

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT4337364

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
MICHAEL E. GLOBE	12/08/2016
MAZIN AL-SAMADI	02/07/2017
LAUREN VAN HEERDEN	01/14/2017
GUNALAN NADARAJAH	01/16/2017
ORIN DEL VECCHIO	02/07/2017
MICHAEL D. CUMMINS	01/24/2017
PRABAHARAN SIVASHANMUGAM	01/25/2017
RECEIVING PARTY DATA	
Name:	THE TORONTO-DOMINION BANK
Street Address:	66 WELLINGTON STREET WEST
Internal Address:	TD TOWER, 12TH FLOOR
City:	TORONTO
State/Country:	CANADA
Postal Code:	M5K 1A2
PROPERTY NUMBERS Total: 2	
Property Type	Number
Application Number:	14510920
Application Number:	61888641
CORRESPONDENCE DATA	
Fax Number:	(202)776-7801
<i>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.</i>	
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Address Line 2:	SUITE 1000
Address Line 4:	WASHINGTON, D.C. 20004
ATTORNEY DOCKET NUMBER:	G4144-00063
NAME OF SUBMITTER:	JAMES A. COOKE III

PATENT

SIGNATURE:	/James A. Cooke III/
DATE SIGNED:	03/27/2017
Total Attachments: 37 source=G414463Assignments#page1.tif source=G414463Assignments#page2.tif source=G414463Assignments#page3.tif source=G414463Assignments#page4.tif source=G414463Assignments#page5.tif source=G414463Assignments#page6.tif source=G414463Assignments#page7.tif source=G414463Assignments#page8.tif source=G414463Assignments#page9.tif source=G414463Assignments#page10.tif source=G414463Assignments#page11.tif source=G414463Assignments#page12.tif source=G414463Assignments#page13.tif source=G414463Assignments#page14.tif source=G414463Assignments#page15.tif source=G414463Assignments#page16.tif source=G414463Assignments#page17.tif source=G414463Assignments#page18.tif source=G414463Assignments#page19.tif source=G414463Assignments#page20.tif source=G414463Assignments#page21.tif source=G414463Assignments#page22.tif source=G414463Assignments#page23.tif source=G414463Assignments#page24.tif source=G414463Assignments#page25.tif source=G414463Assignments#page26.tif source=G414463Assignments#page27.tif source=G414463Assignments#page28.tif source=G414463Assignments#page29.tif source=G414463Assignments#page30.tif source=G414463Assignments#page31.tif source=G414463Assignments#page32.tif source=G414463Assignments#page33.tif source=G414463Assignments#page34.tif source=G414463Assignments#page35.tif source=G414463Assignments#page36.tif source=G414463Assignments#page37.tif	

Assignment

WHEREAS, I, **Michael E. GLOBE** (hereinafter the "**Assignor**"), invented certain new and useful inventions as disclosed and claimed in the patent applications listed on Schedule A attached hereto (hereinafter, the "**Patent Applications**"),

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), whose postal address is 66 Wellington Street West, TD Tower, 12th Floor, Toronto, Ontario, M5K 1A2, Canada, is desirous of acquiring the entire and exclusive right, title and interest in and to said inventions and said Patent Applications and in and to any Letters Patent which may be granted and issued therefore throughout the world;

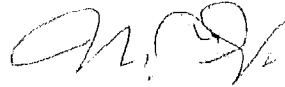
NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, any improvements thereto, any patent applications, including any utility provisional patent applications and any utility non-provisional patent applications, divisional applications, and continuation patent applications claiming priority therefrom or claiming the benefit thereof ("**Subsequent Patent Applications**"), including the right to file said Subsequent Patent Applications identifying the Assignee as applicant, and any Letters Patent, including any re-issue patents, which may be granted and issued therefore in Canada, the U.S., and throughout the world.

The Assignor DECLARES that he (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that he is an original joint inventor of the invention claimed in said Patent Applications and said Subsequent Patent Applications, and (iii) acknowledges 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.

The Assignor AGREES to do all things reasonably required of him, and to execute all instruments submitted to him by the Assignee, for the purpose of carrying out the full intent of this Assignment, including any Oaths/Declarations and/or Assignments to perfect this sale, assignment and transfer of the inventions, the Patent Applications, and the Subsequent Patent Applications to the Assignee, and hereby requests and authorizes the Patent Office to issue the said Letters Patent to the Assignee, its successors and assigns.

WORLDWIDE

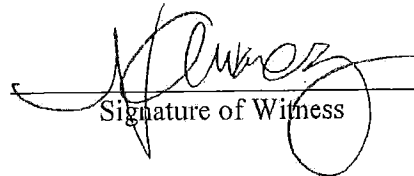
EXECUTED at Toronto, this 8th day of December, 2016



Michael E. GLOBE

STATEMENT BY WITNESS

I, NICOLE ALVAREZ, whose full post office
address is 60 Wellington St. W, 15th Floor, Toronto, ON, was personally present
MEXIAZ
and did see Michael E. GLOBE, who is known to me, execute the above Assignment.


Signature of Witness

WORLDWIDE

Schedule A

<u>Attorney Docket No.</u>	<u>U.S. App. No.</u>	<u>Filing Date</u>	<u>Title</u>
G4144-00058	61/888,641	October 9, 2013	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00049	61/884,745	September 30, 2013	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00055	62/019,267	June 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00046	14/504,250	October 1, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00045	14/502,022	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00050	14/502,268	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00056	14/509,555	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00059	14/509,583	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00063	14/510,920	October 9, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA

Assignment

WHEREAS, I, **Mazin AL-SAMADI** (hereinafter the "Assignor"), invented certain new and useful inventions as disclosed and claimed in the patent applications listed on Schedule A attached hereto (hereinafter, the "Patent Applications"),

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "Assignee"), whose postal address is 66 Wellington Street West, TD Tower, 12th Floor, Toronto, Ontario, M5K 1A2, Canada, is desirous of acquiring the entire and exclusive right, title and interest in and to said inventions and said Patent Applications and in and to any Letters Patent which may be granted and issued therefore throughout the world;

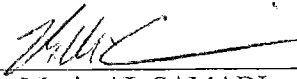
NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, any improvements thereto, any patent applications, including any utility provisional patent applications and any utility non-provisional patent applications, divisional applications, and continuation patent applications claiming priority therefrom or claiming the benefit thereof ("Subsequent Patent Applications"), including the right to file said Subsequent Patent Applications identifying the Assignee as applicant, and any Letters Patent, including any re-issue patents, which may be granted and issued therefore in Canada, the U.S., and throughout the world.

The Assignor DECLARES that he (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that he is an original joint inventor of the invention claimed in said Patent Applications and said Subsequent Patent Applications, and (iii) acknowledges 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.

The Assignor AGREES to do all things reasonably required of him, and to execute all instruments submitted to him by the Assignee, for the purpose of carrying out the full intent of this Assignment, including any Oaths/Declarations and/or Assignments to perfect this sale, assignment and transfer of the inventions, the Patent Applications, and the Subsequent Patent Applications to the Assignee, and hereby requests and authorizes the Patent Office to issue the said Letters Patent to the Assignee, its successors and assigns.

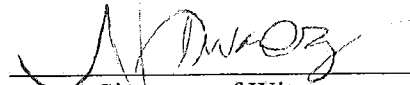
WORLDWIDE

EXECUTED at Toronto, this 7 day of February, 2017


Mazin AL-SAMADI

STATEMENT BY WITNESS

I, Nicole Alvarez, whose full post office
address is 60 Wellington St. W, 15th Floor, Toronto, ON, was personally present
M5K 1A2.
and did see Mazin AL-SAMADI, who is known to me, execute the above Assignment.


Signature of Witness

WORLDWIDE

Schedule A

<u>Attorney Docket No.</u>	<u>U.S. App. No.</u>	<u>Filing Date</u>	<u>Title</u>
G4144-00058	61/888,641	October 9, 2013	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00049	61/884,745	September 30, 2013	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00055	62/019,267	June 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00046	14/504,250	October 1, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00045	14/502,022	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00050	14/502,268	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00056	14/509,555	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00059	14/509,583	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00063	14/510,920	October 9, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA

Assignment

WHEREAS, I, **Lauren VAN HEERDEN** (hereinafter the "**Assignor**"), invented certain new and useful inventions as disclosed and claimed in the patent applications listed on Schedule A attached hereto (hereinafter, the "**Patent Applications**"),

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), whose postal address is 66 Wellington Street West, TD Tower, 12th Floor, Toronto, Ontario, M5K 1A2, Canada, is desirous of acquiring the entire and exclusive right, title and interest in and to said inventions and said Patent Applications and in and to any Letters Patent which may be granted and issued therefore throughout the world;

NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, any improvements thereto, any patent applications, including any utility provisional patent applications and utility non-provisional patent applications, divisional applications, and continuation patent applications claiming priority therefrom or claiming the benefit thereof ("**Subsequent Patent Applications**"), including the right to file said Subsequent Patent Applications identifying the Assignee as applicant, and any Letters Patent, including any re-issue patents, which may be granted and issued therefore in Canada, the U.S., and throughout the world.

The Assignor DECLARES that he (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that he is an original joint inventor of the invention claimed in said Patent Applications and said Subsequent Patent Applications, and (iii) acknowledges 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.

The Assignor AGREES to do all things reasonably required of her, and to execute all instruments submitted to her by the Assignee, for the purpose of carrying out the full intent of this Assignment, including any Oaths/Declarations and/or Assignments to perfect this sale, assignment and transfer of the inventions, the Patent Applications, and the Subsequent Patent Applications to the Assignee, and hereby requests and authorizes the Patent Office to issue the said Letters Patent to the Assignee, its successors and assigns.

WORLDWIDE

EXECUTED at Sugar Hill, NH, this 14 day of January, 2017



Lauren VAN HEERDEN

STATEMENT BY WITNESS

I, Johann van Heerden, whose full post office
address is 64 Dunlap Drive, Bedford NH 03110, was personally present
and did see Lauren VAN HEERDEN, who is known to me, execute the above Assignment.



Signature of Witness

WORLDWIDE

Schedule A

<u>Attorney Docket No.</u>	<u>U.S. App. No.</u>	<u>Filing Date</u>	<u>Title</u>
G4144-00058	61/888,641	October 9, 2013	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00032	61/884,678	September 30, 2013	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00109	61/888,601	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00112	61/888,621	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00049	61/884,745	September 30, 2013	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00035	61/884,798	September 30, 2013	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00044	61/888,653	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING TOKENIZED TRANSACTION ACCOUNTS
G4144-00077	61/951,795	March 12, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION ASSISTANCE
G4144-00128	62/023,770	July 11, 2014	SYSTEMS AND METHODS FOR PROVIDING PREPAID MULTICARDS
G4144-00087	62/003,466	May 27, 2014	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS

WORLDWIDE

G4144-00068	61/923,355	January 3, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS
G4144-00055	62/019,267	June 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00115	62/019,031	June 30, 2014	SYSTEMS AND METHODS FOR PROVIDING INVESTMENT SECURED FINANCIAL ACCOUNTS
G4144-00090	62/016,012	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00120	62/022,119	July 8, 2014	SYSTEMS AND METHODS FOR PROVIDING LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00125	62/022,470	July 9, 2014	SYSTEMS AND METHODS FOR CONFIRMING CUSTOMER IDENTITY USING NON-CREDENTIALLED INFORMATION
G4144-00091	62/016,017	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00046	14/504,250	October 1, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00042	14/487,917	September 16, 2014	SYSTEMS AND METHODS FOR PROVIDING TOKENIZED TRANSACTION ACCOUNTS
G4144-00075	14/656,519	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON USER-GENERATED TRIGGERS
G4144-00126	14/796,450	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING PRE-PAID MULTICARDS
G4144-00085	14/723,331	May 27, 2015	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS
G4144-00066	14/585,069	December 29, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS
G4144-00045	14/502,022	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT

WORLDWIDE

			PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00036	14/273,469	May 8, 2014	BIOMETRIC-BASED TRANSACTION FRAUD DETECTION
G4144-00041	14/301,082	June 10, 2014	HIGH FRAUD RISK TRANSACTION AUTHORIZATION
G4144-00037	14/273,425	May 8, 2014	PERSON-TO-PERSON ELECTRONIC PAYMENT PROCESSING
G4144-00038	14/273,500	May 8, 2014	SYSTEM AND METHOD FOR CONSUMER-MERCHANT TRANSACTION ANALYSIS
G4144-00118	14/793,915	July 8, 2015	SYSTEMS AND METHODS FOR PROVIDING SENSOR-BASED LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00123	14/795,584	July 9, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USERS OF NETWORKED COMPUTER SYSTEMS BASED ON NON-CREDENTIALLED INFORMATION
G4144-00088	14/747,868	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00092	14/747,895	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00113	14/755,740	June 30, 2015	SYSTEMS AND METHODS FOR IDENTIFYING AND REMEDYING ACCOUNT ERROR EVENTS IN NETWORKED COMPUTER SYSTEMS
G4144-00050	14/502,268	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00107	14/510,831	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES

WORLDWIDE

G4144-00110	14/510,873	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00061	14/510,969	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING TOKENIZED TRANSACTION ACCOUNTS
G4144-00056	14/509,555	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00059	14/509,583	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00063	14/510,920	October 9, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00078	14/656,528	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON CONTEXTUAL TRIGGERS
G4144-00080	14/656,541	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON SYSTEM-GENERATED TRIGGERS
G4144-00116	14/755,786	June 30, 2015	SYSTEMS AND METHODS FOR IDENTIFYING AND REMEDYING ACCOUNT ERROR EVENTS IN NETWORKED COMPUTER SYSTEMS
G4144-00121	14/794,038	July 8, 2015	SYSTEMS AND METHODS FOR PROVIDING SENSOR-BASED LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00129	14/796,512	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING SECURE DATA TRANSMISSION BETWEEN NETWORKED COMPUTING SYSTEMS
G4144-00030	14/199,476	March 6, 2014	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00033	14/199,664	March 6, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS

WORLDWIDE

G4144-00039	14/289,261	March 28, 2014	VIRTUAL CERTIFIED FINANCIAL INSTRUMENT SYSTEM
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WORLDWIDE

Assignment

WHEREAS, I, **Gumalan NADARAJAH** (hereinafter the "Assignor"), invented certain new and useful inventions as disclosed and claimed in the patent applications listed on Schedule A attached hereto (hereinafter, the "Patent Applications"),

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "Assignee"), whose postal address is 66 Wellington Street West, TD Tower, 12th Floor, Toronto, Ontario, M5K 1A2, Canada, is desirous of acquiring the entire and exclusive right, title and interest in and to said inventions and said Patent Applications and in and to any Letters Patent which may be granted and issued therefore throughout the world;

NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, any improvements thereto, any patent applications, including any utility provisional patent applications and any utility non-provisional patent applications, divisional applications, and continuation patent applications claiming priority therefrom or claiming the benefit thereof ("Subsequent Patent Applications"), including the right to file said Subsequent Patent Applications identifying the Assignee as applicant, and any Letters Patent, including any re-issue patents, which may be granted and issued therefore in Canada, the U.S., and throughout the world.

The Assignor DECLARES that he (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that he is an original joint inventor of the invention claimed in said Patent Applications and said Subsequent Patent Applications, and (iii) acknowledges 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.

The Assignor AGREES to do all things reasonably required of him, and to execute all instruments submitted to him by the Assignee, for the purpose of carrying out the full intent of this Assignment, including any Oaths/Declarations and/or Assignments to perfect this sale, assignment and transfer of the inventions, the Patent Applications, and the Subsequent Patent Applications to the Assignee, and hereby requests and authorizes the Patent Office to issue the said Letters Patent to the Assignee, its successors and assigns.

EXECUTED at Burlington ON, this 16 day of January, 2017


Gunalan NADARAJAH

STATEMENT BY WITNESS

I, CHARMAINE SILVA, whose full post office
address is 118 VAN FLEET TERRACE, MILTON, ON L9T 0Y3, was personally present
and did see Gunalan NADARAJAH, who is known to me, execute the above Assignment.


Signature of Witness

Schedule A

<u>Attorney Docket No.</u>	<u>U.S. App. No.</u>	<u>Filing Date</u>	<u>Title</u>
G4144-00058	61/888,641	October 9, 2013	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00032	61/884,678	September 30, 2013	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00109	61/888,601	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00112	61/888,621	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00049	61/884,745	September 30, 2013	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00035	61/884,798	September 30, 2013	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00077	61/951,795	March 12, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION ASSISTANCE
G4144-00128	62/023,770	July 11, 2014	SYSTEMS AND METHODS FOR PROVIDING PREPAID MULTICARDS
G4144-00068	61/923,355	January 3, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS
G4144-00055	62/019,267	June 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION

G4144-00115	62/019,031	June 30, 2014	SYSTEMS AND METHODS FOR PROVIDING INVESTMENT SECURED FINANCIAL ACCOUNTS
G4144-00090	62/016,012	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00120	62/022,119	July 8, 2014	SYSTEMS AND METHODS FOR PROVIDING LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00125	62/022,470	July 9, 2014	SYSTEMS AND METHODS FOR CONFIRMING CUSTOMER IDENTITY USING NON-CREDENTIALLED INFORMATION
G4144-00091	62/016,017	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00046	14/504,250	October 1, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00075	14/656,519	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON USER-GENERATED TRIGGERS
G4144-00126	14/796,450	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING PRE-PAID MULTICARDS
G4144-00066	14/585,069	December 29, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS
G4144-00045	14/502,022	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00036	14/273,469	May 8, 2014	BIOMETRIC-BASED TRANSACTION FRAUD DETECTION
G4144-00037	14/273,425	May 8, 2014	PERSON-TO-PERSON ELECTRONIC PAYMENT PROCESSING
G4144-00038	14/273,500	May 8, 2014	SYSTEM AND METHOD FOR CONSUMER-MERCHANT TRANSACTION ANALYSIS

G4144-00118	14/793,915	July 8, 2015	SYSTEMS AND METHODS FOR PROVIDING SENSOR-BASED LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00123	14/795,584	July 9, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USERS OF NETWORKED COMPUTER SYSTEMS BASED ON NON-CREDENTIALLED INFORMATION
G4144-00088	14/747,868	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00092	14/747,895	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00113	14/755,740	June 30, 2015	SYSTEMS AND METHODS FOR IDENTIFYING AND REMEDYING ACCOUNT ERROR EVENTS IN NETWORKED COMPUTER SYSTEMS
G4144-00050	14/502,268	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00107	14/510,831	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00110	14/510,873	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00056	14/509,555	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00059	14/509,583	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00063	14/510,920	October 9, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA

G4144-00078	14/656,528	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON CONTEXTUAL TRIGGERS
G4144-00080	14/656,541	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON SYSTEM-GENERATED TRIGGERS
G4144-00116	14/755,786	June 30, 2015	SYSTEMS AND METHODS FOR IDENTIFYING AND REMEDYING ACCOUNT ERROR EVENTS IN NETWORKED COMPUTER SYSTEMS
G4144-00121	14/794,038	July 8, 2015	SYSTEMS AND METHODS FOR PROVIDING SENSOR-BASED LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00129	14/796,512	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING SECURE DATA TRANSMISSION BETWEEN NETWORKED COMPUTING SYSTEMS
G4144-00030	14/199,476	March 6, 2014	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00033	14/199,664	March 6, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00039	14/289,261	May 28, 2014	VIRTUAL CERTIFIED FINANCIAL INSTRUMENT SYSTEM

Assignment

WHEREAS, I, **Orin DEL VECCHIO** (hereinafter the "**Assignor**"), invented certain new and useful inventions as disclosed and claimed in the patent applications listed on Schedule A attached hereto (hereinafter, the "**Patent Applications**"),

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), whose postal address is 66 Wellington Street West, TD Tower, 12th Floor, Toronto, Ontario, M5K 1A2, Canada, is desirous of acquiring the entire and exclusive right, title and interest in and to said inventions and said Patent Applications and in and to any Letters Patent which may be granted and issued therefore throughout the world;

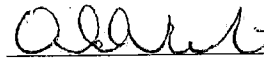
NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, any improvements thereto, any patent applications, including any utility provisional patent applications and any utility non-provisional patent applications, divisional applications, and continuation patent applications claiming priority therefrom or claiming the benefit thereof ("**Subsequent Patent Applications**"), including the right to file said Subsequent Patent Applications identifying the Assignee as applicant, and any Letters Patent, including any re-issue patents, which may be granted and issued therefore in Canada, the U.S., and throughout the world.

The Assignor DECLARES that he (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that he is an original joint inventor of the invention claimed in said Patent Applications and said Subsequent Patent Applications, and (iii) acknowledges 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.

The Assignor AGREES to do all things reasonably required of him, and to execute all instruments submitted to him by the Assignee, for the purpose of carrying out the full intent of this Assignment, including any Oaths/Declarations and/or Assignments to perfect this sale, assignment and transfer of the inventions, the Patent Applications, and the Subsequent Patent Applications to the Assignee, and hereby requests and authorizes the Patent Office to issue the said Letters Patent to the Assignee, its successors and assigns.

WORLDWIDE

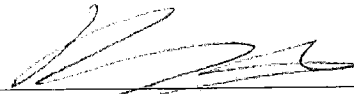
EXECUTED at Toronto, this 7 day of February, 2017



Orin DEL VECCHIO

STATEMENT BY WITNESS

I, John Slee, whose full post office
address is 66 Wellington Toronto, was personally present
and did see Orin DEL VECCHIO, who is known to me, execute the above Assignment.



Signature of Witness

Schedule A

<u>Attorney Docket No.</u>	<u>U.S. App. No.</u>	<u>Filing Date</u>	<u>Title</u>
G4144-00058	61/888,641	October 9, 2013	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00032	61/884,678	September 30, 2013	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00109	61/888,601	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00112	61/888,621	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00049	61/884,745	September 30, 2013	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00035	61/884,798	September 30, 2013	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00077	61/951,795	March 12, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION ASSISTANCE
G4144-00128	62/023,770	July 11, 2014	SYSTEMS AND METHODS FOR PROVIDING PREPAID MULTICARDS
G4144-00068	61/923,355	January 3, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS
G4144-00100	62/201,392	August 5, 2015	SYSTEMS AND METHODS FOR AUTOMATICALLY GENERATING TRADE ORDERS BASED ON SOCIAL MEDIA MESSAGING

WORLDWIDE

G4144-00055	62/019,267	June 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00115	62/019,031	June 30, 2014	SYSTEMS AND METHODS FOR PROVIDING INVESTMENT SECURED FINANCIAL ACCOUNTS
G4144-00090	62/016,012	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00120	62/022,119	July 8, 2014	SYSTEMS AND METHODS FOR PROVIDING LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00125	62/022,470	July 9, 2014	SYSTEMS AND METHODS FOR CONFIRMING CUSTOMER IDENTITY USING NON-CREDENTIALIED INFORMATION
G4144-00091	62/016,017	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00144	62/073,881	October 31, 2014	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITY BASED ON USED-DEFINED IMAGE DATA
G4144-00001	62/204,768	August 13, 2015	HYBRID PUBLIC-PRIVATE BLOCK-CHAIN LEDGERS
G4144-00046	14/504,250	October 1, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00075	14/656,519	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON USER-GENERATED TRIGGERS
G4144-00126	14/796,450	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING PRE-PAID MULTICARDS
G4144-00085	14/723,331	May 27, 2015	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS
G4144-00066	14/585,069	December 29, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS
G4144-00045	14/502,022	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA

WORLDWIDE

G4144-00036	14/273,469	May 8, 2014	BIOMETRIC-BASED TRANSACTION FRAUD DETECTION
G4144-00041	14/301,082	June 10, 2014	HIGH FRAUD RISK TRANSACTION AUTHORIZATION
G4144-00037	14/273,425	May 8, 2014	PERSON-TO-PERSON ELECTRONIC PAYMENT PROCESSING
G4144-00038	14/273,500	May 8, 2014	SYSTEM AND METHOD FOR CONSUMER-MERCHANT TRANSACTION ANALYSIS
G4144-00118	14/793,915	July 8, 2015	SYSTEMS AND METHODS FOR PROVIDING SENSOR-BASED LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00123	14/795,584	July 9, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USERS OF NETWORKED COMPUTER SYSTEMS BASED ON NON-CREDENTIALLED INFORMATION
G4144-00088	14/747,868	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00092	14/747,895	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00113	14/755,740	June 30, 2015	SYSTEMS AND METHODS FOR IDENTIFYING AND REMEDYING ACCOUNT ERROR EVENTS IN NETWORKED COMPUTER SYSTEMS
G4144-00050	14/502,268	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00107	14/510,831	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES

WORLDWIDE

G4144-00110	14/510,873	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00061	14/510,969	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING TOKENIZED TRANSACTION ACCOUNTS
G4144-00056	14/509,555	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00059	14/509,583	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00063	14/510,920	October 9, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00071	14/589,848	January 5, 2015	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS TO CONNECTED DEVICES
G4144-00069	14/588,861	January 2, 2015	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS IN AN AUGMENTED REALITY ENVIRONMENT
G4144-00073	14/589,840	January 5, 2015	SYSTEMS AND METHODS FOR PROVIDING BALANCE AND EVENT NOTIFICATIONS
G4144-00078	14/656,528	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON CONTEXTUAL TRIGGERS
G4144-00080	14/656,541	March 12, 2015	SYSTEMS AND METHODS FOR PROVIDING POPULATED TRANSACTION INTERFACES BASED ON SYSTEM-GENERATED TRIGGERS
G4144-00116	14/755,786	June 30, 2015	SYSTEMS AND METHODS FOR IDENTIFYING AND REMEDYING ACCOUNT ERROR EVENTS IN NETWORKED COMPUTER SYSTEMS
G4144-00121	14/794,038	July 8, 2015	SYSTEMS AND METHODS FOR PROVIDING SENSOR-BASED LOCATION PROXIMITY DETECTION AND NOTIFICATION

WORLDWIDE

G4144-00129	14/796,512	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING SECURE DATA TRANSMISSION BETWEEN NETWORKED COMPUTING SYSTEMS
G4144-00002	14/928,838	October 30, 2015	SYSTEMS AND METHOD FOR TRACKING ENTERPRISE EVENTS USING HYBRID PUBLIC-PRIVATE BLOCKCHAIN LEDGERS
G4144-00003	14/935,829	November 9, 2015	SYSTEMS AND METHOD FOR TRACKING BEHAVIOR OF NETWORKED DEVICES USING HYBRID PUBLIC-PRIVATE BLOCKCHAIN LEDGERS
G4144-00004	14/936,833	November 10, 2015	SYSTEMS AND METHODS FOR TRACKING AND TRANSFERRING OWNERSHIP OF CONNECTED DEVICES USING BLOCKCHAIN LEDGERS
G4144-00005	14/931,414	November 3, 2015	SYSTEMS AND METHOD FOR TRACKING SUBDIVIDED OWNERSHIP OF CONNECTED DEVICES USING BLOCK-CHAIN LEDGERS
G4144-00006	14/936,812	November 10, 2015	SYSTEMS AND METHODS FOR DETECTING AND RESOLVING DATA INCONSISTENCIES AMONG NETWORKED DEVICES USING HYBRID PRIVATE-PUBLIC BLOCKCHAIN LEDGERS
G4144-00007	14/935,799	November 9, 2015	SYSTEMS AND METHODS FOR ESTABLISHING AND ENFORCING TRANSACTION-BASED RESTRICTIONS USING HYBRID PUBLIC-PRIVATE BLOCKCHAIN LEDGERS
G4144-00097	14/874,202	October 2, 2015	SYSTEMS AND METHODS FOR AUTOMATICALLY GENERATING ORDER DATA BASED ON SOCIAL MEDIA MESSAGING
G4144-00098	15/228,705	August 4, 2016	SYSTEMS AND METHODS FOR AUTOMATICALLY GENERATING ORDER DATA BASED ON SOCIAL MEDIA MESSAGING
G4144-00140	14/874,180	October 2, 2015	SYSTEMS AND METHODS FOR VERIFYING USER IDENTITY BASED ON SOCIAL MEDIA MESSAGING
G4144-00142	14/928,500	October 30, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITY BASED ON USER-DEFINED IMAGE DATA
G4144-00030	14/199,476	March 6, 2014	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS

WORLDWIDE

G4144-00033	14/199,664	March 6, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00039	14/289,261	May 28, 2014	VIRTUAL CERTIFIED FINANCIAL INSTRUMENT SYSTEM

Assignment

WHEREAS, I, **Michael D. CUMMINS** (hereinafter the "Assignor"), invented certain new and useful inventions as disclosed and claimed in the patent applications listed on Schedule A attached hereto (hereinafter, the "Patent Applications"),

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "Assignee"), whose postal address is 66 Wellington Street West, TD Tower, 12th Floor, Toronto, Ontario, M5K 1A2, Canada, is desirous of acquiring the entire and exclusive right, title and interest in and to said inventions and said Patent Applications and in and to any Letters Patent which may be granted and issued therefore throughout the world;

NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, any improvements thereto, any patent applications, including any utility provisional patent applications and any utility non-provisional patent applications, divisional applications, and continuation patent applications claiming priority therefrom or claiming the benefit thereof ("Subsequent Patent Applications"), including the right to file said Subsequent Patent Applications identifying the Assignee as applicant, and any Letters Patent, including any re-issue patents, which may be granted and issued therefore in Canada, the U.S., and throughout the world.

The Assignor DECLARES that he (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that he is an original joint inventor of the invention claimed in said Patent Applications and said Subsequent Patent Applications, and (iii) acknowledges 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.

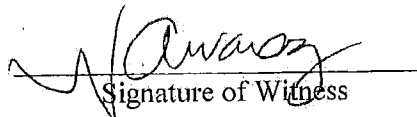
The Assignor AGREES to do all things reasonably required of him, and to execute all instruments submitted to him by the Assignee, for the purpose of carrying out the full intent of this Assignment, including any Oaths/Declarations and/or Assignments to perfect this sale, assignment and transfer of the inventions, the Patent Applications, and the Subsequent Patent Applications to the Assignee, and hereby requests and authorizes the Patent Office to issue the said Letters Patent to the Assignee, its successors and assigns.

EXECUTED at TORONTO, this 24th day of JANUARY, 2017


Michael D. CUMMINS

STATEMENT BY WITNESS

I, NICOLE ALVAREZ, whose full post office
address is 140 Wellington St. W. 15th Floor, Toronto, ON, was personally present
NICOLE ALVAREZ
and did see Michael D. CUMMINS, who is known to me, execute the above Assignment.


Signature of Witness

Schedule A

<u>Attorney Docket No.</u>	<u>U.S. App. No.</u>	<u>Filing Date</u>	<u>Title</u>
G4144-00058	61/888,641	October 9, 2013	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00032	61/884,678	September 30, 2013	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00109	61/888,601	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00112	61/888,621	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00049	61/884,745	September 30, 2013	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00035	61/884,798	September 30, 2013	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00128	62/023,770	July 11, 2014	SYSTEMS AND METHODS FOR PROVIDING PREPAID MULTICARDS
G4144-00087	62/003,466	May 27, 2014	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS
G4144-00055	62/019,267	June 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00090	62/016,012	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00091	62/016,017	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION

G4144-00046	14/504,250	October 1, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00126	14/796,450	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING PRE-PAID MULTICARDS
G4144-00085	14/723,331	May 27, 2015	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS
G4144-00045	14/502,022	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00036	14/273,469	May 8, 2014	BIOMETRIC-BASED TRANSACTION FRAUD DETECTION
G4144-00037	14/273,425	May 8, 2014	PERSON-TO-PERSON ELECTRONIC PAYMENT PROCESSING
G4144-00038	14/273,500	May 8, 2014	SYSTEM AND METHOD FOR CONSUMER-MERCHANT TRANSACTION ANALYSIS
G4144-00088	14/747,868	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00092	14/747,895	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00050	14/502,268	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00107	14/510,831	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00110	14/510,873	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES

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G4144-00059	14/509,583	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
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G4144-00033	14/199,664	March 6, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00039	14/289,261	May 28, 2014	VIRTUAL CERTIFIED FINANCIAL INSTRUMENT SYSTEM

Assignment

WHEREAS, I, **Prabaharan SIVASHANMUGAM** (hereinafter the "Assignor"), invented certain new and useful inventions as disclosed and claimed in the patent applications listed on Schedule A attached hereto (hereinafter, the "Patent Applications"),

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "Assignee"), whose postal address is 66 Wellington Street West, TD Tower, 12th Floor, Toronto, Ontario, M5K 1A2, Canada, is desirous of acquiring the entire and exclusive right, title and interest in and to said inventions and said Patent Applications and in and to any Letters Patent which may be granted and issued therefore throughout the world;

NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, any improvements thereto, any patent applications, including any utility provisional patent applications and any utility non-provisional patent applications, divisional applications, and continuation patent applications claiming priority therefrom or claiming the benefit thereof ("Subsequent Patent Applications"), including the right to file said Subsequent Patent Applications identifying the Assignee as applicant, and any Letters Patent, including any re-issue patents, which may be granted and issued therefore in Canada, the U.S., and throughout the world.

The Assignor DECLARES that he (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that he is an original joint inventor of the invention claimed in said Patent Applications and said Subsequent Patent Applications, and (iii) acknowledges 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.

The Assignor AGREES to do all things reasonably required of him, and to execute all instruments submitted to him by the Assignee, for the purpose of carrying out the full intent of this Assignment, including any Oaths/Declarations and/or Assignments to perfect this sale, assignment and transfer of the inventions, the Patent Applications, and the Subsequent Patent Applications to the Assignee, and hereby requests and authorizes the Patent Office to issue the said Letters Patent to the Assignee, its successors and assigns.

EXECUTED at COLUMBUS, this 25 day of JANUARY, 2017


Prabhakar SIVASHANMUGAM

STATEMENT BY WITNESS

I, RADHIKA JACKSON, whose full post office
address is 8101 TRIBUTARY LN. REYNOLDSBURG, was personally present
and did see Prabhakar SIVASHANMUGAM, who is known to me, execute the above
Assignment.


Signature of Witness

Schedule A

<u>Attorney Docket No.</u>	<u>U.S. App. No.</u>	<u>Filing Date</u>	<u>Title</u>
G4144-00058	61/888,641	October 9, 2013	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00032	61/884,678	September 30, 2013	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00109	61/888,601	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00112	61/888,621	October 9, 2013	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES
G4144-00049	61/884,745	September 30, 2013	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00035	61/884,798	September 30, 2013	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00128	62/023,770	July 11, 2014	SYSTEMS AND METHODS FOR PROVIDING PREPAID MULTICARDS
G4144-00087	62/003,466	May 27, 2014	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS
G4144-00055	62/019,267	June 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00090	62/016,012	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION
G4144-00091	62/016,017	June 23, 2014	SYSTEMS AND METHODS FOR PROVIDING AUTHENTICATION

G4144-00046	14/504,250	October 1, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00126	14/796,450	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING PRE-PAID MULTICARDS
G4144-00085	14/723,331	May 27, 2015	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS
G4144-00045	14/502,022	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00036	14/273,469	May 8, 2014	BIOMETRIC-BASED TRANSACTION FRAUD DETECTION
G4144-00037	14/273,425	May 8, 2014	PERSON-TO-PERSON ELECTRONIC PAYMENT PROCESSING
G4144-00038	14/273,500	May 8, 2014	SYSTEM AND METHOD FOR CONSUMER-MERCHANT TRANSACTION ANALYSIS
G4144-00088	14/747,868	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00092	14/747,895	June 23, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITIES IN NETWORKED COMPUTER SYSTEMS
G4144-00050	14/502,268	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON TRANSACTION DATA
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00107	14/510,831	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES
G4144-00110	14/510,873	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING ENHANCED POINT-OF-SALE SERVICES INVOLVING MULTIPLE FINANCIAL ENTITIES

G4144-00056	14/509,555	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00059	14/509,583	October 8, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00063	14/510,920	October 9, 2014	SYSTEMS AND METHODS FOR IDENTIFYING PRODUCT RECOMMENDATIONS BASED ON INVESTMENT PORTFOLIO DATA
G4144-00129	14/796,512	July 10, 2015	SYSTEMS AND METHODS FOR PROVIDING SECURE DATA TRANSMISSION BETWEEN NETWORKED COMPUTING SYSTEMS
G4144-00030	14/199,476	March 6, 2014	METHODS AND SYSTEMS FOR DETERMINING AND PROVIDING NEGATIVE EVENT NOTIFICATIONS
G4144-00033	14/199,664	March 6, 2014	SYSTEMS AND METHODS FOR PROVIDING TRANSACTION COMPLETION ALERTS
G4144-00039	14/289,261	May 28, 2014	VIRTUAL CERTIFIED FINANCIAL INSTRUMENT SYSTEM