

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT6391066

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
DINO D'AGOSTINO	02/08/2018
PERRY AARON JONES HALDENBY	10/16/2018
DEAN TSERETOPOULOS	02/22/2018
JEFFREY ECKER	02/22/2018
ADAM DOUGLAS MCPHEE	03/07/2018
MILOS DUNJIC	02/08/2018
JOHN JONG-SUK LEE	12/01/2017
ARUN VICTOR JAGGA	03/08/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THE TORONTO-DOMINION BANK
<b>Street Address:</b>	66 WELLINGTON STREET WEST, TD TOWER, 15TH FLOOR
<b>City:</b>	TORONTO
<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:	17092588
<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>	2027767800
<b>Email:</b>	lrhayes@duanemorris.com
<b>Correspondent Name:</b>	DUANE MORRIS LLP
<b>Address Line 1:</b>	505 9TH STREET N.W.
<b>Address Line 2:</b>	SUITE 1000
<b>Address Line 4:</b>	WASHINGTON, D.C. 20004
<b>ATTORNEY DOCKET NUMBER:</b>	G4144-00475
<b>NAME OF SUBMITTER:</b>	JAMES A. COOKE, III
<b>SIGNATURE:</b>	/James A Cooke, III/

PATENT

<b>DATE SIGNED:</b>	11/09/2020
<b>Total Attachments: 24</b> source=assignment#page1.tif source=assignment#page2.tif source=assignment#page3.tif source=assignment#page4.tif source=assignment#page5.tif source=assignment#page6.tif source=assignment#page7.tif source=assignment#page8.tif source=assignment#page9.tif source=assignment#page10.tif source=assignment#page11.tif source=assignment#page12.tif source=assignment#page13.tif source=assignment#page14.tif source=assignment#page15.tif source=assignment#page16.tif source=assignment#page17.tif source=assignment#page18.tif source=assignment#page19.tif source=assignment#page20.tif source=assignment#page21.tif source=assignment#page22.tif source=assignment#page23.tif source=assignment#page24.tif	

**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean TSERETOPOULOS,  
Jeffrey ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on \_\_\_\_\_, and accorded application serial number \_\_\_\_\_ (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;

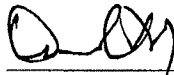
AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

**Inventor 1:**

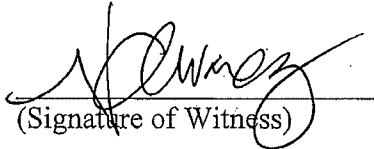
EXECUTED at (City, Province) Toronto, ON, this 8<sup>th</sup> day of February, 2010



Dino D'AGOSTINO

STATEMENT BY WITNESS

I, Nicole Alvarez, whose full Post Office address is  
660 Wellington St. W. 18<sup>th</sup> Floor, Toronto, ON M6K 1A2 was  
personally present and did see the above named person, who is known to me, execute the above  
Assignment.

  
(Signature of Witness)

**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino Paul D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean C. N. TSERETOPOULOS,  
Jeffrey Aaron ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on April 5, 2018, and accorded application serial number 15/946,475 (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;

AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its

successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

**Inventor 2:**

EXECUTED at (City, Province) Toronto, ON, this 16<sup>th</sup> day of October, 2018

  
Perry Aaron Jones HALDENBY

STATEMENT BY WITNESS

I, Madalina Kinnear, whose full Post Office address is  
66 Wellington St. W. 15<sup>th</sup> Floor, Toronto, ON M5K 1A2 was  
personally present and did see the above named person, who is known to me, execute the above  
Assignment.

  
(Signature of Witness)



**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean TSERETOPOULOS,  
Jeffrey ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on \_\_\_\_\_, and accorded application serial number \_\_\_\_\_ (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;

AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

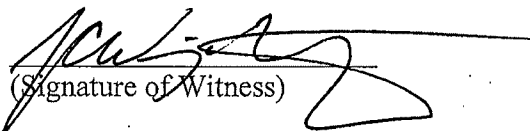
**Inventor 3:**

EXECUTED at (City, Province) TORONTO, ONTARIO, this 22 day of FEBRUARY, 2018

  
Dean TSERETOPOULOS

STATEMENT BY WITNESS

I, JEREMY WISETUNGE, whose full Post Office address is  
66 WELLINGTON ST.W. 15<sup>th</sup> FLOOR, TORONTO, ON, M5K 1A2 was  
personally present and did see the above named person, who is known to me, execute the above  
Assignment.

  
(Signature of Witness)

**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean TSERETOPOULOS,  
Jeffrey ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on \_\_\_\_\_, and accorded application serial number \_\_\_\_\_ (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;

AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

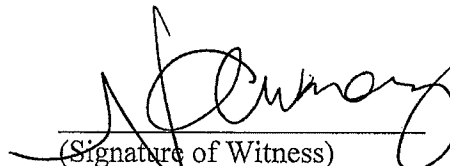
**Inventor 4:**

EXECUTED at (City, Province) TORONTO, ON, this 22 day of February 2018

  
Jeffrey ECKER

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 the above named person, who is known to me, execute the above  
Assignment.

  
(Signature of Witness)

**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean TSERETOPOULOS,  
Jeffrey ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on \_\_\_\_\_, and accorded application serial number \_\_\_\_\_ (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "Assignee"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;

AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

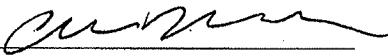


TD Reference No. 17042-MCH-US-PAT

Firm Name: Duane Morris LLP

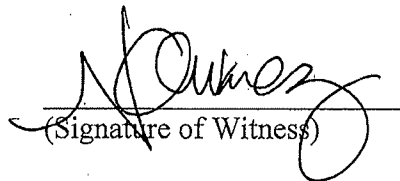
**Inventor 5:**

EXECUTED at (City, Province) Toronto, ON, this 7<sup>th</sup> day of MARCH, 2018

  
Adam Douglas MCPHEE

STATEMENT BY WITNESS

I, Nicole Alvarez, whose full Post Office address is  
606 Wellington St. W. 15th Floor Toronto, ON M5K 1K2 was  
personally present and did see the above named person, who is known to me, execute the above  
Assignment.

  
(Signature of Witness)

**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean TSERETOPOULOS,  
Jeffrey ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on \_\_\_\_\_, and accorded application serial number \_\_\_\_\_ (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;

AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

**Inventor 6:**

EXECUTED at (City, Province) Toronto, ON, this 8 day of Feb, 2018

Milos DUNJIC  
Milos DUNJIC

STATEMENT BY WITNESS

I, Nicole Anwar, whose full Post Office address is  
600 Wellington St. W. 18th Floor, Toronto, ON M5K 1A2 was  
personally present and did see the above named person, who is known to me, execute the above  
Assignment.

(Signature of Witness)

**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean TSERETOPOULOS,  
Jeffrey ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on \_\_\_\_\_, and accorded application serial number \_\_\_\_\_ (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;

AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

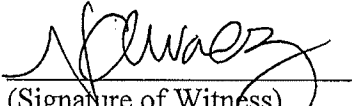
**Inventor 7:**

EXECUTED at (City, Province) Toronto, this 1 day of Dec, 2017

  
John Jong-Suk LEE

STATEMENT BY WITNESS

I, Nicole Alvarez, whose full Post Office address is  
606 Wellington St. W. 15th Floor Toronto, ON M6K 1A2 was  
personally present and did see the above named person, who is known to me, execute the above  
Assignment.

  
(Signature of Witness)

**WORLDWIDE ASSIGNMENT**

WHEREAS, WE, (hereinafter referred to as the "ASSIGNORS"):

**Dino D'AGOSTINO,  
Perry Aaron Jones HALDENBY,  
Dean TSERETOPOULOS,  
Jeffrey ECKER,  
Adam Douglas MCPHEE,  
Milos DUNJIC,  
John Jong-Suk LEE, and  
Arun Victor JAGGA,**

have invented a certain new and useful invention entitled:

**REAL-TIME AUTHORIZATION OF INITIATED DATA EXCHANGES  
BASED ON DYNAMICALLY GENERATED TOKENIZED DATA**

for which a United States Patent application was filed on \_\_\_\_\_, and accorded application serial number \_\_\_\_\_ (further identified by Attorney Docket No. G4144-00207 and TD Reference No. 17042-MCH-US-PAT, hereinafter the "Patent Application"), and

WHEREAS, **The Toronto-Dominion Bank** (hereinafter "**Assignee**"), a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 66 Wellington Street West, TD Tower, 15<sup>th</sup> Floor, Toronto, Ontario, M5K 1A2, has acquired or is desirous of acquiring the entire and exclusive right, title and interest in and to the Patent Application inclusive of any and all priority rights derived therefrom and the inventions therein disclosed or claimed, and in and to all Letters Patent, in the United States of America, Canada, and throughout the world, which may be granted and issued therefore throughout the world;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned, WE, ASSIGNORS does/do hereby sell, assign, transfer, and set over to the ASSIGNEE, its successors and assigns, the entire and exclusive right, title and interest in and to the Patent Application for United States Letters Patent inclusive of any and all priority rights derived therefrom, and the inventions therein disclosed or claimed, and in and to all Letters Patent and issues thereof which may be granted upon the Patent Application and in and to all Letters Patent which may be issued upon any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions of the Patent Application or Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, and in and to any and all Letters Patent which may be granted for the inventions in any foreign country or countries including priority rights derived from any application for the inventions in any country;



AND WE, ASSIGNORS hereby agrees/agree to execute, upon request, any and all further papers without charge which may be necessary or desirable to enable the ASSIGNEE, its successors and assigns, to file and prosecute the Patent Application, and any and all substitutes, continuations, continuations-in-part, divisions, or extensions thereof, and any and all reissues of the Letters Patent granted upon the Patent Application, and any and all applications for foreign Letters Patent on the inventions; and ASSIGNORS further agrees/agree to execute any and all further papers without charge which may be necessary or desirable to vest or perfect the title of ASSIGNEE, its successors and assigns, in and to the Patent Application and the inventions therein disclosed or claimed, and in and to any and all Letters Patent and reissues thereof, in the United States of America, Canada, and foreign countries, which may be granted upon the Patent Application, and any substitutes, continuations, continuations-in-part, divisions, re-issues or extensions thereof, and upon any foreign applications;

AND WE, ASSIGNORS hereby authorizes/authorize and requests/request the Patent Office to issue each and every Letters Patent to be granted upon the Patent Application for United States Letters Patent, and upon any and all substitutes, continuations, continuations-in-part, divisions, or extensions of the Patent Application, and each and every reissue of the Letters Patent, to the ASSIGNEE, its successors and assigns, as the assignee of the entire right, title and interest therein, in accordance with this assignment;

AND WE, ASSIGNORS each individually hereby represent and warrant that I have read and fully understand the terms and provisions hereof, have had an opportunity to obtain independent legal advice, and have executed this assignment based upon my own judgment and advice of independent legal counsel (if sought), or alternatively, have waived the right to obtain independent legal counsel.

TD Reference No. 17042-MCH-US-PAT

Firm Name: Duane Morris LLP

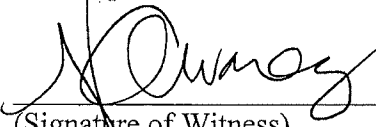
**Inventor 8:**

EXECUTED at (City, Province) Toronto, ON, this 8 day of March, 2018

  
Arun Victor JAGGA

STATEMENT BY WITNESS

I, Nicole Alvarez, whose full Post Office address is  
60 Wellington St. W. 15th Floor Toronto, ON was  
personally present and did see the above named person, who is known to me, execute the above  
Assignment.

  
(Signature of Witness)