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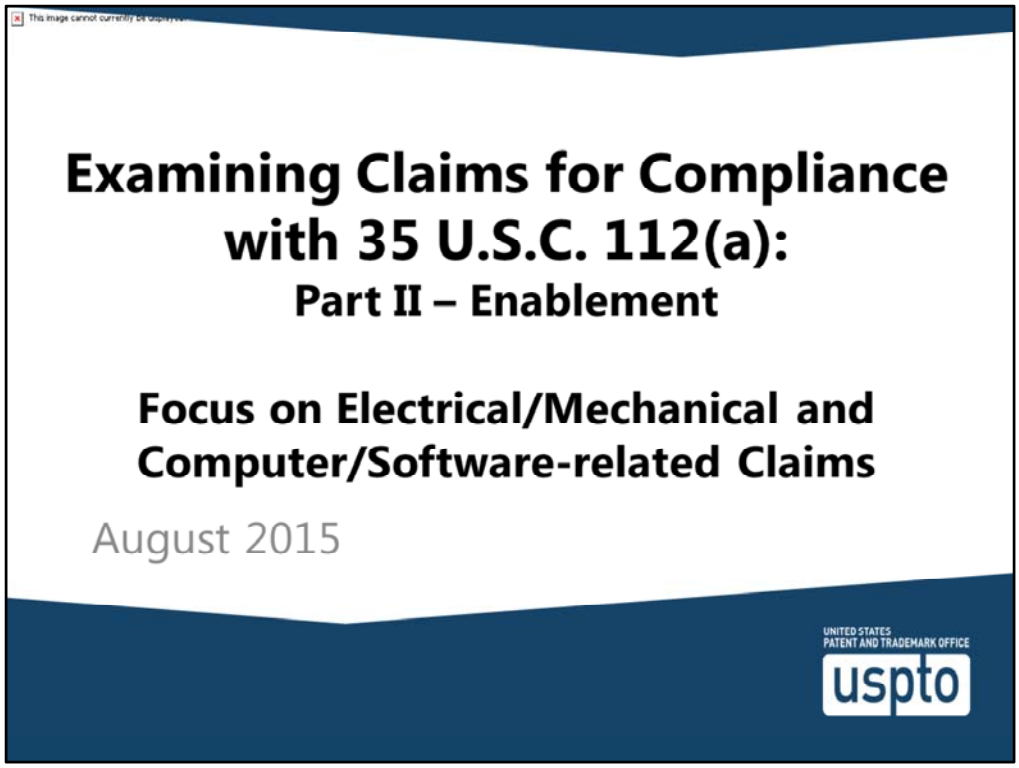

Part II of this module will cover the topic of examining claims with functional language for compliance with the enablement requirement of 35 U.S.C. 112(a), again focusing on computer and software-related claims and making the prosecution record clear regarding the adequacy of the application disclosure. Part I provides an overview of 112(a) and a detailed discussion of the written description requirement.

The Enablement Requirement

- For enablement, the critical inquiry is:
  *Does the specification provide enough information so that one of ordinary skill in the art can make and/or use the **full scope** of the claimed invention without "undue experimentation"?*

- A conclusion of lack of enablement means that, based on the evidence of record, the specification, at the time the application was filed, would not have taught one of ordinary skill in the art how to make and/or use the full scope of the claimed invention without undue experimentation

- The state of the art existing at the filing date of the application is used to determine whether a particular disclosure is enabling as of the filing date

MPEP 2161.01(III), 2164.01(a), 2164.05(a)

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To evaluate enablement, the critical inquiry is: does the specification provide enough information so that one of ordinary skill in the art can make and/or use the full scope of the claimed invention without "undue experimentation"?

A conclusion of lack of enablement means that, based on the evidence of record, the specification, at the time the application was filed, would not have taught one of ordinary skill in the art how to make and/or use the full scope of the claimed invention without undue experimentation. The state of the art existing at the filing date of the application is used to determine whether a particular disclosure is enabling as of the filing date.

The Enablement Requirement (Continued)

- The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art, as well as the predictability in the art
  - The fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation
  - The test of enablement is not whether any experimentation is necessary, but whether, if it is necessary, it is undue

MPEP 2164.01, 2164.03

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The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art, as well as the predictability in the art. Thus, the fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation. That is, the test of enablement is not whether any experimentation is necessary, but whether, if it is necessary, it is undue. The undue experimentation determination is not a single factual determination. Rather, it is a conclusion reached by weighing all the factual considerations.

The Enablement Requirement (Continued)

- Factors to be weighed when evaluating whether a disclosure satisfies the enablement requirement and whether any necessary experimentation is "undue" (*i.e.*, "Wands" factors):
  - Breadth of the claims;
  - Nature of the invention;
  - State of the prior art;
  - Level of one of ordinary skill;
  - Level of predictability in the art;
  - Amount of direction provided by the inventor;
  - Existence of working examples; and
  - Quantity of experimentation needed to make or use the invention based on the content of the disclosure

MPEP 2164.01(a)

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Factors to be weighed when evaluating whether a disclosure satisfies the enablement requirement and whether any necessary experimentation is "undue" include the following:

- Breadth of the claims;
- Nature of the invention;
- State of the prior art;
- Level of one of ordinary skill;
- Level of predictability in the art;
- Amount of direction provided by the inventor;
- Existence of working examples; and
- Quantity of experimentation needed to make or use the invention based on the content of the disclosure

These factors are referred to as the "*Wands*" factors, stemming from the court decision of the same name.

Satisfying the Enablement Requirement

- Enablement can be shown by disclosing at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim
  - Failure to disclose other methods by which the claimed invention may be made does not render a claim invalid for lack of enablement
- The specification need not contain an example if the invention is otherwise disclosed in such a manner that one skilled in the art will be able to practice it without an undue amount of experimentation
- The specification need not teach what is well-known in the art
  - However, applicant cannot rely on the knowledge of one skilled in the art to supply information that is required to enable the novel aspect of the claimed invention, when the enabling knowledge is in fact not known in the art

MPEP 2161.01(III), 2164.01(b), 2164.02

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An applicant can show enablement by disclosing at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim. Applicant's failure to disclose other methods by which the claimed invention may be made does not render a claim invalid for lack of enablement. In the 2008 Federal Circuit decision *Sitrick* v. *Dreamworks,* claims directed to ''integrating'' or ''substituting'' a user's audio signal or visual image into a pre-existing video game or movie were determined to be not enabled. While the claims covered both video games and movies, the specification only taught the skilled artisan how to substitute and integrate user images into video games. Specifically, the court recognized that one skilled in the art could not apply the teachings of the specification regarding video games to movies, because movies, unlike video games, do not have easily separable character functions.

In order to satisfy the enablement requirement, the specification need not contain an example if the invention is otherwise disclosed in such a manner that one skilled in the art will be able to practice it without an undue amount of experimentation.

Also, although the specification need not teach what is well known in the art, applicant cannot rely on the knowledge of one skilled in the art to supply information that is required to enable the novel aspect of the claimed invention, when the enabling knowledge is in fact not known in the art. The Federal Circuit has stated that "'[i]t is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement.'"

Enablement – Computer-Implemented Functional Limitations

- When functional language imposes no limits as to a particular structure for performing the claimed function, the claim may cover all devices for/ways of performing the claimed function
  - This raises a concern regarding whether the scope of enablement provided by the disclosure is commensurate with the scope of protection sought by the claim
  - Example: A claim limitation "sensor responsive to the motion of said mass for initiating an occupant protection system," construed to cover both mechanical and electronic sensors for performing the recited function, would need to be supported by enabling disclosure of both mechanical and electronic sensors to enable the broad claim interpretation, particularly in a new technology
- For hardware and software systems, consider whether the interconnection and functional relationship between elements is disclosed and, if not, whether it would be evident to those of ordinary skill in the art
  - A flow chart or block diagram often suffices to show the relationships between elements, particularly functional or program elements
- If the invention requires a particular apparatus, the specification must provide sufficient disclosure of that apparatus, if it is not readily available

MPEP 2161.01(III), 2164.06(c)

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Now we will focus on special considerations regarding enablement of computer-implemented functional limitations. When functional language imposes no limits as to a particular structure for performing the claimed function, the claim may cover all devices for/ways of performing the claimed function. This raises a concern regarding whether the scope of enablement provided by the disclosure is commensurate with the scope of protection sought by the claim.

For example, a claim limitation ''sensor responsive to the motion of said mass for initiating an occupant protection system,'' construed to cover both mechanical and electronic sensors for performing the recited function, would need to be supported by enabling disclosure of both mechanical and electronic sensors to enable the broad claim interpretation, particularly in a new technology.

For hardware and software systems, the examiner should consider whether the interconnection and functional relationship between claimed elements is disclosed and, if not, whether it would be evident to those of ordinary skill in the art. A flow chart or block diagram often suffices to show the relationships between elements, particularly functional or program elements. Further, if the invention requires a particular apparatus, the specification must provide sufficient disclosure of that apparatus, if it is not readily available.

Enablement – Computer-Implemented Functional Limitations (Continued)

- For software related inventions, the knowledge in the state of the art and predictability tends to be high
  - Thus, for routine functions writing a program to perform the claimed function will frequently be within the skill of a person of ordinary skill in the art
- If (1) the application fails to disclose any program and (2) more than routine experimentation would be required of one skilled in the art to generate such a program, the examiner would have a reasonable basis for challenging the sufficiency of such a disclosure
  - The amount of experimentation that is considered routine will vary depending on the facts and circumstances of individual cases and should be reviewed on a case-by-case basis

MPEP 2164.06(c)

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For software related inventions, the knowledge in the state of the art and predictability tends to be high. Thus, for routine functions writing a program to perform the claimed function will frequently be within the skill of a person of ordinary skill in the art.

If (1) the application fails to disclose any program and (2) more than routine experimentation would be required of one skilled in the art to generate such a program, the examiner would have a reasonable basis for challenging the sufficiency of such a disclosure. The amount of experimentation that is considered routine will vary depending on the facts and circumstances of individual cases and should be reviewed on a case-by-case basis.

Establishing a *Prima Facie* Case to Make a § 112(a) Rejection

- When the specification fails to enable the full scope of a claim, a rejection of the claim under § 112(a) is appropriate
- Burden is on the examiner to set forth a *prima facie* case providing reasons why the specification is deficient and thus the claim that relies thereon is rejected
  - Identify the claim and limitation at issue
  - Weigh evidence of record related to the pertinent *Wands* factors and provide reasons why undue experimentation would be needed to make and use the full scope of the claimed invention
  - The explanation of the rejection need only focus on those factors, reasons, and evidence that lead the examiner to conclude *e.g.*, that the specification fails to teach how to make and use the claimed invention without undue experimentation, or that the scope of any enablement provided to one skilled in the art is not commensurate with the scope of protection sought by the claims

MPEP 2164.04 9

When the specification fails to enable the full scope of a claim, a rejection of the claim under § 112(a) is appropriate. Because there is a presumption that a specification as filed is enabled under § 112(a), the burden is on the examiner to set forth a *prima facie* case providing reasons why the specification is deficient and thus the claim that relies thereon is rejected. In doing so, the examiner should:

- Identify the claim and limitation at issue, and
- Weigh all of the evidence of record related to the pertinent *Wands* factors and provide reasons why undue experimentation would be needed to make and use the full scope of the claimed invention. The explanation of the rejection need only focus on those factors, reasons, and evidence that lead the examiner to conclude, for example, that the specification fails to teach how to make and use the claimed invention without undue experimentation, or that the scope of any enablement provided to one skilled in the art is not commensurate with the scope of protection sought by the claims.

Establishing a *Prima Facie* Case to Make a § 112(a) Rejection (Continued)

- When a rejection is appropriate, identify the claim limitation(s) that are not enabled and provide reasoning by explaining what is lacking in the specification
  - Sample Explanation: *In claim 1, the broadest reasonable interpretation of the system includes disk drives. The specification does not disclose enough information for one of ordinary skill in the art to use the method to control vibrations in disk drives for "long seeks," which are a common disk drive function. The state of the art at the time of filing shows that ways to control vibrations in disk drives was not predictable. The specification does not provide direction as to how to solve the problem with long seeks. Taking these factors into account, undue experimentation would be required by one of ordinary skill in the art to practice the full scope of claim 1. Thus, claim 1 is not enabled by the disclosure.*
- Form paragraphs: 7.30.01 – Statement of Statutory Basis; 7.31.02 – Rejection, Enablement; and 7.31.03 – Rejection, Scope of Enablement
- Under compact prosecution, any claim amendments recognized by the examiner that would resolve the issue should be noted early in prosecution

MPEP 2164.04

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In drafting the rejection, the examiner should identify the claim limitation or limitations that are not enabled and provide reasoning by explaining what is lacking in the specification. The following is a sample explanation: "In claim 1, the broadest reasonable interpretation of the system includes disk drives. The specification does not disclose enough information for one of ordinary skill in the art to use the method to control vibrations in disk drives for 'long seeks,' which are a common disk drive function. The state of the art at the time of filing shows that ways to control vibrations in disk drives was not predictable. The specification does not provide direction as to how to solve the problem with long seeks. Taking these factors into account, undue experimentation would be required by one of ordinary skill in the art to practice the full scope of claim 1. Thus, claim 1 is not enabled by the disclosure."

Form paragraphs 7.30.01 – Statement of Statutory Basis; 7.31.02 – Rejection, Enablement; and 7.31.03 – Rejection, Scope of Enablement are available for the examiner's use in making a rejection for lack of enablement under § 112(a).

As a reminder, under compact prosecution, any claim amendments recognized by the examiner that would resolve the issue should be noted early in prosecution.

Example 1: Enablement

Claim 1. A device forming a junction having a resistance comprising:

a first electrode having a first magnetization direction, a second electrode having a second magnetization direction, and

an electrical insulator between the first and second electrodes, wherein applying a small magnitude or electromagnetic energy to the junction reverses at least one of the magnetization directions and ***causes a change in the resistance by at least 10%*** *at room temperature.*

- The claim limitation "change in the resistance by at least 10%" was construed to cover resistive changes from 10% up to infinity

- Does the specification enable the full scope of the bolded claim limitation?
  - The specification explains the manufacture of a tri-layer tunnel junction and ways to incorporate the device into read-write sensor heads for computer disk storage. The specification teaches that the fundamental science of the tunneling junction was known for many years, but failed to produce adequate level of change in the tunneling resistance for practical applications. The specification explains that yielding a 24% resistive change represents an "ideal case," and discloses that as much as an 11.8% resistive change was achieved in practice.

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This first example is based on the 2012 Federal Circuit decision *MagSil Corp. v. Hitachi Global Storage Technologies Inc*. At issue was whether the specification enabled the full scope of the bolded claim limitation: "causes a change in the resistance by at least 10%."

The claim limitation was construed to cover resistive changes from 10% up to infinity.

The specification in this case describes the manufacture of a tri-layer tunnel junction and ways to incorporate the device into read-write sensor heads for computer disk storage. The specification teaches that the fundamental science of the tunneling junction was known for many years, but failed to produce adequate level of change in the tunneling resistance for practical applications. The specification explains that yielding a 24% resistive change represents an "ideal case," and discloses that as much as an 11.8% resistive change was achieved in practice.

Example 1: Enablement – Not Satisfied

- No, the specification does not enable the full scope of claim 1
  - The record contained no showing that the knowledge of a person of skill in the art at the time of filing would have been able to achieve resistive changes in values that greatly exceed 10% without undue experimentation.
  - Sample explanation for enablement rejection based on *Wands* factors: *The broadest reasonable interpretation of claim 1 covers a device with resistive changes from 10% up to infinity. The specification discloses enough information for one of ordinary skill in the art to make a device with a resistive change of 11.8%. The specification does not provide direction on how to obtain higher values of resistive change. At the time of filing, the state of the art was such that obtaining a resistive change of 24% was ideal. Thus, the disclosed example does not bear a reasonable correlation to the full scope of the claim. Taking these factors into account, undue experimentation would be required by one of ordinary skill in the art to practice the full scope of claim 1.*

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In this case, the specification does not enable the full scope of claim 1.

The record contained no showing that the knowledge of a person of skill in the art at the time of filing would have been able to achieve resistive changes in values that greatly exceed 10% without undue experimentation.

The following is a sample explanation for an enablement rejection based on the *Wands* factors: "The broadest reasonable interpretation of claim 1 covers a device with resistive changes from 10% up to infinity. The specification discloses enough information for one of ordinary skill in the art to make a device with a resistive change of 11.8%. The specification does not provide direction on how to obtain higher values of resistive change. At the time of filing, the state of the art was such that obtaining a resistive change of 24% was ideal. Thus, the disclosed example does not bear a reasonable correlation to the full scope of the claim. Taking these factors into account, undue experimentation would be required by one of ordinary skill in the art to practice the full scope of claim 1.

Example 2: Enablement

Claim 1. A device forming a junction having a resistance comprising:

a first electrode having a first magnetization direction, a second electrode having a second magnetization direction, and

an electrical insulator between the first and second electrodes, wherein applying a small magnitude or electromagnetic energy to the junction reverses at least one of the magnetization directions and ***causes a change in the resistance by up to about 12%*** *at room temperature.*

- Does the specification enable the full scope of the bolded claim limitation?
  - The specification explains the manufacture of a tri-layer tunnel junction and ways to incorporate the device into read-write sensor heads for computer disk storage. The specification teaches that the fundamental science of the tunneling junction was known for many years, but failed to produce adequate level of change in the tunneling resistance for practical applications. The specification explains that yielding a 24% resistive change represents an "ideal case," and discloses that as much as an 11.8% resistive change was achieved in practice.

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This second example is similar to the first example, except the bolded limitation of claim 1 now reads "causes a change in the resistance by up to about 12%."

Does the specification enable the full scope of the bolded claim limitation?

Example 2: Enablement – Satisfied

- Yes, the specification enables the full scope of claim 1 because it discloses enough information to make a device that achieve levels of resistive change up to about 12% without undue experimentation

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Yes, the specification enables the full scope of claim 1 because it discloses enough information to make a device that achieve levels of resistive change up to about 12% without undue experimentation.

Enablement Summary

- The critical inquiry is whether the specification provides enough information so that one of ordinary skill in the art can make and/or use the full scope of the claimed invention without "undue experimentation"
- Analysis regarding whether a disclosure is enabling must be based on a consideration of all the evidence of record related to the pertinent *Wands* factors and the evidence as a whole
- Enablement issues typically arise with computer-implemented inventions when the scope of the claim is not commensurate with the disclosure, such that the claim would cover all devices for/ways of performing a function
- Establish a clear prosecution record by setting forth reasons related to the pertinent *Wands* factors as to why the application disclosure fails to enable the claim(s) under § 112(a) and thus the claims that rely thereon are rejected

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As a summary for Part II of this module covering enablement, remember that the critical inquiry is whether the specification provides enough information so that one of ordinary skill in the art can make and/or use the full scope of the claimed invention without "undue experimentation."

Analysis regarding whether a disclosure is enabling must be based on a consideration of all the evidence of record related to the pertinent *Wands* factors and the evidence as a whole. Enablement issues typically arise with computer-implemented inventions when the scope of the claim is not commensurate with the disclosure, such that the claim would cover all devices for/ways of performing a function.

Additionally, it is important to establish a clear prosecution record by setting forth reasons related to the pertinent *Wands* factors as to why the application disclosure fails to enable the claim or claims under § 112(a) and thus the claims that rely thereon are rejected.

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