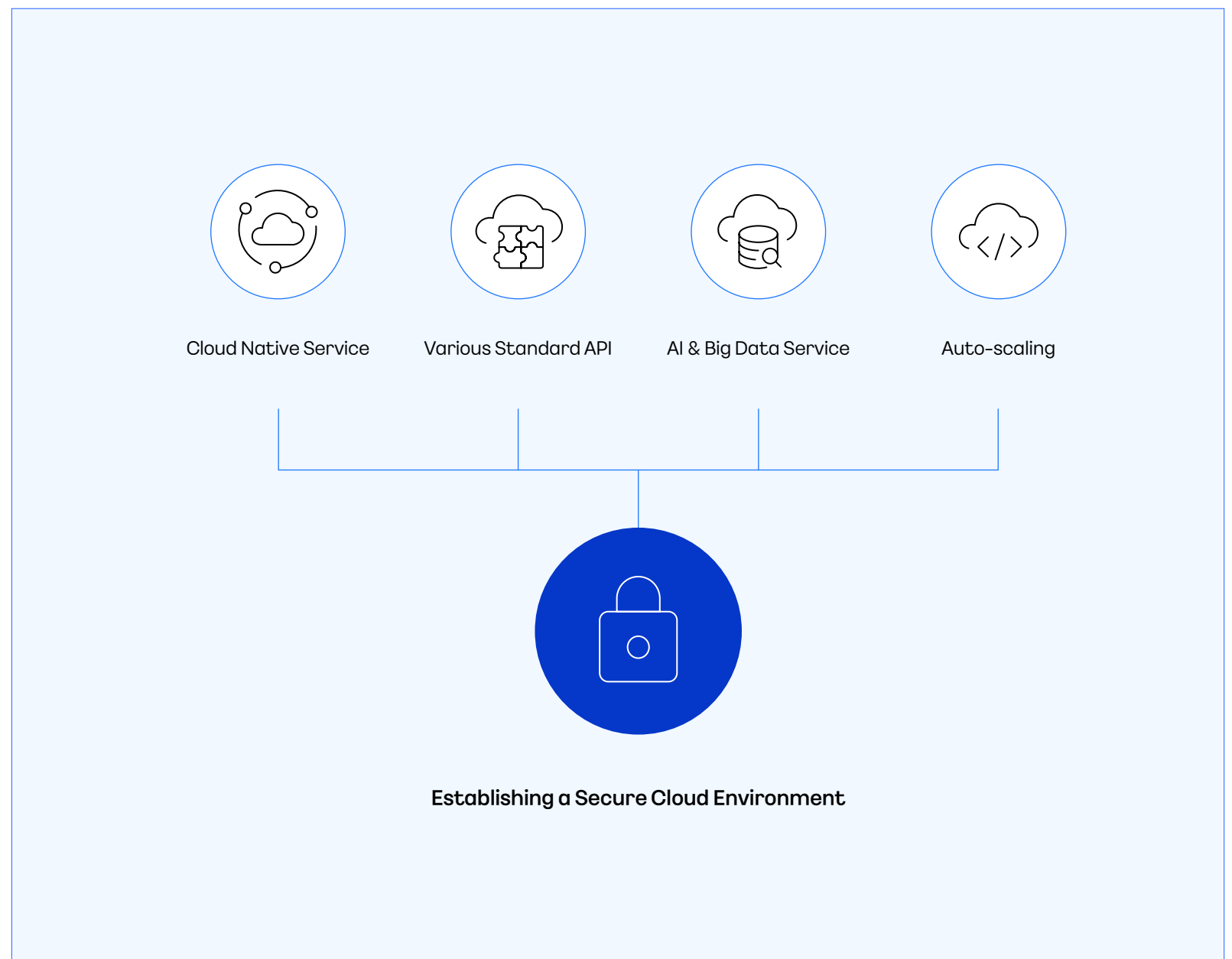


Kakao i Cloud's convenient development environment and standardized architecture helps you easily operate and quickly establish cloud services. Customers are no longer hindered by traditional methods and can accelerate their progress toward innovation in a flexible environment.

## Ready For Business

Set up your business for success.

- Expandable and high-performing network architecture
- Standard API support and expansion
- Flexible service operations
- Analysis of massive data



# 08

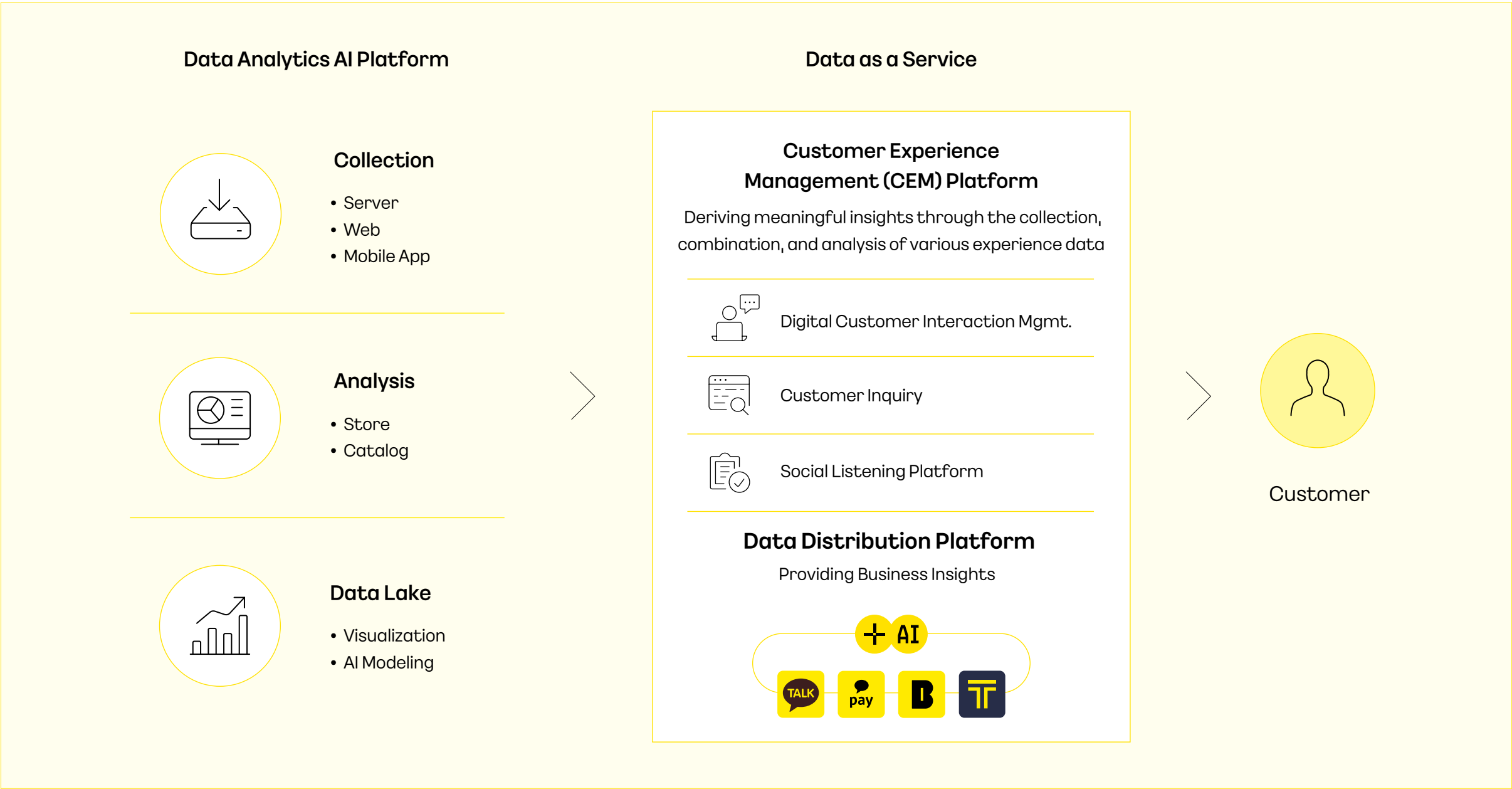
## kakao i insight

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### Data Driven Decision-making Platform

Kakao i Insight uses AI to collect, process, and analyze customer data and provide key insights that help inform decisions and enhance business capabilities.

The Data Analytics AI Platform manages end-to-end data, deriving meaningful business insights related to industries, product areas, and customers that support decision-making and Digital Transformation for businesses.





# 09

## kakao i LaaS


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### A Logistics Eco System Platform Interconnected with AI

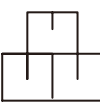
Kakao i Insight uses AI to collect, process, and analyze customer data and provide key insights that help inform decisions and enhance business capabilities.

Kakao i Laas links SaaS solutions to the end-to-end process of logistics from ordering to shipping and assists customers' decision-making through technologies and AI-based SCM Insight.


Core Capabilities



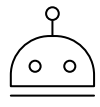
**Matching Order-Logistics Center-Transportation**  
using data analysis and AI



Economies of scale to create **Win-Win situations for shippers/partners**

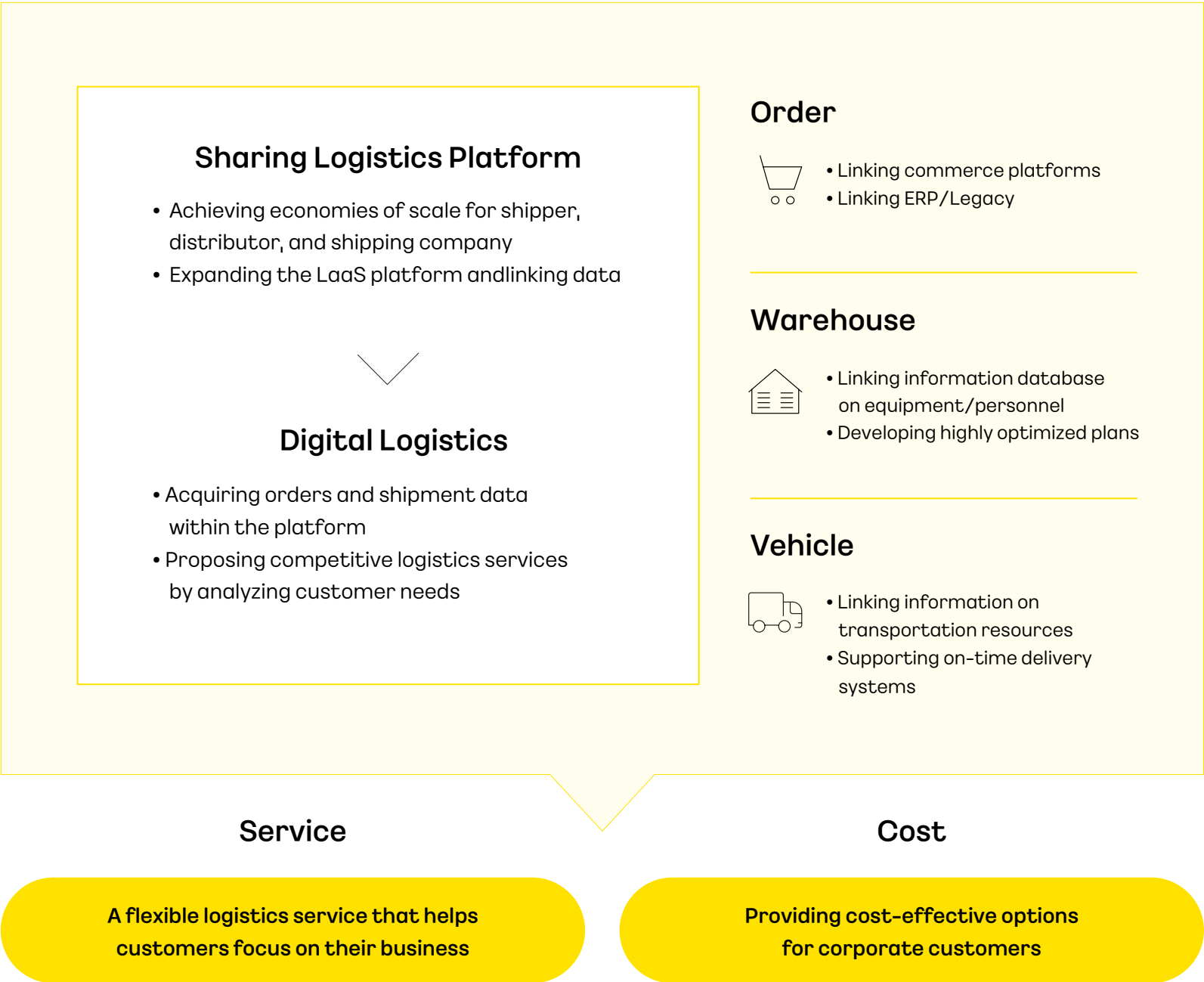


**Notifications on order/inventory /transaction** with the user-friendly Kakao Work



**Operate shipment and customer service** using Kakao Talk Chat Bots

Service Overview



# OUR COMPANY

We question even the most trivial inconveniences that are often overlooked. Our work is about building technologies in the 'Kakao way' to inspire change that benefits all.





Kakao Enterprise supports the AI industry's ecosystem as well as Digital Transformation for our customers with three key capabilities, which are excellent technological capacity, a top-tier Krew of experts, and a robust partnership experience with the best partners.



# Technology

## Research Papers 25 papers accepted in the year 2021 (41 in total since foundation)

Publication Date	Conferences / Journals	Category	Research Title
2021. 12	NeurIPS	Computer Vision	SmoothMix: Training Confidence-calibrated Smoothed Classifiers for Certified Robustness
2021. 12	NeurIPS (Oral)	Computer Vision	Learning Debaised Representation via Disentangled Feature Augmentation
2021. 11	EMNLP (NewSum Workshop)	Natural Language Processing	Capturing Speaker Incorrectness: Speaker-Focused Post-Correction for Abstractive Dialogue Summarization
2021. 11	EMNLP (WMT 2021 System Papers Workshop)	Natural Language Processing	Kakao Enterprise's WMT21 Machine Translation using Terminologies Task Submission
2021. 11	EMNLP	Natural Language Processing	AlignNART: Non-autoregressive Neural Machine Translation by Jointly Learning to Estimate Alignment and Translate
2021. 11	EMNLP	Natural Language Processing	An Evaluation Dataset and Strategy for Building Robust Multi-turn Response Selection Model
2021. 08	ICCV	Computer Vision	Distilling Global and Local Logits with Densely Connected Relations
2021. 08	IEEE Signal Processing Letters	Speech and Audio	Improving End-to-End Contextual Speech Recognition via a Word-Matching Algorithm with Backward Search
2021. 08	INTERSPEECH	Natural Language Processing	Auxiliary Sequence Labeling Tasks for Disfluency Detection
2021. 08	INTERSPEECH	Speech and Audio	SE-Conformer: Time-Domain Speech Enhancement Using Conformer
2021. 08	SIGKDD (Oral)	Natural Language Processing	Learning to Walk Across Time for Interpretable Temporal Knowledge Graph Completion
2021. 08	ACL-IJCNLP	Natural Language Processing	Deep Context- and Relation-Aware Learning for Aspect-based Sentiment Analysis
2021. 08	ACL-IJCNLP	Natural Language Processing	OutFlip: Generating Examples for Unknown Intent Detection with Natural Language Attack
2021. 07	ICML	Computer Vision	ViLT: Vision-and-Language Transformer Without Convolution or Region Supervision
2021. 07	ICML	Speech and Audio	Conditional Variational Autoencoder with Adversarial Learning for End-to-End Text-to-Speech
2021. 06	IEEE Access	Natural Language Processing	Korean Erroneous Sentence Classification with Integrated Eojeol Embedding
2021. 06	ICASSP	Speech and Audio	U-Convolution Based Residual Echo Suppression with Multiple Encoders
2021. 06	ICASSP	Speech and Audio	Multitask Learning and Joint Optimization for Transformer-Rnn-Tranducer Speech Recognition
2021. 04	IEEE Access	Computer Vision	Suppressing Spoof-irrelevant Factors for Domain-agnostic Face Anti-spoofing
2021. 03	Computational Linguistics	Natural Language Processing	RYANSQL: Recursively Applying Sketch-based Slot Fillings for Complex Text-to-SQL in Cross-Domain Databases
2021. 02	IEEE Transactions on Neural Networks and Learning Systems	Computer Vision	A Plug-in Method for Representation Factorization in Connectionist Models
2021. 02	AAAI	Natural Language Processing	Do Response Selection Models Really Know What's Next? Utterance Manipulation Strategies for Multi-turn Response Selection
2021. 02	AAAI	Computer Vision	Multi-level Distance Regularization for Deep Metric Learning

Kakao Enterprise eagerly fosters talented individuals who can pioneer the future of AI. Knowledge and knowhow are constantly shared out through various channels to contribute to building a better world with our technology.

Challenges 11 wins in total

Date	Challenge Title	Category	Result
2021. 11	WMT21 Machine Translation using Terminologies Task	Natural Language Processing	1st
2021. 11	MS MARCO Passage Ranking	Natural Language Processing	1st
2021. 10	DSTC(Dialog State Tracking Challenge) 10	Natural Language Processing	2nd
2021. 10	FRVT 1:1 Mugshot	Computer Vision	4th
2021. 10	ICCV21 Masked Face Recognition Challenge	Computer Vision	2nd
2021. 06	CVPR-NAS 2021 (Unseen Data Track)	Machine Learning	3rd
2020. 03	FRVT 1:1 verification (wild)	Computer Vision	3rd
2020. 02	SPIDER Text-to-SQL Challenge	Natural Language Processing	2nd
2019. 08	DeepFashion2 Challenge 2019	Computer Vision	2nd
2019. 06	Real Image Super-Resolution	Computer Vision	4th
2019. 05	EmotionX Challenge	Natural Language Processing	2nd



# Krew

The country's top AI developers, product managers, designers, and business experts are gathered at Kakao Enterprise. We work efficiently and transparently in a horizontal corporate culture, addressing each other on an English first name basis. People at Kakao Enterprise can freely voice their opinions and communicate in real-time with Kakao Work.

Employees

+1000

% of Researchers & Engineers

+70%

Best IT Company to Work For

#1

(JobPlanet 2020 1H Ranking)



# Best Practice

Kakao Enterprise has formed a strong partnership with multiple Kakao subsidiaries leading in their respective industries and a wide range of leading companies in the finance, distribution, construction, manufacturing, and medical sectors.





We are companions on a journey  
toward making dreams a reality.  
We contribute to building a better world  
by helping people realize their vision.

Founded	December 3rd, 2019
Adress	Kakao Enterprise, H Square N Building, 235, Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Website	<a href="http://www.kakaoenterprise.com">www.kakaoenterprise.com</a>
Email	<a href="mailto:contact@kakaoenterprise.com">contact@kakaoenterprise.com</a>
Business Inquires	<a href="https://www.kakaoenterprise.com/partnership/consulting">https://www.kakaoenterprise.com/partnership/consulting</a>
Partnership Inquires	<a href="https://with.kakao.com/enterprise">https://with.kakao.com/enterprise</a>
Month/Year of Issue	December 2021