UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS, AMERICA, INC.,

Petitioners

v.

CERENCE OPERATING COMPANY,

Patent Owner

Case IPR2025-00457

U.S. Patent No. 7,680,334

Petition for *Inter Partes* Review of

U.S. Patent No. 7,380,334

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1023	Exhibit A-1 to Cerence's Infringement Contentions regarding the '334 Patent
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LISTING OF CHALLENGED CLAIMS

Claim 1	
1[pre]	1. A method performed by a handwriting recognition device for presenting a recognized handwritten symbol, the recognition device having a processor and detection means for detecting entry of a handwritten symbol, the method comprising the steps of:
1[a]	detecting, by the detection means, a handwritten pattern that is entered by a user,
1[b]	recognizing, by the processor, the detected handwritten pattern, wherein said step of recognizing comprises: comparing the handwritten pattern to a plurality of templates, wherein each of the plurality of templates represents at least one of a plurality of handwriting symbol patterns of handwritten ways of hand writing symbols, and returning a best template selected from the plurality of templates that represents one of the plurality of handwriting symbol patterns as a best handwriting symbol pattern which, according to a predefined rule, is most similar to the handwritten pattern, wherein at least two of the plurality of templates comprise different ones of the plurality of handwriting symbol patterns which represent different handwritten ways of handwriting a single symbol; and
1[c]	presenting the best handwriting symbol pattern of the best template.
Claim 2	
2	2. The method according to claim 1, wherein the at least one of the plurality of handwriting symbol patterns of each of the plurality of templates is represented by geometrical information relating to an appearance of said handwriting symbol pattern.
Claim 3	
3	3. The method according to claim 2, wherein the geometrical information comprises information of positions of a number of dots representing the at least one of the plurality of writing symbol patterns,

	said at least one of the plurality of handwriting symbol patterns being presented by lines drawn between the dots.
Claim 4	
4	4. The method according to claim 1, wherein the step of presenting comprises presenting the whole best handwriting symbol pattern of the best template at once.
Claim 8	
8	8. The method according to claim 1, wherein the handwritten pattern is entered on an input area on the screen and the best handwriting symbol pattern of the best template is presented in a presentation area on the screen, wherein said presentation area overlaps the input area.
Claim 9	
9	9. The method according to claim 1, wherein the step of recognizing comprises returning at least one alternative template selected from the plurality of templates.
Claim 10	
10	10. The method according to claim 9, wherein the step of presenting comprises presenting the at least one of the plurality of handwriting symbol patterns of the at least one alternative template at a request of a user.
Claim 15	
15[pre]	15. A method performed by a handwriting recognition device for sequentially presenting a plurality of recognized handwritten symbols, the recognition device having a processor and detection means for detecting entry of a handwritten symbol, the method comprising for each handwritten pattern the steps of:
15[a]	detecting, by the detection means, the handwritten pattern,
15[b]	recognizing, by the processor, the detected handwritten pattern, wherein said step of recognizing comprises: comparing the handwritten pattern to a plurality of templates, wherein each of the plurality of templates represents at least one of a plurality

	of handwriting symbol patterns of handwritten ways of hand writing symbols and returning a best interpretation of the handwritten pattern, said best interpretation being based on one of the plurality of handwriting symbol patterns as a best handwriting symbol pattern of a best template selected from the plurality of templates that, according to a predefined rule, is most similar to the handwritten pattern, wherein at least two of the plurality of templates comprise different ones of the plurality of handwriting symbol patterns which represent different handwritten ways of handwriting a single symbol, and wherein the different ones of the plurality of handwriting symbol patterns of said at least two of the plurality of templates return different best interpretations when being most similar to the handwritten pattern; and
15[c]	presenting the best interpretation.
Claim 16	
16	16. The method according to claim 15, further comprising, before the step of presenting, retrieving as the best interpretation, from a database comprising allographs, a best allograph that is associated with the best handwriting symbol pattern of the best template.
Claim 19	
19	19. The method according to claim 15, wherein the best interpretation is the handwriting symbol pattern of the best template, and wherein the step of presenting comprises presenting the best handwriting symbol pattern of the best template on a screen.
Claim 20	
20	20. The method according to claim 19, wherein each of the plurality of handwriting symbol patterns of a template is represented by geometrical information relating to an appearance of each of said plurality of handwriting symbol patterns.
Claim 21	
21	21. The method according to claim 20, wherein the geometrical information comprises information of positions of a number of dots representing each of the plurality handwriting symbol patterns, said

	each of the plurality of handwriting symbol patterns being presented by lines drawn between the dots.
Claim 22	
22	22. The method according to claim 15, wherein the step of presenting comprises presenting the whole best handwriting symbol pattern represented by the best interpretation at once.
Claim 26	
26	26. The method according to claim 15, wherein the handwritten pattern is entered on an input area on a screen and the best interpretation is presented in a presentation area on the screen, whereby said presentation area overlaps the input area.
Claim 27	
27	27. The method according to claim 15, wherein the step of recognizing comprises returning at least one alternative interpretation.
Claim 28	
28	28. The method according to claim 27, wherein the step of presenting comprises presenting the at least one alternative interpretation at the request of a user.

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc., (collectively, "Samsung" or "Petitioners") request *inter partes* review ("IPR") of claims 1-4, 8-10, 15, 16, 19-22, and 26-28 ("Challenged Claims") of U.S. Patent No. 7,680,334 ("the '334 patent").

II. GROUNDS FOR STANDING

Petitioners certify that the '334 patent is available for IPR, and that Petitioners are not barred or estopped from requesting IPR to challenge the claims on the grounds herein.

III. STATEMENT OF PRECISE RELIEF REQUESTED FOR EACH CLAIM CHALLENGED

Petitioners respectfully request review and cancellation under 35 U.S.C. §311 of the Challenged Claims in view of:[1]

Ground	Claims	Basis
1A	1, 2, 8-10, 15, 19, 20, 26-28	§103: *Sinden* + *Fujisaki*
1B	3, 4, 21, 22	§103: *Sinden* + *Fujisaki* + *Collins*
2	15, 16	§103: *Sinden* + *Fujisaki* + *Sklarew*

[1] Petitioners do not concede that any Challenged Claims satisfy other requirements for patentability that cannot be raised in IPR, including 35 U.S.C. §§101 and 112.

As shown below, each reference pre-dates the '334 patent's earliest purported priority date (August 16, 2002), but Petitioners do not concede that this priority date is correct and reserve the right to dispute it.

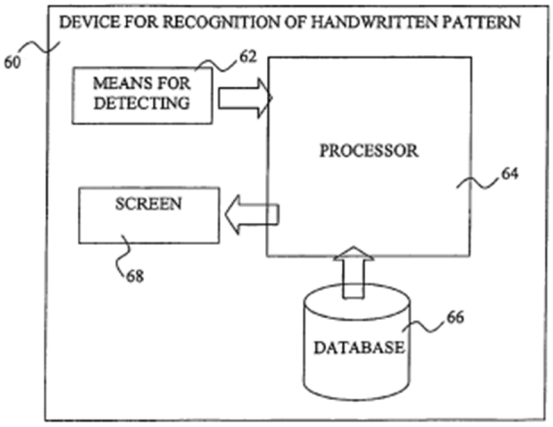
Reference	Date	Pre-AIA Prior Art at Least Under
US 5,333,209 ("*Sinden*") (EX1005)	07/26/1994 (issue date)	§102(b)
US 5,315,667 ("*Fujisaki*") (EX1006)	05/24/1994 (issue date)	§102(b)
US 5,926,567 ("*Collins*") (EX1007)	07/20/1999 (issue date)	§102(b)
US 6,212,297 ("*Sklarew*") (EX1008)	04/03/2001 (issue date)	§102(b)

IV. OVERVIEW OF THE '334 PATENT

The '334 patent generally relates to "[a] method for presenting recognized handwritten symbols." *'334 Pat.*, Abstract. According to the "first aspect" of the alleged invention, the '334 patent discloses a method including the steps of detecting a handwritten pattern entered by a user, comparing the handwritten pattern to templates representing ways of writing symbols, returning a best template, and then presenting the pattern of the best template on a screen. *Id*., 2:17-29. According to the "second aspect" of the alleged invention, the '334 patent discloses a method including the steps of detecting a handwritten pattern entered by a user, comparing

the handwritten pattern to templates representing ways of writing symbols, returning a best interpretation, and then presenting the best interpretation on a screen. *Id*., 2:30-48. The "best interpretation" is "based on the pattern of a best template" and may be "the pattern of a best template" itself or an "allograph that is associated with the pattern of the best template." *Id*., 4:5-20, 4:35-43; 7:56-60 ("The best interpretation intended for presentation may be retrieved from a database of allographs. The best template will return a pointer to the allograph that is to be retrieved. The allographs may be prepared for being presented.").

Figure 6 illustrates a device of the alleged invention including "a means 62 for detecting a handwritten pattern, e.g. a pressure-sensitive screen," "a processor 64 for recognition of the detected handwritten pattern," a "database 66 of templates for comparison to the handwritten pattern," and a "screen 68." *Id*., 8:45-58.



'334 patent, FIG. 6

V. OVERVIEW OF THE PRIOR ART

The prior art references analyzed in the grounds below are analogous to the '334 patent because they are within the same field of endeavor as the '334 patent and reasonably pertinent to one or more problems addressed by the '334 patent. *Beigi* ¶¶64-68.

Sinden relates to "recognition of symbols handwritten on a digitizing tablet." *Sinden*, 1:6-8. *Sinden* generally teaches a system and method for comparing an unknown symbol handwritten by a user to a pre-defined library of model symbols to recognize the unknown symbol. *Sinden* at Abstract. *Sinden*'s model symbols are akin to the "templates" described in the '334 patent. *Beigi* ¶73. *Sinden* also teaches that the set of model symbols may be modified by the user in a so-called "training mode" method whereby a user enters an unknown symbol, the closest model symbol is chosen and displayed, and then the user can take appropriate action (e.g., to identify the correct model symbol if the one that was chosen was incorrect). *Sinden*, 8:3-19, FIG. 8.

Fujisaki relates to handwriting recognition and teaches "a method and apparatus for interactive editing of prototypes that are confusingly similar, that is, prototypes that are close to each other in a prototype space." *Fujisaki*, 1:6-8, 3:56-60. *Fujisaki*'s "prototypes" are akin to *Sinden*'s "model symbols" and the '334 Patent's "templates." *Beigi* ¶79. *Fujisaki* provides details for improvements

applicable to training programs that modify the set of prototypes in a handwriting recognition system, including techniques for displaying the prototype and label to which the user's handwritten unknown symbol corresponds. *See Fujisaki*, 5:25-50, FIG. 2.

Collins "relates to the field of formatting handwritten data displayed on computer systems" and teaches techniques for reducing the time required to display graphical data. *Collins*, 1:11-12, 3:2-16. *Sklarew* discloses a handwriting recognition system and teaches a database that associates a user's handwritten strokes with stored font symbols. *Sklarew*, 5:35-36; *see also id*., 33:56-67.

VI. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art ("POSITA") at the time of the '334 patent's priority date would have had at least a Bachelor's of Science Degree (or equivalent) in an academic area emphasizing computer science, computer engineering, or a related technical field, and about two years of experience in machine learning, pattern recognition, or related subjects. *Beigi* ¶103. A greater amount of education could compensate for fewer years of work experience, and vice versa.

VII. CLAIM CONSTRUCTION

The inclusion of the term "means" in a claim element "creates a presumption that § 112, ¶ 6 applies." *Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*,

161 F.3d 696, 703 (Fed. Cir. 1998). As shown below, Claims 1 and 15 recite "detection means for detecting entry of a handwritten symbol." *'334Pat.*, 9:4-5, 10:12-13. The claims do not recite structure to perform the recited function of "detecting entry of a handwritten symbol." *Beigi* ¶108. Therefore, the claim limitation "detection means for detecting entry of a handwritten symbol" is subject to § 112, ¶ 6 for both claims 1 and 15. The table and discussion below specifies the recited function and disclosed structure corresponding to the function.

Limitation (Function Underlined)	**Corresponding Structure**
Claim 1: "detection means <u>for detecting entry of a handwritten symbol"</u> **Claim 15**: (same)	A screen sensitive to handwriting (*'334Pat.*, 6:33-36, 7:15-17, 7:35-37, 7:44-45, 7:65-66), a separate screen (*id*., 6:41-42, 7:17-18), a pressure sensitive area on a screen (*id*., 1:23-25), a pressure sensitive screen (*id*., 8:45-48), a scanner for detecting patterns written on a piece of paper (*id*., 6:42-43), an intelligent pen incorporating a camera for detection of a handwritten pattern (*id*., 6:44-45), and equivalents thereof
Claim 1: "<u>detecting</u>, by the detection means, <u>a handwritten pattern that is entered by a user</u>" **Claim 15**: "<u>detecting</u>, by the detection means, <u>the handwritten pattern</u>"	

A POSITA would have understood that a "pressure sensitive screen," as that term is used in the '334 patent, refers to a structure with multiple sub-components including a pressure-sensitive digitizer and a display screen, such as a liquid crystal display ("LCD"). *Beigi* ¶¶110-114 (citing *Depew* at 1:10-64, FIGs. 1, 2). A POSITA would have understood that it is the pressure sensitive digitizer component of the "pressure sensitive screen" that detects the user's input and not the display screen component. *Id*. ¶114. Thus, a POSITA would have understood that, although the '334 patent refers to a "pressure sensitive screen" that performs the recited function, it is actually the pressure-sensitive digitizer component of the "pressure sensitive screen" that performs the recited function. *Id*. ¶114. Accordingly, a POSITA would have understood the '334 patent to disclose that a pressure-sensitive digitizer is corresponding structure for the recited function. *Id*. ¶115.

VIII. DETAILED EXPLANATION OF GROUNDS

The sections below, as supported by the Declaration of Homayoon Beigi, demonstrate how the Challenged Claims are unpatentable. *See* 37 C.F.R. 42.104(b)(4)-(5).

A. Ground 1A: *Sinden* in combination with *Fujisaki* Renders Obvious Claims 1, 2, 8, 9, 10, 15, 19, 20, 26, 27, 28

1. Claim 1

a. 1[pre]: "A method performed by a handwriting recognition device for presenting a recognized handwritten symbol, the recognition device having a processor and detection means for detecting entry of a handwritten symbol, the method comprising the steps of:"

To the extent the preamble is limiting, *Sinden* in combination with *Fujisaki* teaches this feature.[2] *Beigi* ¶¶121-142. As a threshold note, Petitioners' analysis of the Challenged Claims focuses on *Sinden*'s method described with reference to Figure 8. *Sinden* discloses the Figure 8 method builds on the methods disclosed with reference to Figures 2 and 4 without restating all of the steps of the methods of Figures 2 and 4. *Sinden*, 8:8-12; *Beigi* ¶¶75, 122. Thus, the description of the methods of Figures 2 and 4 is cited below to describe the overall method of Figure 8. *Id*. ¶122.

[2] Petitioners use the term "teaches" as including both express teachings or those fairly suggested to a person of ordinary skill in the art. *In re Baird*, 16 F.3d 380, 383 (Fed. Cir. 1994); *In re Keller*, 642 F.2d 413, 425 (CCPA, 1981) ("The test for obviousness is ... what the combined teachings of the references would have suggested to those of ordinary skill in the art." (citations omitted)).

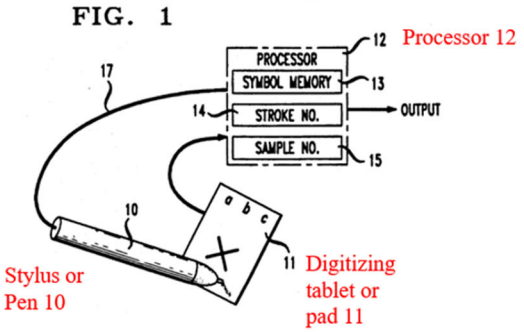
The method of Figure 2 shows "how samples of a handwritten symbol are recorded by the system of FIG. 1." *Sinden*, 3:13-15. The handwritten symbol is either entered and stored as a model symbol or entered as an unknown symbol to be compared to previously entered model symbols. *Id.*, 3:59-64, 4:32-34; *Beigi* ¶123. The method of Figure 4 shows "how the samples for an unknown symbol and the model symbols are compared to identify the unknown symbol." *Id.*, 4:63-65. The method of Figure 8 uses the methods of Figures 2 and 4 such that "an unknown symbol is entered and the closest model symbol to the unknown is chosen … and the choice is displayed." *Sinden*, 8:8-12, FIG. 8.

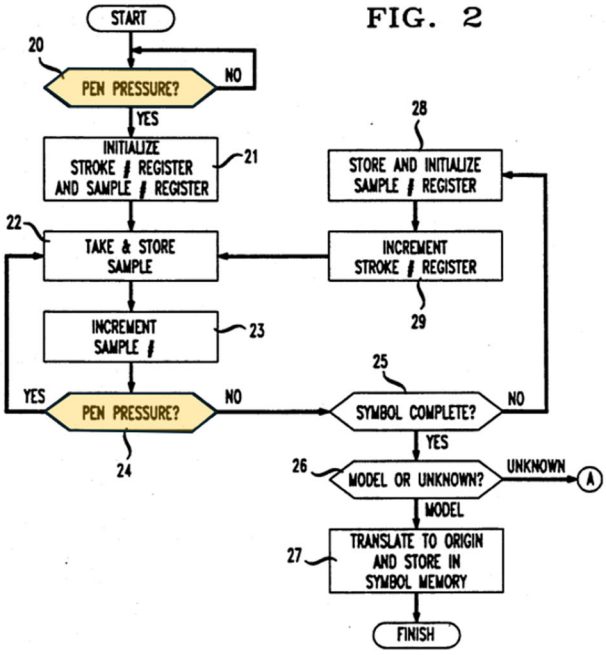
Sinden's teaching is consistent with how the '334 patent describes "[a] method … for presenting a recognized handwritten symbol." *Beigi* ¶126. The '334 patent discloses that "a handwritten pattern is entered by the user" and is "recognised [sic] by being compared with templates in a database." *Id.*, 7:22-26. The comparison returns "a best template," and "the pattern of the best template is presented." *Id.*, 7:26-29, 7:34-35. A POSITA would have understood "presented" to include "displayed" because the '334 patent describes presenting "on a screen," and a POSITA would have understood that to present "on a screen" is to "display." *Beigi* ¶127. In addition, the '334 patent equates "displayed" items with a "presentation" of items. *'334Pat.*, 5:45-47. Petitioners' interpretation is also consistent with the examiner's interpretation provided in the Reasons for Allowance during prosecution

of the ’334 patent. EX1004 at 587. Moreover, a POSITA would have understood *Sinden* to teach that the closest model symbol (i.e., a “recognized handwritten symbol”) is displayed because *Sinden* states that “the choice,” i.e., “the closest model symbol” that was chosen, is displayed. *Beigi* ¶129.

Sinden discloses that the system that implements the method of Figure 8 includes a “processor” and “digitizing tablet or pad.” *Sinden*, 2:44-47, 2:50-57, FIG. 1. *Sinden* explains that handwritten symbols are written on the digitizing tablet or pad, and that the processor reacts to “pen pressure” as the “processor 12 waits until pen 10 touches pad 11.” *Id.*, 2:50-54, 3:19-20, FIG. 2 (box 20, “Pen Pressure?”).[3] Samples are taken “until pen 10 is lifted from pad 11, as indicated by block 24.” *Id.*, 3:26-27, FIG. 2 (block 24, “Pen Pressure?”).

[3] Although *Sinden* initially refers to a “digitizing tablet or pad 11,” the specification later only refers to “pad 11.” *See e.g., Sinden*, 2:55, 2:65. A POSITA would have understood that *Sinden* uses the terms “digitizing tablet” and “pad” interchangeably, and that later references to “pad” also encompass “digitizing tablet.” *Beigi* ¶131.

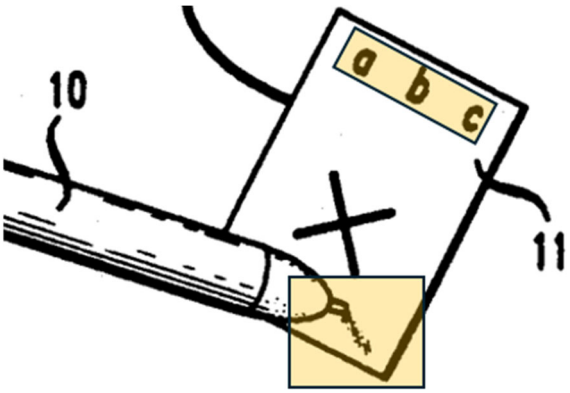




Sinden, FIGs. 1, 2 (annotated)

Because *Sinden* discloses that the handwritten symbol is recorded based on the detection of pen pressure on the digitizing tablet or pad 11, a POSITA would have understood *Sinden* to disclose that the digitizing tablet or pad 11 is "pressure sensitive" and that it detects entry of a handwritten symbol. *Beigi* ¶¶131-133. A POSITA would have further understood that a pressure sensitive digitizing tablet includes a pressure-sensitive digitizer because the digitizer is the component that detects and transduces the pen pressure. *Id*. ¶135. As discussed in §VII, a POSITA would have understood that a pressure-sensitive digitizer is corresponding structure for the claimed "detection means."

If PO argues or the Board finds that the corresponding structure for the claimed "detection means" does not include a pressure-sensitive digitizer, *Sinden* nevertheless discloses this limitation because a POSITA would have understood *Sinden* to disclose a "pressure-sensitive screen." *Id*. ¶¶134-136. In particular, a POSITA would have understood that *Sinden*'s digitizing tablet or pad 11 includes a display screen because *Sinden*'s Figure 1 shows that the digitizing tablet or pad 11 displays letters and a trace of the user's pen input. Thus, a POSITA would have understood *Sinden* to disclose that the digitizing tablet or pad comprises a "pressure sensitive ***screen***." *Id*. ¶¶134-136 (citing *Tappert 1* at 800, 802).



Sinden, FIG. 1 (excerpted and annotated)

If PO argues or the Board otherwise finds that *Sinden* does not literally disclose the corresponding structure of the claimed "detection means" because *Sinden* does not expressly disclose a "pressure sensitive screen," then *Sinden*'s pressure-sensitive digitizing tablet or pad 11 is at least a structural equivalent to a "pressure sensitive screen." *Beigi* ¶137. *Sinden*'s pressure-sensitive digitizing tablet

or pad 11 performs the identical function (detecting entry of a handwritten symbol), in substantially the same way (by using a measure of pressure to detect the user drawing a handwritten symbol), to achieve the same result (a detected handwritten symbol). *Id*.

At a minimum, it would have been obvious to implement *Sinden*'s digitizing tablet or pad with a display screen in view of *Fujisaki*. *Id*. ¶138. In a similar handwriting recognition system, *Fujisaki* discloses "a handwriting transducer comprised of an integrated electronic tablet and display 12." *Fujisaki*, 4:31-36. There were known design incentives to implementing a digitizing tablet with a screen as taught by *Fujisaki*, including the ability to provide the user feedback as he/she wrote on the screen to mimic ink on a page, and to make it so the user did not need to divert attention from the tablet to a separate screen to see what was being written. *Beigi* ¶138 (citing *Tappert 1* at 787).

Thus, a POSITA would have considered the combination to amount to use of a known technique (using a digitizer with an integrated display screen) to improve similar devices (*Sinden*'s system is similar to *Fujisaki*'s) in the same way (to provide a digitizing tablet with an integrated screen that provides feedback to the user while inputting handwriting). *Id*. ¶139. A POSITA also would have considered the combination to amount to following known design trend (integrating the digitizer

and display screen) to achieve a predictable result (*Sinden*'s digitizing tablet with an integrated screen). *Id*.

A POSITA would have had a reasonable expectation of success in making the combination because it would have been within the skill of a POSITA to modify *Sinden*'s system to implement its digitizing tablet with a display screen as taught by *Fujisaki*, as corroborated by *Fujisaki* itself, and the fact that the technology had been available since the early 1990s. *Id*. ¶140.

A POSITA would have understood the *Sinden-Fujisaki* combination teaches *Sinden*'s digitizing tablet or pad with an integrated display screen that records or detects a handwritten symbol using a measure of pressure (a "pressure sensitive screen"). If PO argues or the Board otherwise finds that the *Sinden-Fujisaki* combination does not literally disclose the corresponding structure of the claimed "detection means" because *Sinden-Fujisaki* does not expressly disclose a "pressure sensitive screen," then the *Sinden-Fujisaki* pressure-sensitive digitizing tablet or pad with an integrated display screen is at least a structural equivalent as it performs the identical function (detecting entry of a handwritten symbol), in substantially the same way (by using a measure of pressure to detect the user drawing a handwritten symbol), to achieve the same result (a detected handwritten symbol). *Beigi* ¶141

Accordingly, a POSITA would have understood *Sinden* in combination with *Fujisaki* to teach a system for performing a method including comparing an

unknown handwritten symbol to handwritten model symbols to determine a closest match and displaying the closest model symbol ("[a] method performed by a handwriting recognition device for presenting a recognized handwritten symbol"), wherein the system includes a processor ("the recognition device having a processor") and a digitizing tablet or pad that records a handwritten symbol based on sensing pen pressure ("and detection means for detecting entry of a handwritten symbol"). *Id.* ¶142.

b. 1[a]: "detecting, by the detection means, a handwritten pattern that is entered by a user;"

Sinden in combination with *Fujisaki* teaches this feature. *Beigi* ¶¶143-147.

For the same reasons explained in §VIII.A.1.a that a POSITA would have understood *Sinden* in combination with *Fujisaki* to teach the claimed function in 1[pre], i.e., "detecting entry of a ***handwritten symbol***," and the corresponding structure of for the "detection means," a POSITA would have understood *Sinden* to disclose the claimed function of 1[a], i.e., "detecting … ***a handwritten pattern***" and the corresponding structure for "detection means" or its equivalent. *Beigi* ¶144. The '334 patent explains that "a pattern is a specific way of writing a symbol, i.e. a pattern has a certain appearance." *'334Pat.,* 3:57-59. Thus, a POSITA would have understood that *Sinden*'s digitizing tablet or pad which records a handwritten symbol to also teach recording (i.e., detecting) a "handwritten pattern." *Beigi* ¶145.

Furthermore, *Sinden* generally discloses implementing its disclosure to be "used by an individual or a small number of users." *Sinden*, 8:40-41. *Sinden* also discloses that the method of Figure 8 may be used by a "trainer." *Id.*, 8:13. A POSITA would have understood a "trainer" to be a type of "user" because trainers use the system, and the '334 patent does not draw any distinctions between "users" and "trainers." *Beigi* ¶146. Thus, a POSITA would have understood *Sinden* to teach that it is a user that enters the handwritten symbol. *Id*.

Accordingly, a POSITA would have understood *Sinden* in combination with *Fujisaki* to teach recording a handwritten symbol ("detecting … a handwritten pattern") on a digitizing tablet or pad ("by the detection means") entered using a pen by a user or trainer ("that is entered by a user"). *Id*. ¶147.

c. 1[b]

(i) "recognizing, by the processor, the detected handwritten pattern, wherein said step of recognizing comprises:"

Sinden in combination with *Fujisaki* teaches this feature. *Beigi* ¶¶148-151.

As detailed below in §VIII.A.1.c(ii) and §VIII.A.1.c(iii), *Sinden* teaches, with reference to Figure 4, the "comparing" and "returning" steps of "recognizing … the detected handwritten pattern." *Beigi* ¶149. Furthermore, *Sinden* discloses that the method of Figure 4 is implemented by the processor. *Id.*, 4:32-34; *see also id.*, 2:50-51, 2:31-32, 2:44-47, FIG. 1; *Beigi* ¶150.

Accordingly, a POSITA would have understood *Sinden* in combination with *Fujisaki* to teach the processor performing both recited steps of the claimed "recognizing … the detected handwritten pattern." ("recognizing, by the processor, the detected handwritten pattern"). *Beigi* ¶151.

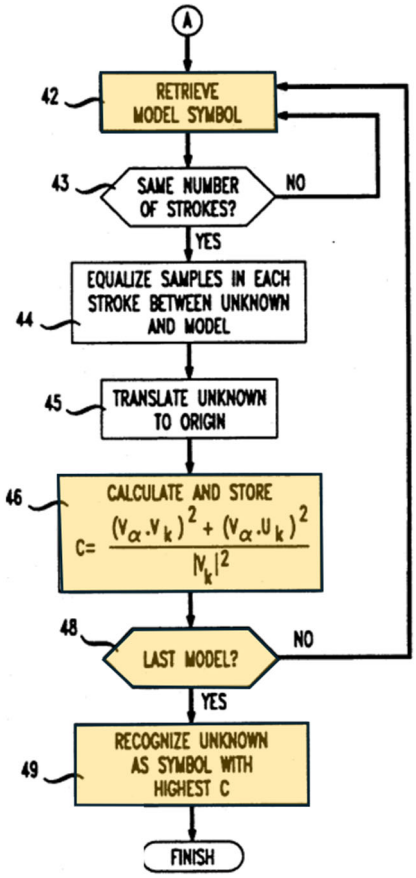
(ii) "comparing the handwritten pattern to a plurality of templates, wherein each of the plurality of templates represents at least one of a plurality of handwriting symbol patterns of handwritten ways of hand writing symbols … wherein at least two of the plurality of templates comprise different ones of the plurality of handwriting symbol patterns which represent different handwritten ways of hand writing a single symbol;"

Sinden in combination with *Fujisaki* teaches this feature. *Beigi* ¶¶152-162.

In general, *Sinden* discloses that "an unknown symbol is compared with model symbols to find a match." *Sinden*, 7:59-60, FIG. 4. In particular, *Sinden* discloses that as a symbol is written on the pad, "processor 12 collects a time sequence of samples of the position of the tip of pen 10 on the surface of pad 11 [where] [e]ach sample is a set of x-y coordinates," to form a vector. *Sinden*, 2:65-3:4; *see also id.*, 4:21-22 ("The samples for a symbol can be thought of in a mathematical sense as a vector.").

Next, as described with reference to Figure 4, *Sinden* discloses comparing the user's unknown symbol to model symbols. *Sinden*, 4:33-34, 4:63-65 4:65-5:3; *Beigi*

¶154. More particularly, the method compares the vector for the unknown symbol to each model symbol in a library or alphabet of model symbols and calculates a correlation value C. *Sinden*, 2:10-16; 4:65-5:3; FIG. 4 (block 48 "Last model?"); 7:20-25. "The correlation C represents the degree of closeness of vector v_α for the unknown symbol to vector v_k for the model symbol. The higher the value of C, the closer the vectors. Thus, as indicated by blocks 47, 48 and 49, the model symbol associated with the highest value of C is recognized as the unknown symbol." *Sinden*, 5:59-64.



Sinden FIG. 4 (annotated)

A POSITA would have understood that *Sinden*'s "model symbols" are "templates" because each model symbol represents a handwritten way of writing a symbol to which the user's handwritten unknown symbol is compared. *Sinden*, 3:6-12, 3:43-47, *Beigi* ¶156; *see also '334Pat.,* 3:62-65 ("a 'template' means ***a model*** or representation of a pattern that is used for comparison with the handwritten pattern in order to recognise [sic] the handwritten pattern"). Thus, a POSITA would have understood *Sinden* to disclose comparing the vector of the unknown symbol ("handwritten pattern") to a library or alphabet of model symbols ("to a plurality of templates"). *Beigi* ¶156.

A POSITA would have further understood that each of *Sinden*'s model symbols (i.e., templates) represent at least one handwritten pattern for a symbol, for example, an alphanumeric character, because *Sinden* discloses that the system is "'trained' by writing in ***at least one model for each symbol*** that the system is expected to recognize and associating the samples recorded for that model symbol with a corresponding label" and that "models for each [alphanumeric character] are … written and associated with the corresponding letter or number." *Sinden*, 3:6-12, 3:44-51, 1:45-48; *Beigi* ¶157. A POSITA would have therefore understood *Sinden* to disclose that each model symbol (i.e., template) "represents at least one of a plurality of handwriting symbol patterns of handwritten ways of hand writing symbols." *Beigi* ¶157.

Sinden further discloses implementing the system with multiple model symbols (i.e., templates) for a single symbol to account for variations in the way that different users write each symbol. *Sinden*, 7:58-8:2 ("More than one model can be stored for each symbol"), *see also id.*, 3:52-58, 8:40-65. Thus, a POSITA would have understood *Sinden* to disclose "at least two of the plurality of templates comprise different ones of the plurality of handwriting symbol patterns which represent different handwritten ways of hand writing a single symbol." *Beigi* ¶¶158-159.

A POSITA would have further understood that in such an implementation (i.e., a system with multiple model symbols for a single symbol), *Sinden*'s method for recognizing unknown symbols would involve comparing the user's handwritten unknown symbol to each of at least two model symbols that represent different handwritten ways of writing a single symbol. *Beigi* ¶¶160-161. That is, a POSITA would have understood that the method of Figure 4 would involve comparing the unknown symbol to each model symbol stored in the system. So, in a system implemented with multiple model symbols per symbol, the method would compare each unknown symbol with at least two model symbols that represent a single symbol. *Id*.

Accordingly, a POSITA would have understood *Sinden* in combination with *Fujisaki* to teach comparing the vector of an unknown symbol entered by the user

("comparing the handwritten pattern") to a library of model symbols ("to a plurality of templates") wherein each of the model symbols are handwritten and represent a symbol ("wherein each of the plurality of templates represents at least one of a plurality of handwriting symbol patterns of handwritten ways of hand writing symbols") and that there is more than one model symbol per symbol to be recognized (e.g., alphanumeric character) to account for variations in the way each symbol is written ("wherein at least two of the plurality of templates comprise different ones of the plurality of handwriting symbol patterns which represent different handwritten ways of hand writing a single symbol"). *Beigi* ¶162.

(iii) "returning a best template selected from the plurality of templates that represents one of the plurality of handwriting symbol patterns as a best handwriting symbol pattern which, according to a predefined rule, is most similar to the handwritten pattern;"

Sinden in combination with *Fujisaki* teaches this feature. *Beigi* ¶¶163-167.

As explained in §VIII.A.1.c(ii), *Sinden* discloses comparing the unknown symbol to each model symbol in a library or alphabet of model symbols and calculates a correlation value C. The correlation C represents the degree of closeness or similarity of vector v_α for the unknown symbol to vector v_k for the model symbol, and the model symbol associated with the highest value of C is recognized as the unknown symbol. *Sinden*, 5:59-64; *see also id.*, 9:33-37. And, in the context of the

method of Figure 8, this is how "an unknown symbol is entered and the closest model symbol to the unknown is chosen." *Id.*, 8:5-10; *Beigi* ¶164.

A POSITA would have understood that choosing the closest model symbol constitutes "returning a best template." *Beigi* ¶165. A POSITA would have understood that the plain and ordinary meaning of "returning" in the context of the '334 patent to refer the recognition process, executed by the processor, reporting the outcome of the recognition comparison. *Id*. (citing EX1021). This is also consistent with how the '334 patent equates "returned" with "determined" with respect to the result of the claimed comparison. *See '334Pat*., 7:66-8:4 ("The pattern is then recognised and the best interpretation based on the best template is ***returned***. After the best interpretation has been ***determined*** it is manipulated…."); *see also id*., 7:46-48; 8:49-52.

Moreover, a POSITA would have understood *Sinden*'s model symbol to be a "template" (§VIII.A.1.c(i)), that each unknown symbol is compared to a plurality of model symbols (§VIII.A.1.c(i)), each of which represents a handwritten symbol (§VIII.A.1.c(i)). And because *Sinden* discloses that the model symbol associated with the highest value of C, i.e., highest value of closeness or similarity, is recognized as the unknown symbol, a POSITA would have understood *Sinden* to disclose that the "closest model symbol" is chosen based on a "pre-defined rule."

Beigi ¶166. In other words, the "pre-defined rule" is that the model symbol with the highest value of similarity is considered to be the recognized model symbol. *Id*.

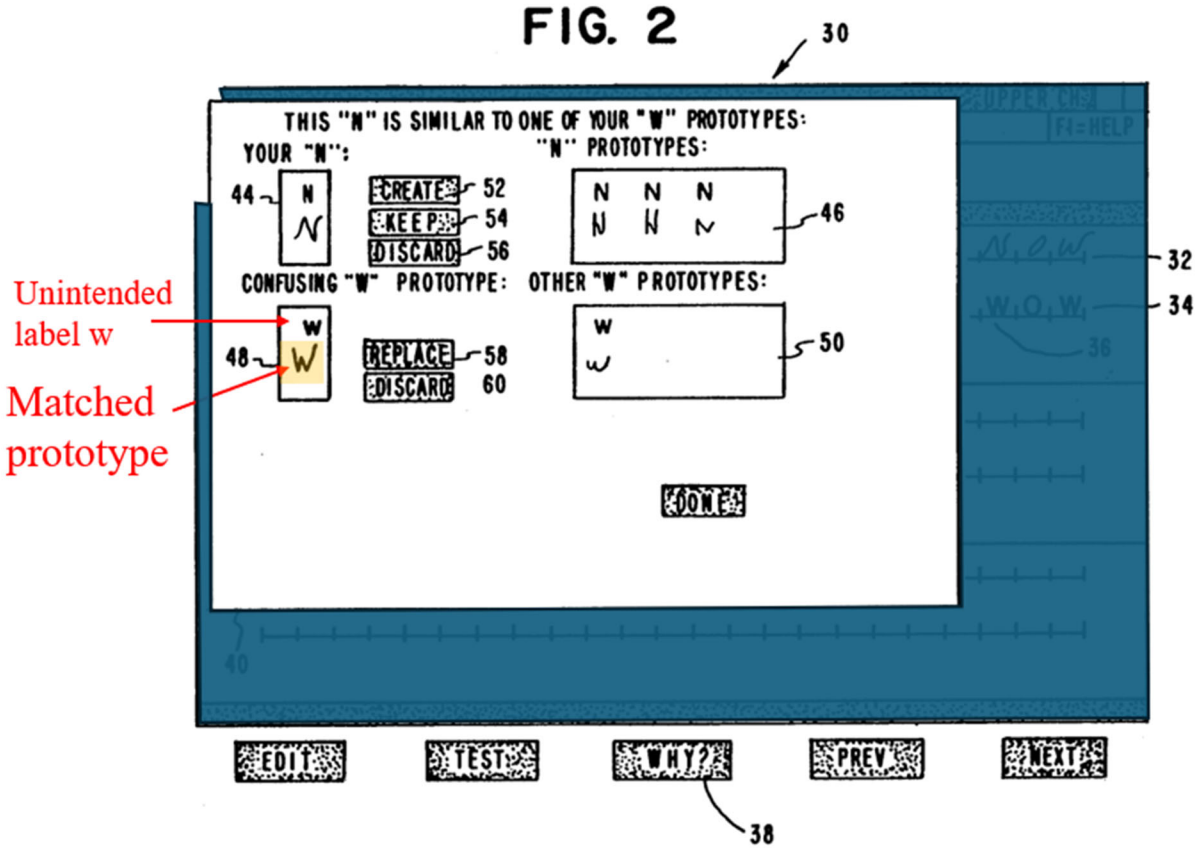
Accordingly, a POSITA would have understood *Sinden* in combination with *Fujisaki* to teach choosing a closest model symbol ("returning a best template") from among an alphabet or library of model symbols representing handwritten symbols ("selected from the plurality of templates that represents one of the plurality of handwriting symbol patterns") that has a vector with the highest correlation value ("as a best handwriting symbol pattern which, according to a predefined rule, is most similar to the handwritten pattern"). *Id.* ¶167.

d. 1[c]: "presenting the best handwriting symbol pattern of the best template."

Sinden in combination with *Fujisaki* teaches this feature. *Beigi* ¶¶168-181. As discussed above in §VIII.A.1.a, a POSITA would have understood *Sinden* to teach that the closest model symbol is displayed, and a POSITA would have understood displaying to constitute "presenting." *Sinden* does not, however, teach the details related to displaying the closest model symbol.

Fujisaki is directed to an improved technique for interactive editing of prototypes in an on-line handwriting recognition system for use in a training program. *Fujisaki*, 4:8-10; *see also id.*, 4:21-23. More particularly, *Fujisaki* discloses a handwriting recognition system and that if the system misrecognizes the user's

handwriting, the user may press a button and the system will display the prototype to which the user's input was matched — "[t]he matched prototype (with unintended label w) is shown in box 48." *Id.*, 5:43-44.



Fujisaki, FIG. 2 (annotated)

In view of the above, a POSITA would have understood *Fujisaki* to provide an explicit teaching that displaying the matched prototype in box 48 comprises displaying the best handwriting symbol pattern of the best template because Figure 2 shows that the handwritten pattern of the matched prototype for W is displayed. *Beigi* ¶171.

A POSITA would have understood *Fujisaki*'s prototypes to be the same thing as *Sinden*'s "model symbols," which are both "templates" as that term is used in the '334 patent. *Fujisaki*, 1:11-13, 3:62-4:4; *Beigi* ¶172. Moreover, a POSITA would have understood *Fujisaki*'s matched prototype to be akin to *Sinden*'s "closest model symbol" because *Fujisaki*'s character matcher performs the same general function as *Sinden* to identify the matched prototype. That is, *Fujisaki* explains that the character matcher, like *Sinden*'s comparison algorithm in Figure 4, compares "unknown characters written by the user" (like *Sinden*'s "unknown symbols") to "prototype characters" (like *Sinden*'s "model symbols") to determine the best match. *Compare Sinden*, 1:67-2:2 ("An unknown handwritten symbol written on a digitizing tablet is compared with symbols in a predefined 'alphabet' or library of model symbols and the closest match chosen.") *with Fujisaki*, 7:35-40 ("a character matcher which compares unknown characters written by the user with prototype characters stored in said character prototype memory to determine the best match between the unknown characters and the prototype characters for producing recognized characters"); *Beigi* ¶173.

A POSITA would have considered it obvious to apply *Fujisaki*'s teaching to display the pattern of the matched prototype (i.e., model symbol) to *Sinden*, and a POSITA would have had a reasonable expectation of success in doing so. *Beigi* ¶174. A POSITA would have recognized that *Sinden* provides few implementation

details for its training mode, and a POSITA looking to implement *Sinden*'s training mode would have been motivated to consider references that disclose such details would have readily identified *Fujisaki*'s techniques as a suitable implementation, as *Fujisaki* is specifically directed to techniques for implementing a training program like *Sinden*'s training mode. *Id*.

Thus, applying *Fujisaki*'s teachings to *Sinden* would have amounted to following an express teaching, suggestion, or motivation in the art, i.e., a suggestion to implement *Sinden*'s interactive technique for editing model symbols in accordance with *Fujisaki*'s teachings for the same purpose. *Beigi* ¶175. It also would have amounted to applying a known technique (*Fujisaki*'s teachings related to its interactive prototype editing technique) to a known device (*Sinden*'s system with a training mode) ready for improvement to yield predictable results (*Sinden*'s training mode implemented with *Fujisaki*'s teachings for a training mode). *Id*.

In addition, a POSITA would have considered it obvious to modify *Sinden* to implement *Fujisaki*'s teaching to display the pattern of the matched prototype (i.e., model symbol) because a POSITA would have recognized that it would improve the functionality of *Sinden*'s system. *Beigi* ¶176. As discussed, *Fujisaki* is directed to an improved prototype editing technique akin to *Sinden*'s training mode that gives the user additional knowledge about why the user's handwritten input was misrecognized, including by displaying the template to which the user's handwriting

was matched. *Fujisaki*, 4:23-30. *Fujisaki* explains that its technique advances the goal of achieving optimal recognition performance by improving the separation of the stored prototypes through informing the user about similar prototypes. *Id.*, 4:8-15. This is a common objective of all handwriting recognition systems, including *Sinden*'s system. *Beigi* ¶¶177-178 (citing EX1022 at 79); *Sinden*, 1:13-18, 8:17-19, 8:51-57. Thus, a POSITA would have considered it obvious to modify *Sinden* to implement *Fujisaki*'s teaching to display the pattern of the matched prototype. *Beigi* ¶178. The combination would have amounted to the use of a known technique (*Fujisaki*'s teaching to display the pattern corresponding to the prototype) to improve similar devices (*Sinden* and *Fujisaki* both disclose handwriting recognition systems with the ability to modify the stored templates) in the same way (to improve recognition performance). *Beigi* ¶179.

A POSITA would have had a reasonable expectation of success in making the modification because *Sinden* and *Fujisaki* disclose similar systems (e.g., processor-based on-line handwriting recognition systems), and *Fujisaki* itself shows that an ordinary artisan would have understood how to implement its functionality. *Id.* ¶180. For example, *Sinden* already teaches comparing the user's unknown symbol to a library of model symbols (i.e., templates) and identifying the closest model symbol, and it would not have been difficult to program *Sinden* to display the closest model

symbol as taught by *Fujisaki* because there were known techniques for displaying such data, as corroborated by *Fujisaki* itself. *Id*.

Accordingly, a POSITA would have understood the *Sinden-Fujisaki* combination to teach displaying the handwritten pattern of closest model symbol ("presenting the best handwriting symbol pattern of the best template."). *Beigi* ¶181.

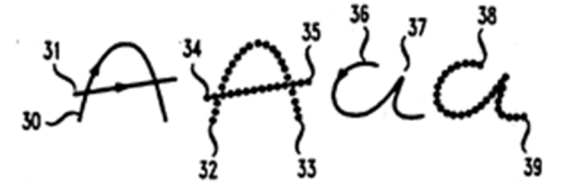
2. Claim 2: "The method according to claim 1, wherein the at least one of the plurality of handwriting symbol patterns of each of the plurality of templates is represented by geometrical information relating to an appearance of said handwriting symbol pattern."

Sinden in combination with *Fujisaki* teaches this claim. *Beigi* ¶¶182-186.

For example, *Sinden* discloses that model symbols are comprised of a sample "set of x-y coordinates." *Sinden*, 2:65-3:5. *Sinden* further discloses that unknown symbols and model symbols are represented as vectors for purposes of comparison. *Id.*, 4:21-22. *Sinden* further provides examples of "handwritten symbols and dots representing samples taken for such symbols." *Sinden*, 2:29-30, FIG. 3. With reference to Figure 3, *Sinden* explains that "[t]he block letter 'A' shown on the left can be written with two strokes 30 and 31 with the strokes moving in the directions shown by the arrows." *Id.*, 4:37-40. Alternatively, "[t]he dotted version of letter 'A' shows samples taken as the letter is written with the speed of the pen tip relatively constant." *Id.*, 4:40-42. Importantly, "the samples for symbols that appear to be

indentical [*sic*] can be quite different, depending on how the symbols were actually written." *Id.*, 4:55-58.

FIG. 3



Sinden, FIG. 3

Sinden's teaching of representing model symbols as vectors comprising a set of x-y coordinates is consistent with the '334 patent, which discloses that the "geometrical information allows the template to be compared to a handwritten pattern" and which can be "represented by positions of discrete dots, which may easily be compared to a handwritten pattern." *Id.*, 4:47-49, 4:53-55; *Beigi* ¶185. A POSITA would have further understood that *Sinden*'s vectors relate to the appearance of the symbol pattern because a POSITA would have understood that the x-y coordinates of the samples represent a shape or appearance of the symbol in two-dimensional space. *Beigi* ¶185.

Accordingly, a POSITA would have understood the *Sinden-Fujisaki* combination to teach that each model symbol comprises a vector formed from a sample set of x-y coordinates ("wherein the at least one of the plurality of handwriting symbol patterns of each of the plurality of templates is represented by

geometrical information") and that the set of x-y coordinates represent a shape or appearance of the symbol in two-dimensional space ("relating to an appearance of said handwriting symbol pattern."). *Beigi* ¶186.

3. Claim 8: "The method according to claim 1, wherein the handwritten pattern is entered on an input area on the screen and the best handwriting symbol pattern of the best template is presented in a presentation area on the screen, wherein said presentation area overlaps the input area."

Sinden in combination with *Fujisaki* teaches this claim. *Beigi* ¶¶187-199.

a. "The method according to claim 1, wherein the handwritten pattern is entered on … the screen"

First, Petitioners note that a POSITA would have understood that the term "***the*** screen" in the claim means "***a*** screen." There is no antecedent basis for "the screen," but a POSITA would have understood "the screen" is a typographical error that should be interpreted as "a screen." *Beigi* ¶188.

As explained in §VIII.A.1.a, *Sinden* explains that handwritten symbols are written on the digitizing tablet or pad, and a POSITA would have understood that *Sinden*'s digitizing tablet or pad includes a display screen. Thus, a POSITA would have understood *Sinden* to disclose "wherein the handwritten pattern is entered on a screen." *Id.* ¶189. If PO argues or the Board finds that *Sinden* does not disclose that its digitizing tablet or pad includes a display screen, it nevertheless would have been

obvious to implement *Sinden*'s digitizing tablet or pad with a display screen in view of *Fujisaki* for the same reasons discussed in §VIII.A.1.a. *Id*.

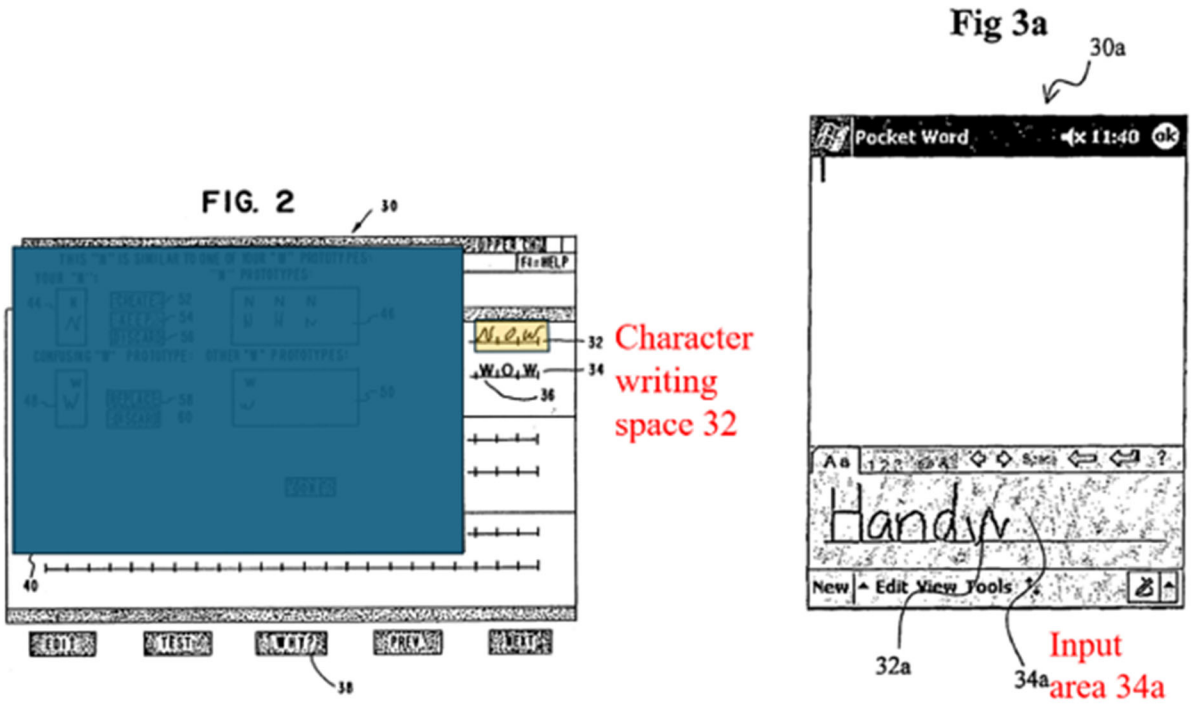
Accordingly, a POSITA would have understood the *Sinden-Fujisaki* combination to teach that the user's unknown symbol is input on the digitizing tablet that includes a screen ("wherein the handwritten pattern is entered on … the screen"). *Beigi* ¶190.

b. "… on an input area … and the best handwriting symbol pattern of the best template is presented in a presentation area on the screen, wherein said presentation area overlaps the input area."

Sinden discloses that, in training mode, the closest model symbol is chosen and displayed, and then the user can indicate whether the choice was correct or not, and if incorrect, what the correct choice is. *Sinden*, 8:3-19. *Sinden* does not describe the details of the graphical user interface for its training mode. A POSITA looking to implement *Sinden*'s training mode would have readily identified *Fujisaki*. *Beigi* ¶191.

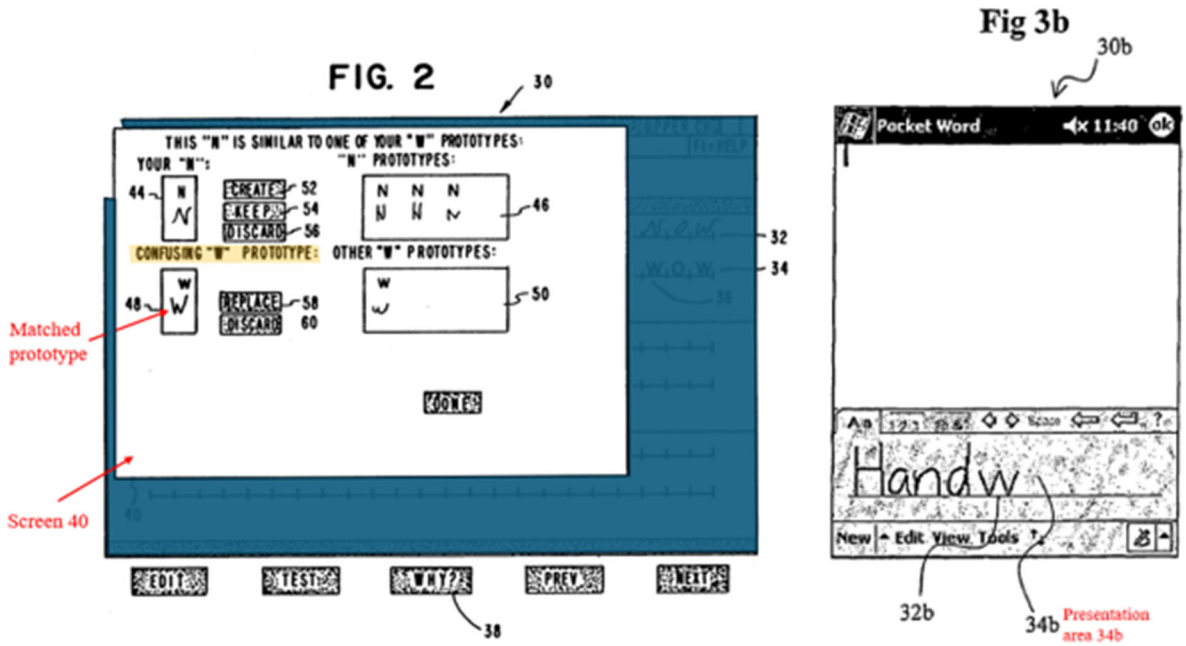
Fujisaki teaches a graphical user interface applicable to a training program. *Fujisaki*, 4:18-23; *Beigi* ¶192. In particular, *Fujisaki* teaches that the user's handwritten input is entered in "character writing space 32," which, as illustrated in Figure 2, is part of a larger window interface. *Id*., 5:30-31. A POSITA would have understood the window that includes character writing space 32 is an area where the

user inputs handwriting. *Beigi* ¶193. This is consistent with how the '334 patent describes "an input area on the screen." *'334Pat.,* 7:65-66; FIG. 3a; *Beigi* ¶193.



Fujisaki, FIG. 2 (annotated); *'334Pat.*, FIG. 3a (annotated)

Fujisaki further teaches that upon pressing the "WHY?" button 38, screen 40 appears. *Fujisaki*, 5:35-37. And *Fujisaki* teaches displaying the prototype (i.e., template) to which the user's input was matched as part of screen 40. *Id.*, 5:38-45. The user can then take appropriate action with respect to the matched prototype. *Fujisaki*, 5:51-6:27 (e.g., keep, discard, or replace the matched prototype).



Fujisaki, FIG. 2 (annotated); *'334Pat.*, FIG 3b (annotated)

Fujisaki's screen 40 is consistent with how the '334 patent describes "a presentation area on the screen, wherein said presentation area overlaps the input area." *'334Pat.,* 8:4-6, FIG. 3; *Beigi* ¶195. A POSITA would have understood that *Fujisaki*'s screen 40, including box 48 which displays the prototype to which the user's input was matched, to overlap the input window to which character writing space 32 belongs. *Beigi* ¶195. This understanding is also consistent with Plaintiff's infringement contentions in the co-pending district court case. EX1023 at 12-14.

A POSITA would have considered it obvious to modify *Sinden* to implement *Fujisaki*'s teachings related to the display of a screen that overlaps the input window with a character writing space and would have had a reasonable expectation of

success in doing so. *Beigi* ¶196. A POSITA would have considered *Fujisaki*'s graphical user interface to be a suitable implementation for *Sinden*'s training mode, as *Fujisaki* is specifically directed to a user interface for a training program similar to *Sinden*'s training mode. Thus, the combination would have amounted to applying a known technique (*Fujisaki*'s graphical user interface for an interactive prototype editing technique) to a known device (*Sinden*'s system with a training mode) ready for improvement to yield predictable results (*Sinden*'s training mode implemented with *Fujisaki*'s teachings related to a graphical user interface for a training program). *Id.*

A POSITA would have had a reasonable expectation of success in making the combination because *Fujisaki*'s teachings related to its graphical user interface are based on conventional graphics (e.g., windows). Moreover, *Fujisaki* and *Sinden* are similar, processor-based handwriting recognition systems, and *Fujisaki* itself demonstrates that a person having ordinary skill in the art would have been able to implement its teachings in *Sinden*'s system. *Id.* ¶197.

In sum, a POSITA would have understood the *Sinden-Fujisaki* combination to teach the user inputting *Sinden*'s unknown symbol on *Sinden*'s digitizing tablet including a display screen in *Fujisaki*'s character writing space, and that the handwritten pattern of *Sinden*'s closest model symbol is displayed as part of another, overlapping window on the screen of *Sinden*'s digitizing tablet or pad. *Id*. ¶198. As

explained in §VIII.A.1.c(ii), a POSITA would have understood that the unknown symbol is "the handwritten pattern" and, as explained in §VIII.A.1.d, the pattern corresponding to the closest model symbol represents "the best handwriting symbol pattern of the best template."

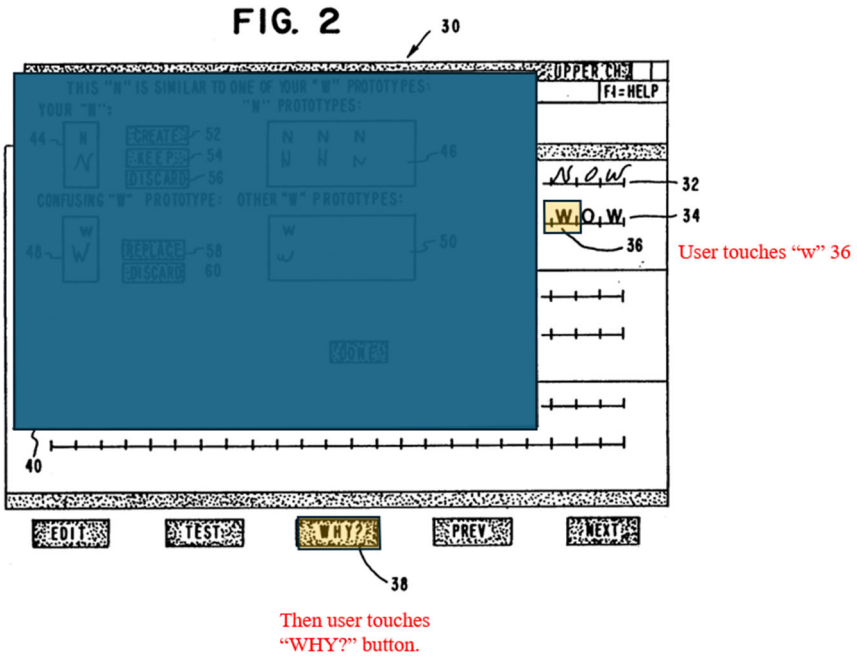
Accordingly, a POSITA would have understood the *Sinden-Fujisaki* combination to teach the user inputting *Sinden*'s unknown symbol ("the handwritten pattern") on *Sinden*'s digitizing tablet or pad with a screen in *Fujisaki*'s character writing space which is part of a larger input area on a screen ("is entered on an input area on the screen") and the pattern corresponding to *Sinden*'s closest model symbol ("and the best handwriting symbol pattern of the best template") is displayed as part of an overlapping window on the screen of *Sinden*'s digitizing tablet or pad ("is presented in a presentation area on the screen, wherein said presentation area overlaps the input area."). *Beigi* ¶199.

4. Claims 9 and 10: "The method according to claim 1, wherein the step of recognizing comprises returning at least one alternative template selected from the plurality of templates … wherein the step of presenting comprises presenting the at least one of the plurality of handwriting symbol patterns of the at least one alternative template at a request of a user."

Sinden in combination with *Fujisaki* teaches these claims. *Beigi* ¶¶200-212. *Sinden* discloses that, in training mode, the closest model symbol is chosen and displayed, and then the user can indicate whether the choice was correct or not, and

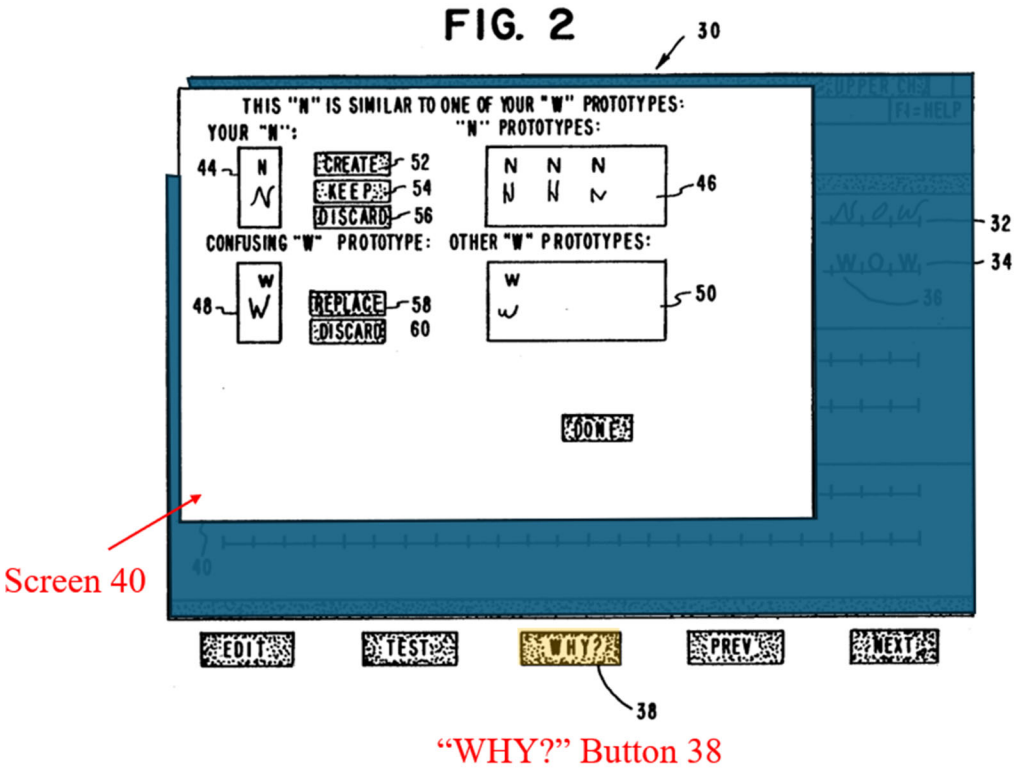
if incorrect, what the correct choice is. *Sinden*, 8:3-19. *Sinden* does not describe the details of how the user indicates whether the choice was correct or incorrect, or otherwise what the correct choice is. A POSITA looking to implement *Sinden*'s training mode would have readily identified *Fujisaki* and would have considered *Fujisaki*'s technique for prototype editing to be suitable for implementing *Sinden*'s training mode, as *Fujisaki*'s technique is used for the same purpose as *Sinden*'s training mode — to modify and correct a set of stored model symbols (i.e., templates, or prototypes). *Beigi* ¶201.

Fujisaki teaches that after the user inputs an unknown symbol, "[t]he user then utilizes the stylus 14 … to touch the 'w' 36 which is incorrect, and then touch[] the 'WHY?' button 38 to determine the cause of the error." *Fujisaki*, 5:33-36.



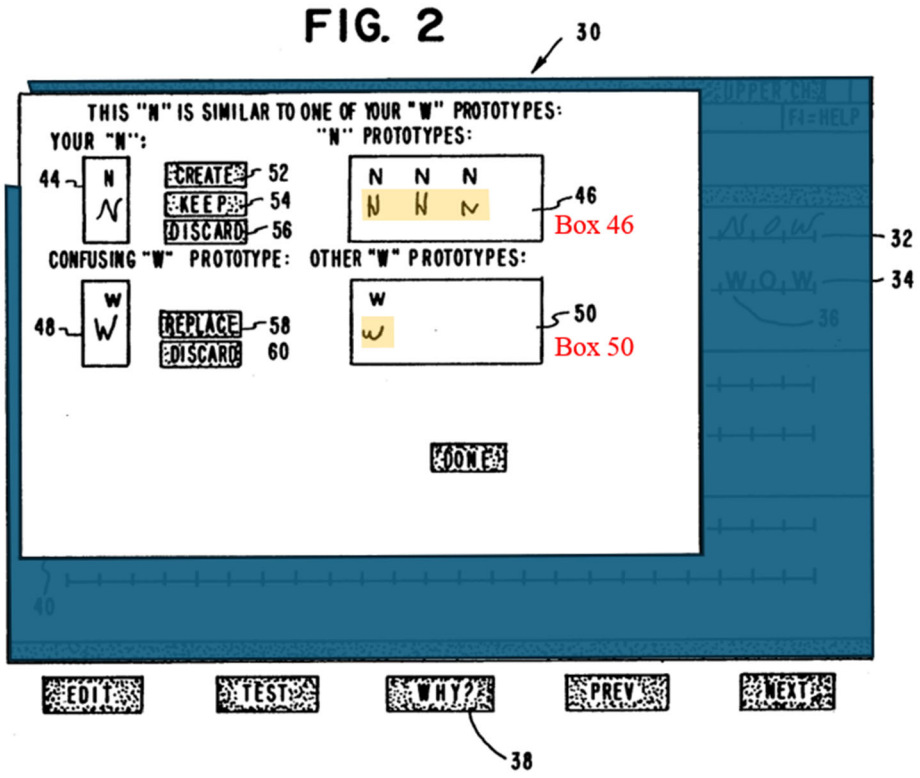
Fujisaki, FIG. 2 (annotated)

"Screen 40 then appears in response to the touching of button 38." *Id.*, 5:36-37.



Fujisaki, FIG. 2 (annotated)

Fujisaki's screen 40 presents a "matched prototype … in box 48." *Fujisaki*, 5:39-44. On the same screen, *Fujisaki* presents multiple other prototypes. *Id.*, 5:30-50. *Fujisaki* discloses that "existing prototypes for n are shown in box 46. *Id.*, 5:41-42, FIG. 2 (boxes 44, 46). Similarly, "[t]he matched prototype (with unintended label w) is shown in box 48; other prototypes for this (unintended) label w are shown in box 50." *Id.*, 5:43-45, FIG. 2 (boxes 48, 50).



Fujisaki, FIG. 2 (annotated)

This is consistent with the '334 patent's disclosure related to claims 9 and 10, as the other prototypes are meant to include the other potentially correct matches. *'334Pat.,* 5:45-54, 8:13-17, FIG. 4; *Beigi* ¶205. Thus, a POSITA would have considered *Fujisaki*'s teaching to display the pattern of additional prototypes for the intended and unintended labels after when the user presses the "WHY?" button 38 to constitute presenting the handwritten pattern of at least one alternative template selected from a plurality of templates at the request of a user. *Beigi* ¶206.

A POSITA would have considered it obvious to modify *Sinden* to implement these teachings from *Fujisaki* and would have had a reasonable expectation of

success in doing so. *Beigi* ¶207. A POSITA would have understood that *Fujisaki*'s teachings of displaying additional prototypes for the intended and unintended labels would have been an efficient technique for allowing the user to identify the correct choice and would have assisted the user in understanding what the correct choice is. *Id.* ¶207. Thus, a POSITA would have considered the combination to amount to the use of known technique (*Fujisaki*'s teaching to display alternative prototypes) to improve similar devices (*Sinden* and *Fujisaki* teach similar handwriting recognition systems and training programs) in the same way (to provide the user more knowledge about how to correct the set of model symbols or prototypes in an efficient manner). *Id*.

A POSITA would have considered the *Sinden-Fujisaki* combination to teach displaying the closest model symbol and alternative model symbols from the library for symbols that the user intended or not. *Id*. ¶208.

The '334 patent does not disclose any details for how the alternative interpretations are determined and returned or otherwise require that they be determined in any particular manner. *Id*. ¶209. A POSITA would have understood that to display the alternative model symbols, the system returns the alternative model symbols. *Id*. At a minimum, *Fujisaki*'s teaching amount to an express suggestion to determine and return alternative model symbols. Techniques for determining such alternatives were known and would have been within the skill of

an ordinary artisan to implement. *Id*. (citing EX1024 at 3:62-4:9, 4:48-56, FIGs. 3A, 3B, 5:1-19). Thus, a POSITA would have considered the *Sinden-Fujisaki* combination to render obvious returning alternative model symbols ("alternative templates"). *Id*. ¶210.

Moreover, a POSITA would have understood that it would be useful to implement *Sinden*'s training mode to be triggered or activated manually with the user's press of a button. *Beigi* ¶211. A POSITA would have understood that it would have frustrated the ordinary use of the *Sinden-Fujisaki* system if, for example, each time the user entered an unknown symbol, the system automatically displayed the closest model symbol and alternative model symbols without first requiring a request from the user to do so. *Id*. Thus, a POSITA would have appreciated that implementing *Fujisaki*'s teaching related to the "WHY?" button would have improved the *Sinden-Fujisaki* combination by providing a less frustrating experience while using the system. *Id*.

Accordingly, a POSITA would have understood the *Sinden-Fujisaki* combination to teach displaying alternative model symbols in addition to the closest model symbol ("the step of recognizing comprises returning at least one alternative template selected from the plurality of templates") and displaying the handwritten pattern of the alternative model symbols in response to the user pressing a button

("presenting the at least one of the plurality of handwriting symbol patterns of the at least one alternative template at a request of a user."). *Id.* ¶212.

5. Claim 15

a. 15[pre]: "A method performed by a handwriting recognition device for sequentially presenting a plurality of recognized handwritten symbols, the recognition device having a processor and detection means for detecting entry of a handwritten symbol, the method comprising for each handwritten pattern the steps of:"

To the extent the preamble is limiting, *Sinden* teaches this feature. *Beigi* ¶¶213-219.

As discussed in §VIII.A.1.a, a POSITA would have understood *Sinden* to disclose, with reference to Figure 8, "[a] method … for presenting a recognized handwritten symbol." *Sinden* also teaches a handwriting recognition device "having a processor and detection means for detecting entry of a handwritten symbol" for the same reasons discussed in §VIII.A.1.a.

Sinden further discloses that the training method of Figure 8 "can be continued until the performance of the system is satisfactory." *Sinden*, 8:17-19. A POSITA would have understood this to mean that the user or trainer could repeatedly perform the method of Figure 8 as needed to achieve optimal performance, and that this would involve repeating the method at least two times over time because *Sinden* discloses that there is an entire library or alphabet of model symbols to which the

method of Figure 8 is applicable. *Sinden*, 1:67-2:2 ("An unknown handwritten symbol written on a digitizing tablet is compared with symbols in a predefined 'alphabet' or library of model symbols and the closest match chosen."); 7:63-66; *Beigi* ¶215. A POSITA would have further understood that repeating the method of Figure 8 at least two times would constitute "sequentially presenting a plurality of recognized handwritten symbols" because each time the method of Figure 8 is performed, another "closest model symbol" would be displayed, one after another. *Id*. ¶216. And as discussed in §VIII.A.1.a, displaying the closest model symbol constitutes "presenting" a "recognized handwritten symbol."

Sinden further discloses that the method of Figures 2, 4, and 8 operate for "each handwritten pattern" because *Sinden* discloses recording an individual vector for an unknown symbol (§VIII.A.1.b), comparing that vector to vectors for a library of model symbols and choosing the closest model symbol (§VIII.A.1.c(ii), §VIII.A.1.c(iii)), and then displaying the closest model symbol (§VIII.A.1.d). By contrast, *Sinden* does not disclose, for example, choosing a plurality of best model symbols ***and then*** displaying the chosen plurality of best model symbols together in a set. *Beigi* ¶218. *Sinden*'s methods are therefore performed for each unknown symbol ("each handwritten pattern"). *Id*.

Accordingly, a POSITA would have understood *Sinden* to teach a method with respect to Figure 8 that may be performed two or more times, one after another

("[a] method … for sequentially presenting a plurality of recognized handwritten symbols") implemented by the system in *Sinden*'s which has a processor and a digitizing tablet or pad ("performed by a handwriting recognition device … the recognition device having a processor and detection means for detecting entry of a handwritten symbol") each step of the method performed for each unknown symbol ("comprising for each handwritten pattern the steps of:"). *Beigi* ¶219.

b. 15[a]

Sinden's teaches limitation 15[a] for the same reasons discussed in §VIII.A.1.b. *Beigi* ¶220.

c. 15[b]

Sinden teaches the "recognizing" and "comparing" limitations of 15[b] for the same reasons discussed in §VIII.A.1.c(i) and §VIII.A.1.c(ii). *Beigi* ¶221.

Sinden also teaches the "returning" limitation of 15[b]. *Beigi* ¶222. There are two differences between the "returning" limitation of claim 1 and the "returning" limitation of claim 15. First, claim 15 recites "returning a best interpretation of the handwritten pattern" rather than "returning a best template," as recited in claim 1. As explained in §VIII.A.1.c(iii), a POSITA would have understood *Sinden* to teach choosing a closest model symbol ("returning a best template").

Sinden discloses "returning a best interpretation of the handwritten pattern" for the same reasons explained in §VIII.A.1.c(iii) because a POSITA would have

understood the ’334 patent to disclose “returning the best interpretation of the handwritten pattern” encompasses “returning a best template.” *Beigi* ¶224. The ’334 patent states that “the term ‘best interpretation’ may according to one embodiment imply ‘the pattern of a best template.’” *’334Pat.,* 4:35-39; *see also id.*, claim 19. A POSITA would have understood that *Sinden*’s “closest model symbol” represents the handwritten pattern of a model symbol that most closely matches the handwritten pattern of the user’s unknown symbol because the model symbols are handwritten patterns. *Sinden*, 3:42-46, *Beigi* ¶225. Thus, a POSITA would have understood that returning the “closest model symbol” also returns the pattern of the closest model symbol. *Id.* Accordingly, a POSITA would have understood *Sinden* to disclose choosing the closest model symbol (“returning a best interpretation of the handwritten pattern”). *Id*.

Moreover, a POSITA would have understood that *Sinden*’s closest model symbol (the “best interpretation of the handwritten pattern”) is “based on one of the plurality of handwriting symbol patterns as a best handwriting symbol pattern of a best template selected from the plurality of templates” because the closest model symbol represents the handwriting symbol pattern of the model symbol, among a plurality of model symbols, that most closely matches the pattern of the user’s unknown symbol. *Beigi* ¶226. A POSITA would have understood that *Sinden*’s closest model symbol is selected from a plurality of templates “according to a

predefined rule" and is "most similar to the handwritten pattern" for the same reasons discussed in §VIII.A.1.c(iii).

The second difference is that claim 15 recites "the different ones of the plurality of handwriting symbol patterns of said at least two of the plurality of templates return different best interpretations when being most similar to the handwritten pattern." As explained in §VIII.A.1.c(ii), *Sinden* also discloses implementing the system with multiple model symbols (i.e., templates) for a single symbol to account for variations in the way that different users write. Thus, a POSITA would have understood *Sinden* to teach implementing the system such that each model symbol is different from every other model symbol, so each "closest model symbol" returned would be different from every other "closest model symbol" returned. *Beigi* ¶227.

This is consistent with how the '334 patent describes this feature. *See* '*334Pat.*, 7:52-56 ("The database comprises at least two templates that represent different patterns, which represent different ways of writing a single character. For each template in the database, when being most similar to the handwritten pattern, the device returns a unique best interpretation."); *Beigi* ¶228. In other words, the '334 patent explains that each template represents a unique pattern, so when it is determined to be the best match to the handwritten pattern, a different "best interpretation" is returned. *Id.*

Accordingly, a POSITA would have understood *Sinden* to teach choosing the closest model symbol ("returning a best interpretation of the handwritten pattern, said best interpretation being based on one of the plurality of handwriting symbol patterns as a best handwriting symbol pattern of a best template") from among an alphabet or library of model symbols ("selected from the plurality of templates") that has a vector with the highest correlation value ("that, according to a predefined rule, is most similar to the handwritten pattern") wherein each model symbol represents a variation on how model symbols are written ("wherein the different ones of the plurality of handwriting symbol patterns of said at least two of the plurality of templates return different best interpretations when being most similar to the handwritten pattern"). *Id.* ¶229.

d. 15[c]: "presenting the best interpretation."

Sinden in combination with *Fujisaki* teaches this feature. *Beigi* ¶¶230-232. The difference between limitation 15[c] and 1[c] is that limitation 15[c] requires presenting the "best interpretation" rather than "the best handwriting symbol pattern of the best template" as recited in claim 1. As explained in §VIII.A.5.c, a POSITA would have understood a "best interpretation" to encompass the pattern of a "best template." Accordingly, a POSITA would have understood the *Sinden-Fujisaki* combination to teach this feature for the same reasons explained in §VIII.A.1.d. *Beigi* ¶232.

6. Claim 19: "The method according to claim 15, wherein the best interpretation is the handwriting symbol pattern of the best template, and wherein the step of presenting comprises presenting the best handwriting symbol pattern of the best template on a screen."

Sinden in combination with *Fujisaki* teaches this claim. *Beigi* ¶¶233-237.

As explained in §VIII.A.5.c, a POSITA would have understood *Sinden* to disclose choosing the closest model symbol ("returning a best interpretation of the handwritten pattern") and that the closest model symbol represents the handwriting symbol pattern of the model symbol (i.e., template) that most closely matches the pattern of the user's unknown symbol.

As explained in §VIII.A.1.d and §VIII.A.5.d, the *Sinden-Fujisaki* combination teaches displaying the handwritten pattern of the closest model symbol ("presenting the best interpretation.").

As explained in §VIII.A.3, a POSITA would have understood the *Sinden-Fujisaki* combination to teach the pattern corresponding to *Sinden*'s closest model symbol is displayed as part of a window on the screen of *Sinden*'s digitizing tablet or pad.

Accordingly, a POSITA would have understood the *Sinden-Fujisaki* combination to teach displaying the handwritten pattern of the closest model symbol ("wherein the best interpretation is the handwriting symbol pattern of the best template") on the screen of *Sinden*'s digitizing tablet or pad ("and wherein the step

of presenting comprises presenting the best handwriting symbol pattern of the best template on a screen."). *Beigi* ¶237.

7. Claim 20: "The method according to claim 19, wherein each of the plurality of handwriting symbol patterns of a template is represented by geometrical information relating to an appearance of each of said plurality of handwriting symbol patterns."

Sinden in combination with *Fujisaki* teaches this claim for the reasons discussed in §VIII.A.2. *Beigi* ¶238.

8. Claim 26: "The method according to claim 15, wherein the handwritten pattern is entered on an input area on a screen and the best interpretation is presented in a presentation area on the screen, whereby said presentation area overlaps the input area."

Sinden in combination with *Fujisaki* teaches this claim for the same reasons discussed in §VIII.A.3 and §VIII.A.5.c. *Beigi* ¶239. As noted in §VIII.A.5.c, a POSITA would have understood "the best interpretation" to encompass the pattern of the best template, i.e., the pattern of *Sinden*'s closest model symbol. *Id.*

9. Claims 27 and 28: "The method according to claim 15, wherein the step of recognizing comprises returning at least one alternative interpretation. … wherein the step of presenting comprises presenting the at least one alternative interpretation at the request of a user."

Sinden in combination with *Fujisaki* teaches these claims for the same reasons discussed in §VIII.A.4 and §VIII.A.5.c. *Beigi* ¶240. As noted in §VIII.A.5.c, a POSITA would have understood "the best interpretation" to encompass the pattern

of the best template, i.e., the pattern of *Sinden*'s closest model symbol. *Id.* Relatedly, because the "best interpretation" may be the "pattern of the best template," a POSITA would have understood that an "alternative interpretation" may be a pattern of an alternative template. *Id*.

B. GROUND 1B: *Sinden* in combination with *Fujisaki* and *Collins* Renders Obvious Claims 3, 4, 21, and 22

1. Motivation to modify the *Sinden-Fujisaki* combination in view of *Collins*

Collins "relates to the field of formatting handwritten data displayed on computer systems." *Collins*, 1:11-12. As background, *Collins* discloses that, "[g]enerally, a pen-based computer system captures digital ink in the form of many polylines." *Id.*, 1:57-58. "The system samples points along [] each handwritten stroke or polyline at a predetermined sampling frequency. Those points represent the inputted graphic data and are digitally stored in memory." *Id.*, 1:66-2:2. "The system derives an image of the graphic data by connecting the stored points with line segments. Thus, each polyline is a collection of the line segments connecting the stored points." *Id.*, 2:2-5.

The problem with the prior art "is the amount of time that is typically required for the system to display … the digital ink representing the graphic data," which "can take several seconds." *Id*., 2:19-23. *Collins* notes that some systems draw "into an off-screen bitmap, and then display the bitmap," and "[t]hese methods and

devices can accommodate 'instant' screen updates, but they still generally require several seconds to create a bitmap representing the graphic data." *Id*., 2:42-46.

In view of these problems, *Collins* teaches reducing the set of sample points that are stored by the system so that display can occur more rapidly. *Id.*, 3:35-40. *Collins* teaches that the system can initially draw an "approximate rendition" and then apply smoothing techniques to draw a "fully rendered" form. *Id.*, 3:21-29. In Figure 8C, *Collins* shows an "approximate rendition being displayed is the result of simple straight-line connections between the retained points." *Id.*, 13:65-14:1. In Figure 8D, *Collins* shows the fully rendered form of the handwritten word "ape." *Id.*, 14:6-7. Application of smoothing techniques results in a fully rendered form that more closely matches the original curvature of the handwritten graphic data. *Id*.

FIG. 8C

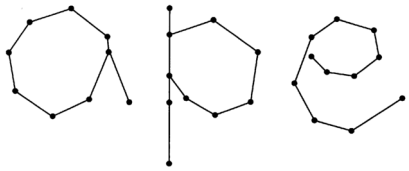
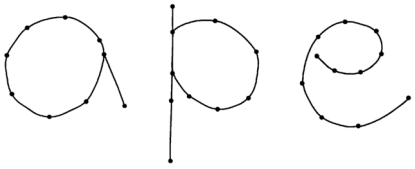


FIG. 8D



Collins, FIGs. 8C and 8D

Collins further teaches that "[d]epending on the availability of machine idle time, the system prepares renditions of both the next and the prior pages of graphic data off-screen, so that they are ready to be displayed as well." *Id*., 7:30-35. "Given sufficient idle time, the system renders bitmaps in the following order of decreasing priority: (1) a reduced bitmap of the current page; (2) a reduced bitmap of the next page; (3) a reduced bitmap of the prior page; (4) a full bitmap of the current page; (5) a full bitmap of the next page; and (6) a full bitmap of the prior page." *Id*., 7:37-42. In this manner, given enough idle time, when the user loads the next page, it will displayed instantly, as it was already rendered. *Id*., 9:7-24.

A POSITA would have considered it obvious to modify the *Sinden-Fujisaki* combination to implement the above-described teachings from *Collins* and would have had a reasonable expectation of success in doing so. *Beigi* ¶¶248-252. A POSITA would have understood that *Collins*' teachings are applicable to handwriting recognition systems like the *Sinden-Fujisaki* combination because *Collins* discloses that its teachings are applicable to, for example, "Microsoft Windows for Pen™" which "provides certain handwriting recognition algorithms." *Collins*, 8:42-58. Moreover, a POSITA would have understood that handwriting recognition systems need to display graphical data and would benefit from *Collins*' teachings to provide faster rendering of handwriting recognition results. *Beigi* ¶250. This is true with respect to the *Sinden-Fujisaki* combination because, as explained

in §VIII.A.1.d, the combination teaches displaying the pattern of the closest model symbol, which, as explained in §VIII.A.2, is comprised of graphical data including x-y coordinate samples. *Id.*

A POSITA would have considered the combination to be obvious because it amounted to the use of a known technique (*Collins*' teachings related to rendering graphical data) to a known device (the *Sinden-Fujisaki* combination) ready for improvement (the *Sinden-Fujisaki* device already stores graphical data) to yield predictable results (the *Sinden-Fujisaki-Collins* combination that displays graphical data in accordance with *Collins*' teachings). *Id*. ¶251.

A POSITA would have had a reasonable expectation of success in making the combination because it would have been within the skill of an ordinary artisan to program the *Sinden-Fujisaki* combination to render graphical data in accordance with *Collins*' teachings, as corroborated by *Collins* itself. *Collins* expressly states that its disclosure may be applied to handwriting recognition systems, and both *Sinden* and *Fujisaki* are handwriting recognition systems, and *Sinden* already discloses storing its model symbols as a collection of samples of data corresponding to x-y coordinates. *Id*. ¶252.

2. Claim 3: "The method according to claim 2, wherein the geometrical information comprises information of positions of a number of dots representing the at least one of the plurality of writing symbol patterns, said at least one of the plurality of handwriting symbol patterns being presented by lines drawn between the dots."

Sinden in combination with *Fujisaki* and *Collins* teaches this claim. *Beigi* ¶¶253-256. As explained in §VIII.A.2, a POSITA would have understood *Sinden* to teach that each model symbol comprises a vector formed from a sample set of x-y coordinates ("wherein the at least one of the plurality of handwriting symbol patterns of each of the plurality of templates is represented by geometrical information") and that the x-y coordinates represent a shape or appearance of the symbol in two-dimensional space ("relating to an appearance of said handwriting symbol pattern").

Sinden further teaches that sample set of x-y coordinates may be represented as dots. *Sinden*, 2:30-31; *Beigi* ¶255. *Sinden* does not expressly disclose that when displaying the pattern represented by closest model symbol, that the display is done by drawing lines between the dots. Nevertheless, a POSITA would have considered it obvious to do so in view of *Collins*. As explained in §VIII.B.1, *Collins* discloses rendering graphical data by straight-line connections between the retained points. A POSITA would have considered it obvious to apply this teaching to the *Sinden-Fujisaki* combination and would have had a reasonable expectation of success in doing so for the reasons discussed in §VIII.B.1. *Beigi* ¶255.

Accordingly, a POSITA would have understood the *Sinden-Fujisaki-Collins* combination to teach each model symbol comprises a vector formed from a sample set of x-y coordinates, where each sample may be represented by dots ("the geometrical information comprises information of positions of a number of dots representing the at least one of the plurality of writing symbol patterns") and that displaying the handwriting pattern of the closest model symbol involves drawing lines between the dots ("said at least one of the plurality of handwriting symbol patterns being presented by lines drawn between the dots."). *Id.* ¶256.

3. Claim 4: "The method according to claim 1, wherein the step of presenting comprises presenting the whole best handwriting symbol pattern of the best template at once."

Sinden in combination with *Fujisaki* and *Collins* teaches this claim. *Beigi* ¶¶257-259.

As explained in §VIII.B.1, *Collins* teaches rendering a bitmap image of a page off-screen, and given sufficient idle time, when the user requests display of the screen, the fully rendered screen will be rendered instantly. Thus, a POSITA would have understood the *Sinden-Fujisaki-Collins* combination to teach rendering a screen, including the handwriting pattern of the closest model symbol, off-screen, and displaying the entire handwriting pattern of the closest model symbol instantly. *Beigi* ¶258.

Accordingly, a POSITA would have understood the *Sinden-Fujisaki-Collins* combination to teach displaying the entire handwriting pattern of the closest model symbol instantly ("wherein the step of presenting comprises presenting the whole best handwriting symbol pattern of the best template at once."). *Beigi* ¶259.

4. Claim 21: "The method according to claim 20, wherein the geometrical information comprises information of positions of a number of dots representing each of the plurality handwriting symbol patterns, said each of the plurality of handwriting symbol patterns being presented by lines drawn between the dots."

Sinden in combination with *Fujisaki* and *Collins* teaches this claim for the reasons discussed in §VIII.B.2. *Beigi* ¶260.

5. Claim 22: "The method according to claim 15, wherein the step of presenting comprises presenting the whole best handwriting symbol pattern represented by the best interpretation at once."

Sinden in combination with *Fujisaki* and *Collins* teaches this claim. *Beigi* ¶261. As explained in §VIII.A.5.c, *Sinden*'s closest model symbol is the claimed "best interpretation," and the *Sinden-Fujisaki-Collins* combination otherwise teaches this claim for the reasons discussed in §VIII.B.3. *Id.*

C. GROUND 2: *Sinden* in combination with *Fujisaki* and *Sklarew* Renders Obvious Claims 15 and 16

1. Claims 15 and 16

Sinden in combination with *Fujisaki* and *Sklarew* teaches this claim. *Beigi* ¶¶262-280. As context, the difference between Ground 2 and Ground 1A with

respect to the analysis of claim 15 is that, in Ground 2, Petitioners address limitation 15[c] under an interpretation where the "presenting" step in 15[c] occurs after the "retrieving" step recited in dependent claim 16, which states "[t]he method according to claim 15, further comprising, ***before the step of presenting***, retrieving as the best interpretation, from a database comprising allographs, a best allograph that is associated with the best handwriting symbol pattern of the best template." *'334Pat.,* 10:39-43. The analysis of limitations 15[pre], 15[a], and 15[b] remains the same as in Ground 1A.

a. 15[pre], 15[a], 15[b]

Sinden teaches 15[pre], 15[a], and 15[b] for the same reasons discussed in §VIII.A.5.a, §VIII.A.5.b, and §VIII.A.5.c, respectively. *Beigi* ¶263.

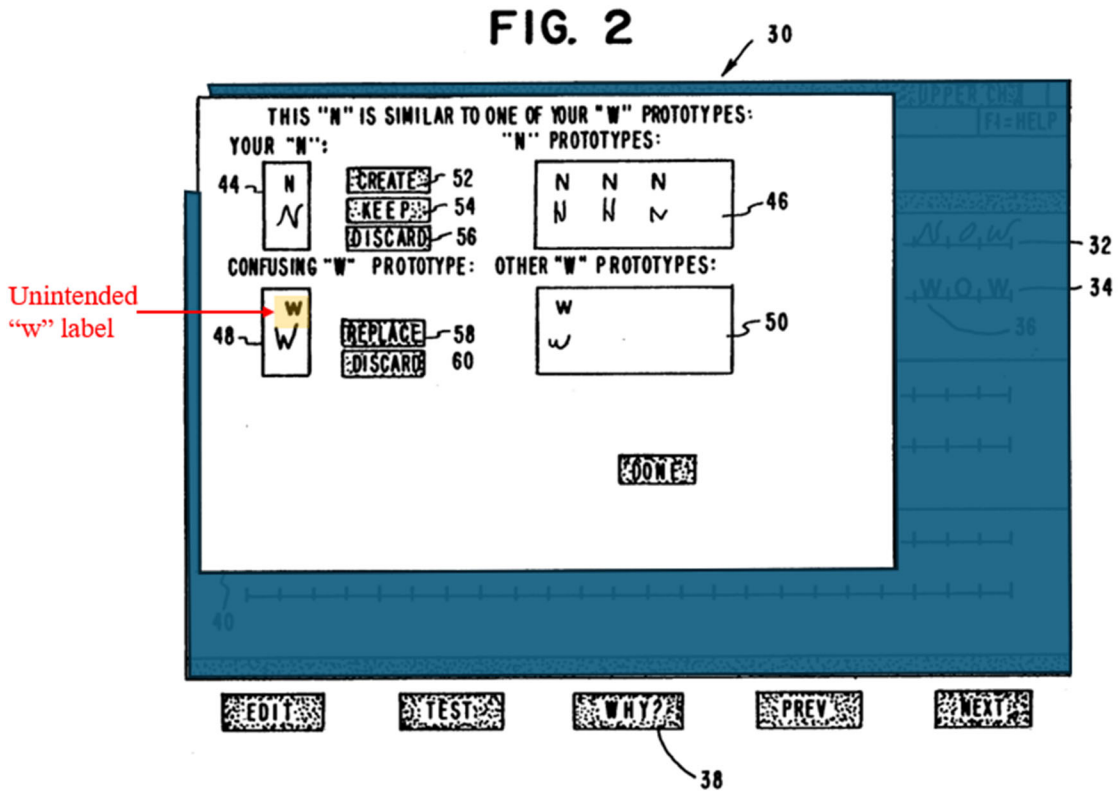
b. 15[c] and Claim 16

Sinden in combination *Fujisaki* and *Sklarew* teach limitation 15[c] and claim 16. *Beigi* ¶¶264-280.

As detailed in §VIII.A.5.c, *Sinden* discloses comparing the user's handwritten unknown symbol to a library of model symbols and choosing the model symbol with the highest correlation value as a closest model symbol ("returning a best interpretation of the handwritten pattern, said best interpretation being based on one of the plurality of handwriting symbol patterns as a best handwriting symbol pattern of a best template").

Sinden also discloses that each model symbol is associated with a "corresponding label" or "corresponding letter or number." *Sinden*, 3:42-51 ("The system is essentially 'trained' by writing in at least one model for each symbol that the system is expected to recognize and associating the samples recorded for that model symbol with a corresponding label. Thus, if it is desired for the system to be able to recognize alphanumeric characters, models for each character are so written and associated with the corresponding letter or number.").

Moreover, *Sinden* discloses that the "closest model symbol" is displayed (*Sinden*, 8:8-12), but *Sinden* does not detail how the closest model symbol is displayed, or if it includes displaying the label with which the closest model symbol is associated. *Beigi* ¶267. *Fujisaki* teaches, in a similar handwriting recognition system, that after the recognized character is identified, the recognized character is displayed. *Fujisaki*, 4:49-53 ("Recognized characters are output from the matcher 18 via line 19 to tablet and display 12 to display the recognized characters"). And as shown in *Fujisaki* Figure 2, below, *Fujisaki* teaches displaying the unintended label "w" in the box 48. *Fujisaki*, 5:44-46. Thus, a POSITA would have understood *Fujisaki* to teach displaying the label with which the matched prototype is associated. *Beigi* ¶268.



Fujisaki FIG. 2 (annotated)

Fujisaki's unintended label "w" is consistent with how the '334 patent describes a "best allograph" that is "associated with the pattern of the best template." *'334Pat.*, 4:5-10; *Beigi* ¶269. The '334 patent states that "[t]he word 'allograph' denotes a symbol having a particular shape" and that "[a]n allograph is used for presenting an interpretation based on the pattern of a template on a screen." *'334Pat.*, 4:15-20; 7:56-60 ("The best interpretation intended for presentation may be retrieved from a database of allographs. The best template will return a pointer to the allograph that is to be retrieved. The allographs may be prepared for being presented."). A POSITA would have understood that *Fujisaki*'s displayed unintended label "w" is

an "allograph" because it a symbol with a particular shape and is used for presenting an interpretation based on the pattern of a prototype. *Beigi* ¶269.

A POSITA would have considered it obvious to combine the teachings of *Sinden* and *Fujisaki* and would have had a reasonable expectation of success in doing so for the same reasons discussed in Section VIII.A.1.d. In sum, a POSITA would have recognized that *Sinden* provides few implementation details for its training mode, and a POSITA looking to implement *Sinden*'s training mode would have been motivated to consider references that disclose such details would have readily identified *Fujisaki*'s techniques as a suitable implementation, as *Fujisaki* is specifically directed to techniques for implementing a training program like *Sinden*'s training mode. The *Sinden-Fujisaki* combination teaches displaying the unintended label with which *Sinden*'s closest model symbol is associated. *Beigi* ¶270.

Neither *Sinden* nor *Fujisaki* explicitly describe a "database of allographs" or otherwise detail the mechanism by which the label associated with *Sinden*'s closest model symbol would be retrieved for display. *Beigi* ¶271. To the extent a POSITA required additional implementation details for this feature, a POSITA would have readily identified *Sklarew*. *Id*. *Sklarew* is discussed in the background section of *Fujisaki*. *Fujisaki*, 3:29-47. It relates to "a keyboardless input system to a computer" (*Sklarew*, 1:25-28), "which has the ability to recognize and display Handwritten Symbols and cause the computer to display Font Symbols" (*id.*, 3:15-20). *Sklarew*

discloses establishing a database that stores the association between Handwritten Symbols and font symbols. *Id*., 5:35-36; *see also id*., 33:56-67 ("1. A handwritten symbol recognition apparatus comprising: …a database for storing a characteristic of a handwritten symbol previously written or drawn by an individual user to correspond to a given font symbol."). "For example, if using the Roman alphabet, the … twenty-six letters of the alphabet and the numerals from 0 to 9 would be inserted into the database." *Id*., 11:5-8. The computer will also "store a suitable array of Font Symbols for conversion of the Handwritten Symbols." *Id*., 11:12-14.

Sklarew explains that, in operation, the user's input is recorded into strokes and compared with "previously entered strokes accumulated into a database, and determines [if] the Stroke is represented by a symbol in the database." *Id*., 13:2-5. "If a match is found (if the Font Symbol represented by the Strokes is recognized), …, microprocessor 50 (FIG. 4) causes the symbol to be sent to display screen 20 (FIG. 4) as indicated in processing box 86." *Id*., 13:5-9. A POSITA would have understood the microprocessor causing the font symbol to be sent to the display to include retrieving the font symbol from the database before display because that is where *Sklarew* teaches that the font symbols are stored. *Beigi* ¶273.

A POSITA would have understood that *Sklarew*'s "font symbols" correspond to the "label" associated with *Sinden*'s model symbols because they are the alphanumeric character to which each of *Sklarew*'s handwritten symbols correspond,

which is the same thing as *Sinden*'s label. *Beigi* ¶274. A POSITA would have further understood *Sklarew*'s database associating handwritten symbols to font symbols to be a "database of allographs" because it is a database that stores "symbol[s] having a particular shape," i.e., the handwritten symbols and font symbols. *Id*.

A POSITA would have considered it obvious to implement *Sklarew*'s teachings related to establishing a database that associates handwritten symbols to font symbols in the *Sinden-Fujisaki* combination for the purpose of retrieving the label with which *Sinden*'s closest model symbol is associated. *Beigi* ¶275. A POSITA would have considered a database, as taught by *Sklarew*, to be a suitable implementation for storing the association between *Sinden*'s model symbols and their corresponding labels because databases were a common data structures used in software for handwriting recognition systems to maintain the relationship between different data items. *Id*. Thus a POSITA found the combination obvious because it amounted to the use of a known technique (a database relating handwritten symbols to font symbols) to improve similar devices (the *Sinden-Fujisaki* combination) in the same way (to provide a database for storing labels and their corresponding model symbols). *Id*.

A POSITA would have had a reasonable expectation of success in making the combination because *Sinden* and *Sklarew* disclose similar handwriting recognition

systems and *Sklarew* demonstrates that it would have been within the skill of a POSITA to implement such a database in the *Sinden-Fujisaki* combination. *Id.* ¶276.

Thus, the *Sinden-Fujisaki-Sklarew* combination teaches a processor that returns a closest model symbol and displays the label associated with the closest model symbol, and before displaying the label, retrieves the label from a database that stores handwriting symbols and associated labels. *Id.* ¶277. This is consistent with how the '334 patent describes claims and 15 and 16. *Id*.

In particular, the '334 patent discloses a method in which a handwritten pattern is detected, the pattern is compared to templates in a database, and a "best interpretation" is returned. *'334Pat.*, 7:42-48. "Thereafter, the best interpretation is presented on the screen." *Id*., 7:48-49. The '334 patent also explains that the "'best interpretation' may … imply 'the pattern of a best template.'" *Id*., 4:41-43. Thus, taken as a whole, a POSITA would have understood the '334 patent to disclose an embodiment including the steps of (1) returning the pattern of a best template (i.e., a best interpretation), (2) retrieving an allograph associated with the best template to be the "best interpretation" for purposes of presentation, and (3) presenting the retrieved allograph. *Beigi* ¶279. A person having ordinary skill in the art would have understood that this embodiment is encompassed by limitation 15[c] and claim 16 and rendered obvious by the combined teachings of *Sinden*, *Fujisaki*, and *Sklarew*. *Id*.

Accordingly, a POSITA would have understood the *Sinden-Fujisaki-Sklarew* combination to teach that before displaying the label associated with *Sinden*'s model symbol, the processor obtains from a database of associating *Sinden*'s model symbols and labels ("[16] before the step of presenting, retrieving …, from a database comprising allographs") the label corresponding to *Sinden*'s closest model symbol ("a best allograph that is associated with the best handwriting symbol pattern of the best template.") and then displaying the label ("[15[c]] presenting the best interpretation"). *Id* ¶280.

IX. SECONDARY CONSIDERATIONS

There is no evidence in the '334 patent's prosecution history or elsewhere supporting any secondary considerations arguments, or evidence of nexus of such alleged evidence to the Challenged Claims. *See generally* EX. 1004; *Beigi* ¶281. To the extent Patent Owner asserts the existence of any secondary considerations in its responses, Petitioners reserve the right to address any such evidence.

X. THE DISCRETIONARY FACTORS FAVOR INSTITUTING TRIAL

A. 35 U.S.C. § 314(a)

To the extent the Patent Owner asks the Board to exercise its discretion to deny institution despite the strong invalidity showing on the merits, the Board should decline to do so because the weight of the factors articulated in *Apple Inc. v. Fintiv*,

Inc., IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020) (precedential) favors institution.[4]

1. Stay

Factor 1 is neutral. Petitioners have not requested a stay but intend to do so. The PTAB has explained that it will not speculate on how any such motion would be resolved, before one is filed. *Google LLC v. Parus Holdings, Inc.*, IPR2020-00847, Paper 9 at 12 (PTAB Oct. 21, 2020); *see also Hulu LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11 at 10-11 (PTAB May 19, 2021) (concluding that without evidence of a requested stay or consideration by the district court in the parallel litigation, this factor does not significantly impact the Board's exercising discretion to deny institution of the IPR).

2. Trial Date

The docket control order in the parallel litigation currently sets jury selection for January 5, 2026, about 11 months away. EX1027. Any comparison of a projected FWD date against the scheduled trial date is speculative. *See Dish Network v. Broadband iTV*, IPR2020-01280, Paper 17 at 16 (PTAB Feb. 4, 2021) ("We cannot

[4] The *Fintiv* framework should not be followed because it is legally invalid as (1) exceeding the Director's authority, (2) arbitrary and capricious, and (3) adopted without notice-and-comment rulemaking.

ignore the fact that the currently scheduled trial date is more than nine months away and much can change during this time").

Setting that aside, this Petition is filed on February 10, 2025, so a FWD would be expected by July 2026. Although this is approximately six months after the currently scheduled (speculative) trial date, this factor is not determinative or considered in isolation. *Facebook, Inc. v. USC IP P'Ship*, IPR2021-00034, Paper 13 at 11 (PTAB April 13, 2021) ("[T]his factor is not considered in isolation, but holistically along with other factors") (citation omitted). Moreover, the Board has instituted IPR and found, on similar facts, that this factor weighs only minimally in favor of denial. *See, e.g.*, *Google LLC, et al. v. Multimodal Media LLC*, IPR2024-00056, Paper 9 at 8 (PTAB Apr. 12, 2024) (a period of about six months between trial and the expected FWD "weighs only marginally in favor" of denial); *NetNut Ltd. v. Bright Data Ltd.*, IPR2021-01492, Paper 12 at 9-16 (PTAB Mar. 21, 2022) (instituting IPR without stipulation and copending trial date six months before FWD); *Facebook*, IPR2021-00034, Paper 13 at 11 (a period of five months between trial and expected FWD "slightly favors denial"); *Coolit Systems, Inc. v. Asetek Danmark A/S*, IPR2021-01195, Paper 10 at 11 (PTAB Dec. 28, 2021) (a period of five months between trial and expected FWD "weighs slightly in favor" of denial); *Equipmentshare.com Inc. v. Ahern Rentals, Inc.*, IPR2021-00834, Paper 19 at

(PTAB Nov. 16, 2021) (a period of seven months between trial and expected FWD "weighs somewhat in favor" of denial).

3. Diligence/Investment

Factor 3 weighs strongly against discretionary denial. No substantive orders have been issued by the court in the underlying litigation, and investment in the parallel litigation against Petitioner Samsung will have remained low at the time of institution. *See, e.g.*, *Hulu LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11 at 12-14 (PTAB May 19, 2021) (holding that this factor supports instituting IPR given the early stage of the district court proceedings, the lack of substantial discovery related to invalidity claims, and the petitioner's diligent filing of the petition after receiving preliminary infringement contentions). Assuming that a Decision on Institution is issued by July 2025, much work in district court will remain. *Id.* Claim construction briefing does not begin until May 23, 2025, and the *Markman* hearing is scheduled for July 11, 2025. Opening expert reports are due August 11, 2025, and dispositive motions are due September 29, 2025. *Id*.

4. Overlap

Factor 4 weighs against discretionary denial. Petitioners challenge claims 1-4, 8-10, 15, 16, 19-22, and 26-28 in this Petition, whereas Patent Owner has alleged infringement of only claims 1-2, 4, 8-10, 15, 16, 19-20, 22, and 26-28. Ex. 1028. Accordingly, a material number of the challenged claims will not be addressed by

the district court. *See, e.g.*, *Precision Planting LLC v. Maschio Gaspardo S.p.A.*, IPR2024-00008, Paper 12 at 18 (PTAB Mar. 26, 2024) (holding that despite substantial overlap in issues between the IPR petition and parallel district court action, the inclusion of claims in the petition not contested in court argues against discretionary denial due to incomplete overlap).

5. Parties

Petitioners and Patent Owner are also parties to the parallel litigation. However, with respect to Factor 5, the *Fintiv* decision "says nothing about situations in which the petitioner is the same as, or is related to, the district court defendant." *Cisco Systems, Inc. v. Ramot at Tel Aviv University Ltd.*, IPR2020-00122, Paper 15, 10 (Crumbley, dissenting).

> In cases such as the one at hand, where the parties are the same, the factor is neutral. To hold otherwise—that the factor weighs in favor of denial if the parties are the same—would, in effect, tip the scales against a petitioner merely for being a defendant in the district court.

Id.; *Fintiv*, 13-14. Accordingly, Petitioners submit that Factor 5 should, at worst, be neutral.

6. Other considerations.

Even if the *Fintiv* factors favor discretionary denial (which they do not), the merits are compelling here. Petitioners therefore respectfully submit that the *Fintiv* factors favor institution and that discretionary denial of this Petition would be neither appropriate nor equitable.

B. 35 U.S.C. §325(d)

The Board should likewise not exercise its discretion under §325(d) to deny institution of Petitioner's petition. *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, at 17-18 (PTAB Dec. 15, 2017) (precedential); *Advanced Bionic, LLC v. MED-EL Elektromedizinische Gerate GmbH*, IPR2019-01469, Paper 6, at 9-11 (PTAB Feb. 13, 2020) (precedential). There is no evidence that the Office considered any of the Grounds presented in this Petition. None of *Sinden*, *Fujisaki*, or *Collins* were disclosed during prosecution. *Sklarew* '561 was disclosed to the Patent Office in an IDS, but *Sklarew '561* was not discussed or used in a rejection by the examiner during prosecution and thus this does not weigh in favor of discretionary denial. *SolarEdge Techs. Ltd. v. SMA Solar Tech. AG*, IPR2020-00021, Paper 8, at 12 (PTAB Apr. 10, 2020) ("Because the Examiner did not rely on [the cited references] to reject a claim, Becton factor (c) weighs strongly against" discretionary denial).

XI. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

A. Real Parties-in-Interest

Petitioners identify themselves as the real parties-in-interest.

1. Related Matters

To the best of Petitioners' knowledge, the '334 patent has only been involved in the following district court litigation: *Cerence Operating Co. v. Samsung Electronics Co., Ltd. et al.*, 2:24-cv-00181-JRG-RSP (E.D. Tex.), filed March 15, 2024.

To the best of Petitioners' knowledge, the '334 patent has not been challenged in any other *inter partes* review or post-grant review prior to this proceeding.

B. Lead and Backup Counsel

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C. Service Information

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D. Power of Attorney

A power of attorney is filed herewith according to 37 C.F.R. §42.10(b).

XII. FEES

Petitioners concurrently electronically submits the required fees for this Petition. The Board is authorized to charge Arnold & Porter Kaye Scholer LLP's deposit account, No. 50-2387, for any fee deficiency.

Date: February 10, 2025

Respectfully submitted,

/Ali R. Sharifahmadian/
Ali R. Sharifahmadian (Reg. No. 48,202)
Counsel for Petitioners

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing Petition for *Inter Partes* Review contains 13,724 words, excluding those portions identified in 37 C.F.R. §42.24(a), as measured by the word-processing system used to prepare this paper.

/Ali R. Sharifahmadian/
Ali R. Sharifahmadian (Reg. No. 48,202)
Counsel for Petitioners

CERTIFICATE OF SERVICE

I certify that on February 10, 2025, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 7,680,334 and supporting exhibits to be served via overnight delivery on the Patent Owner at the following correspondence address of record as listed on Patent Center.

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A courtesy copy was also sent via electronic mail to Patent Owner's litigation counsel listed below:

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