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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/946,536	09/21/2004	Donn Rochette	78803 (120-2 US)	7612
27975 7590 11/18/2008 ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A. 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE P.O. BOX 3791 ORLANDO, FL 32802-3791			EXAMINER RONI, SYED A	
			ART UNIT 4113	PAPER NUMBER
			NOTIFICATION DATE 11/18/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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creganoa@addmg.com

Office Action Summary	Application No. 10/946,536	Applicant(s) ROCHETTE ET AL.	
	Examiner SYED RONI	Art Unit 4113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/21/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20051018, 20061128</u> . | 6) ☐ Other: ____. |

DETAILED ACTION

Information Disclosure Statement

The references cited within the IDS documents, submitted on October 18, 2005 and November 28, 2006 have been considered.

Claim Rejections - 35 USC § 112

Claims 1 – 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the phrase “said software applications” in line 9 of the claim. There are three different “software applications” in lines 1, 6 and 8. It is unclear which “software applications” is being referred by the phrase.

Claims 2 to 20 are dependent claims and are also rejected since they depend from claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1 - 20 are rejected under 35 U.S.C. 102 (b) as being anticipated by Cabrero et al. (6,260,075 B1).

Regarding **claim 1**, Cabrero et al. teaches a computer system employing a microkernel [i.e., kernel] uses common shared libraries [i.e., shared library]. Rather than each task [i.e., application] setting up its own libraries, during compile a Global Offset Table [i.e., SLCSE] is set up for each task so that the task can use common shared libraries (col 3, lines 29 - 34); (Note; according to claim 1, instances of some of the Shared Library Critical System Elements (SLCSE) are accessible to a plurality of software applications. Likewise, in Cabrero et al, a Global Offset Table (GOT) which is an instance of a Shared Library is accessible to all of the tasks).

Cabrero et al. further teaches that a feature of the microkernel system is to provide a simple, extensible communication kernel. The objective of the microkernel system is to permit the flexible configuration of services in either user or kernel space (col 6 lines 28 - 30). (Note; the services offered by kernel mode is also extensible or available in user mode. Thus, the task is accessing GOT in the use mode [i.e., Context of Software Applications]).

Cabrero et al. further teaches that each task has an associated address map [Instances of Shared Library Critical System Elements] that is separate from the address maps for the other tasks (col 7 lines 11 -13); (Note; each tasks gets the unique instances of GOT. So each task can access shared libraries without conflicting with another task).

Caberero further teaches that user mode tasks have the ability to participate in the address mapping mechanism (col 7 lines 22 - 23). (Note; implies that the task address mapping is done in the context of user task [i.e., context of application]).

Regarding **claim 2**, Cabrero et al. teaches a task [application] can allocate new ranges of memory within its address space (col 7 line 31 - 32). (Note; multiple ranges of address map [instances of SLCSE] is allocated by the task. Thus, multiple different tasks are being run since each address map uniquely identifies each task).

Regards **claim 3**, Cabrero et al. teaches that the Common Shared Libraries (CSL) because of its shared nature, it's Global Offset Table [SLCSE] can only be instrumented to the microkernel [i.e., kernel] common services [essential function] (col 8 lines 40 to 42); (Note; the GOT can also perform kernels common services).

Cabrero et al. further teaches that a feature of the microkernel system is to provide a simple, extensible communication kernel. The objective of the microkernel system is to permit the flexible configuration of services in either user or kernel space (col 6 lines 28 - 30). (Note; the services offered by kernel mode is also extensible or available in user mode or kernel mode. Thus, the functions available to GOT are also available to Kernel [OSCSE]).

Regards **claim 4**, Cabrero et al. teaches that each task [application] has an associated address map, separate from the address maps for the other tasks that is maintained by the kernel and controls the translation of virtual address in the task's address space into physical addresses (col 7 lines 11 - 16). (Note; memory address is being mapped to its respected tasks that separate task A from task B.)

Regarding **claim 5**, Cabrero et al. further teaches that a feature of the microkernel system is to provide a simple, extensible communication kernel. The objective of the microkernel system is to permit the flexible configuration of services in either user or kernel space (col 6 lines 28 - 30). (Note; the services offered by kernel mode is also extensible or available in user mode. Thus, the task is accessing GOT in the use mode [i.e., Context of Software Applications]).

Regards **claim 6**, Cabrero et al. teaches a Global Offset Table (GOT) used by first application task; and generating a second applications task by another of said personality servers, and using said GOT by second application task (col 12 lines 1 - 4).

Regards **claim 7**, the Cabrero et al. teaches that a microkernel task [kernel module] must communicate with many other tasks that provide the required services (col 7 lines 55 - 56).

Cabrero et al. further teaches that the microkernel system uses a client/server system architecture in which tasks access services by making request of other tasks through messages sent [i.e., notification of events] over a communication channel. (col 7 lines 50 - 55)

Cabrero et al. further teaches that this message transfer is an asynchronous operation [i.e., asynchronous event] (col 8 line 4).

Regarding **claim 8**, Cabrero et al. teaches that the microkernel system uses a client/server system architecture in which tasks access services by making request of other tasks through messages sent [i.e., notification of events] over a communication channel (col 7 lines 50 - 55).

Cabrero et al. further teaches that the communication channels of the interprocess communication (IPC) mechanism [i.e., Up Call Mechanism] are called ports [i.e., handler] (Note; In light of the specification, Up Call Mechanism is defined to be a means by which a service in kernel mode executes a functions in a user mode application context).

Regarding **claim 9**, Cabrero et al. teaches that the communication channels of the interprocess communication (IPC) mechanism [i.e., Up Call Mechanism] are called ports [i.e., handler] (Note; In light of the specification, Up Call Mechanism is defined to be a means by which a service in kernel mode executes a functions in a user mode application context).

Regarding **claim 10**, Cabrero et al. teaches that the Common Shared Libraries (CSL) because of its shared nature, it's Global Offset Table [SLCSE] can only be instrumented to the microkernel [i.e., kernel] common services [essential function] (col 8 lines 40 to 42); (Note; the GOT can also perform kernels common services).

Regarding **claim 11**, Cabrero et al. teaches that each task has an associated address map [Instances of Shared Library Critical System Elements] that is separate from the address maps for the other tasks (col 7 lines 11 -13); (Note; each tasks gets the unique instances of GOT. So each task can access shared libraries without conflicting with another task).

Regarding **claim 12**, Cabrero et al. teaches that Global Offset Table (GOT) can only be instrumented to the microkernel common services [i.e., kernel services] (col 8

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lines 41 - 42). (Note, services offered by the operating system kernel for device access, interrupt delivery, and virtual memory mapping are considered standard services.)

Regarding **claim 13**, Cabrero et al. teaches that the microkernel system uses a client/server system architecture in which tasks access services by making request of other tasks through messages sent over a communication channel [i.e., Network Protocol Process] (col 7 lines 50 - 55).

Cabrero et al. further teaches that CSL typically needs the following types of services: (a) threading-package-related services; (b) heap management; [i.e., management of files] (c) error reporting/logging; (d) trace message output; (e) dynamic loader services; (f) terminal character output; (g) locks; and (h) semaphores (col 9 lines 25 - 29).

Regarding **claim 14**, Cabrero et al. teaches that each task has an associated address map [Instances of Shared Library Critical System Elements] that is separate from the address maps for the other tasks (col 7 lines 11 -13); (Note; the address map of each task is different from another task).

Regarding **claim 15**, Cabrero et al. teaches that it is an objective of the microkernel system to permit the flexible configuration of services in either user or kernel space (col 6 lines 29 - 30).

Regarding **claim 16**, Cabrero et al. teaches that a feature of the microkernel system is to provide a simple, extensible communication kernel. The objective of the microkernel system is to permit the flexible configuration of services in either user or

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kernel space (col 6 lines 28 - 30). (Note; the services offered by kernel mode is also available in user mode and vice versa).

Regarding **claim 17**, Cabrero et al. teaches rather than each task [i.e., application] setting up its own libraries during compile a Global Offset Table (GOT) [i.e., SLCSE] set up for each task (col 3 lines 32 - 35).

Regarding **claim 18**, Cabrero et al. teaches that the Common Shared Libraries (CSL) because of its shared nature, it's Global Offset Table [SLCSE] can only be instrumented to the microkernel [i.e., kernel] common services [essential function] (col 8 lines 40 to 42); (Note; the GOT can also perform kernels common services).

Cabrero et al. further teaches that a feature of the microkernel system is to provide a simple, extensible communication kernel. The objective of the microkernel system is to permit the flexible configuration of services in either user or kernel space (col 6 lines 28 - 30). (Note; the services can be used in either kernel or user mode).

Regarding **claim 19**, Cabrero et al. teaches a computer system employing a microkernel [i.e., kernel] uses common shared libraries [i.e., shared library]. Rather than each task [i.e., application] setting up its own libraries, during compile a Global Offset Table [i.e., SLCSE] is set up for each task so that the task can use common shared libraries (col 3, lines 29 - 34); (Note; according to claim 1, instances of some of the Shared Library Critical System Elements (SLCSE) are accessible to a plurality of software applications. Likewise, in Cabrero et al., a Global Offset Table (GOT) which is an instance of a Shared Library is accessible to all of the tasks).

Regarding **claim 20**, Cabrero et al. teaches that it is an object of the invention to provide an improved microkernel [i.e., Operating System] to provide improved microkernel architecture for a data processing system (col 3 lines 31 -33)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED RONI whose telephone number is (571)270-7806. The examiner can normally be reached on Monday to Friday, 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott B. Geyer can be reached on (571)272-1958. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

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Customer Service Representative or access to the automated information system, call
800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SYED RONI/

Examiner, Art Unit 4113

/Scott B. Geyer/

Supervisory Patent Examiner, Art Unit 4113

Notice of References Cited	Application/Control No. 10/946,536		Applicant(s)/Patent Under Reexamination ROCHETTE ET AL.	
	Examiner SYED RONI		Art Unit 4113	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,260,075	07-2001	Cabrero et al.	719/310
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Index of Claims</i> 	Application/Control No. 10946536	Applicant(s)/Patent Under Reexamination ROCHETTE ET AL.
	Examiner SYED RONI	Art Unit 4113

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	11/06/2008								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	)	Atty. Docket No.:
ROCHETTE ET AL.	)	78803 (120-2 US)
	)	
Serial No. 10/946,536	)	Art Unit: 4113
	)	
Filing Date: SEPTEMBER 21, 2004	)	Examiner:
	)	SYED A. RONI
Confirmation No. 7612	)	
	)	
For: COMPUTING SYSTEM HAVING USER	)	
MODE CRITICAL SYSTEM ELEMENTS	)	
AS SHARED LIBRARIES	)	
	)	

AMENDMENT

EFILED

Dear Sir:

In response to the Office Action dated November 18, 2008
please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of
claims, which begins on page 2 of this paper.

Remarks begin on page 7 of this paper.

In re Patent Application of:

ROCHETTE ET AL.

Serial No. **10/946,536**

Filed: **09/21/2004**

Amendments to the Claims

1. (currently amended) A computing system for executing a plurality of software applications comprising:

a) an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode; and,

b) a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and

i) wherein some of the SLCSEs stored in the shared library are replicas of OSCSEs and are accessible to some of the [[a]] plurality of ~~the~~ software applications and when one of the SLCSEs is accessed by one or more of the plurality of software applications it ~~form~~ forms a part of the one or more of the plurality of software applications, and

ii) wherein an instance of a SLCSE provided to [[an]] one or more of the plurality of software ~~application~~ applications from the shared library is run in a context of said one or more of the plurality of software ~~application~~ applications without being shared with other of the plurality of software applications and where ~~some~~ one or more other of the plurality of software applications running under the operating system ~~each~~ have use of a unique instance of a corresponding critical system element for performing essentially the same function.

2. (original) A computing system as defined in claim 1, wherein in operation, multiple instances of an SLCSE stored in

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the shared library run simultaneously within the operating system.

3. (original) A computing system according to claim 1 wherein OSCSEs corresponding to and capable of performing essentially the same function as SLCSEs remain in the operating system kernel.

4. (currently amended) A computing system according to claim 1 wherein the one or more SLCSEs provided to ~~[[an]]~~ one of the plurality of software application applications having exclusive use thereof, use system calls to access services in the operating system kernel.

5. (original) A computing system according to claim 1 wherein the operating system kernel comprises a kernel module adapted to serve as an interface between a SLCSE in the context of an application program and a device driver.

6. (currently amended) A computing system as defined in claim 1, wherein an SLCSE related to a predetermined function is provided to a first of the plurality of software application applications for running ~~[[an]]~~ first instance of the SLCSE, and wherein an SLCSE for performing essentially a same function is provided to a second of the plurality of software application applications for running a second instance of the SLCSE simultaneously.

7. (original) A computing system according to claim 5 wherein the kernel module is adapted to provide a notification of an event to an SLCSE running in the context of an application program, wherein the event is an asynchronous

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event and requires information to be passed to the SLCSE from outside the application.

8. (currently amended) A computing system according to claim 7 wherein a handler is provided for notifying the SLCSE in the context of one of the plurality of software applications ~~an application~~ through the use of an up call mechanism.

9. (original) A computing system according to claim 7 wherein the up call mechanism in operation, executes instructions from an SLCSE resident in user mode space, in kernel mode.

10. (currently amended) A computing system according to claim 2, wherein a function overlay is used to provide ~~[[a]]~~ one of the plurality of software applications ~~application~~ access to operating system services.

11. (currently amended) A computing system according to claim 2 wherein SLCSEs stored in the shared library are linked to particular software applications of the plurality of software applications as the particular software applications are loaded such that the particular software applications have a link that provides unique access to a unique instance of a CSE.

12. (original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping.

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13. (original) A computing system according to claim 1, wherein SLCSEs include services related to at least one of, network protocol processes, and the management of files.

14. (currently amended) A computing system according to claim 11 wherein some SLCSEs are modified for a particular one of the plurality of software ~~application~~ applications.

15. (original) A computing system according to claim 14 wherein the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel.

16. (original) A computing system according to claim 5 wherein the kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and wherein the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode.

17. (currently amended) A computing system according to claim 1 wherein SLCSEs form a part of at least some of the plurality of software applications, by being linked thereto.

18. (original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping and otherwise execute without interaction from the operating system kernel.

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19. (original) A computer system as defined in claim 2 wherein SLCSEs are not copies of OSLCEs.

20. (original) An operating system comprising the computing system of claim 2.

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REMARKS

Claims 1-20 are pending in this application and are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the phrase "said software applications" in line 9 of the claim. As the Examiner correctly points out, there are three different "software applications" recited in lines 1, 6, and 8, and it is unclear which "software applications" are being referred to by the phrase.

Claims 1, 6 and 8 have been amended to obviate this indefiniteness and the term "plurality of software applications" recited in the preamble is consistently used within the body of the claims.

Claims 1-20 are rejected under 35 U.S.C. § 102 (b) as being anticipated by U.S. Patent 6,260,075 B1 ("Cabrero et al.").

Claim 1 of the instant application has been amended so as to more clearly distinguish from the teachings of Cabrero et al. and to more distinctly define the invention.

Applicants have carefully considered the Examiner's reasons for rejecting claim 1 and would like to clarify substantial differences between Cabrero et al. and the newly amended claim 1 of the instant application.

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The Examiner states in the Office Action that Cabrero et al. teach a computer system employing a micro-kernel (i.e. a kernel), which uses common shared libraries. This is correct, however, Cabrero et al. make no mention of "operating system critical system elements" or "shared library critical system elements". It is fully acknowledged that Cabrero et al. describe shared libraries. However, the claimed invention utilizes such shared libraries as a way of duplicating critical system elements provided by the operating system and Cabrero et al. do not do this. In a system having a micro-kernel, critical services such as TCP IP, and file services are stand alone applications that are not part of the micro-kernel, thus, they do not reside within the micro-kernel, this in fact being a difference in the structure of a micro-kernel from a monolithic kernel. This difference, in fact, gives rise to the claimed invention. Applicants' claim is to a computing system for executing a plurality of software applications comprising an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode; and, a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode wherein the OSCSEs are replicated as SLCSEs stored in the shared libraries. Therefore, a TCP IP application within the user library is used by a voice processing application like Skype, such that TCP IP becomes part of the application requesting it, wherein it can be tailored to handling Skype and general purpose requests for TCP IP can be provided by the OS, since the CSE resides in both the kernel and in the shared library.

Claims 2 and 3 define embodiments, with further distinctions over Cabrero et al.

Claim 2 defines: A computing system as defined in claim 1, wherein in operation, multiple instances of an SLCSE stored in the shared library run simultaneously within the operating system.

Once again, Applicants acknowledge that Cabrero et al. have and make use of shared libraries. What Cabrero et al. do not do is replicate CSEs present in the OS so that they can also be stored within the shared libraries; and they do not have the capability of running a CSE "simultaneously" from the shared library and the OS. In fact, Cabrero et al.'s TCP IP and other essential services are independent applications that neither reside in the OS nor in shared libraries.

Claim 3 defines a computing system according to claim 1 wherein OSCSEs corresponding to and capable of performing essentially the same function as SLCSEs remain in the operating system kernel. This claim reinforces the fact that OSCSEs that correspond to SLCSEs remain within the kernel. Once again, it must be stressed that CSEs, such as TCP IP, do not reside in Cabrero et al.'s micro-kernel or in the shared libraries.

Amended claim 4 defines a computing system according to claim 1 wherein the one or more SLCSEs provided to one of the plurality of software applications having exclusive use thereof, use system calls to access services in the operating system kernel.

Applicants would like to put claim 4 in context of claim 1 from which it depends. Claim 1 defines a system wherein critical system elements normally residing in the OS under the

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control of the kernel are replicated and stored within shared libraries so that applications requiring the use of the CSE can incorporate it into the application as if it would be a part of the application. At the same time, the CSE can be utilized by the kernel for general purpose requests. An example given before of such a CSE is TCP IP. Claim 4 further recites the one or more SLCSEs provided to one of the plurality of software applications having exclusive use of the SLCSE and wherein system calls are used to access services in the operating system kernel. Cabrero et al. teach no such system.

Claim 5 defines a computing system according to claim 1 wherein the operating system kernel comprises a kernel module adapted to serve as an interface between a SLCSE in the context of an application program and a device driver.

There is no doubt that Cabrero et al. do not teach or suggest the feature defined in claim 5. Firstly, Cabrero et al. have no SLCSEs that are replicas of OS CSEs, which claim 5 defines. Secondly, Cabrero et al. have a micro-kernel, which is not adapted to serve as an interface between SLCSEs in the context of an application program and a device driver. It should be noted that a SLCSE in the context of an application is, for example, TCP IP under the request/control of an application. This SLCSE has a corresponding OS CSE, which is not the case in Cabrero et al.

Claim 6 defines: A computing system as defined in claim 1, wherein an SLCSE related to a predetermined function is provided to a first of the plurality of software applications for running first instance of the SLCSE, and wherein an SLCSE

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for performing essentially a same function is provided to a second of the plurality of software applications for running a second instance of the SLCSE simultaneously.

Applicants appreciate the Examiner's explanation of the global offset table (GOT) taught by Cabrero et al. Notwithstanding, claim 6 defines an entirely different invention than Cabrero et al. teach.

For example, claim 6 provides a system where critical system elements or services are replicated and can be accessed simultaneously by the kernel or by an application in user mode by way of the application using an instance of the CSE within a shared library. As was pointed out before, this is in contradistinction to what is taught by Cabrero et al. Secondly, claim 6 allows different instances of an SLCSE performing a same function to be executed simultaneously by another one or more applications. However, in the context of the system defined in claim 1, claim 6 adds further distinctions to claim 1 which clearly distinguishes from Cabrero et al.

Claim 8 is rejected as being obvious in view of Cabrero et al. The Examiner indicates that Cabrero et al. further teach that this message transfer is an asynchronous operation [i.e., a synchronous event]. In rejecting claim 8 the Examiner states that Cabrero et al. teach that a micro-kernel system uses client/server system architecture in which tasks access services by making request of other tasks through messages sent over a communication channel; and that Cabrero et al. further teach that the communication channels of the interprocess communication (IPC) mechanism [i.e., Up Call

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Mechanism] are called ports [i.e., handler]. The Examiner further suggests that in light of the specification, Up Call Mechanism is defined to be a means by which a service in kernel mode executed a function in a user mode application context.

Firstly, Applicants would like to point out that claim 8 depends upon claims 7, 5, and 1 and includes the recitations from these claims from which it depends. More importantly, claim 8 distinguishes from Cabrero et al. who do not teach an up-call mechanism. Message passing in an Inter-process communication (IPC) in a micro-kernel is significantly different than an Up Call Mechanism. For example, with a message passing paradigm a process makes a system call to the kernel, causing a message to be placed in a queue. A second process makes a system call to the kernel to receive any message in said queue. A response is delivered by the second process through a system call to the kernel, resulting in the response message being placed in a queue. The first process receives the response by making a system call to the kernel to retrieve any message on said queue. An upcall mechanism allows a function in kernel mode to execute code in user mode in the following manner: parameters for the call being made in user mode are taken from the kernel stack and used to build a stack in the user mode process address space, as part of a larger stack frame for a trap return operation. A CPU trap return instruction is executed to transition the CPU from privileged/kernel mode to protected/user mode. It is clear that the two mechanisms are vastly different.

Claim 9 further distinguishes from the teachings of Cabrero et al. by defining that the Up Call mechanism allows a

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function in kernel mode to execute code resident in a user mode CSE. The benefit of this is significant. The difference between user and kernel mode is significant. Furthermore, the ability to execute code in this manner has a profound impact on performance and simplicity implications. One effective way to provide context to the efficacy of an Up Call Mechanism is to use an analogy. Where an RPC (Remote Procedure Call) allows a process on one computer to execute functions on another computer, an Up Call allows kernel code to execute user code.

Amended Claim 10 defines the computing system according to claim 2, wherein a function overlay is used to provide one of the plurality of software applications access to operating system services. The use of a functional overlay provides an efficiency mechanism allowing user mode CSE to more effectively access kernel mode code. This is simply not suggested by Cabrero et al.

Claim 11 is rejected in view of Cabrero et al. The Examiner suggests that Cabrero et al. teach that each task has an associated address map [Instances of Shared Library CSE] that is separate from the address maps for other tasks (col 7 lines 11-13). It is further suggested by the Examiner that since each task gets the unique instance of the GOT, each task can access shared libraries without conflicting with another task.

Claim 11 defines: A computing system according to claim 2 wherein SLCSes stored in the shared library are linked to particular software applications of the plurality of software applications as the particular software applications are

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loaded such that the particular software applications have a link that provides unique access to a unique instance of a CSE.

As was indicated above, Cabrero et al's system, which uses a micro-kernel has critical system elements, such as TCP IP, as separate programs distinct from those that run in shared libraries. Claim 11 distinctly claims that user mode CSEs are part of an application, distinct from the micro-kernel design where user mode CSEs are independent applications. Furthermore, these CSEs are replicated CSEs that remain a part of the kernel. The Examiner suggests that the GOT allows a unique instance of a task within a shared library. The invention defined in claim 11 is simply not suggested by Cabrero et al. Their teaching of a micro-kernel, and shared libraries with all the typical functionality of a shared library does not include the Applicants' claimed invention, wherein CSEs are replicated and can be accessed by the kernel or by applications from shared libraries. Claim 11 still further defines this functionality in a manner not suggested by Cabrero et al.

Claim 12 is rejected in view of Cabrero et al. The Examiner again suggests that Cabrero et al.'s GOT can only be instrumented to the micro-kernel common services and that services offered by the OS kernel for device access, interrupt delivery, and virtual mapping are considered standard services.

Claim 12 defines a computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the

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operating system kernel for device access, interrupt delivery, and virtual memory mapping.

Once again, claim 12 must be taken in context of its full recitations.

Claim 12 recites a computing system for executing a plurality of software applications comprising:

- a) an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode; and,
- b) a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and
 - i) wherein some of the SLCSEs stored in the shared library are replicas of OSCSEs and are accessible to some of the plurality of software applications and when one of the SLCSEs is accessed by one or more of the plurality of software applications it forms a part of the one or more of the plurality of software applications, and
 - ii) wherein an instance of a SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of said one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function, and

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wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping.

It should be evident after reading claim 12 that its recitations are not taught by Cabrero et al. who teach a micro-kernel system where user mode CSEs are independent programs not residing in shared libraries and where OSCSEs are not replicated into user mode CSEs and wherein SLCSEs residing in a shared library (i.e. replicated OSCSEs) utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping.

Claim 13 further defines the replicated services to include services related to at least one of network protocol processes and the management of files. Cabrero et al.'s network protocol processes and file management processes are independent programs neither residing in the kernel nor in a shared library.

Claim 14 has been rejected in view of Cabrero et al. Amended claim 14 defines computing system according to claim 11 wherein some SLCSEs are modified for a particular one of the plurality of software applications.

In rejecting claim 14, which incorporates all of the recitations of the claims from which it depends and which are patentable, the Examiner states that Cabrero et al. teach that each task has an associated address map [Instances of shared library CSEs] that are separate from the address maps of other tasks. Notwithstanding, the system defined in claim 14 is

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simply not taught by Cabrero et al. One of the important features of the claimed invention is that an OS critical system element may have a replica that is tailored to a specific application while at the same time a general purpose OS CSE that is directed to a same service resides in the kernel for general use. Having the service reside with the kernel for general use and having a replica of that service with specific attributes within the shared library offers much greater efficiency. There is no mention of this in Cabrero et al.

Claim 15 further defines this feature wherein the SLCSEs that are application specific reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel. The Examiner, in rejecting claim 15, has stated that Cabrero et al. teach that a feature of a micro-kernel system is to provide the flexible configuration of services in either user space or kernel space. Firstly, this is certainly not a recitation of Applicants' claim 15, and secondly, this implies that some services will be in "either" the user space or kernel space. This is not a teaching of having the services in both user space and kernel space. In a micro-kernel architecture, critical services neither reside in user space nor kernel space; they reside as separate applications accessible by the micro-kernel.

In summary, the claimed invention provides services normally found within the kernel to be duplicated so as to be present within shared libraries so as to form a part of applications requesting these critical services. Thus, these CSEs are present in the kernel and in the shared libraries and

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can be run simultaneously. Furthermore, a CSE may have several unique instances running from different applications requesting the service from a shared library, where at the same time the same service, i.e. TCP IP, may be running in a more general purpose manner from within the kernel.

In view of the amended claims and the Applicants' comments regarding the patentable differences over the system taught by Cabrero et al., Applicants believe that the claims of the instant application are now in condition for allowance.

Early and favorable reconsideration of the application would be appreciated.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-2810 and please credit any excess fees to such deposit account.

Respectfully submitted,

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10/946,536	09/21/2004	Donn Rochette	78803 (120-2 US)	7612
27975 7590 04/02/2009 ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A. 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE P.O. BOX 3791 ORLANDO, FL 32802-3791			EXAMINER RONI, SYED A	
			ART UNIT 4113	PAPER NUMBER
			NOTIFICATION DATE 04/02/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

creganoa@addmg.com

Office Action Summary	Application No. 10/946,536	Applicant(s) ROCHETTE ET AL.	
	Examiner SYED RONI	Art Unit 4113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☐ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) ☐ Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-20 are rejected under 35 U.S.C. 102 (b) as being anticipated by Cabrero et al. (6,260,075 B1).

Regarding **claim 1**, (currently amended) A computing system for executing a plurality of software applications comprising: a) **an operating system having an operating system kernel** [i.e., Cabrero et al. teaches an improved microkernel architecture for a data processing system (Column 3, lines 28 - 29)] **having OS critical system elements (OSCSEs) for running in kernel mode** [i.e., Cabrero et al. teaches in figure 1 that microkernel includes virtual memory module 23, tasks and threads module 24, host and processor sets 25 and I/O support and interrupts module 26 (see figure 1)]; and, b) **a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode** [i.e., Cabrero et al. teaches in figure 2 that application tasks 40a – 41b share a common share library 44. An example of a common shared library is an interface library for the microkernel OS or operating system of figure 1 (Column 8, lines 36 – 40)] and
i) wherein **some of the SLCSEs stored in the shared library are replicas of OSCSEs**

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[i.e., Cabrero et al. teaches that the CSL 44, because of its shared nature, e.g., its global offset table, can only be instrumented to the microkernel common services (Column 8, lines 40 - 42)] **and are accessible to some of the [[a]] plurality of t-be software applications** [i.e., Cabrero et al. teaches that rather than each task setting up its own libraries, during compile a global offset table is set up for each task so the tasks can use common shared libraries (Column 3, lines 33 - 35)] **and when one of the SLCSEs is accessed by one or more of the plurality of software applications it** 4em-m **forms a part of the one or more of the plurality of software applications,** and

ii) wherein **an instance of a SLCSE provided to [[an]] one or more of the plurality of software** application **applications from the shared library** [i.e., Cabrero et al. teaches that various tasks 40 and 41 executing in the computer system 10 under the operating system of figure 1, will, according to a feature of the present invention, use the same GOT (Column 9, lines 4 - 8)] **is run in a context of said one or more of the plurality of software** application ~~applications~~ [i.e., Cabrero et al. teaches that unlike traditional virtual memory designs, the microkernel system 10 does not implement all the caching itself. It gives user mode tasks the ability to participate in these mechanism (Column 7, lines 20 - 23)] **without being shared with other of the plurality of software applications** and where **one or more other of the plurality of software applications** running under the operating system ~~each have use of a unique instance of a corresponding critical system element for performing essentially the same function~~ [i.e., Cabrero et al. teaches that dominant personality applications 38 are

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UNIX type applications which would run on top of the UNIX operation system personality 32. The alternative personality application 39 are OS/2 applications which run on top of the OS/2 alternative personality operation system 35 (Column 5, lines 37 - 43), (see figure 1)].

Regarding **claim 2**, (original) A computing system as defined in claim 1, wherein in operation, **multiple instances of an SLCSE stored in the shared library run simultaneously within the operating system** [i.e., Cabrero et al. teaches that the CSL because of its shared nature, e.g., its global offset table, can only be instrumented to the microkernel common services (Column 8, lines 40 - 42)], [i.e., Cabrero et al. further teaches in figure 1 that multiple personality applications can be run on a microkernel at the same time (see figure 1)].

Regarding **claim 3**, (original) A computing system according to claim 1 wherein **OSCSEs corresponding to and capable of performing essentially the same function as SLCSEs** [i.e., Cabrero et al. teaches that the CSL because of its shared nature, e.g., its global offset table, can only be instrumented to the microkernel common services (Column 8, lines 40 - 42)] **remain in the operating system kernel** [i.e., Cabrero et al. teaches that it is an objective of the microkernel system to permit the flexible configuration of services in either user or kernel space (Column 6, lines 28 - 30)]

Regarding **claim 4**, (currently amended) A computing system according to claim 1 wherein **the one or more SLCSEs provided to [[an]] one of the plurality of software applications having exclusive use thereof** [i.e., Cabrero et al. teaches that application tasks 40a – 41b share a common shared library (Column 8, lines 37 - 38)],

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[i.e., Cabrero et al. further teaches that the global offset table of common shared library is instrumented with the microkernel common services (Column 8, lines 40 - 42)],, **use system calls to access services in the operating system kernel** [i.e., Cabrero et al. teaches in figure 1 that tasks communicate with microkernel via IPC module (see figure 1)], [i.e., Cabrero et al. further teaches that since the microkernel provides very few services of its own, a microkernel task must communicate with many other tasks that provide the required services (Column 7, lines 53 - 56)].

Regarding **claim 5**, (original) A computing system according to claim 1 wherein **the operating system kernel comprises a kernel module** [(see figure 1, number 12)] **adapted to serve as an interface between a SLCSE in the context of an application program and a device driver** [(see figure1, number 30)], [i.e., Cabrero et al. teaches that an example of common shared library is an interface library for the microkernel (Column 8, lines 38 - 40)] [i.e., Cabrero et al. further teaches that it is an objective of the microkernel system to permit flexible configuration of services like virtual memory 23, task and threads 24 and I/O supports 26 etc., in either user or kernel space (Column 6, lines 27 - 30)]

Regarding **claim 6**, (currently amended) A computing system as defined in claim 1, wherein **an SLCSE related to a predetermined function is provided to a first of the plurality of software applications for running [[an]] first instance of the SLCSE** [i.e., Cabrero et al. teaches that application tasks 40a – 41b share a common shared library (Column 8, lines 37 - 38)], [i.e., Cabrero et al. further teaches that the global offset table of common shared library is instrumented with the microkernel common

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services (Column 8, lines 40 - 42)], and wherein an **SLCSE for performing essentially a same function is provided to a second of the plurality of software applications** [i.e., Cabrero et al. teaches in figure 1 that dominant personality and alternative personality servers both could perform a user task such as default pager that provides paging for the main memory (see figure 1)] for running a second instance of the SLCSE **simultaneously** [i.e., Cabrero et al. teaches that an OS2 task 40 and a "Personality Neutral" PN task 41 may be executing at the same time (Column 8, lines 13 - 14)].

Regarding **claim 7**, (original) A computing system according to claim 5 wherein **the kernel module is adapted to provide a notification of an event to an SLCSE running in the context of an application program** [i.e., Cabrero et al. teaches that the personality servers 14 use the message-passing services of the microkernel to communicate with the personality neutral services (Column 4, lines 62 - 64)], wherein **the event is an asynchronous event** [i.e., Cabrero et al. teaches that this message transfer is an asynchronous operation (Column 8, line 4)] and **requires information to be passed to the SLCSE from outside the application** [i.e., Cabrero et al. teaches that it is an objective of the microkernel system 10 to permit the flexible configuration of services in either user or kernel space (Column 6, lines 28 - 30)]

Regarding **claim 8**, (currently amended) A computing system according to claim 7 wherein **a handler is provided for notifying the SLCSE in the context of one of the plurality of software applications** [i.e., Cabrero et al. teaches that any personality server can send a message to a personality neutral disk driver and ask it to read a block of data from the disk. The disk driver reads the block and returns it in a message. The

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message system is optimized so large amounts of data are transferred rapidly by manipulation pointers (Column 4, lines 65 -67) and (Column 5, lines 1 - 3)] through the use of **an up call mechanism** [i.e., Cabrero et al. teaches that common kernel services can be configured either in user or kernel mode with the minimum amount of function in the kernel proper (Column 6, lines 28 - 31)].

Regarding **claim 9**, (original) A computing system according to claim 7 wherein the up call mechanism in operation, **executes instructions from an SLCSE resident in user mode space, in kernel mode** [i.e., Cabrero et al. teaches that common kernel services can be configured either in user or kernel mode with the minimum amount of function in the kernel proper (Column 6, lines 28 - 31)].

Regarding **claim 10**, (currently amended) A computing system according to claim 2, wherein a function overlay is used to **provide [[a]] one of the plurality of software application-applications access** [i.e., i.e., Cabrero et al. teaches that application tasks share a common share library (Column 8, lines 37 - 38)] to **operating system services** [i.e., Cabrero et al. teaches that global offset table of common shared library is instrumented to the microkernel common services (Column 8, lines 41 - 42)], [i.e., Cabrero et al. further teaches that abstraction layer mechanism used by common shared library to access the common interface (Column 8, lines 57 - 62)].

Regarding **claim 11**, (currently amended) A computing system according to claim 2 wherein **SLCSEs stored in the shared library are linked to particular software applications of the plurality of software applications** [i.e., Cabrero et al. teaches that application tasks 40 and 41 have a common shared library and the global offset table of

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shared library is instrumented with the microkernel common services (Column 8, lines 36 - 41)) as the particular software applications are loaded such that **the particular software applications have a link that provides unique access to a unique instance of a CSE** [i.e., Cabrero et al. further teaches that each task has an associated address map that is separated from the address maps for the other tasks (Column 7, lines 11 - 13)].

Regarding **claim 12**, (original) A computing system according to claim 2 wherein **the SLCSEs utilize kernel services supplied by the operating system kernel** [i.e., Cabrero et al. teaches that global offset table of common shared library is instrumented to the microkernel common services (Column 8, lines 41 - 42)] **for device access, interrupt delivery, and virtual memory mapping** [i.e., Cabrero et al. teaches in figure 1 that microkernel 12 includes virtual memory 23, I/O support and interrupts 26 and device drivers (see figure 1)].

Regarding **claim 13**, (original) A computing system according to claim 1, wherein **SLCSEs include services related to at least one of, network protocol processes** [i.e., network services (see 31, figure 1)], **and the management of files** [i.e., see 31, figure 1], [i.e., Cabrero et al. teaches that global offset table of common shared library is instrumented to the microkernel common services (Column 8, lines 41 - 42)].

Regarding **claim 14**, (currently amended) A computing system according to claim 11 wherein **some SLCSEs are modified for a particular one of the plurality of software application-applications** [i.e., Cabrero et al. teaches that the global offset table is generated at compile time, then fixed-up at runtime (Column 9, lines 9 - 10)].

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Regarding **claim 15**, (original) A computing system according to claim 14 wherein the **SLCSEs that are application specific, reside in user mode** [i.e., Personality neutral servers (see 13, figure 1)], [i.e., Cabrero et al. teaches in figure 1 that device drivers, personality servers, file servers reside in user mode (see figure 1)], while **critical system elements, which are platform specific, reside in the operating system kernel** [i.e., Cabrero et al. teaches that IPC module, virtual memory, tasks & threads, I/O support & interrupts reside in kernel mode (see 12 figure 1)].

Regarding **claim 16**, (original) A computing system according to claim 5 wherein the kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and wherein the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode [i.e., Cabrero et al. teaches that a feature of the microkernel system is to provide a simple, extensible communication kernel. The objective of the microkernel system is to permit the flexible configuration of services in either user or kernel space (Column 6, lines 28 - 30)].

Regarding **claim 17**, (currently amended) A computing system according to claim 1 wherein SLCSEs form a part of at least some of the plurality of software applications, by being linked thereto [i.e., Cabrero et al. teaches rather than each task setting up its own libraries during compile a Global Offset Table (GOT) set up for each task (Column 3, lines 32 - 35)].

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Regarding **claim 18**, (original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping and otherwise execute without interaction from the operating system kernel [i.e., Cabrero et al. teaches that the Common Shared Libraries because of its shared nature, it's global offset table can only be instrumented to the microkernel common services (Column 8, lines 40 to 42)].

Regarding **claim 19**, (original) A computer system as defined in claim 2 wherein SLCSEs are not copies of OSLCEs [i.e., Cabrero et al. teaches a compute system employing a microkernel uses common shared libraries. Rather than each task setting up its own libraries, during compile a global offset table is set up for each task so that the task can use common shared libraries (Column 3, lines 29 - 34)].

Regarding **claim 20**, (original) An operating system comprising the computing system of claim 2 [i.e., Cabrero et al. teaches that it is an object of the invention to provide an improved microkernel to provide improved microkernel architecture for a data processing system (Column 3, lines 31 -33)].

Response to Arguments

Applicant's arguments filed 02/18/2009 have been fully considered but they are not persuasive.

Regarding **claim 1**, Applicant's arguments were found to be unpersuasive because Cabrero et al. disclosed a microkernel with critical system elements such as IPC, virtual memory management and I/O supports. Thus, the above mentioned

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microkernel meets the limitation of having a kernel with OS critical system elements.

The microkernel architecture does reduced the size of monolithic kernel to basic process communication and I/O control in kernel space and moving other services to user space in a form of normal processes called servers.

The claimed invention further recites a shared library having critical system elements (SLCSEs). Cabrero et al. also disclosed a common shared library with its global offset table that is instrumented with the microkernel common services. Thus, the global offset table meets the limitation of critical system elements of shared library that duplicates critical system elements provided by the operation system kernel.

Regarding **claim 2**, Applicant's arguments were found to be unpersuasive because Cabrero et al. also disclosed a common shared library with its global offset table that is instrumented with the microkernel common services. Thus, Critical System Elements (CSEs) present in the OS kernel are also present in the Shared Library within a global offset table.

Cabrero et al. disclosed common Critical System Elements (CSEs) in both kernel space and user space and application tasks 40 and 41 both can access the common services through shared library and through abstraction layer of OS.

Regarding **claim 3**, Applicant's arguments were found to be unpersuasive because Cbrero et al. teaches that it is an objective of the microkernel system is to permit the flexible configuration of services in either user or kernel space. Thus, it meets the limitation of OSCSEs corresponding to SLCSEs remain in the OS kernel of the claimed invention.

In rejection of claim 3 based on the limitation of the claimed invention, the TCP/IP protocols were not considered or relied upon by the examiner.

Regarding **claim 4**, Applicant's arguments were found to be unpersuasive because the dependency of claim 4 from claim 1 has been fully acknowledged. Applications accessing the critical system elements of shared library and using IPC module of the kernel to access OS critical elements meet the limitation of the claimed invention.

In rejection of claim 4 based on the limitation of the claimed invention, the TCP/IP protocols were not considered or relied upon by the examiner.

Regarding **claim 5**, Applicant's arguments were found to be unpersuasive because Cabrero et al. also disclosed a common shared library with its global offset table that is instrumented with the microkernel common services.

According to Cabrero et al. Shared library is an interface library of the microkernel which interfaces between kernel common services and processes in user space such as device support and other personality neutral products.

In rejection of claim 5 based on the limitation of the claimed invention, the TCP/IP protocols were not considered or relied upon by the examiner.

Regarding **claim 6**, Applicant's arguments were found to be unpersuasive because Cabrero et al. disclosed the limitation of providing an SLCSE to a first application and providing SLCSE to second application simultaneously of claimed invention.

Cabrero et al. teaches that the global offset table of common shared library is instrumented with the microkernel common services and application tasks access the global offset table to use the common services available in Shared library in user space and kernel space.

Regarding **claims 8 and 9**, Applicant's arguments were found to be unpersuasive because the dependency of claims 8 and 9 from claims 7, 5, and 1 respectively has been fully acknowledged.

Cabrero et al. teaches that common kernel services can be configured either in user or kernel mode with the minimum amount of function in the kernel proper. Thus, the limitation of upcall mechanism, allows a function in kernel mode to execute code in user mode, meets the recitation of Cabrero et al.

Regarding **claim 10**, Applicant's arguments were found to be unpersuasive because Cabrero et al. teaches that global offset table of common shared library is instrumented to the microkernel common services. The common shared library uses a mechanism called OS abstraction layer to access a common interface meets the limitation of claimed invention.

Regarding **claim 11**, Applicant's arguments were found to be unpersuasive because Cabrero et al. discloses that application tasks 40 and 41 have a common shared library and the global offset table of shared library is instrumented with the microkernel common services meets the limitation of SLCSE are linked to particular software application of the claimed invention.

Regarding **claim 12**, Applicant's argument found to be unpersuasive because microkernel's common services are also present in the global offset table of the shared library. Microkernel allows services such as virtual memory, task & threads, I/O support and interrupt and device drivers to be accessed by the application tasks in either user or kernel space. Thus, CSEs of shared library are not independent programs that reside outside of shared library and OSCSEs are being replicated into user mode CSEs.

Regarding **claim 13**, Applicant's argument found to be unpersuasive because network services and file server of microkernel architecture resides in user space. Cabrero et al. further teaches that shared library's CSE are replicas of OS CSE.

Regarding **claim 14**, Applicant's arguments were found to be unpersuasive because Cabrero et al. disclosed that the global offset table of a shared library instrumented with the common services of microkernel. The global offset table is generated at compile time, then fixed-up at runtime according to user mode applications. The common services could be configured by application at user space or kernel space. Thus, the common services are present both in user mode and kernel mode and meet the limitation recited in claimed invention.

Regarding **claim 15**, Applicant's arguments were found to be unpersuasive because the concept behind the microkernel architecture is to reduce the kernel space to basic process communication and I/O control, and let the other services reside in user space in form of normal processes called servers. Thus, the limitations of critical system elements in the claimed invention are also present in the microkernel of Cabrero et al.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED RONI whose telephone number is (571)270-7806. The examiner can normally be reached on Monday to Friday, 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott B. Geyer can be reached on (571)272-1958. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SYED RONI/
Examiner, Art Unit 4113

/Scott B. Geyer/
Supervisory Patent Examiner, Art Unit 4113



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/946,536

09/21/2004

Donn Rochette

78803 (120-2 US)

7612

27975

7590

06/16/2009

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ORLANDO, FL 32802-3791

EXAMINER

RONI, SYED A

ART UNIT

PAPER NUMBER

2194

NOTIFICATION DATE

DELIVERY MODE

06/16/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

creganoa@addmg.com

Interview Summary	Application No. 10/946,536	Applicant(s) ROCHETTE ET AL.	
	Examiner SYED RONI	Art Unit 2194	

All participants (applicant, applicant's representative, PTO personnel):

(1) SYED RONI. (3) Hyung Sub Sough.

(2) David S. Carus. (4) ____.

Date of Interview: 03 June 2009.

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.
If Yes, brief description: ____.

Claim(s) discussed: 1.

Identification of prior art discussed: Cabrero et al. (US 6,260,075 B1).

Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicant argued that the prior art Cabrero et al. do not disclose SLCSEs stored in the shared library are replicas of OSCSEs. Examiner pointed out the limitation in Cabrero et al. (Column 8, lines 40 - 42) Examiner gave his interpretation of the "insturmented to the microkerne common service" as replicas of OSCSEs. Applicant further argued that Cabrero et al. do not teach elements of the shared library are not shared by different software application. Examiner would further consider the applicant's argument after receiving the applicant's written response..

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

	/Hyung S. SOUGH/ Supervisory Patent Examiner, Art Unit 2194
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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL Address to: Mail Stop RCE Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	10/946,536
	Filing Date	September 21, 2004
	First Named Inventor	Donn Rochette
	Group Art Unit	2194
	Examiner Name	Syed Roni
	Attorney Docket Number	78803(120-2 US)

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 C.F.R. § 1.114
- a. Previously submitted
- i. Consider the amendments/reply under 37 CFR § 1.116 previously filed on _____
(Any unentered amendment(s) referred to above will be entered).
- ii. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- iii. Other _____
- b. X Enclosed
- i. X Amendment/Reply
- ii. Affidavit(s)/Declaration(s)
- iii. Information Disclosure Statement (IDS)
- iv. Other _____
2. Miscellaneous
- a. Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 C.F.R. § 1.17(i) required)
- b. Other _____
3. Fees (The RCE fee under 37 C.F.R. § 1.17(e) is required by 37 C.F.R. § 1.14) when the RCE is filed; Fee calculated as shown below.)
- a. Checks in the amount of \$_____ is enclosed.
- b. X The Director is hereby authorized to charge or credit any discrepancies in fee amounts to Deposit Acct. No. 01-0484.
- c. X Payment by EFS-Web.
- i. X RCE fee (\$810 large entity or \$405 small entity) required under 37 C.F.R. § 1.17(e)
- ii. Extension of time fee (37 C.F.R. § 1.137 and 1.17)
- iii. Other _____

SIGNATURE OF APPLICANT, ATTORNEY OR AGENT REQUIRED

NAME	DAVID S. CARUS, Reg. No. 59,291		
SIGNATURE		DATE	July 1, 2009

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	)	Atty. Docket No.:
ROCHETTE ET AL.	)	78803 (120-2 US)
	)	
Serial No. 10/946,536	)	Art Unit: 4113
	)	
Filing Date: SEPTEMBER 21, 2004	)	Examiner:
	)	SYED A. RONI
Confirmation No. 7612	)	
	)	
For: COMPUTING SYSTEM HAVING USER	)	
MODE CRITICAL SYSTEM ELEMENTS	)	
AS SHARED LIBRARIES	)	
	)	

AMENDMENT AFTER FINAL

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

Sir:

Responsive to the Final Official Action of April 2,
2009, please enter the amendments and consider the remarks set
out below.

In re Patent Application of:

ROCHETTE ET AL.

Serial No. **10/946,536**

Filed: **09/21/2004**

In the Claims:

1. (Currently Amended) A computing system for executing a plurality of software applications comprising:

a) an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode; and,

b) a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and

i) wherein some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications and when one of the SLCSEs is accessed by one or more of the plurality of software applications it forms a part of the one or more of the plurality of software applications, and

ii) wherein an instance of a SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of said one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

2. (Original) A computing system as defined in claim 1, wherein in operation, multiple instances of an SLCSE stored

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in the shared library run simultaneously within the operating system.

3. (Original) A computing system according to claim 1 wherein OSCSEs corresponding to and capable of performing essentially the same function as SLCSEs remain in the operating system kernel.

4. (Previously Presented) A computing system according to claim 1 wherein the one or more SLCSEs provided to one of the plurality of software applications having exclusive use thereof, use system calls to access services in the operating system kernel.

5. (Original) A computing system according to claim 1 wherein the operating system kernel comprises a kernel module adapted to serve as an interface between a SLCSE in the context of an application program and a device driver.

6. (Previously Presented) A computing system as defined in claim 1, wherein an SLCSE related to a predetermined function is provided to a first of the plurality of software applications for running first instance of the SLCSE, and wherein an SLCSE for performing essentially a same function is provided to a second of the plurality of software applications for running a second instance of the SLCSE simultaneously.

7. (Original) A computing system according to claim 5 wherein the kernel module is adapted to provide a notification

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of an event to an SLCSE running in the context of an application program, wherein the event is an asynchronous event and requires information to be passed to the SLCSE from outside the application.

8. (Previously Presented) A computing system according to claim 7 wherein a handler is provided for notifying the SLCSE in the context of one of the plurality of software applications through the use of an up call mechanism.

9. (Original) A computing system according to claim 7 wherein the up call mechanism in operation, executes instructions from an SLCSE resident in user mode space, in kernel mode.

10. (Previously Presented) A computing system according to claim 2, wherein a function overlay is used to provide one of the plurality of software applications access to operating system services.

11. (Previously Presented) A computing system according to claim 2 wherein SLCSEs stored in the shared library are linked to particular software applications of the plurality of software applications as the particular software applications are loaded such that the particular software applications have a link that provides unique access to a unique instance of a CSE.

12. (Original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the

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operating system kernel for device access, interrupt delivery, and virtual memory mapping.

13. (Original) A computing system according to claim 1, wherein SLCSEs include services related to at least one of, network protocol processes, and the management of files.

14. (Previously Presented) A computing system according to claim 11 wherein some SLCSEs are modified for a particular one of the plurality of software applications.

15. (Original) A computing system according to claim 14 wherein the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel.

16. (Original) A computing system according to claim 5 wherein the kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and wherein the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode.

17. (Previously Presented) A computing system according to claim 1 wherein SLCSEs form a part of at least some of the plurality of software applications, by being linked thereto.

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18. (Original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping and otherwise execute without interaction from the operating system kernel.

19. (Original) A computer system as defined in claim 2 wherein SLCSEs are not copies of OSLCEs.

20. (Original) An operating system comprising the computing system of claim 2.

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ROCHETTE ET AL.
Serial No. **10/946,536**
Filed: **09/21/2004**

REMARKS

The Examiner is thanked for the thorough examination of the present application. The Examiner and his Supervisor are also thanked for the telephonic interview of June 3, 2009, during which the current claim rejections were discussed and wherein the Examiner agreed that claim amendments along the lines made herein to advance prosecution would define over the prior art. No new matter has been added. The patentability of the claims is discussed below.

I. The Claimed Invention

The present invention, as recited in amended independent Claim 1, for example, is directed to a computing system for executing a plurality of software applications. The computing system includes an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode. The computing system also includes a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode. Some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications. When one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. An instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software

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applications. One or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

II. The Claims are Patentable

The Examiner rejected independent Claim 1 over Cabrero et al. Cabrero et al. is directed to a computer system that uses a microkernel to execute two different tasks, for example, operating systems, and uses a common shared library. Rather than each task setting up its own libraries, a global offset table is set up for each task so that the tasks can use common shared libraries.

Independent Claim 1 has been amended to recite that some of the SLCSEs stored in the shared library are functional replicas of OSCSEs. The Examiner agreed that Cabrero et al. fails to disclose the SLCSEs stored in the shared library being functional replicas of OSCSEs. Instead, the Examiner indicated that Cabrero et al. discloses a common shared library 44 that includes addresses to the microkernel common services. (See Cabrero et al. Col. 8, lines 37-43). Nowhere does Cabrero et al. disclose the SLCSEs stored in the shared library being functional replicas of OSCSEs, or in other words, replacements. Accordingly, independent Claim 1 is patentable for at least this reason alone.

Additionally, Applicants submit that Cabrero et al. fails to disclose an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library being run in a context of the one or more of the

In re Patent Application of:

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plurality of software applications without being shared with other of the plurality of software applications. The Examiner contended that Figure 1, and Col. 5, lines 37-43, of Cabrero et al., which is reproduced below for reference, disclose the above-noted deficiency.

Dominant personality applications 28 shown in FIG. 1, associated with the UNIX dominant personality example, are UNIX-type applications which would run on top of the UNIX operating system personality 32. The alternate personality applications 39 shown in FIG. 1, are OS/2 applications which run on top of the OS/2 alternate personality operating system 35.

As discussed during the telephonic interview, nowhere in the noted passages or anywhere else in Cabrero et al. does it disclose an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library being run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications. Instead, Cabrero et al. merely discloses tasks 40 and 41, corresponding to the dominant and alternative personality operating systems 38, 39 accessing the common shared library 44 via an abstraction layer 45.

Indeed, as described in the Cabrero et al. Summary of the Invention section, and illustrated in Cabrero et al., Figure 2:

A computer system employing a microkernel executes two different tasks, e.g., operating systems, yet uses common shared libraries. Rather than each task setting up its own libraries, during compile a global offset table is set up for each

task so that the tasks can use common shared libraries. An abstractions layer is established to allow the tasks to share the global offset table, and thus to use common shared libraries. (Emphasis Added).

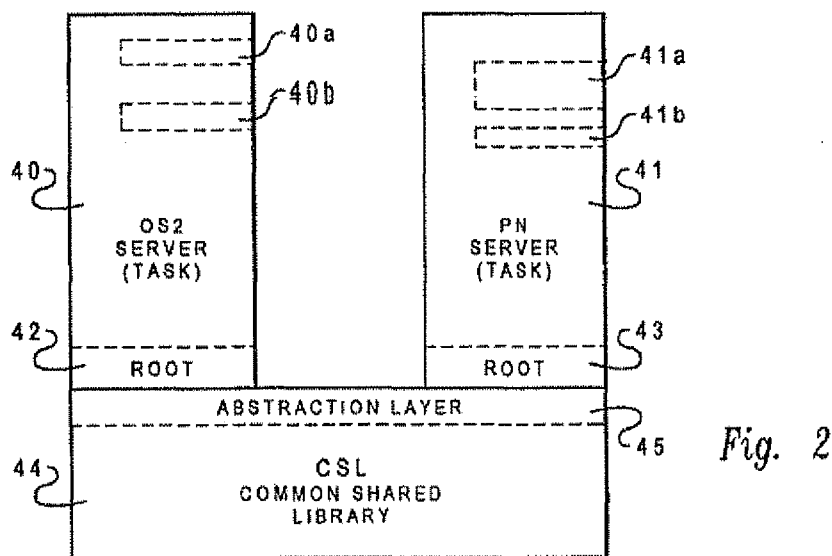


Figure 2 of the Cabrero et al. '075 Patent

Indeed, nowhere in Cabrero et al. does it disclose an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library being run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications.

It is submitted that independent Claim 1 is patentable over the prior art. Its respective dependent claims, which recite yet further distinguishing features, are also patentable over the prior art and require no further discussion herein.

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III. Conclusion

In view of the amendments and arguments presented above, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. If the Examiner determines any remaining informalities exist, he is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/946,536	09/21/2004	Donn Rochette	78803 (120-2 US)	7612
27975 7590 09/22/2009 ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A. 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE P.O. BOX 3791 ORLANDO, FL 32802-3791			EXAMINER RONI, SYED A	
			ART UNIT 2194	PAPER NUMBER
			NOTIFICATION DATE 09/22/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

creganoa@addmg.com

Office Action Summary	Application No. 10/946,536	Applicant(s) ROCHETTE ET AL.	
	Examiner SYED RONI	Art Unit 2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07/01/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/01/2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 9 and 11 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Rourke et al. (US 6,212,574 B1) in further view of Peek (5,481,706).

O'Rourke et al. disclose;

Regarding **claim 1**, (Currently Amended) A **computing system** [i.e., system (col. 1, lines 8 - 11)] for **executing a plurality of software applications** [i.e., software components in the user mode (col. 1, lines 8 - 11)] comprising:

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a) an **operating system** [i.e., operating system (col. 1, lines 10 - 11)] **having** an **operating system kernel** [i.e., kernel mode (col. 1, line 10)] **having OS critical system elements (OSCSEs)** [i.e., software components (col. 1, line 10)], [i.e., drivers or filters (col. 1, line 52), (col. 4, line 52), (see figure 1 and 3)], [i.e., time critical functions (col. 1, lines 49 – 51, lines 58 - 59))] for **running** in **kernel mode** [i.e., kernel mode (col. 1, lines 66 - 67), (col. 2, lines 1 - 2)]; and,

b) **critical system elements (SLCSEs)** [i.e., reader proxy 64...66...68...sound rendering proxy 70 (col. 10, lines 19 - 25), (see figure 3)] stored therein **for use by the plurality of software applications in user mode** [i.e., user mode (col. 10, line 26), (see figure 3)], [i.e., software components...user mode (col. 1, lines 9 - 10)] and

i) **wherein some of the SLCSEs** stored in the shared library are **functional replicas of OSCSEs** [i.e., user mode proxy of kernel mode operations (col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)] and are **accessible** [i.e., interconnecting (col. 5, lines 11 - 14)], [i.e., manipulating...proxies (col. 6, lines 15 - 17)], [i.e., communication with...proxies (col. 10, line 37)] to **some** of the **plurality of software applications** [i.e., user mode applications (col. 2, line 10)], [i.e., controlling agent 44 (col. 5, line 12), (col. 10, line 35), (see figure 3)], [i.e., controlling agents (col. 6, line 15)] and **when** one of the **SLCSEs** is **accessed by** one or more of the **plurality of software applications it forms a part** of the one or more of the plurality of **software applications** [i.e., controlling agent 44 (see figure 3)].

O'Rourke et al. do not disclose;

a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications wherein an instance of a SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of said one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

However, Peek discloses;

a **shared library** [i.e., shared library 14 (col. 4, line 50), (see figure 1)] **having critical system elements (SLCSEs) stored** therein [i.e., data 24 (col. 4, line 53), (see figure 1)] for use **by the plurality of software applications** [i.e., process A 10 (see figure 1)], [i.e., process B 12 (see figure 1)] **wherein an instance of a SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context** of said one or more of the **plurality of software applications** [i.e., Process A – private copy of shared library data 20 (see figure 1)] **without being shared** with **other** of the **plurality of software applications** [i.e., Process B – private copy of shared library data 22 (see figure 1)] and **where** one or more **other** of the **plurality of software applications** running under the operating system **have** use of a **unique instance of a corresponding critical system element** for performing essentially the **same function** [i.e., own copy of data (col. 4, lines 52 - 53)].

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At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the user mode proxy drivers for kernel mode drivers of O'Rourke et al. to be stored in a shared data structure such as a shared library as though by Peek to improve the sharing of resources among different applications and use those kernel filters as the library functions in a user mode.

O'Rourke et al. disclose;

Regarding **claim 2**, (Original) A computing system as defined in claim 1, wherein in operation, an **instance of an SLCSE** [i.e., reader proxy 64...66...68...sound rendering proxy 70 (col. 10, lines 19 - 25), (see figure 3)], [i.e., software components....user mode (col. 1, lines 9 - 10)] **run** within the **operating system** [i.e., operating system (col. 1, lines 9 - 10)].

O'Rourke et al. do not disclose;

multiple instances of an SLCSE stored in the shared library run simultaneously within the operating system.

However, Peek discloses;

multiple instances of an SLCSE stored in the **shared library run simultaneously** within the operating system [i.e., Process A – private copy...data 20.....Process B – private copy....data 22 (see figure 1)], [i.e., own copy of data (col. 4, lines 50 - 54)].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the user mode proxy drivers for kernel mode drivers of O'Rourke et al. to include multiple copies of data in a shared library for multiple processes as

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though by Peek to scale the applicability of user mode proxy of kernel mode drivers in variety of applications.

O'Rourke et al. disclose;

Regarding **claim 3**, (Original) A computing system according to claim 1 **wherein OSCSEs corresponding to** and capable of **performing** essentially the **same function as SLCSEs** [i.e., reader proxy filter 64 which acts...reader driver 50....and sound rendering proxy 70 which acts....sound rendering driver 58 (col. 10, lines 19 - 25), (see figure 3)] **remain** in the **operating system kernel** [i.e., kernel mode filter (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 4**, (Previously Presented) A computing system according to claim 1 **wherein** the one or more **SLCSEs** provided to one of the plurality of **software applications** [i.e., application program in user mode (col. 1, lines 46 - 49)], [i.e., user mode (col. 10, line 26), (see figure 3)] having **exclusive use** [i.e., filters needed....applicable to teleconferencing (col. 11, lines 39 - 41)] thereof, **use system calls** [i.e., controlled interfaces or mechanism (col. 1, lines 39 - 41)], [i.e., interfaces (col. 1, lines 46 - 49)] to **access services** [i.e., hardware and other services (col. 1, lines 39 - 41)] in the **operating system kernel** [i.e., operating system (col. 1, lines 39 - 41)], [i.e., driver or filter (col. 1, lines 49 - 51, lines 66 - 67) and (col. 2, lines 1 - 2)].

O'Rourke et al. disclose;

Regarding **claim 5**, (Original) A computing system according to claim 1 wherein the **operating system kernel** comprises a **kernel module** adapted to **serve as** an

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interface [i.e., interfaces (col. 1, lines 47 - 50)], [i.e., kernel mode/user mode boundary (col. 3, lines 2 - 3), (see figures 1 - 3)] between a **SLCSE in the context of an application program** [i.e., application program in user mode (col. 1, lines 47 - 50)] and a **device driver** [i.e., driver or filter (col. 1, lines 50 - 52)], [i.e., reader driver 50, effect filter 54 (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 6**, (Previously Presented) A computing system as defined in claim 1, **wherein** an **SLCSE related to a predetermined function** [i.e., process audio data (col. 11, lines 39 - 41)] is **provided to a first of the plurality of software applications** [i.e., multimedia (col. 11, lines 37 - 41)] for **running first instance of the SLCSE** [i.e., filters (col. 11, lines 39 - 41), (see figure 3)], and **wherein** an **SLCSE for performing essentially a same function** [i.e., applicable (col. 11, lines 37 - 41)] is **provided to a second of the plurality of software applications** [i.e., teleconferencing (col. 11, lines 37 - 41)] for **running a second instance of the SLCSE simultaneously** [i.e., filters (col. 11, lines 39 - 41), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 7**, (Original) A computing system according to claim 5 wherein the **kernel module** [i.e., proxy filters (col. 11, lines 1 - 2)] is adapted to **provide** [i.e., send (col. 11, line 1)] a **notification of an event** [i.e., notifications (col. 11, line 2)] to an **SLCSE** running in the **context of an application program** [i.e., controlling agent 44 (col. 11, line 2), (see figure 3)], [i.e., corresponding proxy filter (col. 11, lines 1 - 5)], wherein the **event** is an **asynchronous event** and requires **information** to be **passed**

to the **SLCSE** from **outside** the **application** [i.e., events would include end of processing,.....a data overrun situation (col. 9, lines 36 - 38)].

O'Rourke et al. disclose;

Regarding **claim 8**, (Previously Presented) A computing system according to claim 7 wherein a **handler** is provided for **notifying** [i.e., notifications (col. 11, line 2)] the **SLCSE in the context of one of the plurality of software applications** through the **use of an up call mechanism** [i.e., user mode proxy of kernel mode operations (col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 9**, (Original) A computing system according to claim 7 wherein the up call mechanism in operation, **executes instructions** from an **SLCSE resident in user mode space**, in **kernel mode** [i.e., user mode proxy of kernel mode operations (col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 11**, (Previously Presented) A computing system according to claim 2 wherein **SLCSEs** stored in the shared library are **linked to particular software applications** of the **plurality of software applications** as the particular software applications are loaded such that the particular software applications have a link that provides **unique access** to a **unique instance of a CSE** [i.e., filters needed.....applicable to teleconferencing (col. 11, lines 39 - 41)].

O'Rourke et al. do not disclose;

SLCSEs are stored in the shared library

However, Peek discloses;

a **shared library** [i.e., shared library 14 (col. 4, line 50), (see figure 1)] **having critical system elements (SLCSEs) stored** therein [i.e., data 24 (col. 4, line 53), (see figure 1)]

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the user mode proxy drivers for kernel mode drivers of O'Rourke et al. to be stored in a shared data structure such as a shared library as though by Peek to improve the sharing of resources among different applications and use those kernel filters as the library functions in a user mode.

O'Rourke et al. disclose;

Regarding **claim 12**, (Original) A computing system according to claim 2 wherein the SLCSEs utilize **kernel services** [i.e., software components (col. 1, line 10)], [i.e., drivers or filters (col. 1, line 52), (col. 4, line 52), (see figure 1 and 3)] supplied by the operating system kernel for **device access** [i.e., speaker 62 (see figure 3)], **interrupt delivery** [i.e., notifications (col. 11, line 2), (col. 9, lines 36 - 38)], and **virtual memory mapping** [i.e., filter graph (col. 11, line 8), (col. 11, line 12)], [i.e., disk driver 48 (see figure 2)].

O'Rourke et al. disclose;

Regarding **claim 13**, (Original) A computing system according to claim 1, wherein **SLCSEs** include **services** related to **at least one of**, network protocol

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processes, and the **management of files** [i.e., stream of data...processing functions (col. 2, lines 22 - 23)], [i.e., reading, decompressing and rendering of audio data (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 14**, (Previously Presented) A computing system according to claim 11 wherein some **SLCSEs** are **modified** [i.e., filters needed to process audio data (col. 11, lines 39 - 40)] for a **particular one** of the plurality of **software applications** [i.e., multimedia (col. 11, line 40)].

O'Rourke et al. disclose;

Regarding **claim 15**, (Original) A computing system according to claim 14 wherein the **SLCSEs** [i.e., reader proxy 64...66...68...sound rendering proxy 70 (col. 10, lines 19 - 25), (see figure 3)] that are **application specific, reside** in **user mode** [i.e., software components in the user mode (col. 1, lines 8 - 10)], while **critical system elements** [i.e., software components (col. 1, line 10)], [i.e., drivers or filters (col. 1, line 52), (col. 4, line 52), (see figure 1 and 3)], which are **platform specific, reside** in the **operating system kernel** [i.e., software components in the kernel mode (col. 1, lines 10 - 11)].

O'Rourke et al. disclose;

Regarding **claim 16**, (Original) A computing system according to claim 5 wherein the **kernel module** is adapted to **enable data exchange** [i.e., interfaces (col. 1, lines 47 - 50)], [i.e., kernel mode/user mode boundary (col. 3, lines 2 - 3), (see figures 1 - 3)] **between the SLCSEs in user mode** [i.e., application program in user mode (col. 1,

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lines 47 - 50)] and a **device driver in kernel mode** [i.e., driver or filter (col. 1, lines 50 - 52)], [i.e., reader driver 50, effect filter 54 (see figure 3)], and **wherein the exchange uses mapping of virtual memory** [i.e., filter graph (col. 11, line 8), (col. 11, line 12)] such that **data** is **transferred both** from the **SLCSEs in user mode** to the **device driver in kernel mode** and from the **device driver in kernel mode** to the **SLCSEs in user mode** [i.e., arrows are going from user mode to kernel mode and from kernel to use mode (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 17**, (Previously Presented) A computing system according to claim 1 wherein **SLCSEs** form a part of at least some of the plurality of software applications, by **being linked** thereto [i.e., controlling agent 44 (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 18**, (Original) A computing system according to claim 2 wherein the **SLCSEs** utilize **kernel services** supplied by the operating system kernel for **device access** [i.e., speaker 62 (see figure 3)], **interrupt delivery** [i.e., notifications (col. 11, line 2), (col. 9, lines 36 - 38)], and **virtual memory mapping** [i.e., filter graph (col. 11, line 8), (col. 11, line 12)], [i.e., disk driver 48 (see figure 2)] and **otherwise** execute **without interaction** from the **operating system kernel** [i.e., software components in the kernel mode (col. 1, lines 10 - 11)].

O'Rourke et al. disclose;

Regarding **claim 19**, (Original) A computer system as defined in claim 2 wherein **SLCSEs** are **not copies of OSLCEs** [i.e., user mode proxy of kernel mode operations

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(col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 20**, (Original) An **operating system** comprising the computing system of claim 2 [i.e., operating system (col. 1, lines 10 - 11)].

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Rourke et al. (US 6,212,574 B1) and Peek (5,481,706) as applied to claim 2 above, and further in view of Desoli et al. (US 2004/0025165 A1).

O'Rourke et al. disclose;

Regarding **claim 10**, (Previously Presented) A computing system according to claim 2, **plurality of software applications** [i.e., software components....mode (col. 1, line 9)] **access** [i.e., interaction (col. 1, lines 8 - 11)] to **operating system services** [i.e., software components.....operating system (col. 1, lines 10 -11)].

O'Rourke et al. and Peek do not disclose;

a function overlay is used to provide one of the plurality of software applications access to operating system services

However, Desoli et al. disclose;

a **function overlay** [i.e., operating system intercept module 304 (page 3, par 0026), (see figure 3)] is used to **provide one** of the **plurality of software applications**

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[i.e., application 102 (page 3, par 0026), (see figure 3)] **access to operating system services** [i.e., operating system 104 (page 3, par 0026), (see figure 3), (page 1, par 0006)].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the interaction between software components in the user mode and software components in the kernel mode of operating system of O'Rourke et al. and shared library of Peek to include operating system intercept module to intercept calls such system calls from application to an operating system as though by Desoli et al. to manage access of different applications to operating system services.

Response to Arguments

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED RONI whose telephone number is (571)270-7806. The examiner can normally be reached on M - F (8:30 am - 5:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sub Sough (Sam) can be reached on (571) 272 - 6799. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SYED RONI/
Examiner, Art Unit 2194

/Hyung S. Sough/
Supervisory Patent Examiner, Art Unit 2194
09/17/09

Notice of References Cited	Application/Control No. 10/946,536		Applicant(s)/Patent Under Reexamination ROCHETTE ET AL.	
	Examiner SYED RONI		Art Unit 2194	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,212,574 B1	04-2001	O'Rourke et al.	719/321
*	B	US-5,481,706 A	01-1996	Peek, Jeffrey S.	710/200
*	C	US-2004/0025165 A1	02-2004	Desoli et al.	719/310
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Index of Claims</i> 	Application/Control No. 10946536	Applicant(s)/Patent Under Reexamination ROCHETTE ET AL.
	Examiner SYED RONI	Art Unit 4113

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE							
Final	Original	11/06/2008	09/14/2009						
	1	✓	✓						
	2	✓	✓						
	3	✓	✓						
	4	✓	✓						
	5	✓	✓						
	6	✓	✓						
	7	✓	✓						
	8	✓	✓						
	9	✓	✓						
	10	✓	✓						
	11	✓	✓						
	12	✓	✓						
	13	✓	✓						
	14	✓	✓						
	15	✓	✓						
	16	✓	✓						
	17	✓	✓						
	18	✓	✓						
	19	✓	✓						
	20	✓	✓						

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	)	Atty. Docket No.:
ROCHETTE ET AL.	)	78803 (120-2 US)
	)	
Serial No. 10/946,536	)	Art Unit: 4113
	)	
Filing Date: SEPTEMBER 21, 2004	)	Examiner:
	)	SYED A. RONI
Confirmation No. 7612	)	
	)	
For: COMPUTING SYSTEM HAVING USER	)	
MODE CRITICAL SYSTEM ELEMENTS	)	
AS SHARED LIBRARIES	)	
	)	

RESPONSE

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

Sir:

Responsive to the Official Action of September 22,
2009, please consider the remarks set out below.

In re Patent Application of:

ROCHETTE ET AL.

Serial No. **10/946,536**

Filed: **09/21/2004**

In the Claims:

1. (Previously Presented) A computing system for executing a plurality of software applications comprising:

a) an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode; and,

b) a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and

i) wherein some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications and when one of the SLCSEs is accessed by one or more of the plurality of software applications it forms a part of the one or more of the plurality of software applications, and

ii) wherein an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of said one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

2. (Original) A computing system as defined in claim 1, wherein in operation, multiple instances of an SLCSE stored

In re Patent Application of:

ROCHETTE ET AL.

Serial No. **10/946,536**

Filed: **09/21/2004**

in the shared library run simultaneously within the operating system.

3. (Original) A computing system according to claim 1 wherein OSCSEs corresponding to and capable of performing essentially the same function as SLCSEs remain in the operating system kernel.

4. (Previously Presented) A computing system according to claim 1 wherein the one or more SLCSEs provided to one of the plurality of software applications having exclusive use thereof, use system calls to access services in the operating system kernel.

5. (Currently Amended) A computing system according to claim 1 wherein the operating system kernel comprises a kernel module adapted to serve as an interface between ~~a~~ an SLCSE in the context of an application program and a device driver.

6. (Previously Presented) A computing system as defined in claim 1, wherein an SLCSE related to a predetermined function is provided to a first of the plurality of software applications for running first instance of the SLCSE, and wherein an SLCSE for performing essentially a same function is provided to a second of the plurality of software applications for running a second instance of the SLCSE simultaneously.

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7. (Original) A computing system according to claim 5 wherein the kernel module is adapted to provide a notification of an event to an SLCSE running in the context of an application program, wherein the event is an asynchronous event and requires information to be passed to the SLCSE from outside the application.

8. (Previously Presented) A computing system according to claim 7 wherein a handler is provided for notifying the SLCSE in the context of one of the plurality of software applications through the use of an up call mechanism.

9. (Original) A computing system according to claim 7 wherein the up call mechanism in operation, executes instructions from an SLCSE resident in user mode space, in kernel mode.

10. (Previously Presented) A computing system according to claim 2, wherein a function overlay is used to provide one of the plurality of software applications access to operating system services.

11. (Previously Presented) A computing system according to claim 2 wherein SLCSEs stored in the shared library are linked to particular software applications of the plurality of software applications as the particular software applications are loaded such that the particular software applications have a link that provides unique access to a unique instance of a CSE.

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12. (Original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping.

13. (Original) A computing system according to claim 1, wherein SLCSEs include services related to at least one of, network protocol processes, and the management of files.

14. (Previously Presented) A computing system according to claim 11 wherein some SLCSEs are modified for a particular one of the plurality of software applications.

15. (Original) A computing system according to claim 14 wherein the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel.

16. (Original) A computing system according to claim 5 wherein the kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and wherein the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode.

17. (Previously Presented) A computing system according to claim 1 wherein SLCSEs form a part of at least some

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of the plurality of software applications, by being linked thereto.

18. (Original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping and otherwise execute without interaction from the operating system kernel.

19. (Original) A computer system as defined in claim 2 wherein SLCSEs are not copies of OSLCEs.

20. (Original) An operating system comprising the computing system of claim 2.

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REMARKS

The Examiner is thanked for the thorough examination of the present application. The Examiner is also thanked for properly withdrawing his prior rejection. Dependent Claim 5 has been amended to correct a minor informality. The patentability of the claims is discussed below.

I. The Claimed Invention

The present invention, as recited in independent Claim 1, for example, is directed to a computing system for executing a plurality of software applications. The computing system includes an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode. The computing system also includes a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode. Some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications. When one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. An instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications. One or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

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II. The Claims Are Patentable

The Examiner rejected independent Claim 1 over a combination of O'Rourke et al. and Peek. O'Rourke et al. is directed to a system that proxies software components in a kernel mode via software components in a user mode. The Examiner correctly recognized that O'Rourke et al. fails to disclose a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and wherein an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

The Examiner turned to Peek for these critical deficiencies. Peek is directed to libraries for use in a multithreaded computer environment that must be thread-safe and that cannot be recoded. Peek discloses identifying the libraries and repackaging them so that library functions are accessible by multiple threads without extensive library modifications.

Applicants submit the Examiner mischaracterized O'Rourke et al. as it fails to disclose some of the SLCSEs stored in the shared library being functional replicas of OSCSEs. The Examiner contended that O'Rourke et al., Col. 3,

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line 61, Col. 6, line 13, and Col. 10, line 26, disclose some of the SLCSEs stored in the shared library are functional replicas of OSCSEs. Nowhere in Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, does it disclose some of the SLCSEs stored in the shared library being functional replicas of OSCSEs.

Instead, Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, disclose a user mode proxy of kernel mode operations or kernel mode filters or drivers. More particularly, a software layer is formed on top of a kernel mode graph and allows a controller agent to manipulate a particular kernel mode filter by manipulating a user mode proxy of that particular kernel mode filter. (See O'Rourke et al., Col. 4, lines 5-9).

In other words, O'Rourke et al. discloses providing a generic proxy object that may be used for virtually all kernel mode filters either unchanged or through various extension mechanisms, or more simply providing a user mode proxy filter for a kernel mode filter. (See O'Rourke et al., Col. 6, lines 12-19, and Col. 10, lines 12-33). Indeed, the user mode proxy filter is not a functional replica, but merely acts as an intermediary to the kernel mode filters. Accordingly, independent Claim 1 is patentable for at least this reason.

Applicants further submit that the Examiner further mischaracterized O'Rourke et al. in that it fails to disclose that when one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. The Examiner contended that the O'Rourke et al. controlling agent **44** discloses that when one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of

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the one or more of the plurality of software applications. The O'Rourke et al. controlling agent **44** queries "the drivers in order to identify data formats and connection formats in order to interconnect kernel mode filters to create a filter graph." "Controlling agent **44** will also receive notification of important events so that it may exercise control as necessary. Examples of such events would include end of processing, a data starvation situation, a data overrun situation, and so forth." (See O'Rourke et al., Col. 9, lines 28-38; See also O'Rourke et al., Col. 10, lines 33-40, for example). Indeed, the controlling agent **44** fails to disclose that when one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. In other words, the SLCSEs literally form part of the application. SLCSEs reside in the same address space as application code, in contrast to a proxy that is exclusive of the application.

Applicants further submit that the Examiner's proposed combination of references is improper in that a person having ordinary skill in the art would not turn to the repackaging of shared libraries of Peek in an attempt to combine with the proxying of software components in a kernel mode via a software component in a user mode. More particularly, O'Rourke discloses that adding proxy filters for kernel mode filters provides several key benefits, for example, "the controlling agent **44** may manipulate and communicate with a particular kernel mode filter simply by manipulating or communicating with its proxy. Thus, user mode proxies of kernel mode filters allow a robust, familiar interface to be presented to a particular controlling

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agent while, simultaneously, allowing the controlling agent to take advantage of all the benefits of a kernel mode streaming architecture." (See O'Rourke et al., Col. 10, lines 33-41). In stark contrast, Peek is concerned with maintaining the integrity of a shared library that is accessible to multiple threads. Indeed, a person having ordinary skill in the art would not turn to the shared library teachings of Peek to combine with the kernel communication teachings of O'Rourke et al.

Additionally, storing some of the SLCSEs in the shared library as functional replicas of OSCSEs, as recited independent Claim 1, for example, is particularly advantageous in multiple operating system environments. This is in contrast to the teaching of both O'Rourke et al. and Peek. Still further, the present invention, as recited in independent Claim 1, for example, advantageously provides the ability to create unique environments for an application to execute within or by the SLCSEs, which is also in contrast to both O'Rourke et al. and Peek.

Still further, the Examiner contends that a person having ordinary skill in the art would modify the user mode drivers of O'Rourke et al. to be stored in a shared data structure such as a shared library as in Peek to improve the sharing of resources among different applications and use those kernel filters as the library functions in a user mode. Applicants submit that Peek fails to teach using a shared library to improve resource sharing, but rather teaches reducing resources required for preventing data corruption using a shared library. (See Peek, Col. 5, line 25 - Col. 6, line 5). Moreover, Applicants submit that it is not even possible to

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place user mode drivers in the libraries, as suggested. Indeed, O'Rourke et al. fails to disclose a shared library, and thus, Applicants submit that any motivation to combine Peek with O'Rourke et al. comes from Applicants' own Specification, paragraphs 4-7, for example. Accordingly, the Examiner's combination of references is improper, and independent Claim 1 is patentable also for this reason.

It is submitted that independent Claim 1 is patentable over the prior art. Its respective dependent claims, which recite yet further distinguishing features, are also patentable over the prior art for at least the reasons set forth above. Notwithstanding the reasons set forth above, further arguments in support of the patentability of the dependent claims are provided below.

III. The Dependent Claims Are Patentable

A. Dependent Claim 2 Is Patentable

Dependent Claim 2 recites the multiple instances of an SLCSE stored in the shared library run simultaneously within the operating system. Indeed, simultaneously running multiple instances of an SLCSE within the operating system is possible if replicas of OS critical system elements are provided. Neither O'Rourke and Peek disclose this. Allowing simultaneous operation advantageously allows multiple software applications to run at the same time or in parallel without deleterious results that would otherwise occur such as a first instance affecting a second instance or conflicts of that nature. Accordingly, dependent Claim 2 is patentable for these reasons also.

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B. Dependent Claim 3 Is Patentable

Dependent Claim 3 recites the OSCSEs corresponding to and being capable of performing essentially the same function as SLCSEs remain in the operating system kernel. This advantageously provides multiple OS environments within a single OS. This is in contrast to a virtual machine (VM), for example, VmWare, where a VM enables multiple OSs to exist on the same hardware. However, they do it at a cost of duplicating the entire OS, including the kernel. OSCSEs advantageously allow for multiple OS environments to coexist using the same kernel, which increases efficiency.

The Examiner contended that O'Rourke et al. discloses the OSCSEs corresponding to and being capable of performing essentially the same function as SLCSEs remain in the operating system kernel and turned to Col. 10, lines 19-26, to support his contention. Applicants submit that the Examiner mischaracterized O'Rourke et al. as it fails to disclose the OSCSEs corresponding to and being capable of performing essentially the same function as SLCSEs remain in the operating system kernel. Instead, O'Rourke et al. discloses providing a user mode proxy filter for a kernel mode filter. (See O'Rourke et al., Col. 6, lines 12-19, and Col. 10, lines 12-33). Accordingly, dependent Claim 3 is patentable for these reasons also.

C. Dependent Claim 4 Is Patentable

Dependent Claim 4 recites one or more SLCSEs provided to one of the plurality of software applications having

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exclusive use thereof, use system calls to access services in the operating system kernel. The Examiner contended that O'Rourke et al., Col. 11, lines 39-41, disclose the recited exclusive use. Applicants submit that O'Rourke et al., Col. 11, lines 39-41, fails to disclose the recited exclusive use and instead discloses that the filters needed to process audio data for multimedia may also be applicable to teleconferencing.

Indeed, each SLCSE represents a distinct OS environment. Multiple SLCSEs create multiple OS environments. Because each SLCSE uses system calls, they are able to use the same kernel. This advantageously allows multiple OS environments where, for example, multiple web servers may exist each having their own configuration (IP address, etc.), and multiple OS environments are created using a common kernel. Accordingly, dependent Claim 4 is patentable for these reasons also.

D. Dependent Claim 5 Is Patentable

Dependent Claim 5 recites the operating system kernel includes a kernel module adapted to serve as an interface between an SLCSE in the context of an application program and a device driver. A kernel module advantageously enables conversions that may be necessary. For example, SLCSE 1 originally used kernel version 1.1 and is placed on a kernel with version 2.2. In this scenario there are conversions to allow the system calls intended for kernel v1.1 to work effectively with kernel v 2.2. Applicants submit that O'Rourke et al. fails to disclose a kernel module adapted to serve as an interface between an SLCSE in the context of an application

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program and a device driver. Instead, O'Rourke et al. discloses kernel mode/user mode transition. Accordingly, dependent Claim 5 is patentable for these reasons also.

E. Dependent Claim 6 Is Patentable

Dependent Claim 6 recites an SLCSE related to a predetermined function is provided to a first of the plurality of software applications for running a first instance of the SLCSE, and an SLCSE for performing essentially a same function is provided to a second of the plurality of software applications for running a second instance of the SLCSE simultaneously. The Examiner contended that O'Rourke et al. Col. 11, lines 37-41, discloses the above-noted recitation. Applicants submit that O'Rourke et al., Col. 11, lines 37-41, fails to disclose the recited exclusive use and instead disclose that individual kernel mode filters will have wide applicability and utility in a variety of applications. For example, many filters needed to process audio data for multimedia may also be applicable to teleconferencing.

Indeed, multiple SLCSEs equate to multiple applications. Applications that may not execute effectively as multiple instances on the same OS can do so within multiple SLCSEs. Accordingly, dependent Claim 6 is patentable for these reasons also.

F. Dependent Claim 7 Is Patentable

Dependent Claim 7 recites the kernel module is adapted to provide a notification of an event to an SLCSE running in the context of an application program, and the event is an

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asynchronous event and requires information to be passed to the SLCSE from outside the application. This is part of the mechanism that enables an SLCSE, and any application that executes using the SLCSE, to execute on a kernel that it was not originally intended to execute with. The ability to send an event to an SLCSE provides increased efficiency and flexibility, and thus it allows an application to execute that would otherwise not be able to execute.

The Examiner contended that O'Rourke et al., Col. 9, lines 36-38, disclose the event being an asynchronous event and requiring information to be passed to the SLCSE from outside the application. Applicants submit that the Examiner mischaracterized O'Rourke et al. Instead, O'Rourke et al., Col. 9, lines 36-38, disclose a controlling agent that receives notification of important events so that it may exercise control as necessary, and examples of such events include end of processing, a data starvation situation, and a data overrun situation. Accordingly, dependent Claim 7 is patentable for these reasons also.

G. Dependent Claim 8 Is Patentable

Dependent Claim 8 recites a handler is provided for notifying the SLCSE in the context of one of the plurality of software applications through the use of an up call mechanism. In other words, a mechanism for creating an async event is defined. The Examiner cited to O'Rourke et al., Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, as disclosing the above-noted recitation. The Examiner's cited portions of O'Rourke et al. merely disclose a user mode proxy for kernel

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mode filter. Accordingly, dependent Claim 8 is patentable for this reason also.

H. Dependent Claim 9 Is Patentable

Dependent Claim 9 recites the up call mechanism in operation, executes instructions from an SLCSE resident in user mode space, in kernel mode. This advantageously increases efficiency. Each transition from user mode to kernel is expensive with regard to processing requirements, as a context switch is performed. The claimed mechanism reduces the frequency of that transition.

The Examiner cited to O'Rourke et al., Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, as disclosing the above-noted recitation. The Examiner's cited portions of O'Rourke et al. merely disclose a user mode proxy for kernel mode filter. Accordingly, dependent Claim 9 is patentable for this reason also.

I. Dependent Claim 12 Is Patentable

Dependent Claim 12 recites the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping. In other words, multiple OS environments execute on a single kernel. In contrast to a VM, this provides a similar benefit, but increases efficiency and reduces complexity.

The Examiner contended that O'Rourke et al., Col. 11, lines 2, 8, and 12, Col. 9, lines 36-38, along with speaker 62, disk driver 48, disclose the SLCSEs utilize kernel services supplied by the operating system kernel for device access,

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interrupt delivery, and virtual memory mapping. Applicants submit that the Examiner mischaracterized O'Rourke et al. in that Col. 11, lines 2, 8, and 12, disclose controlling agent **44** connecting proxy filters. O'Rourke et al., Col. 9, lines 36-38, discloses examples of notification events include end of processing, a data starvation situation, and a data overrun situation. Speaker 62 and disk driver 48 add nothing to the critical deficiencies of O'Rourke et al. Accordingly, dependent Claim 12 is patentable for these reasons also.

J. Dependent Claim 13 Is Patentable

Dependent Claim 13 recites SLCSEs include services related to at least one of network protocol processes, and the management of files. In other words, SLCSEs include services related to multiple concurrent network stacks or, multiple file systems.

The Examiner contended that O'Rourke et al., Figure 3 and Col. 2, lines 22-23, disclose the SLCSEs include services related to at least one of network protocol processes, and the management of files. Applicants submit that the Examiner mischaracterized the O'Rourke et al. cited portion as it fails to disclose network protocol processes. Instead, Col. 2, lines 22-23, of O'Rourke et al. disclose processing multimedia by processing a stream of data using a sequence of processing functions. Accordingly, dependent Claim 13 is patentable for this reason also.

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K. Dependent Claim 14 Is Patentable

Dependent Claim 14 recites some SLCSEs are modified for a particular one of the plurality of software applications. An OS environment may be customized to a particular application without the need to customize the application. For example, a specific/customized file system that allows files to be accessed in an archive or compressed format may be provided by a custom SLCSE. In another example, a custom network protocol may be used to enable parallel processing over a custom memory interface.

The Examiner contended that O'Rourke et al., Col. 11, lines 39-40, disclose some SLCSEs are modified for a particular one of the plurality of software applications. Applicants submit that the Examiner mischaracterized O'Rourke et al. as it fails to disclose some SLCSEs are modified for a particular one of the plurality of software applications. Instead, O'Rourke et al., Col. 11, lines 39-40, disclose filters needed to process audio data for multimedia may also be applicable to teleconferencing. Accordingly, dependent Claim 14 is patentable for this reason also.

L. Dependent Claim 15 Is Patentable

Dependent Claim 15 recites the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel. The Examiner contended that O'Rourke et al. disclose the above-noted recitation and referred to Col. 1, lines 8-11, to support his contention. O'Rourke et al., Col. 1, lines 8-11, fail to disclose the SLCSEs that are application

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specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel. Instead, O'Rourke et al., Col. 1, lines 8-11, disclose software components of a computer operating system and software components in a kernel mode of a computer system. Additionally, O'Rourke et al., Col. 1, line 52, discloses a layer of software, typically called a driver, existing on top of computer hardware in a system. Nowhere in the Examiner's cited portions of O'Rourke et al. does it disclose the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel.

Indeed, applications may use version 2 of a standard C library from an SLCSE (e.g. OS provides version 5 of the standard C library) while using device drivers for a disk subsystem provided by the kernel. Accordingly, dependent Claim 15 is patentable for this reason also.

M. Dependent Claim 16 Is Patentable

Dependent Claim 16 recites the kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode. This advantageously reduces the need for transition from user mode to kernel mode.

The Examiner contended that O'Rourke et al., Col. 1, lines 47-52, and Col. 11, lines 8-12, somehow disclose the

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kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode. Applicants submit that the Examiner mischaracterized the cited portions of O'Rourke et al. Instead, O'Rourke et al., Col. 1, lines 47-51, disclose the operating system providing interfaces through which an application program in user mode may access hardware or other services provided by the operating system, and thus a layer of software typically exists on top of computer hardware in the system. Col. 11, lines 8-11, disclose controlling agent **44** connecting corresponding proxy filter, and corresponding proxy filters handling the details of connecting the individual kernel mode filters into the desired filter graph. Indeed, O'Rourke et al. is silent as to the kernel module being adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and the data exchange using mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode. Accordingly, dependent Claim 16 is patentable for this reason also.

N. Dependent Claim 17 Is Patentable

Dependent Claim 17 recites SLCSEs form a part of at least some of the plurality of software applications, by being linked thereto. In other words, applications do not change, and

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they execute on an incompatible OS in the same manner as they would on a compatible OS.

Applicants submit that a person having ordinary skill in the art would not turn to Peek in an attempt to combine with O'Rourke et al. More particularly, Applicants submit that Peek fails to teach using a shared library to improve resource sharing, but rather teaches reducing resources required for preventing data corruption using a shared library. (See Peek, Col. 5, line 25 - Col. 6, line 5). Indeed, a person skilled in the art would not turn to the controlling agent **44** as in O'Rourke et al. in an attempt to arrive at the claimed invention, as recited in dependent Claim 17. O'Rourke et al. discloses using a controlling agent **44** to connect corresponding proxy filters, while Peek teaches reducing resources. In other words, Peek attempt to reduce resources, and O'Rourke et al. adds resources via the controlling agent **44**. Accordingly, dependent Claim 17 is patentable for this reason also.

O. Dependent Claim 18 Is Patentable

Dependent Claim 18 recites the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping and otherwise execute without interaction from the operating system kernel. SLCSEs are not the same as the libraries provided by the OS. Indeed, SLCSEs are specific to the application and are independent of the OS.

The Examiner contended that O'Rourke et al., Col. 11, lines 2, 8, and 12, and Col. 9, lines 36-38, along with speaker 62, disk driver 48, disclose the SLCSEs utilize kernel services

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supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping. The Examiner also contended that O'Rourke et al., Col. 1, lines 10-11, disclose executing without interaction from the operating system kernel.

Applicants submit that the Examiner mischaracterized O'Rourke et al. in that Col. 11, lines 2, 8, and 12, disclose controlling agent **44** connecting proxy filters. O'Rourke et al., Col. 9, lines 36-38, discloses examples of notification events include end of processing, a data starvation situation, and a data overrun situation. Speaker 62 and disk driver 48 add nothing to the critical deficiencies of O'Rourke et al. O'Rourke et al., Col. 1, lines 10-11, generally disclose a user mode and a kernel mode of a computer operating system, and fail to supply the above-noted deficiencies. Accordingly, dependent Claim 18 is patentable for this reason also.

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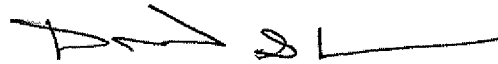
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III. Conclusion

In view of the arguments presented above, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. If the Examiner determines any remaining informalities exist, he is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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10/946,536

09/21/2004

Donn Rochette

78803 (120-2 US)

7612

TITLE OF INVENTION: COMPUTING SYSTEM HAVING USER MODE CRITICAL SYSTEM ELEMENTS AS SHARED LIBRARIES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$300	\$0	\$1055	08/03/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

27975 7590 05/03/2010

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
P.O. BOX 3791
ORLANDO, FL 32802-3791

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/946,536 09/21/2004 Donn Rochette 78803 (120-2 US) 7612

TITLE OF INVENTION: COMPUTING SYSTEM HAVING USER MODE CRITICAL SYSTEM ELEMENTS AS SHARED LIBRARIES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional YES \$755 \$300 \$0 \$1055 08/03/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
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RONI, SYED A 2194 719-310000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/946,536	09/21/2004	Donn Rochette	78803 (120-2 US)	7612
27975	7590	05/03/2010	EXAMINER	
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A. 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE P.O. BOX 3791 ORLANDO, FL 32802-3791			RONI, SYED A	
			ART UNIT	PAPER NUMBER
			2194	
DATE MAILED: 05/03/2010				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1069 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1069 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/946,536	ROCHETTE ET AL.	
	Examiner	Art Unit	
	SYED RONI	2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 01/15/2010.
2. ☒ The allowed claim(s) is/are 1 - 5 and 7 - 19.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. ☐ Notice of Informal Patent Application 6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date <u>20100423</u> . 7. ☒ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other _____. |
|---|---|

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview David S. Carus on 04/23/2010.

Claim 1, (Currently Amended) A computing system for executing a plurality of software applications comprising:

a) a processor;

a b) an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode using said processor; and,

b c) a shared library having shared library critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and

i) wherein some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications and when one of the SLCSEs is accessed by one or more of the plurality of software applications it forms a part of the one or more of the plurality of software applications, and

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ii) wherein an instance of ~~a an~~ SLCSE provided to at least a first one or more of the plurality of software applications from the shared library is run in a context of said at least first one or more of the plurality of software applications without being shared with other of the plurality of software applications and where at least a second one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing ~~essentially~~ same function, and

iii) wherein a SLCSE related to a predetermined function is provided to the first of the plurality of software applications for running a first instance of the SLCSE, and wherein a SLCSE for performing a same function is provided to the second of the plurality of software applications for running a second instance of the SLCSE simultaneously.

Claim 3, (Currently Amended) A computing system according to claim 1 wherein OSCSEs corresponding to and capable of performing ~~essentially~~ the same function as SLCSEs remain in the operating system kernel.

Claim 6, (Canceled)

Claim 9, (Currently Amended) A computing system according to claim 8 ~~claim 7~~ wherein the up call mechanism in operation, executes instructions from an SLCSE resident in user mode space, in kernel mode.

Claim 19, (Currently Amended) A computer system as defined in claim 2 wherein SLCSEs are not copies of OSCSEs ~~OSLCEs~~.

Claim 20, (Canceled)

Reasons for Allowance

Claims 1 – 5 and 7 – 19 are allowed.

The following is an Examiner's statement of reasons for allowance. None of Elnozahy et al. (hereinafter Elnozahy) (US 7,499,966 B2) and Wong et al. (hereinafter Wong) (US 2004/0216145 A1) on the record discloses "a shared library having shared library critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and

i) wherein some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications and when one of the SLCSEs is accessed by one or more of the plurality of software applications it forms a part of the one or more of the plurality of software applications, and

ii) wherein an instance of a SLCSE provided to at least a first of the plurality of software applications from the shared library is run in a context of said at least first of the plurality of software applications without being shared with other of the plurality of software applications and where at least a second of the plurality of software applications running under the operating system have use of

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a unique instance of a corresponding critical system element for performing same function.

iii) wherein a SLCSE related to a predetermined function is provided to the first of the plurality of software applications for running a first instance of the SLCSE, and wherein a SLCSE for performing a same function is provided to the second of the plurality of software applications for running a second instance of the SLCSE simultaneously” (Claim 1). Instead, Elnozahy discloses kernel extension device driver that are user space extensions of operating system code to minimize kernel calls by web server and Wong discloses user mode accessible copies of kernel-mode memory to facilitate a device driver to execute in user-mode while the graphics engine remains in kernel mode.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED RONI whose telephone number is (571)270-7806. The examiner can normally be reached on M - F (8:30 am - 5:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sub Sough (Sam) can be reached on (571) 272 - 6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SYED RONI/
Examiner, Art Unit 2194

/Hyung S. Sough/
Supervisory Patent Examiner, Art Unit 2194
04/26/10

