COMPANY PROFILE

VUNO Inc. / Global Leader in Healthcare AI (Artificial Intelligence)

2024.1Q

VUNO

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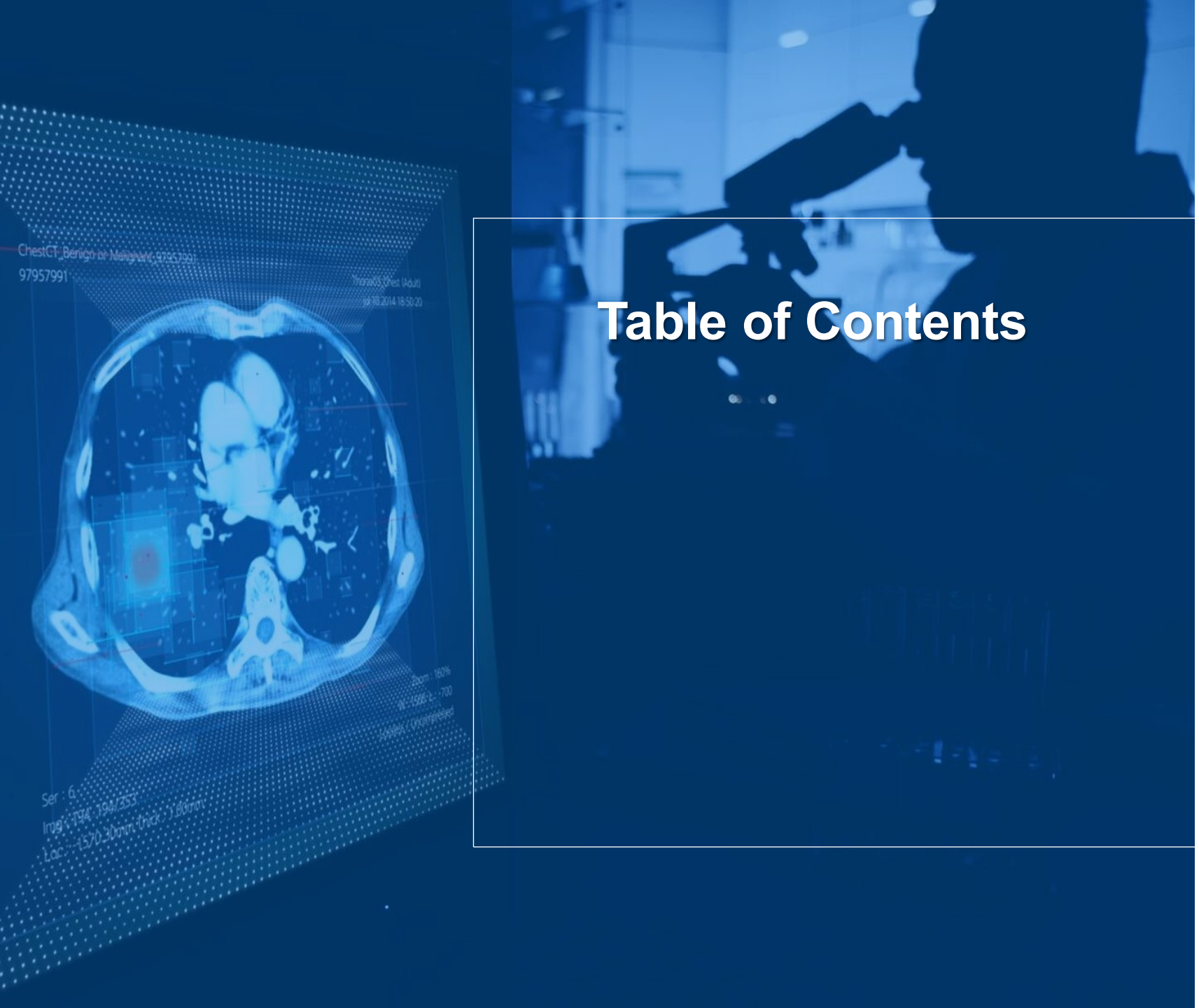
Please note that the forward-looking statements contained in this document relates to future events, not the past, and is inherently subject to uncertainty, and may not correspond to the company's actual operating results due to uncertainties such as changes in the market environment and risks beyond the company's control.

Finally, this material is intended as a reference for investors' investment judgment, and we do not provide any warranty or assume any liability to investors for the contents of this material.



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CHAPTER 01

Company Overview

In full-fledged deployment

VUNO Med®

Nationally recognized healthcare AI solutions

1st
- MFDS approved medical AI device
- Innovative medical device

10 Ready to use solutions

Proven clinical validity based on multiple clinical studies & real-world examples

1,000+ Hospitals

100+ Publications

100+ Patents

RSNA Radiology · AJNR · American Academy of Ophthalmology · MICCAI · AACR · Clinical Cancer Research · ASCO · PLOS ONE · Critical Care Medicine · JAHA · ICASSP · INTERSPEECH

Global network of collaborations

Extensive Network of Global Partners

M3, Inc. · Canon · DRGEM Your Best Healthcare · SAMSUNG · LG Electronics · VIEWORKS · CHC Healthcare Group · HCK Healthcare Konnect · The University of Texas MD Anderson Cancer Center

CHAPTER 01

Company Overview

Established 2014.12

Building R&D Foundation (2015~)

2014

12. Selected as a Tech Incubator Program for Startup (TIPS) by Ministry of SMEs

2015

08. Deep-learning based case studies on lung images with Seoul Asan Medical Center

    Established corporate R&D Center

12. Top 5th in CLS of ImageNet IL SVRC 2015

2016

12. Approval for K-GMP

2017

01. IND Approval for VUNO Med-BoneAge

11. Participated in drafting MFDS regulatory approval guidelines for medical AI devices

Product Development (2018~)

2018

05. Designated as 1st AI Medical Device
    VUNO Med-BoneAge

    Commercialized medical speech record software
    VUNO Med-DeepASR

2019

06. MFDS Approval for VUNO Med-DeepBrain

08. MFDS Approval for VUNO Med-Chest X-ray

12. PMDA Approval for VUNO Med-LungCT AI

2020

04. MFDS Approval for
    VUNO Med-Fundus AI & LungCT AI

06. CE Certified for VUNO Med-5 Medical Imaging solutions

07. Designated as 1st Innovative Medical Device
    VUNO Med-Fundus AI

09. Designated as 6th Innovative Medical Device
    VUNO Med-DeepCARS

Commercialization (2021~)

2021

02. **Listed on KOSDAQ**

08. MFDS Approval for VUNO Med-DeepCARS

10. Designated as 16th Innovative Medical Device
    VUNO Med-DeepECG

2022

05. Designated as Early Access Innovation Medical Device
    VUNO Med-DeepCARS

06. Eligible for 3D MRI reading insurance reimbursement
    VUNO Med-DeepBrain

08. Eligible for **Out-of-Pocket insurance**
    VUNO Med-**DeepCARS**

12. Designated as 22nd Innovative Medical Device
    VUNO Med-LungCT AI

2023

01. Hativ launched (ECG based electrocardiograms)

06. Designated **FDA BDD** of VUNO Med-**DeepCARS**

10. Obtained **FDA 510k** of VUNO Med-**DeepBrain**

2024

01. Wins **reimbursement in Japan** of VUNO Med-**LungCT AI**

03. Expanded European market of VUNO Med-Chest X-ray

04. Received an **integrated review of innovative medical devices**
    VUNO Med-**Fundus AI**

CHAPTER
01

Company Overview

Automatic Detection,
Quantification and Measurement

Medical Imaging

Vital Signs, ECG,
Diagnostic Support and Risk Prediction

Bio Signal

VUNO Med®

Process Improvement

- VUNO Med-DeepASR

Quantification

- VUNO Med-DeepBrain
  - Ministry of Food and Drug Safety
  - FDA
  - CE

Diagnostic Support

- VUNO Med-BoneAge
  - Ministry of Food and Drug Safety
  - CE
  - PMDA
- VUNO Med-Chest X-ray
  - Ministry of Food and Drug Safety
  - CE
  - FDA
- VUNO Med-LungCT AI
  - Ministry of Food and Drug Safety
  - CE
  - PMDA
- VUNO Med-Fundus AI
  - Ministry of Food and Drug Safety
  - CE
- VUNO Med-DeepBrain AD
  - Ministry of Food and Drug Safety
- Hativ
  - Ministry of Food and Drug Safety
- VUNO Med-DeepECG
  - Clinical Trials in Progress

Prediction & Prognosis

- VUNO Med-DeepCARS
  - Ministry of Food and Drug Safety

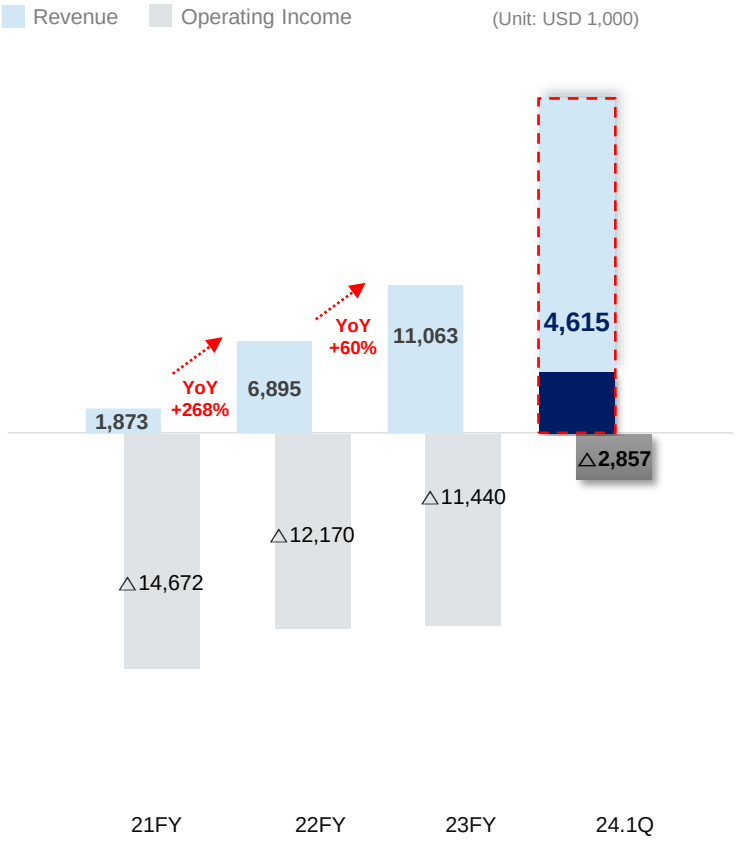
CHAPTER 01

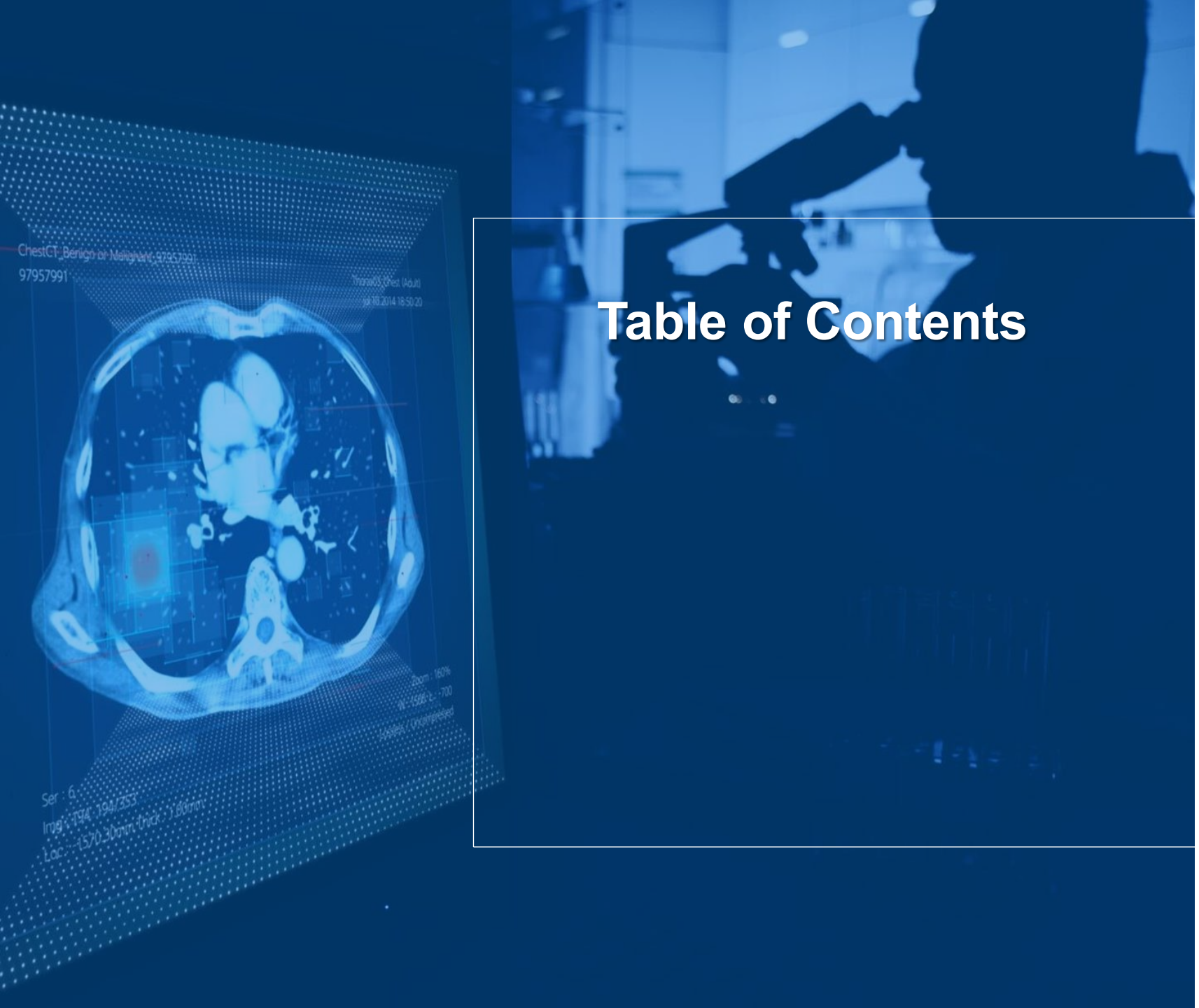
Company Overview – Financial review

- **Achieved USD 4.6 million in revenue, with earnings growing by QoQ +12%, YoY +212%**
  - **Stable SaaS structure and continued expansion of hospitals using DeepCARS etc.**

Separate Income Statement (Unit: USD 1,000)	2023				2024	Q1	
	1Q	2Q	3Q	4Q	1Q	QoQ	YoY
Revenue	1,480	2,505	2,973	4,105	**4,615**	+12.4%	+211.8%
DeepCARS	1,000 (67.6%)	1,574 (62.8%)	2,199 (74.0%)	3,115 (75.8%)	**3,724 (80.7%)**	+19.6%	+272.3%
Medical Imaging	308 (20.8%)	302 (12.1%)	469 (15.8%)	625 (15.2%)	**443 (9.6%)**	-29.1%	+43.9%
Hativ and Server etc.	172 (11.6%)	310 (12.3%)	305 (10.2%)	342 (8.4%)	**434 (9.4%)**	+26.8%	+152.7%
Others	-	319 (12.8%)	1 (0.0%)	23 (0.6%)	**14 (0.3%)**	-39.5%	-
Operating Expense	4,815	6,944	4,512	6,232	**7,472**	+19.9%	+55.2%
Operating Income	△3,334	△4,440	△1,539	△2,127	**△2,857**	+34.3%	-14.3%
Net Income	△3,324	△1,832	△1,638	△4,605	**△2,884**	-37.4%	-13.2%
EBITDA	△3,047	△4,154	△1,225	△1,832	**△2,557**	+39.6%	-16.1%

Note) Exchange Rate: 1 USD=1,200 KRW





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CHAPTER
02

VUNO Med-DeepCARS

In-hospital Cardiac Arrest (IHCA)

3,600 cases[1]

Warning Signs/ Early symptoms

80%[2] (2,880)

IHCA Death

75%[3] (2,700)

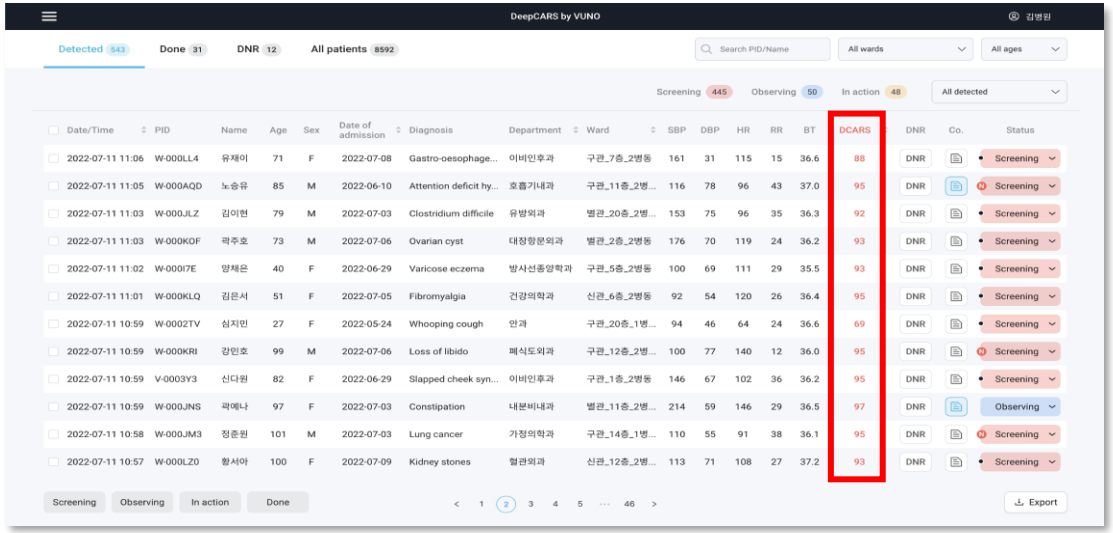
Severe Shortage of Medical Staff

A Lack of Effective Track-and-Trigger System

68%
Avoidable IHCA[4]

Overcoming the limitations of traditional methods with AI

Efficient management with fewer false alarms, higher sensitivity and specificity by using AI model



AI-Based Cardiac Arrest Risk Management System

Target	Inpatients of **all ages** in **general ward**
Purpose	Predicts the risk of cardiac arrest **within 24 hours** for inpatients
Mechanism	• Uses **5 vital signs*** and age/vital sign recorded time collected from the electronic medical record. (EMR) * S/D Blood Pressure, Heart Rate, Respiratory Rate, Body Temperature • Provides a risk score from **0 to 100**. (The higher score the higher risk)

1) Crit Care Med. 2012;39:2401-2406
2) Resuscitation. 2004;62(3):275-282. doi:10.1016/j.resuscitation.2004.05.016
3) JAMA 2019;321(12):1200-1210
4) Resuscitation. 2002 Aug;54(2):115-23

CHAPTER
02

VUNO Med-DeepCARS

1

Select risky-patient

- Check the rate of high-risk patients classified by DeepCARS.
- Notify to medical team.

2

Planning

- Selected patient visits hospital and medical team reviews.
- Share content with relevant departments.
- Requirements reflection, make an intervention plan.

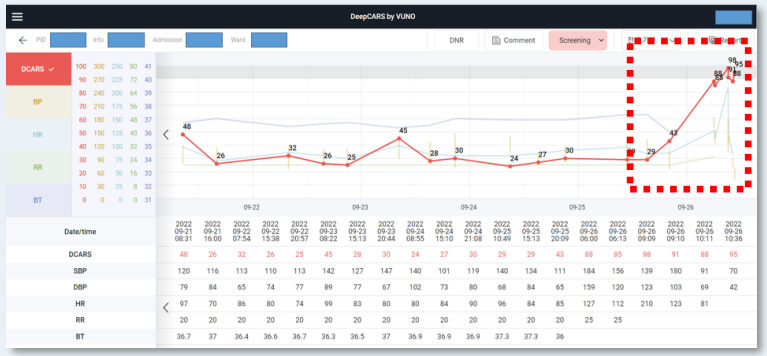
3

Do an Intervention

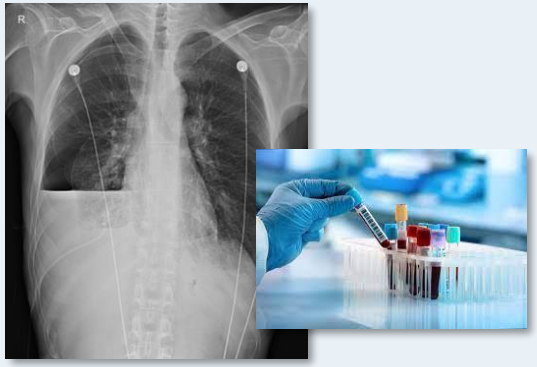
- Provide an intervention depending on the situation. (Airway management, CPR etc.)

• DeepCARS Use Case

① Can check the scores distribution and rate of high-risk patients classified based on the scores set by the DeepCARS.



② Patient visit a hospital, check symptom and proceed with additional inspections as necessary.



③ Take measure to patient.
e.g., After confirming signs of acute exacerbation, airway intubation was performed, and the patient was then transferred to the intensive care unit.

CHAPTER 02

VUNO Med-DeepCARS

• DeepCARS® adoption expectations

Patients

- Reduced cardiac arrest rates
- Improved outcomes through preventive measures

Medical Staff

- Early identification of critically ill patients
- Rapid collaboration between healthcare providers

Hospitals

- Efficient use of healthcare resources
- Help to promote the hospital

• DeepCARS® pathway to go market

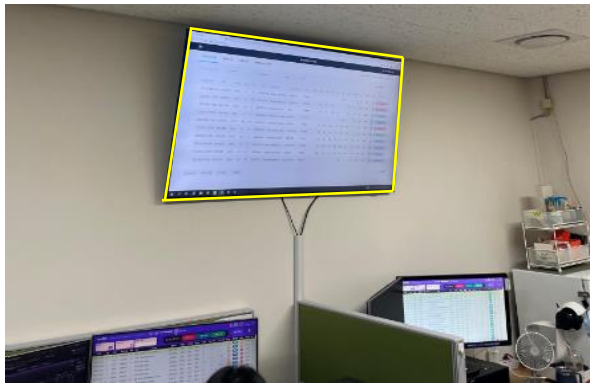
- Innovative Medical Device designated by MFDS (Sep 2020)
- MFDS approval (Aug 2021)
- Designated as a candidate for New Health Technology Assessment (Dec 2021)
- Designated as Early Access Innovation Medical Device (May 2022)
- Official Launching (Aug 2022)

CHAPTER
02

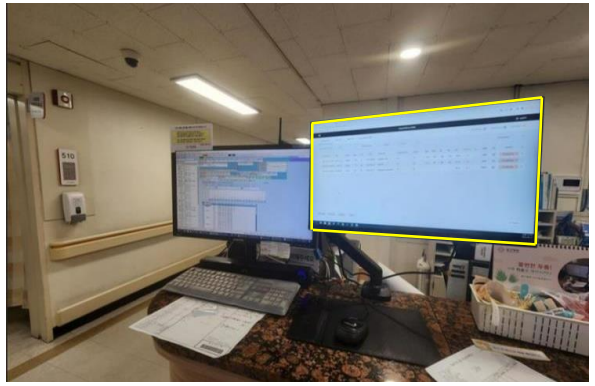
VUNO Med-DeepCARS

- **(Apr. ′24) 85 hospitals totaling 34,000+ beds have adopted DeepCARS in Korea**
  - **Includes Tier 1 Hospitals 15, Tier 2 Hospitals 70 etc.**

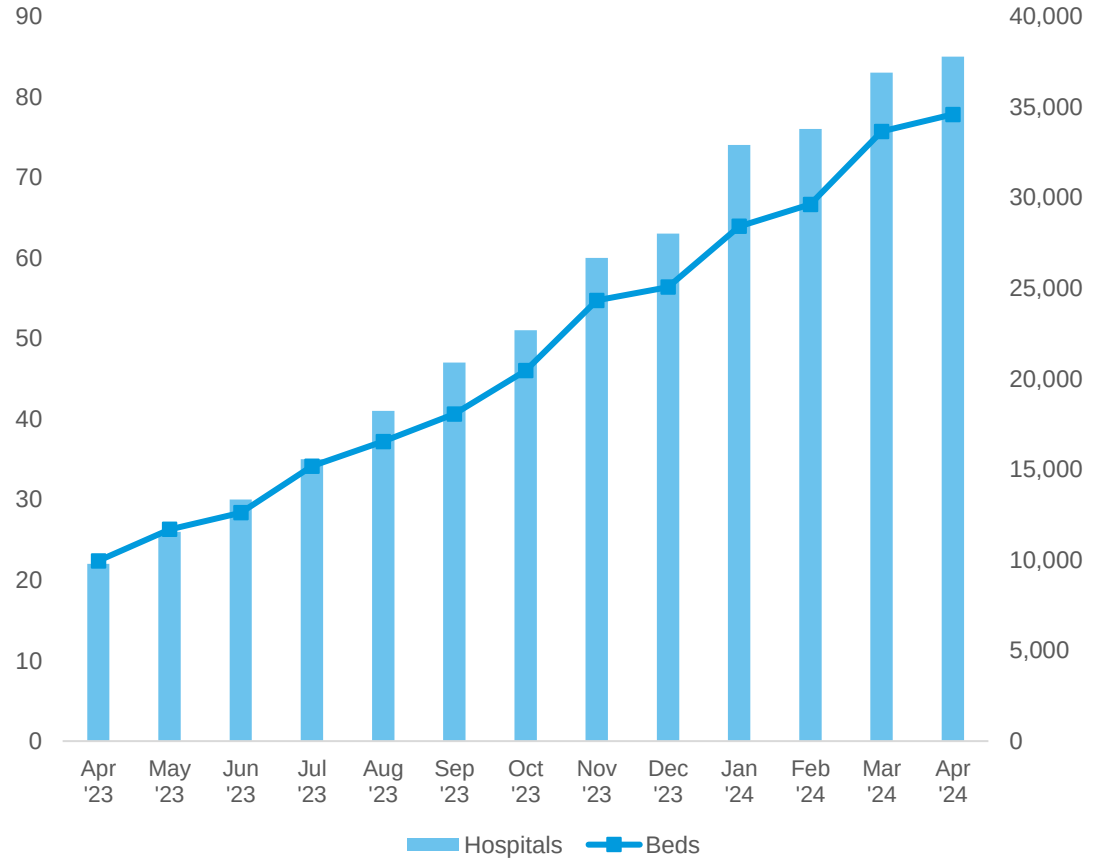
Use in a Medical Emergency Team



Use in a Nurses' Station

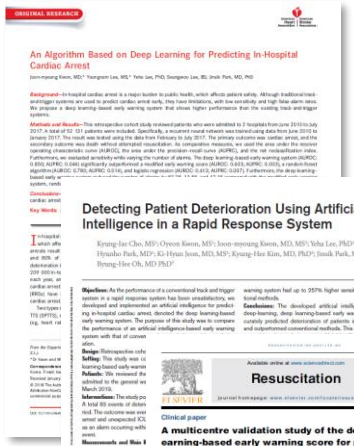


Number of Hospitals / Beds Monitored



CHAPTER
02 VUNO Med-DeepCARS

- **Demonstrated superior cardiac arrest prediction performance through global clinical publications**
  - **Resuscitation, JAHA, ACC, CCM, etc.**


An Algorithm Based on Deep Learning for Predicting In-Hospital Cardiac Arrest

JAHA

[An algorithm based on deep learning for predicting in-hospital cardiac arrest](#) (JAHA, 2018)

Detecting Patient Deterioration Using Artificial Intelligence in a Rapid Response System

Critical Care Medicine

[Detecting patient deterioration using artificial intelligence in a rapid response system](#)
(Critical Care Medicine, 2020)

Resuscitation

A multicentre validation study of the deep learning-based early warning score for predicting in-hospital cardiac arrest in patients admitted to general wards

RESUSCITATION
OFFICIAL JOURNAL OF THE EUROPEAN RESUSCITATION COUNCIL

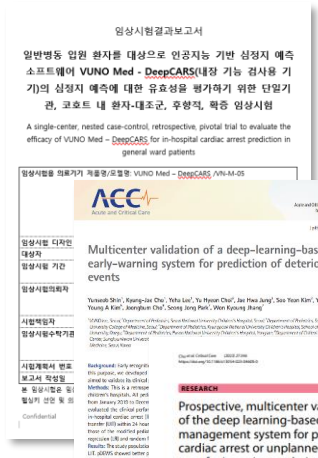
[A multicenter validation study of the deep learning-based early warning score for predicting in-hospital cardiac arrest in patients admitted to general wards](#)
(RESUSCITATION, 2021)

ScienceDirect
Biomedical Journal

Development and validation of a deep-learning-based pediatric early warning system: A single-center study

Biomedical Journal

[Development and validation of a deep-learning-based pediatric early warning system](#)
(Biomedical Journal 2021)


임상시험결과보고서

일반병동 입원 환자를 대상으로 인공지능 기반 심정지 예측 소프트웨어 VUNO Med - DeepCARS(내장 기능 검사용 기기)의 심정지 예측에 대한 유효성을 평가하기 위한 단일기관, 코호트 내 환자-대조군, 후향적, 확증 임상시험

VUNO Med – DeepCARS의 심정지 예측에 대한 유효성을 평가하기 위한 단일기관 임상시험
(식약처 확증 임상시험, 2021)

Multicenter validation of a deep-learning-based pediatric early-warning system for prediction of deterioration events

Acute and Critical Care

[Multicenter validation of a deep-learning-based pediatric early-warning system for prediction of deterioration events](#)
(Acute and Critical Care 2022)


Prospective, multicenter validation of the deep learning-based cardiac arrest risk management system for predicting in-hospital cardiac arrest or unplanned intensive care unit transfer in patients admitted to general wards

Critical Care

[Prospective, multicenter validation of the deep learning-based cardiac arrest risk management system for predicting in-hospital cardiac arrest or unplanned intensive care unit transfer in patients admitted to general wards](#)
(Critical Care 2023)

ONLINE CLINICAL INVESTIGATION

External Validation of Deep Learning-Based Cardiac Arrest Risk Management System for Predicting In-Hospital Cardiac Arrest in Patients Admitted to General Wards Based on Rapid Response System Operating and Nonoperating Periods: A Single-Center Study

Critical Care Medicine

[External validation of deep-learning based cardiac arrest risk management system for predicting in-hospital cardiac arrest in patients admitted to general ward on operating and non-operating time of rapid response system](#)
(Critical Care Medicine, 2024)

CHAPTER
02

VUNO Med-DeepCARS

- **Clinical trial result by MFDS (KFDA)**

Predicting cardiac arrest with superior performance

- **High Sensitivity** Products
  - Prediction accuracy based on AUROC : 0.8934

Enough time to take preventive action

- Predicts cardiac arrest on **average 15.78 hours** in advance

Applies to all inpatients in general wards

- No difference in sensitivity by **age, gender, or specialty**

VUNO Med-DeepCARS

Korea Market Size

- **Number of total average general ward beds in Tier 1 & Tier 2: 1,251**
  - ① Number of average general ward beds in Tier 1: 941
  - ② Number of average general ward beds in Tier 2: 310
- **Number of total general ward beds in Tier 1 & Tier 2: 139,964**
  - ① Tier 1 (45 Hospitals): 41,161
  - ② Tier 2 (319 Hospitals): 98,803
- **Formula of annual market size**

  Number of general ward × Circulation rate of general ward (Approx. 90%) × 365 days × Price
- **Annual market size with price assumptions of KRW 7,000** *

  * Based on per day / per person / per bed

Type	Annual Market Size (KRW)	Annual Market Size (USD) Note)
Tier 1	KRW 94.5 billion	USD 78.8 million
Tier 2	KRW 202.0 billion	USD 168.3 million
Total	**KRW 296.5 billion**	**USD 247.1 million**

Note) Exchange Rate: 1 USD=1,200 KRW

Global Market Size

- **Annual market size with price assumptions**

  Global market size was estimated based on annual Korea market size.

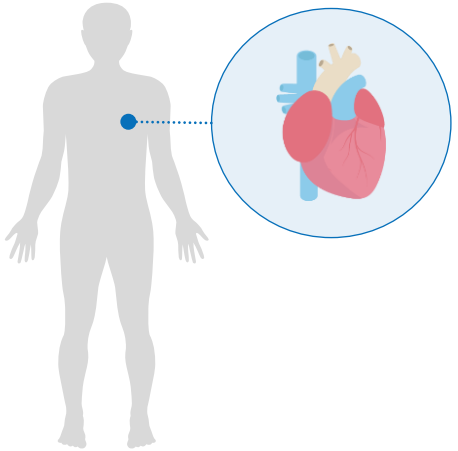
  It was estimated using market coefficients applied by global medical device companies.

Country	Annual Market Size (USD) Note)
North America	USD 2,320 million
EMEA	USD 2,195 million
APAC (Excluding China)	USD 387 million
LATAM	USD 574 million
Total	**USD 5,476 million**

Note) Exchange Rate: 1 USD=1,200 KRW

VUNO Med-Solutions – DeepECG + Hativ

Cardiovascular Disease



1st leading cause of death worldwide Note)

- Approximately 17.9 million people die each year from **cardiovascular disease**, 31% of all deaths worldwide.
- 2nd leading cause of death in Korea after cancer and 1st in medical expenses.
- Increase in cardiovascular complications due to an increase in younger chronic disease patients.

Note) World Health Organization, 'The top 10 causes of death'

ECG Test Types by Number of Inductions

12-Lead

- Electrocardiography in the clinical setting.
- High accuracy based on 12-lead ECG.
- **Difficult to use in daily life due to low portability and convenience.**

6-Lead

- Tests with 12-lead **accuracy and the portability, convenience** of 1-lead.
- Higher accuracy compared to 1-lead, **suitable for medical diagnostic aids.**

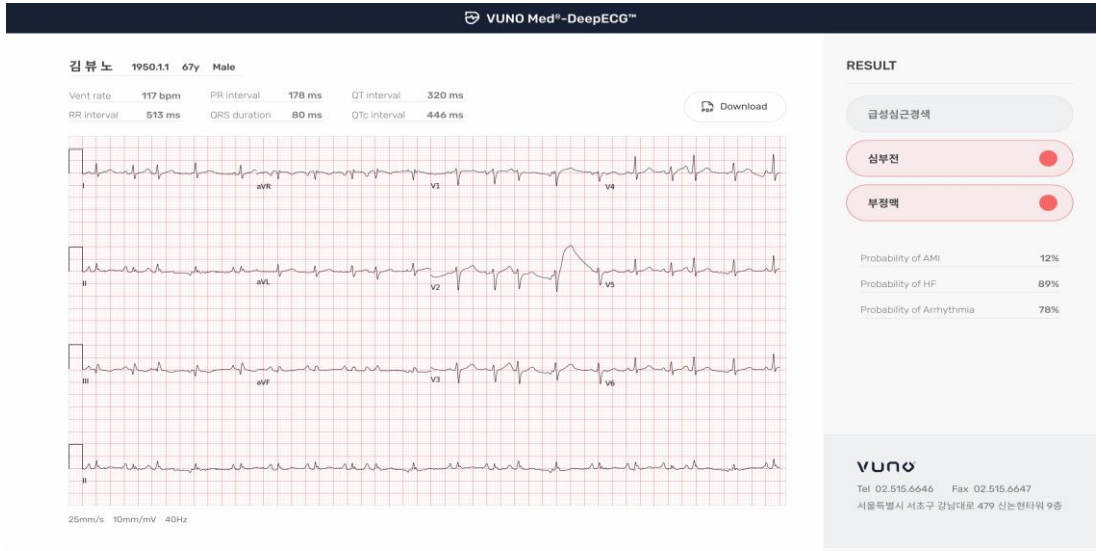
1-Lead

- Highly portable and convenient.
- Because it uses a 1-Lead electrocardiogram **limited information** for **medical purposes.**

CHAPTER 03

VUNO Med-Solutions – DeepECG + Hativ

DeepECG

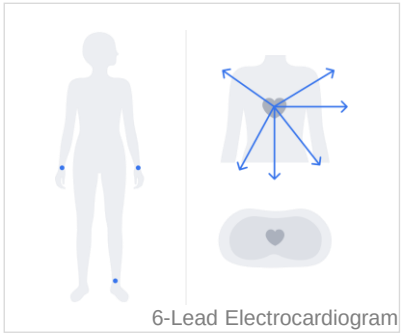


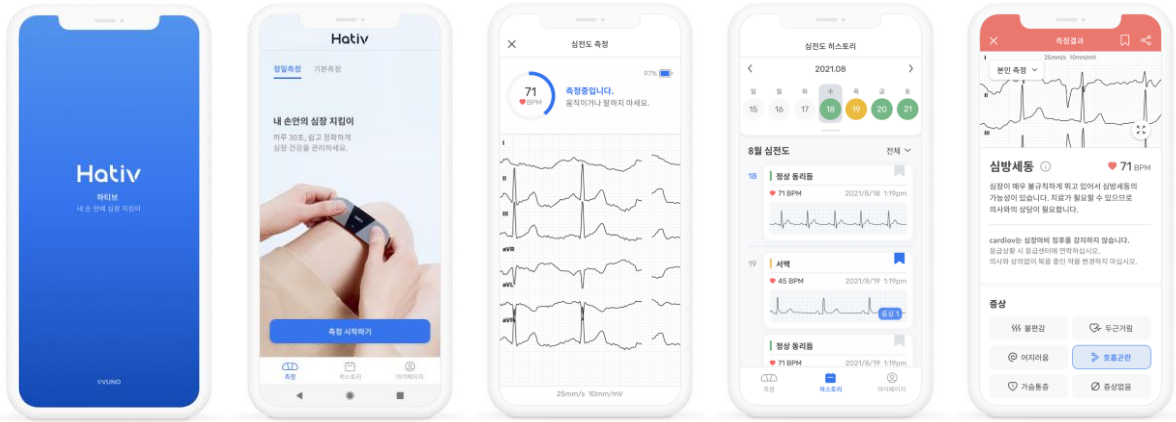
AI-Based ECG Analysis Solution

Description	• Provide diagnostic support on the detection of **cardiovascular diseases** and **kidney disease.** • Allows at risk patients susceptible to kidney and heart disease to self-measure and receive early treatment.
Method	• Analyzes **ECG data** from portable mobile ECGs and other devices.
Disease	• Can detect to **arrhythmia.** • Preparing to expand to ① **Myocardial Infarction, Heart Failure** in ’24. ② **Hyperkalemia, Chronic Kidney Disease** in ’25.

Hativ

- **Medical-grade portable ECG device.**
- Monitor to cardiovascular diseases and kidney disease using AI software to analyze ECG data.
- Approved medical device for **myocardial infarction** detection AI software.
  → Plan to connect the Hativ with Myocardial Infarction AI software.





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CHAPTER 03

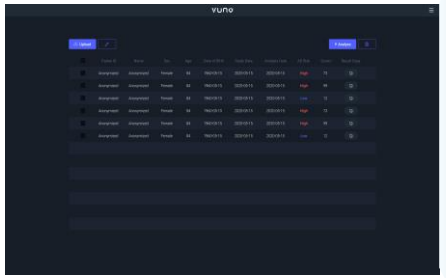
VUNO Med-Solutions

VUNO Med-DeepBrain

Brain MRI-based Quantification Solution

- Provides **volumetric data of 104 brain regions** through brain parcellation in **1 minute**.
  ① Brain volume ② Cortical thickness ③ WMH
- Support to diagnose **neurodegenerative diseases.**
  ① MCI ② Alzheimer's Disease ③ Dementia
- Allows **PACS** integration.

VUNO Med-DeepBrain AD

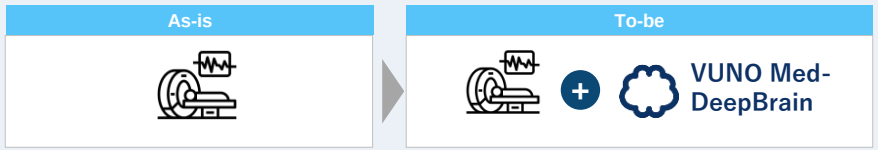


AI Diagnostic Support for Alzheimer's Disease in MRI

- Assist **Alzheimer's disease** diagnosis by providing **risk score** calculated from MRI image.
- Allows medical professionals to identify patients with high risk with high accuracy. (AUC 0.937)
- Provide **score report** to patient for further consultation needs.

Deep Learning-based Brain Parcellation and Atrophy Quantification

- Improves patient satisfaction and understanding by providing the **brain atrophy report** with the statistical analysis results and visualized graphs **within 1 minute.**



Regulatory Approval

Ministry of Food and Drug Safety · CE 2195 · FDA

R&D Partners

서울아산병원 Asan Medical Center · 분당서울대학교병원 SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

MRI-Based Alzheimer's Risk Detection Medical Device

- Preparations are underway for commercialization by 2024.
- Utilized MR images collected from more than 3,000 patients.
- Expected to be widely used in the diagnosis of Alzheimer's disease in the future.

Regulatory Approval

Ministry of Food and Drug Safety

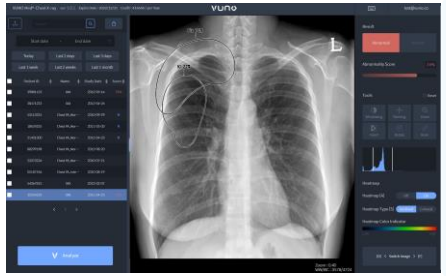
R&D Partner

분당서울대학교병원 SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

CHAPTER 03

VUNO Med-Solutions

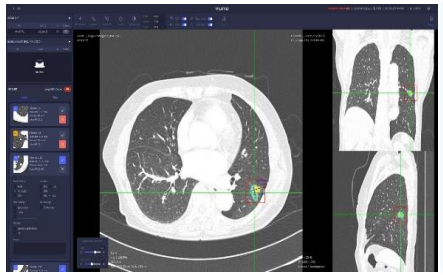
VUNO Med-Chest X-ray



AI Diagnostic Support for Abnormalities in Chest X-Ray

- Detects presence of **5 lung abnormalities** Note1), abnormality score and location.
- Allows **PACS** integration.
- 98% accuracy in image-wise classification of normal or abnormal.
- Reduced reading time by more than 50%. Note2)

VUNO Med-LungCT AI



Detection of Pulmonary Nodules in Chest CT

- Accurate detection and volumetric quantification of **pulmonary nodules** in 1 minute.
- Allows **PACS** integration.
- **Super-resolution** algorithm allows reconstruction of CT scan slices into 1mm section thickness.
- Detected 269 nodules in 9,952 cases reported as normal.

B2B expansion to X-ray equipment companies

- Can be **embedded into X-Ray devices.** (Portable X-ray machines and detector)
- Sustained sales channel expansion in Korea and overseas markets.

rayence VIEWORKS DRGEM Your Best Healthcare
SAMSUNG LG Household & Health Care DIGIRAY

Regulatory Approval

Ministry of Food and Drug Safety · CE 2195 · FDA

R&D Partners

서울아산병원 Asan Medical Center · 분당서울대학교병원 SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

Focus on Japanese and U.S. Market

- **Japan : To increase local sales and strengthen marketing**
  ① Wins reimbursement in Japan. (Jan. ’24)
  ② M3 AI partners with Canon Medical Systems to cooperate for sales.
  → Allows M3 AI to reach over 30% of hospitals that use PACS.
  ③ MHLW announced updates to the health insurance fee system.
  → Expanding coverage to include more hospitals.
- **U.S. : Clinical trial with MGH** (Massachusetts General Hospital) **underway.**

Regulatory Approval

Ministry of Food and Drug Safety · CE 2195 · Pmda

R&D Partners

서울아산병원 Asan Medical Center · SAMSUNG 강북삼성병원 · MASSACHUSETTS GENERAL HOSPITAL

Note1) Nodule/Mass, Consolidation, Interstitial Opacity, Pleural Effusion, Pneumothorax.
Note2) Added Value of Deep Learning–based Detection System for Multiple Major Findings on Chest Radiographs: A Randomized Crossover Study, Radiology. 2021. Mar.

CHAPTER 03

VUNO Med-Solutions

VUNO Med-Fundus AI

AI Screening Solution for Abnormalities in the Fundus

- Detection of **12 retinal findings** Note) associated with diagnosis of vision- threatening ocular diseases in 2 seconds.
- Automatically detects the location of **8 regions** of the fundus.
- Korea's **1st innovative medical device.**

VUNO Med-BoneAge

Automatic Bone Age Assessment in hand X-Ray

- Provides a 3 nearest bone age results in 5 seconds.
  ① Height Percentile.
  ② Bone Age assessment results.
  ③ Growth curve and adult height prediction.
- Reduce reading time by 40% and increased diagnostic accuracy by 16%.
- Korea's **1st AI medical device.**

Increase market penetration / Out-of-Pocket insurance

- Developed with 100,000+ fundus images and 57 ophthalmologists.
- Collaboration with pharmaceutical & bio companies to target internal medicine and checkup centers. → **Increase market penetration**
- Received approval for an **integrated review of innovative medical devices.** (Apr. '24)
  → Enables the use of as an **Out-of-Pocket insurance**

Deep Learning-based Automatic Bone Age Assessment

- Can be used to monitor treatment of kids with conditions that affect growth such as growth hormone levels, genetic growth disorders, orthopedic or orthodontic problems.
  → **Expanding medical center penetration** to pediatrics, orthopedics and dental clinic.

Regulatory Approval

Ministry of Food and Drug Safety CE 2195

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분당서울대학교병원 SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

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Note) Hemorrhage, Hard Exudate, Cotton Wool Patch, Drusen, Membrane, Macular Hole, Myelinated Nerve Fiber, Vascular Abnormality, Chorioretinal Atrophy, Retinal Nerve Fiber Layer Defect, Glaucomatous Disc Change, Non-glaucomatous Disc Change

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Solutions that are medically necessary for your customers

Solutions that are economically beneficial to customers

Solutions that are effectively communicated to customers

VUNO's Business Approach

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