



Kraus & Weisert Seminar

US Patent Law and Practice: Updates and Recent Trends in Artificial Intelligence

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Artificial Intelligence and Inventions

Artificial Intelligence and Inventions

- What is Artificial Intelligence (“AI”)?
- AI can be used “to increase operational efficiency, reduce costs, and improve customer satisfaction.”^[1]
- How is AI being used?



AI-Based Inventions

Uses for AI-based inventions

- Facial recognition and speech recognition
- Understanding language semantics
- Analyzing product samples in the manufacturing process
- Detecting flaws and defects during manufacturing
- Detecting structures in biological samples
- Cross-validating results from conventional tests

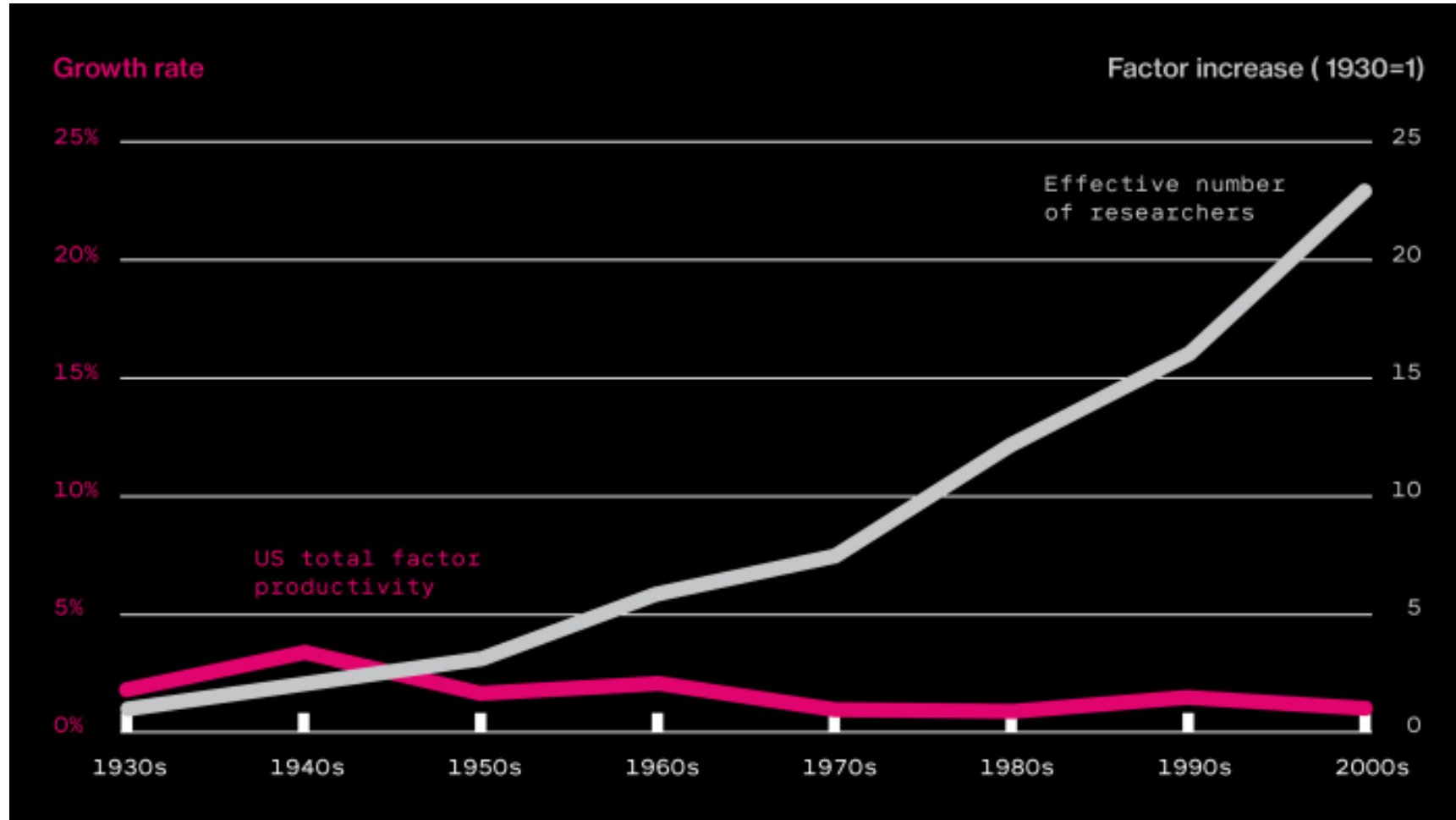


Generative Artificial Intelligence and Inventions

- Artificial Intelligence (“AI”) can also be used to help generate inventions
 - So-called “Generative AI” inventions
- “The biggest impact of artificial intelligence will be to help humans make discoveries we couldn’t make on our own.”^[2]



Generative Artificial Intelligence and Inventions



D. Rotman, "AI is Reinventing the Way We Invent," MIT Technology Review, February 15, 2019, www.technologyreview.com/2019/02/15/137023/ai-is-reinventing-the-way-we-invent/.

Generative AI Inventions

- Generative AI in pharmaceutical and chemical industries
- Companies using generative AI:
 - Atomwise Inc.
 - Kebotix, Inc.
 - Deep Genomics
 - Mitra Chem



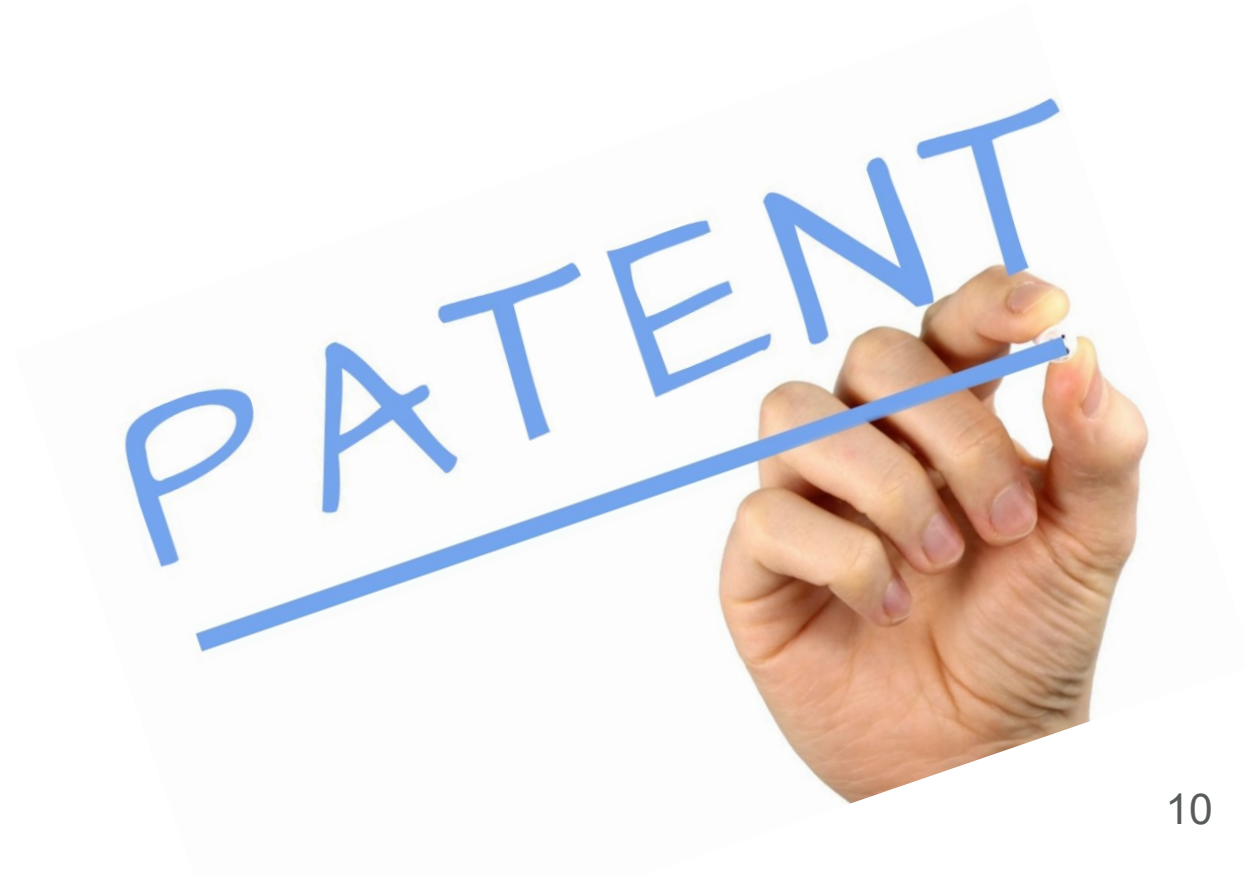
Generative AI Inventions

- Generative AI in tech and other industries
- Companies using generative AI:
 - Microsoft
 - Salesforce
 - Bain & Company, helping Coca-Cola
 - General Motors
 - Google



Patenting of AI-Based Inventions - Benefits

- Block competitors
- Prevent competitors from blocking you
- Seek patent protection instead of keeping as trade secret
- Marketing tool



Inventorship: Using Artificial Intelligence to Generate Inventions

Who is the Inventor? *Thaler v. Vidal* (2022)

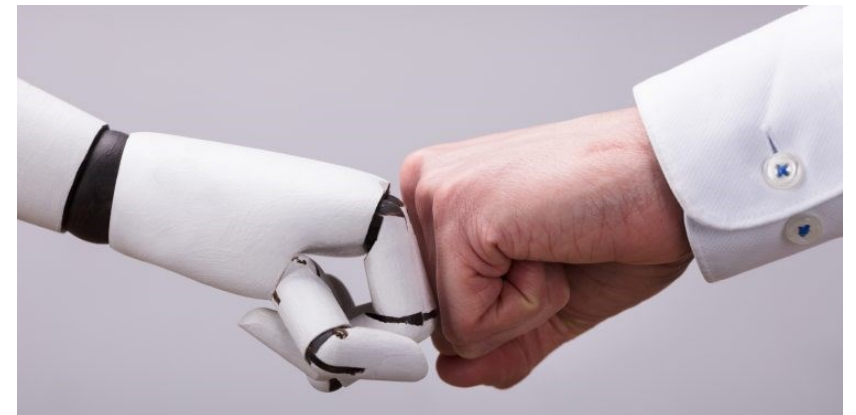
- If generative AI is used to invent, who is the inventor?
- *Thaler v. Vidal*, 2021-2347 (Fed. Cir. Aug. 5, 2022), cert. denied, S.Ct. (Apr. 24, 2023)



R. Waters, "The rapid rise of generative AI threatens to upend US patent system," Financial Times, April 26, 2023, www.ft.com/content/dc556ab8-9661-4d93-8211-65a44204f358.

Who is the Inventor? *Thaler v. Vidal* (2022)

- Thaler developed and ran AI system that generated inventions: DABUS
- DABUS listed as sole inventor on patent applications
- US patent law requires that inventors are natural persons (i.e., human beings)
- US Supreme Court precedent: natural persons are human beings
- Thus, only a natural person can be an inventor, and AI cannot be an inventor



US Patent Act – Individual, Himself, Herself

- **35 U.S.C. 100(f)** – “The term ‘inventor’ means the **individual** or, if a joint invention, the **individuals** collectively who invented or discovered the subject matter of the invention.”
- **35 U.S.C. 100(g)** – “The terms ‘joint inventor’ and ‘coinventor’ mean anyone of the **individuals** who invented or discovered the subject matter of a joint invention.”
- **35 U.S.C. 115(a)** – “Except as otherwise provided in this section, each **individual** who is the inventor or a joint inventor of a claimed invention in an application for patent shall execute an oath or declaration in connection with the application.”
- **35 U.S.C. 115(b)(2)** – “...such individual believes **himself** or **herself** to be the original inventor or an original joint inventor of a claimed invention in the application.”

USPTO – AI and Inventorship

- USPTO Listening Session on AI and Inventorship on April 25, 2023, 88 FR 20864 (April 7, 2023)
- USPTO posed several questions, including:
 - 3. If an AI system contributes like a **joint inventor**, is the invention patentable?
 - 4. **Ownership** issues?
 - 6. Provide explanation of **contributions of AI systems** to a patent application?



Preventing and Overcoming Rejections of AI-Based Inventions

Preventing and Overcoming Rejections of AI-Based Inventions

- Section 101 – Patent eligibility
- Section 112 – Proper written disclosure
- Section 102 – Novelty
- Section 103 - Obviousness



Section 101 Rejections - *Alice*

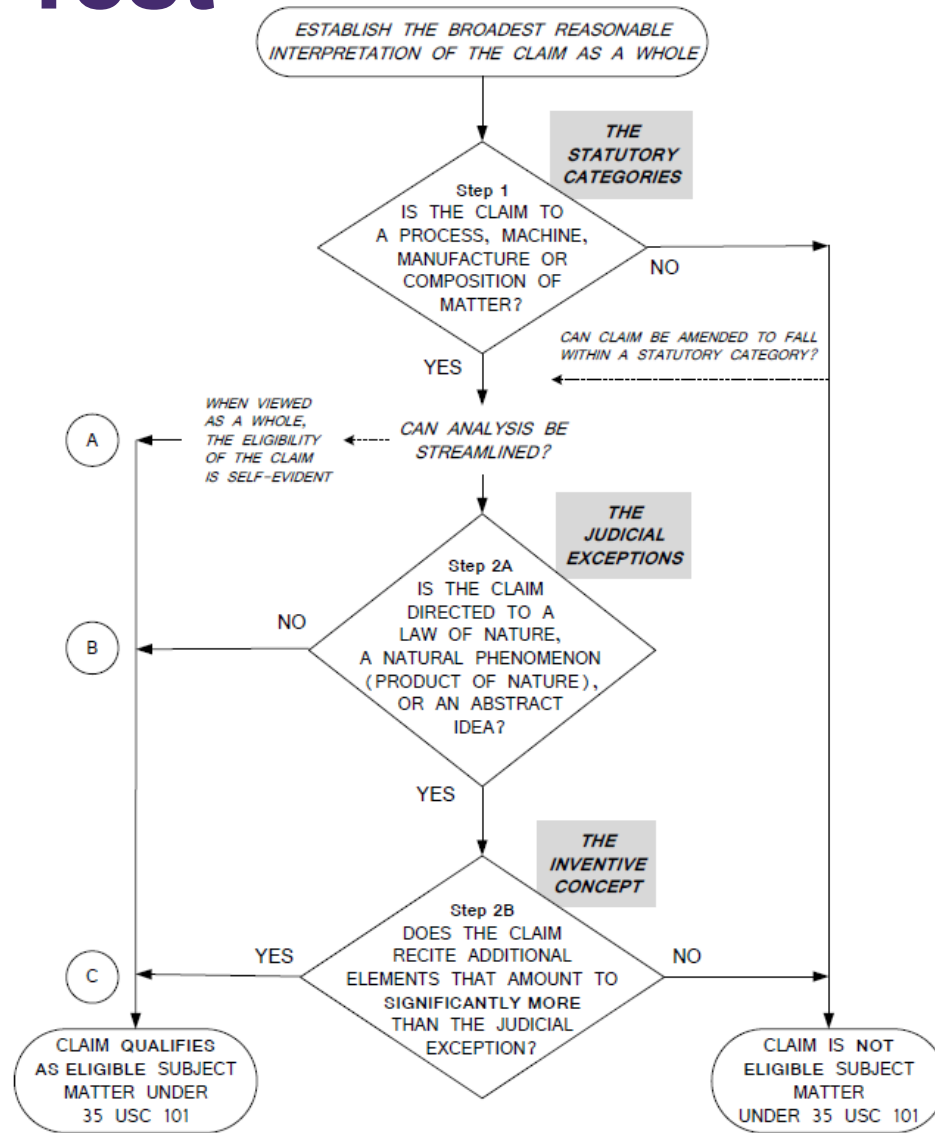
- *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014)
 - Unanimous decision: patent claims invalid because claims drawn to “abstract idea”
 - Two-step test
- “2019 Revised Patent Subject Matter Eligibility Guidance” (“2019 PEG”)
 - January 7, 2019
 - Updated October 7, 2019



Alice Two-Step Test

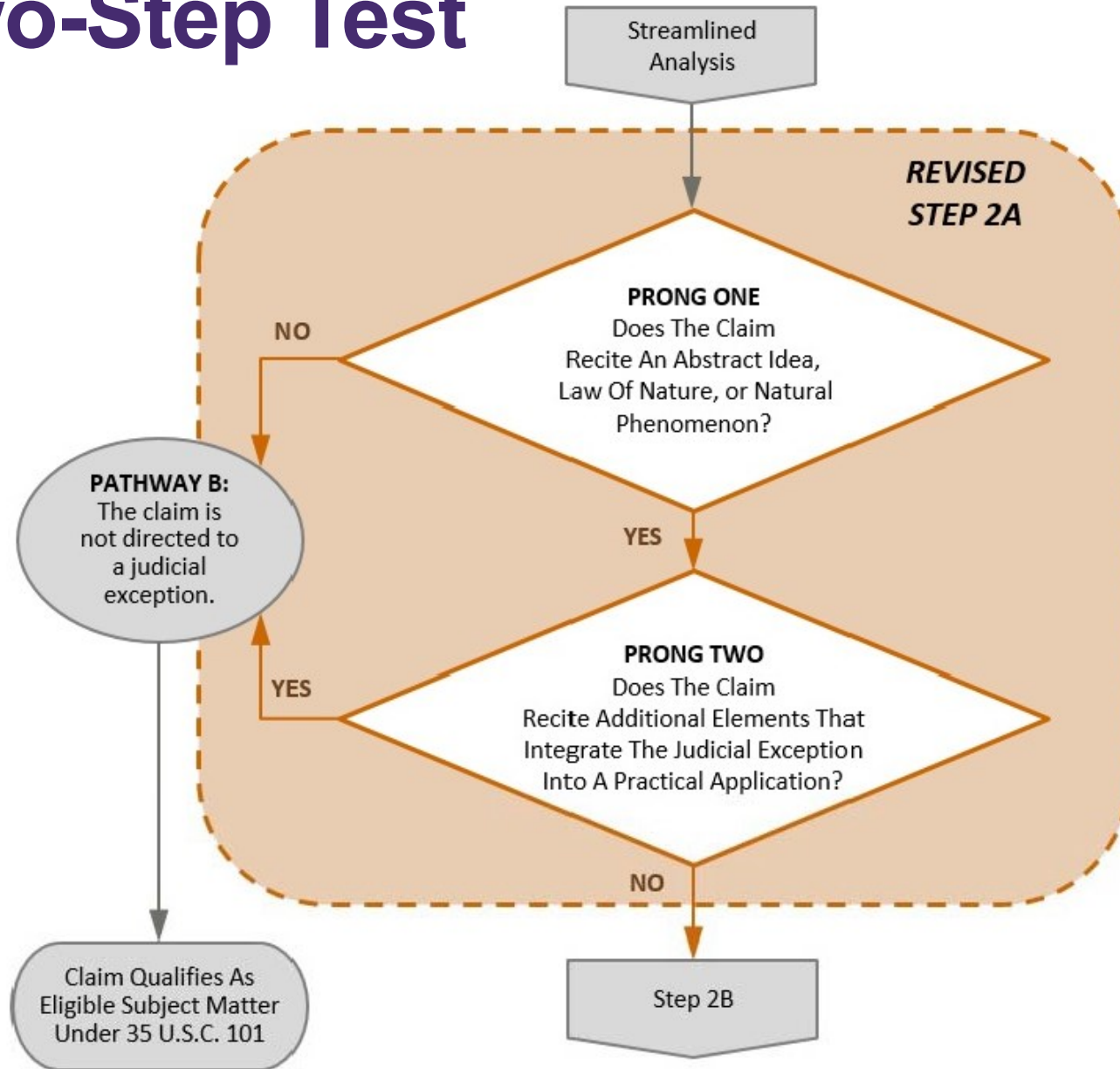


SUBJECT MATTER ELIGIBILITY TEST FOR PRODUCTS AND PROCESSES

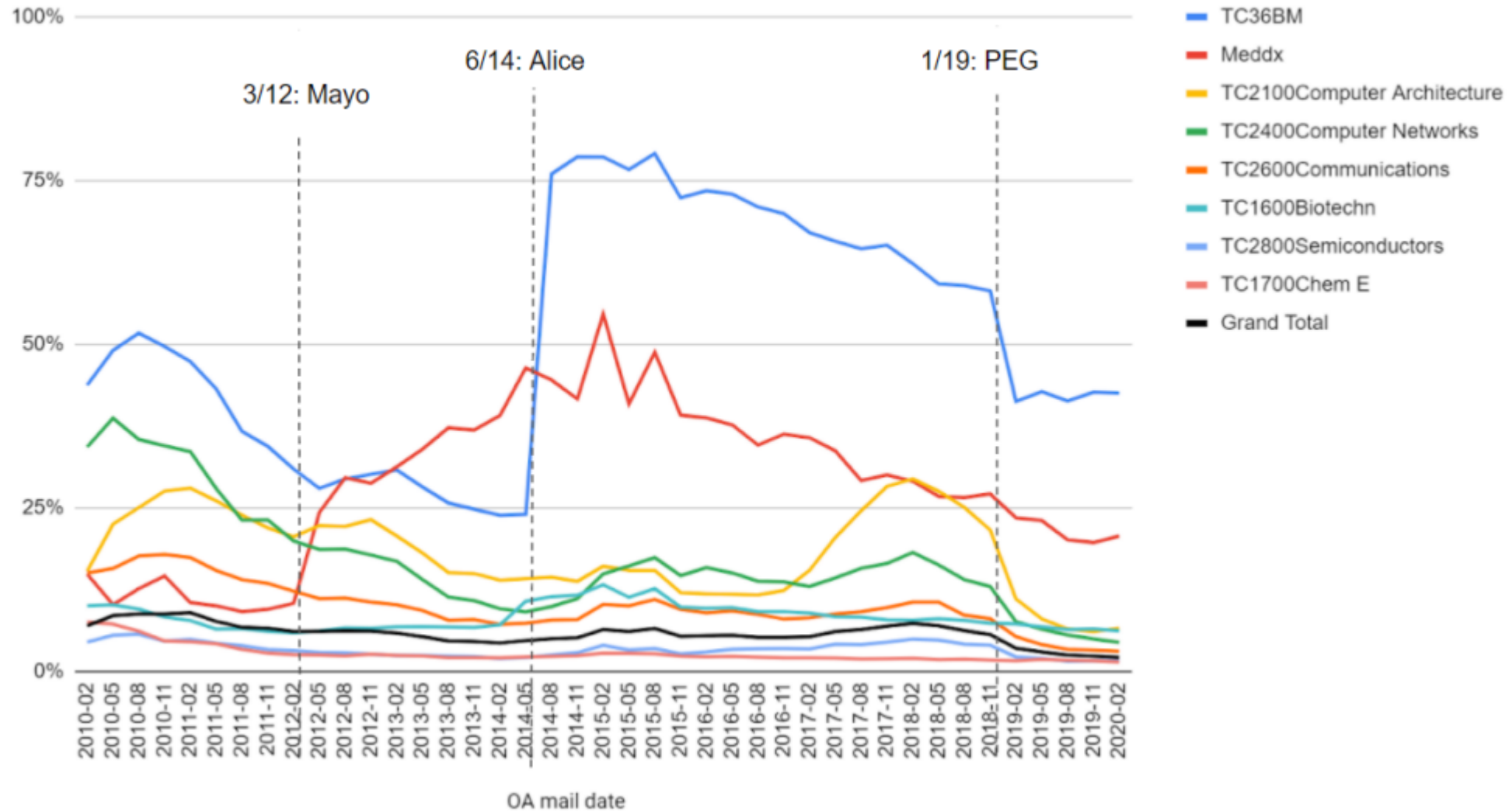


A B C → THE PATHWAYS TO ELIGIBILITY

Alice Two-Step Test



Section 101 Rejections



Preventing Section 101 Rejections of AI-Based Inventions

Preventing Section 101 Rejections

- Draft application and claims to pass *Alice* 2-Step Test
- Include discussion of (1) **Technical** Problem and (2) **Technical** Solution
- Discuss benefits / advantages of Technical Solution

**PROBLEM
SOLVED** ✓

Preventing Section 112 Rejections of AI-Based Inventions

Preventing Section 112 Rejections

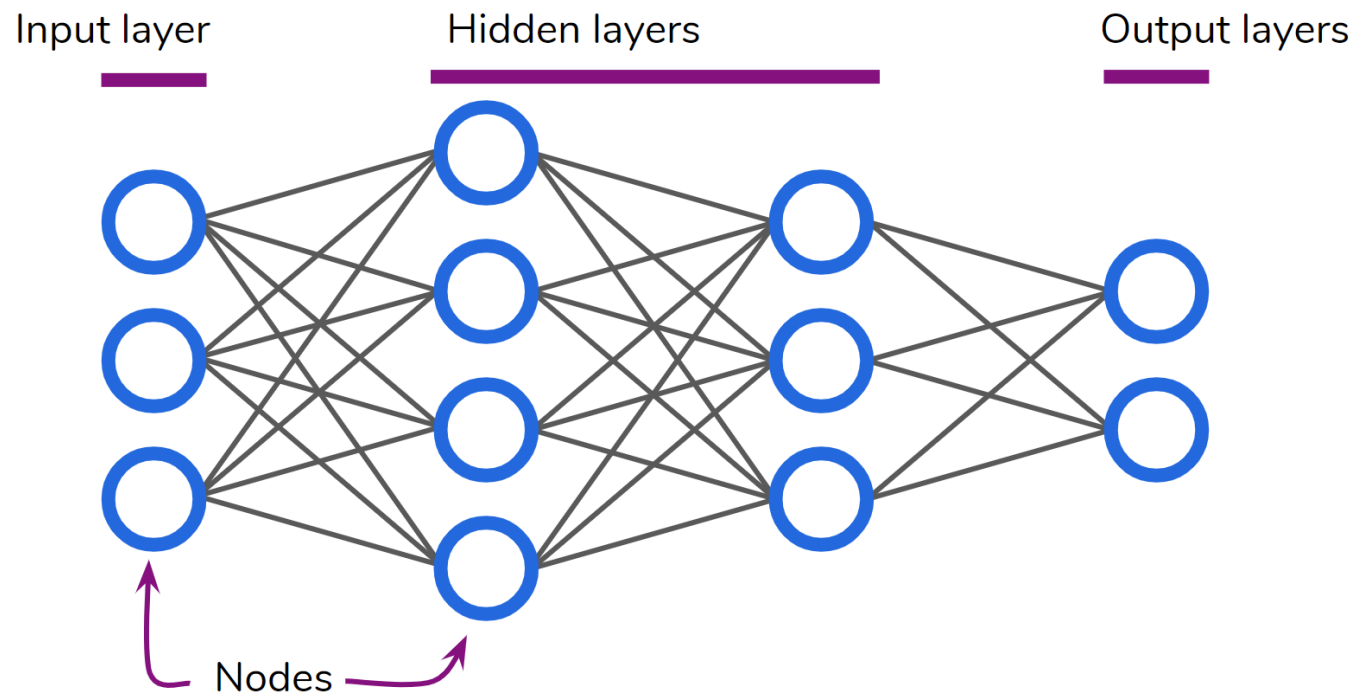
- Draft application and claims to satisfy Section 112
- Have enabling disclosure
- Describe AI process in detail

```
target_time=> select target_date, target_time, server_time, cpu_index, cpu, device
from target_time
```

target_date	target_time	server_time	cpu_index	cpu	device
2016-12-26	02:29:30	1482737402			
2016-12-26	02:32:29	1482737582	2	12	
2016-12-26	02:32:29	1482737582	1	13	
2016-12-26	02:35:29	1482737762	2	19	
2016-12-26	02:35:29	1482737762	1	14	
2016-12-26	02:38:29	1482737942	2	19	
2016-12-26	02:38:29	1482737942	1	16	
2016-12-26	02:38:29	1482737942	2	18	
2016-12-26	02:41:30	1482738123	1	13	
2016-12-26	02:41:30	1482738123	2	19	
2016-12-26	02:41:30	1482738123	1	15	
2016-12-26	02:44:29	1482738302	2	18	
2016-12-26	02:44:29	1482738302	1	15	
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2016-12-26	02:44:29	1482738482	1	15	

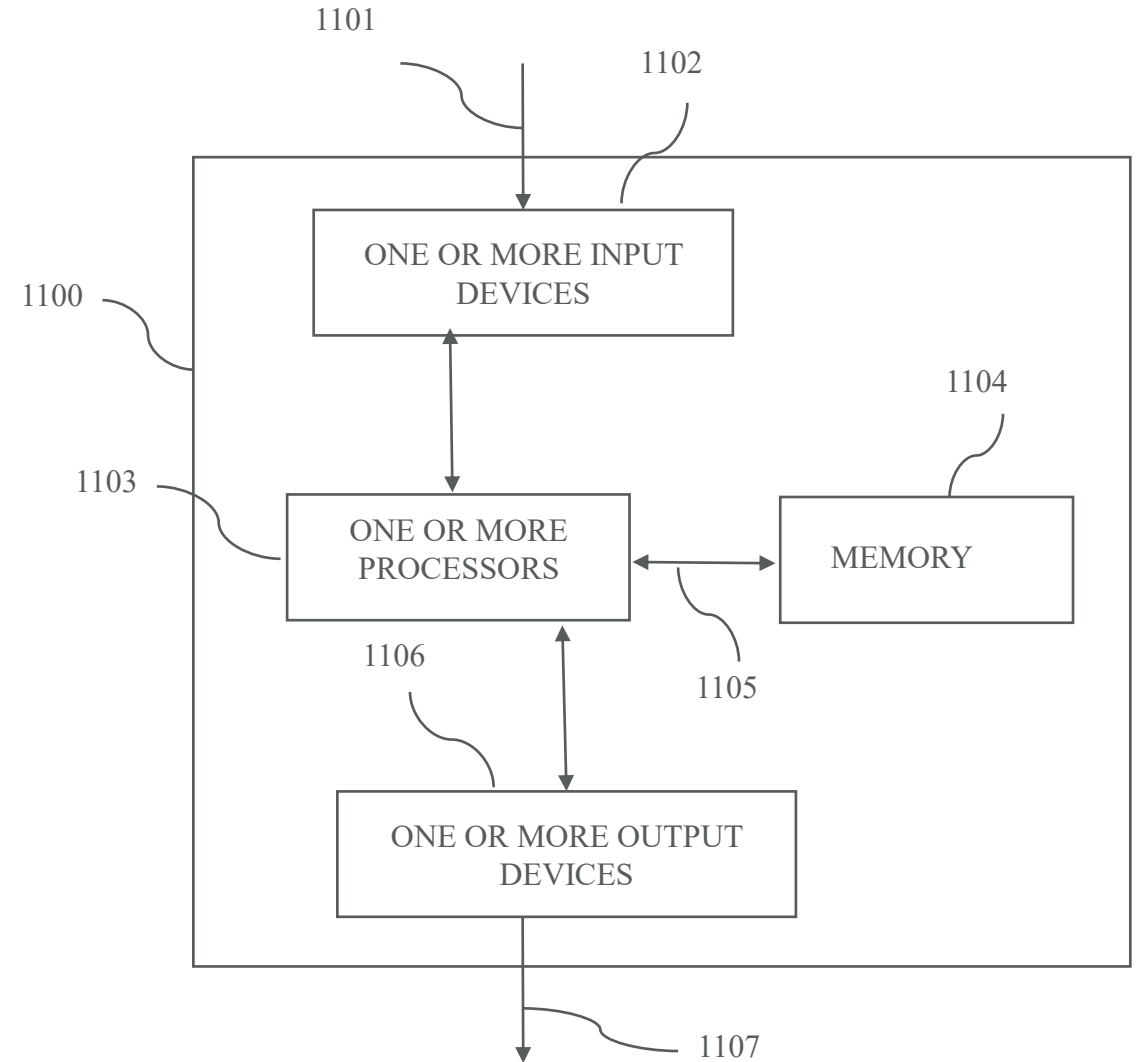
Drafting Applications for AI-Based Inventions

- Focus on AI module
- Discuss any training used the by AI module
- Include figures of AI module



Drafting Applications for AI-Based Inventions

- Provide computer/software support for the AI aspect of the invention



Claiming AI-Based Inventions

- Consider various claim formats
- Single-entity infringement



Overcoming Rejections of AI-Based Inventions

Responding to rejections

- Section 101 – Patent eligible subject matter
- Section 112(a) – Not enabled subject matter
- Section 103 – Obviousness



Software Tools for AI-Based Inventions

Software tools to aid in application drafting and prosecution

- AI-based tools to proofread application
- AI-based tools to predict USPTO Art Unit
- Examiner analytics for prosecution strategies



Proposed US Legislation: “Patent Eligibility Restoration Act of 2023”

US Patent Law - Section 101

- Currently, the US Patent Law on patent eligibility is based on Section 101
 - 35 U.S.C. 101 - Inventions Patentable:
 - “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”
- Where is the term “patent eligibility” in Section 101?



US Patent Law – Tests for Patent Eligibility

- Current test to determine patent eligibility:
 - Two-step *Alice* test
- Past tests to determine patent eligibility:
 - *Freeman-Walter-Abele* test
 - Business method test
 - Technological arts test
 - “Useful, concrete, and tangible result” test
 - Physical steps test
 - Transformation test
 - Practical applications test



“They call them standardized tests because being terrified to take them is the standard.”

“Patent Eligibility Restoration Act of 2023”

- “Patent Eligibility Restoration Act of 2023”
 - Introduced on June 22, 2023 by Senators Thom Tillis (R- North Carolina) and Chris Coons (D-Delaware)
- Concerns on ambiguity of patent eligibility requirements
- Concerns on impact of patenting AI-based inventions, among others



Proposed Changes to US Patent Law

- With only a few exceptions, any invention is patent eligible
- No requirements for novelty, non-obviousness, and written description to be used for patent eligibility
- The claim needs to be considered as a whole, without disregarding any claim element



Proposed Changes to US Patent Law - Exceptions

- Eliminate all judicial exceptions to Section 101
- Replace with only statutory exceptions:
 1. "a mathematical formula that is not part" of a process, machine, manufacture, or composition of matter
 2. "a process that is substantially economic, financial, business, social, cultural or artistic"
 3. "a process that (i) is a mental process performed solely in the human mind"

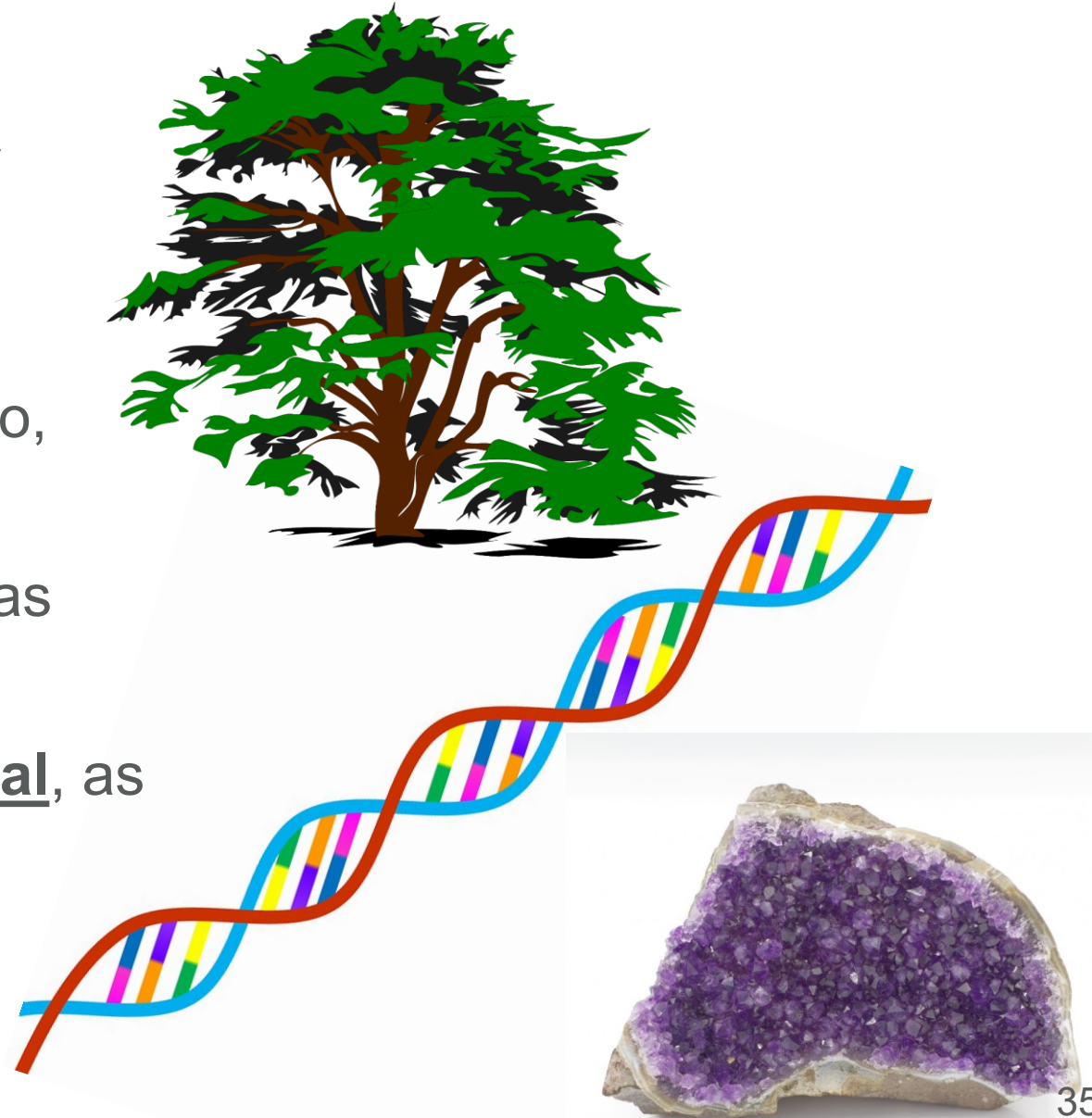
[statutory exceptions continued on next slide]

$$E = mc^2$$



Proposed Changes to US Patent Law - Exceptions

- [Continued] Replace with only statutory exceptions:
 4. “a process that... (ii) occurs in nature wholly independent of, and prior to, any human activity”
 5. “an unmodified human gene, as that gene exists in the human body”
 6. “an unmodified natural material, as that material exists in nature”



Proposed Changes to US Patent Law – What's Next?

- Dramatic changes, if enacted
- Consider filing patent applications for inventions with previously marginal patent eligibility
- For important applications in prosecution with Section 101 rejections, consider slowing down prosecution
- For patent litigation, if a patent may face Section 101 challenges under the current law, consider delaying or slowing down the litigation



Key Takeaways

Key Takeaways

- AI is impacting innovation
- AI as an inventor?
- Prevent rejections of AI-based inventions
- Changing landscape for patent eligibility under Section 101



Thank You!



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