

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT4816142

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
ORIN DEL VECCHIO	02/07/2017
NIGEL LALL	03/31/2017
PAUL MON-WAH CHAN	02/08/2017
JONATHAN K BARNETT	12/08/2016
GARIMA AGGARWAL	12/08/2016
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THE TORONTO-DOMINION BANK
<b>Street Address:</b>	66 WELLINGTON STREET WEST
<b>Internal Address:</b>	TD TOWER, 15TH FLOOR
<b>City:</b>	TORONTO, ONTARIO
<b>State/Country:</b>	CANADA
<b>Postal Code:</b>	M5K 1A2
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	15891645
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(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>	
<b>Phone:</b>	202-776-7800
<b>Email:</b>	leponder@duanemorris.com
<b>Correspondent Name:</b>	DUANE MORRIS LLP - DC
<b>Address Line 1:</b>	505 9TH STREET
<b>Address Line 2:</b>	SUITE 1000
<b>Address Line 4:</b>	WASHINGTON, D.C. 20004-2166
<b>ATTORNEY DOCKET NUMBER:</b>	G4144-00256
<b>NAME OF SUBMITTER:</b>	JAMES A. COOK III
<b>SIGNATURE:</b>	/James A. Cooke, III/
<b>DATE SIGNED:</b>	02/08/2018

**Total Attachments: 27**

source=00071 Assignments#page1.tif

source=00071 Assignments#page2.tif

source=00071 Assignments#page3.tif

source=00071 Assignments#page4.tif

source=00071 Assignments#page5.tif

source=00071 Assignments#page6.tif

source=00071 Assignments#page7.tif

source=00071 Assignments#page8.tif

source=00071 Assignments#page9.tif

source=00071 Assignments#page10.tif

source=00071 Assignments#page11.tif

source=00071 Assignments#page12.tif

source=00071 Assignments#page13.tif

source=00071 Assignments#page14.tif

source=00071 Assignments#page15.tif

source=00071 Assignments#page16.tif

source=00071 Assignments#page17.tif

source=00071 Assignments#page18.tif

source=00071 Assignments#page19.tif

source=00071 Assignments#page20.tif

source=00071 Assignments#page21.tif

source=00071 Assignments#page22.tif

source=00071 Assignments#page23.tif

source=00071 Assignments#page24.tif

source=00071 Assignments#page25.tif

source=00071 Assignments#page26.tif

source=00071 Assignments#page27.tif

**Assignment**

WHEREAS, I, **Nigel LALL** (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, 12<sup>th</sup> 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.

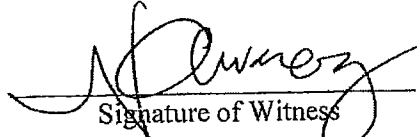
WORLDWIDE

EXECUTED at Toronto, ON, this 31 day of MARCH, 2017

  
\_\_\_\_\_  
Nigel LALL

STATEMENT BY WITNESS

I, Nicole Alvarez, whose full post office  
address is 40 Wellington St. W. 15th Fl., Toronto, ON, was personally present  
NICOLAZ  
and did see Nigel LALL, 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>
G4144-00068	61/923,355	January 3, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS
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
G4144-00066	14/585,069	December 29, 2014	SYSTEMS AND METHODS FOR PROVIDING BALANCE NOTIFICATIONS

**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, 12<sup>th</sup> 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  
Orin DEL VECCHIO

STATEMENT BY WITNESS

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

[Signature]  
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
G4144-00077	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-CREDENTIALLED 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, **Paul Mon-Wah CHAN** (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, 12<sup>th</sup> 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.

Toronto

WORLDWIDE

SSL

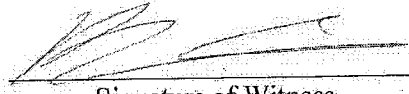
EXECUTED at February, this 8 day of February, 2017



Paul Mon-Wah CHAN

STATEMENT BY WITNESS

I, John Steel, whose full post office address is 66 Wallinghurst Toronto, was personally present and did see Paul Mon-Wah CHAN, 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>
G4144-00055	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
G4144-00133	62/056,794	September 29, 2014	SYSTEMS AND METHODS FOR GENERATING AND ADMINISTERING PRE-LOADED MOBILE WALLET APPLICATIONS
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
G4144-00096	62/056,785	September 29, 2014	SYSTEMS AND METHODS FOR ADMINISTERING PRE-LOADED MOBILE WALLET APPLICATIONS
G4144-00136	62/056,776	September 29, 2014	SYSTEMS AND METHODS FOR ADMINISTERING PRE-LOADED MOBILE WALLET APPLICATIONS
G4144-00144	62/073,881	October 31, 2014	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITY BASED ON USED-DEFINED IMAGE DATA
G4144-00149	62/160,274	May 12, 2015	SYSTEMS AND METHODS FOR PROVIDING INFORMATION-TECHNOLOGY ASSETS IN AN OPEN ENVIRONMENT



WORLDWIDE

G4144-00001	62/204,768	August 13, 2015	HYBRID PUBLIC-PRIVATE BLOCK-CHAIN LEDGERS
G4144-00085	14/723,331	May 27, 2015	SYSTEMS AND METHODS FOR PROVIDING MERCHANT FRAUD ALERTS
G4144-00118	14/793,915	July 8, 2015	SYSTEMS AND METHODS FOR PROVIDING SENSOR-BASED LOCATION PROXIMITY DETECTION AND NOTIFICATION
G4144-00131	14/869,818	September 29, 2015	SYSTEMS AND METHODS FOR GENERATING AND ADMINISTERING MOBILE APPLICATIONS USING PRE-LOADED TOKENS
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
G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00061	14/510,969	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING TOKENIZED TRANSACTION ACCOUNTS
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

WORLDWIDE

G4144-00073	14/589,840	January 5, 2015	SYSTEMS AND METHODS FOR PROVIDING BALANCE AND EVENT NOTIFICATIONS
G4144-00082	14/680,790	April 7, 2015	SYSTEMS AND METHODS FOR PROVIDING INFORMATION-TECHNOLOGY ASSETS IN AN OPEN ENVIRONMENT
G4144-00147	15/152,142	May 11, 2016	SYSTEMS AND METHODS FOR PROVIDING INFORMATION-TECHNOLOGY ASSETS IN AN OPEN ENVIRONMENT
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
G4144-00002	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

WORLDWIDE

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
G4144-00134	14/869,869	September 29, 2015	SYSTEMS AND METHODS FOR ADMINISTERING MOBILE APPLICATIONS USING PRE-LOADED TOKENS
G4144-00094	14/869,852	September 29, 2015	SYSTEMS AND METHODS FOR ADMINISTERING MOBILE APPLICATIONS USING PRE-LOADED TOKENS
G4144-00137	14/869,833	September 29, 2015	SYSTEMS AND METHODS FOR GENERATING AND ADMINISTERING MOBILE APPLICATIONS USING PRE-LOADED TOKENS
G4144-00142	14/928,500	October 30, 2015	SYSTEMS AND METHODS FOR AUTHENTICATING USER IDENTITY BASED ON USER-DEFINED IMAGE DATA
G4144-00100	62/201,392	August 5, 2015	SYSTEMS AND METHODS FOR AUTOMATICALLY GENERATING TRADE ORDERS BASED ON SOCIAL MEDIA MESSAGING
G4144-00008	15/233,475	August 10, 2016	MANUFACTURED PRODUCT COUNTERFEITING PREVENTION USING HYBRID BLOCKCHAIN
G4144-00009	15/232,100	August 9, 2016	SECURE REAL-TIME PRODUCT OWNERSHIP TRACKING USING DISTRIBUTED ELECTRONIC LEDGERS
G4144-00010	15/235,528	August 12, 2016	DOCUMENT TRACKING ON A DISTRIBUTED LEDGER
G4144-00011	15/235,076	August 11, 2016	SECURE TRACKING BEACONS USING DISTRIBUTED LEDGERS

WORLDWIDE

G4144-00012	15/255,236	September 2, 2016	SYSTEM AND METHOD FOR MAINTAINING A SEGREGATED DATABASE IN A MULTIPLE DISTRIBUTED LEDGER SYSTEM
G4144-00013	15/277,540	September 27, 2016	PROCESSING NETWORK ARCHITECTURE WITH COMPANION DATABASE
G4144-00014	15/287,815	October 7, 2016	SECURE ELEMENT METHOD FOR DISTRIBUTED ELECTRONIC LEDGER
G4144-00015	15/285,869	October 5, 2016	DISTRIBUTED ELECTRONIC LEDGER WITH METADATA
G4144-00016	15/277,132	September 27, 2016	REAL TIME VIRTUAL DRAFT SYSTEM AND METHOD
G4144-00017	15/235,199	October 12, 2016	SYSTEMS AND METHODS FOR MONITORING REFERRALS
G4144-00018	15/235,090	August 11, 2016	SYSTEM AND METHODS FOR MONITORING CONSTRUCTION PROJECTS
G4144-00019	15/281,433	September 30, 2016	INFORMATION MASKING USING CERTIFICATE AUTHORITY
G4144-00020	15/285,757	October 5, 2016	CERTIFICATE AUTHORITY MASTER KEY TRACKING ON DISTRIBUTED LEDGER
G4144-00021	15/234,947	August 11, 2016	A SYSTEM AND METHOD FOR IMPLEMENTING HYBRID PUBLIC-PRIVATE BLOCK-CHAIN LEDGERS
G4144-00025			REAL-TIME APPROVAL AND SETTLEMENT OF DATA EXCHANGES BETWEEN COMPUTING SYSTEMS
G4144-00103	15/275,657	September 26, 2016	AUTOMATIC PROVISIONING OF SERVICES TO NETWORK-CONNECTED DEVICES

WORLDWIDE

G4144-00104	15/281,479	September 30, 2016	AUTOMATED IMPLEMENTATION OF PROVISIONED SERVICES BASED ON CAPTURED SENSOR DATA
G4144-00105	15/349,508	November 11, 2016	DATA-AGGREGATING GRAPHICAL USER INTERFACES
G4144-00106	15/366,546	December 1, 2016	ASYNCHRONOUS CRYPTOGRAM-BASED AUTHENTICATION PROCESSES
G4144-00151	15/349,274	November 11, 2016	AUTOMATIC PERFORMANCE OF PARAMETER-BASED OPERATIONS IN TRUSTED NETWORK ENVIRONMENTS
G4144-00156	15/278,852	September 28, 2016	REAL TIME VIRTUAL DRAFT SYSTEM AND METHOD
G4144-00157	15/281,558	September 30, 2016	AUTOMATED IMPLEMENTATION OF PROVISIONED SERVICES BASED ON CAPTURED SENSOR DATA

**Assignment**

WHEREAS, I, **Jonathan K. BARNETT** (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, 12<sup>th</sup> 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.

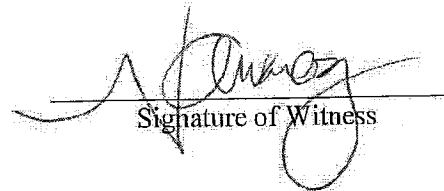
WORLDWIDE

EXECUTED at TORONTO, this 8<sup>th</sup> day of DECEMBER, 2016

  
Jonathan K. BARNETT

STATEMENT BY WITNESS

I, NICOLE AVAREZ, whose full post office address is 606 Wellington St. W. 15<sup>th</sup> Floor, Toronto, ON M5K 1A2, was personally present and did see Jonathan K. BARNETT, 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>
G4144-00055	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
G4144-00118	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



WORLDWIDE

G4144-00052	14/502,407	September 30, 2014	SYSTEMS AND METHODS FOR ADMINISTERING INVESTMENT PORTFOLIOS BASED ON INFORMATION CONSUMPTION
G4144-00061	14/510,969	October 9, 2014	SYSTEMS AND METHODS FOR PROVIDING TOKENIZED TRANSACTION ACCOUNTS
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
G4144-00116	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
G4144-00097	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
G4144-00100	62/201,392	August 5, 2015	SYSTEMS AND METHODS FOR AUTOMATICALLY GENERATING TRADE ORDERS BASED ON SOCIAL MEDIA MESSAGING
G4144-00017	15/235,199	August 12, 2016	SYSTEMS AND METHODS FOR MONITORING REFERRALS

WORLDWIDE

G4144-00018	15/235,090	August 11, 2016	SYSTEM AND METHODS FOR MONITORING CONSTRUCTION PROJECTS
-------------	------------	-----------------	---

**Assignment**

WHEREAS, I, **Garima AGGARWAL** (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, 12<sup>th</sup> 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;

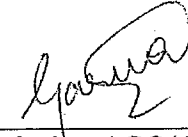
NOW THEREFORE, the Assignor hereby sells, assigns and transfers, to the Assignee, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the entire and exclusive right, title, and interest in and to said inventions in Canada, the U.S., and throughout the world, 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 she (i) authorized said Patent Applications and authorizes said Subsequent Patent Applications, (ii) believes that she 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

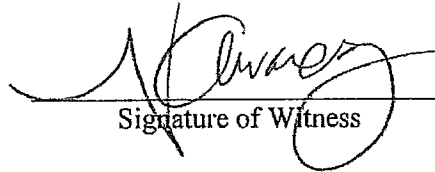
EXECUTED at TORONTO, this 8<sup>th</sup> day of December, 2016



\_\_\_\_\_  
Garima AGGARWAL

STATEMENT BY WITNESS

I, Nicole Alvarez, whose full post office  
address is 60 Wellington St. W. 15<sup>th</sup> Floor, Toronto, ON M5K 1A2, was personally present  
and did see Garima AGGARWAL, 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>
G4144-00071	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