EXHIBIT 5.03

claims 8-14 are directed to statutory subject matter and request the removal of the rejection of these claims under 35 U.S.C. §101.

Allowable Subject Matter

The Office Action indicates that claims 1-7 are allowed.

Applicants thank the Examiner for the allowance of claims 1-7. New independent claim 89 includes similar limitations as independent claim 1. Thus, applicants request the allowance of independent claim 89 and associated dependent claims 90-95.

Conclusion

Applicant respectfully submits that in view of the amendments and discussion set forth herein, the applicable rejections have been overcome. Accordingly, the present and amended claims should be found to be in condition for allowance.

If a telephone interview would expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

If there are any additional charges/credits, please charge/credit our deposit account no. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: Oct. 8, 2009

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Electronic Acknowledgement Receipt

EFS ID:	6232207
Application Number:	11620717
International Application Number:	
Confirmation Number:	9801
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First Named Inventor/Applicant Name:	Andrew Platzer
Customer Number:	45217
Filer:	James Scheller Jr./Connie Thayer
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1		04860P4895_amendment.PDF	262432 b8175fe7b82267f3bf788f78f30f3d568dec43d9	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Specification	2	2
	Claims	3	7
	Applicant Arguments/Remarks Made in an Amendment	8	9

Warnings:	
Information:	
Total Files Size (in bytes):	262432

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/620,717	01/07/2007	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **10/08/2009**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 21	Minus	** 88	= 0	X $ =		OR	X $52=	0
Independent (37 CFR 1.16(h))	* 3	Minus	***25	= 0	X $ =		OR	X $220=	0
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/PATSY ZIMMERMAN/

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Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/620,717	01/07/2007	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	10/08/2009	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 95	Minus	** 88	= 7	X $ =		OR	X $52=	364
	Independent (37 CFR 1.16(h))	* 26	Minus	***25	= 1	X $ =		OR	X $220=	220
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**584**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/ANNETTE SMITH/

Document code: WFEE

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Attorney's Docket No. 4860P4895 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:	
Andrew Platzer	Examiner: Bautista, Xiomara L
Application No.: 11/620,717	Art Unit: 2179
Filed: January 7, 2007	Confirmation No.: 9801
For: APPLICATION PROGRAMMING INTERFACES FOR SCROLLING OPERATIONS	

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

Enclosed is a copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 together with copies of the documents cited on that form, except for copies not required to be submitted (e.g., copies of U.S. patents and U.S. published patent applications need not be enclosed for applications filed after June 30, 2003). It is respectfully requested that the cited documents be considered and that the enclosed copy of Information Disclosure Citation Form PTO-1449 or PTO/SB/08 be initialed by the Examiner to indicate such consideration and a copy thereof returned to applicant(s).

I hereby certify that this correspondence is being submitted electronically via EFS Web to the United States Patent and Trademark Office on the date shown below.

October 13, 2009.
(Date of Deposit)
Jeremy A. Schweigert
(Typed or printed name of person mailing correspondence)

/Jeremy A. Schweigert/ 10-13-2009
(Signature of person mailing correspondence) (Date)

Pursuant to 37 C.F.R. § 1.97, the submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made and is not to be construed as an admission that the information cited in this statement is material to patentability.

Pursuant to 37 C.F.R. § 1.97, this Information Disclosure Statement is being submitted under one of the following (as indicated by an "X" to the left of the appropriate paragraph):

_____ 37 C.F.R. §1.97(b).

__X__ 37 C.F.R. §1.97(c). If so, then enclosed with this Information Disclosure Statement is one of the following:

____ A statement pursuant to 37 C.F.R. §1.97(e) or

__X__ **The Director is Authorized to charge our Deposit Acct. No. 02-2666 in the amount of $180.00 for the fee under 37 C.F.R. § 1.17(p).**

_____ 37 C.F.R. §1.97(d). If so, then enclosed with this Information Disclosure Statement are the following:

(1) A statement pursuant to 37 C.F.R. §1.97(e); and

(2) **Authorization to charge our Deposit Acct. No. 02-2666 in the amount of $180.00 for the fee under 37 C.F.R. §1.17(p) for submission of the Information Disclosure Statement.**

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: Oct. 13, 2009

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(54) Gesture recognition method and touch system incorporating the same

(57) A gesture recognition method includes detecting multiple pointers in close proximity to a touch surface to determine if the multiple pointers are being used to perform a known gesture. When the multiple pointers are being used to perform a known gesture, a command associated with the gesture is executed. A touch system incorporating the gesture recognition method is also provided.

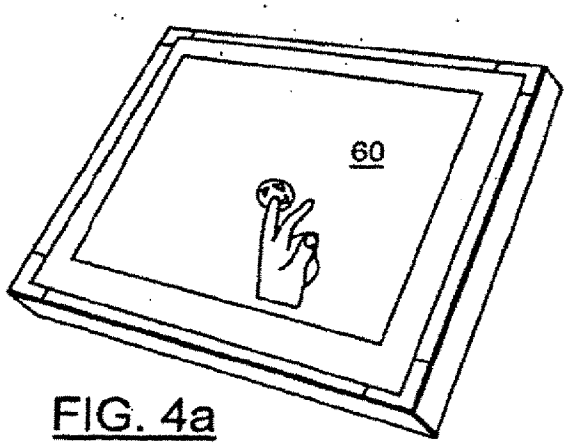

FIG. 4a

EP 1 517 228 A2

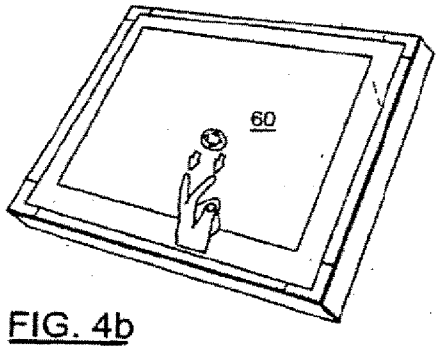

FIG. 4b

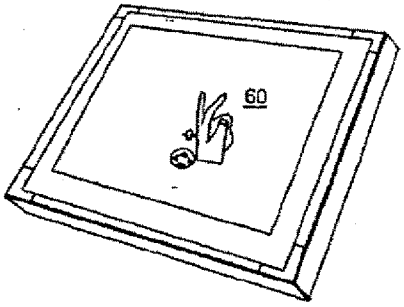

FIG. 4c

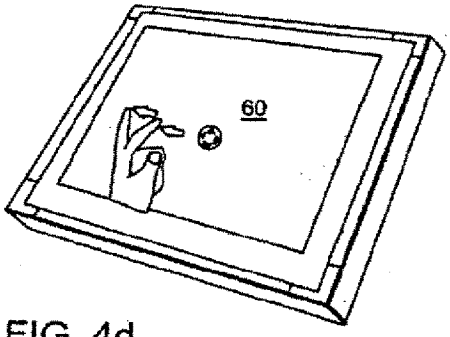

FIG. 4d

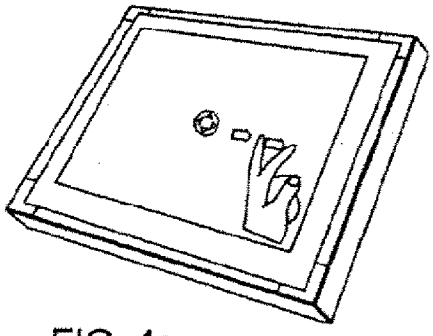

FIG. 4e

(Cont. next page)

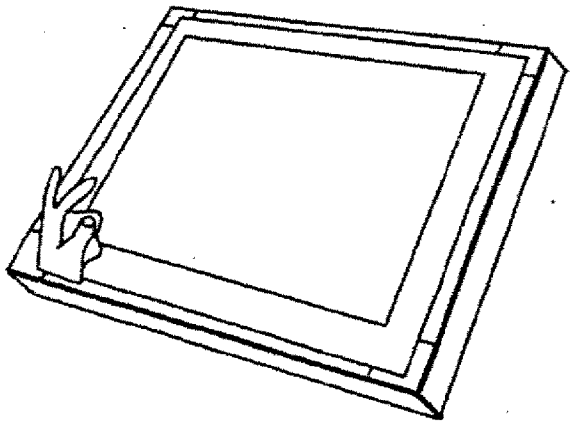

FIG. 4f

Description

Field of the Invention

[0001] The present invention relates generally to touch systems and in particular to a gesture recognition method and touch system incorporating the same.

Background of the Invention

[0002] Touch systems are well known in the art and typically include a touch screen having a touch surface on which contacts are made using a pointer in order to generate user input. Pointer contacts with the touch surface are detected and are used to generate corresponding output depending on areas of the contact surface where the contacts are made. There are basically two general types of touch systems available and they can be broadly classified as "active" touch systems and "passive" touch systems.

[0003] Active touch systems allow a user to generate user input by contacting the touch surface with a special pointer that usually requires some form of on-board power source, typically batteries. The special pointer emits signals such as infrared light, visible light, ultrasonic frequencies, electromagnetic frequencies, etc. that activate the touch surface.

[0004] Passive touch systems allow a user to generate user input by contacting the touch surface with a passive pointer and do not require the use of a special pointer in order to activate the touch surface. The pointer can be a finger, a cylinder of some material, or any suitable object that can be used to contact some predetermined area of interest on the touch surface.

[0005] Passive touch systems provide advantages over active touch systems in that any suitable pointing device, including a user's finger, can be used as a pointer to contact the touch surface. As a result, user input can easily be generated. Also, since special active pointers are not necessary in passive touch systems, battery power levels and/or pointer damage, theft, or misplacement are of no concern to users.

[0006] For example, U.S. Patent Application No. 09/610,481 filed on July 5, 2000 and International PCT Application No. PCT/CA01/00980 filed on July 5, 2001 and published under No. WO 02/03316 on January 10, 2002, assigned to SMART Technologies Inc., assignee of the present invention, disclose a camera-based touch system comprising a touch screen that includes a passive touch surface on which a computer-generated image is presented. A rectangular bezel or frame surrounds the touch surface and supports digital cameras at its corners. The digital cameras have overlapping fields of view that encompass and look across the touch surface. The digital cameras acquire images looking across the touch surface from different locations and generate image data. Image data acquired by the digital cameras is processed by digital signal processors associated with the digital cameras to determine if a pointer exists in the captured image data. When it is determined that a pointer exists in the captured image data, the digital signal processors generate pointer information packets (PIPs) and convey the PIPs to a master controller. Each PIP includes a header portion, a data portion and a checksum. The data portion includes a pointer ID field that stores a pointer identifier to allow multiple pointers to be tracked. The data portion also includes a pointer location parameter that identifies a pointer x-position and a pointer tip parameter that identifies a pointer z-position. A contact state field stores a value indicating whether the pointer is in or out of contact with the touch surface allowing pointer hover to be detected.

[0007] Upon receipt of the PIPs, the master controller processes the PIPs using triangulation to determine the location of each pointer in the captured images relative to the touch surface in (x,y) coordinates. In this manner, as PIPs are generated in response to captured images, the position and movement of pointers over the touch surface can be tracked. The pointer location data generated by the master controller is conveyed to a computer executing one or more application programs. The computer uses the pointer location data to update the computer-generated image that is presented on the touch surface. Pointer contacts on and pointer movement over the touch surface can therefore be recorded as writing or drawing or used to control execution of application programs executed by the computer.

[0008] As will be appreciated, since digital cameras at the corners of the bezels are used to capture image data, the touch system is able to determine when multiple pointers contact and move across the touch surface. This of course provides for enhanced functionality as compared to analog resistive touch systems that are only able to track a single pointer. Although enhanced functionality is provided by the above-described camera-based touch system, to-date, this enhanced functionality has not been fully exploited. It is therefore an object of the present invention to provide a novel gesture recognition method and touch system incorporating the same.

Summary of the Invention

[0009] According to one aspect of the present invention there is provided a gesture recognition method comprising the steps of:

displaying an image on a touch surface;
detecting pointer contacts on said touch surface and examining said pointer contacts to recognize multiple pointer contacts representing a gesture; and
when multiple pointer contacts representing a gesture occur, updating the displayed image in accordance with said gesture.

[0010] Multiple pointer contacts representing a gesture include multiple finger contacts on the touch surface, a finger contact on the touch surface and an object contact on the touch surface and multiple object contacts on the touch surface.

[0011] In one aspect, the gesture is a right-click event and is represented by a first pointer contact on a displayed application, and a subsequent second pointer contact that occurs within a threshold distance of the first pointer contact and while the first pointer contact is maintained. In another aspect, the gesture is a scroll event and is represented by simultaneous pointer contacts on the touch surface.

[0012] According to another aspect of the present invention there is provided a gesture recognition method comprising the steps of:

detecting multiple pointers in close proximity to a touch surface to determine if said multiple pointers are being used to perform a known gesture; and

when said multiple pointers are being used to perform a known gesture, executing a command associated with said gesture.

[0013] Preferably, during the detecting, pointer contacts with or close pointer hovers over the touch surface are detected to determine if a known gesture is being performed and specifically if one of a number of known gestures is being performed, each known gesture being associated with a different command. In a preferred embodiment, the movement of the multiple pointers relative to the touch surface and/or the pointer type determines the gesture being performed.

[0014] According to yet another aspect of the present invention there is provided an input detection method in an interactive system capable of detecting movement of multiple pointers generally simultaneously within an input region, said method comprising the steps of:

capturing images looking generally across said input region;

analyzing said images to detect multiple pointers within said input region;

when multiple pointers are detected, examining data associated with said multiple pointers to determine if the data represents an input gesture; and

when the data represents an input gesture, executing a command corresponding to the recognized input gesture.

[0015] According to still yet another aspect of the present invention there is provided a touch system comprising:

a touch surface to be contacted by at least one pointer;

at least one imaging device having a field of view looking generally across said touch surface; and

at least one processor communicating with said at least one imaging device and analyzing images acquired by said at least one imaging device to determine the location on said touch surface where pointer contacts are made, when said touch surface is contacted by multiple pointers, said processor examining said multiple pointer contacts to determine if said multiple pointer contacts represent a gesture and when said multiple pointer contacts represent a gesture, said processor executing a command associated with said gesture.

[0016] According to still yet another aspect of the present invention there is provided an interactive input system comprising:

at least one imaging device having an input region within its field of view into which one or more pointers is moved to generate user input; and

at least one processor communicating with said at least one imaging device and analyzing each image acquired by said at least one imaging device to determine the action of pointers in said input region, said at least one processor determining when multiple pointer actions within said input region represent a gesture, when said multiple pointer actions represent a gesture, said at least one processor executing a command corresponding to said gesture.

[0017] According to still yet another aspect of the present invention there is provided in an interactive touch system, a method of simulating a right-click mouse event comprising the steps of:

detecting a first pointer contact on a touch surface over a displayed application that represents a left-click mouse event;

detecting a second pointer contact on said touch surface that occurs within a threshold period of time following said first pointer contact and within a threshold distance of said first pointer contact; and

generating a right-click mouse event in response to said detected second pointer contact.

[0018] The present invention provides advantages in that since gestures represented by multiple pointer contacts on and/or movement over the touch surface are detected and corresponding commands generated, enhanced touch system functionality is provided.

Brief Description of the Drawings

[0019] Embodiments of the present invention will now be described more fully with reference to the accompanying drawings in which:

Figure 1 is a schematic diagram of a camera-based touch system in accordance with the present inven-

tion;

Figure 2 is a front elevation view of a touch screen forming part of the touch system of Figure 1;

Figures 3a to 3d are front perspective views of the touch screen of Figure 2 showing an input right-click gesture; and

Figures 4a to 4f are front perspective views of the touch screen of Figure 2 showing input up/down and left/right scroll gestures.

Detailed Description of the Preferred Embodiments

[0020] Turning now to Figure 1, a camera-based touch system in accordance with the present invention is shown and is generally identified by reference numeral 50. Camera-based touch system 50 is similar to that disclosed in International PCT Application Serial No. WO 02/03316, assigned to SMART Technologies Inc., assignee of the present invention, the contents of which are incorporated herein by reference. As can be seen, touch system 50 includes a touch screen 52 coupled to a digital signal processor (DSP) based master controller 54. Master controller 54 is also coupled to a computer 56. Computer 56 executes one or more application programs and provides computer-generated image output that is displayed on the touch screen 52. The coordinate system of the touch system 52 is mapped to the coordinate system of the computer. The touch screen 52, master controller 54 and computer 56 form a closed-loop so that pointer hover or contacts with and pointer movement over or above the touch screen 52 can be recorded as writing or drawing or used to control execution of application programs executed by the computer 56.

[0021] Figure 2 better illustrates the touch screen 52. Touch screen 52 in the present embodiment includes a high-resolution display device such as a plasma display 58, the front surface of which defines a touch surface 60. The touch surface 60 is bordered by an illuminated bezel or frame 62 coupled to the display device. Illuminated bezel 62 is of the type disclosed in U.S. Patent Application No. 10/354,168 filed on January 30, 2003 and includes elongate side frame assemblies 64 that are coupled to the sides of the plasma display 58. Each side frame assembly 64 accommodates a light source (not shown) that projects infrared backlighting across the touch surface 60. The ends of the side frame assemblies 64 are joined by corner pieces 68 that house DSP-based CMOS digital cameras 70. Each digital camera 70 is mounted within its respective corner piece 68 so that its field of view encompasses and looks across the entire touch surface 60.

[0022] During operation, the digital cameras 70 acquire images of the touch surface 60 and generate image data. The acquired image data is processed by digital signal processors associated with the digital cameras 70 to determine if a pointer exists in the captured images. When it is determined that one or more pointers exist in the acquired image data, the digital signal processors of the digital cameras 70 generate pointer information packets (PIPs) and convey the PIPs to the digital signal processor (DSP) based master controller 54. Each PIP includes a header portion, a data portion and a checksum. The data portion includes a pointer ID field that stores a pointer identifier to allow multiple pointers to be tracked. The data portion also includes a pointer location parameter that identifies a pointer x-position and a pointer tip parameter that identifies a pointer z-position. A contact state field stores a value indicating whether the pointer is in or out of contact with the touch surface 60 allowing pointer hover to be detected.

[0023] Upon receipt of the PIPs, the master controller 54 processes the PIPs using triangulation to determine the location of each pointer in the captured images relative to the touch surface 60 in (x,y) coordinates. In this manner, as PIPs are generated in response to captured images, the position and movement of pointers over the touch surface 60 can be tracked. Since image data is processed to detect the existence of one or more pointers, the pointers may take any suitable form such as for example, a user's finger, a cylinder of material, a passive or active pen tool or erase tool or other appropriate object. Specifics of the manner by which the image data is acquired by the digital cameras 70 and processed by the master controller 54 are described in International PCT Application No. PCT/CA01/00980 filed on July 5, 2001 and published under No. WO 02/03316 on January 10, 2002, the contents of which are incorporated herein by reference. Accordingly, such specifics will not be described further herein.

[0024] The master controller 54 outputs generated pointer data to the computer 56 that identifies the location of each pointer relative to the touch surface as each pointer approaches and/or contacts and moves over the touch surface 60. A driver loaded on the computer 56 receives the pointer data and examines the pointer data to determine if the pointer data has been generated in response to a known input gesture stored in a gesture library. Specifically, the driver examines the pointer data to detect the existence of multiple pointers in captured images and then examines the nature of the multiple pointers to determine if a known gesture has been performed such as for example a right-click gesture, a scroll gesture, a rotate gesture etc. When a gesture has been performed, the driver generates a command (event) that is associated with the determined gesture and conveys the command to the active application program being executed by the computer 56.

[0025] Turning now to Figures 3a to 4f, examples of gestures that can be recognized by the touch system and the resulting actions that are performed in response to the recognized gestures are shown.

Intuitive Right-Click Gesture

[0026] Figures 3a to 3d illustrate an intuitive right-click gesture. When a user contacts the touch surface 60 with

a finger over an application displayed on the touch surface, the driver recognizes the contact as a left-click mouse event and injects the left-click mouse event into the application. If the user subsequently contacts the touch surface 60 with another finger while maintaining the contact with the one finger and the subsequent contact is to the right of and close to the initial contact, the driver recognizes the second touch surface contact as a right-click gesture and injects a right-click event into the application. In response to the right-click event, the application opens and displays a drop down menu (not shown). As will be appreciated, this enables a user to invoke a right-click action using a hand gesture that is similar to the action performed when invoking a right-click action using a mouse. Although, Figures 3a to 3d show the intuitive right-click gesture being performed using two fingers on the same hand, it will be appreciated that the right-click gesture can be performed using a finger on different hands.

Scroll Up/Down and Left/Right Gesture

[0027] Figures 4a to 4e illustrate up/down and left/right scroll gestures. If the user contacts the touch surface 60 with a pair of fingers simultaneously over an application window displayed on the touch surface and the fingers are closely and generally horizontally spaced, the driver recognizes the simultaneous finger contacts as a scroll gesture and injects a scroll event into the application. Pointer position data conveyed to the application by the driver in response to subsequent vertical movement of the fingers is interpreted by the application either as scroll up or scroll down commands. In response to the scroll up or down commands, the application moves information presented within the application window in the direction of the vertical movement. Pointer position data conveyed to the application by the driver in response to subsequent horizontal movement of the fingers is interpreted by the application as scroll to side commands. In response to the scroll to side commands, the application moves information displayed within the application window to the side corresponding to the direction of the horizontal movement. Although Figures 4a to 4f show the scroll gestures being performed using two fingers on the same hand, it will be appreciated that the scroll gestures can be performed using a finger on different hands.

[0028] Although not illustrated, a number of other gestures can be recognized by the driver and used to generate commands to control an application being executed by the computer 56. Examples of such other gestures will now be described.

Page Up/Down Gesture

[0029] If the user contacts the touch surface 60 with three fingers simultaneously over an application window displayed on the touch surface and the three fingers are closely and generally horizontally spaced, the driver recognizes the simultaneous finger contacts as a page gesture and injects a page event into the application. Pointer position data conveyed to the application by the driver in response to subsequent vertical movement of the fingers is interpreted by the application as page up or page down commands depending on the direction of the vertical movement. In response to the page up or page down commands, the application moves information displayed within the window in the appropriate direction.

Rotate Gesture

[0030] If the user contacts the touch surface 60 over an object displayed within an application window with one finger and then subsequently contacts the touch surface with another finger and moves that other finger in an arc while maintaining the touch surface contact with the one finger, the driver recognizes the arcuate movement of the second finger as a rotate gesture. The driver in turn injects a rotate command into the application causing the application to rotate the object about the contact point defined by the first finger in the direction of the arc and by an amount equivalent to the path of the arc.

Zoom Gesture

[0031] If the user contacts the touch surface 60 with a pair of closely spaced fingers simultaneously over an application window and expands the distance between the fingers in a generally horizontal direction, the driver recognizes the finger movement as a zoom-out gesture. The driver in turn injects a zoom-out command into the application causing the application to expand the size of the information presented in the application window. If the user contacts the touch surface 60 with a pair of spaced fingers simultaneously over an application window and moves the fingers in a generally horizontal direction towards one another, the driver recognizes the finger movement as a zoom-in gesture. The driver in turn injects a zoom-in command into the application causing the application to reduce the size of the information presented in the application window.

[0032] Alternatively, the zoom-out and zoom-in commands may be represented by other gestures. For example, if the user contacts the touch surface 60 with a clawed hand having its fingers bunched together over an application window and expands the hand by extending the fingers outwardly, the driver recognizes the finger movement as the zoom-out gesture.

[0033] If the user contacts the touch surface 60 with a generally flat hand having its fingers extended over an application window and contracts the hand by clawing the fingers inwardly to bunch them together, the driver recognizes the finger movement as the zoom-in gesture.

Expand Gesture

[0034] If the user contacts the touch surface 60 with a pair of closely spaced fingers simultaneously over an application window and expands the distance between the fingers in a generally diagonal direction, the driver recognizes the finger movement as an increase window size gesture. The driver in turn injects an increase window size command into the application causing the application to expand the size of the application window. If the user contacts the touch surface 60 with a pair of spaced fingers simultaneously over an application window and moves the fingers in a generally diagonal direction towards one another, the driver recognizes the finger movement as a decrease window size gesture. The driver in turn injects a decrease window size command into the application causing the application to reduce the size of the application window.

Icon Select and Open Gesture

[0035] If the user contacts the touch surface 60 with two closely spaced fingers simultaneously over an icon, the driver recognizes the finger contact as a double-click gesture. The driver in turn generates an open application command causing the desktop application running on the computer 56 to open the selected application.

Object/Window Move Gesture

[0036] If the user moves a pair of closely spaced fingers above the touch surface 60 and over an object displayed within an application window, the driver recognizes the hovering finger movement as a translate object gesture. The driver in turn injects a translate object command into the application causing the application to translate the displayed object in the direction of and by an amount equal to the distance the fingers are moved.

[0037] If the user moves three closely spaced fingers above the touch surface 60 and over an application window, the driver recognizes the hovering finger movement as a translate window gesture. The driver in turn generates a translate window command causing the desktop application running on the computer 56 to translate the application window in the direction of and by an amount equal to the distance the fingers are moved.

[0038] Although the above gestures are described as being recognized in response to multiple finger contacts or hovers, the same gestures can be recognized if other objects are used to perform the gestures. For example, multiple pen tools can be used to perform the gestures or alternatively a finger and a pen tool can be used to perform the gestures.

[0039] Also, recognized gestures may be enhanced using different pointer characteristics. For example, in the case of scroll gestures, the angle at which the pointers contact the touch surface 60 may be used to determine the rate at which the displayed information is scrolled. Pointers contacting the touch surface 60 at a steep angle may represent a slow scroll rate whereas pointers contacting the touch surface 60 at a shallow angle may represent a fast scroll rate.

[0040] If the touch system is able to differentiate between the type of pointers used to contact the touch surface 60 as is described in co-pending U.S. Patent Application Serial No. 10/384,783 filed on March 11, 2003 and/or is able to determine pointer characteristics as is described in co-pending U.S. Patent Application Serial No. 10/294,917, filed on November 15, 2002, the contents of which are incorporated herein by reference, different functionality can be assigned to similar gestures that are performed using different pointers. For example, in the case of the rotate gesture described above, if the same gesture is carried out using a finger to initially contact an object within the application window and a pen tool to describe the arc, the driver recognizes the finger contact and pen movement as a pattern fill gesture rather than a rotate gesture. A finger contact and subsequent closely spaced pen tool contact may represent a draw circle gesture rather than a scroll gesture and a finger contact and subsequent closely spaced eraser contact may represent an erase page gesture. As will be appreciated, being able to differentiate between multiple pointers brought into proximity with the touch surface 60 significantly increases the functions that may be invoked by performing the same gestures simply by using discrete pointers that can be differentiated.

[0041] Although the driver is described as examining the pointer data to determine if the pointer data is generated in response to a known gesture, it will be appreciated by those of skill in the art that if the active application being executed by the computer has the capability of recognizing gestures, the pointer data may be conveyed to the active application for gesture recognition.

[0042] If desired the touch surface 60 may be partitioned into multiple regions to enable multiple users to interact with the touch surface simultaneously without ambiguity between user input. In this case multiple contacts on or hovers over the touch surface that are beyond a threshold distance are treated as multiple user inputs. Multiple contacts on or hovers over the touch surface that are within the threshold distance are treated as multiple contacts made by a single user and are examined to determine if the multiple contacts represent a gesture.

[0043] Although preferred embodiments of the present invention have been described, those of skill in the art will appreciate that variations and modifications may be made without departing from the spirit and scope thereof as defined by the appended claims.

Claims

1. A gesture recognition method comprising the steps

of:

displaying an image on a touch surface;
detecting pointer contacts on said touch surface and examining said pointer contacts to recognize multiple pointer contacts representing a gesture; and
when multiple pointer contacts representing a gesture occur, updating the displayed image in accordance with said gesture.

2. The method of claim 1 wherein multiple pointer contacts representing a gesture include multiple finger contacts on said touch surface.

3. The method of claim 1 wherein multiple pointer contacts representing a gesture include a finger contact on said touch surface and an object contact on said touch surface.

4. The method of claim 1 wherein multiple pointer contacts representing a gesture include multiple object contacts on said touch surface.

5. The method of claim 1 wherein multiple pointer contacts representing a gesture include multiple finger contacts on said touch surface, a finger contact on said touch surface and an object contact on said touch surface, and/or multiple object contacts on said touch surface.

6. The method of claim 1 wherein said gesture represents a right-click event.

7. The method of claim 6 wherein said right-click event is represented by a first pointer contact on a displayed application, and a subsequent second pointer contact adjacent said first pointer contact.

8. The method of claim 6 wherein said right-click event is represented by a first pointer contact on a displayed application, and a subsequent second pointer contact that occurs within a threshold distance of said first pointer contact and while said first pointer contact is maintained.

9. The method of claim 1 wherein said gesture is represented by simultaneous pointer contacts on said touch surface.

10. The method of claim 9 wherein said simultaneous pointer contacts are simultaneous finger contacts on said touch surface.

11. The method of claim 9 wherein said simultaneous pointer contacts on said touch surface represent a scroll event, the direction of movement of the pointers over said touch surface subsequent to contact on said touch surface determining the direction of scroll.

12. A gesture recognition method comprising the steps of:

detecting multiple pointers in close proximity to a touch surface to determine if said multiple pointers are being used to perform a known gesture; and
when said multiple pointers are being used to perform a known gesture, executing a command associated with said gesture.

13. The method of claim 12 wherein during said detecting, pointer contacts with or close pointer hovers over said touch surface are detected to determine if a known gesture is being performed.

14. The method of claim 13 wherein said multiple pointers include multiple fingers, at least one finger and at least one object, and multiple objects in close proximity to said touch surface.

15. The method of claim 13 wherein during said detecting the multiple pointers are examined to determine if one of a number of known gestures is being performed, each known gesture being associated with a different command.

16. The method of claim 15 wherein the movement of the multiple pointers relative to the touch surface determines the gesture being performed.

17. The method of claim 15 wherein the pointer type determines the gesture being performed.

18. The method of claim 15 wherein the movement of the multiple pointers relative to the touch surface and the pointer type determines the gesture being performed.

19. An input detection method in an interactive system capable of detecting movement of multiple pointers generally simultaneously within an input region, said method comprising the steps of:

capturing images looking generally across said input region;
analyzing said images to detect multiple pointers within said input region;
when multiple pointers are detected, examining data associated with said multiple pointers to determine if the data represents an input gesture; and
when the data represents an input gesture, executing a command corresponding to the recognized input gesture.

20. A touch system comprising:

a touch surface to be contacted by at least one pointer;
at least one imaging device having a field of view looking generally across said touch surface; and
at least one processor communicating with said at least one imaging device and analyzing images acquired by said at least one imaging device to determine the location on said touch surface where pointer contacts are made, when said touch surface is contacted by multiple pointers, said processor examining said multiple pointer contacts to determine if said multiple pointer contacts represent a gesture and when said multiple pointer contacts represent a gesture, said processor executing a command associated with said gesture.

21. A touch system according to claim 20 wherein a first pointer contact followed by a subsequent second pointer contact adjacent said first pointer contact represents a gesture.

22. A touch system according to claim 20 wherein at least two simultaneous pointer contacts represents a gesture.

23. A touch system according to claim 20 wherein each gesture is represented by specified multiple pointer actions.

24. A touch system according to claim 23 wherein each gesture is further represented by pointer type.

25. An interactive input system comprising:

at least one imaging device having an input region within its field of view into which one or more pointers is moved to generate user input; and
at least one processor communicating with said at least one imaging device and analyzing each image acquired by said at least one imaging device to determine the action of pointers in said input region, said at least one processor determining when multiple pointer actions within said input region represent a gesture, when said multiple pointer actions represent a gesture, said at least one processor executing a command corresponding to said gesture.

26. An interactive input system according to claim 25 wherein each gesture is further represented by pointer type.

27. In an interactive touch system, a method of simulating a right-click mouse event comprising the steps of:

detecting a first pointer contact on a touch surface that represents a left-click mouse event;
detecting when a subsequent second pointer contact on said touch surface occurs within a threshold distance of said first pointer contact; and
generating a right-click mouse event in response to said detected second pointer contact.

28. The method of claim 27 wherein said second pointer contact must also occur during said first pointer contact in order for said right-click mouse event to be generated.

29. The method of claim 28 wherein said second pointer contact must also occur to the right of said first pointer contact in order for said right-click mouse event to be generated.

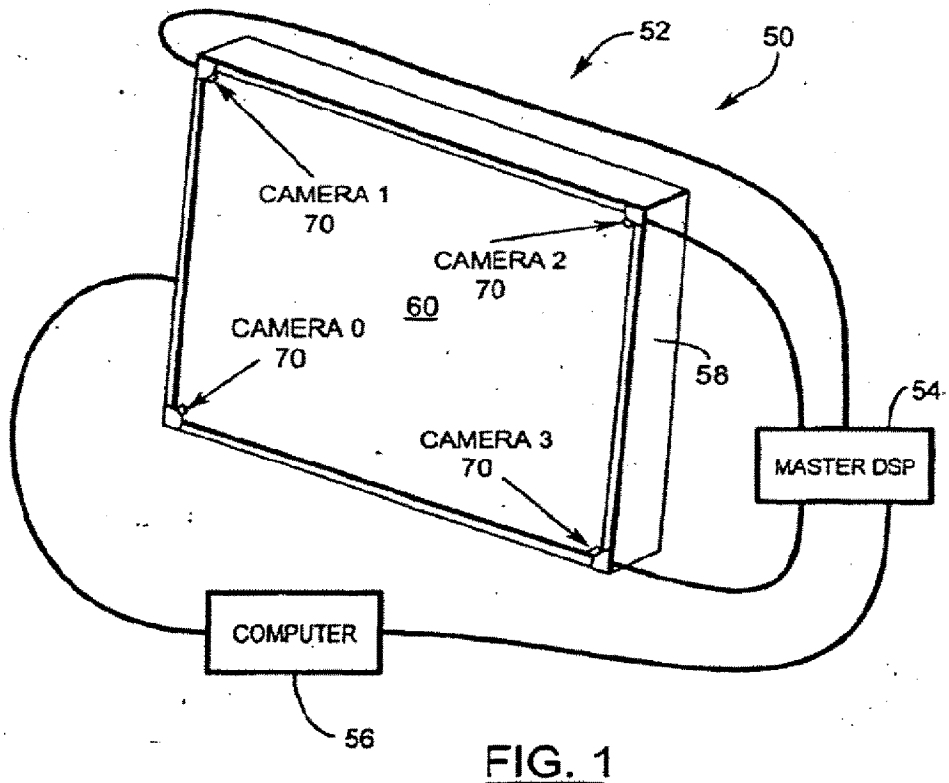

FIG. 1

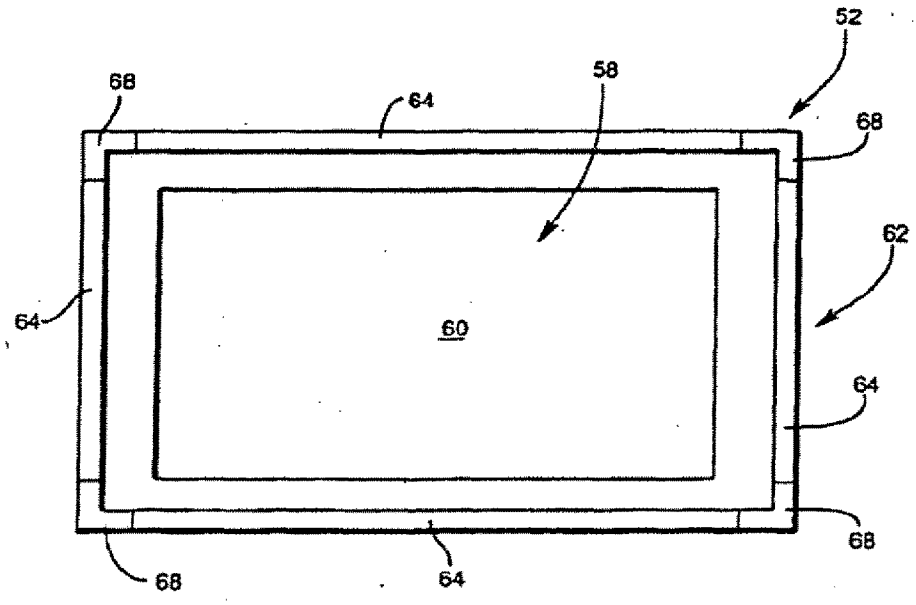

FIG. 2

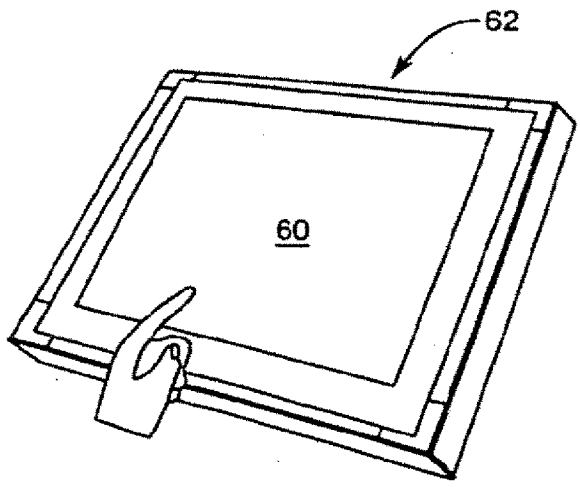

FIG. 3a

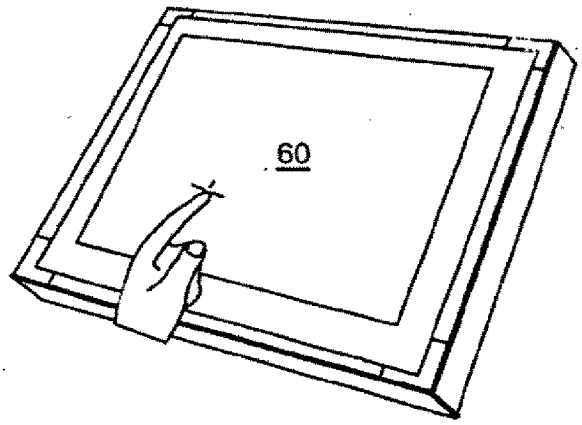

FIG. 3b

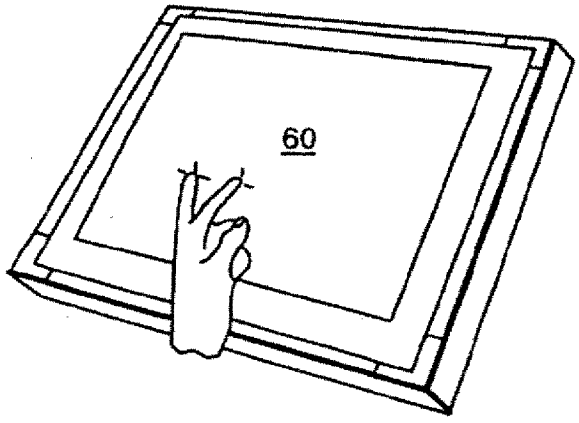

FIG. 3c

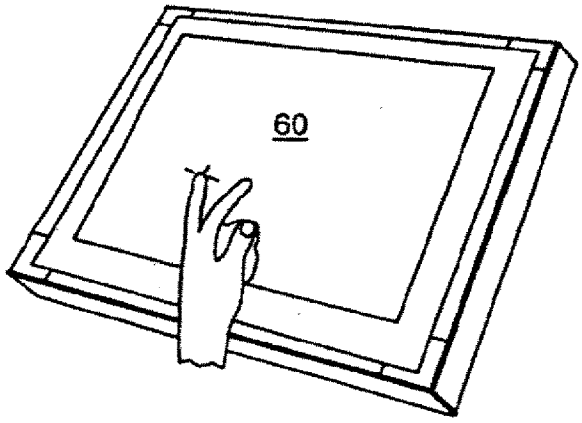

FIG. 3d

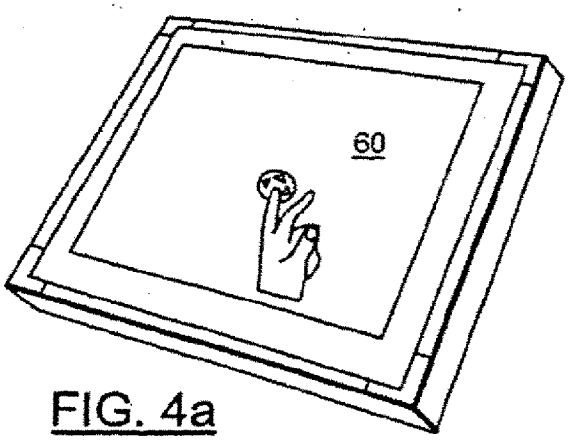

FIG. 4a

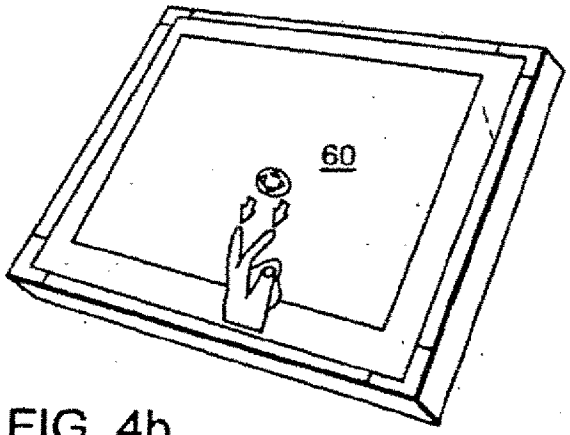

FIG. 4b

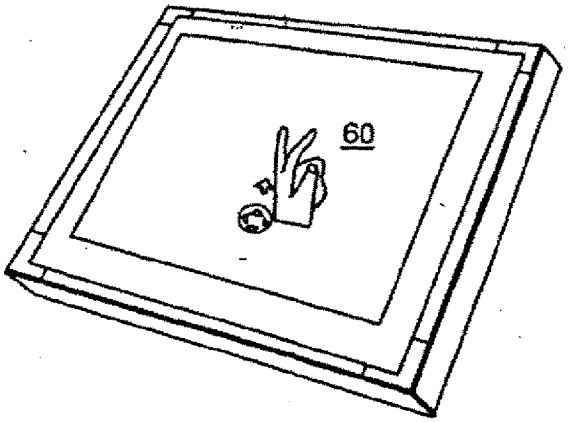

FIG. 4c

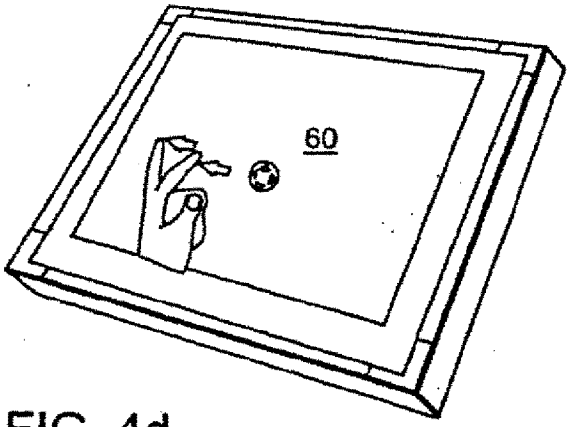

FIG. 4d

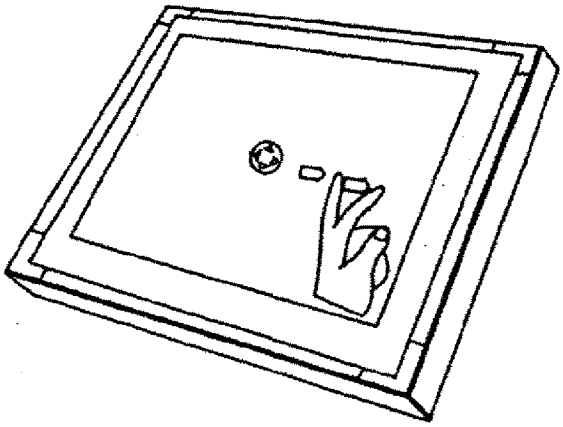

FIG. 4e

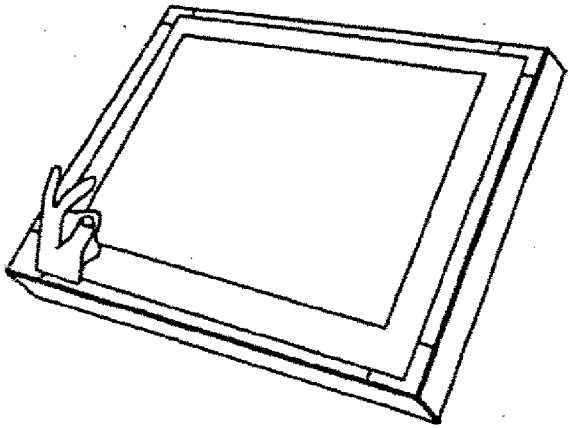

FIG. 4f

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European Patent Office
Office européen des brevets

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(54) Gesture recognition method and touch system incorporating the same

(57) A gesture recognition method includes detecting multiple pointers in close proximity to a touch surface to determine if the multiple pointers are being used to perform a known gesture. When the multiple pointers are being used to perform a known gesture, a command associated with the gesture is executed. A touch system incorporating the gesture recognition method is also provided.

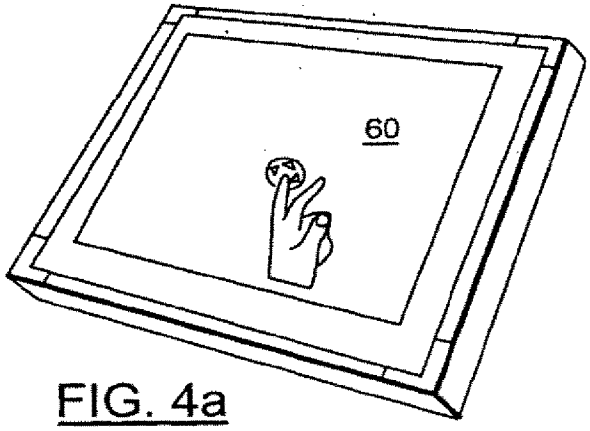

FIG. 4a

EP 1 517 228 A3

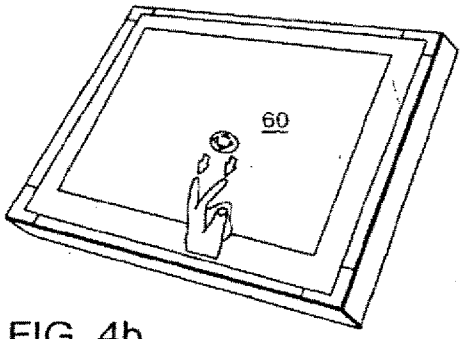

FIG. 4b

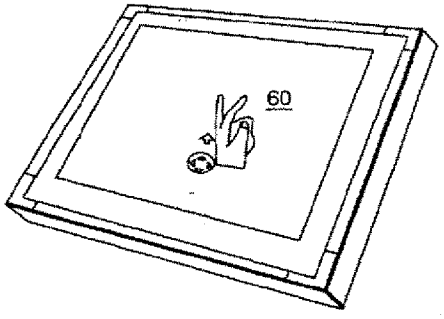

FIG. 4c

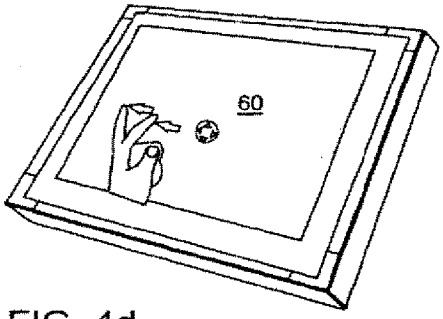

FIG. 4d

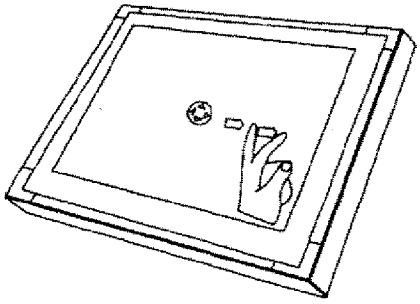

FIG. 4e

(Cont. next page)

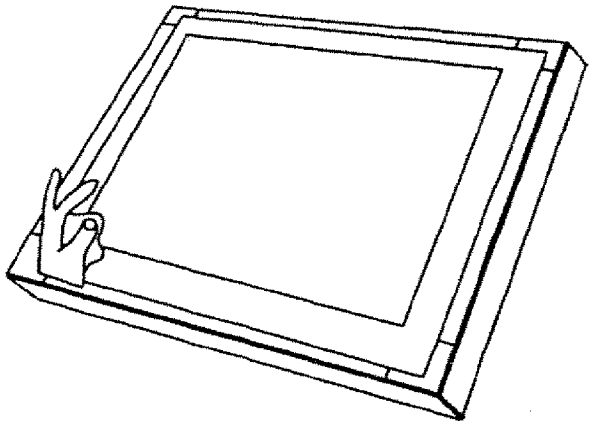

FIG. 4f

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 5568

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 746 770 A (MCAVINNEY PAUL [US]) 24 May 1988 (1988-05-24) * column 3, line 15 - column 4, line 49; figure 1 * * column 7, line 17 - column 8, line 18; figures 10-16 *	1-29	INV. G06F3/033
X	WO 98/07112 A (SYMBIOS LOGIC INC [US]; GILL DAVID ALAN [GB] SYMBIOS LOGIC INC [US]; G) 19 February 1998 (1998-02-19) * page 4, lines 1-9 * * page 6, line 22 - page 9, line 28 *	1-29	
X	WO 99/28812 A (NORTHERN TELECOM LTD [CA]) 10 June 1999 (1999-06-10) * the whole document *	1-29	
X	WO 02/08881 A (QINETIQ LTD [GB]; WORTHINGTON CHRISTOPHER [GB]; ANDREW IAN DUNCAN CAMP) 31 January 2002 (2002-01-31) * page 13, line 11 - page 14, line 9; figures 4,5 *	1-29	TECHNICAL FIELDS SEARCHED (IPC) G06F
A	WO 03/054681 A (NOKIA CORP [FI]; PIHLAJA PEKKA [FI]) 3 July 2003 (2003-07-03) * the whole document *	11	
A	US 6 278 443 B1 (AMRO HATIM YOUSEF [US] ET AL) 21 August 2001 (2001-08-21) * page 10, last paragraph - page 11, paragraph 1; figures 13,14 *	24,26	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Berlin	25 February 2008	Mouton, Benjamin

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 5568

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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25-02-2008

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		EP 0919023 A2	02-06-1999
		US 6208329 B1	27-03-2001
WO 9928812 A	10-06-1999	US 6310610 B1	30-10-2001
WO 0208881 A	31-01-2002	AU 7080801 A	05-02-2002
		AU 2001270808 A1	05-02-2002
WO 03054681 A	03-07-2003	AU 2002366877 A1	09-07-2003
		EP 1456740 A1	15-09-2004
		FI 20012540 A	21-06-2003
		US 2003146905 A1	07-08-2003
		US 2006267956 A1	30-11-2006
US 6278443 B1	21-08-2001	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Attn. Scheller, Jr James C.
1279 Oakmead Parkway
Sunnyvale, California 94085-4040
ETATS-UNIS D'AMERIQUE

RECEIVED
JUN 09 2008
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
SUNNYVALE INTELLECTUAL PROPERTY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 4860P4895PCT	Date of mailing *(day/month/year)* 04/06/2008
International application No. PCT/US2008/000089	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
Applicant APPLE INC.	International filing date *(day/month/year)* 04/01/2008

1. [x] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Marja Brouwers Date In to SV FF: 4908 Checked by: MB Reviewed by: Sent Out by SV FF on:

Form PCT/ISA/220 (October 2005) *(See notes on accompanying sheet)*

Scanned

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
4860P4895PCT		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2008/000089	04/01/2008	07/01/2007
Applicant		
APPLE INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of:

   [X] the international application in the language in which it was filed

   [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**

   a. the figure of the **drawings** to be published with the abstract is Figure No. 4

   [ ] as suggested by the applicant

   [X] as selected by this Authority, because the applicant failed to suggest a figure

   [ ] as selected by this Authority, because this figure better characterizes the invention

   b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/000089

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/048

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 517 228 A (SMART TECHNOLOGIES INC [CA]) 23 March 2005 (2005-03-23) paragraphs [0009], [0024], [0027], [0031]	1-51, 74-77, 80-88
X	US 2003/174149 A1 (FUJISAKI HITOMI [JP] ET AL) 18 September 2003 (2003-09-18) paragraphs [0001] - [0017]	52-73, 78,79
A	US 6 958 749 B1 (MATSUSHITA NOBUYUKI [JP] ET AL) 25 October 2005 (2005-10-25)	1-88

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
27 May 2008	04/06/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Davenport, Kevin

9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2008/000089

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1517228 A	23-03-2005	CA 2481396 A1	16-03-2005
		JP 2005108211 A	21-04-2005
		US 2005057524 A1	17-03-2005
US 2003174149 A1	18-09-2003	JP 3951727 B2	01-08-2007
		JP 2003233455 A	22-08-2003
US 6958749 B1	25-10-2005	JP 2001134382 A	18-05-2001

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2008/000089	04.01.2008	07.01.2007

International Patent Classification (IPC) or both national classification and IPC
INV. G06F3/048

Applicant
APPLE INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	see form PCT/ISA/210	Davenport, Kevin Telephone No. +31 70 340-2191

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	15-51,74-77,80-88
	No:	Claims	1-14,52-73,78,79,
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-88
Industrial applicability (IA)	Yes:	Claims	1-88
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1: EP-A-1 517 228 (SMART TECHNOLOGIES INC [CA]) 23 March 2005 (2005-03-23)
D2: US 2003/174149 A1 (FUJISAKI HITOMI [JP] ET AL) 18 September 2003 (2003-09-18)
D3: US-B1-6 958 749 (MATSUSHITA NOBUYUKI [JP] ET AL) 25 October 2005 (2005-10-25)

2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1,52 is not new in the sense of Article 33(2) PCT.

2.1 Regarding claim 1, the document D1 discloses a machine implemented method for scrolling on a display of a portable data processing device comprising:

receiving a user input (§9);

creating an event object in response to the user input (the very nature of data processing devices means that this will always occur);

determining whether the event object invokes a scroll or gesture operation (§24 - D1 discloses that both scrolling and scaling are two different types of gesture; while claim 1 does not define a scroll call as being initiated by a gesture, it may be seen from the description that a scroll call is initiated by a movement of a finger across the input device, which indeed constitutes a gesture; what is significant is that there is a differentiation between two different gestures;);

issuing at least one scroll or gesture call based on invoking the scroll or gesture operation (the very nature of data processing devices means that this will always occur);

responding to at least one scroll call, if issued, by scrolling a window having a view associated with the event object based on an amount of a scroll with the scroll stopped at a predetermined position in relation to the user input (§27 - " *If the user contacts the touch surface 60 with a pair of fingers simultaneously over an application window displayed on the touch surface and the fingers are closely and generally horizontally spaced, the driver recognizes the simultaneous finger contacts as a scroll gesture and injects a scroll event into the application.*"); and

responding to at least one gesture call, if issued, by scaling the view associated with the event object based on receiving a plurality of input points in the form of the user input (§31- "*If the user contacts the touch surface 60 with a pair of closely spaced fingers simultaneously over an application window and expands the distance between the fingers in a generally horizontal direction, the driver recognizes the finger movement as a zoom-out gesture.*").

The subject-matter of claim 1 is therefore not new.

The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claim 8, which therefore is also considered not new.

2.2 Regarding claim 52, D2 discloses a method for operating through an application programming interface (API) in an environment with user interface software interacting with a software application and a user input contacting a view of a display of a device, comprising transferring a directional scroll call to determine if directional scrolling is enabled. See D2, §11-§17.

2.2.1 With regard to the method of operating through an API, the use of an application programming interface is considered to be implicitly disclosed in the closest prior art for each case because it is standard practice to use an API to interface between and input device and the software which it is manipulating. See e.g. D3, §7-§13, §33.

2.3 The same reasoning applies, mutatis mutandis, to the subject-matter of the

corresponding independent claims 58,64,65,69,73,78 which therefore are also considered not new.

3 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 15 does not involve an inventive step in the sense of Article 33(3) PCT.

3.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 15, and discloses a method for operating through an application programming interface in an environment with user interface software interacting with a software application (§9). See also §2.2.1 supra.

The subject-matter of claim 15 therefore differs herefrom in that a set bounce call is transferred.

3.2 The problem to be solved by the present invention may therefore be regarded as how to present a more visually intuitive graphical user interface.

However, this problem is merely a problem of visual design nature, and thus cannot be used in the assessment of inventive step. The result achieved by solving this problem, namely the simulation of the natural phenomenon of bouncing of one object against another before eventually coming to rest has no technical effect on the usability of the interface by the user, and does not lead to an improved user - machine interaction. The claims merely define a solution which does not lead to technical effects once they are applied to a real world situation.

3.3 The ISA does not dispute the fact that technical means may be involved in the implementation of a more visually intuitive graphical user interface. However, a technical problem solved by this combination of technical means is not apparent.

Therefore, the technical problem has to be seen as how to implement a method

of presenting a more visually intuitive graphical user interface.

The inventive activity is then assessed using the general technical knowledge of the skilled person, in the sense of Article 33(3) PCT, which, in the present case is a programmer of graphical user interfaces, acting on instructions (see §2.8 supra) received from the person in charge of defining the visual design of the interface.

Starting from this knowledge, the skilled person, aware of the design requirements of the person in charge of defining the visual design of the interlace, would arrive at the proposed solution without the exercise of an inventive step. The implementation details described in the application, are well known algorithms used in the field of programming for looping through sequential lists. In general, said implementation does not require any technical considerations that go beyond the skilled person's normal technical abilities.

The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 20,25,26,29,32,74,80,86 which therefore are also considered not inventive.

4 The document D1 is regarded as being the closest prior art to the subject-matter of claim 33, and discloses a method for operating through an application programming interface in an environment with user interface kit interacting with a software application (§9). See also §2.2.1 supra.

4.1 The subject-matter of claim 33 therefore differs herefrom in that a rubberband call to cause a scrolled region displayed within a region of a device to rubberband is transferred.

4.2 The problem to be solved by the present invention may therefore be regarded as how to present a more visually intuitive graphical user interface.

However, this problem is merely a problem of visual design nature, and thus cannot be used in the assessment of inventive step. The result achieved by

solving this problem, namely the simulation of the natural phenomenon of the behaviour of two objects elastically bound to each other has no technical effect on the usability of the interface by the user, and does not lead to an improved user - machine interaction. The claims merely define a solution which does not lead to technical effects once they are applied to a real world situation.

4.3 A similar argumentation to that of §3.3 supra applies.

The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 39,44,45,48,51,76 which therefore are also considered not inventive.

5 The dependent claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step. See documents D1-D3 and the corresponding passages cited in the search report.

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

General information	For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.
Amending claims under Art. 19 PCT	Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.
Filing a demand for international preliminary examination	In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT). If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).
Filing informal comments	After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.
End of the international phase	At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPER (international preliminary examination report).
Relevant PCT Rules and more information	Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Attn. Scheller, Jr James C.
1279 Oakmead Parkway
Sunnyvale, California 94085-4040
ETATS-UNIS D'AMERIQUE

APR 23 2008

BLAKELY SOKOLOFF TAYLOR & ZAFMAN

Entered into FIP
By: dlm

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 4860P5040PCT	Date of mailing *(day/month/year)* 22/04/2008
International application No. PCT/US2008/000060	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
Applicant APPLE INC.	International filing date *(day/month/year)* 03/01/2008

1. [x] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer María Rodríguez Nóvoa

Form PCT/ISA/220 (October 2005) *(See notes on accompanying sheet)*

cc file

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
4860P5040PCT		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2008/000060	03/01/2008	07/01/2007
Applicant		
APPLE INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language,** the international search was carried out on the basis of:

[X] the international application in the language in which it was filed

[ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**

a. the figure of the **drawings** to be published with the abstract is Figure No. 4

[ ] as suggested by the applicant

[X] as selected by this Authority, because the applicant failed to suggest a figure

[ ] as selected by this Authority, because this figure better characterizes the invention

b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/000060

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/048

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 958 749 B1 (MATSUSHITA NOBUYUKI [JP] ET AL) 25 October 2005 (2005-10-25) the whole document	1-33, 35-96
X	US 5 534 893 A (HANSEN JR DANIEL J [US] ET AL) 9 July 1996 (1996-07-09) abstract column 2, line 33 - line 59 column 5, line 1 - column 9, line 46; figures 1-4	1-33, 35-96

[ ] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 April 2008	22/04/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Vieira, Alexandre

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2008/000060

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6958749 B1	25-10-2005	JP 2001134382 A	18-05-2001
US 5534893 A	09-07-1996	NONE	

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2008/000060	03.01.2008	07.01.2007

International Patent Classification (IPC) or both national classification and IPC
INV. G06F3/048

Applicant
APPLE INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this international Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:
European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Date of completion of this opinion
see form PCT/ISA/210

Authorized Officer
Vieira, Alexandre
Telephone No. +31 70 340-3378

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments: