

Señores
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES
E. S. D.

119
SUPERINDUSTRIA Y COMERCIO
Radiación : 05077417 00000001 Folios: 70
Fecha (MM): 2005-09-01 11:01:34
Trámite : 002 PATENTES D 1 REGISTRO/ 329 COMPLETOS
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

Ref.: Expediente No. 05-077.417
Solicitud de Registro para Patente de
Invención SISTEMAS, METODOS E
INTERFACES QUE OFRECEN LA POSIBILIDAD
DE BUSQUEDAS PERSONALIZADAS Y ACCESO
A LA INFORMACIÓN.

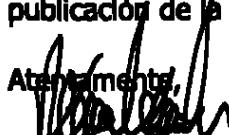
Solicitante: Microsoft Corporation

Darío Cárdenas Navas Identificado como aparece al ple de mi firma, atentamente me dirijo
a ese Despacho adjuntando los siguientes documentos:

1. Copia auténtica del documento donde consta la cesión del derecho a la patente otorgada por los inventores a favor del solicitante debidamente Apostillada y con su correspondiente traducción oficial.
2. Copia auténtica del documento de prioridad correspondiente a la patente de los Estados Unidos No. 10/958.560 de fecha 5 de Octubre de 2004. Tal como consta en el Expediente el recibo oficial 05-057.970 de fecha 3 de Agosto 2005 correspondiente a la reivindicación de la prioridad fue presentado junto con la solicitud de patente radicada ante ese Despacho el día 5 de Agosto de 2005.

Habiendo dado cumplimiento a los requerimientos de forma establecidos por la Decisión 486 de la Comunidad Andina, atentamente solicito a ese Despacho proceda con la publicación de la solicitud de patente en referencia.

Atentamente,


Darío Cárdenas Navas.
c.c. 17.066.629 de Bogotá
t.p. 1.250 C.S.J. L.H.

Jag/correspo/Microsoft.
f. p-348

120

TRADUCCIÓN OFICIAL

APOSTILLA

(Convención de La Haya, 5 de octubre de 1961)

1. País: **Estados Unidos de América**
2. El presente documento público ha sido firmado por: **Trudie Wallace**
3. actuando en calidad de: **Funcionario que Certifica**
4. Lleva el sello / estampilla de: **La Oficina de Patentes y Marcas Registradas de los Estados Unidos/ U.S. Patent and Trademark Office**

CERTIFICADO

5. En: **Washington, D.C.**
6. El: **Veintitrés de Mayo de 2005**
7. Por: **El Funcionario Asistente de Autenticaciones, Departamento de Estado de Los Estados Unidos.**
8. Bajo el número: **05020210-5**
9. Lleva Sello / Estampilla: **Sello del DEPARTAMENTO DE ESTADO DE LOS ESTADOS UNIDOS DE AMÉRICA / United States Department of State**
10. Firmado por: **Patrick O. Hatchett**



Martha S. Sarmiento S.

Martha S. Sarmiento S.

**Traductora Oficial Juramentada
Resolución No. 835 Minjusticia**

2

Traducción Oficial

LOS ESTADOS UNIDOS DE AMÉRICA

A TODOS AQUELLOS QUE LES PUEDA INTERESAR

**EL DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS
LA OFICINA DE PATENTES Y MARCAS REGISTRADAS DE LOS ESTADOS UNIDOS**

20 de Mayo de 2005

CON ESTE CERTIFICAMOS QUE EL DOCUMENTO ANEXO ES COPIA
VERDADERA DE LOS REGISTROS Y ANOTACIONES REALIZADOS EN ESTA
OFICINA, DEL DOCUMENTO REGISTRADO EL 7 DE FEBRERO DE 2005.

Autorizado por el
COMISIONADO DE PATENTES Y MARCAS REGISTRADAS

Firma: TRUDIE WALLACE
Funcionario Autorizado para Certificar

Sello Dorado: DEPARTAMENTO DE COMERCIO
OFICINA DE PATENTES Y MARCAS REGISTRADAS DE LOS ESTADOS UNIDOS



Martha P. Sarmiento S.

Martha P. Sarmiento S.

Traductora Oficial Juramentada
Resolución No. 835 Minjusticia

TRADUCCIÓN FICIAL

TRASPASO DE PATENTE

Versión Electrónica v1.1

Versión Impresa en Papel v1.1

TIPO DE SOLICITUD:	NUEVO TRASPASO
NATURALEZA DEL ACUERDO:	TRASPASO

DATOS DEL CEDENTE	
Nombre	Fecha de Ejecución
Jaime Brooks Teevan	10/04/2004
Susan T. Dumais	10/04/2004
Eric J. Horvitz	10/04/2004

DATOS DEL CESIONARIO	
Nombre:	Microsoft Corporation
Dirección:	One Microsoft Way
Ciudad :	Redmond,
Estado/ País:	WASHINGTON
Código Postal:	98052

NÚMERO Total de PROPIEDADES: 1	
Tipo de Propiedad	Número
Número de Solicitud:	10958560

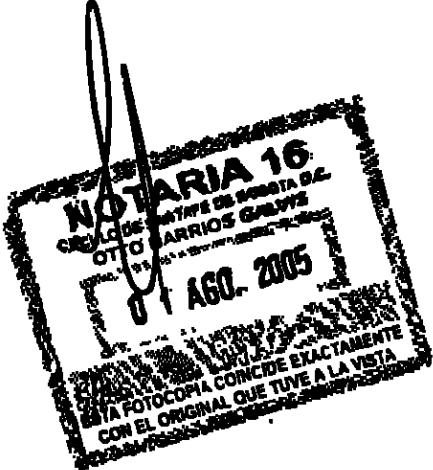
DATOS PARA CORRESPONDENCIA	
Número de Fax:	(216) 896-8731
<i>La correspondencia será enviada por correo de Estados Unidos cuando el envío por correo electrónico es infructuoso</i>	
Teléfono:	216-896-8730
Email:	cmartin@thepatentattorneys.com
Nombre para correspondencia:	Himanshu S. Amin
Dirección Línea 1:	1900 E. 9 th Street
Dirección Línea 2:	24 th Floor, National City Center
Dirección Línea 4:	Cleveland, OHIO 44114



NOMBRE DEL SOLICITANTE:	Himanshu S. Amin
Total Anexos: 3 Fuente = MSFTP706US-Traspaso #página 1.tif Fuente = MSFTP706US-Traspaso #página 2.tif Fuente = MSFTP706US-Traspaso #página 3.tif	

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OP \$40.00 10958560



PATENTE
ROLLO: 015666 CUADRO: 0083

124

Traducción Oficial

**EN OFICINA DE PATENTES Y MARCAS REGISTRADAS DE
LOS ESTADOS UNIDOS**

Número Serial	10/958,580
Fecha de Radicación	5 de Octubre de 2004
Inventor	Jaime Brooks Teevan, et al.
Solicitante	Microsoft Corporation
Expediente de Abogado No.	MSFTP708US
Expediente MS No.	MS309147.01
Nombre: SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING PERSONALIZED SEARCH AND INFORMATION ACCESS / "SISTEMAS, METODOS E INTERFACES QUE OFRECEN LA POSIBILIDAD DE BUSQUEDAS PERSONALIZADAS Y ACCESO A LA INFORMACIÓN"	

TRASPASO DE PATENTE

PARTES QUE SUSCRIBEN ESTE TRASPASO

Cedentes:

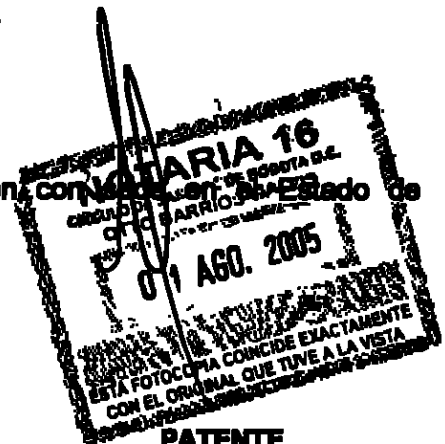
Jaime Brooks Teevan
24 Saville Street
Cambridge, Massachusetts 02138

Susan T. Dumais
6114 104th Avenue NE
Kirkland, Washington 98033

Eric J. Horvitz
330 Waverly Way
Kirkland, Washington 98033

Beneficiario de la Patente:

Microsoft Corporation
Corporation in the State of Washington/Corporación con sede en el Estado de Washington
One Microsoft Way
Redmond, WA 98052



ACUERDO

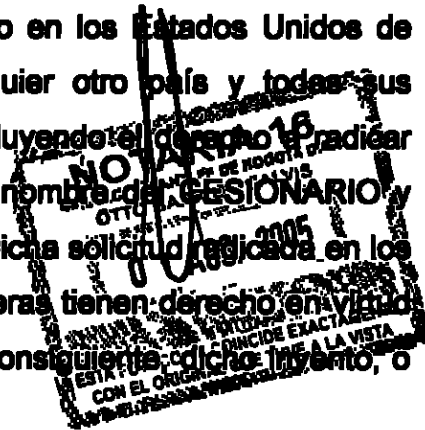
CONSIDERANDO QUE EL(LÓS) CEDENTE(S) (enunciados anteriormente) son los creadores de un invento llamado **SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING PERSONALIZED SEARCH AND INFORMATION ACCESS / "SISTEMAS, METODOS E INTERFACES QUE OFRECEN LA POSIBILIDAD DE BUSQUEDAS PERSONALIZADAS Y ACCESO A LA INFORMACIÓN"** para lo cual:

■ Se radicó una solicitud definitiva de Registro de Patente del invento para los Estados Unidos, que fue:

■ Fue radicada el 5 de Octubre de 2004 y se le asignó en los Estados Unidos el No. Serial 10/958.580; o radicada simultáneamente con esta.

CONSIDERANDO QUE la empresa Microsoft Corporation (denominada de aquí en adelante el CESIONARIO), es una corporación del Estado de Washington con sede en One Microsoft Way, Redmond, WA 98052, está interesada en adquirir en su totalidad los derechos, título e intereses relacionados con este invento y con el registro de patente que se le conceda en los Estados Unidos y en cualquier otro país.

POR CONSIGUIENTE, como resultado de esta negociación por la presente se da reconocimiento al recibo fruto de esta transacción. Con la presente el (los) CEDENTE(S) vende(n), asigna(n) y transfiere(n) al CESIONARIO la totalidad de los derechos, título e intereses relacionados con este invento, con la solicitud y con las patentes que se le otorguen a dicho invento en los Estados Unidos de América y en sus posesiones territoriales y cualquier otro país y todas sus divisiones, reediciones y continuaciones de ésta, incluyendo el derecho a radicar solicitudes de patentes extranjeras directamente en nombre del CESIONARIO y solicitar los derechos de prioridad que se derivan de dicha solicitud radicada en los Estados Unidos por lo cual dichas solicitudes extranjeras tienen derecho en virtud de Convenciones Internacionales o Tratados, y por consiguiente dicho invento, o



las solicitudes de patentes relacionadas con este invento estarán bajo la responsabilidad y beneficio del CESIONARIO, sus sucesores y cesionarios para su uso y beneficio y de sus sucesores y cesionarios total y completamente, de la misma forma como el(los) CEDENTE(S) que tenía(n) esta asignación y responsabilidad, la hubiera(n) mantenido y disfrutado si la venta y traspaso no se hubieran realizado. El(los) CEDENTE(S) por la presente autoriza(n) y solicita(n) al Comisionado de Patentes y Marcas Registradas que otorgue todas las Patentes del invento al CESIONARIO. El(los) CEDENTE(S) se compromete(n) a ejecutar todos los instrumentos y documentos requeridos para diligenciar y procesar las solicitudes de patente relacionadas con dicho invento para los Estados Unidos y otros países, así como para litigación relacionada con dichos registros de patentes, o con el propósito de proteger el nombre, los derechos de dicho invento y su patente.

4 de Octubre de 2004
Fecha

Firma ilegible
Jaime Brooks Teevan

4 de Octubre de 2004
Fecha

Firma ilegible
Susan T. Dumais

4 de Octubre de 2004
Fecha

Firma ilegible
Eric J. Horvitz

RADICADO: 02/07/2005



CONSTANCIA DE TRADUCCIÓN OFICIAL

Yo, Martha Sofía Sarmiento Solano, identificada con Cédula de Ciudadanía No. 41.686.291, de Bogotá, HAGO CONSTAR que el presente documento es versión fiel y completa en idioma Español de los siguientes documentos:

- Apostilla No. 05020210- 5 del 23 de Mayo de 2005 y firmada por Patrick O. Hatchett, Funcionario Asistente de Autenticaciones del Departamento de Estado de Los Estados Unidos.
- Certificado del Departamento de Comercio de los Estados Unidos firmado por: TRUDIE WALLACE, Funcionario Autorizado para Certificar, con fecha 20 de Mayo de 2005.
- Traspaso de Patente identificado con el ROLLO/CUADRO: 015658/0093. Número de Solicitud 10958560
- Traspaso de Patente y Acuerdo bajo el Expediente de Abogado No. MSFTP706US, Número de Expediente MS309147.01 y Número Serial 10/958,560. Firmado por Jaime Brooks Teevan, Susan T. Dumais y Eric J. Horvitz.

Martha S. Sarmiento

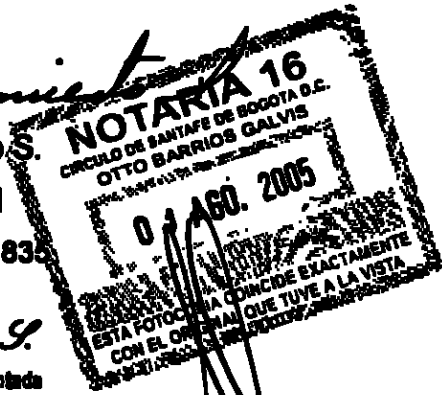
Martha S. Sarmiento S.

Traductora Oficial

Resolución Minjusticia 835

Martha S. Sarmiento S.

Traductora Oficial Juramentada
Resolución No. 835 Minjusticia



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This public document

2. has been signed by Trudie Wallace

3. acting in the capacity of Certifying Officer

4. bears the seal/stamp of U.S. Patent and Trademark Office

Certified

5. at Washington, D.C.

6. the twenty-third of May, 2005

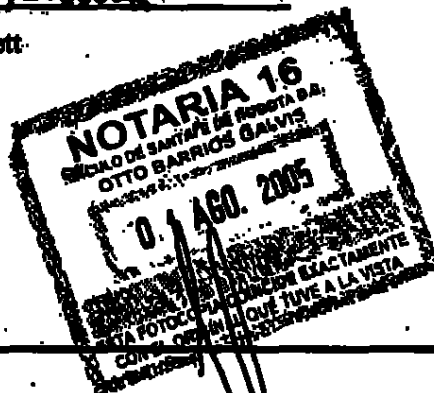
7. by Assistant Authentication Officer, United States Department of State

8. No. 05020210-5

9. Seal/Stamp:

10. Signature:

Patrick O. Hatchett
Patrick O. Hatchett



A 1320761

UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

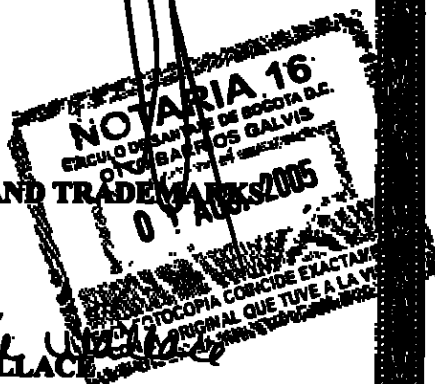
May 20, 2005

THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE
RECORDS OF THIS OFFICE OF A DOCUMENT RECORDED ON
February 07, 2005.

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS



Trudie Wallace
TRUDIE WALLACE
Certifying Officer

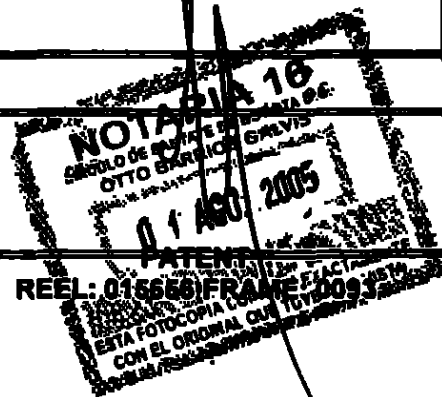


PATENT ASSIGNMENT

Electronic Version v1.1
Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT										
NATURE OF CONVEYANCE:	ASSIGNMENT										
CONVEYING PARTY DATA											
<table border="1"><thead><tr><th>Name</th><th>Execution Date</th></tr></thead><tbody><tr><td>Jaime Brooks Teeven</td><td>10/04/2004</td></tr><tr><td>Susan T. Dumsis</td><td>10/04/2004</td></tr><tr><td>Eric J. Horvitz</td><td>10/04/2004</td></tr></tbody></table>		Name	Execution Date	Jaime Brooks Teeven	10/04/2004	Susan T. Dumsis	10/04/2004	Eric J. Horvitz	10/04/2004		
Name	Execution Date										
Jaime Brooks Teeven	10/04/2004										
Susan T. Dumsis	10/04/2004										
Eric J. Horvitz	10/04/2004										
RECEIVING PARTY DATA											
<table border="1"><tr><td>Name:</td><td>Microsoft Corporation</td></tr><tr><td>Street Address:</td><td>One Microsoft Way</td></tr><tr><td>City:</td><td>Redmond</td></tr><tr><td>State/Country:</td><td>WASHINGTON</td></tr><tr><td>Postal Code:</td><td>98052</td></tr></table>		Name:	Microsoft Corporation	Street Address:	One Microsoft Way	City:	Redmond	State/Country:	WASHINGTON	Postal Code:	98052
Name:	Microsoft Corporation										
Street Address:	One Microsoft Way										
City:	Redmond										
State/Country:	WASHINGTON										
Postal Code:	98052										
PROPERTY NUMBERS Total: 1											
<table border="1"><thead><tr><th>Property Type</th><th>Number</th></tr></thead><tbody><tr><td>Application Number:</td><td>10958560</td></tr></tbody></table>		Property Type	Number	Application Number:	10958560						
Property Type	Number										
Application Number:	10958560										
CORRESPONDENCE DATA											
Fax Number: (216)898-8731 <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>											
Phone: 216-898-8730											
Email: cmartin@thepatentattorneys.com											
Correspondent Name: Himanshu S. Amin											
Address Line 1: 1900 E. 9th Street											
Address Line 2: 24th Floor, National City Center											
Address Line 4: Cleveland, OHIO 44114											
NAME OF SUBMITTER:	Himanshu S. Amin										
Total Attachments: 3 source=MSFTP708US-Assignment#page1.tif source=MSFTP708US-Assignment#page2.tif source=MSFTP708US-Assignment#page3.tif											

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial Number..... 10/958,560
Filing Date..... October 5, 2004
Inventorship..... Jalme Brooks Teevan, et al.
Applicant..... Microsoft Corporation
Attorney's Docket No. MSP1P706US
MS Docket No. MS309147.01

Title: **SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING PERSONALIZED
SEARCH AND INFORMATION ACCESS**

PATENT ASSIGNMENT

PARTIES TO THE ASSIGNMENT

Assignor(s):

Jalme Brooks Teevan
24 Saville Street
Cambridge, Massachusetts 02138

Susan T. Dumais
6114 104th Avenue NE
Kirkland, Washington 98033

Eric J. Horvitz
330 Waverly Way
Kirkland, Washington 98033

Assignee:

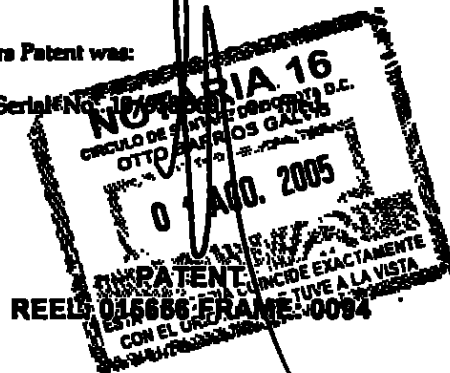
Microsoft Corporation
Corporation in the State of Washington
One Microsoft Way
Redmond, WA 98052

AGREEMENT

WHEREAS, ASSIGNOR(S) (listed above) are inventor(s) of an invention entitled
"SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING PERSONALIZED SEARCH AND
INFORMATION ACCESS," for which:

☒ a non-provisional application for United States Letters Patent was:

☒ filed on October 5, 2004 and was given U.S. Serial No. _____
concurrently herewith.

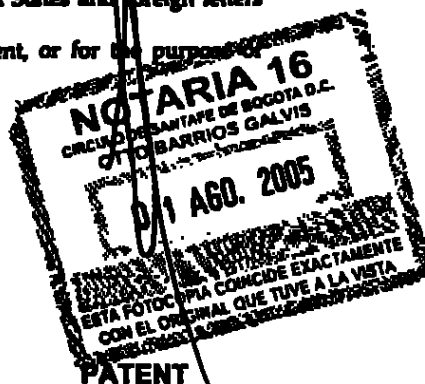


132

Attorney Docket No. MS01720425
MS Docket No. MS00714741
Serial No. 10/958,540

WHEREAS, Microsoft Corporation (hereinafter referred to as ASSIGNEE), a corporation of the State of Washington having a place of business at One Microsoft Way, Redmond, WA 98052, is desirous of acquiring the entire right, title and interest in and to the invention and in and to any letters patent that may be granted therefore in the United States and in any and all foreign countries;

NOW, THEREFORE, in exchange for good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR(S) hereby sell, assign and transfer unto ASSIGNEE, the entire right, title and interest in and to said invention, said application and any and all letters patent which may be granted for said invention in the United States of America and its territorial possessions and in any and all foreign countries, and in any and all divisions, reissues and continuations thereof, including the right to file foreign applications directly in the name of ASSIGNEE and to claim priority rights deriving from said United States application to which said foreign applications are entitled by virtue of international convention, treaty or otherwise, said invention, application and all letters patent on said invention to be held and enjoyed by ASSIGNEE and its successors and assigns for their use and benefit and of their successors and assigns as fully and entirely as the same would have been held and enjoyed by ASSIGNOR(S) had this assignment, transfer and sale not been made. ASSIGNOR(S) hereby authorize and request the Commissioner of Patents and Trademarks to issue all letters patent on said invention to ASSIGNEE. ASSIGNOR(S) agree to execute all instruments and documents required for the making and prosecution of applications for United States and foreign letters patent on said invention, for litigation regarding said letters patent, or for the purpose of protecting title to said invention or letters patent therefore.



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Attorney Docket No. MSJTP2015
MS Docket No. MS09147.01
Serial No. 10/958.560

October 4, 2004
Date

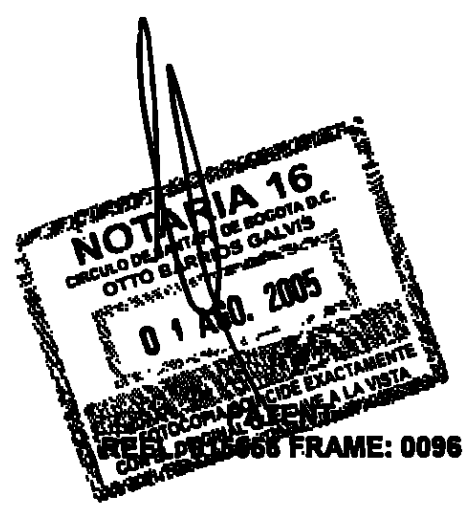
Jaime B Teevan
Jaime Brooks Teevan

October 4, 2004
Date

Susan Dumais
Susan T. Dumais

October 4, 2004
Date

Eric J. Horvitz
Eric J. Horvitz



RECORDED: 02/07/2006

LS

Traducción Oficial

**LOS ESTADOS UNIDOS DE AMÉRICA
A TODOS AQUELLOS QUE LES PUEDA INTERESAR**

**DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS
OFICINA DE PATENTES Y MARCAS REGISTRADAS DE LOS ESTADOS UNIDOS**

17 de Mayo de 2005

CON ESTE CERTIFICAMOS QUE EL DOCUMENTO ANEXO ES COPIA VERDADERA TOMADA DE LOS REGISTROS DE LA OFICINA DE PATENTES Y MARCAS REGISTRADAS DE LOS ESTADOS UNIDOS DE LOS DOCUMENTOS DE LA SOLICITUD DE PATENTE ABAJO IDENTIFICADOS, QUE CUMPLIERON LOS REQUISITOS PARA QUE SE LES OTORGARA UNA FECHA DE RADICACIÓN BAJO EL 35 DEL USC 111.

NÚMERO DE SOLICITUD: 10/958,560

FECHA DE RADICACIÓN: 5 de Octubre de 2004

Autorizado por el

COMISIONADO DE PATENTES Y MARCAS REGISTRADAS

Firma: M. TARVER

Funcionario Autorizado para Certificar

Sello Dorado: DEPARTAMENTO DE COMERCIO
OFICINA DE PATENTES Y MARCAS REGISTRADAS DE LOS ESTADOS UNIDOS



Martha G. Sarmento G.

Martha G. Sarmento G.

Traductora Oficial Juramentada
Resolución No. 835 Mijusticia

Traducción Oficial

PTO/SEP/17(10-06)

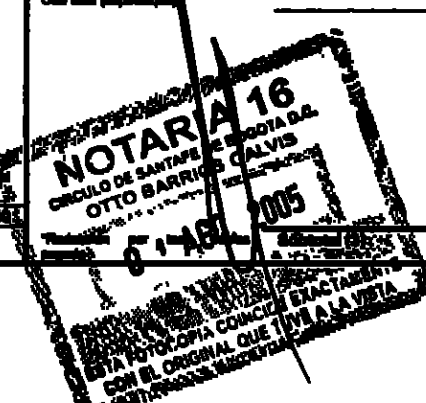
Aprobado para uso hasta el 07/31/2008 CMB 0801-0032

Oficina de Patentes y Marcas Registradas, DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS.

Según la Materialidad de Registro de Trademark de 1995, Marquees presentará una solicitud a su oficina de información a menos que este sistema no responda de un modo válido CMB

Declaración de Gastos para el Año Fiscal 2005 Los gastos de patentes están sujetos a revisión anual. Vigencia 1001/2004 ☐ Si Solicitante declara gastos de Pequeña Empresa ver el 37 del CFR 1.27 Valor Total de pago (\$) 1,524.00	Complete si conoce la información	
	Número de Solicitud	
	Fecha de presentación	Incluida
	Nombre del primer inventor	Jaime Brooks Teevan
	Nombre del Examinador	
	Unidad de Diseño	
Expediente de Abogado No.	MS309147.01/MSFTP706US	

Método de Pago (Marque todas las casillas que aplican)		Calculo de la Tasa (continua)																																																																																																																													
☐ Cheques ☐ Tarjeta de crédito ☐ Giro ☐ Otro ☐ Ninguno		3. Tasa adicional																																																																																																																													
☒ Cuenta de Ahorros: Número de la cuenta de Ahorros: <u>85-1083</u> Nombre del Titular de la Cuenta de Ahorros: <u>Amin & Yancy, LLP</u> Se adjunta el comprobante para: (Marque todas las casillas que apliquen) ☐ Cobrar la(s) tasa(s) indicada(s) o continuación ☒ Acusar recibo a favor. ☒ Cobrar cualquier tasa(s) adicional(es) o cualquier tarifa pendiente. ☐ Cobrar la(s) tasa(s) indicadas continuación, excepto la Tasa de Reclamación y Registro a la cuenta de ahorros antes mencionada.		<table border="1"><thead><tr><th>Gran Empresa</th><th>Pequeña Empresa</th><th>Descripción de la Tasa</th><th>Tasa Pagada</th></tr><tr><th>Tasa Tasa</th><th>Tasa Tasa</th><th></th><th></th></tr><tr><th>Código (S)</th><th>Código (S)</th><th></th><th></th></tr></thead><tbody><tr><td>1001 130</td><td>2001 05</td><td>Revisión- Cargo por Presentación de la solicitud</td><td></td></tr><tr><td>1002 05</td><td>2002 25</td><td>Revisión- Cargo de presentación provisional de la solicitud</td><td></td></tr><tr><td>1003 130</td><td>1003 130</td><td>Tasa para expedientes que no están en línea</td><td></td></tr><tr><td>1012 2,520</td><td>1012 2,520</td><td>Tasa para expedientes que no están en línea</td><td></td></tr><tr><td>1004 650*</td><td>1004 650*</td><td>Para presentar un expediente para no-explotar en línea</td><td></td></tr><tr><td>1005 1,840*</td><td>1005 1,840*</td><td>Para presentar un expediente para no-explotar en línea</td><td></td></tr><tr><td>1201 110</td><td>2201 05</td><td>Revisión de publicación de 250 antes de la apertura del expediente</td><td></td></tr><tr><td>1202 430</td><td>2202 215</td><td>Revisión de publicación de 250 después de la apertura del expediente</td><td></td></tr><tr><td>1203 980</td><td>2203 490</td><td>Revisión de publicación de 250 después de la apertura del expediente</td><td></td></tr><tr><td>1204 1,530</td><td>2204 765</td><td>Revisión de publicación de 250 después de la apertura del expediente</td><td></td></tr><tr><td>1205 2,080</td><td>2205 1,040</td><td>Revisión de publicación de 250 después de la apertura del expediente</td><td></td></tr><tr><td>1401 340</td><td>2401 170</td><td>Ases de Apertura</td><td></td></tr><tr><td>1402 340</td><td>2402 170</td><td>Presentación de material sustancialmente la solicitud</td><td></td></tr><tr><td>1403 300</td><td>2403 150</td><td>Revisión de reclamos</td><td></td></tr><tr><td>1401 1,510</td><td>1401 1,510</td><td>Patente para reclamar un procedimiento público</td><td></td></tr><tr><td>1402 110</td><td>2402 05</td><td>Patente para reclamar - reclamo</td><td></td></tr><tr><td>1403 1,300</td><td>2403 065</td><td>Patente para reclamar - reclamo</td><td></td></tr><tr><td>1401 1,370</td><td>2401 068</td><td>Cargo por Servicio Utilizado (o reclamo)</td><td></td></tr><tr><td>1402 450</td><td>2402 225</td><td>Cargo para reclamo de Cláusula</td><td></td></tr><tr><td>1403 650</td><td>2403 325</td><td>Cargo para reclamo de Variaciones Vegetales</td><td></td></tr><tr><td>1404 130</td><td>1404 130</td><td>Revisión de Cláusula</td><td></td></tr><tr><td>1607 80</td><td>1607 80</td><td>Cargo para Presentación bajo el 37 del CFR 1.179g</td><td></td></tr><tr><td>1808 180</td><td>1808 180</td><td>Revisión de reclamo de información necesaria para</td><td></td></tr><tr><td>8021 40</td><td>8021 40</td><td>Revisión del tiempo de la propiedad de una patente</td><td></td></tr><tr><td>1009 700</td><td>2009 350</td><td>Por presentar una solicitud después del reclamo final</td><td></td></tr><tr><td>1010 700</td><td>2010 350</td><td>Por una solicitud adicional a un reclamo final</td><td></td></tr><tr><td>1001 700</td><td>2001 350</td><td>Revisión de reclamo de reclamo (RCL)</td><td></td></tr><tr><td>1002 600</td><td>1002 600</td><td>Revisión de reclamo de reclamo de reclamo</td><td></td></tr></tbody></table>		Gran Empresa	Pequeña Empresa	Descripción de la Tasa	Tasa Pagada	Tasa Tasa	Tasa Tasa			Código (S)	Código (S)			1001 130	2001 05	Revisión- Cargo por Presentación de la solicitud		1002 05	2002 25	Revisión- Cargo de presentación provisional de la solicitud		1003 130	1003 130	Tasa para expedientes que no están en línea		1012 2,520	1012 2,520	Tasa para expedientes que no están en línea		1004 650*	1004 650*	Para presentar un expediente para no-explotar en línea		1005 1,840*	1005 1,840*	Para presentar un expediente para no-explotar en línea		1201 110	2201 05	Revisión de publicación de 250 antes de la apertura del expediente		1202 430	2202 215	Revisión de publicación de 250 después de la apertura del expediente		1203 980	2203 490	Revisión de publicación de 250 después de la apertura del expediente		1204 1,530	2204 765	Revisión de publicación de 250 después de la apertura del expediente		1205 2,080	2205 1,040	Revisión de publicación de 250 después de la apertura del expediente		1401 340	2401 170	Ases de Apertura		1402 340	2402 170	Presentación de material sustancialmente la solicitud		1403 300	2403 150	Revisión de reclamos		1401 1,510	1401 1,510	Patente para reclamar un procedimiento público		1402 110	2402 05	Patente para reclamar - 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Presentado por			Completer (el apilado)	
Nombre	Miguelito S. Asin	Número de Registro (Abogado/Agente)	40,884	Teléfono (216) 888-8730
Firma	Firma ilegible	Fecha 8 de Octubre de 2004		

Advertencia: La información en este formato se puede divulgar al público. La información de la tarjeta de crédito no deberá ser incluida en este formato. Proporcione la información de la tarjeta de crédito y autorización en el formato PTO-2038

La orden de recolección de esta información se encuentra estipulada en el 37 del CFR 1.17 y 1.27. Esta información es necesaria para obtener o mantener un beneficio público que consiste en recibir y registrar una solicitud para que pueda ser procesada por la oficina USPTO. Su confidencialidad se encuentra garantizada bajo el 35 del USC 122 y por el 37 del CFR 1.14. Se estima que este formato se completa en 12 minutos, incluyendo la recolección, preparación y presentación de la solicitud totalmente diligenciada a la oficina de la USPTO. El tiempo varía dependiendo de las necesidades de cada caso. Cualquier comentario sobre la cantidad de tiempo que usted utiliza para completar este formato y/o sugerencias para reducirlo se debe enviar al Oficial en Jefe de Información de la Oficina de Patentes y Marcas Registradas de los Estados Unidos/ chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1480, Alexandria, VA 22313-1480. NO ENVIAR PAGOS POR CONCEPTO DE TASAS O FORMULARIOS DILIGENCIADOS A ESTA DIRECCIÓN. ENVELOPE A: Commissioner for Patents P.O. Box 1480, Alexandria, VA 22313-1480

Si necesita asesoría para diligenciar este formato, llame al 1-800 - PTO - 8188 y seleccione el número 2

10351 US PTO
CÓDIGO DE BARRAS
100804



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Expediente de Abogado No. MS309147.01/MSFTP706US

**SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING
PERSONALIZED SEARCH AND INFORMATION ACCESS/
SISTEMAS, METODOS E INTERFACES QUE OFRECEN LA
POSIBILIDAD DE BUSQUEDAS PERSONALIZADAS Y ACCESO A
LA INFORMACIÓN.**

Por

Jaime Brooks Teevan, Susan T. Dumals, y Eric J. Horvitz

CERTIFICACIÓN DE ENVÍO POR CORREO

Con la presente certifico que la solicitud de patente adjunta (junto con cualquier otro documento anexo mencionado) se está enviando a través del Servicio Postal de los Estados Unidos hoy 5 de Octubre de 2004, en un sobre de "Correo Expreso al Destinatario" con Sello de Correo No. EV526575164US dirigido al Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450

Firmado por. Firma ilegible
Himanshu S. Amin



Copia Suministrada por la USPTO de la Base de datos de Imagen IFW el 05/15/2005

Traducción Oficial

SOLICITUD DE PATENTEEXPEDIENTE DE ABOGADO
Número. **MSFTP706US****DECLARACIÓN Y PODER
DE ABOGADO**Expediente MS
No. **MS309147.01**

En mi calidad de inventor, por medio del presente documento declaro que:
Mi dirección de residencia/ dirección postal y nacionalidad aparecen consignados
más abajo en este documento, enseguida de mi nombre;

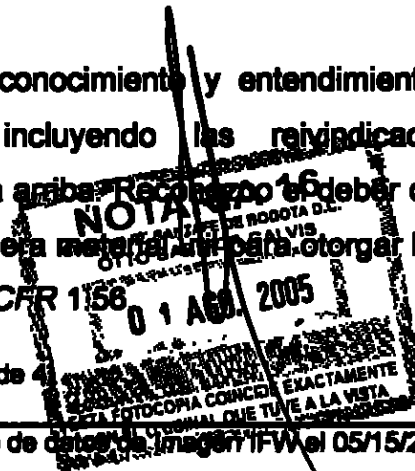
Afirmo ser el inventor original, primero y único (si hay un solo nombre en la lista) o
uno de los inventores originales y colectivo (si se encuentran varios nombres en la
lista) del asunto que se reivindica y para el cual se solicita la patente del invento
titulado: SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING PERSONALIZED
SEARCH AND INFORMATION ACCESS/ SISTEMAS, METODOS E INTERFACES QUE
OFRECEN LA POSIBILIDAD DE BUSQUEDAS PERSONALIZADAS Y ACCESO A LA
INFORMACIÓN.

Cuyas especificaciones se presentan con este documento, a menos que esté
indicado o marcado en el paréntesis que se encuentra a continuación:

() Se radicaron el _____ con el número de serie para Solicitud de
Patente en Estados Unidos o Solicitud Internacional PCT Número .
_____ y fueron modificadas el _____ (si aplica).

Declaro que he revisado y tengo pleno conocimiento y entendimiento de las
especificaciones arriba mencionadas, incluyendo las reivindicaciones y
modificaciones a las que se hace referencia arriba. Reconozco deber de revelar
y publicar toda la información que se considera material para otorgar la patente
según lo que se define en el 37 del Código CFR 1.56.

Página 1 de 4



Copia Suministrada por la USPTO de la Base de datos de Imagen IFW el 05/15/2005

S Ilcitudes Internaci nales y/ Petición de Prioridad de Extranjería

Con el presente documento solicito los beneficios de Prioridad de Extranjería establecidos en el Título 35 del Código de los Estados Unidos, en su Artículo 119 (*United States Code, Section 119*) y que se confieren a la(s) solicitud(es) de Patente(s) a nivel Internacional o a los certificados de inventor(es) que se relacionan e identifican en la lista a continuación, como también a las solicitudes de inscripción de Patentes Internacionales o de Certificados de Inventor(es) que se hayan radicado con anterioridad a la fecha en que se solicita la prioridad:

PAÍS	SOLICITUD NÚMERO	FECHA DE RADICACIÓN	PRIORIDAD SOLICITADA BAJO EL TÍTULO 35 DEL ARTÍCULO 119 DEL U.S.C.
			SI NO
			SI NO

PODER DE REPRESENTACIÓN DE ABOGADO:

En mi calidad de inventor, en el presente documento designo al (los) siguiente(s) abogado(s) y/o representante(s) asociados con

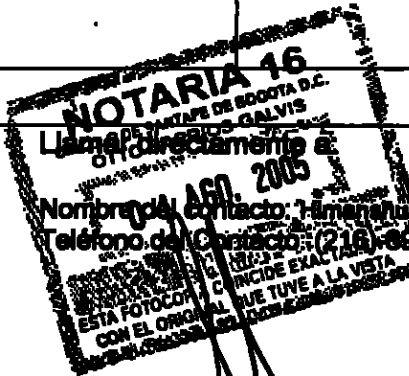
El Número de Cliente 27195

Para que realicen todas las gestiones relacionadas con esta solicitud ante la Oficina de Patentes y Marcas Registradas

David Bartley Eppenauer Reg. No. 35499	Martin L. Shively Reg. No. 33553	Ronald O. Zink Reg. No. 35744	Patricia E. Bornes Reg. No. 37038
Stacy Quan Reg. No. 33760	Jeffrey L. Ranck Reg. No. 38590	Michael W. Bocianowski Reg. No. 28892	John Weresch Reg. No. 32332
Himanshu S. Amin Reg. No. 40,894	Gregory Turocy Reg. No. 38,952		

Enviar Correspondencia a:

Nombre del contacto: Himanshu S. Amin
Nombre de la firma: Amin & Turocy, LLP
Dirección de la Firma: 1900 E. 9th Street, National
City Center – 24th floor
Ciudad, Estado, Código Postal: Cleveland, OH 44114



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Traducción Oficial

EXPEDIENTE DE ABOGADO Número. MSFTP708US	DECLARACIÓN Y PODER DE ABOGADO	Expediente MS No. MS308147.01
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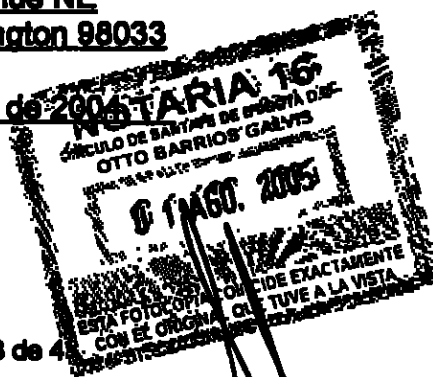
En el presente documento declaro que todas estas afirmaciones las hago bajo mi pleno conocimiento y son verdaderas, además que toda la información que suministro es cierta; como también que todas estas aseveraciones las hago sabiendo que las afirmaciones falsas que se hacen de manera intencional son consideradas de carácter penal y se castigan con multas o prisión o de ambas formas, según lo establecido bajo el Título 18 del Código de los Estados Unidos en su Artículo 1001 y que dicho tipo de afirmaciones falsas ponen en peligro la validez de la solicitud o cualquier patente otorgada a partir de ellas.

Nombre Completo del Inventor: Jaime Brooks Teevan Ciudadano de : Estados Unidos de América
Dirección Residencia: Cambridge, Massachusetts
Dirección Postal: 24 Saville Street
Cambridge, Massachusetts 02138

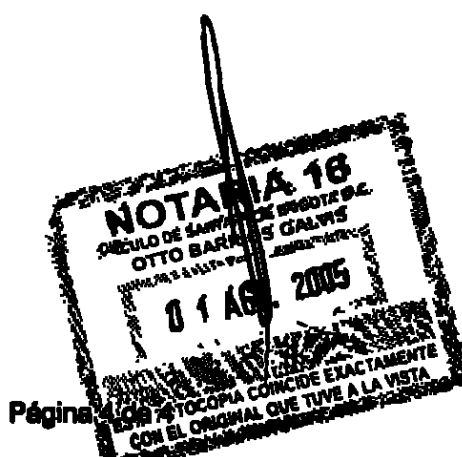
Ilegible 4 de Octubre de 2004
Firma del Inventor Fecha

Nombre Completo del Inventor: Susan T. Dumais Ciudadano de : Estados Unidos de América
Dirección Residencia: Kirkland, Washington
Dirección Postal: 6114 104th Avenue NE
Kirkland, Washington 98033

Ilegible 4 de Octubre de 2004
Firma del Inventor Fecha



Nombre Completo del Inventor: Eric J. Horvitz Ciudadano de : Estados Unidos de América
Dirección Residencia: Kirkland, Washington
Dirección Postal: 330 Waverly Way
Kirkland, Washington 98033
Firma del Inventor: Ilegible Fecha: 4 de Octubre de 2004



CONSTANCIA DE TRADUCCIÓN OFICIAL

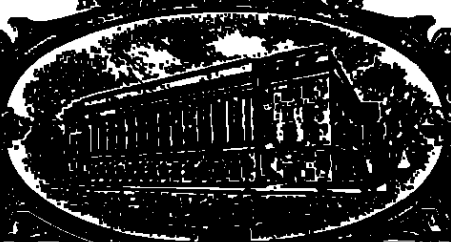
Yo, Martha Sofía Sarmiento Solano, identificada con Cédula de Ciudadanía No. 41.686.291, de Bogotá, HAGO CONSTAR que el presente documento es versión fiel y completa en idioma Español de los siguientes documentos:

- Certificado del Departamento de Comercio de los Estados Unidos firmado por: M. TARVER, Funcionario Autorizado para Certificar, con fecha 17 de Mayo de 2005. Número de Solicitud: 10/958,560 Y fecha de Radicación: 5 de Octubre de 2004
- Transmisión de solicitud de patente de utilidad y Declaración de Gastos para el Año Fiscal 2005, firmadas por Himanshu S. Amin con fecha 5 de Octubre de 2004.
- Certificación de Envío por Correo del 5 de Octubre de 2004 y sello de correo No. EV526575164US
- Declaración y Poder de Abogado, con Expediente de Abogado No. MSFTP706US y Expediente MS No. MS309147.01, firmado por Jaime Brooks Teevan Susan T. Dumais y Eric J. Horvitz.

Martha S. Sarmiento S.
Martha S. Sarmiento S.
Traductora Oficial
Resolución Minjusticia 835
Martha S. Sarmiento S.
Traductora Oficial Juramentada
Resolución No. 835 Minjusticia

NOTARIA 16
OTILIO BARRIOS GALVIS
10 de Mayo de 2005
ESTA FOTOCOPIA COINCIDE EXACTAMENTE
CON EL ORIGINAL QUE TUVE A LA VISTA

PA 13318718



UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

May 17, 2005

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

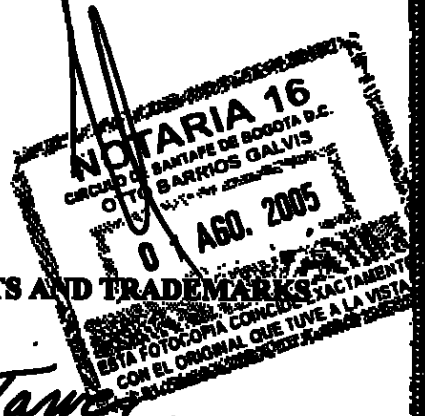
APPLICATION NUMBER: 10/958,560
FILING DATE: October 05, 2004

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS



M. Tarver

M. TARVER
Certifying Officer



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16851 U.S. PTO

17602 U.S. PTO
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UTILITY PATENT APPLICATION TRANSMITTAL (Only for new nonprovisional applications under 37 CFR 1.53(a))	Attorney Docket No.	MS309147.01/MSFT7706US
	First Inventor	Jaime Brooks Teevan
	Title	SYSTEMS, METHODS, AND...
	Express Mail Label No.	EV526575164US

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	ADDRESS TO: Mail Stop Patent Application Commissioner for Patents P.O. Box 1480 Alexandria, VA 22313-1480
1. ☒ Fee Transmittal Form (e.g., PTO/859/17) (Submit an original and a duplicate for fee processing) 2. ☐ Applicant claims small entity status. See 37 CFR 1.27. 3. ☒ Specification [Total Pages <u>28</u>] (prepared arrangement and form below) - Descriptive title of the invention - Cross Reference to Related Applications - Statement Regarding Fed sponsored R & D - Reference to sequence listing, a table, or a computer program listing appendix - Background of the invention - Brief Summary of the invention - Brief Description of the Drawings (if any) - Detailed Description - Claims - Abstract of the Disclosure 4. ☒ Drawings (35 U.S.C. 113) [Total Sheets <u>15</u>] 5. Oath or Declaration [Total Sheets <u>2</u>] a. ☒ Newly executed (original or copy) b. ☐ Copy from a prior application (37 CFR 1.53(d)) (for continuation/divisional with Box 18 completed) c. ☐ DELETION OF INVENTOR(S) (Signed statement attached detailing inventor(s) name in the prior application, see 37 CFR 1.53(d)(2) and 1.53(d)) 6. ☒ Application Data Sheet, See 37 CFR 1.78 7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix) 8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary) a. ☐ Computer Reader Form (CRF) b. Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies	ACCOMPANYING APPLICATION PARTS 9. ☐ Assignment Papers (cover sheet & document(s)) 10. ☐ 37 CFR 3.73(b) Statement ☒ Power of Attorney (when there is an assignee) 11. ☐ English Translation Document (if applicable) 12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations 13. ☐ Preliminary Amendment 14. ☒ Return Receipt Postcard (MPEP 603) (Should be specifically marked) 15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 16. ☐ Nonpublication Request under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/88/35 or its equivalent. 17. ☒ Other: Express Mail Certificate ...Credit Card Payment Form...

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.78:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.

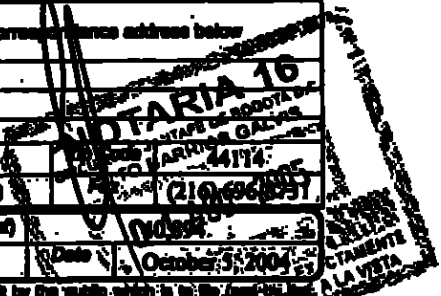
Prior application information: **Examiner:** **Art Unit:**
For CONTINUATION OF DIVISIONAL, APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation may only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

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Signature			

Date: October 5, 2004



This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the rights which it is to be used for (e.g., to process an application). Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to require 20 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the complexity of the application. On the basis 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 1480, Alexandria, VA 22313-1480. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1480, Alexandria, VA 22313-1480.

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FEE TRANSMITTAL**for FY 2005**

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$) 1,524.00**Complete If Known**

Application Number	
Filing Date	Herewith
First Named Inventor	Jabnis Brooks Teeven
Examiner Name	
Art Unit	
Attorney/Agent No.	MS309147.01/MSFTF706US

METHOD OF PAYMENT (check all that apply)☐ Check ☒ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit
Account
Number
Deposit
Account
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50-1063

Amin & Turcoy, LLP

The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee
to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 780	2001 395	Utility filing fee	790.00
1002 380	2002 175	Design filing fee	
1003 500	2003 275	Plant filing fee	
1004 780	2004 395	Release filing fee	
1005 160	2005 80	Provisional filing fee	
SUBTOTAL (1)			(3) 790.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
31	31 - 20 = 11	11 x 18.00 = 198.00	198.00
4	4 - 3 = 1	1 x 68.00 = 68.00	68.00
SUBTOTAL (2)			(3) 734.00

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	
1202 18	2202 9	Claims in excess of 20	
1201 88	2201 44	Independent claims in excess of 3	
1203 300	2203 160	Multiple dependent claims, if not paid	
1204 88	2204 44	** Release independent claims over original patent	
1205 18	2205 9	** Release claims in excess of 20 and over original patent	
SUBTOTAL (2)			(3) 734.00

*or number previously paid, if greater; For Release, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity Small Entity

Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1001 130	2001 65	Surcharge - late filing fee or oath	
1002 80	2002 25	Surcharge - late provisional filing fee or cover sheet	
1003 130	2003 65	Non-English specification	
1012 2,820	2012 1,410	For filing a request for or parts reexamination	
1804 920	2804 460	Requesting publication of BIR prior to Examiner action	
1805 1,840	2805 920	Requesting publication of BIR after Examiner action	
1201 110	2201 55	Extension for reply within first month	
1202 420	2202 210	Extension for reply within second month	
1203 980	2203 490	Extension for reply within third month	
1204 1,630	2204 815	Extension for reply within fourth month	
1205 2,080	2205 1,040	Extension for reply within fifth month	
1401 340	2401 170	Notice of Appeal	
1402 340	2402 170	Filing a brief in support of an appeal	
1403 300	2403 150	Request for oral hearing	
1401 1,510	2401 755	Petition to institute a public use proceeding	
1402 110	2402 55	Petition to revive - unavailable	
1403 1,330	2403 665	Petition to revive - unintentional	
1801 1,370	2801 685	Utility issue fee (or release)	
1802 480	2802 240	Design issue fee	
1803 880	2803 440	Plant issue fee	
1400 130	2400 65	Petitions to the Commissioner	
1807 55	2807 27.5	Processing fee under 37 CFR 1.17(p)	
1808 180	2808 90	Submission of Information Disclosure Sheet	
8021 40	2021 20	Recording each patent assignment per property (lines number of properties)	
1809 780	2809 390	Filing a submission after final rejection (37 CFR 1.120(a))	
1810 780	2810 390	For each additional submission to be examined (37 CFR 1.120(b))	
1801 780	2801 390	Request for Continued Examination (RCE)	
1802 800	2802 400	Request for expedited examination of a design application	

Other fee (specify):

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (3) 0.00

SUBMITTED BY

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Atty. Docket No. MS309147.01/MSFTP706US

**SYSTEMS, METHODS, AND INTERFACES FOR
PROVIDING PERSONALIZED SEARCH AND
INFORMATION ACCESS.**

by

Jaime Brooks Teevan, Susan T. Dumais, and Eric J. Horvitz

MAIL CERTIFICATION

I hereby certify that the attached patent application (along with any other paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on this date October 5, 2004, in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number EV526575164US addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.



Himanshu S. Amin



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Title: SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING PERSONALIZED SEARCH AND INFORMATION ACCESS

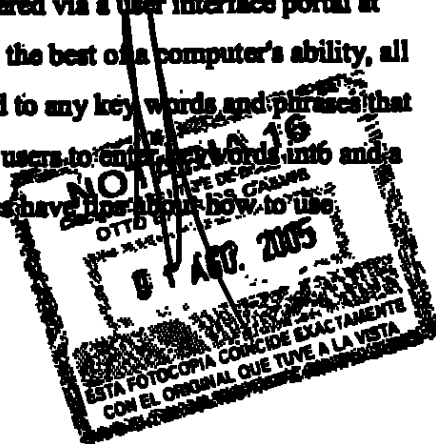
TECHNICAL FIELD

[0001] The present invention relates generally to computer systems and more particularly, the present invention relates to automatically refining and focusing search queries and/or results in accordance with a personalized user model.

BACKGROUND OF THE INVENTION

[0002] Given the vast popularity of the World Wide Web and the Internet, users can acquire information relating to almost any topic from a large quantity of information sources. In order to find information, users generally apply various search engines to the task of information retrieval. Search engines allow users to find Web pages containing information or other material on the Internet that contain specific words or phrases. For instance, if they want to find information about George Washington, the first president of the United States, they can type in "George Washington first president", click on a search button, and the search engine will return a list of Web pages that contain information about this famous president. If a more generalized search were conducted however, such as merely typing in the term "Washington," many more results would be returned such as relating to geographic regions or institutions associated with the same name.

[0003] There are many search engines on the Web. For instance, AllTheWeb, AskJeeves, Google, HotBot, Lycos, MSN Search, Teoma, Yahoo are just a few of many examples. Most of these engines provide at least two modes of searching for information such as via their own catalog of sites that are organized by topic for users to browse through, or by performing a keyword search that is entered via a user interface portal at the browser. In general, a keyword search will find, to the best of a computer's ability, all the Web sites that have any information in them related to any key words and phrases that are specified. A search engine site will have a box for users to enter key words into and a button to press to start the search. Many search engines have help about how to use



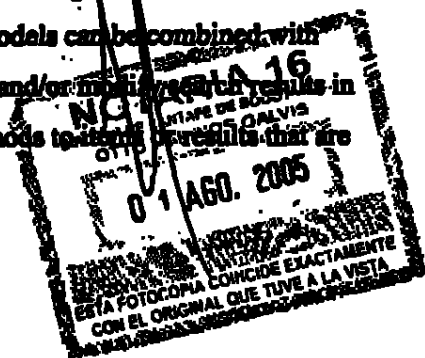
keywords to search effectively. The tips are usually provided to help users more narrowly define search terms in order that extraneous or unrelated information is not returned to clutter the information retrieval process. Thus, manual narrowing of terms saves users a lot of time by helping to mitigate receiving several thousand sites to sort through when looking for specific information.

[0004] One problem with all searching techniques is the requirement of manual focusing or narrowing of search terms in order to generate desired results in a short amount of time. Another problem is that search engines operate the same for all users regardless of different user needs and circumstances. Thus, if two users enter the same search query they get the same results, regardless of their interests, previous search history, computing context, or environmental context (e.g., location, machine being used, time of day, day of week). Unfortunately, modern searching processes are designed for receiving explicit commands with respect to searches rather than considering these other personalized factors that could offer insight into the user's actual or desired information retrieval goals.

SUMMARY OF THE INVENTION

[0005] The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the invention. It is not intended to identify key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concepts of the invention in a simplified form as a prelude to the more detailed description that is presented later.

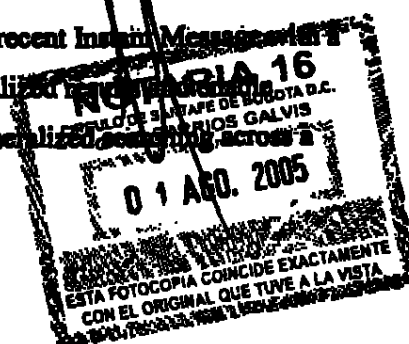
[0006] The present invention relates to systems and methods that enhance information retrieval methods by employing user models that facilitate personalizing information searches to a user's characteristics by considering how the information pertains or is most relevant to respective users. The models can be combined with traditional search algorithms to modify search queries and/or modify search results in order to automatically focus information retrieval methods to return results that are



more likely to be relevant to the user in view of the user's personal characteristics. Various techniques are provided for personalizing searches via the model by considering such aspects as the user's content (e.g., information stored on the user's computer), interests, expertise, and the specific context in which their information need (e.g., search query, computing events) arises to improve the user's search experience. This improvement can be observed by providing users with more focused or filtered searches for items of interest, removing unrelated items, and/or re-ranking returned search results in terms of personalized preferences of the user.

[0097] The user models can be derived from a plurality of sources including rich indexes that consider past user events, previous client interactions, search or history logs, user profiles, demographic data, and/or based upon similarities to other users (e.g., collaborative filtering). Also, other techniques such as machine learning can be applied to monitor user behavior over time to determine and/or refine the user models. The models can be combined with offline or online search methods (or combinations thereof) to modify search results to produce information retrieval outcomes that are most likely to be of interest to the respective user. Thus, the user models are employed to differentiate personalized searches from generalized searches in an automatic and efficient manner.

[0098] In one specific example, a generalized search may include the term "weather." Since the model can determine that the user is from a particular city (e.g., from an e-mail account, saved documents listing the user's address, or by explicit or implicit specification of location), a personalized search can be automatically created (e.g., via automatic query and/or results modification) that returns weather related information relating to the user's current city. In a mobile situation, the context for the search may be different and thus the query and or results can be modified accordingly (e.g., search conducted from user's mobile computer with current context detected as being out of town from recent airline reservation or from a recent Instant Message with friend). User interfaces can be provided that return personalized information. The tuning of the personalized search algorithms from more generalized searching across a spectrum toward more personalized searching.



[0009] To the accomplishment of the foregoing and related ends, certain illustrative aspects of the invention are described herein in connection with the following description and the annexed drawings. These aspects are indicative of various ways in which the invention may be practiced, all of which are intended to be covered by the present invention. Other advantages and novel features of the invention may become apparent from the following detailed description of the invention when considered in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Fig. 1 is a schematic block diagram illustrating an information retrieval architecture in accordance with an aspect of the present invention.

[0011] Fig. 2 is a block diagram illustrating a user model in accordance with an aspect of the present invention.

[0012] Fig. 3 is a flow diagram illustrating an information retrieval process in accordance with an aspect of the present invention.

[0013] Fig. 4-9 illustrate example user interfaces in accordance with an aspect of the present invention.

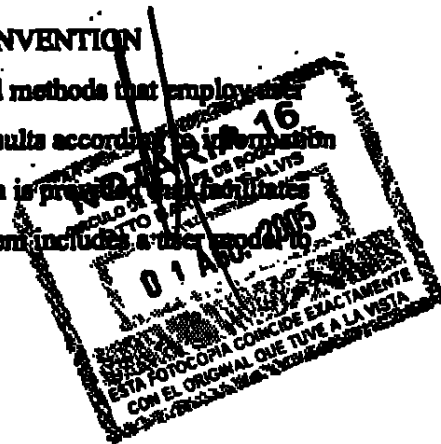
[0014] Figs. 10-13 illustrate an example personalization algorithm in accordance with an aspect of the present invention.

[0015] Fig. 14 is a schematic block diagram illustrating a suitable operating environment in accordance with an aspect of the present invention.

[0016] Fig. 15 is a schematic block diagram of a sample-computing environment with which the present invention can interact.

DETAILED DESCRIPTION OF THE INVENTION

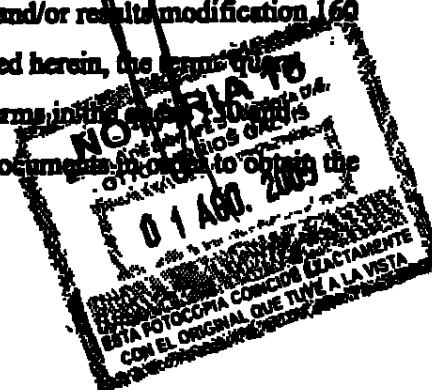
[0017] The present invention relates to systems and methods that employ user models to personalize generalized queries and/or search results according to information that is relevant to a respective user. In one aspect, a system is provided that facilitates generating personalized searches of information. The system includes a user model that



determine characteristics of a user. A personalization component automatically modifies queries and/or search results in view of the user model in order to personalize information searches for the user. A user interface component receives the queries and displays the search results from one or more local and/or remote search engines, wherein the interface can be adjusted in a range from more personalized searches to more generalized searches.

[0018] As used in this application, the terms "component," "service," "model," and "system" are intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a server and the server can be a component. One or more components may reside within a process and/or thread of execution and a component may be localized on one computer and/or distributed between two or more computers. As used herein, the term "inference" refers generally to the process of reasoning about or inferring states of the system, environment, and/or user from a set of observations as captured via events and/or data. Inference can be employed to identify a specific context or action, or can generate a probability distribution over states, for example.

[0019] Referring initially to Fig. 1, a system 100 illustrates an information retrieval architecture in accordance with an aspect of the present invention. The system 100 depicts a general diagram for personalizing search results. A personalization component 110 includes a user model 120 as well as processing components (e.g., retrieval algorithms modified in accordance with the user model) for using the model to influence search results by modifying a query 130 and/or modifying results 140 returned from a search. A user interface 150 generates the query 130 and receives modified or personalized results based upon a query modification 170 and/or results modification 160 provided by the personalization component 110. As utilized herein, the term "query modification" refers to both an alteration with respect to terms in the query and alterations in an algorithm that matches the query 130 to documents in order to obtain the



personalized results 140. Modified queries and/or results 140 are returned from one or more local and/or remote search engines 180. A global database 190 of user statistics may be maintained to facilitate updates to the user model 120.

[0020] Generally, there are at least two approaches to adapting search results based on the user model 120. In one aspect, query modification processes an initial input query and modifies or regenerates the query (via user model) to yield personalized results. Relevance feedback described below is a two-cycle variation of this process, wherein a query generates results that leads to a modified query (using explicit or implicit judgments about the initial results set) which yields personalized results that are personalized to a short-term model based on the query and result set. Longer-term user models can also be used in the context of relevance feedback. Further, as discussed above, query modifications also refer to alterations made in algorithm(s) employed to match the query to documents. In another aspect, results modification take a user's input as-is to generate a query to yield results which are then modified (via user model) to generate personalized results. It is noted that modification of results usually includes some form of re-ranking and/or selection from a larger set of alternatives. Modification of results can also include various types of agglomeration and summarization of all or a subset of results.

[0021] Methods for modifying results include statistical similarity match (in which users interests and content are represented as vectors and matched to items), and category matching (in which the users' interests and content are represented and matched to items using a smaller set of descriptors). The above processes of query modification or results modification can be combined, either independently, or in an integrated process where dependencies are introduced among the two processes and leveraged. To illustrate personalized searching, the following examples are provided.

[0022] In one example, a searcher is located in Seattle. A search for traffic information returns information regarding Seattle traffic, rather than traffic in general. Or, a search for pizza returns only pizza restaurants in the user's zip codes relating to the user.

[0023] In another example, a searcher has previously searched for the term Porsche. A search for Jaguar returns results related to the car meaning of Jaguar as opposed to an animal or computer game or watch; other results may also be returned but preference is given to those relating to the car meaning.

[0024] In another case, a searcher looks for "Bush" and most results are about the president. However, this person has previously read papers by Vannevar Bush and corresponded by email with Susan Bush, thus results matching those items are given higher priority. As can be appreciated, searches can be modified in a plurality of different manners given data stored and processed by the user model 120 which is described in more detail below with respect to Fig. 2.

[0025] Referring to Fig. 2, a user model 200 is illustrated in accordance with an aspect of the present invention. The user model 200 is employed to differentiate personalized searches from generalized searches. One aspect in successful personalization is to build a model of the user that accurately reflects their interests and is easy to maintain and adapt to changes regarding long-term and short-term interests. The user model can be obtained from a variety of sources, including but not limited to:

- 1) From a rich history of computing context at 210 which can be obtained from local, mobile, or remote sources (e.g., applications open, content of those applications, and detailed history of such interactions including locations).
- 2) From a rich index of content previously encountered at 220 (e.g., documents, web pages, email, Instant Messages, notes, calendar appointments, and so forth).
- 3) From monitoring client interactions at 230 including recent or frequent contacts, topics of interest derived from keywords, relationships in an organizational chart, appointments, and so forth.
- 4) From a history or log of previous web pages or local/remote data sites visited including a history of previous search queries at 240.
- 5) From profile of user interests at 250 which can be specified explicitly or implicitly derived via background monitoring.

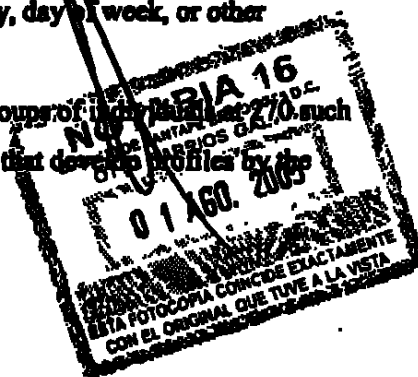


6) From demographic information at 260 (e.g., location, gender, age, background, job category, and so forth).

[0026] From the above examples, it can be appreciated that the user model 200 can be based on many different sources of information. For instance, the model 200 can be sourced from a history or log of locations visited by a user over time, as monitored by devices such as the Global Positioning System (GPS). When monitoring with a GPS, raw spatial information can be converted into textual city names, and zip codes. The raw spatial information can be converted into textual city names, and zip codes for positions a user has paused or dwelled or incurred a loss of GPS signal, for example. The locations that the user has paused or dwelled or incurred a loss of GPS signal can be identified and converted via a database of businesses and points of interest into textual labels. Other factors include logging the time of day or day of week to determine locations and points of interest.

[0027] In other aspects of the subject invention, components can be provided to manipulate parameters for controlling how a user's corpus of information, appointments, views of documents or files, activities, or locations can be grouped into subsets or weighted differentially in matching procedures for personalization based on type, age, or other combinations. For example, a retrieval algorithm could be limited to those aspects of the user's corpus that pertain to the query (e.g., documents that contain the query term). Similarly, email may be analyzed from the previous 1 month, whereas web accesses from the previous 3 days, and the user's content created within the last year. It may be desirable that GPS location information is used from only today or other time period. The parameters can be manipulated automatically to create subsets (e.g., via an optimization process that varies parameters and tests response from user or system) or users can vary one or more of these parameters via a user interface, wherein such settings can be a function of the nature of the query, the time of day, day of week, or other contextual or activity-based observations.

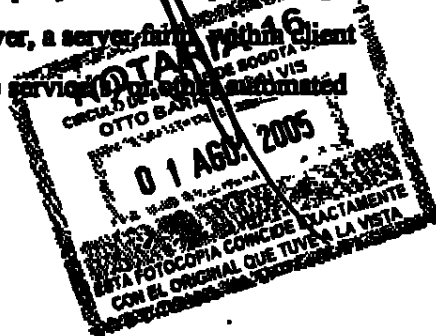
[0028] Models can be derived for individuals or groups of individuals, such as via collaborative filtering (described below) techniques that derive models for the



analysis of similarities among individuals or groups of individuals. Similarity computations can be based on the content and/or usage of items. It is noted that modeling infrastructure and associated processing can reside on client, multiple clients, one or more servers, or combinations of servers and clients.

[0029] At 280, machine learning techniques can be applied to learn user characteristics and interests over time. The learning models can include substantially any type of system such as statistical/mathematical models and processes for modeling users and determining preferences and interests including the use of Bayesian learning, which can generate Bayesian dependency models, such as Bayesian networks, naïve Bayesian classifiers, and/or other statistical classification methodology, including Support Vector Machines (SVMs), for example. Other types of models or systems can include neural networks and Hidden Markov Models, for example. Although elaborate reasoning models can be employed in accordance with the present invention, it is to be appreciated that other approaches can also be utilized. For example, rather than a more thorough probabilistic approach, deterministic assumptions can also be employed (e.g., no recent searching for *X* amount of time of a particular web site may imply by rule that user is no longer interested in the respective information). Thus, in addition to reasoning under uncertainty, logical decisions can also be made regarding the status, location, context, interests, focus, and so forth of the users.

[0030] The learning models can be trained from a user event data store (not shown) that collects or aggregates data from a plurality of different data sources. Such sources can include various data acquisition components that record or log user event data (e.g., cell phone, acoustical activity recorded by microphone, Global Positioning System (GPS), electronic calendar, vision monitoring equipment, desktop activity, web site interaction and so forth). It is noted that the system 100 can be implemented in substantially any manner that supports personalized query and results processing. For example, the system could be implemented as a server, a server farm, within a client application(s), or more generalized to include a web service.



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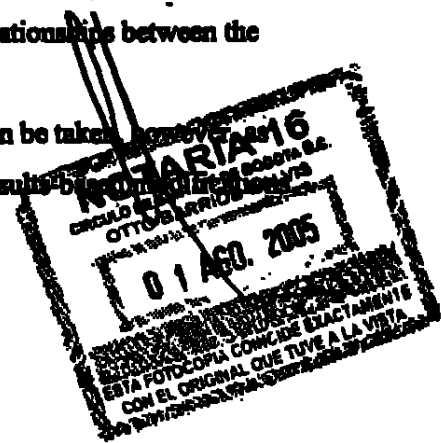
application(s) that interact with search functions such as the user interface 150 and search engines 180.

[0031] Before proceeding, collaborative filter techniques applied at 270 of the user model 200 are described in more detail. These techniques can include employment of collaborative filters to analyze data and determine profiles for the user. Collaborative filtering systems generally use a centralized database about user preferences to predict additional topics users may desire. In accordance with the present invention, collaborative filtering is applied with the user model 200 to process previous user activities from a group of users that may indicate preferences for a given user that predict likely or possible profiles for new users of a system. Several algorithms including techniques based on correlation coefficients, vector-based similarity calculations, and statistical Bayesian methods can be employed.

[0032] Fig. 3 illustrates an information retrieval methodology 300 in accordance the present invention. While, for purposes of simplicity of explanation, the methodology is shown and described as a series of acts, it is to be understood and appreciated that the present invention is not limited by the order of acts, as some acts may, in accordance with the present invention, occur in different orders and/or concurrently with other acts from that shown and described herein. For example, those skilled in the art will understand and appreciate that a methodology could alternatively be represented as a series of interrelated states or events, such as in a state diagram. Moreover, not all illustrated acts may be required to implement a methodology in accordance with the present invention.

[0033] Explicit or implicitly harvested information about a user's interests can be employed in a variety of ways, and in a query-specific manner, wherein numerous classes of algorithms can be applied. Many of the algorithms consider a user's personal content and/or activities and/or query and/or results returned from a search engine, at hand and consider measures or proxies for measures of the statistical relationships between the such content and global content.

[0034] The process 300 depicts two basic paths that can be taken, as noted above a combination of query-based modifications or results



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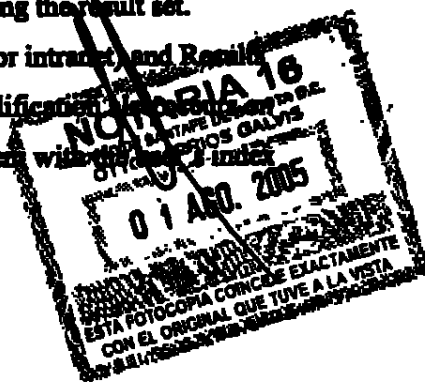
can be applied for personalizing retrieved information. At 310, one or more user models are determined as previously described above with respect to Fig. 2. At 320, a user query is modified in view of the model determined at 310. This can include automatically refining or narrowing the query to terms that are related to interests of the user as determined by the model. At 330, a search is performed by the modified query by submitting the modified query to one or more search engines, wherein results from the modified query are returned at 340.

[0035] In the other branch of the process 300, a search is performed by submitting a user's query to one or more search engines at 350. The returned results are then modified at 360 in view of the user model. This can include filtering or reordering results based upon the likelihood that some results are more in line with the user's preferences for desired search information. At 370, the modified results are presented to the user via a user interface display.

[0036] The following discussion describes one particular example of a Personalized Search system that has been prototyped. Then user model can include an index of all the items a user has previously seen, including email, documents, web pages, calendar appointments, notes, calendar appointments, instant messages, blogs, and so forth. Items are tagged with metadata (e.g., time of access/creation/modification, type of item, author of item, etc.), which can be used to selectively include/exclude items for developing the user model. In this case, the user model resides on a client machine, wherein the user model is accessed from data storage within the client machine upon utilization of a search engine.

[0037] Since the user model typically runs on the client's machine, unless the client machine has a local index of the corpora being searched over, corpus-wide term statistics for re-ranking can be difficult or slow to compute. For this reason, in the following example, the corpus statistics are approximated by using the result set.

[0038] A Query is directed to a Search Engine (internet or intranet) and Results are returned. The results are modified via the User Model. Modification is performed on the client machine. For each result, compute the similarity of the item with the user model.



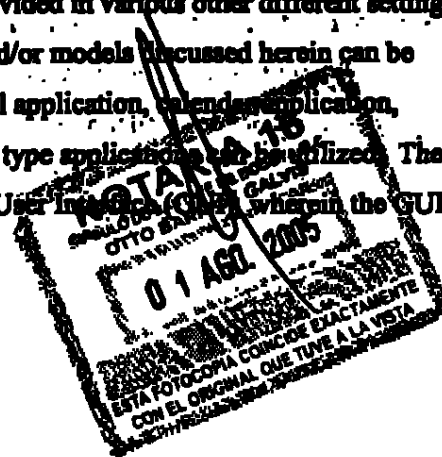
to identify results that are of more interest to the user. There are several ways to perform such matching such as:

$$\text{Personalized similarity equation } psim = \sum_{\text{terms_of_interest}} (tf_i / df_i) \cdot pdf_i$$

[0039] Personalized similarity is summed over all terms of interest. For each term, the similarity of the result is related to how often the term appears in the result (tf_i), inversely related to the number of documents in the corpora being searched in which the term appears (df_i), and related to how many documents the term occurs in the user's index (pdf_i). Terms of interest can include, terms in the title of the result, terms in the result summary, terms in an extended result summary, terms in the full web page, or some subset of these terms. The number of documents in the corpora in which the term occurs can be approximated using the number of documents in the result set in which the term occurs, where documents are represented by the full text of the document or the result set snippet describing the document.

[0040] One implementation identifies terms within a window of two words from each query term in the title or result summary. Generally, all items in the index regardless of type or time are used to compute a personalized similarity measure for each result. The standard similarity of each item is then combined with the personalized similarity for each item. One implementation employs a linear combination of the rank of the item in the original results list with a normalized version of the *psim* score of each item. Other implementations include combining ranks from the original and personalized lists, or scores from the original and personalized lists.

[0041] Referring now to Figs. 4-9, example user interfaces for personalized searches are illustrated in accordance with an aspect of the present invention. It is noted that the respective interfaces depicted can be provided in various other different settings and context. As an example, the applications and/or models discussed herein can be associated with a desktop development tool, mail application, calendar application, and/or web browser, for example although other type applications can be utilized. These applications can be associated with a Graphical User Interface (GUI) wherein the GUI



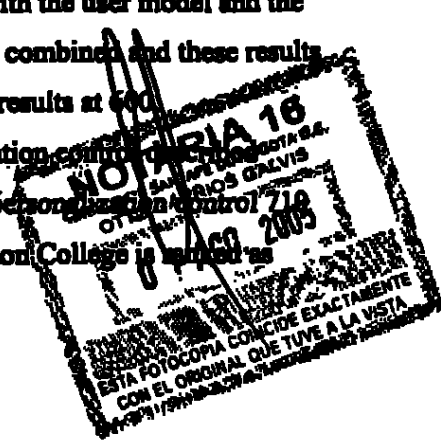
provides a display having one or more display objects (not shown) including such aspects as configurable icons, buttons, sliders, input boxes, selection options, menus, tabs and so forth having multiple configurable dimensions, shapes, colors, text, data and sounds to facilitate operations with the applications and/or models. In addition, the GUI and/or models can also include a plurality of other inputs or controls for adjusting and configuring one or more aspects of the present invention and as will be described in more detail below. This can include receiving user commands from a mouse, keyboard, speech input, web site, remote web service, and/or other device such as a camera or video input to affect or modify operations of the GUI and/or models described herein.

[0042] Fig. 4 illustrates an interface 400 for presenting personalized results. In this example, the query is "Bush." Standard search results are shown on the left side at 410, and the personalized results shown on the right side at 400. A slider 430 is used to control a function that combines the standard and personal results, ranging from no personalization to full personalization.

[0043] Fig. 5 shows an interface 500 in which results of personal interest are further highlighted by increasing their point size in proportion to their *psim* score; color or other presentation cues could be used as well. Further, terms that contribute substantial weight to the *psim* score could be highlighted within the individual result summaries. The left at 510 shows standard results ordering with size augmentation. The interface at 500 shows a personalized combination again augmented with increased font size for items of personal interest.

[0044] Fig. 6 illustrates the process of providing personalized queries at an interface 600. In this case, the top N results are considered that have been returned from a query at 610. Similarity is computed at 620 in accordance with the user model and the returned results. At 630, personalized and standard results are combined and these results are reordered at 640 where they are displayed as personalized results at 600.

[0045] Figs. 7-9 illustrate the effects of the personalization control. With respect to Fig. 7, an interface 700 is tuned via a personalization control 710 where the search term "Eton" is employed. A top result for Eton College is ranked as



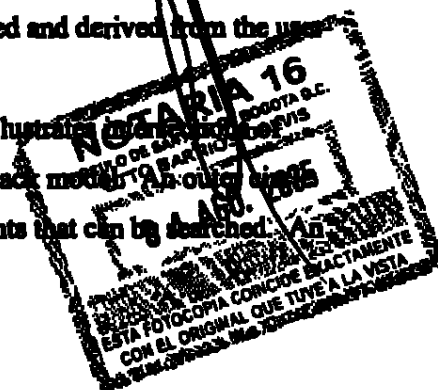
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1/100 at 720. The personalization control 710 is moved to the right and some personalized results appear in the list. The result which appears in position 32 in the standard results list is now shown in position 4. At Fig. 8, a personalization control 810 is moved slightly to the right indicating more personalization for the search. In this case, a top ranking relating to Eton School is generated, wherein Eton School is associated with a personal relative of the user. In this case, the previous rank from Fig. 7 was 32 out of 100. At Fig. 9, the personalization slider is moved to the far right at 910 providing a more personalized ranking of results relating to an Eton School Uniform posting on the current date.

[0046] Figs. 10-13 illustrate an example process that can be employed to personalize queries and/or results in accordance with an aspect of the present invention. Fig. 10 shows axes at reference numerals 1000-1020 that depict standard information retrieval dimensions involving a query, a user generating the query, and documents received from such query. In accordance with the present invention, a fourth or personalized dimension 1030 is considered which is based upon a user model to additionally refine, focus, or modify queries and/or results according to personal characteristics or interests of the user.

[0047] Such personalized information can be sampled from metadata relating to a plurality of personal information that may be available to a user such as how recently a document has been created, viewed or modified, time stamp information, information that has been stored or previously seen, applications used, logs of web site activities (e.g., sites or topics of interest), context information such as location information or recent activity, e-mail activity, calendar activity, personal interactions such as through electronic communications, demographic information, profile information, similarly situated user information and so forth. These characteristics can be sampled and derived from the user models previously described.

[0048] Proceeding to Fig. 11, a Venn diagram 1100 illustrating information search items that are derived from a standard relevance feedback model. 1110 depicts N which represents the total number of documents that can be searched.



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inner circle n_i represents the number of documents having the terms of a given search. An inner circle R represents documents that are related to relevance feedback determinations, wherein the subsection or overlap between n_i and R represent documents r_i having characteristics of the desired search and are considered relevant by the algorithm. Generally, R is determined from users providing judgments of varying degrees of relevance (e.g., user assigning scores). According to the present invention, R is determined automatically by analyzing the user model previously described to determine relevant areas of interest to the user. Instead of representing the entire document space, both N and R can also represent a subset of the document space (e.g., the subset of documents that are relevant to the query, as indicated by the presence of the query terms). Additionally, the corpus statistics, N and n_i , can be approximated using the result set, with N being the number of documents in the result set, and n_i being the number of documents having the terms of a given search, with documents represented by the full text of the document or the result set snippet describing the document.

[0049] The following equations illustrate a Scoring function that assigns a score to a given document based upon the sum of some subset of the document's terms, where term i 's frequency (gf_i) in the document is multiplied by a determined weight (w_i) indicating the term's rarity. The scoring function can then be employed to personalize results. In this case, a BM25 relevance feedback model was employed but it is to be appreciated that substantially any information retrieval algorithm can be adapted for personalized queries and/or results modifications in accordance with the present invention.

$$\text{Score} = \sum t_{fi} * w_i$$

$$w_i = \log \frac{(r_i + 0.5)(N - n_i R + r_i + 0.5)}{(n_i - r_i + 0.5)(R - r_i + 0.5)}$$

[0050] Proceeding to Fig. 12, personalized relevant document information is shown as separate from the collection information (N) in the Venn diagram. In this case, terms N' and n_i' are introduced to facilitate the separation, wherein $N' = N - R$ and $n_i' = n_i - r_i$ and w_i is computed as:



$$w_i = \log \frac{(r_i+0.5)(N'-n_i'-R+r_i+0.5)}{(n_i'-r_i+0.5)(R-r_i+0.5)}$$

[0051] Fig. 13 shows the personalized cluster of data separated at 1300, wherein both personalized items and items matching the search topic are illustrated at 1310. For instance, the circle 1320 could include all documents existing on the web, the documents represented at 1320 could include documents relating to personal data (e.g., documents related to a derived interest in automobiles from the user model), and items at 1310 are those personal documents relating to the search term. As can be appreciated, queries and results can be modified with a plurality of terms or conditions depending on the model and the query of interest.

[0052] With reference to Fig. 14, an exemplary environment 1410 for implementing various aspects of the invention includes a computer 1412. The computer 1412 includes a processing unit 1414, a system memory 1416, and a system bus 1418. The system bus 1418 couples system components including, but not limited to, the system memory 1416 to the processing unit 1414. The processing unit 1414 can be any of various available processors. Dual microprocessors and other multiprocessor architectures also can be employed as the processing unit 1414.

[0053] The system bus 1418 can be any of several types of bus structure(s) including the memory bus or memory controller, a peripheral bus or external bus, and/or a local bus using any variety of available bus architectures including, but not limited to, 11-bit bus, Industrial Standard Architecture (ISA), Micro-Channel Architecture (MSA), Extended ISA (EISA), Intelligent Drive Electronics (IDE), VESA Local Bus (VLB), Peripheral Component Interconnect (PCI), Universal Serial Bus (USB), Advanced Graphics Port (AGP), Personal Computer Memory Card International Association bus (PCMCIA), and Small Computer Systems Interface (SCSI).

[0054] The system memory 1416 includes volatile memory 1420 and nonvolatile memory 1422. The basic input/output system (BIOS), containing the basic routines to transfer information between elements within the computer 1412, such as during start-up, is stored in nonvolatile memory 1422. By way of illustration and not limitation,

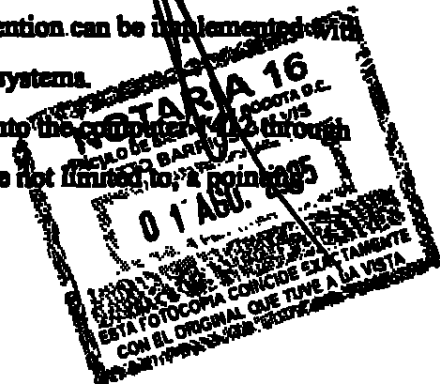


nonvolatile memory 1422 can include read only memory (ROM), programmable ROM (PROM), electrically programmable ROM (EPROM), electrically erasable ROM (EEPROM), or flash memory. Volatile memory 1420 includes random access memory (RAM), which acts as external cache memory. By way of illustration and not limitation, RAM is available in many forms such as synchronous RAM (SRAM), dynamic RAM (DRAM), synchronous DRAM (SDRAM), double data rate SDRAM (DDR SDRAM), enhanced SDRAM (ESDRAM), Synchlink DRAM (SLDRAM), and direct Rambus RAM (DRRAM).

[0055] Computer 1412 also includes removable/non-removable, volatile/non-volatile computer storage media. Fig. 14 illustrates, for example a disk storage 1424. Disk storage 1424 includes, but is not limited to, devices like a magnetic disk drive, floppy disk drive, tape drive, Jaz drive, Zip drive, LS-100 drive, flash memory card, or memory stick. In addition, disk storage 1424 can include storage media separately or in combination with other storage media including, but not limited to, an optical disk drive such as a compact disk ROM device (CD-ROM), CD recordable drive (CD-R Drive), CD rewritable drive (CD-RW Drive) or a digital versatile disk ROM drive (DVD-ROM). To facilitate connection of the disk storage devices 1424 to the system bus 1418, a removable or non-removable interface is typically used such as interface 1426..

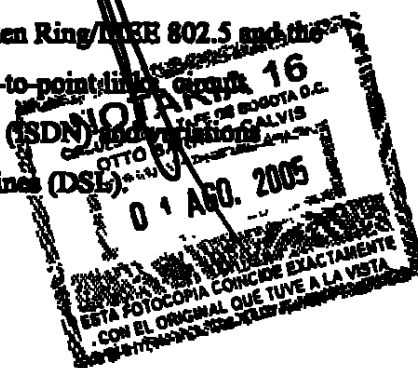
[0056] It is to be appreciated that Fig 14 describes software that acts as an intermediary between users and the basic computer resources described in suitable operating environment 1410. Such software includes an operating system 1428. Operating system 1428, which can be stored on disk storage 1424, acts to control and allocate resources of the computer system 1412. System applications 1430 take advantage of the management of resources by operating system 1428 through program modules 1432 and program data 1434 stored either in system memory 1416 or on disk storage 1424. It is to be appreciated that the present invention can be implemented with various operating systems or combinations of operating systems.

[0057] A user enters commands or information into the computer 1412 through input device(s) 1436. Input devices 1436 include, but are not limited to, a pointing



device such as a mouse, trackball, stylus, touch pad, keyboard, microphone, joystick, game pad, satellite dish, scanner, TV tuner card, digital camera, digital video camera, web camera, and the like. These and other input devices connect to the processing unit 1414 through the system bus 1418 via interface port(s) 1438. Interface port(s) 1438 include, for example, a serial port, a parallel port, a game port, and a universal serial bus (USB). Output device(s) 1440 use some of the same type of ports as input device(s) 1436. Thus, for example, a USB port may be used to provide input to computer 1412, and to output information from computer 1412 to an output device 1440. Output adapter 1442 is provided to illustrate that there are some output devices 1440 like monitors, speakers, and printers, among other output devices 1440, that require special adapters. The output adapters 1442 include, by way of illustration and not limitation, video and sound cards that provide a means of connection between the output device 1440 and the system bus 1418. It should be noted that other devices and/or systems of devices provide both input and output capabilities such as remote computer(s) 1444.

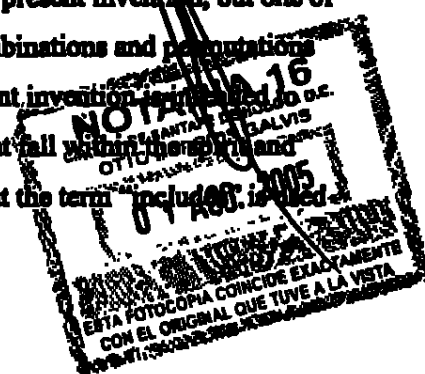
[0038] Computer 1412 can operate in a networked environment using logical connections to one or more remote computers, such as remote computer(s) 1444. The remote computer(s) 1444 can be a personal computer, a server, a router, a network PC, a workstation, a microprocessor based appliance, a peer device or other common network node and the like, and typically includes many or all of the elements described relative to computer 1412. For purposes of brevity, only a memory storage device 1446 is illustrated with remote computer(s) 1444. Remote computer(s) 1444 is logically connected to computer 1412 through a network interface 1448 and then physically connected via communication connection 1450. Network interface 1448 encompasses communication networks such as local-area networks (LAN) and wide-area networks (WAN). LAN technologies include Fiber Distributed Data Interface (FDDI), Copper Distributed Data Interface (CDDI), Ethernet/IEEE 802.3, Token Ring/IEEE 802.5 and the like. WAN technologies include, but are not limited to, point-to-point links, circuit switching networks like Integrated Services Digital Networks (ISDN), packet switching networks, and Digital Subscriber Lines (DSL).



[0059] Communication connection(s) 1450 refers to the hardware/software employed to connect the network interface 1448 to the bus 1418. While communication connection 1450 is shown for illustrative clarity inside computer 1412, it can also be external to computer 1412. The hardware/software necessary for connection to the network interface 1448 includes, for exemplary purposes only, internal and external technologies such as, modems including regular telephone grade modems, cable modems and DSL modems, ISDN adapters, and Ethernet cards.

[0060] Fig. 15 is a schematic block diagram of a sample-computing environment 1500 with which the present invention can interact. The system 1500 includes one or more client(s) 1510. The client(s) 1510 can be hardware and/or software (e.g., threads, processes, computing devices). The system 1500 also includes one or more server(s) 1530. The server(s) 1530 can also be hardware and/or software (e.g., threads, processes, computing devices). The servers 1530 can house threads to perform transformations by employing the present invention, for example. One possible communication between a client 1510 and a server 1530 may be in the form of a data packet adapted to be transmitted between two or more computer processes. The system 1500 includes a communication framework 1550 that can be employed to facilitate communications between the client(s) 1510 and the server(s) 1530. The client(s) 1510 are operably connected to one or more client data store(s) 1560 that can be employed to store information local to the client(s) 1510. Similarly, the server(s) 1530 are operably connected to one or more server data store(s) 1540 that can be employed to store information local to the servers 1530.

[0061] What has been described above includes examples of the present invention. It is, of course, not possible to describe every conceivable combination of components or methodologies for purposes of describing the present invention, but one of ordinary skill in the art may recognize that many further combinations and permutations of the present invention are possible. Accordingly, the present invention is intended to embrace all such alterations, modifications and variations that fall within the scope of the appended claims. Furthermore, to the extent that the term "includes" is used in the



in either the detailed description or the claims, such term is intended to be inclusive in a manner similar to the term "comprising" as "comprising" is interpreted when employed as a transitional word in a claim.



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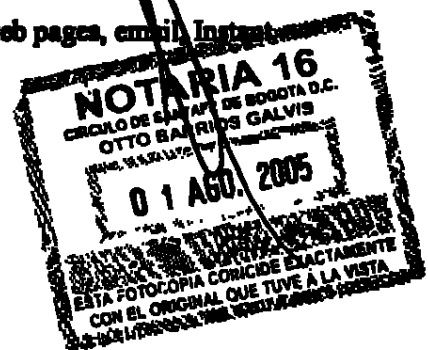
CLAIMS

What is claimed is:

1. A system that facilitates generating personalized searches of information, comprising:
 - a user model to determine characteristics of a user;
 - a personalization component to automatically modify at least one query component or at least one search result in view of the user model; and
 - an interface component to receive the query and display the search result.
2. The system of claim 1, further comprising one or more search engines to receive the query and return the result.
3. The system of claim 1, further comprising a global database of user statistics to facilitate updates to the user model.
4. The system of claim 1, the personalization component employs a query modification processes for an initial input query, modifies or regenerates the query via the user model to yield personalized results from a search engine.
5. The system of claim 4, the personalization component employs relevance feedback, wherein a query generates results that leads to a modified query via explicit or implicit judgments about an initial result set to yield personalized results.
6. The system of claim 1, the personalization component employs results modification utilizing a user's input as-is to generate a query to yield results which are then modified via the user model to generate personalized results.



7. The system of claim 6, the modification of results usually includes re-ranking or selection from a larger set of results alternatives.
8. The system of claim 6, the modification of results includes an agglomeration or summarization of all or a subset of results.
9. The system of claim 1, the personalization component employs a statistical similarity match in which users interests and content are represented as vectors and matched for results modification.
10. The system of claim 9, the personalization component employs category matching in which a user's interests and content are represented using a smaller set of descriptors.
11. The system of claim 1, the personalization component combines query modification or results modification, wherein dependencies are introduced among the two modifications and leveraged.
12. The system of claim 1, the user model is based in part on a history of computing context which can be obtained from local, mobile, or remote sources.
13. The system of claim 12, the computing context includes at least one of applications open, content of the applications, and a detailed history of interactions with the applications.
14. The system of claim 1, the user model is based in part on an index of content previously encountered including at least one of documents, web pages, email, Instant Messages, notes, and calendar appointments.



15. The system of claim 1, the user model is based at least in part on client interactions including at least one of recent or frequent contacts, topics of interest derived from keywords, relationships in an organizational chart, and appointments.

16. The system of claim 1, the user model is based at least in part on a history or log of previous web pages or local/remote data sites visited including a history of previous search queries.

17. The system of claim 1, the user model is based at least in part on a history or log of locations visited by a user over time and monitored by devices that determine information regarding the user's location.

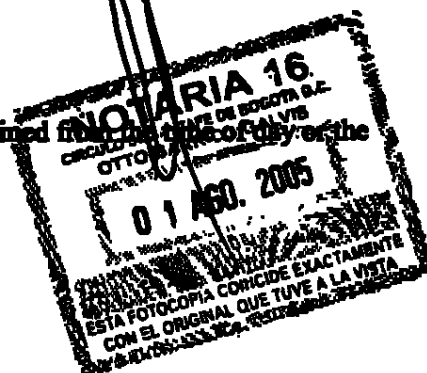
18. The system of claim 17, the devices include a Global Positioning System (GPS) or an electronic calendar to determine the user's location.

19. The system of claim 18, the devices generate spatial information that is converted into textual city names, and zip codes.

20. The system of claim 19, the spatial information is converted into textual city names, and zip codes for locations where a user has paused or dwelled or incurred a loss of GPS signal.

21. The system of claim 20, where the locations that the user has paused or dwelled or incurred a loss of GPS signal are identified and converted via a database of businesses and points of interest into textual labels.

22. The system of claim 21, the locations are determined from the history of the day of the week:



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23. The system of claim 1, the user model is based at least in part on a profile of user interests which can be specified explicitly or implicitly
24. The system of claim 1, the user model is based at least in part on demographic information including at least one of location, gender, age, background, and job category.
25. The system of claim 1, the user model is based at least in part on at least one of a collaborative filtering and a machine learning algorithm.
26. The system of claim 25, the machine learning algorithm includes at least one of a Bayesian network, a naive Bayesian classifier, a Support Vector Machine, a neural network and a Hidden Markov Model.
27. The system of claim 1, the personalization component provides an adjustment to control personalization of results or queries.
28. A computer readable medium having computer readable instructions stored thereon for implementing the components of claim 1.
29. A client component comprising the system of claim 1.
30. An information retrieval system, comprising:
means for modeling characteristics of a user;
means for querying and displaying results from a search by the user; and
means for modifying the search results based at least in part on the characteristics of the user.
31. The system of claim 30, further comprising means for interacting with at least one search engine.

32. A method that facilitates information searching at a user interface, comprising:
 defining a least one user model that automatically determines parameters of interest for a user;
 automatically refining a query or a result from a query based at least in part on the user model; and
 automatically formatting the query or the result in view of the user model before displaying modified results to the user.

33. The method of claim 32, the user model includes an index of items a user has previously seen, including at least one of email, documents, web pages, calendar appointments, notes, instant messages, and blogs.

34. The method of claim 33, further comprising tagging the items with metadata that includes at least one of a time of access or creation or modification, a type of the item, an author of the item which can be employed to selectively include or exclude the items for comparison.

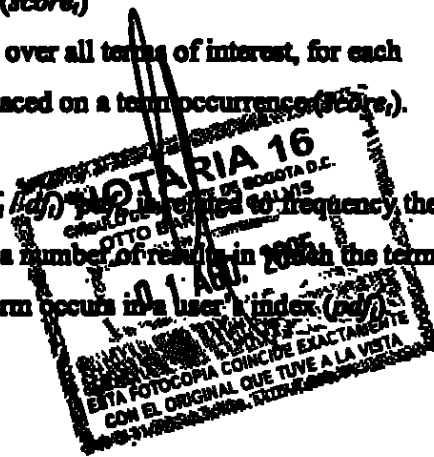
35. The method of claim 33, further comprising computing a similarity of the result with a user's index to identify results that are of more interest to the user.

36. The method of claim 35, further comprising the following equation to determine similarity:

$$\text{Personalized similarity } psim = \text{SIGMA}(score_i)$$

wherein personalized similarity is summed over all terms of interest, for each term, a similarity of a result is related to a value placed on a term occurrence ($score_i$).

37. The method of claim 36, where $score_i = (f_i / df_i) \times (1 / f_{r,i})$, wherein f_i is a frequency of the term appears in the result (f_i), inversely related to a number of results in which the term appears (df_i), and related to how many items the term occurs in a user's index ($f_{r,i}$).



38. The method of claim 36, the terms of interest include at least one of terms in a title of a result, terms in a result summary, terms in an extended result summary, terms in a full web page, a subset of the terms.

39. The method of claim 38, further comprising identifying terms within a window of words from each query term in a title or result summary.

40. The method of claim 35, further comprising combining a standard similarity of items with a personalized similarity the items.

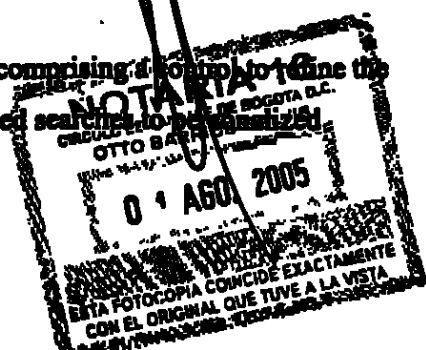
41. The method of claim 40, further comprising employing a linear combination of a rank of the items in an original results list with a normalized version of a personalized similarity score of each item.

42. The method of claim 36, further comprising employing a relevance feedback algorithm to determine similarity ($score_i$).

43. The method of claim 42, the relevance feedback algorithm is a BM25 algorithm.

44. A graphical user interface to perform information retrieval, comprising:
an input component to receive queries;
a display component to show results from queries; and
a personalization component to modify the queries or the results in view of a user model that determines preferences of the user.

45. The graphical user interface of claim 44, further comprising a component to refine the queries or the results in terms of a range from standardized searches to personalized searches.



46. The graphical user interface of claim 45, the personalized searches are associated with a display having text or color augmentation.

47. A system that facilitates generating personalized searches of information, comprising:

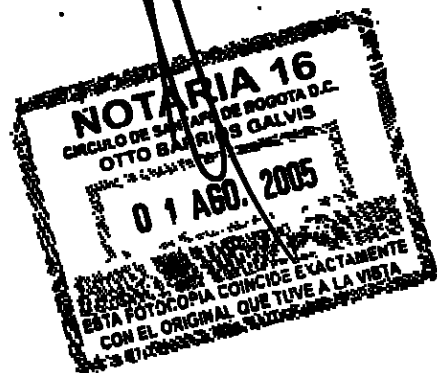
- a user model to determine characteristics of a user;
- a personalization component associated with the user model; and
- a parameter component to control a corpus of data for the user model.

48. The system of claim 47, the corpus of data is related to user appointments, user views of documents, user activities, or user locations.

49. The system of claim 47, the parameter component determines subsets for the corpus of data or determines weighted differentials in matching procedures for data personalization based at least in part on type or age.

50. The system of claim 47, the parameter components varies one or more parameters via an optimization process or through instructions provided by a user interface.

51. The system of claim 50, the parameters are a function of the nature of a query, a time of day, a day of week, contextual-based observations, or activity-based observations.



ABSTRACT

The present invention relates to systems and methods that employ user models to personalize generalized queries and/or search results according to information that is relevant to respective user characteristics. A system is provided that facilitates generating personalized searches of information. The system includes a user model to determine characteristics of a user. The user model may be assembled automatically via an analysis of a user's content, activities, and overall context. A personalization component automatically modifies queries and/or search results in view of the user model in order to personalize information searches for the user. A user interface receives the queries and displays the search results from one or more local and/or remote search engines, wherein the interface can be adjusted in a range from more personalized searches to more generalized searches.



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PATENT APPLICATION
DECLARATION AND POWER OF ATTORNEY

ATTORNEY DOCKET NO. MBPT706UB

MS DOCKET NO. MAB07167

I, a below named inventor, I hereby declare that:
my residence/post office address and citizenship are as stated below next to my name;
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if multiple names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **SYSTEMS, METHODS, AND INTERFACES FOR PROVIDING PERSONALIZED SEARCH AND INFORMATION ACCESS**

the specification of which is filed herewith unless the following box is checked:

☐ was filed on _____ as US Application Serial No. or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claim of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code Section 119 of any foreign application(s) for patent or inventor(s) certificate(s) and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE FILED	PRIORITY CLAIMED UNDER 35 U.S.C. 119
			YES:____ NO:____
			YES:____ NO:____

POWER OF ATTORNEY:

I, a named inventor, I hereby appoint the following attorney(s) and/or agent(s) associated with

Customer No. 27195

to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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DECLARATION AND POWER OF ATTORNEY

TOBNEY DOCKET NO. MSFIP705US

MS DOCKET NO. MS309147.01

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information or belief are believed to be true; and further that these statements were made with the knowledge that willful falsifications and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Inventor's Signature

October 4, 2004

Date

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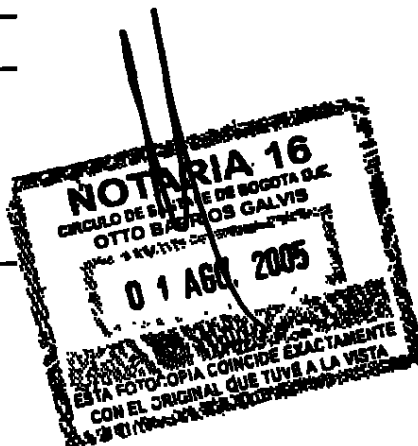
Kirkland, Washington 98033

E. Hervita

Inventor's Signature

October 4, 2004

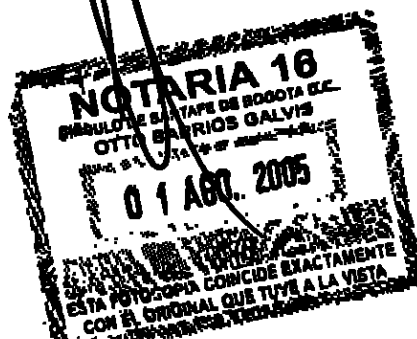
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Application Data Sheet**Application Information**

Filing Date:: 10/05/04
Application Type:: Regular
Subject Matter:: Utility
Suggested classification::
Suggested Group Art Unit::
Computer Readable Form (CRF)?:: NO
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Attorney Docket Number:: MS309147.01/MSFTP708US
Request for Early Publication?:: NO
Request for Non-Publication?:: NO
Suggested Drawing Figure:: '1
Total Drawing Sheets:: 15
Small Entity?:: NO
Petition Included?:: NO
Secrecy Order in Parent Appl.?:: NO



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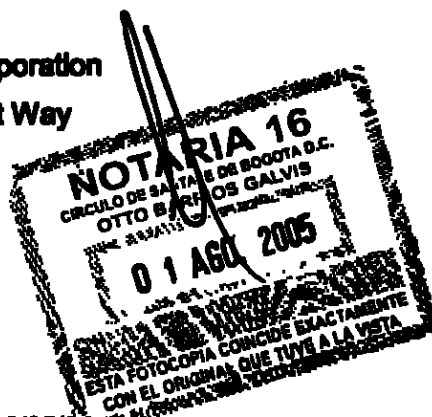
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Postal or Zip Code of mailing address:: 98052



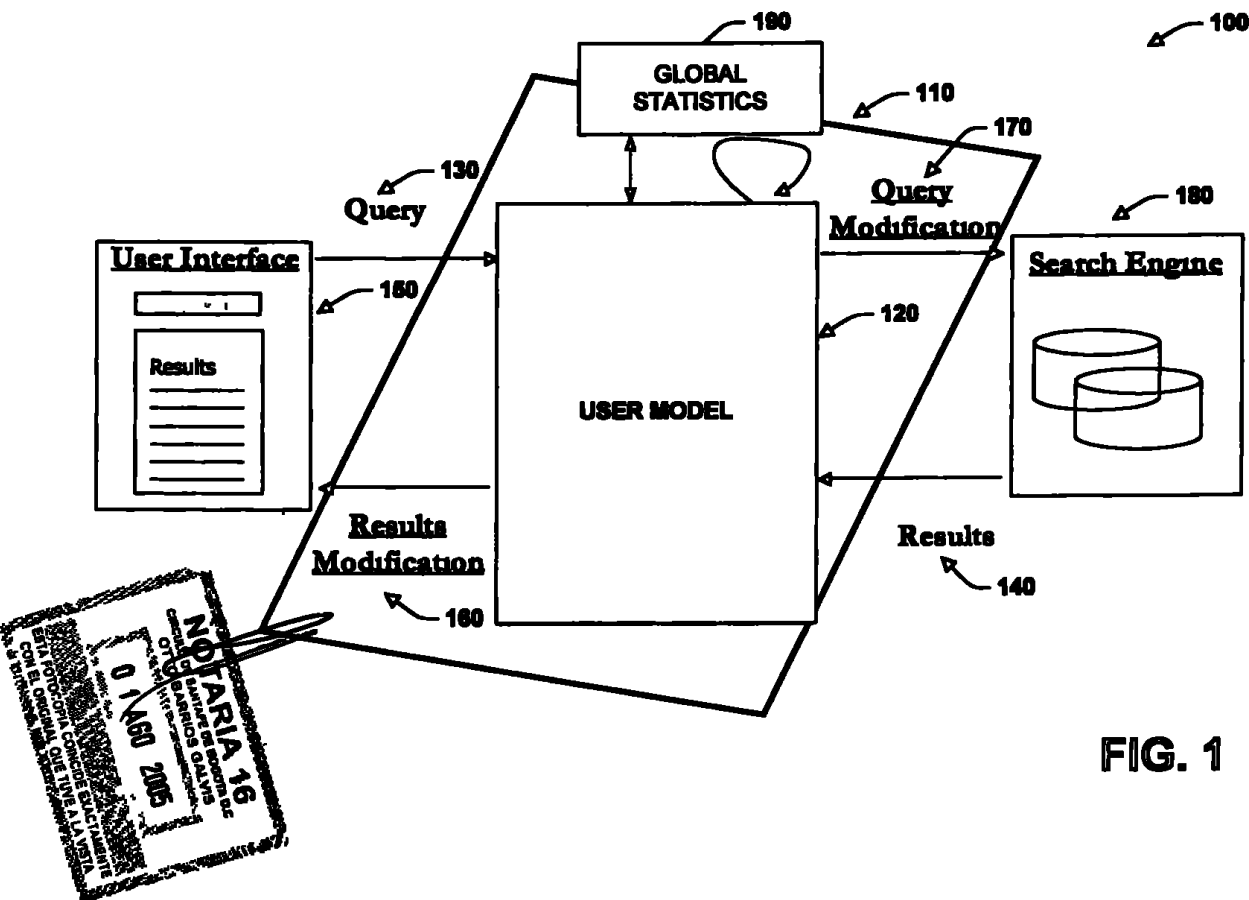
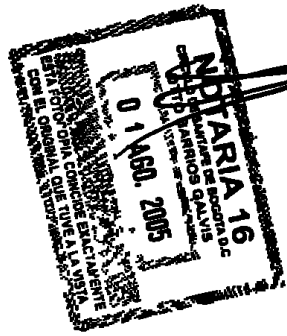


FIG. 1



USER MODEL & DATA	
CONTEXT	210
RICH INDEX	220
RICH CLIENT INTERACTIONS	230
SEARCH HISTORY/LOGS	240
PROFILE OF INTERESTS	250
DEMOGRAPHICS	260
OTHER USERS	270
MACHINE LEARNING	280

200

FIG. 2

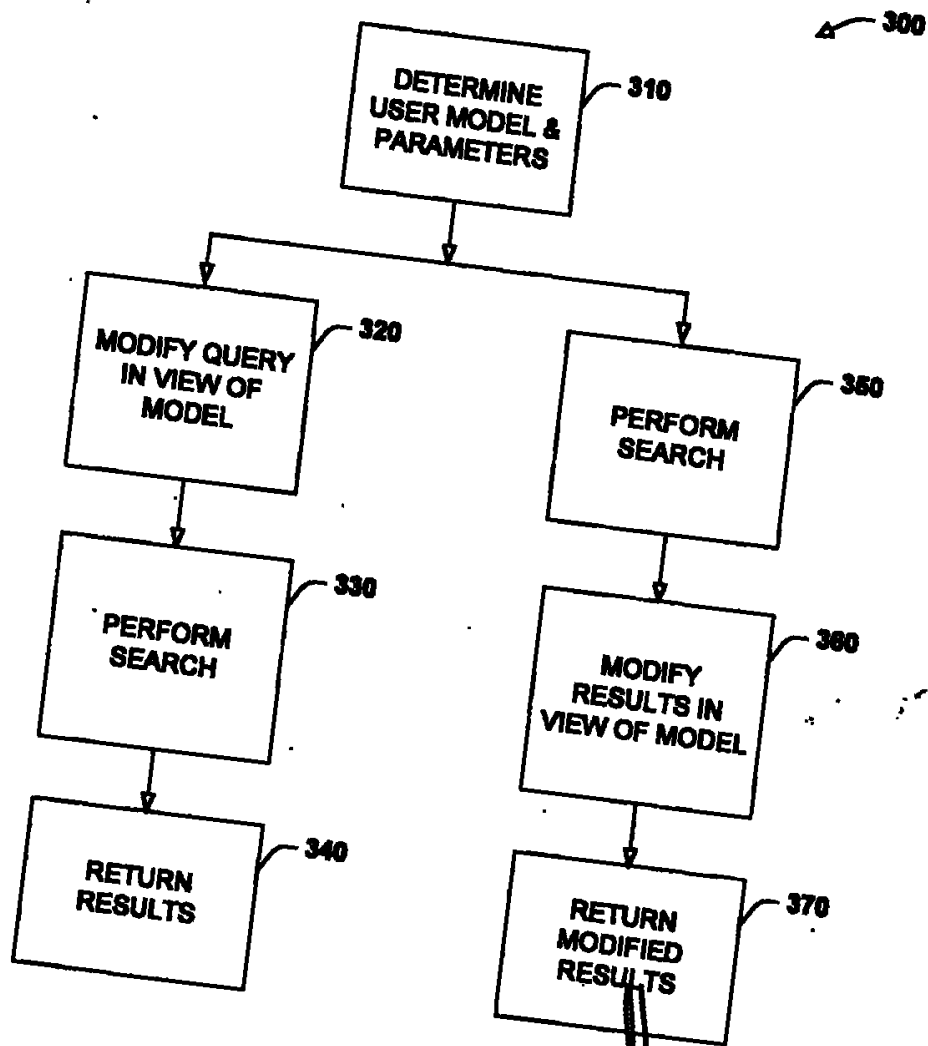
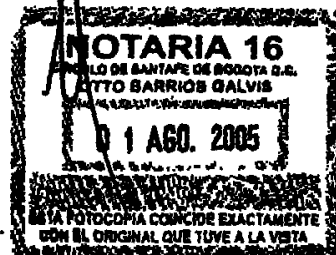
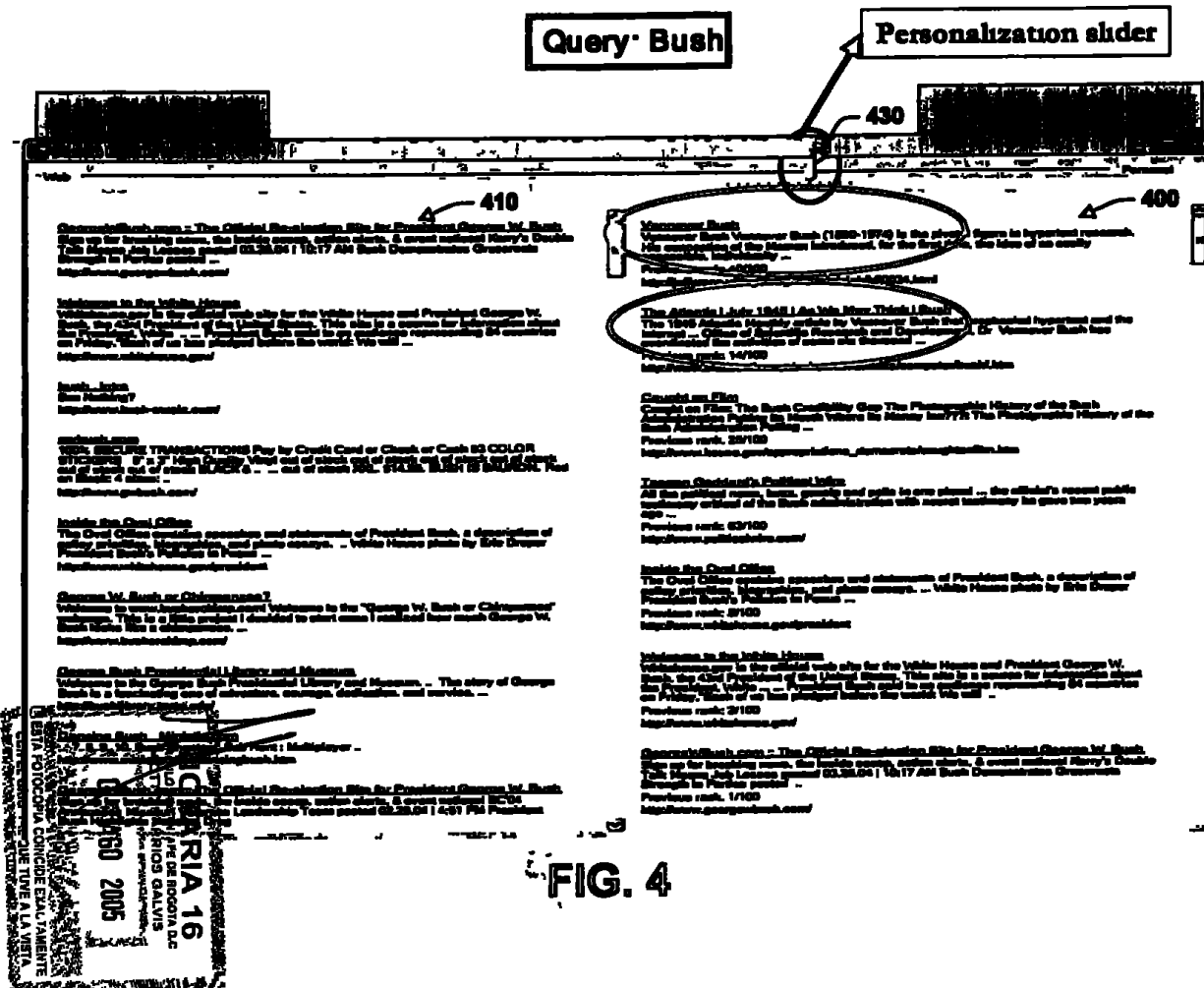


FIG. 3





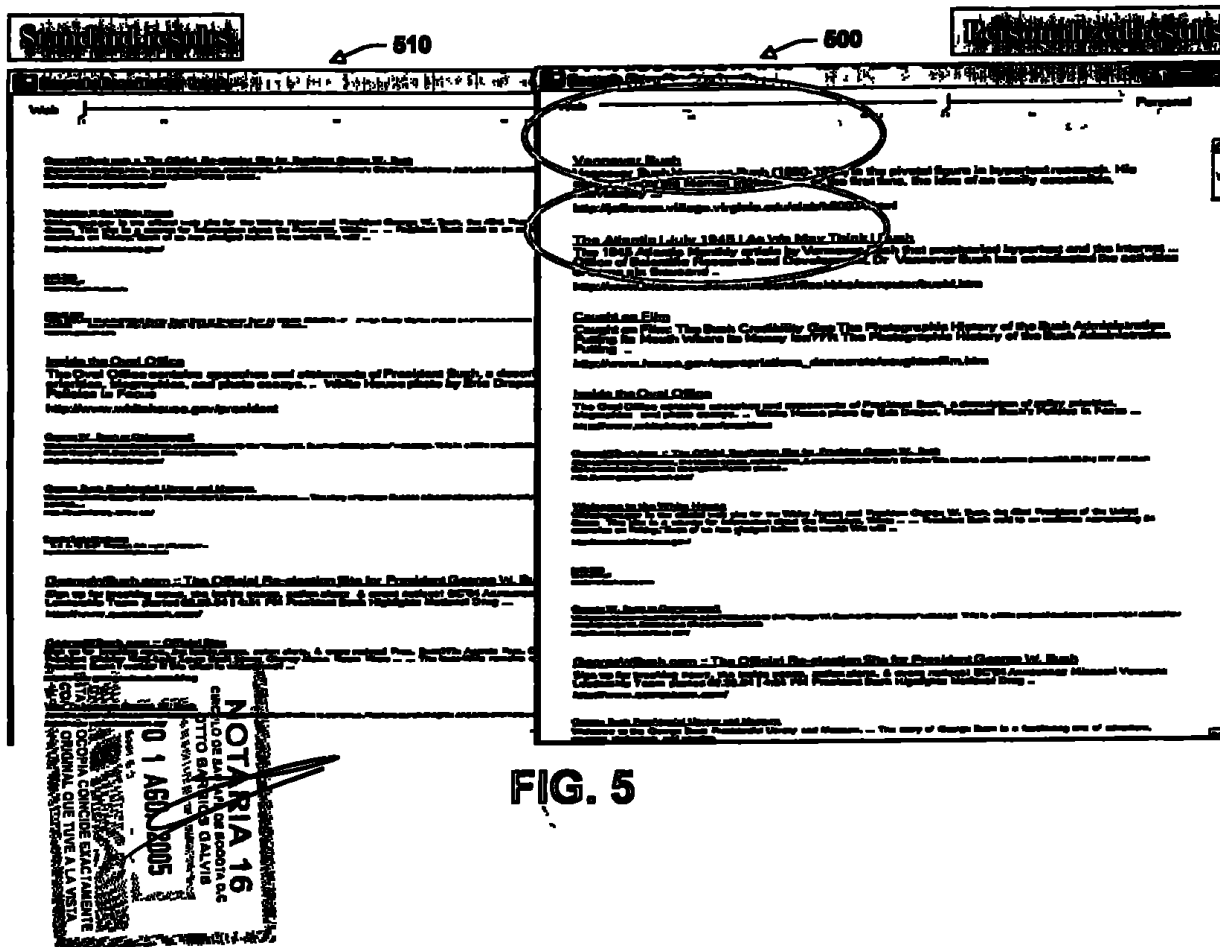
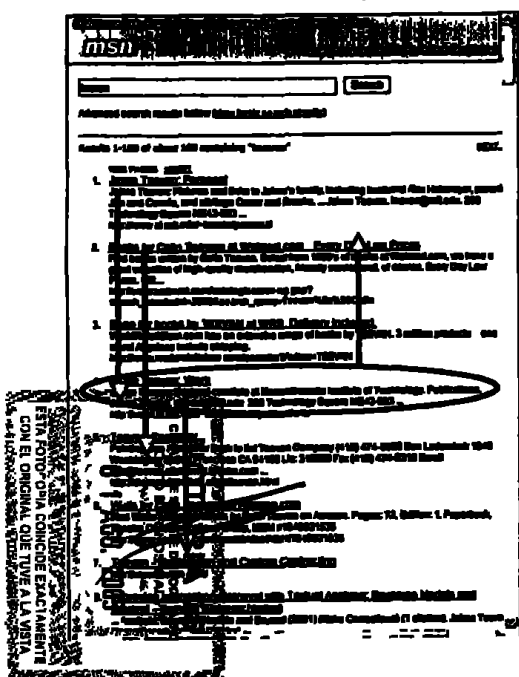
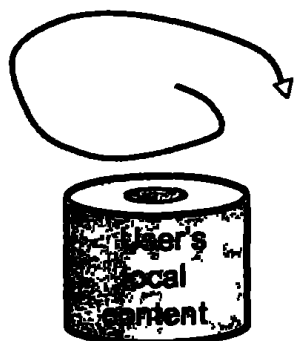


FIG. 5

Consider top n results returned from a query 610



620
Compute similarity
(User model x result)
↓
630
Combine
personalized &
standard results
↓
640
Reorder Results



600

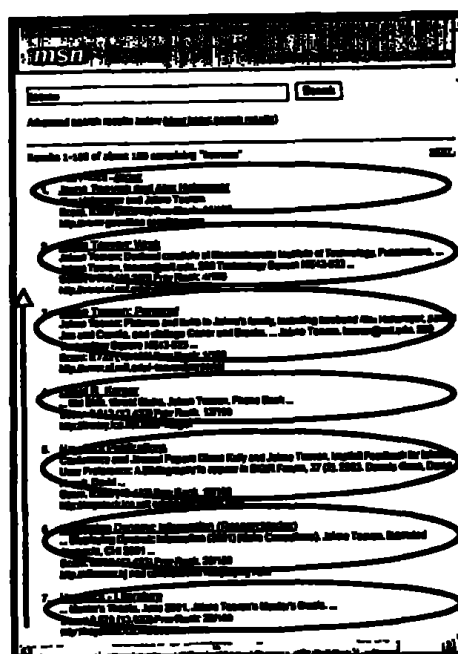


FIG. 6

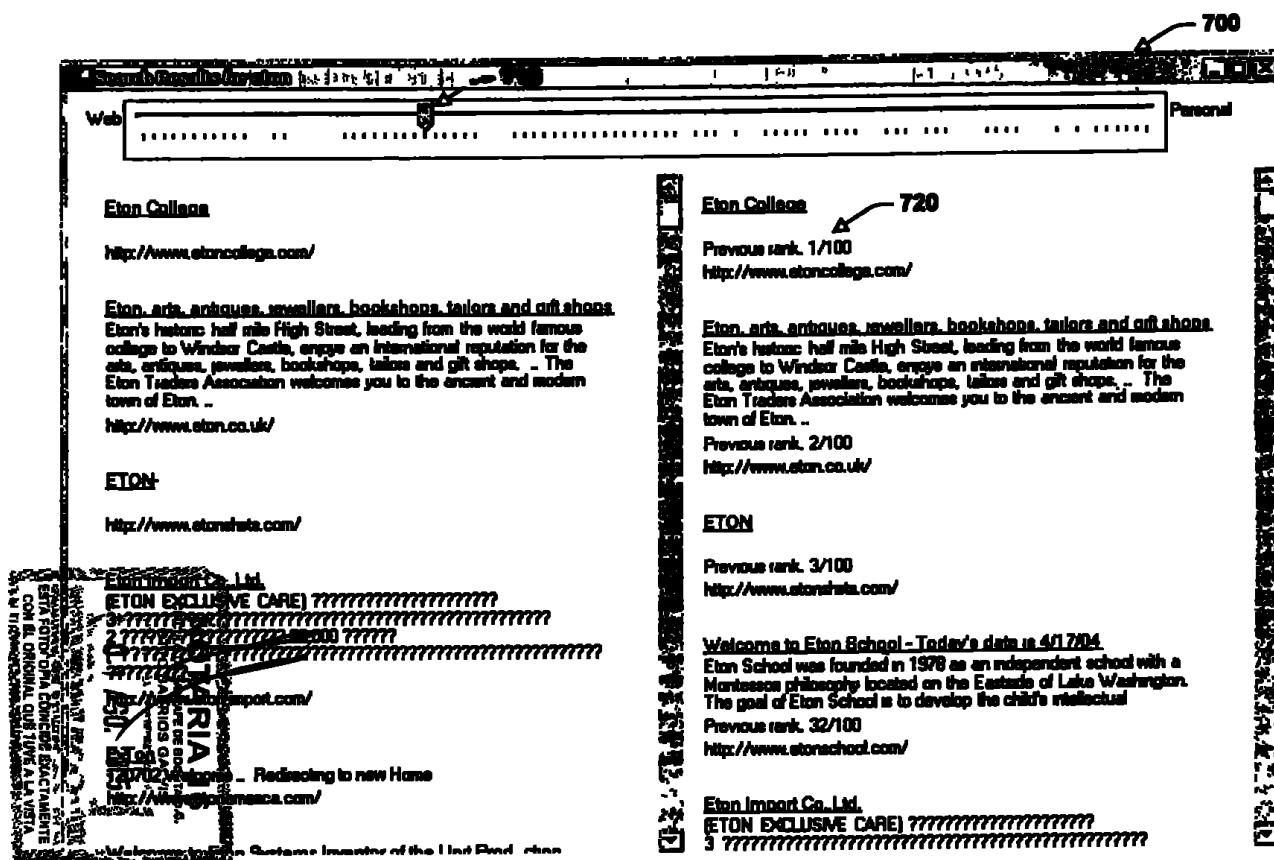


FIG. 7

800

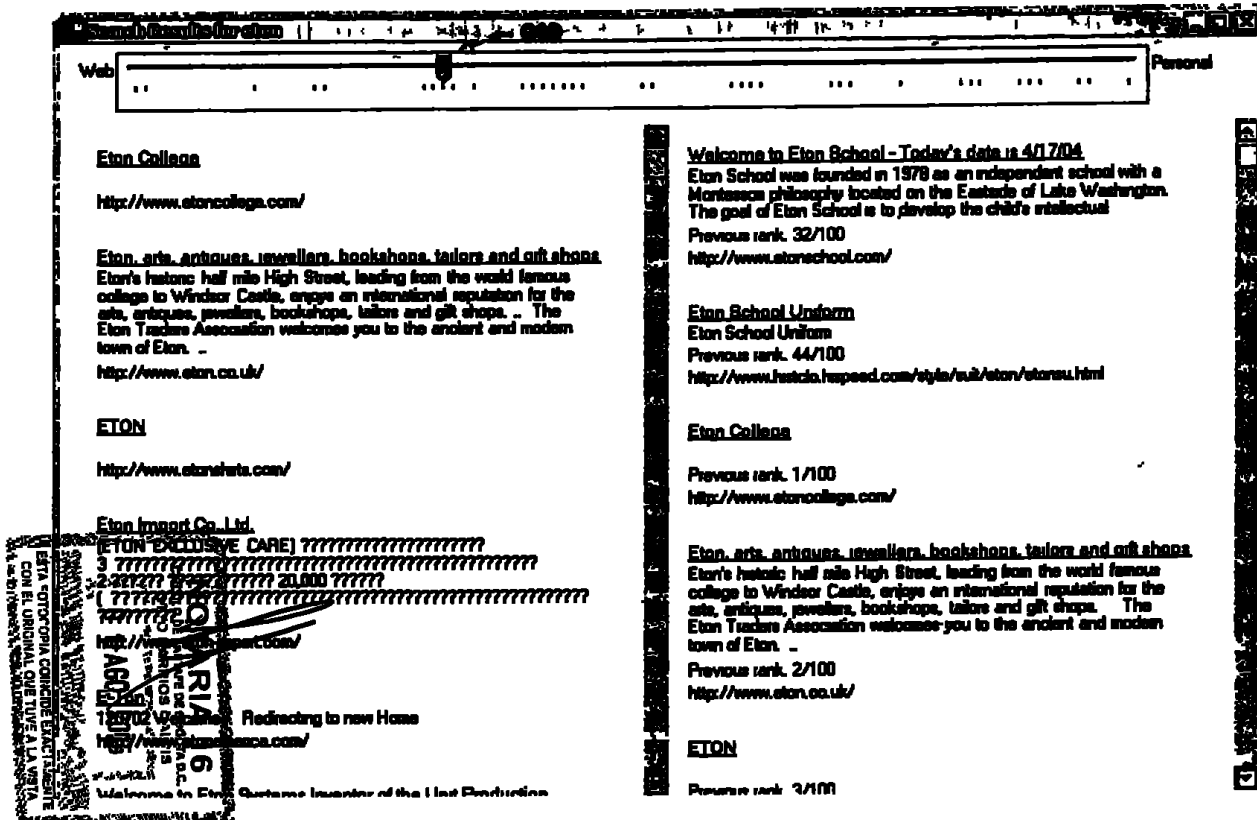


FIG. 8

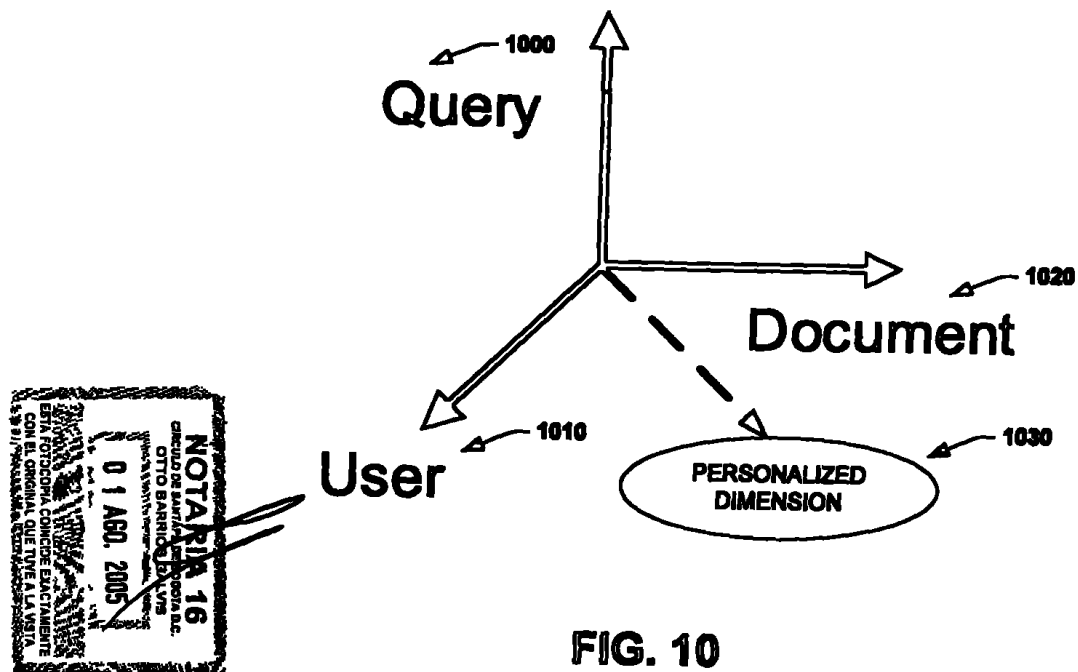
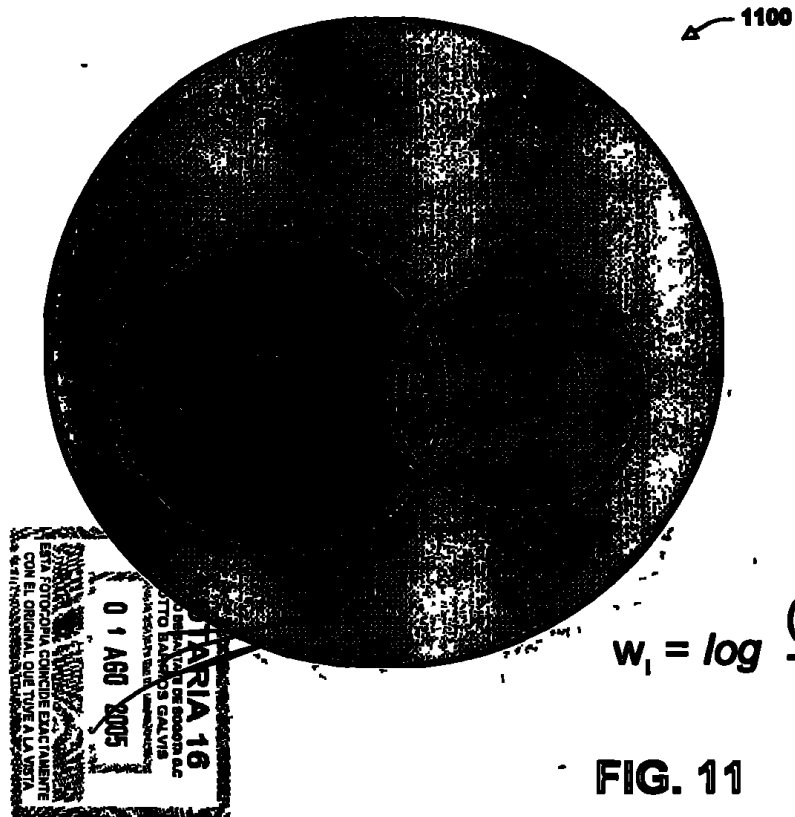


FIG. 10

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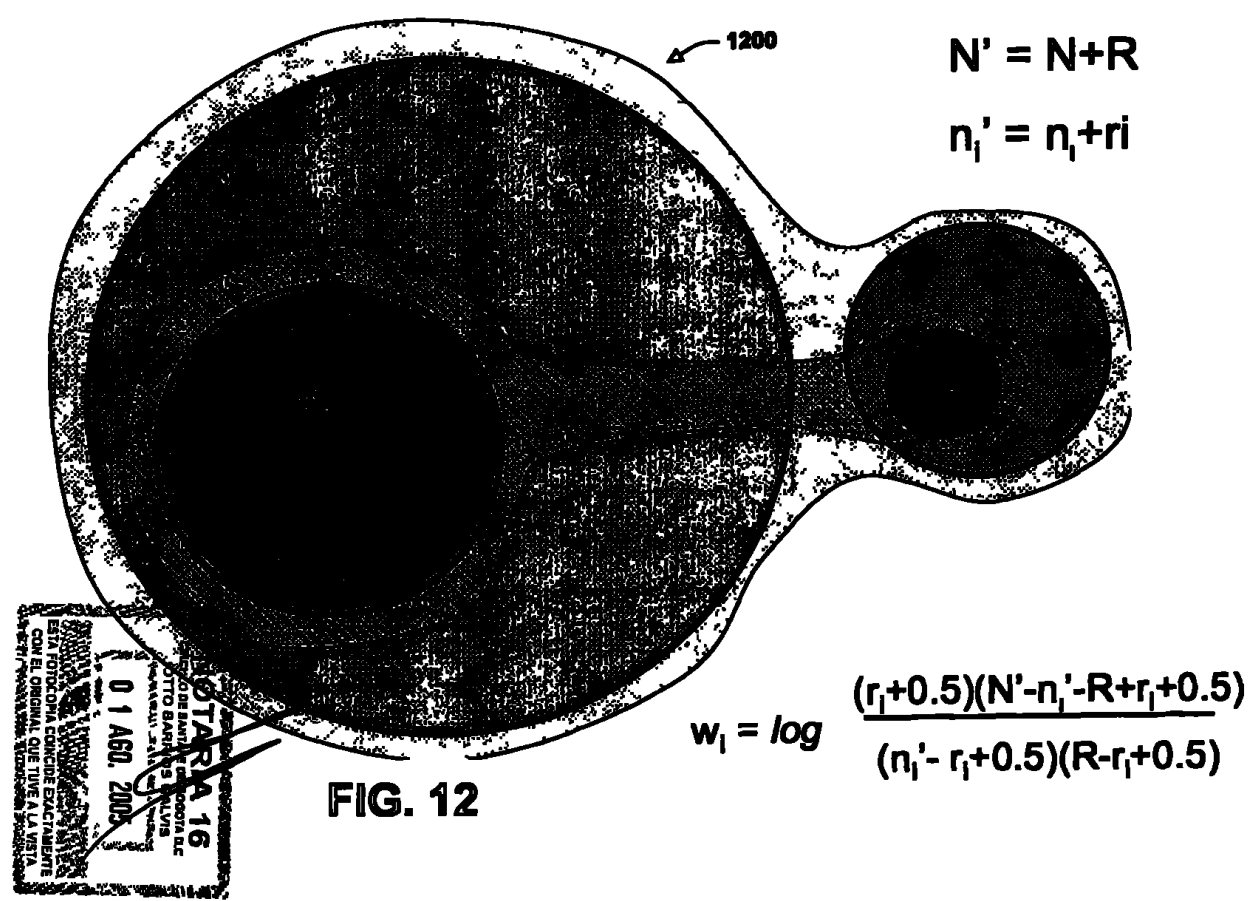


$$\text{Score} = \sum t_{f_i} * w_i$$

$$w_i = \log \frac{N}{n_i}$$

$$w_i = \log \frac{(r_i + 0.5)(N - n_i - R + r_i + 0.5)}{(n_i - r_i + 0.5)(R - r_i + 0.5)}$$

FIG. 11



5

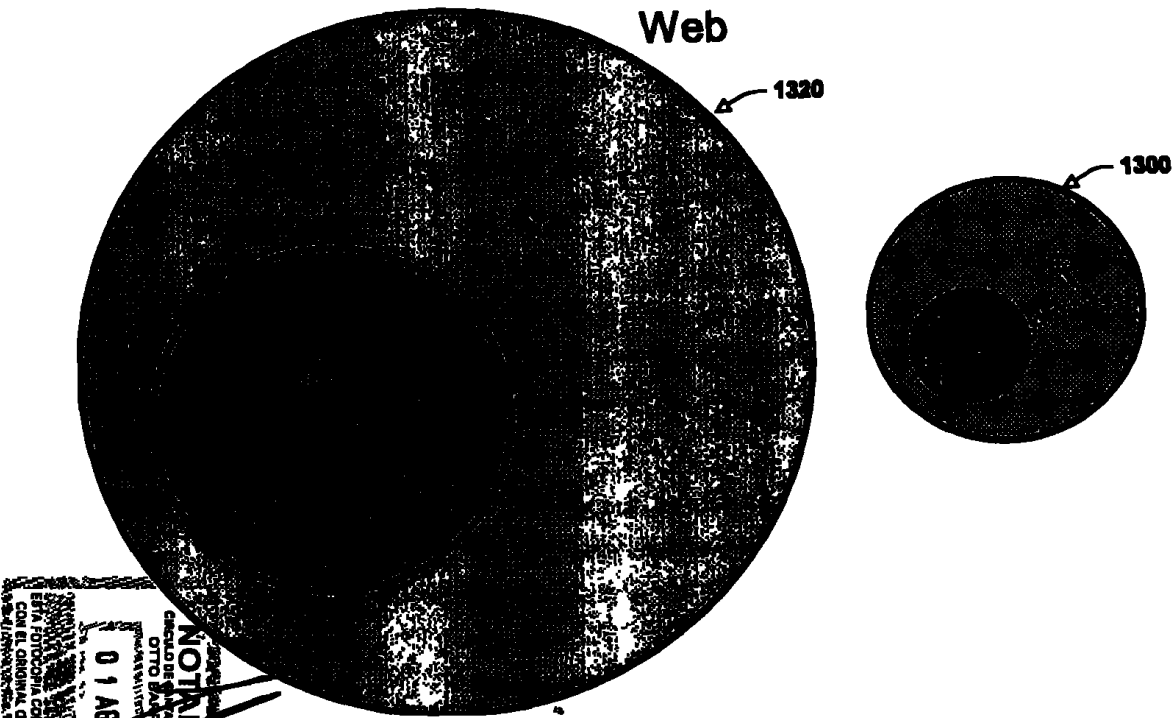
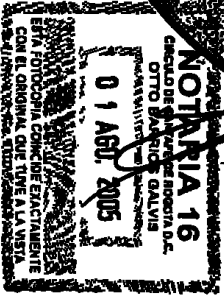


FIG. 13



2

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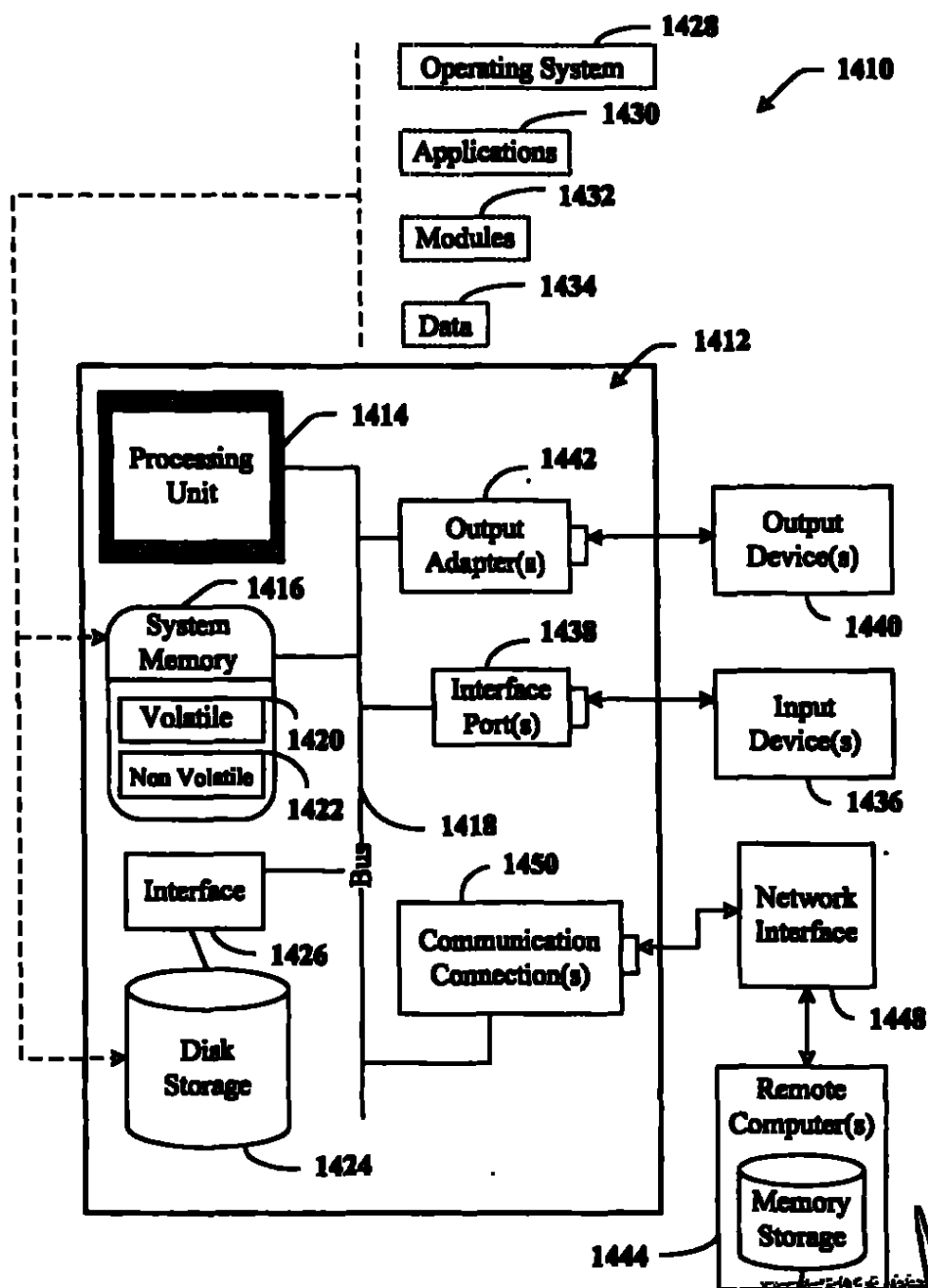
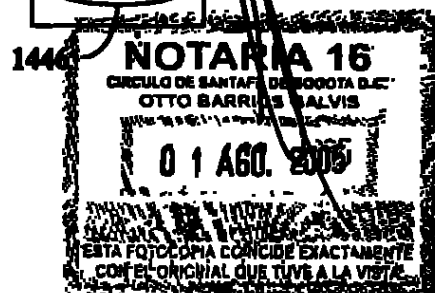


FIG. 14



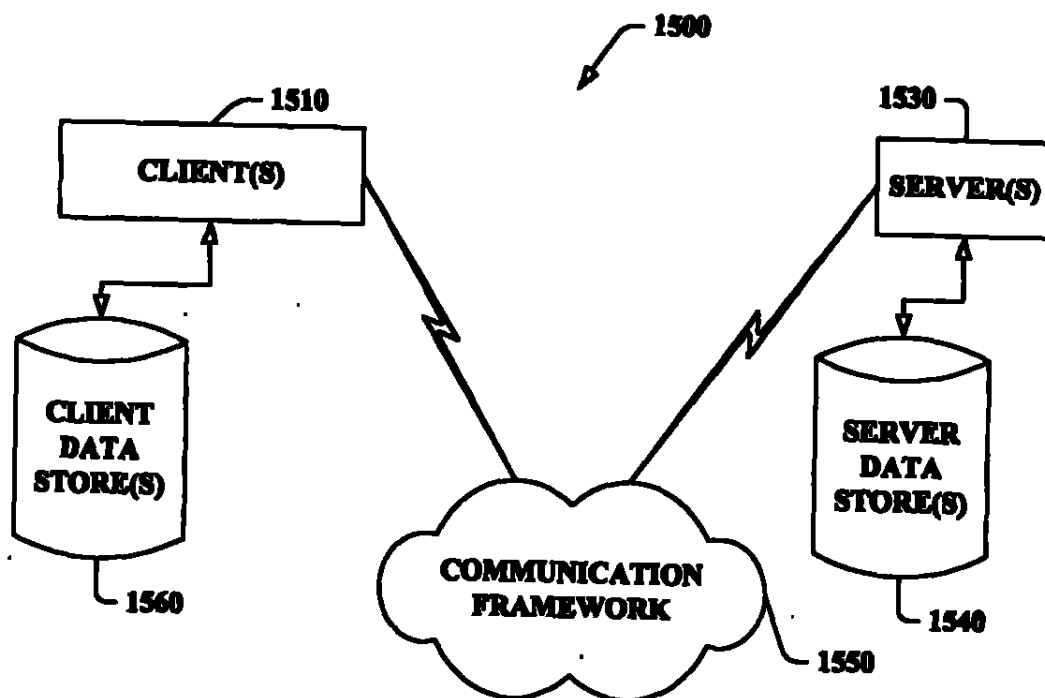


FIG. 15

