505803578 12/04/2019

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5850407

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
JOSEPH NOVIELLO	08/09/2016
STEVEN COOPER	10/25/2016
LEO GOLUBOVSKY	07/27/2016
CHUNG-SIN WANG	07/27/2016
JONATHAN WAKEFIELD	07/28/2016

RECEIVING PARTY DATA

Name:	NASDAQ, INC.
Street Address:	ONE LIBERTY PLAZA, 165 BROADWAY
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10006

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16703372

CORRESPONDENCE DATA

Fax Number: (703)816-4100

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 703-816-4000

Email: PTOMAIL@nixonvan.com
Correspondent Name: NIXON & VANDERHYE, P.C.

Address Line 1: 901 NORTH GLEBE ROAD, 11TH FLOOR

Address Line 4: ARLINGTON, VIRGINIA 22203

ATTORNEY DOCKET NUMBER:	AC-4010-0508	
NAME OF SUBMITTER:	ADAM H. CHAPIN	
SIGNATURE:	/Adam H. Chapin/	
DATE SIGNED:	12/04/2019	
	This document serves as an Oath/Declaration (37 CFR 1.63).	
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Total Attachments: 5

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PATENT REEL: 051178 FRAME: 0811

Doc code: Oath
Document Description: Oath or declaration filed

Attorney Docket Number | AC-4010-0349

	First Named Inventor	NOVIELLO, Joseph
INVENTOR'S DECLARATION AND ASSIGNMENT FOR UTILITY OF USING AN APPLICATION DATA SHI		JICATION (37 CFR 1.63)
Declaration Submitted With Initial Filing OR		·
Declaration Submitted After Initial Filing (surcharge (37 C.F.R. § 1.	16(f)) required)	
MATCHING TECHNIQUES FOR DATA TRANSACTION REQUE	STS WITH PRIVATE AT	TRIBUTES
(Title of the Invention)		
As a below named inventor, I hereby declare that:		
This declaration is directed to: the attached application, or United States Application Number 15/200,902 filed July 1, 2016, or PCT International application number filed on		
The above-identified application was made or authorized to be made by me.		
I believe I am the original inventor or an original joint inventor of a claimed inven	ntion in the application.	
I hereby acknowledge that any willful false statement made in this declaration is by fine or imprisonment of not more than five (5) years, or both.	s punishable under 18 U.S.C	. 1001
WHEREAS, the undersigned (hereinafter ASSIGNOR), has made an invention	in the Application identified a	above.
WHEREAS, NASDAQ, INC. (hereinafter ASSIGNEE), an entity, having an offic Broadway, New York, NY 10006, is desirous of acquiring an interest therein;	e and place of business at O	ne Liberty Plaza, 165
NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and/or other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR by these presents hereby sells, assigns, and transfers unto the said ASSIGNEE, its successors, assigns, and legal representatives, ASSIGNOR'S entire right, title and interest in the United States of America and all foreign countries, in and to the invention as described in the aforesaid application, and to the said application and to all subsequent applications based thereon including any and all continuations, divisions, reissues, and substitutes of said application, and all resulting patents, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and the ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns, and legal representatives. It is understood and agreed that ASSIGNEE's attorneys Nixon & Vanderhye P.C. have represented only ASSIGNEE and will continue to represent only ASSIGNEE with respect to this invention;		
ASSIGNOR hereby agrees to transfer a like interest upon request of said ASSI representatives, and without further remuneration, in and to any improvements, of or related to the said invention;		
ASSIGNOR hereby agrees to execute any papers by ASSIGNEE, its successo to ASSIGNEE'S full protection and title in and to the invention hereby transferred		entatives, deemed essential
ASSIGNOR hereby agrees, upon request of ASSIGNEE, and without further re ASSIGNEE, for the filing and granting of foreign applications and the perfecting		
AGREED and executed as noted below:		
LEGAL NAME OF INVENTOR/JOINT INVENTOR: (E.g., Given Name (first and middle (if any)) and Family Name or Surname)) (A) (A) (A) (A) (A) (A) (A) (A) (A) (A
Joseph) Inventor's Signature	Date: ¿./	NOVIELLO - /
	¥/9	/16
Witnessed by: // Leu Colysusky	описопоставляний под принципальной под принципальной под	nggamoonnaaneestaasjaajaajaajaaneestaastaastaastaastaastaataastaataastaataa
Name: Leo GolyBousky Signature of withess: Leo GolyBousky	Date: \$/9/	16

PATENT

Document Description: Oath or declaration filed

Attorney Docket Number AC-4010-0349

First Named Inventor NOVIELLO, Joseph

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INVENTOR'S DECLARATION AND ASSIGNMENT FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) USING AN APPLICATION DATA SHEET (37 CFR 1.76)
Declaration Submitted With Initial Filing OR
Declaration Submitted After Initial Filing (surcharge (37 C.F.R. § 1.16(f)) required)
MATCHING TECHNIQUES FOR DATA TRANSACTION REQUESTS WITH PRIVATE ATTRIBUTES
(Title of the Invention)
As a below named inventor, I hereby declare that:
This declaration is directed to:
☐ the attached application, or ☐ United States Application Number 15/200,902 filed July 1, 2016, or
PCT International application number_filed on
The above-identified application was made or authorized to be made by me. I believe I am the original inventor or an original joint inventor of a claimed invention in the application.
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001
by fine or imprisonment of not more than five (5) years, or both.
WHEREAS, the undersigned (hereinafter ASSIGNOR), has made an invention in the Application identified above.
WHEREAS, NASDAQ, INC. (hereinafter ASSIGNEE), an entity, having an office and place of business at One Liberty Plaza, 165 Broadway, New York, NY 10006, is desirous of acquiring an interest therein;
NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and/or other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR by these presents hereby sells, assigns, and transfers unto the said ASSIGNEE, its successors, assigns, and legal representatives, ASSIGNOR'S entire right, title and interest in the United States of America and all foreign countries, in and to the invention as described in the aforesaid application, and to the said application and to all subsequent applications based thereon including any and all continuations, divisions, reissues, and substitutes of said application, and all resulting patents, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and the ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns, and legal representatives. It is understood and agreed that ASSIGNEE's attorneys Nixon & Vanderhye P.C. have represented only ASSIGNEE and will continue to represent only ASSIGNEE with respect to this invention;
ASSIGNOR hereby agrees to transfer a like interest upon request of said ASSIGNEE, its successors, assigns, and legal representatives, and without further remuneration, in and to any improvements, and applications for patents based thereon, growing out of or related to the said invention;
ASSIGNOR hereby agrees to execute any papers by ASSIGNEE, its successors, assigns, and legal representatives, deemed essential to ASSIGNEE'S full protection and title in and to the invention hereby transferred; and
ASSIGNOR hereby agrees, upon request of ASSIGNEE, and without further remuneration, to execute any and all papers desired by ASSIGNEE, for the filing and granting of foreign applications and the perfecting of title thereto in ASSIGNEE.
AGREED and executed as noted below:
LEGAL NAME OF INVENTOR/JOINT INVENTOR:
(E.g., Given Name (first and middle (if any)) and Family Name or Sumame)
STEPPEN STEVOV COOPER
Inventor's Signature Date:
Name: Lases Castles Ca
Signature of witness: ACL Cya Date: 10/25/2016

Document Description: Oath or declaration filed

Attorney Docket Number AC-4010-0349

First Named Inventor NOVIELLO, Joseph

	First Named Inventor	NOVIELLO, Joseph
INVENTOR'S DECLARATION AND ASSIGNMENT FOR UTILITY OR USING AN APPLICATION DATA SHE		ICATION (37 CFR 1.63)
Declaration Submitted With Initial Filing OR	,	
Declaration Submitted After Initial Filing (surcharge (37 C.F.R. § 1.1	6(f)) required)	
MATCHING TECHNIQUES FOR DATA TRANSACTION REQUE	STS WITH PRIVATE AT	TRIBUTES
(Title of the Invention)		
As a below named inventor, I hereby declare that:		777779997
This declaration is directed to: the attached application, or United States Application Number 15/200,902 filed July 1, 2016, or PCT International application number filed on		The state of the s
The above-identified application was made or authorized to be made by me.		to our the same
I believe I am the original inventor or an original joint inventor of a claimed inven	tion in the application.	
I hereby acknowledge that any willful false statement made in this declaration is by fine or imprisonment of not more than five (5) years, or both.	punishable under 18 U.S.C.	1001
WHEREAS, the undersigned (hereinafter ASSIGNOR), has made an invention i	n the Application identified a	bove.
WHEREAS, NASDAQ, INC. (hereinafter ASSIGNEE), an entity, having an office Broadway, New York, NY 10006, is desirous of acquiring an interest therein;	and place of business at O	ne Liberty Plaza, 165
NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and/or other good of which are hereby acknowledged, the said ASSIGNOR by these presents here ASSIGNEE, its successors, assigns, and legal representatives, ASSIGNOR'S e America and all foreign countries, in and to the invention as described in the afo subsequent applications based thereon including any and all continuations, divis all resulting patents, together with the right of priority under the international Coramerican Convention Relating to Patents, Designs and Industrial Models, and a States of America adheres, and the ASSIGNOR hereby authorizes and requests said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, agreed that ASSIGNEE'S attomeys Nixon & Vanderhye P.C. have represented ASSIGNEE with respect to this invention;	aby sells, assigns, and transintire right, title and interest in resaid application, and to the sions, reissues, and substitutions for the Protection only other international agrees the Commissioner of Pater assigns, and legal represeronly ASSIGNEE and will con	ters unto the said in the United States of the said application and to all tes of said application, and if Industrial Property, Inter- ments to which the United that and Trademarks to issue that its understood and intinue to represent only
ASSIGNOR hereby agrees to transfer a like interest upon request of said ASSIG representatives, and without further remuneration, in and to any improvements, of or related to the said invention;		
ASSIGNOR hereby agrees to execute any papers by ASSIGNEE, its successor to ASSIGNEE'S full protection and title in and to the invention hereby transferred		entatives, deemed essential
ASSIGNOR hereby agrees, upon request of ASSIGNEE, and without further rer ASSIGNEE, for the filing and granting of foreign applications and the perfecting		
AGREED and executed as noted below:		
Legal Name of Additional Joint Inventor, if any:		
(E.g., Given Name (first and middle (if any)) and Family Name or Surname) Leo	GC	LUBOVSKY
Inventor's Signature: Leo College	Date: 07/2	7/2016
Witnessed by: Name: Chung-Sin Wang		
Signature of witness:	Date: 7/2-7	7/8016
	7	/

PATENT

Document Description: Oath or declaration filed

Attorney Docket Number AC-4010-0349
First Named Inventor NOVIELLO, Joseph

	First Named Inventor	NOVIELLO, Joseph
INVENTOR'S DECLARATION AND ASSIGNMENT FOR UTILITY OF USING AN APPLICATION DATA SH		ICATION (37 CFR 1.63)
Declaration Submitted With Initial Filing OR		
Declaration Submitted After Initial Filing (surcharge (37 C.F.R. § 1.	16(f)) required)	
MATCHING TECHNIQUES FOR DATA TRANSACTION REQUI	STS WITH PRIVATE AT	TRIBUTES
(Title of the Invention)		P. O. P. S.
As a below named inventor, I hereby declare that:		
This declaration is directed to: the attached application, or United States Application Number 15/200,902 filed July 1, 2016, or PCT International application number filed on		
The above-identified application was made or authorized to be made by me.		
I believe I am the original inventor or an original joint inventor of a claimed inver	ntion in the application.	
I hereby acknowledge that any willful false statement made in this declaration is by fine or imprisonment of not more than five (5) years, or both.	punishable under 18 U.S.C.	1001
WHEREAS, the undersigned (hereinafter ASSIGNOR), has made an invention	in the Application identified a	cove.
WHEREAS, NASDAQ, INC. (hereinafter ASSIGNEE), an entity, having an offic Broadway, New York, NY 10006, is desirous of acquiring an interest therein;	e and place of business at Or	ie Liberty Plaza, 165
NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and/or other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the said ASSIGNOR by these presents hereby sells, assigns, and transfers unto the said ASSIGNEE, its successors, assigns, and legal representatives, ASSIGNOR'S entire right, title and interest in the United States of America and all foreign countries, in and to the invention as described in the aforesaid application, and to the said application and to all subsequent applications based thereon including any and all continuations, divisions, reissues, and substitutes of said application, and all resulting patents, together with the right of priority under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and the ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue said Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns, and legal representatives. It is understood and agreed that ASSIGNEE's attorneys Nixon & Vanderhye P.C. have represented only ASSIGNEE and will continue to represent only ASSIGNEE with respect to this invention;		
ASSIGNOR hereby agrees to transfer a like interest upon request of said ASSIGNEE, its successors, assigns, and legal representatives, and without further remuneration, in and to any improvements, and applications for patents based thereon, growing out of or related to the said invention;		
ASSIGNOR hereby agrees to execute any papers by ASSIGNEE, its successors, assigns, and legal representatives, deemed essential to ASSIGNEE'S full protection and title in and to the invention hereby transferred; and		
ASSIGNOR hereby agrees, upon request of ASSIGNEE, and without further remuneration, to execute any and all papers desired by ASSIGNEE, for the filing and granting of foreign applications and the perfecting of title thereto in ASSIGNEE.		
AGREED and executed as noted below:		
Legal Name of Additional Joint Inventor, if any:		
(E.g., Given Name (first and middle (if any)) and Family Name or Surname) Chung-Sin		WANG
Inventor's Signature:	Date: 7/3	7/2016
Witnessed by:	kinikanen sisteman siin kenikan siisan saasaa saasaa saasaa saasaa saasaa ja fiisa saasaa paan paan	najvelinnanzejih santaineelinnan oseeseeseeseesaa osaanaa oseeseeseeseeseeseesee
Name: LEO GOLUBOUSKY Signature of witness: 120 GOLUBOUSKY	TO THE RESIDENCE OF THE PROPERTY OF THE PROPER	
Signature of witness:	Date: Off	27/2016

PATENT

Document Description: Oath or declaration filed

RECORDED: 12/04/2019

Attorney Docket Number AC-4010-0349

First Named Inventor NOVIELLO, Joseph

INVENTOR'S DECLARATION AND ASSIGNMENT FOR UTILITY OR DESIGN		
USING AN APPLICATION DATA SHEET (37 C Declaration Submitted With Initial Filing	CFR 1.76)	
OR 57.5	the dD	
Declaration Submitted After Initial Filing (surcharge (37 C.F.R. § 1.16(f)) requ	UNINESSES SE SERVICE MENUNCATURE SELECTION SEL	
MATCHING TECHNIQUES FOR DATA TRANSACTION REQUESTS WIT	H PRIVATE ATTRIBUTES	
(Title of the Invention)		
As a below named inventor, I hereby declare that:		
This declaration is directed to: ☐ the attached application, or ☐ United States Application Number 15/200,902 filed July 1, 2016, or ☐ PCT International application number filed on		
The above-identified application was made or authorized to be made by me.		
I believe I am the original inventor or an original joint inventor of a claimed invention in the	application.	
I hereby acknowledge that any willful false statement made in this declaration is punishab by fine or imprisonment of not more than five (5) years, or both.	le under 18 U.S.C. 1001	
WHEREAS, the undersigned (hereinafter ASSIGNOR), has made an invention in the App	lication identified above.	
WHEREAS, NASDAQ, INC. (hereinafter ASSIGNEE), an entity, having an office and place Broadway, New York, NY 10006, is desirous of acquiring an interest therein;	e of business at One Liberty Plaza, 165	
NOW, THEREFORE, in consideration of Ten Dollars (\$10.00) and/or other good and valu of which are hereby acknowledged, the said ASSIGNOR by these presents hereby sells, a ASSIGNEE, its successors, assigns, and legal representatives, ASSIGNOR'S entire right, America and all foreign countries, in and to the invention as described in the aforesaid appropriate applications based thereon including any and all continuations, divisions, reis all resulting patents, together with the right of priority under the International Convention for American Convention Relating to Patents, Designs and Industrial Models, and any other in States of America adheres, and the ASSIGNOR hereby authorizes and requests the Compact Letters Patent to ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns, agreed that ASSIGNEE'S attorneys Nixon & Vanderhye P.C. have represented only ASSIGNEE with respect to this invention;	assigns, and transfers unto the sald title and interest in the United States of plication, and to the said application and to all sues, and substitutes of said application, and or the Protection of Industrial Property, Internternational agreements to which the United missioner of Patents and Trademarks to issue and legal representatives. It is understood and GNEE and will continue to represent only	
ASSIGNOR hereby agrees to transfer a like interest upon request of said ASSIGNEE, its successors, assigns, and legal representatives, and without further remuneration, in and to any improvements, and applications for patents based thereon, growing out of or related to the said invention;		
ASSIGNOR hereby agrees to execute any papers by ASSIGNEE, its successors, assigns, and legal representatives, deemed essential to ASSIGNEE'S full protection and title in and to the invention hereby transferred; and		
ASSIGNOR hereby agrees, upon request of ASSIGNEE, and without further remuneration, to execute any and all papers desired by ASSIGNEE, for the filing and granting of foreign applications and the perfecting of title thereto in ASSIGNEE.		
AGREED and executed as noted below:		
Legal Name of Additional Joint Inventor, if any:		
(E.g., Given Name (first and middle (if any)) and Family Name or Sumame) Jonathap	WAKEFIELD	
Inventor's Signature: Hours B Wallach	Date: 7/28/16	
Witnessed by: Cold Division	35003-000-000-000-000-000-000-000-000-00	
Name: // J&E NU(C2C)		
Signature of witness:	Date: 7/27/16	

PATENT REEL: 051178 FRAME: 0816