

Patent Protection for AI outputs at KIPO

6 November 2024



Korean Intellectual
Property Office

AI-Driven Protein Design Wins 2024 Nobel Prize in Chemistry



Breakthrough Use of AI in Protein Design

- The 2024 Nobel Prize in Chemistry was awarded to three scientists for their pioneering work in AI-based protein structure prediction and computational protein design.
- Their AI algorithms predict complex protein structures, enabling the creation of new proteins, accelerating drug discovery, and advancing materials science.

Key Legal Focus: Protecting AI-Generated Innovations

- With the growing role of AI in innovation, establishing clear legal frameworks for patenting AI-generated outputs is essential.

Classification and Protection Status of AI Inventions

What is an AI Invention?

AI Core Inventions

- Inventions related to the core AI technology itself (e.g., training methods, neural network structures)

42.1%(84,386 cases)

AI Applied Inventions

- Inventions that use AI as a tool to solve problems (e.g., autonomous driving, healthcare applications)

57.9%*(116,089 cases)

AI-Generated Inventions

- Inventions which AI significantly contributes to or independently creates

0.0%(1~2cases)?

(Protection O) Major countries classify AI-related inventions into Computer-Implemented Inventions (CIIs) and apply the corresponding examination guidelines.



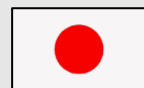
- Released AI examination case studies ('20.4.)
- Published AI patent examination guide ('20.12.)



- Revised examination guidelines for AI and big data ('19.12.)



- Issued a survey report on AI and IP policy ('20.10.)
- ✓ Treated as Computer-Implemented Inventions (CIIs)



- Released AI examination case studies ('19.1.)

(Protection Δ) Listing AI as an inventor violates formality requirements, leading to invalidation.

Claims of AI-generated creations spark growing interest from IP5 and WIPO

* Analysis of patents filed and published between 2000 and 2018 in Korea, the US, Japan, Europe, China, PCT, Canada, and Israel (Source: KISTA December 2020 Big Data Analysis Report).³

What is Generative AI?

Definition at OECD

- GenAI is "a technology that can create content, including text, images, audio, or video, when prompted by a user"
- "Prompts" here correspond to textual instructions, usually produced by the human users, optionally combined with some given data.
- It is expected that the AI-generated content is meaningful and human-like.

Inventorship of AI-Generated Inventions (DABUS Case)

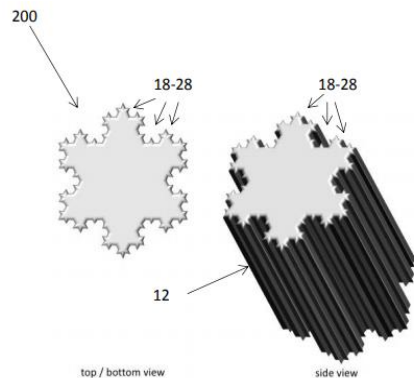
Invention 1. Food container having a fractal structure

Description

A food container of a fractal structure displaying concave and convex portions inside and outside thereof

Effect

Easy combination of containers, each holding and high efficiency in heat transfer



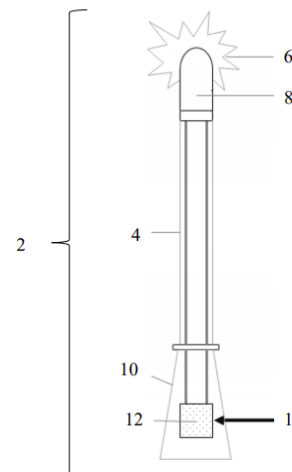
Invention 2. Nerve stimulation lamp

Description

A flashing lamp for grabbing attention by way of imitating neural movement patterns

Effect

Grabbing attention to the lamp's motion pattern



Summary

- ▶ An international patent application filed by an AI developer (Dr. Stephen Thaler, patent applicant) where his own AI was named as an inventor
 - ▶ Invalid to describe a human being as an inventor in the patent application, if a human being was not involved in the inventive process
 - Insisted AI should be recognized as an inventor
- Provided, however, that AI was granted neither with any rights nor with any authorities

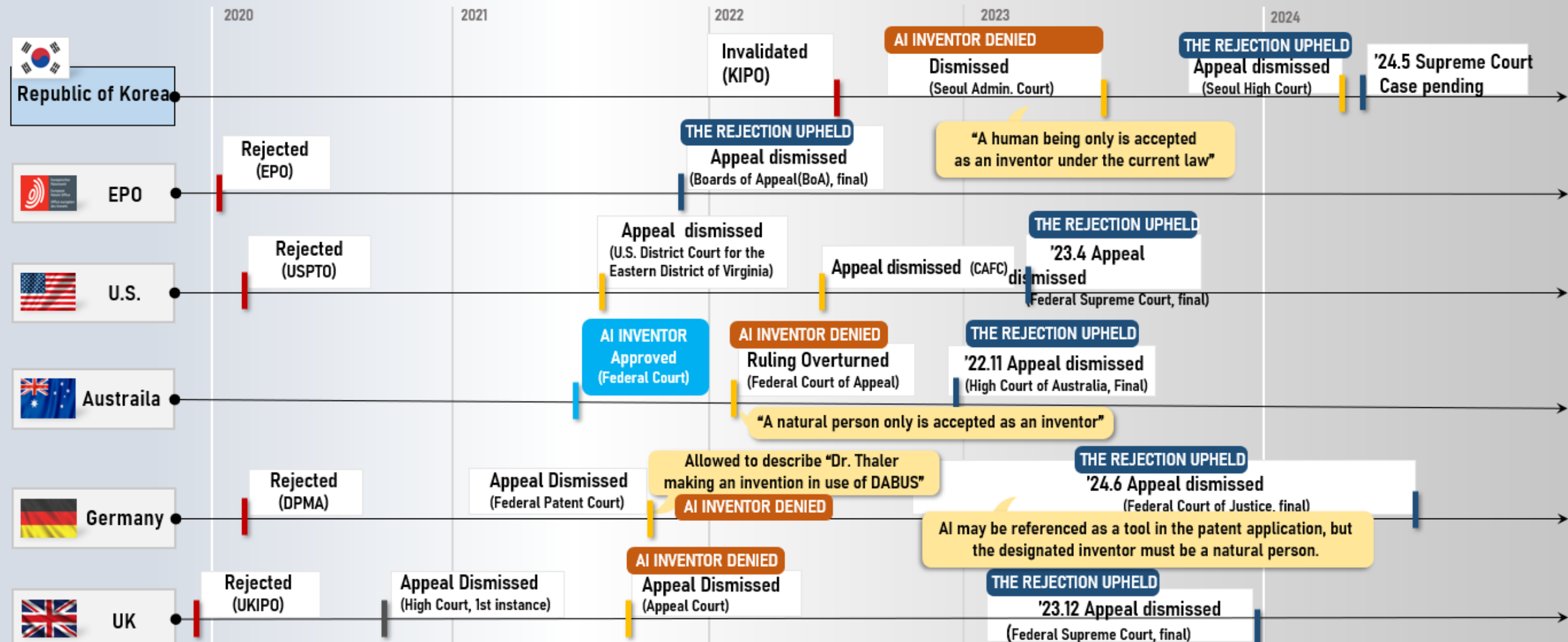
(71) Applicant: **THALER, Stephen L.** [US/US]; 1767 Waterfall Dr., St Charles, Missouri 63303 (US).

(72) **Inventor: DABUS, The invention was autonomously generated by an artificial intelligence;** 1767 Waterfall Dr., St Charles, Missouri 63303 (US).

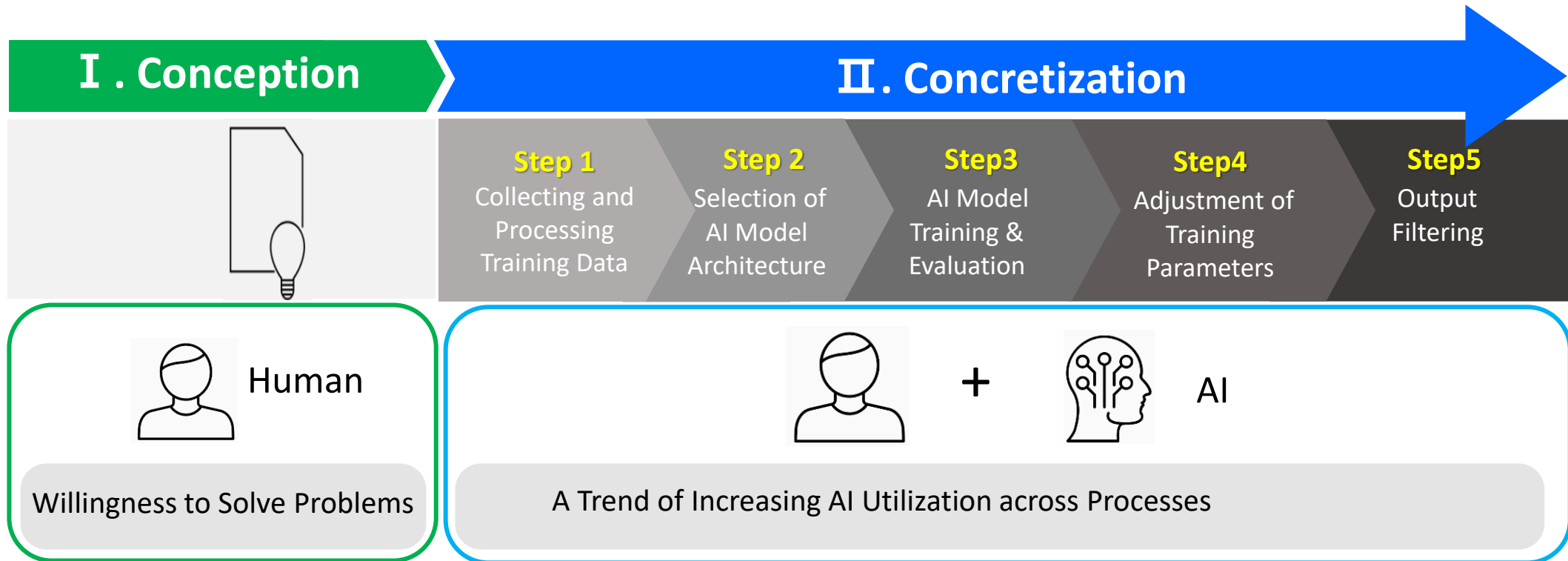
(74) Agent: **ABBOTT, Ryan;** 11601 Wilshire Blvd #2080, Los Angel, CA 90024 (US).

Court Rulings on AI Inventorship (DABUS Case)

Comparison between Recent Court Rulings - DABUS Case for AI Inventorship -

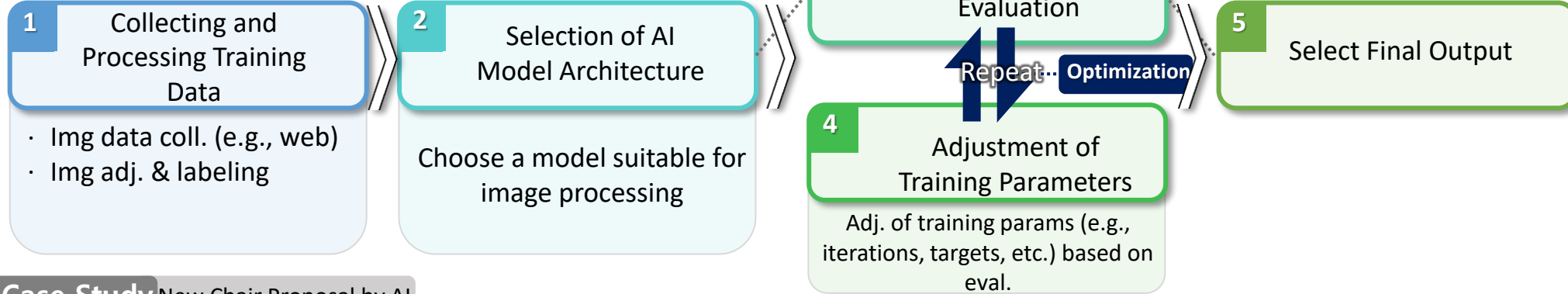


AI Enhances, Not Replaces, Human Innovation



Case Study: AI-Assisted Design in Product Development

Big Data



Case Study New Chair Proposal by AI

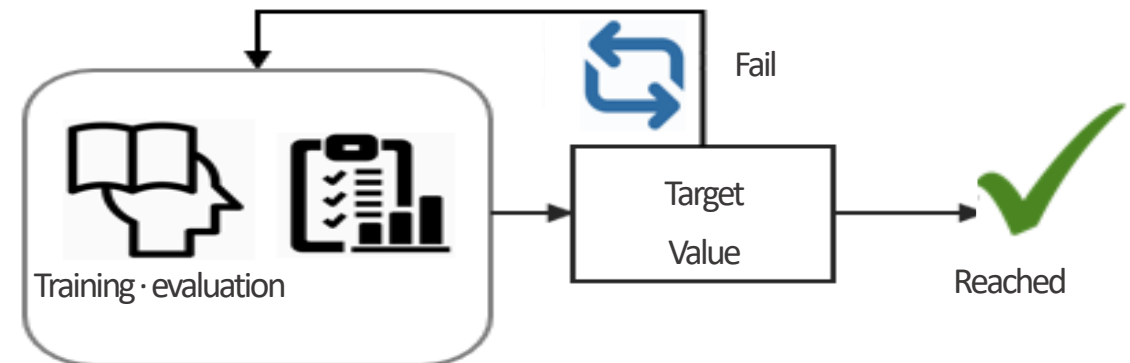
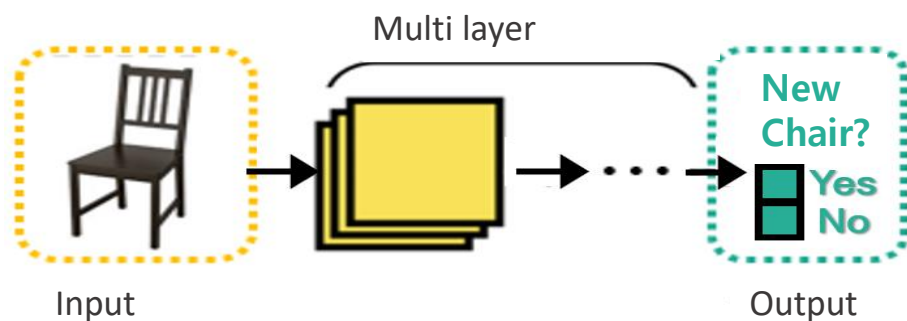
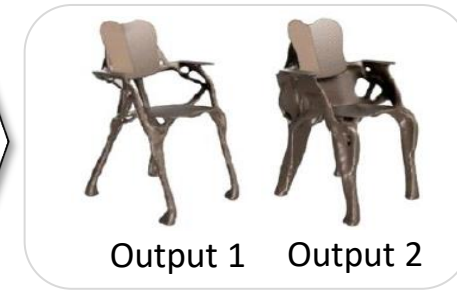
Label images of various chairs



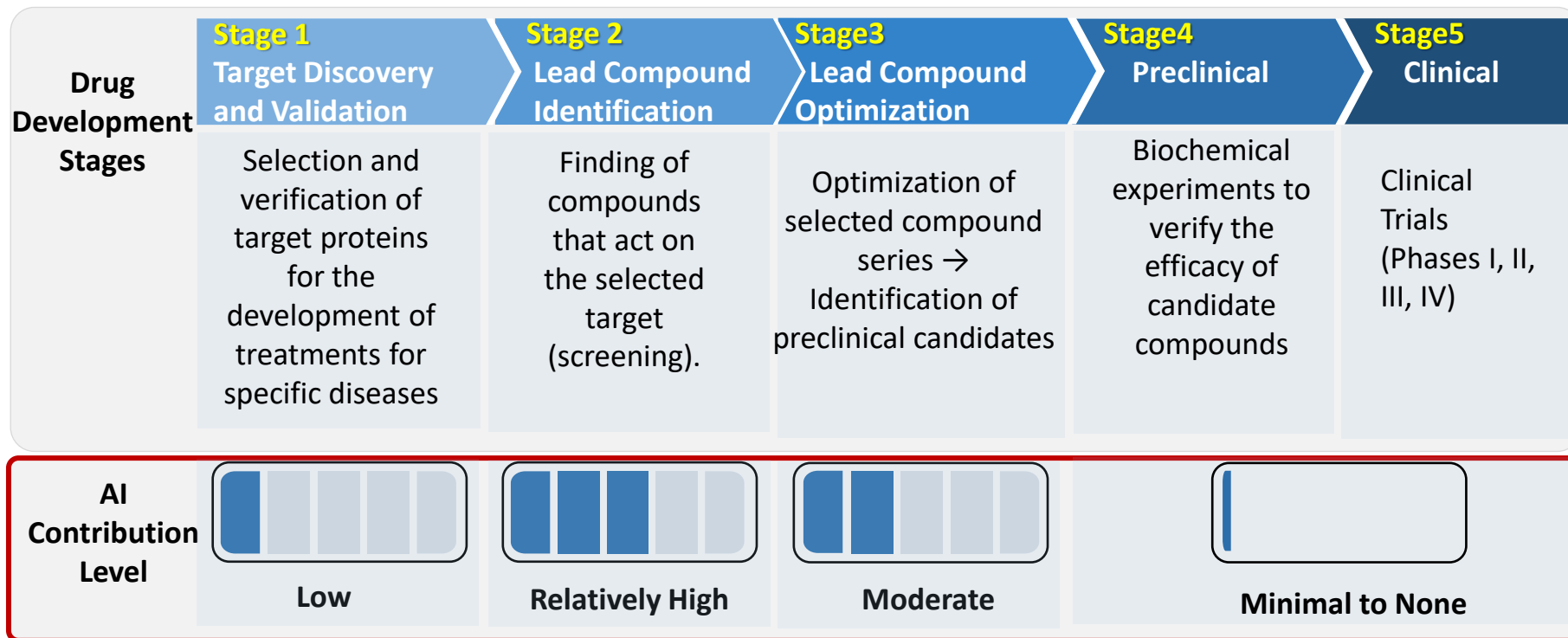
Select new chair proposal model



Repeat training until target (dissimilarity) reached

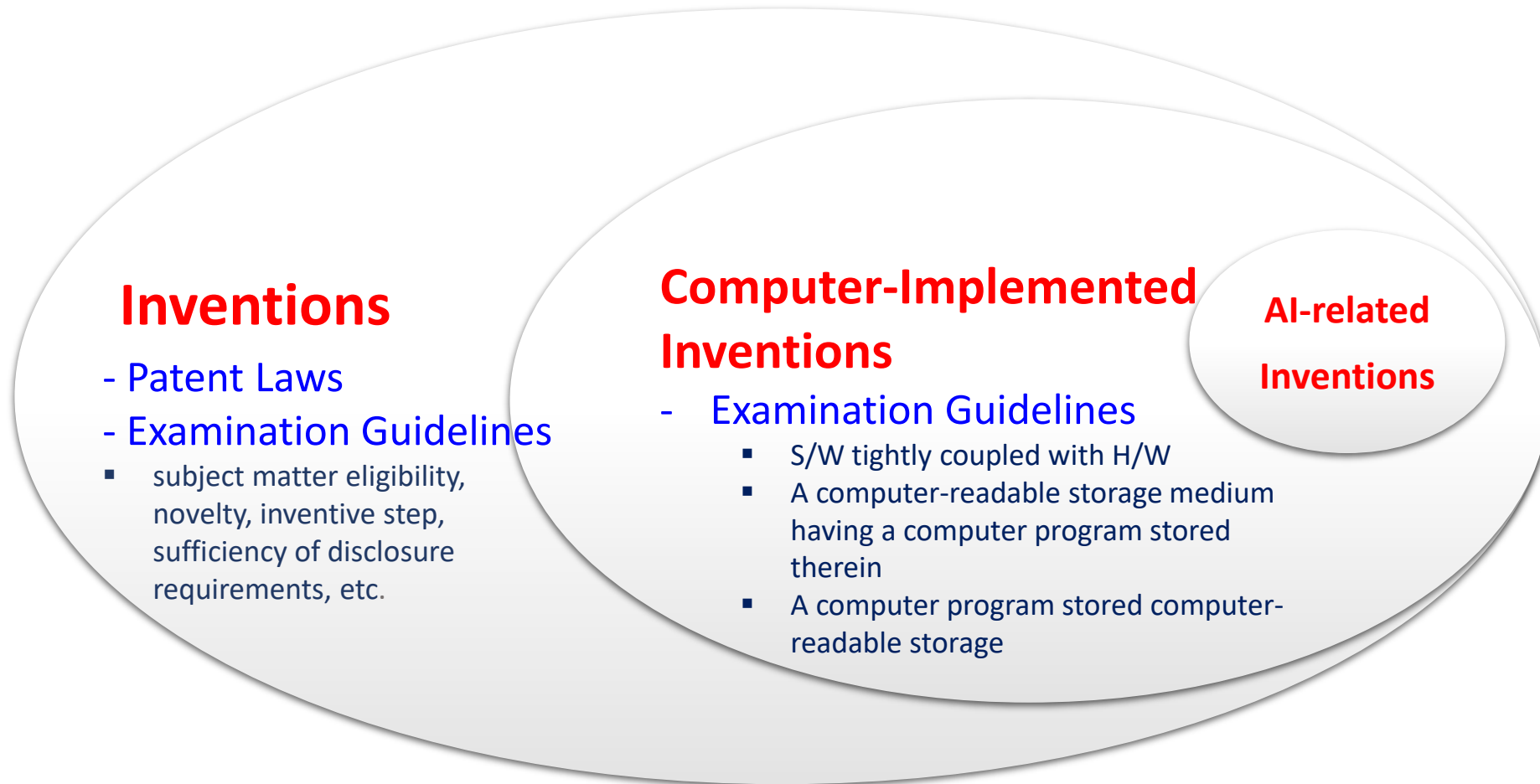


AI in Drug Development: Enhancing Efficiency



KIPO's Guidelines for AI-Related Inventions

- KIPO has continuously revised the “[Examination Guide in the Artificial Intelligence Field](#)” since its establishment in 2020



AI-related Invention

AI Model

Training data set
Modeling
Improvement
...

AI Applied

Health Care
Robotics
Navigation
Autonomous Vehicle

+

Business Model
Big Data Analysis

Examination of AI-Assisted Drug Discovery

- If a new drug candidate is discovered using computer programs or algorithms, and specific experimental results that can prove the efficacy of the substance are included in the description of the invention, then both the method of screening the candidate substance and the new drug candidate itself can be subject to patent protection.
- However, if verification is not conducted through concrete experiments and only in silico methods such as computer modeling are used, it cannot be patented.
- Under the KPA, claims based solely on in silico methods without supporting experimental data fail to meet utility and description requirements

Use of Existing Software for In Silico Screening

- If the search or prediction of interactions for candidate substances is conducted only through in silico methods using existing, already known computer programs or algorithms according to their manuals, the method of screening the candidate substances is not recognized as having inventive step and therefore cannot be patented.

Emerging Challenges in Patent Law from Generative AI

- Does generative AI affect the scope of prior art?
- Should AI's role redefine the concept of a "person skilled in the art"?
- Do increasingly complex algorithms require new approaches to the sufficiency of description requirement in a patent application?
- Can AI be credited as an inventor, or is inventorship strictly limited to natural persons?

Note: Current examination guidelines do not fully address these emerging issues.

KIPO's Policy Study on AI Patent Issues

- **Study Period:** November 2024 - February 2025
- **Research Focus:**
 - ✓ International Policy Trends: Understanding how global IP offices handle AI-generated inventions.
 - ✓ Inventive Step: Adapting criteria for assessing novelty and inventive step in AI-related inventions.
 - ✓ Description Requirements: Addressing challenges posed by the "black box" nature of AI models.
 - ✓ Inventorship Criteria: Establishing clear guidelines for when human inventors use AI.

Objective

- Looking forward to continuing discussions on this issue with Member States and IP Offices.



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Thank you !