

‘Code’ and ‘Application’ Limitations Found to Connote Sufficient Structure to Avoid Means-Plus-Function Interpretation:

A discussion of *Dyfan, LLC v. Target Corp.*
(decided March 24, 2022 by Fed. Cir.)

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Introduction

- We'll discuss *Dyfan, LLC. v. Target Corp.*, decided by a Fed Cir panel on March 24, 2022, holding that disputed claim limitations were not drafted in means-plus-function (MPF) format under pre-AIA § 112 ¶ 6, and thus were not indefinite as lacking sufficient structure in the specification
- Involved 2 patents: US 9,973,899 ('899 patent) & US 10,194,292 ('292 patent)
- Disputed limitations include “code” ('292 patent) and “application” ('899 patent) limitations, recited as elements of a system
- “Code”/“application” is “configured to be executed by at least one of the plurality of mobile devices,” but **not** stored in memory or tangible medium, and mobile devices are **not** positively recited elements of claimed system
- Court held that, coupled with the functional claim language, the “code”/ “application” term connotes sufficiently definite structure to avoid § 112 ¶ 6

Patents

- '899 and '292 patents, entitled “System for Location Based Triggers for Mobile Devices,” describe improved systems for delivering messages to users based on their locations ('292 pat is a CON of '899 pat)
- Communications system provides users with information tailored to their particular interests/needs based on their presence within a particular location (e.g., shopping center) having different retail stores in it
- In claimed embodiment,
 - “Building” has “broadcast short-range communications unit[s]” at fixed locations, each broadcasting messages to mobile devices within comm’s range
 - Mobile devices execute “code” or “application” to receive and process the broadcast messages

Patents

- In claimed embodiment (cont'd),
 - Upon receiving a broadcast message from a short-range comm's unit, the "code"/"application" causes mobile device to communicate directly with a server via the internet to retrieve information relevant to the location and display it
 - After mobile device changes locations so as to receive a broadcast message from a different short-range comm's unit, the "code"/"application" causes mobile device to communicate with the server to retrieve new information relevant to the changed location and display it

Background

- In Feb 2019, Dyfan sued Target Corp. for infringement of various claims of '899 and '292 patents in dist ct (West Dist of Tx)
- During claim construction, Target argued each asserted claim included MPF limitations, but spec failed to disclose structure corresponding to those limitations, thus claims were invalid as indefinite under pre-AIA § 112 ¶ 2
 - Alleged MPF limitations included “code”/“application” limitations and “system limitations”
- In claim construction order, dist ct concluded both types of limitations were MPF limitations and were invalid as indefinite
 - Re “application”/“code” limitations, dist ct assigned a “special purpose computer function” as the corresponding structure, but found no algorithm for implementing this function in the spec

Background

- Based on claim construction order, parties stipulated to final judgment that asserted claims are invalid as indefinite under § 112 ¶ 2, and dist ct entered judgment accordingly
- Dyfan appealed to the Fed Cir
- Fed Cir cited to claim 15 of '292 patent as representative of claims on appeal

Representative Claim

15. A system, comprising:

a building...including:

a first broadcast short-range communications unit...configured to...broadcast...[a] first broadcast message[] *for intended receipt by a...mobile device[]*...

a second broadcast short-range communications unit...configured to...broadcast...[a] second broadcast message[] *for intended receipt by the...mobile device[]*...

code configured to be executed by...the...mobile device[], the code, when executed, configured to...

receive an indication of a receipt...of...the first broadcast message[]...

in response to the indication of the receipt...of the...first broadcast message[]...[,] cause to be sent, from the...mobile device...over the Internet...[a] first message...

receive an indication of a receipt...of...the second broadcast message[]...

in response to the indication of the receipt...of the... second broadcast message[]...[,] cause to be sent, from the...mobile device...over the Internet...[a] second message...

at least one server that is configured to communicate with the...mobile device via the Internet...

said code, when executed, further configured to:

receive, from the...server...the first response message including the first location-relevant information,

in response to the receipt...of the first response message...[,] cause to be output, via the...mobile device, the first visual information based on the first location-relevant information,

receive, from the...server...the second response message including the second location-relevant message,

after the first visual information is caused to be output...; after the...mobile device is moved in the building; and in response to the receipt, from the...server..., of the second response message...[,] cause to be output, via the...mobile device, the second visual information based on the second location-relevant information;

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Representative Claim

(claim 15, cont'd)

wherein the system is configured such that the first visual information is automatically caused to be output without requiring communication of the...first message with the first broadcast short-range communications unit after the receipt of the indication of the receipt of the...first broadcast messages, and the second visual information is automatically cause to be output without requiring communication of the...second message with the second broadcast short-range communications unit after the receipt of the indication of the receipt of the...second broadcast messages.



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Federal Circuit

- Appeal heard by Circuit Judges Lourie, Dyk, and Stoll
- Opinion by Circuit Judge Stoll

Legal Principles

- Regarding questions of claim construction, including whether § 112 ¶ 6 is invoked, Fed Cir reviews dist ct's determinations based on intrinsic evidence, as well as ultimate interpretation of patent claims, *de novo*
 - *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346 (Fed. Cir. 2015)
- If, in construing claims, dist ct makes underlying finding of fact based on extrinsic evidence, Fed Cir reviews such findings of fact for clear error (*id.*)

Legal Principles

- Section 112 ¶ 6:

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

- Overall means-plus-function analysis is 2-step process
 1. Determine whether claim limitation is drafted in MPF format
 2. If determined to be MPF format, determine what structure (if any) disclosed in the spec corresponds to the claimed function
- In 1st step, court must construe the limitation to determine whether it connotes sufficiently definite structure to person of ordinary skill in the art (POSITA)

Legal Principles

- Because invoking § 112 ¶ 6 is typically a choice left to claim drafter, it is presumed in 1st step that the limitation is subject to § 112 ¶ 6 when the claim language includes “means”
- The inverse is also true – the limitation is presumed not drafted in MPF format in absence of “means”
- Presumption can be overcome if challenger demonstrates that the claim fails to recite sufficiently definite structure
- Test is “whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name of the structure” – *Williamson*, 792 F.3d at 1348

Legal Principles

- In this inquiry, evidence can be informative, but since the inquiry turns on the understanding of a POSITA, the court will often look to extrinsic evidence (e.g., expert testimony)
- Claim terms “need not connote a single, specific structure,” and may instead “describe a class of structures” and still recite “sufficiently definite structure” to not invoke § 112 ¶ 6 – *Apple, Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1300 (Fed. Cir. 2014)

Legal Principles

- In cases where it's clear the claim term itself connotes some structure to POSITA, the presumption § 112 ¶ 6 doesn't apply is determinative in absence of “more compelling evidence of the understanding of one of ordinary skill in the art” – *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2003)
 - In *Apex*, Fed Cir found term “circuit” by itself connotes *some* structure
 - Despite expert testimony that “circuit” would have been “understood by one of ordinary skill in the art as a very broad term,” Raritan failed to show by preponderance of evidence that POSITA believes the term doesn't connote sufficient structure

“Code”/“Application” Limitations

“said code, when executed, further configured to . . .

after the first visual information is caused to be output based on the first location-relevant information; after the at least one mobile device is moved in the building; and in response to the receipt, from the at least one server and via the second wireless communications protocol, of the second response message including the second location-relevant information: ***cause to be output***, via the at least one mobile device, the second ***visual information*** based on the second location-relevant information”

“Code”/“Application” Limitations

- Applying the above principles to this case, the Fed Cir found that 2-step MPF analysis ends at 1st inquiry, i.e., “application”/“code” limitations are not drafted in MPF format
- Since “means” doesn’t appear in claims, burden imposed on Target to show by preponderance of evidence that POSITA would not have understood these limitations to connote sufficient structure in light of the claims as a whole
- In concluding Target met this burden, dist ct erred by ignoring key evidence – unrebutted deposition testimony by Target’s own expert Dr. Goldberg

“Code”/“Application” Limitations

- Dr. Goldberg testified that “application” is term of art that a POSITA would have understood as particular structure
 - “Application” would have been understood to mean “computer program intended to provide some service to a user”
 - Developers could have selected existing “off-the-shelf software” to perform specific services and functions
- Dr. Goldberg also testified that POSITAs would have understood “code,” when coupled with language describing its operation, here connotes structure
 - POSITA would understand “code” is “a bunch of software instructions”
 - POSITA would have known that claimed function of displaying information could be implemented using “off-the-shelf” code or applications

“Code”/“Application” Limitations

- None of Dr. Goldberg’s testimony is rebutted
- This testimony thus demonstrates that, contrary to district’s assertion, “code”/ “application” limitations do not recite “purely functional language,” but instead connote a class of structures to POSITA

“Code”/“Application” Limitations

- Dist ct erred by not following Fed Cir’s recent decision in *Zeroclick, LLC v. Apple Inc.*, F.3d 1003 (Fed. Cir. 2018)
 - In *Zeroclick*, Fed Cir reversed dist ct’s determination that claim limitations “program” and “user interface code” invoked § 112 ¶ 6
 - Dist ct erred in “not giving effect to the unrebutted presumption against the application of § 112, ¶ 6
 - Limitations were references to conventional program or code “existing in [the] prior art at the time of the invention[]”; they weren’t used as “generic terms or black box recitations of structure or abstractions”
 - Dist ct made no pertinent finding to support conclusion that “user interface” or “code” were used “in common parlance as substitute for ‘means’”

“Code”/“Application” Limitations

- Same rationale applies here, esp in view of Dr. Goldberg’s unrebutted testimony that “code” and “application” would have connoted structure, and given availability of off-the-shelf code to perform recited functions
- Unlike mechanical arts, the specific structure of software code and applications is partly defined by its function
- Court can look beyond initial “code” or “application” term to the functional language to see if a person of ordinary skill in the art would have understood the claim limitations as a whole to connote sufficiently definite structure
- “[W]hen the structure-connoting term...is coupled with a description of the [term’s] operations, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and § 112 ¶ 6 presumptively will not apply”
 - *Apple v. Motorola*, 757 F.3d at 1298-99

“Code”/“Application” Limitations

- In this analysis, the Fed Cir characterizes the relevant function as merely displaying information
- Ignores other language indicating *when* the information is to be displayed (i.e., “after the first visual information is caused to be output...,” “after the at least one mobile device is moved...,” “in response to the receipt...of the second response message...”



“System” Limitation

“wherein the system is configured such that the first visual information is automatically caused to be output without requiring communication of the at least one first message with the first broadcast short-range communications unit after the receipt of the indication of the receipt of the one or more first broadcast messages, and the second visual information is automatically cause to be output without requiring communication of the at least second message with the second broadcast short-range communications unit after the receipt of the indication of the receipt of the one or more second broadcast messages.”

“System” Limitation

- It’s presumed § 112 ¶ 6 does not apply since limitation doesn’t recite “means”
- Target didn’t satisfy burden of demonstrating by preponderance of evidence that “system” limitation fails to recite sufficiently definite structure
- Both Target and district suggest that “system may be a nonce word” used as substitute for “means”
- Fed Cir agrees that, in a vacuum, “system” may well be a nonce term
- However, in this case, “system” in the wherein clause derives antecedent basis from the “system” in the preamble, which is defined by claim to include specified structure (including a building, 1st and 2nd broadcast short-range comm’s units, code, at least one server)

“System” Limitation

- Target and distinct assert, even if “system” connotes structure, claims don’t specify which components perform the recited function, and thus it’s possible that “an unspecified black box” performs the function
- However, preceding claim limitations make clear the “code” causes the output of visual information based on “location-relevant information”
- While the wherein clause does not expressly refer to the previously recited “code,” it references specific functions defined or introduced in the code limitations
- This demonstrates that it is the claimed “code” that performs the function of the wherein clause
- For reasons explained above, “code” connotes sufficiently definite structure to POSITA

Conclusion

- Fed Cir: “We recognize that the asserted claims are not models of clarity, but poor claim drafting does not allow courts to bypass the presumption that a claim does not invoke § 112 ¶ 6 in the absence of the word “means.” Nor does it relieve the courts of their duty to evaluate whether that presumption has been overcome.”
- **Reversed and Remanded**

Discussion

- If patentee's term connotes *any* structure, no matter how general, the burden is much higher on the other party to show that § 112(f) applies
 - “code,” “application,” “circuit” connote *some* structure

Discussion

- This holding seems to go a step beyond *Zeroclick* as to “code” limitations
- *Zeroclick* involved the following claims:

2. A **graphical user interface (GUI)**, which may **comprise an update of an existing program...**,

wherein, said existing program is any program that can operate movement of the pointer over a screen and has one or more functions operated by one or more other methods apart from said two step method,

wherein said GUI executes one or more functions within the GUI by the completion of the following said two step method:

first said pointer is immediately adjacent or passes within a control area, ...

second by the completion of a subsequent movement of said pointer...generates a click event, thereby triggering one or more functions within the GUI.

19. A device capable of executing software comprising:
a touch-sensitive screen...

a **processor** connected to the touch-sensitive screen...

executable **user interface code stored in a memory connected to the processor**

the **user interface code executable by the processor**;

the user interface code being configured to detect one or more locations touched...without requiring the exertion of pressure and determine therefrom a selected operation; and

...to cause one or more selected operations, which includes one of the functions unavailable to the user interface code of the device, to deactivate while the user’s finger is touching one or more locations of the screen.

Discussion

- In both claims 2 and 19 of *Zeroclick*, the “program”/“code” limitations appear to be connected to some computing element of the claimed invention
 - Presumably, since claim 2 survived § 101 eligibility analysis, the “graphical user interface” is interpreted as incorporating some processing capability
 - In claim 19, the claimed device includes “a processor” and the “user interface code” is “stored in a memory” and “executable by the processor”
- On the other hand, in *Dyfan*, the claimed “code” is not stored on a memory, nor is it executable by or otherwise connected to any positive element of the claimed invention



Discussion

- Is there anything tangible about the claimed “code” in *Dyfan*?
- Could the *Dyfan* claims have been found indefinite under § 112 ¶ 2 for other reasons?
- From an infringement point of view, does it make sense for Dyfan to claim a system comprising, in addition to code executed by user’s mobile devices, the **building**, the **communications units** fixedly located inside the building, and the **server** transmitting the location-relevant information?

Discussion / Practice Tips

- Perhaps it would be helpful to draft claims like:

A non-transitory computer readable medium on which is stored code that, when executed by a mobile device, causes the mobile device to:

- receive a 1st broadcast message from a 1st broadcast short-range communications device having a fixed location in a building;*
- in response to receiving the 1st broadcast message, transmit a 1st message to a server via the Internet;*
- in response to receiving 1st location-relevant information from the server responsive to the transmission of the 1st message, causing the mobile device to output 1st visual information;*
- receive a 2nd broadcast message from a 2nd broadcast short-range communications device....*

- Perhaps a similar claim could be drafted as a method performed by a mobile device (for induced infringement)



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Discussion / Practice Tips

- In my experience, when a claim is written in a similar format as claim 19 of *Zeroclick*, most examiners will agree that it avoids § 112(f) interpretation

Any questions?



The End

