FUNCTIONAL CLAIMS AND THE REQUIRED DISCLOSURE BEFORE AND AFTER THE AIA

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I. Introduction

According to United States patent law\(^1\), processes, machines, articles of manufacture, and compositions of matter are patentable. Although seemingly broad at first reading, there are certain “inventions” which are not patentable (considered abstract ideas or laws of nature), including data structures, software programs, music, literary works, electromagnetic signals, and the like. Of those inventions that are patent eligible, a patent may be obtained when the invention is new, useful, and not obvious. A new machine, for example, may be claimed structurally or with functional claims (i.e., claimed by what it does rather than claimed by its structure).

Mistakenly, functional claims are generally thought of as claims drafted using the means-plus-function model set forth in 35 U.S.C. §112 (f)\(^2\). Instead, functional claims define an invention by its function rather than, for example, by a specific structure or material. Functional claims may be used in various technologies and an apparatus claimed using functional language may cover various types of apparatuses that perform the claimed functions. Hence, an application with functional claims may result in a patent with broad boundaries. Although functional claims are used in various technologies, claiming an invention using functional language is essential in, for example, computer related inventions when the inventive elements are not hardware related, as we will discuss in more detail below. Due to the broad boundaries of patents with functional claims, there is significant criticism in software related industries, in particular, about the use of functional claims. For example, there is criticism that “software” patents typically cover more than the inventors originally intended. As software become more integrated into different industries, functional claims may be necessary to define patent boundaries in these industries. Therefore, patents defined using functional claims are likely to increase.

Despite the widespread criticism of functional claims, the recently enacted Leahy-Smith America Invents Act\(^3\) (“America Invents Act” or “AIA”) did not prohibit functional

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\(^1\) United States Code Title 35 - Patents

\(^2\) 35 U.S.C §112 (f) —An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof; See also Bradley C. Wright, *Functional Claiming and Functional Disclosure*, presented at 6th Annual Advanced Patent Law Institute

\(^3\) Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011)
claiming. Nevertheless, in part due to the criticism of the scope of patents with functional claims, an application with functional claims and a resulting patent may be subject to a high level of scrutiny. In addition to being patent eligible\textsuperscript{4}, new,\textsuperscript{5} and non-obvious\textsuperscript{6}, as set forth in the patent statute and case law, as described below, patent applications employing functional language must be adequately described.\textsuperscript{7} In this paper, we will discuss functional claims and the disclosure requirements as set forth in 35. U.S.C. §112(a)\textsuperscript{8} and (b)\textsuperscript{9}, how computer-implemented inventions can satisfy the disclosure requirements, the advantages associated with using functional claims in contrast to means-plus-function claims, and we will distinguish functional claims from means-plus-function claims.

II. History of Functional Claims

Initially, the scope of a patent was defined by the description of the invention, and not by the claims. “The Patent Act of 1793, did not require claims, but require, in its 3d section, that the patent applicant “deliver a written description of the invention, and of the manner of using, or process of compounding, the same, in such full, clear and exact terms, as to distinguish the same from all things before known, and to enable any person skilled in the art or science of which it is a branch, or with which it is most nearly connected, to make, compound and use the same…..”\textsuperscript{10} Hence, early U.S. patent applications were drafted under a central claiming system (i.e., an application described the general nature of the invention rather than defining the exact boundary of the invention). In the central claiming system, the courts determined the exact boundaries of the patent.\textsuperscript{11} To influence how their claims were interpreted, beginning in the middle of the Nineteenth century, inventors attempted to define their inventions by identifying inventive contribution and/or

\textsuperscript{4} 35 U.S.C. § 101

\textsuperscript{5} 35 U.S.C. § 102

\textsuperscript{6} 35 U.S.C. § 103

\textsuperscript{7} 35 U.S.C. § 112

\textsuperscript{8} 35 U.S.C §112 (a) - The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention

\textsuperscript{9} 35 U.S.C §112 (b) - The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention


market substitutions rather than merely describing and claiming a device.\(^{12}\) Using this approach, inventions were now being defined in functional terms. By the 1940s, the courts became skeptical of broad functional claims and in *Halliburton*\(^{13}\) the court seemed to signal the end of the practice of functional claiming.

However, in the Patent Act of 1952\(^{14}\), Congress permitted means-plus function claiming\(^{15}\) under certain conditions. Section 112(f) of the Patent Act of 1952, which has not been significantly amended since its passage, limits a means-plus-function claim element to the particular technologies described in the specification and the equivalents thereof. After passage of the Patent Act of 1952, the courts began to allow not only means-plus-function claims, but also allowed inventions to be claimed by their functions, regardless of the underlying technology. In *Swinehart*,\(^{16}\) for example, the Federal Circuit found that there is “no support, either in the actual holdings of prior cases or in the statute, for the proposition, put forward, that “functional” language, in and of itself, renders a claim improper.”\(^{17}\) The Federal Circuit in *Swinehart* also noted that there was no prior court decision which held there is “some other ground for objecting to a claim on the basis of any language, “functional” or otherwise, beyond what is already sanctioned by the provisions of 35 U.S.C. §112.”\(^{18}\) Therefore, the courts look to 35 U.S.C. §112, particularly to §112(a) and (b) to determine if functional claim language is acceptable.

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13 *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1 (1946) the court rejected claims to lighting filament claimed in functional terms

14 United States Code Title 35 - Patents

15 35 U.S.C §112 (f) —An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof

16 See *In re Swinehart*, 439 F.2d 210, 213, (CCPA 1971) (a patent applicant is free to recite features of an apparatus either structurally or functionally)

17 *Id.* at 213

18 *Id.* at 213
III. Functional Claiming Requirements under 35 U.S.C. §112

Examples of functional claim language include:\(^{19}\)

- “configured to”  “permitting…”,  “programmable means for”
- “capable of engaging”  “adapted to,”  “for…ing”
- “operative to…”  “mechanism”  “data processing system”
- “mechanism for”  “module for”  “device for”
- “unit for”  “component for”  “element for”
- “member for”  “apparatus for”  “machine for”
- “system for”

Although an applicant is free to claim an invention either structurally or functionally, because a functional claim covers all devices which perform a recited function, functional claim language may render a claim broad when the claim is not limited to any particular structure for performing the claimed function.\(^{20}\) The underlying structure associated with a functional claim element must therefore be adequately disclosed in the specification. Consider the following hypothetical claim:

**Claim 1.** An apparatus comprising:
- a memory configured to store resource information;
- a transceiver; and
- a processor configured to:
  - receive, via the transceiver, a resource request from a user device;
  - process the resource request to identify resource information stored
    in the memory for at least one resource associated with the user device;
  - determine a location of the at least one resource; and
  - display the location on a display device.

If an application including the hypothetical claim was written in the early 1990s and the specification described an example of the apparatus to be a desk computer, this claim, if granted, would cover every apparatus including a memory, a transceiver, and a processor “configured to” perform the functions recited in the claims. For example, the claim would cover smart phones, tablets, and other devices “configured to” perform the functions recited in the claim, even if those devices were not in existence when the application was filed. However, such a claim may be subject to attack under 35 U.S.C. 112, as outlined below.

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\(^{19}\) See Presentation by Assistant Professor Colleen Chien & Aashish Karkhanis, SCU Law ‘13 Software Patents & Functional Claiming available at www.uspto.gov/patents/init_events/software_ak_cc_sw.pdf

\(^{20}\) In re Swinehart, 439 F.2d 210 at 213
A. Requirements under 35 U.S.C. §112(a)

35 U.S.C. §112(a)\(^{21}\) requires that the specification includes:

1. a written description of the invention, and
2. the manner and process of making and using the invention (the enablement requirement).\(^{22}\)

1. The Written Description Requirement

To satisfy the written description requirement set forth in 35 U.S.C. §112(a), the specification must describe the claimed invention in sufficient detail that one skilled in the pertinent art can reasonably conclude that the inventor had possession of the claimed invention.\(^{23}\) Although an applicant does not have to describe “exactly the subject matter claimed, ... the description must clearly allow persons of ordinary skill in the art to recognize that [the applicant] invented what is claimed.”\(^{24}\) The purpose of the written description requirement is to convey with reasonable clarity to those skilled in the art that, as of the filing date, the applicant possessed the invention. “The invention is, for purposes of the “written description” inquiry, whatever is now claimed”\(^{25}\) Possession of the claimed invention may be shown using such descriptive means as words, structures, figures, diagrams, and/or formulas that fully set forth the claimed invention.\(^{26}\)

The written description requirement is not specific to inventions with functional claims. However, this is one area where an application with functional claims or a resulting patent is carefully analyzed. In particular, the specification must adequately describe the claimed invention as a whole, i.e., the specification must describe the claimed functions, the structures of the invention, and the correlation or relationship between the claimed functions and the structures of the invention. The structural disclosure in the specification is particularly important when an apparatus is claimed using functional language. If the specification does not sufficiently specify how the invention achieves a claimed function (i.e., the correlation or relationship between the claimed function and

\(^{21}\) 35 U.S.C. §112(a) - The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention


\(^{23}\) See Ariad Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1136 (Fed.Cir.2010) (the inventor must show to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date by describing the invention understandable to one skilled in the art to show that the inventor actually invented the claimed invention.)

\(^{24}\) In re Gosteli, 872 F.2d 1008, 1012, (Fed.Cir.1989)

\(^{25}\) Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1562-64 (Fed.Cir.1991)

the structure of the invention), an invention claimed in functional language may not satisfy the written description requirement.

In some industries, the structures associated with functional claim elements are quite specific. Consider the example, in Ariad27, where the court noted the problem with genus claims that use functional language to define the boundaries of a claimed genus.

“In such a case, the functional claim may simply claim a desired result, and may do so without describing species that achieve that result. But the specification must demonstrate that the applicant has made a generic invention that achieves the claimed result and do so by showing that the applicant has invented species sufficient to support a claim to the functionally-defined genus.”28

In other industries, for example, those industries implementing computer-implemented inventions, disclosure of a general purpose computer may provide sufficient structural description, allowing a patentee to functionally claim an invention in which the structure (for example, the hardware) is not novel. The Federal Circuit found that it is acceptable to disclose and claim computer-implemented inventions in terms of their functionality because writing computer programming code for software to perform specific functions is normally within the skill of the art once those functions have been adequately disclosed.29 Regardless of the industry in which a computer-implemented invention is created, an application with a computer-implemented invention satisfies the written disclosure requirement if the specification discloses a computing unit (even if it is a general purpose computer) and the algorithm (e.g., the necessary steps and/or flowcharts) that perform the claimed function in sufficient detail such that one of ordinary skill in the art can reasonably conclude that the inventor invented the claimed subject matter.30 One test for determining during examination if the written description requirement is satisfied is whether the knowledge and level of skill in the pertinent art would permit one skilled in the art to understand that the inventor possessed the invention based on the disclosure in the specification. Therefore, the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and the complexity and predictability of the relevant technology.31

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27 Ariad Pharm., Inc. v. Eli Lilly & Co., 598 F.3d 1336 (Fed.Cir.2010)

28 Id at 1349

29 See Fonar Corp. v. General Electric Co., 107 F.3d 1543, 1549 (Fed. Cir. 1997)

30 See In re Hayes Microcomputer Prods., Inc. Patent Litigation 982 F.2d 1527, 1533-34 (Fed. Cir. 1992)

2. The Enablement Requirement

In addition to adequately describing the claimed invention, the specification must also meet the enablement requirement as set forth in 35 U.S.C. §112(a), i.e., the specification must describe the manner and process of making and using the invention such that one skilled in the pertinent art can make and use the invention. In other words, the specification must teach those skilled in the art how to make and use the full scope of the claimed invention without “undue experimentation.” MPEP lists the following factors that may be considered when determining whether or not any necessary experimentation is undue. The factors include, but are not limited to:

(A) The breadth of the claims;

(B) The nature of the invention;

(C) The state of the prior art;

(D) The level of one of ordinary skill;

(E) The level of predictability in the art;

(F) The amount of direction provided by the inventor;

(G) The existence of working examples; and

(H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

Because a functional claim may cover all devices which perform the recited function, the scope of enablement provided to one skilled in the art by the disclosure must be equal to or less than the scope of protection sought by the claim. The specification is not enabling if it fails to disclose the starting materials or apparatus necessary to make the invention. Therefore, the specification must provide sufficient disclosure of an apparatus if the apparatus is not readily available. The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the pertinent art and the predictability in the art. For example, when claims in Sitrick were directed to

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32 See, e.g., In re Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993); In re Wands, 858 F.2d 731, 736-37 (Fed. Cir. 1988)

33 See MPEP section 2164.01(a); In re Wands, 858 F.2d 731, 737 (Fed. Cir. 1988)

34 See In re Swinehart, 439 F.2d 210, 213, 169 (CCPA 1971; AK Steel Corp. v. Sollac, 344 F.3d 1234, 1244 (Fed. Cir. 2003); In re Moore, 439 F.2d 1232, 1236 (CCPA 1971)

35 In re Howarth, 654 F.2d 103, 105, (CCPA 1981)

36 See In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970)
“integrating” or “substituting” a user’s audio signal or visual image into a pre-existing video game or movie, the Federal Circuit held that the specification failed to enable the full scope of the claims because movies, unlike video games, do not have easily separable character functions; hence, the skilled artisan could not apply the teachings of the specification regarding video games to movies without undue experimentation.  

Adequate enabling disclosure should be provided in the specification and the applicant should not rely on the general knowledge of one skilled in the pertinent art to supply information that is required to meet the enablement requirement. The specification must contain the information necessary to enable the novel aspects of the claimed invention. On the other hand, detailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention. “The more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to be explicitly stated in the specification.” In contrast, if little is known in the prior art about the nature of the invention and the art is unpredictable, the specification would need more detail as to how to make and use the invention in order to be enabling. However, the rule that a specification need not disclose what is well known in the art is “merely a rule of supplementation, not a substitute for a basic enabling disclosure.”

For computer-related inventions, disclosure of a general purpose computer is usually sufficient for enabling a structure for performing a general computing function but may not be sufficient for enabling a structure for performing a specific function. For example, if a decoder is claimed using functional language, disclosure of a general purpose computer may not be sufficient for enabling a structure for performing the claimed decoding function. The corresponding disclosure for a general purpose

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37 Sitrick v. Dreamworks, LLC, 516 F.3d 993, 999 (Fed. Cir. 2008) (“The scope of the claims must be less than or equal to the scope of the enablement to ensure that the public knowledge is enriched by the patent specification to a degree at least commensurate with the scope of the claims.”)

38 Id at 999-1001

39 Auto. Techs. Int’l, Inc. v. BMW of N. Am., Inc., 501 F.3d 1274, 1283 (Fed. Cir. 2007) (“Although the knowledge of one skilled in the art is indeed relevant, the novel aspect of an invention must be enabled in the patent.”)

40 ALZA Corp. v. Andrx Pharms., LLC, 603 F.3d 935, 941 (Fed. Cir. 2010) (“ALZA was required to provide an adequate enabling disclosure in the specification; it cannot simply rely on the knowledge of a person of ordinary skill to serve as a substitute for the missing information in the specification.”)

41 See MPEP 2164.03

42 See Chiron Corp. v. Genentech Inc., 363 F.3d 1247, 1254 (Fed. Cir. 2004)


44 In re Katz Interactive Call Processing Patent Litigation, 639 F.3d 1303, 1316 (Fed. Cir. 2011)

computer may include block diagrams that describe the functions recited in the claims. Even if no additional structure is disclosed, the specification may still satisfy the enablement requirement, if a disclosed general purpose computer is known in the pertinent art, the claimed elements can be determined without an undue amount of experimentation, and if the specification includes the algorithm needed to transform the disclosed general purpose computer or microprocessor to a special purpose computer (i.e., to a computer programmed to perform the disclosed algorithm). Regardless of the underlying technology, enablement issues may arise when information is missing about one or more essential parts or the relationship between parts and one skilled in the art would be unable to develop the invention without undue experimentation.

3. Written Description and Enablement

It is possible for the specification to meet the enablement requirement and still not meet the written description requirement. As an example, in DiLeone, the court noted that it is possible for the specification to disclose “only compound A and contain no broadening language of any kind. This might very well enable one skilled in the art to make and use compounds B and C; yet the class consisting of A, B and C has not been described.” Contrast the example given in DiLeone where the enablement requirement is met but the written description requirement is not with an example where a disclosure of an electrical circuit apparatus included block diagrams in the drawings that were labeled with functional labels, but there was no indication in the specification of how the parts were interconnected and controlled to obtain the specific operations noted in the application and the specification was found to be non-enabling.

In computer-implemented inventions the written description and enablement requirements may be satisfied by representing hardware or system components in a “block diagram” format, functionally labeled, and interconnected by lines. As such, for computer-implemented inventions, the written description and enablement requirements may be satisfied if there is hardware disclosure (even if the hardware is not novel) and

46 In reGhiron, 442 F.2d 985, 991, 169 USPQ 723, 727 (CCPA 1971)

47 In Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech., 521 F.3d 1328, 1336-37 (Fed. Cir. 2008)

48 In re DiLeone, 436 F.2d 1404, 1405 (CCPA 1971)

49 Id at 1405

50 In reGunn, 537 F.2d 1123, 1129, 190 USPQ 402, 406 (CCPA 1976); See also Union Pacific Resources Co. v. Chesapeake Energy Corp., 236 F.3d 684 (Fed. Cir. 2001) (Claims directed to a method of determining the location of a horizontal borehole in the earth failed to comply with enablement requirement of 35 U.S.C. 112 because certain computer programming details used to perform claimed method were not disclosed in the specification, and the record showed that a person of skill in art would not understand how to “compare” or “rescale” data as recited in the claims in order to perform the claimed method.)
software disclosure and if the specification shows the interrelationship and interdependence between the computer hardware and software. However, a computer-implemented invention may not be enabled if the function attributed to each block element is not clearly described in the specification as to how such a component could be implemented and if more than routine experimentation would be required of one skilled in the art to generate such the function. As evidenced by the examples provided above, there is no blanket level of detail required for satisfying the written description and enablement requirements in all cases and/or technologies. Instead, to meet the written description and enablement requirements, the level of required detail is case specific.

B. Definite Claims

35 U.S.C. §112(b) states:

“The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”

To satisfy §112(b), the applicant may use functional language or “any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought.” A claim may not be rejected during prosecution or found to be invalid solely on the basis of functional claiming. However, claims are analyzed to ensure that the claim terms are “precise, clear, correct, and unambiguous”, in other words, to determine whether or not the claim scope is clear to one of ordinary skill in the pertinent art.

Definiteness may be determined by:

(1) analyzing the content of the application disclosure,
(2) the teachings of the prior art, and

51 See MPEP - 2161 discussing In re Hayes Microcomputer Prods., Inc. Patent Litigation, 982 F.2d 1527, 1533-34, (Fed. Cir. 1992). (The written description requirement was satisfied because the specification disclosed the specific type of microcomputer used in the claimed invention as well as the necessary steps for implementing the claimed function.)

52 See MPEP section 2164; Hirschfield v. Banner, 462 F. Supp. 135, 142, 200 USPQ 276, 279 (D.D.C. 1978), aff’d, 615 F.2d 1368 (D.C. Cir. 1980), cert.denied, 450 U.S. 994 (1981) (The amount of experimentation involved was reasonable where a skilled programmer was able to write a general computer program, implementing an embodiment form, within 4 hours); White Consol. Indus., 713 F.2d at 791, 218 USPQ at 963 (the required period of experimentation for skilled programmers to develop a particular program would run to 1 to 2 man years, this would be “a clearly unreasonable requirement”)

53 See MPEP – 2171

54 See In re Swinehart, 439 F.2d 210, (CCPA 1971); In re Schreiber, 128 F.3d 1473 (Fed. Cir. 1997) (“there is nothing intrinsically wrong with defining something by what it does rather than what it is in drafting patent claims”)

55 See MPEP - 2171
(3) claim interpretation based on knowledge by one of ordinary skill in the pertinent art at the time the invention was made.\(^{56}\)

Below are examples of some factors to consider when a claim uses functional language to determine whether the claim language is ambiguous:\(^{57}\)

1. Is there a clear indication of the scope of the claimed subject matter?
2. Does the functional language set forth well-defined boundaries of the invention or only states a problem solved or a result obtained? and
3. Would one of ordinary skill in the art know from the claim terms what structure or steps are encompassed by the claim.

C. 35 U.S.C. §112(a) and (b) distinguished from §112(f)

Depending on how a functional claim is drafted, the claim may or may not invoke 35 U.S.C. §112 (f)\(^{58}\) (i.e., the claim may or may not be interpreted as a means-plus-function claim as defined by §112 (f)). As noted previously, a claim uses functional language when it recites a feature by what it does rather than reciting a specific structure. For a claim using functional language to invoke 35 U.S.C. §112 (f), the claim must be “expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof.”\(^{59}\) Means-plus-function claims are restricted by the particular technologies described in the patent specification, making these claims easier for potential infringers to evade. In contrast, a claim with functional language that does not invoke 35 U.S.C. §112 (f) may be construed to cover other apparatuses that perform the claimed features, even if those apparatuses are not described in the specification. In order to avoid limiting the claims to the particular technologies described in the patent specification and not have a claim with functional language invoke §112(f), each limitation in the claim must recite some structure followed by its

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\(^{56}\) *In re Larsen*, No. 01-1092 (Fed. Cir. May 9, 2001) (unpublished) (The preamble of the *Larsen* claim recited only a hanger and a loop but the body of the claim positively recited a linear member. The court found that the totality of all the limitations of the claim and their interaction with each other must be considered to ascertain the inventor’s contribution to the art and concluded that the claim at issue apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112 (b).)

\(^{57}\) See MPEP section 2100

\(^{58}\) *In re Donaldson Co.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (en banc) (“We hold that paragraph six applies regardless of the context in which the interpretation of means-plus-function language arises, i.e., whether as part of a patentability determination in the PTO or as part of a validity or infringement determination in a court.”).

\(^{59}\) 35 U.S.C §112 (f) —An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.
function. For example, the hypothetical claim provided above might invoke §112(f) if written as follows without recitation of some structure.

Claim 2. An apparatus configured to:
receive a resource request from a user device;
process the resource request to identify at least one resource associated with the user device;
determine a location of the at least one resource; and
display the location on a display device.

Staying with the hypothetical described above, if an application including the hypothetical claim 2 was written in the early 1990s and the specification described a desk computer, claim 2, if granted, would be limited to a desk computer and its equivalents. Whereas, claim 1, if granted and not interpreted as a means-plus function claim, would cover every apparatus including a memory, a transceiver, and a processor “configured to” perform the functions recited in the claims. As noted above, claim 1 would cover smart phones, tablets, and other devices “configured to” perform the functions recited in the claim, even if those devices were not in existence when the application was filed.

When a claim limitation explicitly uses the phrase “means for” or “step for” and includes functional language, the claim is presumed to invoke 35 U.S.C. §112 (f). However, the presumption may be overcome when the claim limitation also includes the necessary structure for carrying out the recited function. There is also a rebuttable presumption that a claim limitation that does not explicitly use the phrase “means for” or “step for” and includes functional language is written according to 35 U.S.C. §112(f) if the claim does not include the necessary structure for carrying out the recited function. (See the example of claim 2 above). The following examples of non-structural terms that may invoke 35 U.S.C. §112(f) include “mechanism for,” “module for,” “device for,” “unit for,” “component for,” “element for,” “member for,” “apparatus for,” “machine for,” or “system for.”

However, if one of ordinary skill in the pertinent art understands a term to be a name for a structure that performs a function recited in a claim, even when that term covers a broad class of structures or identifies the structures by their function, 35 U.S.C. 112(f) will not apply to that claim limitation. For example, “brakes,” “clamp,” “filters,” “locks,”

60 See K-2 Corp. v. Salomon S.A., 191 F.3d 1356, 1363 (Fed. Cir. 1999); Phillips v. AWH Corp, 415 F.3d 1303, 1311 (Fed. Cir. 2005) (en banc)

61 TriMed, Inc. v. Stryker Corp., 514 F.3d 1256, 1259-60 (Fed. Cir. 2008) (“Sufficient structure exists when the claim language specifies the exact structure that performs the function in question without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure.”)


63 See MPEP 2181; Welker Bearing Co., v. PHD, Inc., 550 F.3d 1090, 1096 (Fed. Cir. 2008); Massachusetts Inst. of Tech. v. Abacus Software, 462 F.3d 1344, 1354 (Fed. Cir. 2006); Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1214-1215 (Fed. Cir. 1998)
“screwdrivers” are structural terms that may “take the names of the functions they perform”. In addition, terms, such as “computing unit” and “modernizing device”, “circuit,” “digital detector,” “reciprocating member,” “connector assembly,” “perforation,” “sealingly connected joints,” and “eyeglass hanger member,” when read in light of the specification connote definite structure to one skilled in the pertinent art to preclude application of 35 U.S.C. 112(f). Regardless of whether or not 35 U.S.C. §112(f) is invoked, based on the requirements of 35 U.S.C. §112(b), the scope of claims with functional language must be clear to one of ordinary skill in the pertinent art. In addition, as required by 35 U.S.C. §112(a), the scope of claims with functional language must be adequately supported by the written description.

IV. Final Thoughts on the Current State of Functional Claiming

Despite the wide spread criticism of functional claims, the America Invents Act did not significantly alter the sections of §112 that relate for functional claims. Therefore, functional claims are not prohibited and may be used to define the boundaries of patents. Although the use of functional claims is not restricted to specific technologies or industries, as software become more integrated into different industries, functional claims may be necessary to define patent boundaries in these industries. To ensure maximum coverage for inventions, and in particular for inventions incorporating software, an applicant should consider apparatus claims defined with functional language. When functional language is used, care should be taken to meet the written description and enablement requirements, and provide sufficient structural support when a functional claim element is not intended to invoke §112(f).

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65 Inventio AG 649 F.3d at 1350 (Fed. Cir. 2011); Linear Tech. Corp. v. Impala Linear Corp., 379 F.3d 1311, 1321 (Fed. Cir. 2004); Apex, 325 F.3d at 1373; Greenberg, 91 F.3d at 1583-84; CCS Fitness, 288 F.3d at 1369-70; Lighting World, 382 F.3d at 1358-63; Cole v. Kimberly-Clark Corp., 102 F.3d 524, 531 (Fed. Cir. 1996); Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1318-19 (Fed. Cir. 1999)