
ASEAN IVO Forum 2026
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PHN Dermalytica
Research Driven AI for Intelligent Skin Analysis
HUMAN CENTRIC ENGINEERING
Telkom University
PHN Dermalytica: Building an AI-Driven Collaborative Platform for Evidence-Based Skin Health Research in ASEAN
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AI Analysis
Lesion Count 12
Severity 0.56
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Background

From ICT to ICT for Health and Welfare

Telkom University is Building a Faculty of Medicine



Telkom University is building a Faculty of Medicine. The faculty is designed to be **technology-driven, adaptive**, and **future-oriented,** including the integration of **precision medicine** and **CPI** in medical practice.

- Strengthening Telkom University's direction toward ICT for Health and Welfare
- Building a Faculty of Medicine with a technology-driven and adaptive ecosystem
- Future-oriented medical education and research
- Integrating precision medicine and CPI into medical practice
- Encouraging multidisciplinary collaboration among ICT, engineering, and health sciences

"A future-oriented medical faculty connecting technology, health, and innovation."



Digital Health Ecosystem



Precision Medicine



Future Medical Practice

Background

Skin Health is Becoming a Mainstream Ecosystem



IDR 60.2 trillion

Indonesia skin care retail value, 2025



Source: Euromonitor via MarketResearch.com, 2026

19% growth

Current retail value growth in 2025



Source: Euromonitor via MarketResearch.com, 2026

1,655 cosmetic companies

Registered in indonesia by July 2026

87%+ are SMEs



Source: Indonesia Ministry of Industry / BPOM, 2026

4,000+ beauty clinics

Dedicated beauty clinics nationwide

Industry estimate:
4,227 (2023) → 4,461 (2024) → 4,734 (2025 est.)



Source: SWA, industry estimate, 2026



Growth in Dedicated Beauty Clinics in Indonesia



Additional Market Signal

US$2.55B skin care revenue in 2026

3.55% CAGR 2026–2031

Source: Statista Market Insights, Sep 2026

Skin health is no longer a niche domain — it is becoming a major healthcare, lifestyle, consumer, and technology ecosystem.

Sources: *Euromonitor International via MarketResearch.com (2026); Indonesia Ministry of Industry / BPOM (2026); SWA (2026, industry estimate); Statista Market Insights (Sep 2026).*

Background

Growing Services, Limited Specialist Capacity

Growing Demand Needs Scalable Support



2,662 specialists in Dermatology, Venereology, and Aesthetics

287,198,383 population in Indonesia (2026)

≈ 1 specialist per ***108,000 people***

Specialist Ratio vs. National Target



This is an official **health-workforce ratio target** set by the Ministry of Health, not a clinical outcome.

Growing Demand

Limited Specialist Capacity

Need for AI-Assisted Support

- Increasing public awareness of skincare, dermatology, and aesthetic treatment
- Expanding clinics, services, and digital-health expectations
- Need for objective documentation and scalable monitoring
- Opportunity for AI-assisted support in clinical and research workflows

AI should not replace dermatologists. It can support scalable screening, documentation, quantitative monitoring, and research.

Sources: *Ministry of Health of the Republic of Indonesia, E-Planning Health Workforce Indicators (2026); BPS Statistics Indonesia, Mid-Year Population 2026.*

Our Goals

PHN Dermalytica

Research-Driven AI for Intelligent Skin Analysis



PHN Dermalytica

An AI-driven research platform integrating intelligent skin imaging, data-driven analysis, clinical and product evaluation, and personalized dermatology research.

AI & Computer Vision

Deep learning and vision models for automated, objective skin analysis.

Intelligent Skin Imaging

Standardized and high-quality skin image acquisition and processing.

Data-Driven Skin Analysis

Quantitative and interpretable analysis of skin condition, severity, and trends.

Clinical & Product Evaluation

Support for clinical assessment, treatment monitoring, and product efficacy studies.

Multidisciplinary Collaboration

Bridging dermatology, AI, engineering, health sciences, and industry needs.

Scientific Publication & Research Translation

From research and validation to scientific publication and real-world application.



PHN Dermalytica advances skin health through AI, data, and research — from analysis to real-world impact.

Our Goals

PHN Dermalytica Research Journey

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Research-Driven AI for Intelligent Skin Analysis

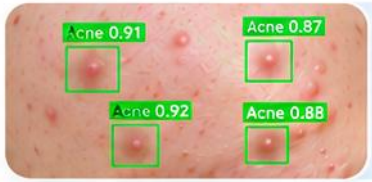
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2024 — Foundation

- YOLOv8 acne vulgaris classification
- Lesion counting





Lesion Counting

4

2025 — Expansion

- Acne severity assessment
- KNN + Random Forest
- KNN + Decision Tree
- YOLOv8 optimization
- Blackhead, fungal acne, and acne nodule detection
- Lesion type and counting
- YOLOv12 skin-lesion detection and classification
- **Melanoma (skin cancer) classification**
  AI-based detection and classification of melanoma to support early screening and timely referral.

Acne Severity Assessment



Melanoma (Skin Cancer)

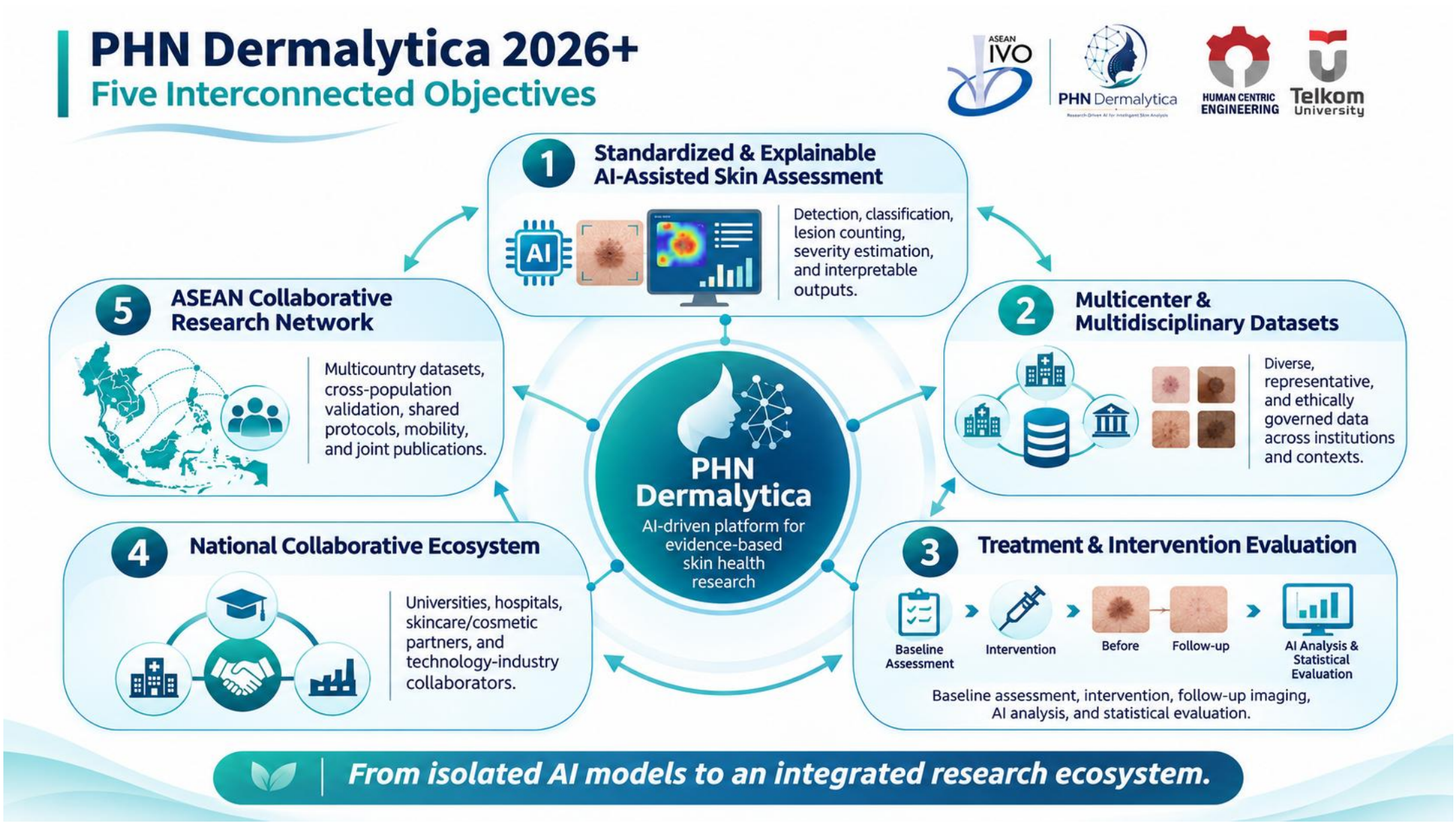


2026+ — Integration

- **Standardized imaging**
  Consistent, high-quality, and reproducible data.
- **Multicenter datasets**
  More diverse and representative samples.
- **Longitudinal evaluation**
  Track skin condition changes over time.
- **Clinical validation**
  Assessment in real clinical settings with dermatologist input.
- **ASEAN collaboration**
  Joint datasets, studies, and real-world impact across the region.

From a focused model to a broader and more impactful research ecosystem for intelligent and clinically relevant skin analysis.

Our Goals


PHN Dermalytica 2026+
Five Interconnected Objectives
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1
Standardized & Explainable AI-Assisted Skin Assessment
AI
Detection, classification, lesion counting, severity estimation, and interpretable outputs.
2
Multicenter & Multidisciplinary Datasets
Diverse, representative, and ethically governed data across institutions and contexts.
3
Treatment & Intervention Evaluation
Baseline Assessment
Intervention
Before
Follow-up
AI Analysis & Statistical Evaluation
Baseline assessment, intervention, follow-up imaging, AI analysis, and statistical evaluation.
4
National Collaborative Ecosystem
Universities, hospitals, skincare/cosmetic partners, and technology-industry collaborators.
5
ASEAN Collaborative Research Network
Multicountry datasets, cross-population validation, shared protocols, mobility, and joint publications.
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AI-driven platform for evidence-based skin health research
From isolated AI models to an integrated research ecosystem.

Impacts

ASEAN Collaborative Research Network

A Regional Collaboration for Advancing AI-Driven Dermatology Research

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Indonesia · Malaysia · Philippines · Singapore · Thailand
Brunei Darussalam · Viet Nam · Lao PDR · Myanmar · Cambodia
Timor-Leste

Potential Collaboration Partners | **Japan** (e.g., joint research, dataset, and technology)

Why ASEAN Collaboration?

Population Diversity
Rich variation in skin types, tones, and environmental exposures.

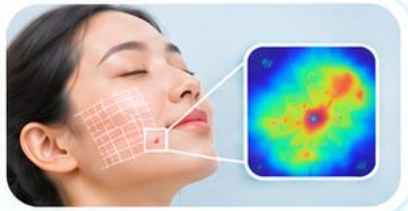
Stronger & More Generalizable AI
More representative and robust skin datastes.

Shared Expertise & Resources
Complementary clinical, technological, and research capabilities.

Real Regional Impact
Solutions for skin health challenges across ASEAN.

Objective 1

Standardized & Explainable Skin Assessment



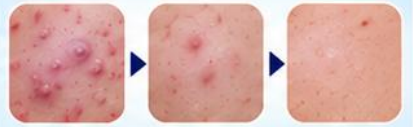
Objective 2

Multicenter & Multidisciplinary Datasets



Objective 3

From Diagnosis to Treatment Evaluation



A unified ASEAN research network to build inclusive, reliable, and clinically impactful AI dermatology solutions.

Impacts

Why ASEAN?

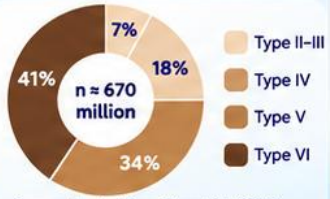
Why Should This Become an ASEAN Initiative?

Population Diversity

Different skin characteristics and environments.



Skin Phototype Distribution in ASEAN (Estimated)



Source: Adapted from Fitzpatrick (1988) and regional skin studies in Asia (e.g., Kawada, 2005; Yuda et al., 2021).

Shared Healthcare Challenges

Growing demand for scalable digital-health solutions.



Rising Dermatology Burden in ASEAN

≈ +24% projected increase in skin disease burden in Southeast Asia (2020–2030).

Source: IHME, Global Burden of Disease (GBD) 2021.

Complementary Expertise

ICT, AI, healthcare, clinical research, and industry.

- ICT & AI
- Healthcare & Clinical Practice
- Clinical Research
- Cosmetic & Skincare Industry



ASEAN + Collaboration Partners | **Japan** (e.g., joint research, dataset, and technology)

Regional Validation

Healthcare AI should work beyond a single institution or country.



- More diverse and representative data
- Better generalizability and robustness
- Higher clinical trust and real-world impact

Local research can create national solutions. Regional collaboration can create robust solutions.

Outcome

Proposed ASEAN Connected Projects

What Could We Build Together?

Project A — ASEAN Skin Imaging Dataset

Standardized multicountry skin-image datasets.



- Multi-country data (ASEAN + Japan)
- Standardized protocol (imaging, annotation, metadata)
- Diverse skin types (Fitzpatrick I–VI)

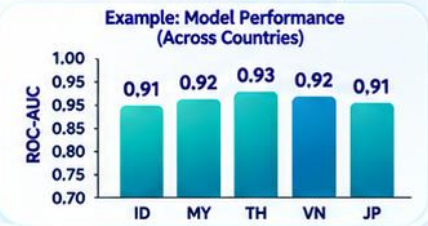




Project B — ASEAN AI Benchmark

Cross-population model validation and robustness testing.





Project C — Treatment Response Monitoring

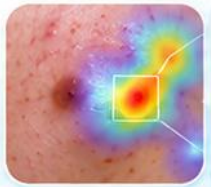
Longitudinal AI-assisted treatment and skincare evaluation.

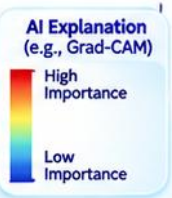




Project D — Explainable & Privacy-Aware AI

Ethically responsible AI for healthcare research and deployment.





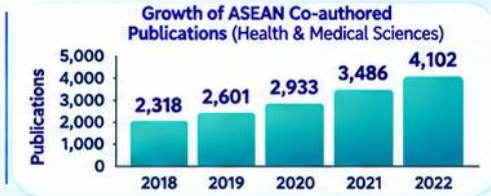
- Privacy-preserving AI (e.g., federated learning, data governance)
- Ethical & safe deployment (transparent, fair, accountable)
- Regulatory and clinical alignment (healthcare and data protection standards)

Project E — ASEAN Skin Health Research Network

Joint publications, mobility, students, researchers, and grants.



- **Joint publications** (Q1/Q2 journals)
- **Researcher & student mobility** (exchange, internship)
- **Joint training & capacity building** (AI, dermatology, research)
- **Collaborative grants** (ASEAN IVO, bilateral, etc.)



Source: Scopus, "ASEAN co-authored publications in Health & Medical Sciences," 2018–2022.

Outcome

Our Long-Term Vision

Our Vision

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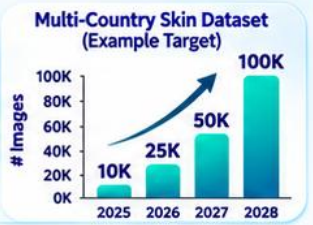
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An open, collaborative, scientifically rigorous, and ethically responsible ASEAN ecosystem for AI-enabled skin health.

DATA | Representative & trustworthy





- Multicenter & multicountry skin-image datasets (ASEAN + Japan)
- Diverse skin types, conditions, and environments
- Standardized acquisition, annotation & governance
- Privacy, security, and ethical data management

AI | Explainable & robust



- Accurate and clinically meaningful analysis (detection, classification, severity, counting)
- Explainable AI (e.g., Grad-CAM, saliency map)
- Robust across populations and environments (ASEAN diversity)
- Continuously improved with real-world data

COLLABORATION | Multidisciplinary & regional



ASEAN–Japan Collaboration

- Joint research, validation, and publications
- Involvement of academia, healthcare, industry, and policymakers
- Capacity building (students, researchers, clinicians)
- Regional programs and funding (e.g., ASEAN IVO, bilateral)



From Algorithm → Evidence → Impact

Conclusion


Closing / Call to Collaboration
Let's Build the ASEAN Skin Health AI Ecosystem Together
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From isolated AI models
AI
Single dataset
Limited validation
Lower generalizability
Slower real-world impact
to collaborative evidence-based digital health
asean
Multicenter & multicountry data
Scientifically validated (evidence-based)
More robust & generalizable AI
Real impact for healthcare & industry
If your institution works in AI, dermatology, healthcare, medical imaging, skincare science, data governance, digital health, or technology commercialization, we would be very pleased to explore a joint ASEAN project with you.
Thank You
Questions & Collaboration Discussion