

# United States Court of Appeals for the Federal Circuit

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**HTC CORPORATION AND  
HTC AMERICA, INC.,**  
*Plaintiffs-Appellees,*

v.

**IPCOM GMBH & CO., KG,**  
*Defendant-Appellant.*

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2011-1004

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Appeal from the United States District Court for the District of Columbia in Case No. 08-CV-1897, Judge Rosemary M. Collyer.

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Decided: January 30, 2012

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MICHAEL A. OBLON, Perkins Coie, LLP, of Washington, DC, argued for plaintiff-appellant. With him on the brief were JONATHAN M. JAMES and DAN L. BAGATELL, of Phoenix, Arizona.

MITCHELL G. STOCKWELL, Kilpatrick Townsend & Stockton, LLP, of Atlanta, Georgia, argued for defendant-appellant. With him on the brief were GEOFFREY K. GAVIN and LEROY M. TOLIVER.

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Before BRYSON, LINN, and O'MALLEY, *Circuit Judges*.

O'MALLEY, *Circuit Judge*.

The U.S. District Court for the District of Columbia granted HTC Corporation and HTC America, Inc.'s ("HTC") motion for summary judgment of invalidity of claims 1 and 18 of U.S. Patent No. 6,879,830, owned by IPCom GmbH & Co., KG ("IPCom"). The district court concluded that those claims were indefinite because they claimed both an apparatus and method steps. We reverse the district court's judgment because the district court misconstrued the claims, which cover only an apparatus.

As an alternative basis for invalidating claims 1 and 18, HTC argues that the claims are indefinite because the '830 patent's specification fails to disclose corresponding structure for the claims' means-plus-function limitation. On this point, we agree with the district court that the specification adequately discloses a processor and transceiver for use in performing the functions recited in these claims. Although the district court was wrong to conclude that a processor and transceiver alone provide sufficient structure for the asserted claims, HTC waived any other legitimate attack on the adequacy of the disclosures with respect to claims 1 and 18. We, thus, find that the district court was correct to deny summary judgment on HTC's alternative indefiniteness claim.

## I.

HTC sued IPCom in 2008 and sought a declaration that it did not infringe a valid and enforceable claim of one of IPCom's patents. IPCom filed a counterclaim and alleged infringement of two additional patents, including the '830 patent.

The '830 patent covers a handover in a cellular telephone network. A cellular telephone—called a "mobile

station” in the patent—maintains a link with a tower—called a “base station.” A handover occurs when a mobile station switches from one base station to another. This happens, for example, when a person using a cellular telephone travels in a car between coverage areas. The invention, in principle, reduces the chance of interrupted service during a handover.

Claim 1 recites:

A mobile station for use with a network including a first base station and a second base station that achieves a handover from the first base station to the second base station by:

storing link data for a link in a first base station,

holding in reserve for the link resources of the first base station, and

when the link is to be handed over to the second base station:

initially maintaining a storage of the link data in the first base station,

initially causing the resources of the first base station to remain held in reserve, and

at a later timepoint determined by a fixed period of time predefined at a beginning of the handover, deleting the link data from the first base station and freeing up the resources of the first base station, the mobile station comprising:

an *arrangement for reactivating* the link with the first base station if the handover is unsuccessful.

U.S. Patent No. 6,879,830 col.8 ll.12–32 (filed Jan. 6, 2000) (emphasis added).

Claim 18 is identical to claim 1, except that the phrase in claim 1 that reads, “at a later timepoint determined by a fixed period of time predefined at a beginning of the handover, deleting the link data from the first base station and freeing up the resources of the first base station . . .” is modified in claim 18 to read, “at a later timepoint determined based on a message from one of the mobile station and the second base station regarding a successful completion of handing over the link, deleting the link data from the first base station and freeing up the resources of the first base station . . .” *Id.* col.10 l.61–col.12 l.6 (emphasis added). The distinction is immaterial to this appeal.

In its opening claim construction brief, HTC moved for summary judgment of invalidity on the ground that the means-plus-function limitation “arrangement for reactivating,” found in the last paragraph of claims 1 and 18, was indefinite because the patent failed to disclose structure corresponding to the claimed function. The district court rejected that argument because, the court believed, a person of skill in the art would understand that the corresponding structure was a processor and transceiver. *HTC Corp. v. IPCom GmbH & Co.*, No. 08-cv-1897 (D.D.C. Aug. 25, 2010), ECF No. 187 at 42. HTC, however, also argued for summary judgment on the ground that claims 1 and 18 were indefinite because they claimed both an apparatus and method steps. The district court agreed with that argument and granted summary judgment of invalidity of claims 1 and 18. *Id.* at 47.

The district court’s ruling only partially disposed of the claims in the case. The parties stipulated, and the district court agreed, to enter final judgment on the

summary judgment ruling and certify the matter for immediate appeal. *See* Fed. R. Civ. P. 54(b). The parties also stipulated that claim 12, in addition to claims 1 and 18, was indefinite under the district court's reasoning. Our opinion and judgment apply to claim 12 as well.

## II.

The district court erred when it held the claims indefinite for claiming an apparatus and method steps. First, the district court misconstrued the claims. Then, the district court applied to the erroneous construction this court's precedent prohibiting hybrid claiming of apparatus and method steps. The prohibition on hybrid claiming is inapplicable to claims 1 and 18 when they are correctly construed.

### A.

The district court erred in construing claims 1 and 18 because it failed to adhere to the principles of claim construction set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). To facilitate our claim construction analysis, we recite the relevant portion of the claims again, annotate them with numbered paragraphs, and emphasize key terms:

[1] A *mobile station* for use with a *network including* a first base station and a second base station *that* achieves a handover from the first base station to the second base station by:

[2] storing link data for a link in a first base station,

[3] holding in reserve for the link resources of the first base station, and

[4] when the link is to be handed over to the second base station:

[5] initially maintaining a storage of the link data in the first base station,

[6] initially causing the resources of the first base station to remain held in reserve, and

[7] at a later timepoint . . . deleting the link data from the first base station and freeing up the resources of the first base station, *the mobile station comprising*:

[8] an *arrangement for reactivating* the link with the first base station if the handover is unsuccessful.

'830 patent col.8 ll.12–32, col.10 l.61–col.12 l.6 (emphases added). The parties disagree whether the mobile station or the network, both recited in paragraph 1, implements the six functions enumerated in paragraphs 2–7. If the mobile station implements the functions, the claims are indefinite because they recite both an apparatus—the mobile station—and method steps—the functions enumerated in paragraphs 2–7. If the network performs the functions, the claims are not indefinite because the claims merely describe the network environment in which the mobile station must be used. The district court concluded, without complying with *Phillips's* claim construction principles, that the mobile station implements the functions recited in paragraphs 2–7.

1.

The district court did not examine adequately the claims themselves. *Phillips*, 415 F.3d at 1314. Claims 1 and 18 begin by reciting, in the first paragraph, a “mobile station” to be used with a “network.” Immediately following “network” are the phrase “including a first base

station and a second base station” and the clause “that achieves a handover from the first base station to the second base station by [implementing the six enumerated functions].” Modifiers should be placed next to the words they modify. William Strunk, Jr. & E.B. White, *The Elements of Style* 30 (4th ed. 2000). A reader, therefore, may assume that the phrase beginning with “including” and the clause beginning with “that achieves” modify “network.”

Supporting that assumption, the claims re-introduce the mobile station in paragraph 7 after the enumerated functions. The mobile station is followed by a functional limitation in paragraph 8: “the mobile station *comprising* . . . an arrangement for reactivating the link with the first base station if the handover is unsuccessful.” ’830 patent col.8 ll.28–32, col.12 ll.4–6 (emphasis added). The claims would read in a disjointed manner if they were to recite the mobile station in the first paragraph, modify the mobile station with the six enumerated functions, and then, without a transition, recite the mobile station again in paragraph 7, followed by yet another modifier. Had the claim drafter intended that format, the drafter likely would have followed the recitation of the mobile station in paragraph 7 with “further comprising” instead of “comprising” to signal that *additional* modification would be attached to the mobile station.

Words of a claim “are generally given their ordinary and customary meaning.” *Vitronics Corp. v. Conception, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). The plain language of claims 1 and 18 indicates that the network, not the mobile station, performs the enumerated functions.

## 2.

In addition to examining the claim language, the district court should have referred to the specification to understand the claims. *Phillips*, 415 F.3d at 1315. The specification is in parity with the claim language, confirming that the network, rather than the base station, performs the enumerated functions. As the specification explains, the first base station, not the mobile station, initially stores link data: “[T]he data required for the link initially remain stored in BS 1 [the first base station], and initially BS 1 does not reassign the resources . . . required to maintain the link with the MS [mobile station].” ’830 patent col.5 ll.61–64. This is consistent with the claims’ first five enumerated functions in paragraphs 2–6: “[2] storing link data for a link in a first base station,” “[3] holding in reserve for the link resources of the first base station,” and, “[4] when the link is to be handed over to the second base station,” “[5] initially maintaining a storage of the link data in the first base station” and “[6] initially causing the resources of the first base station to remain held in reserve.” The specification then explains that, after a successful handover, the first base station, not the mobile station, deletes the held resources: “BS 1 can therefore delete the information and, respectively, the resources that were held in reserve can be assigned elsewhere.” *Id.* col.6 ll.18–20. This is consistent with the claims’ sixth condition recited in paragraph 7, in which, “at a later timepoint,” link data are deleted “from the first base station and free[] up the resources of the first base station.”

HTC fails to cite any part of the specification indicating that the mobile station implements the six functions. The mobile station, HTC argues, is the “quarterback” of the handover because the specification speaks in terms of the mobile station’s “performing” a handover. The specifi-

cation, however, does not suggest that the mobile station must actually implement the six functions to perform a handover. In one scenario described in the specification, the mobile station sends the first base station a “Hand-over Notify” message indicating that it is trying to perform a handover to another base station. ’830 patent col.5 ll.58–59. The first base station—not the mobile station—holds resources in reserve and maintains link data while the second base station attempts to establish a link to the mobile station. *Id.* col.5 ll.60–64. Meanwhile, the first and second base stations swap authentication parameters for the mobile station. *Id.* col.6 ll.6–7. The first base station does not delete the link data it is holding in reserve until it receives confirmation from the second base station—not the mobile station—that the handover was successful. *Id.* col.6 ll.15–20. Thus, although the mobile station “performs” the handover, the base stations are actually implementing the six functions. The specification confirms that the six functions define the network environment; they are not functions performed by the mobile station.

### 3.

A court should also look to the prosecution history when construing a claim. *Phillips*, 415 F.3d at 1317. The district court noted that, in an office action response, the applicants of the ’830 patent distinguished a prior art reference that the examiner cited by arguing that “the cited section of [the prior art reference] clearly describes a process that is completely different from *the claimed process . . .*” App. 46 (emphasis and brackets in original). The district court believed that the applicants’ use of the word “process” was an acknowledgement that claims 1 and 18 recite method steps.

The district court placed too much weight on the applicants' use of the word "process" when the claim language and the specification indicated that the applicants did not claim a process. Claim language and the specification generally carry greater weight than the prosecution history. "[B]ecause the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. An attorney's single reference to a "process" in the office action response is unpersuasive when weighed against the plain language of the claims and the specification, both of which clearly indicate that the enumerated functions are part of the network environment.

Like the district court, HTC places too much weight on the prosecution history. In addition to seizing on the applicants' use of the word "process," HTC argues that the applicants acquiesced when the examiner called the six enumerated functions "steps." That fact carries little weight. The examiner was also referring, in most instances, to a pending method claim, which the applicants later withdrew.

The cases that HTC cites do not change our view. In *Ventana Medical Systems, Inc. v. Biogenex Laboratories, Inc.*, this court held that an examiner's restriction requirement and a patentee's remarks during prosecution were insufficient to support a finding that the patentee disavowed a particular claim scope. 473 F.3d 1173, 1182–83 (Fed. Cir. 2006). IPCom's office action response, likewise, is insufficient to support a finding of disavowal. In *Fuji Photo Film Co. v. U.S. International Trade Commission*, this court rejected a patentee's argument that the applicant's failure to recite a "taking lens" as a means in a

claim was an inadvertent omission. 386 F.3d 1095, 1099 (Fed. Cir. 2004). The examiner had suggested that the applicant omitted the taking lens—a suggestion that the applicant never contested. *Id.* at 1100. The applicant’s prosecution conduct in *Fuji* provided a much clearer indication of the applicant’s understanding of the invention than in this case.

Although the district court was correct in considering the prosecution history, the claim language and specification in this case are better sources for the correct construction.

#### 4.

A court may also look to extrinsic evidence, such as dictionaries and expert opinions. *Phillips*, 415 F.3d at 1317. The parties do not rely on extrinsic evidence in connection with this issue. The claim language and the specification provide ample support for the conclusion that the six enumerated functions are part of the network environment and are not method steps.

#### B.

Based on its erroneous claim construction, the district court held that claims 1 and 18 are indefinite because they claim an apparatus and method steps. *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2006). The claims do not contravene *IPXL* when properly construed.

The claim at issue in *IPXL* read as follows:

The *system of claim 2* [including an input means] wherein the predicted transaction information comprises both a transaction type and transaction parameters associated with that transaction type, and *the user uses the*

*input means* to either change the predicted transaction information or accept the displayed transaction type and transaction parameters.

*Id.* (quoting U.S. Patent No. 6,149,055 col.22 ll.8–13 (filed June 26, 1996)). We held the claim indefinite because the claim failed to make clear whether infringement would occur “when one creates a system that allows the user to change the predicted transaction information or accept the displayed transaction, or whether infringement occurs when the user actually uses the input means to change transaction information or uses the input means to accept a displayed transaction.” *Id.* The *IPXL* claim, in other words, was ambiguous because it recited both a system that allowed a user to practice a method step and the user’s practicing the method step. Claims 1 and 18 are different. They do not recite a mobile station and then have the mobile station perform the six enumerated functions. The claims merely establish those functions as the underlying network environment in which the mobile station operates.

Claims 1 and 18 are similar to a claim we found definite in *Microprocessor Enhancement Corp. v. Texas Instruments, Inc.*, 520 F.3d 1367 (Fed. Cir. 2008) (“*MEC*”). The claim structure was as follows:

A method of executing instructions in a pipelined processor comprising: [structural limitations of the pipelined processor]; the method further comprising: [method steps implemented in the pipelined processor].

*Id.* at 1374 (quoting U.S. Patent No. 5,471,593 col.129 l.27–col.130 l.32 (filed Jan. 21, 1994)). The *MEC* claim made clear that direct infringement was limited to practicing the claimed method in the pipelined processor

possessing the required structure. *Id.* Claims 1 and 18, likewise, make clear that infringement occurs when one makes, uses, offers to sell, or sells the claimed apparatus: the mobile station—which must be used in a particular network environment. Both the *MEC* claim and the claims in this case feature what the *MEC* court called a “preamble-within-a-preamble” format. *Id.* Although the *MEC* court acknowledged that such a format is unconventional, the court found the claim sufficiently clear to apprise a person of when infringement occurs. *Id.* The unconventional format of claims 1 and 18, likewise, does not preclude the claims from being definite.

### C.

Finally, IPCom moves that we take judicial notice of several third-party wireless-technology patents that it claims would be jeopardized if we were to hold claims 1 and 18 indefinite. Appellee’s Br. 33–34. We deny the motion as moot because the claims are definite.

### III.

HTC argues, as an alternative basis for invalidity, that claims 1 and 18 fail to disclose corresponding structure sufficient to satisfy the principles governing means-plus-function claims. Although the district court was wrong when it found that a processor and transceiver alone supplied sufficient structure, HTC failed to preserve the argument that the specification fails to disclose an algorithm sufficient to transform the processor and transceiver into a special-purpose computer designed to implement the claimed functions. HTC argued only that the specification’s reference to cellular telephones was insufficient to convey use of a processor and transceiver with sufficiently complex hardware to perform the handover function described in claims 1 and 18.

## A.

The mobile station recited in paragraphs 7–8 of claims 1 and 18 is a “mobile station comprising . . . an arrangement for reactivating the link with the first base station if the handover is unsuccessful.” The parties agree that the term “arrangement for reactivating” is a means-plus-function limitation.

A patentee may express an “element in a claim for a combination” “as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof.” 35 U.S.C. § 112 ¶ 6. When a patentee invokes such “means-plus-function” claiming, the “claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” *Id.*

To determine whether a means-plus-function limitation is definite, a court applies a two-step analysis. First, a court identifies the particular claimed function. *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed. Cir. 2003) (citation omitted). The parties agree—aside from immaterial differences in their respective articulations—that the function of the term “arrangement for reactivating” is to reactivate the link with the first base station if the handover is unsuccessful. The district court conducted its analysis based on that articulation; the parties do not ask us to disturb it.

After identifying the particular claimed function, a court, in the second step of the analysis, looks to the specification and identifies the corresponding structure, material, or acts that perform that function. *Id.* (citation omitted). The district court concluded that the structure corresponding to the “arrangement for reactivating” limitation was “a processor connected to a transceiver and programmed to formulate and send messages to reacti-

vate the link, if the handover is unsuccessful.” Although the specification does not literally disclose a processor and transceiver, the district court stated that it had “no doubt that one skilled in the art would immediately deduce that a processor with a transceiver was the structure indicated by the term.”

On this point, we agree with the district court. Whether a specification adequately sets forth structure corresponding to a claimed function is viewed from the perspective of one skilled in the art. *Budde v. Harley Davidson, Inc.*, 250 F.3d 1369, 1376 (Fed. Cir. 2001). Although the specification here does not literally disclose a processor and transceiver, a person skilled in the art would understand that the mobile device would have to contain a processor and transceiver. One of HTC’s own experts, Dr. Christopher Rose, acknowledged that, at the time of invention, a mobile station would have “to be able to talk to the network,” which means “you’ve got to have a transceiver” and “some sort of processor. Something has to handle the data.” The district court relied on Dr. Rose’s testimony.

HTC argues that the district court and IPCom placed too much stock in Dr. Rose’s testimony. Dr. Rose, HTC argues, merely observed during his deposition that processors and transceivers were among the components found in mobile phones at the time of invention. Dr. Rose, moreover, specifically opined in a declaration that the patent did not disclose or suggest to one skilled in the art any *specific* structural configuration for a processor and transceiver to perform the recited functions.

The district court did not clearly err in relying on Dr. Rose’s deposition testimony. Although indefiniteness is a question of law, we review a trial court’s factual findings in support of its legal conclusion for clear error. *Tech.*

*Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338 (Fed. Cir. 2008) (citations omitted). HTC offers no basis, nor can we discern one, for unsettling the district court's finding and placing more weight on Dr. Rose's declaration than his deposition testimony. Indeed, even if Dr. Rose's deposition testimony stands for nothing more than that processors and transceivers were among the components found in mobile phones at the time of invention, his testimony is probative of the perspective of those skilled in the art.

Another expert, Dr. Vijay Madisetti, further supported the district court's conclusion. Dr. Madisetti referred to one scenario, described in the specification, in which it is determined that a handover is required because the quality of the link between the mobile station and first base station has fallen below a certain value. That scenario, Dr. Madisetti opined, "tells one of ordinary skill in the art that the [mobile station] is able to receive messages through the use of a transceiver and monitor the link quality, which processors typically do in assessing whether the quality of such signals falls below a certain level." Dr. Madisetti went on to explain that various other functionalities described in the patent conveyed to one skilled in the art that a processor was needed for accomplishing the claimed functions. The expert testimony supports the district court's conclusion.

HTC also contends that, even if one skilled in the art would know that use of a processor and transceiver were needed, one would not understand exactly how that processor and transceiver would be configured—e.g., what its precise "circuitry," "components," or "schematics" would be or what "controllers" would be employed. *HTC Corp. v. IPCom GmbH & Co.*, No. 08-cv-1897 (D.D.C. Nov. 24, 2009), ECF No. 132 at 17-18 ("*HTC's Opening Markman Br.*"); ECF No. 180 at 155 ("*Markman Hr'g Tr.*").

Our case law does not require that level of hardware disclosure, however. As long as a sufficient algorithm describing how a general-purpose computer will perform the function is disclosed, reference to such general-purpose processors will suffice to overcome an indefiniteness challenge. See *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366-67 (Fed. Cir. 2003).

Contrary to HTC's view, examination of the specification from the perspective of a skilled artisan does not convert an indefiniteness inquiry into an enablement inquiry. We are not analyzing whether a skilled artisan could have devised a processor and transceiver—with all necessary component parts—but whether a skilled artisan would have understood the specification as requiring a processor and transceiver. This approach is consistent with our precedent. *Tech. Licensing Corp.*, 545 F.3d at 1338 (citations omitted).

The district court, in sum, did not err in finding that the specification disclosed a processor and transceiver to one of skill in the art, and that no additional hardware disclosure was needed.

## B.

The district court misstated the law, however, when it stated that disclosure of a processor and transceiver alone was sufficient to provide structure to these claims. The processor and transceiver amount to nothing more than a general-purpose computer. We have “consistently required that the structure disclosed in the specification be more than simply a general purpose computer or micro-processor.” *Aristocrat Techs. Austl. PTY Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008). General-purpose “computers” or “processors” can be “programmed to perform very different tasks in very different ways.” *Id.* Accordingly, “simply disclosing a computer as

the structure designated to perform a particular function does not limit the scope of the claim to ‘the corresponding structure, material, or acts’ that perform the function, as required by section 112 paragraph 6.” *Id.*

Rather than relying on the processor and transceiver, IPCom had to identify an algorithm that the processor and transceiver execute. *Id.* at 1333 (citing *WMS Gaming, Inc. v. Int’l Game Tech.*, 184 F.3d 1339 (Fed. Cir. 1999)). The specification had to disclose that algorithm to one of skill in the art. *Id.* And, it had to do more than parrot the recited function; it had to describe a means for achieving a particular outcome, not merely the outcome itself. *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382-85 (Fed. Cir. 2009). While IPCom maintained that the ’830 patent contains such a qualifying algorithm, the district court never analyzed whether that claim was true. There is, thus, no finding in the record specifically addressing whether the structure actually needed for the type of functional claiming at issue here can be found in the ’830 patent’s specification.

### C.

The district court failed to analyze the existence and adequacy of an algorithm in the ’830 patent because HTC never asked it to do so. HTC never attacked the adequacy of the algorithm to which IPCom pointed before the district court. HTC consistently focused on the lack of hardware rather than the lack of an algorithm. In its opening claim construction brief, for example, HTC argued that the “recited means-plus-function limitations [are] indefinite for failure to disclose . . . corresponding structure . . .” because “nowhere in the ’830 patent is there any disclosure of any circuitry, structure, components or schematics of a mobile phone for performing the recited functions.” *HTC’s Opening Markman Br.* 17.

HTC mentioned nothing about an algorithm in its indefiniteness argument. Although HTC cited *Aristocrat*, that case appeared only in a string citation as an example of a case supporting the general proposition that a patent is invalid for “failure to disclose structure corresponding to [a] means-plus-function limitation.” *Id.* at 19. In its responsive claim construction brief, HTC again focused on the lack of hardware, arguing that the “complete absence of structure in the patent” should not be “excused” based on IPCom’s argument that “several patents and articles that pre-date the ’830 patent show that mobile phones typically include a ‘processor’ and receiver.” *HTC*, No. 08-cv-1897 (D.D.C. Dec. 23, 2009), ECF No. 151 at 6.

During the *Markman* hearing, HTC once more focused on what it perceived as gaps in the hardware described, arguing that the patent should have explained how the hardware was structured and which piece of the hardware accomplished the base station handover. *Markman Hr’g Tr.* 155. Thus, in comparing the text of the ’830 patent to other patents describing processors, HTC’s counsel noted that, in those other disclosures, “[t]here’s a codec for coding and decoding. There’s analogue to digital converters, there’s all these controllers. . . . Sometimes they’re bundled up into different units in some ways. Sometimes they are separate. There’s lots of different ways to do this and the patent has to set forth something to tell you how to do it.” *Id.* Notably, despite IPCom’s citation to *WMS Gaming* and its assertion that the patent’s disclosed algorithm completed the allegedly missing structure, HTC argued that disclosure of an algorithm was inadequate in the absence of a more detailed description of the computer hardware into which the algorithm would be programmed. *Id.* at 151. And, when the district court later asked about “the argument that . . . the algorithm itself . . . is the structure,” HTC’s

counsel stated that the argument was irrelevant because the '830 patent is not a “software patent.” *Id.* at 172.

The argument that the '830 patent failed to disclose an adequate algorithm did not emerge until HTC filed its responsive brief on appeal. Even then, moreover, HTC tied its attack on the algorithm to its attack on the generic nature of the hardware disclosure. Thus, HTC acknowledged for the first time that “the corresponding ‘structure’ may take the form of a particular software program or algorithm that converts a disclosed general-purpose processor into a machine that performs the specific function claimed.” Appellee’s Br. 46. HTC then argued that “the patent [in suit] does not describe how the mobile station generates those messages—just the results of some undescribed algorithms operating on some undescribed hardware. It is not enough merely to describe ‘the results of the operation of an unspecified algorithm.’” *Id.* at 47 (quoting *Aristocrat*, 521 F.3d at 1334–35). That argument was too little and too late.<sup>1</sup>

As a general rule, an appellate court does not consider an issue not passed upon below. *Singleton v. Wulff*, 428 U.S. 106, 120 (1976); *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1344 (Fed. Cir. 2001). This rule fosters sound policies. It ensures finality in litigation by limiting the appealable issues to those a lower court had an opportunity to, and did, address. The rule also conserves judicial resources because it prevents parties from undoing a lower court’s efforts—sometimes

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<sup>1</sup> When asked at oral argument before this court where HTC had challenged the adequacy of the algorithm in the '830 patent when before the district court, HTC’s counsel pointed to a footnote in its opening *Markman* brief. That footnote, however, again only focused on the alleged lack of “schematics[,] . . . components or circuitry . . .” *HTC’s Opening Markman Br.* 18 n.3.

spanning years of litigation—based on an error that a lower court could have considered and corrected. In the same regard, the rule discourages parties from inviting an alleged error below only to raise it on appeal. Many of our sister circuits have recognized the importance of this rule and the policies it fosters. *See, e.g., Nat'l Ass'n of Social Workers v. Harwood*, 69 F.3d 622, 627 (1st Cir. 1995); *Lavoie v. Pac. Press & Shear Co.*, 975 F.2d 48, 56-57 (2d Cir. 1992); *Webb v. City of Philadelphia*, 562 F.3d 256, 263 (3d Cir. 2009); *Wheatley v. Wicomico County*, 390 F.3d 328, 334-35 (4th Cir. 2004); *Payne v. McLemore's Wholesale & Retail Stores*, 654 F.2d 1130, 1144-45 (5th Cir. 1981); *Sigmon Fuel Co. v. Tenn. Valley Auth.*, 754 F.2d 162, 164-65 (6th Cir. 1985); *Strauss v. Stratojac Corp.*, 810 F.2d 679, 683 (7th Cir. 1987); *United States v. Whitten*, 706 F.2d 1000, 1012 (9th Cir. 1983); *Lyons v. Jefferson Bank & Trust*, 994 F.2d 716, 721 (10th Cir. 1993); *Ferrill v. Parker Group, Inc.*, 168 F.3d 468, 475 (11th Cir. 1999).

An appellate court, however, has discretion to consider an issue for the first time on a case-by-case basis. *Singleton*, 428 U.S. at 120. We have described the circumstances in which an appellate court might excuse a party's failure to preserve an issue, as where: (i) the issue involves a pure question of law and refusal to consider it would result in a miscarriage of justice; (ii) the proper resolution is beyond any doubt; (iii) the appellant had no opportunity to raise the objection at the district court level; (iv) the issue presents significant questions of general impact or of great public concern; or (v) the interest of substantial justice is at stake. *L.E.A. Dynatech, Inc. v. Allina*, 49 F.3d 1527, 1531 (Fed. Cir. 1995) (citations omitted).

None of those circumstances exists here. The necessity of an algorithm has been well established at least

since *WMS Gaming*, a 1999 case. This case does not alter that doctrine. HTC had an opportunity to argue the algorithm issue—at IPCom’s invitation—during briefing on claim construction and HTC’s summary judgment motion, and at oral argument before the district court. Because the parties have not developed the algorithm issue, moreover, we cannot resolve that issue now on the theory that its proper resolution is beyond any doubt. Indeed, if we were to remand the issue, the district court would have to conduct additional fact finding, and the parties potentially would have to conduct additional expert discovery. Remand, in sum, would stymie judicial economy because it would require the district court and the parties to invest resources in an issue that could have been raised for the first time below.

This waiver case is distinct from another involving algorithmic structure corresponding to a means-plus-function limitation decided by this court. In *Harris Corp. v. Ericsson Inc.*, Ericsson argued to the district court and this court that the claim should be construed to require a two-step algorithm of “producing nondiscrete estimates and deriving discrete decisions therefrom.” 417 F.3d 1241, 1251 (Fed. Cir. 2005). In the district court, Ericsson argued that the claimed process required “selecting discrete decisions” as a separate step from the function of the “time domain processing means,” which was to produce “nondiscrete ‘estimates of the originally transmitted information signals.’” *Id.* Ericsson also argued to the district court, as an alternative claim construction, that the function of the “time domain processing means” was to implement the two-step algorithm. *Id.* What Ericsson failed to do in the district court—but did on appeal—was to characterize the two steps as part of the corresponding structure of the “time domain processing means” limitation. *Id.* After analyzing the difference between the two

positions, this court concluded that those differences were more of form than substance and that Ericsson had presented the essence of its position to the district court. *Id.*

In refusing to find waiver in *Harris*, we focused on the fact that Ericsson had asserted throughout the litigation that the claims required a two-step algorithm: the very point on which the case ultimately turned. There, we concluded that Ericsson's modified articulation of its claim construction yielded nothing more than an "infinitesimal tweak in scope, devoid of any practical consequence." *Id.* at 1252 n.3. Here, by contrast, HTC emphasized the absence of circuitry, structure, and processor components in the district court, but now asserts the absence of any disclosure of a pertinent algorithm. HTC's argument on appeal is a concept distinct from what it argued below; there is no way we legitimately could characterize HTC's course change as a mere "tweak," infinitesimal or otherwise, to the position it took in the trial court.

We agree that the structure necessary to support the functional claiming in claims 1 and 18 of the '830 patent must include an adequate algorithm describing how a processor and transceiver can perform the claimed function. Because HTC never attacked the adequacy of the algorithm in the '830 patent when given an opportunity to do so before the district court, however, HTC cannot lodge that attack for the first time here.

#### IV.

We reverse the district court's grant of summary judgment to HTC on the ground that claims 1 and 18 cover hybrid subject matter. We hold, moreover, that the district court correctly concluded that the '830 patent's specification adequately disclosed a processor and transceiver for use in performing the function claimed in claims

1 and 18. Although the district court was incorrect to assume that a processor and transceiver are alone sufficient under 35 U.S.C. § 112 ¶ 6 to provide structure for a functional claim such as that at issue here, HTC failed to preserve any attack on the algorithm that IPCom asserted provided additional needed structure. We, therefore, decline to overturn the district court's denial of summary judgment on the alternative ground of indefiniteness or to order that the record be reopened on that motion.

**REVERSED**