

PUBLIC VERSION

**UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.**

In the Matter of

**CERTAIN PERSONAL DATA AND
MOBILE COMMUNICATIONS DEVICES
AND RELATED SOFTWARE**

Investigation No. 337-TA-710

COMMISSION OPINION

PUBLIC VERSION

TABLE OF CONTENTS

I. INTRODUCTION..... 3

II. VIOLATION OF SECTION 337..... 7

 A. The '263 Patent..... 7

 1. "Realtime API" 8

 2. "Device Handler"..... 12

 3. A Realtime API "Coupled Between" Two Subsystems 15

 4. Inconsistency Between the ID's Infringement and Invalidity Analyses..... 16

 5. "Adapter Subsystem"..... 22

 6. Summary of Findings for the '263 Patent..... 22

 B. The '647 Patent..... 23

 1. "Linking Actions to the Detected Structures" (claim 1) and
 "Linking at Least One Action to the Detected Structure" (claim 15)..... 23

 2. The Ordering of Claim 15's Steps 30

 3. Linking Structures to Multiple Actions in the Accused Products..... 31

 4. *Global-Tech Appliances, Inc. v. SEB S.A.*, No. 10-6 (U.S. May 31, 2011)..... 31

 5. HTC's Motion for Summary Determination of Intervening Rights 32

 6. Summary of Findings for the '647 Patent..... 34

 C. The '721 Patent..... 35

 1. "Processing Means" 35

 2. "Dynamic Binding" 46

 3. "Dynamic Binding" Under the ALJ's Construction 50

 4. Summary of Findings for the '721 Patent..... 51

 D. The '983 Patent..... 51

 1. "Loading"..... 52

 2. "Selectively Load Required Object-Oriented Methods" 55

 3. "Executable Program Memory" Limitations 63

 4. The ALJ's Striking a Portion of HTC's Expert Report 65

 5. Summary of Findings for the '983 Patent..... 66

III. REMEDY, THE PUBLIC INTEREST, AND BONDING 66

 A. Remedy and the Public Interest 67

 1. Limited Exclusion Order..... 67

 2. Cease and Desist Order..... 84

 B. Bonding..... 84

IV. CONCLUSION 86

PUBLIC VERSION

I. INTRODUCTION

The Commission instituted this investigation on February 24, 2010, based on a complaint filed by Apple Inc., and its subsidiary NeXT Software, Inc., both of Cupertino, California (collectively, “Apple”), alleging a violation of section 337 of the Tariff Act of 1930 as amended, 19 U.S.C. § 1337, in the importation, sale for importation, or sale within the United States after importation of certain personal data and mobile communications devices and related software by reason of infringement of certain claims of ten patents. 75 *Fed. Reg.* 17434. Respondents are High Tech Computer Corp. of Taoyuan City, Taiwan and its United States subsidiaries HTC America Inc. of Bellevue, Washington, and Exedia, Inc. of Houston, Texas (collectively, “HTC”).¹ The accused products are certain HTC smartphones running the Android operating system.

On July 15, 2011, the ALJ issued his final Initial Determination (“ID”). By that time, the investigation had been narrowed to certain claims of four patents: claims 1, 2, 24, and 29 of U.S. Patent No. 6,343,263 (“the ’263 patent”); claims 1, 3, 8, 15, and 19 of U.S. Patent No. 5,946,647 (“the ’647 patent”); claims 1, 5, and 6 of U.S. Patent No. 5,481,721 (“the ’721 patent”); and claims 1 and 7 of U.S. Patent No. 6,275,983 (“the ’983 patent”). The four patents are unrelated. The

¹ Five of the ten patents asserted by Apple in this investigation were also asserted by Apple against Nokia Corp. of Espoo, Finland and Nokia Inc. of White Plains, New York (collectively “Nokia”) in Investigation No. 337-TA-704. On motion by the Commission investigative attorney in the 704 investigation and by the respondents in both investigations, the Chief Administrative Law Judge transferred Apple’s assertion of overlapping patents against Nokia from the 704 investigation into the 710 investigation. *See Certain Mobile Communications and Computer Devices and Components Thereof*, Inv. No. 337-TA-704, Order No. 5 (Apr. 26, 2010). Subsequently, Apple and Nokia entered a settlement agreement, and on July 21, 2011, the Commission determined not to review the presiding Administrative Law Judge’s (“ALJ”) termination of the investigation as to Nokia on the basis of settlement.

PUBLIC VERSION

'263 patent discloses a telecommunications interface for real-time data processing. The '647 patent discloses automatically highlighting structures (*e.g.*, telephone numbers, email addresses, and names) in a document such as an email message or word-processing file to enable certain linked actions (*e.g.*, calling that telephone number, adding the address to an electronic telephone book, or composing an email to that email address). The '721 and '983 patents both involve aspects of object-oriented programming.

Based substantially on certain claim constructions, the ID found that none of the asserted patent claims were invalid. With respect to infringement and domestic industry, the ID found as follows:

Infringement and Domestic Industry Findings in the ID

Asserted claims	Infringed	Domestic Industry
'263 claims 1, 2, 24, 29 '647 claims 1, 8, 15, 19	Yes	Yes
'647 claim 3	No	Yes
'721 claims 1, 5, 6 '983 claims 1, 7	No	No

Accordingly, the ID found a violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, with respect to the asserted claims of the '263 patent and all but one of the asserted claims of the '647 patent.² The ALJ recommended the issuance of a limited exclusion order, that zero bond be

² The ALJ found that HTC did not infringe claim 3 of the '647 patent, and Apple did not petition for review of the ALJ's noninfringement finding for that claim. Accordingly, there can be no violation of section 337 as to that claim.

PUBLIC VERSION

posted during the Presidential review period, and that no cease and desist order issue.

HTC, Apple, and the Commission investigative attorney (“IA”) each petitioned for review of the ID, and each filed responses to the others’ petitions. On September 15, 2011, the Commission determined to review several issues regarding each of the four patents asserted in this investigation. 76 *Fed. Reg.* 58,537 (Sept. 21, 2011). In response, the parties filed opening and reply briefs.³ In addition, three non-parties filed comments on remedy, the public interest, and bonding: Google Inc. (“Google”); T-Mobile USA, Inc. (“T-Mobile”); and The Association for Competitive Technology (“ACT”).⁴

³ Apple filed separate briefs on the issues under review and on remedy, the public interest, and bonding. HTC’s opening brief consolidated these matters, but it filed separate replies. Compl’ts Apple Inc. and NeXT Software, Inc.’s Written Submission in Response to the Commission’s Determination to Rev. in Part a Final ID Finding a Violation of Section 337 (Oct. 6, 2011) (“Apple Br.”); Compl’ts Apple Inc. and NeXT Software, Inc.’s Written Submission on Remedy, the Public Interest, and Bonding (Oct. 6, 2011) (“Apple Remedy Br.”); The HTC Resp’ts’ Opening Br. on Comm’n Rev. (Oct. 6, 2011) (“HTC Br.”); Office of Unfair Import Investigations’ Resp. to Questions Posed in the Comm’n’s Notice of Sept. 15, 2011, and Briefing on the Issues of Remedy, the Public Interest, and Bonding (Oct. 6, 2011) (“IA Br.”); Compl’ts Apple Inc. and NeXT Software, Inc.’s Reply to Respondents and OUII’s Respective Written Submissions in Resp. to the Notice of Comm’n Determination to Rev. in Part a Final Initial Determination Finding a Violation of Section 337 (Oct. 17, 2011) (“Apple Reply Br.”); Compl’ts Apple Inc. and NeXT Software, Inc.’s Reply on Remedy, the Public Interest, and Bonding (Oct. 17, 2011) (“Apple Remedy Reply Br.”); The HTC Resp’ts’ Reply to the Briefs of Compl’t and the Office of Unfair Import Investigations on the Issues Under Review (Oct. 17, 2011) (“HTC Reply Br.”); The HTC Resp’ts’ Reply to the Briefs of Compl’t and the Office of Unfair Import Investigations on Remedy, Bonding, and the Public Interest (Oct. 17, 2011) (“HTC Remedy Reply Br.”); Office of Unfair Import Investigations’ Reply to Apple’s and HTC’s Initial Responses to the Comm’n’s Notice of Sept. 15, 2011, and Briefing on Remedy, the Public Interest, and Bonding (Oct. 17, 2011) (“IA Reply Br.”). HTC’s briefing totaled more than 300 pages of argument, Apple’s nearly as much, all exclusive of supporting materials.

⁴ Submission of Google Inc. in Resp. to the Comm’n’s Sept. 21, 2011 Request for Written Submissions on the Issues of Remedy, the Public Interest and Bonding in Inv. No. 337-TA-710 (Oct. 6, 2011) (“Google Remedy Br.”); Third-Party T-Mobile USA, Inc.’s Statement Regarding the Public Interest (Oct. 6, 2011) (“T-Mobile Remedy Br.”); Reply Comments of the Association for Competitive Technology in Resp. to the Comm’n’s Sept. 21, 2011 Request for Written

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PUBLIC VERSION

On review, we have determined to affirm the ALJ’s finding of a violation of section 337 as to claims 1 and 8 of the ’647 patent. We affirm the ALJ’s finding of no violation of section 337 as to the ’721 patent and the ’983 patent. We reverse the ALJ’s finding of a violation of section 337 as to the ’263 patent and claims 15 and 19 of the ’647 patent. Our conclusions bearing on the violation of section 337 are as follows:

The Commission’s Determinations on Review

Asserted claims	Infringed	Domestic Industry	Invalid
’263 claims 1, 2, 24, 29	No	No	Only under Apple’s construction of “realtime API”
’647 claims 1, 8	Yes	Yes	No
’647 claims 15, 19	No position	Yes	Yes
’721 claims 1, 5, 6	No	Yes	Yes
’983 claims 1, 7	No	No	Only under Apple’s construction of “selectively load” to include class loading

[Footnote continued from the previous page]

Submissions on the Issues of Remedy, the Public Interest and Bonding (Oct. 26, 2011) (“ACT Remedy Br.”). On October 18, 2011, the Commission granted ACT’s motion for an extension of time to file its comments. Thus, ACT’s comments were filed closer in time to the parties’ reply comments, and ACT referred to its comments as a “reply.” Google and T-Mobile did not file reply comments. We hereby grant ACT’s subsequent motion for leave to file a corrected version of its comments to fix certain typographical errors.

PUBLIC VERSION

The Commission has determined that the appropriate remedy is a limited exclusion order, and that the exclusion of articles subject to the order shall commence on April 19, 2012. In addition, the exclusion order contains an exemption permitting HTC to import into the United States until December 19, 2013 refurbished handsets to be provided to consumers as replacements under warranty or an insurance contract. The Commission has determined that Apple has not demonstrated that a bond is appropriate during the Presidential review period, and has determined not to issue a cease and desist order.

II. VIOLATION OF SECTION 337

A. The '263 Patent

Independent claim 1 and its dependent claims 2, 24, and 29, have been asserted from this patent, which is entitled “Real-time Signal Processing System for Serially Transmitted Data.” The '263 patent issued on January 29, 2002, and discloses a telecommunications interface for real-time data processing. Although the patent’s written description (including the patent claims) uses the terms “real-time” or “realtime” nearly 200 times, the parties disputed its meaning before the ALJ. The ALJ construed “realtime” as “within a defined upper bounded time limit.” ID at 32. The construction of that term is no longer in dispute.⁵ The Commission granted review on

⁵ The patent equates realtime processing to processing of “isochronous streams of data.” Col. 2 lines 26-36, 42-50. The patent references the definition of isochronous data from U.S. Patent No. 5,515,373 col. 11 lines 43-51, which shares the same inventors, and which the '263 patent disclosure incorporates by reference at col. 3 lines 30-37. The '263 patent distinguishes “isochronous data handling” from “a burst mode.” Col. 2 lines 26-33. One dictionary defines “burst mode” as a “mode of transmission by which a system can send a burst of data at higher speed for some period of time.” IEEE 100: The Authoritative Dictionary of IEEE Standards Terms 128 (7th ed. 2000). Because “realtime” is not disputed before the Commission, we provide this discussion for context regarding the now-agreed-upon construction’s requirement of a “defined upper bounded time limit.”

PUBLIC VERSION

five issues. *See* Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011). These issues include two claim constructions (“realtime API” and “device handler”), as well as certain questions of infringement, invalidity, and domestic industry independent of those constructions.

1. “Realtime API”

The ALJ construed the term “realtime API” in claim 1 as an “API that allows realtime interaction between two or more subsystems.” ID at 41. In its petition for review, HTC contended that the ALJ’s construction is erroneous, and that under a proper construction, neither its products nor Apple’s domestic industry products practice the asserted patent claims. The Commission granted review. *See* Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 1).

a) Claim Construction

Asserted claim 1 includes “at least one realtime application program interface (API) coupled between the subsystem and the realtime signal processing subsystem to allow the subsystem to interoperate with said realtime services.” The claim construction issue regarding this “realtime API” boils down to whether the term “realtime” modifies each term it precedes in the asserted claims including “API.” HTC contends that it does, and the IA agrees. HTC Br. 3-11; IA Pet. 5-7. For each component to operate in “realtime” is to say that the component itself operates within certain limits to ensure that the data stream can be processed in realtime, *i.e.*, that all frames of video are displayed, or that all packets of voice data are transmitted in time. *See* HTC Br. 4-8; IA Pet. 5-7.

Apple’s proposed construction, adopted by the ALJ, found that *any* “API that allows realtime interaction between” subsystems is a “realtime API.” ID at 41. We find that this

PUBLIC VERSION

construction improperly reads the term “realtime” out of the API limitation.⁶ *See, e.g., Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“claims are interpreted with an eye toward giving effect to all terms in the claim”). Specifically, the ALJ’s construction makes the term “realtime” in connection with the API at most nominal and without any purpose of its own.⁷ That the ALJ’s construction for the “realtime API” includes the word “realtime” does not make the usage as construed any less nominal. Under Apple’s and the ALJ’s reading, the only operative use of realtime is the “realtime signal” itself, and the mere processing of the realtime signal under that reading necessarily gives rise to the existence of a “realtime API.” We do not believe that a person of ordinary skill would read all these terms merely as nominal surplusage.⁸ Rather, we conclude that a person of ordinary skill would understand that the term “realtime API” to mean that the API itself has defined upper bounded time limits. *See, e.g., Tr.* 1329-1343, 1367-71,

⁶ Apple’s proposed construction also read “realtime” out of the “realtime signal processing subsystem” limitation of claim 1: “a realtime signal processing subsystem for performing a plurality of data transforms comprising a plurality of realtime signal processing operations.” On review, HTC has focused only on the realtime API. Apple has *not* argued that it would be wrong to impose a “realtime” limitation on the API because the subsystem cannot accommodate a “realtime” limitation. Having reviewed the record, we believe that it would be proper to impose this limitation on the subsystem, and Apple has waived any argument to the contrary, *see* Apple Br. 2-7; Apple Reply Br. 4-13.

⁷ This nominal usage applies not merely for the API (and the subsystem) of claim 1, but also for many limitations across the patent claims (asserted and unasserted): “realtime processor including a realtime operating system” (claim 4); “virtual realtime device” (claim 7); and “realtime engine” (claim 8).

⁸ Based on the reasoning adopted in the ID, and which Apple defends before the Commission, a computer running Skype videoconferencing is “realtime” so long as Skype works properly, but once the computer buckles under the weight of other tasks and starts dropping frames, then the system is no longer realtime. *Tr.* 714-720 (Apr. 20, 2011) (Apple expert Nathaniel Polish). Thus, under this reasoning, as computer speeds increase, systems that had not been realtime suddenly become so through happenstance, and through no specific architectural detail such as a “realtime subsystem” or “realtime API.”

PUBLIC VERSION

1451-55.

In adopting HTC's proposed construction, we observe that unasserted claim 31 recites an API without the "realtime" modifier: "at least one application programming interface for receiving the requests generated by said device handler program"⁹ The applicant, therefore, knew how to claim *any* API that would function in a realtime system, in the manner that Apple contends claim 1 should be interpreted.

We reject two of Apple's arguments that the ALJ found influential: (1) treating "realtime" as a limitation throughout the claims leads to absurd results (though not with respect to the API itself); and (2) the patent specification does not disclose how each component enforces realtime limitations. ID at 26 n.13, 29. With respect to the first argument, Apple stated that claim 24's "realtime processor including an operating system" would make no sense if the processor is realtime but the operating system is not. The ALJ agreed. *Id.* However, the omission of "realtime" with respect to the operating system recited in claim 24 does not make the operating system "not realtime" as the ALJ assumed; as to those components the claims simply do not require them to be realtime. Similarly, the fact that the preamble of claim 1 describes a "signal processing system" without "realtime," but the claim calls for a "realtime signal processing subsystem," is not problematic. For one, no party has argued that the preamble of claim 1 is limiting. For another, the claim language establishes that some aspects of the system must be realtime (those specified), while others may or may not be (those that are not so specified).

With respect to Apple's second argument, Apple states that finding the term "realtime" to

⁹ The patent claims have other examples of components not specifically described as "realtime," for example, a "translation interface program" (claim 4), and a "device handler program" (claim 31).

PUBLIC VERSION

have meaning as a modifier is contravened by insufficient guidance in the specification about enforcement of limitations. *Cf. id.* at 29; Apple Reply Br. 9-10; *cf.* col. 5 lines 37-63; col. 6 lines 48-52, col. 6 line 67 - col. 7 line 4; col. 7 lines 8-12; col. 7 lines 46-51; col. 8 line 57-64 (resource allocation and assessment). No party has argued, however, that the claims are invalid as construed under 35 U.S.C. § 112. To the extent that the Commission must choose between mere inferences from the specification and the plain meaning of the claim terms as informed by the intrinsic record as a whole, the Commission chooses the latter.

We also reject the ALJ's finding that treating "realtime" as a limitation is inconsistent with the "flexibility" emphasized by the patent specification. ID at 28-29 (citing col. 1 lines 30-32; col. 11 lines 7-10). We do not find that rationale persuasive, as virtually *any* limitation would undermine flexibility, and adopting this rationale would be tantamount to applying a canon of construction favoring the unduly broad.¹⁰

b) Infringement and Domestic Industry

Apple does not make substantial infringement and domestic industry arguments under the Commission's construction of "realtime API," and there is no genuine dispute that the identified API in both the HTC and Apple products do not operate within a "defined upper bounded time limit" as the unchallenged construction of "realtime" requires. *See* HTC Br. 11-13. Rather, Apple contends that the construction is not "faithful to the intrinsic evidence." Apple Br. 7. For

¹⁰ The ID's discussion of "hard realtime" and "soft realtime" on pages 29-32 is inapposite with respect to the issue under Commission review. Most of that discussion related to "without handling delays," a limitation on realtime urged by HTC but not pursued on Commission review. The ALJ's construction of "realtime" as "within a defined, upper bounded time limit" does not have the effect, when applied to the claimed realtime subsystem and realtime API, of transforming the claimed system into a rigid hard-wired device eschewed by the ID.

PUBLIC VERSION

the reasons set forth above, we disagree and find that neither the accused products nor Apple's domestic industry products practice the "realtime API" limitation. As we will discuss below, however, even if Apple's construction of "realtime API" were to be accepted, the asserted patent claims would be invalid in view of AT&T's VCOS system under that construction.

2. "Device Handler"

The ALJ construed the term "device handler," which appears in claims 1 and 24, as Apple and the IA had proposed: "software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem." ID at 41, 44. HTC had urged a different construction: "a software module specific to a device that sets up dataflow paths, and presents data and commands to the realtime signal processing system." ID at 41. We granted review of HTC's petition for review of the claim construction of "device handler" and the application of that construction to infringement and domestic industry. Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2).

a) Claim Construction

As noted above, HTC sought to add the requirement that the device handler be "specific to the device." *See id.* In its briefing on Commission review, HTC no longer seeks to add that construction to the "device handler" limitation. Rather, HTC claims that its previous arguments in support of that construction now support a different argument that "associated with" in the ALJ's construction means that "the device handler must know . . . about the device it supposedly handles," as opposed to the device handler "merely be[ing] somewhere in the data path for data that originated at the 'device.'" HTC Br. 23. Tellingly, HTC offers no construction. We agree with Apple, Apply Reply Br. 16, that the issue, as presented by HTC, is not one of claim construction, and to the extent that it is, the claim construction issue has been waived.

PUBLIC VERSION

We observe that the petitions and briefs in this investigation are replete with efforts by HTC and Apple to label many or most disputed issues to be disputed issues of claim construction, even when there was no dispute as to the meaning of a term, or after a party's own construction had been adopted. These attempts cut across all the patents and are improper. The Commission was mindful to specify expressly in its review notice (which issued in the Federal Register on September 21, 2011) those issues that fairly involved claim constructions, and those in which the only issue genuinely in dispute was the application of a claim construction, *i.e.*, infringement, validity, or domestic industry. There is a distinction between a claim construction and application of the claim construction. *See, e.g., Tessera, Inc. v. ITC*, 646 F.3d 1357, 1364 (Fed. Cir. 2011). Disagreements over an application of a construction – a finding of infringement or invalidity and the analysis therefor – do not themselves give rise to opportunities, after the fact, to change the agreed-upon or adopted constructions. Commission proceedings are not an iterative process whereby each unfavorable resolution results in an opportunity to offer a changed construction, or to construe the construction, in the hope of effecting a different outcome.

b) Infringement

HTC takes issue with how the term “presents data” in the ALJ’s construction of “device handler” is applied with regard to the accused products. HTC believes that the device handlers in its accused products do not present data because they do not themselves “receive or transmit data”; rather, they direct the flow elsewhere. *See, e.g., HTC Br. 15-17*. The constructions proposed by all the parties and the construction adopted by the ALJ included “presents data,” *see ID at 41*, and not “receives or transmits data,” as argued now by HTC. We reject HTC’s attempt to create a

PUBLIC VERSION

claim construction dispute,¹¹ and we affirm the ALJ's determination that the accused products contain a claimed device handler. ID at 48-49.

HTC also takes issue with whether the accused device handlers are “associated with an interface device” as urged by Apple and as required by the ALJ's construction. *Id.* at 41, 44. HTC argues that this, too, is a matter of claim construction, HTC Br. 23, but here, too, we disagree. The claim has been construed, and all that is at issue on review is application of the construction. HTC does not invite the Commission to adopt the construction it previously urged, that the device handler be “specific to” a device. HTC Br. 23-27. Instead, HTC takes issue with the application of the ALJ's construction, which we find to be a question of infringement.¹² We agree with the

¹¹ Even were we to consider the issue in the context of claim construction, we would reject HTC's proposed construction of the construction. HTC does not offer a dictionary definition in support of its argument, and we do not believe that a dictionary definition supports HTC. 2 The New Shorter Oxford English Dictionary 2340 (1993) (providing as its first definition of the verb “present”: “Make present, bring into the presence of.”). Instead, HTC relies on the specification and figures, which show the preferred embodiment's handler's reception and transmission of data. HTC Br. 16. In particular, HTC argues that Figure 2 shows data passing through the adapter handler 44. *Id.* Thus, HTC argues that the specification shows that the device handler act of “presenting data” is to “receive or transmit data.” HTC's arguments, we believe, represent an improper incorporation into the claim language of the preferred embodiment's limitations. We reject HTC's construction without reaching Apple's counterargument that HTC's construction would exclude the preferred embodiment. *See* Apple Reply Br. 17-20; HTC Br. 18-23. Accordingly, if the question were one of claim construction, we agree with the ALJ.

¹² Again, even were we to consider the issue in the context of claim construction, we would reject HTC's proposed construction of the construction. HTC does not rely on any dictionary definition to support its narrow interpretation of “associated with” to mean something akin to “specific to.” Rather, HTC declares that the plain meaning is to the contrary, HTC Br. 26, and then argues that intrinsic and extrinsic evidence support its interpretation, *id.* at 26-31. HTC's argument is based principally on a passage from the '263 patent specification: “An adapter handler 44 is specific to the particular adapter 36 and carries out features associated with that adapter.” Col. 5 lines 8-9. The ALJ found that this passage related to the preferred embodiment and did not constrain the construction of “handler” generally. ID at 43. We agree. In addition, we find that the extrinsic evidence cited by HTC, Tr. 228-31, 275 (Lynch); Tr. 666-68 (Polish); Tr. [Footnote continued on the next page]

PUBLIC VERSION

ALJ's infringement analysis at pages 49-50 of the ID, and conclude that the accused devices contain the claimed "device handlers."¹³

3. A Realtime API "Coupled Between" Two Subsystems

Claim 1 requires that the realtime API be "coupled between the subsystem and the realtime signal processing subsystem," *i.e.*, between the structures of the first two elements of the claim. The parties agreed that "coupled between" should be construed as "functionally connected to, but distinct from."¹⁴ The ALJ found that HTC's accused products practice the "realtime API" limitation because the ".h" header files in the accused Android products are "coupled between" two subsystems as required by claim 1. ID at 36-37, 56-59. It is unclear why the ALJ merged some of his infringement discussion into his claim construction analysis, *see id.* at 36-37, as the only question at issue is whether HTC infringes the patent claims on the basis of these ".h" header files under the claim construction agreed upon by the parties. We determined to review the infringement question. 76 *Fed. Reg.* 58537-38 (Sept. 21, 1011) (Issue No. 3) ("Whether the API of the accused products is 'coupled between' two subsystems.").

Despite the Commission's limitation of review on this point to infringement, HTC argues that the question on review is properly one of claim construction. HTC Br. 29-31. We disagree. As noted, HTC's noninfringement argument is based on the fact that the accused APIs

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1297-98 (Brandt), is consistent with the plain meaning of "associated with." Accordingly, if the question were one of claim construction, we agree with the ALJ.

¹³ HTC's domestic industry argument is predicated on its "associated with" argument that we have rejected in connection with infringement. *See* HTC Br. 28-29.

¹⁴ Joint Mot. of All Relevant Parties to Amend the Joint List of Undisputed Claim Terms with Agreed Constructions App. A at 14 (Feb. 24, 2011).

PUBLIC VERSION

are “header files,” also known as “.h” files. HTC Br. 33-34. As such, these files are prepended (as headers) to other files. *See id.* at 33 & n.10. HTC argues that because the headers are attached to code that Apple accused as the realtime signal processing subsystem, the headers could no longer be an intermediary that is “functionally connected to, but distinct from” the two accused subsystems.

Although we disagree with the ALJ’s placement of his infringement analysis within his discussion of claim construction, we agree with his conclusions, that the accused APIs are “coupled between” two subsystems. The term “coupled between” does not support the conclusion that HTC seeks. Substantial evidence supports the ALJ’s conclusion on page 37 of the ID that the header “API is indeed functionally connected to the object(s) for which it provides an interface, and HTC does not contend otherwise. But this API is also ‘distinct from’ the objects for which it provides an interface in the sense that it is the only aspect of the object exposed to the higher-level components . . . , is defined separately in a header file . . . , and can provide a generic interface for multiple different objects of a similar type” ID at 37 (citing Tr. 857-59, 1067, 1091-92, 1562); *see also* Apple Reply Br. 25-30; Apple Br. 16-17 (citing Tr. 818-19, 1092). We therefore find that the ID’s determination on this point is correct.

4. Inconsistency Between the ID’s Infringement and Invalidity Analyses

HTC and the IA petitioned for review of the ID on the basis that its infringement analysis is inconsistent with its invalidity analysis. HTC Pet. 33-36; IA Pet. 5-13. They contended that the ALJ, in finding the asserted claims valid over the prior art VCOS system,¹⁵ applied greater scrutiny than he did in his infringement analysis, and that this difference constituted error. The

¹⁵ *See generally* RX-963 (“AT&T VCOS Operating System: The Multimedia Solution”).

PUBLIC VERSION

Commission granted HTC's and the IA's petitions for review on the matter. 76 *Fed. Reg.* 58537-38 (Sept. 21, 1011) (Issue No. 4). On review, we find the ALJ's infringement analysis appropriate, comparing the accused products to the claims as construed,¹⁶ ID at 45-61, but we agree with HTC and the IA that the ALJ's invalidity analysis constitutes legal error.

The ALJ found that AT&T's prior art VCOS system does not anticipate any of the asserted claims because "it fails to disclose at least the realtime API and device handler limitations." *Id.* at 69. However, the invalidity analysis in the ID compared the VCOS system to the Chen prior-art patent (U.S. Patent No. 5,440,740 (issued Aug. 8, 1995)), which was the primary focus of the prosecution history. *See* ID at 69-71. Essentially, the ALJ assumed that if the '263 patent was patentable over Chen and if the VCOS system is in some ways similar to the Chen patent, then the '263 patent must be patentable over VCOS. *Id.*

Prosecution history is certainly relevant for claim construction, where claims are construed so not to encompass a "clear and unmistakable" disclaimer of claim scope. *E.g., Purdue Pharma L.P. v. Endo Pharms., Inc.*, 438 F.3d 1123, 1136 (Fed.Cir.2006). Such disclaimers may result in complex claim constructions to accommodate the scope of disclaimer. But in this investigation, Apple has not argued that the pertinent prosecution history gives rise to disclaimer. *See* ID at 39;

¹⁶ Apple, which invited the ALJ's invalidity error, *see* Apple Post-Hearing Br. 49-50 (comparing the prior art to the Chen patent), argues that if there is inconsistency between the infringement and validity analyses, infringement should not be analyzed more rigorously: "The correct claim constructions should be adopted, as the ID did. If the Commission finds that there is some inconsistency in the application of these constructions in the infringement and validity analyses as articulated in the ID – and to be clear, Apple strongly believes there is no inconsistency – the proper way to resolve this would be to clarify the findings with respect to the prior art to make even clearer the consistency of these findings with the infringement analysis." Apple Br. 26. On this we agree with Apple, and we have not disturbed the ALJ's infringement analysis on the basis of inconsistencies with the ALJ's invalidity analysis.

PUBLIC VERSION

IA Pet. 12.

Similarly, other portions of the ALJ's invalidity discussion did not analyze whether VCOS anticipates the asserted '263 patent claims as construed, but compared the VCOS system to limitations of the '263 patent's preferred embodiment. In particular, pages 71-72 of the ID analyze whether the VCOS system contains a "realtime API" by discussing what the '263 patent's specification says about the preferred embodiment.¹⁷ Page 73 relies on the preferred embodiment regarding the scope of "device handler program."¹⁸ Such statements with respect to the preferred embodiment ordinarily inform claim construction, which in turn informs all subsequent inquiries (such as validity and infringement). When applied as the ALJ did, the effect is to limit improperly the scope of the claims to the preferred embodiment for purposes of preserving validity.

The ALJ's analysis of the VCOS prior art is an error made moot because the Commission has construed "realtime API" to require that the API operate within a defined upper bounded time limit. HTC does not contend that under this construction the VCOS system anticipates the asserted patent claims. However, we have determined to reach the question of validity under the

¹⁷ See, e.g., ID at 71 ("This need for knowledge about the particular implementation of the real-time engine is incompatible with the '263 invention and its realtime API, which 'provid[es] a layer of abstraction between the real-time engine and the remainder of the processing system, . . . eliminat[ing] the need for a device handler to have any knowledge about the particular implementation of the real-time engine.") (quoting the '263 patent); *id.* at 72 ("This need to redesign the system is also inconsistent with the invention's realtime API, in which 'any one of a hardware-implemented, software-implemented or native digital signal processor can be employed, without requiring any redesign of the system.") (quoting the applicant's June 24, 1996 Response Under 37 C.F.R. 1.117 Expedited Procedure characterizing the preferred embodiment); *id.* (citing the '263 patent abstract and col. 2 line 66 – col. 3 line 11 for support for the same "redesign" proposition).

¹⁸ ID at 73 ("But this is not consistent with the patent's disclosure, as the '263 patent makes clear that 'mixing audio streams into a single output stream' is a function in the preferred embodiment of serial driver 42, not the device handler program.") (quoting the '263 patent).

PUBLIC VERSION

construction of “realtime API” adopted by the ALJ and advocated by Apple. HTC has demonstrated by clear and convincing evidence that the asserted claims of the ’263 patent would be anticipated under 35 U.S.C. § 102(b) by AT&T’s prior art VCOS system under the ALJ’s construction of “realtime API.”

The ALJ found that VCOS does not anticipate the asserted claims because it lacks the claimed “realtime API” and lacks a claimed “device handler.” ID at 69. On Commission review, Apple defends the ALJ’s determination on these same bases. Apple Br. 18-23. Page 1 of the VCOS Product Note (RX-963) contains a diagram showing what HTC contends is the corresponding API (“VCAS Apps Server”) and the corresponding device handler (“API/Resource Manager”):

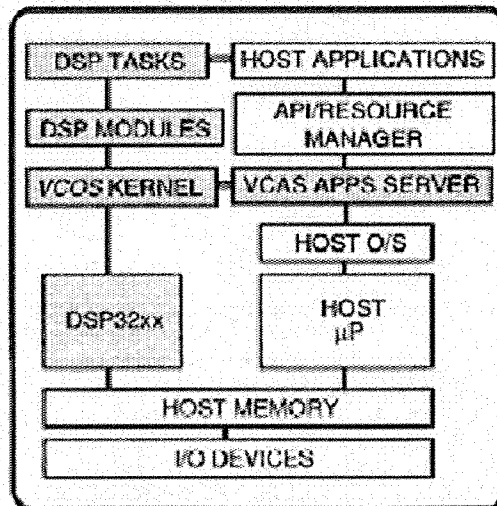


Figure 1. VCOS/DSP32xx System Integration

The VCOS product note defines the VCAS as follows: “VCAS is a set of interface functions that run on the host computer under the host’s operating system. Included are functions for DSP initialization, buffer communications, task management, and communication with directly addressed system devices (DASDs) such as the computer’s hard disk.” RX-963 at 8.

PUBLIC VERSION

We disagree with the ALJ's determination that VCOS lacked an API because it was not sufficiently separate from the DSP subsystem. ID at 72; *see* HTC Posthearing Br. 37. The evidence of record, including the figure above, clearly shows a pathway between the VCAS Apps Server and the VCOS Kernel. There was no dispute that the VCOS Kernel is part of the claimed "realtime subsystem." Thus, there are two pathways between the left and right columns: applications communicate either directly with the DSP or do so through the VCAS Apps Server. RX-963 explains that VCOS is useful for two types of developers (*i.e.*, software firms or programmers): DSP algorithm developers and application developers. RX-963 at 6. The DSP algorithm developers look to create new functions from the DSP, and the top-most connection between the columns permits that to happen. *See id.* at 6-8. We agree with the ALJ that the top-most direct pathway does not anticipate the '263 patent claims.

That conclusion, however, is not itself dispositive, because VCOS teaches a second method of operation directed to a second type of developer. The second type of developer is the application developer, who needs "to have canned DSP modules that can be treated as objects and development tools that allow developers to easily include DSP objects in their application programs. This type of environment lets application developers concentrate on the human interface aspects of their application and simply connect DSP objects together when signal processing is required." *Id.* at 6. These developers do not communicate directly from their applications to the DSP Tasks. Instead, they do it through VCAS, which is "a set of interface functions that run on the host computer under the host's operating system. Included are functions for DSP initialization, buffer communications, task management, and communication with directly addressed system devices (DASDs) such as the computer's hard disk." *Id.* at 8; *see also* RX-1019 at 107 ("The VCOS provides access to its DSP functions through a C function library,

PUBLIC VERSION

the VCOS Application Server. This host-resident library provides an application programming interface that lets host applications load, execute, and communicate with DSP tasks running under the VCOS on the [digital signal processor.]; RX-1038 at 38 (“The VCOS Application Server (VCAS) provides host applications with a set of C functions for controlling and communicating with one or more DSPs.”). It is this pathway that anticipates. *See, e.g.* Tr. 1150-65, 1172-74, 1387-1400. We agree with HTC that VCOS’s VCAS is a “realtime API” under Apple’s construction of that term.

We disagree with the ID that the preferred embodiment’s lack of “knowledge about the particular implementation of the real-time engine” has a bearing on invalidity. ID at 71. Nothing in the patent claim language or the claim constructions requires such lack of knowledge. Moreover, HTC demonstrated that the VCOS API (*i.e.*, VCAS) could be run on multiple digital signal processing systems. Tr. 1164; RX-1038 at 13.

We also conclude that the VCOS system contains the claimed “device handler.” The ALJ construed “device handler” as “software associated with an interface device that sets up dataflow paths, and also presents data and commands to a realtime signal processing subsystem.” ID at 44. The ALJ determined that the API/Resource Manager was not the device handler because the device handler, among other things, mixed “streams of data into a single output stream.” ID at 73. The ALJ found that in the preferred embodiment, a serial driver performed this function, and not the disclosed adapter handler (the claimed “device handler”). *Id.* As shown in Figure 2 of the ’263 patent, the serial driver acts as an intermediary between the adapter handler and the hardware abstraction layer.

The patent claim uses the broad term “device handler” and there was no argument made that a person of ordinary skill would understand such audio mixing to be beyond the scope of a

PUBLIC VERSION

device handler. To the extent that Apple now contends that such functionality is beyond the scope of a handler, it was incumbent upon Apple to propose a construction of “device handler” that was more closely tied to the preferred embodiment’s description of allocation of responsibilities for unclaimed elements. Apple did not do so before the ALJ. Accordingly, we agree with HTC’s argument that the VCOS Resource Manager corresponds to the claimed “device handler” and that the VCOS system anticipates the asserted patent claims.

Accordingly, we find that if “realtime API” were construed as Apple urges, the asserted claims would be anticipated by the VCOS system.

5. “Adapter Subsystem”

HTC petitioned for review of the ALJ’s determination that the MacBook Pro practices claim 1’s “device handler” limitation. ID at 63-64. We granted review. *See Notice, 76 Fed. Reg. 58537, -38 (Sept. 21, 2011) (Issue No. 5).*

In its brief on review, HTC devotes only one page to the question whether Apple’s domestic industry product (the MacBook Pro) contains a “device handler.” HTC Br. 41. In view of our decision to uphold the ALJ’s broad construction of “device handler,” we do not believe that there remains a substantial challenge to the ALJ’s determination that the MacBook Pro practices claim 1’s “device handler” limitation. The ALJ’s decision, ID at 63-64, is consistent with his treatment for purposes of infringement, and as Apple demonstrates in its briefs, HTC has failed to provide evidence demonstrating that the ALJ’s analysis is incorrect. Apple Br. 23-24; Apple Reply Br. 41-42. We therefore affirm.

6. Summary of Findings for the ’263 Patent

We construe “realtime API” as an API that operates in realtime, *i.e.*, as an API that operates within a defined upper bounded time limit. We find that the accused products do not infringe, and

PUBLIC VERSION

that Apple's domestic industry products do not practice, the asserted patent claims 1, 2, 24, and 29. We also find that under Apple's construction for "realtime API," the asserted claims would be infringed by the accused HTC products and practiced by Apple's domestic industry products but that the claims would be anticipated under 35 U.S.C. § 102(b) by the VCOS system.

B. The '647 Patent

Independent claims 1 and 15 and dependent claims 8 and 19 are before the Commission on review. The '647 patent, entitled "System and Method for Performing an Action on a Structure in Computer Generated Data," issued on August 31, 1999, from an application filed on February 1, 1996. In short, "structures" – *e.g.*, names, phone numbers, and email addresses – are identified in a document (such as an email message or word-processing file) and highlighted on a display so that the user can select to perform a linked action on a particular structure, such as dialing a telephone number. The asserted claims require "linking" an "action" to a "structure," which presents the key issue of infringement and invalidity. The Commission granted review on four issues. Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011). These issues include the applications of the ALJ's "linking" constructions to infringement and invalidity, whether the steps of method claim 15 must be performed in the order in which they appear, and whether the accused products link structures to "multiple" actions as required by claim 1.

1. "Linking Actions to the Detected Structures" (claim 1) and
"Linking at Least One Action to the Detected Structure" (claim 15)

The ALJ construed the linking phrase of claim 1, "linking actions to the detected structures," as Apple proposed: "linking detected structures to computer subroutines that cause the CPU to perform a sequence of operations on the particular structures to which they are linked." ID at 127, 131. Similarly, the ALJ adopted Apple's construction for the similar linking phrase of

PUBLIC VERSION

claim 15, “linking at least one action to the detected structure.” *Id.* HTC’s proposed construction was different in two respects. First, HTC included at the end “rather than an informational structure.” *Id.* at 127. This added language, that the CPU perform operation on structures other than an “informational structure,” was based on statements Apple made in the prosecution history. *See* ID at 128-29. Second, HTC contended that claim 1, despite requiring “actions” (plural) and “structures” (plural), only required a single action and structure. *See* ID at 127.

On petition for review, HTC challenged what it believed to be an unduly rigorous invalidity analysis, much as HTC challenged inconsistencies in the ID’s treatment of infringement and invalidity for the ’263 patent. HTC Pet. 38. The IA agreed with HTC, and also petitioned for review. *See* IA Pet. 15-17. In its petition for review, HTC expressly disclaimed any challenge to the claim constructions for the ’647 patent. HTC Pet. 38-39. The Commission granted review on the infringement and invalidity questions. Notice, 76 *Fed.Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 1).

We find the ALJ’s analysis of validity for the ’647 patent in error for similar reasons as for the ’263 patent. Rather than relying on the agreed-upon construction of “structure” – “an instance of a pattern, where a ‘pattern’ refers to data, such as grammar, regular expression, string, etc., used by a pattern analysis unit to recognize information in a document such as dates, addresses, phone numbers, etc.,” ID at 127 n.35, the ALJ relied upon the preferred embodiment’s use of structures to determine whether the Perspective prior art system anticipated the asserted claims. ID at 170-71. The ALJ relied upon other aspects of the preferred embodiment in his invalidity analysis.

Drawing upon the patent specification, the ALJ believed that a structure is something that the system can recognize automatically, *i.e.*, ten digits are a phone number, or a string of text with

PUBLIC VERSION

an “@” in the middle is an email address. ID at 171. According to the ALJ’s invalidity analysis, the mere search of a database of contact names and subsequent comparison to entered text cannot constitute detecting a “structure.” *Id.*

The ALJ’s invalidity analysis was in error for two reasons. First, the ALJ used the wrong construction of “structure” because the parties agreed to a different construction and that construction was used in the ALJ’s infringement analysis. Second, the preferred embodiment does not support the unduly narrow interpretation used in the ALJ’s invalidity analysis. The patent specification discusses “structures” in detail:

- “For purposes of the present description, the term ‘pattern’ refers to data, such as a grammar, regular expression, *string*, etc., used by a pattern analysis unit to recognize information in a document, such as dates, addresses, phone numbers, *names*, etc.” Col. 1 lines 27-31 (emphasis added).
- “Fig. 4 illustrates an example of an analyzer server **220**, which includes grammars **410** and a string library **420** such as a dictionary, each with associated actions. . . . Analyzer server **220** also includes grammars for post-office addresses, e-mail addresses and dates, and a string library **420** containing *important names*.” Col. 5 lines 6-14 (emphasis added).
- “Fig. 5 shows a window **510** presenting an exemplary document **210** having data containing recognizable *structures*, including a phone number, post-office address, e-mail address, and *name*.” Col. 5 lines 19-22 (emphasis added).
- “As illustrated in Fig. 6, analyzer server **220** identifies the phone number, post-office address, e-mail address, and *name*. Although not shown in Fig. 6, analyzer server **220** links the actions associated with grammars **410** and strings **420** to *these identified structures*” Col. 5 lines 29-33 (emphasis added).
- “As illustrated in block **1060** [of Fig. 10], a fast string search function retrieves **1070** the contents of string library **420**, and links **1090** actions associated with the library string to the detected string.” Col. 6 lines 43-47.

The patent’s figures support the text. Figure 4 shows the actions that can be associated with a name:

PUBLIC VERSION

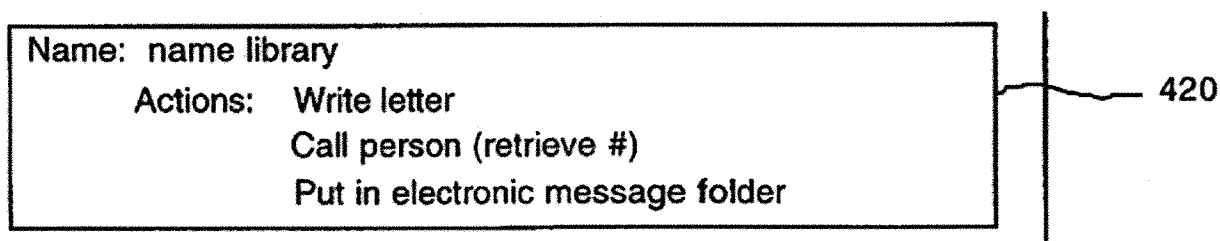
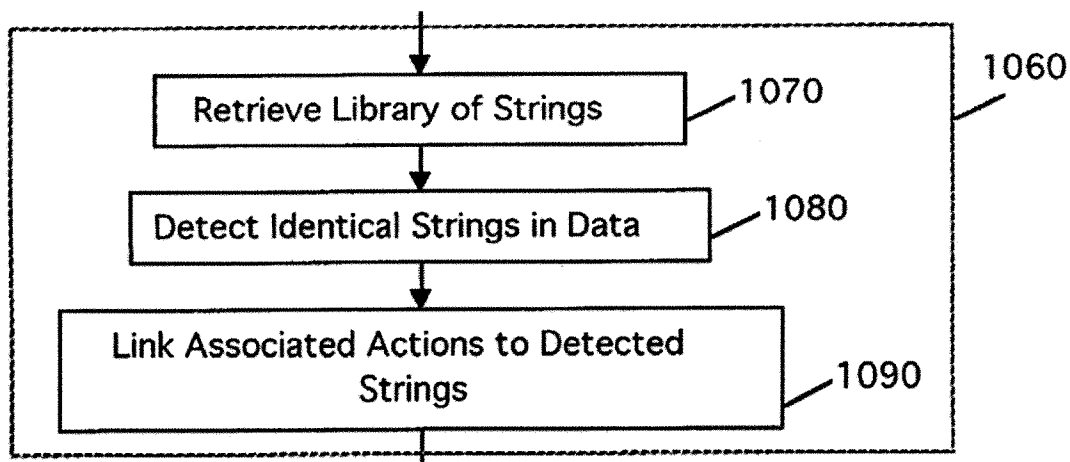


Figure 10 shows the string detection operated by comparing strings in a document to see if they are identical to those in a name library:



What the text and figures make incontrovertible is that names can be looked up in a database (a library of strings) and are “structures.” To be clear, the patent does not disclose identifying names based on capitalization or a syntactic cue, but based on looking up words in a list (in the preferred embodiment, a list of names).¹⁹

With this understanding that the identification of names can satisfy the claim limitations – even absent the parsing of grammars such as phone numbers or email addresses, we turn to the principal elements in dispute: claim 1’s “linking actions to the detected structures,” and claim

¹⁹ The asserted claims do not call for the existence of multiple grammars. Compare asserted claims 1 and 15 (which call for “structures” but no grammars) with unasserted dependent claims 4 and 17 (requiring “grammars”).

PUBLIC VERSION

15's "linking at least one action to the detected structure."

The operation of the Perspective prior art system is not substantially disputed. (The Perspective handbook was marked as Exhibit RX-935.) First, a user creates a list of contacts. When the user subsequently creates an appointment ("Meet Dan on December 15, 1992 at 2:00") or makes a note, Perspective can automatically link names it recognizes to the contact information. RX-935 at 36-40. Doing so will cause the name to be displayed as bold text. *Id.* at 40. Double tapping on the bolded name will cause the contact information to open. *Id.* at 43, 210. Tracing a "D" on top of the bolded name will cause a dialer to come on screen, populated with a phone number (if any) for that contact. Tr. 3895-99 (May 3, 2011) (Olsen); SO-RDX-27; DO-RDX-V4. If there is more than one phone number for the contact, the user will be presented with the option to choose a number. DO-RDX-V7.

The ALJ found that both of these operations – opening the contact and dialing – "invoke the database record number at the location of the gesture without knowledge of or performing operations on the detected name." ID at 167. Accordingly, the ALJ found that the Perspective action subroutines do not "operate *on* a detected structure and therefore do not constitute a claimed 'action.'" *Id.* We believe that the ALJ's distinction over Perspective is strained. To restate the argument, it is Apple's position that in order for Perspective to anticipate, Perspective must dial the name (an impossibility), rather than a phone number. Apple Reply Br. 54. The '647 patent teaches that an "action" can include: "Call person (retrieve #)." Fig. 4. Accordingly, this dialing can be an "action" even though this action is made on an associated phone number rather than on the name itself. *See, e.g.,* Fig. 10; col. 6 lines 43-47.

Apple argues that because Perspective operates as a "relational database," no actions are linked to structures. When Perspective automatically links an entered name to the list of contacts,

PUBLIC VERSION

it does so by associating that entered name with database entry number for the contact. ID at 167. Apple argues, and the ALJ agreed, that this is not sufficient because subsequent actions selected by a user are no longer associated with the entered name but rather with a database number. *Id.* at 167-68. According to Apple, a user could change the name in the contact list, but the system would still maintain the original link. Apple Br. 37. We do not find Apple's argument persuasive. Even if Apple's point were relevant to the patent claims (and we do not believe that it is), the fact that a user can later break a link by changing a name in the contact list does not prevent Perspective from anticipating in its ordinary operative uses.

Perspective's automatic linking necessarily results in linking to one action – pulling up the contact information for that contact. By recognizing that the contact exists and putting the name in bold, we find that there is unquestionably a link for that contact-list action. On that basis, asserted claims 15 and 19 are invalid; only one action is required for those claims.²⁰ Claim 1, however, requires multiple actions,²¹ and we do not find that HTC has demonstrated by clear and convincing evidence that the Perspective system has an “analyzer server” that links a second action, *i.e.*, calling a telephone number to the detected structure. The parties agreed that an “analyzer server” means “a program sub-routine that receives data from a document having

²⁰ In so finding, we reject the argument that there must necessarily be two separate selections, one for the structure and one for the action. *See* ID at 149 (infringement analysis); Apple Reply Br. 56. The claims use “selection” in the singular, permitting one or several acts of selection.

²¹ The ALJ found in his claim construction analysis that in claim 1, multiple actions must be linked to each detected structure. ID at 130-31. In our September 15, 2011 notice, we did not review that finding. An alternative reading of the claim, in which there are multiple actions across multiple structures, would not lead to a different result with regard to whether Perspective anticipates the asserted patent claims.

PUBLIC VERSION

recognizable structures, and uses patterns to detect the structures.” ID at 127 n.35. Claim 1 also requires that the analyzer server “link[] actions to the detected structures” and that there be a “user interface enabling the selection of a detected structure and a linked action.” We read these two claim elements to require that the system “analyze” whether an action can be performed on the structure, and it is that analysis that establishes a link. That link must exist prior to the user interface’s enablement of selection because the user interface enables selection of a “linked action,” *i.e.*, an action that has already been linked. HTC has not established such linkage for calling a phone number. *See* Tr. 5018-19 (Mowry). If there is no phone number associated with the contact (only an address), drawing a D on top of a highlighted name cannot result in a call being placed. The mere fact that in some instances drawing a D can result in “an action” does not mean that it is an “action” that has been “linked” to the “detected structure.” Thus, for purposes of dialing, there is no link between a structure and an action, but only a link between a structure and associated data upon which action may be directed by the user.²² We therefore find that HTC has not demonstrated that Perspective contains an “analyzer server” for “linking actions to the detected structures” or a “user interface” for enabling the selection of a “linked action.” Accordingly, we find claims 15 and 19 invalid, and claims 1 and 8 not invalid.²³

²² The prosecution history distinguishes between the prior art’s “linking to an informational structure” and the patent’s “linking to an action.” Amendment at 9 (Mar. 15, 1999). We believe that the linking for purposes of dialing may best be considered linking to an informational structure, with a user command that a particular action be performed. Without relying on the ongoing reexamination proceedings of the ’647 patent, we take notice that our decision appears to be consistent with those proceedings. *See* Office Action (June 27, 2011) (finding claims 13, 15, 16, 20-22, 24 of the ’647 patent anticipated by the Perspective handbook, and confirming claims 1-12 and 14 in view of claim 1’s “analyzer server”).

²³ Our invalidity analysis does not rely on the ALJ’s (invalidity-related) assessment of what it means to operate “on a detected structure,” as opposed to a representation of a detected
[Footnote continued on the next page]

PUBLIC VERSION

2. The Ordering of Claim 15's Steps

HTC has argued that the steps of method claim 15 must be performed exactly in order. The ALJ disagreed, and HTC petitioned for review. We granted HTC's petition on this issue. Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2). We believe that claim 15 is invalid in view of Perspective even if the steps of claim 15 must be performed in the order in which they appear. Accordingly, the issue is moot, and we do not reach it.

The Commission requested briefing as to whether "claim 15's 'enabling selection of the structure and a linked action' (as opposed to the unclaimed step of 'selection of the structure and a linked action' by the user) is a single step, and whether HTC made and preserved the argument that it is a single step." *Id.* at 58539 (question (c)). This question involves whether the enabling step of claim 15 can be split in half so that enabling selection of the structure can occur before linking (in the previous step) takes place. In the accused devices, linking does not [REDACTED]

[REDACTED]²⁴ See ID at 147; HTC Br. 59.

We find, based on our prior discussion, that the Perspective system anticipates claim 15 regardless whether enabling involves one step or two. This issue is therefore also moot. In particular, Perspective detects a name and links the name to the contact list, enabling the action of viewing the contact to take place later. Perspective highlights the name enabling the structure to be selected. Both acts of "enabling selection" occur after linking.

[Footnote continued from the previous page]

structure. ID at 167-70. HTC's noninfringement arguments presume the ALJ's narrow application, HTC Br. 57-59, and our analyses of invalidity and infringement are therefore consistent.

²⁴ In contrast, the preferred embodiment shows parsing a document for structures and inventorying all the actions ahead of time, before a user selects a structure. *E.g.*, Col. 3 line 61 – col. 4 line 5.

PUBLIC VERSION

3. Linking Structures to Multiple Actions in the Accused Products

HTC has argued that its devices link only to a single “action” as opposed to the plural “actions” recited by claim 1 (but not by claim 15). HTC Pet. 39-40. The ALJ found that HTC’s noninfringement argument had been waived and also rejected HTC’s argument on the merits. ID at 143-47. We granted HTC’s petition for review on this issue, though in so doing, we did not “excus[e] any party’s noncompliance with Commission rules and the ALJ’s procedural requirements.” Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011). We explained that we “may, for example, decline to disturb certain findings in the final ID upon finding that issue was not presented in a timely manner to the ALJ.” *Id.*

On review, we need not determine whether the ALJ abused his discretion in finding waiver because we reject HTC’s argument on the merits. According to HTC, the accused products do not infringe, because, prior to a map being displayed or a telephone number dialed, all commands pass through a single routine called alternately [REDACTED]” HTC Br. 43; HTC Reply Br. 41. We affirm the ID for the reasons set forth therein, including at pages 143-46, regarding intent objects in the accused devices.

4. *Global-Tech Appliances, Inc. v. SEB S.A.*, No. 10-6 (U.S. May 31, 2011)

We determined to review the ID on an issue not raised in the parties’ petitions. *See* 19 C.F.R. § 210.44. In particular, we sought clarification from the parties whether the Supreme Court’s recent decision in *Global-Tech* affected the ID’s determination of induced infringement. Notice, 76 *Fed. Reg.* 58537, -38 (Issue No. 4); *id.* at 58539 (Question (b)). On review, HTC admits that it had knowledge of the ’647 patent, and “[t]hus, *Global-Tech’s* willful blindness standard is irrelevant to the disputed issue on infringement.” HTC Br. 71.

PUBLIC VERSION

5. HTC's Motion for Summary Determination of Intervening Rights

On October 17, 2011, HTC filed a "Motion for Summary Determination of Intervening Rights as to U.S. Patent No. 5,946,647 in View of Claim Narrowing in Reexamination of Same and for Termination of Investigation as to Same in View of Intervening Rights." HTC argued that under the Federal Circuit's September 21, 2011 decision in *Marine Polymer Technologies, Inc. v. Hemcon, Inc.*, No. 2010-1548, the '647 patent's reexamination proceedings provide HTC with intervening rights that preclude the issuance of an exclusion order against HTC as to that patent. HTC's motion purported to be allowable pursuant to Rule 210.18 (summary determination), with its requested remedy of termination purportedly pursuant to Rule 210.21(a) (termination). Motion at 3. On October 24, 2011, the Commission issued an order to show cause why HTC's motion was procedurally allowable. The order observed that under Rule 210.18, a motion for summary determination "must be filed at least 60 days before the date fixed for any hearing." 19 C.F.R. § 210.18(a). Under Rule 210.21(a), a motion for termination (not involving a settlement, a consent order, or an arbitration agreement) must be made "prior to the issuance of an initial determination on violation of Section 337." *Id.* § 210.21(a).

In response to the Commission's order, on October 28, 2011, HTC asserted that its motion was appropriate under Commission rule 210.18(a): "Rule 210.18(a) allows filing a motion for summary determination past the usual deadline in 'exceptional circumstances' when 'good cause' for doing so exists." HTC Response 1. But HTC selectively quotes the rule, which reads, in context, as follows: "Under exceptional circumstances and upon motion, *the presiding administrative law judge* may determine that good cause exists to permit a summary determination motion to be filed out of time." 19 C.F.R. § 210.18(a) (emphasis added). The rule does not contemplate that motions for summary determination can be filed with the Commission. HTC's

PUBLIC VERSION

second argument was that Commission Rule 201.4(b) gives the Commission the authority to waive or suspend a procedural rule when the Commission finds “there is good and sufficient reason therefor, provided the rule is not a matter of procedure required by law.” *Id.* § 201.4(b); *see* HTC Response at 2. That the Commission may waive or suspend a procedural rule does not itself provide a basis for permitting the substantive filing HTC seeks to make and HTC has not cited relevant authority providing for such a basis.

Besides the procedural obstacles to HTC’s motion, it fails on the merits. HTC’s argument is based on Apple’s August 29, 2011 statement in reexamination that “the ’647 patent describes linking an action directly to the detected structure.” HTC Mot. 8 (citing 8/29/2011 Remarks at 19). HTC argues that this statement creates intervening rights under *Marine Polymer*.²⁵

We disagree with HTC’s belief that *Marine Polymer* is pertinent here. First, HTC’s argument is premature. Under the Patent Act, it is the reissuance of the patent or the issuance of a reexamination certificate that gives rise to intervening rights. Section 307 of the Patent Act states: “Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents” 35 U.S.C. § 307(b). Pending the completion of reexamination nothing is “incorporated into a patent following a reexamination proceeding.” (Similarly, pending the completion of reissue proceedings, there is no “reissued patent.” 35

²⁵ HTC argues in its show-cause response that its intervening rights inured when the Federal Circuit decision in *Marine Polymer* issued on September 24, 2011. HTC Resp. 1-2. The date of the Federal Circuit decision is irrelevant to whether HTC acquired intervening rights through P.T.O. action. As discussed *infra*, intervening rights do not arise until after reexamination closes, but if they did arise sooner, they would have arisen as of the date of Apple’s statement to the P.T.O., and not based on the date of an intervening judicial decision.

PUBLIC VERSION

U.S.C. § 252(b)). Accordingly, there are no intervening rights here, unlike in *Marine Polymer*, where a reexamination certificate issued while the appeal was pending before the Federal Circuit. Instead, at best HTC may claim estoppel to prevent Apple from making arguments in this investigation inconsistent with its arguments to the P.T.O, or *vice versa*. However, Apple's arguments to the P.T.O. are exactly the same as the arguments it made here, so there is nothing to be estopped.²⁶ See Apple Resp. 2.

Putting the prematurity to the side, *Marine Polymer* is still inapposite. The Federal Circuit in *Marine Polymer* held the patentee to its statements to the P.T.O. only after the Federal Circuit found that the pertinent P.T.O. claim construction was correct and the district court construction incorrect. Because the P.T.O.'s construction was adopted by the court of appeals (albeit collaterally in the appeal of the district court judgment), the Federal Circuit was able to determine that the patentee's arguments and claim withdrawals during reexamination amounted to a narrowing of claim scope. *Marine Polymer*, 659 F.3d at 1093-94. That is a very different situation from the facts of the instant investigation, where no such narrowing can be demonstrated.²⁷ Accordingly, HTC has not demonstrated the existence of intervening rights.

6. Summary of Findings for the '647 Patent

We find that HTC has demonstrated by clear and convincing evidence that claims 15 and 19 are anticipated under 35 U.S.C. § 102(b), by the Perspective system, but that HTC has not made such a demonstration for claims 1 and 8. We find that HTC infringes claims 1 and 8. We find it

²⁶ Moreover, even if there were some inconsistency, ordinarily Apple's earlier arguments (raised here) would estop Apple's later arguments (raised at the P.T.O.).

²⁷ We also observe that the P.T.O. has already found claims 1 and 8 (the claims upon which we find a violation) patentable in reexamination.

PUBLIC VERSION

not necessary to reach whether claims 15 and 19 required ordered performance of the steps, and therefore we have made no determination whether HTC's accused products infringe those claims. Claims 15 and 19 are anticipated by Perspective even if the steps must be performed in order.²⁸ We deny HTC's motion for "summary determination" that it possesses intervening rights with respect to the '647 patent.

C. The '721 Patent

Independent claim 1 and its dependent claims 5 and 6 have been asserted from this patent, which is entitled "Method for Providing Automatic and Dynamic Translation of Object Oriented Programming Language-Based Message Passing into Operation System Message Passing Using Proxy Objects." The patent issued on January 2, 1996. The patent claims purport to facilitate object oriented messaging with a procedural operating system. We determined to review two claim constructions ("processing means" and "dynamic binding") as well as issues of infringement and domestic industry under the ALJ's construction of "dynamic binding." Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011).

1. "Processing Means"

The three asserted patent claims (independent claim 1 recites a method, and dependent claims 5 and 6 add more steps to that method) include "processing means" – more specifically a "first processing means" and a "second processing means" – and the parties dispute the proper construction of the term. HTC and the IA argued, and the ALJ found, that the "processing means" invoked the requirements of 35 U.S.C. § 112 ¶ 6. ID at 194-204. The ALJ determined that

²⁸ In our notice, 76 *Fed. Reg.* 58537 (Sept. 21, 2011), we did not determine to review the ALJ's determination that Apple's domestic industry products practice claims of the '647 patent. ID at 157-64.

PUBLIC VERSION

substantially all of the method steps were recited functions of the “processing means.”²⁹ The ALJ agreed with HTC’s identification of the corresponding structure in the specification for performing the methods claims’ steps. ID at 194-96. Before the ALJ, Apple argued that the claims should not be construed under 35 U.S.C. § 112 ¶ 6, Apple Post-Hearing Br. 147-52, and before us, Apple also raises a slightly different argument that if the claims are to be construed under § 112 ¶ 6 that the function is “processing” and that a general purpose computer performs that function. Apple Br. 56-65; *see also* Apple Pet. 44-49.

There is no dispute that if the ALJ’s construction were to stand that HTC’s products do not infringe. Under Apple’s construction, HTC concedes that its “processing means” noninfringement and domestic industry arguments regarding this element fall away, but asserts that the patent claims are invalid in view of the prior art. HTC Br. 92, 97-102.

a) Claim Construction

Federal Circuit law on the means-plus-function question at issue is complex, and it places great reliance on the use of the word “means.” *See, e.g., Inventio AG v. ThyssenKrupp Elevator Americas Corp.*, 649 F.3d 1350, 1356-60 (Fed. Cir. 2011); *see also, e.g., Massachusetts Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1355-56 (Fed. Cir. 2006); *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004).

In our view, the ALJ applied the Federal Circuit’s rules improperly. Under the ALJ’s approach, the claims were literally turned inside out as each step was rewritten, for example, from

²⁹ *See generally, e.g., Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324 (Fed. Cir. 2006) (“First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs that function.”) (citations omitted).

PUBLIC VERSION

“transmitting, using a first processing means, said object oriented programming language” to “a first processing means for transmitting said object oriented programming language.” The result is that the claim, as effectively rewritten by the ALJ, reads:

A method for sending an object oriented programming language based message . . . , said method comprising the steps of:

a first processing means for [performing two-thirds of a page of functions recited on pages 194-195 of the ID];

a second processing means for [performing two-thirds of a page of functions recited on page 195 of the ID].

decoding, using a second process, said operating system based message into a language based method; and

executing said object oriented programming language based message to said second object in said second process.

This restructuring is exacerbated when the dependent claims are considered. For example, dependent claim 5, which is asserted in this investigation, uses the processing means language to flesh out the executing step.

While recognizing that the ALJ’s analysis was guided by Federal Circuit precedent, we disagree with his conclusion. Apple added all of the “processing means” recitations in response to an indefiniteness rejection that stated: “[A]s per claims 1, 2, 5, 6, & 11, it is unclear who or what is executing these steps. If they are executed by a computer, this must be explicitly stated within the context of the claims, and the steps involving ‘providing’ must be clarified in relation to a computer actually implementing these steps.” JX-7, Office Action at 3-4 (Sept. 10, 1993). Apple responded by quoting the examiner’s rejection explaining: “Applicant has amended these claims accordingly.” Amendment and Response at 9 (Mar. 10, 1994). We do not believe that the evidence of record supports the conclusion that a person of ordinary skill in the art would

PUBLIC VERSION

interpret Apple's amendment in the context in which it was offered to rewrite the claims in the manner required under the ALJ's analysis.

Among our questions on review posed to the parties was question (d): whether the ALJ's methodology improperly converted a method claim into an apparatus claim. Apple answers yes, Apple Br. at 52-55, but its brief fails to identify cases squarely on point. HTC's brief responds by recognizing, correctly, that method claims can nonetheless contain structural details. HTC Br. 75-78. But HTC's brief fails to identify cases squarely on point, because it is one thing to require some structure in the context of a method, and quite another to convert a method into a means-plus-function apparatus.

Under pertinent Federal Circuit precedent, the claim language "means" carries a presumption that the claim construction methodology for § 112 ¶ 6 applies, and the two bases for rebutting that presumption are inapplicable here. *See, e.g., Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1428-29 (Fed. Cir. 1997). "Processing," (as opposed to the noun "processor") is functional rather than structural, so we do not believe that it can be fairly argued that the claim language connotes sufficient structure needed to perform a recited function. Moreover, while § 112 ¶ 6 will not apply where there is no function recited in the claim, *Sage Prods.*, 126 F.3d at 1428, the claim language in dispute provides a function, either "processing" in isolation (as Apple argues) or the two pages of functions recited by the ALJ.

We agree with Apple that in the context of the claim language itself as well as the file history, "processing" is the recited function. The file history demonstrates the examiner's and applicant's intention to broadly point out where processing occurs generally – and treating the recited function as "processing" preserves these claims as methods rather than apparatuses.

However, Apple did not argue at claim construction that the claim, if subject to § 112 ¶ 6,

PUBLIC VERSION

had the function of “processing,” but rather argued only that § 112 ¶ 6 did not apply at all. HTC argues that this failure forecloses Apple’s current argument, while Apple asserts that its previous arguments that “processing means” refers to a “processor” are close enough to its current arguments to avoid waiver, Apple Br. 64. Apple also argues that the Federal Circuit’s recent decision in *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) is an intervening change in the law that should excuse any failure by Apple to preserve the issue. We excuse Apple’s failure to present a § 112 ¶ 6 construction to the ALJ because its § 112 ¶ 6 argument before the Commission is of similar scope and effect as its arguments to the ALJ.³⁰

Returning to the merits, that the recited function of the means is “processing” is supported by the file history, which makes clear that the corresponding structure is a general purpose computer. JX-7, Office Action at 3-4 (Sept. 10, 1993). The ALJ believed that the file history demonstrated a contrary intention, ID at 199, but we disagree with his findings. In the March 10, 1994, Amendment and Response, the applicant added the “means” language, and there is nothing there suggesting specific programmed apparatus. JX-7 at 8188-89. Other portions of the file history cited by the ALJ are the patent’s own specification and provide no guidance. *Id.* at 8017, 8035. The August 23, 1994, Amendment and Response is the applicant’s response to the examiner’s rejection for nonenablement, *id.* at 8237, but we do not read the applicant’s statement

³⁰ We do not believe that *Katz* constitutes an intervening change in the law. *Katz* merely stands for the proposition that the corresponding structure for certain “processing means” limitations may be a general purpose computer. *Id.* at 1316. We also note that *Katz* remanded the underlying claim construction issue to the district court. *Id.* at 1317.

We note that in future investigations, the Commission’s ALJs may well wish to require that parties provide § 112 ¶ 6 constructions for each term for which the applicability of § 112 ¶ 6 is in dispute.

PUBLIC VERSION

there – which necessarily pointed to an enabling disclosure in the specification – to be pertinent to the claim construction issue.

HTC contends that if the Commission were to reach this result – that the function is “processing” – that the Federal Circuit’s *Katz* decision requires a remand. HTC Br. 102-103. We disagree. Apple’s arguments all along were that processing merely required a processor, and the record is sufficient to resolve this issue without further remand. Moreover, we note that the motivations for the Federal Circuit’s limitations on functional claiming of a general purpose computer are not invoked in connection with the steps of a method claim. *See, e.g., Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1336-37 (Fed. Cir. 2008).

b) Invalidity

HTC contends that under our adopted construction of “processing means,” the asserted patent claims are all anticipated by John Bennett’s 1988 Ph.D. thesis entitled “Distributed Smalltalk: Inheritance and Reactiveness in Distributed Systems.” RX-920A. In the alternative, HTC contends that the patent claims are obvious in view of Bennett and Mach messages. Both Mach and a related Bennett publication are discussed extensively in the ’721 patent specification. Col. 4 line 21 – col. 5 line 26 (Bennett); col. 8 line 45 – col. 9 line 63. The Bennett thesis expands upon the Bennett article cited to the examiner.³¹ The ALJ did not reach the validity question because of his means-plus-function construction of the “processing means” limitations. ID at 229-30.

Notwithstanding HTC’s high burden to demonstrate invalidity, we believe that it has met

³¹ Dr. Bennett explained his thesis at Tr. 3227-41.

PUBLIC VERSION

that burden here.³² The only dispute is whether Bennett, or Bennett and Mach, teach the '721 patent claims' "operating system based messages."³³ Apple Reply Br. 82-89. The key piece of prior art is the Bennett thesis (RX-920A), which teaches the use of the User Datagram Protocol ("UDP") for the transmission of messages ("datagrams") in his distributed Smalltalk system. Bennett Thesis at 77, 100. HTC's position was that the UDP datagram was the claimed "operating system based message."³⁴ Rinard Expert Report App. 5 at 36 ("Bennett discloses operating system based messages. *See, e.g.,* Network communication in Distributed Smalltalk uses UDP datagrams.") (claim chart). The ALJ's construction of "operating system based" was essentially, "based *on* an operating system," as opposed to HTC's construction, which was essentially, "based *from* an operating system," *i.e.*, the operating system was the origin. *See* ID at 214-19 (rejecting HTC's proposed construction of "operating system based message" as "data sent by an operating system," and instead construing the term as "a message that is based, or dependent, on an operating system"). We determined not to review the ALJ's construction.

At trial, HTC's discussion of the relationship between the UDP message and the operating

³² We have been mindful of the Supreme Court's guidance in *Microsoft Corp. v. i4i Limited Partnership*, 131 S. Ct. 2238, 2251 (2011), regarding the persuasive value of and deference toward the P.T.O. examiner's decisions.

³³ There is no argument that the references teach "dynamic binding" under both Apple's and HTC's proposed constructions.

³⁴ In response to HTC's invalidity contention, Apple's expert contended that the UDP datagrams were not "operating system based" because the communications protocol disclosed in Bennett (both the Bennett thesis and the related Bennett paper) was operating-system independent. Spielman Rebuttal Expert Report ¶¶ 111-117 at 50-54. For example, Apple's expert explained, "methods encoded using UDP datagrams over Ethernet are operating system independent, because both UDP and the use of Ethernet connections are system-independent in terms of the data transmission protocols and the physical connection medium. Thus, they are not operating system based messages." *Id.* ¶ 117 at 54.

PUBLIC VERSION

system was scant in its case in chief. *See* HTC Br. 98 (citing Tr. 3237 and 4522-4524). Instead, HTC waited until its cross-examination of Apple's expert, who had opined, as discussed above, that the UDP message was operating-system independent. During the cross-examination, HTC introduced an impeachment exhibit (SSS-RDX-355) that demonstrated that the headers on UDP messages contained information the operating system would need, including ports for communication and so forth. *See* HTC Br. 98-99; *see also* Tr. 5105-5111.

HTC's argument before the Commission is based nearly entirely on its impeachment of Apple's expert including the impeachment exhibit presented to her. HTC Br. 98-99; *see also* HTC Posthearing Br. 180-81. HTC believes that this suffices to show an "operating system based message" because the UDP messages are "understood by the operating system." HTC Br. 98. HTC improperly characterizes the ALJ's construction of the "operating based system message" as "a format that is understood by, or dependent on the [operating] system." *Id.* (modification in original). The ALJ construed the term, as Apple proposed, as "a message that is based, or dependent, on an operating system." *Id.* at 216. The ALJ explained (citing Apple's expert) that "messages that are based on an operating system have a format that is understood by, or dependent on, that system. Thus, whether a message is understood by an operating system is evidence of whether it is an operating system based message." *Id.* at 217. This is to say that the fact that the message is understood by the operating system may be necessary for it to be an operating-system based message, but it is not sufficient. The ALJ explained that "evidence that a particular format is used in a heterogenous environment, namely one with multiple different operating systems, suggests that the message is not based on an operating system." *Id.* at 218.

Accordingly, HTC has not demonstrated that the Bennett thesis anticipates any asserted patent claim because it has not shown that the pertinent messages are specific to any particular

PUBLIC VERSION

operating system. HTC's contention that the UDP messages of Bennett bear a close resemblance to Mach messages is not sufficient for anticipation, because Bennett's messages appear to be used across operating systems, while Mach is a single operating system, '721 Patent col. 8 lines 47-60.

HTC also argues that the prosecution history demonstrates the examiner's belief that Bennett's paper disclosed operating-system based messages. HTC Br. 99. HTC asserts that "Applicants never contested the examiner's conclusion regarding operating system based messages in Distributed Smalltalk. . . . Instead, applicants focused on other limitations that Apple did not address here." *Id.* (emphasis in original). HTC cites no cases in support of its prosecution-history argument here and the law does not support HTC: "An applicant's silence in response to an examiner's characterization of a claim does not reflect the applicant's clear and unmistakable acquiescence to that characterization if the claim is eventually allowed on grounds unrelated to the examiner's unrebutted characterization." *3M Innovative Props. Co. v. Avery Dennison Corp.*, 350 F.3d 1365, 1373-74 (Fed. Cir. 2003). Apple picked alternative bases for persuading the examiner that the claims were allowable, and if the examiner mischaracterized Smalltalk's (*i.e.*, Bennett's) operating-system based messages, Apple is not held to have acquiesced to the examiner's characterization.

Having found that Bennett does not anticipate claims 1, 5, and 6, we turn to HTC's argument that Bennett combined with Mach messaging render the '721 patent obvious under 35 U.S.C. § 103. *KSR Int'l Co. v. Teleflex Inc.*, 500 U.S. 398, 417 (2007). HTC argues that it was known to use Mach messages in a way that was substitutable for the UDP datagrams of Bennett. HTC Br. 100-02; HTC Reply Br. 66-67. Apple argues that some reconfiguring of Mach would be required, Apple Br. 67-69, and that some of HTC's arguments have been waived, Apple Reply Br. 88. Even if the prior art is deemed to disclose operating system based messages, Apple contends

PUBLIC VERSION

that Bennett does not “disclose the ‘encoding,’ ‘decoding,’ or second ‘transmitting’ steps of claim 1. . . . These steps require a specific architecture – the ‘operating system based message is encoded using a proxy in a first process, and is then transmitted through an operating system to a ‘second process,’ for where [*sic*] decoding occurs.” Apple Br. 67. Apple further contends that the “UDP datagrams in Bennett are decoded by the *operating system* and thus are never received by the second process.” *Id.*

Based on the record, we have no reason to doubt that a person of ordinary skill could have substituted an operating-system-dependent messaging protocol for the universal protocol described by Bennett. Tr. 4535-46; Tr. 5069-71, 5075, 5113-14, 5121-25. Indeed, it is not clear from the record that use of an operating-system-dependent messaging protocol such as Mach messaging would be an improvement over Bennett’s UDP messages, just a difference from Bennett with predictable results.

Apple has argued that the combination of Bennett and Mach do not make the asserted claims obvious because “combining a program designed to run on UNIX with a Mach kernel at the time of the ’721 patent required the use of the Mach compatibility layer,” which isolated Mach messages “within the Mach kernel and made them invisible to other processes.” Apple Br. 68. According to Apple, the messages therefore “would not be sent to the second process as required by the claims.” *Id.* at 68-69. We reject Apple’s argument. We do not view the obviousness question in the way that Apple suggests: that the prior art be like two puzzle pieces that must fit together perfectly. Here Apple argues that based on specific details of the Mach operating system, an adaption of Bennett within Mach would have resulted in an operative system that would not include the claim elements because of a compatibility layer. We agree with HTC’s demonstration to the contrary. HTC Br. 100-02; HTC Reply Br. 66-67. Moreover, and more

PUBLIC VERSION

importantly, we view the relevant inquiry as trying to fit the improvements of Mach into the system of Bennett, or applying the teachings of both into a new system.

There is no dispute that other messaging protocols were known in the art besides UDP, and that Mach was one. *See, e.g.*, Tr. 4536-55. Some, like Mach, were unquestionably operating-system based. *See* '721 patent col. 8 lines 47-65. Others like UDP were meant to be used across different operating systems, with the benefits and weaknesses such interoperability creates. *See, e.g.*, Tr. 5075 (“The UNIX kernel here is specifying that it is an unreliable underlying communication protocol, which is what I have talked about for the UDP datagrams.”). Apple has not demonstrated that the choice of one protocol versus another is anything more than a design choice. As the Supreme Court has admonished: “Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, for patents combining previously known elements, deprive prior inventions of their value or utility.” *KSR*, 550 U.S. at 419. In this context, Apple’s arguments fall away, because there is no dispute that a person of ordinary skill, dissatisfied with the particular advantages or disadvantages of Bennett’s UDP system would have chosen something else.³⁵ *See, e.g.*, Tr. 4535-46. The asserted claims of the '721 patent do not purport to cover the benefit of a new messaging protocol, and do not overcome any drawbacks of Bennett with nonobvious improvements. Instead the asserted claims merely chooses a set of messaging protocols (any messaging protocol not understood across different operating systems) that happens to have been different from Bennett. Apple has

³⁵ *See KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill would recognize that it would improve similar devices in the same way, using the technique is obvious unless it is beyond that person’s skill. . . . [A] court must ask whether the improvement is more than the predictable user of prior art elements according to their established functions.”).

PUBLIC VERSION

presented no secondary indicia of nonobviousness. We therefore find the asserted claims obvious.

2. “Dynamic Binding”

The ALJ construed “dynamic binding” in a manner that combined HTC’s proposed construction with the IA’s: “permitting messages to be bound to the actual methods to be invoked depending on the class of the receiver, allowing objects of any classes that implement a given method to be substituted for the target object at run time.” ID at 223. Apple had proposed a broader construction: “permitting messages to be bound to the actual methods to be invoked during runtime.” ID at 219. Apple petitioned for review of the ALJ’s construction, and we granted Apple’s petition on this issue. *76 Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2). There is no dispute that under Apple’s construction, the accused products and Apple’s domestic industry products practice the “dynamic binding” limitation. HTC Br. 108.

The “dynamic binding” issue boils down to a battle of the dictionaries between the parties. HTC argued the pertinence of a NeXTSTEP manual upon which the ALJ relied. ID at 221-22. Apple argued that the pertinent definition was in the “Object-Oriented Programming” text by Brad Cox cited in the ’721 patent specification in the paragraph prior to “dynamic binding.” *Id.* at 222. The pertinent portion of column 8 of the specification reads:

PUBLIC VERSION

The preferred embodiment of the present invention implements an object-oriented programming system using objective C language. Objective C is an extension to ANSI C that supports the definition of classes of objects and provides syntactic and run-time support for sending messages to objects. This language model is partially derived from SmallTalk and has been described in "Object-Oriented Programming: An Evolutionary Approach," Brad J. Cox, Addison-Wesley 1986 and in "SmallTalk-80: The Language and its Implementation," Adele Goldberg, Dave Robson, Addison-Wesley 1983.

One feature of objective C is "dynamic binding" of messages to the actual methods to be invoked, depending on the class of the receiver. A programmer writing code in objective C can create code that sends a message "doSomething" to an object. The actual method corresponding to the class of the target object does not need to be determined until the message must be sent. This allows objects of any classes that implementing the doSomething method to be substituted for the target object at run time without having to modify the part of the program that sends the message. Also, in objective C, programs have run time access to method "signatures," that encode a method's argument and return types for each class. The method signature provides a way for two programs to agree on the format of messages. Moreover, there is a way to extract arguments from the stack using the signature.

Col. 8 lines 18-44. The dispute revolves around whether dynamic binding requires (as set forth in lines 34-36 above) that the "actual method corresponding to the class of target object does not need to be determined until the message must be sent."

The Cox textbook states that binding "is the process of integrating functionality from different supplier into a consumer's code." CX-780 at 13. It goes on to explain: "Delayed binding (also known as late binding or dynamic binding) means that binding is done later than compile-time, generally while the program is running." *Id.*

There is a narrower understanding of the term "dynamic binding" in the text "NeXTSTEP Object-Oriented Programming and the Objective C Language" written by Apple's predecessor NeXT, the assignee of the '721 patent. RX-84. At page 21 of the NeXTSTEP text, there is a

PUBLIC VERSION

discussion that explains that waiting until run-time is not enough for binding to be dynamic; dynamism requires that the binding be implemented without time constraints:

Late Binding

Some object-oriented programming languages (notably C++) require a message receiver to be statically typed in source code, but don't require the type to be exact. An object can be typed to its own class or to any class that it inherits from.

The compiler therefore can't tell whether the message receiver is an instance of the class specified in the type declaration, an instance of a subclass, or an instance of some more distantly derived class. Since it doesn't know the exact class of the receiver, it can't know which version of the method named in the message to invoke.

In this circumstance, the choice is between treating the receiver as if it were an instance of the specified class and simply bind the method defined for that class to the message, or waiting until run time to resolve the situation. In C++, the decision is postponed to run time for methods (member functions) that are declared *virtual*.

This is sometimes referred to as "late binding" rather than "dynamic binding." While "dynamic" in the sense that it happens at run time, it carries with it strict compile-time type constraints. As discussed here (and implemented in Objective C), "dynamic binding" is unconstrained.

Id. at 21. We also note that the text has a definition of "dynamic binding" in the glossary that reads: "Discovering the class of an object at run time rather than compile time," which is closer to the Cox definition. *Id.* at 229.

The discussion at page 21 of the NeXTSTEP text comports with the discussion in lines 34-38 of the specification: "The actual method corresponding to the class of the target object does not need to be determined until the message must be sent. This allows objects of any classes that implement the doSomething method to be substituted for the target object at run time without having to modify the part of the program that sends the message." Apple argues that these lines are descriptive of the preferred embodiment and do not help advance a definition of "dynamic binding."

PUBLIC VERSION

The ALJ observed the tension between the two definitions:

On the one hand, Cox states that “late” binding is synonymous with “dynamic binding.” NeXTSTEP, however, explicitly states that while “late binding” is “‘dynamic’ in the sense that it happens at run time, it carries with it strict compile time constraints. As discussed here (and implemented in Objective C), ‘dynamic binding’ is unconstrained.”

ID at 222 n.58.

The specification does not purport to incorporate the Cox text but rather notes generally that the Objective C “language model” had “been described in” Cox, as well as another text. Col. 8 line 24. The NeXTSTEP manual was a public document that would provide guidance to a person of ordinary skill as to what NeXT meant by dynamic binding; NeXT is the assignee on the face of the patent. We agree with the ALJ that the discussion in column 8 from lines 29-38 is explanatory of “dynamic binding” and does not merely describe aspects of the preferred embodiment: “dynamic binding” is presented in quotation marks in line 29 as a feature of objective C, and the subsequent discussion (in lines 31-38) purports to explain what dynamic binding in Objective C is. Even if a person of ordinary skill did not adopt the meaning from the NeXTSTEP manual, that person, recognizing an extant ambiguity in the term’s meaning, would read lines 29-38 as definitional. *See* Tr. 4452-56.

Apple’s argument on review is that the ALJ’s construction unreasonably imposes a “dynamic typing” requirement into “dynamic binding.” Apple Br. 71-74. But while Apple says that the ALJ conflated “dynamic typing” with “dynamic binding,” the fact is that the NeXTSTEP manual purposefully did so as well, and the discussion relied upon by HTC and the ALJ was in the manual’s discussion of dynamic binding rather than in its immediately-preceding discussion of dynamic typing. The specification also conflates the two concepts. Col. 8 lines 29-41.

PUBLIC VERSION

3. “Dynamic Binding” Under the ALJ’s Construction

The ALJ found that, under his construction of “dynamic binding,” the accused products do not practice the “dynamic binding” limitation. ID at 223-28. We granted Apple’s petition for review of the ALJ’s application of his construction of dynamic binding to the questions of infringement and domestic industry. 76 *Fed. Reg.* 58537, -38 (Issue No. 3). HTC contends that Apple has waived the infringement theory Apple now asserts.

Apple’s infringement theory is [REDACTED]

[REDACTED] Apple Br. 77. As HTC observes, Apple’s argument is difficult to follow in view of its absence from Apple’s submissions in the record to the ALJ, HTC Br. 111 n.57, and we agree with HTC that Apple’s infringement theory is waived. Apple contends in its reply that it could not have presented its theory because it did not know how the claim would be construed. Apple Reply Br. 97. We do not believe that to be a genuine argument here, where Apple’s new infringement theory would also have led to infringement under broader constructions of dynamic binding. That the ID departed slightly from HTC’s proposed construction (in a manner that Apple urged) does not entitle Apple to devise, for the Commission, new theories of infringement for the first time. Apple bore the burden of demonstrating infringement and with it the risk that its theories would not result in infringement under all possible constructions of disputed claim terms.

HTC does not contest that under the ALJ’s construction of “dynamic binding” Apple’s products practice the “dynamic binding” limitation. HTC Br. 108-14 (discussing infringement not domestic industry); HTC Reply Br. 73-76 (same).

PUBLIC VERSION

4. Summary of Findings for the '721 Patent

We find that the asserted claims' "processing means" terms invoke § 112 ¶ 6, that the function is "processing," and that the corresponding structure is a general purpose computer. We affirm the ALJ's construction of "dynamic binding." We find that Apple's domestic industry products practice claim 1 of the '721 patent. We further find that HTC's accused products do not infringe the asserted claims. Finally, we find that the asserted claims are obvious under 35 U.S.C. § 103 in view of the Bennett thesis and Mach messaging.

D. The '983 Patent

Claims 1 and 7 are asserted from the '983 patent, which is entitled "Object-Oriented Operating System," and issued on August 14, 2001. The patent involves similar subject matter as the '721 patent, although the two patents are not related and do not share any co-inventors. A certificate of correction issued for the '983 patent shortly before the institution of this investigation. Among other things, that certificate corrects the priority date that appears on the front page of the patent. Priority is properly to July 19, 1993, when the application's great-grandparent application (which issued as U.S. Patent No. 5,379,432) was filed.³⁶ In response to question (e) in the Commission's notice, 76 *Fed. Reg.* 58537, 58539 (Sept. 21, 2011) the parties have agreed that the file histories of these earlier applications are not pertinent to any issues in the investigation, including claim construction. Apple Br. 106; HTC Br. 124-25; IA Br. 11. We note that related applications include continuations of continuations of continuations of

³⁶ By great-grandparent application, we mean that the patent in suit is a continuation of a continuation of a continuation of that application. Apple submitted a terminal disclaimer during the prosecution of the '983 patent, such that the patent expires when the '432 patent does, *i.e.*, on July 19, 2013.

PUBLIC VERSION

continuations, and prosecution in the P.T.O. is still ongoing nearly twenty years after the original application was filed. *See, e.g.*, Patent Application No. 12/142,641 (filed June 19, 2008).

Asserted claim 1 requires that a “runtime loader . . . selectively load required object oriented methods into the executable program memory during runtime.” Asserted claim 7 is a method that includes the step of “selectively loading the object-oriented methods into the executable program memory during runtime.” We granted review on three issues that deal substantially with these claim requirements: two claim constructions (“loading” and “selectively”); and an infringement and domestic industry issue regarding these and other requirements in the claim regarding “executable program memory.” We also granted review on an evidentiary matter.

1. “Loading”

Apple contended, and the ALJ found, that “loading is not limited to physical copying, but includes virtual copying as well.” ID at 87. “Virtual copying” of a method is the process of putting into executable program memory a pointer to the method's existence elsewhere. *See* ID at 87-88. HTC argued for a narrower construction that excluded such virtual copying from “loading.” *Id.* at 87. HTC petitioned for review, and we granted HTC’s petition on this issue.³⁷ Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 1).

HTC’s claim construction argument is two-fold. First, HTC contends that the plain meaning of “load” excludes virtual copying. HTC Br. 117. Second, HTC argues that Apple clearly disclaimed virtual copying in the patent’s prosecution history. *Id.* at 118.

³⁷ HTC contends that, under its construction, the accused products do not practice the claimed “loading.” HTC Br. 122-25. Because we do not adopt HTC’s construction, we do not reach that issue.

PUBLIC VERSION

Although every claim of the '983 patent includes a "loading" step, the patent specification barely uses the term, and not in any way pertinent to this claim construction dispute. Instead, the patent discusses "copying" and explains, with respect to the only preferred embodiment, that copying includes virtual copying:

Upon completion of step **314**, the library server has copied the requested computer program logic to the task address space. . . . However, preferably the computer program logic of the code library **110** is physically stored in only one physical memory area. The library server virtually copies computer program logic from the code library **110** to the task address space. That is, instead of physically copying computer program logic from one part of physical memory to another, the library server places in the task address space a pointer to the physical memory area containing the relevant computer program logic.

Col. 9 lines 37-50.

We believe that the patent specification's conflation of virtual copying and copying applies also to the patent claims' "loading." Accordingly, we believe that the specification supports the ALJ's determination that loading includes virtual copying.³⁸ We reject HTC's argument to the contrary. HTC Br. 117-18.

HTC also argues that to the extent that "loading" is disclosed in the specification to include "virtual copying," that the claim scope was disclaimed in prosecution. HTC Br. 118-22. The examiner rejected the claims as obvious in view a journal article by Schultz in combination with U.S. Patent No. 5,247,681 to Janis. The Janis patent is what is pertinent on Commission review.

³⁸ The parties presented plausible dictionary definitions on both sides of the issue. *See* Apple Reply Br. 100; HTC Br. 118. In particular, the definition of "load" discussed by Apple and HTC was: "To read machine code into main memory in preparation for execution and, in some cases, to perform address adjustment and linking of modules." HTC Br. 118. The first half of that definition supports HTC, and the "in some cases" portion supports Apple. We believe that in light of the specification's conflation of "copying" and "virtual copying," and the preferred embodiment's use of "virtual copying," that the "in some cases" language controls.

PUBLIC VERSION

In the Janis patent, the invention:

provides a system and method for sharing previously loaded software modules which are part of a computer program without having to place them in a common area of main memory of a computer system. More specifically, the present invention keeps track of the location of any software modules which remain loaded in a private area of main memory, having been loaded by a previous execution of the computer program. In this way, a subsequent execution of that computer program requiring those software modules can immediately access them rather than having to re-load them into memory.

Janis col. 3 lines 26-37; *see also, e.g.* Janis Figs. 3-5 & col. 5 line 1 – col. 7 line 3. The examiner explained that “assuming that the applicant is correct in indicating that Schmidt does not teach or suggest the feature of loading information during runtime, the feature is taught by Janis . . . to reduce the amount of memory required at runtime to improve memory management” Office Action at 3 (July 31, 2000) (citing Janis col. 3 lines 6 - col. 4 line 13).

In response, Apple argued in pertinent part:

[T]he applicant asserts that the cited section at column 3, lines 24-37 of the Janis reference teaches away from the Applicant's claimed invention. Janis is describing sharing previously loaded software modules. . . . The Applicant is claiming a runtime loader that selectively loads the required object-oriented methods into the executable program memory during runtime before invocation of the object-oriented methods.

Amendment at 12 (Dec. 28, 2000).

HTC takes this statement as a disclaimer of virtual copying in its entirety. Apple argues that the disclaimer is more nuanced than that, and that what was disclaimed was only the virtual copying of modules that had already been loaded into executable program memory. Apple Reply Br. 102. *But see* Janis Figs. 3-5 & col. 5 line 1 – col. 7 line 3 (describing how user 1's private memory area is made available to user 2). We believe that Apple's statement in prosecution, which formed the basis for the patent's issuance, cannot be ignored. Whether purposeful or

PUBLIC VERSION

accidental, the prosecution history statement stands: the sharing of previously loaded software modules falls outside the scope of claim 1's "selectively load required object-oriented methods into the executable program memory during runtime" and claim 7's "selectively loading the object-oriented methods into the executable program memory during runtime." Although there may be nuanced ways to distinguish the virtual copying of Janis from some other systems with virtual copying, Apple's interpretation of the file history, as it relates to the accused systems, demonstrates no such nuance.

We find that the accused products do not infringe claims 1 and 7. We discuss our noninfringement finding separately in connection with the claims' "executable program memory" limitations. To the extent that our determination is deemed to exclude the preferred embodiment, we note that the preference to construe the claims not to read out the preferred embodiment is not absolute. *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1383 (Fed. Cir. 2008). Were it so, an applicant would be at liberty to make whatever statements it wished during prosecution, knowing that after issuance, the applicant (now a patentee) could, in enforcement proceedings, retreat from those statements to a preferred embodiment.

2. "Selectively Load Required Object-Oriented Methods"

Apple argued to the ALJ that to "*selectively load required object-oriented methods*" (claim 1) and the similar language of claim 7 should be construed to include loading a "class" of methods rather than just the required methods themselves. ID at 91. The ID rejected Apple's argument, concluding that the "plain language of the claim requires selectively loading 'object-oriented methods' rather than 'object-oriented' classes.'" *Id.* Under the ID's construction, HTC's products do not infringe. *Id.* at 1115-18. We granted Apple's petition for review. *76 Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 2). HTC contends that if the Commission were to adopt

PUBLIC VERSION

Apple's construction, that the claims are not infringed and are invalid. HTC Br. 137-42.

a) Claim Construction

It is undisputed that a class can contain hundreds of methods. *See* ID at 92. Apple's principal argument is that the '983 patent's preferred embodiment teaches class loading, Apple Br. 82-85, whereas HTC argues that the preferred embodiment teaches method loading, HTC Br. 131-33. We do not believe that the operation of the preferred embodiment is dispositive here. The patent's Figure 3 expressly recites the step "Access Library Server and Copy Method Code from Code Library to Task Address Space." The textual discussion of the figure does not recite otherwise. Col. 8 line 55 – col. 9 line 6. There is no question that in the system upon which the '983 patent purports to build methods are stored in classes. *E.g.*, col. 6 line 41 – col. 7 line 1; col. 7 lines 11-59; col. 8 lines 6-10. But we do not find this to imply, much less require, that the claims be construed to require that to "selectively load" a "required" method is to load an entire class.

As we explained earlier, the Federal Circuit's preference not to read out of the scope of a claim a patent's preferred embodiment is not absolute. *Helmsderfer*, 527 F.3d at 1383. Thus, even if Apple were correct regarding the operation of the disclosed preferred embodiment,³⁹ we would not be compelled to read the claim language as Apple recommends. In addition, we find Apple's argument in favor of such an interpretation particularly attenuated here, where it is not alleged that all the patent claims (either the '983 patent standing alone, or with its related patents)

³⁹ Apple has relied on extrinsic evidence, most of which is confidential, about the [REDACTED] project that gave rise to the '432 patent and the subsequent patents (including the '983 patent) claiming priority to the '432 patent. Apple Br. 82-85. We do not believe that such extrinsic evidence is pertinent for determining the scope of the preferred embodiment as actually disclosed.

PUBLIC VERSION

would fall outside the preferred embodiment.⁴⁰

We find the prosecution history of the '983 patent to be helpful in reaching our conclusion. As originally filed, the '983 patent included ten claims. Dependent application claims 2 and 3 are instructive. They read:

2. The method of claim 1 in which an object-oriented class library includes related object-oriented classes having class methods for accessing services provided by the operating system using procedural function calls compatible with the native procedural interface of the operating system, wherein the object-oriented statement located in the application is defined by the class library, further comprising the step of storing in the memory component a code library comprising computer program logic implementing the object-oriented class library.

3. The method of claim 2, wherein step (b) [of claim 1] comprises the steps of identifying one or more methods in the class library corresponding to the object-oriented statement, and copying the identified methods to a portion of virtual memory in the computer previously allocated to the application, and wherein step (c) [of claim 1] comprises the step of executing the identified methods.

Application at 56 (Aug. 26, 1998).⁴¹ Application claim 3 undermines Apple's assertion that its patent claims cannot plausibly be read to include method-by-method loading, for that appears to be exactly what application claim 3 purported to cover. Accordingly, we find that a person of

⁴⁰ The case most cited for Apple's proposition is *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996), but our review of that decision and the patent there at issue shows that all claims, and not merely the asserted claims, contained the disputed claim term "solder reflow temperature" or "reflow temperature of the solder."

Moreover, while we are unaware of any pertinent decisions on point, we observe that the *Vitronics*-like preference is also somewhat undercut when, through continuation practice, as here, it appears that the applicant is refining or expanding claim coverage years later.

⁴¹ Apple accompanied these claims with a preliminary amendment that cancelled those claims and added one claim. Preliminary Amendment at 2 (Aug. 26, 1998). However, that claim was only a placeholder because Apple subsequently filed another preliminary amendment cancelling that claim and adding twenty more. Supplemental Preliminary Amendment at 1 (May 3, 1999).

PUBLIC VERSION

ordinary skill, in view of the claim language itself (including both the “determination” and “loading” steps or elements), the specification, and file history, would interpret “selectively load required object-oriented methods” to require loading the methods actually required and not some potentially much larger superset.

We agree with the ALJ that if Apple had intended broader claim scope, it would have been easy for Apple to so claim. To that end, we note that claims 16-22 of the '983 patent do not “selectively load required object-oriented methods,” but instead “load[] procedural program logic code.” *Compare, e.g., claim 1 with claim 19.* “Selectively” does not appear in those later claims. We also agree with the ALJ that a person of ordinary skill reading unasserted claim 12 would recognize that Apple, in its issued claims, appreciated the differences between “object-oriented methods” and “object-oriented classes.” *See ID at 91-92.* We are careful not to afford these differences dispositive effect, but they support our understanding of the plain language of the asserted claims, as supported by the specification and file history.

b) Invalidity

Because the ALJ construed “selectively load” as requiring method-by-method loading as opposed to class loading, he did not analyze HTC’s invalidity arguments. ID at 124. We have determined to reach these issues under the rejected claim construction (allowing class loading to satisfy “selectively loading”).

(i) NeXTSTEP

The ALJ did not rule on whether Apple’s NeXTSTEP 3.0 system was prior art to the '983 patent. *See 35 U.S.C. § 102(a).* Apple contends that the '983 patent antedates NeXTSTEP 3.0, because the inventors of the '983 patent conceived and reduced to practice each of the asserted '983 patent claims no later than [REDACTED]. Apple Br. 90. The '983 patent, however, claims

PUBLIC VERSION

priority to a patent application filed more than two years later. *See* '983 patent (certificate of correction) (priority to July 19, 1993). NeXTSTEP was available by September 1992. HTC Reply Br. 88.

Apple and HTC both cite *Spectrallytics, Inc. v. Cordis Corp.*, 576 F. Supp. 2d 1030 (D. Minn. 2008) for the pertinent burdens for swearing behind prior art (*i.e.*, for proving that the invention of the '963 patent occurred before the prior art and was followed by diligent reduction to practice). HTC Br. 136; Apple Reply Br. 112. As explained by the district court there, the patentee bears the burden of producing evidence that the claim limitations had been invented as of its proposed invention date. *Spectrallytics*, 576 F. Supp. 2d at 1045. Testimony must be corroborated. *Id.* at 1046; *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577-78 (Fed. Cir. 1996) (“This court does not require corroboration where a party seeks to prove conception through the use of physical exhibits. The trier of fact can conclude for itself what the documents show, aided by testimony as to what the exhibit would mean to one skilled in the art.”) (citations omitted). It then becomes the accused infringer’s burden to prove by clear and convincing evidence that the patentee’s invention date did not precede the date of the purported prior art reference. *Spectrallytics*, 576 F. Supp. 2d at 1045.

We believe that Apple met its burden of production. It produced evidence (source code [REDACTED] [REDACTED] on which the inventors worked) that purported to demonstrate selective loading. Apple Br. 90-91; Apple Reply Br. 113-15; *see* Tr. 4832-40 (Apple expert Susan Spielman); Tr. 1797-1811 (inventor Debra Orton). In view of *Mahurkar*, we do not view Apple’s testimony as freestanding evidence, but as an explanation of the source code. We believe that HTC mischaracterizes the burden of production, improperly imposing upon Apple the clear and convincing burden that HTC itself bore. HTC Br. 136; HTC Reply Br. 89.

PUBLIC VERSION

HTC has not met its clear and convincing burden. HTC cites several passages of cross-examination of Apple's expert Spielman, HTC Br. 136-37 (citing Tr. 4818-22), but Apple's redirect examination of its expert (cited above, Tr. 4832-40) undercuts HTC's arguments. HTC cites its own witness only once, HTC Br. 136 (citing Tr. 3487-97), but the passages cited are based in part on HTC's argument that virtual copying is not loading. *See* Tr. 3489 ("Linking and loading are fundamentally separate operations."). Because we have affirmed the ALJ's finding that virtual copying is loading, HTC's basis for distinguishing the ██████████ project falls away. As to the remainder of HTC's expert's testimony, Tr. 3491-97, we find it too cursory to support a clear and convincing burden. HTC's reply brief fails to cite any testimony in support of its position, and instead relies on an incorrect explanation of the burden of proof to try to make its case. HTC Reply Br. 88-89. Accordingly, we find that NeXTSTEP 3.0 has not been shown to be prior art.

(ii) Vernon and Gautron

HTC's second invalidity argument is based on the 1989 article by Vaughn Vernon, "OS/2 Multitasking with Class" (RX-892) and on the 1987 paper by Phillipe Gautron and Marc Shapiro, "Two Extensions to C++: A Dynamic Link Editor and Inner Data" (RX-891). Vernon discloses most of the claim limitations, while Gautron discloses the selective runtime loading required by the last two elements of claims 1 and 7. *See* HTC Br. 140-41; *see also* Tr. 3469-85. HTC argues that under Apple's construction of "selectively load" to permit class loading, the asserted claims are obvious in view of Vernon and Gautron.⁴² HTC Br. 140. We find that, but for our

⁴² We are aware that certain aspects of C++ were before the examiner during prosecution, although the Gautron article was not. As with our earlier invalidity determinations, we have been mindful of the Supreme Court's guidance in *Microsoft Corp. v. i4i Limited Partnership*, 131 S. Ct. [Footnote continued on the next page]

PUBLIC VERSION

determination that “selective loading” requires method-by-method loading, the asserted patent claims would be obvious in view of Vernon and Gautron.

Apple offers two arguments against a finding of invalidity: (1) Vernon and Gautron were wholly incompatible with each other and the combination of the two would have produced an inoperable device, Apple Br. at 93; and (2) if Vernon and Gautron could be combined, they still lack the requirement that there be “runtime determinations regarding and selective loading of object-oriented methods *to be invoked*,” *id.* at 93 (emphasis in original).

We do not agree with Apple’s argument, or its’ expert testimony, regarding the difficulty of combining Vernon and Gautron. Gautron explained the benefits of adding dynamic loading and linking to ordinary C++ environments. In order to do so, Gautron required the addition of “a keyword” to “the C++ language, and a few modifications to the compiler.” RX-891 at 23; *see also id.* at 24 (“We present here a dynamic linker for the C++ object oriented programming language. Our work integrates linker support into the compiler. This requires a small addition to the syntax of C++, and some additions to the code generator. We link the code for a class at the time of its first instantiation.”). Gautron explained that its implementation was “clean and portable,” *id.*, and “clean and machine independent,” by which Gautron meant that the teachings of the paper could be readily adapted across computer platforms. *See* Tr. 4801 (Apple expert Spielman). Apple’s position is that Gautron was not portable, and could not be combined with the teachings of Vernon, because of the small changes Gautron made to the C++ environment. *See, e.g.,* Tr. 4804 (Spielman), Apple Br. 93. Following Apple’s reasoning, Gautron cannot be

[Footnote continued from the previous page]
2238, 2251 (2011), regarding the persuasive value of and deference toward the P.T.O. examiner’s decisions.

PUBLIC VERSION

combined with anything because doing so requires modest changes to the underlying C++ environment. We do not agree with Apple's position.

Apple also claims that the combination of Vernon and Gautron would result in an inoperable device. *Id.* But that argument is based on the same assumption as the one we have just rejected: that Gautron is incompatible with conventional C++ compilers. Tr. 4696-97 (Spielman). The level of skill in the art is not in dispute, and is a "B.S. degree in computer science or equivalent, and two to three years of industry experience." ID at 86 n.30. What is missing from all of Apple's arguments is proof as to why a person of ordinary skill would have any difficulty combining the two references. Merely saying that the compilers, or the operating systems, are a little different does not demonstrate that the advancement made by Gautron and Shapiro in their system would face different unpredictable challenges in the Vernon system. In contrast, HTC's expert (Jeffay) explained in some detail why the combination would be straightforward. Tr. 3469-73; 3483-85.

Apple also makes an argument that hinges on its proposed construction of "selectively loading" to include class loading. Specifically, Apple argues that notwithstanding the permissibility of class loading (for purposes of infringement), there is no teaching in the combined Vernon and Gautron papers that the methods loaded are methods "to be invoked." Apple Br. 94. Essentially, in order to preserve the validity of the asserted patents, Apple argues that the specific method that will be run must be automatically identified and loaded, as opposed to an identification that a particular class is necessary. Apple Reply Br. 117. We find Apple's argument inconsistent with the class loading that it has emphasized elsewhere. The "selectively loading" requirement is the most restrictive element in the claim by virtue of its use of "selectively." If that requirement is nonetheless practiced when a class is loaded that contains a

PUBLIC VERSION

needed method, then assessing that the class is needed also suffices to practice the patent. It follows *a fortiori* that if the class is deemed to be needed it is because one or more methods within that class are needed. See Tr. 3479-83.

Accordingly, we believe that HTC has met its burden of demonstrating that the asserted claims of the '983 patent are invalid, except as to the claim requirement "selectively" load. HTC has demonstrated that the prior art loads classes; HTC did not offer an invalidity analysis under our construction of "selectively," which excludes class loading. We find that but for this requirement, the claims of the '983 patent would be invalid.

c) Infringement

As noted above, HTC contends that under our construction of "selectively load required object-oriented methods" its products do not infringe. We agree and find no infringement. We also agree with HTC that even if class loading were found to satisfy this limitation, loading *all* classes is not selective. We discuss this noninfringement argument in connection with our discussion of the "executable program memory" limitations below.

3. "Executable Program Memory" Limitations

We granted review on the issue whether "the accused products and the Apple domestic industry products practice the claim limitations that call for executable program memory."

Notice, 76 *Fed. Reg.* 58537, -38 (Sept. 21, 2011) (Issue No. 3). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] ID at 116-18. Accordingly, there is not a violation of section 337 as to the '983 patent. However, based on our conclusions regarding "executable program memory," we would reach the same conclusion even if the claims were construed to permit class loading.

PUBLIC VERSION

As discussed earlier in connection with “virtual loading,” during the prosecution history, Apple disclaimed pointing to a method that is already in executable program memory. That begs the question of what the executable program memory is. The issue is not, as Apple attempts to frame the issue, one of claim construction. The claim was not sought to be construed. Rather, the question is fairly only one of infringement, whether the accused products (i) “determine during runtime” if object oriented methods are already in executable program memory and (ii) whether methods are loaded “into” that executable program memory at runtime as called for by independent claims 1 and 7.

In view of this backdrop, we believe that Apple's infringement theory is strained. Apple contends that when an accused device wishes to execute a method, it executes it, and in so doing transforms what had been nonexecutable memory [REDACTED] into executable memory [REDACTED]. That transformation occurs because of Apple's theory that executable program memory is “that subset of memory actually configured and used for execution.” *E.g.*, Apple Br. 96. Apple's blurring of any distinction between executable and nonexecutable memory makes Apple's prosecution disclaimer wholly illusory. To the extent that Apple argues that this interpretation of the file history is at odds with the preferred embodiment, then the preferred embodiment must give way because otherwise the disclaimer is nonsensical. Accordingly, we do not find that there is infringement.

In addition, as the ALJ found in the ID, in the accused devices, all methods are loaded into the task address space at startup. ID at 113. The mere fact that the methods are executed later does not transform the task address space into something else, and therefore the methods are not loaded at runtime, but beforehand. Accordingly, there is nothing “selective” about Android's loading. Moreover, because the methods are in that executable program memory already and

PUBLIC VERSION

because [REDACTED], no claimed “determinations” are made whether the needed methods are in executable memory in the accused devices. ID at 111. For these additional reasons, we affirm the ALJ’s finding of noninfringement.

In view of our conclusion that the patent claims are not infringed by HTC, we determine to take no position on whether Apple’s domestic industry product (MacBook Pro computer running Mac OS X v10.6 Snow Leopard) contains the claimed executable program memory. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984). We note that both Apple and HTC devoted little time to explaining the issue, Apple Br. 103-04; HTC Br. 153-54; Apple Reply Br. 134-35; HTC Reply Br. 107, and find that neither party provided a clear or persuasive discussion in support of its conclusion.

4. The ALJ’s Striking a Portion of HTC’s Expert Report

In a pre-hearing evidentiary ruling, Order No. 99, the ALJ purported only to strike the portions of HTC’s expert Dr. Jeffay’s report regarding the “Actor’s User Manual” (the user manual for a prior art system) as applied to the fourth element of claim 1 of the ’983 patent. At the hearing, however, the ALJ explained that he interpreted his order to apply to claim 7 as well. *See* Tr. 3409; Apple Br. 105. HTC petitioned for review of certain of the ALJ’s evidentiary decisions, and we granted review on this single ruling, *76 Fed. Reg.* 58537, -38, because the ALJ’s basis in the record was not clear to us.

We have reviewed Order No. 99, the parties’ briefing of the motions leading to that order, and the expert report itself. The pertinent portion of the report is an invalidity claim chart. *See* Ex. 13 to HTC Respondents’ Opp. to Compl’ts’ Supp. Mem. in Supp. of Their Emergency Mot. to Strike Improper and Disallowed Allegations from Resp’ts’ Opening Expert Report (Feb.

PUBLIC VERSION

14, 2011). Dr. Jeffay relied upon the struck portions of the Actor user manual (regarding the graphical user interface, performing file I/O, and performing memory management, *see* Order No. 99) not only for claim 1, but also for the second through fourth elements of claim 7. Absent these struck portions, it does not appear that Dr. Jeffay has any viable contention in his report that Actor system practiced steps (b) and (d) of claim 7. HTC does not argue otherwise in its briefing to the Commission, and instead makes vague assertions about the fact that the claims are different. We find that the ALJ acted soundly within his discretion, and HTC's arguments do not convince us otherwise.

5. Summary of Findings for the '983 Patent

We affirm the ALJ's construction of "loading" to include virtual copying and "selectively load" to exclude class loading. We therefore affirm the ALJ's determinations that HTC's products do not infringe, and Apple's products do not practice, the asserted claims. We further find that under Apple's construction of "selectively load" to include class loading, HTC's products would not infringe the asserted claims. Under Apple's same construction, the asserted claims would be obvious under 35 U.S.C. § 103 in view of the Vernon and Gautron articles. We affirm the ALJ's evidentiary decision regarding the Actor user manual.

III. REMEDY, THE PUBLIC INTEREST, AND BONDING

Apple seeks a limited exclusion order and a cease and desist order. ID at 231, 233. In his Recommended Determination ("RD"), the ALJ recommended that should the Commission determine that a violation of section 337 exists, the Commission should issue a limited exclusion order directed to the accused personal data and mobile communications devices and related software found to infringe a patent in suit. *Id.* at 231-32. The ALJ recommended against the issuance of a cease and desist order because the evidence established that "HTC's inventories of

PUBLIC VERSION

accused products in the U.S. are for testing purposes only, are not approved by the U.S. government, and are not for sale.” *Id.* at 233. Although Apple had sought a 100% bond during the Presidential review period, the ALJ determined that Apple failed to carry its burden to demonstrate a price differential that would protect it from injury and recommended a bond in the amount of zero. *Id.* at 234-35. The IA agreed with the ALJ’s remedial recommendations. We agree with the ALJ’s recommendations, although we have determined to tailor the exclusion order in certain respects in view of our assessment of the statutory public interest factors.⁴³

A. Remedy and the Public Interest

1. Limited Exclusion Order

Upon finding a violation of section 337, the statute provides that the Commission “shall direct that the articles concerned, imported by any person violating the provision of this section, be excluded from entry into the United States, unless, after considering the effect of such exclusion upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers, it finds that such articles should not be excluded from entry.” 19 U.S.C. § 1337(d)(1); *see Spansion, Inc. v. ITC*, 629 F.3d 1331, 1359-60 (Fed. Cir. 2010). We find that a limited exclusion order is appropriate here, with terms as discussed below.

There are four statutory public interest factors for the Commission to consider in determining whether an exclusion order ought not to issue. We will address these factors in turn. However, before doing so, we observe that the exclusion order extends only to HTC products, and

⁴³ Commissioner Pinkert writes separately to provide additional views regarding remedy and the public interest.

PUBLIC VERSION

not to products of other Android smartphone manufacturers, such as LG, Motorola, and Samsung. Those smartphone manufacturers are not respondents in this investigation and their Android smartphones are not the subject of our violation finding. Google, whose interests align with HTC's in this investigation, argues that the Commission should not lose sight of the broader patent wars being waged and that "Apple is seeking exclusion orders directed not only at HTC, but also directed at the other primary Android device suppliers." *Id.* at 8. It is either premature or erroneous to assume that an exclusion order in this investigation is tantamount to excluding from the United States all Android smartphones.⁴⁴ Should the Commission exclude the smartphones of other manufacturers in future investigations, or should the district courts limit the availability of other manufacturers' Android smartphones to U.S. consumers, the Commission has established procedures that permit modification or rescission of an exclusion order, as appropriate based on a reassessment of the changed facts or public interest at such time. 19 C.F.R. § 210.76(a)(1).

Accordingly, the question presented is the effect on the public interest caused by a limited exclusion order against HTC's infringing smartphones. This proper framing of the issue puts HTC's public interest arguments (and the similar arguments raised by Google) in context: whether smartphones with Apple's, Microsoft's, or RIM's operating systems, or Android smartphones from other manufacturers (LG, Motorola, Samsung, among others) serve as viable substitutes to HTC's smartphones.

We turn to the statutory public interest factors. Because the arguments raised by the parties under each factor overlap to some extent, we address the factors in a different order than

⁴⁴ Should Apple assert in the future the same patents it chose to assert here, accused infringers may raise new invalidity and other defenses not presented by HTC here.

PUBLIC VERSION

they appear in the statute.

a) United States Consumers

While HTC's arguments make vague assertions about the potential for consumers and the U.S. economy to be deprived of the benefits of mobile telephony generally, or 4G networks generally, HTC is essentially arguing that a limited exclusion order will reduce consumer choice among smartphone models or features. The right to exclude under a patent, 35 U.S.C. § 154, is the right to exclude a competitor's products; such exclusion necessarily affects consumer choice. Accordingly, the mere constriction of choice cannot be a sufficient basis for denying the issuance of an exclusion order.

Because HTC does not assert that an exclusion order would result in an actual shortage of smartphones in the United States market, its arguments largely turn on the proposition that HTC's infringing smartphones feature special or unique functionality that, if unavailable, would adversely impact the public interest. In other words, HTC's arguments turn on whether there are reasonable substitutes for its infringing products.

HTC's briefing offers little that distinguishes its smartphones to warrant denial of an exclusion order in this investigation. The only distinction HTC claims in comparison to other Android smartphone suppliers is that its smartphones use HTC's "Sense User Interface" ("Sense UI"), which is HTC's modification of the Android interface that Google provides smartphone suppliers.⁴⁵ HTC has failed to establish that other smartphone manufacturers' user interfaces (or

⁴⁵ See Statement of Dr. Vincent E. O'Brien in Support of Respondent HTC's Opening Br. on Commission Review at 27 ¶ 62 (Oct. 6, 2011) (Att. A to HTC Br.) ("O'Brien Stmt."). T-Mobile similarly makes the unsubstantiated assertion that "HTC smartphones offer a unique HTC Sense software user interface layer that is attractive to many customers." T-Mobile Remedy Br. 4.

PUBLIC VERSION

in the case of “Nexus” smartphones, no manufacturer add-ons at all) are not adequate substitutes for HTC’s. Moreover, HTC does not demonstrate any user preference for HTC’s Sense UI over the user interfaces of smartphones running other operating systems. In sum, as we have discussed above, HTC has not demonstrated the unavailability of adequate substitutes for its Android smartphones subject to the exclusion order.⁴⁶ See HTC Br. 174.

HTC also observes that it has a greater share of the 4G smartphone market than for smartphones overall. HTC Br. 161. HTC’s sales figures appear to rely on data from early- to mid-2011, including figures that rely on the fact that at one point HTC offered the only LTE (a type of 4G technology) smartphone in the United States. O’Brien Stmt. ¶ 53. However, the Commission takes notice of the fact that many non-HTC Android 4G smartphones for each of the four national carriers are now available to consumers.⁴⁷ Consumers may also choose 4G smartphones using different operating systems. See Apple Remedy Reply Br. 12-15; ACT Remedy Br. 18-22.

HTC also suggests that it may be unusual among smartphone manufacturers because of the

⁴⁶ We reject HTC’s arguments to the extent that they are class- or race-based. HTC Br. 175. HTC has not demonstrated that low-income groups or minorities are particularly reliant on HTC Android smartphones, as opposed to mobile telephones, or smartphones generally.

⁴⁷ We take notice of the following non-exhaustive list of non-HTC 4G Android handsets offered for sale on carriers’ websites and websites of their resellers on November 14, 2011: AT&T (LG Thrill, Motorola Atrix 2, Samsung Focus S, Samsung Galaxy S II, Samsung Infuse, Sony Ericsson Experia); Verizon (LG Revolution, Motorola Droid Bionic, Motorola Droid RAZR, Pantech Breakout, Samsung Stratosphere, Samsung Droid Charge); Sprint (Motorola Photon, Samsung Nexus S, Samsung Conquer, Samsung Epic, Samsung Galaxy S II); T-Mobile (LG Doubleplay, LG MyTouch, Samsung Exhibit, Samsung Exhibit II, Samsung Galaxy S II). Others have since been announced. See, e.g., Galaxy Nexus – The New Android Phone from Google, at <http://www.google.com/nexus> (last visited Dec. 14, 2011) (manufactured by Samsung). For discussion of regional carriers, see Apple Remedy Reply Br. 15.

PUBLIC VERSION

speed with which it brings products to market and the number of its devices in the marketplace. O'Brien Stmt. 29-37 ¶¶ 65-83. However, we decline to find that the fact that HTC releases more models than other manufacturers itself equates to a demonstrably significant impact on consumer welfare. Moreover, HTC's statements regarding its speed to market compared to competitors, O'Brien Stmt. 30-32 ¶¶ 67-75, are unsubstantiated.

Accordingly, we find that the record supports Apple's and ACT's assertions that ample substitutes exist for HTC's Android smartphones. It is undisputed that there are many smartphone manufacturers and it is also undisputed that they compete vigorously, not only among Android smartphones, but among different operating systems. Accordingly, this investigation presents a weaker argument on this issue than one where there might be few suppliers and limited availability of products to U.S. consumers.

HTC also argues that "consumers will likely see an increase in smartphone prices, and a decrease [in] the range of available features. . . . HTC provides a wider selection of smartphones at a wider range of prices, to a wider audience than any other manufacturer. That commitment has assisted carriers like T-Mobile in providing a substantial break on prices in wireless devices and wireless service." HTC Br. 174-75 (footnotes omitted). However, HTC's support for this assertion is based on the price pressure of Android smartphones overall on iPhone prices, O'Brien Stmt. ¶ 101, and not based on the specific availability of HTC Android smartphones in the United States. Indeed, T-Mobile has informed the Commission that four months will be sufficient for it to refill its product offerings with devices from HTC competitors at the various price points that HTC products presently serve. T-Mobile Remedy Br. 6; *see also* Apple Remedy Reply Br. 14-15 (HTC competitors); ACT Remedy Br. 21-22. Thus, we do not view HTC's argument to be compelling.

PUBLIC VERSION

Finally, HTC argues that customers ordinarily purchase HTC's Android devices with "a 2-year service contract with a substantial penalty for early termination, and the agreements often provide for replacement and repair services in the event that a device breaks." HTC Br. 173.

HTC further states:

Under standard contracts, when a consumers' [*sic*] phone breaks, the carriers and HTC arrange for a replacement device to be sent to the consumer, who sends back his or her faulty device. HTC devices are repaired and replaced by facilities outside the United States. That phone is then repaired, and returned to other consumers as a replacement device. An exclusion order would prevent the carriers and HTC from satisfying their obligations to current consumers.

HTC Br. 173-74 (footnotes omitted). T-Mobile argues that under an exclusion order "some T-Mobile customers could be left without access to the smartphone of their choice and forced to accept a substitute product, if one could be found." T-Mobile Remedy Br. 5. Apple argues, however, T-Mobile's own contract with its customers is to "repair[] or replace[] with the same *or* comparable models," Apple Remedy Reply Br. 20 (emphasis omitted), and that other carriers' agreements are to the same effect, *id.* at 19-20. Therefore, according to Apple, "excluding the Infringing Products in no way threatens a carrier's ability to fulfill its contractual obligation to customers, nor will it put consumers at risk of not receiving a replacement device." *Id.* at 20.

We agree with HTC that the effect on a consumer is somewhat different between a consumer's decision to purchase a new device and a request by a consumer for a replacement in the middle of a contract so that the consumer can fulfill the terms of the contract with the same or a comparable device.⁴⁸ We believe that the cited contracts support the expectation of *some*

⁴⁸ There is no evidence of consumer expectation upon completing a contract and purchasing a new handset that the consumer be offered the same model; indeed, there is no

[Footnote continued on the next page]

PUBLIC VERSION

consumers that they will receive the same (as opposed to a comparable) model, even though HTC has offered no evidence demonstrating an obligation to provide that same model. *See* T-Mobile Remedy Br. 5. As HTC explains in the passage quoted above, defective devices are exported from the United States to be repaired overseas, and returned to a different customer in the United States. HTC Br. 173-74. Upon consideration of the effect of exclusion upon United States consumers, the Commission believes it appropriate to provide a narrow exemption to the scope of the exclusion order. HTC shall be permitted to import into the United States until December 19, 2013 refurbished handsets to be provided to consumers as replacements under warranty or an insurance contract (whether the warranty or contract is offered by HTC, a carrier, or by a third party). This exemption does not permit HTC to call new devices “refurbished” and to import them as replacements.

b) Public Health and Welfare

With respect to public health and welfare, the Commission has historically examined whether “an exclusion order would deprive the public of products necessary for some important health or welfare need: energy efficient automobiles, basic scientific research, or hospital equipment.” *Spansion, Inc. v. ITC*, 629 F.3d 1331, 1360 (Fed. Cir. 2010) (citing *Certain Fluidized Supporting Apparatus and Components*, Inv. No. 337-TA-182/188, USITC Pub. 1667 (Oct.1984); *Inclined-Field Acceleration Tubes and Components*, Inv. Nos. 337-TA-67, USITC Pub. 1119, 2 ITRD 5572 (Dec.1980); *Certain Automatic Crankpin Grinders*, Inv. No. 337-TA-60, USITC Pub. 1022 (Dec.1979)).

[Footnote continued from the previous page]

evidence in the record that any HTC Android device is sold by a carrier for that length of time, or that there is consumer demand for an older device to be subject to the term of a new contract.

PUBLIC VERSION

HTC asserts that exclusion of its devices “would have effects on the public health and welfare.” HTC Remedy Br. 175. In particular, HTC states:

- “Excluding HTC’s 4G Android devices will limit consumers’ ability to access the Internet.” *Id.* at 176.
- “The exclusion order would also affect traditionally underserved communities. HTC continues to be committed to being a primary provider of devices for regional wireless carriers, often servicing rural areas.” *Id.*
- “[M]obile phones, and more recently smartphones, play an increasingly critical role in public health and safety.” *Id.* at 177.

None of HTC’s arguments, however, demonstrates cognizable public health and welfare effects that would result from the exclusion of HTC smartphones. That “mobile phones” may play a critical role in public health and safety does not mean that *HTC Android smartphones* play a critical role in public health and safety that other smartphones cannot. As discussed above, HTC’s statements that consumers seeking 4G options lack choice is unsupported, rebutted by Apple and ACT, and contradicted by what products are actually available for sale in the United States. HTC fails to provide substantial support for the suggestion that it has an unusually strong relationship to rural carriers, compared to its competitors.⁴⁹ *See* Apple Remedy Reply Br. 15.

HTC also touts certain benefits of Android smartphones generally: they are used for “researching medical information, managing home security accounts, viewing surveillance videos, and monitoring the location of family members.” HTC Br. 177. HTC notes that Android

⁴⁹ To the extent that a rural carrier can demonstrate that it is disproportionately impacted by the exclusion order, and if it can establish grounds for a sufficient basis for relief from the order, that carrier may petition for modification of the exclusion order. 19 C.F.R. § 210.76. It is noteworthy that no regional carriers submitted briefs in response to the Commission’s request for briefing on remedy, bonding and the public interest. Nevertheless, as we discuss herein, because of competitive conditions in the U.S. economy, exclusion of subject articles shall commence on April 19, 2012 with respect to imports for all carriers.

PUBLIC VERSION

devices are used “as an early notification system for impending national disasters” and to enable people to apply for disaster aid. HTC Br. 177-78. Again, however, there is no evidence that HTC devices play a distinct role that Samsung, Motorola or LG Android smartphones (or Apple, Microsoft/Nokia, or RIM smartphones) do not.⁵⁰

Google argues that its “Android platform is especially well-suited to military applications, because . . . it can be adapted to a variety of different hardware and run custom programs developed for it.” Google Remedy Br. 13. Military and other U.S. government sales, however, are exempted from exclusion orders by statute. 19 U.S.C. § 1337(I); 28 U.S.C. § 1498(a). Moreover, while Google asserts that the military is developing certain applications for Android smartphones, there has been no evidence that any military applications specially relate to HTC’s Android smartphones. Google also suggests that Android devices are used by the blind and used in medical applications. Google Remedy Br. 13-14. But Google does not demonstrate that non-HTC smartphones or non-Android smartphones are any less capable of serving these purposes. See Apple Remedy Reply Br. 8-11.

The Commission rejects HTC’s and T-Mobile’s comparisons to factual circumstances in *Baseband Processor Chips*, in which the Commission provided carve-outs from an exclusion order in view of the then-developing 3G network, and the need for first responders to use that

⁵⁰ These facts are very different from *Certain Baseband Processor Chips and Chipsets*, Inv. No. 337-TA-543, Comm’n Op. (June 2007) (Public Version). In *Baseband Processor Chips*, the Commission was sensitive to concerns about public health and welfare for reasons not presented in this investigation. In that investigation, it was demonstrated that the move from 2G to 3G was essential for certain public safety officials to perform their duties and virtually no non-infringing substitute 3G handsets were available on the market. *Id.* at 148. By contrast, here, HTC offers no such arguments or evidence about the transition from 3G to 4G, and, in any event, HTC has not demonstrated the inadequacy of 4G substitutes. See generally IA Reply Br. 7-8 n.2 (discussing differences between 3G and 4G technologies).

PUBLIC VERSION

network.⁵¹ See HTC Br. 178-79, T-Mobile Remedy Br. 9. That investigation dealt with certain Qualcomm components contained in various handset manufacturers' mobile phones to be used on various carriers' networks. Some networks relied on one type of 3G standard called "EV-DO" and others relied on another 3G standard called "WCDMA." It was uncontested there that there were "no non-infringing EV-DO-compatible chips or EV-DO-compatible handsets that contain non-infringing EV-DO chips," and therefore, we concluded that there were no alternative products. *Baseband Processor Chips*, Comm'n Op. at 95-96. In addition, Qualcomm's infringing chips [made] up the vast majority of chips supplied for use in WCDMA-compliant handsets sold in the United States." *Id.* at 30. Non-infringing WCDMA-compatible chips could not "be readily substituted into handsets designed to operate with infringing Qualcomm chips, given the complexity of the operations performed jointly by the chips and the other components of the handset." *Id.* at 98. Based on these facts, the Commission found that "the substantial burden imposed on third parties and the lack of alternative products collectively outweigh[ed] the value to Complainant of obtaining a complete exclusion of the infringing articles." *Id.* at 121. As noted, above, however, HTC has not demonstrated the unavailability of suitable substitutes here, even as to 4G devices.

Accordingly, HTC has not demonstrated that the public health and welfare provides a substantial basis for not issuing an exclusion order.

⁵¹ The Commission determination in *Baseband Processor Chips* was reversed in part on appeal *sub nom. Kyocera Wireless Corp. v. ITC*, 545 F.3d 1340 (Fed. Cir. 2008). That decision, however, dealt with the scope of limited exclusion orders and not with the application of section 337's public interest factors. *Id.*

PUBLIC VERSION

c) Production of Like or Directly Competitive Articles in the United States

There is no evidence of domestic production of smartphones. “[T]o HTC’s knowledge no smartphones (including Apple’s iPhones) are produced in the United States; rather they are all manufactured overseas and imported into the United States.” HTC Br. 161. Accordingly, we agree with Apple that the issuance of an exclusion order would not result in a deficiency in the production of like or directly competitive articles in the United States. Apple Remedy Reply Br. 19.

Google argues that the issuance of an exclusion order, however, has the “potential to leave U.S. consumers without access to innovative technologies resulting from the only open and generative mobile computing platform developed and distributed in the U.S. – Android.” Google Remedy Br. 9. As we have already discussed, however, the effect of an exclusion order in this investigation is only to halt the importation of certain HTC Android devices, and not Android devices generally. Moreover, while we recognize the substantial value of many open-source projects, for example, in creating consumer choice where there had been limited choice before, we do not believe that open-source projects should be conferred special status or immunity from infringement allegations. Google offers no legal authority in support of favoring Android because it is purportedly open source,⁵² but instead relies on the viewpoints of certain professors and commentators who extol the benefits of open platforms. Google Remedy Br. 11. Finally, we observe that other smartphone operating systems – including Apple’s and Microsoft’s – are also developed in the United States. Accordingly, we reject Google’s argument that

⁵² Apple and ACT contest whether Android is properly considered open source at all. Apple Remedy Reply Br. 19 n.35; ACT Remedy Br. 13-14. The Commission makes no finding on this issue.

PUBLIC VERSION

consideration of the production of like or directly comparable articles in the United States weighs against the issuance of an exclusion order.

d) Competitive Conditions in the United States Economy

HTC asserts that the issuance of a limited exclusion order “threatens to upset the precarious nature of competition concerning the sale and use of mobile devices.” HTC Br. 166. HTC further states that the “fragility of that competition may best be seen in the Department of Justice’s recent announced filing to block the proposed merger between AT&T and T-Mobile and its concern about the impact on 4G development.” *Id.*

T-Mobile explains that it is the only national carrier that does not offer the iPhone. T-Mobile Remedy Br. 7. It further argues that it is particularly vulnerable to the effects of an exclusion order because of its reliance on Android smartphones, and because of its reliance on HTC smartphones among Android smartphones. *Id.* at 1. It asserts that it “has invested in a new 4G HSPA+ network, but its investments depend on consumers having access to devices that can utilize the benefits of that network.”⁵³ *Id.* at 1-2. T-Mobile further asserts as follows:

HTC accounts for a majority of T-Mobile’s U.S. smartphone sales. HTC offers smartphones at a variety of price points, and T-Mobile and HTC have partnered for many years to offer consumers HTC Android smartphones allowing high-speed Internet access. T-Mobile builds its smartphone portfolio by sourcing smartphones with specific features and prices, which it could not easily change on short notice. . . .

Consumers would lose access to T-Mobile’s fastest technology if HTC’s Android smartphones were removed from the marketplace, particularly the recently-announced HTC Amaze 4G Without these HTC Android smartphones, T-Mobile would be unable to meet the customer demand for smartphones that take advantage of its new, faster network. At present, T-Mobile has only one other approved smartphone,

⁵³ To the extent that T-Mobile’s HSPA+ network is properly considered 4G, the Commission takes notice of the fact that AT&T offers an iPhone on its HSPA+ network.

PUBLIC VERSION

the Samsung Galaxy S II, that can take advantage of its new 4G network. T-Mobile does not believe Samsung could meet expected consumer demand *in the short term* for devices that use its new network.

...
External and internal timing, qualification, and approval considerations prevent T-Mobile from offering like or directly competitive products within a commercially reasonable time without a Transition Period. Finding alternative manufactures [*sic*] and suppliers of Android smartphones; developing comparable products at the same price points as the HTC devices; obtaining necessary regulatory approval; testing proposed substitutes for performance, operation, safety, and network compatibility; and ensuring appropriate supply, among other steps, would take many months.

Id. at 3-4, 6 (footnotes omitted and emphasis added).

The key phrase, highlighted in the passage above, is “in the short term.” T-Mobile asks that if an exclusion order is entered that the Commission “allow a four-to-six month transition period . . . so that T-Mobile and the rest of the industry could change to other devices” *Id.* at 2. Apple has offered no substantial challenge to T-Mobile’s assertion that it would require at least four months to shift to other suppliers of smartphones. Instead, Apple asserts that T-Mobile should have begun winding down its relationship with HTC as of the date the ID issued, Apple Reply Br. 14, rather than the date of a Commission determination. While we agree with Apple that it is possible that T-Mobile has “begun implementing contingency plans based on the foreseeability of an exclusion order in this Investigation,” there is no evidence in the record that T-Mobile has acted irresponsibly, or that T-Mobile’s request for transition time of at least four months (in light of regulatory and other considerations) is unreasonable.

We recognize that this case raises some important competitiveness concerns. The President has determined that the build-out of high-speed wireless coverage is one of several vital

PUBLIC VERSION

infrastructure developments for the nation.⁵⁴ The Department of Justice, representing the Administration, recently asserted in its complaint to block the proposed AT&T-T-Mobile merger: “Innovation in wireless technology drives innovation throughout our 21st-century information economy, helping to increase productivity, create jobs, and improve our daily lives. Vigorous competition is essential to ensuring continued innovation and maintaining low prices.”⁵⁵ The Department of Justice complaint also discusses the benefits that a robust T-Mobile brings to the competitive marketplace: “T-Mobile’s investment in an advanced high-speed network and its innovations in technology and mobile wireless telecommunications services have provided, and continue to provide, consumers with significant value.” *Id.* ¶ 23. “T-Mobile has also been an innovator in terms of network development and deployment. For instance, T-Mobile was the first company to roll out and market a nationwide network based on advanced HSPA+ technology and marketed as 4G.” *Id.* ¶ 29.

We find that the President’s statements and the Department of Justice’s lawsuit demonstrate the importance of competitive conditions in wireless telecommunications services in

⁵⁴ See, e.g., Remarks by the President in State of the Union Address (Jan. 25, 2011) (“Within the next five years, we’ll make it possible for businesses to deploy the next generation of high-speed wireless coverage to 98 percent of all Americans. . . . It’s about connecting every part of America to the digital age.”), at <http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address>; President Obama Details Plan to Win the Future Through Expanded Wireless Access (Feb. 10, 2011) (“The rollout of next generation of high-speed wireless – the ‘4G’ technology now being deployed in the United States by leading carriers – promises considerable benefits to our economy and society.”), at <http://www.whitehouse.gov/the-press-office/2011/02/10/president-obama-details-plan-win-future-through-expanded-wireless-access>.

⁵⁵ Complaint ¶ 1, *United States v. AT&T et al.*, No. 1:11-cv-01560 (D.D.C. Aug. 31, 1011).

PUBLIC VERSION

the United States generally and T-Mobile's role within it.⁵⁶ Accordingly, we find that, to the extent an immediate exclusion of HTC Android smartphones would have a substantial impact on T-Mobile's competitiveness, such an order would not be in the public interest. In this instance, however, the Commission does not need to choose between an immediate exclusion order and no exclusion order at all. Rather, T-Mobile itself has advised the Commission that a four-month transition period would likely be sufficient for it to replace its infringing HTC smartphones with Android smartphones produced by other manufacturers, ultimately offering consumers the same range of product and price point choices they have today. T-Mobile Remedy Br. at 4. We find T-Mobile's suggestion to be reasonable and within our authority to implement. However, under the circumstances presented, we do not believe that competitive conditions in the U.S. economy require favoring T-Mobile; they warrant enabling T-Mobile to compete on a level field with other carriers. Thus, the four-month transition period should apply equally to all infringing smartphones, and not just those sold by T-Mobile.

The Commission investigative attorney's reply brief recommended that the transition period be limited to 4G smartphones. IA Reply Br. 7-12. T-Mobile's arguments, however, were not limited to 4G smartphones. T-Mobile Comments at 6. The IA's special treatment for 4G

⁵⁶ The Commission does not believe that the mere fact that a technological field has been determined to provide benefits to the economy is sufficient to excuse infringement of a patent in that field, resulting in what essentially amount to a compulsory license. Such a license would be the implication of HTC's arguments. HTC Br. 166-67. The Commission observes that most of its section 337 investigations (not to mention patent infringement actions in district courts) involve cutting-edge technologies involving, *inter alia*, mobile telephony, computer memory devices, global positioning components, light emitting diodes, and liquid-crystal-display devices (including televisions). Accordingly, depriving a patent of its enforceability because it discloses technologies in a growing field would deny protection for intellectual property where it is arguably most important.

PUBLIC VERSION

smartphones was based on the assumption that there are a “relatively small number of alternative suppliers of 4G-capable phones.” IA Reply Br. 11. As discussed above, HTC has not shown that its products serve a unique or distinct need in the United States with respect to 4G smartphones. Although Google asserts that the “mobile device industry” is “still emerging and fragile,” Google Remedy Br. 15, *cf.* HTC Br. 166-67, presumably with reference to the 4G marketplace, there is nothing in the record to support that proposition.⁵⁷ Accordingly, there is insufficient evidence in the record to limit the transition period to 4G smartphones.

HTC also argues that balanced “against the significant harms to competition in all sectors of the mobile wireless markets that could flow from an exclusion order, Apple’s purported interest in protecting its intellectual property for the asserted patents here is hollow, and highlights the anti-competitive effects of a broad exclusion order.” HTC Br. 172. HTC’s support for this proposition is that the products that Apple identified as practicing three of the four patents in this investigation are Apple computers rather than iPhones. HTC Br. 172-173. However, the Commission’s exclusion order is based on the infringement of the ’647 patent, and it is undisputed that “the iPhone 3GS running Mobile Mail” practices the asserted claims of that patent. ID at 157. Accordingly, we need not reach HTC’s argument.

Google makes a different argument about competition, calling upon antitrust proceedings involving Microsoft and what Google styles as the “applications barrier to entry.” Google Remedy Br. 7 (citing *United States v. Microsoft Corp.*, 253 F.3d 34, 54-55 (D.C. Cir. 2001)).

⁵⁷ For discussion of carriers’ plans to deploy 4G networks, *see generally In re Applications of AT&T Inc. and Deutsch Telekom AG for Consent to Transfer Control of Licenses and Authorizations*, Staff Analysis & Findings, F.C.C. WT Docket No. 11-65 ¶¶ 245-58 (Nov. 29, 2011).

PUBLIC VERSION

Because the Commission's exclusion order extends only to HTC smartphones, and not all Android smartphones, Google's arguments are at best premature.⁵⁸

For the reasons set forth above, we find that competitive conditions in the United States do not weigh against the issuance of an exclusion order, but favor providing a transition period of four months prior to the exclusion of subject articles.⁵⁹

e) Summary of the Effect of Exclusion on the Statutory Factors

For the reasons set forth above, the statutory public interest factors do not weigh against the issuance of a limited exclusion order in this investigation. The Commission, however, concludes that those factors favor a narrower exclusion that affords meaningful relief to the Complainant while minimizing the impact on third parties. Accordingly, we determine that the exclusion of articles subject to the order shall commence on April 19, 2012. In addition, we have determined that a narrow exemption is appropriate: HTC shall be permitted to import into the United States until December 19, 2013 refurbished handsets to be provided to consumers as replacements under warranty or an insurance contract (whether the warranty or contract is offered by HTC, a carrier, or

⁵⁸ We find comparison to *Microsoft* problematic. Unlike *Microsoft*, 253 F.3d at 56, HTC and Google have not alleged, nor to the Commission's knowledge has any court found, that Apple exercises monopoly power in a relevant antitrust market. Accordingly, Google does not allege unlawful anticompetitive conduct. *Cf. Microsoft*, 253 F.3d at 60-78 (reciting in detail Microsoft's illegal activities). Absent such, we are left merely with Apple's enforcement of its patent rights, and it is well-settled that those "who petition government for redress are generally immune from antitrust liability." *Professional Real Estate Investors, Inc. v. Columbia Pictures Indus., Inc.*, 508 U.S. 49, 56 (1993). We are not aware of any evidence in the record demonstrating cognizable anticompetitive conduct, and HTC and Google have not suggested to the contrary. See Apple Remedy Reply Br. 16.

⁵⁹ In view of our determination, *infra*, that Apple is entitled to zero bond during the Presidential review period, the effect of the transition period is to delay the enforcement of the exclusion order for two months beyond the period of Presidential review.

PUBLIC VERSION

by a third party). As we noted earlier, this exemption does not permit HTC to call new devices “refurbished” and to import them as replacements.

2. Cease and Desist Order

Under section 337(f)(1), the Commission has the discretion to issue a cease and desist order in “addition to, or in lieu of” an exclusion order. 19 U.S.C. § 1337(f)(1). The ALJ did not recommend the issuance of a cease-and-desist order because he found that Apple failed to demonstrate that HTC maintains commercially significant levels of inventory in the United States: “the evidence shows that HTC surrenders all title and interest to its commercial products when they arrive and are warehoused in the United States.” ID at 233. The ALJ found that HTC maintains a small inventory in the United States for testing purposes, but “does not store thousands of devices as Apple has implied.” *Id.* (quotation omitted). Apple’s arguments in favor of a cease and desist order rely on its position that HTC maintains substantial inventory in the United States and that “HTC maintains title to such inventory until it is delivered to its customers.” Apple Remedy Br. 3.

We agree with the ALJ that under the facts of this investigation Apple has not demonstrated the need for the issuance of a cease-and-desist order against HTC.⁶⁰

B. Bonding

During the Presidential review period, imported articles otherwise subject to a remedial order are entitled to conditional entry under bond, pursuant to section 337(j)(3). 19 U.S.C. §

⁶⁰ Apple’s arguments rely on HTC’s maintenance of title for handsets that have already been sold to its customers. Apple Remedy Br. 2-4. While the maintenance of title may in some cases be pertinent to the Commission’s consideration of the issuance of a cease and desist order, Apple’s reliance under the facts of this investigation elevates form over substance.

PUBLIC VERSION

1337(j)(3). The amount of bond is specified by the Commission and must be an amount sufficient to protect the complainant from any injury. *Id.*

We agree with the ALJ that a bond in the amount of zero is appropriate in this investigation. The Commission typically bases the amount of the temporary importation bond on the price differential between the complainant's product and the infringing imports. *See, e.g., Certain Microsphere Adhesives, Processes for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. at 24 (1995). Apple failed to satisfy its burden to demonstrate the imposition of a bond during the Presidential review period in view of record evidence that the HTC and Apple products are similarly priced (before carrier subsidies). ID at 235-36. Apple argues on review that "a price comparison is not practicable because, as the ALJ found, HTC sells at least 17 different Infringing Products . . . that are sold at varying prices ranging from \$270 to \$430." Apple Remedy Br. 7. This assertion alone does not make price comparison impracticable nor does it justify entry of 100% bond. Additionally, as the ALJ noted, parties can demonstrate the appropriateness of bonding based on other factors. ID at 234. Apple failed to do so. Complainants are, or should be aware, that such failure to satisfy their burden to support bonding may result in no bonding at all. *See, e.g., Certain Rubber Antidegradants, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-533, Comm'n Op., at 39-40 (Public Version July 21, 2006) ("We find the ALJ's recommendation appropriate in the circumstances here and have determined not to require that a bond be posted for temporary importation. In our view, the complainant has the burden of supporting any proposition it advances, including the amount of the bond.").

PUBLIC VERSION

IV. CONCLUSION

For the reasons set forth herein, we find a violation of section 337 based on importation of articles that infringe claims 1 and 8 of the '647 patent. We have determined that the appropriate remedy is a limited exclusion order, tailored in scope as set forth herein, and that a cease and desist order should not issue. We have determined that the bond amount should be zero.

By order of the Commission.

A handwritten signature in black ink, appearing to read "J R Holbein", written in a cursive style.

James R. Holbein
Secretary to the Commission

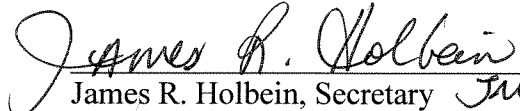
Issued: December 29, 2011

**CERTAIN PERSONAL DATA AND MOBILE
COMMUNICATIONS DEVICES AND RELATED SOFTWARE**

337-TA-710

Certificate of Service

I, James R. Holbein, hereby certify that the attached **Commission Opinion** has been served by hand upon the Commission Investigative Attorney, Thomas S. Fusco, Esq., and the following parties as indicated, on **December 29, 2011**.


James R. Holbein, Secretary *JRH*
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

**On Behalf of Complainants Apple Inc., f/k/a Apple
Computer, Inc. and NeXT Software, Inc. f/k/a NeXT
Computer, Inc.:**

F. Christopher Mizzo, Esq.
KIRKLAND & ELLIS LLP
655 15th Street, NW
Washington, DC 20005

() Via Hand Delivery
(**x**) Via Overnight Mail
() Via First Class Mail
() Other: _____

**On Behalf of Respondents High Tech Computer Corp.
a/k/a HTC Corp.; HTC America; and, Exedeia, Inc.:**

James B. Coughlan, Esq.
PERKINS COIE LLP
700 13th Street, NW, Suite 600
Washington, DC 20005

() Via Hand Delivery
(**x**) Via Overnight Mail
() Via First Class Mail
() Other: _____