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Software Claims Reflecting Technical Improvement Pass § 101 Muster

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In addressing subject matter eligibility of software patent claims, the US Court of Appeals for the Federal Circuit found claims to be subject matter eligible where the claims were directed to configuration of a memory system based on the type of processor connected to that memory system. The Court concluded that the claims were directed to a technological improvement in memory systems rather than an abstract idea. *Visual Memory LLC v. NVIDIA Corporation*, Case No. 16-2254 (Fed. Cir., Aug. 15, 2017) (Stoll, J) (Hughes, J, dissenting).

The patent at issue relates to a memory system connected to different types of processors, where operational characteristics of a corresponding cache are programmed based on the type of processor connected to the memory system. The cache is divided into pages containing either code or non-code data, and the programmable operational characteristics provide a bias towards code pages or non-code pages depending on the type of processor connected to the memory system. The specification discloses that the memory system "allows different types of processors to be installed with the [same] subject memory system without significantly compromising their individual performance."

After Visual Memory sued NVIDIA alleging patent infringement, the district court dismissed the complaint in the context of an R. 12(b)(6) failure to state a claim motion, concluding that the patent was directed to patent ineligible subject matter. The district court found that the claims were directed to "the abstract idea of categorical data storage" and found no inventive concept because the claims recited generic and conventional computer components and concepts. Visual Memory appealed.

The Federal Circuit reversed, finding that the challenged claims were patent eligible under § 101. Regarding step one of the *Alice* inquiry, the Court found that the challenged claims were not directed to an abstract idea because the claims reflected a technical improvement to computer memory systems as discussed in the specification. The Court cited its decisions in *Enfish* (*IP Update*, Vol. 19, No. 6) and *Thales* (*IP Update*, Vol. 20, No. 4) for guidance.

In *Enfish*, the self-referential table recited in the claims at issue was found to be an improvement in the computer's functionality, where the specification described the benefits of using a self-referential table and highlighted the differences between the claimed self-referential table and a conventional database structure. In *Thales*, the Court found that the non-conventional use of inertial sensors and a

mathematical equation to reduce errors in measuring the location and orientation of an object relative to a moving platform amounted to a technical improvement under step one of the *Alice* inquiry.

Like the specifications in *Enfish* and *Thales*, the specification in this case discussed the advantages offered by the technical improvement in the claimed memory system, where the teachings of the specification shed light on the claimed memory system's efficiency and outperformance over other conventional approaches.

Although the Federal Circuit acknowledged that the abstract concept of categorical data storage underlay the claims at issue, it explained that the claims focused on a "specific asserted improvement in computer capabilities" (*i.e.*, the use of programmable operational characteristics that are configurable based on the type of processor) instead of "on a process that qualifies as an abstract idea for which computers are invoked merely as a tool."

In dissent, Judge Hughes argued that distilling the purpose of the claims requires expressing the fundamental concept "at a level consistent with the level of generality or abstraction expressed in the claims themselves," and that the fundamental concept cannot be described at a lower level than categorical data storage. The majority disagreed with the characterization of the "programmable operational characteristics" as a black box lacking support from the specification as to how the programmable operational characteristics are implemented, explaining that the specification and claims make clear that the improved memory system is "achieved by configuring a programmable operational characteristic of a cache memory based on the type of processor connected to the memory system."

Practice Note: This case reflects the Federal Circuit's current jurisprudence as to what qualifies as patent eligible subject matter as it relates to software patent claims. Patent drafters may consider including in the written description an explanation of the advantages of the claimed subject matter over conventional approaches, since the Court has shown a pattern of reliance on the specification for determining whether the claims reflect a technical improvement. Practitioners may also consider providing code as part of the specification, as the Court has shown some proclivity to find that code that teaches an artisan about the "innovative programming effort" behind the invention may help demonstrate a technical improvement.

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