

## PATENT ASSIGNMENT COVER SHEET

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EPAS ID: PAT4399678

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
EDISON U. ORTIZ	03/07/2017
TERRY W. LEE	03/07/2017
MARKO PAVLOVIC	03/07/2017
ARNOLD BADAL-BADALIAN	03/07/2017
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	ROYAL BANK OF CANADA
<b>Street Address:</b>	1 PLACE VILLE MARIE
<b>Internal Address:</b>	6TH FLOOR, NORTH WING
<b>City:</b>	MONTREAL
<b>State/Country:</b>	CANADA
<b>Postal Code:</b>	H3C 3A9
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	15453193
<b>CORRESPONDENCE DATA</b>	
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<b>ATTORNEY DOCKET NUMBER:</b>	41609-35
<b>NAME OF SUBMITTER:</b>	MATTHEW J. MARQUARDT
<b>SIGNATURE:</b>	/Matthew J. Marquardt/
<b>DATE SIGNED:</b>	05/05/2017
<b>Total Attachments: 7</b>	
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**ASSIGNMENT (Worldwide)**

WHEREAS,

- (1) **Edison U. ORTIZ** of Orlando, Florida, U.S.A.
- (2) **Terry W. LEE** of Toronto, Ontario, Canada,
- (3) **Marko PAVLOVIC** of Toronto, Ontario, Canada,
- (4) **Arnold BADAL-BADALIAN** of Toronto, Ontario, Canada, and

hereinafter referred to, separately and collectively, as “**Assignors**”, and whose full post office address is c/o Royal Bank of Canada, 6<sup>th</sup> Floor, North Wing, 1 Place Ville Marie, Montreal, Quebec, H3C 3A9, Canada, have jointly and/or severally made one or more inventions relating to and entitled:

**SYSTEMS, METHODS, AND DEVICES FOR SECURE GENERATION AND PROCESSING OF DATA SETS REPRESENTING PRE-FUNDED PAYMENTS**

hereinafter referred to as the “**Invention**”, which is described in one or more applications for Letters Patent identified as:

Country: United States  
Application Number: 61/715,142  
Filed: October 17, 2012

Country: United States  
Application Number: 61/811,783  
Filed: April 14, 2013

Country: United States  
Application Number: 61/825,865  
Filed: May 21, 2013

Country: United States  
Application Number: 61/833,188  
Filed: June 10, 2013

Country: United States  
Application Number: 61/863,593  
Filed: August 8, 2013

Country: United States  
Application Number: 14/142,072  
Filed: December 27, 2013

Country: United States  
Application Number: 62/056,688  
Filed: September 29, 2014

Country: United States  
Application Number: 62/058,799  
Filed: October 2, 2014

Country: United States  
Application Number: 62/065,208  
Filed: October 17, 2014

Country: United States  
Application Number: 62/078,683  
Filed: November 12, 2014

Country: United States  
Application Number: 62/084,549  
Filed: November 25, 2014

Country: United States  
Application Number: 62/089,210  
Filed: December 8, 2014

Country: United States  
Application Number: 62/118,890  
Filed: February 20, 2015

Country: United States  
Application Number: 14/869,186  
Filed: September 29, 2015

Country: United States  
Application Number: 62/105,061  
Filed: January 19, 2015

Country: United States  
Application Number: 62/200,859  
Filed: August 4, 2015

Country: United States  
Application Number: 62/188,067  
Filed: July 2, 2015

Country: United States  
Application Number: 15/000,685  
Filed: January 19, 2016

Country: United States  
Application Number: 62/062,467  
Filed: October 10, 2014

Country: United States  
Application Number: 14/879,913  
Filed: October 9, 2016

Country: United States  
Application Number: 15/201,428  
Filed: July 2, 2016

Country: United States  
Application Number: 62/305,429  
Filed: March 8, 2016

Country: United States  
Application Number: 15/453,193  
Filed: March 8, 2017

Country: PCT  
Application Number: PCT/CA2017/000050  
Filed: March 8, 2017

hereinafter referred to as the “**Applications**”;

AND WHEREAS, **ROYAL BANK OF CANADA**, a Canadian Chartered Bank hereinafter referred to as “**Assignee**”, whose full post office address is 6<sup>th</sup> Floor, East Wing, 1 Place Ville Marie, Montreal, Quebec H3C 3A9, Canada, desires among other things to acquire

Assignors' entire right, title, interest and benefit for the United States, Canada and all other countries and jurisdictions in and to the Invention and Applications.

NOW THEREFORE, in consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignors hereby confirm that they have sold, assigned, transferred and set over to Assignee and, for greater certainty, do hereby sell, assign, transfer and set over to Assignee, and to Assignee's successors, assigns, nominees or other legal representatives, their entire right, title, interest, property and benefit in and for United States, Canada and all other countries and jurisdictions in and to the Invention, together with their entire right, title, interest, property and benefit in and to the Applications, and any applications corresponding thereto in any country or jurisdiction, including any and all corresponding applications whether in the form of divisions, continuations, re-examinations, re-issues and extensions thereof, any and all Letters Patent and Registrations that may issue, be granted or result therefrom for the Invention, and any and all rights of priority resulting from the filing of the above-identified applications, the said corresponding applications and any previously filed applications in respect of the Invention under international conventions, treaties or otherwise, the same to be held and enjoyed as fully and exclusively as the same would have been held and enjoyed by Assignors had this sale, assignment, transfer and setting over not been made;

AND ASSIGNORS, on behalf of themselves and their heirs, executors and administrators, do hereby covenant and agree to do all such lawful acts and things and to execute and deliver without further consideration such further lawful assignments, instruments, assurances, applications and other documents as may reasonably be required by said Assignee, or by its successors, assigns, nominees, or other legal representatives, to obtain each said Letters Patent and Registrations of the United States and all other countries and jurisdictions for the Invention and vest or secure the same in Assignee, and in Assignee's successors, assigns, nominees or other legal representatives.

AND ASSIGNORS do hereby authorize any official whose duty it is to grant patents or registrations, to grant each said Letters Patent and Registration for the Invention to the Assignee, and to Assignee's successors, assigns, nominees or other legal representatives.

AND ASSIGNORS, on behalf of themselves and their heirs, executors and administrators, do hereby authorize said Assignee, its successors, assigns, nominees or other legal representatives, including its Patent Agents, Dickinson Wright LLP, to amend the present assignment document to insert or correct the filing date, serial number or other identifying information of the Applications as may be needed to record same.

ASSIGNORS UNDERSTAND AND AGREE that the attorneys and agents of the law firm of Dickinson Wright LLP do not personally represent Assignors or Assignors' legal interests, but instead represent the interests of Assignee. Since Dickinson Wright LLP cannot provide legal advice to Assignors with respect to this Assignment, Assignors acknowledge their right to seek their own independent legal counsel.

THIS ASSIGNMENT may be executed in counterparts, all of which shall be considered one and the same agreement. This Assignment shall be effective to transfer an Assignors' entire right, title, interest, property, and benefit to Assignee upon execution of this Assignment by such Assignors, regardless of whether any other Assignor executes this Agreement.

IN WITNESS WHEREOF, Assignors have hereunto signed their names on the day and year set forth below.

DATED this 7<sup>th</sup> day of March, 2017.

**Edison U. ORTIZ**

Per: [Signature]

Name: VP. Solution Acceleration & Transition

Title: Edison Ortiz

**STATEMENT OF WITNESS**

I, Janet Eisenbaum  
[Signature], state that I was personally present and did see  
(name of witness)

Edison U. ORTIZ, who is personally known to me to be the person (name of authorized signing officer/inventor) named in the above assignment, duly execute the same on the day and year set forth above.

Jared Eisen  
(signature of witness)

DATED this 7<sup>th</sup> day of March, 2017.

Terry W. LEE

Per: [Signature]

Name: Terry Lee

Title: Managing Director  
Acceleration and R&D

**STATEMENT OF WITNESS**

I, Jared Eisen, state that I was personally present and did see  
(name of witness)

Terry W. Lee, who is personally known to me to be the (name of authorized signing officer/inventor) person named the above assignment, duly execute the same on the day and year set forth above.

Jared E  
(signature of witness)

DATED this 7<sup>th</sup> day of March, 2017.

Marko PAVLOVIC

Per: [Signature]

Name: MARKO PAVLOVIC

Title: DIRECTOR, PRODUCTS INNOVATION

**STATEMENT OF WITNESS**

SYSTEMS, METHODS, AND DEVICES FOR SECURE GENERATION AND PROCESSING OF DATA SETS REPRESENTING PRE-FUNDED PAYMENTS  
41609-34

**PATENT**

**REEL: 042250 FRAME: 0291**



I, Tanel Eisenbaum, state that I was personally present and did see  
(name of witness)

Marko, PAVLOVIC, who is personally known to me to be the  
(name of authorized signing officer/inventor) person named the above assignment, duly execute  
the same on the day and year set forth above.

Tanel Eisenbaum  
(signature of witness)

DATED this 7<sup>th</sup> day of March, 2017.

**Arnold BADAL-BADALIAN**

Per: DBA  
Name: Arnold Badal-Badalian  
Title: Director of Technology Delivery

**STATEMENT OF WITNESS**

I, Tanel Eisenbaum, state that I was personally present and did see  
(name of witness)

Arnold BADAL-BADALIAN, who is personally known to me  
to be the (name of authorized signing officer/inventor) person named the above assignment, duly  
execute the same on the day and year set forth above.

Tanel Eisenbaum  
(signature of witness)