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Computer-Implemented Functional Claiming Under 35 U.S.C. § 112

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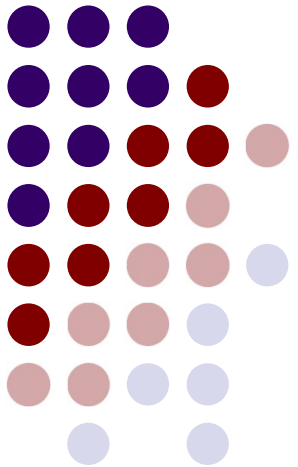
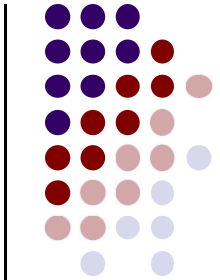
March 4, 2020

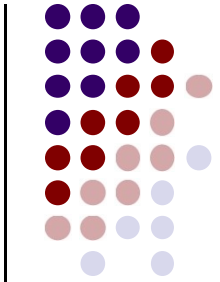


Functional Claiming



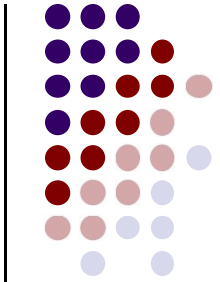
- A claim term is functional when it recites a feature "by what it does rather than by what it is" (e.g., as evidenced by its specific structure or specific ingredients). *In reSwinehart,* 439 F.2d 210, 212, 169 USPQ 226, 229 (CCPA 1971).
- 35 U.S.C. 112(f) and pre-AIA 35 U.S.C. 112, sixth paragraph, expressly authorize a form of functional claiming (means- (or step-) plus- function claim limitations discussed in MPEP § 2181*et seq.*).
- Functional language may also be employed to limit the claims without using the means-plus-function format.

Functional Claiming under 35 U.S.C. § 112(f)



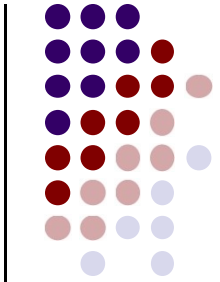
- If a claim limitation recites a term and associated functional language, the examiner should determine whether the claim limitation invokes 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph.

USPTO Latest Guidance (January 2019)



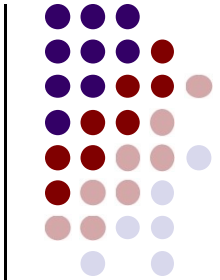
- 3-Prong analysis for identifying § 112(f) claim limitations
  - (A) The claim limitation uses the term “means” or a term used as a substitute for “means” that is a generic placeholder for performing the claimed function.
  - (B) The term “means” or the generic placeholder is modified by functional language, typically, but not always linked by the transition word “for” (e.g., “means for”) or another linking word or phrase, such as “configured to” or “so that.”
  - (C) The term “means” or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

USPTO Latest Guidance (January 2019)



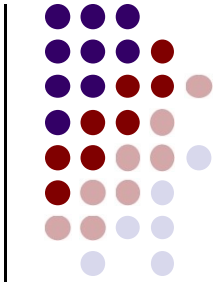
- Generic placeholder
  - Examples that may invoke § 112(f) : “mechanism for,” “module for,” “device for,” “unit for,” “component for,” “element for,” “member for,” “apparatus for,” “machine for,” or “system for.”

USPTO Latest Guidance (January 2019)



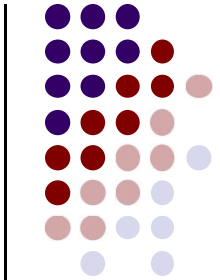
- Presumption of whether to invoke § 112(f)
  - A claim limitation is presumed to invoke § 112(f) when it explicitly uses the term “means” and includes functional language.
    - The presumption that § 112(f) applies is overcome when the limitation further includes the structure necessary to perform the recited function.
  - A claim limitation that does not use the term “means” will trigger the presumption that § 112(f) does not apply.
    - The presumption that § 112(f) does not apply is overcome when the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.

USPTO Latest Guidance (January 2019)



- A limitation will not invoke § 112(f) if a structural modifier further describes the term “means” or the generic placeholder.
- To determine whether a word, term, or phrase coupled with a function denotes structure, check whether:
  - The specification provides a description sufficient to inform one of ordinary skill in the art that the term denotes structure.
  - General/subject matter specific dictionaries provide evidence that the term has achieved recognition as a noun denoting structure.
  - The prior art provides evidence that the term has an art-recognized structure to perform the claimed function.

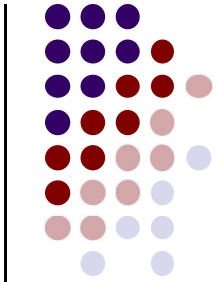
Computer-implemented § 112(f) claim limitations under § 112(b)



- A computer-implemented § 112(f) claim limitation will be indefinite under § 112(b) when the specification fails to disclose an algorithm to perform the claimed function **or** when the specification discloses an algorithm but the algorithm is not sufficient to perform the entire claimed function or functions.

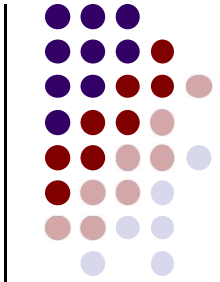
- The sufficiency of the algorithm is determined **in view of what one of ordinary skill in the art would understand as sufficient to define the structure and make the boundaries of the claim understandable**. The requirement for the disclosure of an algorithm cannot be avoided by arguing that one of ordinary skill in the art is capable of writing software to perform the claimed function.

Algorithm



- An algorithm is defined, e.g., as a finite sequence of steps for solving a logical or mathematical problem or performing a task.
- Applicant may express that algorithm in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure.
- The algorithm may be a step-by-step procedure for accomplishing the given results.
- The algorithm needs to be sufficient to perform the entire claimed function or functions.

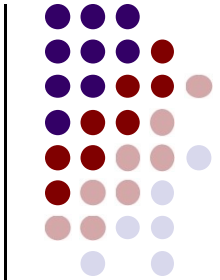
Algorithm



- "[A] description of an algorithm that places no limitations on how values are calculated, combined, or weighed is insufficient to make the bounds of the claim understandable." *Ibormeith IP, LLC v. Mercedes-Benz USA, LLC,* 732 F.3d 1376, 1382 (Fed. Cir. 2013)).

- The fact that this algorithm relies, in part, on techniques known to a person of skill in the art does not render the composite algorithm insufficient under § 112 ¶ 6. Indeed, this is entirely consistent with the fact that the sufficiency of the structure is viewed through the lens of a person of skill in the art and without need to "disclose structures well known in the art," *Enfish, LLC v. Microsoft Corp.* (Fed. Cir. 2016) citing *Biomedino LLC v. Waters Techs. Corp.*, 490 F.3d 946, 952 (Fed. Cir. 2007).

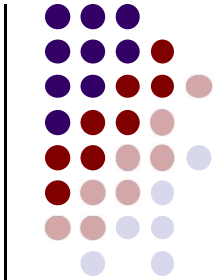
Computer-implemented § 112(f) claim limitations under § 112(a)



- When a claim containing a computer-implemented § 112(f) claim limitation is found to be indefinite under § 112(b) for failure to disclose sufficient corresponding structure (e.g., the computer and the algorithm) in the specification that performs the entire claimed function(s), it will also lack written description under § 112(a).

- In such situations, further consider whether the disclosure contains sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the full scope of the claimed invention in compliance with the enablement requirement of § 112(a).

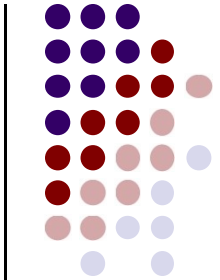
Interpretation of § 112(f) claim limitation



- The broadest reasonable interpretation of a claim limitation that is subject to § 112(f) is the structure, material or act described in the specification as performing the **entire** claimed function and equivalents to the disclosed structure, material or act.

- If the claim limitation is being interpreted under § 112(f), the specification must be consulted to determine the corresponding structure, material, or act for performing the claimed function.

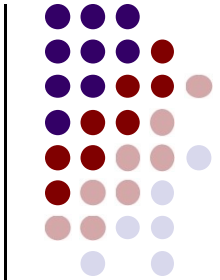
Interpretation of computer-implemented § 112(f) claim limitations



- For a computer-implemented 35 U.S.C. § 112(f) claim limitation that performs a specific computer function, the specification must disclose an **algorithm** for performing the claimed specific computer function.

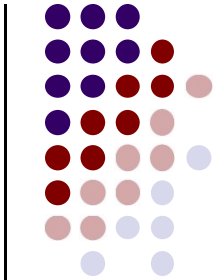
- The corresponding structure is not simply a general purpose computer by itself but a computer specially programmed to perform the disclosed algorithm.

Interpretation of computer-implemented § 112(f) claim limitations



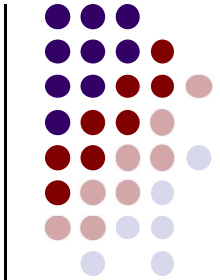
- *Sony Corp. v. Iancu*, Case No. 18-1172 (Fed. Cir. May 22, 2019)
  - "*reproducing means* for reproducing the audio data of the channel designated by the default value stored in the storing means."
  - PTAB concluded that the corresponding structure of the reproducing means is "a controller and a synthesizer, or the equivalent," and does not mean that the controller is 'computer-implemented' or require that the construction must include the algorithm."
  - The Federal Circuit found that the patent at issue "refers to a computer-implementation of the reproducing means" and did not find "the patent to describe or refer to the circuitry of the controller that would be required for a hardware controller to perform the claimed function."
  - The Federal Circuit constructed the means-plus-function term as computer implementation requiring an algorithm.

Commonly used terms for Computer-Implemented Invention --- Controller/Control device/Control means



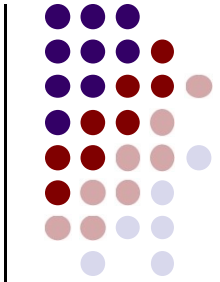
- "control means" and "programmable control means" ---*Ergo Licensing, LLC v. Carefusion 303, Inc.*, No. 11-1229 (Fed. Cir. 2012)
  - The Court held that "control device" provided no more structure than the term "control means," and the description of "memory" was insufficient because memory is not a structure capable of performing the claimed function.
  - The Federal Circuit also rejected Ergo's argument that the specification provided adequate structure because one skilled in the art would understand "control device" to be a general-purpose computer.
  - The Court found that the "control means" cannot be performed by a general-purpose computer because the claimed function requires more than merely plugging in a general-purpose computer…the specification in this case does not describe any algorithm for performing the function of "controlling the adjusting means."
  - Comparison: *In re Katz* (Fed. Cir. 2011)

Commonly used terms for Computer-Implemented Invention --- Module



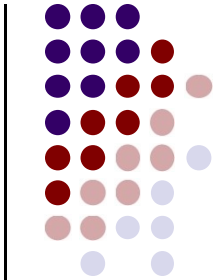
- "distributed learning control module" --*Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015)
- The Federal Circuit held that "the 'distributed learning control module' limitation fails to recite sufficiently definite structure and that the presumption against means-plus-function claiming is rebutted."
  - "the word 'module' does not provide any indication of structure" and "sets forth the same black box recitation of structure ... as if the term 'means' had been used,"
  - "[t]he prefix 'distributed learning control' does not impart structure into the term 'module,'" and
  - "the written description fails to impart any structural significance to the term."
- The Federal Circuit further held that the claim was indefinite because the specification did not disclose adequate corresponding structure, i.e., an algorithm.

Commonly used terms for Computer-Implemented Invention --- Module



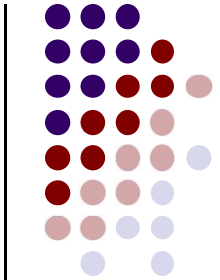
- "customization module" --*William Grecia v. Samsung Electronics* (Fed. Cir. 2019)
  - Equivalent to "means for customization" and thus invoking § 112, ¶ 6.
  - The court then found that the specification did not provide any specific disclosure of how such a module would actually work.
    - "*[T]he specification fails to explain how such customization is performed. Instead, the specification only describes the results of customization.*"
    - "the results of the operation of an unspecified algorithm" is not sufficient to transform the disclosure of a general-purpose computer into the disclosure of sufficient structure to satisfy § 112, ¶ 6.
    - The specification failed to disclose any algorithm for configuring the claimed module to obtain the described results.

Commonly used terms for Computer-Implemented Invention --- Mechanism



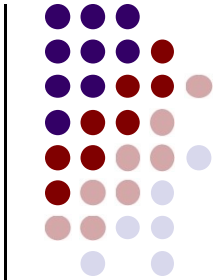
- "copyright compliance mechanism"---*Media Rights Technologies, Inc. v. Capital One Financial Corporation* (Fed. Cir. 2015)
- The Court held that the claims only recite function without reciting sufficient structure foe preforming the function, and the term has no commonly understood meaning and is not generally viewed by one skilled in the art to connote a particular structure.
- The specification states that there are rules, which the "copyright compliance mechanism" enforces to monitor the data pathway to ensure there is no unauthorized recording of electronic media, but the specification provides no detail about the rules themselves or how the "copyright compliance mechanism" determines whether the rules are being enforced.
  - The Court held that the "copyright compliance mechanism" limitation is indefinite under § 112(b) because the specification fails to adequately disclose structure (algorithm) to perform the claimed functions.

Commonly used terms for Computer-Implemented Invention --- Program and User interface code



- "program" and "user interface code" --*Zeroclick, LLC, v. Apple Inc.*, (Fed. Cir. June 1, 2018)
  - Apple and District Court fail to rebut the presumption that § 112(f) does not apply.
  - The Federal Circuit held that the District Court erroneously "treated 'program' and 'user interface code' as nonce words.
    - "First, the mere fact that the disputed limitations incorporate functional language does not automatically convert the words into means for performing such functions."
    - "Second, the court's analysis removed the terms from their context, which otherwise strongly suggests the plain and ordinary meaning of the terms." They refer to "conventional graphical user interface programs or code, existing in prior art at the time of the inventions." And as explained in the specifications, the claimed invention was an improvement to such interfaces and code.
    - "Third, and relatedly, the district court made no pertinent finding that compels the conclusion that a conventional graphical user interface program or code is used in common parlance as substitute for 'means.'"

Commonly used terms for Computer-Implemented Invention --- Processor



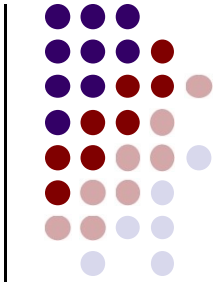
- Even to the extent a person of ordinary skill in the art would have understood the recited "modules" to include generic computer components (e.g., a processor or device including a processor), such generic computer components without specific programming are not capable of performing each of the recited functions. (*Willamson*)

§ 112(f) applies	§ 112(f) does not apply
Ex Parte Lakkala • "a person skilled in the art of computer programming would recognize the term "processor" to mean a general purpose computer, a central processing unit ("CPU"), or a program that translates another program into a form acceptable by the computer being used." • At least two of the functions performed by the processor in claim are not typical functions found in a general purpose processor and would require additional programming of the processor to implement. • The claim does not recite any structure connected to the "processor" other than a memory device, which is not sufficient for performing the control recited functions.	***Inventio AG v. ThyssenKrupp Elevator Americas Corp.*** The claimed "computing unit" that was held to connote sufficiently definite structure was claimed to be connected to a modernizing device and to generate a destination signal for transmission to the modernizing device and was further claimed to be connected to floor terminals of the elevator system and evaluate incoming call reports, destination floors, and identification codes to generate the destination signal for processing by the modernizing device.
Ex Parte Erol "[t]o confirm whether the presumption against such a substitution is overcome, we look to determine whether the functions performed by the processor are typical functions found in a commercially, available off-the-shelf processor, which would weigh against invoking § 112, sixth paragraph."	***SyncPoint Imaging, LLC v. Nintendo of Am. Inc.***, 2016 US Dist. LEXIS 677 (E.D. Tex. Jan. 5, 2016) First, the word "processor" denotes structure according to its dictionary definition. Second, the claim at issue recites the objectives and operations (i.e., the functionality) of the recited processor. And, third, one of ordinary skill in the art would understand the structural arrangements of the processor from the recited functionality of the processor.
Ex Parte Smith PTAB held that the term "processor" would be recognized to mean a general purpose computer, and is not a sufficient structure for performing the cited functions without additional programming.	

§ 112(f) does not apply	
Finjan, Inc. v. Proofpoint, Inc. N.D. Cal. - 2015 U.S. Dist. LEXIS 162504	"content processor for processing/invoking …"
Collaborative Agreements, LLC v. Adobe Sys. N.D. Cal. - 2015 U.S. Dist. LEXIS 161809	"computer readable medium encoded with a computer program coupled to processors to"
Masimo Corp. v. Philips Elecs. N. Am. Corp. D. Del - 2015 U.S. Dist. LEXIS 160645	"a processor configured to perform a method comprising"
M2M Solutions LLC v. Sierra Wireless Am., Inc. D. Del - 2015 U.S. Dist. LEXIS 134558	"processing module"
Smartflash LLC v. Apple Inc. E.D. Tex. - 2015 U.S. Dist. LEXIS 91669	"processor"

Ex Parte Dwivedula	"one or more processors, one or more circuits, or any combination thereof…being operable to"

Commonly used terms for Computer-Implemented Invention --- Processor

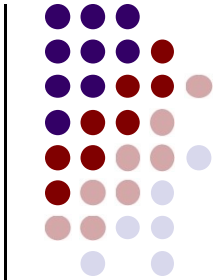


- The term “processor” may designate some structure based on the dictionaries—but not “sufficiently definite structure”
- Without reciting further definition or structure within or connected to the processor, one of skilled in the art would understand “processor” to mean a general purpose computer (merely reciting a memory may not be enough).
- Whether the recited processor interconnecting with the surrounding recitations is sufficient to perform the recited operations might be considered.

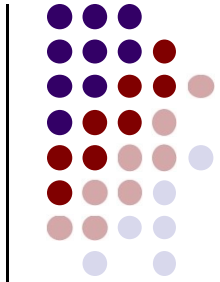
Practice tips

- Although the presumption that § 112(f) does not apply with the absence of "means" has been weakened, the Examiner still has the burden of providing evidence that a term coupled with the function does not denote structure (rebutting by referring to specification, dictionary, prior art).
- Avoid claiming "black boxed" terms.
- Surround the term coupled with the function with additional detail (e.g., input, output) and tie the term to some other structure in order to avoid invoking § 112(f).
- Specification drafting:
  - try to provide any functional claim element with a brief description of an algorithm that can be used to carry out the function
  - provide a brief discussion of at least one way of achieving the results
  - when reciting processor/controller, describe interconnections of components and interactions between the components within the processor and controller
  - provide a detailed description to any operation that an off-the-shelf computer cannot perform.
  - Avoid repeating the claim recitations, and focus on "how"

Practice tips



- Once invoking § 112(f), carefully reviewing if the Examiner has correctly determined the corresponding structure in the specification when determining patentability under § 102 and 103.
  - e.g., whether the Examiner has given weight to the required algorithm for performing the recited function when the means-plus-function term is computer-implemented.



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